



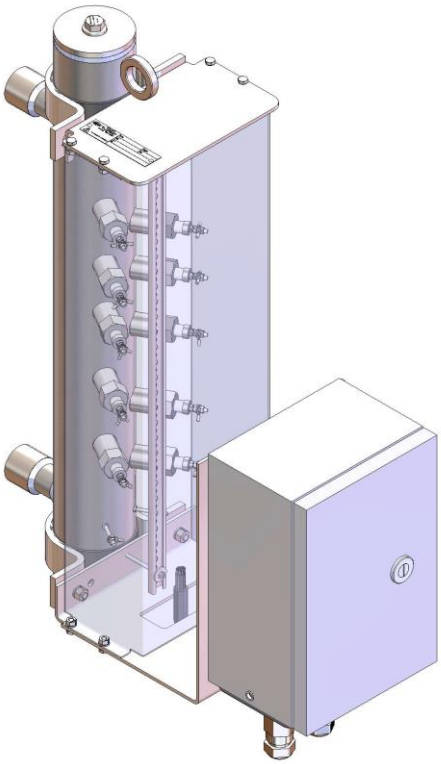

Electronic remote water level gauge

EWLI-3B

System components

The remote indicator consists of the following components:

- Add-on housing with number of probes ordered (EL65 (<=32bar) or EL60 (>32bar)); (min. 5; max. 32 probes)
- Measuring unit (MU-3); fitted on to the add-on housing and fully wired
- Control unit (CU-3) with separate switched-mode power supply unit; for top-hat rail fitting in the distribution cabinet
- Display unit (DU-3) – optional; different versions available
- Various CAN-Bus connecting cables



Application and function

The electronic remote indicator (EWLI-3B) is used as a water level gauge for steam boilers or tanks with electrically conductive liquid. Depending on the regulations applied the EWLI-3B can also be used as a multi-control system (indicator - limiter - controller).

Recording is carried out by a conductive measuring principle which assumes a minimum conductivity of the liquid.

The measuring unit (MU-3) can be equipped with up to 32 probes. The distance between the individual probes can be freely determined by the customer – taking into account a minimum distance.

Because of the freely programmable assignment of switch contacts to the probes, any subdivision of the display range can be carried out, e.g. low water level range (LW), working range and high-water level range (HW). A subdivision into LLW – LW – working range – HW – HHW is also possible.

Both the measuring unit and the control unit have 2 independent electronic circuits with their own processors. All processors carry out regular self-tests for internal faults in the electronic circuit.

The control unit (CU-3) processes the signals recorded and controls the downstream functions.
There are seven freely controllable output contacts (SPDT / or 3 DPDT) available. An eighth contact (SPDT) is permanently switched as the signal contact for device error and a ninth contact (SPDT) is permanently switched as the water level alarm contact, whereby the probes triggering the alarm (LW and/or HW) can be freely selected.
Here each processor actuates its own relay per contact whereby the output contacts are only switched when both processors signal the normal operating state in agreement. In addition, there is a 4mA – 20mA interface as a (virtually) continuous output available. The output is increased per submerged probe by the corresponding proportion (16 mA / number of probes). In the event of an error the output goes to 2 mA.
The programming is carried out via 4 buttons and a 2-row LCD display with 16 characters each.

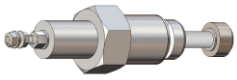
The EWLI-3B can be optionally supplemented by additional LED display units (DU-3). Here each probe of the measuring module is displayed green or red depending on status (water/steam). Moreover, error states can be rapidly and reliably diagnosed with the aid of a 2x7-segment display – depending on the kind of display unit - and 3 status LEDs.

The EWLI-3B complies with EU Directive 2014/68/EU and the applied standards EN 13445, EN12952 and EN 12953. Additional heeded rules are AD2000 and ASME boiler code.

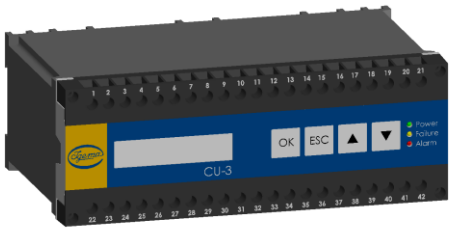
Technical equipment

- Materials according to DIN or ASME
- Process connection according to DIN or ANSI; flange or welding end
- Up to 32 probes (EL65 / EL60)
- Display of the level in relation to the probes
- 1 separate output interface 4 mA – 20 mA for loads up to 500 Ohm
- 7 SPDT or 3 DPDT switching contacts, can be freely assigned to individual probes
- 1 error contact, permanently interconnected
- 1 alarm contact permanently assigned to the water level alarm, LW and/or HW probes can be freely assigned
- One additional separate output interface each 4 mA - 20 mA for loads up to 500 Ω in some (optional) DU-3s

Technical data

Allowable pressure	PS [bar]	32	200
Allowable temperature	TS [°C]	239	367
Probe	Type	EL65 	EL60 
	Article no.	15-01877	15-00790
	Insulator	PTFE	Ceramics
Conductivity		0,5 µS/cm ≤ æ ≤ 10.000 µS/cm (25°C)	

CU-3



Power supply	24 V DC / 24 W through separate switched-mode power supply; redundant design due to the possible use of 2 power supplies				
Interfaces:					
internal	CAN-Bus for supply and internal communication				
output	4 mA – 20 mA output (load < 500Ohm; not galv. isolated) e.g. for connection to a PLC				
	7 SPDT / 3 DPDT output contacts freely programmable (Probe – switch contact)				
	1 SPDT output contact permanently assigned to device errors				
	1 SPDT output contact permanently assigned to the water level alarm (LW and/or HW); the corresponding probes for LW and/or HW are freely selectable				
Maximum ratings of potential free contacts	Error relay	Switching voltage	max. 250 V AC	25 V DC	300 V DC
		Switching current	max. 6 A ohmic	6 A	0,1 A
			inductive / higher loads: use contactor		
	Limit value contacts	Switching voltage	max. 250 V AC	25 V DC	300 V DC
		Switching current	max. 6 A ohmic	6 A	0,1 A
			inductive / higher loads: use contactor		

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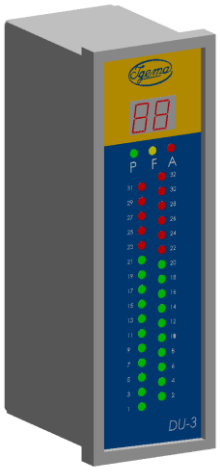
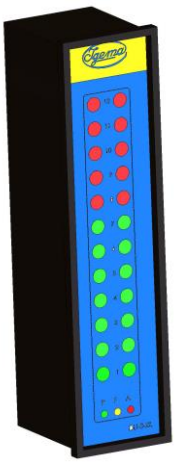
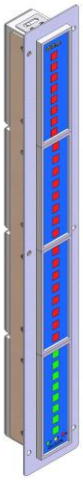
Housing design	
Material	PC-GF V-0
Protection type	Housing: IP40 Terminals: IP20
Connection	Two terminal strips with 21 terminals each, up to 2.5 mm²
Display	LCD display with 2 lines of 16 characters each
Input / Programming	4 buttons
Working temperature	0°C bis +55°C (-10°C without condensation)

MU-3	
Probe design	
Connection thread	G ½″
Width across flats	AF27
Material screw connection	Niro
Material electrode tip	Niro
Electrode spacing	At least 36 mm with staggered arrangement; smaller distances on request
Housing design	
Material	Stainless steel
Protection type	IP65 (Also available for the probes as an option)
Interface	CAN-Bus
Working temperature	0°C bis +85°C (-10°C without condensation)

DU-3			
Type	DU-3 	DU-3-XL 	DU-3-XXL 
Specification	up to 16 probes: single column 17 -32 probes: double column	for (up to) 12 probes	Modules for 8 probes; combinable for (up to): 8 / 16 / 24 / 32 probes
Power supply	18 V – 36 V; 24 V DC / 2 W electrical short-circuit-proof via lead	18 V – 36 V; 24 V DC / 2 W electrical short-circuit-proof via lead	24 V DC +10% / -20% / 6 W electrical short-circuit-proof via lead
Current consumption	70 mA @ 24 V	70 mA @ 24 V	80 mA @ 24 V

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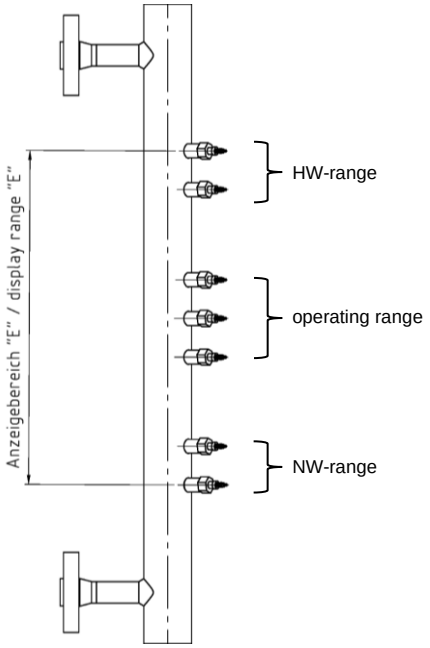
Interfaces			
internal	CAN-Bus for supply and internal communication		
output	4 mA - 20 mA output load < 500 Ohm, not galv. insulated e.g. for connection to a PLC	---	4 mA - 20 mA output load < 500 Ohm, not galv. insulated e.g. for connection to a PLC
Housing design	As per IEC 61554		
Material	Housing: Noryl SE1 GFN2; Pane: Macrolon		
Protection type	Front: IP40 Rear: IP20		
Working temperature	0°C bis +55°C (-10°C without condensation)		
Display	2 x 7-segment display	---	---
	3 Status LEDs	green: Power	yellow: error red: alarm
	Level indicator per probe: green – water // red – steam		

Note:

Max. Cable length EWLI-3B MU-3 – EWLI-3B CU-3 – EWLI-3B DU-3:

- **800m**
- **Extension by amplifier possible**
- **Data Transmission via optical fibre possible**



Available (optional) versions

- IP65 junction box for CU-3 and DU-3
- Switched-mode power supply
- Relay version with gold-plated contacts
- Display DU-3
- Top-hat rail adapter for DU-3
- Bus connecting cable of required length
- optional isolated switch amplifier for galv. isolation of the power output

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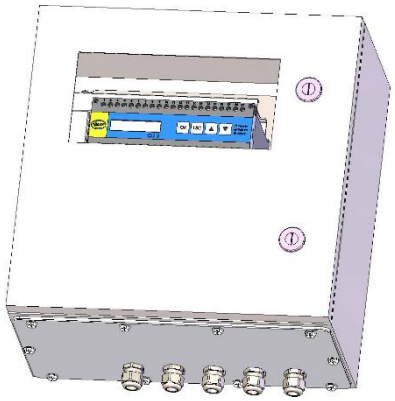
Junction box for CU-3

Example: Stainless Steel housing with 5x M20 cable glands



The junction box contains the basic functions / devices:

- 1x CU-3
- 1x power supply
- 1x 2 pol. fuse 6 A
- Terminals for mains voltage
- Output terminals for the CAN connection to the MU-3
- 5 x M20 cable glands MS/NI or adapter M20 to ¾" NPT MS/NI

Standards	IEC/EN 60529	
Housing material	sheet steel housing coated, RAL 7035	stainless steel housing 1.4404 / 316 electrically polished
Protection class	IP66, NEMA 4	IP 66, NEMA 4x,
Housing dimensions	400 x 400 x 200	
Power supply	110-240 V AC, 47-63HZ	
Power consumption	0,55 A @ 115 V AC resp. 0,35 A @ 230 V AC	

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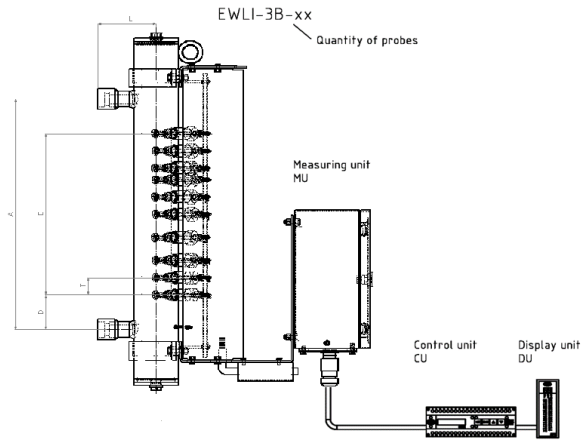
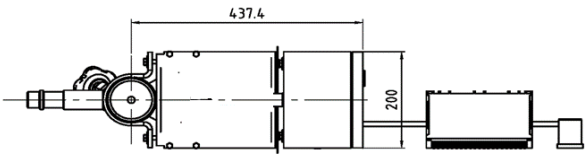
Dimensions

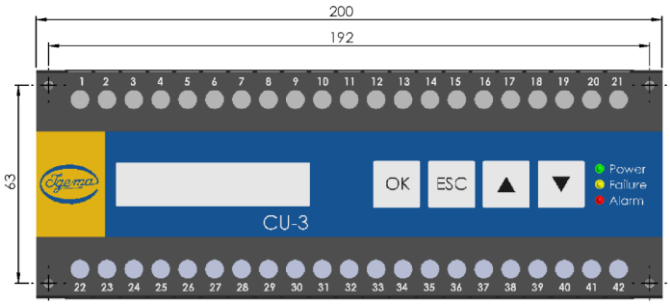
Side view



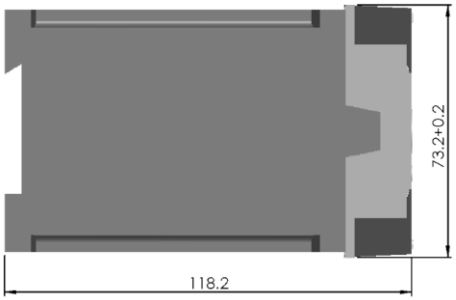
Top view



Front view CU-3

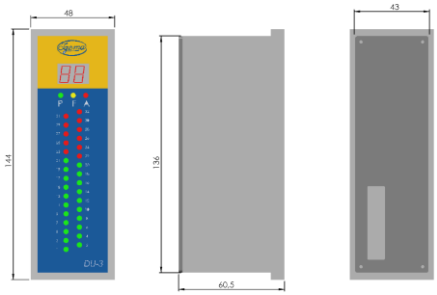


Side view CU-3

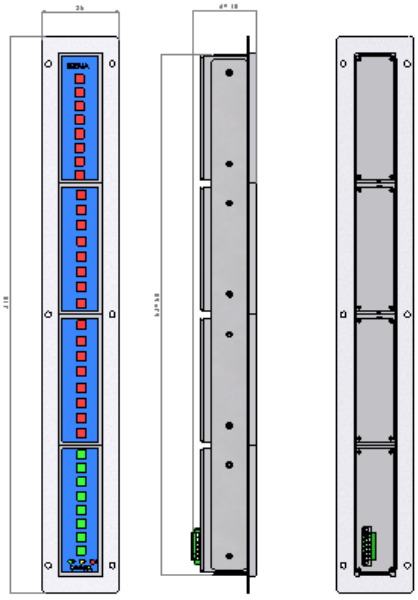


View:

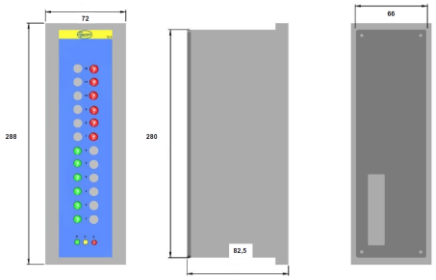
DU-3



DU-3-XXL



DU-3-XL



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