

# MH1U – 3-digit digital indicator for top hat rail mounting

**Multifunctional measuring input:** Direct voltage, direct current, Pt100(0), Thermocouple, Frequency, Rotational speed, Counter

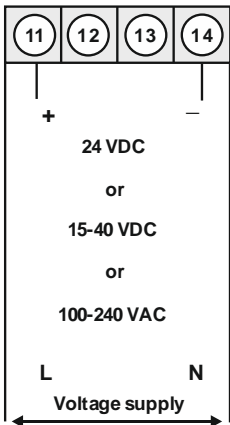
- red display of -199...999 Digits
- digit height approx. 7mm
- min/max value recording
- 9 adjustable supporting points
- display flashing at threshold value exceedance / threshold value undercut
- Tara function
- programming interlock via access code
- pluggable screw-terminal
- optional: analog output 0-10 VDC, 0/4-20 mA switchable
- optional: interfaces RS232 / RS485 / Bluetooth
- optional: sensor supply incl. digital input
- optional: 2 relay outputs / 2 PhotoMos-outputs / 2 relay outputs & 2 PhotoMos-outputs
- optional: Bluetooth interface
- optional: data logger
- accessories: PC-based configuration kit PM-TOOL with CD & USB adapter



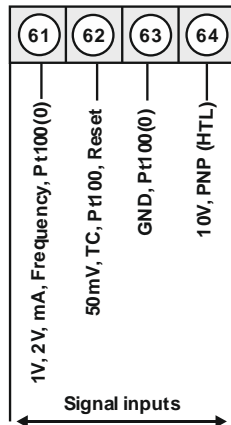
**ORDER NUMBER**  
(without options)

## • Multifunction measuring input

**Terminal 1**



**Terminal 6**



Supply 24 VDC galv. isolated

**MH-1UR3A.000X.760A**

Supply 100-240 VAC/DC ±10%

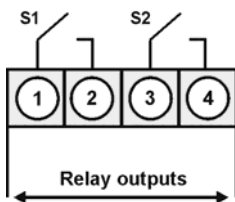
**MH-1UR3A.000X.S60A**

Supply 15-40 VDC / 20-30 VAC

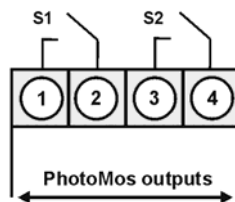
**MH-1UR3A.000X.W60A**

## Options

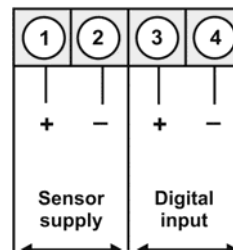
**Terminal 2**



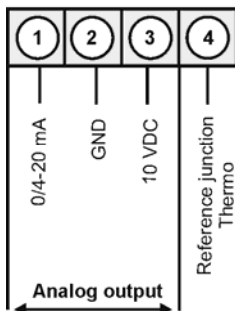
**Terminal 3**



**Terminal 5**

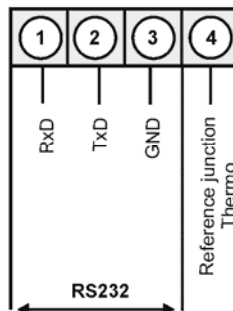


**Terminal 4**

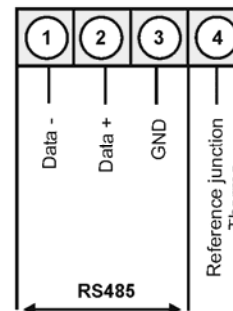


alternative to analog output

**Terminal 4**



or



## • Order key for options

M	H-	1	U	R	3	A.	0	0	0	X.	6	7	0	A
M	H-	1	U	R	3	A.	0	0	0	X.	S	7	0	A
M	H-	1	U	R	3	A.	0	0	0	X.	W	7	0	A

<b>May be combined to some extend.</b>	2	2 Relay outputs	<b>In preparation.</b>
	3	2 PhotoMos outputs	
	5	2 PhotoMos- and 2 relay outputs	
	X	Analog output	
	3	Sensor supply 24VDC/50mA incl. digital input for 24VDC power supply	
	3	Sensor supply 24VDC/50mA incl. digital input for 10-30VDC, 100-240VAC power supply	
	3	Interface RS232	
	4	Interface RS485	
	C	Bluetooth interface	
	D	Data logger	

## • Parameterisation software

PC-based configuration software PM-TOOL, for devices without keypad; for a simple adjustment of standard devices, incl. CD & USB adapter.  
Programming happens via interface.

## PM-TOOL-MUSB4

## • Technical data

<b>Housing</b>	Dimensions	W22.5 x H117.2 x D107 mm
	Fixing	top hat rail
	Housing material	PA6.6, black, UL94V-0
	Connection	plug-in terminal; wire cross section up to 1.5 mm <sup>2</sup>
<b>Display</b>	Display	3-digit
	Digit height	7 mm
	Segment colour	red
	Range of display	-199 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

### Measuring input

Signal	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	
Pt100-3-wire	-50...200°C	-58...392°F	0,1°C / 0,1°F
Pt100-3-wire	-200...850°C	-328...1562°F	1°C / 1°F
Pt1000-2-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 up to 1000)		

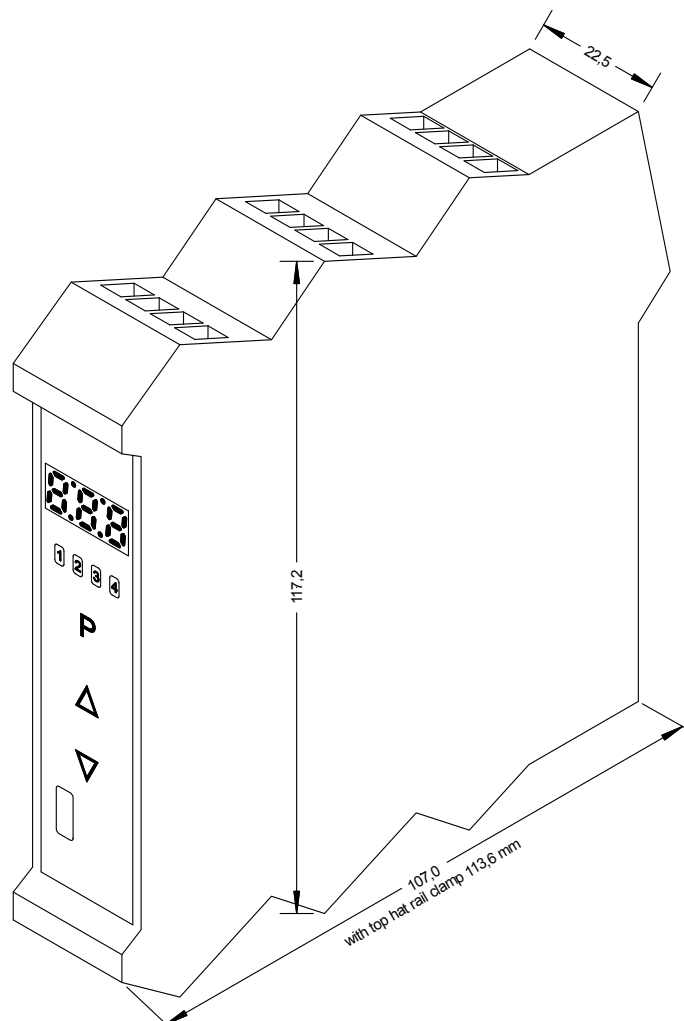
<b>Pulse input</b>	<b>TTL</b> / Low <2 V / High >3 V <b>NPN</b> / Low <0.8 V / High via resistance	<b>HTL/PNP</b> / Low <6 V / High >8 V <b>Namur</b> / Low <1.5 mA / High >2.5 mA
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**Reset input** active <0.8 V

<b>Measuring error</b>	Standard	0.2% of measuring range ± 1 Digit
	Pt100 / Pt1000	0.5% of measuring range ± 1 Digit
	Thermocouple	0.3% of measuring range ± 1 Digit

<b>Accuracy</b>	Reference junction	± 1°C
	Drift of temperature	100 ppm/K
	Measuring time	0.01...2.0 seconds
	Measuring rate	approx. 1/s with temperature sensor, approx. 100/s with standard signals
	Measuring principle	U/F-conversion
	Resolution	approx. 14 Bit at 1s measuring time
<b>Output</b>	Sensor supply	24 VDC / 50 mA incl. digital input, < 2.4V OFF, > 10V ON, max. 30 VDC / Ri~ 14 kOhm
<b>Switching points</b>	2x relay outputs with nomally open contact	Switching voltage 30 VDC/AC, max. 2 A resistive load operating life < 30 mV/< 10 mA – min. 2,5x10 <sup>6</sup> 30 VDC / 1 A – minimum 5x 10 <sup>5</sup> 30 VDC / 2 A – minimum 1x 10 <sup>5</sup>
	2 PhotoMos-outputs with nomally open contact	Switching voltage 30 VDC/AC, max. 0,4 A
<b>Analog output</b>	0-10 VDC / load min. 10 kOhm, 0/4-20 mA / load max. 500 Ohm, 12 Bit	
<b>Interface</b>	Modbus with ASCII or RTU protocol	
	USB	11520 Baud, no parity, 8 data bit, 1 stop bit, flow control (none)
	Bluetooth	9.600 Baud, no parity, 8 data bit, 1 stop bit, flow control (none)
	RS323	9.600 Baud, no parity, 8 data bit, 1 stop bit, wire length max. 3 m
	RS485	9.600 Baud, no parity, 8 data bit, 1 stop bit, wire length max. 1.000 m
<b>Power pack</b>	Supply	24 VDC ± 10% galvanic isolated, ≤ 5 VA 100-240 VAC 50/60 Hz DC ± 10%, ≤ 15 VA 15-40 VDC galvanic isolated / 20-30 VAC 50/60 Hz, ≤ 10 VA
<b>Memory</b>	EEPROM	Data preservation ≥ 100 years at 25°C
<b>Ambient conditions</b>	Working temperature	-20 to + 50°C
	Storing temperature	-30 to + 70°C
	Weathering resistance	relative humidity 0-85% on years average without dew
<b>EMV</b>	EN 61326	
<b>CE-identification</b>	conformity according to directive 2014/30/EU	
<b>Safety regulations</b>	according to low voltage directive 2014/35/EU; EN 61010; EN 60664-1	

**Housing:**



● Purchase order key

	M	H-	1	U	R	3	A.	0	0	0	X.	S	6	0	A
<b>Standard type M-Line</b>															
<b>Top hat rail housing</b>	H														
<b>Housing size</b> 22.5 x 117.2 x 107 mm (WxHxD)			1												
<b>Type of display</b> Multifunction				U											
<b>Display colour</b> Red					R										
<b>Number of digits</b> 3-digit						3									
<b>Digit height</b> 7 mm							A								
<b>Digital input</b>															
Without						0									
Interface RS232						3	galv. isolated without analog output								
Interface RS485						4	galv. isolated without analog output								
Bluetooth interface						C									
Data logger						D									
<b>Sensor supply</b>															
Without						0									
24 VDC / 50 mA incl. digital input						3									
<b>Version</b>															
A A															
<b>Switching points</b>															
0 No switching points															
2 2 relay outputs															
3 2 PhotoMos outputs															
5 2 PhotoMos and 2 relay outputs															
<b>Protection class</b>															
6 IP20 / pluggable terminal															
<b>Supply</b>															
7 24 VDC, galv. isolated															
S 100-240 VAC, DC ±10%															
W 15-40 VDC, 20-30 VAC															
<b>Measuring input</b>															
X Direct voltage, direct current, Shunt, Resistance, Pt100(0), Thermocouple, Frequency, Counter															
<b>Analog output</b>															
X 1x 0-10 VDC, 0/4-20 mA (without interface)															