

Operating Manual MUM16

updated: 2025-10-09 / dr



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Operating manual, Quick guide, Datasheet, Connection diagram, CAD Data
Firmwareupdates, FAQ, Videos about installation and settings, Certificates

- Multipoint selector switch for 16 measuring points



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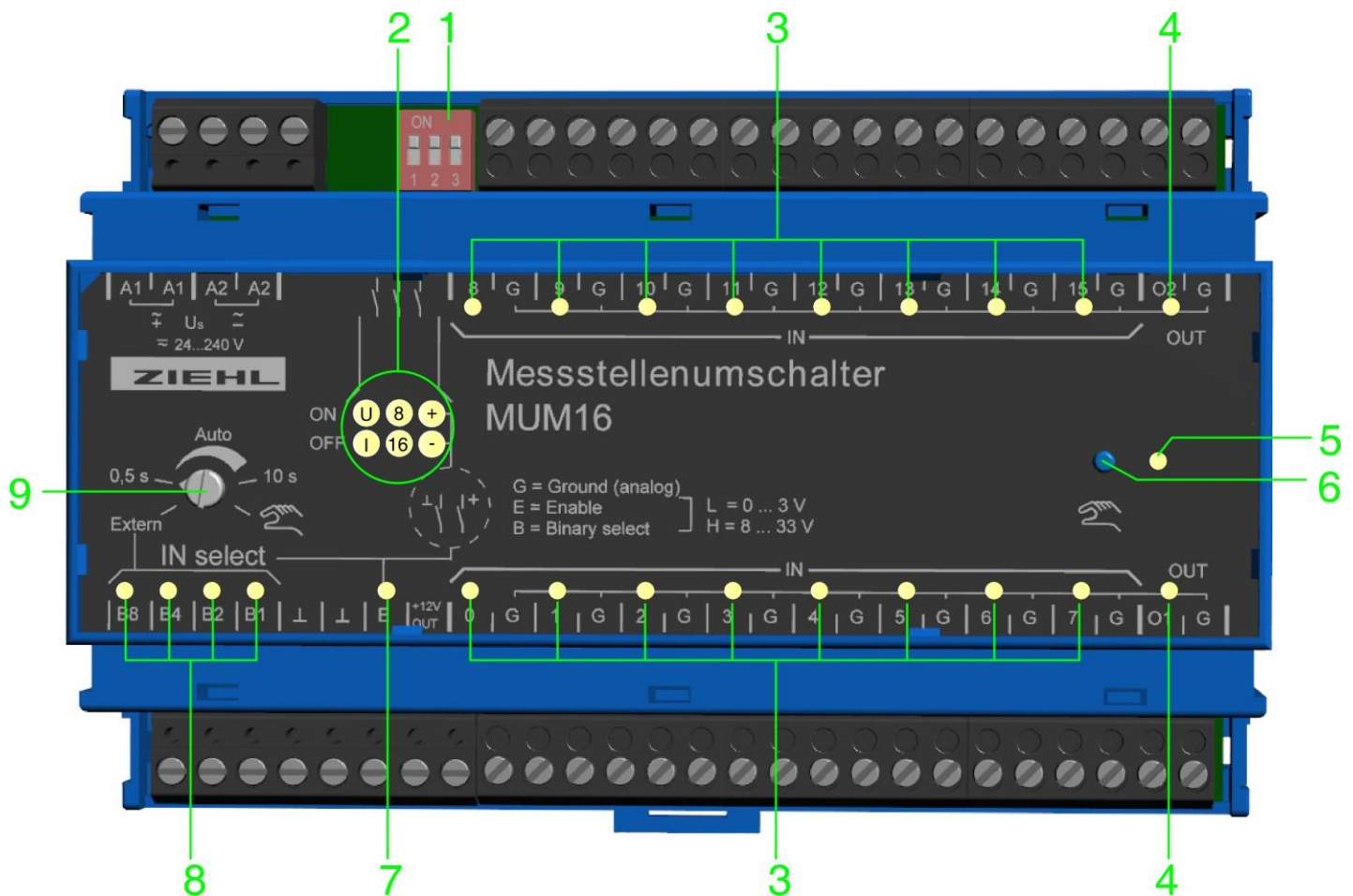
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1 General Notes

Compliance with the following instructions is mandatory to ensure the functionality and safety of the product. If the following instructions given especially but not limited for general safety, transport, storage, mounting, operating conditions, commissioning and disposal / recycling are not observed, the product may not operate safely and may cause a hazard to the life and limb of users and third parties.

Deviations from the following requirements may therefore lead both to the loss of the statutory material defect liability rights and to the liability of the buyer for the product that has become unsafe due to the deviation from the specifications.

2 Display and controls



- 1 DIP switch for selection:
 - 1 ON=Voltage OFF=Current
 - 2 ON= 8 channels OFF=16 channels
 - 3 ON= PNP (+) OFF=NPN (-)
- 2 6 LEDs for indicating the DIP switch setting
- 3 16 LEDs, indicating which channel is currently switched to the output
- 4 2 LEDs, indicating which output is currently active
- 5 Manual operation LED
- 6 Manual operation button for manually switching channels
- 7 Enable LED, lights up when the Enable input is active
- 8 4 LEDs, indicating which control inputs (B8..B1) are active
- 9 Rotary knob for selection:
 - External - Selection via the binary control inputs B8...B1 (8)
 - Auto - Automatic switching of channels (cycle 0.5...10 s)
 -  - manual channel switching with manual operation button (6)

3 Application and short description

Multipoint selector switches Type MUM16 allow the connection of up to 16 measuring points to an evaluation unit, e.g., the analogue input of a PLC.

The inputs can be selected with binary code. Manual operation is possible with a coding switch. In automatic mode, the inputs are cyclically switched (adjustable cycle time) and thus e.g., displayed successively.

When using a multipoint selector switch, only one measuring input is required to capture multiple values. Especially with slowly changing measured values, such as temperature measurement and control, it is sufficient if the measured value is evaluated only every few seconds. Expensive Pt 100 or analogue inputs to PLCs can be saved.

With the MUM16 multipoint selector switch, either 16 measuring points with common ground or 8 potential-separated measuring points can be switched

4 Detailed Description

The desired mode is set with the 3-way DIP switch (1). The switch position is also readable through the LEDs (2) even when the DIP switches are no longer visible after installation in the control cabinet.



DIP switch 1 is used to set whether the inputs are switched for voltage/resistance (ON) or current (OFF).

DIP switch 2 selects between 8 potential-free channels (ON) and 16 ground-referenced channels (OFF).

In potential-free operation, the input signal is switched to the two outputs O1 and O2; in 16-channel operation, only O1 and ground (G) are connected (O2 not used).

DIP switch 3 is used to set whether the control inputs (B8..B1, E) are PNP active (ON) or NPN active (OFF). The +Voltage for PNP operation can be taken from the +12 V OUT output. (Associated LEDs: + = PNP; - = NPN)

The rotary knob "IN select" can be used to select 3 operating modes:

Manual operation.  The inputs are switched regardless of the wiring of the control inputs by pressing the "Hand" button  (6).

Automatic operation. When the Enable input is active, the inputs switch according to the set interval (0.5-10 s). If the control inputs are not active, all channels are cycled through. By activating the control inputs B8...B1, it can be defined in binary code up to which input the cycling will occur. Regardless of the Enable, in automatic mode, the inputs can be further cycled through with the Manual button. The channel limitation through the inputs B8..B1 also applies here.

External operation. When the Enable input is active, the inputs can be cycled through in any order by activating the inputs B8..B1, e.g., through a PLC. If the Enable input is not active, no measurement input is switched to the output. The Manual button is deactivated.

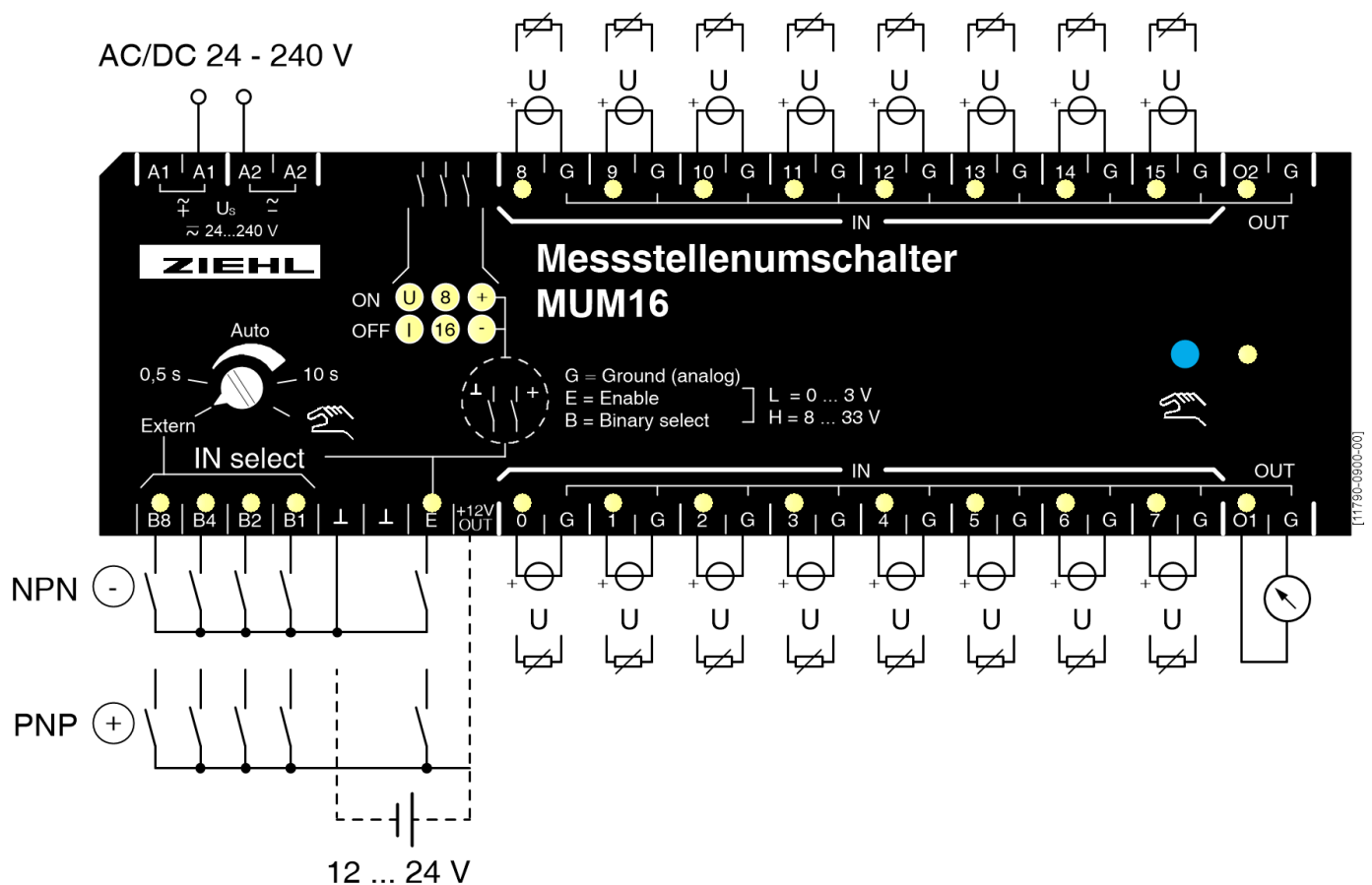
When multiple devices are operated in parallel, the respective active MUM16 is selected by activating the Enable input. The inputs B8..B1 can be connected in parallel.

5 Overview of functions

- PLC-compatible, channel selection via 4-bit parallel (24 V) e.g., from PLC or with coding switch
- Control inputs (B8...B1, E) optionally PNP or NPN (adjustable with DIP switch +/-)
- Enable input for parallel operation of multiple devices
- 16 channels (0/4 ... 20 mA, 0 ... 10 V, Pt 100/2-wire) with common ground
- 8 double channels with separate ground (also Pt 100/3-wire and thermocouples)
- easily configurable with only 3 DIP switches
- Supply AC/DC 24-240 V
- LED display for selected channel
- Cycle time adjustable in automatic mode 0.5...10 s
- Plug-in terminal blocks
- Distribution mounting housing 8 TE, installation height 55 mm

6 Wiring diagram:

16 channels for voltage / resistance (Pt 100 / 2-wire)



7 Important Information



DANGER!

Hazardous voltage!

Will cause death or serious injury. Turn off and lock out all power supplying this device before working on this device.



Before connecting the power supply U_s , check if the connected supply voltage matches the defined supply voltage on the type plate.

To use the equipment flawless and safe, transport and store properly, install and start professionally and operate as directed.

Only let persons work with the equipment who are familiar with installation, start and use and who have appropriate qualification corresponding to their function. They must observe the contents of the instructions manual, the information which are written on the equipment and the relevant security instructions for the setting up and the use of electrical units.

The equipment is built according to DIN VDE/EN/IEC and checked and leave the plant according to security in perfect condition. If, in any case the information in the instructions manual is not sufficient, please contact our company or the responsible representative.

In order to maintain this status, you must observe the safety regulations entitled "caution" in this operating manual. Failures to follow the safety regulations can result in death, personal injury or property damage to the device itself and to other devices and facilities.

To maintain this condition, you must observe the safety instructions in this instruction manual titled "Important Information". Failure to follow the safety instructions may result in death, personal injury, or property damage to the equipment itself and other equipment and facilities.

Instead of the industrial norms and regulations written in this instruction manual valid for Europe, you must observe out of their geographical scope the valid and relevant regulations of the corresponding country.

8 Installation


- mount on 35 mm mounting rail according to EN 60715
- wall-mount with 3 x screws M4
- connecting wires refer to the connection plan to prevent miss-operation and malfunction.



A circuit-breaker or switch must be situated within easy reach of the unit and fused. Installation excess current protection should be ≤ 10 A.

9 Commissioning

Set desired mode with the 3-position DIP switch (1). Set operating mode / cycle time with the rotary knob (9).

Operating mode	Output O1 (O2)	Enable active	Enable inactive
External	0...15 (B8-B1)	0...15 -> O1 (O2)	O1 (O2) open
Auto	0...(B8-B1)	Cyclical advance	Stop
 (Manual)	0...15	Enable without function	

When multiple devices are operated in parallel, the respective active MUM16 is selected by activating the Enable input. The inputs B8..B1 can be connected in parallel.

10 Application examples

Yellow = LED on.

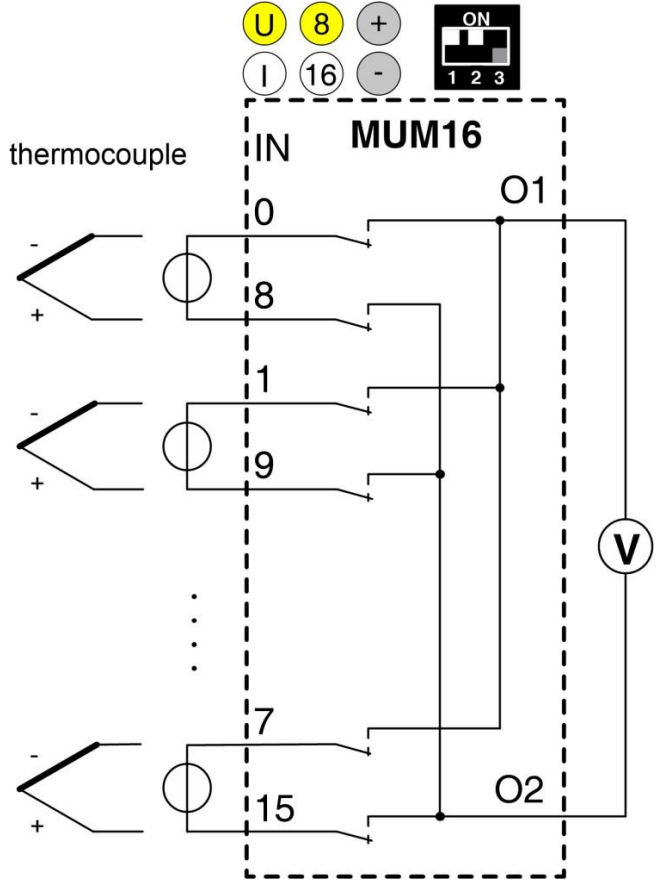
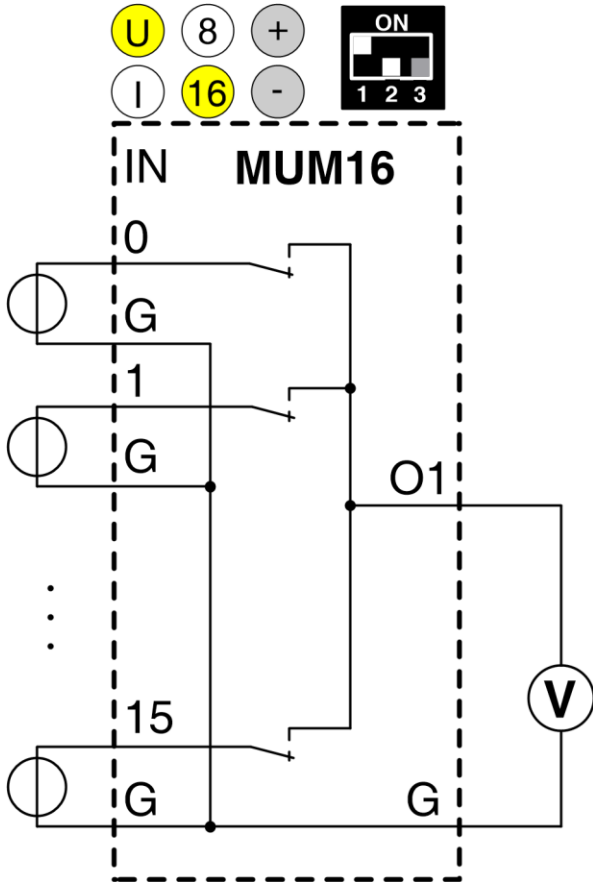
DIP switch or LED grey = Switch position not important for this example.

Voltage

Up to 16 single-channel channels

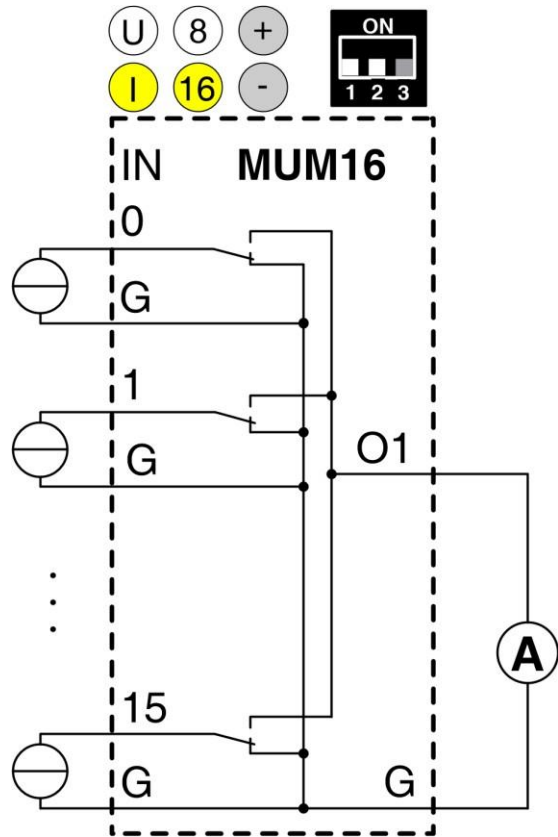
Voltage and thermocouples

Up to 8 two-channel potential-free channels

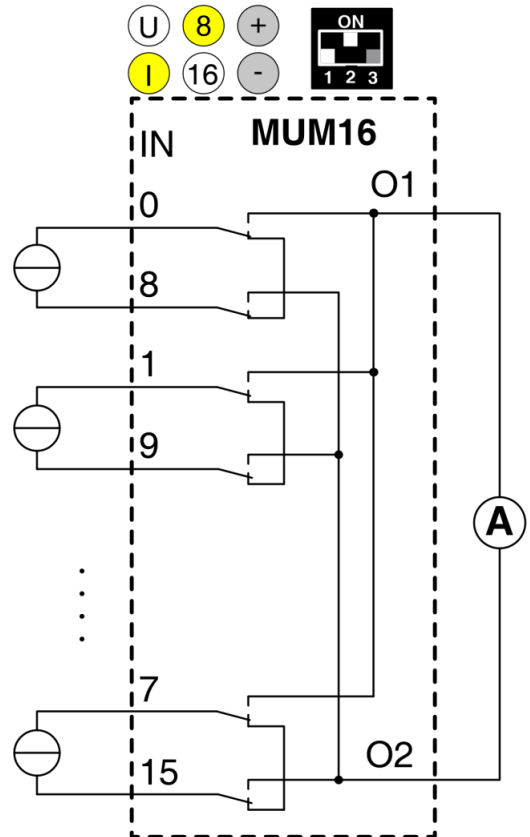


Current

Up to 16 single-channel channels

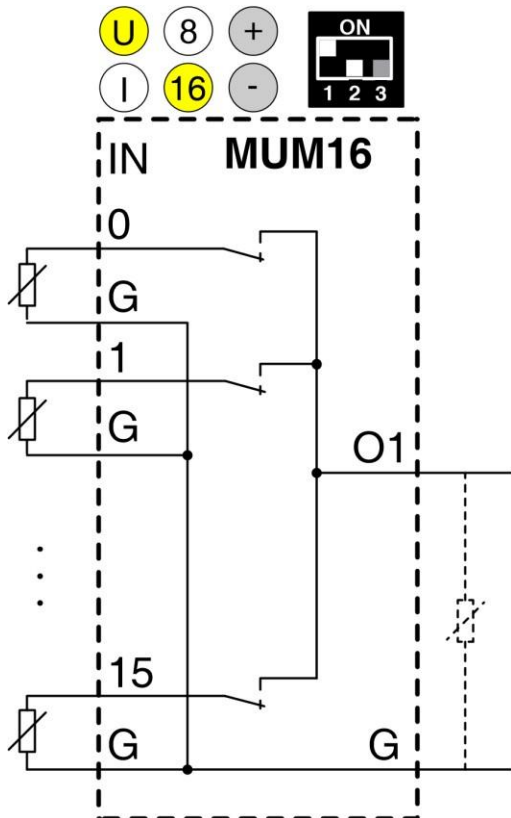


Up to 8 two-channel potential-free channels

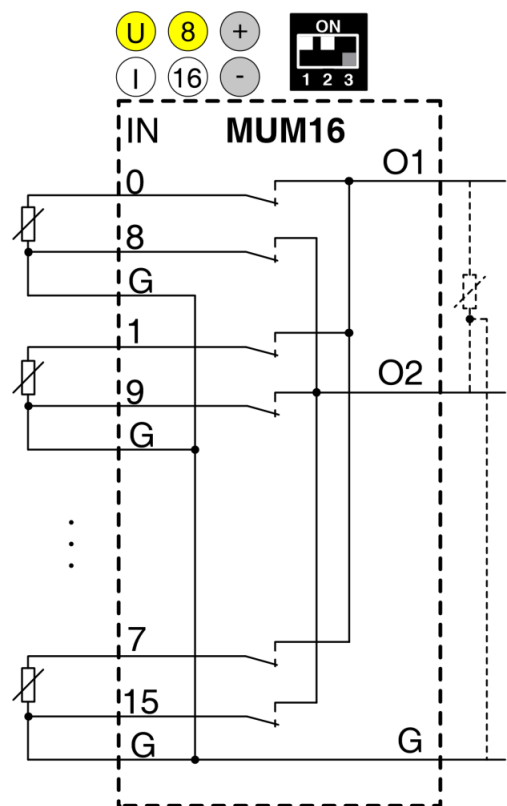


Pt 100 temperature sensor

Up to 16 two-wire channels

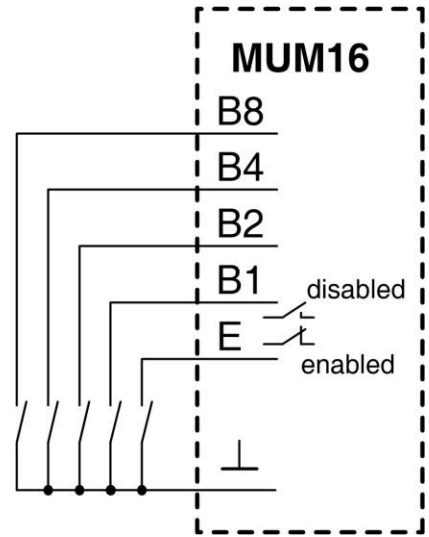
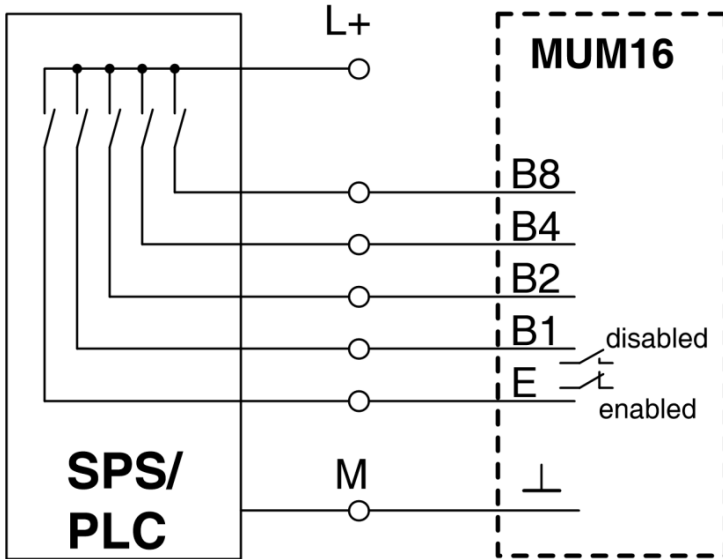
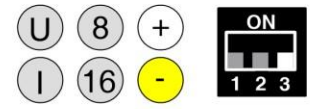
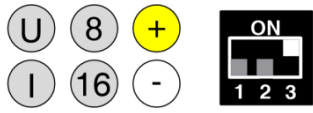


Up to 8 three-wire channels



Control inputs
 PNP
 e.g., via PLC

NPN



11 Technical data

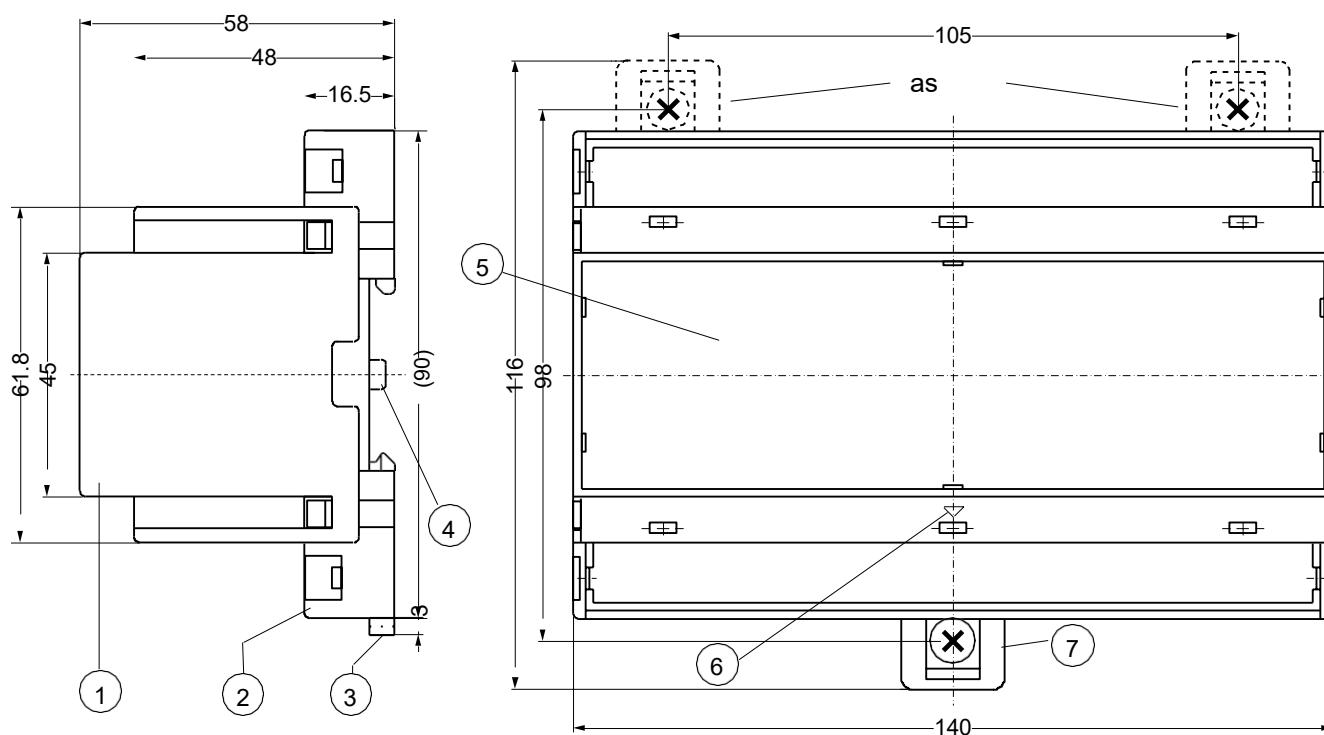
Rated control voltage Us	AC/DC 24 – 240 V	0/50/60 Hz
Tolerance	AC 20 - 264 V / DC 20,4 - 297 V	
Power consumption	< 6,5 VA, < 4 W	
Input	16 x 1 single-channel with common ground or 8 x 2 channel potential-isolated	
Channel display	1 LED per channel	
Relais	16 x 1 U	
Switching voltage	max. AC/DC 24 V	
Switching current	max. 100 mA	
Switching capacity	max. 2,4 W or 2,4 VA (resistive load)	
Contact life mechanical	ca. 10 ⁸ switching cycles Contact life	
Contact life electrical	5 x 10 ⁷ switching cycles at 12 V / 10 mA 3 x 10 ⁶ switching cycles at 24 V / 0,1 A	
Cycle time	continuously adjustable via potentiometer ca. 0,5...10 s	
Output		
Single channel	IN 0 – 15 auf OUT 1	
Double channel	IN 0 – 7 auf OUT 1; IN 8 – 15 auf OUT 2	
Control inputs	galvanically isolated from the output Test voltage AC 500 V	
Enable E		
Channel selection B8-B1	4x binary	
Control signal	for all control inputs 0/24 V (PLC compatible)	
Switching thresholds	3/8 V active high or low adjustable via DIP switch	
Switching transition	Dead time between two channels ca. 1 - 2 ms	
Switching time when changing E, B8-B1	10 – 15 ms	
Test conditions	EN 61010-1	
Rated impulse voltage	4 kV	
Overvoltage category	III	
Pollution degree	2	
Rated insulation voltage Ui	250 V	
On-period	100 %	

EMC-tests	EN 61326-1 industrielle Umgebung		
Emission	EN 61326-1; CISPR 11 Klasse B		
Electrical fast transient/Burst	EN 61000-4-4 ±4 kV		
	Pulse 5/50 ns, f = 5 kHz, t = 15 ms, T = 300 ms		
SURGE immunity	IEC 61000-4-5 ±2 kV		
Reliability – failure rate	EN 61709/ SN29500		
Ambient conditions	Local operation in dry rooms		
Operation time 24/7/365	8760 h/y		
Failure rate (FIT)	Tu = 40 °C	Tu = 60°C	Tu = 80°C
Tu = Tref (component not in operation)	371 FIT	727 FIT	1521 FIT
	100 (371) years	100 (157) years	75 years
Installation conditions			
Permissible ambient temperature	-20 °C ... +55 °C		
Permissible storage temperature	-40 °C ...+75 °C		
Umgebungsbedingungen	EN 60 068-1		
Installation height	< 2000 m over N.N.		
Climatic conditions	5-85% rel. F., no condensation		
Permissible wiring temperature	-5 °C ...+55 °C		
Vibration resistance EN 60068-2-6	2 ... 13,2 Hz ±1 mm	13,2 ... 100 Hz 1 g	
	2...25 Hz ±1,6 mm	25 ... 150 Hz 5 g	
Housing	Type V8		
Dimensions (W x H x D)	140 x 90 x 58 mm		
Installation depth / width	55 mm / 8 TE		
Breite	8 TE		
Protection class housing	IP30		
Installation position	any		
Line connection solid wire	1 x 0,34 - 1,5 mm ² / AWG 22 - 14		
Stranded wire with insulated ferrules	1 x 0,1 - 1,0 mm ² / AWG 27 - 16		
Stripping length / torque	8 mm / 0,5 Nm		
Protection class terminals	IP20		
Mounting	Snap mounting on 35 mm standard rail EN60715 or M4 screws (additional bar not included)		
Weight	ca. 350 g		

Subject to technical changes

12 Housing Type V8

Dimensions in mm



- 1 Top part / cover
- 2 Base
- 3 Bar for snap mounting
- 4 Latch for sealing
- 5 Front panel insert
- 6 Position downward
- 7 Bar for fixing to wall with screws.
Fastening hole \varnothing 4.2 mm / for fixing to wall with screws, \varnothing 4.2 mm

13 Disposal



Disposal should be carried out properly and in an environmentally friendly manner in accordance with legal provisions.
ZIEHL is registered with the EAR Foundation under WEEE no. : DE 49 698 543.