Kübler

Counting Technology
Counters, Timers, Tachometers

- **Display counters** electronic, electromechanical and pneumatic
- **Preset counters** electronic and electromechanical
- **Timers** electronic and electromechanical
- **Tachometers** electronic
- **Time relays**
- **Accessories**

pulses for automation

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Type of counters		Serie	Display	Panel cut out B x H [mm]	Reset without	man	electr.	Remarks	
Display counters electromechanical	Micro - Totalizer	K 46	999999	27 x 14	•	–	–	high shock resistance	36
		K 47	9999999	27 x 14				panel, base mount	
		K 66	999999	27 x 14	•	–	–	high magnetic and shock resistant	40
		K 67	9999999	27 x 14	•	–	–	panel, base mount	
		K 04	9999	24 x 13	•	–	–	Panel/PCB/Base mount	44
		K 05	99999	24 x 13	•	–	–		
		K 06	999999	30 x 13	•	–	–		
		K 07	9999999	30 x 13	•	–	–		
		KWH 17	9999999	–	–	–	–	PCB mount for kWh counter	52
		SK 06.1	999999	–	•	–	–	Counter for DIN Rail	54
		SK 07.1	9999999	–	•	–	–		
	Mini-Totalizer								
		W15/AW15	99999	ab 31 x 20	–	•	–	Panel/Base and PCB mount	56
		W16/AW16	999999	ab 31 x 20	•	–	–	Panel/Base and PCB mount	59
		W 17	9999999	ab 38 x 24	•	–	–	Panel/Base and PCB mount	
	Standard - Totalizer								
		BK 14	9999	33,3 x 25	–	•	–	Panel mount	64
		BK 16	999999	33,3 x 25	•	–	–	Panel mount	
		B 15	99999	50 x 25	–	•	–	Panel mount	66
		B 16	999999	50 x 25	–	•	–	Panel mount	
		B 18	99999999	50 x 25	•	–	–	Panel mount	
		MK 14	9999	33,3 x 22	–	•	–	Panel mount	74
		MK 16	999999	33,3 x 22	–	•	–	Panel mount	
		MK 18	99999999	48 x 24	•	–	–	Panel mount	
		E 16	999999	48 x 27	–	•	•	Panel mount	78
Pneumatic Pulse counters		PMK 14	9999	33,3 x 22	–	•	–	Panel mount	80
		PMK 16	999999	48 x 24	–	•	–	Panel mount	
		PMK 18	99999999	48 x 24	•	–	–	Panel mount	
Display counters electronic	LCD Display counter								
		CODIX 130	99999999	45 x 22	–	•	•	Panel mount, diferent functions e.g. add., sub, direct connection to incremental encoders, locking of the reset key	83
		CODIX 131							
		CODIX 132							
		CODIX 133							
		184	99999999	45 x 22	–	•	•	Panel mount	86
		185	99999999	45 x 22					88
	LED Display counter	CODIX 520	999999	45 x 22	–	–	•	Compact counter	90
		CODIX 521	999999	45 x 22	–	•	•	Totalizer and position display	91
		CODIX 524	999999	45 x 22	–	•	•	Universal	92
		CODIX 525	999999	45 x 22	–	•	•	Totalizer and frequency meter	93
		CODIX 526	999999	45 x 22	–	•	•	2 Totalizers	94
		CODIX 527	999999	45 x 22	–	•	•	Totalizer and time meter	95
		CODIX 540	999999	92 x 45	–	•	•	Totalizer	96
		CODIX 541	999999	92 x 45	–	•	•	Totalizer and position display	97
		CODIX 544	999999	92 x 45	–	•	•	Universal	98
		CODIX 54U	999999	92 x 45	–	•	•	Multifunction with double functions	100
		CODIX 54P	999999	92 x 45	–	•	•	Position display and tachometer	101

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General instructions

1. Electromechanical Pulse counters

The general counter construction consists of an electromagnetic drive and a mechanical kind of number wheel system. Electrical impulses cause a step-by-step revolution of the number wheels.

Adding Pulse Counters

Add the incoming impulses continuously. They are available with or without electrical or manual reset. Miniature counters are also available for battery operation with a power consumption of only 50 or 30 mW and are protected against shock and vibration to a very high extent.

1.1 Characteristics

Current type

Our counters are all constructed for DC voltage. On AC voltages a rectifier is always required and is incorporated in the housing. The maximum permissible voltage fluctuation for DC and AC is generally ±10 % of the nominal voltage at maximum count frequencies.

Residual ripple

is the AC voltage superposed on the DC voltage in%

$$\frac{U_W}{U_g} \times 100\ \%$$

U_W = Effective value of superposed AC voltage
U_g = arithmetical mean value of DC voltage

Power consumption

is the power in W or VA that a pulse counter consumes at continuous pulse and rated voltage with unheated coil (20 °C)

Maximum Impulse Frequency

is the maximum possible count frequency which the counter in question can consume in permanent operation. It differs according to counter type and power consumption and is limited by the required pickup- and release times of the counting solenoid.

Minimum Pulse on time

is the period of time witch is sufficient for accurate counting, even at permissible ± variation of operating voltage; the pulse interval can be optionally as long as required.

Minimum Pulse Interval

is the period of time which is sufficient for accurate counting. Optimal spark quenching is imperative if high count frequency is required.

Pulse ratio

is the ratio of $\frac{\text{pulse on time}}{\text{pulse interval}}$ at maximum count frequency.

On time ED

states how long a coil may be energized without overheating.
The following formula is applicable to the

$$\text{ED \%} = \frac{\text{pulse on time}}{\text{pulse on time + pulse interval}} \times 100$$

From this can be derived:

$$\text{pulse on time} = \frac{\text{ED \%}}{100 - \text{ED \%}} \times \text{pulse interval}$$

$$\text{pulse interval} = \frac{100 - \text{ED \%}}{\text{ED \%}} \times \text{pulse on time}$$

In addition to the ED % figure the listed values include an addition concerning the maximum permanent on time. Therefore a coil may only be energized by a constant current during this period and then has to be cooled of again. On ED = 100 % limitation of this is not necessary as this coil will become inadmissibly hot, even if continuously energized.
Example:
A count coil has the listed value ED = 15 %, max. 55 sec. This coil may therefore remain under constant current for max. 55 sec. After this a cooling interval of

$$\text{pulse interval} = \frac{100 - 15}{15} \times 55\ \text{s} = 283\ \text{s}$$

is required.

The same coil is constantly receiving pulses of 40 sec. duration with a count interval of 6 min. Is this still permissible?

$$\text{ED \%} = \frac{40}{40 + 360} \times 100 = 10\ \%$$

Result:
Since the on time does not exceed 15 % these pulse-on times are permissible.

Ambient temperature

is the permissible temperature within the direct vicinity of the pulse counter. When using the counters in groups, the reciprocal heating must be taken into consideration as this results in an ambient temperature rise. The upper or lower value is only applicable to the rated voltage.

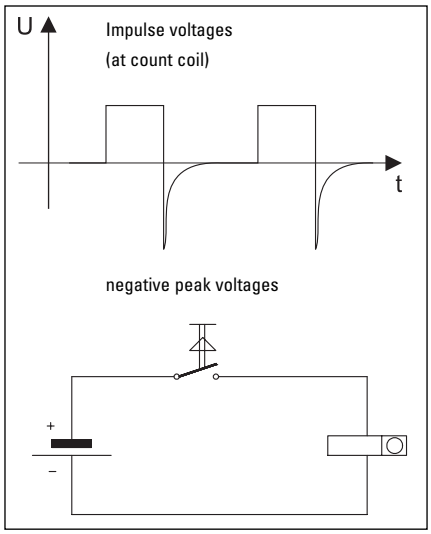
General instructions

2.1 Instructions for electromechanical Pulse Counters

2.2 Pulse Voltages

DC voltage pulses without or with very small residual ripple are, for example, taken from a battery, DC generator, electronically stabilised power supply, according to the circuit above. These pulses are most suitable for the maximum possible frequencies due to their ideal square shape.
If only AC voltage is available it must be rectified. Therefore, according to count speed, a more or less greater degree of residual ripple has to be put up with. A simple bridge-rectifier will give a residual ripple of approx. 50%, and the following relationship is applicable.

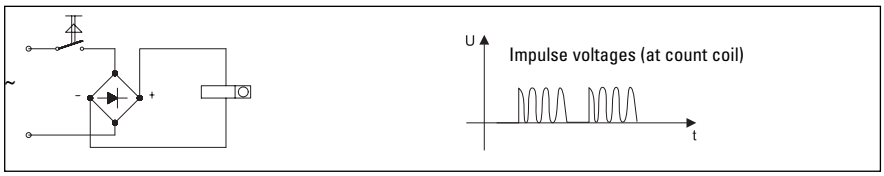
AC voltage (effective value)
12 24 48 60 110 220 V
DC voltage (arithm. mean value)
8,5 19,5 40 49 91 185 V



Two types of switching circuits can be used to drive the counters

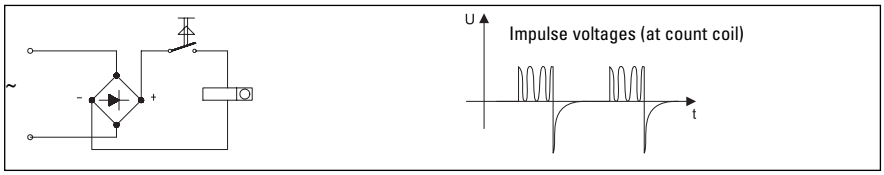
a) Pulse contact in AC circuit Model a0 or a

This circuit is mostly used when the count speed is ≤ 18 Imp/sec.



Advantage:
No spark required; contact bounces have no negative effect because the rectifier acts as spark quenching and provides inductive drop-out time lag.
Disadvantages:
Count speed only possible up to max. 18 Imp/sec.

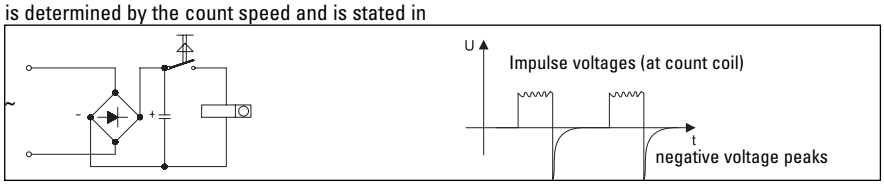
b) Pulse contact in DC circuit version b



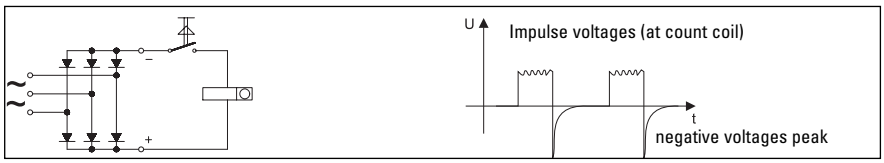
Advantages:
High count speed = 25 /cps, only one rectifier is necessary when driving several counters.

Disadvantages:
More sensitive to contact bounce, spark quenching is required.
4 connection points required is rectifier is built into counter

On pulse speeds ≥ 30 Imp/sec smoothed DC must be used. The residual ripple (smoothing degree) is determined by the count speed and is stated in the technical specification.



Simple bridge circuit
smoothing by capacitor



3 phase AC bridge circuit capacitor nit required . Residual ripple 4.2 %

If the rectifiers are connected directly to AC mains they are often damaged through the"contamination" of the high peak voltages. These peak voltages are caused by switching of transformers, spot welding machines, switching motors on and off etc; they often exceed the mains voltage by many times over. Therefore it is essential to use a heavy duty rectifier or one with controlled avalanche so that these peak voltages will not have any destructive effects in the long run. This is particularly important in the case of silicon rectifiers which are very sensitive to short period excess voltages. It is advisable to use controlled avalanche silicon rectifiers for this purpose. Rectifiers which we build in or attach to our pulse counters are to a large extent dielectric, and an over voltage protection is provided, if required.

General instructions

2.3 Pulse Generator

Appropriate pulse generators are required in order to achieve accurate count results. In this connection, it should be ensured that these operate as far as possible without bounce; this is particularly important for counters with high pulse rate. Cam operated spring contacts, limit switches and microswitches are suitable for count speeds up to approx. 10 or 25/cps, small relay-contacts up to approx. 40 Cps, higher count speed up to 60/Cps. can be achieved with reedswitches, exact matching of spark quenching being necessary to avoid premature sticking of contact reeds. Even higher speeds can be obtained by using photoelectric or inductive sensors. Our pulse generators which are manufactured in a robust and solid style are suitable for count speeds up to maximum of 60/cps.

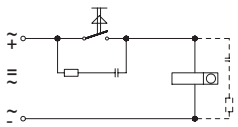
2.4 Electrical Reset

Counters with electrical reset have an electromagnet which is operated by a reset pulse, and resets the number wheels back to the starting number. The predetermining counters have a release mechanism which is additionally tensioned. The pre-determining counters can be reset either by remote pulse or automatically. On remote reset through pulse, the pulse duration must be long enough for the reset operation to be completed and for the minimum pulse duration to be maintained in accordance with the technical data of the counters. It is essential that during resetting no pulses may pass into the count mechanism as otherwise intermediate positions of the number wheel of rejection can occur. There is no danger of mechanical damage of the counter, however. In order to avoid mistakes, the count pulses should only be allowed to enter, when the number wheels have been accurately adjusted and the drive mechanism is fully engaged. On remote reset a count interval of at least 50 ms after pulse end is required and thus the total count interval = reset pulse time + 50 msec. On counters with automatic reset the count interval must be adhered to according to the technical specifications.

2.5 Spark Quenching

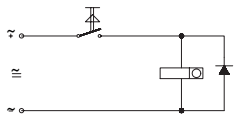
If the pulse contact is within the DC circuit of the counter, spark quenching is necessary in order to avoid any contact disturbance from the inductive breaking voltage. Unfortunately, however, a more or less strong dropout delay is produced by the spark quenching and it should be checked in any case whether this will cause disturbance.

2.5.1 Spark Quenching with RC element



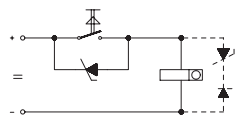
This spark quenching produces practically no disturbing dropout delay and is, therefore most suitable for all count speeds. It should preferable be used at very high count speeds. In general the RC element is located in parallel with the contact in order to produce high frequency interference suppression at the same time. However, it can also be connected in parallel with the coil. We supply RC elements for any voltage and count speed.

2.5.2 Spark quenching with Diodes



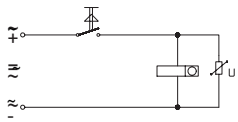
Considerable dropout delay, therefore only suitable for low count speeds up to 10 cps. Particulair attention should be paid to the correct polarity on connecting. The small fitting size is an advantage: e.g. this type of spark quenching can be used for resetting coils.

2.5.3 Spark Quenching with Zener Diodes



Low dropout delay, therefore suitable for higher count speeds because the diode only passes the inductive breaking current when the Zener voltage is achieved. It is also suitable for the protection of transistor circuits, whereby here as well as correct polarity is important.

2.5.4 Spark Quenching with Varistors

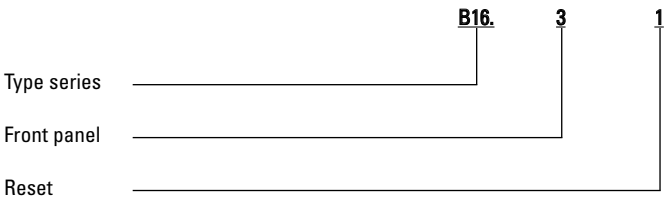


Varistors are voltage dependent resistors whose resistance decreases inertialessly and exponentially with rising voltage. They are therefore, suitable for spark quenching, the varistor ideally being connected in parallel with the coil. It is rated for the current to be approx. 1/10 of the coil current at nominal voltage.

2.5.5 Identification of counter model

The design of the impulse counters is identified according to type series, version of front panel, and reset, according to the following system:

z. B.



Some products are (**UL Underwriters Laboratories Inc.**) certified:

General instructions

Electromechanical standard range

please refer to the technical data for the various counters

Front panels

0 = no front bezel
1 = front bezel for panel with 2 screws
2 = front bezel with spring clip mount
3 = large front bezel for panel with 2 screws

For further codes, please refer to the respective counters.

Reset

0 = without reset
1 = manual push button reset
2 = remote reset
3 = remote- and manual reset

2.6 Special versions

These are modifications of standard versions. The most common versions available are listed under the various type series.

2.7 General Instructions

In order to avoid queries, please state exact type designation, voltage and pulse frequency and other accessories if required, when ordering. If combinations and special versions are required, please send drawing with circuit diagram. In difficult cases the availability can be clarified by a visit from our agent.

If a counter is only required to operate at a maximum of 10 cps, then one for 25 cps should not be used. This is primarily because of the higher service life of the 10 cps version compared to the 25 cps model. In addition the 10 cps counter has a higher duty cycle and a lower power consumption than the one for 25 cps.

The choice of spark quenching is also very important, particularly at high count speeds (refer to section 2.4 spark quenching). RC element, silicon diodes and some varistors can be obtained from us.

Certain counter types are supplied with a built in spark quenching. It should be ensured that the release contact on the preset counter will not be damaged by excessive breaking current or breaking voltage. If necessary, spark quenching should be provided here as well.
The explanations given in the above paragraphs and the technical specifications of each counter should be noted carefully.

General instructions

3. Notes on the use of electronic counters

Electronic counters can be divided into:

- **Display Counters**
- **Preset Counters**

3.1.1 Display Counters

These counters have no outputs activated at a specific count value. They are used purely to monitor the count value. The functions range from simple totalising up to position display (with phase discriminator). Depending on the speed of the events being counted, the count speed can go up to 100 kHz.

Example:

CODIX 130

CODIX 520

More recent counters have a scale factor, which for example could be used to convert a length measured in inches into meters.

3.1.2 Preset Counters

It is always the job of preset counters to trigger a signal at a particular count value. In the simplest instance this can mean just shutting down a machine, however it could also be the initialisation of control functions (e.g. cutting material to length, transporting parts etc.). Relays, transistors or optocouplers are used as outputs. Relays are suitable for switching heavy loads (up to 2000 VA). The actual switching capacity depends on the model (counter) and can be seen in the data sheet. Most relays are available with a changeover function.

Example:

Typ 571

CODIX 717 (also EX)

Typ 903

3.1.3 SSI Display

Our SSI display has a SSI clock frequency from 100 Hz up to 1 MHz.and it is suitable for SSI protocols up to 25 Bit We supply versions with 2 optocoupler outputs to work as limit or preset values; also available with tracking preset or with scalable analogue output. The units have a large 15 mm high LED display, 6 digit, with adjustable brightness. A version with serial interface is also available.

3.2 Count modes

Adding
The counter starts from zero and counts up to the programmed preset value, at which an output signal is triggered. The counter is then reset to zero - this can be programmed to happen automatically. The current count value is always displayed.

Subtracting
The counter starts from the preset value or from a separate setpoint and counts down to zero, at which an output signal is triggered. The counter is then reset to the preset value. The value displayed corresponds to the difference between the preset value and the count value.

General instructions

3.3 Display Types

Electronic counters are differentiated according to their display type. The most common types of displays used today are liquid-crystal displays (LCD) and light-emitting diodes (LEDs).

Example:

LED display

LCD display

LCD displays

LCD displays have the advantage of being very economical. They come in both standard versions as well as in customised versions. The advantage of the customised version is that as well as the count value, it is possible to display the preset value and also additional symbols such as, for example, the status of the outputs. With customised models, the height of the digits and the size of the display can be optimally laid out for the corresponding counter. LCD displays also have the advantage that they are not affected by ambient light and for poorly lit environments they are available with built-in backlighting. Note however that backlit displays do have higher power consumption.

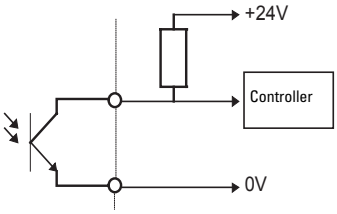
LED displays

LED displays are always employed, if units are to be used in environments with diffuse lighting. Thanks to their self-luminous display, these models are also easy to read even from a long distance. For each segment, LED displays require a current of between 2 and 10 mA. For a 6 digit counter that could mean from 90 to 450 mA. A further disadvantage is that no additional symbols can be displayed. As a rule 7 segment displays are the norm, although 14 segment displays or alphanumeric displays can be used to display message texts.

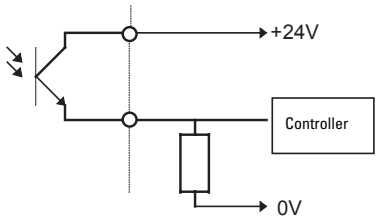
3.4 Outputs

We offer our preset counters with various output options: relay, transistor and optocoupler.
Relays should not be used when switching very small loads. Transistor or optocoupler outputs are better suited to operate the input of a controller. The design of both outputs is basically almost the same. However with the optocoupler, galvanic isolation is achieved between the unit (counter) and the peripheral (controller) thanks to an LED and a phototransistor (in one housing). As a rule, with the optocoupler output the emitter and the collector are brought out and may have to be switched externally. Using the appropriate circuit it is possible to achieve either negative polarity (normally closed function) or positive polarity (normally open function).

Optocoupler output with negative polarity



Optocoupler output with positive polarity

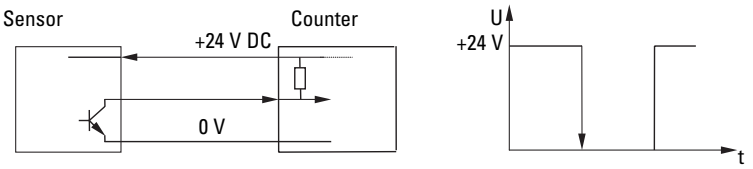


General instructions

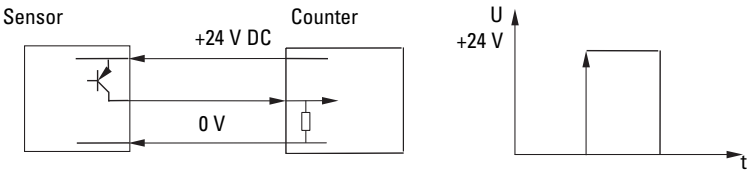
3.5 Inputs

The inputs of our counters are designed as transistor inputs. Either NPN or PNP type.

3.5.1 Negative input polarity (NPN)

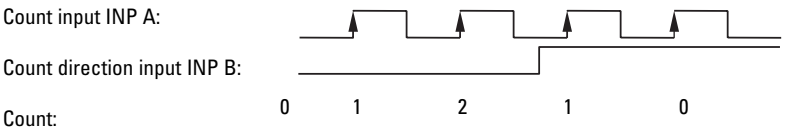


3.5.2 Positive input polarity (PNP)

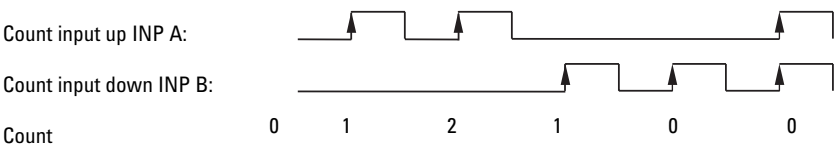


3.6 Input Modes

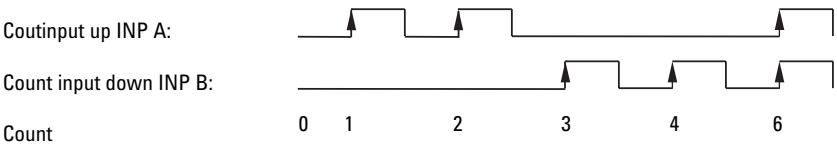
3.6.1 Input mode E1 (Cnt.Dir)



3.6.2 Input mode E2 (up.dn)



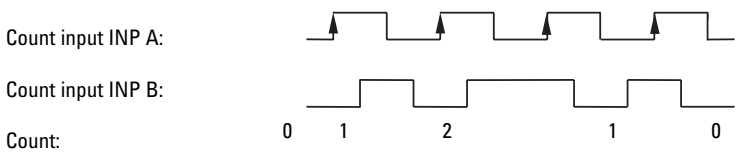
3.6.3 Input mode up.up



General instructions

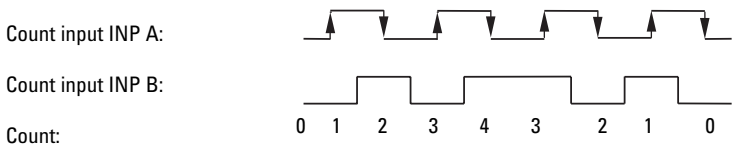
3.6.3 Input mode E3 (Quad)

(phase discriminator/quadrature with recognition of direction)



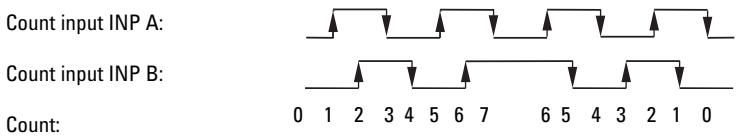
3.6.4 Input mode E4 (Quad 2)

(phase discriminator/quadrature with recognition of direction and pulse doubling)



3.6.5 Input mode E5 (Quad 4)

(phase discriminator/quadrature with recognition of direction and pulse quadrupling)



General instructions

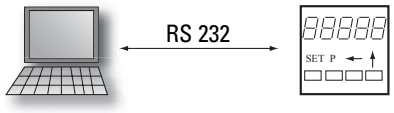
3.7 Interface options

Kübler counters use the following serial interfaces:

– RS 232
– RS 422
– RS 485

3.7.1 Serial Interface RS 232

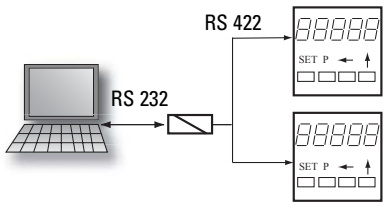
The serial interface RS 232 is a **full-duplex** point-to-point connection. Full-duplex means that data can be both transmitted and received simultaneously via the interface and that only two devices can be connected with each other. If two devices are to be connected to a computer, then a second interface port is required on the computer. The two connections are totally independent one from the other. This method has a disadvantage, because interface cards for PLCs are expensive and with PCs a maximum of 4 ports are available for use. For this reason, more recent Kübler counters are equipped with either the



RS 422 or the RS 485 interface. At least a 3-wire cable is needed when connecting RS 232. The connection then works without handshaking. For connections with handshaking a 5-wire cable is needed.

3.7.2 Serial Interface RS 422

This interface is a full-duplex multi-point connection. This means that several receivers can be connected to one transmitter cable. In counting technology the PC or the PLC are used as the master station, which then controls all activity on the serial line. All devices 'listen' to what the master is transmitting, but only that device, which is being addressed, answers. A message can only be sent from one device to another via the master - which does not make much sense with counters. Connecting the PC standard RS 232 port to the RS 422 counter interface is done by means of a simple interface converter. By using this solution, up to 10 devices can be connected to the serial port of a PLC or PC. The wiring is done using a 4-wire cable with all



the devices being connected in parallel. Each device has to be assigned a unique address, so that it can distinguish between messages being sent to its own address and those for another address.

3.7.3 Serial Interface RS 485

This interface is a half-duplex multi-point connection. Half-duplex means that the data exchange works in both directions, but only in one direction at a time. It also means that one can transmit and receive over the same line. Converting the common RS 232 interface to RS 485 is not so easily done. However several devices can act as masters as well as also being receivers (slaves). In total up to 32 devices can be connected to one interface.

When connecting the stations together, only a two-wire cable is necessary. Most field buses operate on this interface basis. The hardware is thus always the same, it is only the protocol that differs - this says which device is being addressed, which information is for that device and what control information is required to check that the transmission has been done correctly.

General instructions

3.8 Interface Comparison

Interface	RS 232	RS 422	RS 485
Mode of transmission	asymmetrical with respect to GND	symmetrical with out earth connection	
No. of senders (masters)	1	1	32
No. of receivers (slaves)	1	1	32
Transmission distance	15 m	1200 m	1200 m
Transfer rate	20 kBit/s	10 Mbit/s	10 Mbit/s
Sender output signal without load	+/- 15 Volts	+ 5 Volts	+ 5 Volts
Driver load	3.7 kΩ	120 Ω	60 Ω

3.9 EzControl

3.9.1 EzControl - the advantages at a glance

- User-friendly programming software for counter types 716/717 and process indicators 55x
- Upload and download functions
- Monitor and terminal program for simple diagnostics
- Online display of measured values in the monitor program
- Multilingual

see page 186

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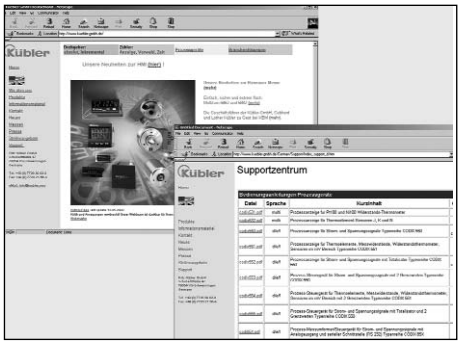

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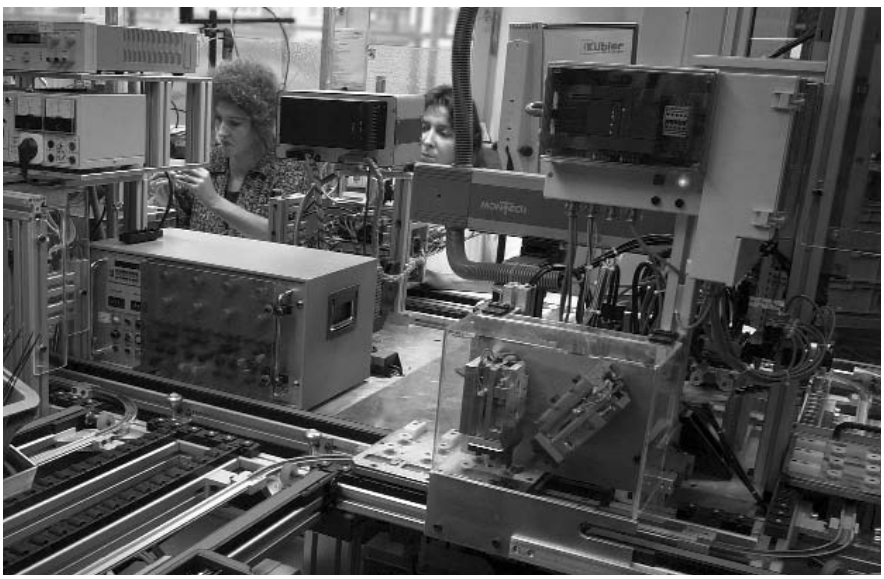


Micro-Totalizer/ e.g. for energy meters



	Version	Micro	Micro	Cyclometer display
	Series	K 46/K 47	K 66/K 67	KWH 17
	Highlights	Shock resistant micro counter, versions with additional *magnetic field resistance* (patented), 6…7 digits, panel or PCB mounting. Suitable for soldering. Meets IP65 for wash-down. Low power consumption.		Large digits, Stepper motor driven, for PCB mounting in kWh meters, shielded against magnetic effects, low power consumption*.
Technical data				
Number of digits		6/7	6/7	7
Digit height, visible	[mm]	1,7 x 4	1,7 x 4	5 x 3
Panel cut-out	[mm]	27 x 14	27x 14	–
Viewing angle		variable	variable	front
Type of mounting		Panel	Panel, PCB	PCB
Max. count frequency	[Hz]	10	10	–
Min. power consumption	[mW]	50	50	25
Shock resistance		yes	yes	yes
Magnetic field resistance		–	yes	no
see page		36	40	52




	Version	Micro	Micro	Micro	Micro
	Series	K 04	K 05/AK 05	K 06/AK 06	K 07, AK 07
	Highlights	Shock resistant miniature counter, 4 …7 digits, low power consumption. Various models, e.g. for panel-, PCB- and base mounting. Suitable for soldering. Meets IP65 for wash-down. For kWh applications, medical equipment, alarm systems, battery-powered units, fuel pumps...			
Technical data					
Number of digits		4	5	6	7
Digit height, visible	[mm]	1,7 x 4	1,2 x 4	1,7 x 4	1,2 x 4
Panel cut-out	[mm]	24 x 13	24 x 13	30 x 13	30 x 13
Viewing angle		variable	variable	variable	variable
Type of mounting		Panel/base mount, PCB	Panel/base mount, PCB	Panel, PCB	Panel/base mount ,PCB
Max. count frequency	[Hz]	25	25	25	25
Min. power consumption	[mW]	50	50	50	50
Shock resistance		yes	yes	yes	yes
see page		44	44	44	44

Mini-Totalizer

	Version	DIN-Rail	Mini	Mini	Mini
	Series	SK 06/07	W 15	W 16	W 17
	Highlights	Pulse counter for DIN rail mounting	Miniature pulse counter for OEM applications. Available in a variety of models, including low cost, and with different mounting options. Various housing sizes including DIN 48 x 24 mm.		
	Technical data				
	Number of digits	6/7	5	6	7
	Reset	–	yes	–	–
	Digit height, visible [mm]	1,2 x 4	1,7 x 4	1,7 x 4	1,7 x 4
	Panel cut-out [mm]	wide 30 mm	33.5 x 22 / 31 x 20	45 x 22/31 x 20	45 x 22/31 x 20
	Viewing angle	front	front	front, top	front, top
	Type of mounting	DIN-Rail	Panel/Base mount	Panel, PCB, Base mount	Panel, PCB
	Max. count frequency [Hz]	25	10	10	10
	Min. power consumption [mW]	50	130	50	50
	see page	54	56	59	59

Totalizer, Industry standard

	Version	Industry standard	Industry standard	Industry standard	Industry standard
	Series	BK 14	BK 16	B 15/B16	B 18
	Highlights	Industry standard, plug-in versions		Industry standard, plug-in versions	
	Technical data				
	Number of digits	4	6	5/6	8
	Digit height, visible [mm]	2 x 4	2 x 4	2,4 x 4,5	2 x 4
	Panel cut-out [mm]	33.3 x 25	33.3 x 25	50 x 25	50 x 25
	Viewing angle	variable	variable	variable	variable
	Type of mounting	Panel	Panel	Panel	Panel
	Max. count frequency [Hz]	25	25	25	25
	Min. power consumption [mW]	1000	1000	1000	1000
	see page	64	64	66	66

Totalizers



Version				
Series		**MK 14***	**MK 16/18***	**E 16***
Highlights		Rugged counter with up to 8 digits, with or without manual reset / electrical reset.		Rugged counter with metal housing
Technical data				
Number of digits		4	6/8	6
Digit height, visible	[mm]	4	4	4
Panel cut-out	[mm]	e.g. 33.3 x 22	e.g. 48 x 24	e.g. 48 x 27
Viewing angle		variable	variable	variable
Type of mounting		Panel	Panel	Panel
Max. count frequency	[Hz]	25	25	25
Min. power consumption	[mW]	1000	1000	2000
see page		74	74	78

Pneumatic Pulse Counters



Version		**Industry standard**	**Industry standard**	**Industry standard**
Series		**PMK 14**	**PMK 16**	**PMK 18**
Highlights		Pneumatic counter, suitable for Ex hazardous areas, easy to use in pneumatic installations, with or without reset. Long-life diaphragm actuator; no leakage.		
Technical data				
Number of digits		4	6	8
Digit height, visible	[mm]	4	4	4
Panel cut-out	[mm]	e.g. 33.3 x 22	e.g. 48 x 24	e.g. 48 x 24
Viewing angle		variable	variable	variable
Type of mounting		Panel	Panel	Panel
Max. count frequency	[Hz]	5 (8 bar)	5 (8 bar)	5 (8 bar)
Min. power consumption	[mW]	–	–	–
see page		80	80	80

CODIX Type 13X




	Version	**LCD-Panel mount**	**LCD-Panel mount**	**LCD-Panel mount**	**LCD-Panel mount**
	Series	**CODIX 130**	**CODIX 131/132**	**CODIX 133**	**CODIX 136**
	Highlights	battery-powered, low-cost LCD counter/rate meter (service life >8 years), count inputs for mechanical contacts or AC/DC voltage pulses. All models have screw terminals. Backlighting optional. ASIC design. High count speeds.			
	Function				
	Totalizer	X	X	–	–
	Differential/up-down counting	–	X	–	–
	Position display	–	–	X	–
	Frequency meter 1/sec, rate meter.	–	–	–	X
	Technical data				
	Number of digits	8	8	8	8
	Reset	manual/electrical	manual/electrical	manual/electrical	–
	Digit height [mm]	8	8	8	8
	Dimensions [mm]	DIN 48 x 24	DIN 48 x 24	DIN 48 x 24	DIN 48 x 24
	Panel cut-out [mm]	45 x 22	45 x 22	45 x 22	45 x 22
	Max. count frequency [kHz]	12	12	6	12
	Power supply	Lithium-Battery	Lithium-Battery	Lithium-Battery	Lithium-Battery
	Count inputs	NPN/PNP 10 ... 260 V AC/DC	NPN/PNP 10 ... 260 V AC/DC	NPN/PNP 10 ... 260 V AC/DC	NPN/PNP
	see page	83	83	83	176

Type 184 and 195


	Version	**LCD Panel mount** Position display	**LCD Panel mount**
	Series	**184**	**185**
	Highlights	with cable output or screw terminal DIN 48 x 24 housing	
	Technical data		
	Number of digits	8	8
	Count mode	Up/down	adding
	Reset	manual/electrical	manual/electrical
	Digit height [mm]	7	7
	Dimensions [mm]	DIN 48 x 24	DIN 45 x 22
	Panel cut-out [mm]	45 x 22	45 x 22
	Type of mounting	Panel	Panel
	Max. count frequency [Hz]	10 000	2500
	Power supply	Battery	Battery
	see page	86	88

CODIX - Serie 52X




	Version	**LED Panel mount**	**LED Panel mount**	**LED Panel mount**	**LED Panel mount**
	Series	**CODIX 520 ... 524**	**CODIX 525**	**CODIX 526**	**CODIX 527**
	Highlights	Compact programmable LED counter and rate meter, single function or combined units, e.g. count & frequency meter with separate scaling, e.g. for displaying quantity, units of time and total amount. IP65 front-panel protection. Screw terminal connectors.			
		524: multifunctional			
	Function				
	Pulse counter	**520/524**	**X**	**2 x X**	**X**
	Position display for encoder	**521/524**	**–**	–	–
	Frequency meter/rate meter	**522/524**	**X**	–	**–**
	Timer	**523/524**	–	–	**X**
	Technical data				
	Number of digits	6	6	6	6
	Reset	manual/electrical	manual/electrical	manual/electrical	manual/electrical
	Digit height [mm]	8	8	8	8
	Dimensions [mm]	DIN 48 x 24	DIN 48 x 24	DIN 48 x 24	DIN 48 x 24
	Panel cut-out [mm]	45 x 22	45 x 22	45 x 22	45 x 22
	Max. count frequency [Hz]	20 000	20 000	20 000	20 000
	Power supply [V DC]	10 ... 30	10 ... 30	10 ... 30	10 ... 30
	Inputs	Schmitt-Trigger	Schmitt-Trigger	Schmitt-Trigger	Schmitt-Trigger
	Outputs	Optocoupler	–	–	–
	see page	90 ... 92	93	94	95

CODIX - Serie 54X


	Version	**LED Panel mount**	**LED Panel mount** New	**LED Panel mount** New
	Series	**CODIX 540 ... 544**	**CODIX 54P**	**CODIX 54U**
	Highlights	DIN housing, large keys for easy operation when wearing gloves. Readable from a long distance. Screw terminal connectors.		
		544: multifunctional		The **CODIX 54U** can be used as 2 x totalizer, or 2 x timer or 1 x totalizer and 1 x timer or 1 x totalizer and 1 x tachometer
	Function			
	Pulse counter	**540/544**	**–**	
	Position display	**541/544**	**X**	
	Frequency meter/rate meter	**542/544**	**X**	
	Timer	**543/544**		
	Technical data			
	Number of digits	6	6	6
	Reset	manual/electrical	manual/electrical	manual/electrical
	Digit height [mm]	14	14	14
	Dimensions [mm]	DIN 96 x 48	DIN 96 x 48	DIN 96 x 48
	Panel cut-out [mm]	92 x 45	92 x 45	92 x 45
	Max. count frequency* [kHz]	60	30	60
	Power supply [V DC]	10 ... 30	10 ... 30	10 ... 30
	[V AC]	90 ... 260	90 ... 260	90 ... 260
	Inputs	Schmitt-Trigger	Schmitt-Trigger	Schmitt-Trigger
	Outputs	Optocoupler	–	–
	see page	96 ... 98	100	99

*for further specifications please refer for the manual

Count modules

	Version	**LCD count module**	**LCD count module**
	Series	**190**	**192**
	Highlights	LCD PCB module for pulse counting and PCM mount, non-volatile memory (no battery, EEPROM)	
	Technical data		
	Number of digits	7	6
	Count mode	add	add
	Reset	electrical	electrical
	Digit height [mm]	6	5
	Dimension [mm]	32,4 x 18,4	32,4 x 18,4
	Type of mounting	PCB	PCB
	Max. count frequency [Hz]	10 000	100
	Power supply	4,75 ... 15 V DC 9 ... 60 V DC	8 ... 28 V DC
	see page	102	103

Count modules

	Version	**LCD count module**	**LCD count module**	**LCD count module**
	Series	**166**	**167/168**	**180**
	Highlights	LCD panel mount module for OEM pulse counter applications such as portable test equipment (with or without battery supply.)		
		Current consumption < 10 µA	Current consumption < 10 µA	
	Technical data			
	Number of digits	4	6/6	8
	Count mode	add.	167:add./168:add-sub.	add./sub.
	Reset	electrical	electrical	manual/electrical
	Digit height [mm]	6	6	8
	Dimensions [mm]	31 x 24	31 x 24	47 x 21
	Panel cut-out [mm]	29,4 x 22	29,4 x 22	–
	Type of mounting	Panel, PCB	Panel, PCB	PCB
	Max. count frequency [Hz]	18	10 000	10 000
	Power supply	Battery	2,6 ... 3,4 V DC	2,4 ... 3,2 V DC
	see page	104	105	106

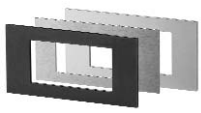
LED Panel mount

	Version	SSI Display	Multifunction
	Series	570	571
		SSI Frequency up to 1 MHz, Master- or Slave function	Display programmable, speed, counter function
Technical data		17 ... 30 V DC or 115/230 V AC	17 ... 30 V DC or 115/230 V AC
	Power supply	LED display	LED display
	Display	24 V DC, 120 mA	24 V DC, 150 mA
	Auxiliary voltage for encoder	100 Hz ... 1 MHz,	100 Hz ... 1 MHz,
	SSI-Inputs	npn or pnp	–
	Control input	Adjustable via scaling factor, Current or voltage	Adjustable via scaling factor, Current or voltage
	Analogue Outputs	5 ... 35 V, 150 mA	5 ... 35 V, 150 mA
	Optocoupler Outputs	IP 65	IP 65
	Protection to	107	108
	see page		

electromechanical

	Version	**low price**		
	Series	**BVa 15**	**MVs 13**	**MVs 16**
	Highlights	Counter with manually selectable preset, voltage-free changeover switch on reaching preset, contact remains switched until reset occurs.		
		Microswitch with changeover contact.		
	Technical data			
	Number of digits	3 or 5	3 or 2	6 or 3
	Count mode	add.	subt.	subt.
	Digit height, visible [mm]	4,5	4	4
	Panel cut-out [mm]	50 x 50	33.3 x 50	33 x 60
	Viewing angle	variable	variable	variable
	Type of mounting	Panel	Panel	Panel
	Max. count frequency [Hz]	25	25	25
	Min. power consumption [W]	3	4	4
	see page	109	112	115

Examples for accessories



see page 181

electronic




	Version	**LED Panel mount**	**LED Panel mount**	**LCD Panel mount** low cost	**LCD Panel mount**
	Series	**715**	***CODIX* 716/717**	**901**	**903/904**
	Highlights	cULus approval , supplied with front gasket and fixing clips			
	Function		optional: EX-proof		optional: backlight-ning
	Pulse counting	X	X	X	X
	Position indicator	X	X	–	X
	Frequency meter	X	X	–	X
	Timer	X	X	–	X
	Scaling function	X	X	–	X
	Technical data				
	Number of digits/Display	5/LED	6/LED	6/LCD	6/LCD
	Dimensions [mm]	DIN 48 x 48	DIN 48 x 48	DIN 48 x 48	DIN 48 x 48
	Panel cut-out [mm]	45 x 45	45 x 45	45 x 45	45 x 45
	Max. count frequency [Hz]	10 000	20 000	25	10 000
	Supply voltage [V DC]	11 ... 30	10 ... 30	User exchang. battery	11 ... 30
	[V AC]	115/230	90 ... 250	10 Years	90 ... 260
	Presets	1	1/2	1	1/2
	Outputs	1 Relay/1 Optocoupler	1/2 Relay/Optocoupler	1 Relay	1/2 Relay/Optocoupler
	Inputs	count-, gate-, reset-, freeze display and pro-gram disable inputs	2 Count inputs, gate- and run mode inputs	count, reset and pro-gram disable input	2 Count inputs, gate, reset and program disable inputs
	Serial interface		optional RS 232/422/485		
	see page	119	122	126	128

Accessories:

see page 181

electromechanical




	Version	Micro	Micro	Micro	Base mount
	Series	HK 46	HK 47	HK 07	AHK07/SHK07
	Highlights	Shock resistant miniature hour meter for installation in control panels, on PCBs or for DIN-rail mounting. Various models, IP65 (PCB versions can be soldered and washed down). For applications in technical equipment (medical apparatus, UV-lamps) and in industrial applications.			Base mount housing, DIN rail mounting
Technical data					
Number of digits		6	7	7	7
Digit height, visible	[mm]	1,7 x 4	1,25 x 4	1,4 x 2,8	1,7 x 4
Dimensions	[mm]	30 x 20	30 x 34	32 x 15	–
Panel cut-out	[mm]	27 x 14	27 x 14	30 x 13	–
Viewing angle		variable	variable	variable	front
Type of mounting		Panel, PCB	Panel, PCB	Panel,PCB	Base mount
Typ. power consumption	5/24 V[mW]	82/135	82/135	82/135	82/135
Voltage ranges	[V DC]	4,5 ... 35	4,5 ... 35	4,5 ... 35	4,5 ... 35
	[V AC]	–	–	–	20 ... 264
see page		134	134	135	135/141




	Version	Panel mount	Panel mount	Panel mount	Panel mount
	Series	HK 17	H 37	H 57/AH 57	HR 76
	Highlights	Low cost, stepper-motor driven hour meters for panel/base mount. Quiet motor running even after >8 years thanks to special motor technology.			
		IP 65 different versions also US applications		short panel mount depth	IP65 special version for US applications
Technical data					
Number of digits		7/8	7/8	7/8	6
Digit height, visible	[mm]	1,7 x 3,8	1,7 x 4	1,7 x 4	1,8 x 3,5
Dimensions	[mm}	e.g. 37 x 26	DIN 48 x 24	DIN 48 x 48	
Panel cut-out	[mm]	33 x 22	45 x 22	□ 46/ø 50,5	ø 50,5
Viewing angle		front	front	front	front
Type of mounting		Panel	Panel	Panel Base mount	Panel
Min. power consumption	[W/VA]	0,5/–	0,5/1,2	0,5/1,2	0,08/0,4
Voltage range	[V DC]	10 ... 130	10 ... 130	10 ... 130	10 ... 80
	[V AC]	20 ... 440	20 ... 264	20 ... 440	115/230
see page		143	147	150	152

electromechanical

	Version	Panel mount	DIN rail mount	Combination
	Series	HB26/27	SH 17	HC 77/SHC 77
		with Reset, plug in version available		pulse counter and hour meter in one unit
Technical data				
Number of digits hour meter		6/7	7	7/8
Number of digits adding counter		–	–	8
Digit height, visible	[mm]	4,5	2,5 x 3,5	4 x 1,7
Panel cut-out	[mm]	50 x 25	–	□ 46/ø 50,5
Viewing angle		variable	front	front
Type of mounting		Panel	Din rail	Panel, DIN rail
Min. power consumption	[W/VA]	0,5/1,2	1/2,5	1/3
Voltage ranges	[V DC]	10 ... 115	10 ... 27	10 ... 130
	[V AC]	20 ... 440	230	20 ... 264
see page		153/156	142	158/160

electronic

	Version	LCD Panel mount	LCD Panel mount	LCD-Panel mount counter
	Series	CODIX 134	CODIX 135	186/187
	Highlights	battery-powered, low-cost LCD counter/ rate meter (service life >8 years), count inputs for mechanical contacts or AC/DC voltage pulses. All models have screw terminals. Backlighting optional. High count speeds.		
Technical data				
Number of digits		7	8	8
Resolution		0.00 h; h.min	h.min.s; 0.0 s	186:h.min.s, 187:h.min
Reset		yes	yes	yes
Digit height	[mm]	8	8	7
Dimensions	[mm]	48 x 24	48 x 24	48 x 24
Panel cut-out	[mm]	45 x 22	45 x 22	45 x 22
Type of mounting		Panel	Panel	Panel
Power supply		Lithium-Battery	Lithium-Battery	Battery
see page		163	163	165

electronic



New

	Version	LED	LED	LED	LED
	Series	CODIX 523	CODIX 524/527/528	CODIX 543/544	CODIX 54U
	Highlights	compact timer with 8 mm high display, DIN housing, low cost		CODIX 544: One function CODIX 54U: two functions	
		Alternatively with single function, multifunction or combinations, Set-up, Screw terminal connectors, Resolution 1 ms.			
	Function		524 / 527 / 528	543 / 544	The CODIX 54U can be used as 2 x totalizer, or 2 x timer or 1 x totalizer and 1 x timer or 1 x totalizer and 1 x tachometer
	Pulse counter	–	X / X / –	– / X	
	Position display	–	X / – / –	– / X	
	Frequency counter	–	X / – / –	– / X	
	Timer	**X**	**X / X / 2 x X**	X / X	
	Technical data				
	Number of digits	6	6	6	6
	Reset	manual/electrical	manual/electrical	manual/electrical	manual/electrical
	Digit height [mm]	8	8	14	14
	Dimensions [mm]	DIN 48 x 24	DIN 48 x 24	DIN 96 x 48	DIN 96 x 48
	Panel cut-out [mm]	45 x 22	45 x 22	92 x 45	92 x 45
	Power supply [V DC]	10 ... 30	10 ... 30	10 ... 30	10 ... 30
	[V AC]	–	–	90 ... 260	90 ... 260
	Outputs	Optocoupler	Optocoupler	Optocoupler	–
	see page	167	92/95/168	169 / 98	99

Preset time counter




	Version	LED Panel mount	LED Panel mount	LCD Panel mount	electromechanical
	Series	715	CODIX 716/717	903/904	HVa 15
	Highlights		optional: EX-proof	with batch counting mode optional: backlight-ning	low cost, for easy time control
	Function				
	Pulse counter	X	X	X	–
	Position indicator	X	X	X	–
	Frequency meter	X	X	X	–
	Timer	**X**	**X**	**X**	**X**
	Scaling function	X	X	X	–
	Technical data				
	Number of digits/display	5/LED	6/LED	6/LCD	5
	Dimensions [mm]	DIN 48 x 48	DIN 48 x 48	DIN 48 x 48	56 x 66
	Panel cut-out [mm]	45 x 45	45 x 45	45 x 45	50 x 50
	Max. count frequency [Hz]	10 000	20 000	10 000	–
	Supply voltage [V DC]	11 ... 30	10 ... 30	11 ... 30	10 ... 130
	[V AC]	115/230	90 ... 250	90 ... 260	20 ... 264
	Presets	1	1/2	1/2	1
	Outputs	1 Relay/1 Optocoupler	1/2 Relay/Optocoupler	1/2 Relay/Optocoupler	Microswitch*
	see page	119	122	128	171

*and changeover contact

Time relay

Version		**Time relay LCD**
Series		**910**
		suitable for mobile applications (no external power supply)
Technical data		
Power supply		Lithium-Battery
Control/Reset inputs	[V DC/AC]	12 ... 260
Display		2 line LCD
Time ranges		9, programmable 0,2s .... 99 999 h
Operation modes		8, e.g. on delay, off delay
Triggering methods		3, programmable (level, edge,)
Panel mount dimensions		48 x 48 DIN
Output		Relay (max. 8 A)
Protection		IP 65
see page		174

Count module for PCB mount

Version		**LCD module PCB mount**	**LCD module PCB mount**
Series		**194**	**198**
Highlights		Low cost LCD hour meter for PCB mount	
Technical data			
Number of digits		6	6
Display		h-1/100 h	hhhhh.h
Reset		yes	yes
Digit height	[mm]	6	5
Dimension	[mm]	32,4 x 18,4	32,4 x 18,4
Type of mounting		PCB mount	PCB mount
Power supply		4,75 ... 15 V DC 9 ... 60 V DC	8 ... 28 V DC
see page		161	162

CODIX 136, 522, 524 and 525

	Version	LCD Panel mount	LED Panel mount	LED Panel mount
	Series	CODIX 136 Frequency meter/ Rate meter	CODIX 522/524 522: Frequency meter Rate meter 524: multifunctional	CODIX 525 2 functions: Rate meter/Pulse counter
Technical data				
Number of digits		8	6	6
Reset		–	manual/electrical	manual/electrical
Digit height	[mm]	8	8	8
Dimensions	[mm]	DIN 48 x 24	DIN 48 x 24	DIN 48 x 24
Panel cut-out	[mm]	45 x 22	45 x 22	45 x 22
Max. count frequency	[kHz]	12	20	20
Power supply		Lithium-Battery	10 ... 30 V DC	10 ... 30 V DC
Count inputs		NPN/PNP	Schmitt-Trigger	Schmitt-Trigger
Outputs		–	Optocoupler	–
see page		176	178	93

CODIX 542, 544 55U and 55P

	Version	LED Panel mount	LED Panel mount	LED-Einbau
Large keys bright LED	Series	CODIX 542/544 542: Frequency meter rate meter 544: multifunctional	CODIX 54P Position display and rate meter with individual signal inputs	CODIX 54U 2 functions: tacho-meter and pulse counter
Technical data				
Number of digits		6	6	6
Reset		manual/electrical	manual/electrical	manual/electrical
Digit height	[mm]	14	14	14
Dimensions	[mm]	DIN 96 x 48	DIN 96 x 48	DIN 96 x 48
Panel cut-out	[mm]	92 x 45	92 x 45	92 x 45
Max. count frequency*	[kHz]	60	30	60
Power supply	[V DC]	10 ... 30	10 ... 30	10 ... 30
	[V AC]	90 ... 260	90 ... 260	90 ... 260
Inputs		Schmitt-Trigger	Schmitt-Trigger	–
Outputs		Optocoupler	–	99
see page		179/98	119	

The CODIX 54U can be used as
2 x counter,
or
2 x timer
or
1 x counter and
1 x timer
or
1 x counter and
1 x tachometer

*for further specifications please refer for the manual

Type 715, *CODIX* 716/717/903/904

	Version	**LED Panel mount**	**LED Panel mount**	**LCD Panel mount**
	Series	**715**	***CODIX* 716/717**	**903/904**
	Highlights		optional: EX proof	with batch counting mode optional: backlightning
Function				
Pulse counter		X	X	X
Position indicator		X	X	X
Frequency meter		X	X	X
Timer		X	X	X
Scaling function		X	X	X
Technical data				
Number of digits/Display		5/LED	6/LED	6/LCD
Dimensions	[mm]	DIN 48 x 48	DIN 48 x 48	DIN 48 x 48
Panel cut-out	[mm]	45 x 45	45 x 45	45 x 45
Max. count frequency	[Hz]	10 000	20 000	10 000
Supply voltage	[V DC]	11 ... 30	10 ... 30	11 ... 30
	[V AC]	115/230	90 ... 250	90 ... 260
Presets		1	1/2	1/2
Outputs		1 Relay/1 Optocoupler	1/2 Relay/Optocoupler	1/2 Relay/Optocoupler
see page		119	122	128

Accessoires for type 716/717: ExControl

- Easy parameter software for the counter type 716/717 and process displays 55x.
- Upload und download function
- Monitor- and terminal programm for easy diagnostic functions
- Online display of the measuring values
- german/english

see page186.

RS 232
RS 485
RS 422

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Table of Contents

Micro Display counter K 46/K 47 shock resistant

- 6/7-digit micro adding counter
- low cost
- **high shock resistance**
- low power consumption; suitable for battery operation
- small dimensions
- magnified large figures
- different mounting solutions
- flush mount with integrated spring clip (snap in)
- PCB-mount versions
- solderable and wash proof
- protection to IP 66
- stores value also at power failure
- long service life (50 x 10^6 impulses)

Applications

charge counting, KWh registration alarm systems, compact units, copiers, fuel dispensers, medical equipment, miniature pumps, dosing machines, gates, general event counting

Technical data:

Electrical Connection:	flush mount	flying leads AWG 22 app. 150 mm
	PCB mount:	solder pins ø 0.64 mm
Power consumption:	up to 12 V DC:	appr. 70 mW
	at 24 V DC:	appr. 150 mW
Rated voltage:	1.5/3/4,5/5/6/12/24 V DC –10 % +20 %	
Counting frequency:	max. 10 Imp/s (type 0)	
Pulse duration	min. 50 ms	
Pulse interval:	min. 50 ms	
Cycle duration factor:	100 %	
Number of digits:	6 (K46), 7 (K47)	
Counting system	adding	
Hight of figures	K 46: 4 x 1.7 mm, K 47: 4 x 1,25 optical	
Colour of figures:	white on black	
Reset:	no reset	
Ambient temperature:	–10 ... +60 °C	
Mounting position	any	
Operating life:	> 50 x 10^6 impulses	

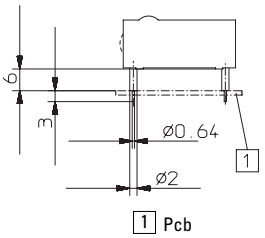
solderable and wash proof types:	K 46.80, K 46.90, K 46.91, K 46.94, K 46.95 K 47.80, K 47.90, K 47.91
Protection:	IP 65 (K 46.20, K 47.20: on frontside)
Housing:	clear plastic
Weight:	12 ... 14 g
Options:	
K46.20, K46.80; K47.20 K47.80:	flat pin 0.8 x 2.8 mm and push on connectors
K 46.9x ... 71:	types with spacer (high 6 mm Draw. 1)
K 47.9x ... 71:	
further options:	– different voltages – counting frequency > 10 Imp/s – different colour of figures – extended temperature range: –30 ... +85 °C or –20 ... +70 °C

Series:

Type	Display	el. Connection	Description
K46.20, K47.20	Small side	Flying leads	Panel mount with latch
K46.80, K47.80	Small side	Solder pins	PCB mount wash proof
K46.90, K47.90,	Large side	Solder pins	PCB mount wash proof
K46.91, K47.91	Small side	Solder pins	PCB mount wash proof
K46.94	Large side	Solder pins	PCB mount wash proof
K46.95	Small side	Solder pins	PCB mount wash proof

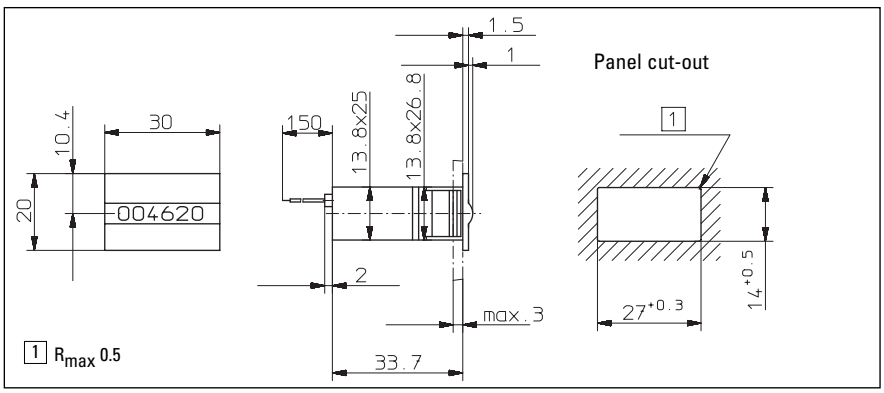
Ordering information
– Article number
– for options please give exact counter type, voltage and options e.g. 1.700.200.012 K 46.20, 12 V DC/0 temperature range –20 °C ... +70 °C

Draw 1



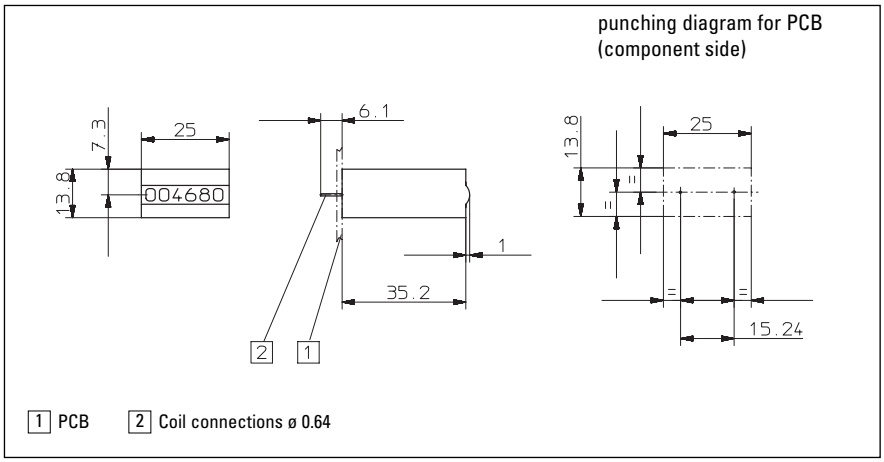
1 Pcb

Type K 46.20/K47.20



K 46.20	1.5 V Art.-No.	3 V Art.-No.	4.5 V Art.-No.	5 V Art.-No.	6 V Art.-No.	12 V Art.-No.	24 V Art.-No.
DC (10 imp/s)	1.700.200.002	1.700.200.006	1.700.200.008	1.700.200.009	1.700.200.010	1.700.200.012	1.700.200.013
K 47.20	1.5 V Art.-No.	3 V Art.-No.	4.5 V Art.-No.	5 V Art.-No.	6 V Art.-No.	12 V Art.-No.	24 V Art.-No.
DC (10 imp/s)	1.710.200.002	1.710.200.006	1.710.200.008	1.710.200.009	1.710.200.010	1.710.200.012	1.710.200.013

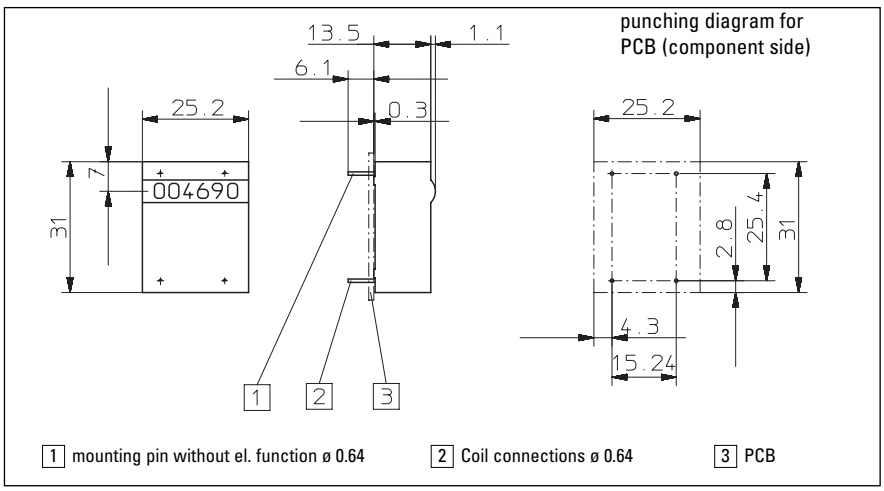
Type K 46.80/K 47.80



K 46.80	1.5 V Art.-No.	3 V Art.-No.	4.5 V Art.-No.	5 V Art.-No.	6 V Art.-No.	12 V Art.-No.	24 V Art.-No.
DC (10 imp/s)	1.700.800.002	1.700.800.006	1.700.800.008	1.700.800.009	1.700.800.010	1.700.800.012	1.700.800.013

K 47.80	1.5 V Art.-No.	3 V Art.-No.	4.5 V Art.-No.	5 V Art.-No.	6 V Art.-No.	12 V Art.-No.	24 V Art.-No.
DC (10 imp/s)	1.710.800.002	1.710.800.006	1.710.800.008	1.710.800.009	1.710.800.010	1.710.800.012	1.710.800.013

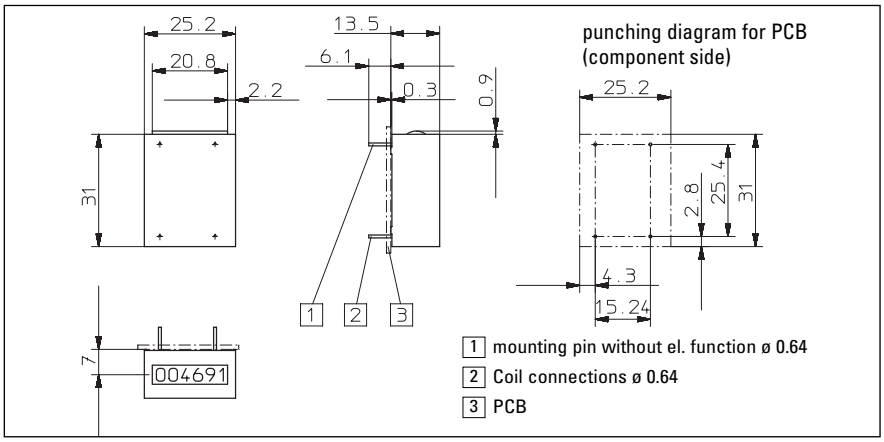
Type K 46.90/K 47.90



K 46.90	1,5 V Art.-No.	3 V Art.-No.	4,5 V Art.-No.	5 V Art.-No.	6 V Art.-No.	12 V Art.-No.	24 V Art.-No.
DC (10 imp/s)	1.700.900.002	1.700.900.006	1.700.900.008	1.700.900.009	1.700.900.010	1.700.900.012	1.700.900.013

K 47.90	1,5 V Art.-No.	3 V Art.-No.	4,5 V Art.-No.	5 V Art.-No.	6 V Art.-No.	12 V Art.-No.	24 V Art.-No.
DC (10 imp/s)	1.710.900.002	1.710.900.006	1.710.900.008	1.710.900.009	1.710.900.010	1.710.900.012	1.710.900.013

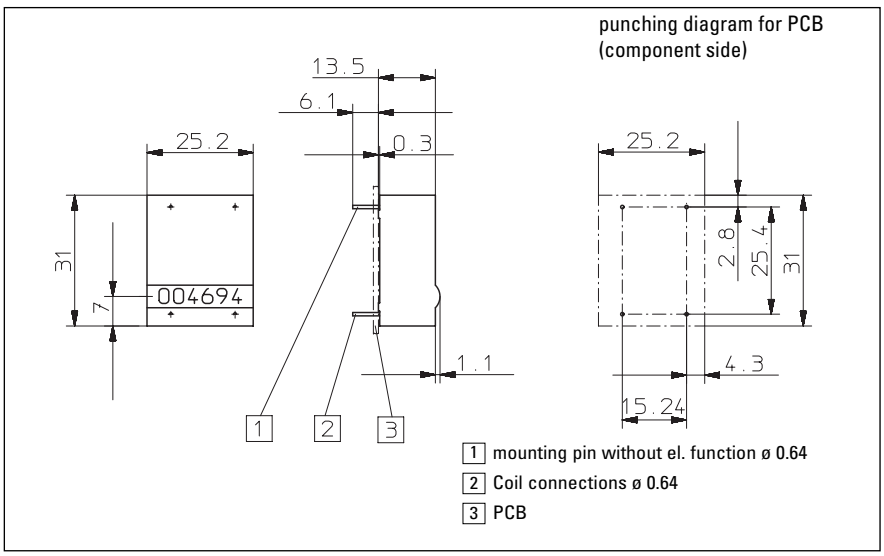
Type K 46.91/K 47.91



K 46.91	1.5 V Art.-No.	3 V Art.-No.	4.5 V Art.-No.	5 V Art.-No.	6 V Art.-No.	12 V Art.-No.	24 V Art.-No.
DC (10 imp/s)	1.700.910.002	1.700.910.006	1.700.910.008	1.700.910.009	1.700.910.010	1.700.910.012	1.700.910.013

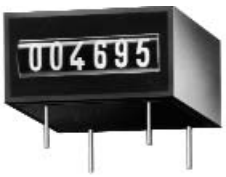
K 47.91	1.5 V Art.-No.	3 V Art.-No.	4.5 V Art.-No.	5 V Art.-No.	6 V Art.-No.	12 V Art.-No.	24 V Art.-No.
DC (10 imp/s)	1.710.910.002	1.710.910.006	1.710.910.008	1.710.910.009	1.710.910.010	1.710.910.012	1.710.910.013

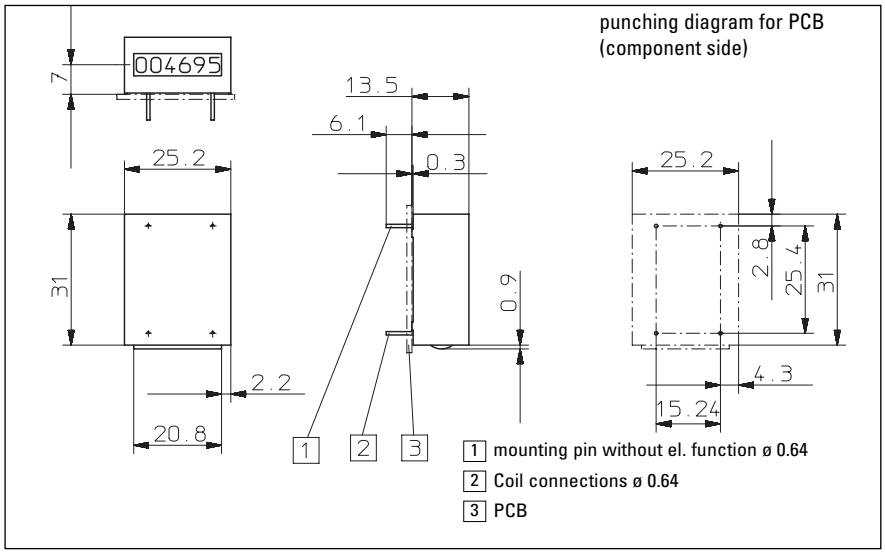
Type K 46.94



K 46.94	1.5 V Art.-No.	3 V Art.-No.	4.5 V Art.-No.	5 V Art.-No.	6 V Art.-No.	12 V Art.-No.	24 V Art.-No.
DC (10 imp/s)	1.700.940.002	1.700.940.006	1.700.940.008	1.700.940.009	1.700.940.010	1.700.940.012	1.700.940.013

Type K 46.95





K 46.95	1.5 V Art.-No.	3 V Art.-No.	4.5 V Art.-No.	5 V Art.-No.	6 V Art.-No.	12 V Art.-No.	24 V Art.-No.
DC (10 imp/s)	1.700.950.002	1.700.950.006	1.700.950.008	1.700.950.009	1.700.950.010	1.700.950.012	1.700.950.013

Micro Display counter K 66, K 67 shock- and magnetic field resistant

- 6/7-digit micro adding counter
- **not affected by magnetic fields as moving parts are made from plastic or non-ferrous metal (patented system).**
- **maximum shock resistance, as a counter-rotating movement is required for counting, ACR-system (patented).**
- Low power consumption; suitable for battery consumption
- small dimensions
- large optical figures
- Flush mount with integrated spring clip
- PCB-mount versions
- Solderable and wash proof
- Protection IP 65
- Stores value also at power failure
- Long service life

Applications

charge counting, KWh registration alarm systems, compact units, copiers, fuel dispensers, medical techniques, miniature pumps, dosing techniques, gates general event counting

Technical data:

Electrical Connection:	flush mount:	Flying leads AWG 22 appr. 150 mm
	PCB-mount:	solder pins ø 0.64 mm
Power consumption: (at 20 °C)	up to 6 V DC:	appr. 70 mW
	at 12 V DC:	appr. 120 mW
	at 24 V DC:	appr. 500 mW
Rated voltage:	1.5/3/4.5/5/6/12/24 V DC –10 % +20 %	
Counting frequency:	max. 10 Imp/s (type 0)	
Pulse duration:	min. 50 ms	
Pulse interval:	min. 50 ms	
Cycle duration factor:	100 %	
Number of digits:	6 (K 66), 7 (K 67)	
Counting system:	adding	
Hight of figures:	K 66: 4 x 1.7 mm K 67: 4 x 1,25 mm optical	
Colour of figures:	white on black	
Reset:	no reset	
Ambient temperature:	–10 ... +60 °C	
Mounting position:	number wheel view horizontal	

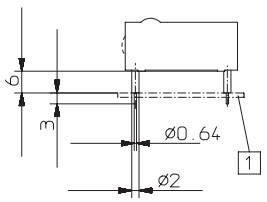
Operating life:	> 50 x 10^6 pulses
solderable and wash proof types	K 66.80, K 66.90, K 66.91, K 66.94, K 66.95 K 67.80, K67.90, K67.91
Protection:	IP 65 (K 66.20, K 67.20: only front side)
Housing:	clear plastic types with protection IP 65 are sealed
Weight	9 ... 11 g
Options	
K 66.20, K 66.80, K67.20, K67.80:	flat pin 0.8 x 2,8 mm and push on connectors
K 66.20, K 67.20:	solder pins ø 0.64 mm
K 66.9x ... 71,K 67.9x ... 71:	types with spacer (High 6 mm Draw.1)
Further options:	– different voltages – counting frequency > 10 Imp/s – different colour of figures – extended temperature range –30 ... +85 °C or –20 ... +70 °C

Series:

Type	Display	el. Connection	Description
K66.20, K 67.20	Small side	Flying leads	Panel mount with latch
K66.80, K 67.80	Small side	Solder pins	PCB mount wash proof
K66.90, K 67.90	Large side	Solder pins	PCB mount wash proof
K66.91, K 67.91	Small side	Solder pins	PCB mount wash proof
K66.94	Large side	Solder pins	PCB mount wash proof
K66.95	Small side	Solder pins	PCB mount wash proof

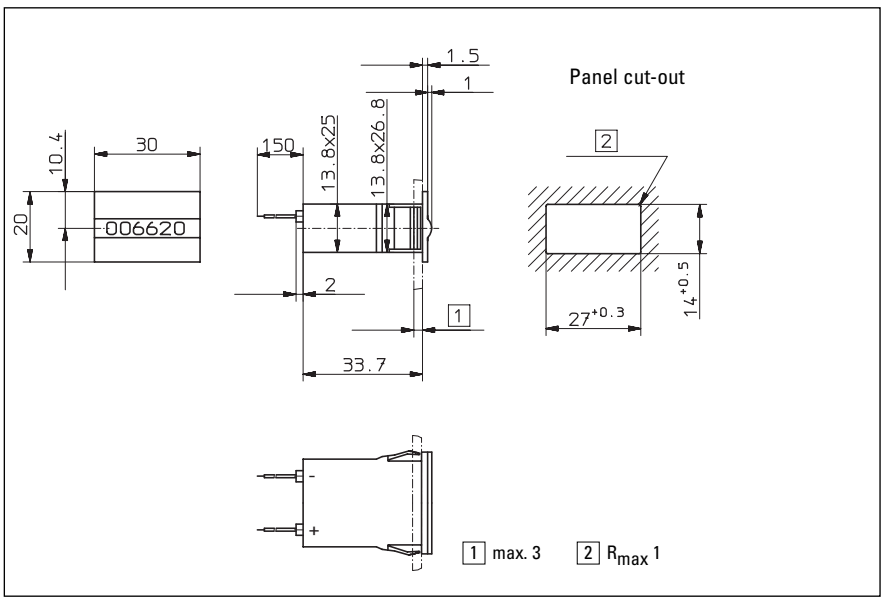
Ordering information
– Article number 1.680.9X0.XXX
– for options please give exact counter type, voltage and options e.g.K 66.20, 9 V DC/0 temperature range –20 °C ... +70 °C

Draw 1



1 PCB

Type K 66.20/K 67.20

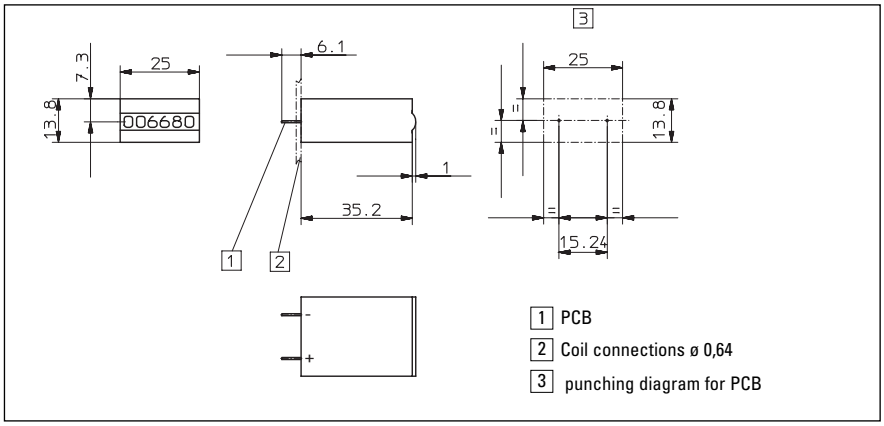


Order code see next page.

Type K 66.20/K 67.20

K 66.20	1.5 V Art.-No.	3 V Art.-No.	4.5 V Art.-No.	5 V Art.-No.	6 V Art.-No.	12 V Art.-No.	24 V Art.-No.
DC (10 imp/s)	1.650.200.002	1.650.200.006	1.650.200.008	1.650.200.009	1.650.200.010	1.650.200.012	1.650.200.013
K 67.20	1.5 V Art.-No.	3 V Art.-No.	4.5 V Art.-No.	5 V Art.-No.	6 V Art.-No.	12 V Art.-No.	24 V Art.-No.
DC (10 imp/s)	1.660.200.002	1.660.200.006	1.660.200.008	1.660.200.009	1.660.200.010	1.660.200.012	1.660.200.013

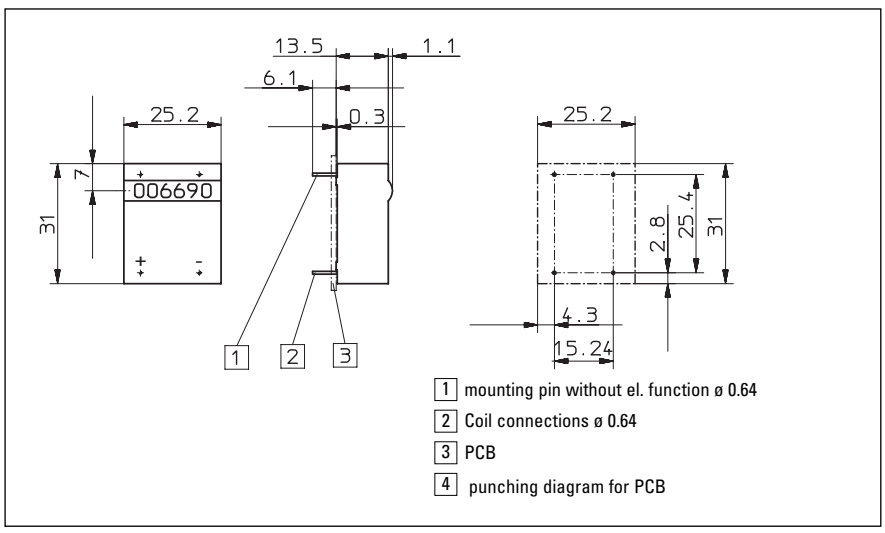
Type K 66.80/K 67.80



K 66.80	1.5 V Art.-No.	3 V Art.-No.	4.5 V Art.-No.	5 V Art.-No.	6 V Art.-No.	12 V Art.-No.	24 V Art.-No.
DC (10 imp/s)	1.650.800.002	1.650.800.006	1.650.800.008	1.650.800.009	1.650.800.010	1.650.800.012	1.650.800.013

K 67.80	1.5 V Art.-No.	3 V Art.-No.	4.5 V Art.-No.	5 V Art.-No.	6 V Art.-No.	12 V Art.-No.	24 V Art.-No.
DC (10 imp/s)	1.660.800.002	1.660.800.006	1.660.800.008	1.660.800.009	1.660.800.010	1.660.800.012	1.660.800.013

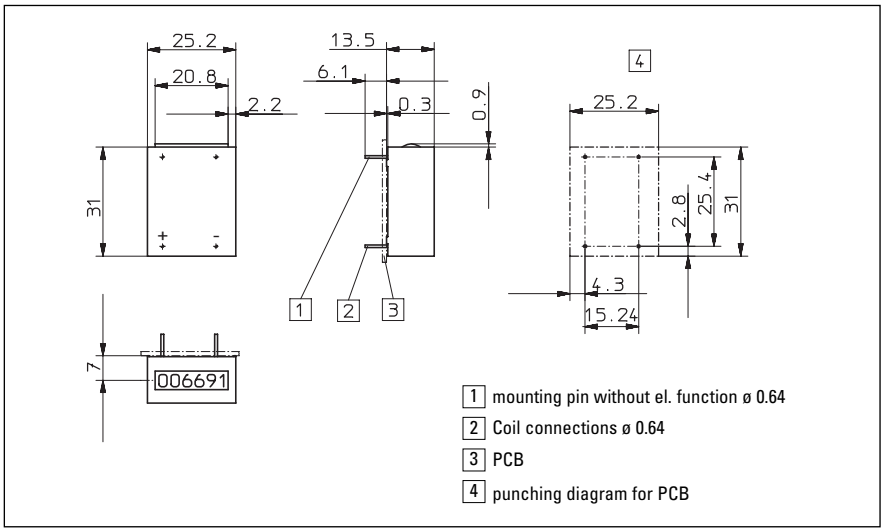
Type K 66.90/K 67.90



K 66.90	1.5 V Art.-No.	3 V Art.-No.	4.5 V Art.-No.	5 V Art.-No.	6 V Art.-No.	12 V Art.-No.	24 V Art.-No.
DC (10 imp/s)	1.650.900.002	1.650.900.006	1.650.900.008	1.650.900.009	1.650.900.010	1.650.900.012	1.650.900.013

K 67.90	1,5 V Art.-No.	3 V Art.-No.	4,5 V Art.-No.	5 V Art.-No.	6 V Art.-No.	12 V Art.-No.	24 V Art.-No.
DC (10 imp/s)	1.660.900.002	1.660.900.006	1.660.900.008	1.660.900.009	1.660.900.010	1.660.900.012	1.660.900.013

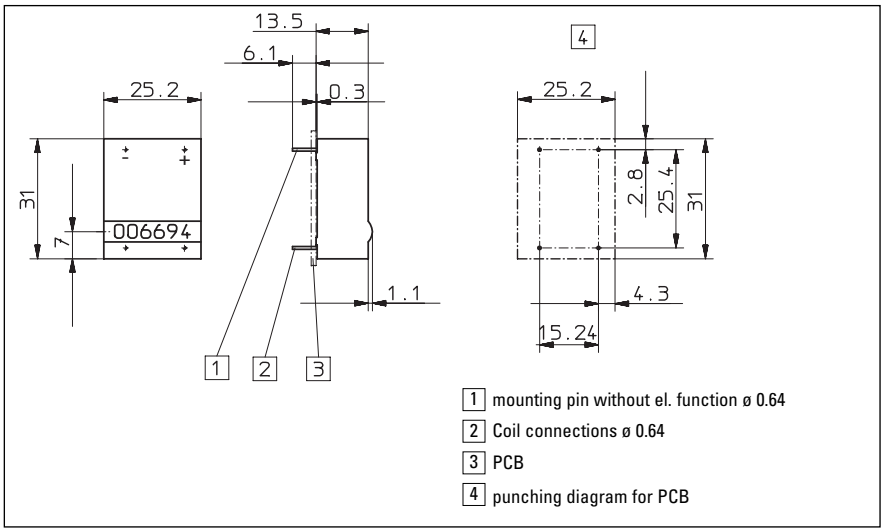
Type K 66.91/K 67.91



K 66.91	1.5 V Art.-No.	3 V Art.-No.	4.5 V Art.-No.	5 V Art.-No.	6 V Art.-No.	12 V Art.-No.	24 V Art.-No.
DC (10 imp/s)	1.650.910.002	1.650.910.006	1.650.910.008	1.650.910.009	1.650.910.010	1.650.910.012	1.650.910.013

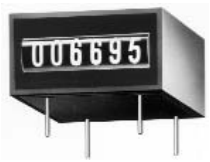
K 67.91	1.5 V Art.-No.	3 V Art.-No.	4.5 V Art.-No.	5 V Art.-No.	6 V Art.-No.	12 V Art.-No.	24 V Art.-No.
DC (10 imp/s)	1.660.910.002	1.660.910.006	1.660.910.008	1.660.910.009	1.660.910.010	1.660.910.012	1.660.910.013

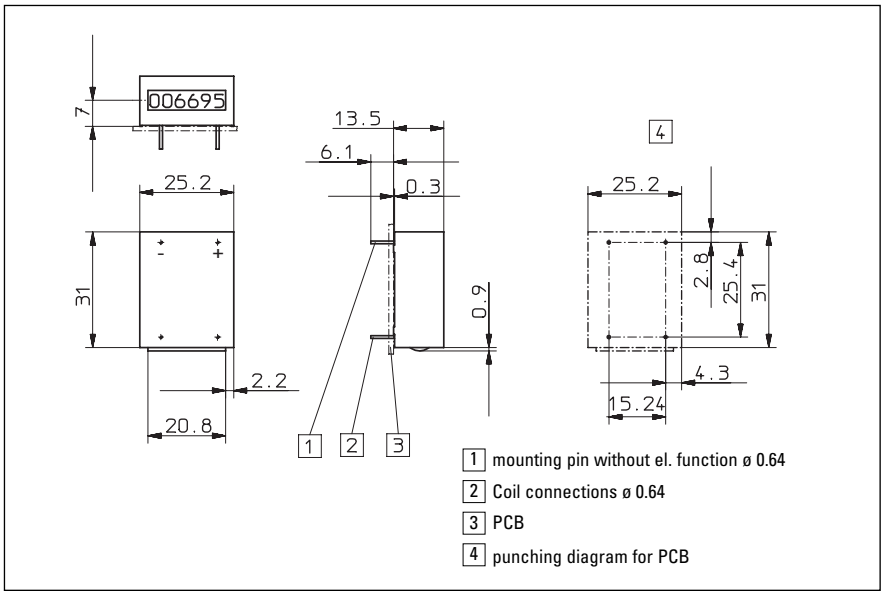
Type K 66.94



K 66.94	1.5 V Art.-No.	3 V Art.-No.	4.5 V Art.-No.	5 V Art.-No.	6 V Art.-No.	12 V Art.-No.	24 V Art.-No.
DC (10 imp/s)	1.650.940.002	1.650.940.006	1.650.940.008	1.650.940.009	1.650.940.010	1.650.940.012	1.650.940.013

Type K 66.95





K 66.95	1.5 V Art.-No.	3 V Art.-No.	4.5 V Art.-No.	5 V Art.-No.	6 V Art.-No.	12 V Art.-No.	24 V Art.-No.
DC (10 imp/s)	1.650.950.002	1.650.950.006	1.650.950.008	1.650.950.009	1.650.950.010	1.650.950.012	1.650.950.013

Micro Display counter K 04 ... K 07, shock resistant

- 4-, 5-, 6- and 7 digit Micro adding counter
- High shock resistance
- Low power consumption; suitable for battery consumption
- small dimensions
- Large optical figures
- Different viewing possibilities
- Flush mount with integrated spring clip
- PCB-mount versions
- Solderable and wash proof
- Protection IP 65
- Stores value also at power failure
- long service life
- cULus certified (UL Underwriters Laboratories Inc.)

Applications

charge counting, KWh registration alarm systems, compact units, copiers, fuel dispensers, medical equipment, miniature pumps, dosing machines, gates, general event counting

Technical data:

Electrical Connection:	Built-in counter	Flying leads AWG 22 appr. 150 mm
	PCB counter:	Solder pins 0,4 x 1,2 mm
Power consumption: (at 20 °C and normal voltage)	at 10 Imp/s (type 0):	appr. 50 mW
	at 25 Imp/s (type 1):	appr. 250 mW
	at 10 Imp/s (type a0):	appr. 800 mVA
Rated voltage:	type 0:	1.5/3/4.5/5/6/12 V DC –10 % +20 %
	type 1:	3/4.5/5/6/12/24 V DC ± 10 %
	type 4:	24 V DC –10 % +20 %
	type a0:	12/24/115/230 V AC ± 10 %
Counting frequency:	max. 10 and 25 Imp/s	
Pulse duration:	at 10 Imp/s (type 0 and a0): min. 50 ms	
	at 25 Imp/s (type 1): min. 20 ms	
Pulse interval:	at 10 Imp/s (type 0 and a0): min. 50 ms	
	at 25 Imp/s (type 1): min. 20 ms	
Cycle duration factor:	100 %	
Number of digits:	4, 5, 6 and 7	
Counting system	adding	
Hight of figures	K 04, K 06: 1,7 x 4 mm optical	
	K 05, K 07: 1,2 x 4 mm optical	
Colour of figures:	white on black	
Reset:	no reset	

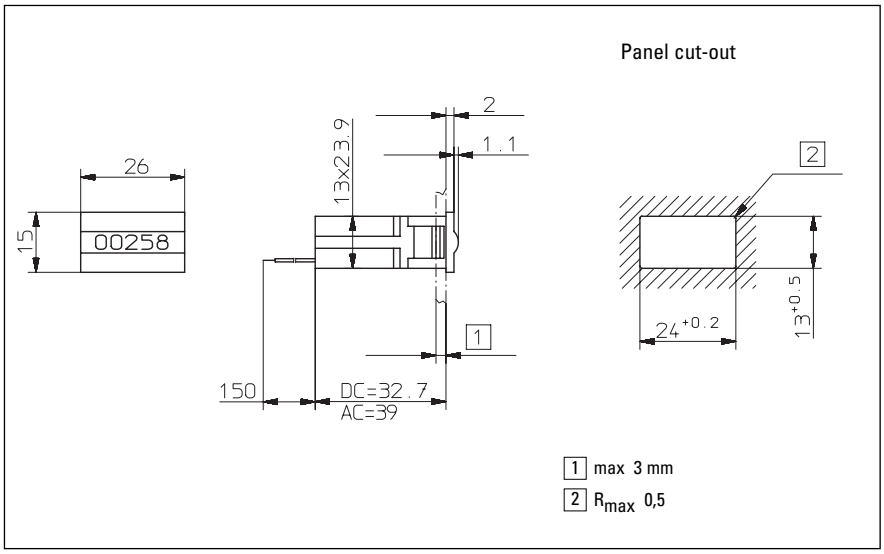
Ambient temperature:	–10 ... +60 °C
Mounting position	any
Operating life:	> 50 x 10^6 pulses
solderable and wash proof types	K 04.92, K 05.92, K 06.90, K 06.92, K 07.90 K 07.92
Protection:	K 04.92, K 05.92, K 06.90, K 06.92, K 07.90 K 07.92: IP 65 (K 04.20, K 05.20, K 06.20, K 07.20: IP 65 only front side) others, depending from kind of mounting
UL-certified	File E43429
Housing:	clear plastic or steel (see table "Series") types with protection IP 65 are fully sealed enclosure
Weight	15 ... 18 g
Options	
K 0x.20	Flat pin 0.5 x 2.8 mm Art-.No.: 1.1X7.XX0.XXX – different voltages – version not potted – different figure colours – different lengths of flying leads – different connections – different temperature range, depends on version –30 ... +85 °C, –20 ... +70 °C

Series:

4 digit	5 digit	6 digit	7digit	Housing	Display	Description
K 04.20	K 05.20	K 06.20	K 07.20	Plastic	Small side	Flush mount
K 04.40	K 05.40	K 06.40	K 07.40	Steel	Large side	PCB mount
K 04.50	K 05.50	K 06.50	K 07.50	Steel	Small side	PCB mount
K 04.80	K 05.80	K 06.80	K 07.80	Plastic	Small side	PCB mount
K 06.90	K 07.90			Plastic	Large side	PCB mount wash proof
K 04.92	K05.92	K 06.92	K 07.92	Plastic	Small side	PCB mount wash proof

Ordering information
– Article number
– for options please give exact counter type, voltage and options e.g.
K 06.20, 9 V DC/0 temperature range –20 °C ... +70 °C

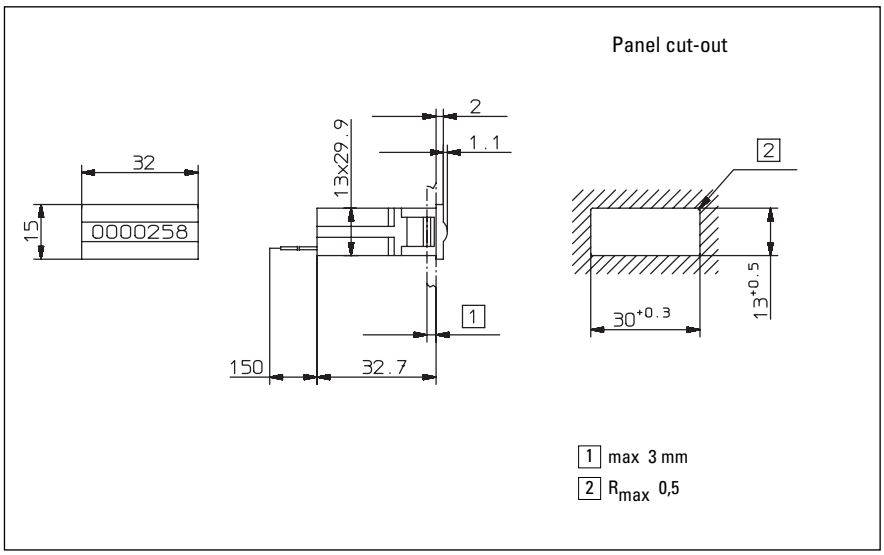
Type K 04.20 and K 05.20



K 04.20	3 V	4.5 V	12 V	24 V	115 V	230 V
(4 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.100.200.006	1.100.200.008	1.100.200.012	1.100.200.418		
DC (25 Imp/s)			1.100.200.032	1.100.200.033		
AC (10 Imp/s)				1.100.200.051	1.100.200.054	1.100.200.056

K 05.20	3 V	4.5 V	12 V	24 V	115 V	230 V
(5 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.110.200.006	1.110.200.008	1.110.200.012	1.110.200.418		
DC (25 Imp/s)			1.110.200.032	1.110.200.033		
AC (10 Imp/s)				1.110.200.051	1.110.200.054	1.110.200.056

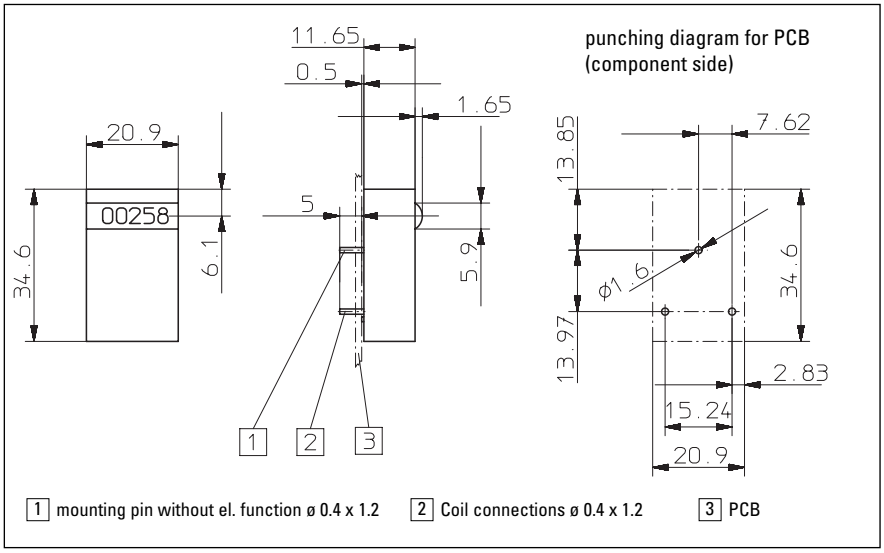
Type K 06.20 and K 07.20



K 06.20	3 V	4.5 V	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.120.200.006	1.120.200.008	1.120.200.012	1.120.200.418		
DC (25 Imp/s)			1.120.200.032	1.120.200.033		
AC (10 Imp/s)				1.120.200.051	1.120.200.054	1.120.200.056

K 07.20	3 V	4.5 V	12 V	24 V	115 V	230 V
(7 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.130.200.006	1.130.200.008	1.130.200.012	1.130.200.012		
DC (25 Imp/s)			1.130.200.032	1.130.200.033		
AC (10 Imp/s)				1.130.200.051	1.130.200.054	1.130.200.056

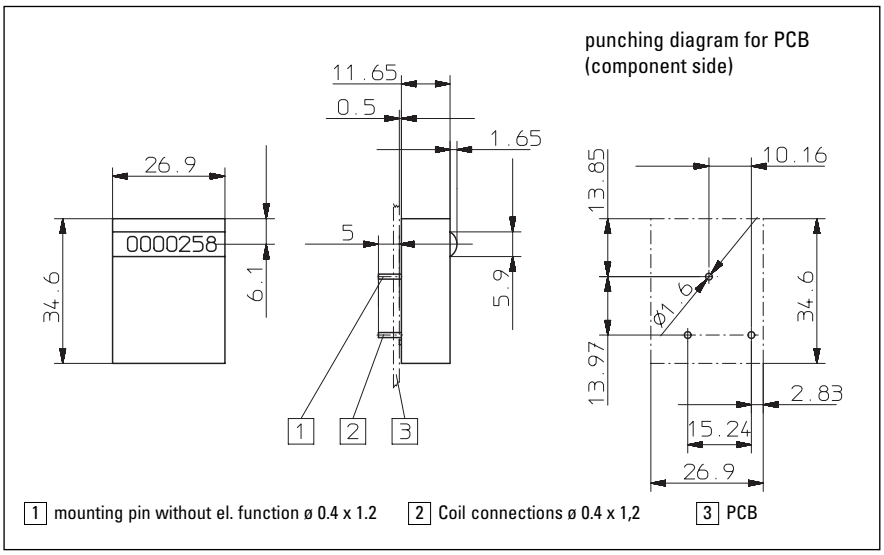
Type K 04.40 and K 05.40



K 04.40	3 V	4.5 V	12 V	24 V
(4 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.100.401.006	1.100.401.008	1.100.401.012	1.100.401.418
DC (25 Imp/s)			1.100.401.032	1.100.401.033

K 05.40	3 V	4.5 V	12 V	24 V
(5 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.110.401.006	1.110.401.008	1.110.401.012	1.110.401.418
DC (25 Imp/s)			1.110.401.032	1.110.401.033

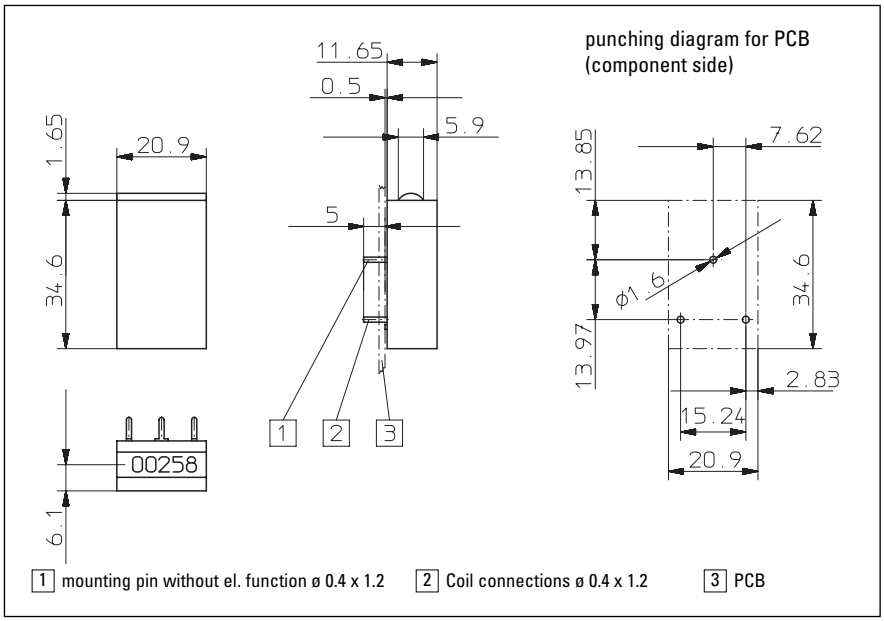
Type K 06.40 and K 07.40



K 06.40	3 V	4.5 V	12 V	24 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.120.401.006	1.120.401.008	1.120.401.012	
DC (25 Imp/s)			1.120.401.032	1.120.401.033

K 07.40	3 V	4,5 V	12 V	24 V
(7 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.130.401.006	1.130.401.008	1.130.401.012	
DC (25 Imp/s)			1.130.401.032	1.130.401.033

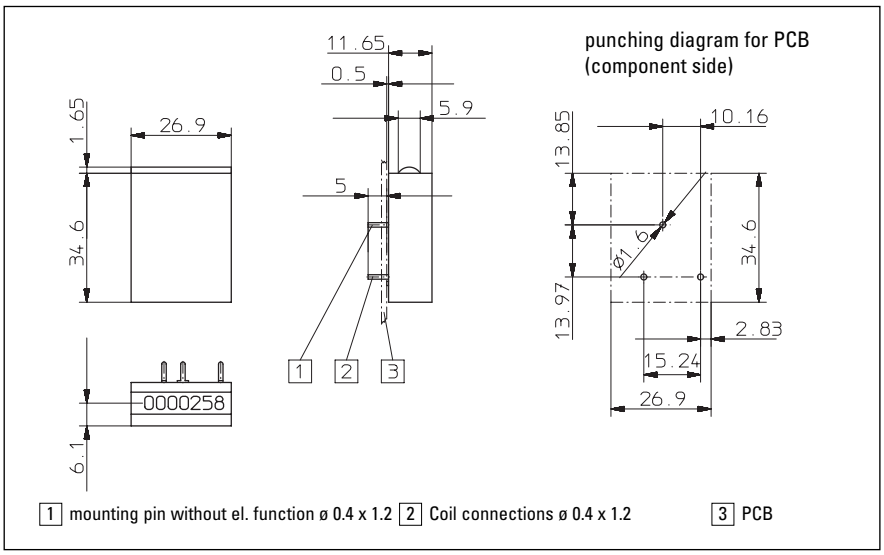
Type K 04.50 and K 05.50



K 04.50	3 V	4.5 V	12 V	24 V
(4 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.100.501.006	1.100.501.008	1.100.501.012	1.100.501.418
DC (25 Imp/s)			1.100.501.032	1.100.501.033

K 05.50	3 V	4.5 V	12 V	24 V
(5 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.110.501.006	1.110.501.008	1.110.501.012	1.110.501.418
DC (25 Imp/s)			1.110.501.032	1.110.501.033

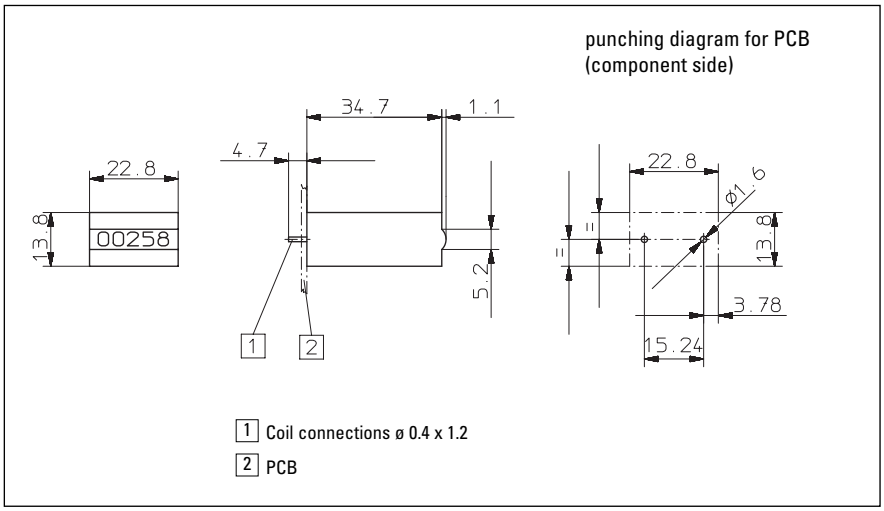
Type K 06.50 and K 07.50



K 06.50	3 V	4.5 V	12 V	24 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.120.501.006	1.120.501.008	1.120.501.012	1.120.501.418
DC (25 Imp/s)			1.120.501.032	1.120.501.033

K 07.50	3 V	4.5 V	12 V	24 V
(7 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.130.501.006	1.130.501.008	1.130.501.012	1.130.501.418
DC (25 Imp/s)			1.130.501.032	1.130.501.033

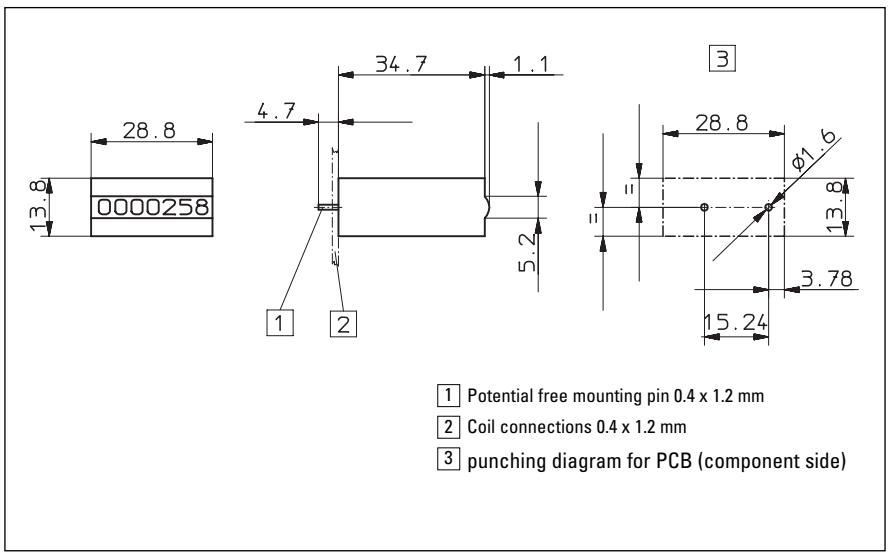
Type K 04.80 and K 05.80



K 04.80	3 V	4.5 V	12 V	24 V
(4 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.100.800.006	1.100.800.008	1.100.800.012	1.100.800.418
DC (25 Imp/s)			1.100.800.032	1.100.800.033

K 05.80	3 V	4.5 V	12 V	24 V
(5 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.110.800.006	1.110.800.008	1.110.800.012	1.110.800.418
DC (25 Imp/s)			1.110.800.032	1.110.800.033

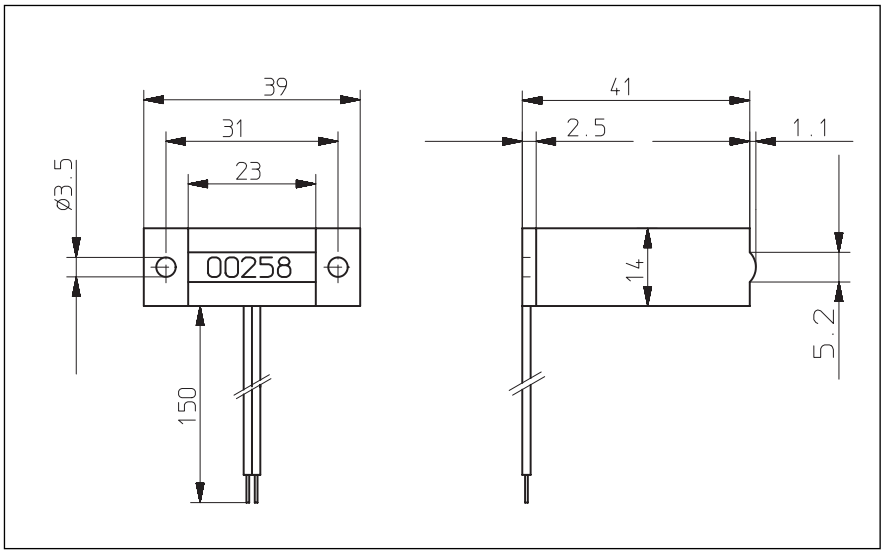
Type K 06.80 and K 07.80



K 06.80	3 V	4.5 V	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.120.800.006	1.120.800.008	1.120.800.012	1.120.800.418		
DC (25 Imp/s)			1.120.800.032	1.120.800.033		
AC (10 Imp/s)				1.120.800.051	1.120.800.054	1.120.800.056

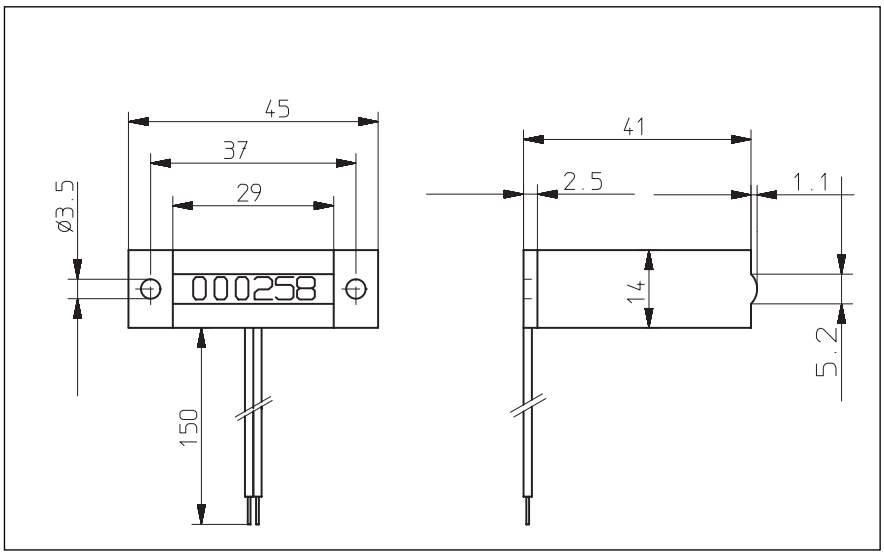
K 07.80	3 V	4.5 V	12 V	24 V	115 V	230 V
(7 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.130.800.006	1.130.800.008	1.130.800.012	1.130.800.418		
DC (25 Imp/s)			1.130.800.032	1.130.800.033		
AC (10 Imp/s)				1.130.800.051	1.130.800.054	1.130.800.056

AK 05.00



AK 05.00	3 V	4.5 V	12 V	24 V	115 V	230 V
(5 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.110.000.006	1.110.000.008	1.110.000.012	1.110.000.418		
DC (25 Imp/s)			1.110.000.032	1.110.000.033		
AC (10 Imp/s)				1.110.000.051	1.110.000.054	1.110.000.056

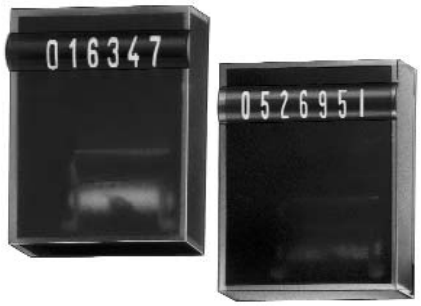
Type AK 06.00 and AK 07.00

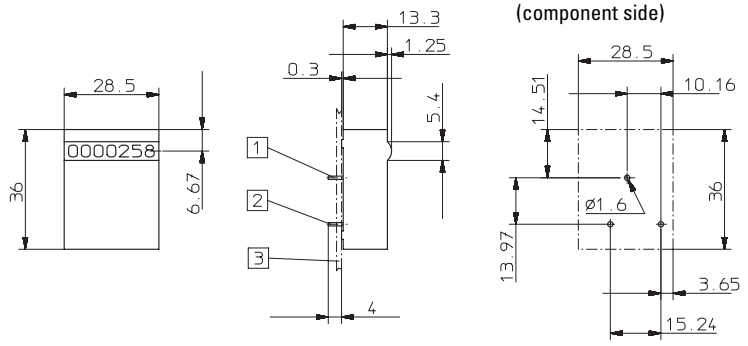


AK 06.00	3 V	4.5 V	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.120.000.006	1.120.000.008	1.120.000.012	1.120.000.418		
DC (25 Imp/s)			1.120.000.032	1.120.000.033		
AC (10 Imp/s)				1.120.000.051	1.120.000.054	1.120.000.056

AK 07.00	3 V	4.5 V	12 V	24 V	115 V	230 V
(7 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.130.000.006	1.130.000.008	1.130.000.012	1.130.000.418		
DC (25 Imp/s)			1.130.000.032	1.130.000.033		
AC (10 Imp/s)				1.130.000.051	1.130.000.054	1.130.000.056

Type K 06.90 and K 07.90



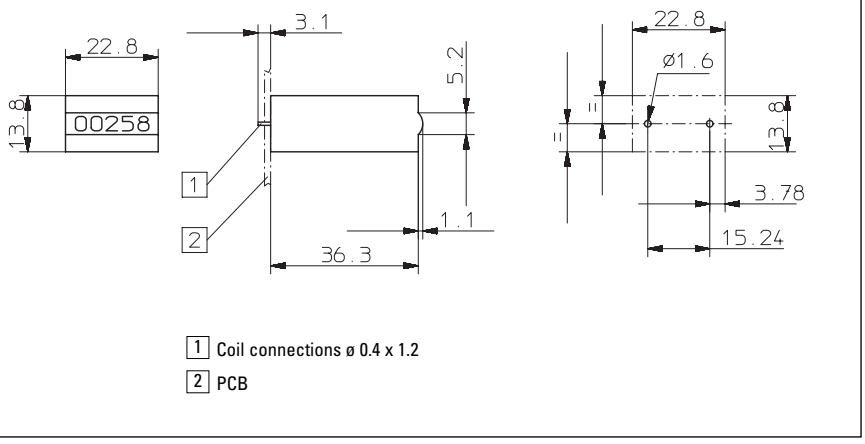


1 mounting pin without el. function ø 0.4 x 1.2
2 Coil connections ø 0.4
3 PCB

K 06.90	3 V	4.5 V	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.120.900.006	1.120.900.008	1.120.900.012	1.120.900.418		
DC (25 Imp/s)			1.120.900.032	1.120.900.033		
AC (10 Imp/s)				1.120.900.051	1.120.900.054	1.120.900.056

K 07.90	3 V	4.5 V	12 V	24 V	115 V	230 V
(7 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.130.900.006	1.130.900.008	1.130.900.012	1.130.900.418		
DC (25 Imp/s)			1.130.900.032	1.130.900.033		
AC (10 Imp/s)				1.130.900.051	1.130.900.054	1.130.900.056

Type K 04.92 and K 05.92

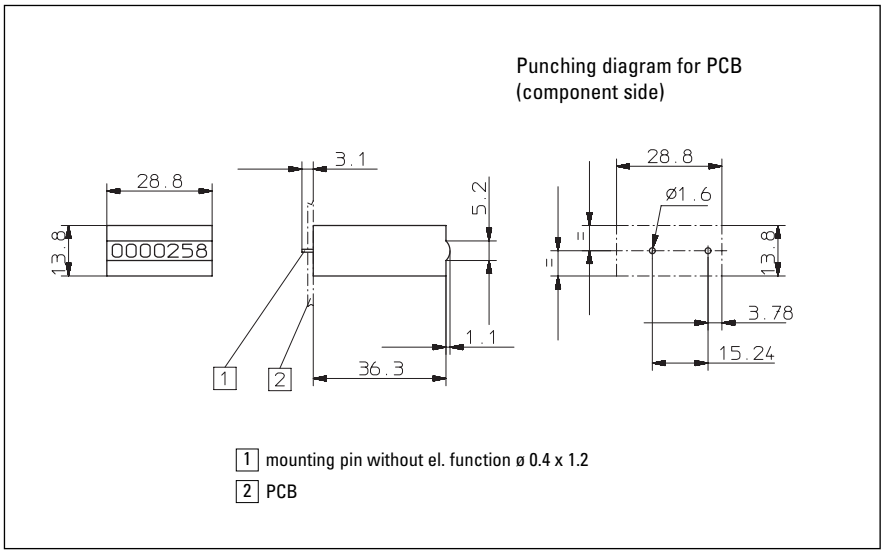


1 Coil connections ø 0.4 x 1.2
2 PCB

K 04.92	3 V	4.5 V	12 V	24 V
(4 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.100.920.006	1.100.920.008	1.100.920.012	1.100.920.418
DC (25 Imp/s)			1.100.920.032	1.100.920.033

K 05.92	3 V	4.5 V	12 V	24 V
(5 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.110.920.006	1.110.920.008	1.110.920.012	1.110.920.418
DC (25 Imp/s)			1.110.920.032	1.110.920.033

Type K 06.92 and K 07.92



K 06.92	3 V	4.5 V	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.120.920.006	1.120.920.008	1.120.920.012			
DC (25 Imp/s)			1.120.920.032	1.120.920.033		
AC (10 Imp/s)				1.120.920.051	1.120.920.054	1.120.920.056

K 07.92	3 V	4.5 V	12 V	24 V	115 V	230 V
(7 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.130.920.006	1.130.920.008	1.130.920.012			
DC (25 Imp/s)			1.130.920.032	1.130.920.033		
AC (10 Imp/s)				1.130.920.051	1.130.920.054	1.130.920.056

KWH 17

- Only 25 mW power consumption
- 7-digit cyclometer display with pulse control
- Stores value also at power failure
- Large figures 5 x 3 mm
- Stepper motor driven

One impulse increases the first number wheel by 1/100 => 100 pulses generates one turn of the first number wheel

Applications

electromechanical register for kWh meter (solid state meters or sub meters) speedometers (utility, vehicles, etc.) any application which requires large number wheels

Technical data:

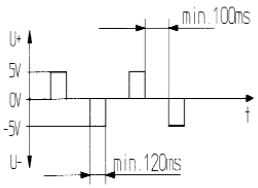
Driving mechanism:	Stepper motor	Stepper motor
Nominal voltage:	5 V DC ±10 %	10 V DC ±10 %
Activation	Rectangular- or needle-shaped pulses	Rectangular- or needle-shaped pulses
Electrical connection:	Solder pins	Solder pins
Display:	7-digit display, decimal place with additional cent divisions the counter reading is 000 000 1 ±3 digits at delivery of the shipment	
Figures:	white on black	
Coil resistance:	1 kΩ	3,6 kΩ
Power consumption:	25 mW	28 mW
Hight of figures	5 x 3 mm	5 x 3 mm
Ambient temperature:	–20 ... +70 °C	–20 ... +70 °C

Options

Different mounting possibilities:	on request
Magnetic shield:	with or without
Alternative operating voltage:	on request
Alternative coil resistance:	on request
Extended temperature range:	–40 ... +90 °C

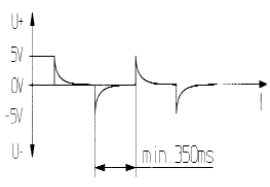
Pulse diagrams

Rectangular shaped pulses



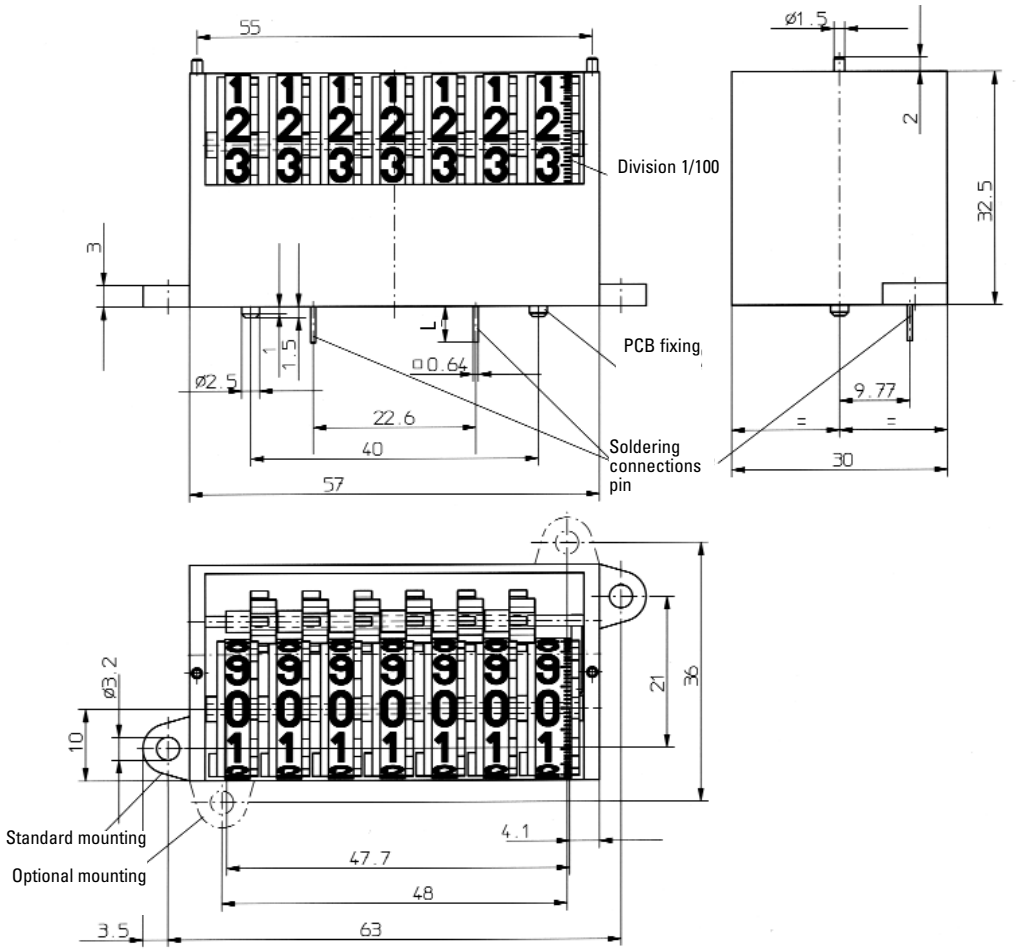
Pulses by capacitor charge or discharge

Recommended Capacitor
5 V DC version 100 µF
10 V DC version33 µF



KWH 17

Dimensions



Order Code:

1.94X.XXX.XXX.XXX

Type

Electrical connection
- 3 = pin □ 0,64 x L (L = 19 mm)
- 4 = pin □ 0,64 x L (L = 5 mm)
- 5 = pin □ 0,64 x L (L = 7,5 mm)

Mounting
- 0 = Latch at the side (standard)
- 1 = Latch on top and bottom (optional)

Colour of wheels
- 0 = standard red on black, last digit white on black
- 2 = all digits white on black

Options
- 346 = extended temperature range –40 ... +90 °C

Nominal voltage
- 090 = 5 V DC
- 091 = 10 V DC

Shield against magnetic field
- 0 = without shield
- 1 = with shield

Totalizer SK 06/SK 07 for Rail mounting

- 6- and 7 digit Micro-Totalizer
- Rail mounting to EN 50 022
- Base mount counter
- High shock resistance
- Low power consumption
- small dimensions
- Large optical figures
- Stores value also at power failure
- long service life
- c UL us certified (UL Underwriters Laboratories Inc.)

Applications

general event counting

Technical data:

Electrical Connection:	clamp terminal for cable diameter up to 2,5 mm^2, tightening torque max. 0,8 Nm
Power consumption: (at 20 °C)	at 10 Imp/s (type 0): appr. 50 mW at 25 Imp/s (type 1): appr. 250 mW at 10 Imp/s (type a0): appr. 800 mVA
Rated voltage:	type 0: 1.5/3/4.5/5/6/12 V DC –10 % +20 % type 1: 3/4.5/5/6/12/24 V DC ± 10 % type a0: 12/24/115/230 V AC ± 10 %
Counting frequency:	max. 10 and 25 Imp/s
Pulse duration	at 10 Imp/s (type 0 and a0): min. 50 ms at 25 Imp/s (type 1): min. 20 ms
Cycle duration factor:	100 %
Number of digits:	6 and 7
Counting system	adding
High of figures	SK 06: 1.7 x 4 mm optical SK 07: 1.2 x 4 mm optical
Colour of figures:	white on black

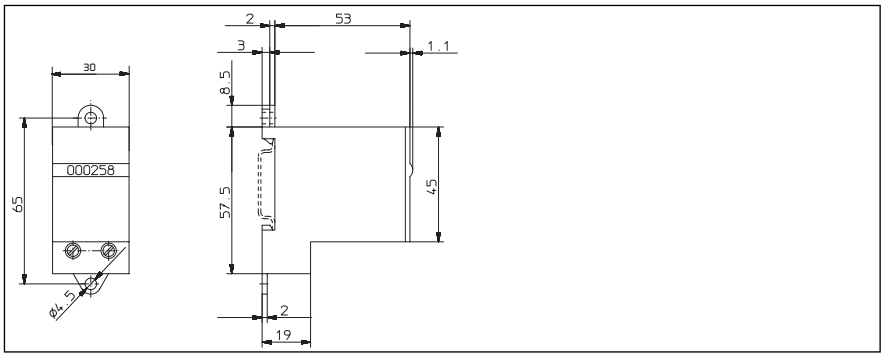
Reset:	no
Ambient temperature:	–10 ... +60 °C
Mounting position	any
Operating life:	> 50 x 10^6 pulses
Protection:	IP 50 front
UL-certified	File E43429
Housing:	Plastic black PC
Weight	55 g
Options:	– Electrical Connection: Flat pin 0.8 x 6.3 mm and push on connectors Art.-No.: 1.1X2.X01.XXX.**011** – different voltages – different digit colours – different temperature range depends on type –30 ... +85 °C, –20 ... +70 °C

Series:

Type	No. of digits	Height of digits	Width of figures	Description
SK 06.1	6	4 mm	1.7 mm	Base mounting
SK 07.1	7	4 mm	1.2 mm	and rail mounting

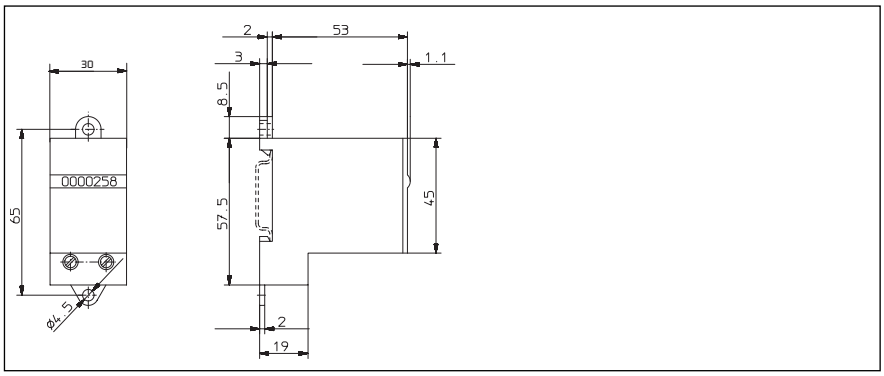
Ordering information
– Article number
– for options please give exact counter type, voltage and options e.g.
SK 06.1.9 V DC/0 temperature range –20 °C ... +70 °C

Type SK 06.1



SK 06.1	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.122.101.012			
DC (25 Imp/s)	1.122.101.032	1.122.101.033		
AC (10 Imp/s)		1.122.101.051	1.122.101.054	1.122.101.056

Type SK 07.1



SK 07.1	12 V	24 V	115 V	230 V
(7 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.132.101.012			
DC (25 Imp/s)	1.132.101.032	1.132.101.033		
AC (10 Imp/s)		1.132.101.051	1.132.101.054	1.132.101.056

Miniature pulse counter W 15

- 5 digit miniature pulse counter, adding with manual reset
- Power consumption min. 130 mW
- Suitable for battery operation
- long operating life (50 Mio. pulses)
- Available for all DC and AC voltages
- DIN housing 24 x 48 available

Applications

Self powered device, battery operation
Vending machines, automatic message systems
general counting systems

Technical data:

Electrical connection:	Standard:	Flying leads AWG 22, appr. 150 mm long
	Options:	Pins ø 1.5 mm with push on connectors
Rated voltage:	type 05:	1.5/3/4.5/5/6/12 V DC +15 % -5 %
	type 0:	12/24/48/115/185 V DC ± 10 %
	type a0:	12/24/48/115/230 V AC ± 10 %
Cycle duration factor:	100 %	
Hight of figures	appr. 1.7 x 4 mm	
Colour of figures:	white on black	
Shafts:	stainless steel	
Ambient temperature:	–10 ... +50 °C	
Mounting position	any	
Operating life:	> 50 x 10^6 pulses	
Colour of housing:	Panel model W 15.01, W15.21.56, W 15.91: light grey Base mount model AW 15.01: black Panel mount: W15.51	
Weight	AC 52 g, DC 62 g	

Options:
– Electrical Connection: instead of flying leads, pin ø 1.5 mm with push on connectors Art.-No.: 1.151.X1X.XXX
with Flat pin 0.8 x 2.8 mm and flat push on connectors Art.-No.: 1.159.X1X.XXX
...with flat pin 0.8 x 6.3 ...Art-No.: 1.155.XXX.XXX
...with screw terminal ... Art.-No: 1.154.XXX.XXX
– different temperature range on request

Series:

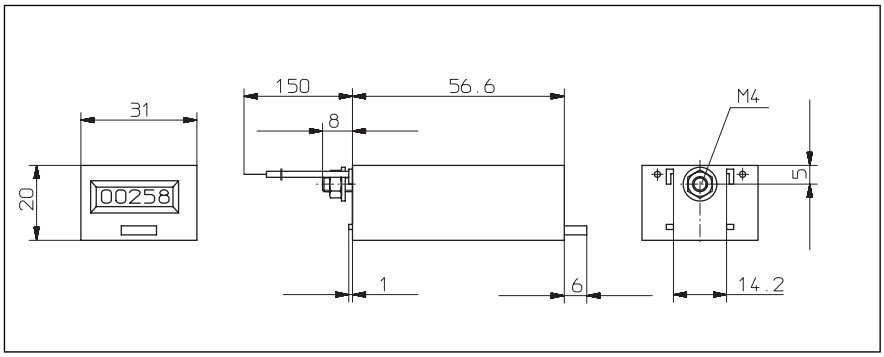
Type	Description
W 15.01	Housing without front panel, rear screw mount
W 15.21	Panel mount with spring clip 31 x 20 mm
W 15.21.56	Built in counter with spring, dimension 31 x 20 mm
W 15.51	DIN housing 24 x 48, dimension 22 x 45 mm
W 15.91	Built in counter with spring, dimension 37.5 x 23.5 mm
AW 15.01	Base mount with two mounting holes

Counting mechanism:

Voltage	Model	Max. pulse speed	Pulse on time	Pulse interval min.	Power consupt. appr.	Residual ripple voltage max.
V DC	05	8	50 ms	75 ms	130 mW	5 %
	0	10	50 ms	50 ms	0.5 W (≤115 V) 1 W (185 V)	48 %
V AC	a0	10	50 ms	50 ms	0,75 VA (≤ 115 V) 1.5 VA (230 V)	

Ordering information
– Article number
– For special voltages, please give type, voltage, kind of voltage and series e.g. W 15.21, 4.5 V DC/0, black.

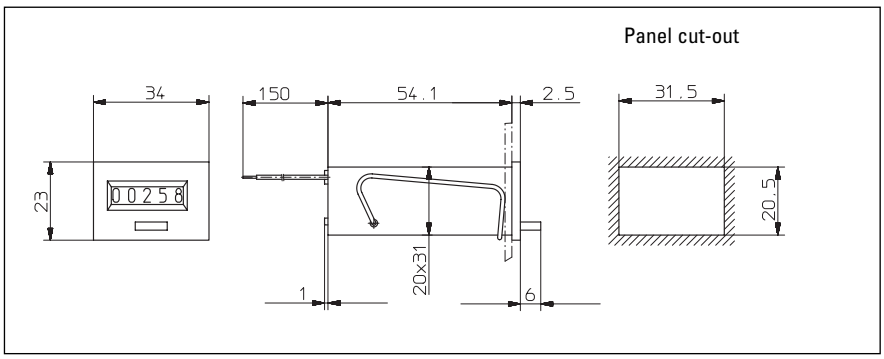
Type W 15.01



W 15.01	12 V	24 V	115 V	230 V
(5 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (8 Imp/s)	1.150.010.049	1.150.010.050		
DC (10 Imp/s)	1.150.010.012	1.150.010.013		
AC (10 Imp/s)		1.150.010.051	1.150.010.054	1.150.010.056

Colour of housing black
Art.-No. 1.150.011.XXX

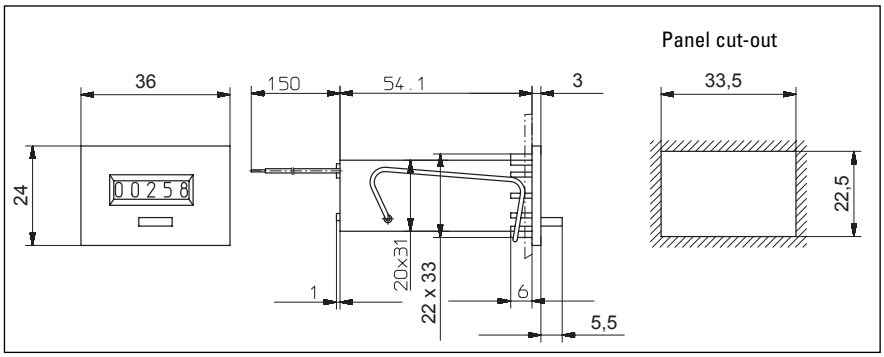
Type W 15.21



W 15.21	12 V	24 V	115 V	230 V
(5 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (8 Imp/s)	1.150.210.049	1.150.210.050		
DC (10 Imp/s)	1.150.210.012	1.150.210.013		
AC (10 Imp/s)		1.150.210.051	1.150.210.054	1.150.210.056

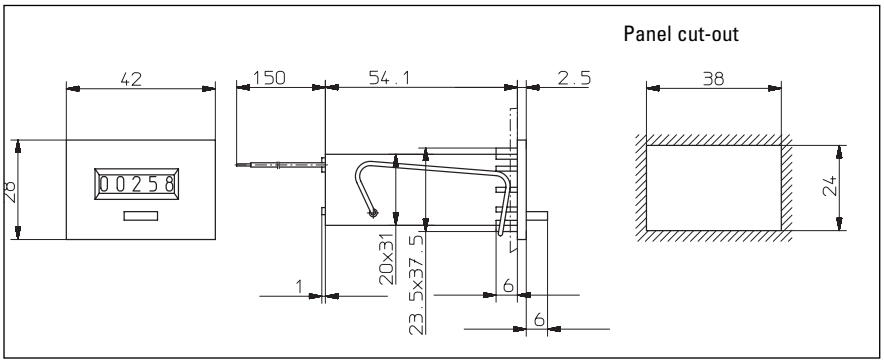
Colour of housing black:
Art.-No. 1.150.211.XXX

Type W 15.21.56



W 15.21.56	12 V	24 V	115 V	230 V
(5 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (8 Imp/s)	1.150.210.049.056	1.150.210.050.056		
DC (10 Imp/s)	1.150.210.012.056	1.150.210.013.056		
AC (10 Imp/s)		1.150.210.051.056	1.150.210.054.056	1.150.210.056.056

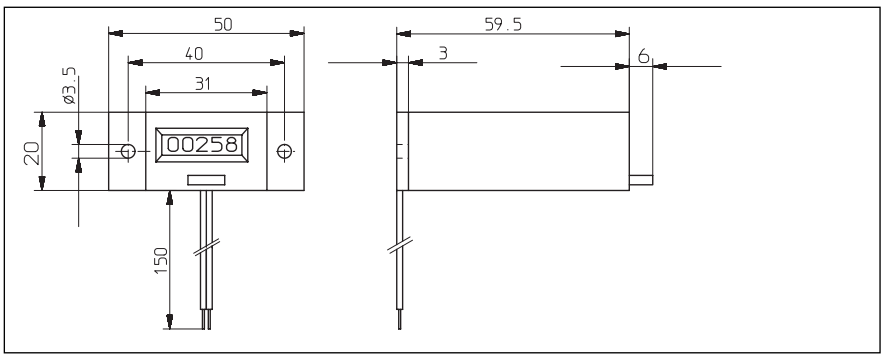
Type W 15.91



W 15.91	12 V	24 V	115 V	230 V
(5 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (8 Imp/s)	1.150.910.049	1.150.910.050		
DC (10 Imp/s)	1.150.910.012	1.150.910.013		
AC (10 Imp/s)		1.150.910.051	1.150.910.054	1.150.910.056

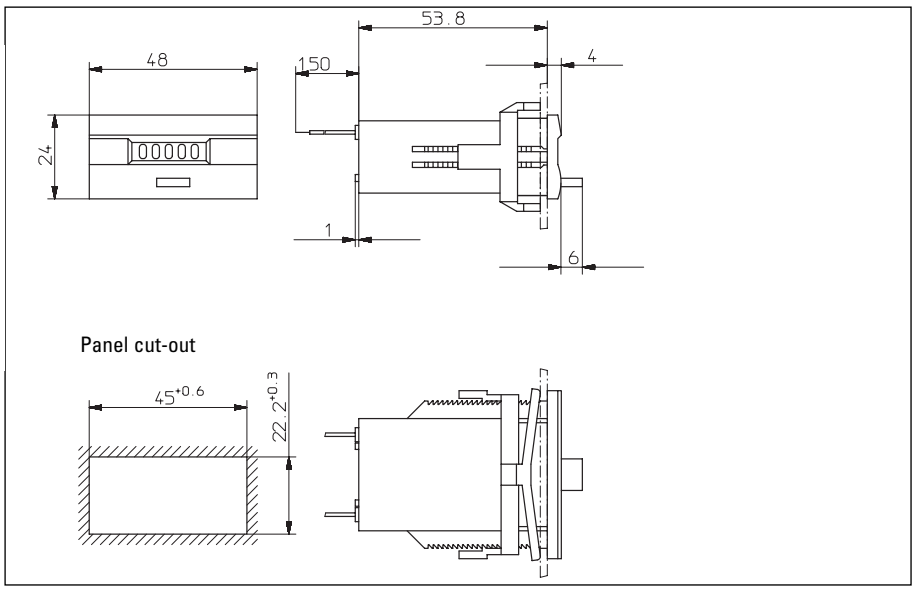
Colour of housing black:
Art.-No. 1.150.911.XXX

Type AW 15.01



AW 15.01	12 V	24 V	115 V	230 V
(5 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (8 Imp/s)	1.152.011.049	1.152.011.050		
DC (10 Imp/s)	1.152.011.012	1.152.011.013		
AC (10 Imp/s)		1.152.011.051	1.152.011.054	1.152.011.056

Type W 15.51



W 15.51	12 V	24 V	115 V	230 V
	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (8 Imp/s)	1.150.510.049.550	1.150.510.050.550		
DC (10 Imp/s)	1.150.510.012.550	1.150.510.013.550		
AC (10 Imp/s)		1.150.510.051.550	1.150.510.054.550	1.150.510.056.550

Miniature pulse counter W 16/W 17

- 6 or 7 digit miniature pulse counter, without reset
- Power consumption min. 50 mW
- Power consumption at version 05 and 50 ms pulse length 2,5 mWs/Pulse
- Long operating life
- For all DC and AC voltages
- Types to DIN dimension 24 x 48 and many other dimensions e.g. PCB mount
- Protection IP 41

Applications

Self powered device, battery operation
Vending machines, automatic message systems general counting systems

Technical data:

Electrical Connection:	Panel and-surface mount model PCB mounting	Flying leads AWG 22, appr. 150 mm round pin ø 1.6 mm
Rated voltage:	type 05: 1.5/3/4,5/5/6/12 V DC +15 % -5 % type 0: 12/24/48/115/185 V DC ± 10 % type a0: 24/48/115/230 V AC ± 10 %	
Cycle duration factor:	100 %	
Hight of figures	appr. 1.7 x 4 mm	
Colour of figures	white on black	
Shaft:	stainless steel	
Ambient temperature:	–10 ... +50 °C	
Mounting position	any	
Operating life:	> 50 x 10^6 pulses	
Colour of housing:	**black**	**grey**
	W16.50, W17.50 W16.60, W17.60 W16.70, AW16.00	W16.00, W16.20 W16.20.10, W16.20.31 W16.90, W16.80 W17.80
Weight	appr. 50 g	

Options:	
	– Electrical Connection: counter with pins ø 1.6 mm and push on connectors Art.-No.: 1.161.XXX.XXX
	with Flat pin 0.8 x 2.8 mm and push on connectors Art.-No.: 1.169.XXX.XXX
	...with Flat pin 0.8 x 6.3 and push on connectors ...Art-No.: 1.165.XXX.XXX
	...with screw terminal ... Art.-No: 1.164.XXX.XXX
	– extended temperature range
	– with lens or digit height 5 or 6.3 mm on request

Type series

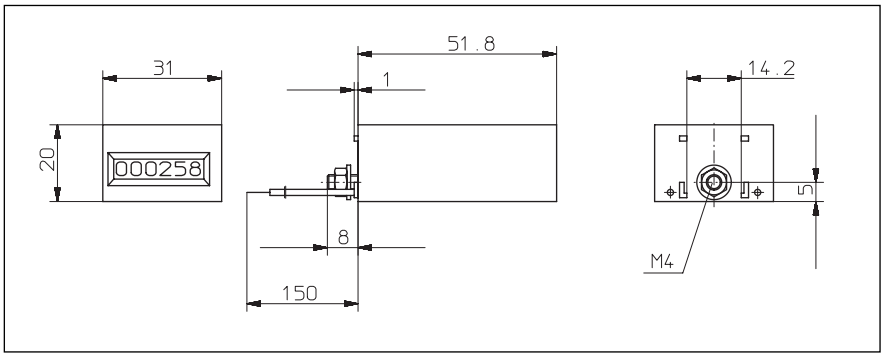
Type	Housing	Display	Description
W 16.00	Plastic	Small side	Counter without front bezel, rear mounting
W 16.20	Plastic	Small side	Flush mount counter with spring clip, dimension 31 x 20 mm
W 16.20.10	Plastic	Small side	Flush mount counter with spring clip, panel cut-out 33 x 24 mm
W 16.20.31	Plastic	Small side	Flush mount counter with spring clip, panel cut-out 32 x 23 mm
W 16.40	Plastic	Small side	2 two holes at front side
W 16.50	Plastic	Small side	DIN housing 24 x 48, Built in dimension 22 x 45 mm
W 16.60	Steel	Large side	PCB counter
W 16.70	Steel	Small side	PCB counter
W 16.80	Plastic	Small side	PCB counter
W 16.90	Plastic	Small side	Flush mount counter with spring , dimension 37.5 x 23.5
AW 16.00	Plastic	Small side	Base mount counter
AW 16.80	Plastic	Small side	Base mount counter
AW 16.81	Plastic	Small side	Base mount counter
W 17.50	Plastic	Small side	DIN housing with spring 24 x 48, Panel cut-out 22 x 45 mm
W 17.80	Plastic	Small side	PCB counter
W 17.90	Plastic	Small side	Panel counter with spring, Panel cut-out 37,5 x 23,5 mm

Counting mechanism

Voltage	Model	max. Pulse-speed	Pulse on time	Pulse interval min.	Power consumption appr.	Residual ripple voltage max.
DC	05	8	50 ms	75 ms	50 mW	5 %
	0	10	50 ms	50 ms	0,5 W (≤ 115 V) 1 W (185 V)	48 %
AC	a0	10	50 ms	50 ms	0,75 VA (≤ 115 V) 1,5 VA (230 V)	

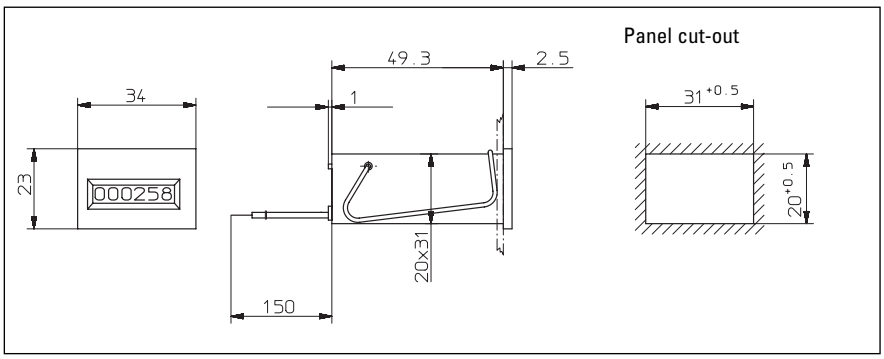
Ordering information
– Article number
– For special voltages, please give type, voltage, kind of voltage and series e.g. W 16.20, 9 V DC, 05, black.

Type W 16.00



W 16.00	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (8 Imp/s)	1.160.000.049	1.160.000.050		
DC (10 Imp/s)	1.160.000.012	1.160.000.013		
AC (10 Imp/s)		1.160.000.051	1.160.000.054	1.160.000.056

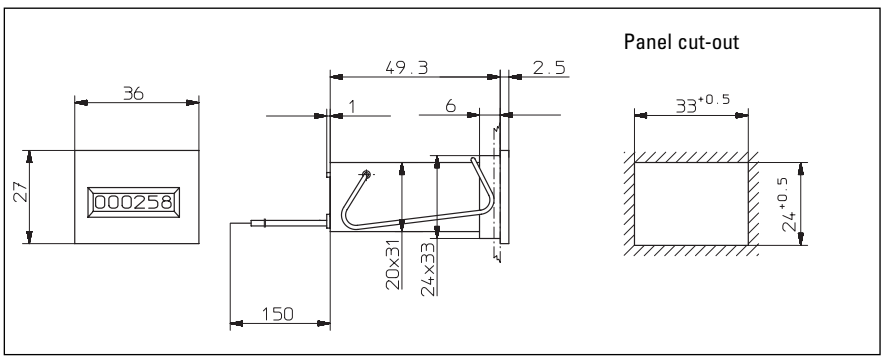
Type W 16.20



W 16.20	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (8 Imp/s)	1.160.200.049	1.160.200.050		
DC (10 Imp/s)	1.160.200.012	1.160.200.013		
AC (10 Imp/s)		1.160.200.051	1.160.200.054	1.160.200.056

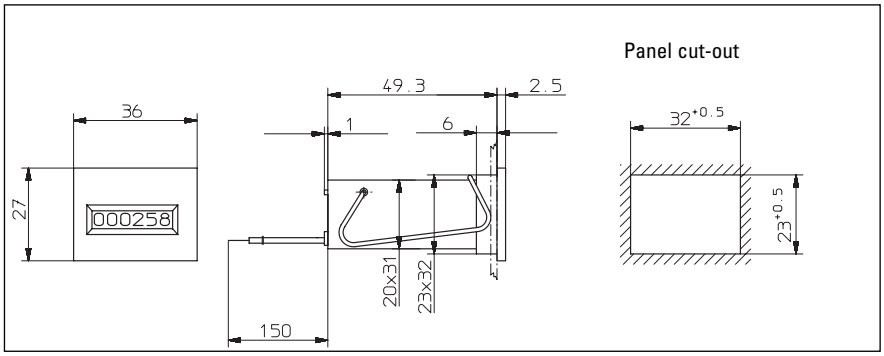
Colour of housing black:
Art.-No. 1.160.20**1**.XXX

Type W 16.20.10



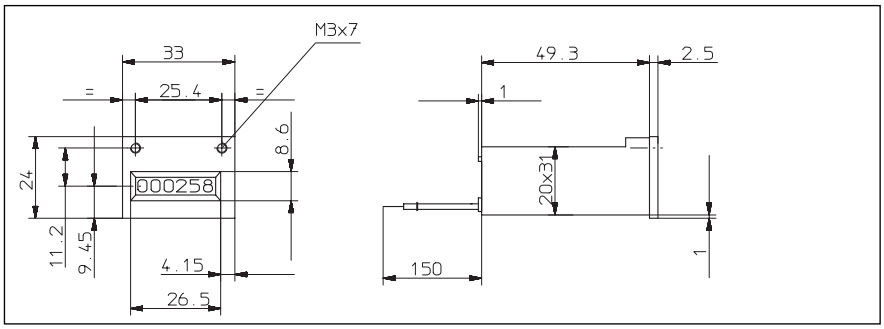
W 16.20.10	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (8 Imp/s)	1.168.250.049	1.168.250.050		
DC (10 Imp/s)	1.168.250.012	1.168.250.013		
AC (10 Imp/s)		1.168.250.051	1.168.250.054	1.168.250.056

Type W 16.20.31



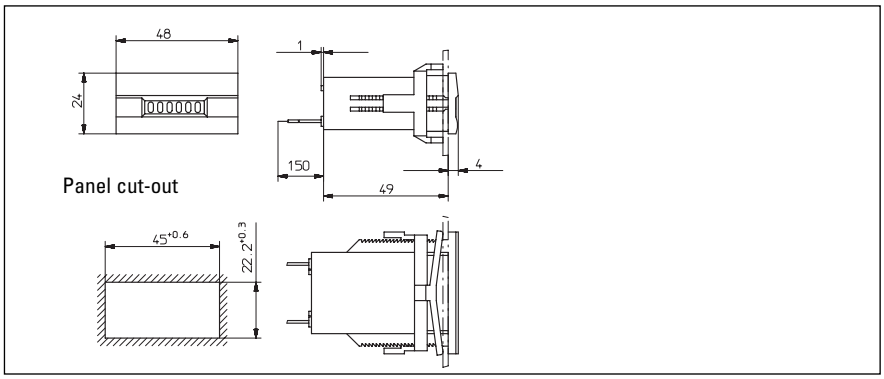
W 16.20.31	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (8 Imp/s)	1.168.260.049	1.168.260.050		
DC (10 Imp/s)	1.168.260.012	1.168.260.013		
AC (10 Imp/s)		1.168.260.051	1.168.260.054	1.168.260.056

Type W 16.40



W 16.40	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (8 Imp/s)	1.160.400.049	1.160.400.050		
DC (10 Imp/s)	1.160.400.012	1.160.400.013		
AC (10 Imp/s)		1.160.400.051	1.160.400.054	1.160.400.056

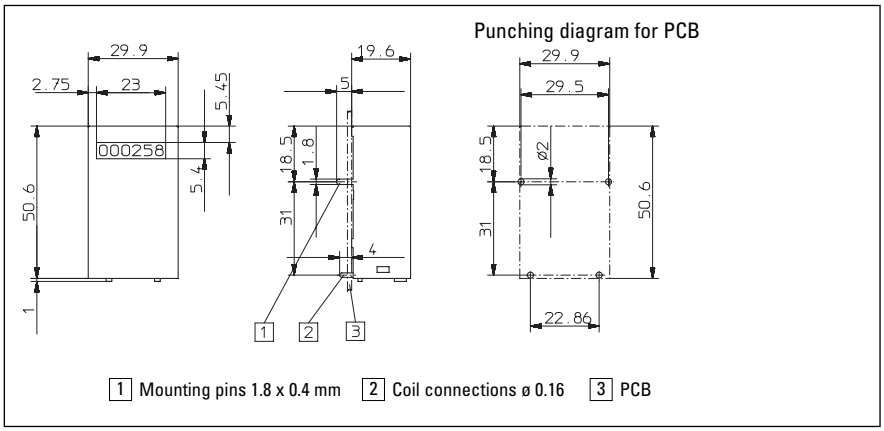
Type W 16.50/W17.50



W 16.50	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (8 Imp/s)	1.160.500.049.550	1.160.500.050.550		
DC (10 Imp/s)	1.160.500.012.550	1.160.500.013.550		
AC (10 Imp/s)		1.160.500.051.550	1.160.500.054.550	1.160.500.056.550

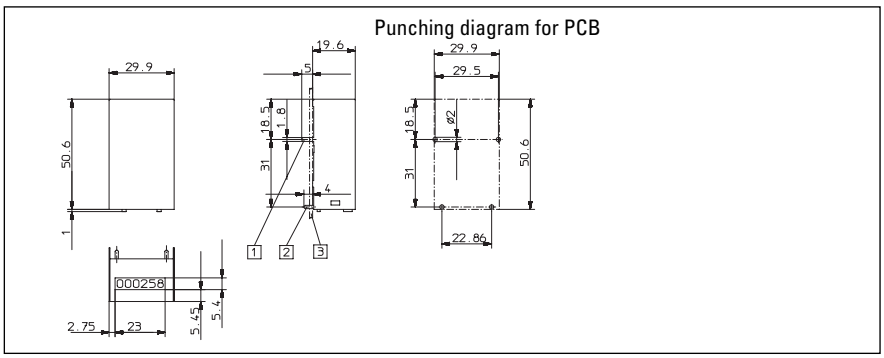
W 17.50	12 V	24 V	115 V	230 V
(7 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (8 Imp/s)	1.740.500.049.550	1.740.500.050.550		
DC (10 Imp/s)	1.740.500.012.550	1.740.500.013.550		
AC (10 Imp/s)		1.740.500.051.550	1.740.500.054.550	1.740.500.056.550

Type W 16.60



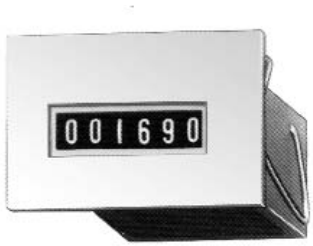
W 16.60 (6 digit)	12 V Art.-No.	24 V Art.-No.
DC (8 Imp/s)	1.160.601.049	1.160.601.050
DC (10 Imp/s)	1.160.601.012	1.160.601.013

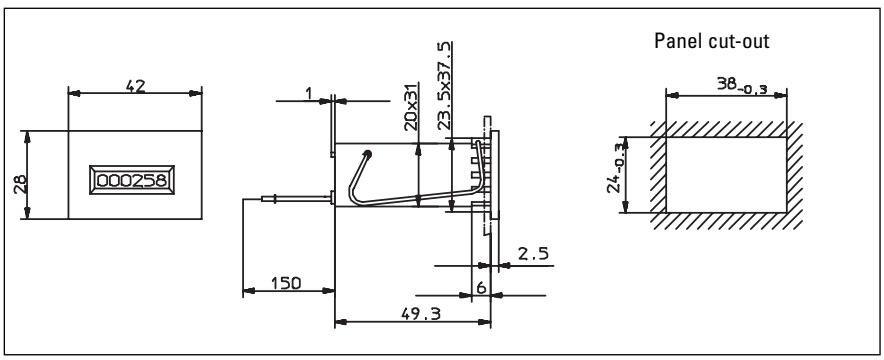
Type W 16.70



W 16.70 (6 digit)	12 V Art.-No.	24 V Art.-No.
DC (8 Imp/s)	1.160.701.049	1.160.701.050
DC (10 Imp/s)	1.160.701.012	1.160.701.013

Type W 16.90/W 17.90

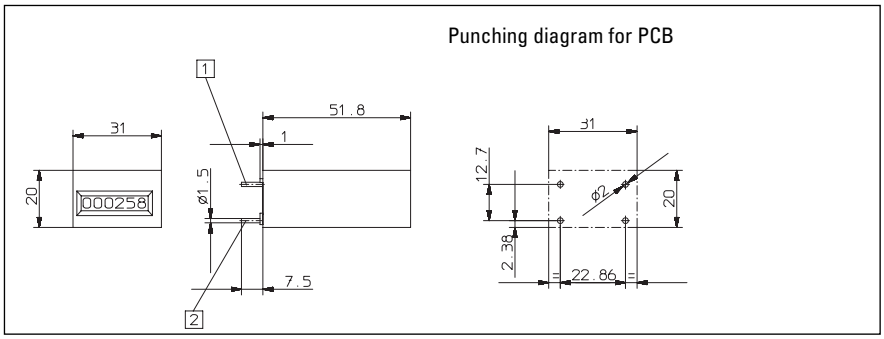




W 16.90 (6 digit)	12 V Art.-No.	24 V Art.-No.	115 V	230 V
DC (8 Imp/s)	1.160.701.049	1.160.701.050	–	–
DC (10 Imp/s)	1.160.701.012	1.160.701.013	–	–
AC (10 IMP/s)	–	–	1.160.900.054	1.160.900.056

W 17.90 (7 digit)	12 V Art.-No.	24 V Art.-No.	115 V	230 V
DC (8 Imp/s)	1.740.701.049	1.740.701.050		
DC (10 Imp/s)	1.740.701.012	1.740.701.013		
AC (10 IMP/s)			1.740.900.054	1.740.900.056

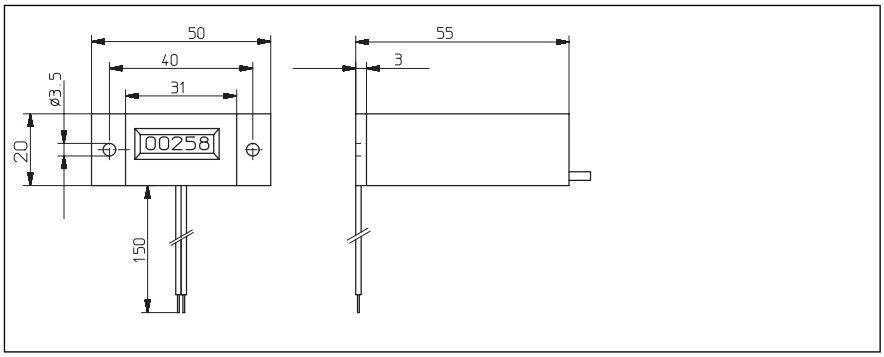
Type W 16.80/W 17.80



1 potential free pins 2 Coil connections

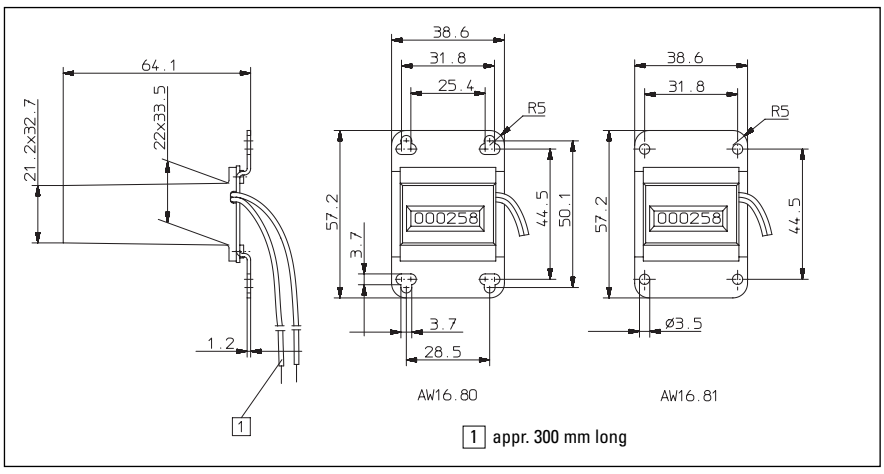
W 16.80 (6 digit)	12 V Art.-No.	24 V Art.-No.	115 V Art.-No.	230 V Art.-No.
DC (8 Imp/s)	1.160.800.049	1.160.800.050		
DC (10 Imp/s)	1.160.800.012	1.160.800.013		
AC (10 Imp/s)		1.160.800.051	1.160.800.054	1.160.800.056
W 17.80 (7 digit)	12 V Art.-No.	24 V Art.-No.	115 V Art.-No.	230 V Art.-No.
DC (10 Imp/s)	1.740.800.012	1.740.800.013		
AC (10 Imp/s)		1.740.800.051	1.740.800.054	1.740.800.056

Type AW 16.00



AW 16.00 (6 digit)	12 V Art.-No.	24 V Art.-No.	115 V Art.-No.	230 V Art.-No.
DC (8 Imp/s)	1.162.001.049	1.162.001.050		
DC (10 Imp/s)	1.162.001.012	1.162.001.013		
AC (10 Imp/s)		1.162.001.051	1.162.001.054	1.162.001.056

Type AW 16.80 and AW 16.81



1 appr. 300 mm long

Type	Imp/s	12 V DC Art.-No.	24 V DC Art.-No.
AW 16.80	10	1.162.800.012	1.162.800.013
AW 16.81	10	1.162.810.012	1.162.810.013

Totalizer BK 14 and BK 16 with and without reset

- BK 14, 4 digit Totalizer with manual reset
  BK 16, 6 digit Totalizer without reset
- very high operating life (200 Mio. pulses)

Applications

general counting, time,-performance and rate measuring

Technical data:

Electrical Connection:	silver plated round pins ø 1.5 mm with push on connectors
Rated voltage:	type 0/1/a: 12/24/48/115/230 V DC ±10 % 24/48/115/230 V AC ± 10 %
Colour of counter:	grey
Hight of figures	appr. 2 x 4 mm
Colour of figures:	white on black
Shaft:	stainless steel
Mounting position	any
Operating life:	appr. 200 x 10^6 pulses
Weight :	without reset 66 g with reset 70 g

Test voltage:	2000 V ~ effective, according to VDE 0435	
Shock resistance:	3 g at	10 Hz
	6 g at	15 Hz
	10 g	20 ... 300 Hz

Options:

– Key-Locking zero-reset special key (Order code. " vs", e.g.. BK 14.11 vs)
– Housing Colour black
– higher counting speed
– also with flying leads

Series:

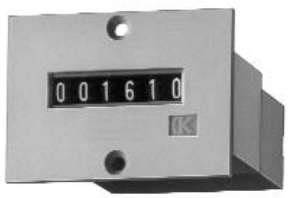
6 digit without reset	4 digit with	Description
BK 16.10	BK 14.11	flush mount with 2 mounting holes
BK 16.20	BK 14.21	flush mount with spring clip

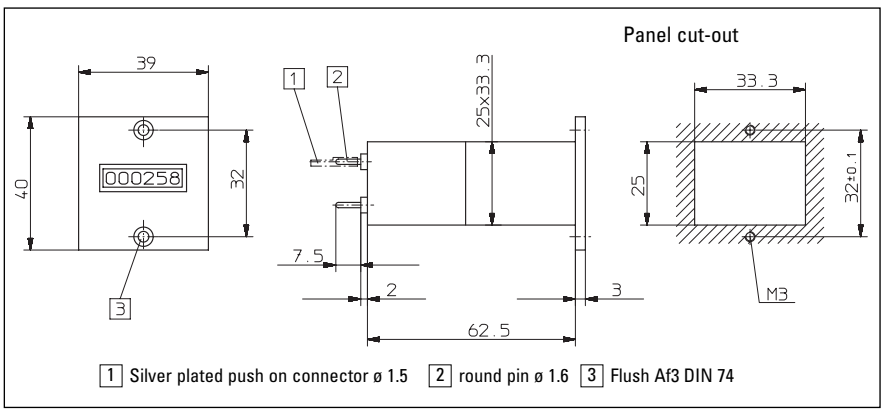
Ordering information
– Article number
– At different voltages, please give type, voltage, kind of voltage and series e.g. BK 14.21, 12 V AC, type a.

Counting mechanism:

Voltage	Model-	Max. Pulse-freq.	Min.-Pulse on time	Min. Pulse-interval	Pulse-ratio	On-time	Power consumption	Max. ripple voltage	Ambient-temperature ° C
V DC	0	10/sec	60 ms	40 ms	3:2	100 %	appr. 1 W	48 %	–10 ...
	1	25/sec	24 ms	16 ms	3:2	100 %	appr. 2 W	48 %	+ 60
V AC	a	18/sec	22.2 ms	33,3 ms	2:3	100%	appr. 2.9 VA		–10 ... + 55

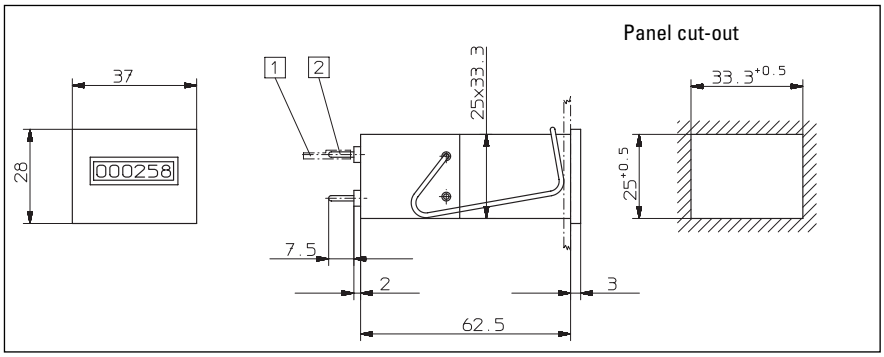
Type BK 16.10





BK 16.10	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.190.100.012	1.190.100.013		
DC (25 Imp/s)	1.190.100.032	1.190.100.033		
AC (18 Imp/s)		1.190.100.061	1.190.100.064	1.190.100.066

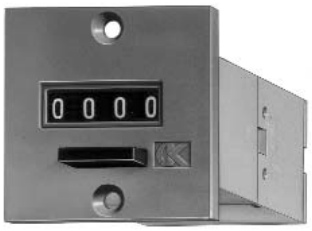
Type BK 16.20

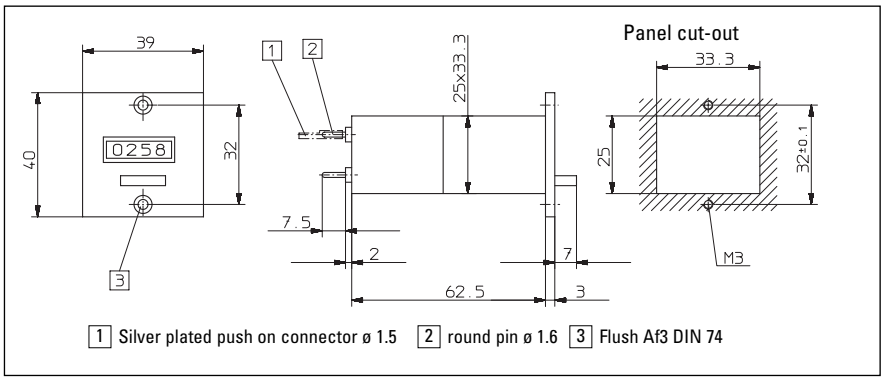


1 Silver plated push on connector ø 1.5
2 round pin ø 1.5 silver

BK 16.20	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.190.200.012	1.190.200.013		
DC (25 Imp/s)	1.190.200.032	1.190.200.033		
AC (18 Imp/s)		1.190.200.061	1.190.200.064	1.190.200.066

Type BK 14.11

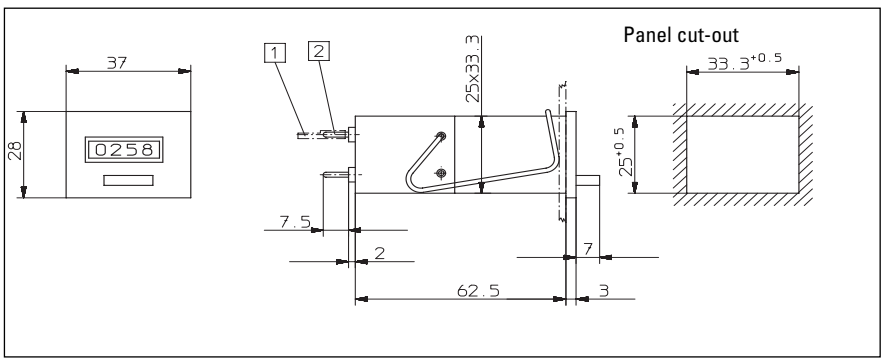




1 Silver plated push on connector ø 1.5 2 round pin ø 1.6 3 Flush Af3 DIN 74

BK 14.11	12 V	24 V	115 V	230 V
(4 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.180.110.012	1.180.110.013		
DC (25 Imp/s)	1.180.110.032	1.180.110.033		
AC (18 Imp/s)		1.180.110.061	1.180.110.064	1.180.110.066

Type BK 14.21



BK 14.21	12 V	24 V	115 V	230 V
(4 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.180.210.012	1.180.210.013		
DC (25 Imp/s)	1.180.210.032	1.180.210.033		
AC (18 Imp/s)		1.180.210.061	1.180.210.064	1.180.210.066

Totalizer B 15 - B 18 with and without reset

- B 15..1 and B 16..1, 5 resp. 6 digit Totalizer with manual Reset
- B 15..0, B 16..0 and B 18..0, 5, 6 and 8 digit Totalizer without reset
- Counters without front panel fit into front frames F1B and F2B. The latter can accommodate combination of count with dimensions of 50 x 50 mm
- Combined with preset counter of Type series BVa and HVa.
- very high operating life (200 Mio. pulses)

Applications

counting number of pieces, events, periods

Technical data:

Electrical Connection:	Pin ø 1.6 mm with push on connector (count mechanism) for flying leads 0,5 ... 1,0 mm^2 Flat pin 0.8 x 2.8 mm (socket box)	
Rated voltage:	type 0/1/a: 12/24/48/115/230 V DC ±10 % 24/48/115/230 V AC ± 10 %	
Colour of counter:	grey	
Hight of figures	B 15	2.4 x 4.5 mm
	B 16	2 x 4.5 mm
	B 18	2 x 4 mm
Colour of figures:	white on black	
Shaft:	stainless steel	
Mounting position	any	
Operating life:	appr. 200 x 10^6 pulses	
Wight:	without reset	81 g
	with reset	83 g
	socket box	14 g
Test voltage:	2000 V ~ effective, according to VDE 0435	
Accessories:		
Transparent cover:	Protection IP 55 according to DIN 400050 from front side when cover is closed. Gasket: oil and gasoline resistant synthetic rubber especially suitable for acids and electrolytes, good resistance to ageing	

Options:
– Colour of housing: black (For Art.-No. ref. to type)
– Electr. Connection at counter: flat pins 0.8 x 2.8 mm with push on connectors Art.-No. 1.2X7.XXX.XXX Screw terminal 1.2.XXX.XXX.023
– Connection with flying leads
– Extended temperature range
– Key looking zero reset
– Knob locking tranparent cover a.) Counter with front bezel size No. 3 Art.-No. 1.2X0.**7**XX.XXX b.) Counter with front frame F 1 Art.-No. 1.2X1.**7**XX.XXX
– knob locking with tranparent cover a.) Counter with front bezel size No. 3 Art.-No. 1.2X0.**8**XX.XXX.XXX
– Flexible sealing cover K 1 (IP 54) a.) Counter with front bezel size No. 3 Art.-No. 1.2X0.**6**XX.XXX
Key for reset: G50 265

Series:

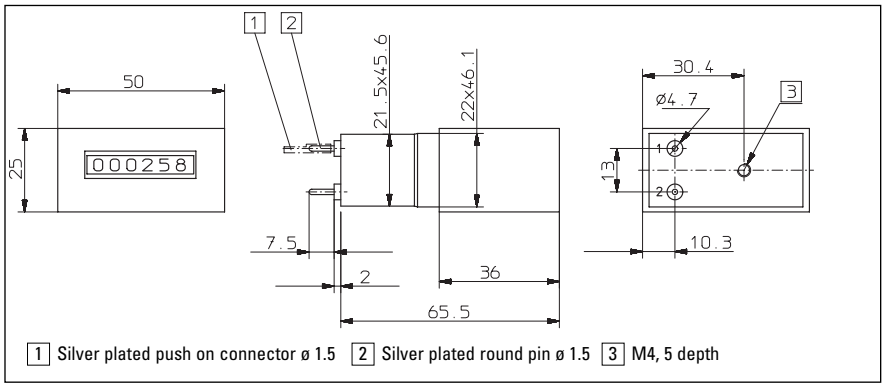
without reset		with reset		Description
6 digit	8 digit	5 digit	6 digit	
16.00	B 18.00	–	B 16.01	without front bezel, rear mounting plugs into socket box 945.2
B16.10	B 18.10	B 15.11	B 16.11	panel mount front bezel size No. 1, 2 mounting holes
B 16.20	B 18.20	B 15.21	B 16.21	panel mount with spring clip fastening
B 16.30	B 18.30	–	B 16.31	panel mount front bezel size No. 3, 2 mounting holes
F1 B 16.00	F1 B 18.00	–	F1 B 16.01	panel mount, plugs into frame F1 with socket box 945.2
			Dv B 16.31	panel mount front bezel size No. 3, knob locking transparent cover
			F1 Dv B 16.01	panel mount front frame F1, knob locking transparent cover
			Dvs B 16.31	panel mount, front bezel size No. 3, key looking transparent cover
			F1 Dvs B 16.01	panel mount front frame F1, key looking tranparent cover
			K1 B 16.31	panel mount, front bezel size No. 3, flexible sealing cover K1

Count mechanism:

Voltage	Mo-del	Max. Pulse-freq.	Min. Pulse-on time	Min.-Pulse-interval	Pulse ratio	On time	Power con-sumption	Max. perm ripple voltage	Ambient-temperature ° C
V DC	0	10/sec	60 ms	40 ms	3:2	100 %	appr. 1 W	48 %	–10
	1	25/sec	24 ms	16 ms	3:2	100 %	appr. 2 W	48 %	+ 60
V AC	a	18/sec	22.2 ms	33.3 ms	2:3	100%	appr. 2.9 VA		–10 ... + 55

Ordering information
– Article number
– For special voltages, please give type, voltage, kind of voltage and series e.g. B 16.31, 4.5 V DC, 0.

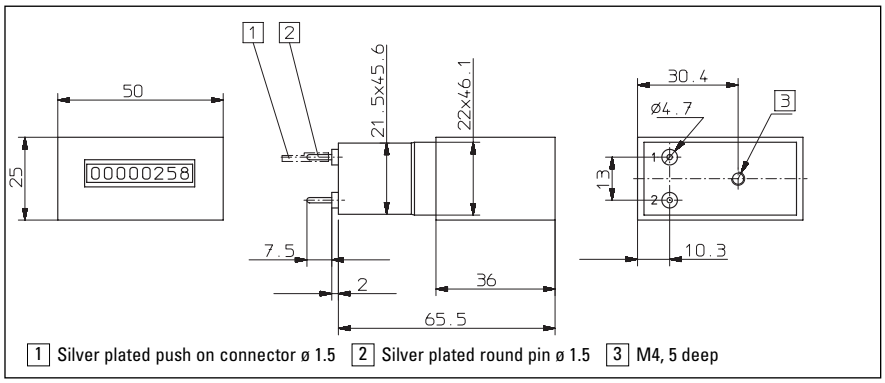
Type B 16.00



B 16.00	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.230.002.012	1.230.002.013		
DC (25 Imp/s)	1.230.002.032	1.230.002.033		
AC (18 Imp/s)		1.230.002.061	1.230.002.064	1.230.002.066

Colour of housing black:
Art.-No. 1.230.001.XXX

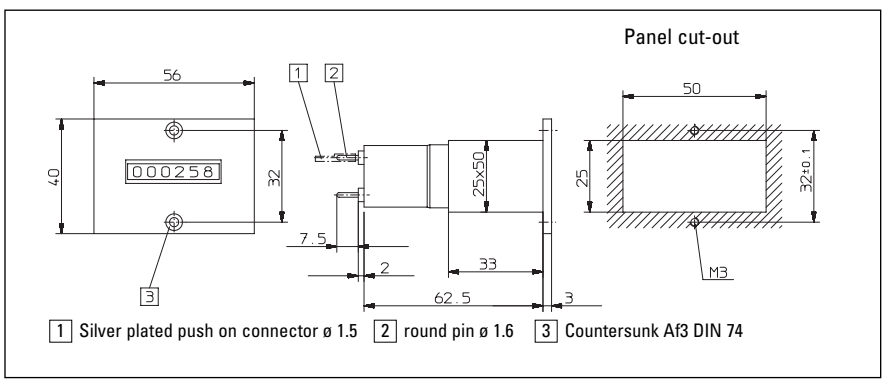
Type B 18.00



B 18.00	12 V	24 V	115 V	230 V
(8 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.260.002.012	1.260.002.013		
DC (25 Imp/s)	1.260.002.032	1.260.002.033		
AC (18 Imp/s)		1.260.002.061	1.260.002.064	1.260.002.066

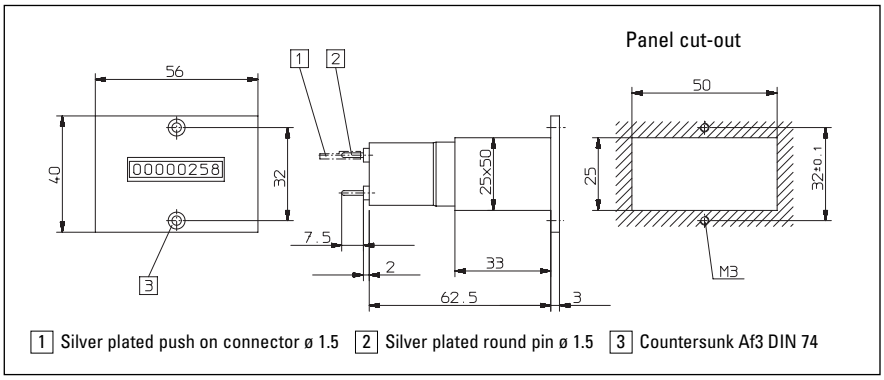
Colour of housing black:
Art.-No. 1.260.001.XXX

Type B 16.10



B 16.10	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.230.100.012	1.230.100.013		
DC (25 Imp/s)	1.230.100.032	1.230.100.033		
AC (18 Imp/s)		1.230.100.061	1.230.100.064	1.230.100.066

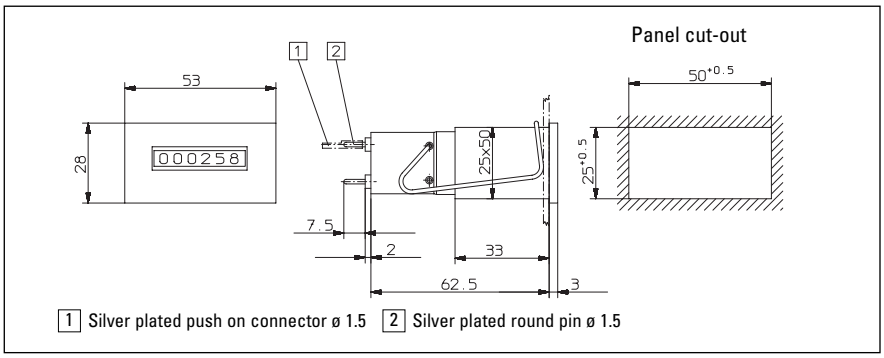
Type B 18.10



B 18.10	12 V	24 V	115 V	230 V
(8 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.260.100.012	1.260.100.013		
DC (25 Imp/s)	1.260.100.032	1.260.100.033		
AC (18 Imp/s)		1.260.100.061	1.260.100.064	1.260.100.066

Colour of housing black:
Art.-No. 1.260.101.XXX

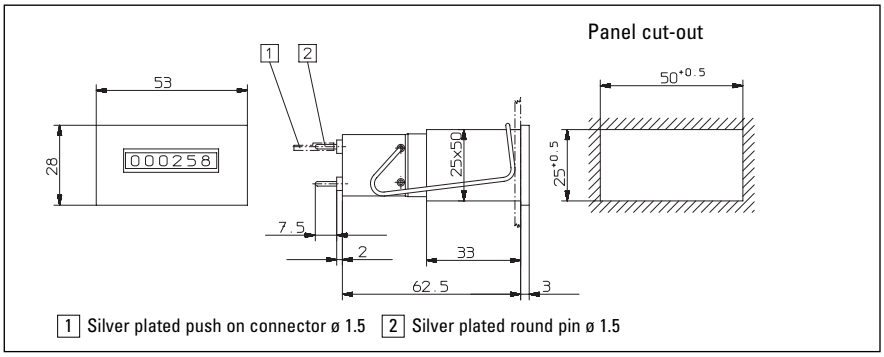
Type B 16.20



B 16.20	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.230.200.012	1.230.200.013		
DC (25 Imp/s)	1.230.200.032	1.230.200.033		
AC (18 Imp/s)		1.230.200.061	1.230.200.064	1.230.200.066

Colour of housing black:
Art.-No. 1.230.201.XXX

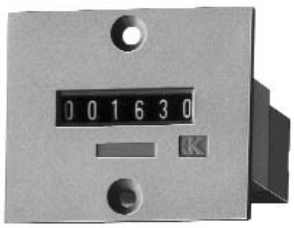
Type B 18.20

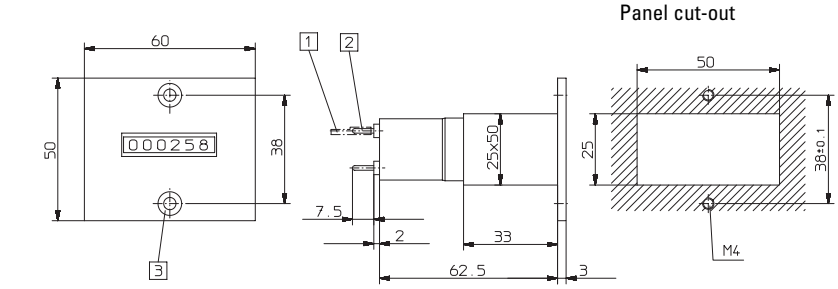


B 18.20	12 V	24 V	115 V	230 V
(8 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.260.200.012	1.260.200.013		
DC (25 Imp/s)	1.260.200.032	1.260.200.033		
AC (18 Imp/s)		1.260.200.061	1.260.200.064	1.260.200.066

Colour of housing black:
Art.-No. 1.260.201.XXX

Type B 16.30



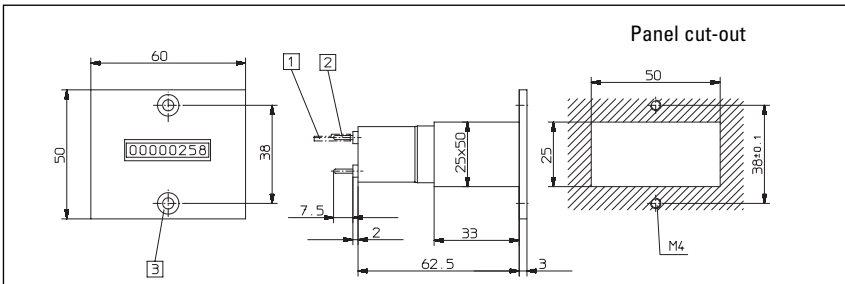


1 Silver plated push on connector ø 1.5 2 Silver plated round pin ø 1.5 3 Countersunk Am 4 DIN 74

B 16.30	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.230.300.012	1.230.300.013		
DC (25 Imp/s)	1.230.300.032	1.230.300.033		
AC (18 Imp/s)		1.230.300.061	1.230.300.064	1.230.300.066

Colour of housing black:
Art.-No. 1.230.301.XXX

Type B 18.30

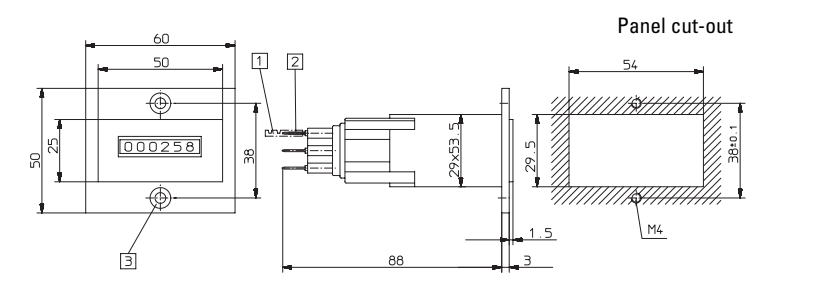


1 Silver plated push on connector ø 1.5 2 Silver plated round pin ø 1.5 3 Countersunk Am 4 DIN 74

B 18.30	12 V	24 V	115 V	230 V
(8 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.260.300.012	1.260.300.013		
DC (25 Imp/s)	1.260.300.032	1.260.300.033		
AC (18 Imp/s)		1.260.300.061	1.260.300.064	1.260.300.066

Colour of housing black:
Art.-No. 1.260.301.XXX

Type F1 B 16.00

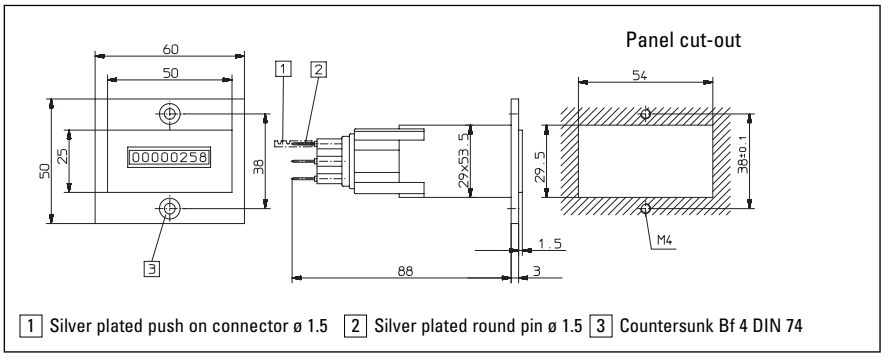


1 Silver plated push on connector ø 1.5 2 Silver plated round pin ø 1.5 3 Countersunk Bf 4 DIN 74

F1 B 16.00	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.231.502.012	1.231.502.013		
DC (25 Imp/s)	1.231.502.032	1.231.502.033		
AC (18 Imp/s)		1.231.502.061	1.231.502.064	1.231.502.066

Colour of housing black:
Art.-No. 1.231.501.XXX

Type F1 B 18.00

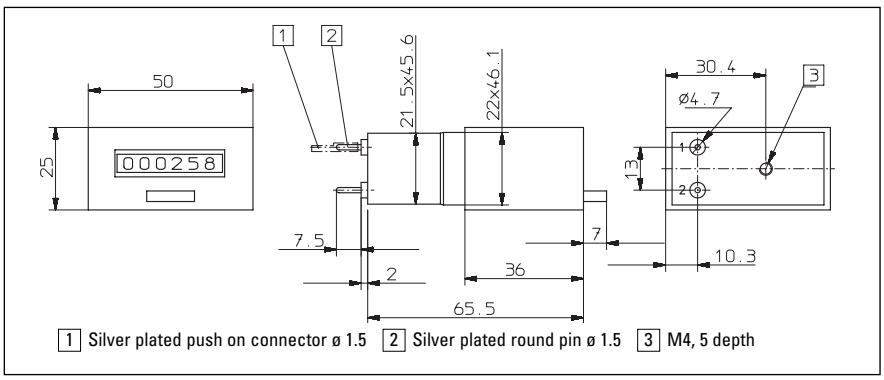


1 Silver plated push on connector ø 1.5 2 Silver plated round pin ø 1.5 3 Countersunk Bf 4 DIN 74

F1 B 18.00	12 V	24 V	115 V	230 V
(8 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.261.502.012	1.261.502.013		
DC (25 Imp/s)	1.261.502.032	1.261.502.033		
AC (18 Imp/s)		1.261.502.061	1.261.502.064	1.261.502.066

Colour of housing black:
Art.-No. 1.261.501.XXX

Type B 16.01

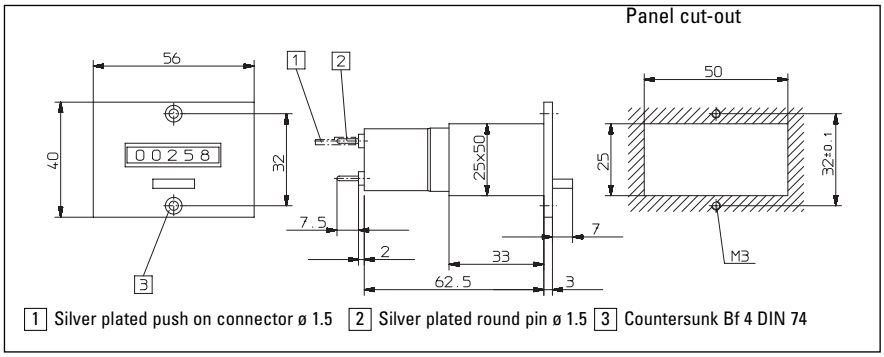


1 Silver plated push on connector ø 1.5 2 Silver plated round pin ø 1.5 3 M4, 5 depth

B 16.01	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.230.012.012	1.230.012.013		
DC (25 Imp/s)	1.230.012.032	1.230.012.033		
AC (18 Imp/s)		1.230.012.061	1.230.012.064	1.230.012.066

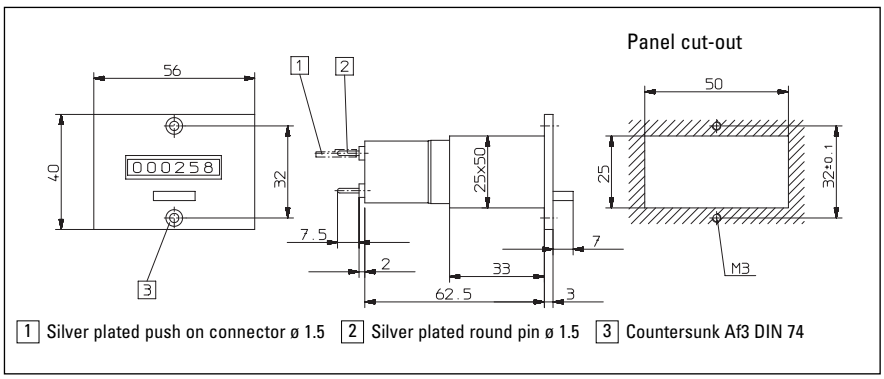
Colour of housing black:
Art.-No. 1.230.011.XXX

Type B 15.11



B 15.11	12 V	24 V	115 V	230 V
(5 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.200.110.012	1.200.110.013		
DC (25 Imp/s)	1.200.110.032	1.200.110.033		
AC (18 Imp/s)		1.200.110.061	1.200.110.064	1.200.110.066

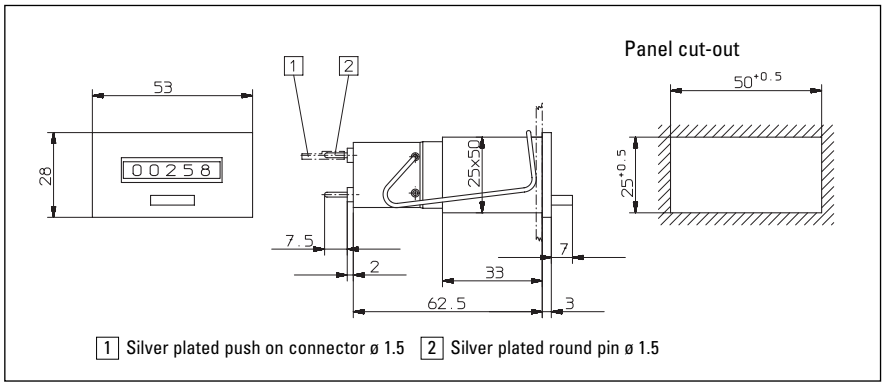
Type B 16.11



B 16.11	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.230.110.012	1.230.110.013		
DC (25 Imp/s)	1.230.110.032	1.230.110.033		
AC (18 Imp/s)		1.230.110.061	1.230.110.064	1.230.110.066

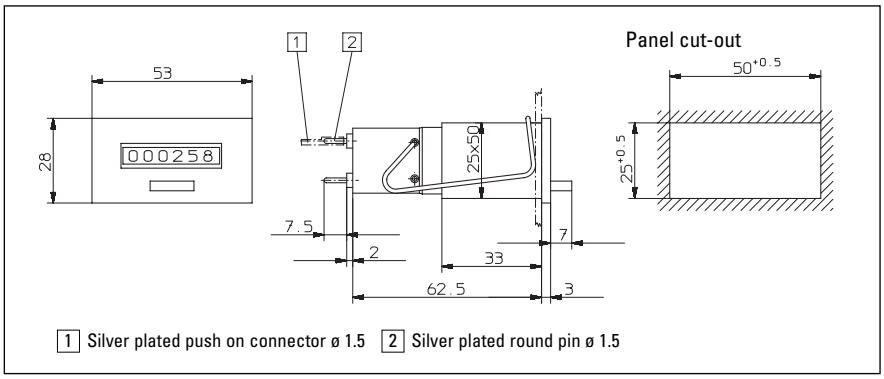
Colour of housing black:
Art.-No. 1.230.111.XXX

Type B 15.21



B 15.21	12 V	24 V	115 V	230 V
(5 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.200.210.012	1.200.210.013		
DC (25 Imp/s)	1.200.210.032	1.200.210.033		
AC (18 Imp/s)		1.200.210.061	1.200.210.064	1.200.210.066

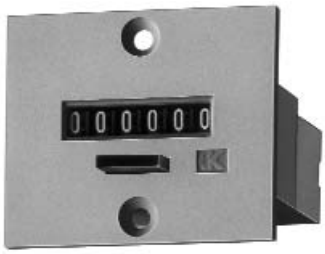
Type B 16.21

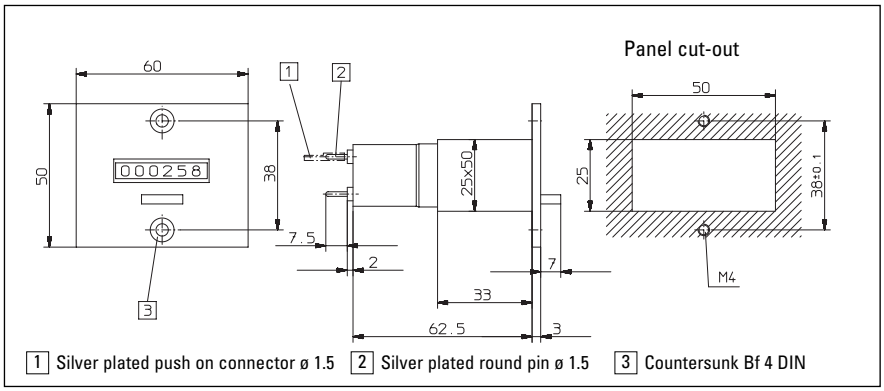


B 16.21	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.230.210.012	1.230.210.013		
DC (25 Imp/s)	1.230.210.032	1.230.210.033		
AC (18 Imp/s)		1.230.210.061	1.230.210.064	1.230.210.066

Colour of housing black:
Art.-No. 1.230.211.XXX

Type B 16.31

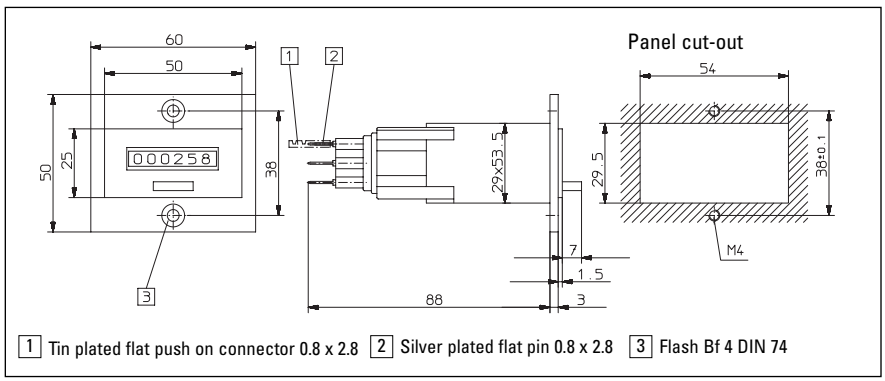




B 16.31 (6 digit)	12 V Art.-No.	24 V Art.-No.	115 V Art.-No.	230 V Art.-No.
DC (10 Imp/s)	1.230.310.012	1.230.310.013		
DC (25 Imp/s)	1.230.310.032	1.230.310.033		
AC (18 Imp/s)		1.230.310.061	1.230.310.064	1.230.310.066

Colour of housing black:
Art.-No. 1.230.311.XXX

Type F1 B 16.01



F1 B 16.01 (6 digit)	12 V Art.-No.	24 V Art.-No.	115 V Art.-No.	230 V Art.-No.
DC (10 Imp/s)	1.231.512.012	1.231.512.013		
DC (25 Imp/s)	1.231.512.032	1.231.512.033		
AC (18 Imp/s)		1.231.512.061	1.231.512.064	1.231.512.066

Colour of housing black:
Art.-No. 1.231.511.XXX

B 15.21 vs

DvS B 16.31

Dv B 16.31

K1B 15.31

945.2

Totalizer MK 14 - MK 18 without zero reset

- 6 or 8 digit Totalizer without zero reset
- 4 or 6 digit Totalizer with manual, electrical or manual and electrical reset
- Integrated electrical 0-reset fitted at MK 16
- MK 14: electrical 0-reset to the rear side of counter

Applications

Registering of pieces, units, events, periods of time

Technical data:

Count mechanism:			
Electrical Connection:	Flat pin 0.8 x 2.8 mm with tab receptacles		
Rated voltage:	12/24/48/60/115/230 V DC ±10 % 24/48/60/115/230 V AC ± 10 %		
Hight of figures	4 mm		
Housing:	Makrolon,colour grey, similar to RAL 7001		
Colour of figures:	white on black		
Shaft:	stainless steel		
Mounting position	any		
Operating life:	appr. 200 x 10^6 pulses		
Weights:	Zero reset		
	manual		electrical
	MK 14 85 g		145 g
	MK 16 100 g		140 g
Test voltage:	2000 V - effective		
Acceleration influence:	3 g up to	10 Hz	
	6 g up to	15 Hz	independent of
	10 g	20 - 300 Hz	position

Reset magnet:			
Power consumption:	appr.	9 W	at DC
	appr.	12 VA	at AC
Rated voltage:	12/24/48/60/115/230 V DC ± 10 % 24/48/60/115/230 V AC ± 10 %		
Permissible residual ripple:	max. 48 %		
Min pulse time:	0.25 sec, during 0.3 sec no count pulse is allowed.		
Cycle duration factor:	15 %, max. 1,0 min at MK 16 10 %, max. 40 sec at MK 14		
Options:			
	– Extended temperature range		

Type Series:

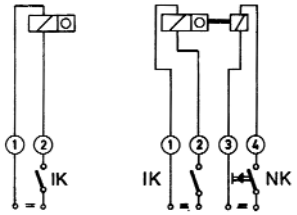
zero reset without		zero reset manual		zero reset man. + electr.		Description
6 digit	8 digit	4 digit	6 digit	4 digit	6 digit	
–	MK 18.10	MK 14.11	MK 16.11	–	–	panel mount 2 screw holes
MK 16.20	MK 18.20	MK 14.21	MK 16.21	–	MK 16.23	panel mount with spring clip

Count mechanism

voltage	Model	max. Pulse-freq.	Min.-Pulse on time	Min.-Pulse-intverval	Pulse ratio	On time	Power consumption	Max. perm ripple voltage	Ambient.-temperature ° C
V DC	0	10/sec	64 ms	40 ms	3:2	100 %	appr. 1 W	48 %	- 10
	1	25/sec	24 ms	16 ms	3:2	100 %	appr. 2 W	48 %	+ 45
V AC	a	18/sec	22.2 ms	33,3 ms	2:3	100%	appr. 2,9 VA	-	- 10 ... + 45

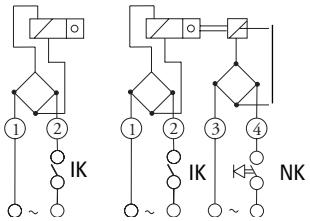
Ordering information
– Article number
– For special voltages, please give type, voltage, kind of voltage and series e.g. MK 16.21, 48 V AC, type a.

Connection diagram: (type: 0 u.1, DC)



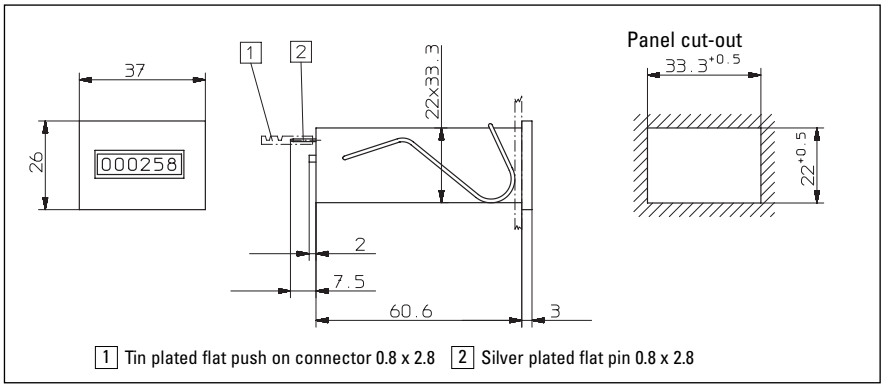
IK = Pulse contact NK = 0 contact

(type: a, AC)



IK = Pulse contact NK = 0 contact

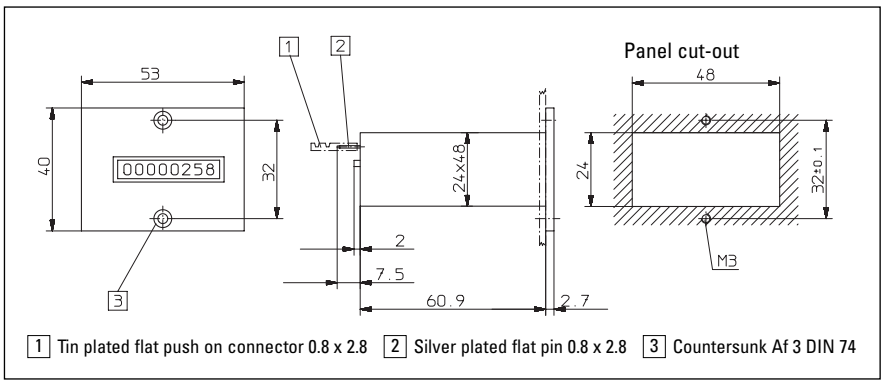
Type MK 16.20



MK 16.20	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.330.200.012	1.330.200.013		
DC (25 Imp/s)	1.330.200.032	1.330.200.033		
AC (18 Imp/s)		1.330.200.061	1.330.200.064	1.330.200.066

Colour of housing black:
Art.-No. 1.330.201.XXX

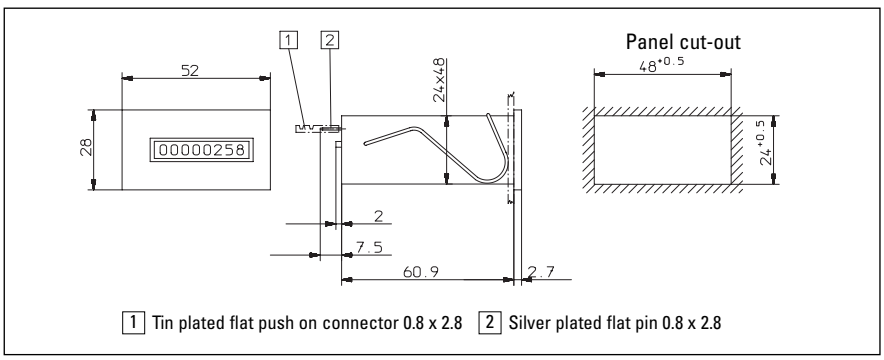
Type MK 18.10



MK 18.10	12 V	24 V	115 V	230 V
(8 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.360.100.012	1.360.100.013		
DC (25 Imp/s)	1.360.100.032	1.360.100.033		
AC (18 Imp/s)		1.360.100.061	1.360.100.064	1.360.100.066

Colour of housing black:
Art.-No. 1.360.101.XXX

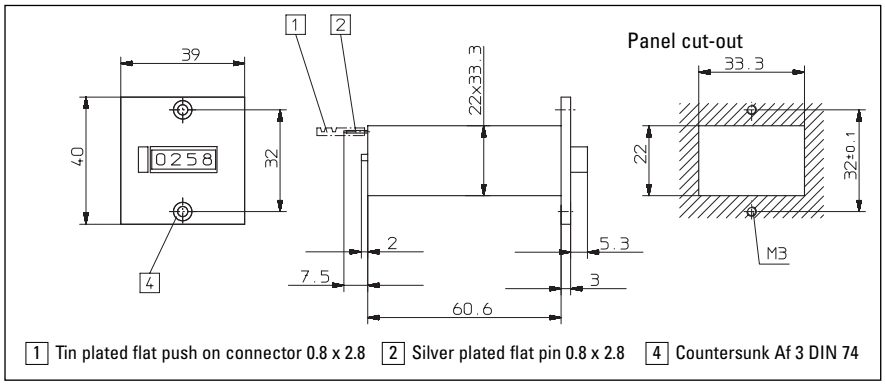
Type MK 18.20



MK 18.20	12 V	24 V	115 V	230 V
(8 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.360.200.012	1.360.200.013		
DC (25 Imp/s)	1.360.200.032	1.360.200.033		
AC (18 Imp/s)		1.360.200.061	1.360.200.064	1.360.200.066

Colour of housing black:
Art.-No. 1.360.201.XXX

Type MK 14.11

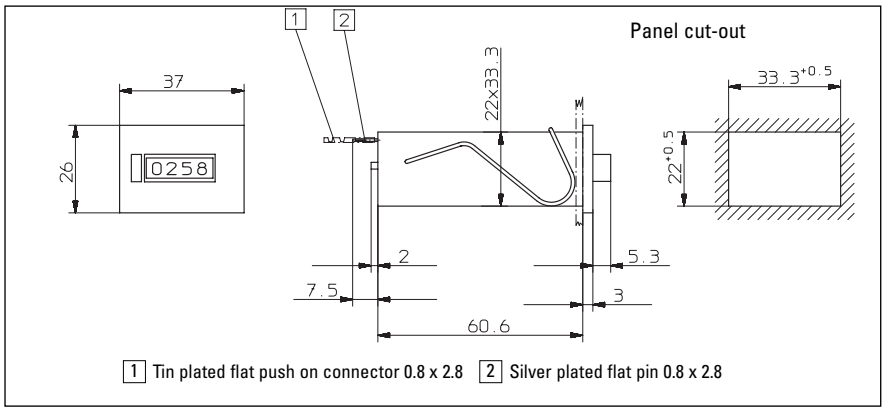


manual 0 reset

MK 14.11	12 V	24 V	115 V	230 V
(4 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.310.110.012	1.310.110.013		
DC (25 Imp/s)	1.310.110.032	1.310.110.033		
AC (18 Imp/s)		1.310.110.061	1.310.110.064	1.310.110.066

Colour of housing black:
Art.-No. 1.310.11**1**.XXX

Type MK 14.21

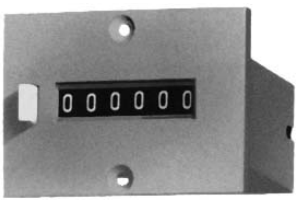


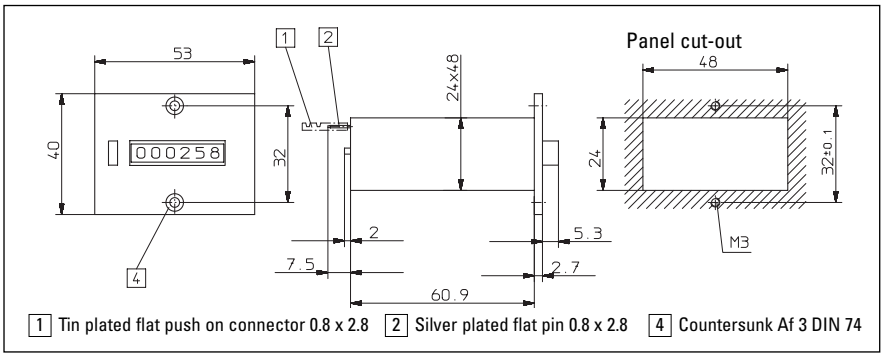
manual 0 reset

MK 14.21	12 V	24 V	115 V	230 V
(4 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.310.210.012	1.310.210.013		
DC (25 Imp/s)	1.310.210.032	1.310.210.033		
AC (18 Imp/s)		1.310.210.061	1.310.210.064	1.310.210.066

Colour of housing black:
Art.-No. 1.310.21**1**.XXX

Type MK 16.11



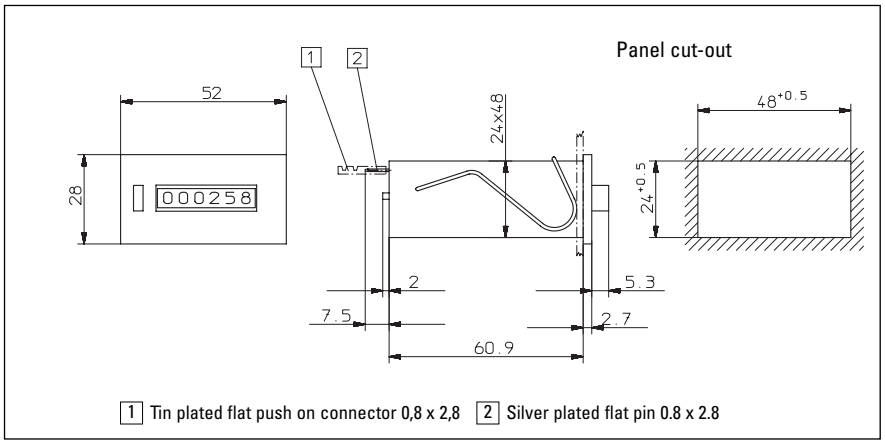


manual 0 reset

MK 16.11	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.340.110.012	1.340.110.013		
DC (25 Imp/s)	1.340.110.032	1.340.110.033		
AC (18 Imp/s)		1.340.110.061	1.340.110.064	1.340.110.066

Colour of housing black:
Art.-No. 1.340.11**1**.XXX

Type MK 16.21

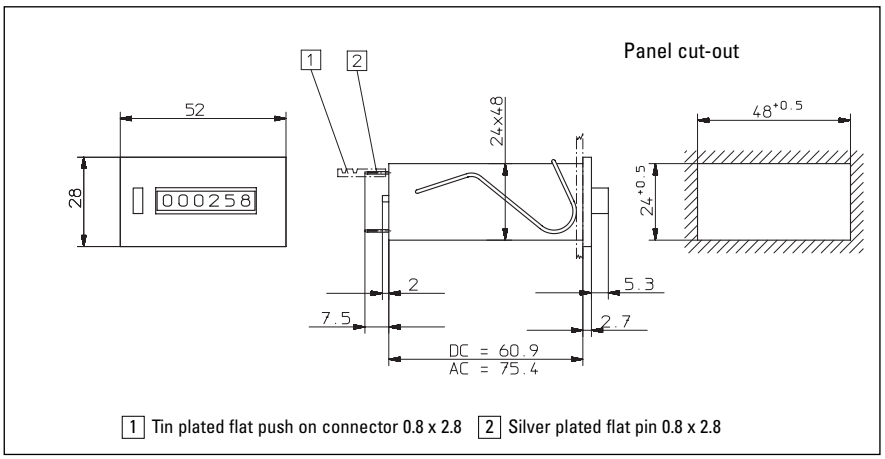


manual 0 reset

MK 16.21	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.340.210.012	1.340.210.013		
DC (25 Imp/s)	1.340.210.032	1.340.210.033		
AC (18 Imp/s)		1.340.210.061	1.340.210.064	1.340.210.066

Colour of housing black:
Art.-No. 1.340.211.XXX

Type MK 16.23



manual and electrical 0 reset

MK 16.23	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (10 Imp/s)	1.340.230.012	1.340.230.013		
DC (25 Imp/s)	1.340.230.032	1.340.230.033		
AC (18 Imp/s)		1.340.230.061	1.340.230.064	1.340.230.066

Colour of housing black:
Art.-No. 1.340.231.XXX

Totalizer E 16 with manual and electrical zero reset

- 6 digit adding pulse counter with manual or manual and electrical zero reset
- The counters have plastic front plates and metal housing

Application
general event counting

Technical data:

Count mechanism:		
Electrical connection:	screw terminal	
Rated voltage:	12/**24**/48/60/115/230 V DC ±10 %	
	24/48/60/115/**230** V AC ± 10 %	
High of figures	4 mm	
Colour of front plate:	grey	
Colour of figure:	white on black	
Mounting position	any	
Operating life:	appr. 250 x 10^6 pulses	
Weihgts :	E 16.11	170g
	E 16.13	230 g
Test voltage:	2000 V ~ effective	
Acceleration influence:	3 g at	10 Hz
	6 g at	15 Hz independent of position
	10 g	20 ... 300 Hz

Zeroing magnet:			
Power consumption:	appr.	9.5 W	at DC
	appr.	13 VA	at AC
Rated voltage:	4/6/12/24/48/60/115/230 V DC ± 10 %		
	24/48/60/115/230 V AC ± 10 %		
Min pulse on time:	0.15 sec, during 0.2 sec no pulse count is allowed		
Options:			
	– count speed50 Imp/s at DC		
	– key locking reset		

Series:

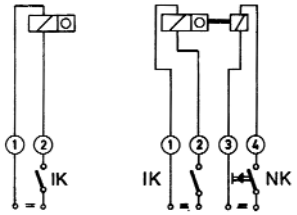
Zero reset manual	Zero reset manual and electrical	Description
E 16.11	E 16.13	panel mount with 2 fixing holes

Ordering information
– Article number
– For special voltages, please give type, voltage, kind of voltage and series e.g. . E 16.11, 48 V AC, type a.

Count mechanism:

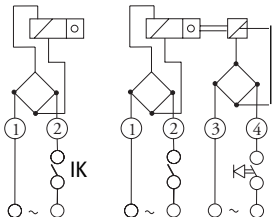
Voltage	Mo-del	Max. Pulse-freq.	Min.-Pulse-on time	Min.-Pulse-interval	Pulse ratio	On time	Power consump-tion	Max. perm ripple voltage	Ambient-temperature ° C
V DC	I	25/sec	24 ms	16 ms	3:2	100 %	appr. 2 W	48 %	–10 ...
V AC	a	18/sec	22.2 ms	33.3 ms	2:3	100%	appr. 3.2 VA		+ 45

Connection diagram: (type: 0 u.1, DC)



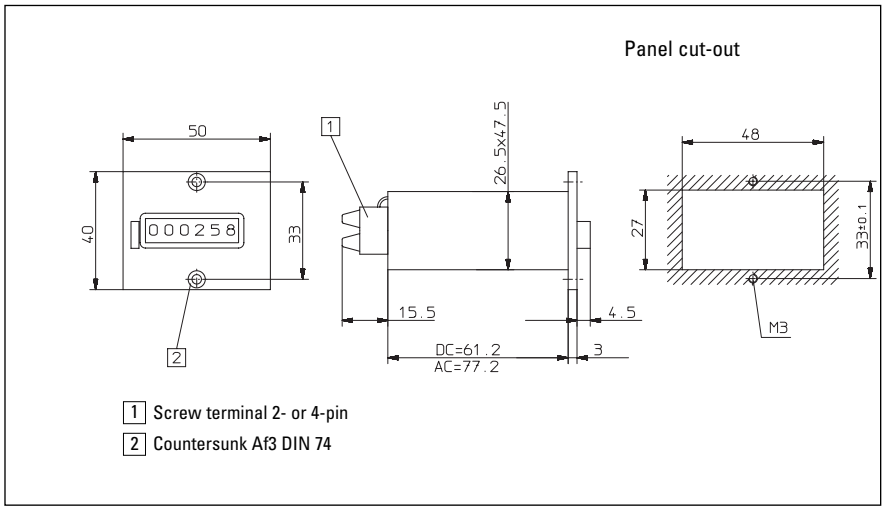
IK = Pulse contact NK = zero contact

(type: a, AC)



IK = Pulse contact NK = zero contact

Type E 16.11 and E 16.13



manual zero reset

E 16.11	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (25 Imp/s)	1.520.110.032	1.520.110.033		
AC (18 Imp/s)		1.520.110.061	1.520.110.064	1.520.110.066

manual and electrical zero reset

E 16.13	12 V	24 V	115 V	230 V
(6 digit)	Art.-No.	Art.-No.	Art.-No.	Art.-No.
DC (25 Imp/s)	1.520.130.032	1.520.130.033		
AC (18 Imp/s)		1.520.130.061	1.520.130.064	1.520.130.066

Pneumatic Pulse counter PMK 14 - PMK 18

- Low cost pneumatic totalizer
- PMK 14 and PMK 16 with manual zero reset
- PMK 18 without zero reset
- Counting is effected through a piston driven armature system
- no leckage

Applications

Use pneumatically operated instruments and equipements. in Ex hazardous areas

Technical data:

Pneumatic connections with M 5 inner thread, 4 mm depth		
Air purity:	Oil free or oil containing, the filter required must eliminate impurities ≥ 40 µm.	
Mounting position	any	
L signal:	1.5 ... 8 bar ± 15 %	
O signal:	≤ 0.15 bar	
Max. safe pressure:	9 bar (statical)	
Max. pulse frequency:	17 Hz at 1.5 bar 5 Hz at 8 bar depends on tube length	
Pulse ratio:	1:1 at max. Pulse frequency	
Hose length: (transmitter - counter)	at 50 Hz at 25 Hz at 10 Hz	0,3 m 0,4 m 0,5 m
Height of figures:	4 mm	
Colour of figures:	white on black	

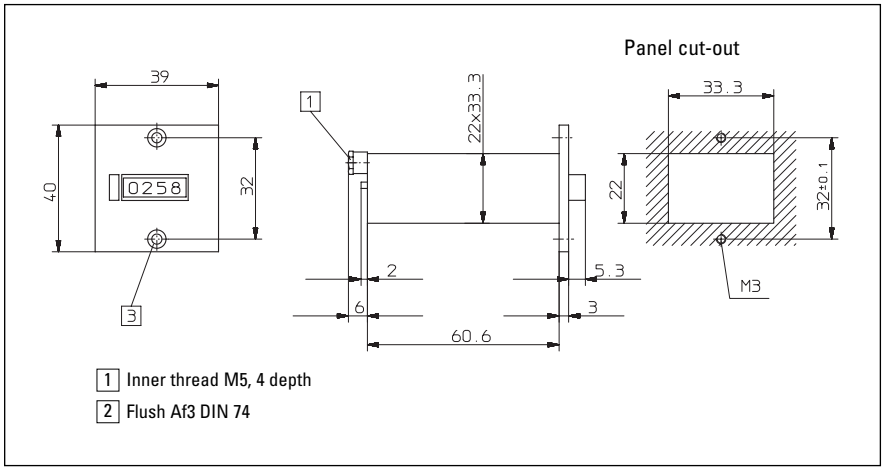
Counting:	
Connection volume:	0.19 m³
Options:	
	– Colour of housing: black (Art.-No. see type)
	– Connector for polyamide hose Ø 4 x Ø 6 mm
	– Quick connection for tube outside diameter ø 4 mm: QSM-M5-4 M140 620

Series:

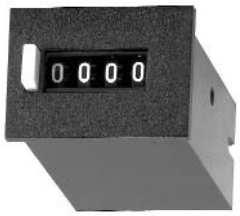
4 digit with 0 reset	6 digit with 0 reset	8 digit without reset	Description
PMK 14.11	PMK 16.11	PMK 18.10	Panel mount 2 screw holes
PMK 14.21	PMK 16.21	PMK 18.20	Panel mount spring clip

Type PMK 14.11

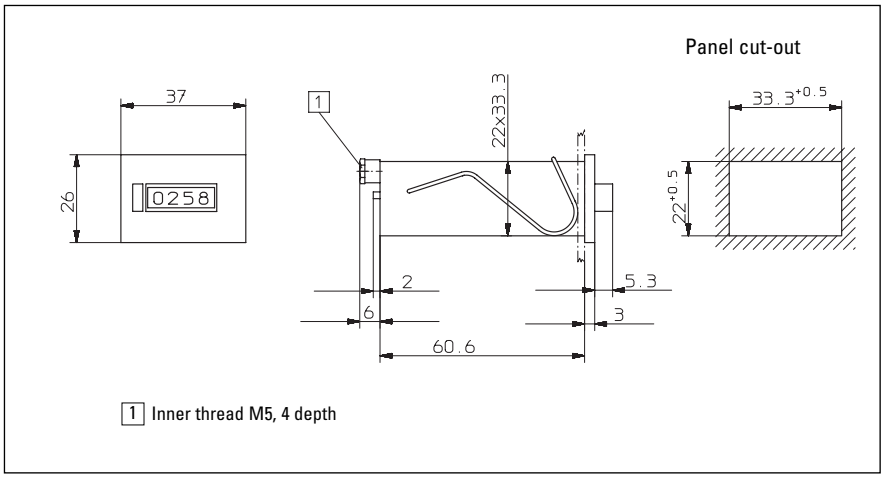
PMK 14.11, grey:	Art.-No. 3.802.110
PMK 14.11, black:	Art.-No. 3.802.111



Type PMK 14.21

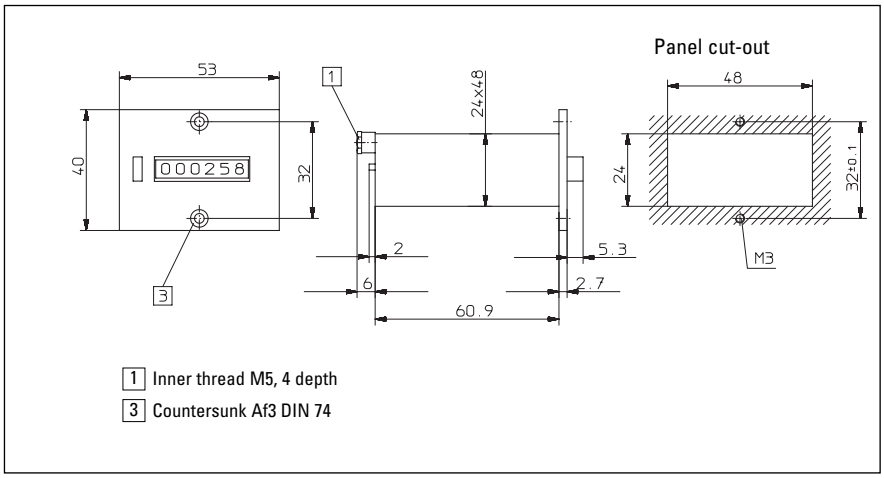


PMK 14.21, grey:	Art.-No. 3.802.210
PMK 14.21, black:	Art.-No. 3.802.211



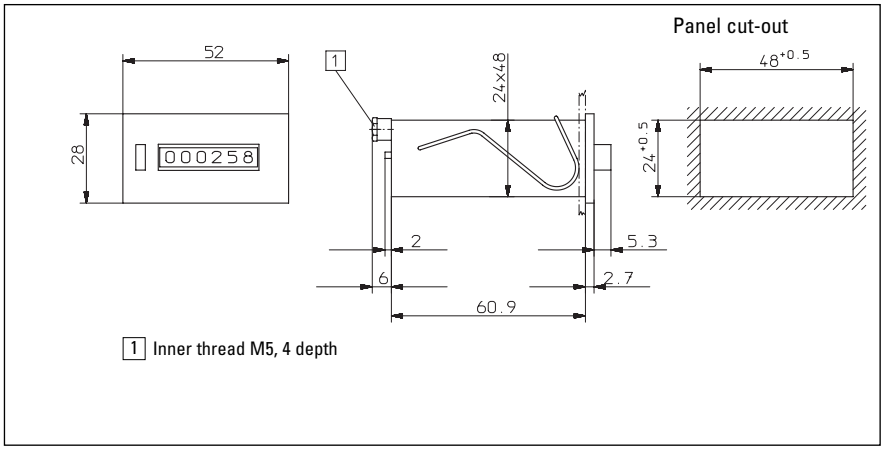
Type PMK 16.11

PMK 16.11, grey:	Art.-No. 3.804.110
PMK 16.11, black	Art.-No. 3.804.111



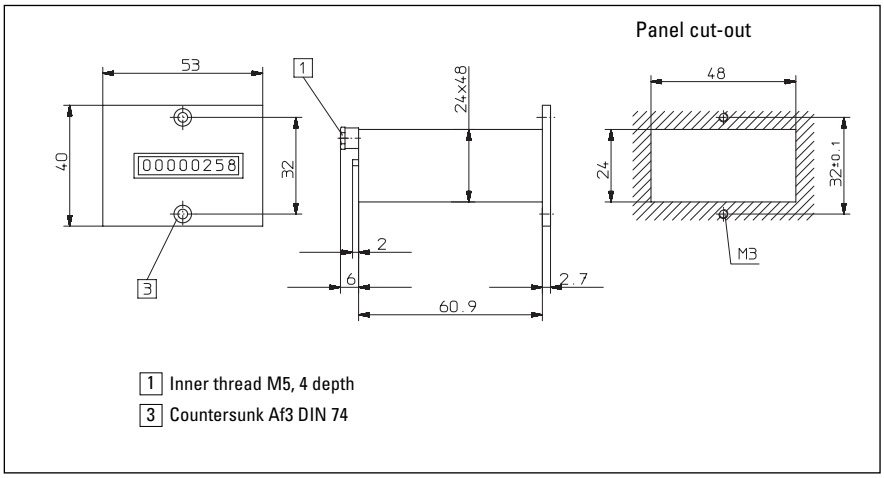
Type PMK 16.21

PMK 16.21, grey:	Art.-No. 3.804.210
PMK 16.21, black	Art.-No. 3.804.211

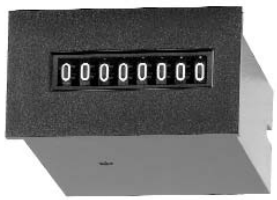


Type PMK 18.10

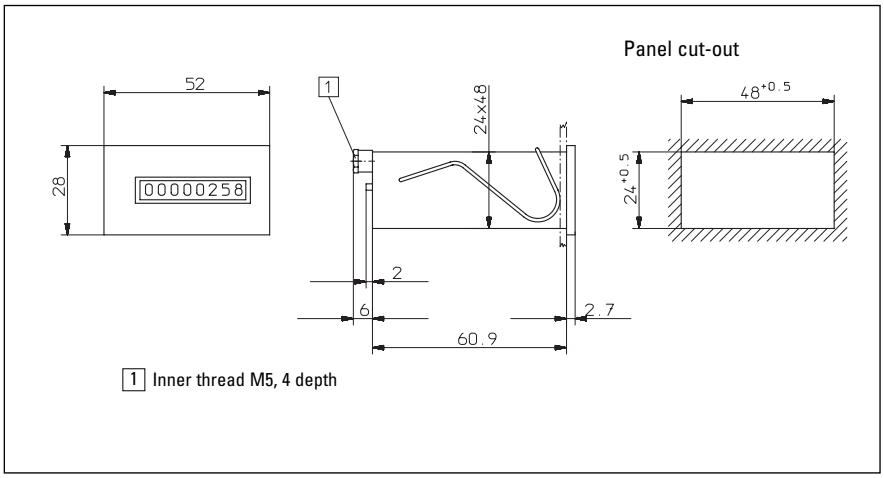
PMK 18.10, grey:	Art.-No. 3.805.100
PMK 18.10, black:	Art.-No. 3.805.101



Type PMK 18.20



PMK 18.20, grey:	Art.-No. 3.805.200
PMK 18.20, black	Art.-No. 3.805.201



LCD Display counter *CODIX* 130/131/132/133

- Low-price and high efficiency
- Large 8-digit LCD display, height of the figures 8 mm
- Optional backlighting
- Various counting modes like up /down, differential and phase discriminator counting, also with pulse doubling for connection with incremental encoders
- High voltage input for 10 ... 260 V AC/DC voltage pulses
- Unified Codix design, suiting the extensive *CODIX* family
- IP65
- Screw terminals, RM 5 mm
- Lifetime of the battery approximately 8 years
- Locking of the reset key
- Operating temperature –10 ... +60 °C
- All versions for positive or negative counting edge
- Filter function for bounce-free counting with mechanical contacts.

Technical data:

Power supply:	non-replaceable lithium battery (lifetime approximately 8 years at 20°C)
Backlighting:	external electrical source 24 V DC +/-20 %, 50 mA
Display:	LCD, 8 digits, height of the figures 8 mm
Mode:	adding or subtracting (selectable) counting direction differential counting or phase discriminator single or dual evaluation, selectable
Display range:	–9999999 ... 99999999, with overflow display
Reset:	manual and electrical
UL certified	File: E128604
Interference emissions:	EN 55011 Class B, EN 61000-6-2
	EN 61010 Section 1 (only AC versions)
Housing :	dark grey RAL 7021
Operating temperature:	–10 ... +55 °C
Ambient temperature:	–10 ... +60 °C
Storage temperature:	–20 ... +70 °C
Protection:	IP 65 front
Weight:	approximately 50 g

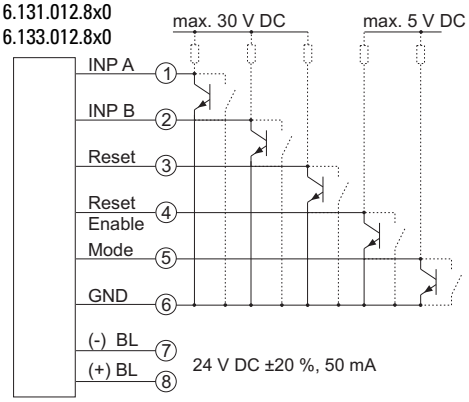
Counting inputs:	
Counting input of the DC-versions (max. 30 V DC)	
Slow counting input:	max. 30 Hz NPN
Fast counting input:	max. 12 kHz (PNP), 7 kHz (NPN)
Switching level:	NPN: Low: 0 ... 0,7 V, High: 3 ... 30 V DC
	PNP: Low: 0 ... 0,7 V, High: 4 ... 30 V DC
Counting input of the high voltage versions (10 ... 260 V DC/V AC)	
Counting input:	Optocoupler input, max. 30 Hz
Min. pulse time:	16 ms
Switching level:	Low: 0 ... 2 V DC/V AC, High: 10 ... 260 V DC/V AC
Counting direction switching (only DC-version)	
Mode :	see order table
Contact input:	Open Collector NPN (switching at 0 V DC)
Switching level:	NPN: Low: 0 ... 0,7 V, High: 3 ... 5 V DC
Reset Input (only DC and high voltage)	
Minimum pulse time:	DC: 50 ms, high voltage: 16 ms
Contact input DC*:	NPN: Low: 0 ... 0,7 V, High: 3 ... 30 V DC
High voltage input:	10 ... 260 V DC/V AC
Electrical reset key locking (for DC and AC)	
Contact input:	Open Collector NPN (switching at 0 V)
Switching level:	NPN: Low: 0 ... 0,7 V, High: 3 ... 5 V DC

* and high voltage 131 and 132

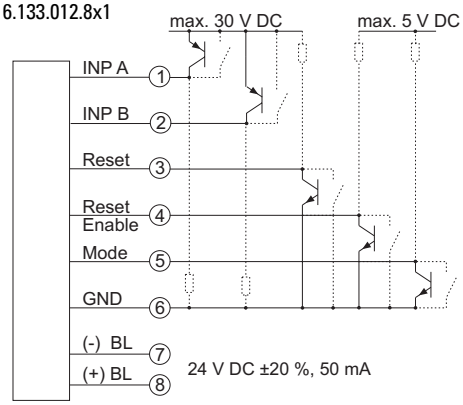
LCD Display counter *CODIX* 130/131/132/133

Connection diagramm

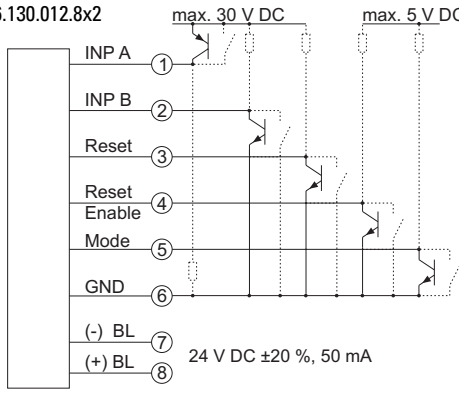
DC type:
6.130.012.8x0
6.131.012.8x0
6.133.012.8x0



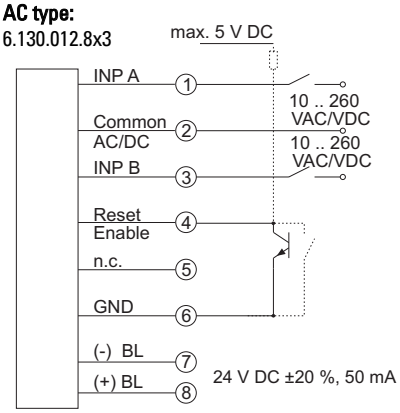
DC typ:
6.131.012.8x1
6.133.012.8x1



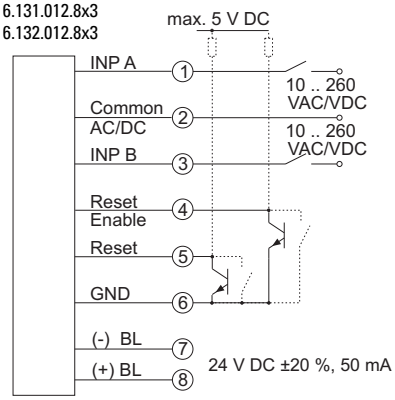
DC type:
6.130.012.8x2



AC type:
6.130.012.8x3



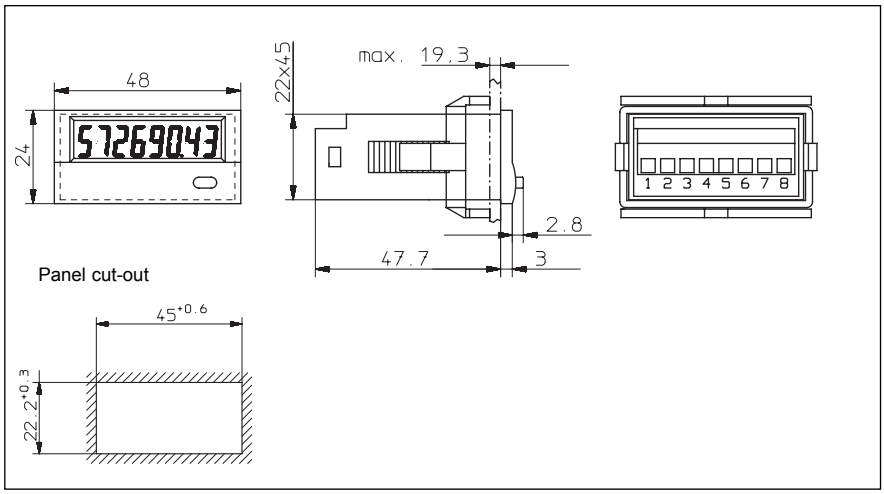
AC type:
6.131.012.8x3
6.132.012.8x3



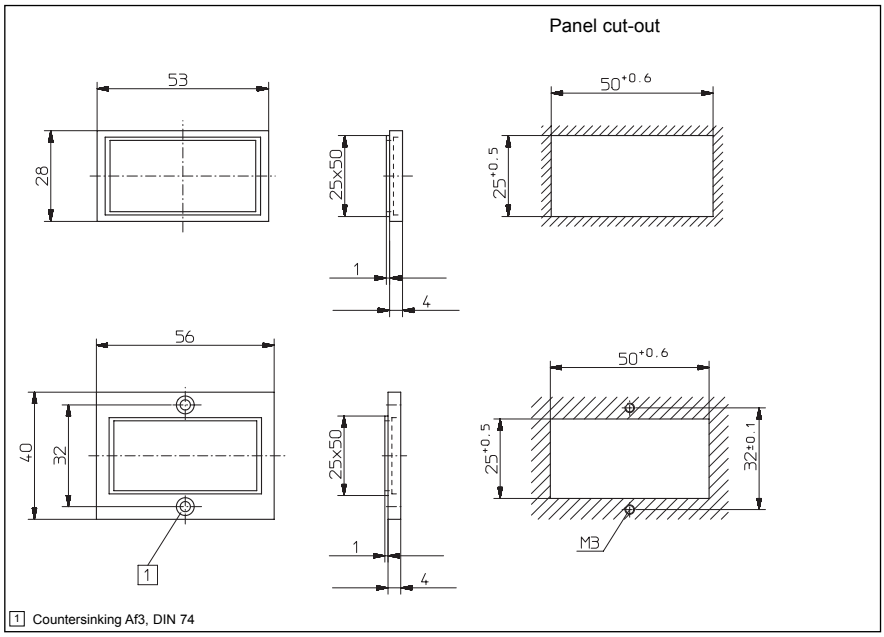
BL = backlight

LCD Display counter *CODIX* 130/131/132/133

Dimensions:



Dimensions for bezels (included in scope of delivery):



Scope of delivery:

- Digital display
- Panel mounting clip
- Bezel for screw mounting (56 x 40), panel cut out 50 x 25 mm
- Bezel for clip mounting(53 x 28), panel cut out 50 x 25 mm
- Seal
- Operating instructions.

Order information:

Type	Input type	Count inputs							
		INP A				INP B			
6.130.012.8x0	Count[1]	0 ... 0,7 V DC	count	NPN	7 kHz	0 ... 0,7 V DC	count	NPN	30 Hz
6.130.012.8x2		4 ... 30 V DC	count	PNP	12 kHz0	0 ... 0,7 V DC	count	NPN	
6.130.012.8x3		10 ... 260 V AC/DC	count	AC/DC	30 Hz	10 ... 260 V AC/DC	reset	AC/DC	–
6.131.012.8x0	Cnt.Dir[2]/Up.Dn[3]	0 ... 0,7 V DC	count	NPN	7 kHz	0 ... 0,7 V DC	count/direction	NPN	7 kHz
6.131.012.8x1		4 ... 30 V DC	count	PNP	12 kHz	4 ... 30 V DC	count/direction	PNP	12 kHz
6.131.012.8x3	Up.Dn[3]	10 ... 260 V AC/DC	count	AC/DC	30 Hz	10 ... 260 V AC/DC	count	AC/DC	30 Hz
6.132.012.8x3	Cnt.Dir[2]	10 ... 260 V AC/DC	direction	AC/DC	30 Hz	10 ... 260 V AC/DC	count	AC/DC	30 Hz
6.133.012.8x0	Quad[4]/Quad2[5]	0 ... 0,7 V DC	channel A	NPN	3 kHz	0 ... 0,7 V DC	channel B	NPN	3 kHz
6.133.012.8x1		4 ... 30 V DC	channel A	PNP	6 kHz	4 ... 30 V DC	channel B	PNP	6 kHz

X: 5 = no backlight
X: 6 = with backlight

1): one-channel, adding or subtracting counting
2): counting input with counting direction input
3): one adding and one subtracting counting input (differential mode)
4): Phase discriminator for incremental encoders with single processing
5): Phase discriminator for incremental encoders with double processing

LCD-Display counter 184

- 8 digit up/down counter
- Clearly readable due to leading zero blanking
- Range 9999 9999
- Power supply and data retention by an internal lithium battery up to 10 Years at 20 °C ambient temperature
- Max. count frequency 10 kHz
- Manual and electrical reset
- Locking of the key reset
- DIN housing 48 x 24 mm with clip mount
- Additional bezel for screw mounting
- Protection IP 65

Applications:

Count control via encoder by two signals shifted by 90°
Use in device without external power

Technical data:

Power supply:	built in lithium battery (appr. 10 Years at 20 °C)
Display:	LCD, 8 digit, hight of figures 7 mm
Counting system	add./subtr.
Display range:	9999 9999 , overflow at add. count mode from 9999 9999 to zero, overflow at subtr. count mode from zero to 9999 9999
Immunity to interference:	EN 50081-1
Emitted interference:	EN 55022 Class B
Colour of housing:	black
Ambient temperature:	–10 °C … +60 °C
Storage temperature:	–10 °C … +60 °C
Protection:	IP 65 from front side
Weights:	0.184.012.830: 30 g 0.184.01X.831: 42 g 0.184.012.832: 42 g
Type 0.184.012.830 and 0.184.012.832	
Inputs:	
Reset:	static reset input; no counting while this input is connected to 0 V. Min. pulse length: 25 ms Contact closure/open collector (NPN switching to 0 V)
Reset enable:	electrical enabling of the reset button. Contact closure input switching to 0 V (link to 0 V to enable reset button)
Type 0.184.012.830	
Count input:	Max. count frequency10 kHz min. pulse time 50 µs counting with negative pulse(NPN)
Count direction:	switching to 0 V or open collector (NPN) Input open: add. count Input to 0 V: subtr. count
Switching level:	Low: 0 ... 0.7 VDC High: 3 ... 18 VDC (count and direction)
Type 0.184.012.832 (with phase discriminator)	
Count inputs A and B:	Max. count frequency 2.5 kHz min. pulse time200 µs Counting with negative pulse (NPN)
Input sensitivity:	Low 0 ... 0.7 VDC High: 10 ... 18 VDC
Type 0.184.012.831 (count and direction 5 ... 240 V AC/V DC)	
Reset:	static reset input; no counting while this input is connected to 0 V min. pulse length 25 ms Contact closure input switching to 0 V
Reset enable:	electrical enabling of the reset button Contact closure input switching to 0 V (link to 0 V to enable reset button)
Count:	Max. count frequency 18 Hz min. pulse length 28 ms counting at high signal
Direction:	add. counting at open input subtr. counting at 0 V
Input sensitivity:	Low: < 1 VAC/VDC High: 5 ... 240 V AC/V DC

Series

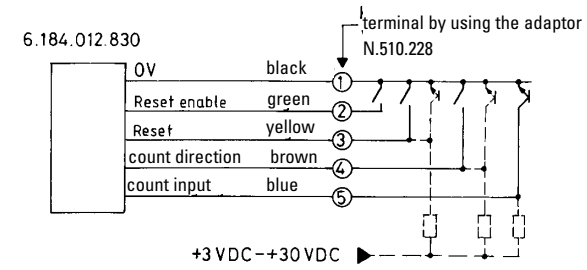
		Count inputs		
Type	Input	voltage level	max. frequency	Connection
0.184.012.830	E1	3 ... 18 VDC	10 kHz	Plug with 24 cm long flying leads*
0.184.012.831	E1	5 ... 240 VAC/VDC	18 Hz	Screw terminal
0.184.012.832	E3	10 ... 30 VDC	2.5 kHz	Screw terminal

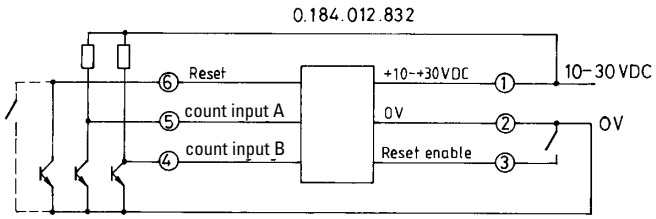
*screw terminal N.510.228 as accessories

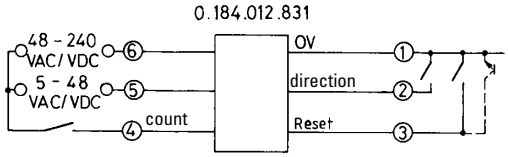
Types of count inputs:

E1: One pulse and count input and one input for count direction. If this input is not switched, the counter adds.

E3: Phase discriminator for encoder with two signals shifted by 90° for automatic direction measurement.

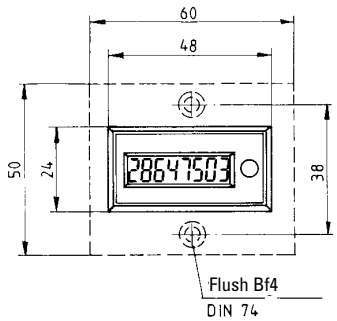


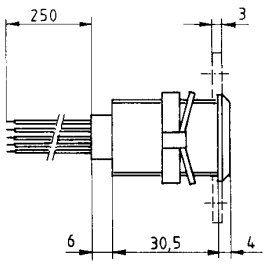


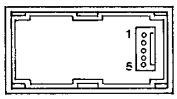


Dimensions:

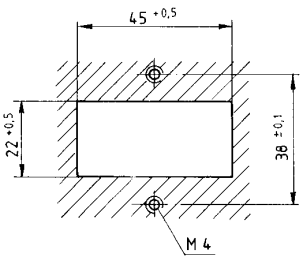
0.184.012.830





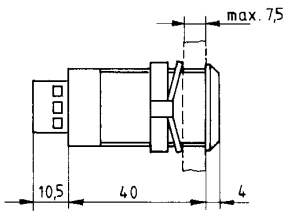


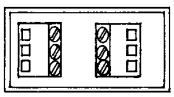
Panel cut-out



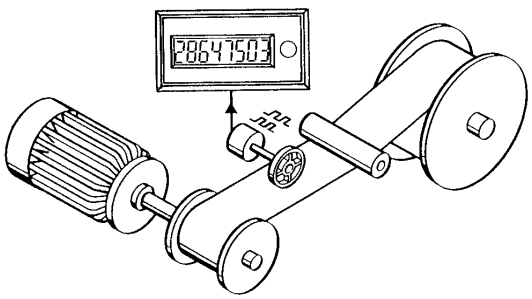
screw mount only

0.184.01X.831
0.184.012.832





Applications
Length measurement



Order information

0.184.012.830	(Flying leads, Pulse- and direction 3 ... 18 V DC)
0.184.012.832	(Screw terminal, phase discriminator input voltage add. and subtr. 10 ... 18 V DC
0.184.01X.831	(Screw terminal, pulse- and direction 5 ... 240 VAC/VDC)

Key lock:
2 = locked
3 = active

Scope of delivery
Counter with clip mount
Mounting bezel for screw mount

Accessories
adaptor for screw terminal N.510.228 suitable for type 0.184.012.830

LCD-Totalizer 185

- 8 digit totalizer with LCD display
- Clearly readable due to leading zero blanking
- Power supply and data retention by an integrated lithium battery up 10 years at 20 °C ambient temperature
- Slow speed count input max. 30 Hz, e.g. for mechanical contacts
- High speed input (NPN) up to 2,5 kHz
- Manual and electrical reset
- Reset button to be enabled
- DIN housing 48 x 24 mm with clip mount
- additional bezel for screw mount
- Front IP 65 protected

Applications

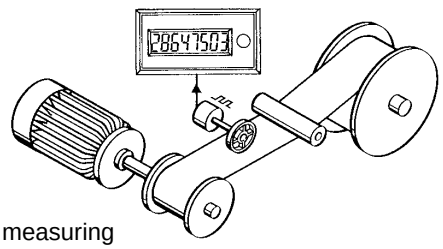
General counting
Devices without power supply
Counting directly from contact closure

Technical data:

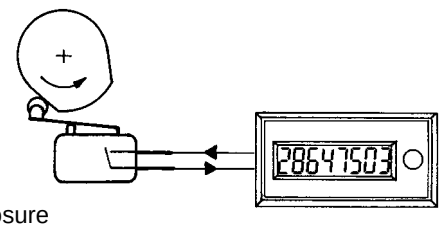
Power supply:	internal lithium battery (appr. 10 Years at 20 °C)
Display:	LCD, 8 digit, 7 mm high characters
Counting mode:	adding
Count range:	99999999, roll over to 0
Inputs:	
Reset:	static reset input; no counting while this input is connected to zero min. pulse length: 25 ms Contact closure/open collector npn (switching to 0)
Reset enable:	electrical enabling of the reset button contact closure input switching to 0 V (link to 0 V to enable reset button)
Count inputs: (Type 0.185.012.830)	
Slow speed count input	
Max. count frequency:	30 Hz
min. pulse length:	16 ms negative edge triggered (npn)
High speed count input	
Max. count frequency:	2.5 kHz
min. pulse time:	0.2 ms negative edge triggered (npn)

Input sensitivity for count inputs:	
Low:	0 ... 0.7 VDC
High:	3 ... 18 VDC
Count input (Type 0.185.012.831)	
Max. count frequency:	18 Hz
min. pulse time:	28 ms triggered at high signal
Input sensitivity:	
Low:	< 1 V AC/V DC
High:	5 ... 240 V AC/V DC
Immunity to interference:	EN 50081-1
Emitted interference:	EN 55022 Class B
Colour of housing:	black
Ambient temperature:	–10 °C...+60 °C
Storage temperature:	–10 °C...+60 °C
Protection:	IP 65 from front
Weight:	0.185.012.830: 30 g 0.185.012.831: 42 g

Applications:



Length measuring



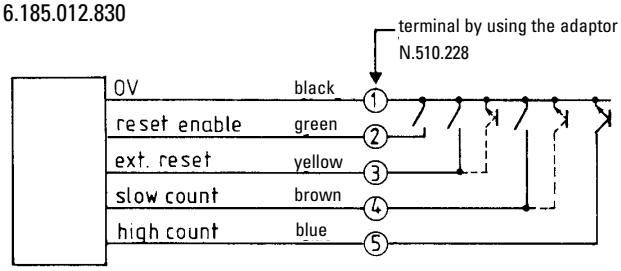
Contact closure

Series

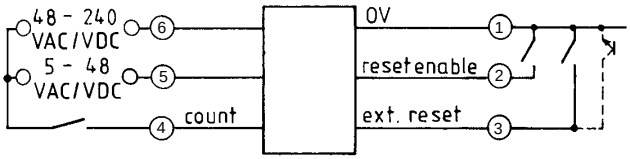
		Count inputs		
		max. frequency		
Type	voltage level	slow speed	high speed	mode of connection
0.185.012.830	3 ... 18 VDC	30 Hz	2.5 kHz	plug on connector with 25 cm flying leads*
0.185.012.831	5 ... 240 VAC/VDC	18 Hz	—	screw terminal

* Screw terminal adaptor type N.510.228

6.185.012.830

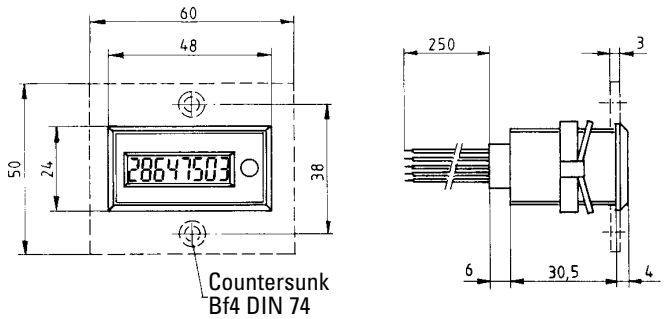


0.185.012.831

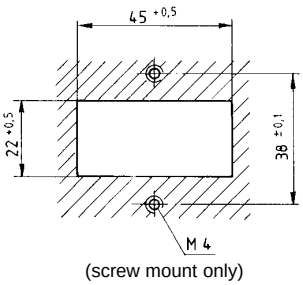


Dimensions::

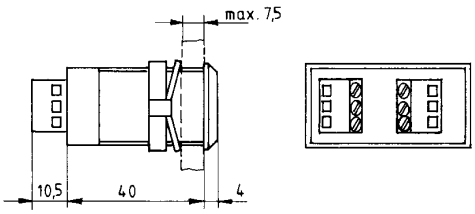
0.185.012.830



Panel cut-out



0.185.012.831



Ordering code:

0.185.012.830 (Flying leads, voltage 3 ...18 V DC)
0.185.012.831 (screw terminal, voltage 5 ... 240 V AC/V DC)

Delivery includes

Counter with clip mount
mounting bezel for screw terminal

Accessories:

adaptor for screw terminal connection
N.510.228 suitable for counter type 0.185.012.830.
Screw terminal adaptor **N.510.229** for high voltage input pulses from 5 ... 240 V AC/DC suitable for type 0.185.012.830
(Refitting from counter 0.185.012.830 to 0.185.012.831)

CODIX 520

Your benefit
- **simple totalizer**
- low cost
- easy programming and operating
- Counting frequency up to 20 kHz
- any input signal because of Schmitt-Trigger

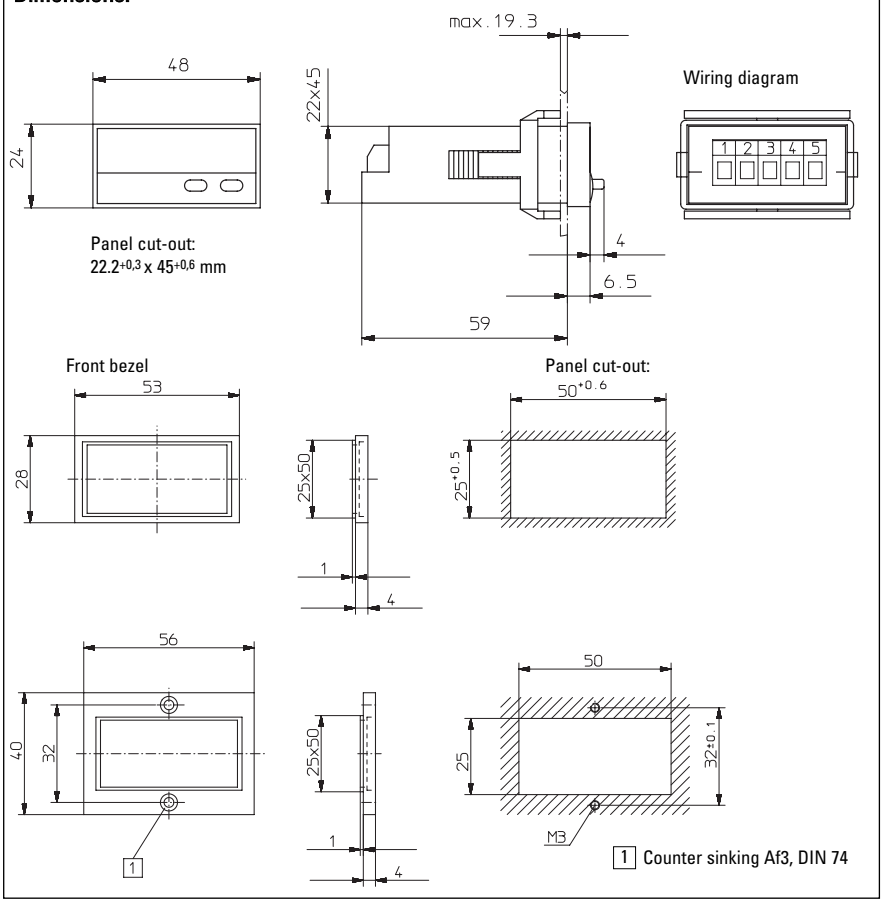
Product features
- Display range 0 ... 999999 with zero blanking
- locking SET-Key for reset
- Connection to screw terminal
- Modern ***CODIX***-Design

Technical data

Supply voltage:	10 ... 30 V DC, with reverse polarity protection
Current consumption:	max. 50 mA
Display:	6 digit red 7-segment LED´s; 8 mm high
Data backup:	EEPROM
Housing:	Dimension 48 x 24 mm according to DIN 43 700; RAL 7021, grey
Polarity of inputs:	programmable, npn or pnp for all inputs
Input resistance:	appr. 10 kΩ
Counting frequency:	20 kHz, can be damped to 30 Hz
Reset time:	5 ms

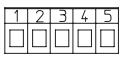
Level of inputs	Low: 0 ... 0.2 x U_B [V DC] High: 0.6 x U_B ... 30 [V DC]
EMC:	according to EC EMC directive 89/36/EWG
Immunity to interference:	EN 61000-6-4/EN 55011 class B
Emitted interference:	EN 61000-6-2
Ambient temperature:	–10 ... +50 °C
Storage temperature	–25 ... +70 °C
Protection:	IP65 (front)
Weight:	appr. 50 g

Dimensions:



Connections:

1 10 ... 30 VDC
2 0 V GND
3 INP
4 –
5 Reset



Order Code and delivery specification:

***CODIX* 520**: Art.-No: 6.520.012.300

Scope of delivery:

1 Digital display
1 Panel mounting clip
1 Bezel for screw mounting, panel cut out 50 x 25 mm
1 Bezel for clip mounting, panel cut out 50 x 25 mm
1 Seal
1 Multilingual operating instructions

CODIX 521

Your benefit
- **Totalizer and position display in one**
- low cost
- easy programming and operating
- Counting frequency up to 20 kHz
- any input signal because of Schmitt-Trigger
- Counting with direction
- Counting mode subtracting
- Phase discriminator
- Scaling factor 00.0001 ... 99.9999

Product features
- Display range –199 999 ... 0 ... 999 999 with zero blanking
- Connection with screw terminal
- Locking for SET key
- Modern CODIX-Design
- Overflow indication by flashing of the display value

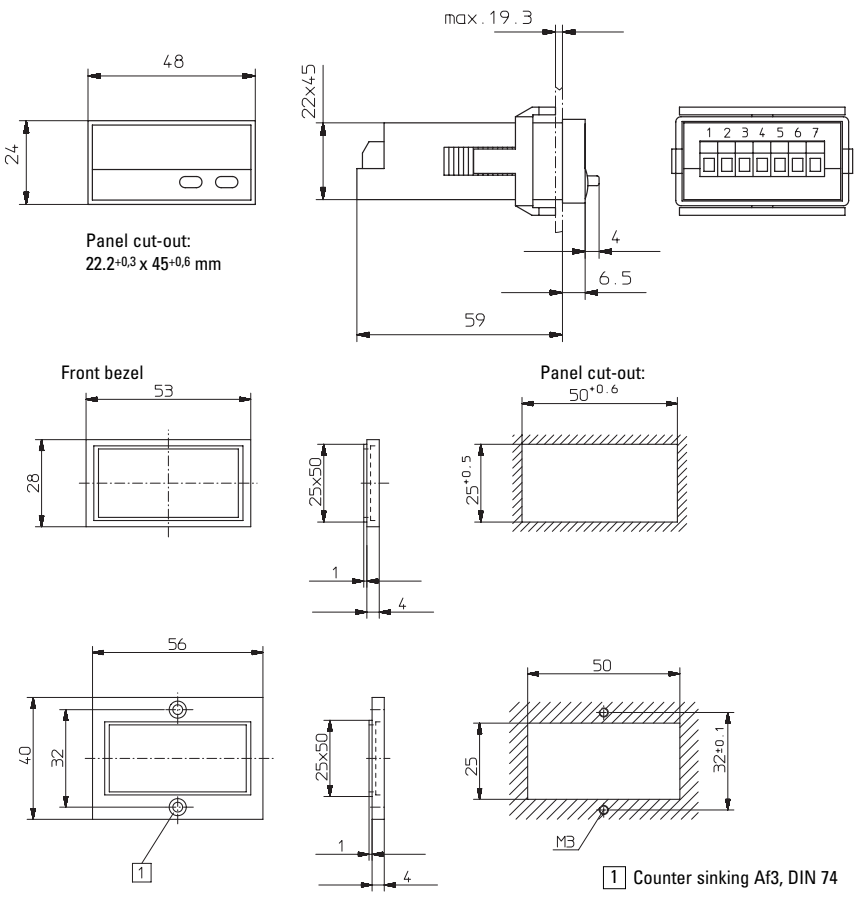
Option:
Optocoupler-Output if count value ≤ 0.

Technical data

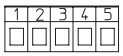
Supply voltage:	10 ... 30 V DC, with reverse polarity protection
Current consumption:	max. 50 mA
Display:	6 digit red 7-segment LED´s; 8 mm high
Data backup:	EEPROM
Housing:	Dimension 48 x 24 mm according to DIN 43 700; RAL 7021, grey
Polarity of Inputs:	programmable, npn or pnp for all inputs
Input resistance:	appr. 10 kΩ
Counting frequency:	20 kHz, can be damped to 30 Hz at position display max. 11 kHz
Reset time:	5 ms

Level of inputs:	Low: 0 ... 0.2 x U_B [V DC] High: 0.6 x U_B ... 30 V DC
Optocoupler output:	Max. 30 V, 10 mA
Ambient temperature:	–10 ... +50 °C
Storage temperature:	–25 ... +70 °C
EMC:	according to EC EMC directive 89/36/EWG
Interference emmisions:	61 000-6-4/EN 55 011 class B
Interference resistance:	EN 61 000-6-2
Protection:	IP65 (front)
Weight:	appr. 50 g

Dimensions:

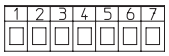


Connections:
without Optocoupler



1 10 ... 30 VDC
2 0 V GND
3 INP A
4 INP B
5 Reset

Connections:
with Optocoupler



1 10 ... 30 VDC
2 0 V GND
3 INP A
4 INP B
5 RESET
6 Emitter
7 Collector

Delivery specification
1 Digital display
1Panel mounting clip
1 Bezel for screw mounting, panel cut out 50 x 25 mm
1 Bezel for clip mounting, panel cut out 50 x 25 mm
1 Seal
1 Multilingual operating instructions

Order code:
6.521.01X.300

X: Output
1 = Optocoupler
2 = no output

CODIX 524

Your benefit
- **Universal**
- Function range as **CODIX** 521 ... 523!
  – Display counter adding and subtracting
  – Position display
  – Frequency counter/Rate meter
  – Timer
- the function is programmable

Product features
- Display range –199 999 ... 0 ... 999 999 with zero blanking
- Screw terminal
- Locking SET-Key
- Modern **CODIX**-Design

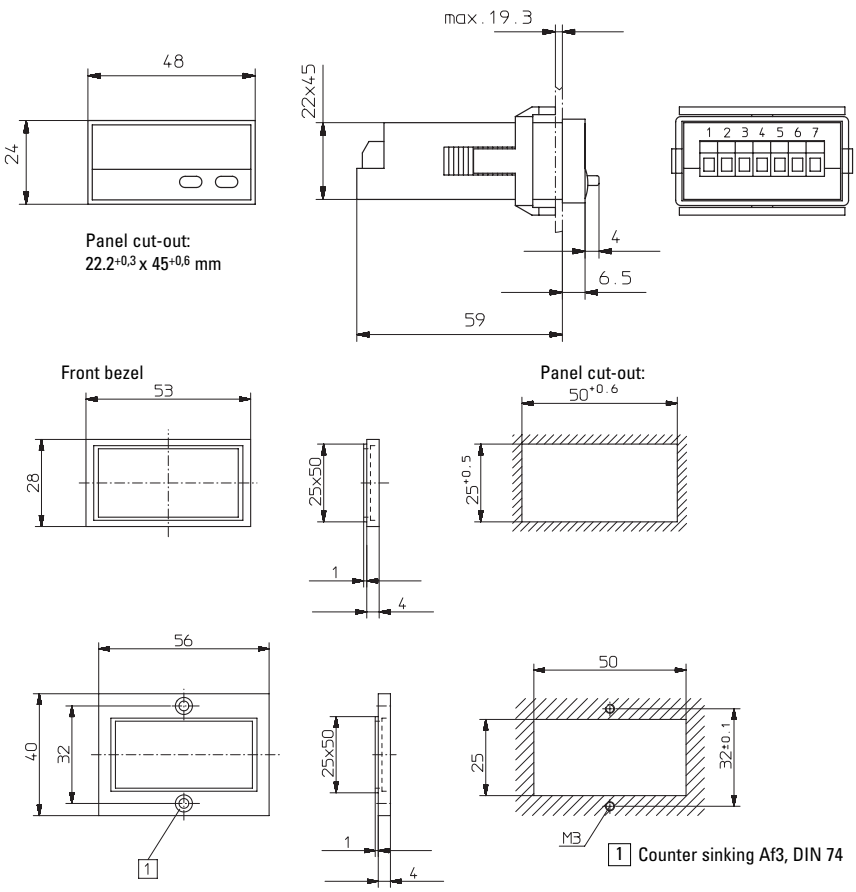
Option:
Optocoupler-output

Technical data

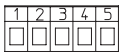
Supply voltage:	10 ... 30 V DC, with reverse polarity protection
Current consumption:	max. 50 mA
Display:	6 digit red 7-segment LED´s; 8 mm high
Data backup:	EEPROM
Housing:	Dimension 48 x 24 mm according to DIN 43 700; RAL 7021, grey
Polarity of Inputs;	programmable, npn or pnp
Input resistance:	approx. 10 kΩ
Counting frequency:	20 kHz, can be damped to 30 Hz position display: max. 11 kHz
Resolution:	Timer 0.001 s
Reset time:	5 ms

Level of inputs	Low: 0 ... 0.2 x U_B [V DC] High: 0.6 x U_B ... 30 V DC
Optocoupler output:	Max. 30 V, 10 mA
Accuracy	Tacho meter: <0.1 % Time meter: <50 ppm
Ambient temperature:	–10 ... +50 °C
Storage temperature:	–25 ... +70 °C
EMC:	according to EC EMC directive 89/36/EWG
Immunity to interference:	EN 61 000-6-4/EN 55 011 class B
Emitted interference:	EN 61 000-6-2
Protection:	IP65 (front)
Weight:	appr. 50 g

Dimensions:

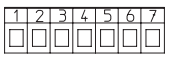


Connections:
without Optocoupler



1 10 ... 30 VDC
2 0 V GND
3 INP A
4 INP B
5 Reset

Connections:
with Optocoupler (npn)



1 10 ... 30 VDC
2 0 V GND
3 INP A
4 INP B
5 Reset
6 Emitter
7 Collector

Delivery specification
1 Digital display
1Panel mounting clip
1 Bezel for screw mounting, panel cut out 50 x 25 mm
1 Bezel for clip mounting, panel cut out 50 x 25 mm
1 Seal
1 Multilingual operating instructions

Order code:
6.524.01X.300

X: Output
1 = Optocoupler-output
2 = no output

CODIX 525

Your benefit

- **Totalizer and frequency counter**
- Frequency display changeable between 1/s and 1/min
- separate scaling factor for pulse counter and Rate meter
- 2 keys to switch over between the two functions
- Period duration measurement (average value at high frequency)

Product features

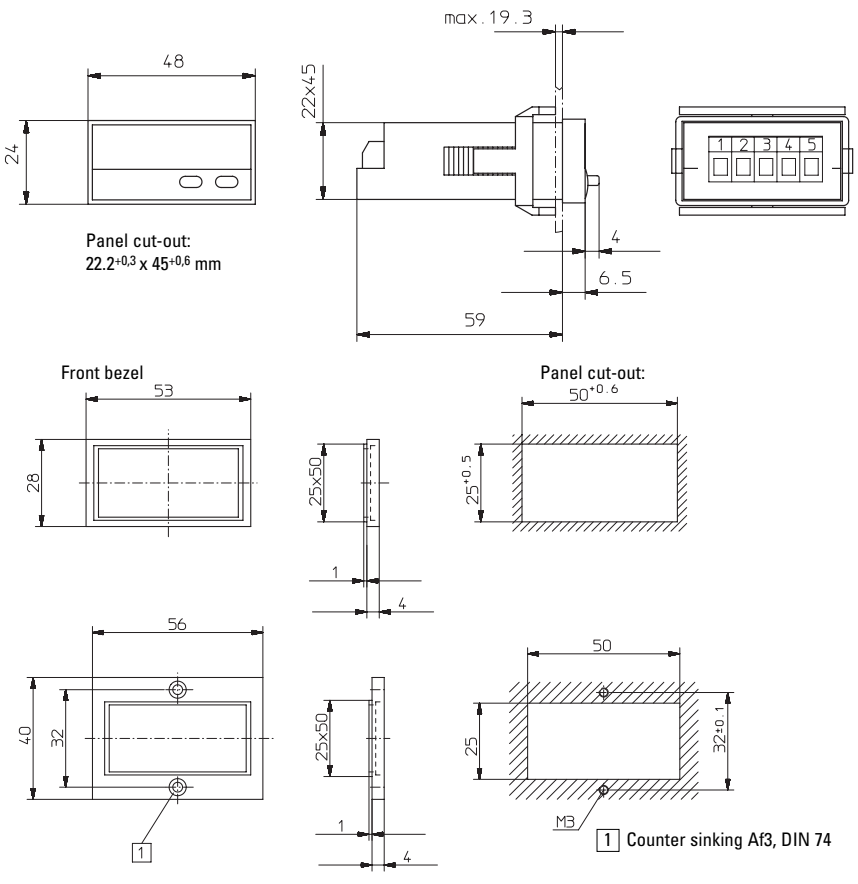
- Display range 0 ... 999999 with zero blanking
- Screw terminal
- Locking SET-Key
- Modern CODIX-Design

Technical data

Supply voltage:	10 ... 30 V DC, with reverse polarity protection
Current consumption:	max. 50 mA
Display:	6 digit red 7-segment LED´s; 8 mm high
Data backup:	EEPROM
Housing:	Dimension 48 x 24 mm according to DIN 43 700; RAL 7021, grey
Polarity of Inputs:	programmable, npn or pnp for all
Input resistance:	appr. 10 kΩ
Counting frequency:	20 kHz, can be damped to 30 Hz
Reset time:	5 ms

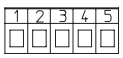
Level of inputs:	Low: 0 ... 0.2 x U_B [V DC] High: 0.6 x U_B ... 30 V DC
Accuracy:	<0.1 % (Frequency/Rate meter)
Ambient temperature:	–10 ... +50 °C
Storage temperature:	–25 ... +70 °C
EMC:	according to EC EMC directive 89/36/EWG
Immunity to interference:	EN 61000-6-4/EN 55011 class B
Emitted, interference:	EN 61000-6-2
Protection:	IP65 (front)
Weight:	appr. 50 g

Dimensions:



Connections:

1 10 ... 30 VDC
2 0 V GND
3 INP
4 –
5 RESET



Delivery specification

1 Digital display
1Panel mounting clip
1 Bezel for screw mounting, panel cut out 50 x 25 mm
1 Bezel for clip mounting, panel cut out 50 x 25 mm
1 Seal
1 Multilingual operating instructions

Order code: 6.525.012.300

CODIX 526

Your benefit
- **Two totalizers**
- Key for switch over between counter 1 and 2
- SET-Key resets the counter to zero (can be disabled in the set up for each totalizer separately)
- Scaling factor 00.0001 ... 99.9999

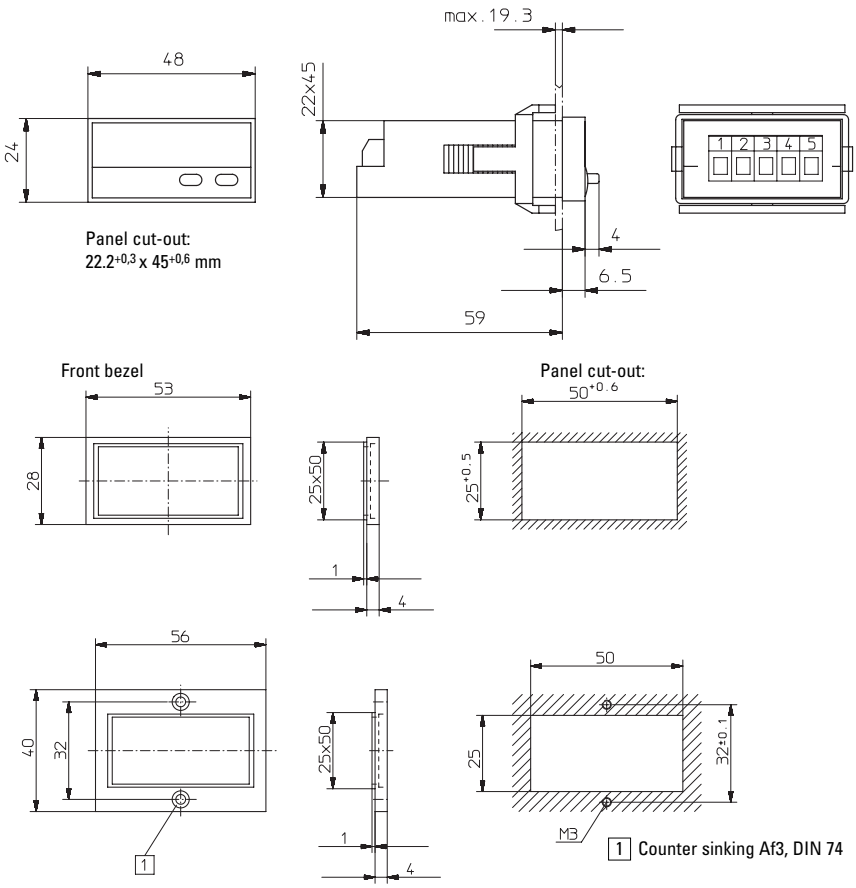
Product features
- Display range 0 ... 999 999 with zero blanking
- Connection with screw terminal
- Modern ***CODIX***-Design

Technical data

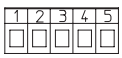
Supply voltage:	10 ... 30 V DC, with reverse polarity protection
Current consumption:	max. 50 mA
Display:	6 digit red 7-segment LED´s; 8 mm high
Data backup:	EEPROM
Housing:	Dimension 48 x 24 mm according to DIN 43 700; RAL 7021, grey
Polarity of Inputs:	programmable, npn or pnp for all inputs
Input resistance:	appr. 10 kΩ
Counting frequency:	20 kHz, can be damped to 30 Hz
Reset time:	5 ms

Level of inputs	Low: 0 ... 0.2 x U_B [V DC] High: 0.6 x U_B ... 30 V DC
Ambient temperature:	–10 ... +50 °C
Storage temperature:	–25 ... +70 °C
EMC:	according to EC EMC directive 89/36/EWG
Immunity to interference:	EN 61 000-6-4/EN 55 011 class B
Emitted interference:	EN 61 000-6-2
Protection:	IP65 (front)
Weight:	appr. 50 g

Dimensions:



Connection:



1 10 ... 30 VDC
2 0 V GND
3 INP
4 –
5 Reset

Delivery specification

1 Digital display
1Panel mounting clip
1 Bezel for screw mounting, panel cut out 50 x 25 mm
1 Bezel for clip mounting, panel cut out 50 x 25 mm
1 Seal
1 Multilingual operating instructions

Order code: 6.526.012.300

CODIX 527

Your benefit

- **Totalizer and Time meter in ONE**
- 2 keys for switching between totalizer and timer
- Display:
  – Totalizer: decimal point only display
  – Timer: s, min, h or h.m.s, decimal point fixes the resolution
- Scaling factor 00.0001 ... 99.9999
- Resolution 0.001

Product features

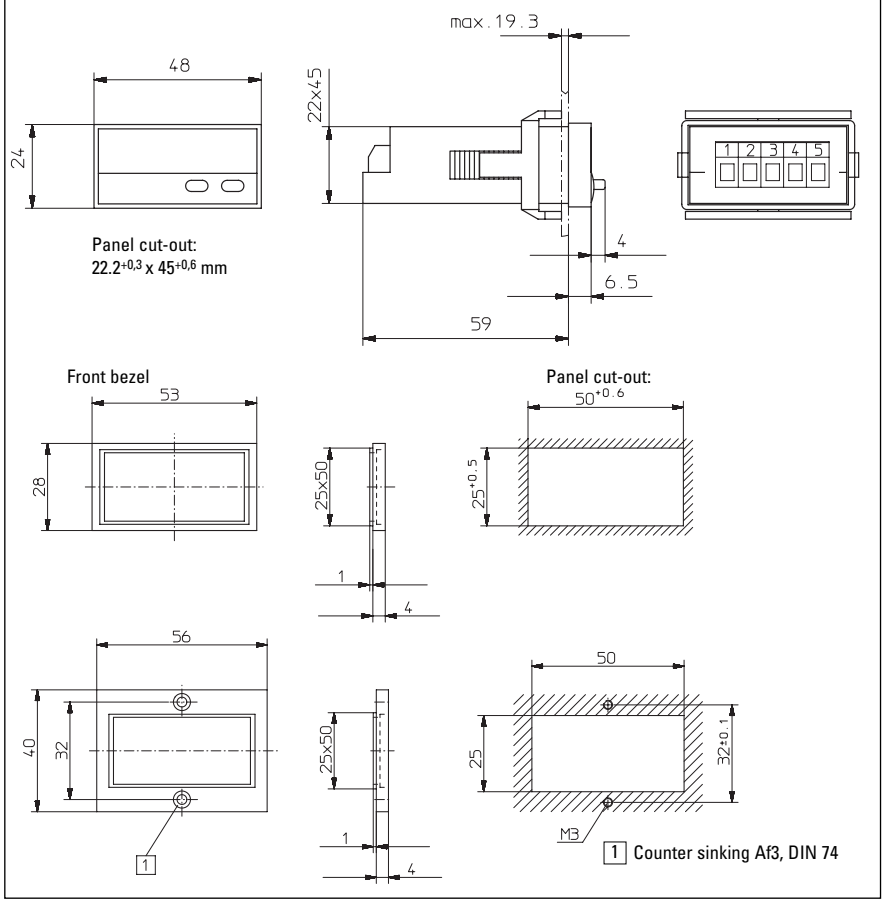
- Display range 0 ... 999999 with zero blanking
- Connection with screw terminal
- Locking SET-key
- Start, Stop or Gate-Input
- Modern CODIX-Design

Technical data

Supply voltage:	10 ... 30 V DC, with reverse polarity protection
Current consumption:	max. 50 mA
Display:	6 digit red 7-segment LED´s; 8 mm high
Data backup:	EEPROM
Housing:	Dimension 48 x 24 mm according to DIN 43 700; RAL 7021, grey
Polarity of Inputs:	programmable, npn or pnp for all inputs
Input resistance:	appr. 10 kΩ
Counting frequency:	20 kHz, can be damped to 30 Hz
Reset time:	5 ms

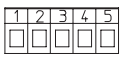
Level of inputs:	Low: 0 ... 0.2 x U_B [V DC] High: 0.6 x U_B ... 30 V DC
Accurancy:	< 50 ppm at timer
Ambient temperature:	–10 ... +50 °C
Storage temperature:	–25 ... +70 °C
EMC:	according to EC EMC directive 89/36/EWG
Immunity to interference:	EN 61000-6-4/EN 55011 class B
Emitted interference:	EN 61000-6-2
Protection:	IP65 (front)
Weight:	appr. 50 g

Dimensions:



Connections:

1 10 ... 30 VDC
2 0 V GND
3 INP A
4 INP B
5 Reset



Delivery specification

1 Digital display
1Panel mounting clip
1 Bezel for screw mounting, panel cut out 50 x 25 mm
1 Bezel for clip mounting, panel cut out 50 x 25 mm
1 Seal
1 Multilingual operating instructions

Order code: 6.527.012.300

CODIX 540

Your benefit

- **Simple totalizer**
- Very high luminosity and 14 mm high characters
- Big keys for use when wearing gloves
- DIN housing
- Voltage output for sensors (for AC-version)
- Counting frequency up to 60 kHz
- Input pulse shape variable (Schmitt Trigger characteristics)

Product features

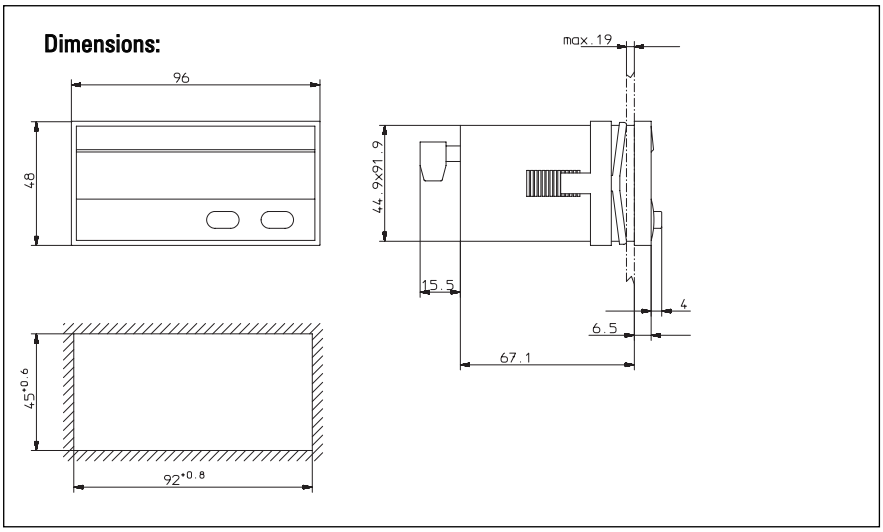
- Display range 0 ... 999 999 with zero blanking
- Connection with screw terminal
- Locking SET-key for reset
- Modern ***CODIX***-Design

Technical data

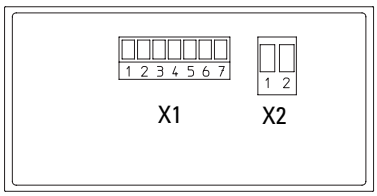
Supply voltage(U_B):	10 ... 30 V DC, with reverse polarity protection 90 ... 260 V AC
Current consumption:	max. 50 mA, 6 VA
Display:	6 digit red 7 segment LED display; 14 mm high
Data backup:	EEPROM
Housing:	Dimension 48 x 24 mm according to DIN 43 700; RAL 7021, grey
Polarity of Inputs;	programmable, npn or pnp for al inputs
Input resistance:	appr. 5kΩ
Counting frequency*:	max. 60 kHz, can be damped to 30 Hz, depending on operating mode
Reset time:	5 ms
Input switching level (standard version):	DC-version: Low: 0 ... 0.2 x U_B [V DC] High: 0.6 x U_B ... 30 V DC
	AC-version Low 0 ... 4 V DC High 12 ... 30 V DC
Input switching level (5 V version):	Low 0 ... 2 V DC High 4 ... 30 V DC
Voltage output for sensors	24 V DC ±15 %/100 mA for AC-version
Ambient temperature:	–20 ... +65 °C
Storage temperature:	–25 ... +70 °C
EMC:	according to EC EMC directive 89/36/EWG
Immunity to interference:	EN 61 000-6-4/EN 55 011 class B
Emitted interference:	EN 61 000-6-2
Protection:	IP65 (front)
Weight:	appr. 150 g

*for further specifications please refer to the manual

Dimensions:



Connections:



Connection: X2

Pin	AC-version	DC-version
1	90 ... 260 V AC	0 V DC (GND)
2	90 ... 260 V AC	10 ... 30 V DC

Connection X1

Pin	AC-version	DC-version
1	n.c.	
2	n.c	
3	Reset	
4	n.c	
5	INP	
6	GND out	n.c.
7	+24 Vout	n.c.

Order code:

6.540.012.XX0

Input switching level
0 = Standard level
A = 5 V level

Voltage supply
0 = 90 ... 260 V AC
3 = 10 ... 30 V DC

Delivery specification

Digital display
Mounting clip
Seal
Multilingual operating instructions

CODIX 541

Your benefit

- **Totalizer and position indicator in ONE**
- Voltage output for AC version
- 2 Count inputs
- Scaling factor 0,0001 ... 99,9999
- Division factor 0,0001 ... 99,9999
- 2 count inputs with count direction input
- Differenzzählung von beiden Eingängen up.down Mode
- Summenbildung von beiden Eingängen up.up Mode
- Phase discriminator with pulse doubling oder Vervierfachung

Product features

- Display range –199 999 ... 0 ... 999 999 with zero blanking
- Connection with screw terminal
- Locking SET-Key for reset
- Programmable set value

Options:

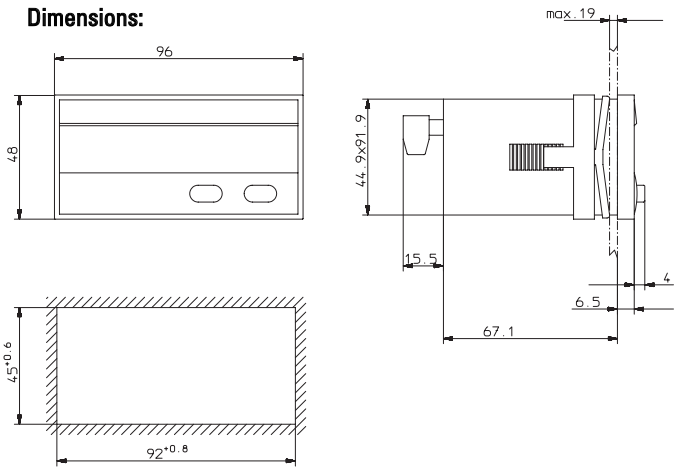
Optocoupler output if count value ≤ 0

Technical data

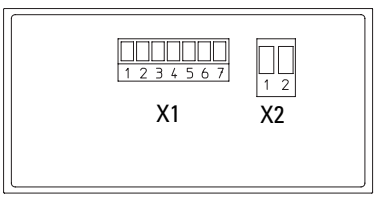
Supply voltage	10 ... 30 V DC, with reverse polarity protection 90 ... 260 V AC
Current consumption:	max. 50 mA, 6 VA
Display:	6-digit red 7 segment LED display; 14 mm high
Data backup:	EEPROM
Housing:	Dimension 96 x 48 mm according to DIN 43 700; RAL 7021, grey
Polarity of Inputs:	programmable, npn or pnp for all inputs
Input resistance:	appr. 5 kΩ
Counting frequency*:	max. 60 kHz, can be damped to 30 Hz, depending on operating mode at position display max. 25 kHz
Reset time:	5 ms
Input switching level (standard version):	DC-version Low: 0 ... 0.2 x U_B [V DC] High: 0.6 x U_B ... 30 V DC
Input switching level (5 V version):	AC-version Low 0 ... 4 V DC High 12 ... 30 V DC Low 0 ... 2 V DC High 4 ... 30 V DC
Voltage supply for sensors	24 V DC ±15 %/100 mA for AC version
Max power consumption Optocouplers:	max. 30 V, 10 mA
Ambient temperature:	–20 ... +65 °C
Storage temperature:	–25 ... +70 °C
EMC:	according to EC EMC directive 89/36/EWG
Immunity to interference:	EN 61000-6-4/EN 55011 class B
Emitted interference:	EN 61000-6-2
Protection:	IP65 (front)
Weight:	appr. 150 g

*for further specifications please refer to the manual

Dimensions:



Connections:



Connection: X2

Pin	AC-version	DC-version
1	90 ... 260 V AC	0 V DC (GND)
2	90 ... 260 V AC	10 ... 30 V DC

Connection X1

Pin	AC-version	DC-version
1	Optocoupler-output Emitter	
2	Optocoupler-output Collector	
3	Set	
4	INP B	
5	INP A	
6	GNDout	n.c.
7	+24 Vout	n.c.

Order code:

6.541.01X.XX0

Output	Input switching level	Voltage supply
1 = Optocoupler output 2 = no output	0 = Standard level A = 5 V level	0 = 90 ... 260 V AC 3 = 10 ... 30 V DC

Delivery specification

Digital display
Mounting clip
Seal
Multilingual operating instructions

CODIX 544

Your benefit
- **Multipurpose device**
- ***CODIX*** 541 ... 543 in just one device
  - – Display counter adding and subtracting
  - – Position display
  - – Frequency counter/rate meter
  - – timer, res. up to 0,001 s
- the mode is programmable

Product features
- Display range –199 999 ... 999 999 with zero blanking
- Connection with screw terminal
- Locking SET-Key for reset
- Modern ***CODIX***-Design
- Programmable set value

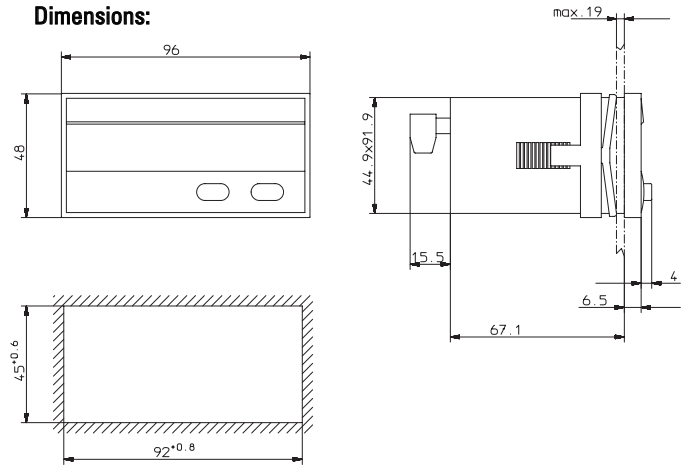
Option:
Optocoupler-output at f = 0, e.g. operation indicator

Technical data

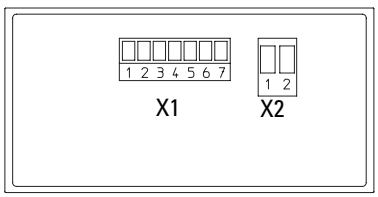
Supply voltage	10 ... 30 V DC, with reverse polarity protection 90 ... 260 V AC
Current consumption:	max. 50 mA, 6 VA
Display:	6 digit red 7 segment LED display; 14 mm high
Data backup:	EEPROM
Housing:	Dimension 96 x 48 mm according to DIN 43 700; RAL 7021, grey
Polarity of Inputs:	programmable, npn or pnp for all inputs
Input resistance:	appr. 10 kΩ
Counting frequency*:	60 kHz, can be damped to 30 Hz depending on operating mode at position display max. 25 kHz
Reset time:	5 ms
Resolution timer:	up to 0.001 s
Input switching level (standard version):	DC-version Low: 0 ... 0.2 x U_B [V DC] High: 0.6 x U_B ... 30 V DC
	AC-version Low 0 ... 4 V DC High 12 ... 30 V DC
Input switching level (5 V version):	Low: 0 ... 2 V DC High: 4 ... 30 V DC
Voltage supply for sensors	24 V DC ±15 %/100 mA at AC-versions
Accuracy:	Tacho meter: <0,1 % Timer < 50 ppm
Ambient temperature:	–20 ... +65 °C
Storage temperature:	–25 ... +70 °C
EMC:	according to EC EMC directive 89/36/EWG
Immunity to interference:	EN 61 000-6-4/EN 55 011 class B
Emitted interference:	EN 61 000-6-2
Protection:	IP65 (from front)
Weight:	appr. 150 g

*for further specifications please refer for the manual

Dimensions:



Connections:



Connection2

Pin	AC-version	DC-version
1	90 ... 260 V AC	0 V DC (GND)
2	90 ... 260 V AC	10 ... 30 V DC

Connection X1

Pin	AC-version	DC-version
1	Optocoupler-output Emitter	
2	Optocoupler-output Collector	
3	SET	
4	INP B	
5	INP A	
6	GNDout	n.c.
7	+24 Vout	n.c.

Order code:

6.544.01X.XX0

Output 1 = Optocoupler output 2 = no output	Input switching level 0 = Standard level A = 5 V level
	Voltage supply 0 = 90 ... 260 V AC 3 = 10 ... 30 V DC

Delivery specification
Digital display
Mounting clip
Seal
Multilingual operating instructions

CODIX 54U

Your benefit

- **Universal with the following double functions**
  - – adding and frequency counter
  - – counter with 2 adding ranges
  - – one adding counter and one timer
  - – counter with 2 time ranges
- Key to switch between the functions
- Separate scaling factor for counter and rate meter
- Frequency display in 1/s or 1/min
- Key to switch between counter and rate meter
- At higher frequencies measurement of periods by reporting the average value

Product features

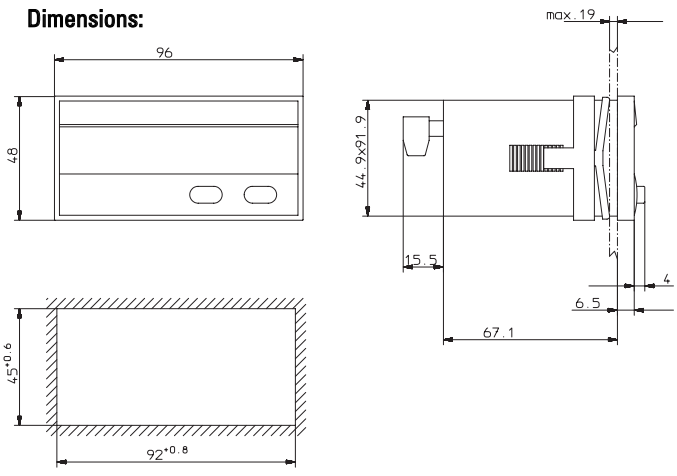
- Display range 0 ... 999 999 with zero blanking
- Connection with terminal
- Locking SET-Key for reset
- Modern CODIX-Design

Technical data

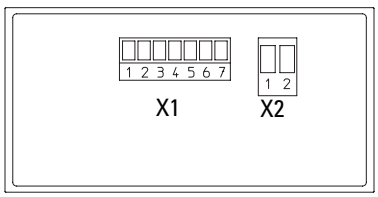
Supply voltage	10 ... 30 V DC, with reverse polarity protection 90 ... 260 V AC
Current consumption:	max. 50 mA, 6 VA
Display:	6 digit red 7 segment LED display; 14 mm high
Data backup:	EEPROM
Housing:	Dimension 96 x 48 mm according to DIN 43 700; RAL 7021, grey
Polarity of Inputs:	programmable, npn or pnp for all inputs
Input resistance:	appr. 5 kΩ
Counting frequency*:	60 kHz, can be damped to 30 Hz depending on operating mode
Reset time:	5 ms
Input switching level (standard version):	DC-version: Low: 0 ... 0.2 x U_B [V DC] High: 0.6 x U_B ... 30 V DC
Input switching level (5 V version):	AC-version: Low 0 ... 4 V DC High 12 ... 30 V DC Low 0 ... 2 V DC High 4 ... 30 V DC
Voltage supply for sensors:	24 V DC ±15 %/100 mA at AC version
Accuracy:	<0.1 % (Frequency display/Rate meter)
Ambient temperature:	–20 ... +65 °C
Storage temperature:	–25 ... +70 °C
EMC:	according to EC EMC directive 89/36/EWG
Immunity to interference:	EN 61000-6-4/EN 55011 class B
Emitted interference:	EN 61000-6-2
Protection:	IP65 (from front)
Weight:	appr. 150 g

*for further specifications please refer to the manual

Dimensions:



Connections:



Connection: X2

Pin	AC-version	DC-version
1	90 ... 260 V AC	0 V DC (GND)
2	90 ... 260 V AC	10 ... 30 V DC

Connection: X1

Pin	AC-Version	DC-Version
1	n.c.	
2	n.c.	
3	Reset	
4	INP B	
5	INP A	
6	GNDout	n.c.
7	+24 Vout	n.c.

Order code:

6.54U.012.XX0

- Input switching level
  0 = Standard
  A = 5 V level
- Power supply
  0 = 90 ... 260 V AC
  3 = 10 ... 30 V DC

Delivery specification

Digital display
Mounting clip
Seal
Multilingual operating instructions

CODIX 54P

Your benefit

- Position and frequency display
- Key to switch between position- and frequency display
- Switching the display with key
- Programmable set value
- Scaling factor 0.0001 ... 99.9999
- Division factor 0,0001 ... 99,9999

Product features

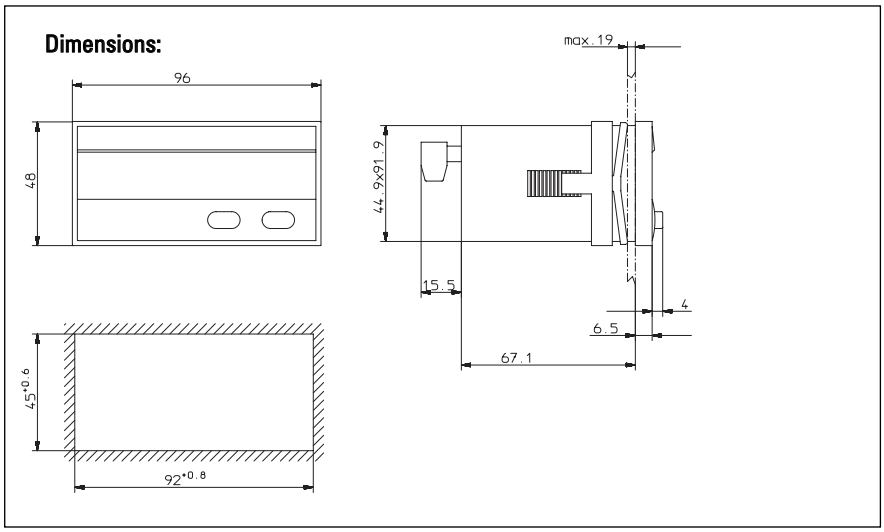
- Display range -199999 ... 999 999 with zero blanking
- Connection with screw terminal
- Locking SET-Key for reset
- Modern CODIX-Design
- Separated inputs of position and frequency display

Technical data

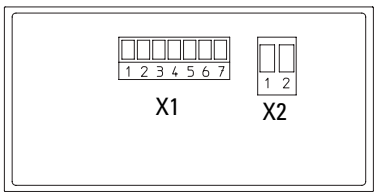
Supply voltage	10 ... 30 V DC, with reverse polarity protection 90 ... 260 V AC
Current consumption:	max. 50 mA, 6 VA
Display:	6 digit red 7 segment LED display; 14 mm high
Data backup:	EEPROM
Housing:	Dimension 96 x 48 mm according to DIN 43 700; RAL 7021, grey
Polarity of Inputs:	programmable, npn or pnp for all inputs
Input resistance:	appr. 5 kΩ
Counting frequency*:	max. 30 kHz, can be damped to 30 Hz depending on operating mode
Reset time:	5 ms
Input switching level (standard version):	DC version: Low: 0 ... 0.2 x U_B [V DC] High: 0.6 x U_B ... 30 V DC
Input switching level (5 V version):	AC version: Low 0 ... 4 V DC High 12 ... 30 V DC High 0 ... 2 V DC Low 4 ... 30 V DC
Voltage supply for sensors:	24 V DC ±15 %/100 mA at AC version
Ambient temperature:	–20 ... +65 °C
Storage temperature:	–25 ... +70 °C
EMC:	according to EC EMC directive 89/36/EWG
Immunity to interference:	EN 61 000-6-4/EN 55 011 class B
Emitted interference:	EN 61 000-6-2
Protection:	IP65 (from the front)
Weight:	appr. 150 g

*for further specifications please refer to the manual

Dimensions:



Connections:



Connection X2

Pin	AC version	DC version
1	90 ... 260 V AC	0 V DC (GND)
2	90 ... 260 V AC	10 ... 30 V DC

Connection X1

Pin	AC version	DC version
1	n.c.	
2	n.c.	
3	INP C (Frequency)	
4	INP B (Count)	
5	INP A (Count)	
6	GNDout	n.c.
7	+24 Vout	n.c.

Order code:

6.54P.012.XX0

Input switching level
0 = Standard
A = 5 V level

Voltage supply
0 = 90 ... 260 V AC
3 = 10 ... 30 V DC

Delivery specification
Digital display
Mounting clip
Seal
Multilingual operating instructions

LCD Counter Module 190

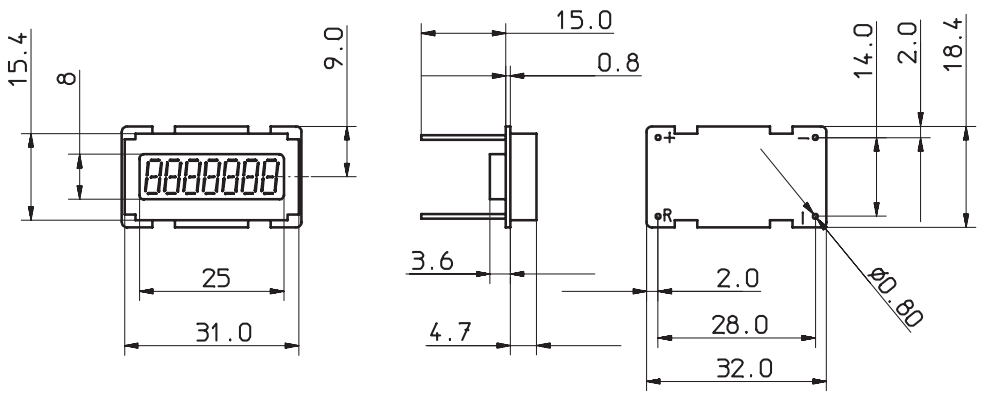
- Counting frequency up to 10 kHz
- 7-digit display, hight 6 mm
- Non-volatile memory (no battery, EEPROM)
- High reliability
- Low operating current
- Wide operating voltage and temperature range
- Very high shock and vibration specs
- Low cost and small size

Technical features for LCD Counter Module Type 190

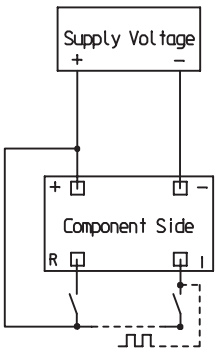
Supply:	1. 4,75 ... 15 V DC 2. 9 ... 60 V DC reverse polarity protection
Current consumption:	1. 8 mA at 4,75 ... 15 V DC 2. 6 mA at 9 ... 60 V DC
Count and reset input:	High 4 ... 60 V DC; Low: 0 ... 0,7 V DC
Max. Count frequeny:	10 kHz(edge triggered)
Display:	7-digit display, figure height 6 mm
Data backup:	EEPROM
Colour:	black
Working temperature	–20 ... +85 °C
Operating temperature:	–40 ... +80 °C
Storage temperature:	–50 ... +90 °C

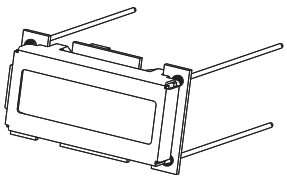
Interference emission:	EN 61000-6-3, EN 55 011 Class B
Interference resistance:	EN 61000-6-2
Weight:	approximately 8 g
Memory capacity:	CMOS EEPROM. Nonvolatile memory has data retention in excess of 10 years.
Shock resistance acc. to DIN-IEC 68-2-27:	550 m/s^2, 11 ms
Vibration resistance acc. to DIN-IEC 68-2-6:	50 ... 200 m/s^2, 10 ... 80 Hz
Protection from:	inductive swichting, alternator load dump

Dimensions:



Connecting diagram:





Order code:
Availability on request
LCD count module type 190:
4,75 ... 15 V DC Order-No.: 6.190.012.F00
Art-No.: 162 135
9 ... 60 V DC Order-No.: 6.190.012.G00
Art-No.: 162 136

Scope of delivery:
– LCD Counter Module Type 190
– Operating instructions

LCD Counter Module 192

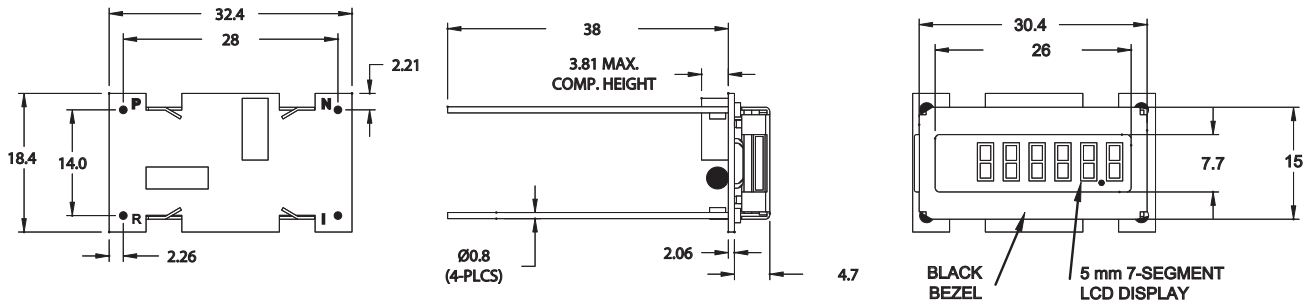
- Non-volatile memory (no battery)
- High reliability
- Low cost and small size
- Low operating current
- Wide operating voltage and temperature range
- Very high shock and vibration specs
- Solid state electronics

Technical features for LCD Counter Module Type 192

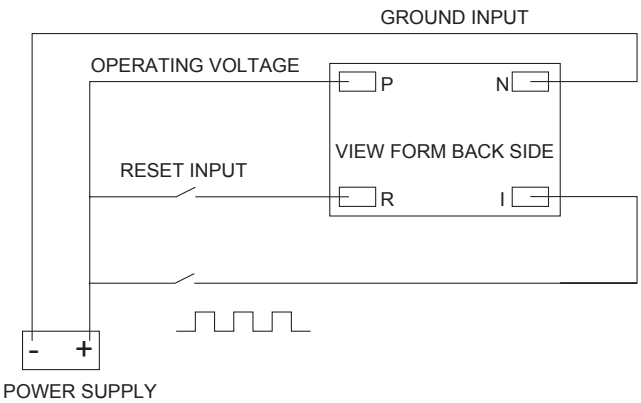
Supply	8 ... 28 V DC
Current consumption:	3 mA maximum at 8 ... 24 V DC 10 mA at 28 V DC
Count and reset input:	8 ... 28 V DC
Max. Count frequeny:	100 Hz
Display:	6-digit display, figure height 5 mm
Data backup:	EEPROM
Housing:	Dimension 19 x 33 mm
Colour:	black
Operating temperature:	–40 ... +85 °C

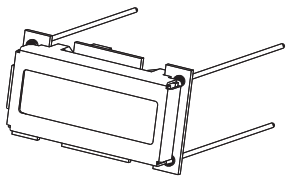
Humidity:	95 % RH +32 C for 2 hours
EMC:	according to EC EMC directive 89/36/EWG
Interference emission:	EN 61000-6-3/EN 55011 Class B
Interference resistance:	EN 61000-6-2
Weight:	approximately 8 g
Memory capacity:	CMOS EEPROM. Nonvolatile memory has data retention in excess of 10 years without power.
Protection from:	inductive swichting, alternator load dump

Dimensions:



Connecting diagram:





Order code:
LCD Counter Module Type 192:
Order-No.: 6.192.012.300

Scope of delivery:
– LCD Counter Module Type 192
– Operating instructions

4 digit LCD module 166

- 4 digit LCD totalizer panel
- Removable housing for special applications
- Power supply from replaceable lithium battery, 3 ... 4 years at 20 °C
- Max. count frequency 18 Hz by contact

Applications

Devices without power supply
easy counting
self powered device
vending machines
gaming machines
printers and copiers

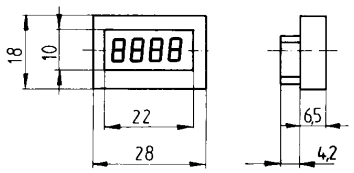
Technical data:

Power supply:	1,5 V lithium battery Type 386 or SR 43
Battery operating life:	3 ... 4 Years at 20 °C
Display:	LCD 4 digit, 6 mm high
Count range:	9999 with zero blanking
Count input:	Max. count frequency 18 Hz counting by closed contact
0 reset:	quick removal or the battery or connect the two pins on the back of the unit

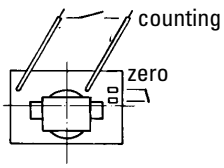
Interference emmisions:	EN 50081-2/EN 55011 class B
Interference resistance:	EN 6100-6-2 EN 50081-1
Working temperature:	0 °C…+50 °C
Storage temperature:	–10 °C…+60 °C
Housing:	clear and black
Protection:	IP 40
Weight:	7.5 g
Electrical connections:	Flying leads 18 cm long

Dimensions:

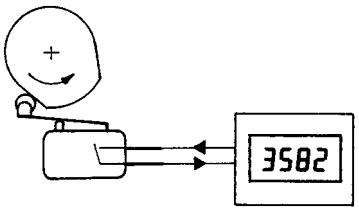
without housing



Flying leads
180 mm long

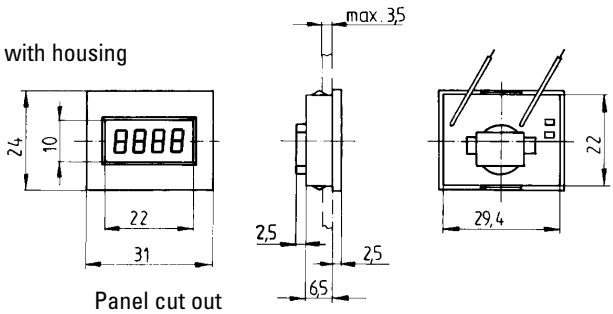


Application



Control with contact

with housing



Panel cut out
29.4 x 22 mm

Order code and delivery specification:
Art.-No.: 0.166.012.830

Delivery specification:
LCD module
Operating manual

6 digit LCD module 167/168

- 6-digit LCD display counter for panel or PCB mount (removable mounting)
- 3 V DC power supply
- Current consumption <5 µA (10 µA at max. count frequency 10 kHz)
- Inputs TTL/CMOS compatible
- Electrical zero reset

Type 167:
count mode: adding

Type 168:
count mode: adding/subtracting
1 count input
1 direction input

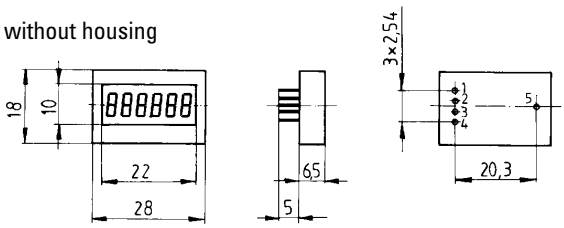
Applications
Simple counting
Position-, length- and distance measurement, PCB counter

Technical data:

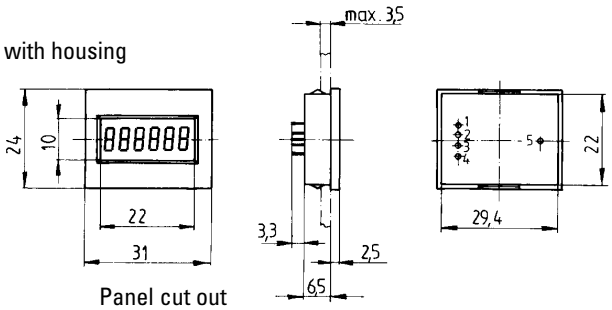
Power supply:	2.6 ... 3.4 VDC
Current consumption:	typical 5 µA, 10 µA at 10 kHz
Display:	LCD, 6 digit, 6 mm high
Count range:	999999
Overflow	
Type 167:	from 999 999 to zero
Type 168:	adding from 999 999 to zero subtracting from zero to 999 999
Count input:	Max. count frequency 10 kHz min. pulse time 50 µs negative triggered (NPN)
0 reset:	min. pulse time 15 ms negative triggered (NPN)
Direction input (Only Type 168):	switch to 0 V or negative triggered (NPN) Open input: count mode adding Input to zero: 0 V: count mode subtract.
Interference resistance:	EN 50081-1
Interference emmisions:	EN 55022 class B
Working temperature:	–10 °C…+60 °C
Storage temperature:	–10 °C…+60 °C
Housing:	clear and black
Protection:	IP 40
Weight:	7.5 g
Electrical connection:	PCB pin ø 0.4 mm

Dimensions:

without housing

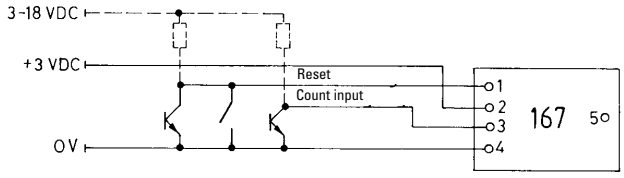


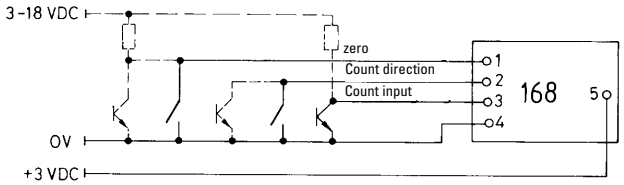
with housing



Panel cut out
29.4 x 22 mm

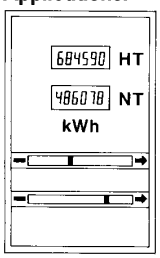
Connections:





	Function	
Pin-No.	Type 167	Type 168
1	reset	reset
2	+ 3 VDC	Count direction
3	Count input	Count input
4	0 V	0 V
5	0 V	+3 VDC

Applications:



kWh counter

Order code:
Type 167: 0.167.012.000
Type 168: 0.168.012.000

Delivery specification:
LCD module
Operating manual

8 digit count module with LCD display

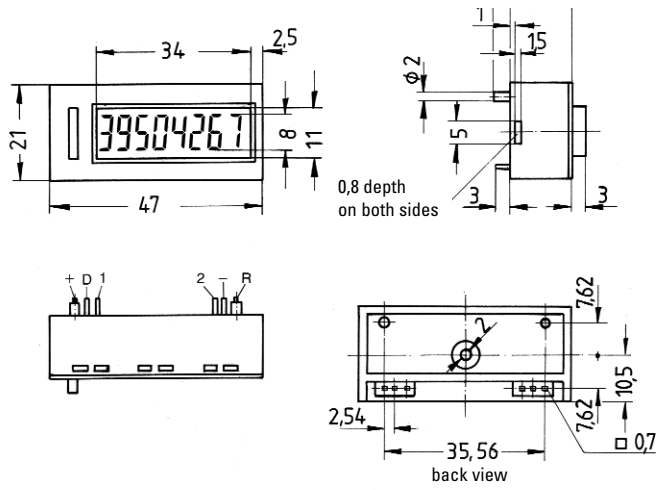
Your benefit
- small dimensions
- PCB mount
- low current consumption, for battery

Product features
- with manual and/or manual and electrical reset
- using a lithium battery with 1000 mAh the life is more than 10 years
- CMOS and TTL compatible

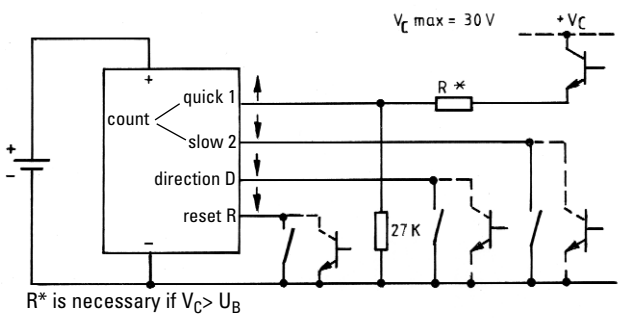
Technical data:

Power supply:	3 V (+0.2, -0.6 V) DC
Display:	LCD, 8-digit, figures 8 mm high
Counting system	adding or subtracting
Inputs:	
Quick count input:	Max. count frequency, 10 kHz, min. pulse time 50 µs Input resistance 1 MΩ Switching level: Low: <0.7 V DC High: <2.5 V – UB (without R*) positive triggered see connection diagram
Slow count input:	Max. count frequency, 40 Hz min. pulse time 13 ms Input resistance 1 MΩ Switching level Low: <0.7 V DC High: <2.5 V – UB , negative triggered
Count direction:	static input, subtracting count as long as the input is 0.
Reset input:	static input, d.h. no count as long as the input is active. Please note: the reset input will be active, when switching to 0 V.
min. pulse time	12 ms
Input resistance	1 MΩ
Switching voltage	1.4 V negative triggered
Interference resistance:	EN 50081-1
Interference emmisions:	EN 55022 class B
Housing colour:	black
Connections:	
	1 quick count input 2 slow input D count direction R reset +, – Power supply
Type:	
	180.2: module with electrical reset 180.3: module with manual and electrical reset

Dimensions:



Connections:



R* is necessary if $V_C > U_B$

Calculation: $R^* = 9\ (V_C – 3)k\Omega$

Example: VC = 24 V, –> R* = 189 kΩ

SSI-Display Type 570

Your benefit

- AC and DC supply voltage in one unit
- Master- or slave mode
- plug-in screw terminals
- SSI-clock frequency from 100 Hz up to 1 MHz
- Display and outputs may be adjusted using scaling- and offset-features
- Large 15 mm high LED-display, 6 digit, with adjustable brightness

Product features

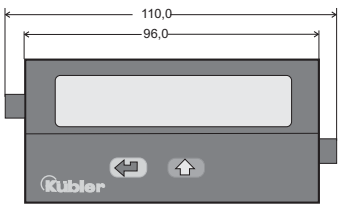
- qualified for SSI-protocols up to 25 Bit
- Version with 2 optocoupler outputs to work as limit or preset values; also with programmable tracking preset.
- Version with scaleable analogue output, resolution 14 Bit, 0 ...10 V, –10 ... +10 V, 0 ... 20 mA or 4 ... 20mA
- Gray- or binary-code
- 48 x 96mm DIN-housing, IP 65

Technical data:

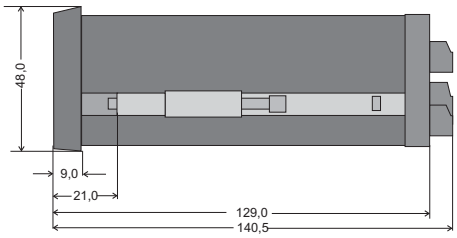
Supply voltage:	17 ... 30 V DC 115/230 V AC ± 12,5 %
Display:	15 mm high LED-display, 6 digits
Current consumption [DC]:	17 V: 190 mA; 24 V: 150 mA; 30 V: 120 mA
Power consumption [AC]:	7.5 VA
Sensor power supply:	24 V DC ± 15%, 120 mA
Inputs:	
SSI-input frequency range:	100 Hz ... 1 MHz
Input reset:	PNP or NPN, programmable 5.1 mA 24 V DC/ R_i = 4.7 kOhm
Input level:	Low: 0 ... 2 V High: 9 ... 35 V
Reset time:	min. 5 ms

Outputs:	
Scaleable analogue output (0.570.012.E90):	0 ... 10 V, –10 ... + 10 V or 0 ... 20 mA, 4 ... 20mA
Resolution:	14 Bit + Sign
Accuracy:	0.1 %
Optocoupler output: (0.570.012.E05)	5 ... 35 V DC/150 mA
Interface:	RS232 and RS 485 to ISO 1745 Drivecom Protokoll
Operating temperature:	0 ... +45 °C
Storage temperature:	–25 ... +70 °C
Protection class:	IP 65 (front)
EMC:	according to EC EMC directive 89/36/EWG
Interference emmisions:	EN 6100-6-3/EN 55011 class B
Interference resistance:	EN 6100-6-2
Weight:	approx. 200 g

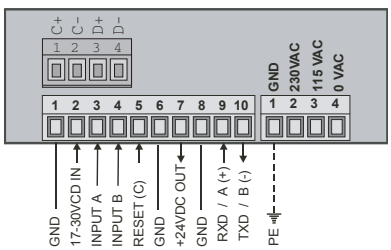
Dimensions:



Panel cut-out: 92 x 45mm

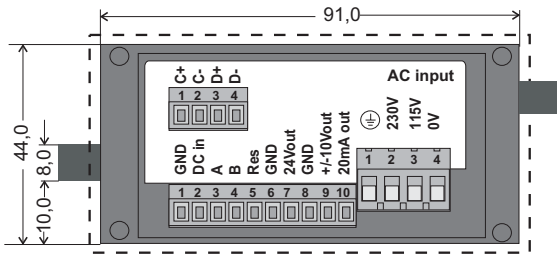


Display with interface (0.570.012.E05)

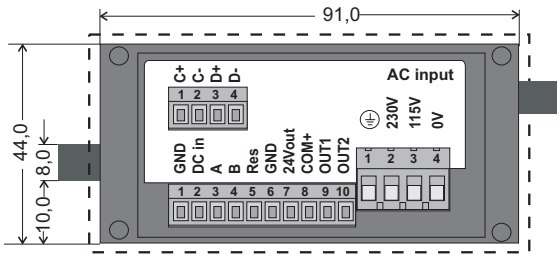


Wiring diagram:

Display with analogue output (0.570.012.E90)



Display with 2 optocoupler outputs (0.570.011.E00)



Do not connect A, B; C+, C– = clock signal SSI; D+, D– = data signal SSI

Delivery specifications:

- SSI-Display
- Seal
- Mounting kit
- plug-in screw terminals
- Manual German/English

Order code:

Display with 2 outputs:	0.570.011.E00
Display with analogue outputs:	0.570.012.E90
Display with interface:	0.570.012.E05

Display Type 571

Your benefit

- AC and DC supply voltage in one unit
- Measuring function can be programmed for RPM, speed (from elapsed time), machine cycle time, throughput and baking time (time interval), as well as numerous count and stop-watch functions
- Scaleable display, programmed via 2 keys
- Large 15 mm high LED-display, 6 digit, with adjustable brightness

Product features

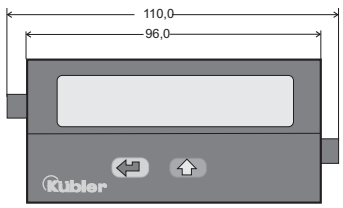
- Fast count input, works with our ***LIMES*** measuring system (100KHz)
- Version with 2 optocoupler outputs for alarms
- Version with analogue output, resolution 14 Bit: 0 ... 10 V, +10 V ... -10 V, 0 ... 20 mA, 4 ... 20 mA
- Version with serial interface RS232/485 for importing and exporting data
- 48 x 96mm DIN housing, IP65

Technical data:

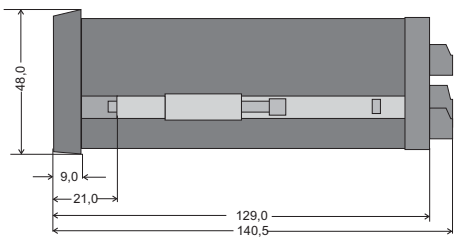
Supply voltage :	16 ... 35 V DC (Normal voltage: 24 V DC) 115/230 V AC ± 12,5 %
Display:	15 mm high LED-display, 6 digits
Current consumption [DC]:	18 V: 120 mA; 24 V: 95 mA; 30 V: 80 mA
Power consumption [AC]:	7,5 VA
Sensor power supply :	24 V DC ± 15%, 120 mA (at AC and DC supply)
Inputs:	3 Inputs (PNP, NPN and Namur) A, B = Impulse, C = Reset
Max. input frequency:	A, B = 25 kHz (100 kHz at count); C = 1 kHz
(Accuracy:	±1 ppm ± 1 digit
Input level HTL:	Low: 0 ... 3,5 V High: 9 ... 35 V

Outputs:	
Analog-Output: (0.571.012.E90)	0 ... +10 V, 0 ... –10 V and 0 ... 20 mA, 4 ... 20mA
Resolution:	14 Bit + Sign
Accuracy:	0,1 %
Optocoupler-Output: (0.571.011.E00)	5 ... 35 V DC/150 mA
Interface (0.571.012.E05)	RS232 and RS485 acc. to ISO 1745 Drivecom Protocol
Operating temperature:	0 ... +45 °C
Storage temperature:	–25 ... +70 °C
Protection	IP 65 (front)
EMV:	according to EC EMC directive 89/36/EWG
Interference emmisions:	EN 50081-2/EN 55011 Class B
Interference resistance:	EN 6100-6-2
Weight:	appr. 200 g

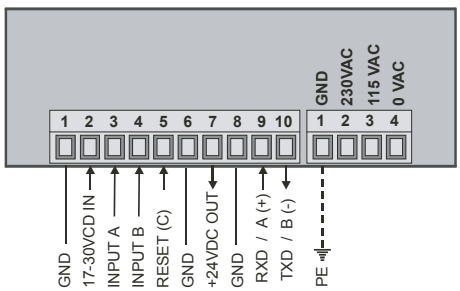
Dimensions:



Panel cut out: 91 x 44mm

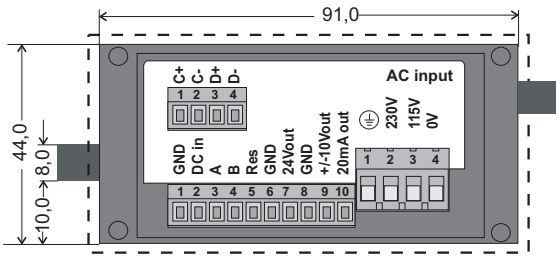


Display with seriell Interface (0.571.012.E05)

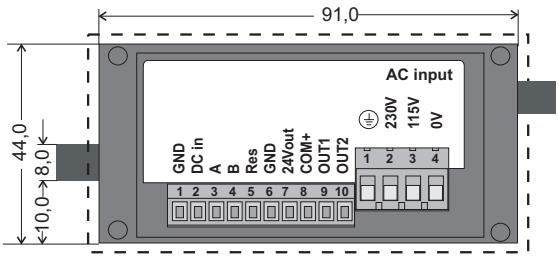


Terminal assignment:

Display with analog output (0.571.012.E90)



Display with 2 Optocoupler outputs (0.571.011.E00)



Includes:

- Display 571
- Seal
- Mounting kit
- plug-in screw terminals
- Manual german/english

Order data:

Display with 2 outputs	Order code: 0.571.011.E00
Display with analog outputs	Order code: 0.571.012.E90
Display with ser. Interface	Order code: 0.571.012.E05

Preset counter BVa 15

- 3- or 5 digit **adding** preset counter with stationary preset value
- Preset value remains unchanged but can be adjusted at any time during the counting operation
- 0-reset manual
- Potential free changeover contact (micro-switch) on reaching the preset Contact remains switched till a 0-reset occurs
- Contact is released in its position until 0-resetting
- Counter without front bezel fits into front frame F2B and may be combined in blocks of 50 x 50 mm
- Can be combined with the counter series B-, MVs 36- and HVa.

Applications

Piece-counting, automation

Technical data:

Electrical connection:	Silver-plated tabs ø 1.5 mm with push-on connectors (counter) Silver plated tabs 0.8 x 2.8 mm (socket box)
Rated voltages:	Counting mechanism: 12/24/48/115 V DC ±10 % 24/48/115/230 V AC ± 10 %
Figures :	Counter 4.5 mm , Preset 4 mm
Colour of housing:	Black
Colour of figures:	Counter: white on black , Preset: yellow on black
Shaft:	stainless steel
Mounting position:	optional
Service life:	appr. 100 x 10^6 Pulse
Weight:	appr. 130 g
Test voltage:	2000 V, effective
Switching contact:	1 change over contact (micro switch), release in 2nd half-step on the preset number

Loading (max):	AC: 250 V AC, 2A DC: 24 V DC, 2 A 60 V D. 0,7 A 115 V DC, 0,4 A 230 V DC, 0,2 A, at **resistive** Load. Suitable spark quenching is required on **inductive** load, reducing the max. current to 60%
Options:	Key locking 0-reset
	Key locking transparent cover
	Counter with front plate size 3 Art.-No.: 2.1X0.**7**XX.XXX
	Flexible sealing coverK2 (IP 54)
	Counter with front frame no. 3 Art.-No.: 2.1X0.**6**XX.XXX
	Screw terminal

Type series:

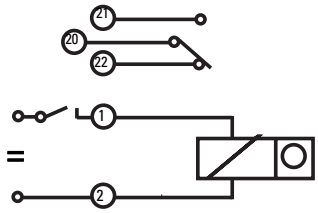
Manual reset		Description
5 digit	3 digit	
BVa 15.01	BVa 15.01/3	no front frame
BVa 15.11	BVa 15.11/3	front frame 1 with mounting holes
BVa 15.21	BVa 15.21/3	front frame 2 with spring clip
BVa 15.31	BVa 15.31/3	front bezel 3 with mounting holes

Counting mechanism:

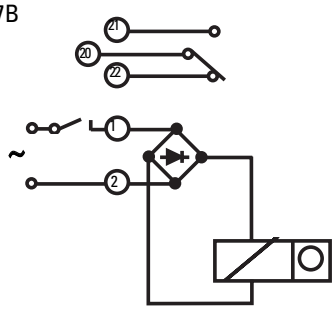
Voltage	Model	max. CP7s	Min. pulse-duration	Min. pulse-interval	Pulse-ratio	On time	Power consump-tion	Ripple voltage max.	Ambient temperature ° C
V DC	I	25/sec	24 ms	16 ms	3:2	100 %	3 W	48 %	–10 ... +60 °C
V AC	a	18/sec	27.7 ms	27.7 ms	1:1	100%	3 VA	-	–10 ... + 55 °C

Connection diagrams

26B



27B



Preset counter electromechanical

Delivery specification:

Counter complete with push-on connectors

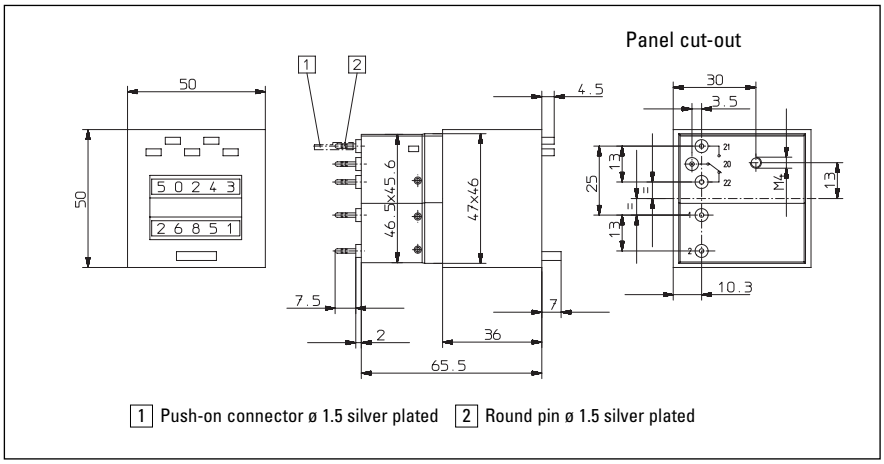
Accessories:

– Socket box 946.1
– Sealing cover K2
– Front frame F2B

Order information:

– Art-No.
– If special voltages ... are requested, please state exact counter type, voltage and model e.g. BVa 15.31, 12 V DC....

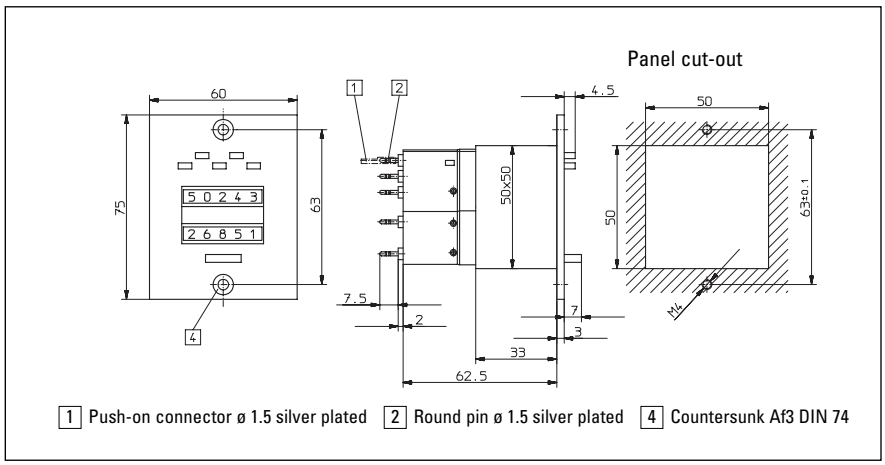
Type BVa 15.01



	BVa 15.01			BVa 15.01/3		
	24 V Art-No.	115 V Art-No.	230 V Art-No.	24 V Art-No.	115 V Art-No.	230 V Art-No.
DC (25 Imp/s)	2.100.011.033	–	–	2.120.011.033		
AC (18 Imp/s)	2.100.011.061	2.100.011.064	2.100.011.066	2.120.011.061	2.120.011.064	2.120.011.066

Colour of housing black:
Art-.No. 2.1X0.011.XXX

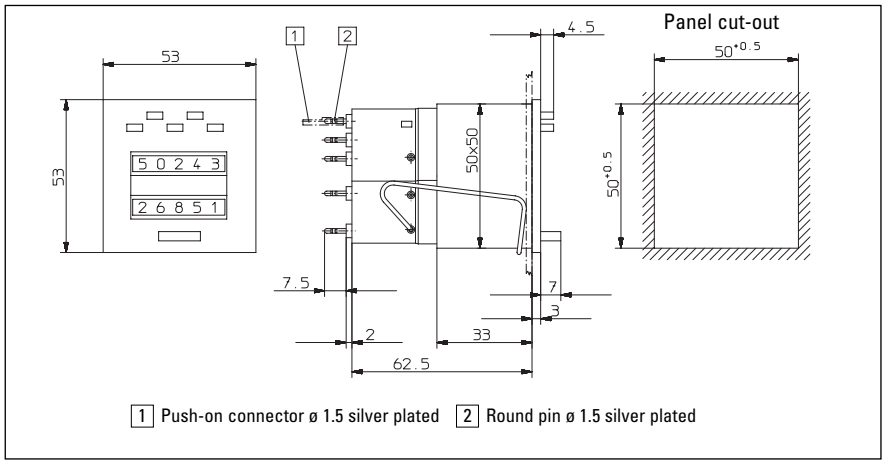
Type BVa 15.11



	BVa 15.11			BVa 15.11/3		
	24 V Art-No.	115 V Art-No.	230 V Art-No.	24 V Art-No.	115 V Art-No.	230 V Art-No.
DC (25 Imp/s)	2.100.110.033	–	–	2.120.110.033		
AC (18 Imp/s)	2.100.110.061	2.100.110.064	2.100.110.066	2.120.110.061	2.120.110.064	2.120.110.066

Colour of housing black:
Art-.No. 2.1X0.111.XXX

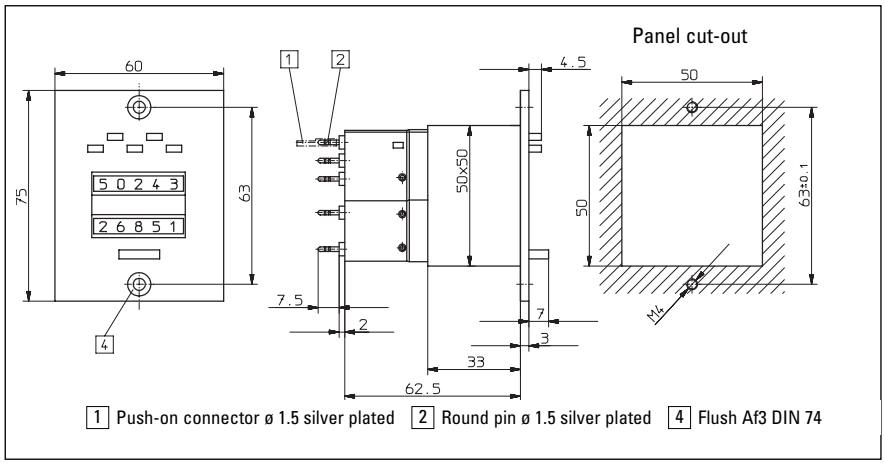
Type BVa 15.21



	BVa 15.21			BVa 15.21/3		
	24 V	115 V	230 V	24 V	115 V	230 V
	Art-No.	Art-No.	Art-No.	Art-No.	Art-No.	Art-No.
DC (25 Imp/s)	2.100.210.033	–	–	2.120.012.033		
AC (18 Imp/s)	2.100.210.061	2.100.210.064	2.100.210.066	2.120.210.061	2.120.210.064	2.120.210.066

Colour of housing black:
Art-.No. 2.1X0.211.XXX

Type BVa 15.31



	BVa 15.11			BVa 15.11/3		
	24 V	115 V	230 V	24 V	115 V	230 V
	Art-No.	Art-No.	Art-No.	Art-No.	Art-No.	Art-No.
DC (25 Imp/s)	2.100.310.033	–	–	2.120.110.033		
AC (18 Imp/s)	2.100.310.061	2.100.310.064	2.100.310.066	2.120.310.061	2.120.310.064	2.120.310.066

Colour of housing black:
Art-.No. 2.1X0.311.XXX

Options:

Key-locking 0-reset:
Colour of housing grey: Art-No. 2.1X0XX**6**.XXX
Colour of housing black Art-No. 2.1X0.XX**7**.XXX

Knob-locking transparent cover (IP55)
Counter with front plate size 3
Art-No. 2.1X0.**8**XX.XXX

Flexible sealing cover K2 (IP 54)
Counter with front plate size 3
Art-No. 2.1X0.**6**XX.XXX

Preset counter MVs 13

- Subtracting preset counter with 2 or 3 digits
- Manual or electrical reset
- Potential free change-over contact (micro switch)
- Contact remains in its position until resetting
- Delivery includes counter according to specifications and flat push-on connectors 2.8 mm.

Applications

Piece-counting,
General event counting,
automation etc.

Technical data:

Electrical connection:	Silver plated flat pins 0,8 x 2,8 mm with push on connectors
Rated voltages:	Count magnet: 12/24/48/115/230 V DC ±10 % 24/48/115/230 V AC ±10 % Reset magnet: 24/48/115/230 V DC ±10 % 24/48/115/230 V DC ±10 %
Figures height:	4 mm
Colour of housing:	grey, similar to RAL 7001
Colour of figures:	white on black background
Shaft:	stainless steel
Mounting position:	optional
Service life:	appr. 100 x 10^6 impulses
Weight:	with manual reset appr. 150 g, with electrical reset appr. 190 g
Test voltage:	2000 V, effective

Switching contact:	1 change over contact (micro switch), release in 2nd half-step on the preset number
Load (max):	AC: 250 V AC, 2A DC: 24 V DC, 2 A 60 V D. 0,7 A 115 V DC, 0,4 A 230 V DC, 0,2 A, at **resistive** load. at **inductive:** Suitable spark quenching is required on inductive load, reducing the max,. current to appr. 60 %
Options:	electrical reset only (on request)

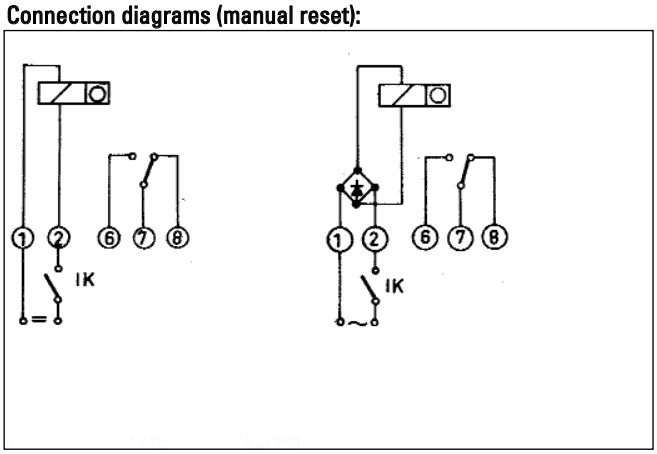
Type series:

3-digit		2-digit		Description
Reset manual	Reset man. and electr.	Reset manual	Reset man. and electr.	
MVs 13.11	MVs 13.13	MVs 13.11/2	MVs 13.13/2	Front panel with mounting holes
MVs 13.21	MVs 13.23	MVs 13.21/2	MVs 13.23/2	Front panel with spring clip

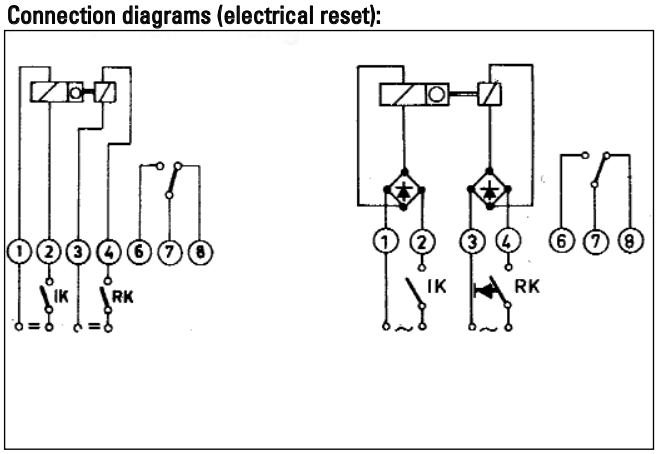
Count mechanism:

Voltage	Model	max. pulse-speed	Min.-pulse-on-time	Min.-pulse-interval	Pulse-ratio	On time appr.	Power consumption	Max. res. ripple	Ambient temperature ° C
V DC	1	25/sec	24 ms	16 ms	3:2	100 %	4 W	48 %	–10 ... +45 °C
V AC	a	18/sec	22.2ms	33.3 ms	2:3	100%	4.5 VA	-	–10 ... + 45 °C

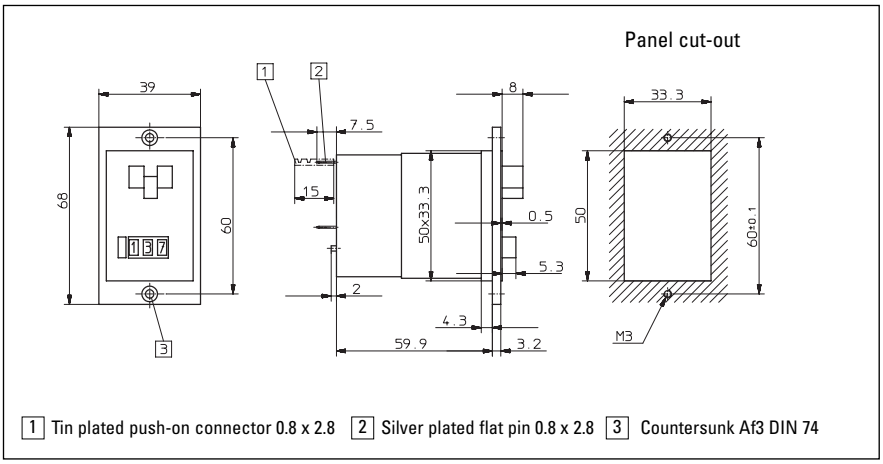
Connection diagrams (manual reset):



Connection diagrams (electrical reset):



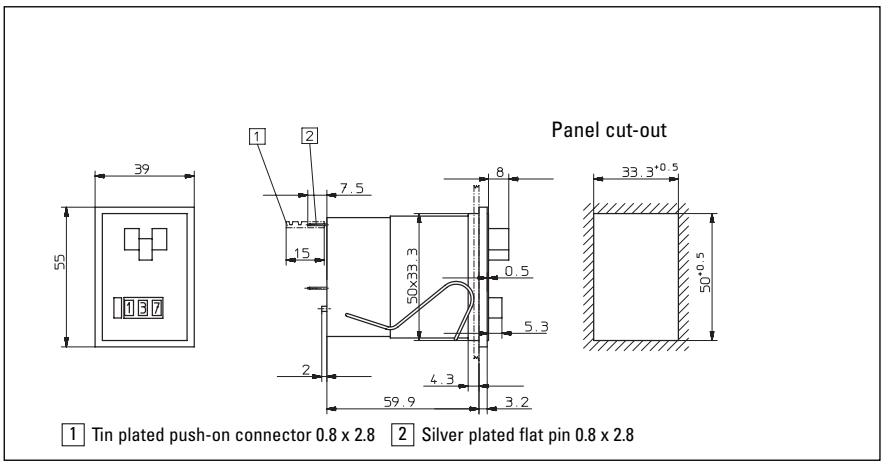
Type MVs 13.11



manual reset

	MVs 13.11(3-digit)			MVs 13.11/2 (2-digit)		
	24 V Art-No.	115 V Art-No.	230 V Art-No.	24 V Art-No.	115 V Art-No.	230 V Art-No.
DC (25 Imp/s)	2.300.110.033	–	–	2.310.110.033		
AC (18 Imp/s)	2.300.110.061	2.300.110.064	2.300.110.066	2.310.110.061	2.310.110.064	2.310.110.066

Type MVs 13.21

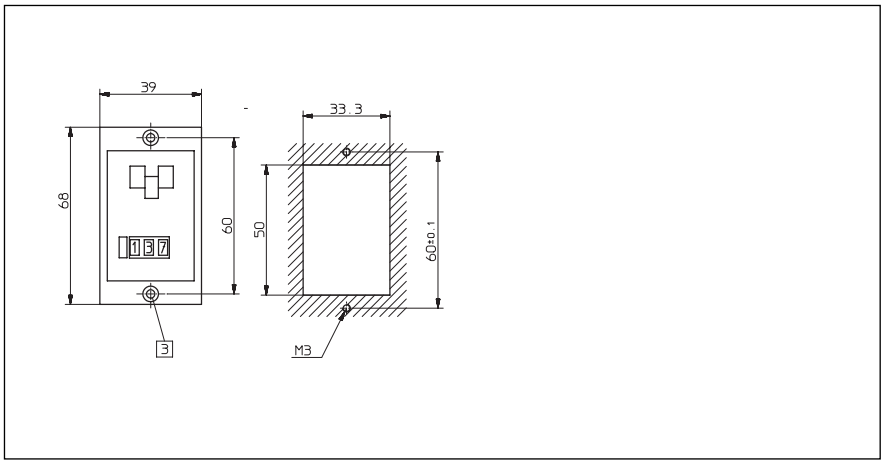


manual Reset

	MVs 13.21 (3-digit)			MVs 13.21/2 (2-digit)		
	24 V Art-No.	115 V Art-No.	230 V Art-No.	24 V Art-No.	115 V Art-No.	230 V Art-No.
DC (25 Imp/s)	2.300.210.033	–	–	2.310.210.033		
AC (18 Imp/s)	2.300.210.061	2.300.210.064	2.300.210.066	2.310.210.061	2.310.210.064	2.310.210.066

Colour of housing
black:
Art-.No. 2.3X0.211.XXX

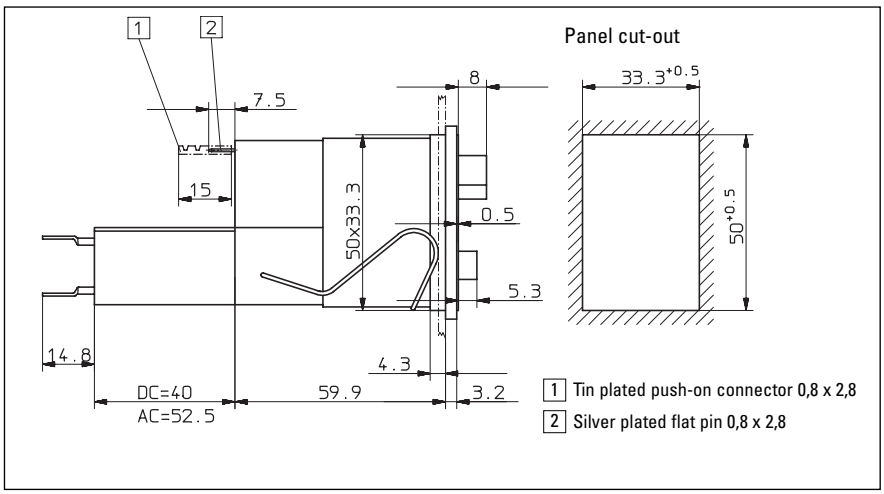
Type MVs 13.13



manual and electrical reset

	MVs 13.13 (3-digit)			MVs 13.13/2 (2-digit)		
	24 V	115 V	230 V	24 V	115 V	230 V
	Art-No.	Art-No.	Art-No.	Art-No.	Art-No.	Art-No.
DC (25 Imp/s)	2.300.130.033	–	–	2.310.210.033		
AC (18 Imp/s)	2.300.130.061	2.300.130.064	2.300.130.066	2.310.130.061	2.310.130.064	2.310.130.066

Type MVs 13.23



manual and electrical reset

	MVs 13.23 (3-digit)			MVs 13.23/2 (2-digit)		
	24 V	115 V	230 V	24 V	115 V	230 V
	Art-No.	Art-No.	Art-No.	Art-No.	Art-No.	Art-No.
DC (25 Imp/s)	2.300.230.033	–	–	2.310.230.033		
AC (18 Imp/s)	2.300.230.061	2.300.030.064	2.300.230.066	2.310.230.061	2.310.230.064	2.310.230.066

Preset counter MVs 16

- **Subtracting** preset counter with 3 or 6 digits
- Manual or manual and electrical reset
- Potential free charge over contact (micro switch) on reaching zero
- Contact remains in its position until resetting
- Delivery includes counter as ordered and flat push-on connectors

Applications

Piece and batch counting, quantities automation processes etc.

Technical data:

Electrical connection:	silver plated flat pins 0,8 x 2,8 mm with push-on connectors) , silver plated flat tabs 0,8 x 2,8 mm (socket box)
Rated voltages:	Counting magnet: 12/24/48/115 V DC ±10 % 24/48/115/230 V AC ±10 % Reset magnet: 24/48/115 V DC ±10 % 24/48/115/230 V DC ±10 %
Figures:	4 mm
Colour of housing:	grey, similar to RAL 7001
Colour of figures:	white on black
Shaft:	stainless steel
Mounting position:	optional
Service life:	appr. 100 x 10^6 pulses
Weight:	with manual reset appr. 170 g, with electrical reset: appr. 210 g

Test voltage:	2000 V AC, effective
Switching contact:	1 change over contact (micro switch), Contact making in 2nd half step at zero
Load (max):	AC: 250 V AC, 2A DC: 24 V DC, 2 A 60 V D. 0,7 A 115 V DC, 0,4 A 230 V DC, 0,2 A, at **resistive** load.
	at **inductive** load: Suitable spark quenching is required on inductive load, reducing the max. current to appr. 60%

Type series:

6-digit		Description
reset manual	reset man. and electr.	
–	MVs 16.03	no front bezel, plug-in socket
MVs 16.11	–	front bezel 1 with mounting holes
MVs 16.21	MVs 16.23	front bezel 2 with spring clip

Options:

Locking tranparent cover (IP55) counter with front bezel 3 3 Art-No. 2.1X0.**7**XX.XXX

Tranparent locking cover (IP55) Counter with front bezel 3 Art-No. 2.1X0.**8**XX.XXX

Flexible sealing cover K2 (IP 54) counter with front bezel size 3 Art-No. 2.1X0.**6**XX.XXX

Accessories:

Socket box 926.1 Art-No. G.008.443

Sealing cover
K2 grey: Art-No. G.008.302
K2 black: Art-No. G.008.303

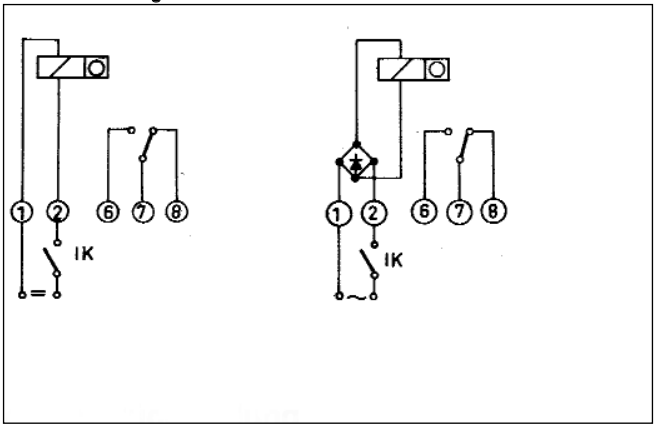
Front bezel
F2M grey Art-No. T.008.105

Delivery includes flat pin connectors

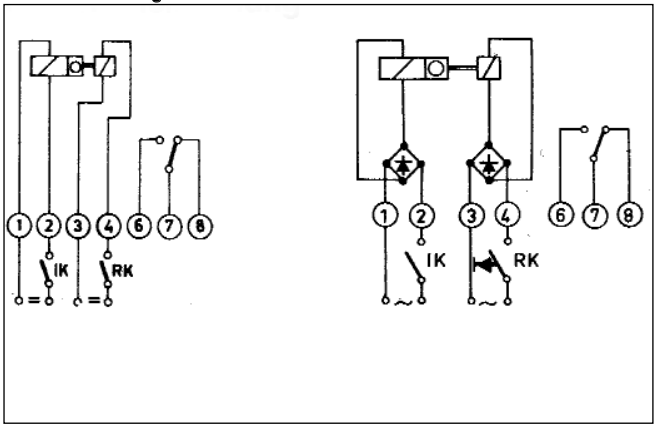
Count mechanism:

Voltage	Model	Max. impulse-speed	Min. pulse-on-time	Min. pulse-Interval	pulse-ratio	On time	Power consumption	Max. res ripple	Ambient temperature ° C
V DC	I	25/sec	24 ms	16 ms	3:2	100 %	4 W	48 %	–10 ... +45 °C
V AC	a	18/sec	22.2ms	33.3 ms	2:3	100%	4.5 VA	-	–10 ... + 45 °C

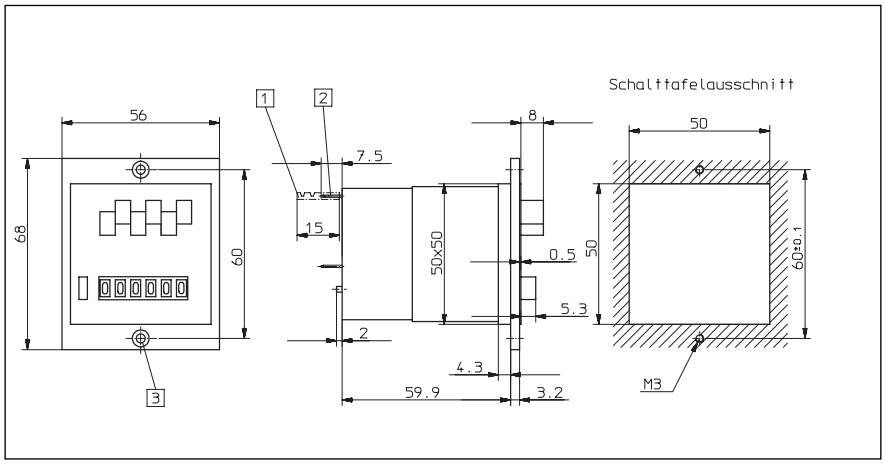
Connection diagram manual reset:



Connection diagram electrical reset:



Type MVs 16.11

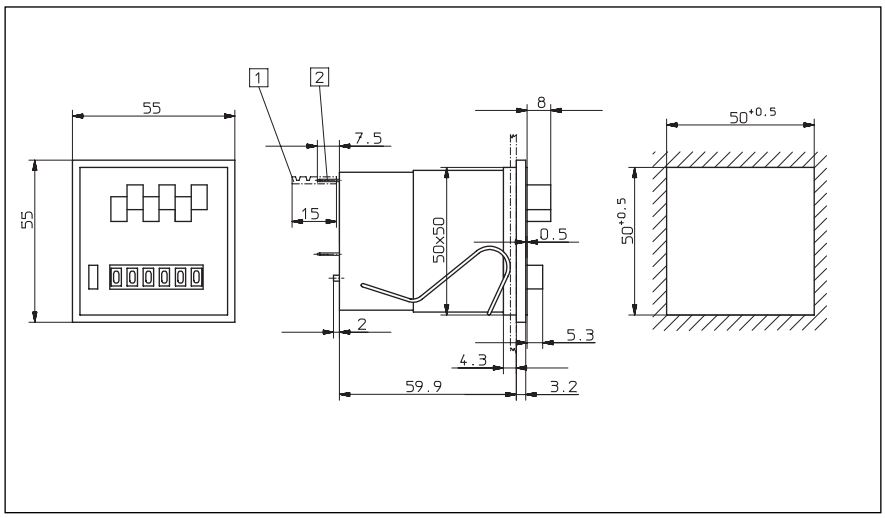


manual reset

	MVs 16.11 (6-digit)		
	24 V	115 V	230 V
	Art-No.	Art-No.	Art-No.
DC (25 Imp/s)	2.320.110.033	–	–
AC (18 Imp/s)	2.320.110.061	2.320.110.064	2.320.110.066

1 Tin plated push-on connector 0.8 x 2.8
2 Silver plated flat pin 0.8 x 2.8

Type MVs 16.21

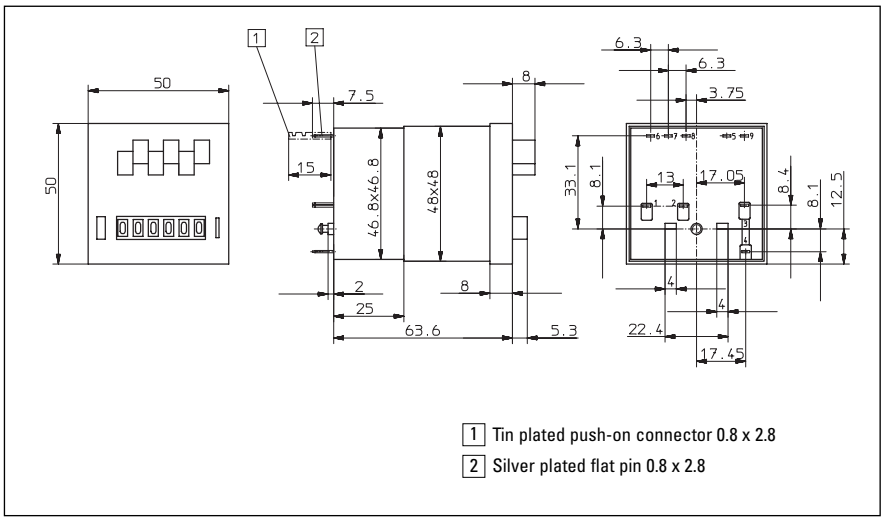


manual reset

	MVs 16.21 (6-digit)		
	24 V	115 V	230 V
	Art-No.	Art-No.	Art-No.
DC (25 Imp/s)	2.320.210.033	–	–
AC (18 Imp/s)	2.320.210.061	2.320.210.064	2.320.210.066

1 Tin plated push-on connector 0.8 x 2.8
2 Silver plated flat pin 0.8 x 2.8

Type MVs 16.03

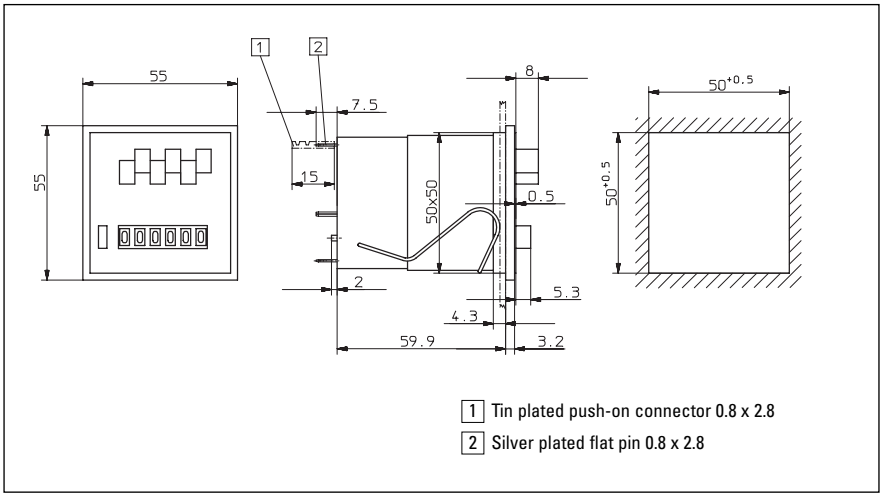


1 Tin plated push-on connector 0.8 x 2.8
2 Silver plated flat pin 0.8 x 2.8

manual and electrical reset

	MVs 16.03 (6-digit)		
	24 V Art-No.	115 V Art-No.	230 V Art-No.
DC (25 Imp/s)	2.320.030.033	–	–
AC (18 Imp/s)	2.320.030.061	2.320.030.064	2.320.030.066

Type MVs 16.23



1 Tin plated push-on connector 0.8 x 2.8
2 Silver plated flat pin 0.8 x 2.8

manual and electrical reset

	MVs 16.23 (6-digit)		
	24 V Art-No.	115 V Art-No.	230 V Art-No.
DC (25 Imp/s)	2.320.230.033	–	–
AC (18 Imp/s)	2.320.230.061	2.320.230.064	2.320.230.066

Dv MVs 16.31
(knob locking cover)

DVs 16.31
(key locking cover)

Front frame F2M

Socket box 926.1

Flexible cover K2

for more details about accessories,
see page 181

Type 715

Your benefit

- 5 digit preset counter with one preset point, add./subtr.
- bright 5 digit LED display with 7,5 mm high characters
- programmable as pulse counter, frequency meter or timer
- Supply voltage: 230 V AC, 115 V AC or 11 ... 30 V DC
- cULus approval

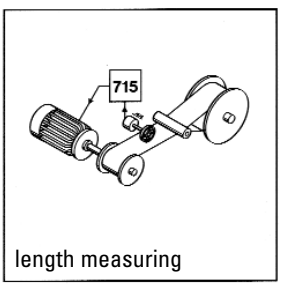
Further product features

- display range –19999 ... 9999 with zero blanking
- easy programming of preset pint; one key for each digit
- Relay or optocoupler output
- prescaling factor 0.001 ... 9.999

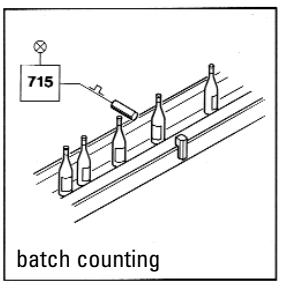
Technical data

Supply voltage:	11 ... 30 V DC, with reverse polarity protection 115 V AC, 230 V AC
Current consumption:	max. 100 mA, 4 VA
Display:	5 digit 7 segment red LED display; 7.5 mm high characteristics
Polarity of input signals:	programmable, all inputs in common.
Input resistance:	approx. 10 kΩ
Count frequency:	via DIL switches separately selectable for INP A and INP B 30 Hz, 10 kHz (7.5 kHz for input mode E4) automatical reset 1 kHz without count losses (600 Hz for input mode E4)
Min. pulse length of the control inputs:	5 ms
Input sensitivity:	DC supply voltages: Low: 0 ... 0.2 x U_B [V DC] High: 0.6 x U_B ... 30 V DC AC supply voltages: Low 0 ... 4 V DC High 12 ... 30 V DC
Pulse shape:	variable (Schmitt Trigger characteristic)
Output Relay:	wit potential-free change-over contact
	switching voltage max. 250 V AC/300 V DC switching current max. 3 A, switching current for DC min. 30 mA switching performance: max. 50 W for DC max. 2000 VA for AC
Optocoupler:	with open collector and emitter switching performance max. 30 V DC, 15 mA
Responding time of outputs:	Relay: appr. 6 ms Optocoupler: appr. 1 ms
Data retention:	min. 10 Years or 10^6 memory cycles
Transmitter voltage:	24 V DC –40 %/+15 %, 80 mA unstabilized for AC versions
Ambient temperature:	0 ... +50 °C
Storage temperature:	–25 ... +70 °C
EMC:	EN 61 000-6-4/EN 55011 class B EN 61 000-6-2
UL certified:	File E128604
Protection:	IP65 (front)
Weight:	appr. 240 g, (AC-version with relay)

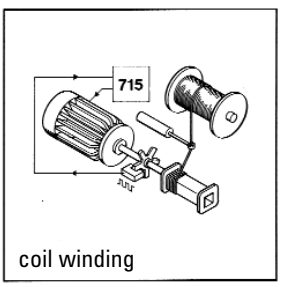
Applications



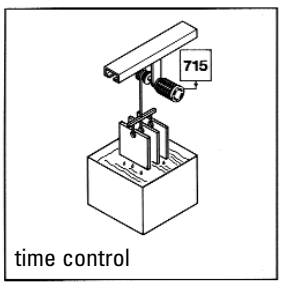
length measuring



batch counting



coil winding



time control

Operating modes

Operating modes	Counting starts at	Output signal at count value	Kind of signal
1	0	≥ preset value	permanent or timed signal
2	preset value	≤ 0	permanent or timed signal
3	0	= preset value	timed signal and autom. reset
4	preset value	= 0	timed signal and autom. reset

Selection of basic function

1. Pulse counter

Mode: see table
Decimal point: 0 ... 3 decimal places (only optical function)
Polarity: npn or pnp
Input modes:
E1: One count input and one count direction input. While this input is not activated the counter adds, if it is activated the counter will subtract.
E2: Differential input, one up input and one down input
E3: Quadrature input for two lines of count pulses 90° out of phase. Up and down counting is automatic.
E4: Quadrature input with pulse doubling. Each pulse edge of count input "A" will be counted. Up and down counting is automatic.
Prescaling factor: 0,001 ... 9,999
Output signal: Permanent signal or timed signal selectable (0,01 ... 99,98 s)

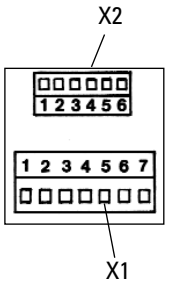
2. Frequency counter

Gate: Gate time selectable from 0,001 ... 99,99 s
Decimal point: 0 ... 3 decimal places
Polarity: npn or pnp
Input modes: see pulse counter E1 ... E4
Scaling factor: 0,001 ... 9,999
Output signal: Permanent or timed signal selectable (0,01 ... 99,98 s)

3. Timer

Operating mode: see pulse counter
Counting: s, min or h;
Resolution: 0,001; 0,01; 0,1 or 1,0
Polarity: npn or pnp
Output signal: Permanent signal or timed signal (0,01 ... 99,98 s)

Connection diagram:



Plug connection X1:

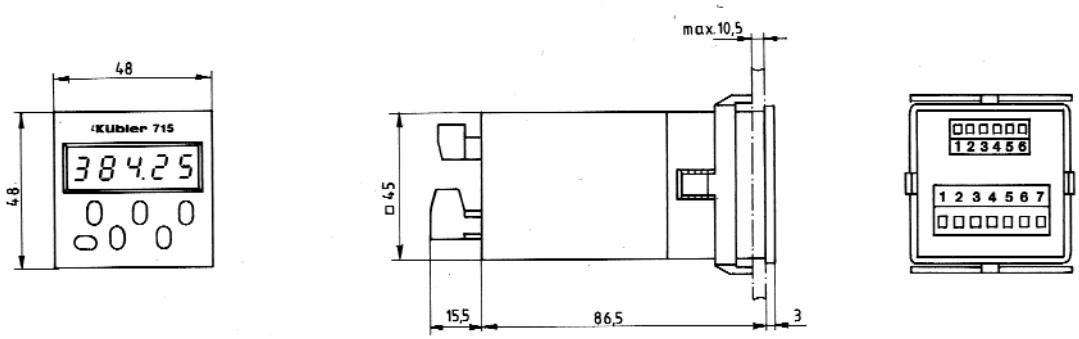
Pin	115/230 V AC version	11 ... 30 V DC version
1	+24 V DC transmitter voltage	–
2	0 V DC (GND)	–
3	Relay output common contact (C) Optocoupler output Emitter	
4	Relay output normally open contact (NO)	
5	Relay output normally closed (NC) Optocoupler output collector	
6	115 V AC/230 V AC	11 ... 30 V DC
7	115 V AC/230 V AC	0 V DC (GND)

Plug connection X2:

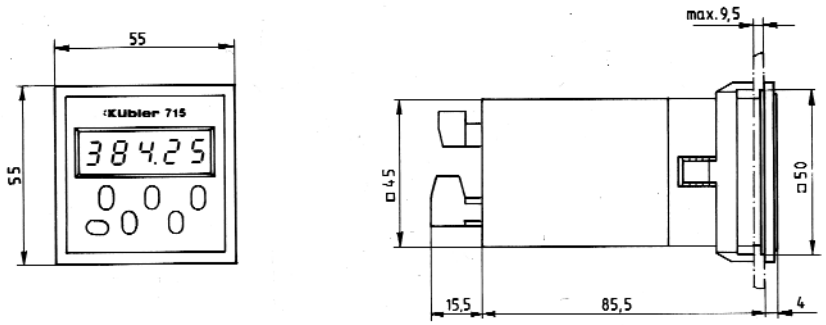
Pin	Designation	Function
1	INP A	Count input A
2	INP B	Count input B
3	Gate	gate input
4	Reset	reset input
5	Latch	display stop input
6	Key	keyboard lock input

Dimension:

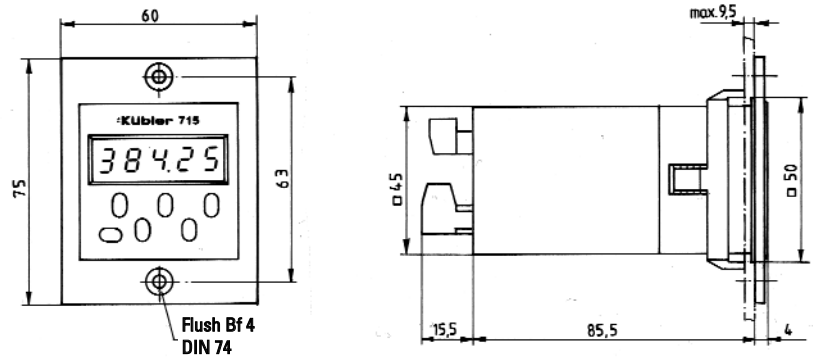
715: panel cut-out 45 x 45 mm



715: with front frame 2
panel cut-out 50 x 50 mm



715: with front frame 3
panel cut-out 50 x 50 mm



Delivery specification:

Counter715
1 screw terminal plug 7 pin
1 screw terminal plug 6 pin
1 bezel for screw mount
panel cut-out 50 x 50 mm
1 bezel for clip mount
panel cut-out 50 x 50 mm
1 panel mounting clip
1 panel cut-out template
1 operating manual

Order code

6.715.01X.X00

Supply voltage
0 = 230 V AC
1 = 115 V AC
3 = 11 ... 30 V DC

Output
0 = Relay
1 = Optocoupler

Type 716/717 and 717 Ex

Your benefit

- very bright 8 mm high display
- programmable as a pulse counter, frequency meter or an operating time counter
- Wide range Power supply
  90 ... 260 V AC or
  10 ... 30 V DC
- cULus approval
- Ex-proof version

Further product features

- Display range –199 999 ... 999 999 with zero blanking
- easy to use and programmable with only 4 keys
- Option: serial interface RS 232, RS 422, RS 485
- Relay or optocoupler output
- Scaling factor 0.0001 ... 99.9999

716: one preset
717: two presets

Technical data

Supply voltage:	10 ... 30 V DC, max. 1,2 W with reverse polarity protection 90 ... 260 V AC, max. 5 VA
Display:	6-digit red 7 segment LED; 8 mm high
Counting inputs:	2 counting inputs, 4 types of programmable inputs
Polarity of the inputs:	programmable, common for all inputs
Input resistance:	appr. 10 kΩ
Counting frequency:	20 kHz, cab be reduced to 30 Hz
Minimum pulse duration for inputs:	5 ms
Input switching level:	DC version: Low: 0 ... 0,2 x U_B [V DC] High: 0.6 x U_B ... 30 V DC AC version: Low 0 ... 4 V DC High 12 ... 30 V DC
Pulse shape:	any shape (Schmitt-Trigger)
Output 1 Relay:	with potential-free contacts, programmable as normally-closed (NC) or normally-open (NO) switching voltage max. 250 V AC/125 V DC, switching current max. 3 A. switching current min. at DC 30 mA switching power max. DC 90 W max. AC 750 VA
or npn optocoupler:	with open collector and emitter switching power 30 V DC/15 mA
Output 2 Relay:	with potential free switching contact, programmable opening or closing. switching voltage max. 250 V AC/300 V DC, switching current max. 3 A. switching current at DC min. 30 mA switching power at DC 50 W at AC max. 2000 VA
or npn-optocoupler:	with open collector an d emitter switching power 30 V DC/15 mA
Accuracy:	<0,1 % (at frequency meter mode) ±50 ppm (at time counter mode)
Output response time:	Relay: appr. 7 ms Optocoupler: appr. 2 ms
Data storage:	min. 10 years or 10^6 memory cycles
Transmitter voltage:	24 V DC –40 %/+15 %, 100 mA at AC version
Ambient temperature:	–10 ... +50 °C
Storage temperature:	–25 ... +70 °C
EMC:	according to EC EMC directive 89/36/EWG
EMC:	EN 61 000-6-4/EN 55011 class B EN 61 000-6-2
Protection:	IP65 (front) EX-proof IP54
Weight:	appr. 200 g, Ex-execution 2 kg
only for ex proof:	Counter in EX proof version acc. to explosion-proof class EEx D IIC T6, with encapsulated cable 2 x 3 m PTB approval no. Ex-96.D. 1024 hartcoated AL-housing function mode as type 717 Note: the Ex-proof version has an additional fuse.

Inputs

2 counting inputs
The maximum frequency is 20 kHz (20 kHz in the phase discriminator mode); it can be reduced to 30 Hz

Gate
Static gate input
pulse count mode: no counting, when the input is active
timer mode: Counting when active gate.lo or not activated Gate.hi programmable

Reset
Dynamic reset input with the same function as the reset key. Resets the counter to zero, when counting up and sets it to the preset value when counting down

Key
Static key lock input. The keys are locked as long as this input is on. The preselection display key remains active.

Interfaces:

The devices can be fitted with the optional RS 232, RS422 or with the RS 485 interfaces. These interfaces can be used to program the devices as well as for remote reading. They are simply controlled by ESC sequences, max. 4800 Baud

Programming

The counters 716/717 are programmed by means of the 4 front keys. The operator guidance on this display allows a simple and intuitive programming. All settings can be carried out by selecting the corresponding parameters in this menu.

The follow modes can be programmed

1. Pulse counter
2. Frequency meter
3. Time meter

Programmable are:

Input polarity:

Positive (pnp) or negative (npn). The selection is valid for all inputs

Pulse or time counting modes:

– adding with counting; start at 0
– subtracting with counting start at the preset (716) and at preselection 2 (717)
– adding with automatic reset when the preset (716) or the preset 2 (717)
– subtracting with automatic positioning at the preset (716) or preset 2 (717) when 0 is reached

Input types in pulse counter mode:

Cnt.Dir	1 counting input 1 counting direction input
uP.dn	Differential counting 1 adding input 1 subtracting input
quad	Phase discriminator to connect encoders with 2 signals shifted by 90°
quad2	Phase discriminator with double pulse processing, to connect pulse sources with 2 signals shifted by 90°

Decimal place:

Data can be displayed with with one, two or three decimal point

Factor

For an optimum matching of the measuring signal, the displayed values can be weighted by a scale factor between 0.0001 and 99.9999.

Output signal

The function of the output signal can be preselected (independently for both outputs of model 717) as a normally-closed, normally open or a negative pulse signal.

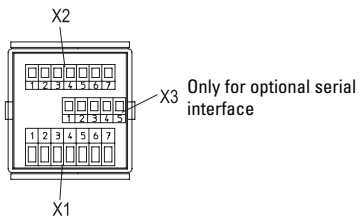
Maximum counting frequency

The maximum counting frequency can be set to 30 Hz or 20 kHz.

Timer

Counting can be carried out in h, min, s or in h:min:s. The number of decimal places determines the resolution. A resolution up to the ms-range can be achieved.

Connection diagram:



Pin connection X2:

Pin	description	AC version	DC-Version
1	+24 V DC	Power supply	n.c.
2	0 V DC (GND)	GND	n.c.
3	INP A	Count input A	
4	INP B	Count input B	
5	Reset	Reset input	
6	Gate	Gate input	
7	Key	input for key lock	

Pin connection X1:

Pin	AC version	DC version
1	Output1 Relay Collector at Optocoupler output	
2	Output 1 Relay Emitter at Optocoupler output	
3	Output 2 Relay common contact (C) Emitter at optocoupler output	
4	Output 2 Relay closing contact (NO)	
5	Output 2 Relay opening contact (NC) Collector at Optocoupler-output	
6	Power supply 90 ... 250 V AC	10 ... 30 V DC
7	90 ... 250 V AC	0 V DC (GND)

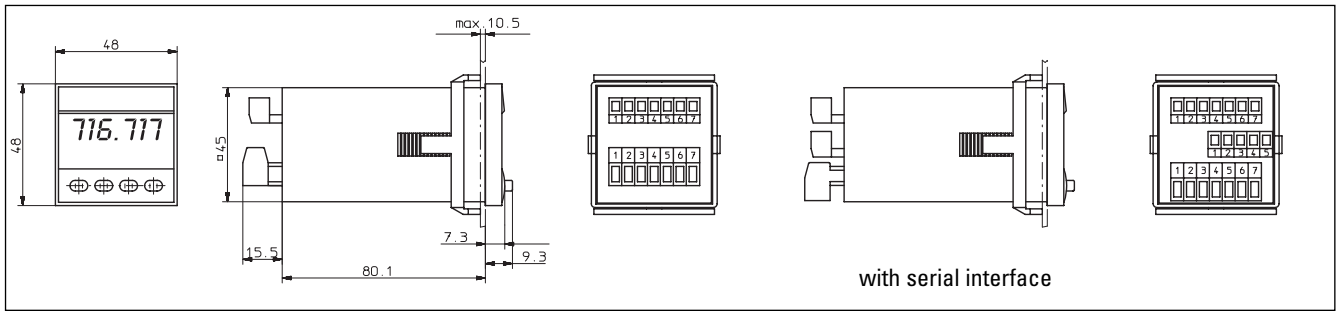
Pin connection X3:

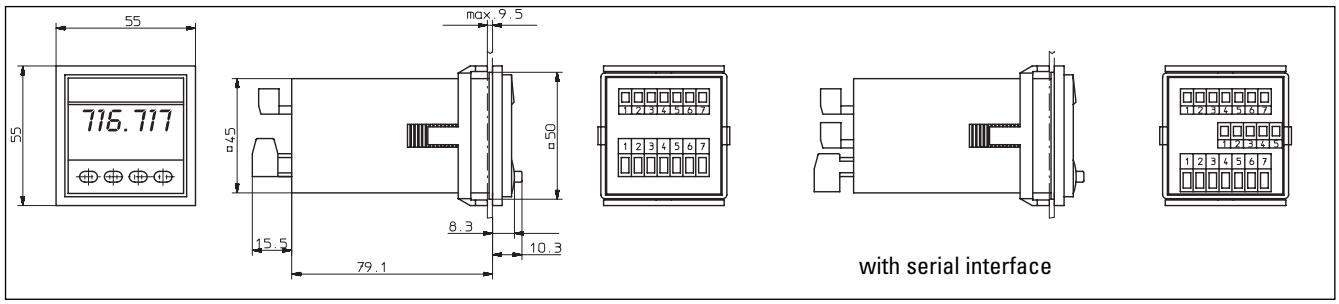
PIN No.	RS232	RS 422	RS 485
1	GND	–	–
2	RxD	RI+	DO/RI+
3	TxD	RI-	DO/RI-
4	RTS	DO+	–
5	CTS	DO-	–

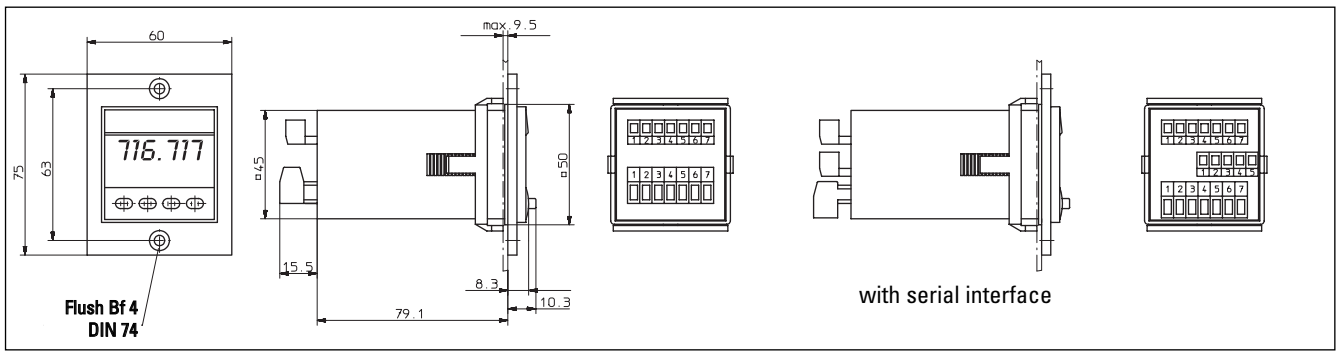
Für die die Zähler mit serieller Schnittstelle ist optional eine Steuersoftware lieferbar. Damit können die Zähler einfach über einen PC programmiert werden. Im Monitorprogramm werden die Messwerte online angezeigt. Weiter Informationen über die Software EzControl erhalten Sie auf Seite 185.

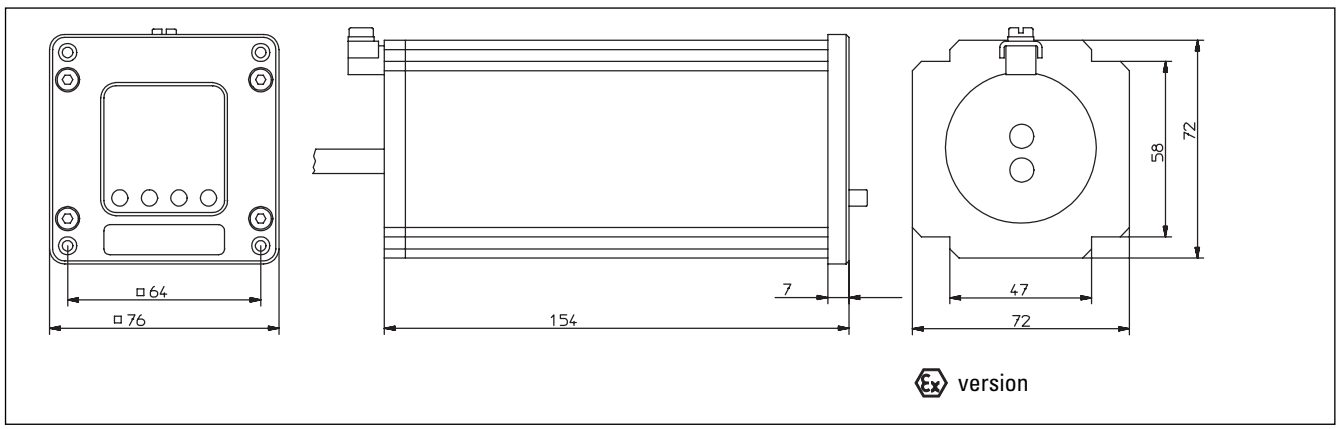
Dimensions:

717









Delivery includes: 716/717

Counter 716/717
1 Screw terminal 7 poles, RM 5.08
1 Screw terminal 7 poles, RM 3.81
1 Frame for screw mounting
panel cut-out 50 x 50 mm
1 Frame for clip mounting
panel cut-out 50 x 50 mm
1 mounting clip
1 Template for cut-out
1 Operating instructions

Order code:

6.XXX.01X.XXX

Type
716 = Preset counter with one preset
717 = Preset counter with two presets

Output
0 = Relay
1 = Optocoupler

Option
00 = no
05 = serial interface RS 232
06 = serial interface RS 422
07 = serial interface RS 485

Supply voltage
0 = 90 ... 250 V AC
3 = 10 ... 30 V DC

Delivery includes: 717 Ex

Counter 717 in Ex-proof housing acc. to explosion-proof class EEx D IIC T6 with encapsulated cable 2 x 3 m, various mounting parts, PTB approval certificate

Order code for Ex proof version:

6.717.010.X00.Ex

Supply voltage
0 = 90 ... 250 V AC
3 = 10 ... 30 V DC

Type 901

Your benefit
- Replacement for electromechanical preset counters
- no power supply necessary (battery-operated)
- Count and reset input electrically separated from counter through optocoupler input range 12 ... 250 V AC/DC
- 2 line LC display count, preset and level of the output
- screw terminal
- cULus approval

Further product features
- Data security, trough 2 exchangeable lithium batteries, life time minimum 8 years
- easy programming
- Counter presets easily via presetting keys allocated to each decade

Output

Potential free relay, programmable normally open or normally closed contact

Technical data

Power supply:	2 pcs user exchangeable lithium-batteries Type 1/2 AA lithium 3,6 V
Display:	2 line LCD display, 6 digits: 999999 height of figures 7 or 4.5 mm
Input:	Reset, count and key lock inputs
Polarity of the inputs:	bidirectional optocoupler input for the reset and count inputs Reset, count and keyboard lock is connected to +3 V DC
Min pulse duration of the inputs:	Reset input: 50 ms Keyboard lock input: 15 ms
Switching levels of the inputs:	Low: < 3 V AC/DC High: 12 ... 250 V AC/DC
Input frequency:	max: 25 Hz
Input resistance:	110 kΩ
Output:	bistable relay with potential free contact (programmable as normally closed or normally opened contact)
max. switching voltage:	250 V AC/220 V DC
max. switching current:	2 A
max. switching capacity:	60 VA/30 W
Output responce time	< 20 ms, max. 4 Hz
Data retention:	via 2 batteries; 8 years at $5x10^6$ power operations of the output relay and an ambient temperature of 25 °C
Ambient temperature:	–10 ... +50 °C
Storage temperature:	–25 ... +60 °C
EMC:	according to EC EMC directive 89/36/EWG EN 61 000-6-4/EN 55011 class B EN 61 000-6-2
UL:	File E128604
Protection:	IP65 (front)
Weight:	appr. 80 g

Programming

The counter is programmed using the keys on the front. The menu is shown on the display. The following modes are programmable:

1. Count mode (adding or subtracting)
2. Latch or automatic cycle
3. Output (normally open or normally closed)
4. Display Hold during automatic cycles in steps of 100 ms between 100 and 500 ms.
5. Decimal point up to max. 3 decimal places.

Function of the output:

Adding:
Relay is active , when actual value ≥ preset
Subtracting:
Relay is active , when actual value ≤ 0
When the relay is active a colon will appear at the bottom left of the display

Operating the counter:

Setting or resetting.

Press the red SET button or apply a pulse to the reset input to set the counter to zero in the adding mode or to the preset in the subtracting mode.

Presetting:

The preset value is indicated on the lower row of digits. To set it, use the 6 presetting buttons assigned to each decade. The set value will be accepted with the next set or reset operation.

Overflow and underflow:

In the adding mode the overflow is 999 999 to 0; in the subtracting mode it is 0 to 999 999. The output signal remains unaffected.

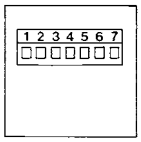
Lo-Bat-indicator:

When the battery charge is too low, **Lo-bat** appears in the lower display. This flashes on a two second cycle. When lo-bat is indicated, the battery should be changed as soon as possible.

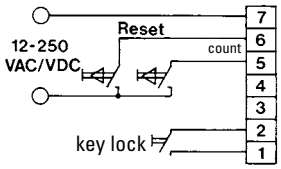
Changing the battery:

Push the battery cover back and remove the batteries, making certain that polarity is correct. (observe "–" terminal on PCB)
Note: Changing the battery should not take longer than 2 min. otherwise, the count and preset values as well as the parameters will get lost and therefore must be set again.

Terminal block:

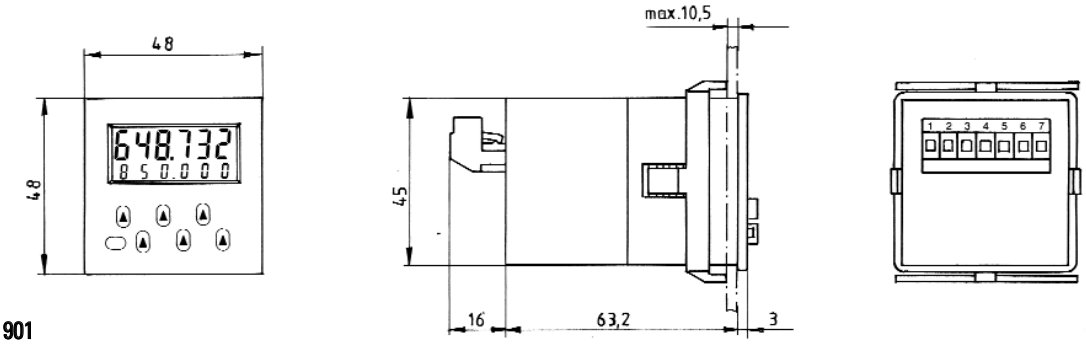


Example of connection:

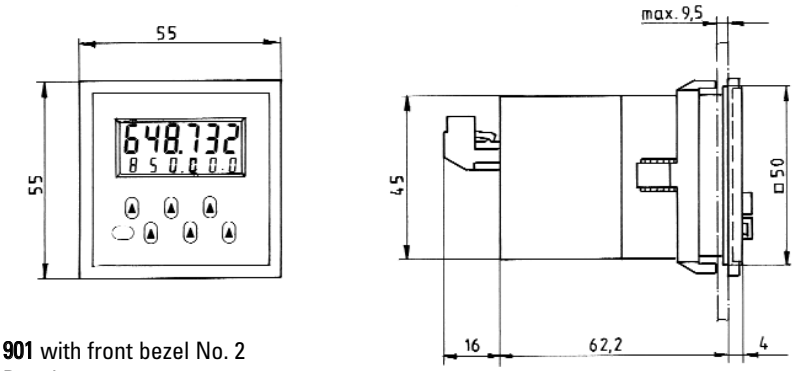


Pin	
1	+3 V DC for terminal 2
2	keyboard lock-input
3	Relay contact
4	Relay contact
5	AC/DC optocoupler count input
6	AC/DC optocoupler reset input
7	common AC/DC input for terminal 6 and 5

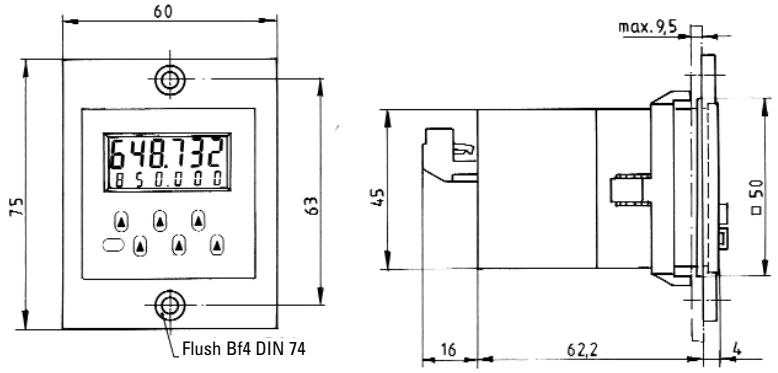
Dimensions:



901
Panel cut-out 45 x 45 mm



901 with front bezel No. 2
Panel cut-out 50 x 50 mm



901 with front bezel No. 3
Panel cut-out 50 x 50 mm

Delivery specification::
Counter 901
2 lithium batteries
1 Screw terminal
1 Front frame for screw mounting
Panel cut-out 50 x 50 mm
1 Front frame for spring clip mount
Panel cut-out 50 x 50 mm
1 Spring clip
1 Template for panel cut-out
1 Operating instruction

Order Code: **6.901.010.800**

Type 903/904

Your benefit

- 2 line LCD display
- programmable as impulse counter, frequency meter or time meter with sign and zero blanking
- Power supply
  90 ... 260 V AC or 10 ... 30 V DC
- cULus approval
- Batch mode

Further product features

- Display range –199 999 ... 999 999 with zero blanking
- easy to operate and set the preset values via 4 keys
- Relay or optocoupler-output
- Scaling factor 0,0001 ... 9,9999

903: 1 preset value, 1 output
904: 2 preset values, 2 outputs

Technical data

Supply voltage:	10 ... 30 V DC, max. 1,1 W with reverse protect. 90 ... 260 V AC max. 4 VA
Display:	2 line LCD display, 6 digits
Count inputs:	2 count inputs, 4 input modes are programmable
Polarity of the inputs:	programmable for all inputs in common
Input resistance:	appr. 10 kΩ
Count frequency:	10 kHz via DIL-switches reducible for INP A and INP B to 30 Hz (7 kHz at input mode E3 and E4 phase discriminator), automatic repeat at 900 Hz without losing counts (500 Hz for input mode E4)
Min pulse duration of the inputs:	5 ms
Input sensitivity:	DC supply voltages: Low: 0 ... 0.2 x U_B [V DC] High: 0.6 x U_B ... 30 [V DC] AC supply voltages: Low 0 ... 4 V DC High 12 ... 30 V DC
Pulse shape:	variable (Schmitt-Trigger characteristics)
Output 1 Relay:	with potential free contact, programmable as normally opened or normally closed. switching voltage max. 250 V AC/125 V DC, switching current max. 3 A. switching current at DC min. 30 mA switching power at DC 90 W at AC max. 750 VA
or npn optocoupler:	with open collector an d emitter switching power 30 V DC/15 mA
Output 2 Relay:	with potential free contact, programmable as normally opened or normally closed. switching voltage max. 250 V AC/125 V DC, switching current max. 3 A. switching current at DC min. 30 mA switching power at DC 90 W at AC max. 750 VA
or npn optocoupler:	with open collector an d emitter switching power 30 V DC/15 mA
Reaction time of the inputs:	Relay: appr. 7 ms Optocoupler: appr. 1 ms
Data retention:	min. 10 years or $1x10^6$ memory cycles
Transmitter voltage:	24 V DC –40 %/+15 %, 100 mA at 90 .. 260 V AC
with optional backlightning:	24 V DC –40 %/+15 %, 60mA at 90 ... 260 V AC
Ambient temperature:	0... +50 °C
Storage temperature:	–25 ... +70 °C
EMC:	according to EC EMC directive 89/36/EWG
EMC:	EN 61 000-6-4/EN 55011 class B EN 61 000-6-2
UL:	File E128604
Protection:	IP65 (front) EX version IP54
Weight:	appr. 240 g, AC version with relay

Inputs

INP A, INP B
Count inputs: The max. count frequency 30 Hz or 10 kHz is separately selectable for both of these inputs

Gate
Static gate input
no counting while this input is activated

Reset
Dynamic reset input; it is connected in parallel to the red reset key and sets the counter to zero (adding mode) or to the preset value (subtracting mode)

Key
Static keyboard lock input. While this input is activated, the front keys are locked for operations

Outputs

2 potential free outputs (903: 1 output), versions with relay or optocoupler available

Programming

The types 903 and 904 are programmed via only 4 keys on the front side. Trouble-free and intuitive operation through clear text user guidance on the display. The operating parameters are chosen from a menu. The device can be used as:

1. Pulse counter
2. Frequency meter
3. Time meter

Therefore the following functions are programmable:

Polarity of the inputs:
Positive (pnp) or negative (npn) polarity of the inputs. The selected polarity applies to all inputs.

Operating modes, impulse counter and timer:
- adding, starting at zero
- subtracting, starting at the preset value (903) or at preset value 2 (904)
- adding with automatical reset to zero at preset value (903) or preset value 2 (904)
- subtracting with automatical reset to preset value (903) or preset value (904) at zero.

Input modes, impulse counter and frequency meter:

E1	1 count input, 1 count direction input
E2	1 Count input up 1 Count input down
E3	quadrature input to connect encoders with 2 signals shifted by 90°
E4	quadrature input with pulse doubling to connect encoders with 2 signals shifted by 90°

Decimal places:
The display is possible with two or three decimal places

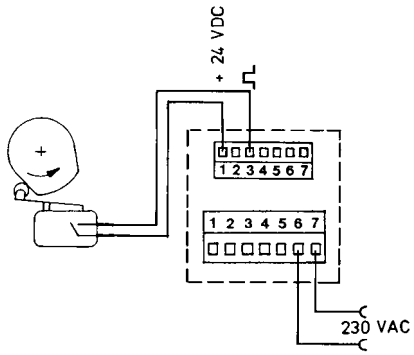
Scaling factor
For optimizing the operation with an encoder a scaling factor of 0.0001 ... 9.9999 may be programmed

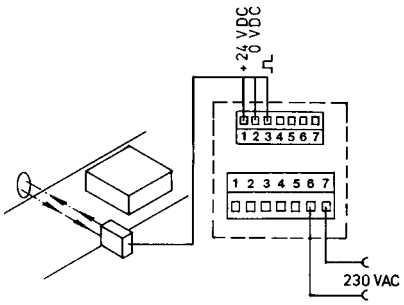
Output signal
selectable as NO contact or NC contact, positive or negative timed signal (duration 0.01 ... 99.99 s)

Gate time for frequency meter
selectable from 0.01 ... 99.99 s

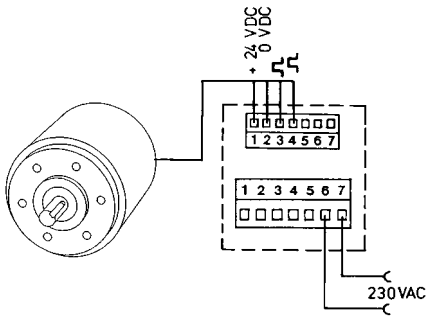
Hour meter
Timing in h, min or s, with a resolution of 0.001, 0.01, 0.1 or h:min:s.

Applications:



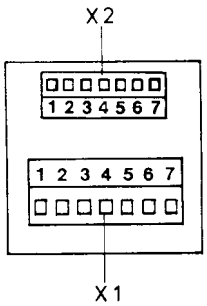


control via light barrier



control via encoder

Connection diagram 904:



Pin connection X1:

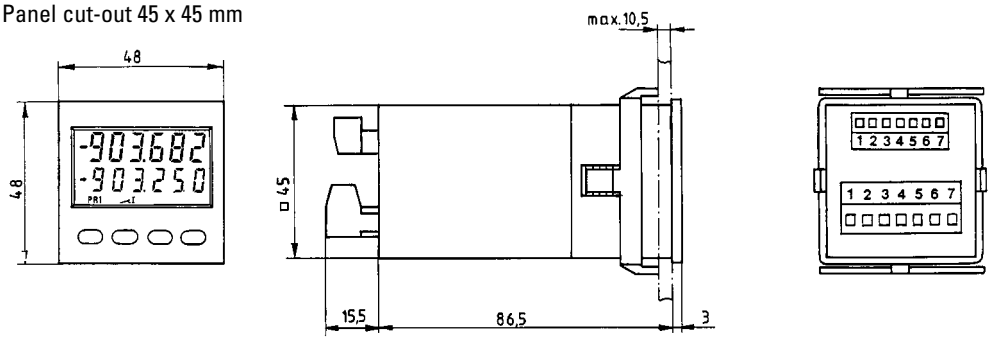
Pin	AC version	DC version
1	Output 1 Relay collector at optocoupler output	
2	Output 1 relay emitter at optocoupler output	
3	Output 2 Relay common contact (c) emitter at optocoupler output	
4	Output 2 Relay normally open (NO)	
5	Output 2 relay normally close (NC) collector at optocoupler output	
6	Supply voltage 90 ... 260 V AC	11 ... 30 V DC
7	90 ... 260 V AC	0 V DC (GND)

Pin connection X2:

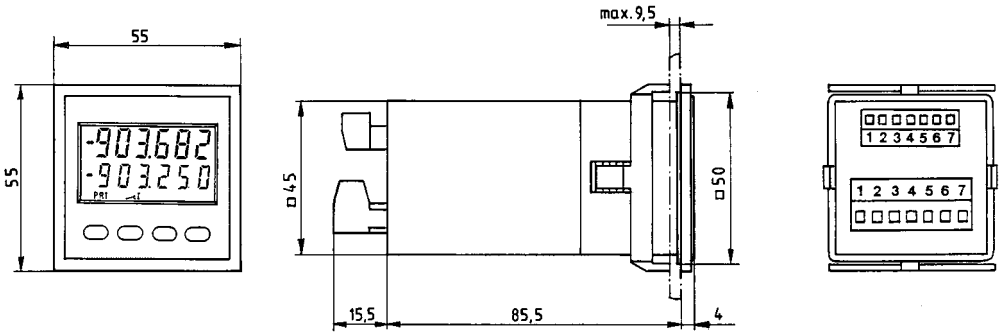
Pin	Description	AC version	DC version
1	+24 V DC	transmitter voltage supply	n.c.
2	0 V DC (GND)	GND	n.c.
3	INP A	Count input A	
4	INP B	Count input B	
5	Reset	Reset input	
6	Gate	Gate input	
7	Key	Key locking input	

Dimensions:

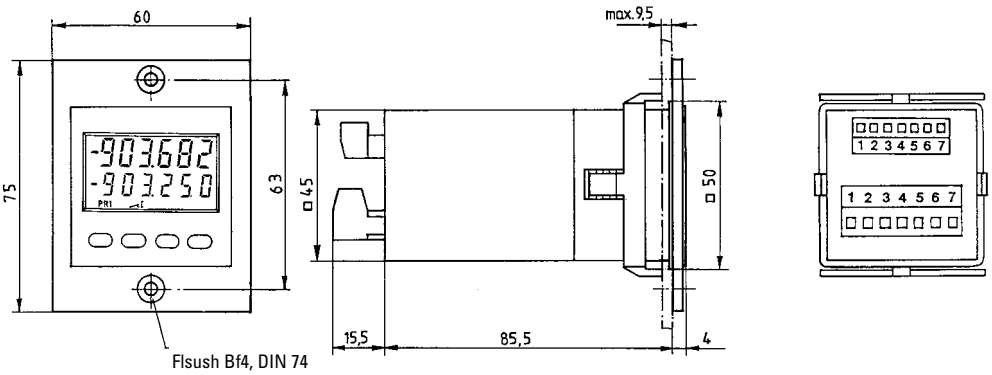
903/904
Panel cut-out 45 x 45 mm



903/904 with front bezel no 2
Panel cut-out 50 x 50 mm



903/904 with front bezel no. 3
Panel cut-out 50 x 50 mm



Delivery specification::

Counter
2 lithium batteries
1 Screw terminal
1 Front frame for screw mounting
Panel cut-out 50 x 50 mm
1 Front frame for spring clip mount
Panel cut-out 50 x 50 mm
1 Spring clip
1 Template for panel cut-out
1 Operating instruction

Order code:

6.XXX.01X.XXX

Type
903 = Preset counter with one preset
904 = Preset counter with two presets

Outputs
0 = Relay
1 = Optocoupler

Options
00 = without
10 = backlit LCD

Supply voltage
0 = 90 ... 250 V AC
3 = 10 ... 30 V DC

Table of Contents

Micro Hour Meters HK 46/HK 47

- 6- or 7-digit micro hour meters; displays 1/100 h
- low cost
- high shock resistance
- low power consumption; suitable for battery operation
- small dimensions
- magnified large figures
- flush mount with integrated spring clip (snap in) (HK 47.20)
- PCB-mount (HK 47.80)
- solderable and wash proof (HK 47.80)
- protection to IP 66
- long service life

Applications

time registration, maintenance intervals for measuring instruments (respiration units, oxygen, dialysis), UV-lamps, machines
panel indicators in vehicles ...

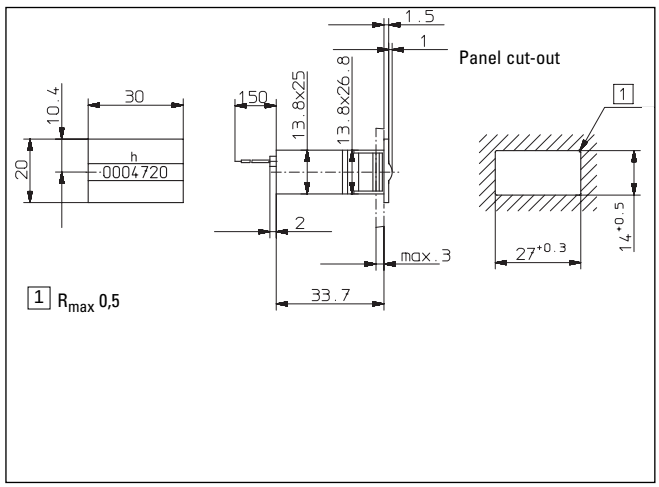
Technical data:

Drive:	Quartz controlled impulse counter
Impulse duration:	32 ms; every 36 s = 0.01 h (Power on times < 36 s are not counted)
Electrical connection:	HK 46.20/HK 47.20: Flying leads AWG 22, appr. 150 mm long (red +, black –) HK 46.80/HK 47.80: solder pins ø 0.64 mm
Display:	9999.99 h resp. 99999.99 h
Figures:	white on black 1/10, 1/100 decimal red on black
Supply voltage:	4.5 ... 35 V DC
Residual ripple:	< 1 %
Current consumption:	< 1,5 mA (average)
Power consumption:	at U_B = 5 V DC typ. 82 mW at U_B = 12 V DC typ. 135 mW at U_B = 24 V DC typ. 135 mW max. 170 mW (count impulse every 36 s with an impulse duration of 32 ms)
Accuracy:	22.5 ppm at 20 °C

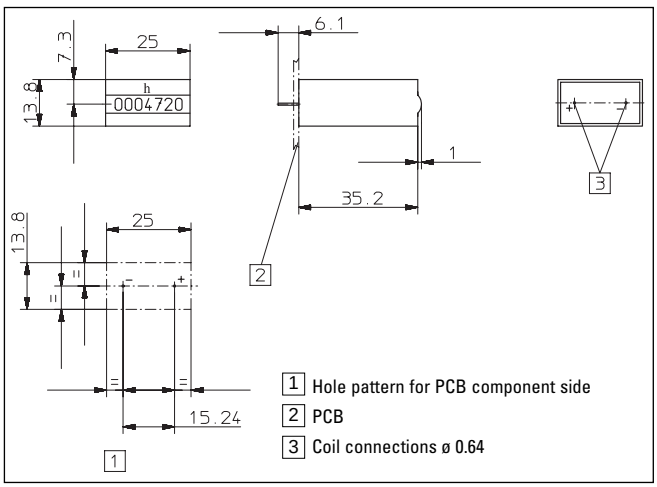
Height of figures:	HK 47: 4 x 1.25 mm; HK 46: 4 x 1,7 mm magnified
Reset:	no reset
Ambient temperature:	–10 ... +60 °C
Storage temperature:	–20 ... +70 °C
Mounting position:	any
Solderable and wash proof versions:	HK 46.80/HK 47.80
Protection according to EN 60529:	IP 66 at HK46.80/HK 47.80 IP 66 (only front) at HK46.20/HK 47.20
Conforms to CE:	EN 61000-6-2
requirements acc. to:	EN 55011 class B
Housing:	PC transparent; HK 47.80
Weight:	13 ... 15 g
Options for:	
HK 4X.20, 4X.80:	flat pin 0.8 x 2.8 mm and push-on connectors
HK46.20/HK 47.20:	solder pins ø 0.64 mm

Dimensions:

HK46.20/HK 47.20



HK46.80/HK 47.80



Order code:

	HK 46.20 Art.-No.	HK 47.20 Art.-No.
4,5 ... 35 V DC	3.050.200.383	3.060.200.383

	HK 46.80 Art.-No.	HK 47.80 Art.-No.
4,5 ... 35 V DC	3.050.800.383	3.060.800.383

Micro Hour meter HK 07

- 7 digit micro hour meter
- **High shock resistance**
- Low power consumption allows battery operation
- Small size
- Magnified figures
- Built in counter
- PCB mount counter
- Solderable and wash proof version
- Protection IP 65
- Wide voltage range 4.5 ... 35 V DC
- Data retention if power is lost
- long life time service

Applications

general counting, service interval for measurement systems (respiratory ventilators, oxygen machines, dialysis machines), small appliances, UV lamps, display panels in cars.

Technical data:

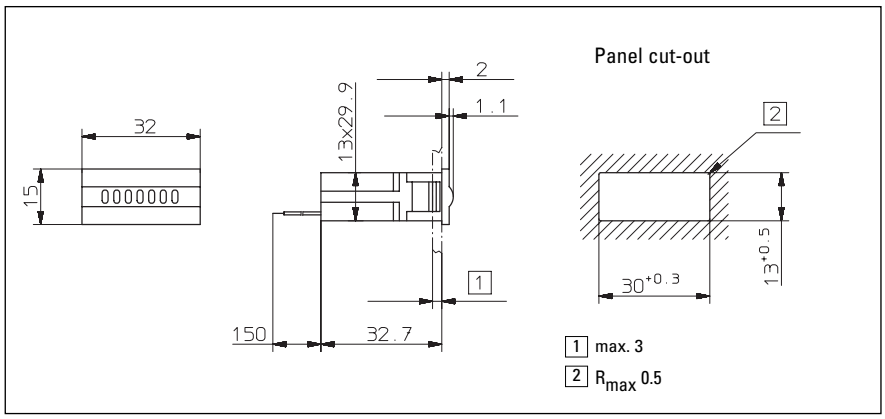
Electrical connection:	base mount models: Flying leads appr. 150 mm (red +, black -) PCB mount models: silver plated solder pins 0.4 x 1.2 mm
Typ. power consumption:	at U_B = 5 V DC appr. 82 mW at U_B = 12 V DC appr. 135 mW at U_B = 24 V DC appr. 135 mW max. 170 mW (every 36 s with a pulse length of 32 ms)
Rated voltages:	4.5 ... 35 V DC
Residual ripple:	< 1 %
Current consumption:	< 1.5 mA (average)
On time:	100 %
Display:	7 figures (99999.99 h)
Accuracy:	22.5 ppm at 20 °C
Count mode:	adding

Height of figures:	1.35 x 2.8 mm
Colour of figures:	white and red on black
Reset:	no
Ambient temperature:	–10 ... +60 °C
Mounting position:	any
Solderable and wash proof versions:	HK 07.90, HK 07.91, HK 07.92,
Protection:	up to IP 65 depending on kind of type
Conforms to ce:	EN 61000-6-2
requirements acc. to:	EN 55011 class B
Housing:	Plastic
Weight:	12 ... 14 g
Options:	
HK 07.20	Flat pins 0.3 mm x 2,8 mm
Further options:	Temperature range –30 ... +85 °C, –20 ... +70 °C

Available types:

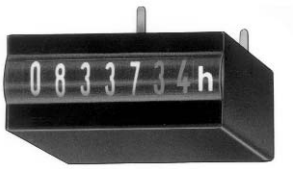
Type	Housing	Height of figures	display	Termination	Description
HK 07.20	Plastic	4 mm	On narrow side	Flying leads	Flush mount with click stop device
HK 07.40	Steel sheet	4 mm	On broad side	Solder pins	PCB-mount
HK 07.50	Steel sheet	4 mm	On narrow side	Solder pins	PCB-mount
HK 07.80	Plastic	4 mm	On narrow side	Solder pins	PCB-mount
HK 07.90	Plastic	4 mm	On broad side	Solder pins	PCB-mount wash proof
HK 07.91	Plastic	2,8 mm	On narrow side	Solder pins	PCB-mount wash proof
HK 07.92	Plastic	4 mm	On narrow side	Solder pins	PCB-mount wash proof
AHK 07.00	Plastic	4 mm	On narrow side	Flying leads	Base mount

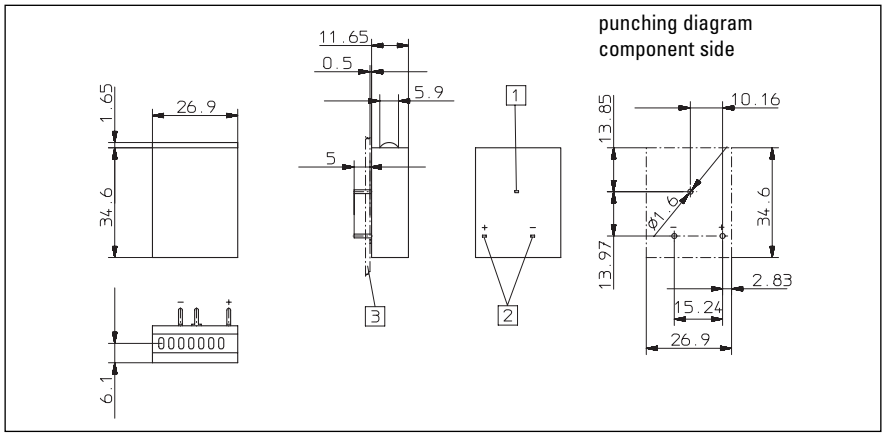
Type HK 07.20



Order information:

	4.5 ... 35 V	
Art-No.	3.100.200.383	

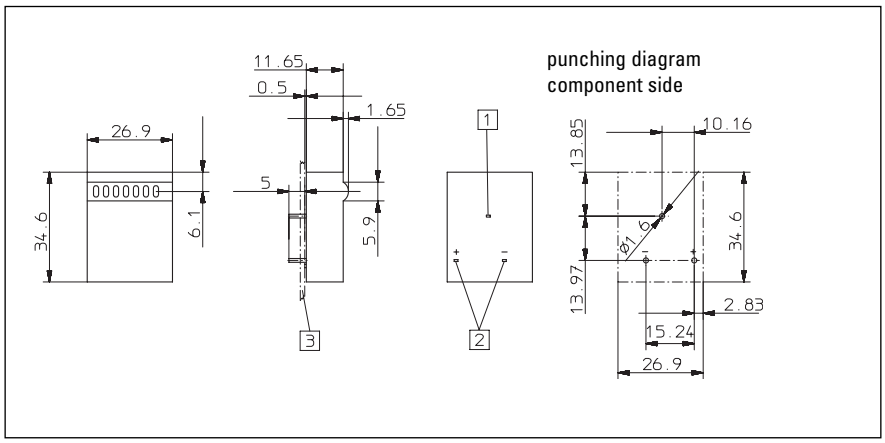




HK 07.50	4.5 ... 35 V DC	
Art-No.	3.100.501.383	

1 Potential free mounting pin 0.4 x 1.2
2 Coil connections 0.4 x 1.2
3 PCB

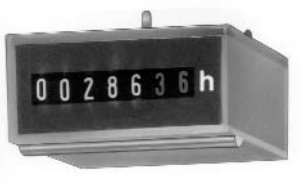
Type HK 07.40

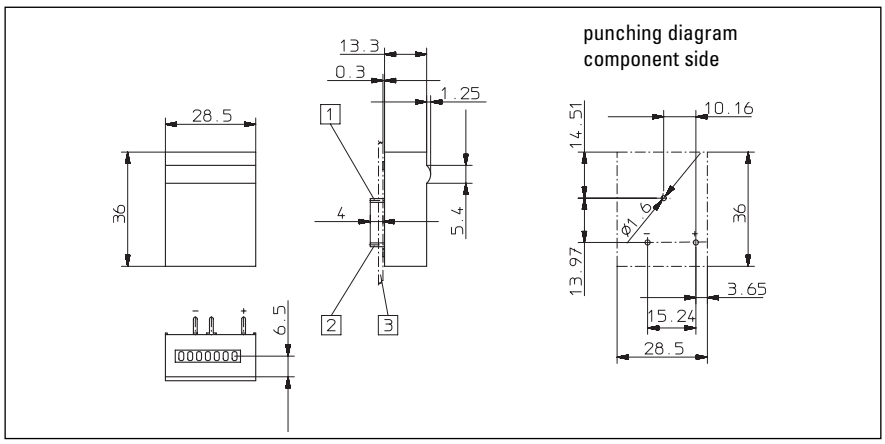


HK 07.40	4.5 ... 35 V DC	
Art-No.	3.100.401.383	

1 Pins without el. function 0.4 x 1.2 mm
2 Coil connections 0.4 x 1.2 mm
3 PCB

Type HK 07.91

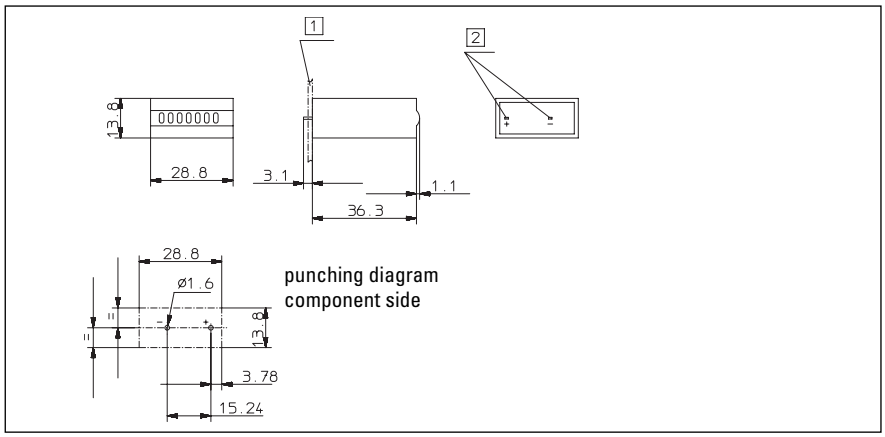




HK 07.91	4.5 ... 35 V	
Art-No.	3.100.910.383	

1 Potential free mounting pin 0.4 x 1.2 mm
2 Coil connections ø 0.64 0.4 x 1.2 mm
3 PCB

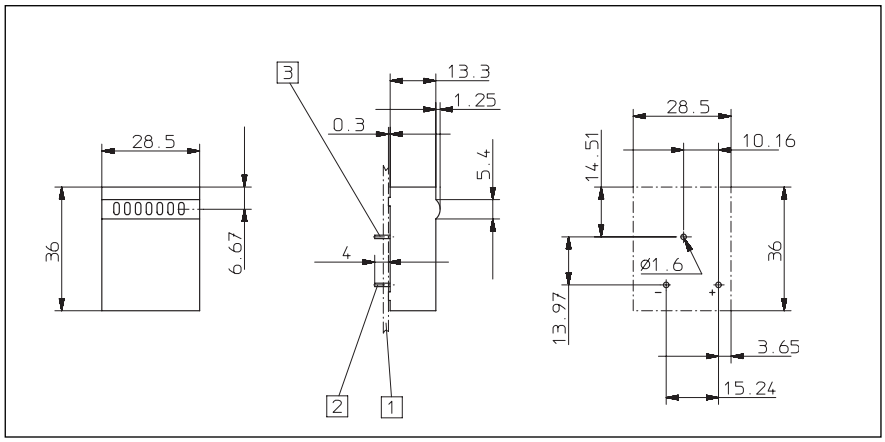
Type HK 07.92



HK 07.92	4.5 ... 35 V	
Art-No.	3.100.920.383	

1 Potential free mounting pin 0.4 x 1.2 mm
2 Coil connections 0.4 x 1.2 mm
3 PCB

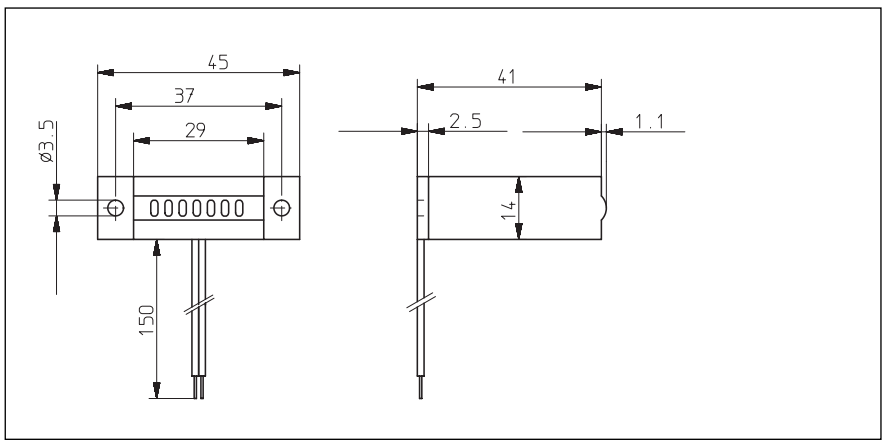
Type HK 07.90



HK 07.90	4.5 ... 35 V	
Art-No.	3.100.900.383	

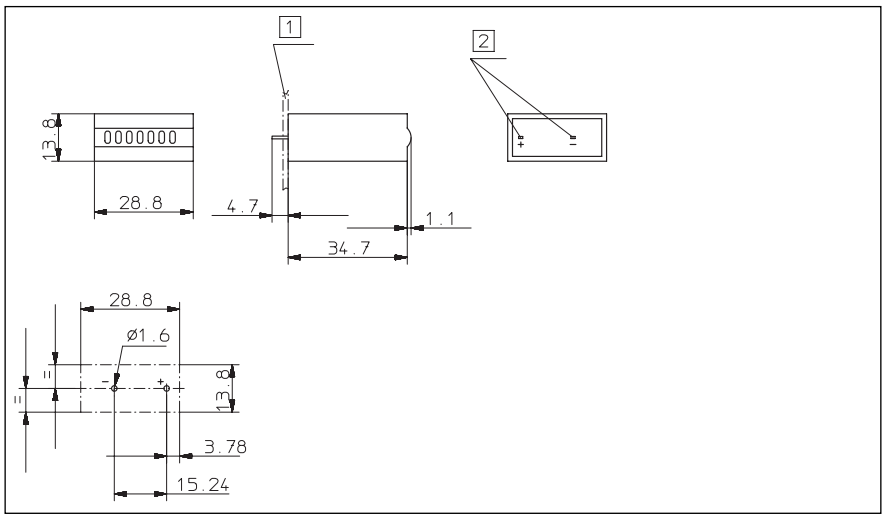
1 Potential free mounting pin 0.4 x 1.2 mm
2 Coil connections 0.4 x 1.2 mm
3 PCB

Type AHK 07.00



AHK 07.00	4.5 ... 35 V	
Art-No.	3.100.000.393	

Type HK 07.80



HK 07.80	4.5 ... 35 V	
Art-No.	3.100.800.383	

1 Potential free mounting pin 0.4 x 1.2 mm
2 Coil connections 0.4 x 1.2 mm

Micro Hour Meters HK 07, Disable-Input

- Disable-Input: allows to register short on-times, too (<36 s). They are stored in the integrated circuit
- 7 digits
- **High shock resistance**
- Low power consumption allows battery operation
- Magnified figures
- Built in counter
- PCB mount counter
- Solderable and wash proof version

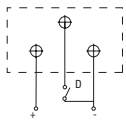
Applications

general counting, service interval for measurement systems (respiratory ventilators, oxygen machines, dialysis machines), small appliances, UV lamps, display panels in cars.

Technical data:

Electrical connection:	Base mount models:	Flying leads appr. 150 mm	
	PCB-mount:	silver plated solder pins size 0.4 x 1.2 mm	
Typ. power consumption:	at U_B = 5 V DC	typ. 82 mW	
	at U_B = 12 V DC	typ. 135 mW	
	at U_B = 24 V DC	typ. 135 mW max. 170 mW	
	(every 36 s with a pulse length of 32 ms)		
Residual ripple:	< 1 %		
Current consumption:	< 1.5 mA (average)		
Rated voltage:	4.5 ... 35 V DC		
On time:	100 %		
Display:	7 (99999.99 h)		
Accuracy:	22.5 ppm at 20 °C		
Count mode:	adding		

Height of figures:	1.35 x 2.8 mm
Colour of figures:	white and red on black
Reset:	no
Ambient temperature:	–10 ... +60 °C
Mounting position:	any
Solder- and wash proof versions:	HK 07.90D and HK 07.91D,
Conforms to CE:	EN 61000-6-2
requirements acc. to:	EN 55011 class B
Protection:	up to IP 65 depends on version
Housing:	Plastic
Weight:	16 ... 19 g
Options:	
HK 07.20	Flat pin connectors 0.8 x 2.8 mm
Further Options:	Temperature range –30 ... +85 °C

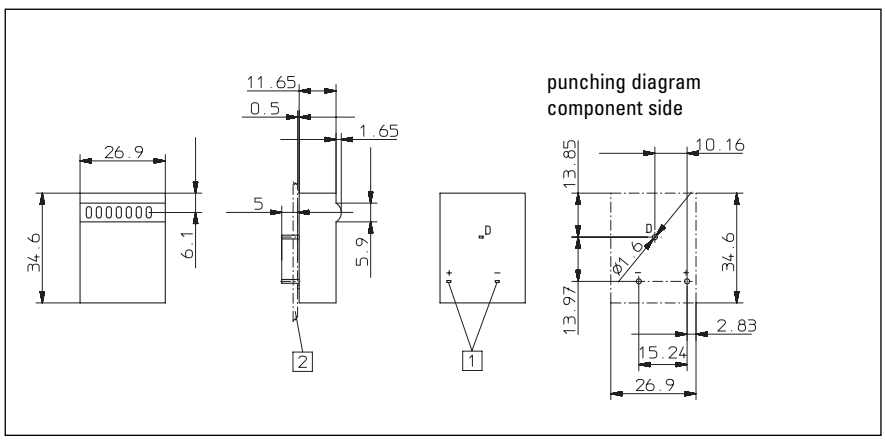


D	Function
open	counting
closed	interval

Available types:

Type	Housing	Height of figures	Display	el. connection	Description
HK 07.40 D	Steel sheet	4 mm	On broad side	Solder pins	PCB-mount
HK 07.50 D	Steel sheet	4 mm	On narrow side	Solder pins	PCB-mount
HK 07.90 D	Plastic	4 mm	On broad side	Solder pins	PCB-mount wash proof
HK 07.91 D	Plastic	2.8 mm	On narrow side	Solder pins	PCB-mount wash proof

Type HK 07.40 D

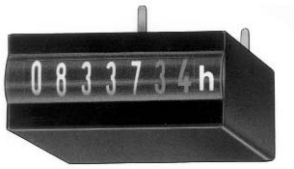


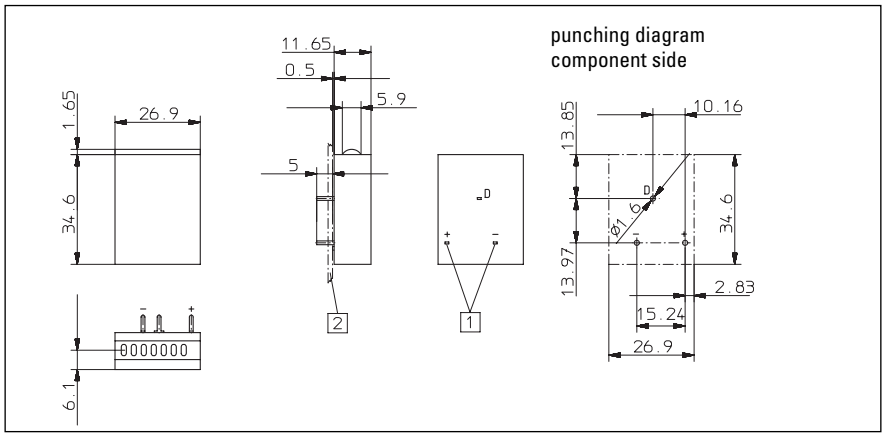
HK 07.40 d	4.5 ... 35 V	
Art-No.	3.104.401.383	

1 Potential free mounting pin 0.4 x 1.2 mm

2 Coil connections 0.4 x 1.2 mm

Type HK 07.50 D

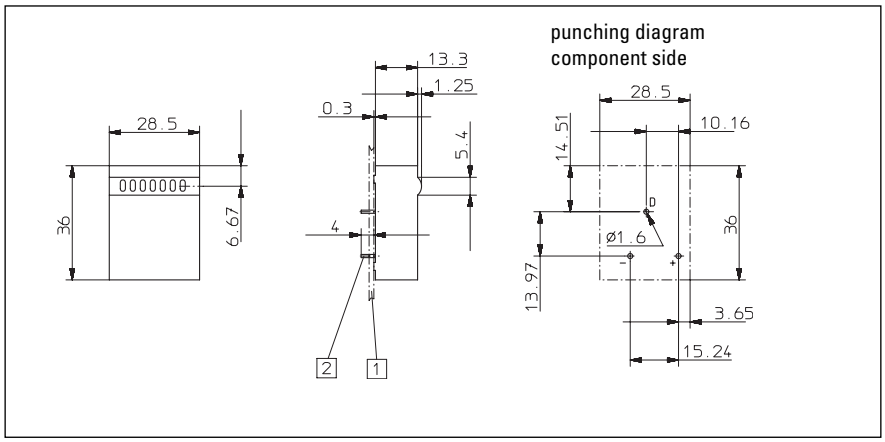




HK 07.50 D	4.5 ... 35 V	
Art-No.	3.104.900.383	

1 Potential free mounting pin 0.4 x 1.2 mm
2 Coil connections 0.4 x 1.2 mm

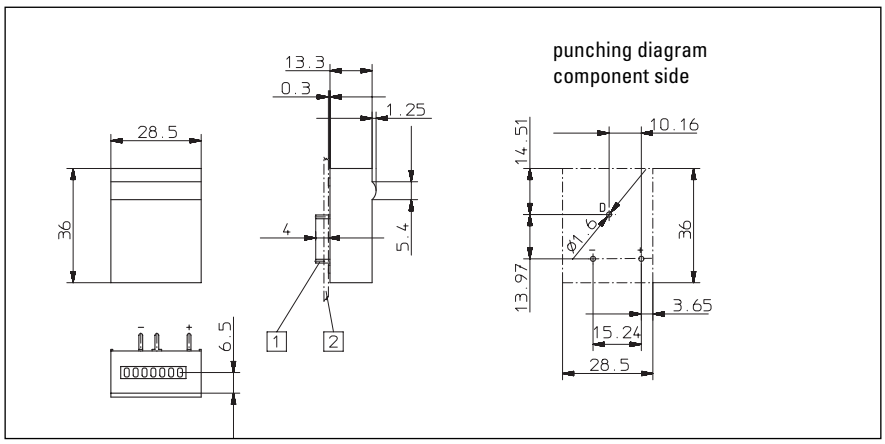
Type HK 07.90 D



HK 07.90 D	4.5 ... 35 V	
Art-No.	3.104.900.383	

1 Potential free mounting pin ø 0.64
2 Coil connections ø 0.64

Type HK 07.91 D



HK 07.91 D	4.5 ... 35 V	
Art-No.	3.104.910.383	

1 Potential free mounting pin 0.4 x 1.2 mm
2 Coil connections 0.4 x 1.2 mm

Type series SHK 07

- 7 digit
- **High shock resistance**
- magnified figures
- various viewing angles
- built in counter
- PCB-mount
- Any mounting position
- Protection IP 52
- Long service life

Applications

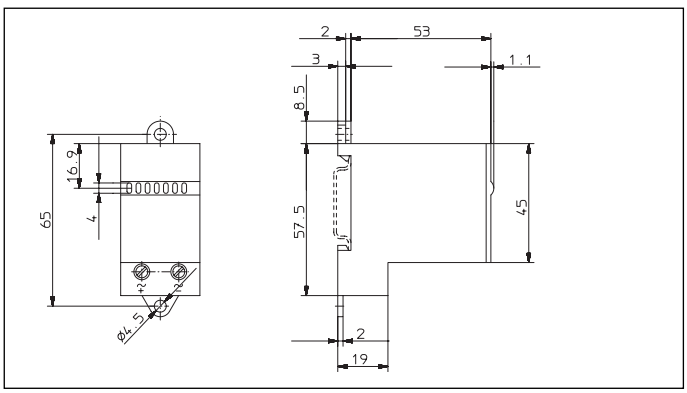
general counting, service interval for measurement systems (respiratory ventilators, oxygen machines, dialysis machines), small appliances, UV lamps, display panels in cars.

Technical data:

Electrical connection:	clamp terminal for cable diameter up to 2,5 mm², tightening torque max. 0,8 Nm
Typ. power consumption:	at U_B = 5 V DC typ. 82 mW at U_B = 12 V DC typ. 135 mW at U_B = 24 V DC typ. 135 mW max. 170 mW (only all 36 s with a pulse time of 32 ms) 100 ... 130 V AC appr. 0.82 VA 187 ... 264 V AC appr. 1.8 VA
Rated voltages:	20 ... 30, 100 ... 130, 187 ... 264 V AC 50 Hz, 60Hz 4.5 ... 35 V DC
On time:	100 %
Figures:	7 (99999.99 h)

Accuracy:	22.5 ppm at 20 °C
Counting mode:	adding
Height of figures:	1.35 x 2.8 mm
Colour of figures:	white and red on black
Reset:	no
Ambient temperature:	–10° ... +50 °C at AC
	–10° ... +60 °C at DC
Mounting position:	any
Protection:	up to IP 52 depends on version
Housing:	Plastic
Weight:	appr. 55 g
Options:	Colour of housing: grey Flat pins: 0.8 x 6.3 mm

Type SHK 07



Voltage	Art-No. (V DC)	Art-No. (V AC)
4.5 ... 35	3.102.101.383	
20...30		3.102.101.310
100...130		3.102.101.312
187 ... 264		3.102.101.313

Type series SH 17

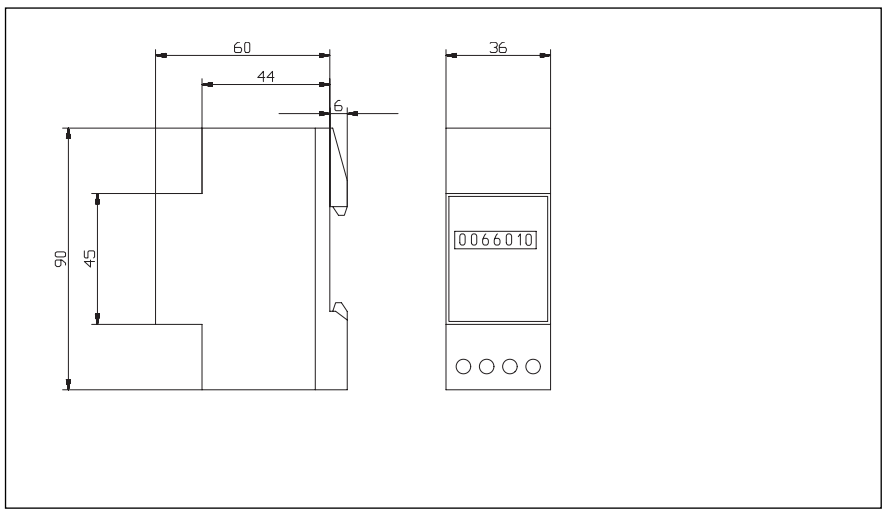
- 7 digit hour meter for DIN rail mounting with snap in-mechanism as EN 50022
- 36 mm wide
- Count range 99999,99 h
- Drive: Synchronous motor for AC
  Stepper motor for DC
- Frequency standard:
  50 Hz for AC
  Quartz for DC
- Applications:
  Switch cabinets, distribution panels etc.

Technical data:

Electrical connection:	Screw terminal	
Power consumption:	V DC:	appr. 1 W
	AC:	appr. 2.5 VA
Rated voltages:	230 V AC ±10%, 50Hz	
	10 ... 27 V DC	
On time	100 %	
Display:	7 figures (99999,99 h)	
Count mode:	adding	
Height of figures:	1.5 x 3.5 mm	
Colour of figures:	white on black	
	decimal figures black on white	
Reset:	no	

Ambient temperature:	–10° ... +70 °C at AC
	–10° ... +50 °C at DC
Mounting position:	any
Protection:	IP 65 (front)
	screw terminal IP 20
Housing:	Plastic; color Ral 7035
Weight:	appr. 60 g
Options:	
Colour of housing:	grey

Dimensions:



Connection

DC: 2 = +
3 = –

AC: 2 and 3

Order information:

Voltage	10 ... 27 V DC	230 V AC
Art. No.	0.170.000.351	0.170.000.075

Type series HK 17

- 7- or 8-digit hour meter for AC or DC voltage
- Without reset
- High shock resistance
- Small dimensions
- Magnified figures
- Protection IP 65 (front)
- Data retention if power is lost
- Long service life
- UL-approved

Applications

general counting, service interval for measurement systems (respiratory ventilators, oxygen machines, dialysis machines), small appliances, UV lamps, display panels in cars.

Technical data:

Electrical connection:	Flat pins 0.8 x 6.3 mm with screw terminals or flat pins 0.8 x 6.3 mm tightening torque max. 0,8 Nm	
Power consumption:	10 ... 30 V DC:	appr. 500 mW
	36 ... 80 V DC:	appr. 900 mW
	100 ... 130 V DC:	appr. 750 mW
	20 ... 30 V AC, 50 Hz:	appr. 0.3 VA
	42 ... 48 V AC , 50 Hz	appr. 0.25 VA
	100 ... 130 V AC, 50 Hz	appr.0.6 VA
	187 ... 264 V AC, 50Hz	appr.1.2 VA
	360 ... 440 V AC, 50 Hz:	appr. 1.65 VA
Rated voltages:	20 ... 30, 42 ... 48, 100 ... 130, 187 ... 264, 360 ... 440 V AC 50 or 60 Hz, 10 ... 30, 36 ... 80, 100 ... 130 V DC	
Display:	7 at AC: 99999.99 8 at DC: 999999.99	
Accuracy:	AC: supply frequency +30 ms	
	DC: <0,003 % (at 24 h)	
Height of figures:	3.8 x 1.7 mm magnified	
Colour of figures:	white and red on black	
Ambient temperature:	–15 ... +50 °C	
Mounting position:	any	
Protection:	IP 65 (front)	
UL:	File E128604	
Housing:	Plastic, types with Protection IP 65 are sealed	
Weight:	appr. 40 g	
Options:	Counter with flat pin 0.8 x 6.3 mm Art.-No. 3.138.X51.XXX	

Order code:

HK17.XXX.XX

Type series

Front plate:
0 = without
1 = big front plate for screw
2 = small front plate with clip
4 = front plate with holes at the side
5 = US version front plates with clip1.6" x 1.08"
6 = US version front holes at the side 2.13" x 1.25"

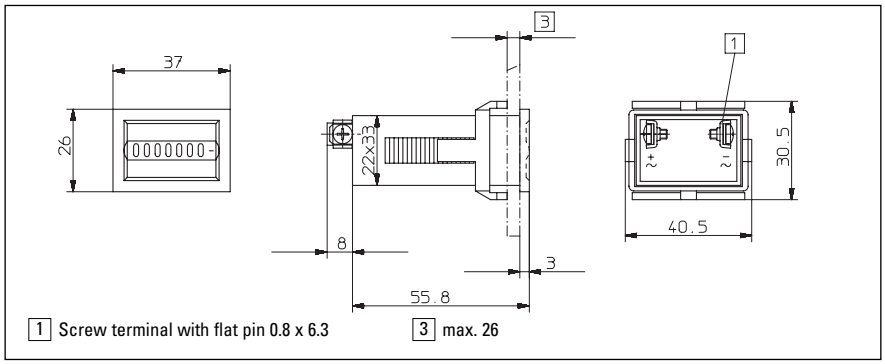
Electrical connection
11 = Flat pin 0.8 x 6.3 mm
39 = Screw terminal with flat pin 0.8 x 6.3 mm (standard)

Colour
1 = black

Size of housing
5 = Housing black with welded viewing window
1 = 1 = Black housing with press-fit window (US version)

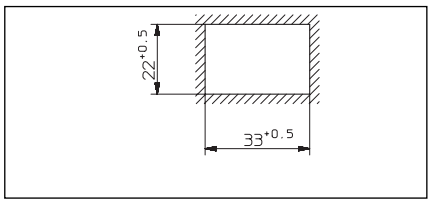
HK17.XXX.XX.056
additional number for versions with 24 x 36 mm front plate

HK 17.251

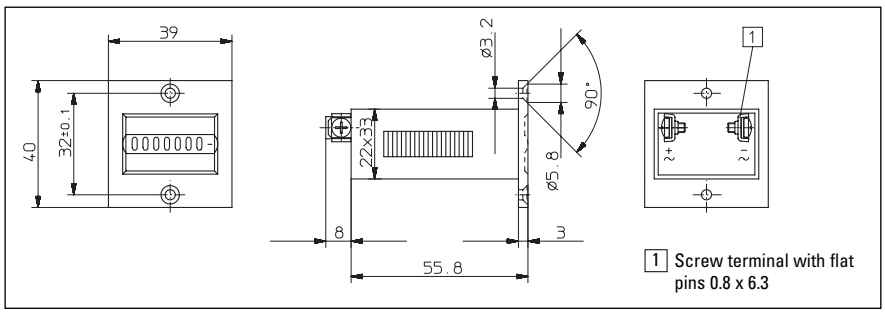


Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.130.251.351
20 ... 30	3.130.251.071	3.130.251.081	
36 ... 80			3.130.251.353
42 ... 48	3.130.251.072	3.130.251.082	
100 ... 130	3.130.251.074	3.130.251.084	3.130.251.381
187 ... 264	3.130.251.075	3.130.251.085	
360 ... 440	3.130.251.079	3.130.251.089	

Panel cut-out

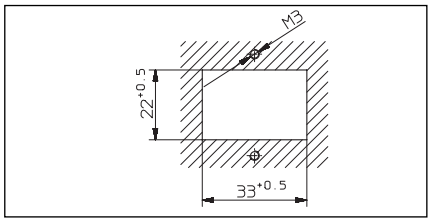


HK 17.151

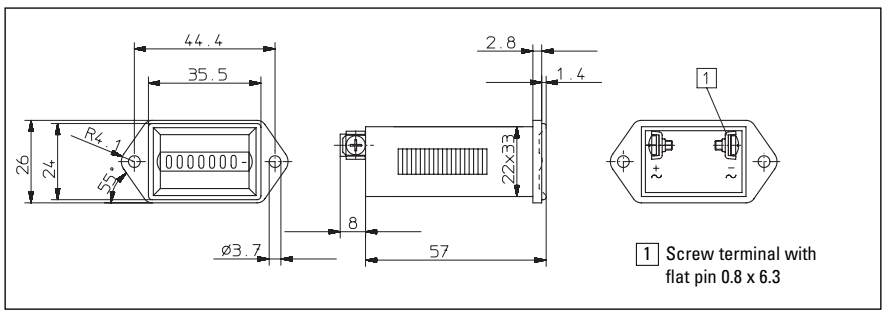


Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.130.151.351
20 ... 30	3.130.151.071	3.130.151.081	
36 .. .80			3.130.151.353
42 ... 48	3.130.151.072	3.130.151.082	
100 ... 130	3.130.151.074	3.130.151.084	3.130.151.381
187 ... 264	3.130.151.075	3.130.151.085	
360 ... 440	3.130.151.079	3.130.151.089	

Panel cut-out

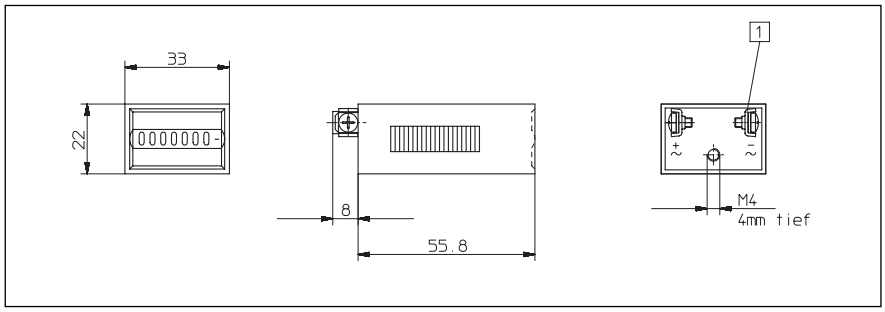


HK 17.451



Voltage	Art-No. (AC), 50 Hz	Art-No. (AC) 60 Hz	Art-No. (V DC)
10...30			3.130.451.351
20...30	3.130.451.071	3.130.451.081	
36...80			3.130.451.353
42...48	3.130.451.072	3.130.451.082	
100...130	3.130.451.074	3.130.451.084	3.130.451.381
187...264	3.130.451.075	3.130.451.085	
360...440	3.130.451.079	3.130.451.089	

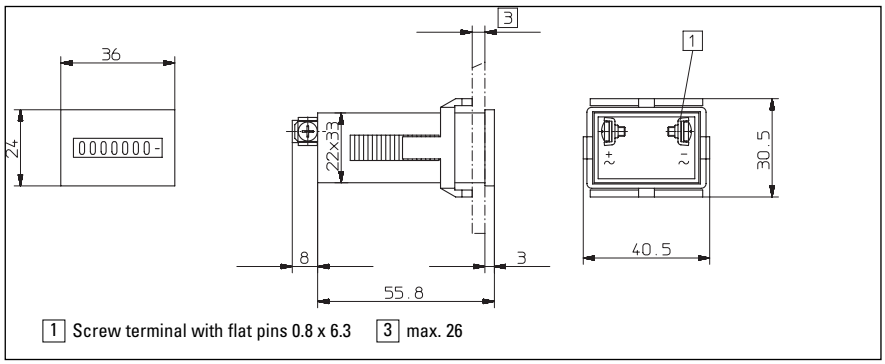
HK 17.051



Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.130.051.351
20 ... 30	3.130.051.071	3.130.051.081	
36 ... 80			3.130.051.353
42 ... 48	3.130.051.072	3.130.051.082	
100 ... 130	3.130.051.074	3.130.051.084	3.130.051.381
187 ... 264	3.130.051.075	3.130.051.085	
360 ... 440	3.130.051.079	3.130.051.089	

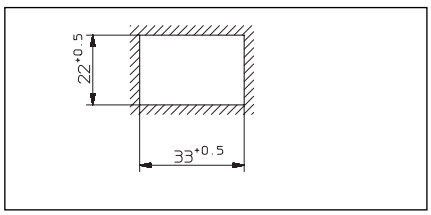
[1] Screw terminal with flat pins 0.8 x 6.3

HK 17.251.56

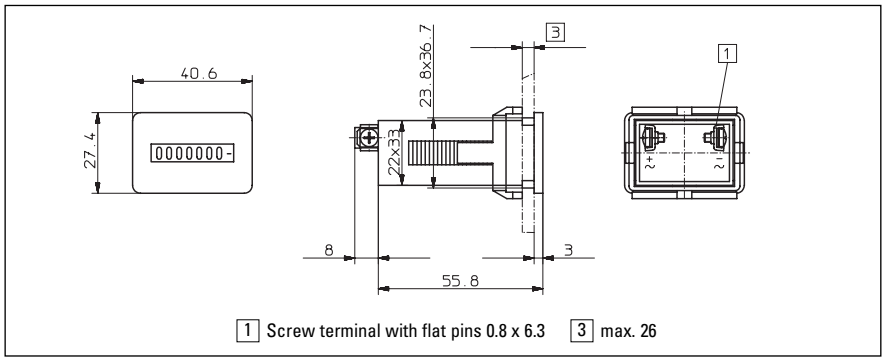


Voltage	Art-No. (V AC), 50 Hz	Art-No. (V AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.130.251.351.056
20 ... 30	3.130.251.071.056	3.130.251.081.056	
36 ... 80			3.130.251.353.056
42 ... 48	3.130.251.072.056	3.130.251.082.056	
100 ... 130	3.130.251.074.056	3.130.251.084.056	3.130.251.381.056
187 ... 264	3.130.251.075.056	3.130.251.085.056	
360 ... 440	3.130.251.079.056	3.130.251.089.056	

Panel cut-out



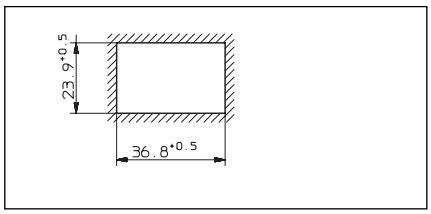
HK 17.511



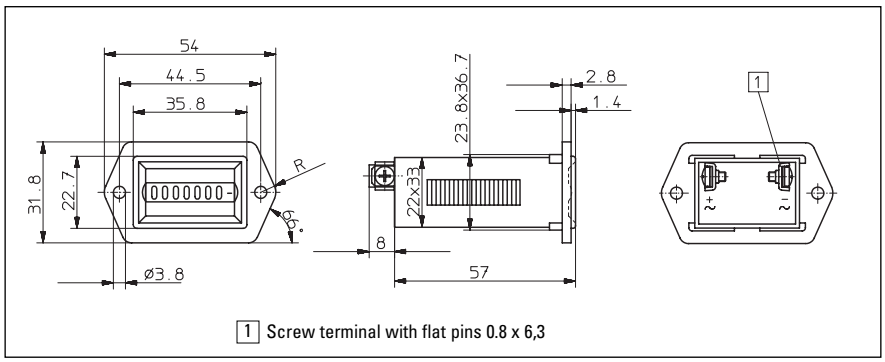
1 Screw terminal with flat pins 0.8 x 6.3 3 max. 26

Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.130.511.351
20 ... 30	3.130.511.071	3.130.511.081	
36 ... 80			3.130.511.353
42 ... 48	3.130.511.072	3.130.511.082	
100 ... 130	3.130.511.074	3.130.511.084	3.130.511.381
187 ... 264	3.130.511.075	3.130.511.085	
360 ... 440	3.130.511.079	3.130.511.089	

Panel cut-out



HK 17.611



1 Screw terminal with flat pins 0.8 x 6,3

Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.130.611.351
20 ... 30	3.130.611.071	3.130.611.081	
36 ... 80			3.130.611.353
42 ... 48	3.130.611.072	3.130.611.082	
100 ... 130	3.130.611.074	3.130.611.084	3.130.611.381
187 ... 264	3.130.611.075	3.130.611.085	
360 ... 440	3.130.611.079	3.130.611.089	

Type series H 37

- 7- or 8-digit hour meter
- Without reset
- High shock resistance
- small dimensions
- magnified figures
- Protection IP 65 (front)
- Data retention if power is lost
- Long service life
- Built in counter (H37.4)
- UL-approved

Applications

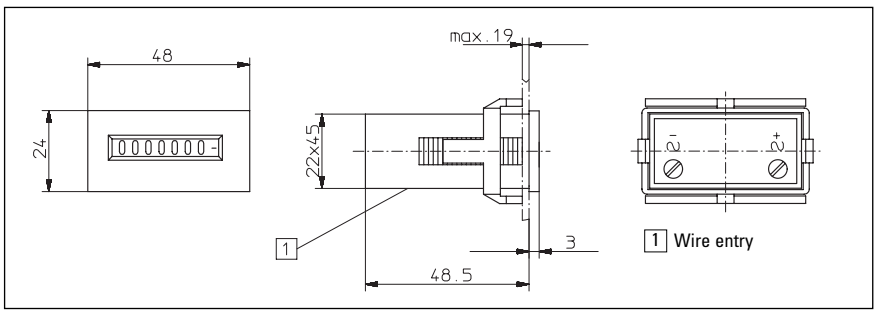
general counting, service interval for measurement systems (respiratory ventilators, oxygen machines, dialysis machines), small appliances, UV lamps, display panels in cars.

Technical data:

Electrical connection:	Screw terminal, tightening torque max 0,8 Nm	
Power consumption:	10 ... 30 V DC:	appr. 500 mW
	36 ... 80 V DC:	appr. 900 mW
	100 ... 130 V DC:	appr. 750 mW
	20 ... 30 V AC, 50 Hz:	appr. 0.3 VA
	42 ... 48 V AC , 50 Hz	appr. 0.25 VA
	100 ... 130 V AC , 50 Hz	appr. 0.6 VA
	187 ... 264 V AC , 50Hz	appr. 1.2 VA
Rated voltages:	20 ... 30/42 ... 48/100 ... 130/187 ... 264 V AC	
	50 or 60 Hz, 10 ... 30/36 ... 80/100 ... 130 V DC	
On time:	100 %	
Display:	7 at AC: 99999.99	
	8 at DC: 999999.99	
Accuracy:	AC: Supply frequency + 30 ms	
	DC: < 0.003 % (24 h)	
Count mode:	adding	
Height of figures:	4 mm	
Colour of figures:	white and red on black	
Reset:	no	
Ambient temperature:	–10 ... +50 °C	
Mounting position:	any	
Protection:	IP 65 (front-side, built in)	
Housing:	Plastic ,	
	IP 65 are sealed	

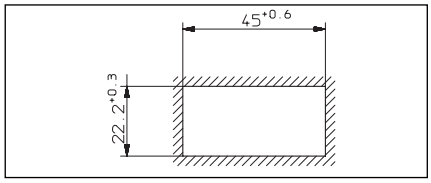
Weight:		
H 37 appr.	50 g	
Slip on bezel 37.1	6 g	
Slip on bezel 37.2	2g	
Options:	1. Colour of housing: grey	
	Art.-No. 3.130.X50.XXX	
	2. Electrical connection:	
	a) Flat pins 0.8 x 6,3 mm	
	Art-No.: 3.24X.20X.XXX.**011**	
	b) Screw terminal with terminal cover	
	Art-No.: 3.24X.20X.XXX.456	
Accessories:		
Slip on bezel 37.1	black:	Art-No.: T008.161
	grey	Art-No.: T008.160
Slip on bezel 37.2	black:	Art-No.: T008.165
	grey:	Art-No.: T008.164
Terminal cover **KA37**	2 pcs required per counter	
		Art-No.: T051.687
Seal:		Art-No.: N511015
		for H 37.2 and H 37.4
		Art-No.: N511029
		for H 37 and H 37.5
Approvals:	UL for USA and Canada E128604	

H 37

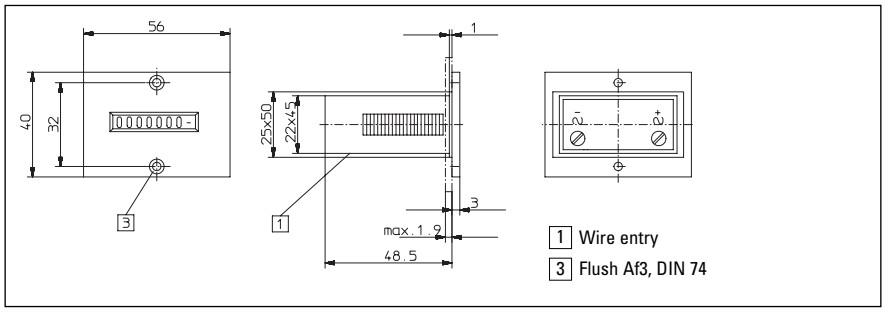


Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.240.201.351
20 ... 30	3.240.201.071	3.240.201.081	
36 ... 80			3.240.201.353
42 ... 48	3.240.201.072	3.240.201.082	
100 ... 130	3.240.201.074	3.240.201.084	3.240.201.381
187 ... 264	3.240.201.075	3.240.201.085	

Panel cut-out

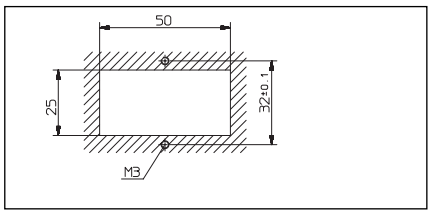


H 37.1

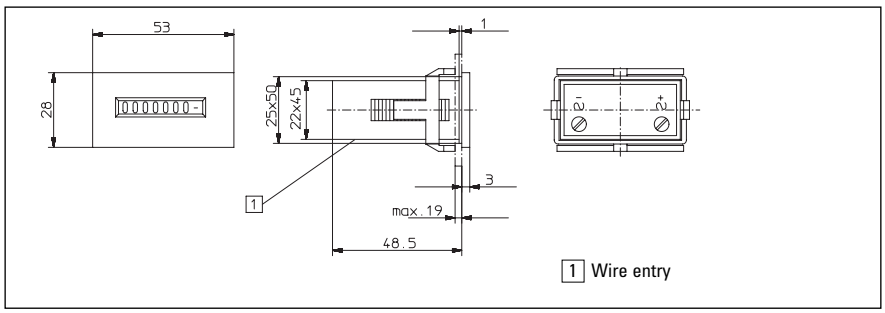


Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.241.201.351
20 ... 30	3.241.201.071	3.241.201.081	
36 ... 80			3.241.201.353
42 ... 48	3.241.201.072	3.241.201.082	
100 ... 130	3.241.201.074	3.241.201.084	3.241.201.381
187 ... 264	3.241.201.075	3.241.201.085	

Panel cut-out

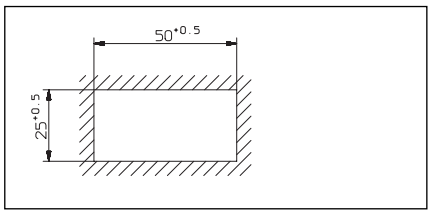


H 37.2

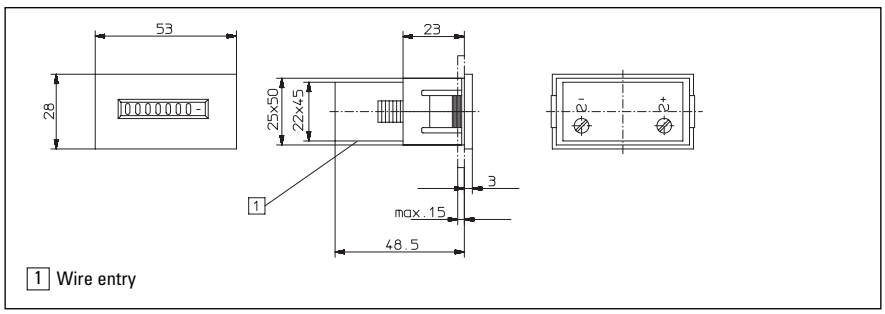


Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.242.201.351
20 ... 30	3.242.201.071	3.242.201.081	
36 ... 80			3.242.201.353
42 ... 48	3.242.201.072	3.242.201.082	
100 ... 130	3.242.201.074	3.242.201.084	3.242.201.381
187 ... 264	3.242.201.075	3.242.201.085	

Panel cut-out

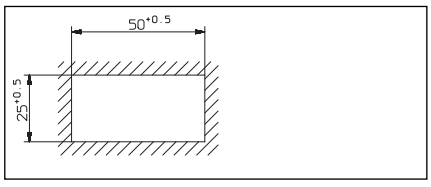


H 37.4

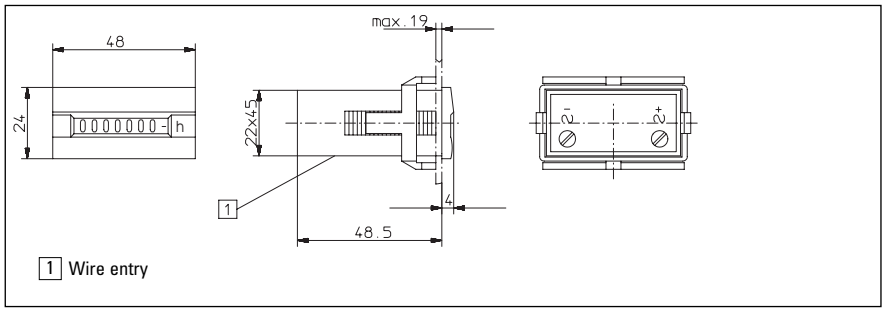


Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.244.201.351
20 ... 30	3.244.201.071	3.244.201.081	
36 ... 80			3.244.201.353
42 ... 48	3.244.201.072	3.244.201.082	
100 ... 130	3.244.201.074	3.244.201.084	3.244.201.381
187 ... 264	3.244.201.075	3.244.201.085	

Panel cut-out

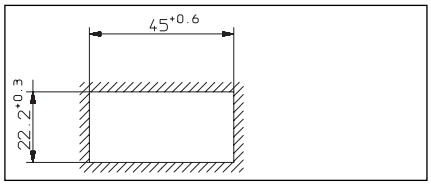


H 37.5

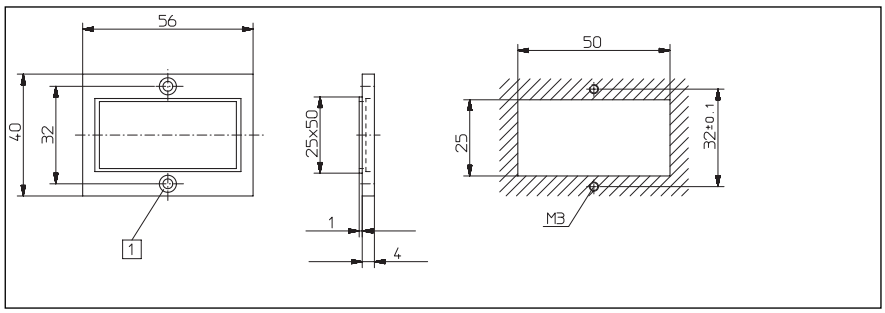


Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.245.201.351
20 ... 30	3.245.201.071	3.245.201.081	
36 ... 80			3.245.201.353
42 ...	3.245.201.072	3.245.201.082	
100 ... 130	3.245.201.074	3.245.201.084	3.245.201.381
187 ... 264	3.245.201.075	3.245.201.085	

Panel cut-out



Slip on bezel **37.1**



1 Countersunk Af3, DIN 74

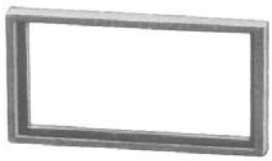
2 Panel cut-out

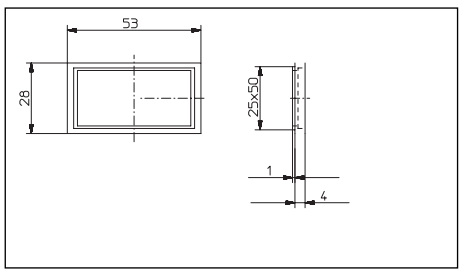
black: Art-No. T008.161

Slip on bezel **37.2**

Panel cut-out 50 x 25 mm

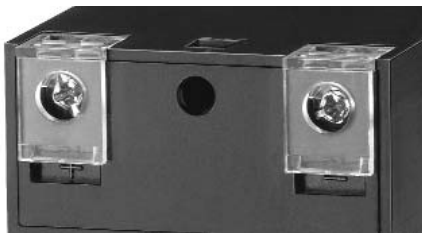
black: Art-No.: T008.165





Terminal cover KA 37

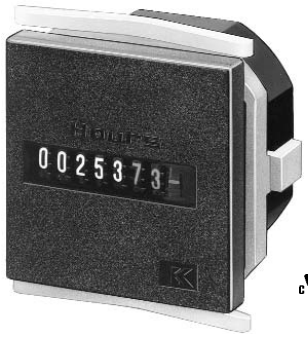
black: Art-No.: T051.687
(2 pcs required/counter)



Sealing gasket for H37 and H37.5:
Art-No.: N511.029

Sealing gasket for H37.2 and H37.4:
Art-No.: N511.015

Type series H 57



- 7- resp. 8-digit hour meter
- High shock resistance
- Without reset
- Small dimension
- Magnified figures
- Protection IP 52
- Data retention when breaking of power supply
- Long service life
- Optional mounting position
- UL-approvals

Applications

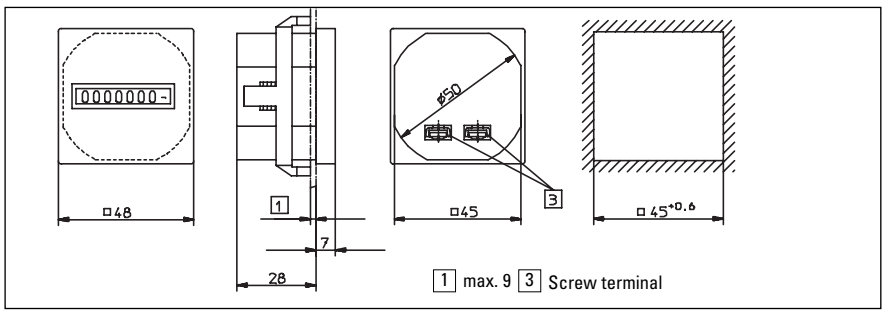
general counting, service interval for measurement systems (respiratory ventilators, oxygen machines, dialysis machines), small appliances, UV lamps, display panels in cars.

Technical data:

Electrical connection:	clamp terminal for cable diameter up to 2,5 mm², tightening torque max. 0,8 Nm
Power consumption:	10 ... 30 V DC: appr. 500 mW 100 ... 130 V DC: appr. 750 mW 20 ... 30 V AC, 50 Hz appr. 0,3 VA 42 ... 48 V AC, 50 Hz appr. 0.25 VA 100 ... 130 V AC, 50 Hz appr. 0.6 VA 187 ... 264 V AC, 50 Hz appr. 1.2 VA 360 ... 440 V AC, 50 Hz appr. 1.65 VA
Rated voltages:	20...30/42...48/100...130/187...264/360...440 V AC, 50 or 60 Hz, 10...30/100...130 V DC
On time:	100 %
Display:	7 at AC 99999.99 8 at DC 999999.99
Accuracy:	AC: Supply frequency + 30 ms DC: < 0.003 % (24 h)
Count mode:	adding
Height of figures:	4 mm
Colour of figures:	white and red on black
Ambient temperature:	–15° ... +50°C
Mounting position:	any
Protection:	up to IP 52, DIN 40 050 front side
Housing:	Plastic

Weight:	H 57: 48 g; AH 57: 84 g
Base mount socket No. 48	36 g
Slip-on bezel 55	8 g
Slip-on bezel 72	13 g
Operating indicator of the running time meter:	
AC:	Fast rotating wheel with red dashes
DC:	1/100 h display turns continuously by 1 digit in 36 s
Test voltage:	2000 V AC , 50 Hz for AC counters
Options:	Further voltages on request
Counter with wire entry from below, screw fixing from rear.	
	Art-No. 3.228.401.XXX.044
Colour of housing:	grey: Art-No. 3.22X.400.XXX
Flat pin	0.8 x 6.3 mm
	Art-No. 3.228.401.XXX
Cap wrapped (**IP 65** from front)	
IP 65 version:	Order code: 3.22X.XXX.XXX.422
Necessary sealing between counter and bezel:	
H 57:	N.511.018
H 57.55:	N.511.018 + N.511.017
H 57.72:	N.511.018 + N.511.016
(at IP 65 version delivery includes sealing)	
Approvals:	UL for USA and Canada E128604

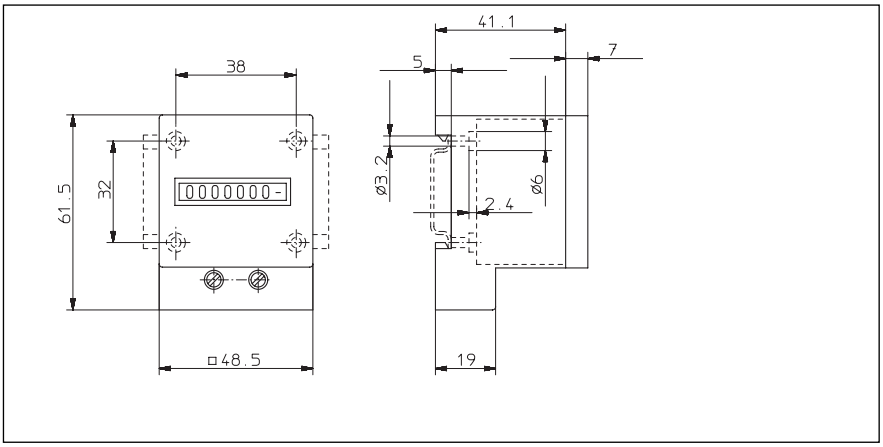
H 57



Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.220.401.351
20 ... 30	3.220.401.071	3.220.401.081	
36 ...80			3.220.401.353
42 ... 48	3.220.401.072	3.220.401.082	
100 ... 130	3.220.401.074	3.220.401.084	3.220.401.381
187 ...264	3.220.401.075	3.220.401.085	
360 ... 440	3.220.401.079	3.220.401.089	

Type series H 57

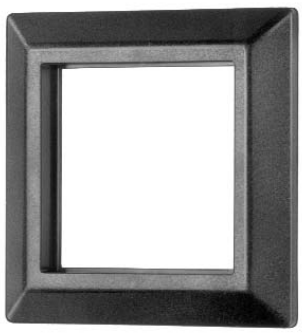
AH 57



Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.223.401.351
10 ... 50			3.223.401.371
20 ... 30	3.223.401.071	3.223.401.081	
36 ...80			3.223.401.353
42 ... 48	3.223.401.072	3.223.401.082	
100 ... 130	3.223.401.074	3.223.401.084	3.223.401.381
187 ...264	3.223.401.075	3.223.401.085	
360 ... 440	3.223.401.079	3.223.401.089	

Slip-on bezel 55 x 55
black: Art-No. T008.171
grey: Art-No. T008.170

Slip-on bezel 72 x 72
black: Art-No. T008.177
grey: Art-No. T008.176



Slip-on bezel 55 x 55
black: Art-No. G008.040
grey: Art-No. G008.041

For hour meter H57 with flat pins
Art-No. 3.22**8**.401.XXX

Slip-on bezel Ø 72 for Panel cut-out
Ø 60 mm, colour black Art-No. N.510.226

Type series HR 76

- 6-digit hour meter for round panel cut out
- Low cost
- **High shock resistance**
- Low power consumption
- Small dimension
- magnified figures
- waterproof
- Protection IP 65
- Data retention if power is lost
- UL-approval

Applications

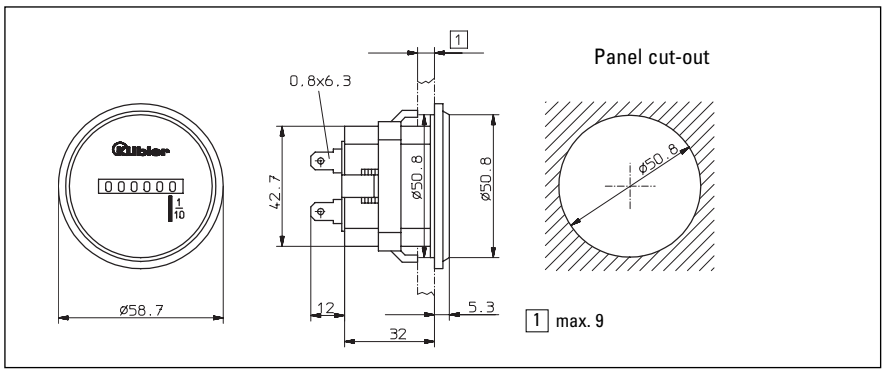
general counting,
utility vehicles, construction machines, generators, fork-lift trucks, car washes , outside areas

Technical data:

Electrical connection:	Flat pins 0.8 x 6.3	
Power consumption:	AC	max. 0.4 VA
	12 V DC:	max. 0.08 W
	48 V DC:	max. 0.7 W
Rated voltages:	115/230 V AC, ± 10 %, 50/60 Hz, 10 ... 80 V DC	
On time:	100 %	
Display:	6 (99999.9 h)	
Count mode:	adding	
Height of figures:	3.5 mm	
Colour of figures:	white on black	

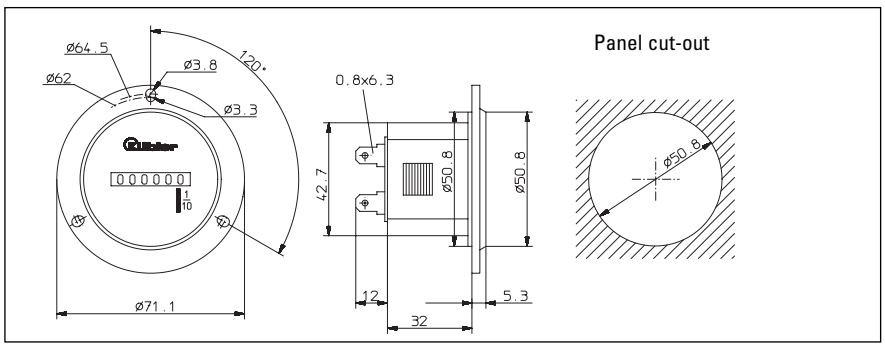
Reset:	no
Ambient temperature:	–30 ... +65 °C
Mounting position:	any
Protection:	IP 65
Housing:	Plastic
Weight:	HR 76.1: 56 g
	HR 76.2: 54 g
Options:	Accuracy:
	< 0.02% over the full range
UL:	E128604

HR 76.2



V	Art-No. (AC, 50/60 Hz)	Art-No. (DC)
10 ... 80		0.135.200.373
115	0.135.200.301	
230	0.135.200.302	

HR 76.1



V	Art-No. (AC, 50/60 Hz)	Art-No. (DC)
10 ... 80		0.135.100.373
115	0.135.100.301	
230	0.135.100.302	

Type series HB 26

- 6 digit hour meter with reset
- High shock resistance
- Magnified figures; 4.5 mm high
- Data retention if power is lost
- Long service life
- Plug-in versions

Applications

Indication of machine run time or time between services.
Machine utilisation timing for pricing etc.

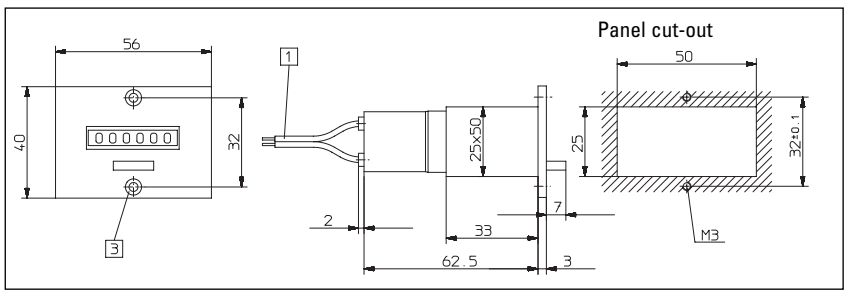
Technical data:

Electrical connection:	Cable: 2 x 0.5 mm², NYFAZ, 0.5 m long AC: grey/grey, DC: red +, black – Type HB 26.01.3 round pins (pluggable in socket box 945.2)
Power consumption:	10 ... 30 V DC: appr. 500 mW 36 ... 80 V DC: appr. 900 mW 100 ... 130 V DC: appr. 750 mW 20 ... 30 V AC appr. 0.3 VA 42 ... 48 V AC appr. 0.25 VA 100 ... 130 V AC appr. 0.6 VA 187 ... 264 V AC appr. 1.2 VA 360 ... 440 V AC appr. 1.65 VA
Rated voltages:	20 ... 30/42 ... 48/100 ... 130/187 ... 264/ 360...440 V AC, 50 or 60 Hz, 10 ... 30/36 ... 80/100 ... 130 V DC
Display:	6: 99999.9 h
Accuracy:	AC: Supply frequency + 30 ms DC: < 0.003 % (24 h)
Height of figures:	4.5 mm
Colour of figures:	white and red on black
Ambient temperature:	–15° ... +50°C
Mounting position:	any
Protection:	IP 41 (front) Flexible sealing cover K1: IP 54 (front) Transparent cover Dv U. Dvs: IP 55 (front)
Housing:	Plastic
Weight:	appr. 45 g

Options:	Different voltages Different temperature range Key-locking 0-reset: Art-No.: 3.160.XX7.XXX Flat pin 0.8 x 6.3 mm without flat pin rt-No.: .168.X11.XXX Flat pin 0.8 x 2.8 with socket box Art-No.: 3.16**7**.X.11.XXX
Accessories:	Socket box 945.2 Art-No.: G.008.434 Sealing cover K1 black Art-No.: G.008.301 only for front panel 3 50 x 60
Front bezel:	F1B beige Art-No.: G.007.501 F1B black Art-No.: G.007.502
Dummy housing 25 x 50 mm	Black: Art-No.: T.005.753

HB 26.21 vs

HB 26.11

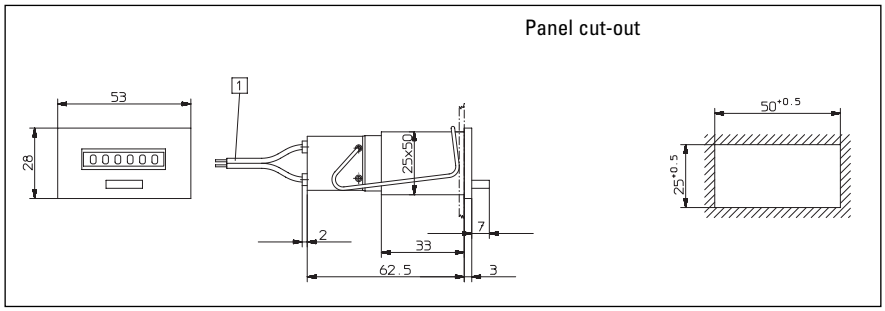


Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.160.111.351
20 ... 30	3.160.111.071	3.160.111.081	
36 ... 80			3.160.111.353
42 ... 48	3.160.111.072	3.160.111.082	
100 ... 130	3.160.111.074	3.160.111.084	3.160.111.381
187 ... 264	3.160.111.075	3.160.111.085	
360 ... 440	3.130.111.079	3.160.111.089	

[1] Connection cable, 2 x 0.5 mm², NYFAZ, 0.5 m long

[3] Countersunk Af3, DIN 74

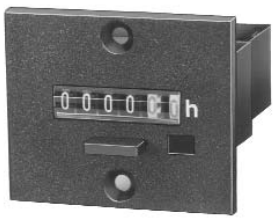
HB 26.21

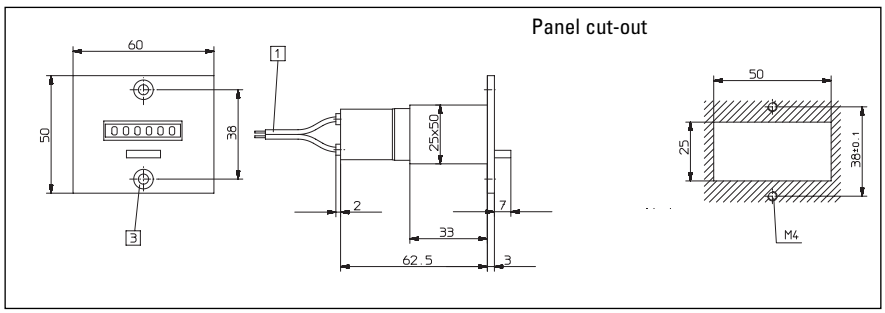


Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.160.211.351
20 ... 30	3.160.211.071	3.160.211.081	
36 ... 80			3.160.211.353
42 ... 48	3.160.211.072	3.160.211.082	
100 ... 130	3.160.211.074	3.160.211.084	3.160.211.381
187 ... 264	3.160.211.075	3.160.211.085	
360 ... 440	3.160.211.079	3.160.211.089	

[1] Connection cable, 2 x 0.5 mm², NYFAZ, 5 m lang

HB 26.31



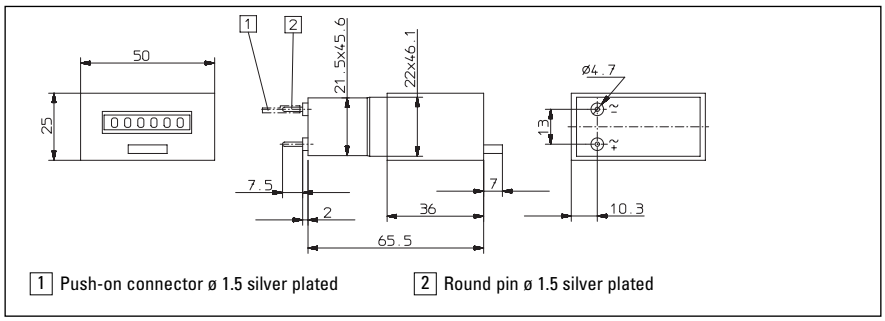


Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.160.311.351
20 ... 30	3.160.311.071	3.160.311.081	
36 ... 80			3.160.311.353
42 ... 48	3.160.311.072	3.160.311.082	
100 ... 130	3.160.311.074	3.160.311.084	3.160.311.381
187 ... 264	3.160.311.075	3.160.311.085	
360 ... 440	3.160.311.079	3.160.311.089	

[1] Cable connection 2 x 0.5 mm², NYFAZ, 0.5 m long

[3] Countersunk Bf4, DIN 74

HB 26.01.3

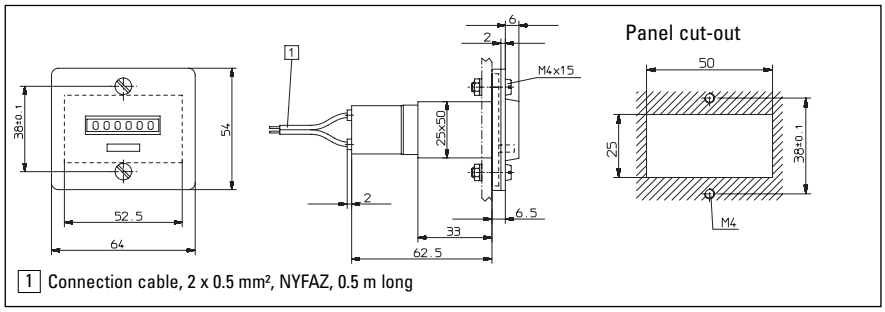


Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.165.011.351
20 ... 30	3.165.011.071	3.165.011.081	
36 ... 80			3.165.011.353
42 ... 48	3.165.011.072	3.165.011.082	
100 ... 130	3.165.011.074	3.165.011.084	3.165.011.381
187 ... 264	3.165.011.075	3.165.011.085	
360 ... 440	3.165.011.079	3.165.011.089	

Socket box 945.2

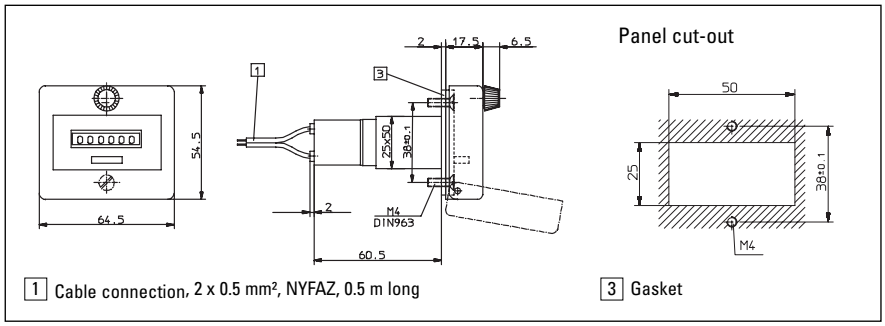
Time meter

K1 HB 26.31



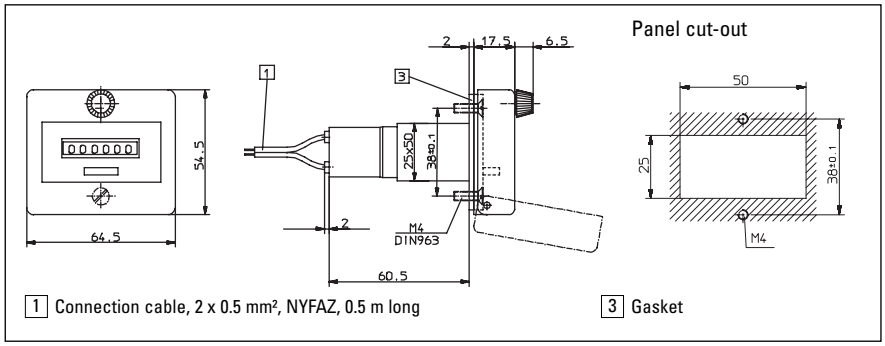
Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.160.611.351
20 ... 30	3.160.611.071	3.160.611.081	
36 ... 80			3.160.611.353
42 ... 48	3.160.611.072	3.160.611.082	
100 ... 130	3.160.611.074	3.160.611.084	3.160.611.381
187 ... 264	3.160.611.075	3.160.611.085	
360 ... 440	3.160.611.079	3.160.611.089	

Dv HB 26.31



Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.160.711.351
20 ... 30	3.160.711.071	3.160.711.081	
36 ... 80			3.160.711.353
42 ... 48	3.160.711.072	3.160.711.082	
100 ... 130	3.160.711.074	3.160.711.084	3.160.711.381
187 ... 264	3.160.711.075	3.160.711.085	
360 ... 440	3.160.711.079	3.160.711.089	

Dvs HB 26.31



Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.160.811.351
20 ... 30	3.160.811.071	3.160.811.081	
36 ... 80			3.160.811.353
42 ... 48	3.160.811.072	3.160.811.082	
100 ... 130	3.160.811.074	3.160.811.084	3.160.811.381
187 ... 264	3.160.811.075	3.160.811.085	
360 ... 440	3.160.811.079	3.160.811.089	

Type series HB 27

- 7-digit hour meter
- High shock resistance
- Without reset
- Magnified figures (4,5 mm)
- Data retention even if power is lost
- Long service life

Applications

general counting, service interval for measurement systems (respiratory ventilators, oxygen machines, dialysis machines), small appliances, UV lamps, display panels in cars.

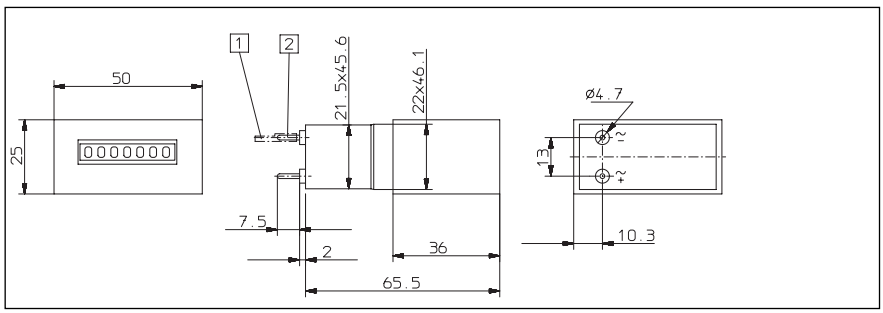
Technical data:

Electrical connection:	Cable: 2 x 0.5 mm², NYFAZ, 0.5 m long AC: grey/grey DC: red +, black– Type HB 27.00.3 with round pins (pluggable in socket box 945.2) Test voltage: 2000 V AC,50 Hz at AC-counters
Power consumption:	10 ... 30 V DC: appr. 500 mW 36 ... 80 V DC: appr. 900 mW 100 ... 130 V DC: appr. 750 mW 20 ... 30 V AC appr. 0.3 VA 42 ... 48 V AC appr. 0.25 VA 100 ... 130 V AC appr. 0.6 VA 187 ... 264 V AC appr. 1.2 VA 360 ... 440 V AC appr. 1.65 VA
Rated voltages:	20...30/42...48/100...130/187...264/360...440 V AC, 50 or 60 Hz, 10...30/36...80/100...130 V DC
Display:	7 (99999.99 h)
Accuracy:	AC: Supply frequency + 30 ms DC: < 0.003 % (24 h)
Height of figures:	4.5 mm
Colour of figures:	white and red on black
Ambient temperature:	–15° ... +50°C
Mounting position:	any
Protection:	up to IP 51 (front) Sealing cover K1: IP 54 (front) Transparent cover Dv U. Dvs: IP 55 (front)

Housing:	Plastic
Weight:	appr. 45 g
Options:	
Further temperature range	on request
Silver plated round pins Ø1.5 mm with push on connectors	
	Art-No.: 3.205.X01.XXX
Flat pin 0.8 x 3.6 mm without push on connectors	Art-No.: 3.208.X11.XXX
Flat pin 0.8 x 2.8 mm with push on connectors	Art-No.: 3.207.X01.XXX
Accessories:	
Socket box 945.2	Art-No.: G.008.434
Sealing cover K1 black	Art-No.: G.008.301
Front bezel: F1B black	Art-No.: G.007.502
Dummy housing 25 x 50 mm black:	Art-No.: T.005.753

Note: Since 01.01.2001 the polarity has been changed on the model with round pins, (see the separate instructions on the product).
Since 01.01.2001 the standard model has a cable connection. The version with ø 1.5 mm round pins is now an option.

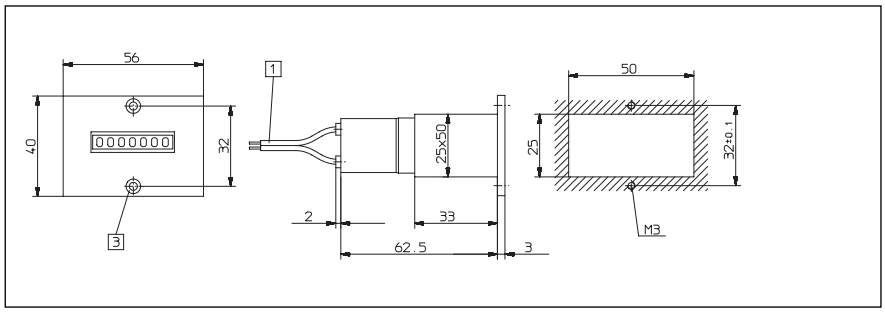
HB 27.00.3



Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.205.001.351
20 ... 30	3.205.001.071	3.205.001.081	
36 ... 80			3.205.001.353
42 ... 48	3.205.001.072	3.205.001.082	
100 ... 130	3.205.001.074	3.205.001.084	3.205.001.381
187 ... 264	3.205.001.075	3.205.001.085	
360 ... 440	3.205.001.079	3.205.001.089	

1 Push-on connector ø 1.5 silver plated
2 Round pin ø 1.5 silver plated

HB 27.10

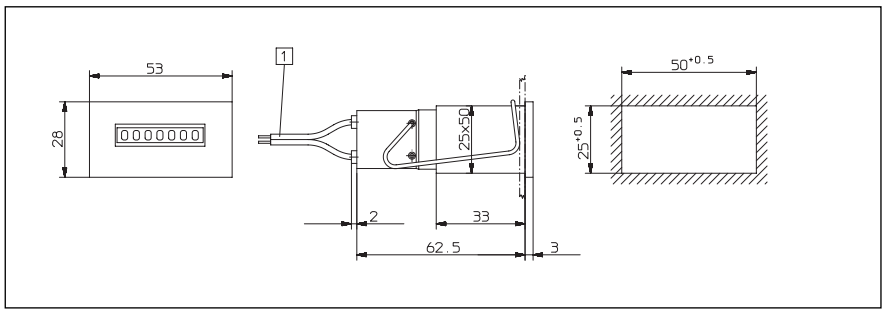


Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.200.101.351
20 ... 30	3.200.101.071	3.200.101.081	
36 ... 80			3.200.101.353
42 ... 48	3.200.101.072	3.200.101.082	
100 ... 130	3.200.101.074	3.200.101.084	3.200.101.381
187 ... 264	3.200.101.075	3.200.101.085	
360 ... 440	3.200.101.079	3.200.101.089	

1 Connection cable 2 x 0.5 mm², NYFAZ, 0.5 m long

3 Countersunk Af3, DIN 74

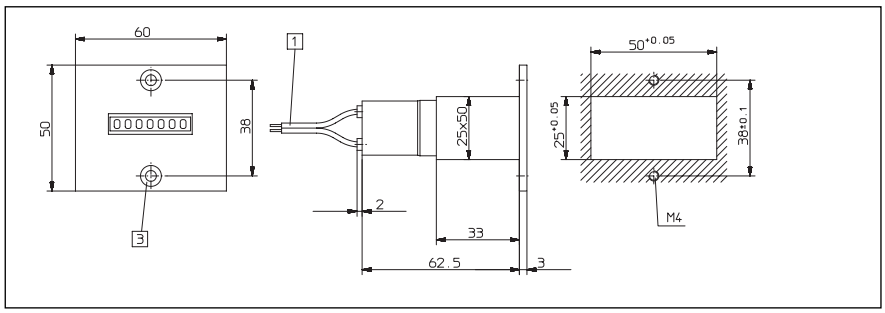
HB 27.20



Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10...30			3.200.201.351
20...30	3.200.201.071	3.200.201.081	
36...80			3.200.201.353
42...48	3.200.201.072	3.200.201.082	
100...130	3.200.201.074	3.200.201.084	3.200.201.381
187...264	3.200.201.075	3.200.201.085	
360...440	3.200.201.079	3.200.201.089	

1 Connection cable 2 x 0.5 mm², NYFAZ, 0.5 m long

HB 27.30



Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.200.301.351
20 ... 30	3.200.301.071	3.200.301.081	
36 ... 80			3.200.301.353
42 ... 48	3.200.301.072	3.200.301.082	
100 ... 130	3.200.301.074	3.200.301.084	3.200.301.381
187 ... 264	3.200.301.075	3.200.301.085	
360 ... 440	3.200.301.079	3.200.301.089	

1 Connection cable 2 x 0.5 mm², NYFAZ, 0.5 m long

3 Countersunk Af3, DIN 74

Type series HC 77

- **Combination counter consists of time meter and adding counter in one**
- Without reset
- High shock resistance
- Magnified figures
- Protection IP 52 (front)
- Data retention if power is lost
- Long service life
- UL-approval

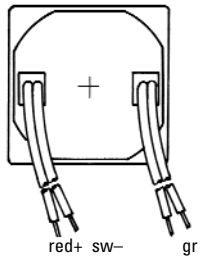
Applications

general counting, service interval for measurement systems (respiratory ventilators, oxygen machines, dialysis machines), small appliances, UV lamps, display panels in cars.

Technical data:

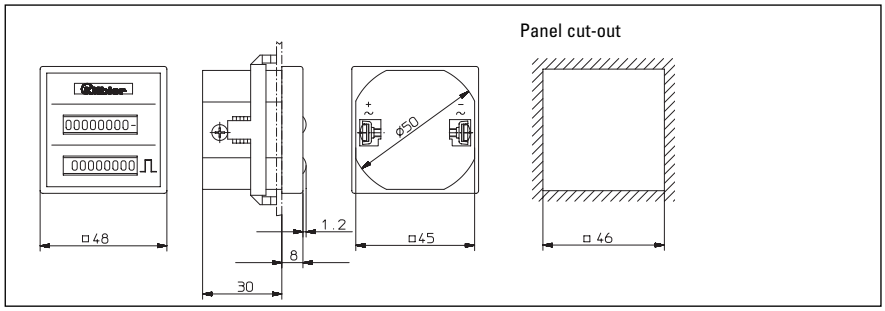
Electrical connection:	Flat pin 0,8 x 6,3 mm with screw terminal tightening torque max. 0,8 Nm
Power consumption:	10 ... 30 V DC: appr. 1 W 36 ... 80 V DC: appr. 1.65 W 100 ... 130 V DC: appr. 1.75 W 20 ... 30 V AC, 50 Hz: appr. 0.53 VA 42...48 V AC , 50 Hz appr. 0.53 VA 100...130 V AC , 50 Hz appr.1.43 VA 187...264 V AC , 50Hz appr. 3.0 VA
Rated voltages:	20 ... 30/42 ... 48/100 ... 130/187 ... 264 V AC 50 or 60 Hz, 10 ... 30/36 ... 80/100 ... 130 V DC
On time:	100 %
Count mode:	adding
Height of figures:	4 x 1.7 mm
Colour of figures:	Hour: white on black Decimal: red on black
Operating indicator of the running time meter:	
AC:	Fast rotating wheel with red dashes: 99999.99 h
DC:	1/100 h display turns continuously by 1 digit in 36 s: 999999.99 h
Accuracy:	AC: Supply frequency + 30 ms DC: < 0.003 % (24 h)
Reset:	no
Ambient temperature:	–15 ... +50 °C
Mounting position:	any
Protection:	IP 65 (from front, when built in)
Colour of housing:	black
Weights:	
HC 77	65 g
Plug in frame 55	8 g
Plug in frame 72	13g
Options:	
	1. Colour of housing: grey Art-No. 3.55X.4**00**.XXX
	2. Flat pin 0.8 x 6.3 mm Art-No.: 3.55X.40X.XXX.**011**
	3. Separate connections for running time meter and adding counter. This model is available for AC or DC (not mixed) Adding counter max. 10Imp/s Electrical connections: 2 x cable 2 x 0.5 mm² NYFAZ, 0.5 m long (hour meter cable red/black, adding counter grey cable) Art-No. 3.55X.40X.XXX.**060**
	4. Sealed window (IP 65 front) with: - Screw terminal: Art-No. 3.55X.40X.XXX.**419** -Flat pin 0,8 x 6,3 mm Art-No. 3.55X.40X.XXX.**062** -Separated connections (cable) Art-No. 3.55X.40X.XXX.**061**
Approvals:	UL for USA and Canada E128604
Order information:	
	Art-No. (for special voltages etc. indicate exact model, voltage and frequency e.g. HC 77, 120 V AC, 60 Hz)

Meter with separate connections (rear view)



Type series HC 77

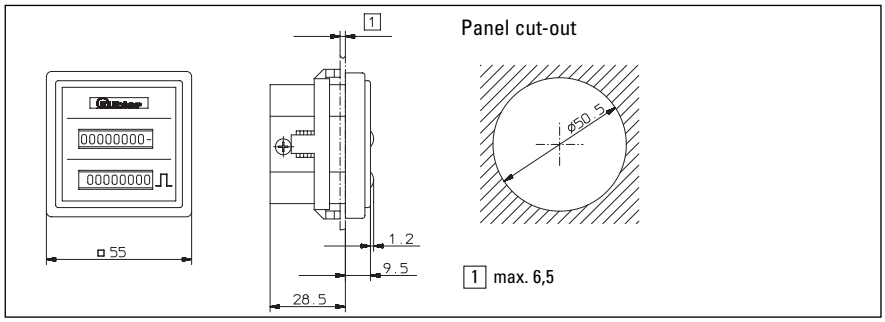
HC 77



Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No. (V DC)
10 ... 30			3.550.401.351
20 ... 30	3.550.401.071	3.550.401.081	
36 ... 80			3.550.401.353
42 ... 48	3.550.401.072	3.550.401.082	
100 ... 130	3.550.401.074	3.550.401.084	3.550.401.381
187 ... 264	3.550.401.075	3.550.401.085	

Colour of housing grey: Art.-No.3.550.400.XXX

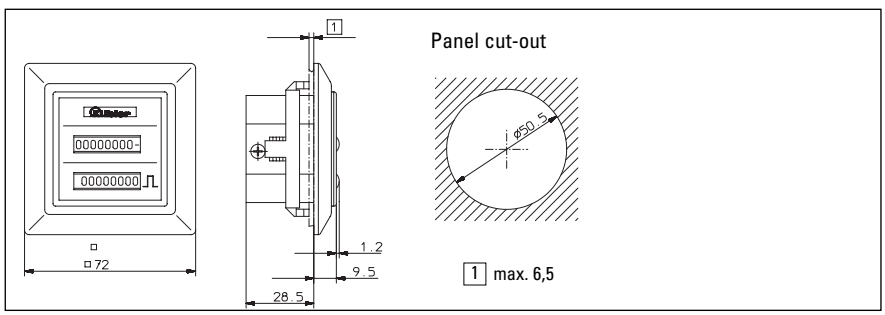
HC 77.55



Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.551.401.351
20 ... 30	3.551.401.071	3.551.401.081	
36 ... 80			3.551.401.353
42 ... 48	3.551.401.072	3.551.401.082	
100 ... 130	3.551.401.074	3.551.401.084	3.551.401.381
187 ... 264	3.551.401.075	3.551.401.085	

Colour of housing grey: Art.-No. 3.551.400.XXX

HC 77.72



Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.552.201.351
20 ... 30	3.552.401.071	3.552.401.081	
36 ... 80			3.552.201.353
42 ... 48	3.552.401.072	3.552.401.082	
100 ... 130	3.552.401.074	3.552.401.084	3.552.201.381
187 ... 264	3.552.401.075	3.552.401.085	

Colour of housing grey: 3.552.400.XXX

For panel cut-outs 66 x 66 mm and 68 x 68 mm adaptors are available as accessories.
Adaptor 66 x 66 mm: Art.-No. T.009.423
Adaptor 68 x 68 mm: Art.-No. T.009.420

Type series SHC 77

- **Combination counter consists of time meter and adding counter in one**
- Without reset
- High shock resistance
- Magnified figures
- Protection IP 52 (front)
- Data retention if power is lost
- Long service life
- UL-approval

Applications

general counting, service interval for measurement systems (respiratory ventilators, oxygen machines, dialysis machines), small appliances, UV lamps, display panels in cars.

Technical data:

Electrical connection:	SHC 77:	Screw terminal tightening torque max. 0,8 Nm
	SHC 77.60:	2x cable 2 x 0.5 mm² NYFAZ, 0.5 m long Hour meter red/black Adding counter grey
Power consumption:	10 ... 30 V DC:	appr. 1 W
	36 ... 80 V DC:	appr. 1.65 W
	100 ... 130 V DC:	appr. 1.75 W
	20 ... 30 V AC, 50 Hz:	appr. 0.53 VA
	42 ... 48 V AC , 50 Hz	appr. 0.53 VA
	100 ... 130 V AC , 50 Hz	appr.1.43 VA
	187 ... 264 V AC , 50Hz	appr.3.0 VA
Rated voltages:	20 ... 30/42 ... 48/100 ... 130/187 ... 264 V AC 50 or 60 Hz, 10 ... 30/36 ... 80/100 ... 130 V DC	
On time:	100 %	
Count mode:	adding	
Height of figures:	4 x 1.7 mm	
Colour of figures:	Hour meter: Hours: white figures on black 1/10 and 1/100 h: red figures on black Adding counter: white figures on black	

Operating indicator of the hour meter:

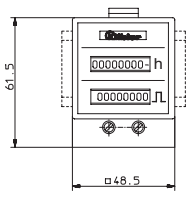
AC: Fast rotating wheels with red dashes: 99999.9 h

DC: 1/100 h display turns continuously by 1 digit per 36 s: 999999.9 h

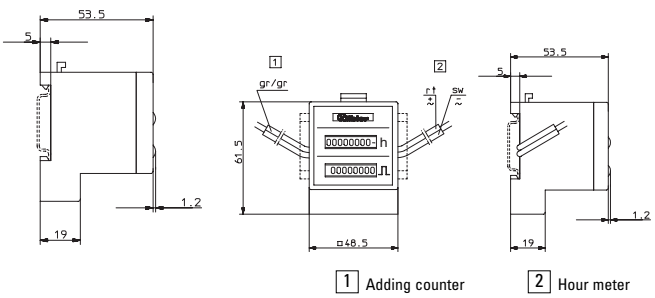
Accuracy:	AC: Supply frequency + 30 ms DC: < 0.003 % (24 h)
Reset:	no
Ambient temperature:	–15 ... +50 °C
Mounting position:	any
Protection:	IP 52 (from front, when built-in)
Colour of housing:	black
Weights:	
SHC 77.	85 g
SHC 77.60	105 g
Options:	
SHC 77:	The two meters are connected in parallel, this means, that the adding counter registers the total number of events and the time meter the total operating time of the device.
SHC 77.60	Hour meter and adding counter have two separate connections. This version is available for either AC or DC version (not mixed)
Applications:	Switch cabinets, distribution boxes etc.
Test voltage:	2500V AC, 50 Hz
Order information:	Art.-No. (for special voltages etc. exact type, voltage, frequency e.g. SHC 77, 120 V AC, 60 Hz)
Approvals:	UL for USA and Canada E128604

Figure.: SHC 77

SHC 77



SHC 77.60



SHC 77

Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.553.401.351
20 ... 30	3.553.401.071	3.553.401.081	
36 ... 80			3.553.401.353
42 ... 48	3.553.401.072	3.553.401.082	
100 ... 130	3.553.401.074	3.553.401.084	3.553.401.381
187 ... 264	3.553.401.075	3.553.401.085	

SHC 77.60 (separate connections)

Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.553.401.351.060
20 ... 30	3.553.401.071.060	3.553.401.081.060	
36 ... 80			3.553.401.353.060
42 ... 48	3.553.401.072.060	3.553.401.082.060	
100 ... 130	3.553.401.074.060	3.553.401.084.060	3.553.401.381.060
187 ... 264	3.553.401.075.060	3.553.401.085.060	

LCD Hour Meter Module 194

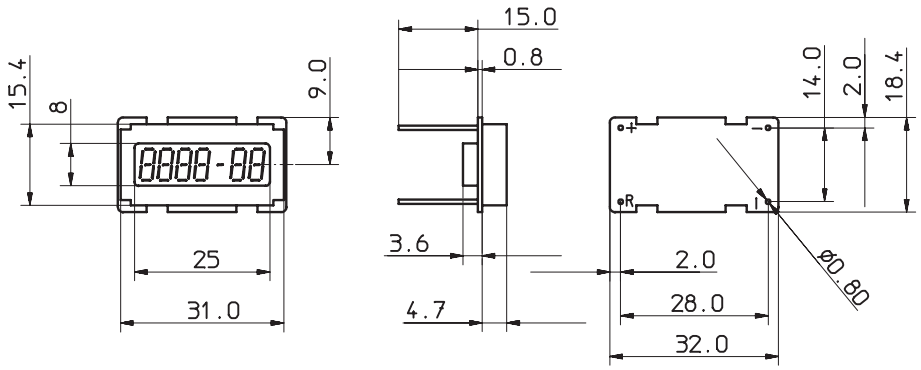
- 6-digit display, 6 mm hight
- Time range 9999-99 hours
- Wide operating voltage and temperature range
- High reliability
- Low cost and small size
- Low operating current
- Very high shock and vibration specs
- Non-volatile memory (no battery)

Technical features for LCD Hour Meter Module Type 194

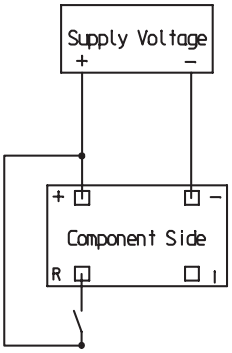
Supply:	1. 4,75 ... 15 V DC 2. 9 ... 60 V DC reverse polarity protection
Current consumption:	1. 8 mA at 4,75 ... 15 V DC 2. 6 mA at 9 ... 60 V DC
Reset input:	High 4 ... 60 V DC; Low: 0 ... 0,7 V DC pulse length min. 1 ms edge triggered
Display:	7-digit display, figure height 6 mm
Data backup:	EEPROM
Housing:	Dimension 18 x 33 mm
Colour:	black
Display:	9999-99 hours
Measuring error:	max. 4 s
Measuring error of the quartz clock	max. 200 ppm (25 °C)

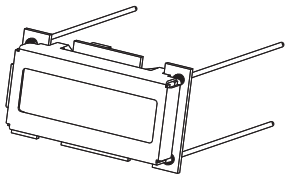
Working temperature	–40 ... + 80°C
Operating temperature:	–40 ... +85 °C
Storage temperature:	–50 ... +90 °C
Interference emission:	EN 61000-6-3, EN 55 011, class B
Interference resistance:	EN 61000-6-2
Weight:	approximately 8 g
Memory capacity:	CMOS EEPROM. Nonvolatile memory has data retention in excess of 10 years
Shock resistance acc. to DIN-IEC 68-2-27:	550 m/s^2, 11 ms
Vibration resistance acc. to DIN-IEC 68-2-6:	50 ... 200 m/s^2, 10 ... 80 Hz
Protection from:	inductive swichting, alternator load dump

Dimensions:



Connecting diagram:





Order code:

LCD Hour Meter Module Type 194:
4.5 ... 15 V DC: Order-No.: 6.194.012.F00
Art-No.: 162 137
9 ... 60 V DC: Order-No.: 6.194.012.G00
Art.-No.: 162 138
(availability on request)

Scope of delivery:

– LCD Hour Meter Module Type 194
– Operating instructions

LCD Hour Meter Module 198

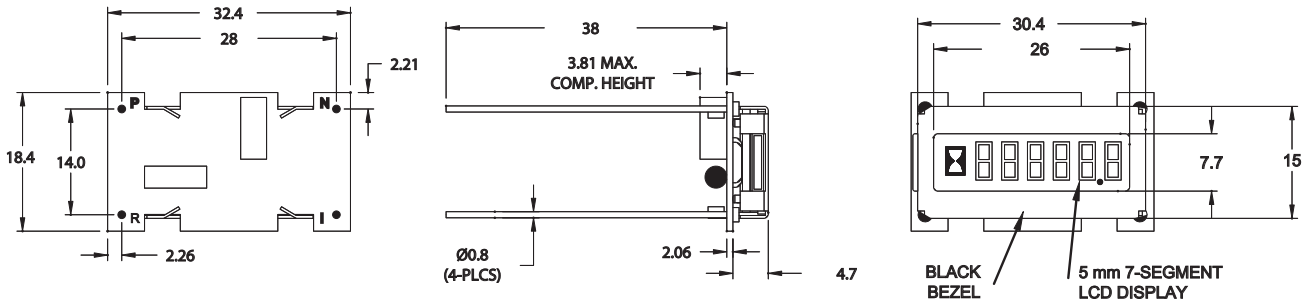
- Non-volatile memory (no battery)
- High reliability
- Low cost and small size
- Low operating current
- Wide operating voltage and temperature range
- Very high shock and vibration specs
- Solid state electronics

Technical features for LCD Hour Meter Module Type 198

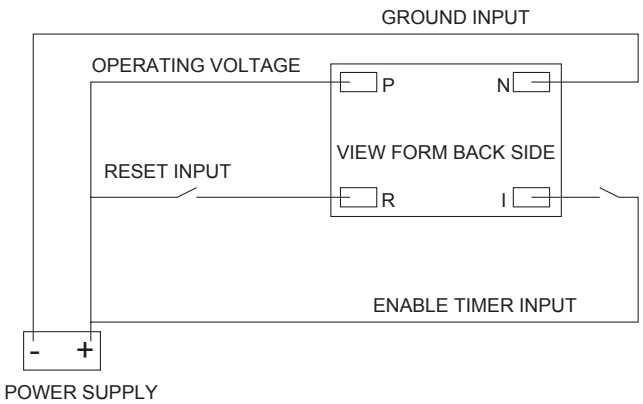
Supply	8 ... 28 V DC
Current consumption:	3 mA maximum at 8 ... 24 V DC 10 mA at 28 V DC
Start and reset input:	8 ... 28 V DC
Display:	6-digit display, figure height 8 mm
Data backup:	EEPROM
Housing:	Dimension 15 x 33 mm
Colour:	black

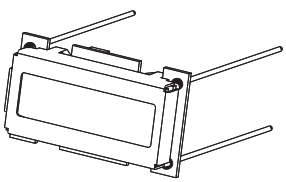
Operating temperature:	–40 ... +85 °C
Humidity:	95 % RH +32 C for 2 hours
EMC:	according to EC EMC directive 89/36/EWG
Interference emission:	EN 50081-2/EN 55011 Class B
Interference resistance:	EN 6100-6-2
Weight:	approximately 8 g
Memory capacity:	CMOS EEPROM. Nonvolatile memory has data retention in excess of 10 years without power.
Protection from:	inductive swichting, alternator load dump

Dimensions:



Connecting diagram:





Order code:
LCD Hour Meter Module Type 198:
Order-No.: 6.198.012.300

Scope of delivery:
– LCD Hour Meter Module Type 198
– Operating instructions

LCD hour meter *CODIX* 134/135

- Low-price and high efficiency
- Large 8-digit LCD display, height of the figures 8 mm
- Optional backlighting
- Different time ranges from 0.1 second to 100,000 hours
- 0.1 second synchronisation makes it suitable for very short activation times
- High voltage versions for 10 ... 260 V AC/DC voltage pulses, can be connected directly via contactors, relays and motors
- Very high accuracy: 100 ppm
- Protection IP65
- Unified Codix design, suiting the extensive *CODIX* family
- Screw terminals, RM 5 mm
- Lifetime of the battery approximately 8 years
- Operating temperature –10 ... +60 °C
- Locking of the reset key
- Accumulated time always readable thanks to battery*powered LCD display.

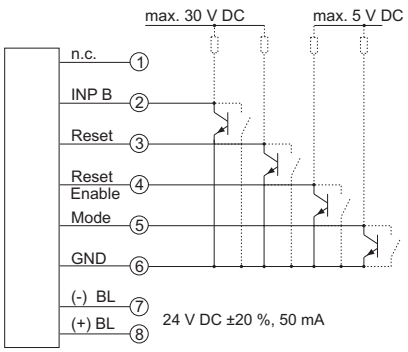
Technical data

Power supply:	non-replaceable lithium battery:
	(lifetime approximately 8 years at 20°C)
Backlighting:	external electrical source
	24 V DC +/-20 %, 50 mA
Display:	LCD, 8 decades, height of the figures 8 mm
Counting direction:	adding
Display range:	see next page
Reset :	manual and electrical
A. Timer inputs DC versions: (max. 30 V DC)	
Timer input	NPN or PNP depending on the type (see table)
Switching level:	NPN: Low: 0 ... 0.7 V, High: 3 ... 30 V DC
	PNP: Low: 0 ... 0.7 V, High: 4 ... 30 V DC
Counting start:	NPN: for low signal at the timer input
	PNP: for high signal at the timer input
B. Timer inputs high voltage version (10 ... 260 V DC/V AC)	
Timer input:	Optocoupler input, max. 30 Hz
Min. pulse time:	16 ms
Switching level:	Low: 0 ... 2 V DC/V AC,High: 10 ... 260 V DC/V AC
Counting start:	for high signal at the timer input.

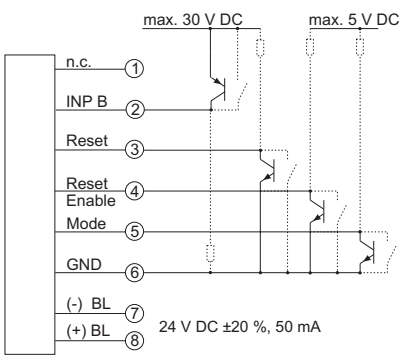
C: Time range change (Mode)	
Contact input:	Open Collector (switching at 0 V)
	NPN: Low: 0 ... 0.7 V, High: 3 ... 5 V DC
Time range:	depending on the circuit (see order information)
D. Reset Input (only DC and high voltage)	
Minimum pulse time:	DC: 50 ms, high voltage: 16 ms
Contact input DC*:	NPN: Low: 0 ... 0.7 V, High: 3 ... 30 V DC
High voltage input:	10 ... 260 V DC/V AC
E. Reset locking input (for DC and AC)	
Electrical reset key locking	
Input not active:	Reset key locked
Contact input:	Open Collector NPN (switching at 0 V)
Switching level:	NPN: Low: 0 ... 0.7 V, High: 3 ... 5 V DC
Interference emissions:	EN 55011 Class B, EN 61000-6-2
	EN 61010 Section 1 (only AC versions)
Housing:	dark grey RAL 7021
Operating temperature:	–10 ... +55 °C
Ambient temperature:	–10 ... +60 °C
Storage temperature:	–20 ... +70 °C
Protection:	IP 65 front
Weight:	approximately 50 g

Connecting diagram:

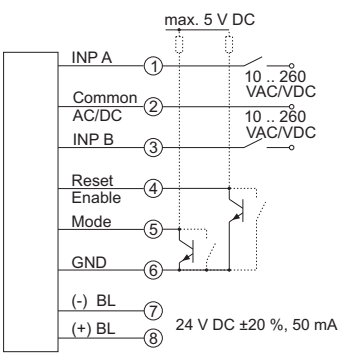
DC type:
6.134.012.8x0
6.135.012.8x0



DC typ:
6.134.012.8x1
6.135.012.8x1

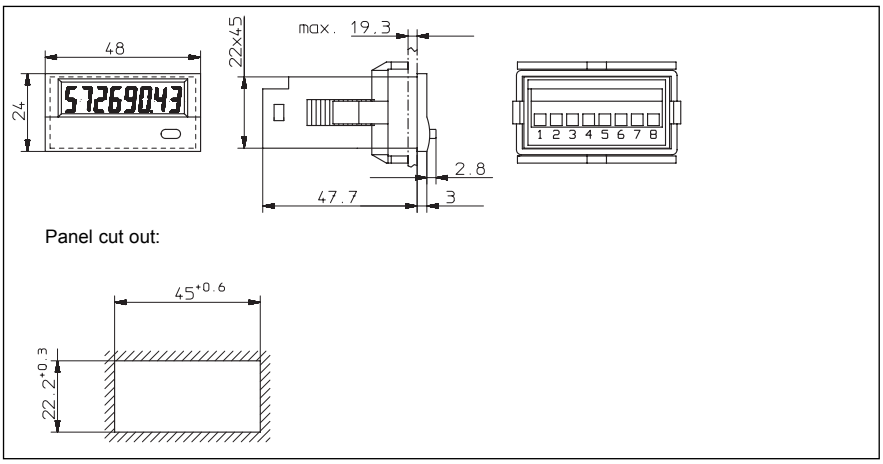


AC type:
6.134.012.8x3
6.135.012.8x3



BL = backlightning

Dimensions:

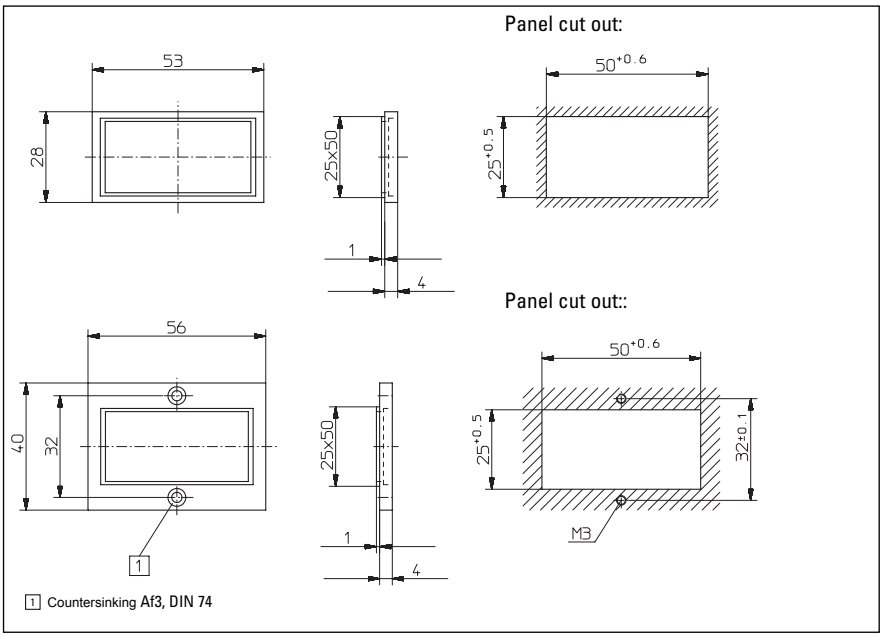


Display:

Time ranges and display

Time range	Display
99999 h 59 m (134)	99999-59
99999.99 h (134)	99999-99
9999 h 59 m 59 s (135)	9999.59.59
9999999.9 s (135)	9999999.9

Frame dimensions:



Scope of delivery:

– Digital display
– Panel mounting clip
– Bezel for screw mounting, panel cut out 50 x 25 mm
– Bezel for clip mounting, panel cut out 50 x 25 mm
– Gasket
– Operating instructions.

Order information:

Type	Mode	Time range	Inputs INP A		INP B	
6.134.012.8x0	Timer	99999h 59 m/ 99999.99 h	–		0 ... 0.7 V DC	NPN
6.134.012.8x1					4 ... 30 V DC	PNP
6.134.012.8x3			10 ... 260 V AC/DC	AC/DC	10 ... 260 V AC/DC	AC/DC
6.135.012.8x0	Timer	9999 h 59 m 59 s/ 9999999.9 s	–		0 ... 0.7 V DC	NPN
6.135.012.8x1					4 ... 30 V DC	PNP
6.135.012.8x3			10 ... 260 V AC/DC	AC/DC	10 ... 260 V AC/DC	AC/DC

X: 5 = no backlight
X: 6 = with backlight

Type 186/187

- Clearly readable due to leading zero blanking
- Power supply and data retention by an internal lithium battery up to 10 years at 20 °C ambient temperature
- Manual and electrical reset
- Reset button to be enabled/disabled
- DIN standard housing 48 x 24 mm
- Additional bezel for screw mount in the scope of delivery
- Protection IP 65 (front)

Type 186: Time meter with time range: 99999999 s or 99999 min 59 s
Type 187: Hour meter with time range: 99999 h 59 min or 99999,99 h

Applications:
– Recording of running time outage times, set-up times
– Use in devices without external power
– Counting directly from contact closure

Technical data:

Power supply:	Built-in lithium battery (appr. 10 years at 20 °C)
Display:	LCD, 7 or 8 digits, 7 mm high characters
Time range:	see table
Conforms to CE:	EN 50081-1
Requirements acc. to:	EN 55022 Class B
Colour of housing :	black
Ambient temperature:	–10 °C…+60 °C
Storage temperature:	–10 °C…+60 °C
Protection:	IP 65 from front
Weight:	0.18X.012.830: 30 g 0.18X.012.83X: 42 g
Inputs:	
Reset:	Static reset input; no counting while this input is set to 0 V , min. pulse length: 25ms Contact closure/open collector NPN (switching to 0 V)
Reset enable:	Electrical enable of the reset button Contact closure input switching to 0 V (link to 0 V to enable reset button)
Time mode select:	Type 0.186.012.830 and 0.187.012.830 Contact input switching to 0 V, see table
Timing Input:	Type 0.186.012.830 and 0.187.012.830 Contact closure/open Collector, switching to 0 V; Counts as long as the input is 0 V Input sensitivity Low: 0 ... 0,7 V DC High: 3 ... 18 V DC
Timing Input:	Types 0.186.012.831 and 0.186.012.832 Types 0.187.012.833 and 0.187.012.834 Static count input: Counting as long as this input is connected to 5 ... 240 V AC/DC Input sensitivity Low: < 1 V AC/DC High: 5 ... 240 V AC/DC
Colour of housing:	black

Timing mode select

Type	Time range no connection	Bridge Pin 1 ... Pin 5
0.186.012.830	99999999 s	99999 min 59 s
0.187.012.830	99999 h 59 min	99999.99 h

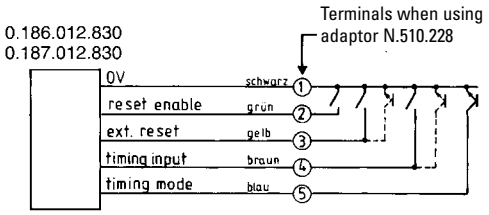
Delivery includes:
Counter with clip mount
Mounting bezel for screw mount

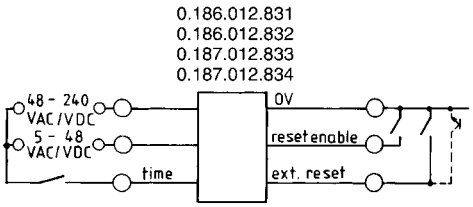
Type series and order code:

Type	Time range	Count input Voltage level	Mode of connection
0.186.012.830	99999999 s or 99999 min 59 s	3 ... 18 V DC	plug-on connector with 25 cm flying leads*
0.186.012.831	99999999 s	5 ... 240 V AC/DC	Screw terminal
0.186.012.832	99999 min 59 s	5 ... 240 V AC/DC	Screw terminal
0.187.012.830	99999 h 59 min or 99999,99 h	3 ... 18 V DC	plug-on connector with 25 cm flying leads*
0.187.012.833	99999 h 59 min	5 ... 240 V AC/DC	Screw terminal
0.187.012.834	99999,99 h	5 ... 240 V AC/DC	Screw terminal

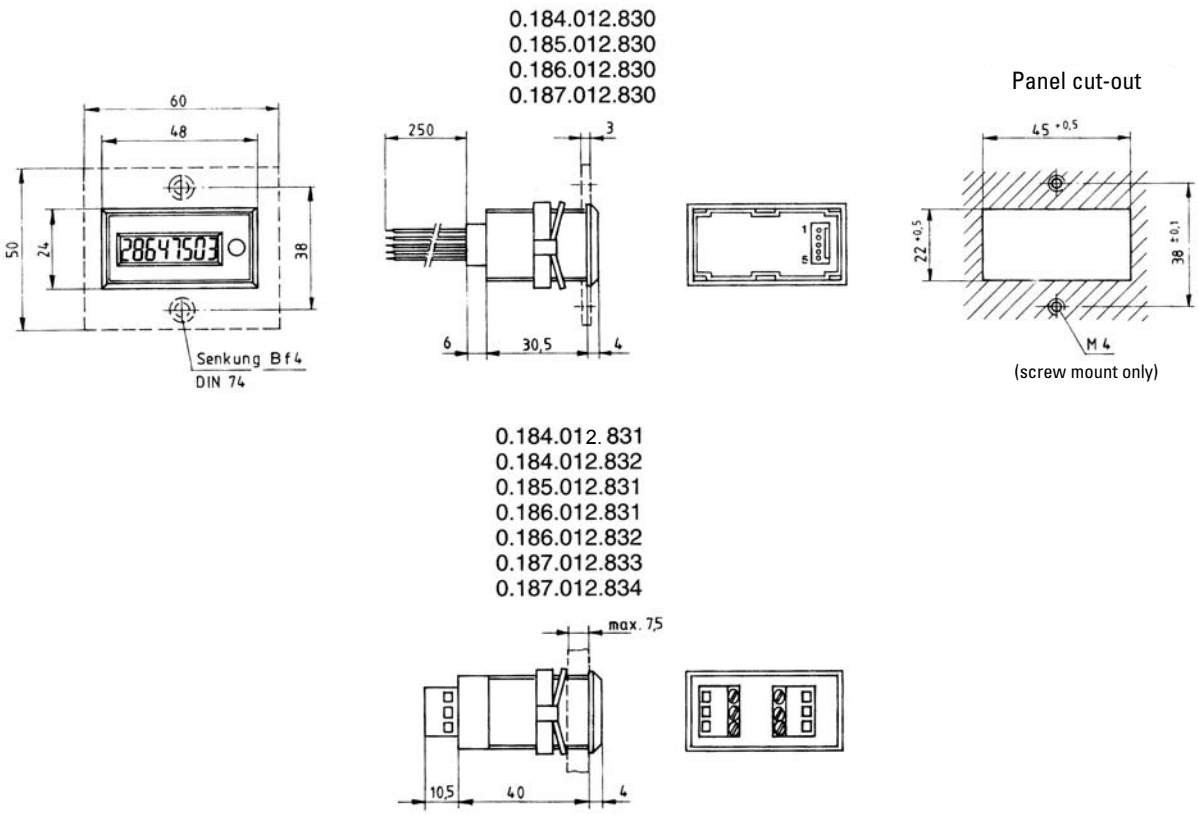
*Adaptor for screw terminal connection N.510.228 available for 0.18X.012.830

Connections:





Dimension



CODIX 523

Your benefit
- **Timer meter**
- Display in s, min, h or h.m.s (programmable)
- Resolution up to 0,001 s
- Locking SET-key for reset
- Gate, Start and Stop with 2 Inputs (programmable)

Product features
- Display range 0 ... 999 999 with zero blanking
- Screw terminal
- Modern CODIX-Design

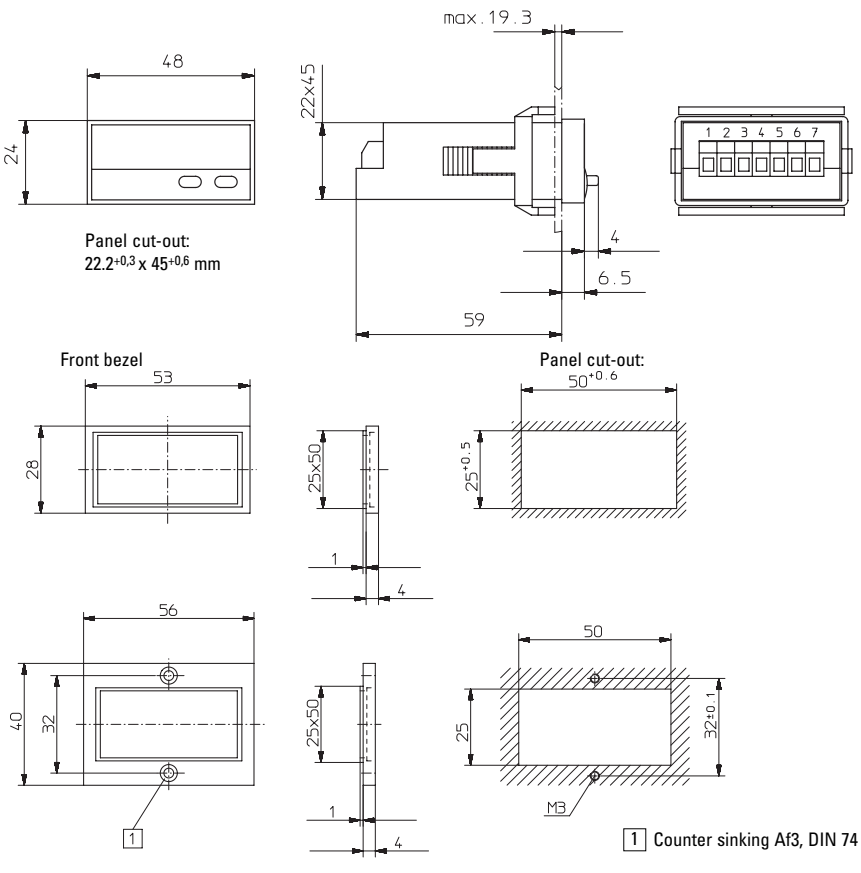
Option:
Optocoupler-output as function monitoring

Technical data

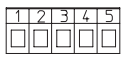
Supply voltage:	10 ... 30 V DC, with reverse polarity protection
Current consumption:	max. 50 mA
Display:	6 digit red 7-segment LED´s; 8 mm high
Data backup:	EEPROM
Housing:	Dimension 48 x 24 mm according to DIN 43 700; RAL 7021, grey
Polarity of Inputs;	programmable, npn or pnp for al inputs
Input resistance:	appr. 10 kΩ
Resolution:	up to 0.001 s
Reset time:	5 ms

Level of inputs	Low: 0 ... 0.2 x U_B High: 0.6 x U_B ... 30 V DC
Optocoupler output	Max. 30 V, 10 mA
Accurancy:	<50 ppm
Ambient temperature:	–10 ... +50 °C
Storage temperature:	–25 ... +70 °C
EMC:	according to EC EMC directive 89/36/EWG
Immunity to interference:	EN 61 0006-4/EN 55011 class B
Emitted interference:	EN 61000-6-2
Protection:	IP65 (front)
Weight:	appr. 50 g

Dimensions:

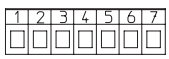


Connections:
without optocoupler



1 10 ... 30 VDC
2 0 V GND
3 INP A
4 INP B
5 Reset

Connections:
with Optocoupler (npn)



1 10 ... 30 VDC
2 0 V GND
3 INP A
4 INP B
5 Reset
6 Emitter
7 Collector

Delivery specification
1 Digital display
1Panel mounting clip
1 Bezel for screw mounting, panel cut out 50 x 25 mm
1 Bezel for clip mounting, panel cut out 50 x 25 mm
1 Seal
1 Multilingual operating instructions

Order code:

6.523.01X.300

Output
1 = Optocoupler
2 = no output

Timer

CODIX 528

Your benefit

- **Two time meters in one**
- 2 keys for switching between timer 1 and timer 2
- Display in s, min, h or h.min.s
- Reset input, programmable for each counter separately in set up

Product features

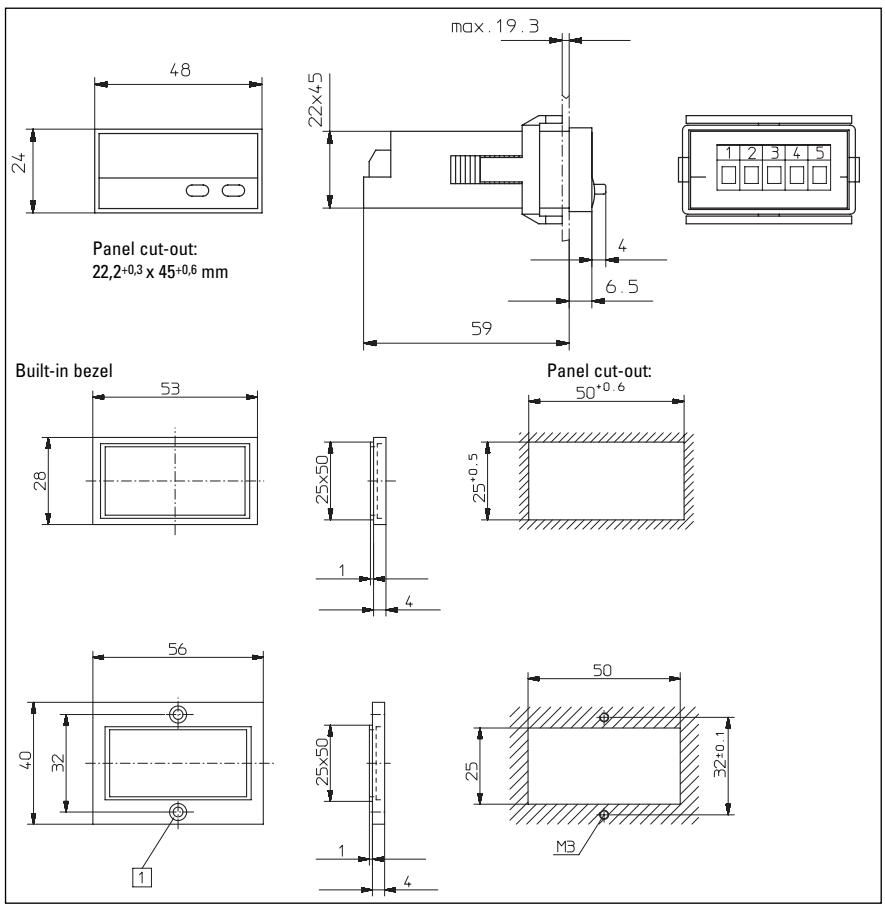
- Display range 0 ... 999 999 with leading zero blanking
- Connection via screw terminal
- SET-key resets the counter to zero (can be disabled in the set-up)
- Start, Stop or Gate-Input
- Modern ***CODIX***-Design

Technical data

Supply-voltage:	10 ... 30 V DC, with reverse polarity protection
Current consumption:	max. 50 mA
Display:	6-digit red 7-segment LED´s; 8 mm high
Data backup:	EEPROM
Housing:	Dimension 48 x 24 mm according to DIN 43 700; RAL 7021, grey
Polarity of the inputs:	programmable, npn or pnp
Input resistance:	appr. 10 kΩ
Resolution:	up to 0.001 s
Reset time:	5 ms

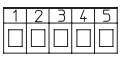
Level of the Inputs:	Low: 0 ... 0,2 x U_B [V DC] High: 0,6 x U_B ... 30 V DC
Accuracy:	<50 ppm
Ambient temperature:	–10 ... +50 °C
Storage temperature:	–25 ... +70 °C
EMC:	according to EC EMC directive 89/36/EWG
Immunity to interference:	EN 61 0006-4/EN 55011 class B
Emitted interference:	EN 61000-6-2
Protection:	IP65 (front)
Weight:	appr. 50 g

Dimensions:



Connections:

1 10 ... 30 V DC
2 0 V GND
3 INP A
4 INP B
5 Reset



Delivery specification:

1 Digital display
1 Panel mounting clip
1 Bezel for screw mounting, panel cut out 50 x 25 mm
1 Bezel for clip mounting, panel cut out 50 x 25 mm
1 Gasket
1 Multilingual operating instructions

Order code: 6.528.012.300

CODIX 543

Your benefit

- **Timer meter**
- Display in s, min, h or h.min.s (programmable)
- Big keys for use with wearing gloves
- DIN housing
- Gate, start and stop function via 2 Inputs (programmable)
- Resolution up to 0.001 s, programmable by setting the decimal point
- programmable set value

Product features

- Display range 0 ... 999 999 with zero blanking
- Connection with screw terminal
- Locking SET-Key for reset
- Modern ***CODIX***-Design

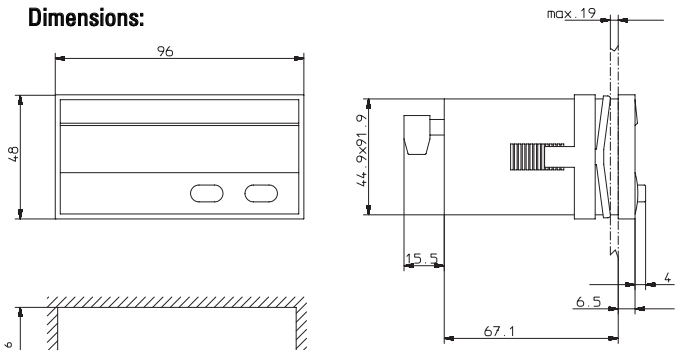
Option:

Optocoupler output as operation indicator

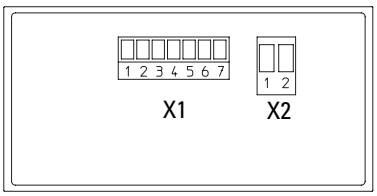
Technical data

Supply voltage	10 ... 30 V DC, with reverse polarity protection 90 ... 260 V AC
Current consumption:	max. 50 mA, 6 VA
Display:	6-digit red 7 segment LED display; 14 mm high
Data backup:	EEPROM
Housing:	Dimension 96 x 48 mm according to DIN 43 700; RAL 7021, grey
Polarity of Inputs:	programmable, npn or pnp for all inputs
Input resistance:	approx. 5 kΩ
Resolution:	up to 0.001 s
Reset time:	5 ms
Input switching level (standard version):	DC-version: Low: 0 ... 0.2 x U_B [V DC High: 0.6 x U_B ... 30 V DC
Input switching level (5 V version):	AC-version Low 0 ... 4 V DC High 12 ... 30 V DC Low 0 ... 2 V DC High 4 ... 30 V DC
Supply voltage for sensors:	24 V DC ±15 %/100 mA at AC-version
Accuracy:	<50 ppm
Ambient temperature:	–20 ... +65 °C
Storage temperature:	–25 ... +70 °C
EMC:	according to EC EMC directive 89/36/EWG
Immunity to interference:	EN 61 0006-4/EN 55011 class B
Emitted interference:	EN 61000-6-2
Protection:	IP65 (front)
Weight:	appr. 150 g

Dimensions:



Connections:



Connection: X2

Pin	AC-version	DC-version
1	90 ... 260 V AC	0 V DC (GND)
2	90 ... 260 V AC	10 ... 30 V DC

Connection: X1

Pin	AC-Version	DC-Version
1	Optocoupler-output Emitter	
2	Optocoupler-output Collector	
3	Reset	
4	INP B	
5	INP A	
6	GNDout	n.c.
7	+24 Vout	n.c.

Order code:

6.543.01X.XX0

- Output
  1 = Optocoupler output
  2 = no output
- Input switching level
  0 = Standard level
  A = 5 V level
- Power supply
  0 = 90 ... 260 V AC
  3 = 10 ... 30 V DC

Delivery specification

Digital display
Mounting clip
Seal
Multilingual operating instructions

CODIX 54U

Your benefit

- **Universal with the following double functions**
  - adding and frequency counter
  - counter with 2 adding ranges
  - one adding counter and one timer
  - counter with 2 time ranges
- Key to switch between the functions
- Separate scaling factor for counter and rate meter
- Frequency display in 1/s or 1/min
- Key to switch between counter and rate meter
- At higher frequencies measurement of periods by reporting the average value

Product features

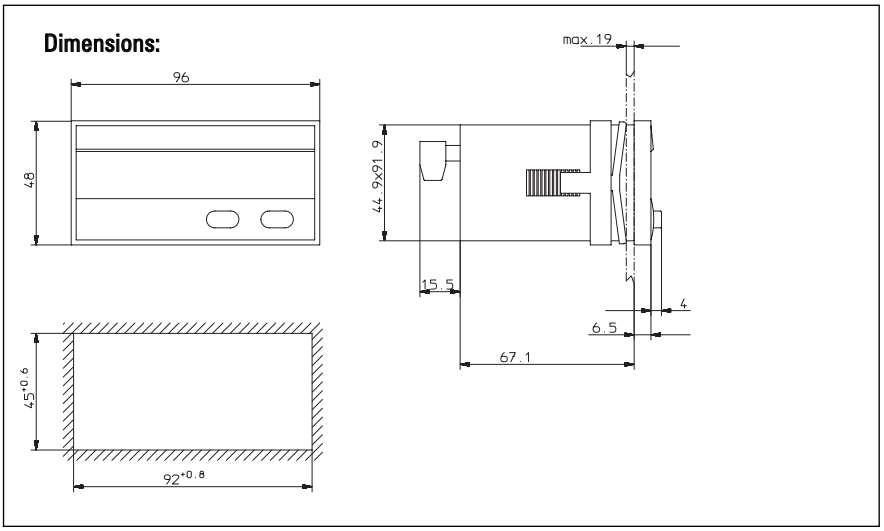
- Display range 0 ... 999 999 with zero blanking
- Connection with terminal
- Locking SET-Key for reset
- Modern *CODIX*-Design

Technical data

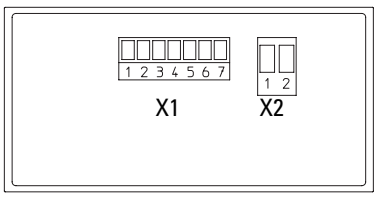
Supply voltage	10 ... 30 V DC, with reverse polarity protection 90 ... 260 V AC
Current consumption:	max. 50 mA, 6 VA
Display:	6 digit red 7 segment LED display; 14 mm high
Data backup:	EEPROM
Housing:	Dimension 96 x 48 mm according to DIN 43 700; RAL 7021, grey
Polarity of Inputs:	programmable, npn or pnp for all inputs
Input resistance:	appr. 5 kΩ
Counting frequency*:	60 kHz, can be damped to 30 Hz depending on operating mode
Reset time:	5 ms
Input switching level (standard level):	DC-version: Low: 0 ... 0.2 x U_B [V DC] High: 0.6 x U_B ... 30 V DC
Input switching level (5 V version):	AC-version: Low 0 ... 4 V DC High 12 ... 30 V DC Low 0 ... 2 V DC High 4 ... 30 V DC
Voltage supply for sensors:	24 V DC ±15 %/100 mA at AC version
Accuracy:	<0.1 % (Frequency display/Rate meter)
Ambient temperature:	–20 ... +65 °C
Storage temperature:	–25 ... +70 °C
EMC:	according to EC EMC directive 89/36/EWG
Immunity to interference:	EN 61 000-6-4/EN 55 011 class B
Emitted interference:	EN 61 000-6-2
Protection:	IP65 (from front)
Weight:	appr. 150 g

*for further specifications please refer for the manual

Dimensions:



Connections:



Connection: X2

Pin	AC-version	DC-version
1	90 ... 260 V AC	0 V DC (GND)
2	90 ... 260 V AC	10 ... 30 V DC

Connection: X1

Pin	AC-Version	DC-Version
1	n.c.	
2	n.c.	
3	Reset	
4	INP B	
5	INP A	
6	GNDout	n.c.
7	+24 Vout	n.c.

Order code:

6.54U.012.XX0

Input switching level
0 = Standard
A = 5 V level

Power supply
0 = 90 ... 260 V AC
3 = 10 ... 30 V DC

Delivery specification

Digital display
Mounting clip
Seal
Multilingual operating instructions

Type series HVa 15

- 5-digit presettable hour meter with stationary preset value
- Manual reset
- High shock resistance
- Magnified figures
- Protection IP 42 (front)
- Data retention if power is lost
- Long service life

Applications

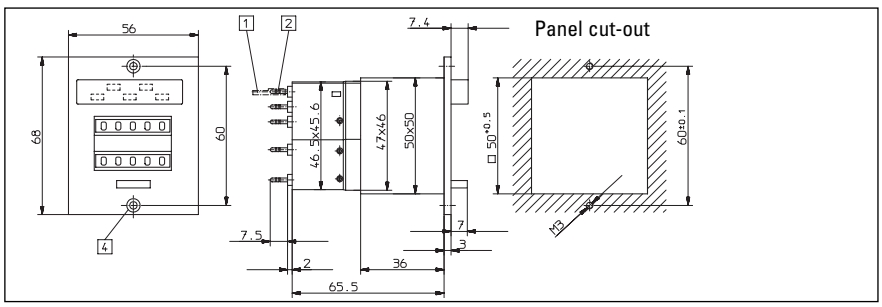
general counting, service interval for measurement systems (respiratory ventilators, oxygen machines, dialysis machines), small appliances, UV lamps, display panels in cars.

Technical data:

Electrical connection:	Silver platted round pins ø 1,6 mm, with push on connectors	
Power consumption:	10 ... 30 V DC:	appr. 0,5 W
	36 ... 80 V DC:	appr. 0,9 W
	100 ... 130 V DC:	appr. 0,75 W
	20 ... 30 V AC, 50 Hz:	appr. 0,3 VA
	42 ... 48 V AC, 50 Hz	appr. 0.25 VA
	100 ... 130 V AC, 50 Hz	appr. 0.6 VA
	187 ... 264 V AC, 50Hz	appr. 1.2 VA
	360 ... 440 V AC, 50Hz	appr. 1.65 VA
Rated voltages:	20 ... 30/42 ... 48/100 ... 130/187 ... 264, 360 V AC 50 or 60 Hz, 10 ... 30/36 ... 80/100 ... 130 V DC	
Range:	at AC: 999.99 h at DC: 9999.9 h	
On time:	100 %	
Count mode:	adding	
Colour of figures:	Hour: white on black, 1/10 and 1/100 h: red on white Preset: appr. 4mm high Hour: yellow on black 1/10 and 1/100 h: red on white	
Reset:	manual	
Ambient temperature:	–15 ... +50 °C	
Mounting position:	any	
Protection:	IP 42 (front), Sealing cover K1: IP 54 (front) Clear cover Dv and Dvs: IP 55 (front)	

Colour of housing:	black, grey on request	
Switching contact:	1 Charge over contact (Micro switch) release at the preset time loading capacity at AC: max.250 V, max 2 A loading capacity at DC: 24 V max. 2,0 A 60 V max. 0,7 A ohmic load 115 V max. 0,4 A 230 V max.0,2 A on inductive load, a spark quenching is required reducing the max. current to 65%	
Options:		
	Knob-locking 0-reset	
Housing:	black: Art.-No.	3.30X.X17.XXX
	grey: Art.-No.	3.30X.X16.XXX
	HVa 15.01 (without front bezel) pluggable in socket box 946.1 DIN Rail mount SR 3	
Housing:	black: Art.-No.	3.300.001.XXX
	beige: Art.-No.	3.300.012.XXX
Test voltage:	2000 VA C, 50Hz at AC	
Sealing:	oil and gasoline-firm composition rubber, causes suitably for acid and caustic solutions, very good age stability	
Accessories:	Socket box 946.1	Art.-No. G.008.439
Front frame:	black:	Art.-No. G.007.504
	beige:	Art.-No. G.007.503

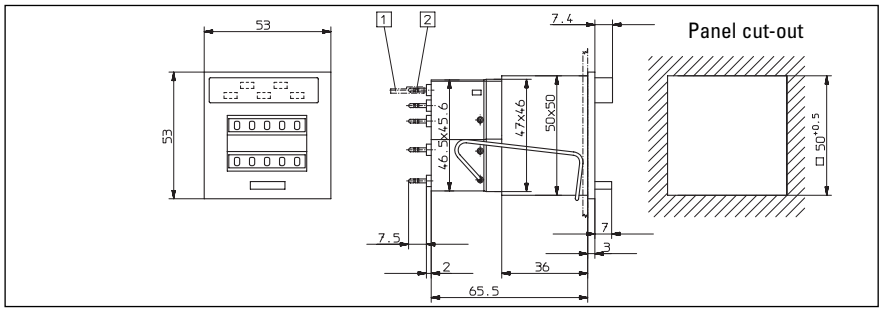
HVa 15.11



Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.300.111.351
20 ... 30	3.300.111.071	3.300.111.081	
36 ... 80			3.300.111.353
42 ... 48	3.300.111.072	3.300.111.082	
100 ... 130	3.300.111.074	3.300.111.084	3.300.111.381
187 ... 264	3.300.111.075	3.300.111.085	
360 ... 440	3.300.111.079	3.300.111.089	

1 silver plated push on connector
2 Round pin ø 1.5 silver plated
4 Countersink Af34 DIN 74

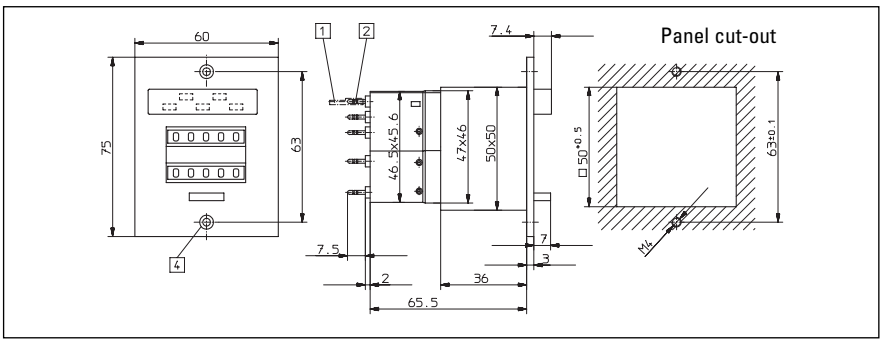
HVa 15.21



Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.300.211.351
20 ... 30	3.300.211.071	3.300.211.081	
36 ... 80			3.300.211.353
42 ... 48	3.300.211.072	3.300.211.082	
100 ... 130	3.300.211.074	3.300.211.084	3.300.211.381
187 ... 264	3.300.211.075	3.300.211.085	
360 ... 440	3.300.211.079	3.300.211.089	

1 silver plated push on connector ø 1.5
2 silver plated round pin ø 1.5

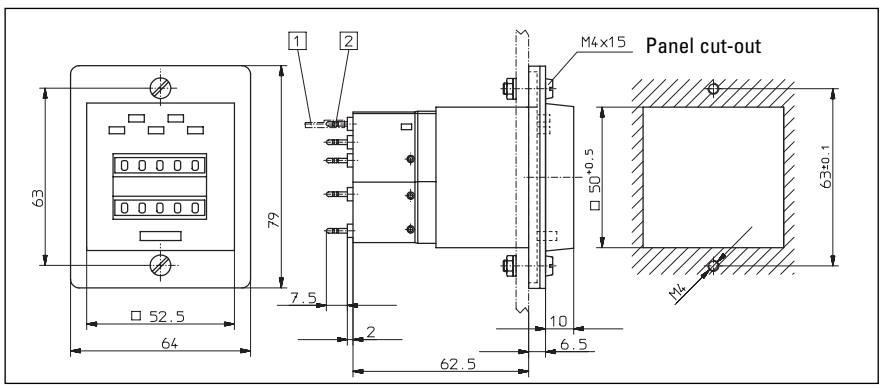
HVa 15.31



Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.300.311.351
20 ... 30	3.300.311.071	3.300.311.081	
36 ... 80			3.300.311.353
42 ... 48	3.300.311.072	3.300.311.082	
100 ... 130	3.300.311.074	3.300.311.084	3.300.311.381
187 ... 264	3.300.311.075	3.300.311.085	
360 ... 440	3.300.311.079	3.300.311.089	

1 silver plated push on connector ø 1.5
2 silver plated round pin ø 1.5
3 Counter sink Af3 DIN 74

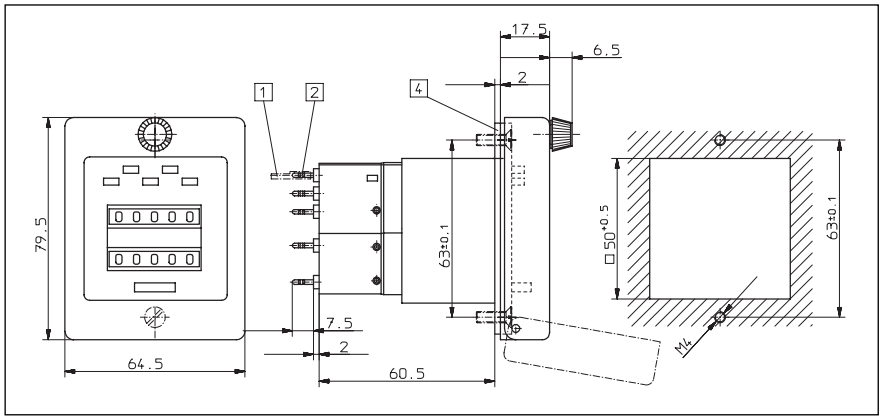
K2 HVa 15.31



Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.300.611.351
20 ... 30	3.300.611.071	3.300.611.081	
36 ... 80			3.300.611.353
42 ... 48	3.300.611.072	3.300.611.082	
100 ... 130	3.300.611.074	3.300.611.084	3.300.611.381
187 ... 264	3.300.611.075	3.300.611.085	
360 ... 440	3.300.611.079	3.300.611.089	

1 silver plated push on connector ø 1.5
2 silver plated round pin ø 1.5

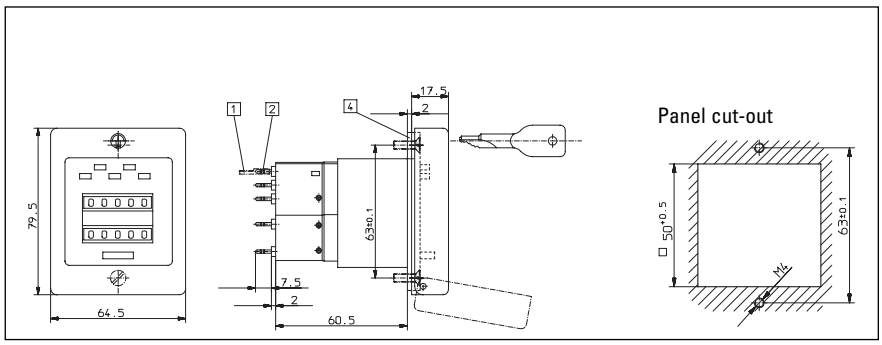
Dv HVa 15.31
(knob locking cover)



Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.300.211.351
20 ... 30	3.300.211.071	3.300.211.081	
36 ... 80			3.300.711.353
42 ... 48	3.300.711.072	3.300.711.082	
100 ... 130	3.300.711.074	3.300.711.084	3.300.711.381
187 ... 264	3.300.711.075	3.300.711.085	
360 ... 440	3.300.711.079	3.300.711.089	

1 Silver plated push on connector ø 1.5
2 Round pin ø 1.5 silver plated
4 Sealing

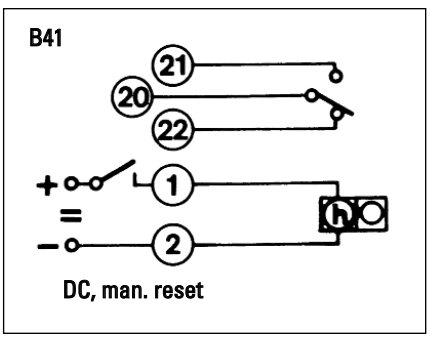
Dvs HVa 15.31
(locking transparent cover)

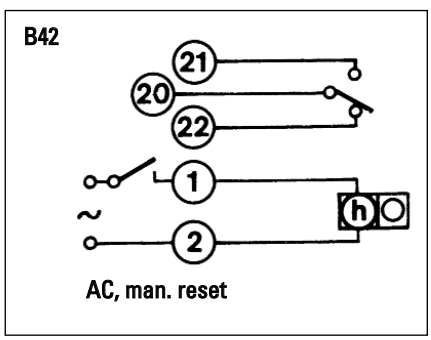


Voltage	Art-No. (AC), 50 Hz	Art-No. (AC), 60 Hz	Art-No.(V DC)
10 ... 30			3.300.811.351
20 ... 30	3.300.811.071	3.300.811.081	
36 ... 80			3.300.811.353
42 ... 48	3.300.811.072	3.300.811.082	
100 ... 130	3.300.811.074	3.300.811.084	3.300.811.381
187 ... 264	3.300.811.075	3.300.811.085	
360 ... 440	3.300.811.079	3.300.811.089	

1 Silver plated push on connector ø 1.5
2 Round pin ø 1.5 silver plated
4 Sealing

Wiring diagrams





Time Relay Type 910

- easy operating over decade keyboard
- no external voltage supply, because of internal replaceable lithium battery
- high contrast, 2-line LCD-Display, 5-digit, with many symbols for easy operation and reading
- 9 programmable time ranges from 0.20 seconds up to 99 999 hours
- resolution up to 0.01 seconds
- inputs for start and reset
  – universal inputs for 12 ... 260 V AC/DC
- 8 timing modes
  – ON DELay, OFF DELay, One shot and Single Shot
  – Repeat cycle modes: Delay, Cycle, Symmetrical delay
- 3 programmable activation modes
- Relay contacts rated at 8 A programmable to NO or NC
- protection IP 65
- plug-in connector

Technical data:

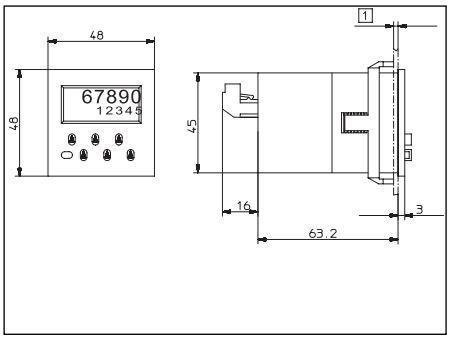
Voltage supply:	2 x 3 V ½AA replaceable lithium battery, service life > 10 years or 500 000 relay changes
Timing and Reset inputs:	12 ... 260 V AC/DC , impedance 180 kΩ min.impulse 20 ms, (optocoupler)
Display (time): (set time, mode)	5-digit LCD-Display; 6.5 mm high 5-digit LCD-Display; 3.5 mm high
Accuracy:	+50/-20 ms respectively 0,5 % of setting time (higher value counts)
Repetition accuracy:	0.3 % of setting time
Operating temperature:	–10 ... +60 °C
Storage temperature:	–20 ... +70 °C
Relative humidity:	80 % max. up to 31 °C; decreasing to max. 50 % at 40 °C
Protection	IP 65 with delivered seal

Output relays	
Contact connection:	SPTST voltage free contacts programmable as NO or NC
Contact Raiting:	250 V AC at 8 A; cos φ = 1 250 V AC at 5 A; cos φ = 0,4 30 V DC at 8 A; cos φ = 1
Reaction time:	< 20 ms
Expected life:	2 A ohm´s load 1 000 000 switching cycles
EMC:	CE-conform to EC-guideline 89/36/EWG
Electromagnetic radiation:	EN 61 000-6-4/EN 55 011 class B
Electromagnetic immunity:	EN 61 000-6-2
Weight:	appr. 80 g

Time ranges

1 s ... 99999 s; 0.2 s ... 9999.9 s; 0.02 ... 999.99s;
1 min ... 99999 min; 0,1 min ... 9999.9 min; 0,01 min ... 999.99 min;
1 h ... 99999 h; 0.1 h ... 9999.9 h; 0.01 h ... 999.99 h

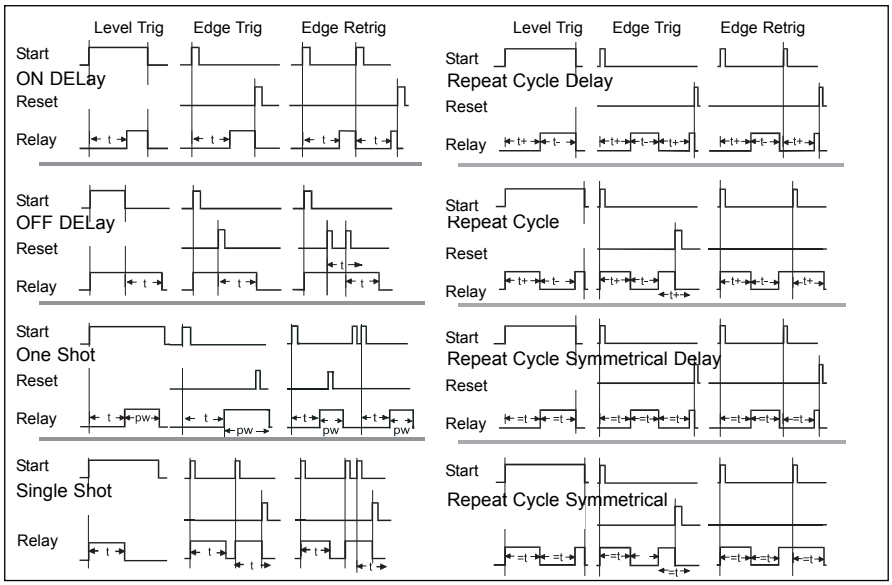
Dimensions:



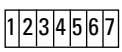
1 max. 10,5 at front panel3 max. 9.5

Panel cut-out: $45^{+0,6}$ x $45^{+0,6}$ mm

Timing modes:



Connections:



1	Common for terminals 2 + 3	
2	Timing input, programmable to level or edge triggered	These inputs can be 12 ... 260 V AC/DC. For DC input the polarity is unimportend
3	Reset input	
4/5	Voltage free relay contacts, programmable to NO or NC	
6/7	Connect together to disable front panel keys	

Order specification:

Order-No.: 0.910.010.800

Delivery specification:

Time relay, seal, clamp, user manual multilingual
front panel 3 for screw mounting mounting dimensions 60 x 75 mm,
front panel 2 for clamping mounting dimensions 55 x 55 mm, template for panel cut-out (50 x 50 mm for front panel 2 and 3).

Table of contents

LCD-Frequency meter/Tachometer *CODIX* 136

- Low-price and high efficiency.
- Large 8 digit LCD display, height of the figures 8 mm.
- Optional backlighting
- Input frequency range from 1 Hz ... 12 kHz
- Gate measuring method, gate time 1 second
- Accuracy 0.05%
- All versions for positive or negative counting edge.
- Unified Codix design, suiting the extensive *CODIX* family.
- IP65
- Screw terminals, RM 5 mm
- Lifetime of the battery approximately 8 years
- Frequency measurement without external voltage supply, pulses acquisition also possible via dry contact, thus usable in all conditions
- Operating temperature –10 ... +60 °C

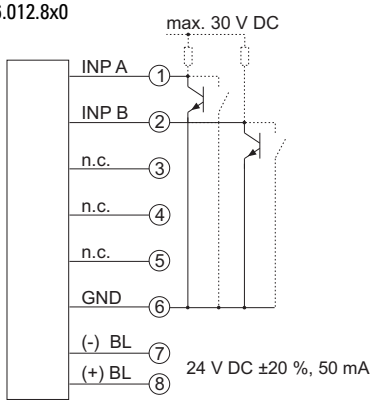
Technical data:

Power supply:	non-replaceable lithium battery: (lifetime approximately 8 years at 20°C)
Backlighting:	external electrical source 24 V DC +/-20 %, 50 mA
Display:	LCD, 8 decades, height of the figures 8 mm
Display range:	0 ... 99999999
Resolution:	1/sec (1 Hz)
Counting inputs:	
A. Counting input of the DC-versions (max. 30 V DC)	
Slow counting input:	max. 30 Hz NPN
Fast counting input:	max. 12 kHz (PNP), 7 kHz (NPN)
Switching level:	NPN: Low: 0 ... 0.7 V, High: 4 ... 30 V DC PNP: Low: 0 ... 0.7 V, High: 4 ... 30 V DC

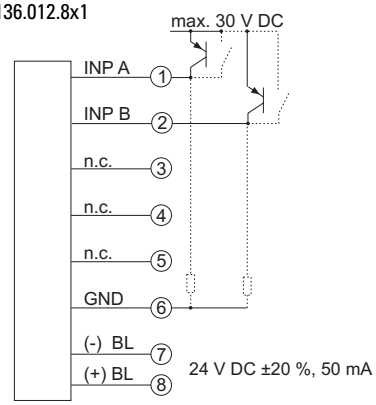
Interference emissions:	EN 55011 Class B, EN 61000-6-2 EN 61010 Section 1 (only AC versions)
Housing :	dark grey RAL 7021
Operating temperature:	–10 ... +55 °C
Ambient temperature:	–10 ... +60 °C
Storage temperature:	–20 ... +70 °C
Protection:	IP 65 front
Weight:	approximately 50 g

Connecting diagram

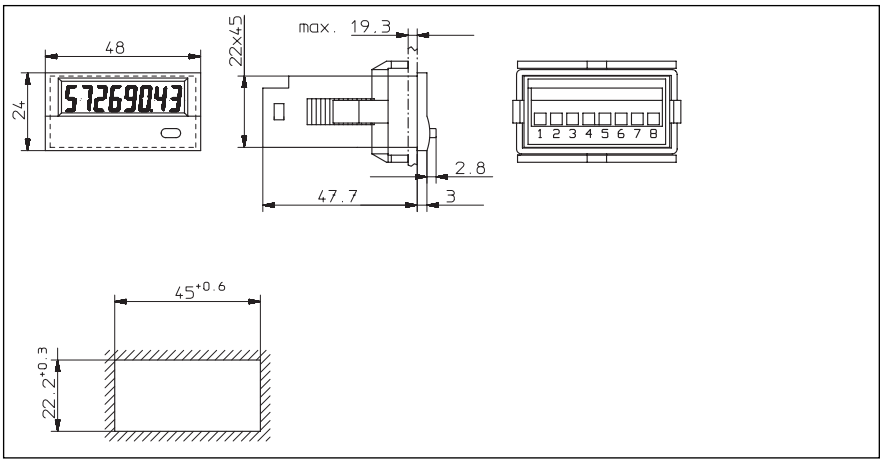
DC type:
6.136.012.8x0

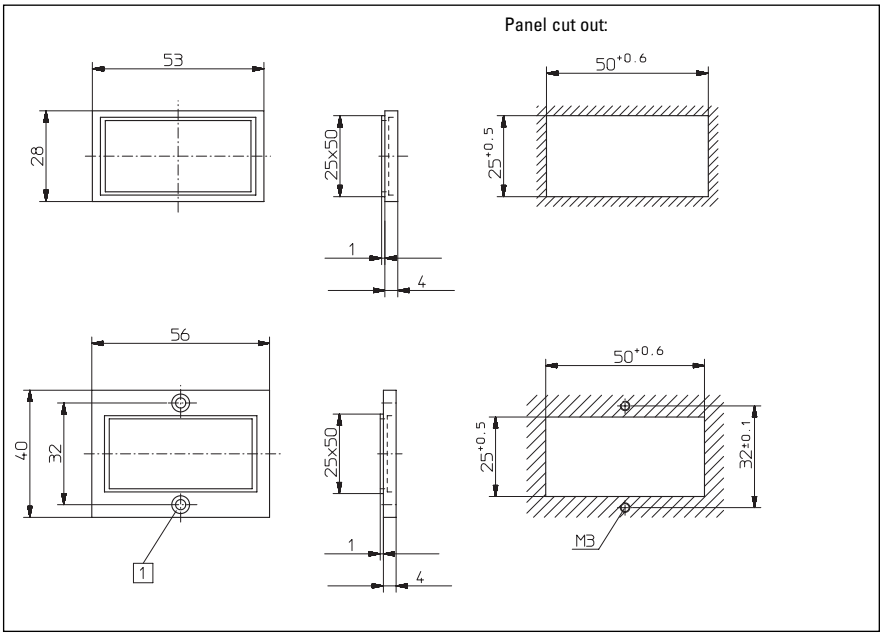


DC type:
6.136.012.8x1



Dimensions:





Scope of delivery:
– Digital display
– Panel mounting clip
– Bezel for screw mounting(56 x 40), panel cut out 50 x 25 mm,
– Bezel for clip mounting(53 x 28), panel cut out 50 x 25 mm
– Seal
– Operating instructions.

Order information

Type	Mode	Counting inputs					
		INP A			INP B		
6.136.012.8x0	Tacho	0 ... 0.7 V DC	NPN	7 kHz	0 ... 0,7 V DC	NPN	30 Hz
6.136.012.8x1	Tacho	4 ... 30 V DC	PNP	12 kHz	4 ... 30 V DC	PNP	30 Hz

X: 5 = no backlight
X: 6 = with backlight

CODIX 522

Your benefit

- **Programmable frequency meter and tacho.** Programmable are:
  – Polarity of the input
  – Count input can be damped
  – Scaling factor 00,0001 ... 99.9999
  – Decimal point
  – Display in 1/min or 1/s
- Count frequency up to 20 kHz
- Input pulse shape (Schmitt-Trigger characteristics)

Product features

- Display range 0 ... 999 999 with zero blanking
- Connection via screw terminals
- Modern ***CODIX***-Design

Option:

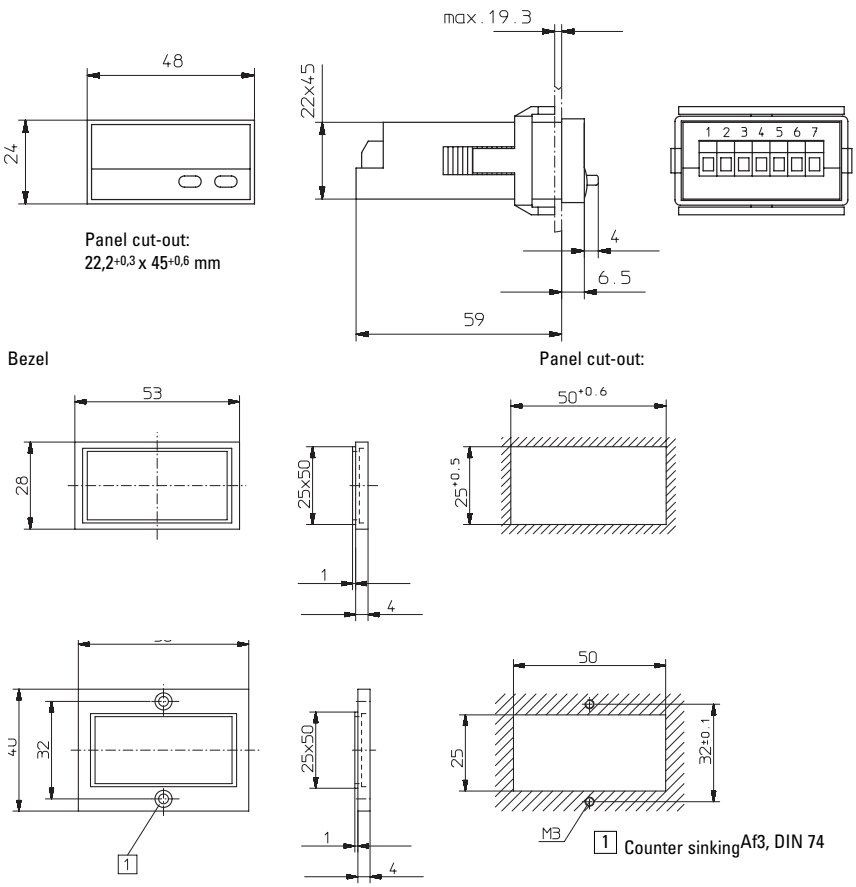
Optocoupler output, active, when frequency = 0.

Technical data

Power supply:	10 ... 30 V DC, with reverse polarity protection
Current consumption:	max. 50 mA
Display:	6-digit red 7 segment LED display; figures 8 mm high
Data retention:	EEPROM
Housing:	Dimension 48 x 24 mm according to DIN 43 700; RAL 7021, grey
Polarity of the inputs	programmable, npn or pnp
Input resistance:	appr. 10 kΩ
Count frequency:	20 kHz, can be damped to 30 Hz
Measurement principle:	Period duration measurement with averaging at higher frequencies

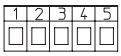
Level of the inputs:	Low: 0 ... 0,2 x U_B [V DC] High: 0,6 x U_B ... 30 V DC
Optocoupler output:	Max. 30 V, 10 mA
Accuracy:	<0,1 %
Ambient temperature:	–10 ... +50 °C
Storage temperature:	–25 ... +70 °C
EMC:	according to EC EMC directive 89/36/EWG
Interference emmisions:	EN 61 000-6-4/EN 55011 class B
Interference resistance:	EN 61 000-6-2
Protection:	IP65 (front)
Weight:	appr. 50 g

Dimension:



Connection:

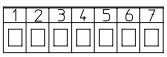
without optocoupler



1 10 ... 30 V DC
2 0 V GND
3 INP
4 –
5 –

Connection

with optocoupler (npn)



1 10 ... 30 V DC
2 0 V GND
3 INP
4 –
5 –
6 Emitter
7 Collector

Delivery specification

1 Digital display
1Panel mounting clip
1 Bezel for screw mounting, panel cut out 50 x 25 mm
1 Bezel for clip mounting, panel cut out 50 x 25 mm
1 Seal
1 Multilingual operating instructions

Order code:

6.522.01X.300

X: Output
1 = Optocoupler output
2 = no output

CODIX 542

Your benefit

- **frequency counter and tachometer**
- Very high luminosity and 14 mm high characters
- Big keys for use with wearing gloves
- DIN-Housing
- Voltage output for sensors (at AC-version)
- 1 Count input
- Scaling factor 0,0001 ... 99,9999
- Division factor 0,0001 ... 99,9999

Product features

- Display range 0 ... 999 999 with zero blanking
- Connection with screw terminal
- Modern ***CODIX***-Design

Options:

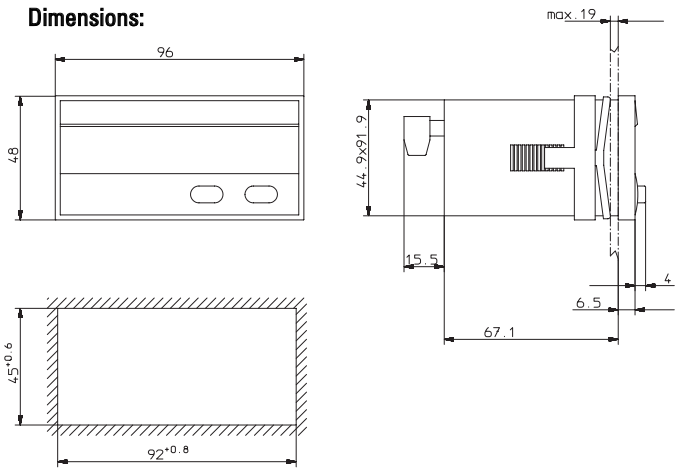
Optocoupler output for at f = 0, e.g. as stop indicator

Technical data

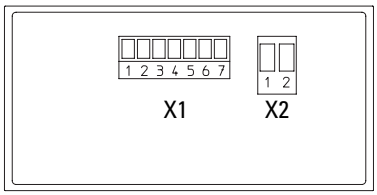
Supply voltage:	10 ... 30 V DC, with reverse polarity protection 90 ... 260 V AC
Current consumption:	max. 50 mA, 6 VA
Display:	6-digit red 7-segment LED-display; 14 mm high
Data retention:	EEPROM
Housing:	Dimension 96 x 48 mm according to DIN 43 700; RAL 7021, grey
Polarity of the inputs:	programmable, npn or pnp
Input resistance:	appr. 5 kΩ
Count frequency*:	max. 60 kHz, can be damped to 30 Hz depending on operating mode
Measurement principle:	Period duration measurement with averaging at higher frequencies
Input switching level (standard version):	DC version: Low: 0 ... 0,2 x U_B [V DC] High: 0,6 x U_B ... 30 V DC
Input switching level (5 V version):	AC version: Low 0 ... 4 V DC High 12 ... 30 V DC Low 0 ... 2 V DC High 4 ... 30 V DC
Voltage output for sensors:	24 V DC ±15 %/100 mA at AC-version
Accuracy:	<0,1 %
Ambient temperature:	–20 ... +65 °C
Storage temperature:	–25 ... +70 °C
EMC:	according to EC EMC directive 89/36/EWG
Interference emmisions:	EN 61 000-6-4/EN 55 011 class B
Interference resistance:	EN 61 000-6-2
Protection:	IP65 (front)
Weight:	appr. 150 g

*for further information please refer to the manual

Dimensions:



Connections:



Connection X2

Pin	AC version	DC version
1	90 ... 260 V AC	0 V DC (GND)
2	90 ... 260 V AC	10 ... 30 V DC

Connection X1

Pin	AC version	DC version
1	Optocoupler output Emitter	
2	Optocoupler output Collector	
3	–	
4	–	
5	INP	
6	GNDout	n.c.
7	+24 Vout	n.c.

Order code:

6.542.01X.XX0

Output 1 = Optocoupler output 2 = no output	Input switching level 0 = Standard level A = 5 V level
	Power supply 0 = 90 ... 260 V AC 3 = 10 ... 30 V DC

Delivery specification

Digital display
Mounting clip
Seal
Multilingual operating instructions

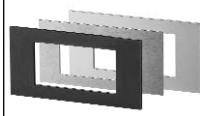
Overview

1. Software

- Easy parameter software for counter types 716/717 and process displays and controllers 55x.

see page 186

2. Accessories for counters with panel cut out 22,2 x 45, 25 x 50 or 29 x 552.1

Front bezels	Accessories	for counter types	Remarks	Page
	Slip on bezel 37.2, for panel cut-out 25 x 50 mm	W15.5, W16.5, W17.5 ***CODIX*** 13x, ***CODIX*** 52x, H37	available in black and silver anodized, as set	187
	Bezel adapter 37.1 for cut-out 25 x 50 mm with screw fixing	W15.5, W16.5, W17.5 ***CODIX*** 13x, ***CODIX*** 52x, H37	available in black, grey and anthracite	187
	Bezel adapter for cut-out 68 x 33 mm	W15.5, W16.5, W17.5 ***CODIX*** 13x, ***CODIX*** 52x, H37	available in black, grey silber anodized as set	187
	Bezel adapter 50 x 60 for 18x counter for screw fixing with sealing gaskets	184, 185, 186, 187 ***CODIX*** 13x	available in black	187
	Bezel adapter 50 x 60 mm for panel cut-out 29 x 55 mm for screw fixing with sealing gaskets	52X, 13X, H37, W15.5, W16.5, W17.5	available in black	188
	Bezel adapter 24 x 48 mm for panel cut-ou 48 x 48 mm for screw fixing with sealing gaskets	52X, 13X, H37, W15.5, W16.5, W17.5	available in black	188
	Front bezel for cut-out 29 x 55 mm Size F1	B/HB counter	available in black and beige; plug in from front	188

2.2 Socket boxes	Accessories	for counter type	Remarks	Page
	Socket box 945.2	B/HB counter	plug in from front	193

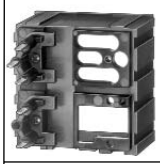
Overview

2.3 Sealing covers	Accessories	for counter types	Remarks	Page
	Flexible sealing cover type K1 for size F1, IP65	B, HB or 29 x 48 mm counter in adapter bezel 50 x 60 mm		188
	Sealing covers 1 DV for size F1, IP 65, with front bezel	B, HB or 29 x 48 mm counter with adapter bezel 50 x 60 mm	lockable front bezel, screw-on with gasket, using M4 fixing screws	189
	Transparent cover 1 DV for size F1, IP65 with key lock	B, HB with front bezel 50 x 60 mm	Front bezel with key lock, with 2 gaskets, can be screwed on to counter bezel	189
	Transparent cover 1 DV S for size F1, IP65, with key-lock	B, HB with front bezel 50 x 60 mm	Front bezel with key lock, with 2 gaskets can be screwed on to counter bezel, supplied with two keys	189

Overview

3. Accessories for counters with cut-out 45 x 45, 50 x 50 or 54 x 54				
3.1 Front panel	Accessories	for counter type	Remarks	Page
	Bezel adapter 55 for cut-out 50 x 50 to 45 x 45	H57 and HC77	black	190
	Bezel adapter 55 for el. counter 45 x 45 for cut-out 50 x 50	901, 903, 904, 715 ***CODIX*** 716/717, 910	Colour anthracite	190
	Adapter 75 x 60 for cut-out 50 x 50 mm to 45 x 45 for screw fixing	901, 903, 904, 715 ***CODIX*** 716/717, 910		190
	Bezel adapter 68 x 68 to 45 x 45; additional retaining bezel available	H57 and HC77	available in grey and black	191
	Bezel adapter for hole ø 60	H57 and HC77		191
	Front bezel F2B for cut-out 54 x 54, Size F2 for one BVa or two B counter	BVa and B counter HVa and HB counter	plug in from front	191
	Front bezel F2M for cut-out 54 x 54, size F2 for one MVs or two M counter	MVs or M counter	plug in from front	192

Overview

3.2 Socket boxes	Accessories	for counter types	Remarks	Page
	Socket box type 946.1	BVa	plug in from front plastic	192
	Socket box type 926.1	MVs	plug in from front	192

3.3 Sealing covers				
	Accessories	for counter types	Remarks	Page
	Flexible sealing cover for size F2, types K2, IP65	BVa and B counters, el. preset counters front bezel adapter 75 x 60 mm		193
	Sealing cover transparent for MVs 13 TypKV3, IP 65	MVs 13	Material: Steel	195
	Sealing cover transparent type 2 DV for size F1, with gasket, IP 65	BVa and B counters, el. preset counters with adapter front bezel 75 x 60 mm		195
	Sealing cover with key-lock type 2 DVs, IP 65 with gasket	BVa and B counter, el. preset counters with front bezel adapter 75 x 60 mm	with two keys	195
	Lockable transparent cover with bezel adapter for counters with dimensions 45 x 45 to cut-out 50 x 50	901, 903, 904, 715 ***CODIX*** 716/717, 910		195
	Lockable transparent cover with bezel adapter for counters with dimensions 45 x 45 to cut-out 50 x 50	901, 903, 904, 715 ***CODIX*** 716/717, 910		195

Overview

4. Special accessories				
4.1 Front bezel	Accessories	for counter type	Remarks	Page
	Front bezel F3B, die-cast aluminium for cut-out 81 x 55 mm	1 x BVa, 1 x B or 3 x B, HVa and HB	available in black or beige	196
	Front bezel F4B die-cast aluminium for cut-out 25 x 50 mm with screw fixing	2 x Bva or 1 x Bva and 2 x B or 4 x B	available in black or beige	196
	Enclosure	Counter for cut-out 25 x 50 mm, 22.2 x 45 mm with bezel adapter or 45 x 45 mm	available in two sizes	197
	Rail mount frames	BVa or B HVa or HB	available in 3 versions	197
	Terminal cover for H37	H37	transparent	197
	Add on socket for H57 and HC77 on DIN rail	H57, HC77	available in black	199

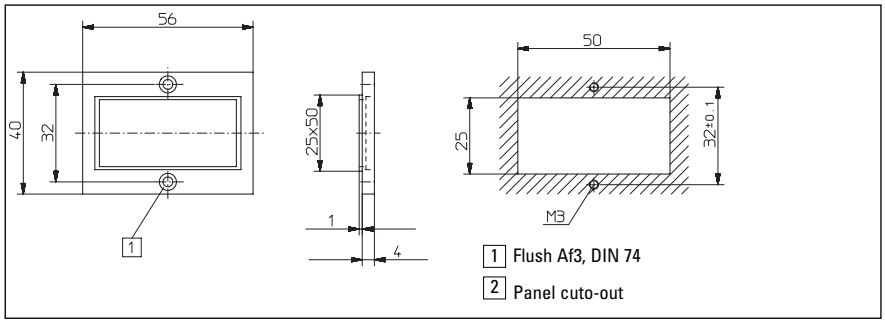
EzControl

- Easy parameter sotware for counter type 716/717 and process displays 55x.
- Upload and download function
- Monitor- and terminal program for easy diagnostic functions
- Online display of the measurement values
- German and english.

EzControl software on CD	Order No.: N 150.080
Accessoires:	
RS 232 interface cable to the counter	Order No.: N 140.076
RS 232 <=> RS 485/422 interface converter with power supply and cable to counter	Order No.: N 150.002
RS 232 <=> RS 485/422 interface converter with power supply and cable to counter for the US market (110 V AC)	Order No.: N 150.003

Bezel

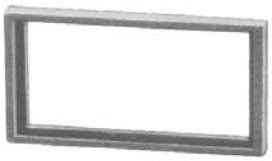
Slip-on bezel **37.1**

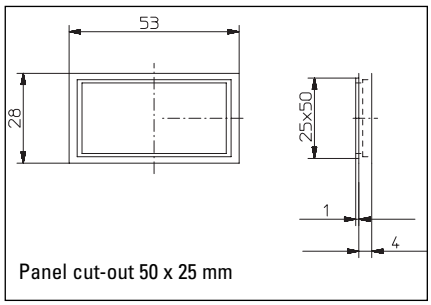


Suitable for counter::
W15.5, W16.5, W17.5, ***CODIX*** 13x,
CODIX 52x, H37

Ordering information:	
grey:	Art. No. T008 160
anthracite	Art. No. T008 181

Slip-on bezel **37.2**

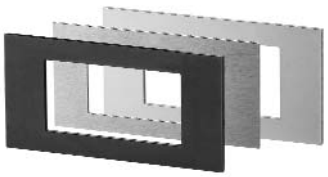


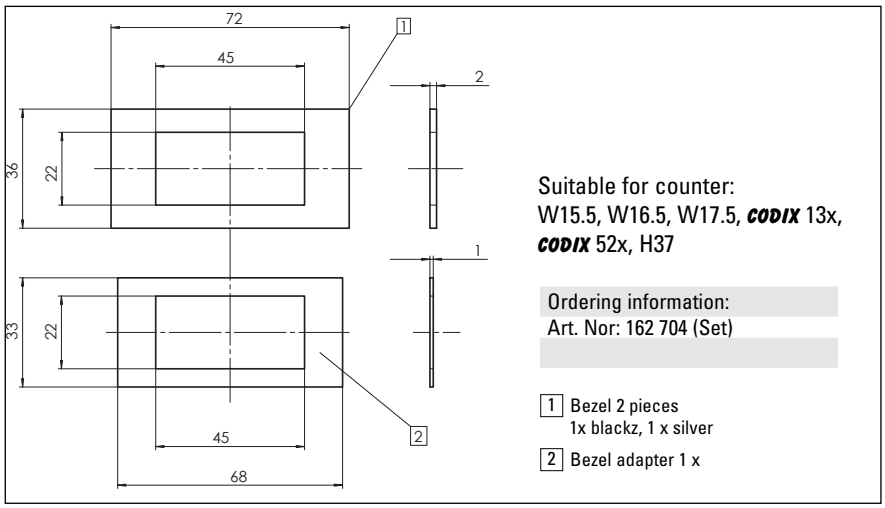


Suitable for counter::
W15.5, W16.5, W17.5, ***CODIX*** 13x,
CODIX 52x, H37

Ordering information:	
grey:	Art. No. T008 164
anthracite:	Art. No. T008 180

Bezel adapter for cut-out 68 x 33 mm

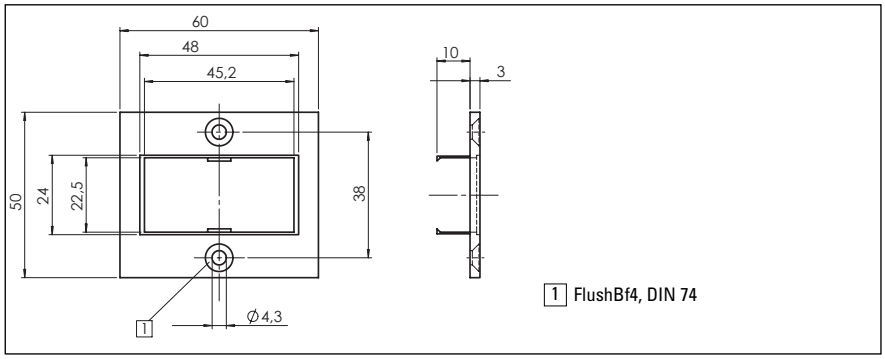




Suitable for counter:
W15.5, W16.5, W17.5, ***CODIX*** 13x,
CODIX 52x, H37

Ordering information:
Art. Nor: 162 704 (Set)

Bezel adapter 50 x 60 mm for screw fixing



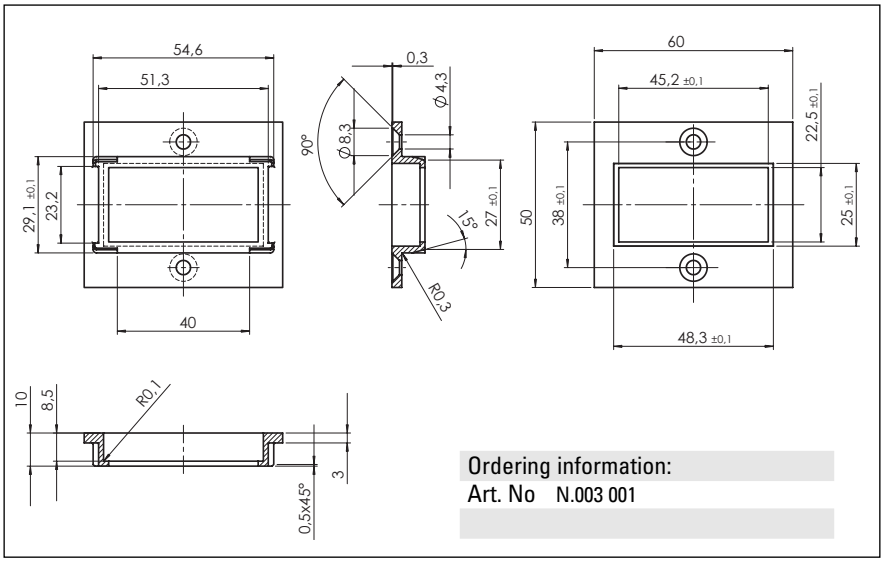
Suitable for counter:
184, 185, 186, 187

Ordering information
Art. No. N.510 219

Bezels

Bezel adapter for
panel cut-out 29 x 55 mm

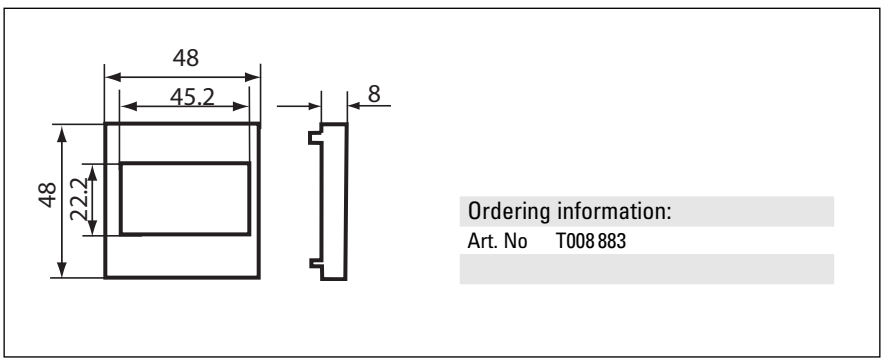
Suitable for counters:
CODIX 13x, ***CODIX*** 52x, W15.5,
W16.5, W17.5



Ordering information:
Art. No N.003 001

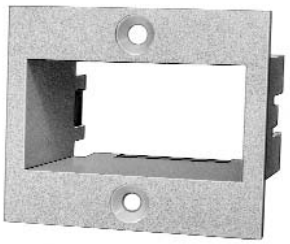
Bezel adapter for
panel cut out 45 x 45 mm
to 22,2 x 45

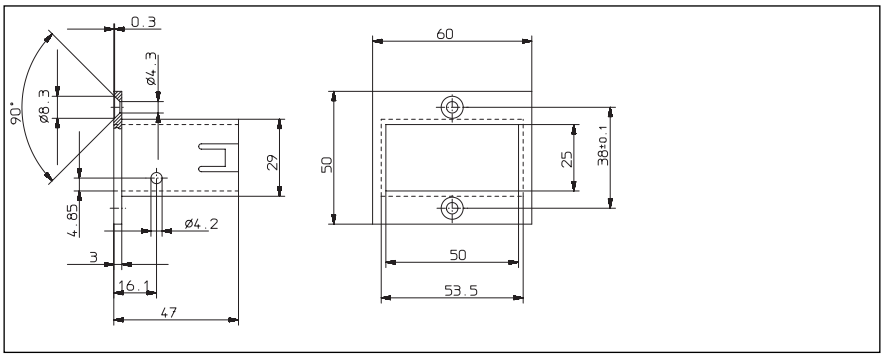
Suitable for counters:
CODIX 13x, ***CODIX*** 52x,
W15.5, W16.5, W17.5



Ordering information:
Art. No T008 883

Type F1B





- Plastic front bezel F1B for counters with panel cut-outs 50 x 25 mm.
- The counters plug into the respective socket box.

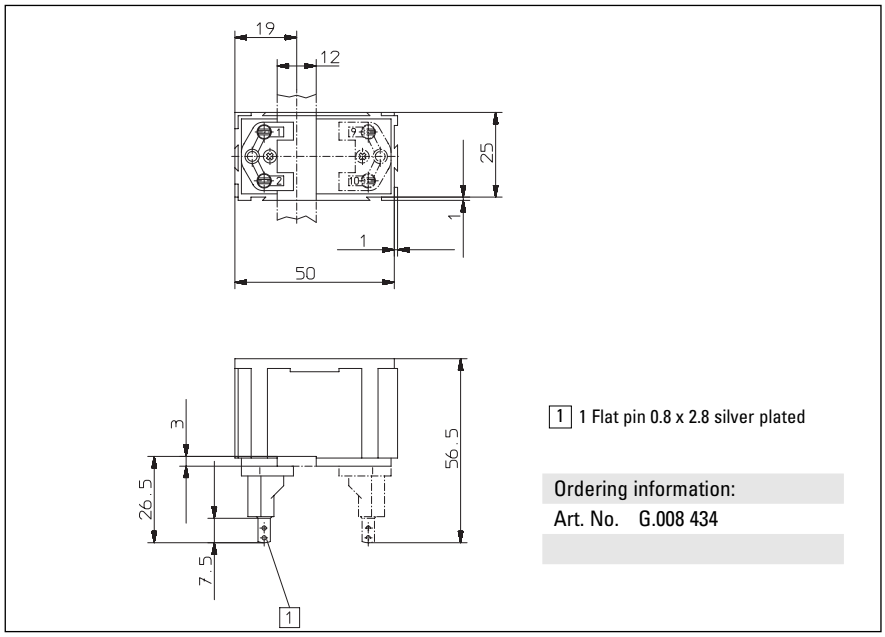
Ordering information:

F1B	beige	Art. No. G.007 501
F1B	black	Art. No. G.007 502

Socket boxes

Type 945.2

Suitable for counters:
B and HB



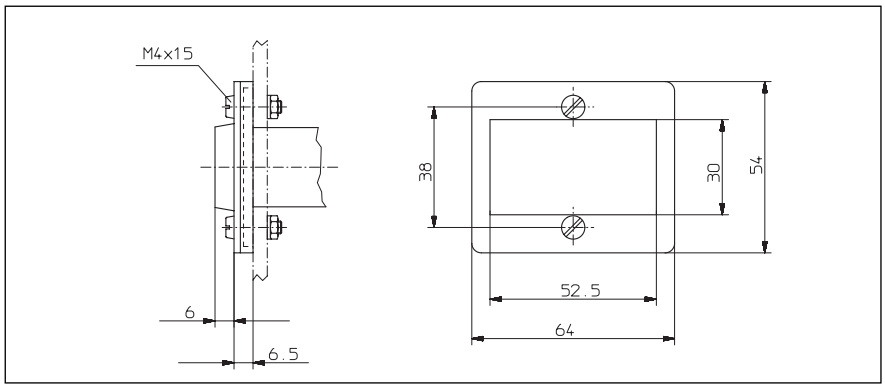
1 Flat pin 0.8 x 2.8 silver plated

Ordering information:
Art. No. G.008 434

Flexible sealing cover

Type K 1

Suitable for counter types:
B 15.31, B16.31, B 16.30, B 18.30,
F1 B15.01, F1 B 16.01, F1 B 16.00,
F1 B18.00.



- Flexible sealing cover made of soft PVC, with varnished steel metal frame and fixing screws
- IP 54 protection to DIN 40050 when installed.

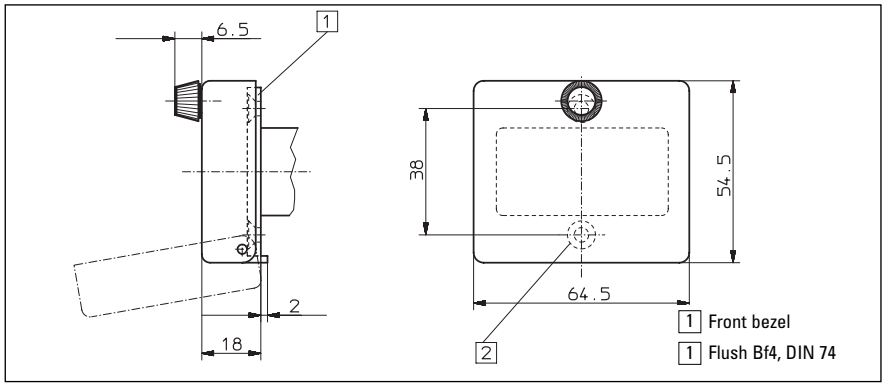
Ordering information::

grey	Art. No. G.008 300
black	Art. No. G.008 301

Flexible sealing covers

Transparent cover with key-lock 1 Dv

Suitable for counters:
H, B, HB or counters 24 x 48
in bezel adapter 50 x 60 mm



1 Front bezel
1 Flush Bf4, DIN 74

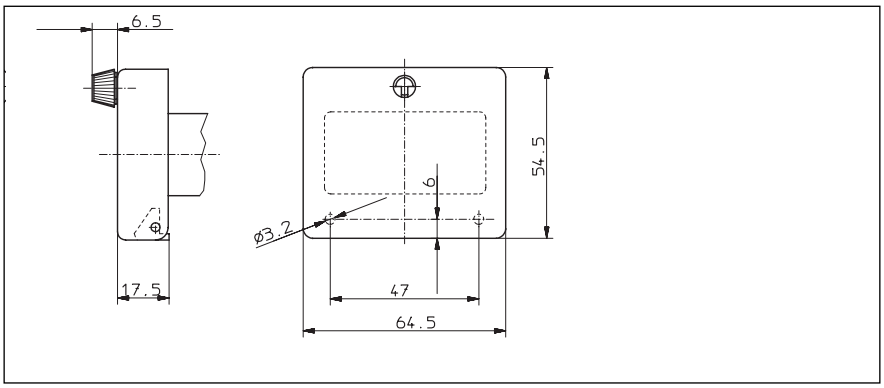
- Screw-on transparent cover, 1 DV, with key locking for size F1
- IP 65 protection with front bezel

Ordering information:

grey	Art. No. N.003 002

Sealing covers

Transparent cover with key-lock 1 Dv

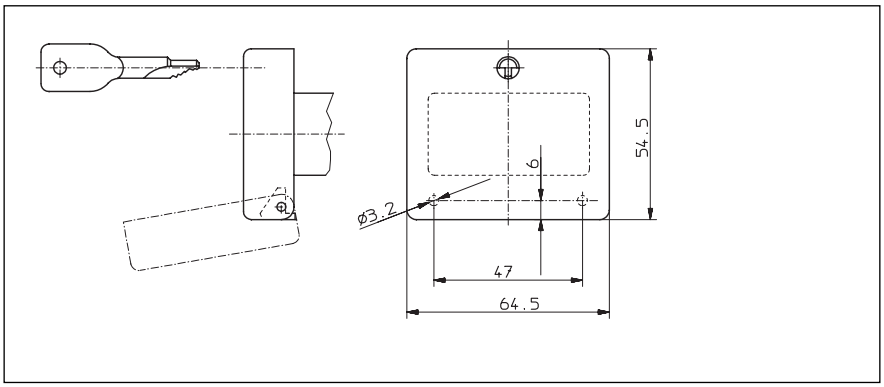


Suitable for counters:
H, B, HB or counters 24 x 48
in bezel adapter 50 x 60 mm

- Screw-on transparent cover, 1 DV, with key locking for size F1
- IP 65 protection
- With gaskets and screws

Ordering information:	
grey	Art. No. G008 121

Transparent cover with key lock 1 Dvs



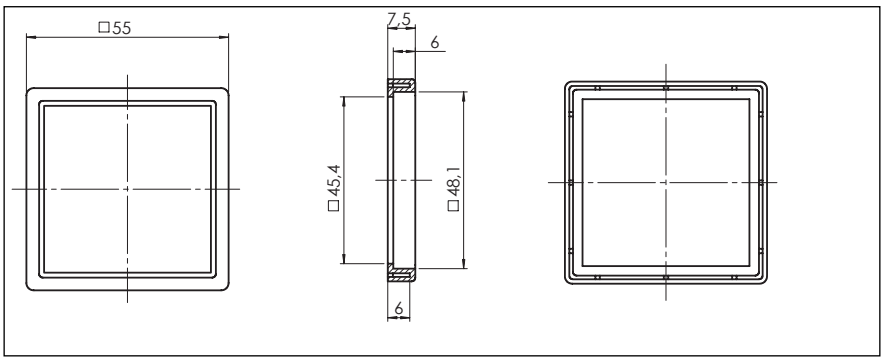
Suitable for counters:
H, B, HB or counters 24 x 48
in bezel adapter 50 x 60 mm

- Screw-on transparent cover, 1 DVs, with key locking for size F1
- IP 65 protection
- With gaskets and screws

Ordering information:	
grey	Art. No. N008 131

Bezels

Slip-on bezel 55



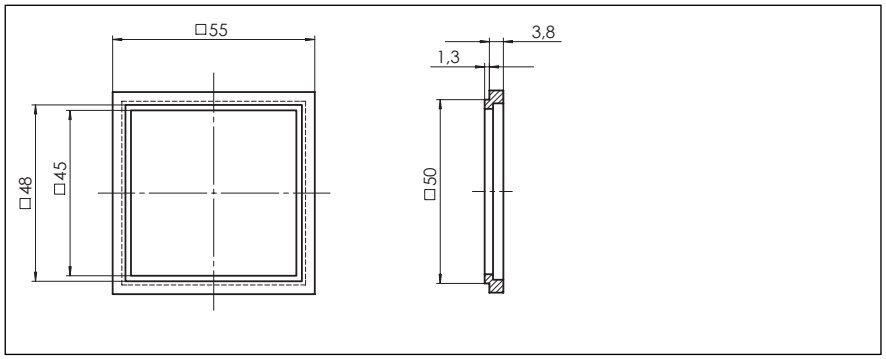
Suitable for counters:
H,HB, HC

- Bezel adapter 55 x 55 for adapting cut-out 50 x 50 to 45 x 45 mm

Ordering information:	
black	Art. No. T 008 171
grey	Art. No. T 008 170

Bezel

Slip-on bezel 55

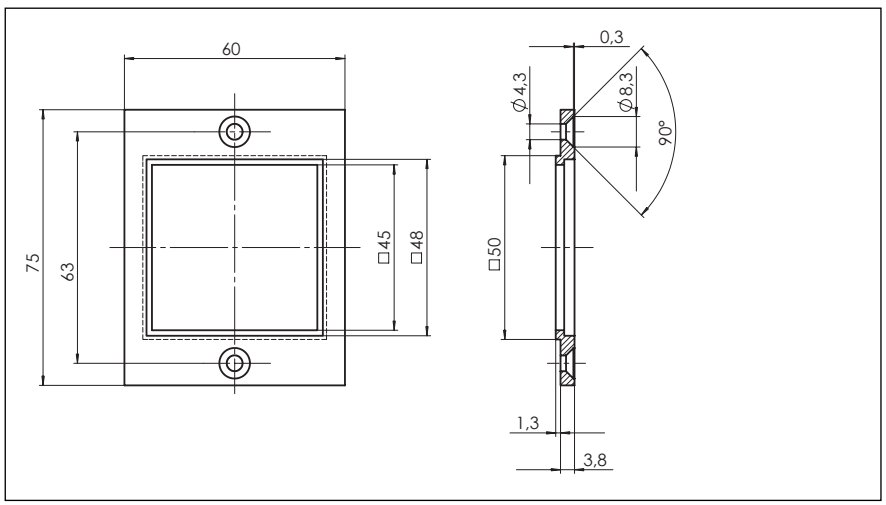


Suitable for counters:
901,903,904,715, ***CODIX*** 716/717, 910

- Bezel adapter for el. counters with panel cut-out 45 x 45 mm

Ordering information:	
black	Art. No. T 008 853

Bezel adapter 45

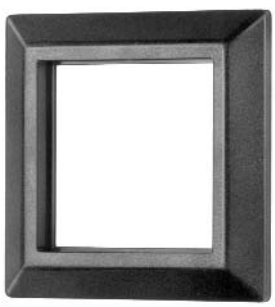


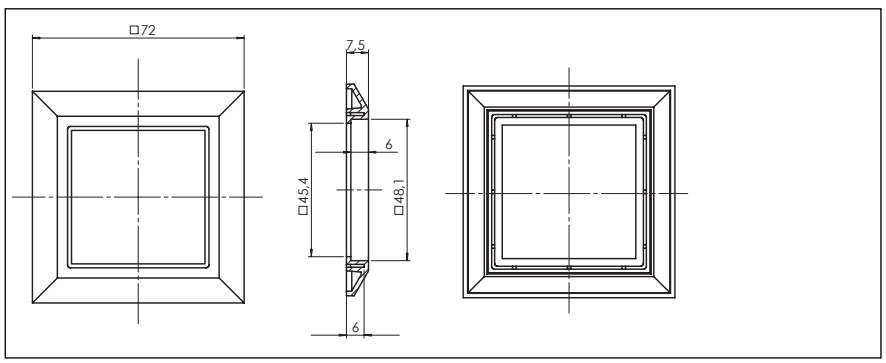
Suitable for counters:
901, 903, 904, 715, ***CODIX*** 716/717, 910

- Bezel adapter 50 x 50 to 45 x 45 for screw fixing

Ordering information:	
black	Art. No. T 008 860

Slip-on bezel 72





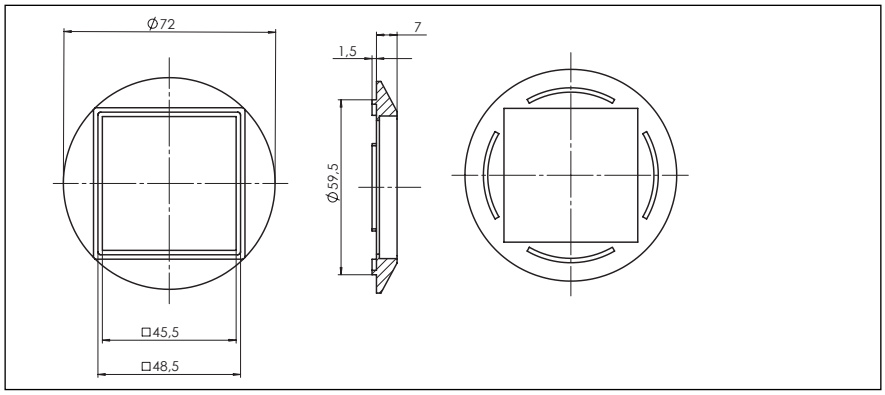
Suitable for counters:
715, ***CODIX*** 716, ***CODIX*** 717, 901, 903, 904,H57 and HC77

Ordering information:	
black	Art. No. T 008 177
grey	Art. No. T 008 176
Arrester	Art. No. T 009 420

Bezels

Slip-on bezel for bore ø 60

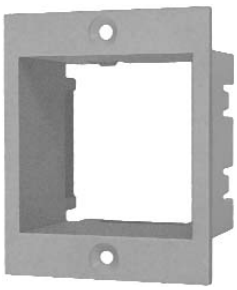
Suitable for counters:
H57 and HC77



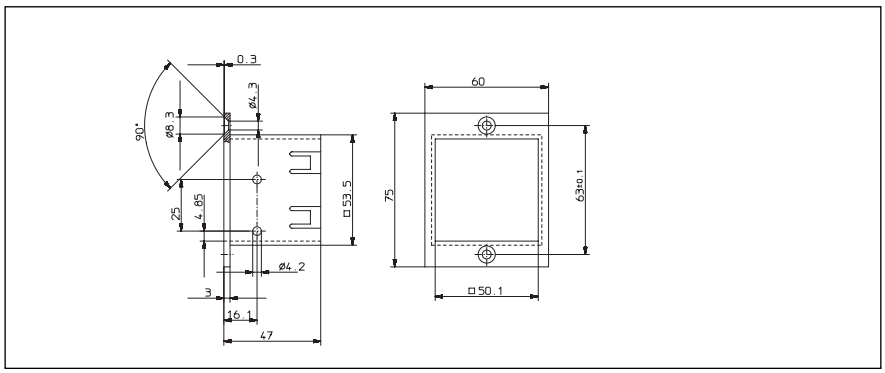
Ordering information:

black	Art. No. N 510226

Type F2B



- Plastic front bezel F2B for counters with panel cut-out dimensions 50 x 50 mm.
- Suitable for counters Hva and HB

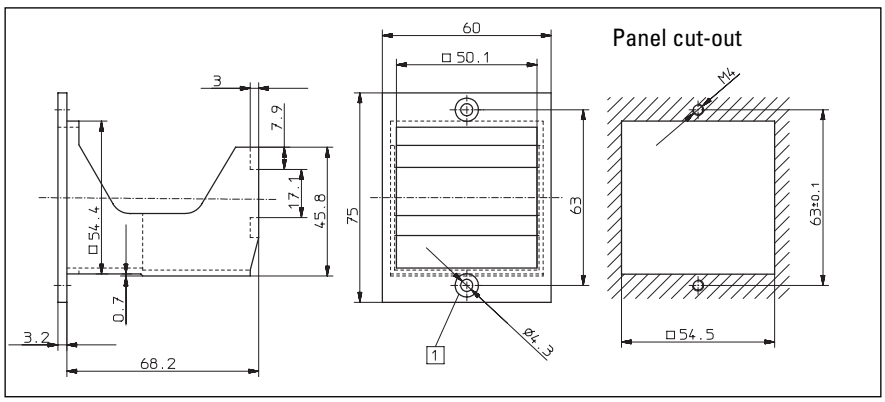


Ordering information:

F2B	beige	Art. No. G.007.503
F2B	black	Art. No. G.007.504

Type F2M

Suitable for counter
MVs or M



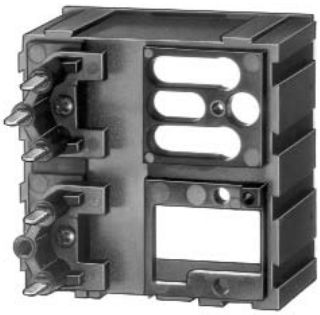
1 Flush, Bf4, DIN 74

Ordering information:

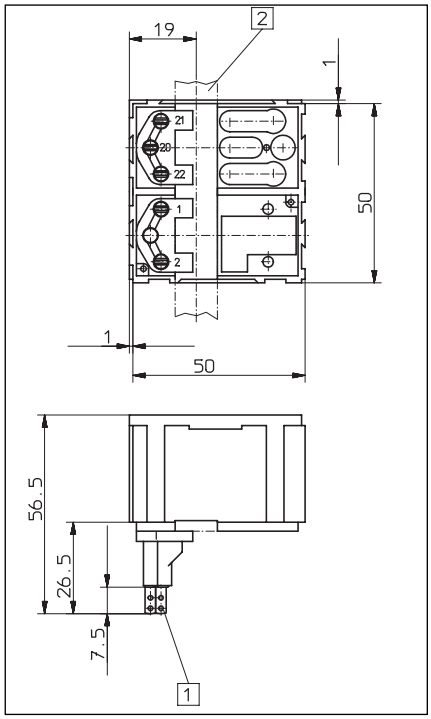
F2M	beige	Art. No. T.008.105
F2M	black	Art. No. T.008.106

Socket boxes

Socket box 946.1



Suitable for counter:BVa



1 Flat pin 0.8 x 2.8 mm silver plated
2 Fixing strip 3 x 12 mm

Ordering information:
Art. No. G.008 439

Socket boxes 926.1

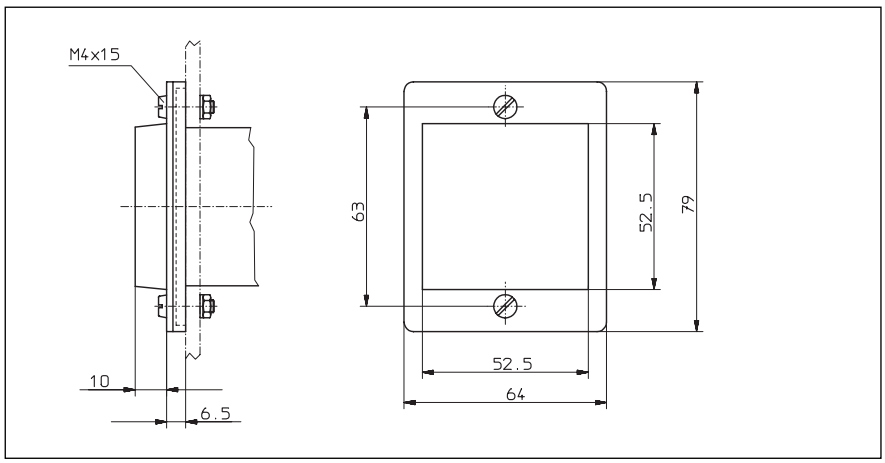
Suitable for counter MVs

Odering information
Art. No. G008 433

Sealing covers

Type K 2

Suitable for counters:
BVa and B or el. preset counters with bezel adapter 75 x 60 mm.

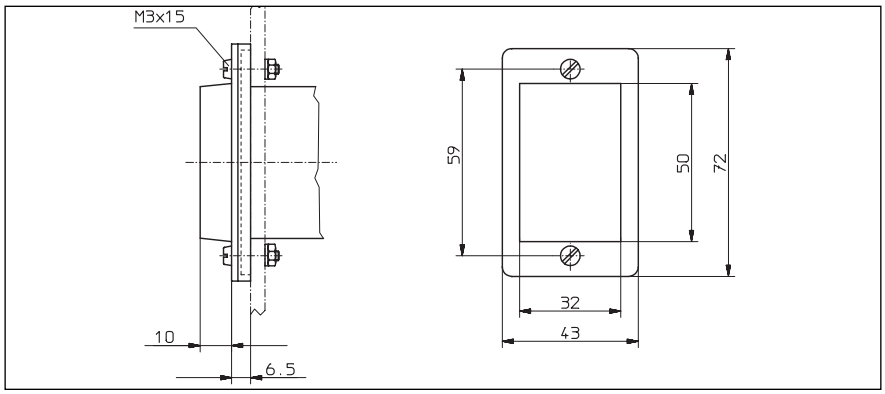


Ordering information		
grey	Art. No.	G008302
black	Art. No.	G008303

Sealing covers

Type KV3

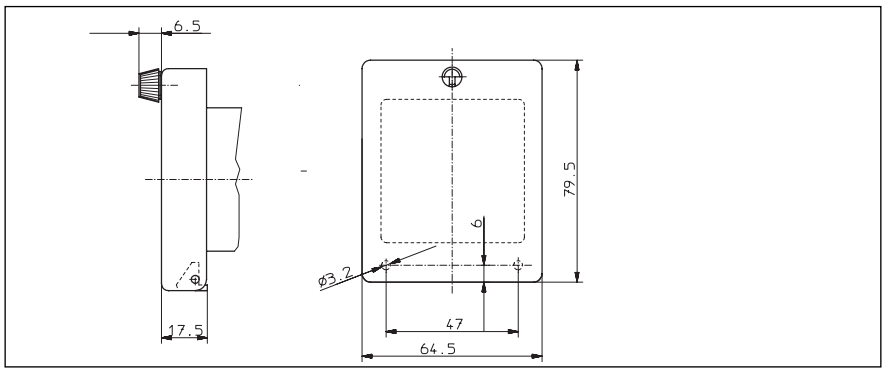
Suitable for counter:
MVs 13



Ordering information:		
grey	Art. No.	G008 310
black	Art. No.	G008 311

Type 2 DV

Suitable for counters:
BVa and B or el. preset counters with bezel adapter 75 x 60 mm.

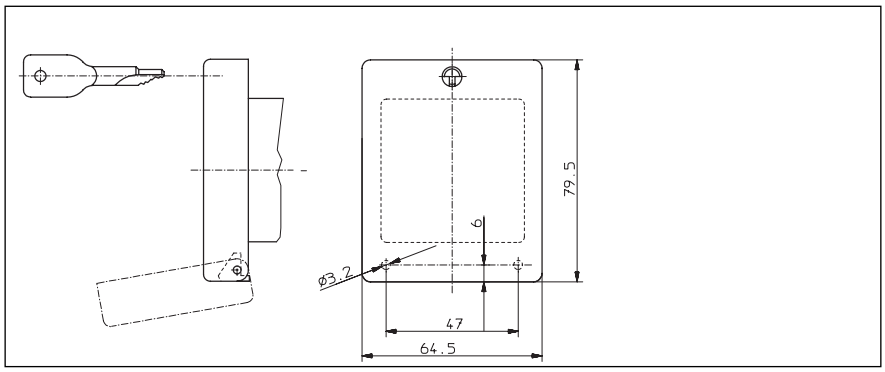


Ordering information		
Art. No.	G008 141	

- Screw-on transparent cover, 2 DV, with key locking for size 2
- IP 65 protection
- With gaskets and screws

Type 2 DVs

Suitable for counters:
BVa and B or el. preset counters with bezel adapter 75 x 60 mm.

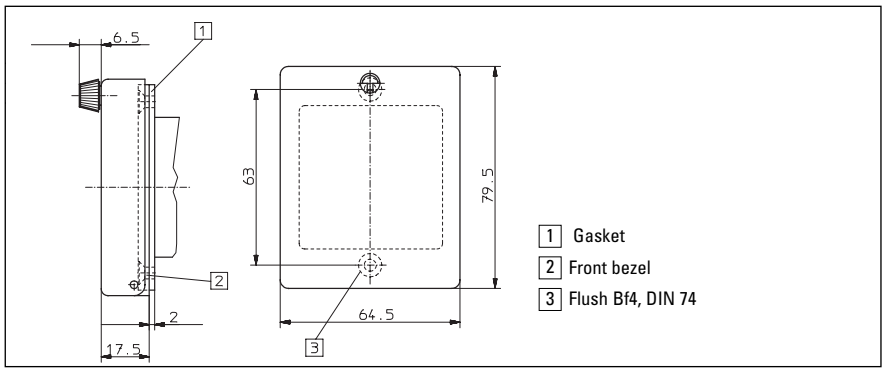


Ordering information		
grey	Art. No.	G008 151

- Screw-on transparent cover, 2 DVs, with key locking for size 2
- IP 65 protection
- With gaskets and screws

Sealing covers

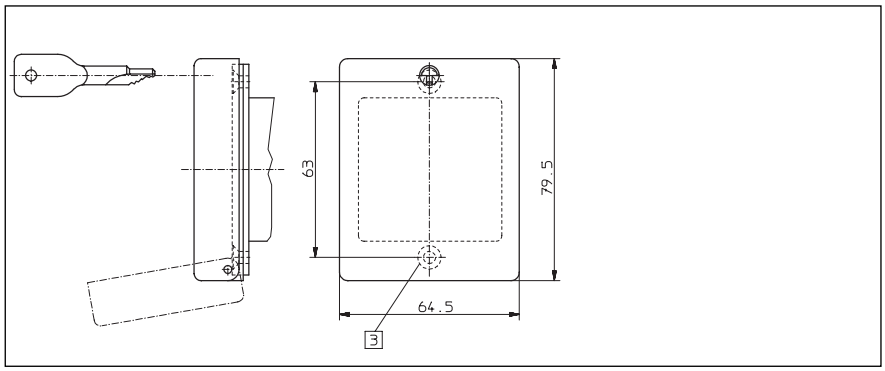
Lockable transparent cover



Suitable for counter
901, 903, 904, 715
CODIX 716/717, 910

Ordering information:
Art. No. G008 143

Lockable transparent cover, with key

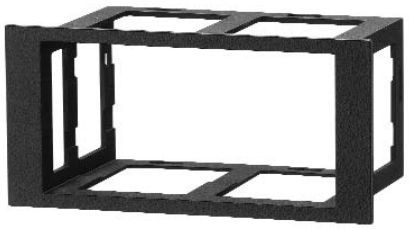


Suitable for counter:
901, 903, 904, 715
CODIX 716/717, 910

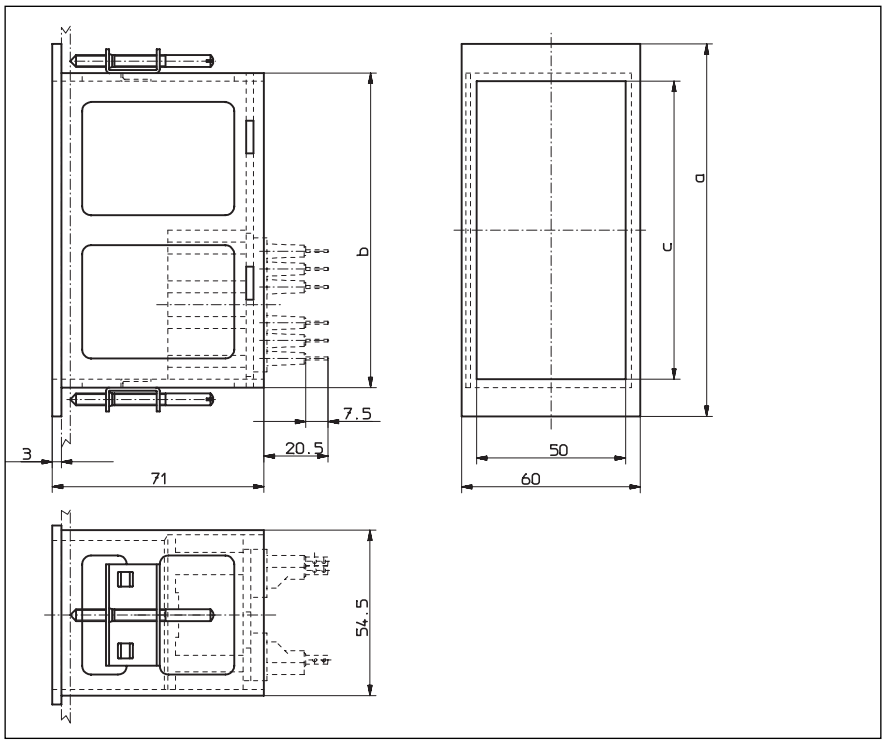
Ordering information
Art. No. G008153

Front bezels

Type F3B
Type F4B



Suitable for counter:
1 x BVa, 1x B, 3 x B or HVa and HB

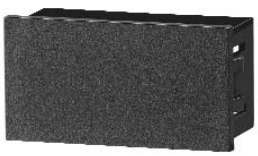


Front bezel	a	b	c
F3B	100	80,5	75
F4B	125	105,5	100

Ordering information		
F3B	Art. No.	G007 506
F4B	Art. No.	G007 509

Enclosure Blind
for cut out 25 x 50

Ordering information:	
Art. No.	T005 751



Ordering information:	
Art. No.	T005 753

Enclosure

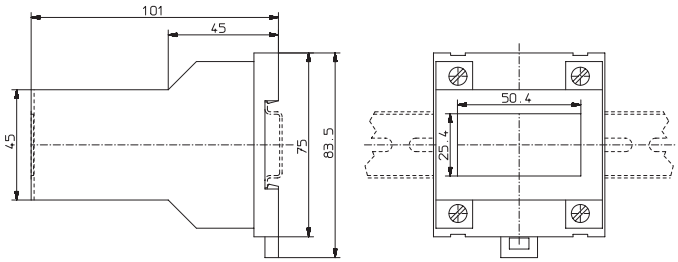
- For panel-mounting all counters, timers and process indicators, with DIN size 24 x 48 mm or 50 x 25 mm, such as ***CODIX*** 52X, ***CODIX*** 53X, ***CODIX*** 13X as well as electro-mechanical pulse counters and hour meters, such as H37, W17.50 etc.

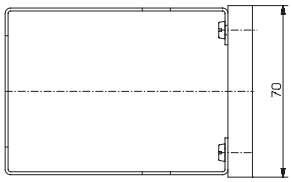
Note:
when mounting the DIN 24 x 48 mm units in the enclosure, please use the 50 x 25 mm panel adaptor, which is provided with all electronic products.

- Cut-out 25 x 50 mm
- For snap-on fitting to 35 mm top hat DIN rails
- Construction: Mounting panel for counter: chrome-plated sheet steel
  Top hat DIN rail adaptor: glass fibre reinforced polyamide
- Applications include, for example, control cabinets

Order code: G.300.004

Dimensions:





Further Accessories:
Bezel 25 x 50 for electromechanical counter with built-in dimension 22 x 45 mm.

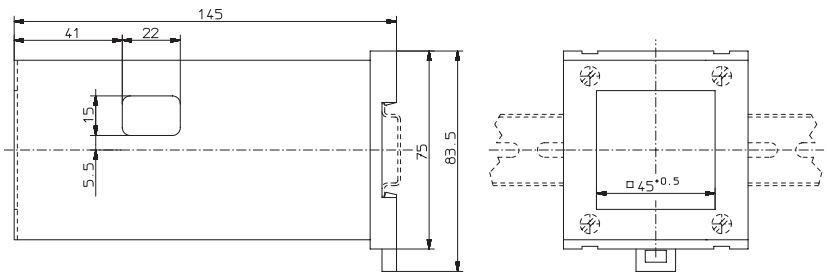
Order code: T.008.180

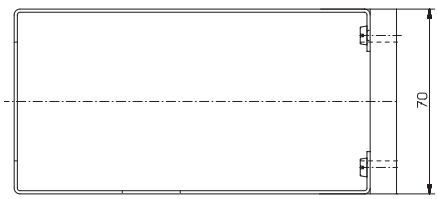
- For panel-mounting all counters and timers of DIN size 48 x 48 mm, for example preset counter 715, ***CODIX*** 716/717, 901, 903/904 or time relay 910
- Cut-out □ 45 mm
- For snap-on fitting to 35 mm top hat DIN rails

- Construction:
  Mounting panel for counter:
  chromate passivation sheet steel
  Top hat DIN rail adaptor:
  glass fibre reinforced polyamide
- Applications include for example control cabinets

Order code: G.300.003

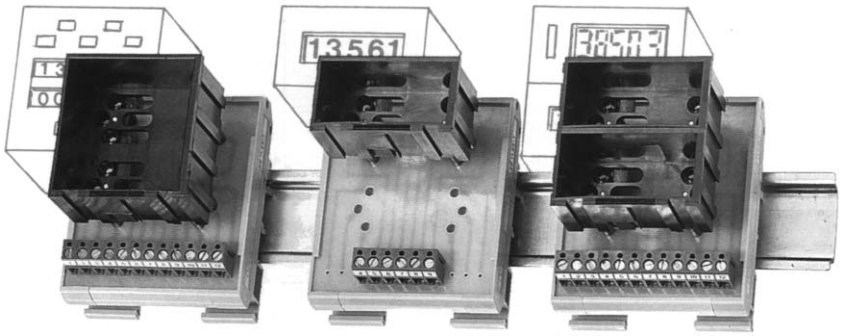
Dimensions:





Rail mount frames SR 1, SR 2 and SR 3

Type SR 3 **Type SR 1** **Type SR 2**



- SR1, SR2 and SR3 frames for rail mount can be snapped onto rails TS 35 x 7,5 and TS 35 x 15 as per DIN EN 50 022 respectively as per DIN EN 50 035.
- Electronical and electromechanical totalizer, present counters or hour meters may be plugged into the built-in socket

Applications:

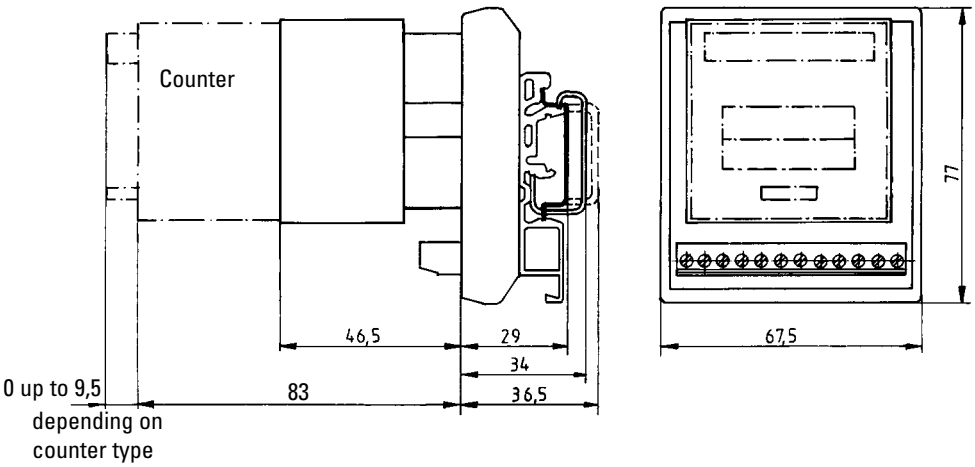
Electrical switch or distribution box etc.

Connection:

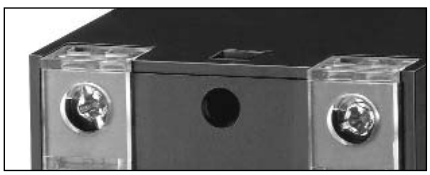
Count mode	Type series	Frame	Counter position with SR 2 frame	Count input Terminal number
Adding counter	B 16.01, B 18.00	SR 1		7+8
		SR 2	top	7+8
			bottom	10+12

Ordering information:	
– SR 1:	Art-.No. G 300 000
SR 2:	Art-.No. G 300 001
SR 3:	Art-.No. G 300 002

Dimensions:

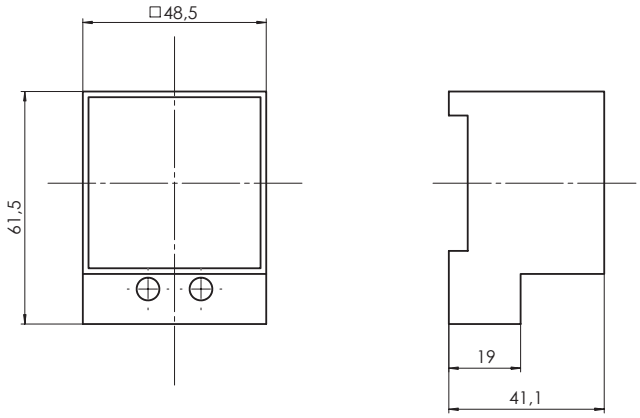


Terminal cover KA 37



Art. No. T051.687
(2-pcs. per counter required)

Add-on socket for H57, AH 57



Order information:		
black	Art-.No.	G008 040
grey	Art-.No.	G008 041

Overview of sealing gaskets

Art. No.	Sealing gaskets for				
	Front bezel/Type	Cover	Add-on socket	External dimensions (A)	Internal dimensions (B)
N.511.003	F2 D			60 x 75	54,4 x 54,4
N.511.004		F2 D		58 x 58	50,2 x 50,2
N.511.005	F1 D			60 x 50	54,4 x 29,4
N.511.006		F1 D		58 x 33	50,2 x 25,2
N.511.011	MK14.1 MK16.10 HK17.151			39 x 40	33,3 x 22
N.511.015	H37.2, H37.4 HB26.21, HB27.00			53 x 28	50 x 25
N.511.016	H57.72			72 x 72	∅50,5 / 45
N.511.017	H57.55			55 x 55	∅50,5 / 45
N.511.018	H57			48 x 48	∅50 / 45
N.511.019	Panel cut-out cross section 25 x 50 and front plate size 3			60 x 50	50 x 25
N.511.020	Panel cut-out cross section 50 x 50 and front plate size 3			60 x 75	50 x 50
N.511.028	901 ... 904			48 x 48	45 x 45
N.511.029	H37, H37.5, 520 ... 530			48 x 24	45 x 22
N.511.031	54X , 55X			96 x 49	92 x 45
N.511.033	715, 901 ... 904			49 x 49	45 x 45
N.511.034	520 ... 529			49 x 25	45 x 22

Note

What has to be considered when using Kübler products ?

Correct function of the Kübler products is guaranteed only when the contents of all notes are observed and electrical and mechanical liwiths are not exceeded. The user has to ensure this by all means. Also the ambient conditions at the place where the encoder is used have to be considered.

When using Kübler products in a protected area, also the specific instructions of e.g. professional associations or technical control associations are to be observed.

Also the VDE-regulations or respectively the national regulations about the handling with electrical units are to be observed. All specifications etc. correspond to the state of printing ot this catalogue.

Mit the mentioned specifications in this catalogue we specify the products, but do not ensure the characteristics for the application.

Subject to changes without notice.