
ACCESSORIES
2025
PROFI MESS GMBH
ELECTRONIC ACCESSORIES

UM-01

Universal Transmitter for RTD, TC, Ohm, Potentiometer, mA and V

Features

/ Ideal for evaluation of resistance thermometers or levelmeters
/ Galv. separation of analogue signals
/ Models with relay and analogue output
/ Optionally with DNV approval
/ Universal power supply through 21.6 - 253 V AC or 19.2 - 300 V DC
/ Including sensor power supply
/ Attachable display
/ SIL 2

Description:

The UM-01 universal transmitter is a module for assembling into a switchgear cabinet that can receive at the input measured values from resistance thermometers, thermo-elements, ohmic resistors, potentiometers or devices with analogue signals and translates them into a galvanically separated analogue signal. Optionally, the UM-01 can also be equipped with two additional programmable relay outputs; alternatively it can be supplied only as a cost-effective switching unit with relay outputs. The UM-01 is programmed through a separately available mountable display PE451 which is fixed on the front side of the measurement converter to display continuously the input signal, the units, the device TAG-No. and the relay or the output status, as required. The special feature of PE451 is, however, that the UM-01 operates even without it and that the program parameters in the PE451 remain saved. Programming more than one UM-01 is, therefore, a child's play. Once the configuration is done, the settings are easily read into any new measurement converter on mounting and pressing the button; cumbersome resetting of parameters is, therefore, unnecessary. The UM-01 measurement converter is powered universally by DC or AC voltages and is compatible with most common transmitter devices like thermo-elements of type B to type LR, resistance thermometers NI100 and PT100 as 2, 3 or 4-wire and transmitters with analogue output range of 0-20 mA or 0-10 V DC.
The UM-01 has been developed in accordance with the most stringent safety measures and hence can be used in installations with SIL 2.

Application:

Wherever temperatures are measured using thermo-elements or resistance thermometers or levels are output by levelmeters as a potentiometer signal, the UM-01 is the ideal supplement in the line of measuring devices. It converts the linear input signal into an analogue output signal and offers, additionally, the facility of tapping two setpoints as a potential-free relay NO contact. Since the transmitter connected at the input of UM-01 is powered directly by the UM-01, the measurement converter is perfectly suited as a signal separator that establishes a galvanic

separation between the measuring and analyzing circuits. The UM-01 has been conceived for universal application so as to enable the user to save costs on inventory, since he would only need a single device as against two to three variants earlier. Optionally, the UM-01 can be supplied with UL approval for markets in USA or with DNV approval for shipping applications.

Electrical Specifications:

Ambient temperature /	-20°C. . .+60°C
General specifications /	
Universal power supply:	21,6. . .253 VAC, 50. . .60 Hz or 19,2. . .300 VDC
Power consumption:	≤ 2,0 W (≤ 2,5 W, UM-01.3)
Fuse:	400 mA T / 250 VAC
Insulation voltage, Test/Operation:	2,3 kVAC / 250 VAC
Communication interface:	Programming front PE451
Signal/Noise ratio:	min. 60 dB (0. . .100 kHz)
Response time (0. . .90%, 100. . .10%):	
· Temperature input:	≤ 1 s
· mA-/V input:	≤ 400ms
Calibration temp.:	20. . .28°C
Compliance with directives /	
EMV:	2014/30/E4
LVD:	2014/35/E4
FM:	3025 177
UL, Standard f. Safety	UL 508
2-wire power supply (terminals 44, 43) /	25. . .16 VDC / 0. . .20 mA
Cable diameter /	1 x 2.5 mm² max. flex
Terminal joint torque /	0.5 Nm
Rel. humidity /	<95% RF (non-condensing)
Dimensions with PE451 /	109 x 23.5 x 116 mm (H x W x D)
Dimensions without PE451 /	109 x 23.5 x 104 mm (H x W x D)
Protection class Housing/Terminal /	IP50 / IP20
Weight /	Basic weight 145 g plus 25 g in relay outputs plus 15 g with PE451

Accuracy Basic Values:

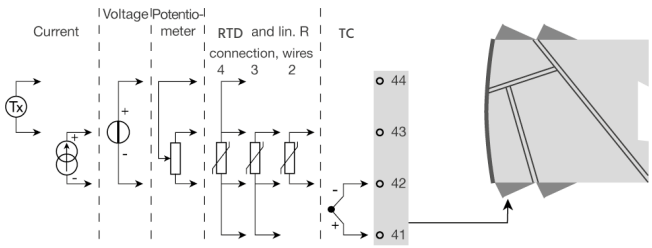
Input type	Basic accuracy	Temp. coefficient
mA	≤ ± 4 µA	≤ ± 4 µA / °C
Volt	≤ ± 20 µV	≤ ± 2 µV / °C
RTH	≤ ± 0.2°C	≤ ± 0.01°C / °C
Lin. R	≤ ± 0.1 Ω	≤ ± 0.01 Ω / °C
Potentiometer	≤ ± 0.1 Ω	≤ ± 0.01 Ω / °C
TE-Types E, J, K, L, N, T, U	≤ ± 1°C	≤ ± 0.05°C / °C
TE-Types R, S, W3, W5, LR	≤ ± 2°C	≤ ± 0.2°C / °C
TE-Type: B 85°C. . .200°C	≤ ± 4°C	≤ ± 0.4°C / °C
TE-Type: B 200°C. . .1820°C	≤ ± 2°C	≤ ± 0.2°C / °C

Accuracy in general /

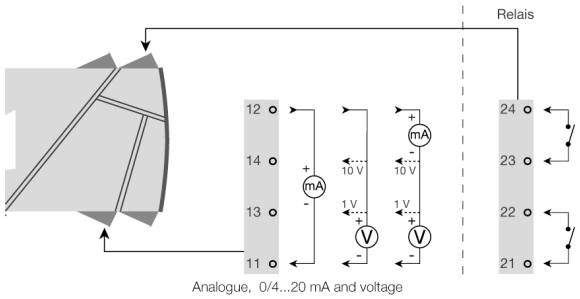
Absolute accuracy:	≤ ± 0.1% of operating range
Temperature coefficient:	≤ ± 0.01% of operating range per °C
EMV error voltage factor:	≤ ± 0.5% of measuring range
Extended EMV error stability:	NAMUR NE21, criterion A
Burst:	≤ ± 1% of measuring range

Applications

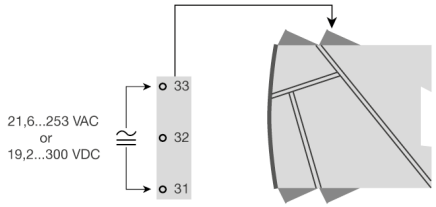
Input signals:



Output signals:



Power supply:



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Inputs:

RTD-, linear resistance and potentiometer /

Eingangsart	MIN-Wert	MAX-Wert	Norm
Pt100	-200°C	+850°C	IEC60751
Ni100	-60°C	+250°C	DIN 43760
Lin. R	0 Ω	10000 Ω	-
Potentiometer	10 Ω	100 kΩ	-

Cable resistance per wire for RTD:	50 Ω max.
Sensor current for RTD:	nom. 0.2 mA
Effect of wire resistance (3- or 4-wire RTD):	< 0.002 Ohm / Ohm
Sensor recognition RTD:	yes
Short-circuit detection RTD:	< 15 Ω

Thermo-element input /

Type	MIN-Value	MAX-Value	Standard
B	0°C	+1820°C	IEC 60584-1
E	-100°C	+1000°C	IEC 60584-1
J	-100°C	+1200°C	IEC 60584-1
K	-180°C	+1372°C	IEC 60584-1
L	-200°C	+900°C	DIN 43710
N	-180°C	+1300°C	IEC 60584-1
R	-50°C	+1760°C	IEC 60584-1
S	-50°C	+1760°C	IEC 60584-1
T	-200°C	+400°C	IEC 60584-1
U	-200°C	+600°C	DIN 43710
W3	0°C	+2300°C	ASTM E988-90
W5	0°C	+2300°C	ASTM E988-90
LR	-200°C	+800°C	GOST 3044-84

Compensations accuracy (CJC) through internal sensors:	± (2,0°C + 0,4°C * Δt)
Sensor detection all TC types:	yes
Sensor error current on detection:	nom. 2 µA, otherwise 0 µA

Power input /

Operating range:	0. . .20 mA
Programmable op. ranges:	0. . .20 and 4. . .20 mA
Input resistance:	nom. 20 Ω + PTC 50 Ω

Voltage input /

Operating range:	0 V. . .12 VDC
Programmable op. ranges:	0/0,2. . .1; 0/1. . .5; 0/2. . .10 VDC
Input resistance:	nom. 10 MΩ

Outputs:

Current output (UM-01.2 and UM-01.3 only) /

Signal range:	0. . .20 mA
Programmable operating ranges:	0/4. . .20 or 20. . .4/0 mA
Load:	800 Ω
Load stability:	≤ 0.01% of measuring range / 100 Ω
Sensor error detection:	0 / 3.5 / 23 mA / keine
NAMUR NE43 Up-/ Downscale:	23 mA / 3.5 mA
Power limiting:	≤ 28 mA

Voltage output (UM-01.2 and UM-01.3 only) /

Signal range:	0. . .10 VDC
Programmable operating ranges:	0/0,2. . .1; 0/1. . .5; 0/2. . .10; 1. . .0,2/0; 5. . .1/0; 10. . .2/0 VDC
Load:	≥ 500 kΩ

Relay outputs (UM-01.1 and UM-01.3 only) /

Relay function:	Setpoint value, Window, Sensor error, Power and Off
Hysteresis:	0. . .100%
On-/Off delay:	0. . .3600 s
Maximum voltage:	250 VRMS
Maximum current:	2 A / AC or 1 A / DC
Maximum AC power:	500 VA
Sensor error confirmation:	Close / Open / Hold

Ordering Codes:

Order number	**UM-01.**	**2.**	**1**

UM-01 Universal Transmitter

Output variants /

1 = Limit switch with two potential-free relays
2 = Transmitter with 4-20 mA- or 0-10 V DC output
3 = Transmitter with 4-20 mA- or 0-10 V DC output and two potential-free relays

Programming unit PE451 /

0 = none
1 = with programming unit PE451 for front-side mounting on the UM-01

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UM-05

Universal transmitter for top hat rail mounting

Description:

The Universal Transmitter UM-05 is a new development of our company and offers the possibility to convert all current sensor signals from the ranges flow, level, pressure and temperature to switching or analog signals, and to set new standards in price-performance ratio. On the input side, the device processes voltage and current signals, Pt100 and PT1000, thermocouples, frequencies and pulses. At the output, the user can use switching signals in the form of relay or PhotoMos outputs, or use the optionally installed analogue signals, the RS232 / 485 or the Bluetooth interface. The UM-05 has a standard 3-digit digital display and has become a DIN rail
assembly designed.

Application:

In the development of the UM-05, the main focus was on ease of use, the suitability for the largest possible number of signals and a very low price range. The configuration therefore also takes place either via three front pushbuttons or via the optional PC software PM-TOOL with CD or USB adapter. The UM-05 is powered by DC or AC voltage and provides as standard a red, 3-digit display, nine parameterizable interpolation points and a display flashing when the limit value is exceeded or undershot. An optionally available sensor supply saves the user the additional power supply for the sensor and an optional data logger saves the recorded measured values over time.

Features

/ 9 adjustable supporting points

/ Tara-function

/ Programming interlock via access code

/ Plug-in screw termina

/ Min/max value recording

/ PNP/NPN- or relay inputs

/ Current or voltage input

/ 3-digit digital display

/ Three front-taster

Technical Specifications:

Protection class /	IP20 / pluggable terminal
Dimensions /	W22,5 x H117,2 x D107 mm
Fixing /	top hat rail
Housing material/	PA6, black, UL94V-0
Connection /	plug-in terminal; wire cross section up to 1,5 mm^2
Display /	3-digits
Digit height /	7 mm
Segment colour /	red
Range of display /	-199 up to 999
Switching points /	LED S1, LED S2, LED S3, LED S4
Overflow/	horizontal bars at the top
Underflow/	horizontal bars at the bottom
Display time/Meas. time /	0,1 to 10,0 seconds
Temperature drift /	100 ppm/K
Measuring time/	0,01. . .2,0 seconds
Measuring rate /	approx. 1/s at temperature sensor, approx. 100/s with standard signals
Measuring principle /	U/F conversion
Resolution /	approx. 14 Bit at 1s measuring time
Working temperature /	-20 to +50°C
Storing temperature /	-30 to +70°C
Weathering resistance /	relative humidity 0-85% on years average without dew

Elektrical Specifications:

Supply 1 /	24 VDC ± 10% galvanic isolated, ≤ 5 VA
Supply 2 /	100-240 VAC 50/60 Hz DC ± 10%, ≤ 15 VA
Supply 3 /	15-40 VDC galvanic isolated / 20-30 VAC 50/60 Hz, ≤ 10 VA
Sensor supply /	24 VDC / 50 mA incl. digital input
Switching points /	**2 Relay outputs with nomally open contact**
Switching voltage /	30 VDC/AC, max. 2 A resistive load
Operating life /	< 30mV/< 10mA - min. 2,5x10^6 30 VDC / 1 A - minimum 5x10^5 30 VDC / 2 A - minimum 1x10^5
	2 PhotoMos-outputs with no. open contact
Switching voltage /	30 VDC/AC, max. 0,4 A
Analog output /	0-10 VDC / load min. 10 kOhm 0/4-20 mA / load max. 500 Ohm. 12 Bit
Interface /	Modbus with ASCII or RTU-protocol
	USB
	Bluetooth
	RS 323
	RS485
Memory /	EEPROM Data preservation ≥ 100 years at 25°C
EMV /	EN61326
CE-identification /	Conformität according to directive 2014/30/EU
Safety regulations /	according to low voltage directive 2014/35/EU EN 61010; EN 60664-1
Pulse input /	**TTL /** Low <2 V / High >3 V
	HTL/PNP / Low <6 V / High >8 V
	Namur / Low <1,5 mA/ High >2,5 mA
	NPN / Low <0,8 V / High via resistance
Reset input	activ <0,8 V
Measuring error/	
Standard	0,2% of measurement ± 1 Digit
Pt 100 / Pt 1000	0,5% of measurement ± 1 Digit
Thermocouple	0,3% of measurement ± 1 Digit

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Measuring Inputs:

Measuring Input	Measuring range	Measuring span	Resolution
Voltage	0. . .10 V (Ri > 100 kOhm)	0. . .12 V	≥ 14 bit
Voltage	0. . .2 V (Ri ≥ 10 kOhm)	0. . .2,2 V	≥ 14 bit
Voltage	0. . .1 V (Ri ≥ 10 kOhm)	0. . .1,1 V	≥ 14 bit
Voltage	0. . .50 mV (Ri ≥ 10 kOhm)	0,75 mV	
Current	4. . .20 mA (Ri = ~ 125 Ohm)	1. . .22 mA	
Current	0. . .20 mA (Ri = ~ 125 Ohm)	0. . .22 mA	
Pt 100-3-wire	-50. . .200°C	-58. . .392°F	0,1°C / 0,1°F
Pt 100-3-wire	-200. . .850°C	-328. . .1562°F	1°C / 1°F
Pt 1000-2-wire	-200. . .850°C	-328. . .1562°F	1°C / 1°F
Thermo K	-270. . .1350°C	-454. . .2462°F	1°C / 1°F
Thermo S	-50. . .1750°C	-328. . .3182°F	1°C / 1°F
Thermo N	-270. . .1300°C	-454. . .2372°F	1°C / 1°F
Thermo J	-170. . .950°C	-274. . .1742°F	1°C / 1°F
Thermo T	-270. . .400°C	-454. . .752°F	1°C / 1°F
Thermo R	-50. . .1768°C	-58. . .3214°F	1°C / 1°F
Thermo B	80. . .1820°C	176. . .3308°F	1°C / 1°F
Thermo E	-270. . .1000°C	-454. . .1832°F	1°C / 1°F
Thermo L	-200. . .900°C	-328. . .1652°F	1°C / 1°F
Frequency	0. . .10 kHz	0. . .10 kHz	0,001 Hz
NPN	0. . .3 kHz	0. . .3 kHz	0,001 Hz
PNP	0. . .1 kHz	0. . .1 kHz	0,001 Hz
Rotational speed	0. . .9999 1/min	0. . .9999 1/min	0,001 1/min
Counter	0. . .9999 (prescaler bis 1000)		

Odering Codes:

Order number **UM-05. 1. 1. 2. 1. 0.**

Universal transmitter

Supply /
1 = 24 VDC, ± 10%
2 = 100. . .240, VDC/AC
3 = 15. . .40 VDC, 20. . .30 VAC

Sensor supply /
0 = without
1 = 24 VDC / 50 mA incl. digital input

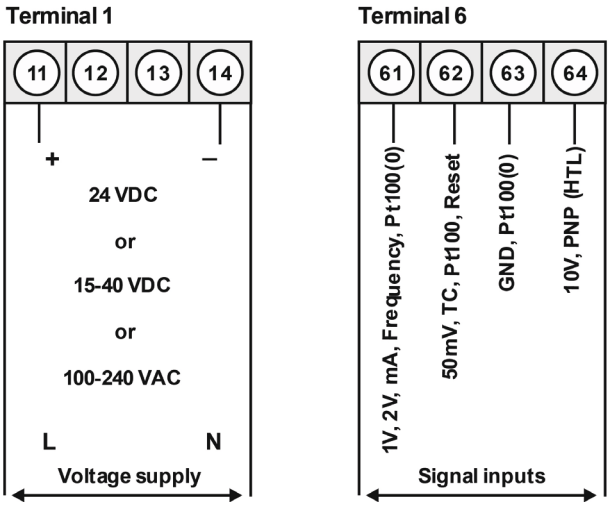
Digital input /
0 = without
1 = Interface RS232
2 = Interface RS485
3 = Bluetooth Interface
4 = Data logger
5 = Analog output

Switch points /
0 = without switch point
1 = 2 relay outputs
2 = 2 PhotoMos outputs
3 = 2 PhotoMos- and 2 relay outputs

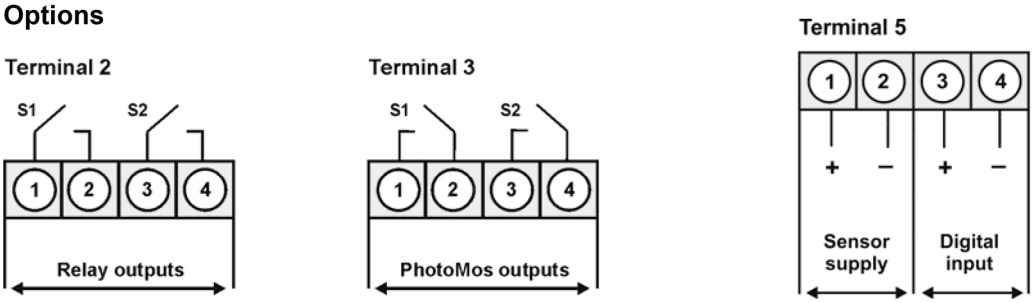
Options /
0 = without
9 = please specify in clear text

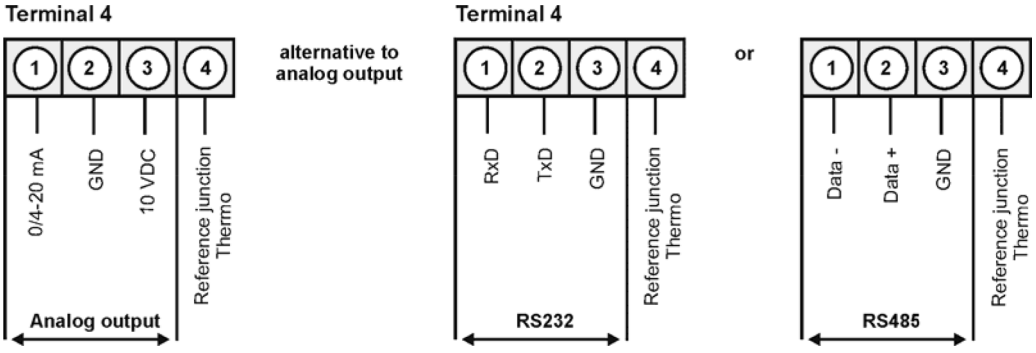
Connections:

• Multifunction measuring input



Options





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AZ-02N

5-digit Digital Display and Control Unit

Features

/ Direct voltage and direct current
/ Direct voltage (Shunt)
/ Potentiometer
/ Resistance
/ PT100
/ Thermocouple
/ Frequency
/ AC voltage & alternating current
/ DMS-4-wire
/ Weighing technology

Description:

The AZ-02N Digital Display offers to the user everything that the current process measuring technology demands from electronic evaluation devices. This device is freely scalable and capable of utilizing a wide spectrum of input signals. Equipped with a 5-digit LED display, it optionally provides an output for sensor power supply and a power or voltage output for further processing of the measurement as well as possible setpoints.

Application:

This universal display unit is capable of processing signals from all commonly used sensors in fill level, pressure, flow control or temperature measuring technology and displaying them visually. The relay and analogue outputs freely configurable for hysteresis and range optimally evaluate and process the measurement. The AZ-02N is, therefore, also capable of serving as a control unit for simple system operations. Particulary noteworthy is the easy handling and programming of the device, which is carried out on the frontside keys and leaves no questions open. Through the highlighted properties the universal display units are suitable for practically all applications in the industrial or laboratory operation.

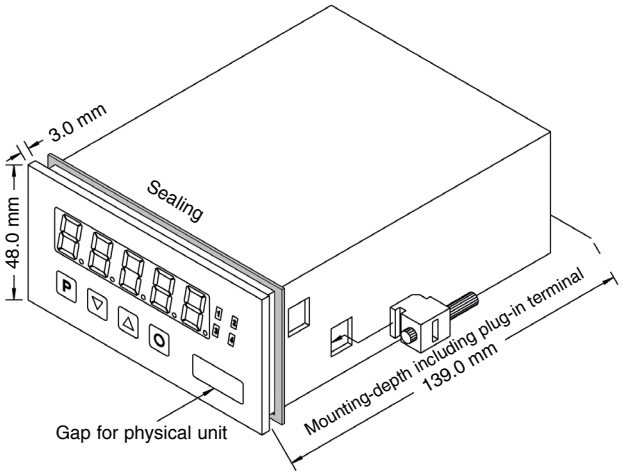
Technical Specifications:

Housing dim. /	W 96 x H48 x D120 mm incl. plug-in terminal D=139 mm
Panel cut-out /	$92.0^{+0,8}$ x $45.0^{+0,6}$ mm
Fastening /	screw elements for walls up to 15 mm thick
Housing material /	PC Polycarbonate, black
Sealing material /	EPDM, 65 Shore, black
Protection class /	front side IP65 standard back side IP00
Weight /	approx.. 350 g
Connection /	plug-in terminal; line cross-section up to 2.5 mm^2
Display /	5-digit
Digit height /	14 mm
Segment colour /	red (standard), optional available in green, blue and orange
Range of display /	-19999 to 99999
Threshold /	optical display flashing
Overflow /	horizontal bars at the top
Underflow /	horizontal bars at the bottom
Display time /	0.1. . .10 seconds
Working temp. /	0°C. . .+50°C
Storing temp. /	-20°C. . .+80°C
Climatic proof /	relative humidity 0 to 85% on years average without dew
On request /	devices for working temperatures of -20°C to +60°C or -40°C to +70°C

Electrical Specifications:

Supply 1 /	100-240 VAC 50/60 Hz, DC ±10% (max. 15 VA)
Supply 2 /	10-40 VDC galvanically insulated, 18-30 VAC 50/60 Hz (max. 15 VA)
Output /	
Relays:	with change-over contact 250 VAC/ 5 A, 30 VDC/ 5 A
Switching cycles:	30 x 10^3 at 5 A, ohmic load 10 x 10^6 mechanically separation as per DIN EN50178 / specifications as per DIN EN 60255
PhotoMos output:	NO-contact: 30 VDC/ AC 0.4 A
Impulse output:	max. 10 kHz (for frequency measurement)
Analog output:	0. . .10 VDC, load ≥ 10 kΩ, 0(4). . .20 mA, load ≤ 500 Ω, 16 Bit)
Sensor supply:	24 VDC/ 50 mA 10 VDC/ 20 mA
Bridge supply:	10 VDC/ 20. . .40 mA/ 250. . .500 Ω
Digital input /	< 2.4 V OFF; 10 V ON; max. 30 VDC, R_i ~5 kΩ
Interface /	
Protocol:	Modbus with ASCII or RTU
RS232:	9600 Baud, no parity, 8 DataBit, 1 StopBit
Wire length:	max. 3 m
RS485:	9600 Baud, no parity, 8 DataBit, 1 StopBit
Wire length:	max. 1000 m
Memory /	EEPROM Data life ≥ 100 years at 25°C
CE-sign /	Conformity to directive 2004/108/EG
EMC /	EN 61326, EN 5501
Safety standard /	according to low voltage directive 2006/95/EG EN 61010; EN 60664-1

Dimensions in mm:



Measuring inputs:

E1: Direct voltage / direct current		
Span	-12. . .12 V	-22. . .24 mA
Measuring range	0. . .10 VDC	0/4. . .20 mA
Input resistance	R_i at ~200 kΩ	R_i at ~100 Ω
Measuring fault	0.1% of measuring range ±1 Digit	0.1% of measuring range ±1 Digit
Temperature drift	100 ppm/K	
Measuring time	0.1. . .10.0 seconds	
Measuring principle	U/F-Converter	
Resolution	approx. 18 Bit at 1s measuring time	

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E2: Direct voltage/ Direct current H-Version (High Voltage)				
Span	-600. . .600 VDC	-300. . .300 VDC	-50. . .50 VDC	-1. . .1 ADC
Measuring range	0. . .600 VDC	0. . .300 VDC	0. . .50 VDC	0. . .1 ADC
Input resistance	R_i at ~2 MΩ	R_i at ~1 MΩ	R_i at ~200 kΩ	R_i at ~0,2 Ω
Measuring fault	0.5% of measuring range			
Temperature drift	100 ppm/K			
Measuring time	0.1. . .10.0 seconds			
Measuring principle	U/F-Converter			
Resolution	approx. 18 Bit at 1s measuring time			

E3: Direct voltage - Shunt				
Span	-5. . .75 mV	-15. . .180 mV	-30. . .360 mV	-100. . .1200 mV
Measuring range	0. . .60 mV	0. . .150 mV	0. . .300 mV	0. . .1000 mV
Input resistance	R_i at ~12 kΩ	R_i at ~30 kΩ	R_i at ~60 kΩ	R_i at ~200 kΩ
Measuring fault	0.5% of measuring range, ±1 Digit	0.5% of measuring range, ±1 Digit	0.5% of measuring range, ±1 Digit	0.5% of measuring range, ±1 Digit
Temperature drift	100 ppm/K			
Measuring time	0.1. . .10.0 seconds			
Measuring principle	U/F-Converter			
Resolution	approx. 18 Bit at 1s measuring time			

E4: Potentiometer	
Span	> 1 kΩ. . .< 1000 kΩ
Measuring range	0. . .100 %
Measuring fault	0.5% of measuring range, ±1 Digit
Temperature drift	100 ppm/K
Measuring time	0.1. . .10.0 seconds
Measuring principle	U/F-Converter
Resolution	approx. 18 Bit at 1s measuring time

E5: Resistance			
Span	0. . .1.1 kΩ	0. . .11 kΩ	0. . .110 kΩ
Measuring range	0. . .1 kΩ	0. . .10 kΩ	0. . .100 kΩ
Measuring fault	0.5% of measuring range, ±1 Digit	0.5% of measuring range, ±1 Digit	.,5% of measuring range, ±1 Digit
Temperature drift	100 ppm/K		
Measuring time	0.1. . .10.0 seconds		
Measuring principle	U/F-Converter		
Resolution	approx. 18 Bit at 1s measuring time		

E6: PT100 (3-/4-wire) (2-wire via Offset)		
Measuring range	-200.0. . .850.0 °C	-328.0. . .1562.0 °F
Measuring fault	0.1% of measuring range, ±1 Digit	0.1% of measuring range, ±1 Digit
Temperature drift	100 ppm/K	
Measuring time	0.1. . .10.0 seconds	
Measuring principle	U/F-Converter	
Resolution	0.1 °C or 0.1 °F	

E7: Thermal elements	
Measuring range	**Type L** -200. . .900°C **Type N**-270. . .1300°C **Type J** -210. . .1200°C **Type E** -270. . .1000°C **Type K** -270. . .1372°C **Type T** -270. . .400°C **Type B** 80. . .1820°C **Type R** -50. . .1768°C **Type S** -50. . .1768°C
Measuring fault	2 K, ±1 Digit
Temperature drift	100 ppm/K
Measuring time	0.1. . .10.0 seconds
Measuring principle	U/F-Converter
Resolution	0.1°C
Characteristic curve fault	< ± 1 K
Reference junction	Thermistor

E8: Frequency	
Signal	Pulse input, TTL, Namur, 3-wire initiator PNP/NPN
Input resistance	R_i at 24 V / 4 kΩ High/Low level > 15 V / < 4 V High/Low TTL-level > 4.6 V / < 1.9 V
Input frequency	0.01 Hz selectable up to 999.99 kHz
Measuring fault	0.05% of measuring range, ±1 Digit

E9: AC voltage, alternating current (true RMS)				
Measuring range	50 VAC	10 VAC	5 AAC	1 AAC
Input resistance	R_i at ~200 kΩ	R_i at ~40 kΩ	R_i at ~0,05 Ω	R_i at ~0,2 Ω
Measuring fault	at 50 Hz to 1 kHz up to crestfactor 4 for input signals of 1% to 100% of final value			
Temperature drift	100 ppm/K			
Measuring time	0.1. . .10.0 seconds			
Measuring principle	U/F-Converter			
Resolution	approx. 18 Bit at 1s measuring time			

E10: AC voltage, alternating current (true RMS) H-Version (High Voltage)				
Measuring range	600 VAC	300 VAC	5 AAC	1 AAC
Input resistance	R_i at ~2 MΩ	R_i at ~1 MΩ	R_i at ~0,05 Ω	R_i at ~0,2 Ω
Measuring fault	at 50 Hz to 1 kHz up to crestfactor 4 for input signals of 1% to 100% of final value			
Temperature drift	100 ppm/K			
Measuring time	0.1. . .10.0 seconds			
Measuring principle	U/F-Converter			
Resolution	approx. 18 Bit at 1s measuring time			

E11: DMS-4-wire with calibration	
Sensor sensitivity	1 mV/V, 2 mV/V, 3.3 mV/V, free up to 4 mV/V with 80% calibration

E12: Weighing technology	
Sensor sensitivity	1 mV/V, 2 mV/V, 3,3 mV/V mit Tara

Possible Configurations:

Selection / Measuring input	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12
Supply voltage 100. . .240 VAC	x	x	x	x	x	x	x	x	x	x	x	x
Supply voltage 10. . .40 VDC	x		x	x	x	x	x	x	x		x	x
Sensor supply 10 VDC, 20 mA	x		x									
Sensor supply 24 VDC, 50 mA	x		x					x				
2x Relay output	x	x	x	x	x	x	x	x	x	x	x	x
4x Relay output	x	x	x	x	x	x	x	x	x	x	x	x
8x PhotoMos-output	x	x	x	x	x	x	x	x	x	x	x	x
1x Analog output 0(4). . .20 mA, 0. . .10 VDC	x	x	x	x	x	x	x	x	x	x	x	x
2x Analog output 0(4). . .20 mA, 0. . .10 VDC	x	x	x	x	x	x	x	x	x	x	x	x
1x Digital input	x	x	x	x	x			x	x	x	x	x
Interface RS232	x	x	x	x	x	x	x	x	x	x	x	x
Interface RS485	x	x	x	x	x	x	x	x	x	x	x	x

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Ordering Codes:

Order no.	AZ-02N.	2.	1.	1.	E1.	2.	1.	3.	1

AZ-02N Digital Display

Size /
2 = 96 x 48 mm

Supply Voltage /
1 = 100-240 VAC
2 = 10-40 VDC, galvanic insulated

Sensor supply (incl. digital input) /
0 = without
1 = 10 VDC, 20 mA
2 = 24 VDC, 50 mA
3 = 24 VDC, 50 mA (incl. impulse output)

Measuring input /
E1 = direct voltage / -current (0. . .10 VDC/ 0(4). . .20 mA)
E2 = direct voltage / -current H-Version
E3 = direct voltage (Shunt)
E4 = potentiometer 0 - 100% (> 1 kΩ. . .< 1000 kΩ)
E5 = resistance (1 kΩ, 10 kΩ or 100 kΩ)
E6 = Pt100 (3-/4-wire)
E7 = thermocouple (type L, J, K, B, S, N, E, T, R)
E8 = frequency (0.01 Hz. . .999.99 kHz)
E9 = AC voltage, alternating current (true RMS)
E10 = AC voltage, alternating current (true RMS) H-Version
E11 = DMS-4-wire with calibration
E12 = weighing technology

Digital input /
0 = without
1 = 1 digital input
2 = interface RS232 (galvanic insulated)
3 = interface RS485 (galvanic insulated)
4 = interface RS232 (incl. digital input)
5 = interface RS485 (incl. digital input)

Analog output /
0 = without
1 = 1 x 0(4). . .20 mA, 0. . .10 VDC
2 = 2 x 0(4). . .20 mA, 0. . .10 VDC

Switching output /
0 = without
1 = 2 relay outputs
2 = 4 relay outputs
3 = 8 PhotoMos-outputs (analog output 2 is not applicable)

Options /
0 = without
1 = display colour blue (red standard)
2 = display colour green
3 = display colour orange
4 = display colour tricolour (red-green-orange)
5 = physical unit (selectable)

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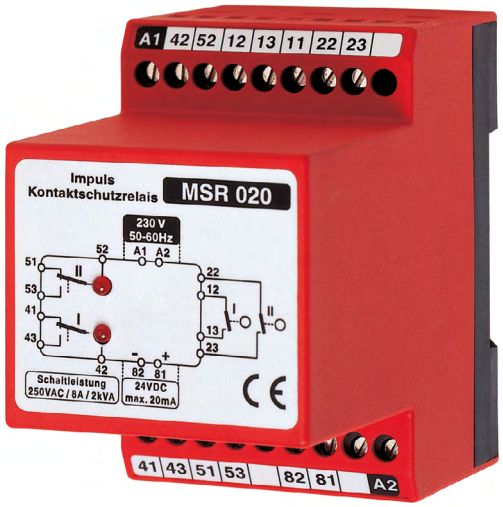
MSR

Multifunctional Relay



Description:

The MSR series includes the range of multifunctional relays MSR 10, MSR 11 and MSR 20 that cover all commonly known applications. Thus, the MSR 10 and the MSR 20 are purely contact protecting relays for one or two control signals which protect the contacts in measuring devices against overload due to high switching operations especially in inductive or capacitive loads. In these units, a smartly selected drop-out delay ensures that highly frequent switching of sensor contacts is disregarded and, therefore, the switching points are unambiguously defined. The MSR 11 has a highly qualified bistable interval relay with self-preservation that is capable of controlling the pump completely in combination with two fill level switches.

Features

/ Protects your sensor elements

/ Practical time response

/ Additional DC voltage output

Application:

Naturally, this unit also protects the contacts of the switch connected to it against overloads. The MSR series of devices is designed for a standard supply voltage of 230 V AC, but they possess also a 24 V DC DC voltage output. Optionally, they are available for connecting to 115 V AC, 24 V AC and 24 V DC. On request, the MSR 10, MSR 11 and MSR 20 can be provided with 24 V DC PNP electronic outputs. The polyamide housing has a housing of type IP 20 protection; however, it can be equipped with an outer housing in IP 65 available as accessory. The device can be assembled on a standard mounting rail as per DIN 50022 or by means of an adapter for individual mounting through screw fitting.

Versions:

MSR Multifunctional Relay

Type: MSR10
monostable contact protective relay for single contacts

Type: MSR11
bistable interval relay with locking feature

Type: MSR20
monostable contact protective relay for double contacts

Supply voltage:
standard 230 VAC;
optional 115 VAC, 24 VAC or 24 VDC

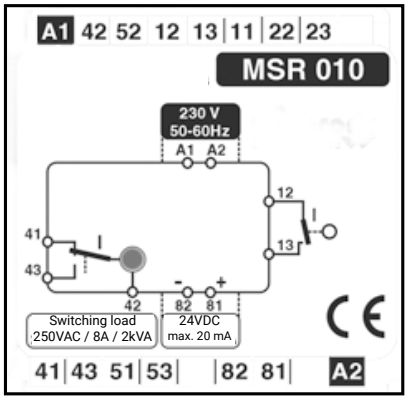
Electrical Specifications::

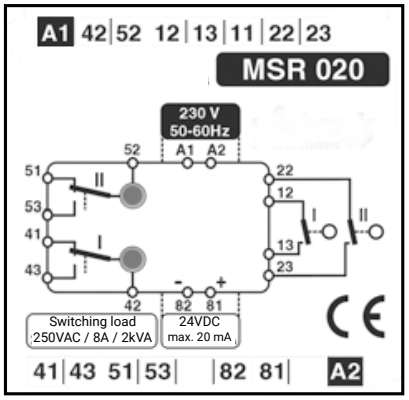
Standards /	
EN 50 178:	electrical safety
EN 61 000-6-2:	stability
EN 61 000-6-3:	fault reporting
EN 60 947-5-1:	low voltage switch-gear
Auxiliary power /	
Supply voltage /	230 VAC (standard), 50 to 60 Hz
Consumption /	MSR 10 typ. 6 VA MSR 11 typ. 6 VA MSR 20 typ. 6 VA
Control signals /	
Control voltage:	35 to 40 VDC Pulse
Pulse-Pause ratio:	0.5 ms / 50 ms (+/-20%)
Switching threshold:	9.7 VDC (+/-10%)
Input impedance:	3300 Ohm, 100 nF (+/-20%)
Line and contact resistance:	max. 4700 Ohm, 47 nF
Output /	
Relay output.:	1 or 2 potential-free change-over
Draw-up and drop-out delay:	10 ms / 450 ms +/- 20% + 50 ms
Contact material:	AgCdO or AgNi+Au
Switching load:	max. 250 VAC; 8 A min. 24 VDC; 100 mA
Short-circuit fuse element:	F 10 A (max. short-circuit current < 100 A)
Voltage output:	(cond. short-circuit protected)
Voltage:	24 VDC (+/-10%)
Load:	max. 20 mA

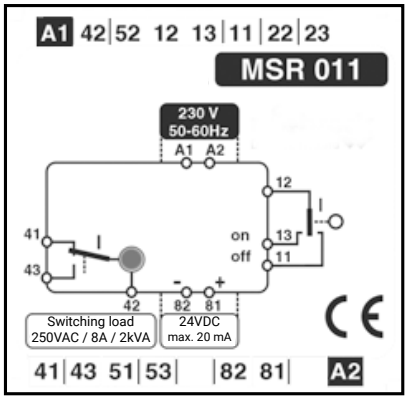
Technical Specifications:

max. Ambient temp. /	0°C to 70°C
Protection class /	IP 20
Assessed insulation voltage /	250 VAC
Housing /	polyamide 6.6
Fixture /	standard rail 35 x 7.5 DIN50022
Connection cross-sections /	0.5 bis 2.5 mm^2 (single or fine-wire)

(for individual fixture an adapter is provided)







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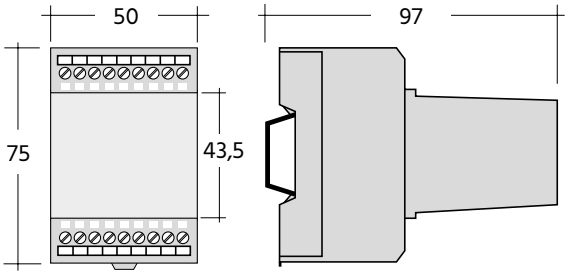
Dimensions in mm:



Ordering Codes:

Order number	MSR.	10.	2

MSR Multifunctional Relay

Type /

10 = monostable contact protective relay for single contacts
11 = bistable interval relay with locking feature
20 = monostable contact protective relay for double contacts

Supply voltage /

1 = 230 VAC standard
2 = 115 VAC
3 = 24 VAC
4 = 24 VDC

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MV-01

2/2-way Solenoid Valve for Fluids

Features

/ Nominal diameters 1/4“-2“

/ Pressure up to 10 bar

/ 24 V DC and all common AC variants

/ Forced-lifting

Description:

The pilot-controlled full-way valve with servo membrane and forced-lifting is currentless closed. In this status, the core closes the pilot-control boring in the center of the membrane holder due to spring action. The media pressure above the membrane builds up over a membrane throttle boring and closes the valve. When the valve’s magnetic coil is supplied with current, the resulting magnetic field lifts up the core which first opens the pilot-control boring to let the closing pressure above the membrane weaken and the valve can open fully due to the excrescent media pressure and the coil’s magnetic force.

Application:

Magnetic valves are primarily used in processes in which flow of fluids need to be switched on or shut off frequently and at precisely defined point of time. The simple but reliable devices are very frequently deployed especially in the dosing technology. A variety of possible material combinations for the valve body are in brass or stainless steel and the membrane materials like NBR, FKM or EPDM, as well as the available operating voltages in the AC and DC range, render the MV-01 into one of the most universally applicable solenoid valve in the market.

Versions:

MV-01 Solenoid Valve

Housing material: As materials for the housing brass or stainless steel can be selected. In addition, other materials such as brass nickel-plated are available on request.

Cv-value: For these flow values of water as the medium at 20°C (from 1.3 to 30.0 m3/h) exactly 1 bar pressure will drop at the relevant valve. These are taken into regard so as to assess the loss of pressure on the valve with reference to the entire range.

Connection: All cylindrical thread sizes between G1/4" and G2" are available. However, the relationship between the Cv- value and the thread must be taken into consideration.

Supply voltage: Besides 24 V DC also all commonly used variants of AC voltage can be supplied.

Membrane material: Among plastic materials, NBR (Perbunan®), FKM (Viton®) and EPDM are available. Depending on the medium and the required temperature any of the alternatives can be supplied. NBR is used for neutral fluids like water, hydraulic oil and oils and greases without additives. FKM is used for Per-solutions and hot oils with additives and EPDM should be used for oil- and greaseless fluids like hot water and alkaline washing and bleaching lye.

Accessories: Besides the required standard plug socket also sockets with LED for switching status display, varistor for surge voltage protection or integrated rectifier can be supplied.

Ordering Codes:

Order number	**MV-01.**	**[][][][][].**	**2**

MV-01 Solenoid Valve

Type-ID (see table) /
Example A041M:
brass housing, NBR diaphragm, polyamide coil,
process connection G 1/2", Cv-value 3.6 m^3/h, voltage 24 VDC

Accessories /
0 = none
1 = device plug socket DIN EN 175301-803 Form A
2 = device plug socket DIN EN 175301-803 Form A with LED
3 = device plug socket DIN EN 175301-803 Form A with LED and varistor
4 = device plug socket DIN EN 175301-803 Form A with LED, varistor and rectifier

Technical Specifications:

Housing material /	brass acc. to DIN EN 50930-6, stainless steel 1.4408 (316), brass nickel-plated (5µ)
Intern. components /	
Brass housing	brass, stainless steel and PPS
St.-steel housing:	stainless steel and PPS
max. Pressure /	10 bar
Medium /	
NBR:	neutral fluids, water, hydraulic oil, oil without additives
FKM:	Per-solutions, hot oils with additives
EPDM:	oil- and greaseless fluids
max. Temperature /	
NBR:	-10°C. . .+80°C
FKM:	with polyamid coil 0°C. . .+90°C, with epoxy coil 0°C. . .+120°C
EPDM:	with polyamid coil -30°C. . .+90°C, with epoxy coil -30°C. . .+100°C
max. Ambient temp. /	+55°C
Mounting position /	any, preferably with drive towards top

Electrical Specifications:

Supply /	24 VDC or 24 VAC (50 Hz) and 230 VAC (50 Hz), others on request
Voltage tolerance /	± 10%
Protection class /	IP65 with cable plug
El. connection /	plug DIN EN 175301-803 Form A
Response time[1] /	0.1. . .4 seconds (depending on nominal diameter and differential pressure)

[1] Measured at valve outlet at 6 bar and +20°C

Opening	pressure build-up	0. . .90%
Closing	pressure drop	100. . .10%

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Table 1: Solenoid valves with brass housing, DN 10-40 mm

1a: Brass housing, NBR diaphragm, polyamide coil, medium temperature: -10°C. . .+80°C

Thread	ND	Cv-Value [3) 5)]	Pressure [4)]	Weight		Ordering code: Type-ID		
	[mm]	[m³/h]	[bar]	[kg] AC	[kg] DC	24 VDC	24 VAC, 50 Hz	230 VAC, 50 Hz
G 1/4"	10	1.3	0 - 10	0.3	0.5	A011M	A012M	A013M
G 3/8"	10	1.9	0 - 10	0.3	0.5	A021M	A022M	A023M
G 1/2"	10	1.9	0 - 10	0.4	0.5	A031M	A032M	A033M
G 1/2"	13	3.6	0 - 10	0.4	0.5	A041M	A042M	A043M
G 3/4"	13	3.6	0 - 10	0.5	0.6	A051M	A052M	A053M
G 3/4"	20	8.3	0 - 10	0.7	0.8	A061M	A062M	A063M
G 1"	20	8.3	0 - 10	0.9	1.0	A071M	A072M	A073M

1b: Brass housing, NBR diaphragm, epoxy coil, medium temperature: -10°C. . .+80°C

Thread	ND	Cv-Value [3) 5)]	Pressure [4)]	Weight		Ordering code: Type-ID		
	[mm]	[m³/h]	[bar]	[kg] AC	[kg] DC	24 VDC	24 VAC, 50 Hz	230 VAC, 50 Hz
G 1"	25	11	0 - 10	1.6	2.2	B011M	B012M	B013M
G 1 1/4"	25	11	0 - 10	1.7	2.3	B021M	B022M	B023M
G 1 1/4"	40	23	0 - 10	2.9	3.4	B031M	B032M	B033M
G 1 1/2"	40	30	0 - 10	3.2	3.7	B041M	B042M	B043M
G 2"	40	30	0 - 10	3.4	3.9	B051M	B052M	B053M

1c: Brass housing, FKM diaphragm, epoxy coil, medium temperature: 0°C. . .+120°C

Thread	ND	Cv-Value [3) 5)]	Pressure [4)]	Weight		Ordering code: Type-ID		
	[mm]	[m³/h]	[bar]	[kg] AC	[kg] DC	24 VDC	24 VAC, 50 Hz	230 VAC, 50 Hz
G 1/4"	10	1.3	0 - 10	0.3	0.5	C011M	C012M	C013M
G 3/8"	10	1.9	0 - 10	0.3	0.5	C021M	C022M	C023M
G 1/2"	10	1.9	0 - 10	0.4	0.5	C031M	C032M	C033M
G 1/2"	13	3.6	0 - 10	0.4	0.5	C041M	C042M	C043M
G 3/4"	13	3.6	0 - 10	0.5	0.6	C051M	C052M	C053M
G 3/4"	20	8.3	0 - 10	0.7	0.8	C061M	C062M	C063M
G 1"	20	8.3	0 - 10	0.9	1.0	C071M	C072M	C073M
G 1"	25	11	0 - 10	1.6	2.2	C081M	C082M	C083M
G 1 1/4"	25	11	0 - 10	1.7	2.3	C091M	C092M	C093M
G 1 1/4"	40	23	0 - 10	2.9	3.4	C101M	C102M	C103M
G 1 1/2"	40	30	0 - 10	3.2	3.7	C111M	C112M	C113M
G 2"	40	30	0 - 10	3.4	3.9	C121M	C122M	C123M

1d: Brass housing, EPDM diaphragm, polyamide coil, medium temperature: -30°C. . .+90°C

Thread	ND	Cv-Value [3) 5)]	Pressure [4)]	Weight		Ordering code: Type-ID		
	[mm]	[m³/h]	[bar]	[kg] AC	[kg] DC	24 VDC	24 VAC. 50 Hz	230 VAC. 50 Hz
G 1/4"	10	1.3	0 - 10	0.3	0.4	D011M	D012M	D013M
G 3/8"	10	1.9	0 - 10	0.3	0.4	D021M	D022M	D023M
G 1/2"	10	1.9	0 - 10	0.4	0.5	D031M	D032M	D033M
G 1/2"	13	3.6	0 - 10	0.4	0.5	D041M	D042M	D043M
G 3/4"	13	3.6	0 - 10	0.5	0.6	D051M	D052M	D053M
G 3/4"	20	8.3	0 - 10	0.7	0.8	D061M	D062M	D063M
G 1"	20	8.3	0 - 10	0.9	1.0	D071M	D072M	D073M

1e: Brass housing, EPDM diaphragm, epoxy coil, medium temperature: -30°C. . .+100°C

Thread	ND	Cv-Value 3) 5)	Pressure 4)	Weight		Ordering code: Type-ID		
	[mm]	[m³/h]	[bar]	[kg] AC	[kg] DC	24 VDC	24 VAC, 50 Hz	230 VAC, 50 Hz
G 1"	25	11	0 - 10	1.6	2.2	**E011M**	**E012M**	**E013M**
G 1 1/4"	25	11	0 - 10	1.7	2.3	**E021M**	**E022M**	**E023M**
G 1 1/4"	40	23	0 - 10	2.9	3.4	**E031M**	**E032M**	**E033M**
G 1 1/2"	40	30	0 - 10	3.2	3.7	**E041M**	**E042M**	**E043M**
G 2"	40	30	0 - 10	3.4	3.9	**E051M**	**E052M**	**E053M**

Table 2: Solenoid valves with st. steel housing, DN 10-40 mm

2a: Stainless steel housing, NBR diaphragm, polyamide coil, medium temperature: -10°C. . .+80°C

Thread	ND	Cv-Value 3) 5)	Pressure 4)	Weight		Ordering code: Type-ID		
	[mm]	[m³/h]	[bar]	[kg] AC	[kg] DC	24 VDC	24 VAC, 50 Hz	230 VAC, 50 Hz
G 3/8"	10	1.9	0 - 10	0.3	0.4	**A021E**	**A022E**	**A023E**
G 1/2"	13	3.6	0 - 10	0.4	0.5	**A041E**	**A042E**	**A043E**
G 3/4"	20	8.3	0 - 10	0.7	0.8	**A061E**	**A062E**	**A063E**
G 1"	20	8.3	0 - 10	0.9	1.0	**A071E**	**A072E**	**A073E**

2b: Stainless steel housing, NBR diaphragm, epoxy coil, medium temperature: -10°C. . .+80°C

Thread	ND	Cv-Value 3) 5)	Pressure 4)	Weight		Ordering code: Type-ID		
	[mm]	[m³/h]	[bar]	[kg] AC	[kg] DC	24 VDC	24 VAC, 50 Hz	230 VAC, 50 Hz
G 1"	25	11	0 - 10	1.6	2.2	**B011E**	**B012E**	**B013E**
G 1 1/4"	25	11	0 - 10	1.7	2.3	**B021E**	**B022E**	**B023E**
G 1 1/2"	40	30	0 - 10	3.2	3.7	**B041E**	**B042E**	**B043E**
G 2"	40	30	0 - 10	3.4	3.9	**B051E**	**B052E**	**B053E**

2c: Stainless steel housing, FKM diaphragm, epoxy coil, medium temperature: 0°C. . .+120°C

Thread	ND	Cv-Value 3) 5)	Pressure 4)	Weight		Ordering code: Type-ID		
	[mm]	[m³/h]	[bar]	[kg] AC	[kg] DC	24 VDC	24 VAC, 50 Hz	230 VAC, 50 Hz
G 3/8"	10	1.9	0 - 10	0.3	0.4	**C021E**	**C022E**	**C023E**
G 1/2"	13	3.6	0 - 10	0.4	0.5	**C041E**	**C042E**	**C043E**
G 3/4"	20	8.3	0 - 10	0.7	0.8	**C061E**	**C062E**	**C063E**
G 1"	20	8.3	0 - 10	0.9	1.0	**C071E**	**C072E**	**C073E**
G 1"	25	11	0 - 10	1.6	2.2	**C081E**	**C082E**	**C083E**
G 1 1/4"	25	11	0 - 10	1.7	2.3	**C091E**	**C092E**	**C093E**
G 1 1/2"	40	30	0 - 10	3.2	3.7	**C111E**	**C112E**	**C113E**
G 2"	40	30	0 - 10	3.4	3.9	**C121E**	**C122E**	**C123E**

2d: Stainless steel housing, EPDM diaphragm, polyamide coil, medium temperature: -30°C. . .+90°C

Thread	ND	Cv-Value 3) 5)	Pressure 4)	Weight		Ordering code: Type-ID		
	[mm]	[m³/h]	[bar]	[kg] AC	[kg] DC	24 VDC	24 VAC. 50 Hz	230 VAC. 50 Hz
G 3/8"	10	1.9	0 - 10	0.3	0.4	**D021E**	**D022E**	**D023E**
G 1/2"	13	3.6	0 - 10	0.4	0.5	**D041E**	**D042E**	**D043E**
G 3/4"	20	8.3	0 - 10	0.7	0.8	**D061E**	**D062E**	**D063E**
G 1"	20	8.3	0 - 10	0.9	1.0	**D071E**	**D072E**	**D073E**

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2e: Stainless steel housing, EPDM diaphragm, epoxy coil, medium temperature: -30°C. . .+100°C

Thread	ND	Cv-Value [3] [5]	Pressure [4]	Weight		Ordering code: Type-ID		
	[mm]	[m³/h]	[bar]	[kg] AC	[kg] DC	24 VDC	24 VAC, 50 Hz	230 VAC, 50 Hz
G 1"	25	11	0 - 10	1.6	2.2	**E011E**	**E012E**	**E013E**
G 1 1/4"	25	11	0 - 10	1.7	2.3	**E021E**	**E022E**	**E023E**
G 1 1/2"	40	30	0 - 10	3.2	3.7	**E041E**	**E042E**	**E043E**
G 2"	40	30	0 - 10	3.4	3.9	**E051E**	**E052E**	**E053E**

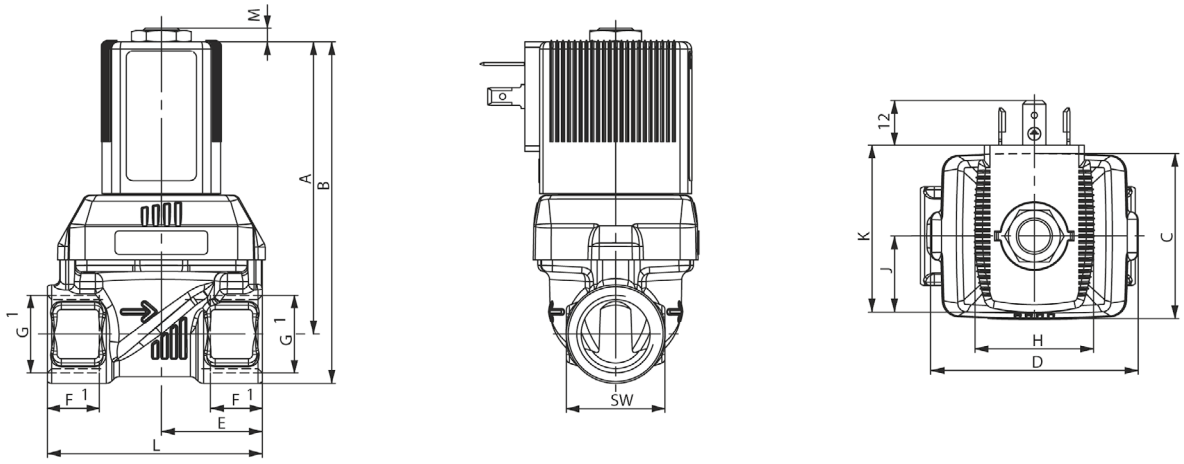
[3] Measured at +20°C, 1 bar pressure at valve inlet and free outlet
[4] Pressure data [bar]: Overpressure with respect to atmospheric pressure
[5] A minimum differential pressure of 0.5 bar is required for full (100%) opening

Table 3: Power consumption

ND	Thread	Coil size width [mm]		Power consumption [6]			Insulation class coil [7]		Weight [kg]	
				Inrush AC [VA]	Operating hot coil		Seal material FKM	Seal material NBR & EPDM	Brass coil AC	Brass coil DC
		AC	DC		AC [VA/W]	DC [W]				
10	**G 1/4"**	32	40	34	14/8	10 (11)	H	B	0.33	0.41
10	**G 3/8"**	32	40	34	14/8	10 (11)	H	B	0.33	0.41
10	**G 1/2"**	32	40	34	14/8	10 (11)	H	B	0.37	0.44
13	**G 1/2"**	32	40	36	14/8	10 (11)	H	B	0.46	0.54
13	**G 3/4"**	32	40	36	14/8	10 (11)	H	B	0.49	0.57
20	**G 3/4"**	32	40	38	14/8	10 (11)	H	B	0.74	0.82
20	**G 1"**	32	40	38	14/8	10 (11)	H	B	0.95	1.03
25	**G 1"**	42	65	150	37/16	28 (29)	H	H	1.6	2.2
25	**G 1 1/4"**	42	65	150	37/16	28 (29)	H	H	1.7	2.3
40	**G 1 1/4"**	42	65	190	37/16	28 (29)	H	H	3.2	3.7
40	**G 1 1/2"**	42	65	190	37/16	28 (29)	H	H	3.2	3.7
40	**G 2"**	42	65	190	37/16	28 (29)	H	H	3.38	3.9

[6] Values in brackets applies at coil temperature +20°C
[7] H epoxy coil, B polyamide coil

Table 4: Dimensions (mm)



3a: Dimensions (AC-coil, 32 mm)

DN	A	B	C	D	E (MS)	E (VA)	F1	G1	H	J	K	L (MS)	L (VA)	SW	M
	67.4	78.4			22	22	12	G 1/4"				50	50	22	
10	67.4	78.4	36	46	22	22	12	G 3/8"	32	20.5	45	50	50	22	3.7
	69.4	82.9			24.5	24.5	14	G 1/2"				50	55	27	
13	78.9	92.4	44.5	56	27.2	32.5	14	G 1/2"	32	20.5	45	58	65	27	3.7
	80.9	96.9			32.5	32.5	16	G 3/4"				65	65	32	
20	93.4	109.4	65	76.6	37	37	16	G 3/4"	32	20.5	45	80	80	32	3.7
	95.9	116.4			37.5	37.5	18	G 1"				80	80	41	

3b: Dimensions (DC-coil, 40 mm)

DN	A	B	C	D	E (MS)	E (VA)	F1	G1	H	J	K	L (MS)	L (VA)	SW	M
	67.4	78.4			22	22	12	G 1/4"				50	50	22	
10	67.4	78.4	36	46	22	22	12	G 3/8"	40	23.5	51	50	50	22	3.7
	69.4	82.9			24.5	24.5	14	G 1/2"				50	55	27	
13	79.3	92.8	44.5	56	27.2	32.5	14	G 1/2"	40	23.5	51	58	65	27	3.7
	81.3	97.3			32.5	32.5	16	G 3/4"				65	65	32	
20	93.8	109.8	65	76.6	37	37	16	G 3/4"	40	23.5	51	80	80	32	3.7
	96.3	116.8			37.5	37.5	18	G 1"				80	80	41	

3c: Dimensions (AC-coil, 42 mm / DC-coil 65 mm)

DN	A	B	C	D	E (MS)	E (VA)	F1	G1	H	J	K	L (MS)	L (VA)	SW	M
	158.3	193.3			64	64	24	G 2"				132	132	70	
40	152.3	182.3	104.5	117	61	61	22	G 1 1/2"	65	37.5	72	126	126	60	7
	146.8	171.8			61	61	20	G 1 1/4"				126	126	50	
25	141.3	166.3	77	88	46	46	20	G 1 1/4"	65	37.5	72	95	95	50	7
	136.3	156.8			46	46	18	G 1"				95	95	41	
	158.3	193.3			64	64	24	G 2"				132	132	70	
40	152.3	182.3	104.5	117	61	61	22	G 1 1/2"	42	27	55.5	126	126	60	7
	146.8	171.8			61	61	20	G 1 1/4"				126	126	50	
25	141.3	166.3	77	88	46	46	20	G 1 1/4"	42	27	55.5	95	95	50	7
	136.3	156.8			46	46	18	G 1"				95	95	41	

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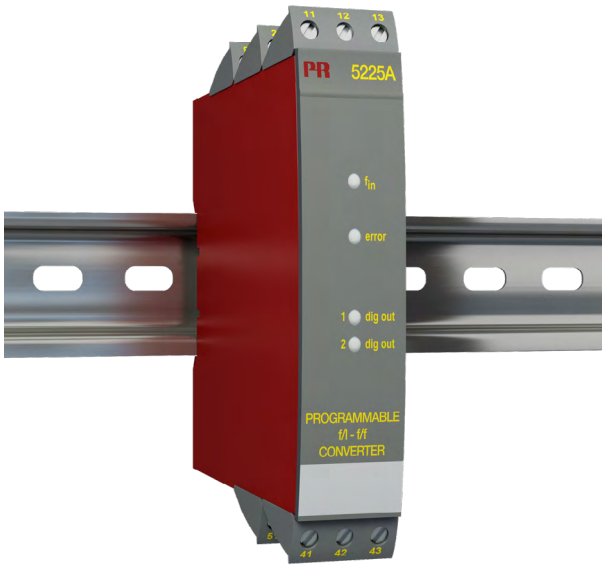
PR-5225

Railmounted
F/F- or F/I-converter



Features

/ Pulse conditioning

/ Frequency generator

/ Freq. division or multiplication

/ Buffer for fast pulse trains

/ 4. . .20 mA or 0. . .10 VDC output

/ PNP/NPN- or Relay outputs

/ Input range 0. . .20 kHz

/ Namur, Tacho, NPN, PNP, TTL

/ Four front-LEDs

Description:

PR-5225 converts the output frequency of nearly all Profimess flow-meters or any other units with pulse output, to an analogue output, which may be a power signal of any span between 0 mA and 20 mA with a minimum width of 5 mA or a voltage signal of either 0. . .1 VDC or 0. . .10 VDC gripped of at an internal shunt. Alternatively PR-5225 may be operated as a frequency converter, which either transforms the signal of too slow sensors up or the signal of too fast sensors down to a usable frequency. Even an operation mode as frequency generator e.g. as clock generator or time base is possible. If the FIFF-mode is chosen, PR-5225 outputs the evaluated frequency and the analogue signal simultaneously.

Application:

Pulse signals of flowmeters in practice often have to be converted into analogue outputs, because the downstream evaluating units do usually not possess any slots for frequency-based signals. Also a frequency adaption is frequently necessary, whenever the inputs of the PLC do not work with too high frequencies. PR-5225 offers there-fore a reliable, cost-effective solution. The emitted pulses of PR-5225 are usually much cleaner than those of the connected flowmeters, nevertheless a 50 Hz low-pass filter can be factory-set, to fade out high-frequent interfering signals.

Technical Specifications:

Protection class /	IP20
Temperature range /	-20°C. . .+60°C
Calibration temperature /	+20°C. . .+28°C
rel. Humidity /	< 95 % RH (non-cond.)
Dimensions (HxWxD) /	109 x 23.5 x 130 mm
Weight /	app. 190 g
DIN rail type /	DIN 46277
Wire size /	max. 1 x 2.5 mm^2 stranded wire
Screw terminal torque /	0,5 Nm

Electrical Specifications:

Supply voltage /	19.2. . .28.8 VDC
Power consumption /	max. 3.5 W
Internal consumption /	1.7 W
Warm-up time /	30 s
Power-up delay digital outputse /	0. . .999 s factory adjustable
Signal-noise ratio /	min. 60 dB
Response times /	
analogue output:	< 60 ms + 1 period
digital output:	< 50 ms + 1 period
concurrent f/i and f/f:	< 80 ms + 1 period
Effect of supply voltage /	≤ 0.002 % of span per %V
Temperature coefficient /	< ± 0.01% of span per °C
Linearity error /	< ± 0.1% of span
EMC-immunity influence /	< ± 0.5%
Auxiliary voltages /	
Supply NAMUR:	8.3 V ± 0.5 VDC / 8 mA
Supply S0:	17 V / 20 mA
Supply NPN / PNP:	17 V / 20 mA
Additional supply:	5. . .17 V / 20 mA factory adjustable

Inputs:

Common specifications /	
Input range:	0. . .20 kHz
max. Offset:	50% of selected max. frequency
min. Frequency:	0.001 Hz
Low cut-off frequency:	0.001 Hz
min. Pulse width:	25 µs
min. Period time:	50 µs
max. Frequency:	20 kHz
Trigger level:	0.025. . .6.5 V (nom.), factory adjustable
Trigger level LOW:	50 % of trigger HIGH
NAMUR-input acc. to DIN 19234 /	
Trigger level LOW:	≤ 1.2 mA
Trigger level HIGH:	≥ 2.1 mA
Input impedance:	1000 Ω
Sensor break:	≤ 0.1 mA
Short-circuit:	≥ 7 mA
Response time:	≤ 400 ms
Tacho-input /	
Trigger level LOW:	≤ -50 mV
Trigger level HIGH:	≥ +50 mV
Input impedance:	≥ 100 kΩ
max. Input voltage:	80 V AC pp
NPN-/PNP-input /	
Trigger level LOW:	≤ 4,0 V
Trigger level HIGH:	≥ 7,0 V
Standard input impedance:	3.48 kΩ
Input impedance special version:	13.3 kΩ / NPN
TTL-input /	
Trigger level LOW:	≤ 0.8 V DC
Trigger level HIGH:	≥ 2.0 V DC
Input impedance:	≥ 100 kΩ
S0-input acc. to DIN 43864 /	
Trigger level LOW:	≤ 2.2 mA
Trigger level HIGH:	≥ 9.0 mA
Input impedance:	800 Ω

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Outputs:

Digital outputs (PNP/NPN) /

max. Current source:	30 mA
max. Current sink:	130 mA
max. Voltage:	28.5 V

Power output /

Signal range:	0. . .20 mA
min. Span:	5 mA
Signal dynamics:	16 bit
max. Offset:	50% of selected max. value
Updating time:	max. 20 ms
Updating time for concurrent f/f and f/i:	max. 40 ms
max. Load:	20 mA / 600 Ω/ 12 VDC
Load stability:	≤ 0.01% of span per 100 Ω
Current limit:	< 23 mA

Voltage output through internal shunt /

Signal range:	0. . .10 VDC
min. Span:	250 mV
max. Offset:	50% of selected max. value
Load:	min. 500 kΩ

FF-converter output /

Signal range:	0. . .1000 Hz
Multiplicator / Divisor:	1. . .1000000
min. Pulse width:	500 µs
max. Pulse width:	999 ms
max. Duty Cycle:	50 %

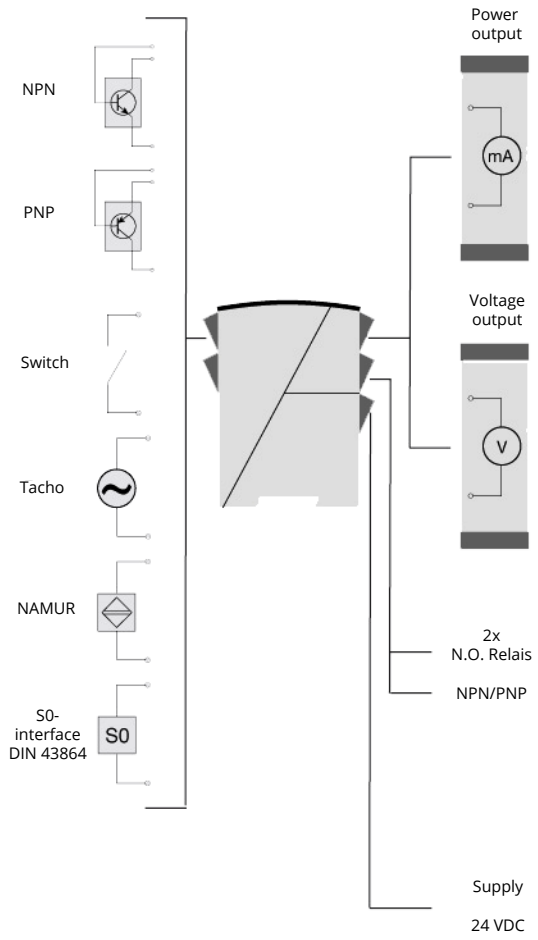
Frequency generator /

min. Periodic time:	50 µs
max. Frequency:	20 kHz
Duty Cycle:	50 %

Relay outputs /

max. Output frequency:	20 Hz
Isolation voltage test / operation:	3.75 kV AC / 250 V AC
max. Voltage:	250 VRMS
max. Current:	2 A AC
max. Power (AC):	500 VA
max. Relay load at 24 VDC:	1 A

Connections:



Ordering Codes:

Order number	PR-5225.	1.	FI

PR-5225 Railmounted F/F- or F/I-Converter

Digital outputs /

1 = two PNP / NPN-outputs
2 = two relay outputs (max. 20 Hz)

Mode of operation /

FI = F/I-converter
digital outputs are configuered as setpoint outputs
analogue output is switched on

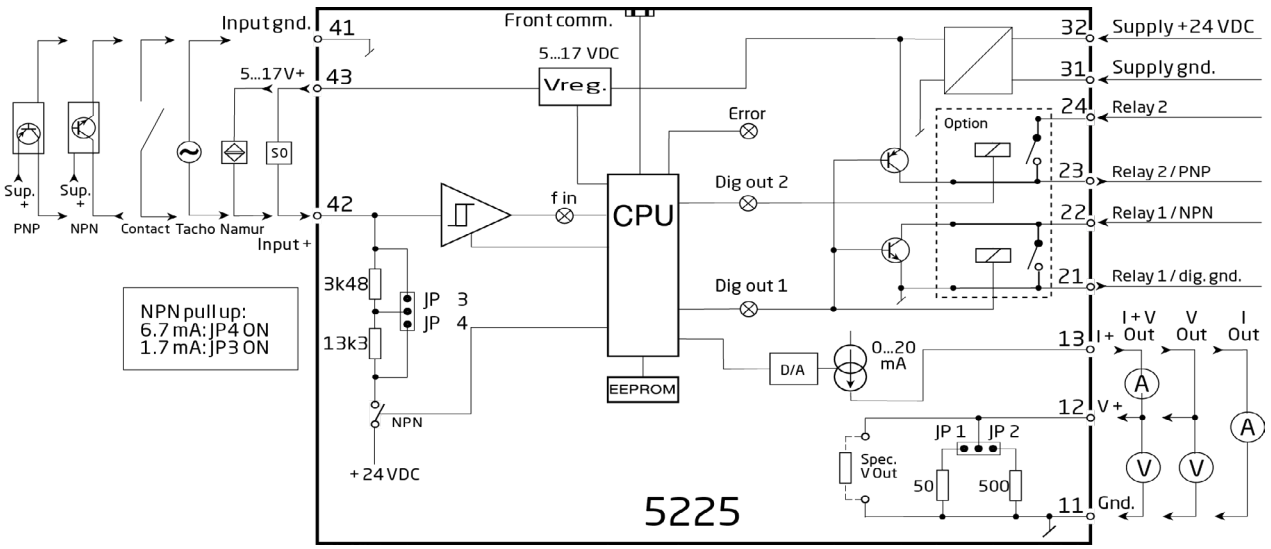
FF = F/F-converter
digital output 1 outputs the evaluated frequency
analogue output is switched off

FG = Frequency generator
digital output 1 outputs the selected freqency
analogue output is switched off

FIFF = F/I and F/F-converter
digital output 1 outputs the evaluated frequency,
digital output 2 is configuered as setpoint
analogue output is switched on

Please specify the analogue output range (how many mA at what frequency) and the setpoints for increasing or decreasing values in % (for FI or FIFF), the divisor or multiplicator (for FF or FIFF) respectivily the generated frequency (for FG) in clear text. Please specify additionally the mode of the digital outputs (PNP or NPN for transistor outputs respectivily open-circuit current or closed current for relay outputs).

Electrical Connections:



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