



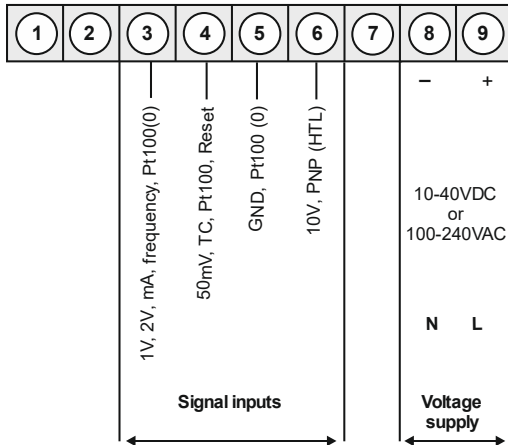
ML2-2 – LCD indicator for panel-mounting in 96x96mm

Multifunctional measuring inputs:

Direct voltage, direct current, Pt100, Pt1000, Thermocouple, pulse signals for frequency and rotational speed metering or counter

- multi voltage power supply unit of 100-240 VAC/DC or 10-40 VDC/18-30 VAC
- LCD indicator with all graphic features of 128x64 pixel
- measurand indication of -1999...9999 digits
- multicolour backlight (7 colours available)
- indication of metering point and signal identification
- 3-digit adjustable dimension unit
- adjustment of the metering point, manually via display menu (with help text as ticker)
or optionally via interface RS485 with ModBus protocol
- min/max memory, Tara function, 9-points-linearisation
- buzzer alarm for audible signalling with switchable confirmation function
- colour change at threshold value exceedance/undercut
- programming interlock via access code
- pluggable screw terminal
- optional: sensor supply
- optional: digital input for triggering of activities like e.g. TARA
- optional: analog output 0/4-20 mA, 0-10 VDC switchable
- optional: 2 relay outputs
- optional: RS232/RS485 interfaces (ModBus protocol) galvanically isolated
- accessories: PC-based configuration kit PM-TOOL with USB-adapter

• **Multifunctional measuring input**



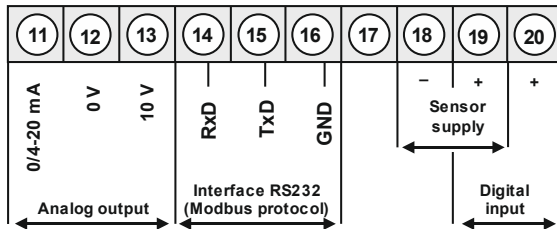
Supply 100-240 VAC, DC±10%

ML2-2UX4C.000X.S70AD 402.20

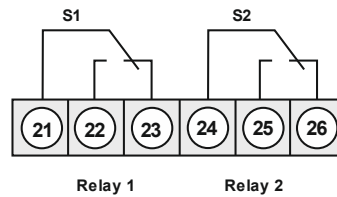
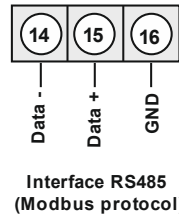
Supply 10-40 VDC, 18-30 VAC

ML2-2UX4C.000X.W70AD 402.20

Options:



alternative to RS232



• **Product key options**

M	L	2-	2	U	4	X.	0	0	0	X.	S	7	0	A	D
M	L	2-	2	U	4	X.	0	0	0	X.	W	7	0	A	D

		EUR	
	2	2 relay outputs	35.00
	X	Analog output 0/4-20 mA, 0-10 VDC galvanically isolated, 16 Bit switchable	127.10
	Z	Analog output 0/4-20 mA, 0-10 VDC galvanically isolated, 12 Bit switchable	63.50
	2	Sensor supply 10 VDC / 50 mA incl. digital input	26.50
	3	Sensor supply 24 VDC / 50 mA incl. digital input	26.50
	3	Interface RS232 galvanically isolated	58.30
	4	Interface RS485 galvanically isolated	58.30
	1	Digital input galvanically isolated	10.60

• **Parameterisation software**

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

ORDER NUMBER

EUR

PM-TOOL-MUSB4

94.30

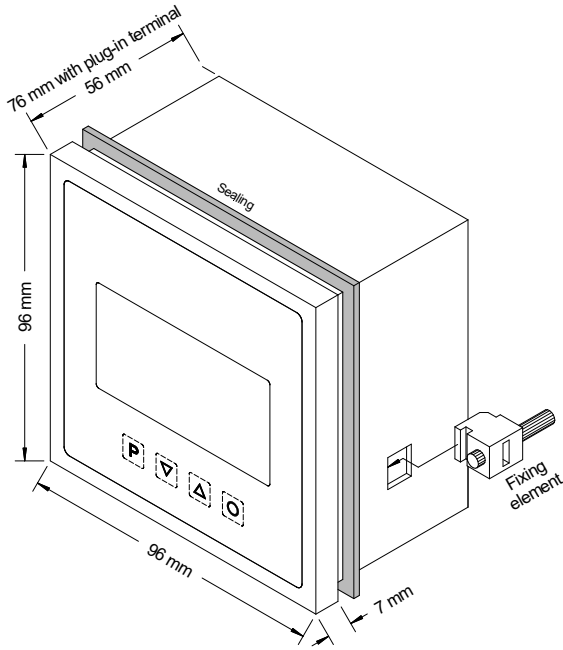
• Technical data

Dimensions	Housing	B96 x H96 x D56 mm (incl. plug-in terminal D= 82 mm)	
	Panel cut-out	91.0 ^{+0.6} x 91.0 ^{+0.6} mm	
	Fixing	screw elements for a wall thickness up to 10 mm	
	Housing material	PC polycarbonate, black	
	Sealing material	EPDM, 65 Shore, black	
	Protection class	at the front IP65 Standard, at the back IP00	
	Weight	approx. 330 g	
	Connection	plug-in terminal; cable cross-section up to 2.5 mm ²	
Display	Display	LCD indicator with full graphic features with 128x64 Pixel	
	Indication of measurand	of -1999...9999 digits	
	Digit height	12 mm	
	Background colour	selectable: red, green, blue, white, yellow, teal, purple	
	LCD digit colour	black	
	Limit values	optical display flashing	
Measuring input	Measuring range	Measuring span	Resolution
Voltage	0...10 V (R _i > 100 kOhm)	0...12 V	≥ 14 bit
Voltage	0...2 V (R _i ≥ 10 kOhm)	0...2.2 V	≥ 14 bit
Voltage	0...1 V (R _i ≥ 10 kOhm)	0...1.1 V	≥ 14 bit
Voltage	0...50 mV (R _i ≥ 10 kOhm)	0...75 mV	
Current	4...20 mA (R _i = ~125 Ohm)	1...22 mA	
Current	0...20 mA (R _i = ~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 / ±1
NPN	0...3 kHz	0...3 kHz	0,001 Hz / ±1
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)		
Output	Relay	with changeover contact 250 V / 5 AAC, 30 V / 5 ADC	
	Switching cycle	30 * 10 ³ at 5 AAC, 5 ADC with ohm resistive burden, 10 * 10 ⁶ mechanically Diversification according to DIN EN50178 / Characteristics according to DIN EN 60255	
	Analog output	10 VDC / burden 10kΩ, 0/4-20 mA / burden 500Ω, 16 Bit 10 VDC / burden 10kΩ, 0/4-20 mA / burden 500Ω, 12 Bit switchable	
	Sensor supply	24 VDC / 50 mA, 10 VDC / 20 mA	
	Buzzer	Signal transmitter as alarm indication	
Pulse input	TTL / Low <2 V / High >3 V	HTL/PNP / Low <6 V / High >8 V	
	NPN / Low <0.8 V / High via resistance	Namur / Low <1.5 mA / High >2.5 mA	
Reset input	active <0.8 V		
Digital input	< 6 V Low and > 18 V High max. 30 VDC galv. isolated		
Measuring fault	Standard	0.2% of measuring range ± 1 Digit	
	Pt100 / Pt1000	0.5% of measuring range ± 1 Digit	
	Thermocouples	0.3% of measuring range ± 1 Digit	
Accuracy	Reference junction	± 1°C	
	Temperature drift	100 ppm/K	
	Measuring time	0.01...2.0 seconds	
	Sampling 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	
Interface	Protocol ModBus	with ASCII- or RTU-protocol	
	RS232	9.600 Baud, no parity, 8 Databit, 1 StopBit, wire length max. 3m	
	RS485	9.600 Baud, no parity, 8 Databit, 1 StopBit, wire length max. 1000m	
Power pack	Supply	100-240 VAC 50/60 Hz /DC ±10 % (max. 15 VA) 10-40 VDC / 18-30 VAC 50/60 Hz (max. 15 VA)	
Memory	EEPROM	Data preservation ≥ 100 years at 25°C	
Ambient conditions	Working temperature	0 to +50°C	
	Storing temperature	-20 to +80°C	
	Wheathering resistance	relative humidity of 0-85% on years average without dew	
CE-sign	Conformity to guidance 2014/30/EU		
EMV	EN 61326, EN 55011		

Safety standards

According to low voltage directive 2014/35/EU, EN 61010; EN 60664-1

Housing:



• Order key

		ML	2-	2	U	X	4	C	0	0	0	X	S	7	0	A	D
Standard type M-Line LCD																	
Installation depth																	
82 mm (incl. plug-in terminal)	<input type="checkbox"/> 2																
Housing dimensions																	
96 x 96 x 56 mm (BxHxD)	<input type="checkbox"/> 2																
Indicator type																	
Universal / Multifunctional	<input type="checkbox"/> U																
Display colour																	
LCD: black	<input type="checkbox"/> X																
Background colour selectable: Red, green, blue, white, yellow, teal, purple																	
Number of digits																	
4-digit	<input type="checkbox"/> 4																
Pixel																	
128x64 pixel, all graphic features	<input type="checkbox"/> C																
Digital input																	
without	<input type="checkbox"/> 0																
Interface RS232	<input type="checkbox"/> 3																
Interface RS485	<input type="checkbox"/> 4																
Digital input	<input type="checkbox"/> I																
		Dimension															
		<input type="checkbox"/> D Physical unit (3 digits are adjustable)															
		Version															
		<input type="checkbox"/> A A															
		Switching points															
		<input type="checkbox"/> 0 no switching points															
		<input type="checkbox"/> 2 2 relay outputs															
		Protection class															
		<input type="checkbox"/> 7 IP65 / pluggable terminal															
		Power pack															
		<input type="checkbox"/> S 100-240 VAC, DC ±10%															
		<input type="checkbox"/> W 10-40 VDC, 18-30 VAC															
		Measuring input															
		<input type="checkbox"/> X Multifunctional: voltage, current, shunt, frequency, counter, Pt100(0), Thermocouple															
		Analog output															
		<input type="checkbox"/> 0 without															
		<input type="checkbox"/> X 1x 0-10 VDC, 0/4-20 mA, 16 Bit															
		<input type="checkbox"/> Z 1x 0-10 VDC, 0/4-20 mA, 12 Bit															
		Sensor supply															
		<input type="checkbox"/> 0 without															
		<input type="checkbox"/> 2 10 VDC / 50 mA / incl. digital input															
		<input type="checkbox"/> 3 24 VDC / 50 mA / incl. digital input															