

Ultrasonic open channel flow,
level meter **MQU 99, MHU 99**

Data sheet



Technical data

Features

Continuous measurement of current flow, positive and negative flow bi-directional total flow measurement flow direction indication flexible possibilities comparing functions with relay output, manual set up of outputs, high-speed signal processing data-logger: 4 months capacity; average 5-minute current flowrates, total volume and operating time by hour/day/month time slices; accessible via communication output universal power supply, low power consumption easy exchange of control unit without necessity of reprogramming additional modules according to customers requirements diagnostics: field current display, empty or full pipe detection + other functions.

Advantages

Multi-universal, efficient flowmeter with simple economic possibility of assembling right at the place of measurement adaptive assembling via special bracket.

Possibilities of assembly

Compact version – flowmeter MQU 99 C, level meter MHU 99 C

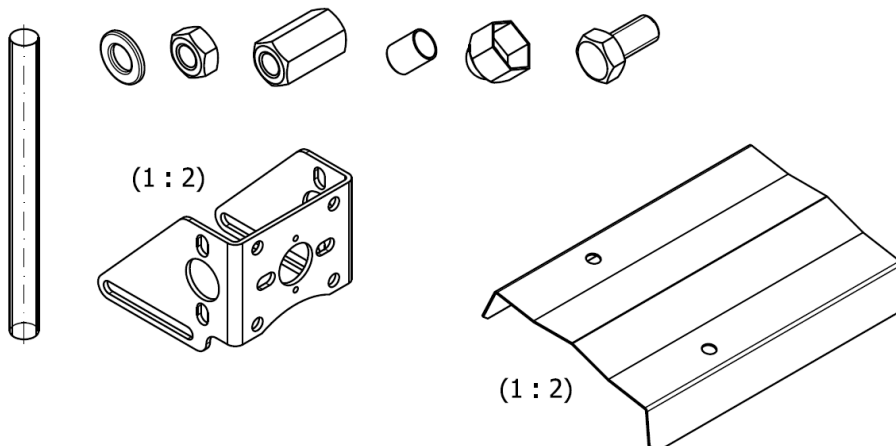
- 1) **assembly of sensor in horizontal pipeline**
- 2) **assembly of sensor in vertical pipeline**

Remote version – flowmeter MQU 99 C, level meter MHU 99 C (length of connecting cable to 400 m)

- 3) panel mounted with protection of unit IP 67 (rear side)
- 4) panel mounted with protection of unit IP 44 (rear side)
- 5) **assembly of control unit to a DIN rail**
multiple overhead and side-by-side application
- 6) **assembly of control unit to the wall - right, left, overhead application and inside unit bracket application**
- 7) assembly of control unit to wall board – rear side
- 8) assembly of control unit – overhead application

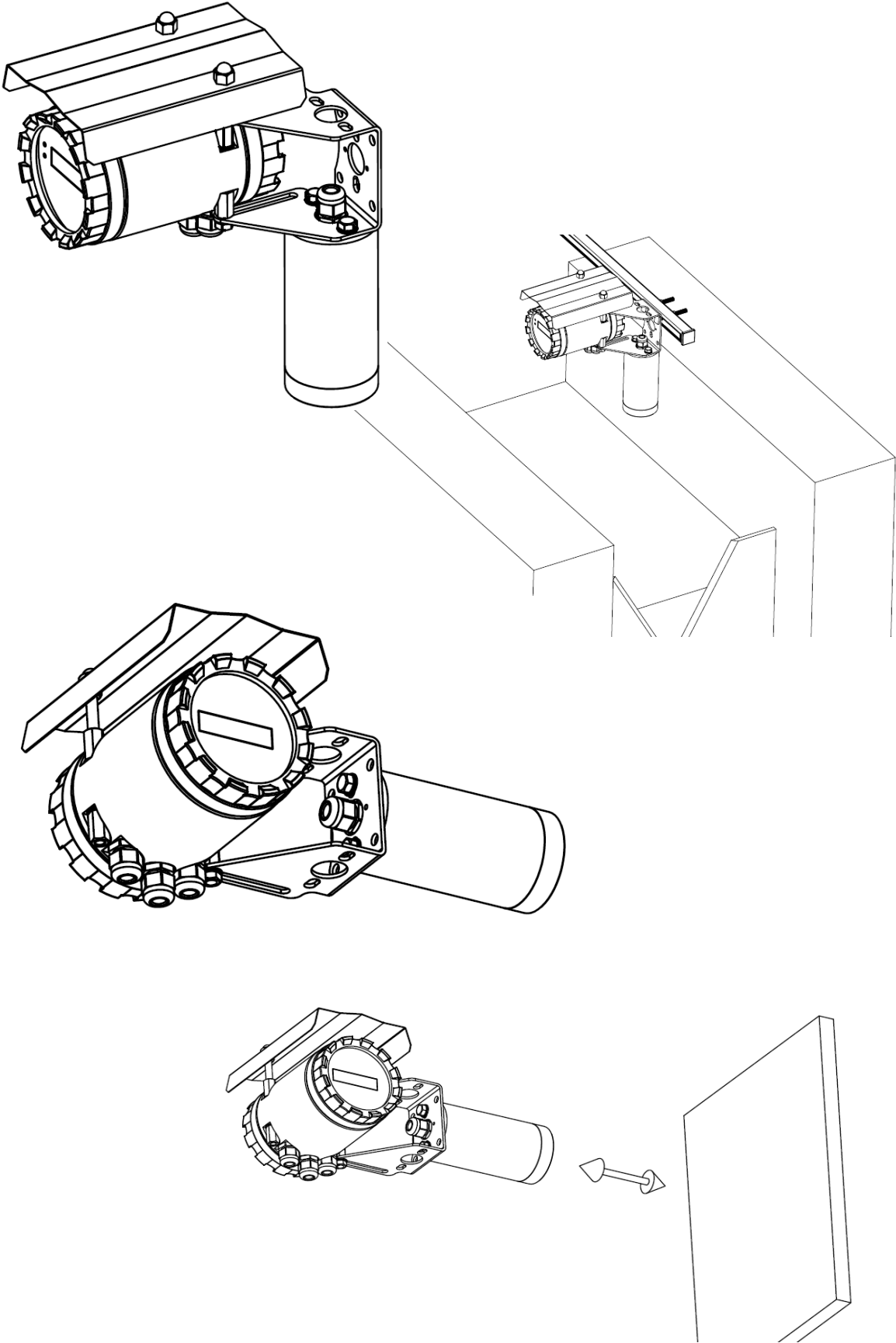
Display unit can be mounted in any plain and when changing from or to compact – remote version, mounting kits are available.

Mounting kit



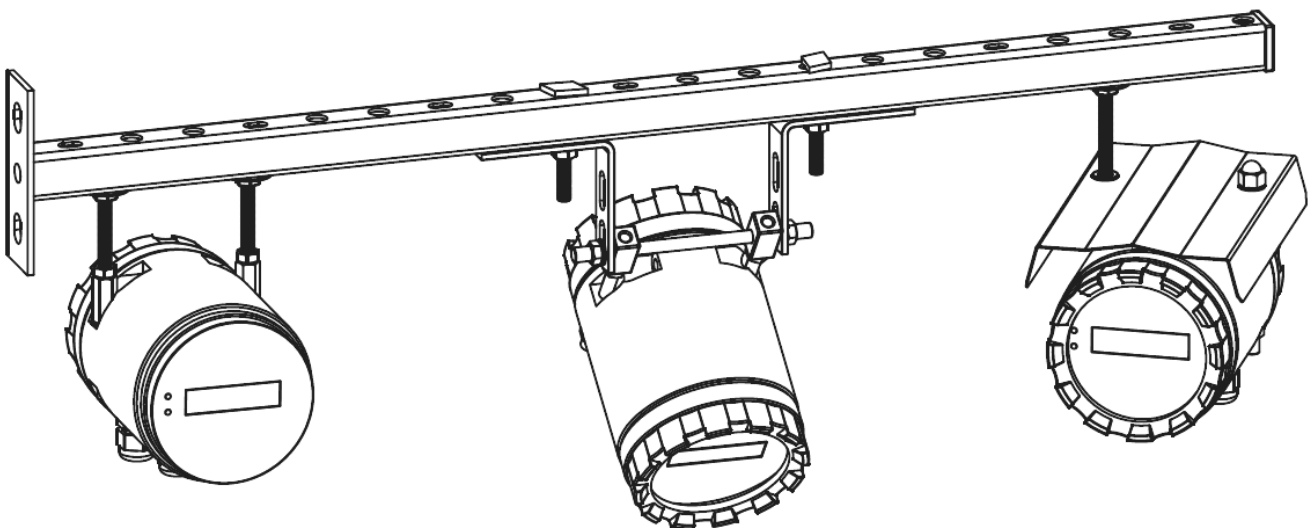
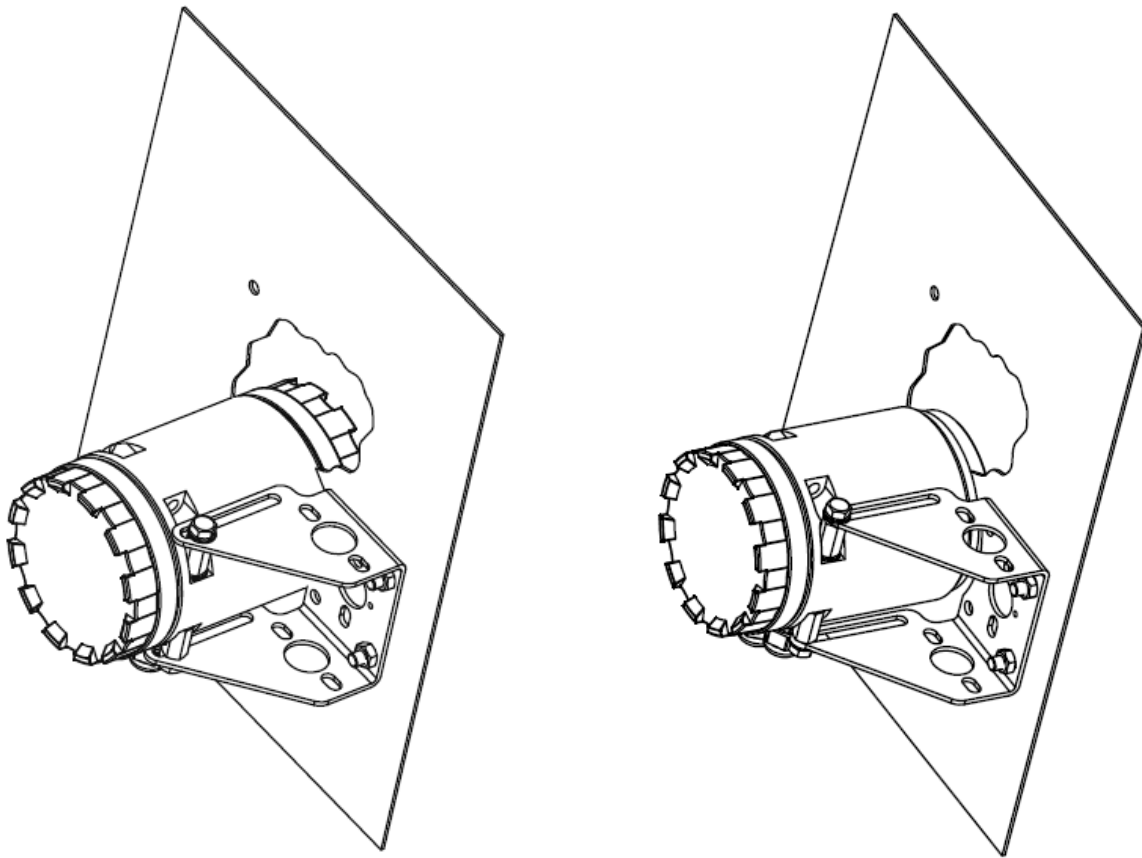
Technical data

Possibilities of assembly – compact version MQU 99 C, MHU 99 C



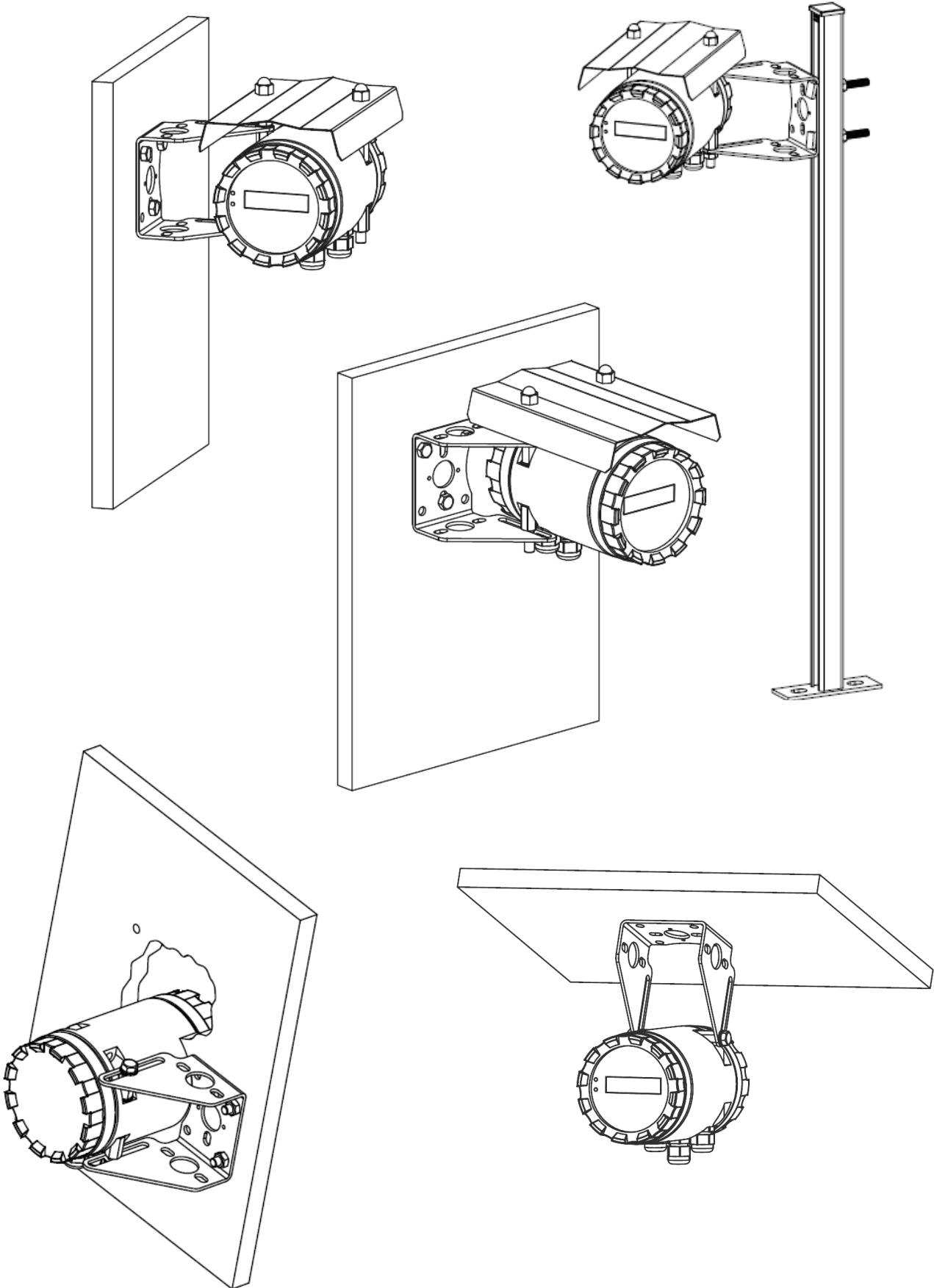
Technical data

Possibilities of assembly – remote version MQU 99 S, MHU 99 S



Technical data

Possibilities of assembly – remote version MQU 99 S, MHU 99 S



Technical data

WARNING: The customer assume personal responsibility for reasonable using of sensor and control unit.

Level sensors to 0,5 or 2 m

Level range	0 ÷ 0,4 m or 0 ÷ 1,8 m
Emission angle	10°
Accuracy	0,25 % of range, for reference conditions ¹⁾
Temperature compensation	internal
Ambient temperature	-20 ÷ 50 °C
Electric protection	IP 68 (NEMA 6)
Power supply	12 ÷ 24 VDC or from control unit / drain < 60 mA
Weight	0,8 kg

Level sensors to 4 or 6 m

Level range	0 ÷ 3,5 m or 0 ÷ 5,2 m
Emission angle	12°
Accuracy	0,4 % of range, for reference conditions ¹⁾
Temperature compensation	internal
Ambient temperature	-20 ÷ 50 °C
Electric protection	IP 68 (NEMA 6)
Power supply	12 ÷ 24 VDC or from control unit / drain < 90 mA
Weight	0,9 kg

Sensor performance	PP (Polypropylen) housing, non-dismountable compact body
Sensor cable	non-rewirable, self-supporting, 4 m lenght

MQU 99 or MHU 99 Control unit ^{2) 3)}

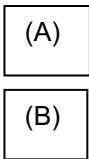
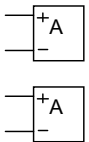
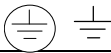
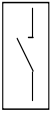
Flow measurement accuracy	1,9 % of reading while flow is within 10÷100% of range, for reference conditions ¹⁾
Level filter	digital
Low flow suppression	up to adjusted level limit (Hsupp)
Operating time (MQU only)	run if flowmeter is on power and in measuring mode, while no ultrasonic sensor failure is indicated; double performance at double channel flowmeter
Data logger	2 months capacity (current month + previous month); average 5-minute current flowrates, total volume and operating time by hour/day/month time slices
Real time Display	Clock and calendar including leap years until 2099; with battery backup
Keyboard	LCD, alphanumeric, 2x16 characters, with backlight
Inputs	4 keys
Analog outputs	galvanically separated, for one or two ultrasonic sensors (A, B)
Binary outputs	1 or 2 active galvanically separated outputs, 0(4)÷20 mA / 500 Ω, 0÷5 mA / 2 kΩ or generally selected to maximum 30 mA / 300 Ω, overvoltage protection of III. level
Communication output (must be specified)	1 to 4 relays, non-voltage contact, non-inductive load, 250VAC/3A, 30VDC/3A; modes: pulse (according to total flow), comparing (4 submodes), status (echo loss, flood)
Power supply	RS 485 (galv. sep.) or RS 232C, company protocol ELA-1; for current and stored data transmission to PC etc.; on request: data acquisition software Smart MQU for Windows
Fuse	85 ~ 260 VAC/50~60 Hz/10 VA □□9 ~ 36 VDC/10 W □□24 VDC/10 W (±10 %)
Cable outlets	630 mA/F
Electric protection	3x PG 11
Ambient temperature	IP 67 (NEMA 5), IP 44 without front cover
Dimensions	-20 to +50 °C
Weight	180 x Ø 115 mm
Housing material	2,6 kg
Surface finish	Cast AlSi 10Mg / EN AC-47100
Power supply cable	Powered coated (komaxit, anodizing)
Sensor connecting cable	Cu 3 x 1 ÷ 1,5 mm ²
Sensor distance	Cu 3 x 0,5 ÷ 1 mm ² , shielded cable recommended for strong noisy environment up to 400 m

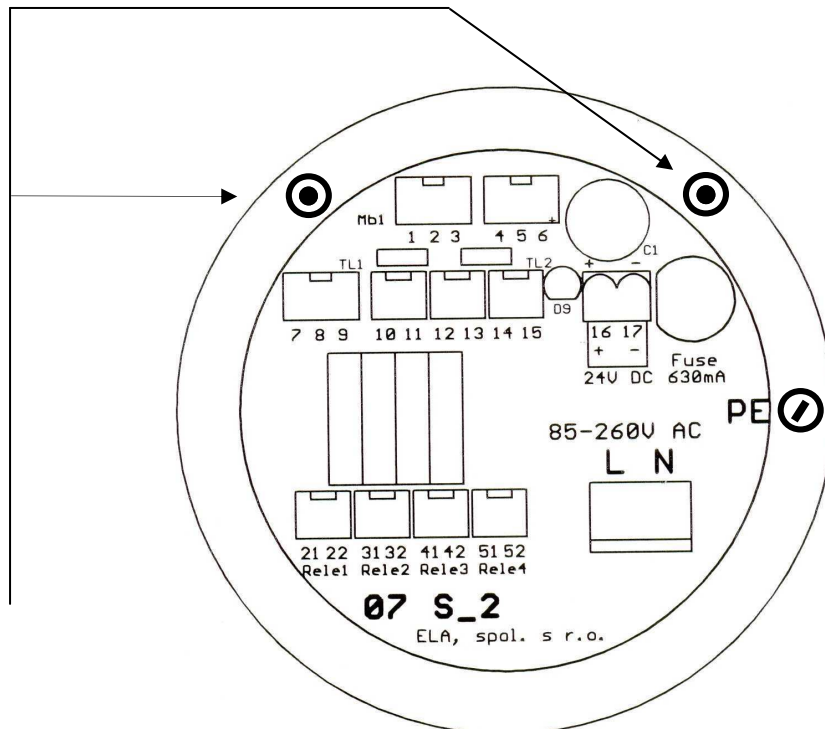
- 1) Reference conditions: Measured medium: water, waveless, temperature 10÷30° C. Environment: streamless air, steady humidity, 18÷25 °C. Sensor exactly situated with proper direction. Level adjustment done at 10% of flow range. Power supply voltage tolerance: ± 2 %. Stabilization after power up: at least 20 minutes.
- 2) MQU only functions: Measurement and logging of flow and total volume and respective output functions (e.g. pulse mode or flood mode for relays). See *Instructions for use* for details.
- 3) MHU only functions: Level difference calculation (double channel device) and its utilization for analog output and comparators. Medium volume calculation inside of constant cross-section tank. See *Instructions for use* for details.

Technical data

Converter terminal board, connection of input / output and basic function:

WARNING: For reason of safety and protection health of consumers is necessary to make equipment ground ! (Separate terminal PE on body of equipment.)

<p>1 2 3 4 5 6</p> 	<p><u>STANDARD</u></p> <p>brown power supply black function ground grey signal indication LED</p> <p>cable length 4 m</p>	<p><u>OPTION</u></p> <p>brown power supply black function ground grey signal indication LED</p> <p>cable length 4 m</p>	
<p>7 8 9</p>		<p><u>RS 232</u></p> <p>RxD TxD GND cable max. 10 m</p>	<p><u>RS 485</u></p> <p>A B cable max. 500 m</p>
<p>10 11 12 13 14 15</p> 	<p>analog output (A) active output flowrate, level</p> <p>unwired contact unwired contact</p>	<p>analog output (B) active output flowrate, level</p>	
<p>16 17 L N PE</p> 	<p>85 ~ 260 VAC/10VA</p> <p>do not connect do not connect mains L mains N mains PE</p>	<p>9 ~ 36 VDC/10W</p> <p>do not connect do not connect + 9 ~ 36 V 0 V protective wire</p>	<p>24 VDC/10W</p> <p>+ 24 V 0 V do not connect do not connect protective wire</p>
<p>21,22 31,32 41,42 51,52</p> 	<p>relay 1 / <250 VAC, <30 VDC/<3A</p> <p>totalizer, comparators, failure, etc.</p>	<p>relay 2 / <250 VAC, <30 VDC/<3A relay 3 / <250 VAC, <30 VDC/<3A relay 4 / <250 VAC, <30 VDC/<3A</p> <p>totalizer, comparators, failure, etc.</p>	



Technical data

Converter and bracket dimensions:

