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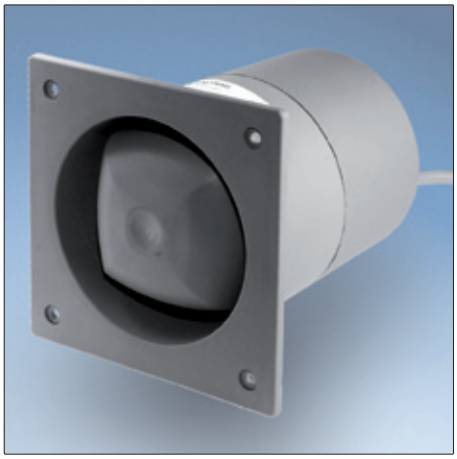
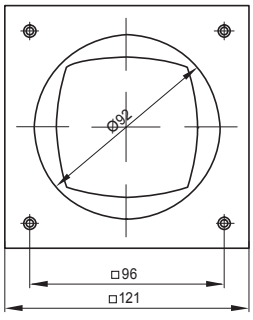
Electronic buzzers for automatic train protection systems JA222, JA222WD, JA224A





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Electronic buzzers, Series JA222, JA222WD, JA224A

Electronic buzzers for automatic train protection systems

Electronic buzzers in the driver's cabin of railway vehicles are an integral part of the intermittent automatic train-running control and the driver's safety device (DSD) respectively.This includes the proven JA222 and JA222WD Series buzzers.

With electronic buzzer JA224A Schaltbau integrates up to nine different warning tones for country-specific automatic train protection systems in one device. For this reason the buzzer is especially suitable for multisystem railway vehicles in cross-border traffic throughout Europe.

JA222 and JA222WD Series

- Electroacoustic transducer for intermittent automatic train-running control and DSD
- Several frequency and volume settings

JA224A Series

- Transducer for up to 9 different tones
- All inputs optically isolated against each other
- Output prioritized or mixed
- 16 volume settings
- Download of customized tones from memory card

Specifications

Series JA222, JA222WD, JA224A

Series	JA222	JA222WD	JA224A
Nominal voltage U_n Tolerance	24 ... 110 V DC -30 % / +40 %	24 ... 120 V DC or AC -30 % / +25 %	24 V DC or 110 V DC -30 % / +25 %
Inputs Number of Voltage U_i	 --- ---	 4 (for external frequency setting) 24 V DC	 9 (for external selection of tone) 24 V DC or 110 V DC
Rated operating current I_e	250 mA max. at U_n = 24 V DC 100 mA max. at U_n = 110 V DC	60 mA at U_n = 24 V DC	500 mA at U_n = 24 V DC
Sound level (1 m distance, $U_{n\,max}$) Tolerance	85 / 95 / 100 / 110 dB(A) ± 10 %	86 / 94 / 104 / 110 dB(A) ± 10 %	80 ... 110 dB(A) ± 10 %
Frequency Tolerance	340 / 550 Hz or 400 / 900 Hz ± 15 %	350 / 400 / 550 / 900 Hz ± 10 %	9 different tones ---
Speaker internal/ Output external	● / ---	● / ---	● / ●
Housing Dimensions (Ø x D / x H x D) Sound outlet Weight Material, colour	 Ø 125 x 80 Ø 80 1 kg PBT, GRP, black	 121 x 121 x 150 Ø 92 1.5 kg Polyamide (PA), grey	 181 x 131 x 53 Ø 80 1.15 kg Stainless steel, silver
Installation	Sound outlet preferably facing front	Sound outlet preferably facing front, water should be able to run off in any position	Any position, only for indoor use
Vibration / shock	IEC 61373	IEC 61373	IEC 61373
Degree of protection	IP20	IP65	IP20
Temperature	-25 °C ... +70 °C	-25 °C ... +70 °C	-25 °C ... +60 °C
Standards	EN 50155	EN 50155	EN 50128 SSAS=2, EN 50155, EN50121-3-2
Approvals		DB approval, since 1997	

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Overview of series	Variants	Description
JA222 Electronic buzzer with dynamic speaker	JA222D	Selectable frequencies, 340 / 550 Hz
	JA222F	Selectable frequencies, 400 / 900 Hz
JA222WD Wheater-proof buzzer for outdoor use	JA222WD	Standard version
JA224A Electronic buzzer for 9 different tones max.	JA224A	Standard version
	JA224A-MW	Version with mounting brackets

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JA222 Electronic buzzer with dynamic speaker — Series JA222

The electronic buzzer is a warning device designed for use in rail vehicles. The rugged device has a dynamic speaker. There are four settings for volume and two settings for sound frequency.

Featues:

- Wide range of operating voltages: 16.8 ... 150 V DC
- 4 sound levels selectable
- 2 sound frequencies selectable

Standard:

- BS EN 50155 Railway applications - Electronic equipment used on rolling stock

Configuration, dimension diagram, mounting — Series JA222

Configuration

Volume settings

The sound level can be selected with the switch on the rear side, on the left:

Sound level	1	2	3	4
L_1 = 86 dB(A)	■	○	○	○
L_2 = 94 dB(A)	○	●	○	○
L_3 = 102 dB(A)	○	○	●	○
L_4 = 110 dB(A)	○	○	○	●

● *switch ON* ○ *switch OFF* ■ *preset*

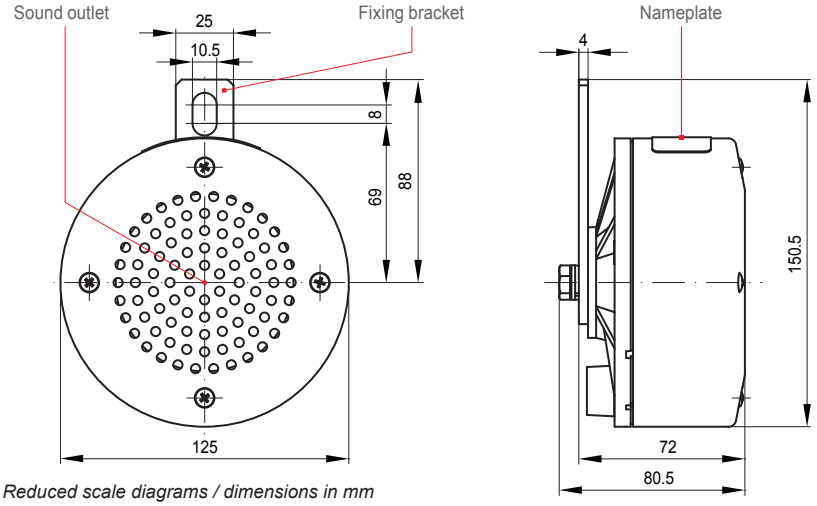
Frequency settings

The pitch can be selected with the switch on the rear side, on the right:

Series	Country	Frequency		1	2
JA222D	Germany	f_{ATC} =	340 Hz	■	○
		f_{DSD} =	550 Hz	○	●
JA222F	France	f_{ATC} =	400 Hz	■	○
		f_{DSD} =	900 Hz	○	●
JA222I	Italy	$f_{ATC/DSD}$ =	3,000 Hz	■	---

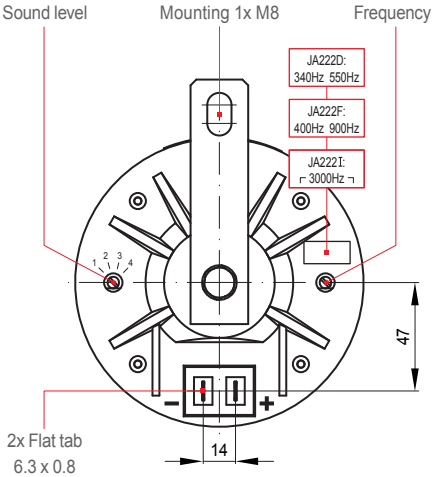
● *switch ON* ○ *switch OFF* ■ *preset*

Dimension diagram:



Reduced scale diagrams / dimensions in mm

Mounting:



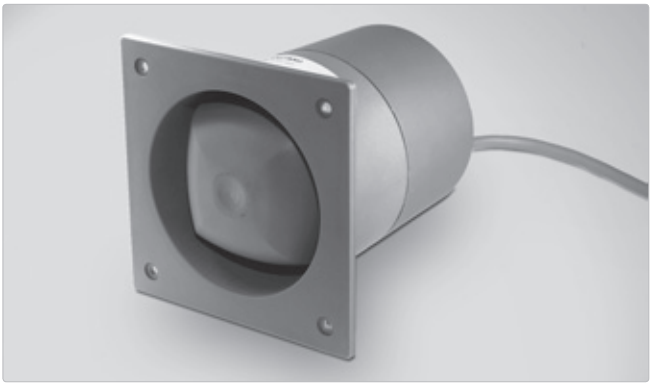
JA222WD Weatherproof buzzer for outdoor applications

Series JA222WD

The weatherproof buzzer is used as warning device in rail-bound vehicles.

The device is sealed to IP65. When installing it, make sure that water which has entered the sound outlet can run off unhindered.

The device comes complete with a 10 pole cable; together with a control system it allows the pitch to be set from the outside. A potential-separated "buzzer ok" signal is available as relay output.



Features

- Weatherproof housing for outdoor installation, IP65
- Universal operating voltage range 16.8 V to 150 V, DC or AC, independent of polarity
- 4 volume settings
- Constant volume, temperature-independent
- 4 pitches, selectable from inside and outside

Standard

- BS EN 50155 Railway applications - Electronic equipment used on rolling stock
- DB approval (since May 1997)

Configuration, dimension diagram, mounting

Series JA222WD

Configuration

Volume settings

The sound level can be selected with switches S1-6 ... S1-9:

Switch S1-	1	2	3	4	5	6	7	8	9
L_1 = 86 dB(A)						■	○	○	○
L_2 = 94 dB(A)						○	●	○	○
L_3 = 102 dB(A)						○	○	●	○
L_4 = 110 dB(A)						○	○	○	●

Frequency settings

● *switch ON* ○ *switch OFF* ■ *preset*

Internal frequency settings

The pitch can be selected with switches S1-2 ... S1-5:

Switch S1-	1	2	3	4	5	6	7	8	9
$f_{internal\ 1}$ = 340 Hz	○	■	○	○	○				
$f_{internal\ 2}$ = 400 Hz	○	○	●	○	○				
$f_{internal\ 3}$ = 550 Hz	○	○	○	●	○				
$f_{internal\ 4}$ = 900 Hz	○	○	○	○	●				

Volume settings

● *switch ON* ○ *switch OFF* ■ *preset*

Connecting cable

Lead	Colour	Internal terminal
Supply voltage 1	red	ST2-1
Supply voltage 2	blue	ST2-2
PE conductor / cable screen	cable mesh	ST2-3
External frequency 340 Hz	white	ST2-4
External frequency 400 Hz	yellow	ST2-5
External frequency 550 Hz	pink	ST2-6
External frequency 900 Hz	violet	ST2-7
External return frequency	brown	ST2-8
Relay output 1 buzzer = ok	grey	ST2-9
Relay output 2 buzzer = ok	black	ST2-10

External frequency settings

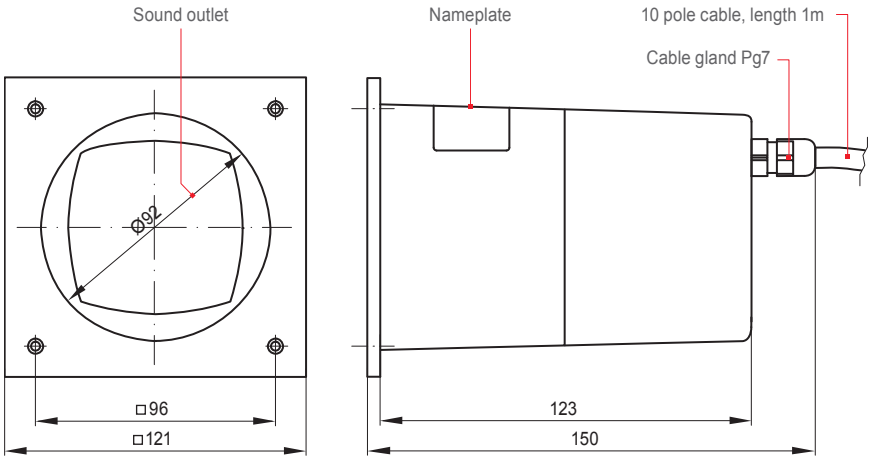
By setting switch S1-1 and applying the voltage U_{st} = 24 V to one of the four control leads (ST2-4 to ST2-7) the pitch can be selected externally. The common return conductor (earth) is control lead ST2-8.

Switch S1-	1	2	3	4	5	6	7	8	9
$f_{external\ 1}$ = 340 Hz	●	○	○	○	○				
$f_{external\ 2}$ = 400 Hz	●	○	○	○	○				
$f_{external\ 3}$ = 550 Hz	●	○	○	○	○				
$f_{external\ 4}$ = 900 Hz	●	○	○	○	○				

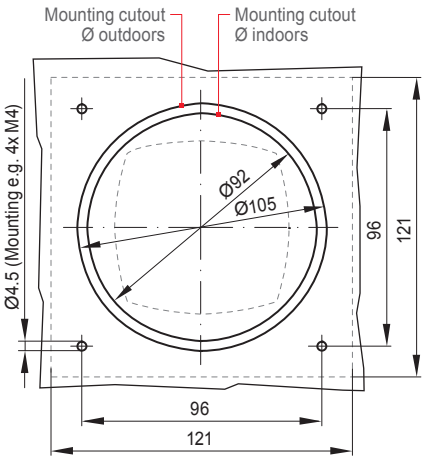
Volume settings

● *switch ON* ○ *switch OFF* ■ *preset*

Dimension diagram:



Mounting:



Reduced scale diagrams / dimensions in mm

JA224A Electronic buzzer for 9 different tones max. — Series JA224A

Multisystem locomotives are now used for cross-border services throughout Europe. One problem of their interoperability is the integration of different country specific train protection systems with their respective warning tones. It means that the driver's cab of a multisystem loco must be equipped with up to 9 different buzzers for cross-border service.
The solution is an all-in-one device: the Schaltbau buzzer JA224A.

Features:

- One device replacing up to 9 different buzzers
- All inputs optically isolated against each other and against supply voltage
- Two modes of operation*:
  - All 9 tones prioritized
  - Combination: 3 tones prioritized, 6 tones mixed
- 16 volume settings
- Download of customized tones from memory card*
- Test output (all 9 tones, volume-reduced)

Standards:

- BS EN 50121-3-2 Railway applications - Electromagnetic compatibility - Part 3-2: Rolling stock - Apparatus
- BS EN 50128 Railway applications - Communications, signalling and processing systems - Software for railway control and protection systems
- BS EN 50155 Railway applications - Electronic equipment used on rolling stock

Function, connectors, dimension diagram, mounting — Series JA224A

Function:

After selecting a tone via one of the nine control leads there is the audio output of the stored tone. Volume can be adjusted to the installation situation by means of a 16-step volume control.
There are two modes of operation*:
All 9 tones prioritized: The internal priority control system provides for the issuing of the signal for the required tone with the highest priority. Where necessary a tone with lower priority will be interrupted by a tone of higher priority. The highest priority has always input 1, the lowest input 9.
Combination: Inputs 1 ... 3 are prioritized. Signals for required tones of inputs 4 ... 9 are internally mixed and then issued with lower priority against inputs 1 ... 3 .

** Memory card with customized tones and fixed mode of operation supplied by Schaltbau. Data storage medium is a flash card.*

Configuration:

Female connectors X1 and X2:
Two female connectors are included in the delivery for electrical connection:
X1 8 pole: Power supply, diagnosis, external speaker
X2 20 pole: Control inputs of tones

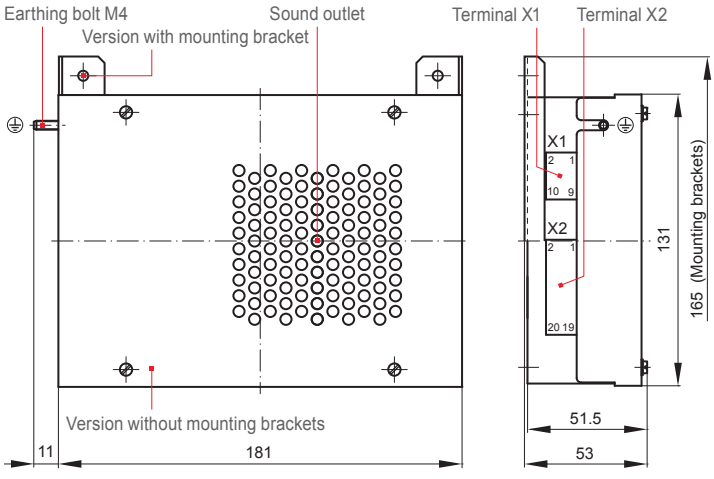
Connector pin assignment:

	U_n	GND	Diag ok	Diag error
X1	1	3	5	7
	2	4	6	8
	NC	Speaker +	Speaker –	Diag com

	Tone 1+	Tone 2+	Tone 3+	Tone 4+	Tone 5+	Tone 6+	Tone 7+	Tone 8+	Tone 9+	Test +
X2	1	3	5	7	9	11	13	15	17	19
	2	4	6	8	10	12	14	16	18	20
	Tone 1–	Tone 2–	Tone 3–	Tone 4–	Tone 5–	Tone 6–	Tone 7–	Tone 8–	Tone 9–	Test –

***Note:** The female connectors are fitted with cage clamps for wire gauges up to 1.0 mm² (AWG 17) max.*

Dimension diagram:



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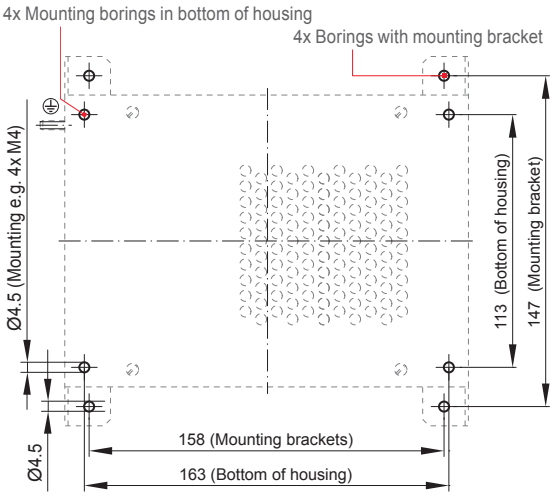
Mounting:



RoHS 2002/95/EC

Schaltbau GmbH manufactures in compliance with RoHS. The LV Series connectors are RoHS compliant.

ISO 14001:2005 BUREAU VERITAS Certification

Schaltbau GmbH has an environment management system that has been certified since 1994.

ISO 9001:2000 BUREAU VERITAS Certification

Schaltbau GmbH has a quality management system that has been certified since 1994.

Electrical Components and Systems for Railway Engineering and Industrial Applications

Connectors	• Connectors manufactured to industry standards • Connectors to suit the special requirements of communications engineering (MIL connectors) • Charging connectors for battery-powered machines and systems • Connectors for railway engineering, including UIC connectors • Special connectors to suit customer requirements
Snap-action switches	• Snap-action switches with positive opening operation • Snap-action switches with self-cleaning contacts • Enabling switches • Special switches to suit customer requirements
Contactors	• Single and multi-pole DC contactors • High-voltage AC/DC contactors • Contactors for battery powered vehicles and power supplies • Contactors for railway applications • Terminal bolts and fuse holders • DC emergency stop switches • Special contactors to suit customer requirements
Electrics for rolling stock	• Equipment for driver‘s cab • Equipment for passenger use • High-voltage switchgear • High-voltage heaters • High-voltage roof equipment • Equipment for electric brakes • Design and engineering of train electrics to customer requirements

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