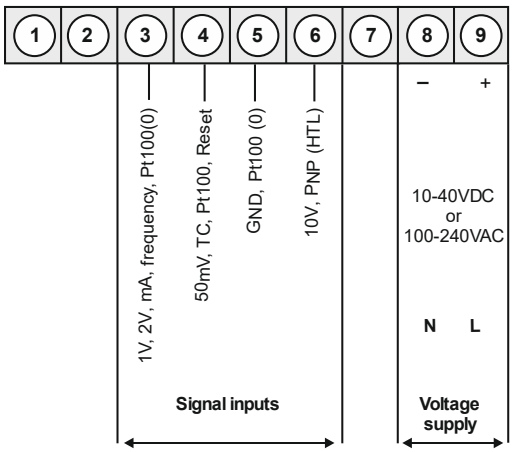
ML2-2 – LCD indicator for panel-mounting in 96x96mm

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

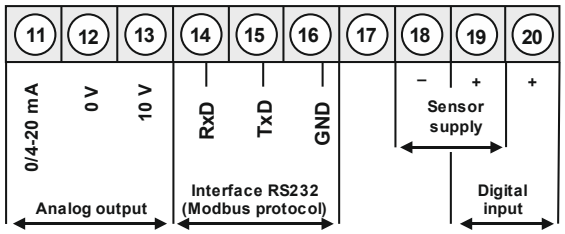
	ORDER NUMBER (without options)	EUR

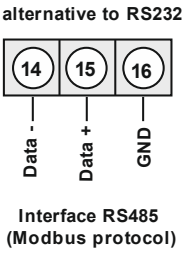
• Multifunctional measuring input

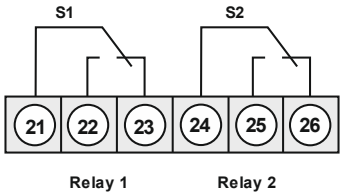


Supply 100-240 VAC, DC±10%	**ML2-2UX4C.000X.S70AD**	**450,00**
Supply 10-40 VDC, 18-30 VAC	**ML2-2UX4C.000X.W70AD**	**450,00**

Options:







• 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	74,10
2	Sensor supply 10 VDC / 50 mA incl. digital input	47,70
3	Sensor supply 24 VDC / 50 mA incl. digital input	47,70
3	Interface RS232 galvanically isolated	63,50
4	Interface RS485 galvanically isolated	63,50
I	Digital input galvanically isolated	10,60

	ORDER NUMBER	EUR

• 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.

	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 (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 / ±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

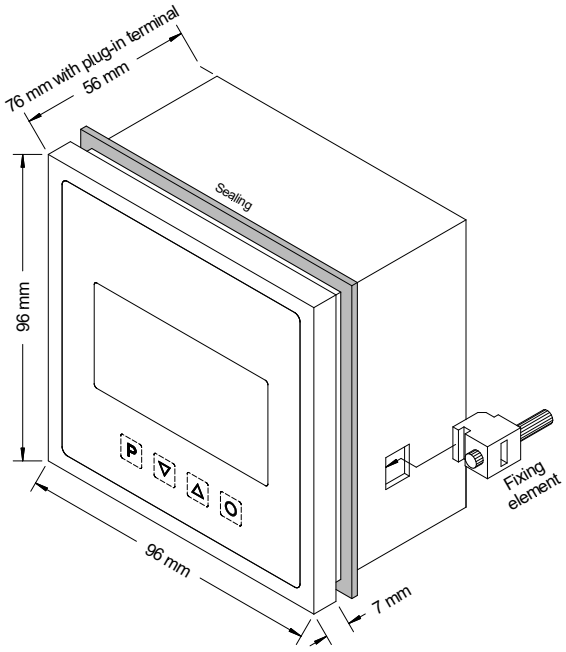
Reset input	active <0.8 V
Digital input	< 6 V Low and > 18 V High max. 30 VDC galv. isolated

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
	Weathering 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) 2

Housing dimensions
96 x 96 x 56 mm (BxHxD) 2

Indicator type
Universal / Multifunctional U

Display colour
LCD: black X
Background colour selectable:
Red, green, blue, white, yellow, teal, purple

Number of digits
4-digit 4

Pixel
128x64 pixel, all graphic features C

Digital input
without 0
Interface RS232 3
Interface RS485 4
Digital input I

Dimension
D Physical unit (3 digits are adjustable)

Version
A A

Switching points
0 no switching points
2 2 relay outputs

Protection class
7 IP65 / pluggable terminal

Power pack
S 100-240 VAC, DC ±10%
W 10-40 VDC, 18-30 VAC

Measuring input
X Multifunctional: voltage, current, shunt, frequency, counter, Pt100(0), Thermocouple

Analog output
0 without
X 1x 0-10 VDC, 0/4-20 mA, 16 Bit
Z 1x 0-10 VDC, 0/4-20 mA, 12 Bit

Sensor supply
0 without
2 10 VDC / 50 mA / incl. digital input
3 24 VDC / 50 mA / incl. digital input