

Description

The BMS01 is a battery master switch designed for dangerous goods road vehicles complying with international ADR regulations. Environmental protection and the intrinsically safe control circuitry of the BMS01 are in accordance with ADR 2015. The battery switch must be installed between the battery and the vehicle's electrical system. It is operated on and off by means of a control switch in the driver's cab, additional control switches can be sited around the vehicle as required. The BMS01 is a double pole device, but can be connected as 1-pole version (see connection diagram).

An integral safety barrier permits siting of the BMS01 in hazardous areas. Additional auxiliary contacts are provided for disconnection of the ignition circuit, de-energisation of the alternator field winding, or a controlled shutdown of the CANBUS system followed after a delay by disconnection of the battery.

Typical applications

Utility vehicles for hazardous goods.

Ordering information

Type number									
BMS01 Battery Master Switch (to ADR 2015)									
Number of poles									
2 2-pole									
Rated voltage									
0 DC 12 V									
1 DC 24 V									
Control function: delay time between auxiliary contact K13 and main contacts									
1 1 sec / ADR-compliant									
2 9.5 sec / ADR-compliant									
5 180 sec / version for SCRT (BlueTec) motors									
Control function: low voltage monitoring									
0 without low voltage monitoring									
1 with low voltage monitoring and disconnection - device switches off in undervoltage condition									
3 with low voltage monitoring and signalisation									
Version									
0 neutral									
BMS01 - 2 1 1 1 - 0 ordering example									

Rubber caps and mounting screws are supplied with the product. Accessories (e.g. external control switch, 7-pole and 4-pole connectors) should be ordered separately.

Approvals

Authority	Standard	Rated voltage
TÜV	- ADR 2015 Teil/part 9, 9.2.2 und / and 9.7.8 - VdTÜV-Merkblatt 5205, Ausgabe / edition 03.2015 - IEC 60079-0:2011 - IEC 60079-11:2011 - IEC 60529:2001	
KBA	ECE Regelung Nr. 10 (E1) Rev. 4	DC 12 V DC 24 V
ZELM	EN60079-0:2012+A11:2013 EN60079-11:2012	DC 12 V DC 24 V

Protection Class

IP65



BMS01

Technical data

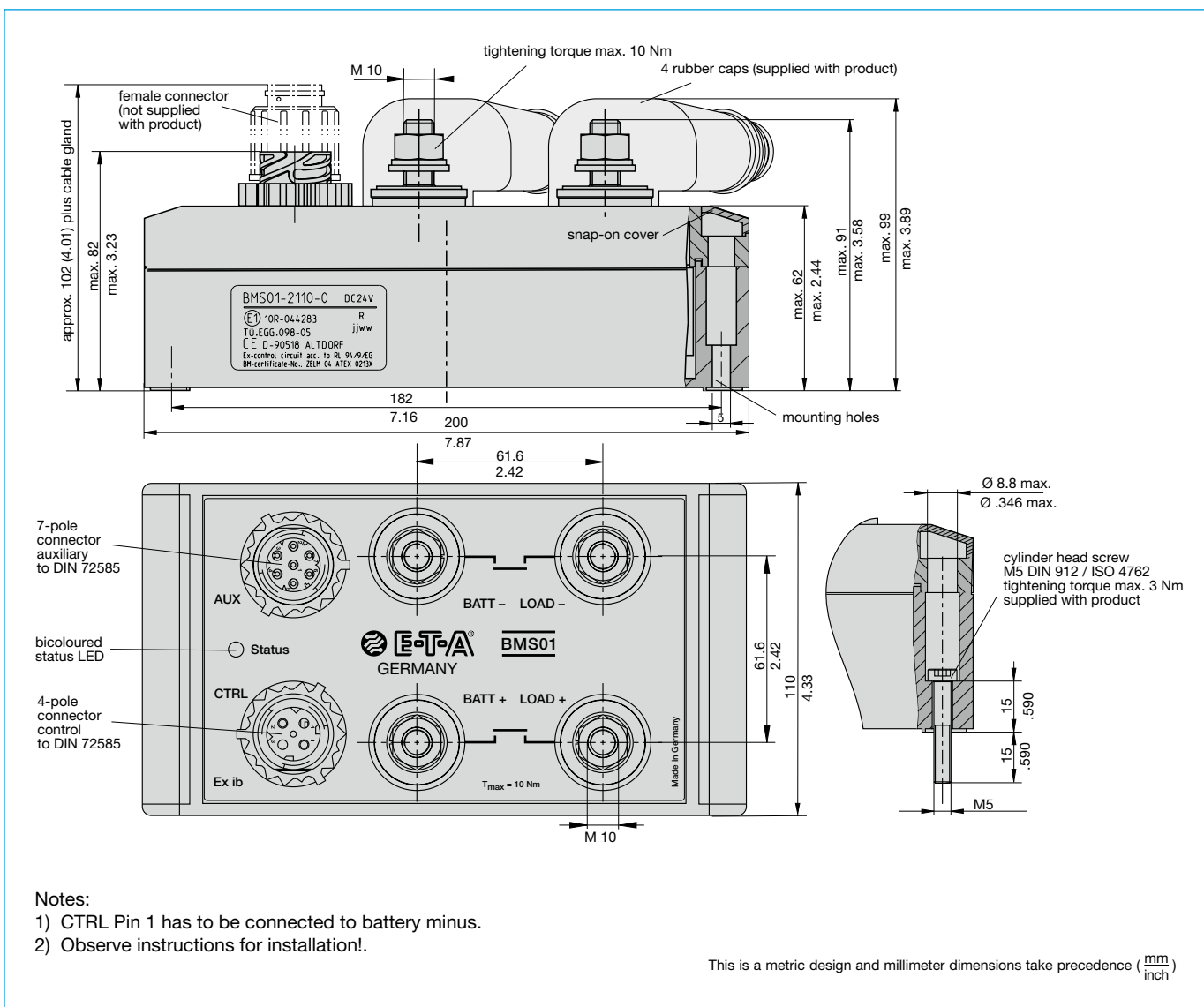
Operating data

Voltage rating	DC 12 V	DC 24 V
Voltage range	9...16 V	18...32 V
Rated current	200 A / pole	
Max. overload current	2,400 A 1 s; 600 A 20 s	
Power consumption of electronic module	typically 5 mA (in OFF condition)	
Excitation current / time of the bistable main relay	12 V: typically 2.6 A / 200 ms 24 V: typically 1.3 A / 200 ms	
Control circuit (EX)	ZELM 04 ATEX 0213X Ex II (2) G [Ex ib] II C	
Temperature range	-40...+70 °C (-40...+158 °F)	
Reverse polarity protection	integral (in the event of reverse polarity the master switch will disconnect instantaneously)	
Low voltage monitoring switching thresholds:	DC 12 V 11.0 V ± 0.3 V	DC 24 V 22.8 V ± 0.3 V
hysteresis:	typically 0.25 V	typically 0.5 V
trip time:	typically 60 sec	typically 60 sec
Typical life	10,000 cycles at rated current 100,000 cycles without load	
Protection class: housing	IP65	
Protection class: terminals	IP54 with rubber caps	
Vibration	5 g (57-200 Hz), ± 0.38 mm (10-57 Hz), test to IEC 60068-2-6, test Fc, 10 frequency cycles / axis	
Shock	10 g, test to IEC 60068-2-27, test Ea	
Corrosion	96 hrs 5 % salt mist, test to IEC 60068-2-11, test Ka	
Humidity	240 hrs. 95 % RH, test to IEC 60068-2-78, test Cab	
Terminals	battery terminals: M10 terminal studs control terminals: AUX connectors to DIN 72 585, 7-pole CTRL connectors to DIN 72 585, 2-pole	
Auxiliary contact	max. 10 A (circuit unprotected)	
Aux. energy output for permanently energised loads (e.g. tachograph)	max. 1 A (internally protected)	
Mass	approx. 1,700 g	

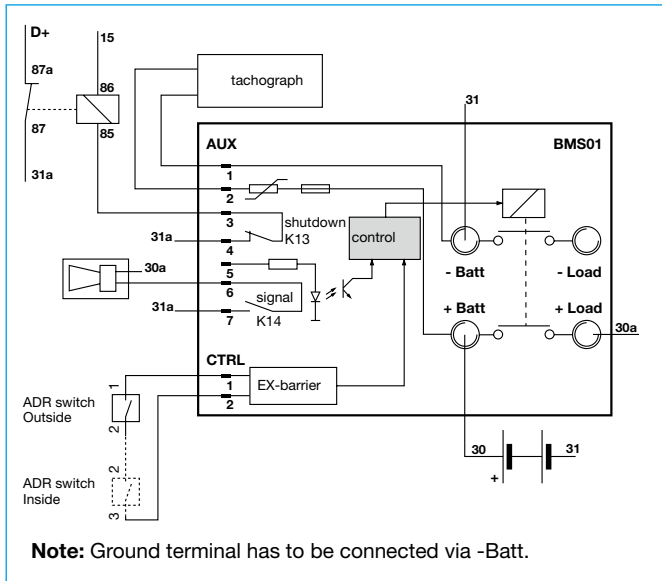
Signalisation by bicoloured LED

Signalisation by bicoloured LED	red and green LED
via control switch	
- Main contact closed "ON"	status LED flashes green (100 ms on; 900 ms off)
- Main contact open "OFF"	status LED flashes red (100 ms on; 900 ms off)
Low voltage detected	
- Main contact closed	status LED flashes green / red (900 ms green; 100 ms red)
- Main contact open due to low voltage	status LED red permanently on
Main contact monitoring	
- Main contact does not follow control switch "error"	status LED flashes red / green (500 ms red; 500 ms green)

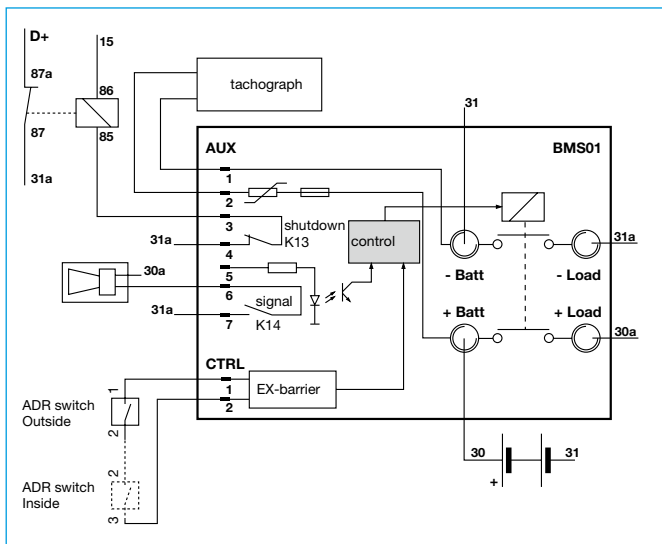
Dimensions



Connection diagram 1-pole



Connection diagram 2-pole



Pin Assignment

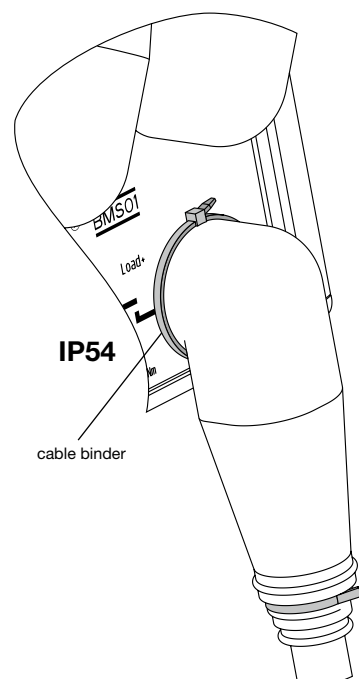
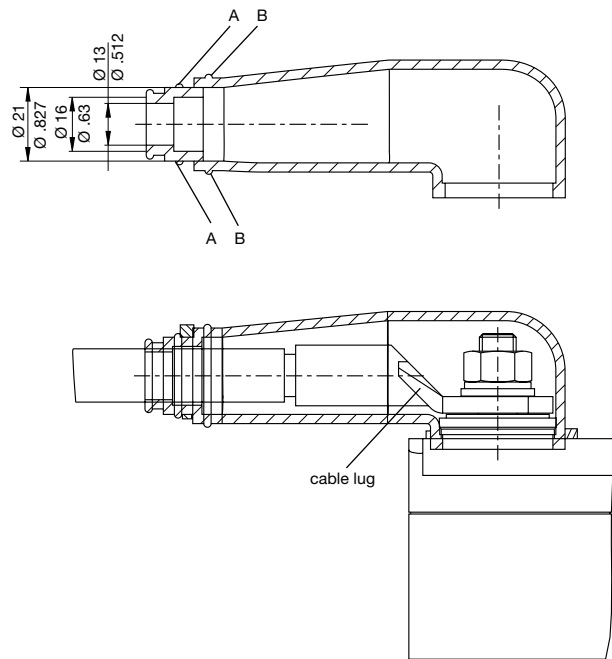
CTRL

- 1 and 2 to switch the battery isolation switch ON and OFF by means of a control switch in the driver's cab and one or more control switches outside the vehicle (if required)

AUX

- 1 and 2 current-limited supply line for permanently energised loads, e. g. tachograph, limited to 1 A
- 3 and 4 shutdown contact, which opens immediately after the control switch has been operated and remains open until the battery is disconnected
- 5 to de-activate low voltage disconnection when driving; only for configuration "1" for "Control function: low voltage monitoring"
- 6 and 7 signal contact, closes during the response delay and may be used for an acoustic alarm signal during the period until final disconnection of the battery

Terminal design



This is a metric design and millimeter dimensions take precedence ($\frac{\text{mm}}{\text{inch}}$)

Note: the rubber caps can be cut to match the outer diameter of the connected cable.

Rubber caps

Outer cable dia. (mm)	Inner dia. of rubber caps (mm)	Cutting position
14 - 17	13	-
> 17 - 22	16	A - A
> 22 - 25.4	21	B - B

Functional diagrams

Diagram 1

Type: BMS01-2120
switch on/off via control switch

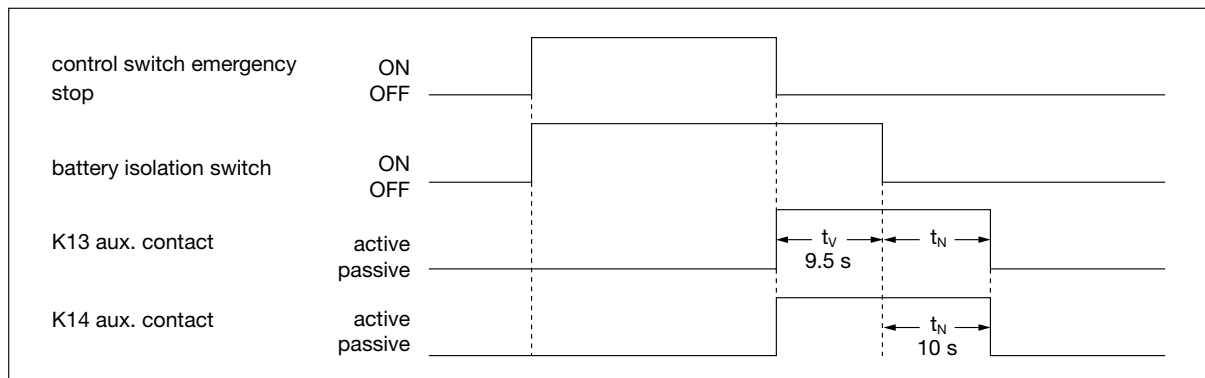


Diagram 2

Type: BMS01-2121
with low voltage monitoring and automatic disconnection

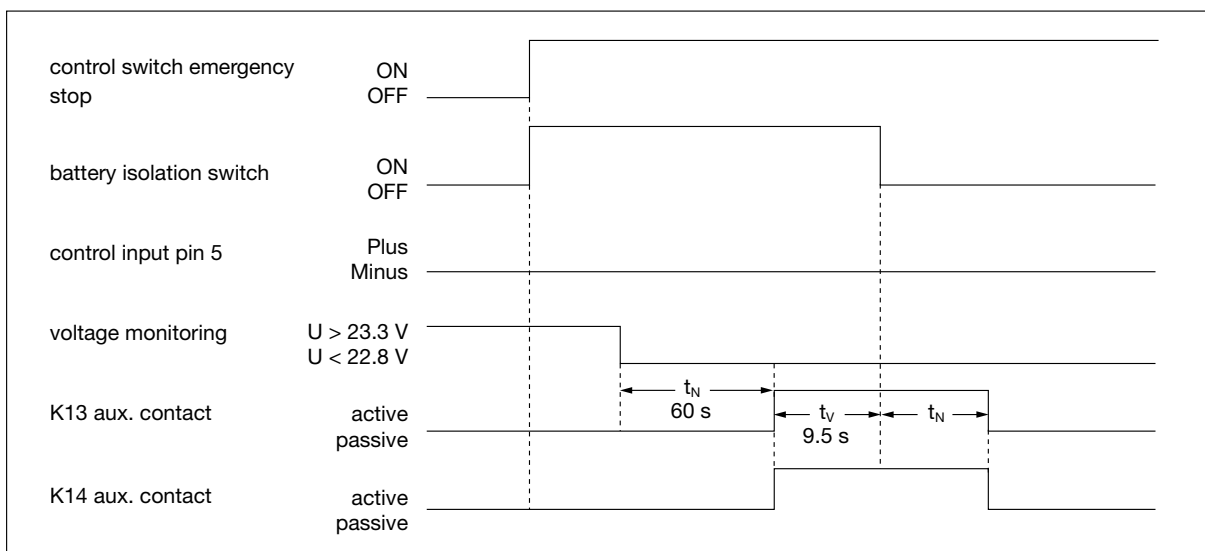
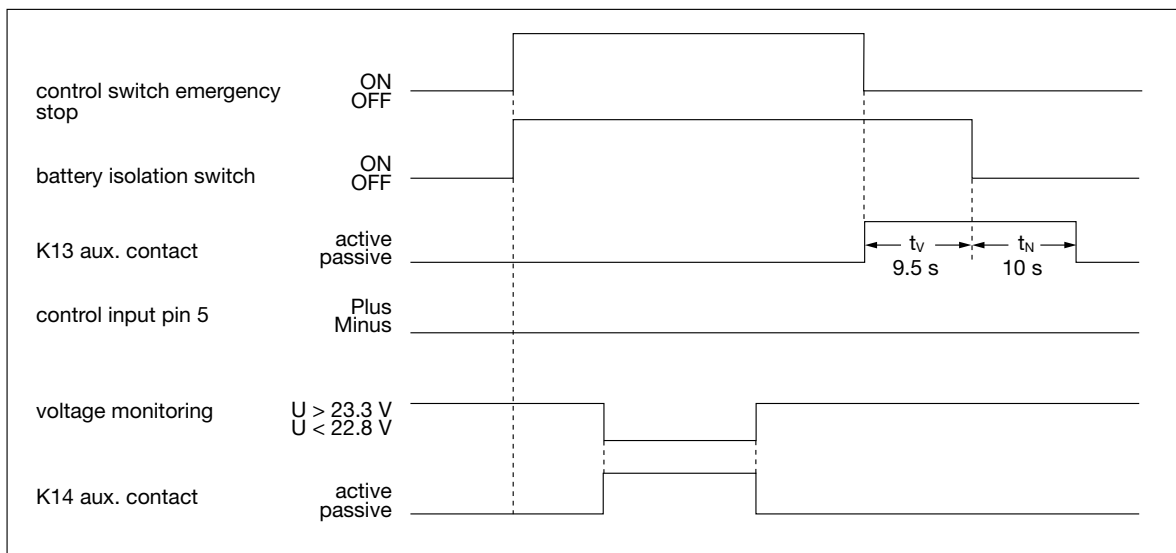


Diagram 3

Type: BMS01-2123
with low voltage monitoring and signalisation via K14
and ON/OFF operation via control switch



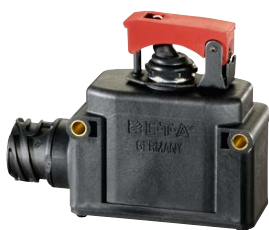
Accessories

**External circuit breaker 4120 in a water-proof enclosure
XSB-A1S1-S-4-A01-00-N**



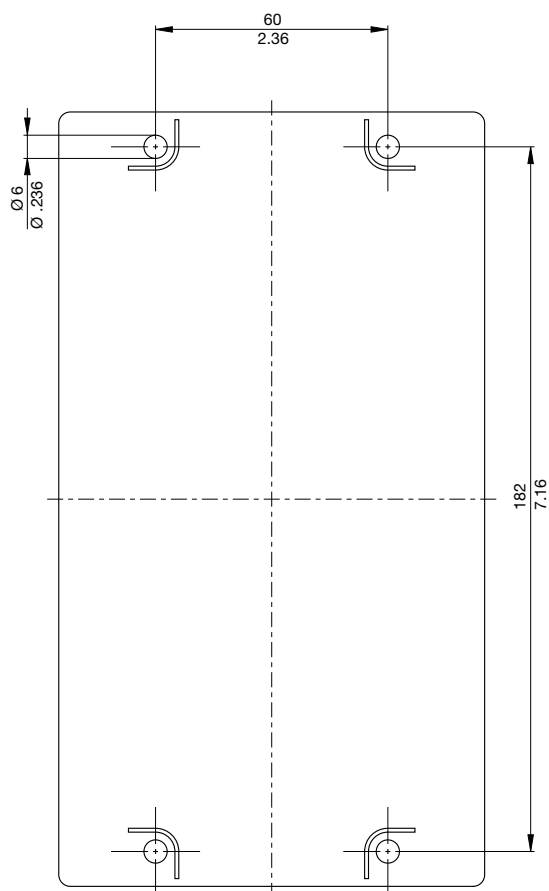
For detailed information
please see external data
sheet

**External control switch ADR in a water-proof enclosure
XSB-BBB1-S-4-A01-00-N**



For detailed information
please see external data
sheet

Mounting holes

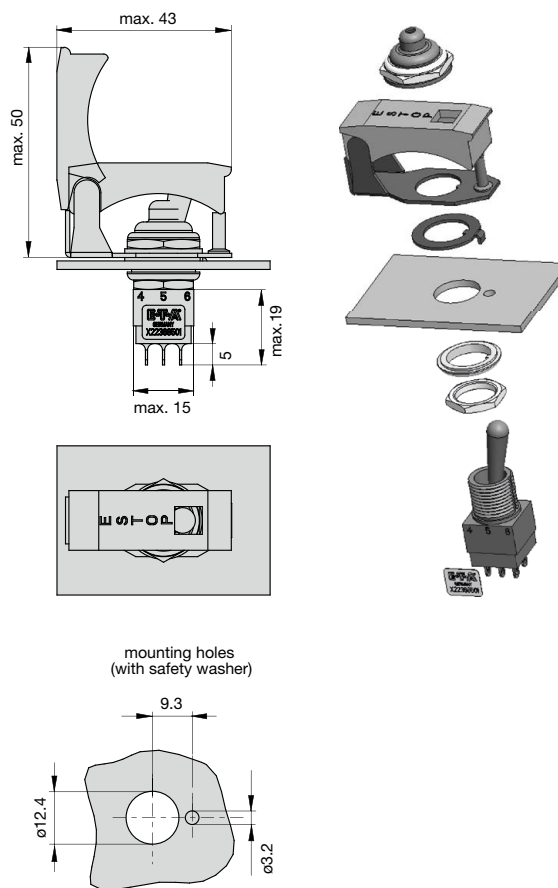


**External control switch with safety cover
X22368501**



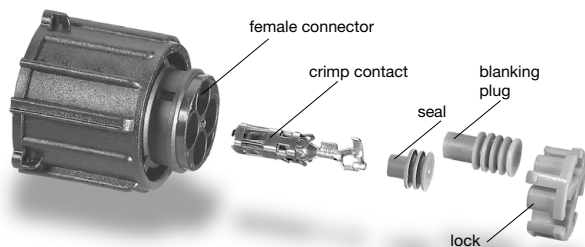
Detailed information available
upon request

**ADR switch with safety cover and bellows
(IP54 in the operating area)
X22368501**

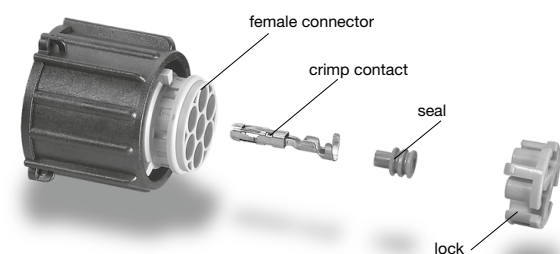


Accessories

4-pole connector CTRL X 222 581 01



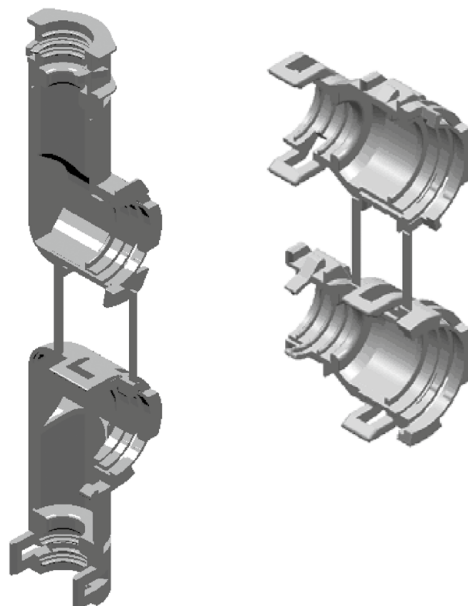
7-pole connector AUX X 222 580 01



Connector sleeve (for 4- and 7-pole connectors)

Y 307 978 01 (NW10)
Y 307 979 01 (d=11 mm)

Y 307 977 01 (NW10)



All dimensions without tolerances are for reference only. In the interest of improved design, performance and cost effectiveness the right to make changes in these specifications without notice is reserved. Product markings may not be exactly as the ordering codes. Errors and omissions excepted.