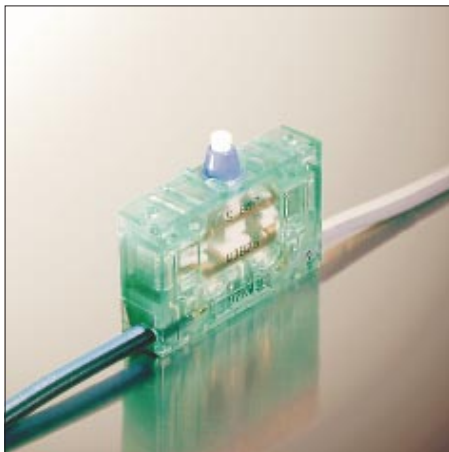
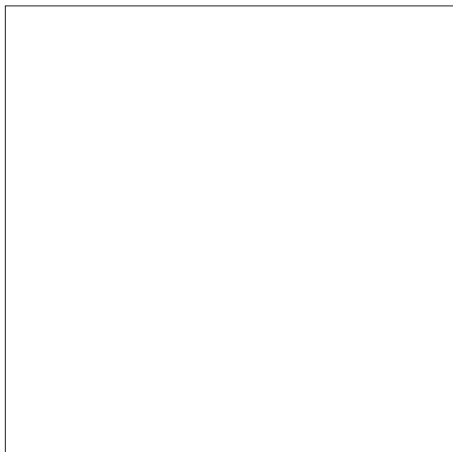
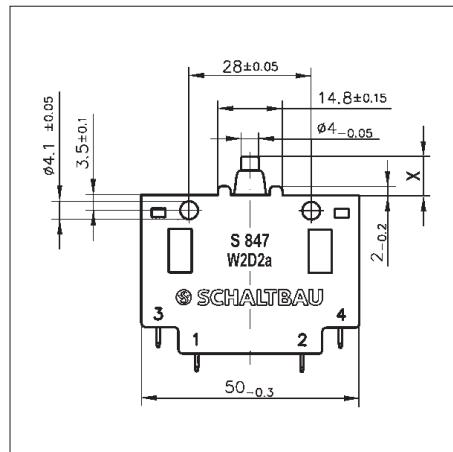
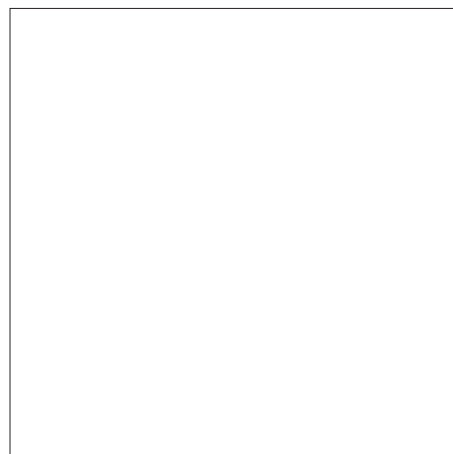
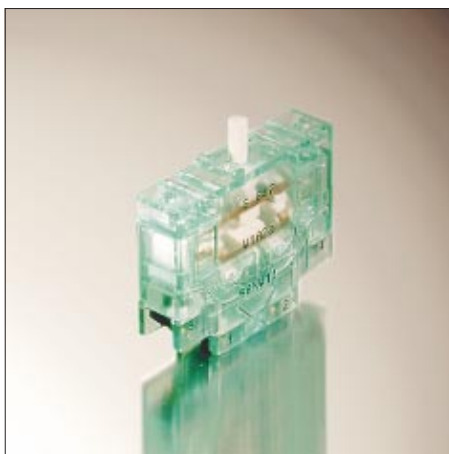


**Snap Action Switches
with Positive Opening
Operation and
Self Cleaning Action
Double Break Contacts
Sealed to IP 67
S 847**



D 47e

Snap Action Switches S 847

Design Features

- Performance according to EN 60947, IEC 947 DIN VDE 0660 part 200 7/92
- Positive opening operation. Mechanical formlocking feature according to EN 60947, IEC 947 DIN VDE 0660 part 200 chapter 3
- Normally open and closed contact sets are galvanically separate
- Self cleaning of the contact points by wiping action
- Low transfer resistance
- High reproducibility of snap-over point
- Protection degree IP 40, IP 60 and IP 67 according to EN 60529, IEC 529, DIN VDE 0470, DIN 40 050
- Fire retardant according to UL 94-VO
- Dimensions according to DIN 41 636, type F
- Flat profile lends itself to the ganging together of switches in applications where space is limited
- Transparent housings allow the contact condition and internal mechanism to be viewed easily
- Different terminals and actuators available:
 - Faston terminals according to DIN 46 247
 - Screw terminals
 - Fly leads
 - Additional actuators
 - Protection cap

Technical Data



Permanent current (I_{th})	10 A
Rated insulation voltage	400 V
Rated impulse withstand	4 kV
Contamination degree	3
Contacts	Hard silver (Gold on request)
Contact gap	typical 2 x 1,1 mm
Contact force	0,45 N
Transfer resistance	typical 10 mΩ
Switching categories	AC - 15, 230 VAC / 1,5 A DC - 13, 110 VDC / 1,0 A
Positive opening force	10 N
Positive opening travel	4,45 mm
Actuation travel	4,9 mm
Operating force	max. 2,6 N
Release force	min. 0,2 N
Operation speed	Max. 1 m/s Min. 0,1 mm/s
Vibration resistance	slide actuator: 8 g roller lever: 6 g
Shock resistance	20 g, half sinus
SCPD	10 A, slow fuse
Switching frequency	300 Ops / Min
Mechanical life	min. 10 Mio. operations
Temperature	IP 40 -40°C ... +85°C IP 60, IP67 -20°C ... +85°C
Weight per switch, without wire	25 g

Applications Dimensions

The S 847 snap action switches in modular design are available in three sealing standards: IP 40, in dustproof IP 60 and fully waterproof types IP 67.

The forced contact mechanism of these switches ensures positive opening even when the contacts have become welded due to a short circuit situation. This function also comes into play in the unusual circumstance of spring failure giving the switch failsafe properties.

A characteristic feature of the snap action switch is the fast motion of the contact bridge induced by the force of a pretensioned spring. This snap action mechanism provides a maximum independence of the contact make from the speed of actuation.

Self cleaning contacts allows very low currents to be handled and at the other extreme the switch has a permanent load capacity of 10 A.

A clear makrolon case allows the condition of the contacts to be easily determined and a range of interchangeable actuators allows a degree of design flexibility.

Application Fields

- Limit switch for use on machines, doors and plant-controls
- Auxiliary switch in e.g. camshaft gears and command devices
- Electromechanical switch for automation tasks with different electric loads
- Safety switch in control units

Ordering Information

e.g.: **S 847 W 2 D 2 a**

Series _____

Contact Configuration _____

W = NO + NC

Protection _____

	Contacts	Terminals
1 =	IP 40	IP 00
2 =	IP 60	IP 00
3 =	IP 67	IP 67

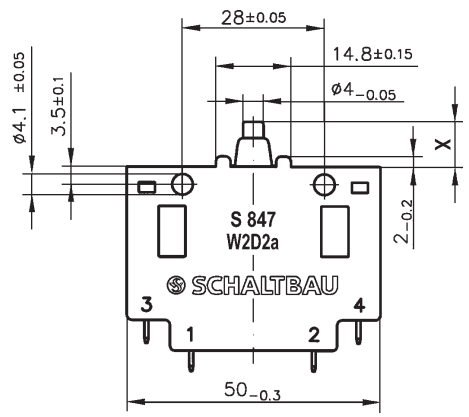
Terminals _____

A = Screws
B = Fly leads
D = Faston 6,3 mm x 0,8 mm

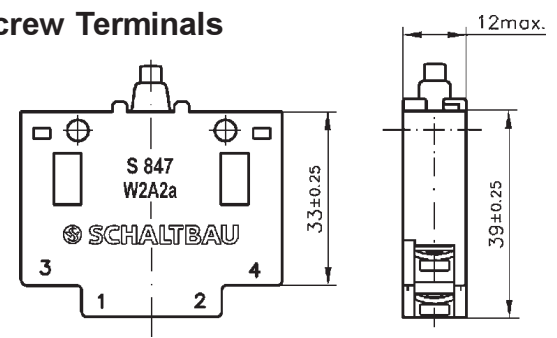
Contact Material _____

Actuator _____

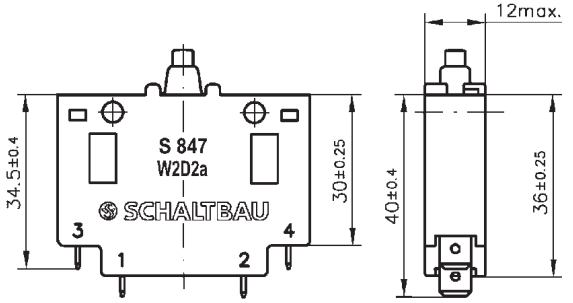
a = Standard button
b = Roller with fixing brackets
e = Roller only



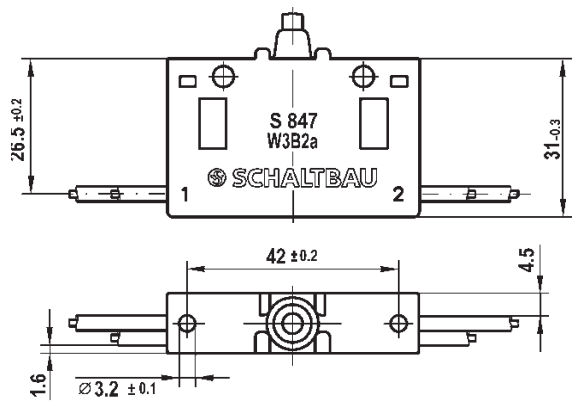
○ Screw Terminals



○ Faston Terminals



○ Fly Leads



Termination	Tinned copper wire; AWG 18; 0.88 mm ² ; length 500 mm	
Connection:	black	1 NC-Contact
	grey	2 NC-Contact
	blue	3 NO-Contact
	white	4 NO-Contact

Accessories

○ Actuators

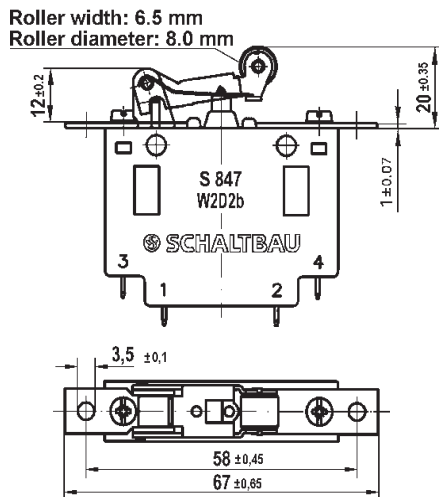
● Field of application

- if tappet actuating differs more than 15° from the perpendicular line
- if actuating with cam disks, driving rod or gearshift rod
- if the operation speed is up to 1.5 m/s

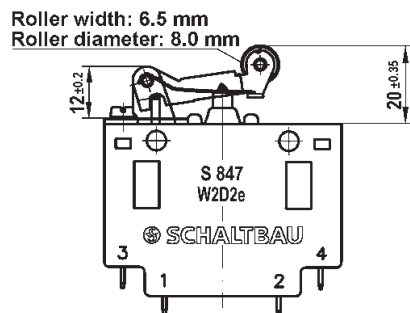
● Roller lever characteristics

- The roller itself is manufactured out of wear-resistant and easy-running thermoplastic
- Integral roller lever

● Roller lever with fixing brackets, type b



● Roller lever only, type e



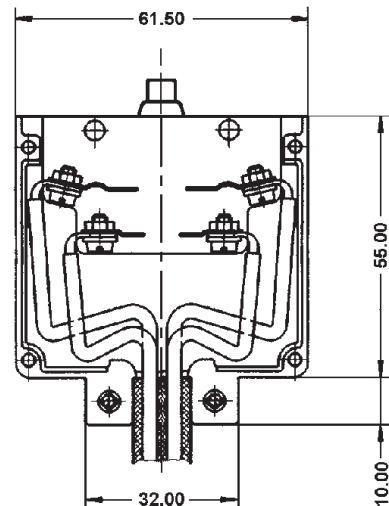
- Special actuators, terminal style, gold contacts and other options are available, consult factory

○ Protective Housing SK 100

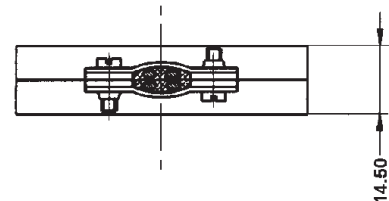
Part No 1529. 0415 446



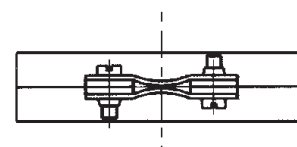
- Housing manufactured in impact resistant Makrolon GV
- For use with screw fixing switches
- IP 40 protection



- Clamp for cable 5 to 10.9 mm.
Min. retaining power 80 N



- Clamp for cable 5 to 8 mm.
Min. retaining power 80 N



Breaking Capacity

○ Electrical Life

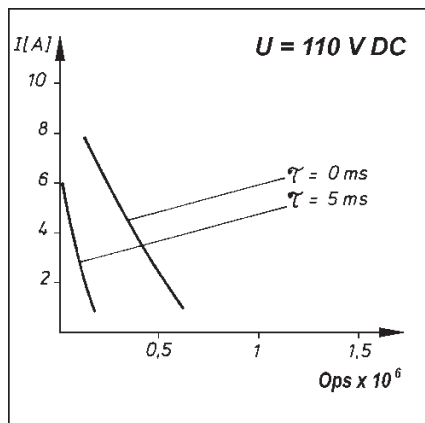
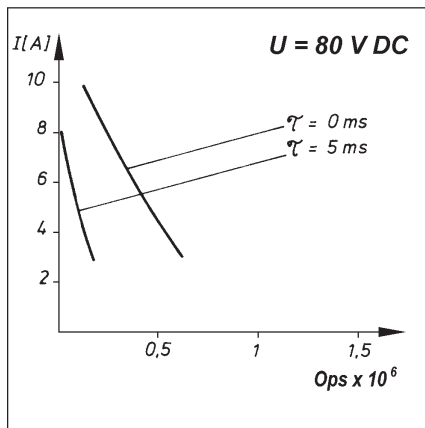
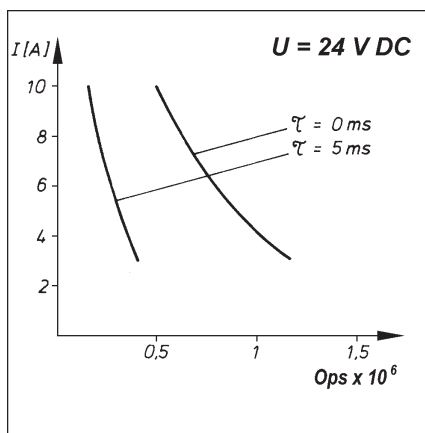
is a measure of contact life and shows the dependence on external conditions:

- current / voltage values in the circuit
- kind of load (inductive / capacitive)
- frequency of operation
- arc quenching rating / capacity (specially in DC applications)
- pollution, e.g. dust, harmful substances, noxious gases and vapours

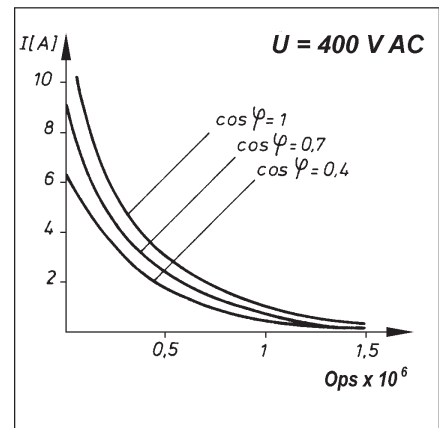
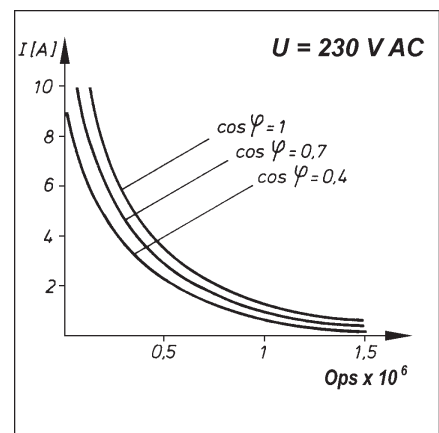
Note:

These curves are based on results of electrical service life testing made in laboratory conditions and show characteristic values.

○ Breaking Capacity DC



○ Breaking Capacity AC



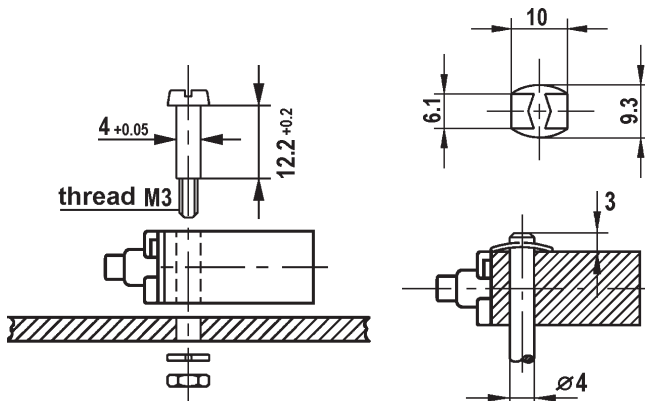
Suggestions for Installation

○ Mechanical Fastening

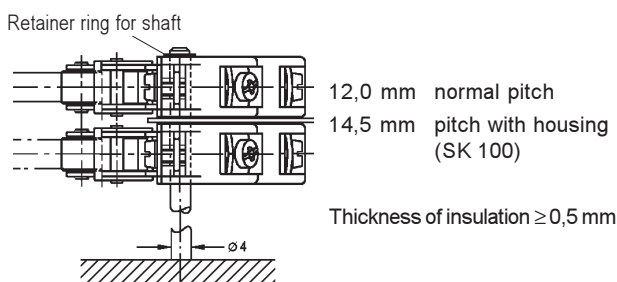
- Ganging or mounting through the two transversal bore-holes with 4 mm screws, bolts or DUO-Clips (fastening torque max. 1.3 Nm).

● Manner of fastening

Screws	DUO-Clips
Cheese-head thread length 10 mm Part No 1529.0451 782	
Hexagonal head thread length 10 mm Part No 1529.0573 188	4 ESN 10 on bolts Art.-Nr.: 1090.0436 685
Hexagonal head thread length 7 mm Part No 1529.0509 574	

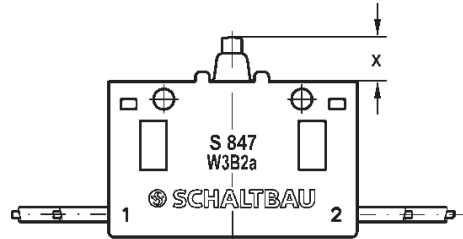


- Frontmounting through bore-holes in fixing plate of roller lever (actuator type b) or - on standard design without roller lever - by screw inserts in the snap action switch housing (Part No 3529.0140 299).
- During mechanical mounting please make sure to have 2 fixing points.
- Please use insulating plates when mounting S 847 with screw- or faston-terminals in series, or when mounting on uninsulated surfaces to safeguard air and creepage distances.



○ Actuator Travel

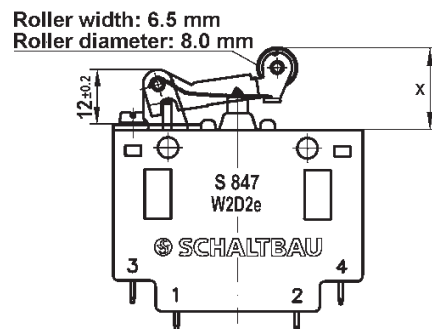
● Tappet Actuating



Dimension x (mm)	Actuator position
8.85 ±0.15	Released position
6.60 ±0.25	Snapover point
4.40	End of positive opening
3.95	Final position
8.00 ±0.25	Release point

The movement differential between snapover point and release point is 1.4 ± 0.25 mm

● Actuator with Roller Lever



Dimension x (mm)	Actuator position
20.00 ±0.35	Released position
16.50 ±0.50	Snapover point
13.30	End of positive opening
12.90	Final position
18.65 ±0.50	Release point

The movement differential between snapover point and release point is 2.1 ± 0.37 mm

Note: Above values are valid for all types of actuation.

Projecting Notes

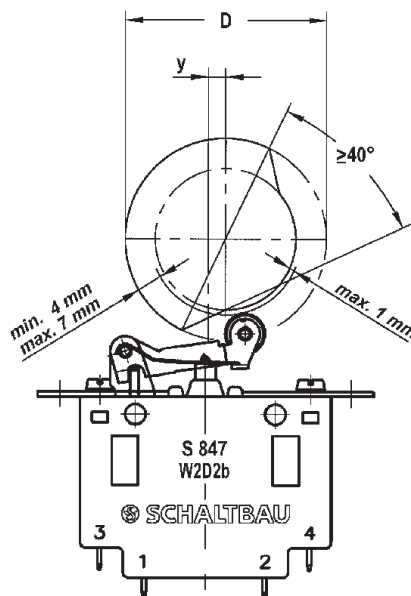
Snap action switches are built for use with and without roller lever.

Please use roller lever when tappet actuating differs more than $> \pm 15^\circ$ from the perpendicular line or actuating with cam disks, driving rod or gearshift rod.

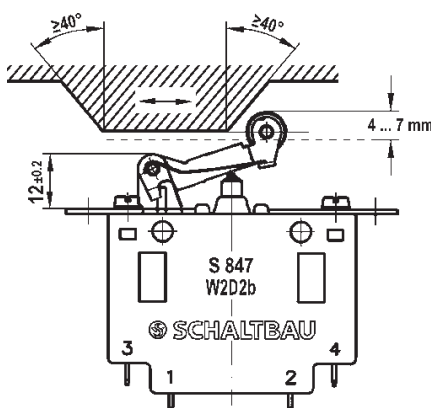
Normally open and closed contact sets are galvanically separate.

○ Switch with Roller Lever and Cam Disk Setup

Disk Diameter D (mm)	Distance y (mm)
40	3,6
60	0
max. 100	0



○ Switch with Roller Lever and Trigger Cam Setup



○ Screw Terminals

- Wire section 0.75 – 2.5 mm² without multicore cable end, with multicore cable end 1.5 mm²
- Max. 2 electric cable per connection
- Wire insulation has to lead to the relevant terminal
- Torque value max. 0.5 Nm
- Multicore cable end according to DIN 46 228:

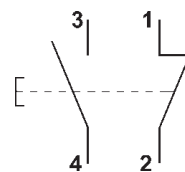
Cable cross-section	Forms			
	A	B	C	D
1 mm ²	X	X	X	X
1.5 mm ²			X	X

○ Faston Terminals

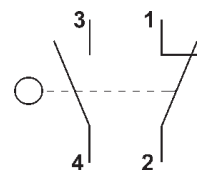
- Flat tabs according to DIN 46 247 part 3
- **Notes:** After mounting the switch and making wiring connections, the insulation distance between ground and each terminal should be confirmed as sufficient.

○ Terminal

- Tappet actuating



- Actuating with roller lever



○ Protection Degree

The S 847 snap action switches are available in three sealing standards: IP 40, in dustproof IP 60 and fully waterproof types IP 67.

The information is valid for the contact area. The protection degree for the connection area is IP 00, for the waterproof types IP 67.

The protection degree with protection housing SK 100 for the connection area is IP 40.

Note: Care should be taken of a working pull-relief.

Electrical Components and Systems for Railway and Industrial Applications

Connectors	<ul style="list-style-type: none"> ● Industry-standard connectors ● Special connectors for communication technology (MIL-connectors) ● Connectors for railway technology including UIC connectors ● MID (<u>M</u>olded <u>I</u>nterconnect <u>D</u>evice) and telecommunications connectors ● Special connectors per customer requirements
Switchgear	<ul style="list-style-type: none"> ● Single and multipole DC contactors ● High-voltage AC/DC contactors ● Contactors for battery powered vehicles and power supplies ● Contactors for railway applications ● Special devices per customer requirements
Switching Elements	<ul style="list-style-type: none"> ● Snap-action switches with direct opening action ● Snap-action switches with self-cleaning contacts ● Switching elements with high breaking capacity ● Control and safety switches ● DC emergency break switches ● Special switches per customer requirements
Control and Signal Devices	<ul style="list-style-type: none"> ● Master controllers and reversers for railway applications ● Toggle switches ● Hand-operated and foot switches for railway applications (Dead Man's Device) ● Emergency brake handle
Systems and Components for Railway Technology	<ul style="list-style-type: none"> ● Power supply plants for passenger coaches ● Battery chargers for locomotives and restaurant cars ● High-voltage equipment for single and multi-voltage operation ● Heaters ● Projecting performance for passenger coaches ● Projecting performance for diesel MUs ● Electrical drives with magnetic drive technology ● Special devices per customer requirements