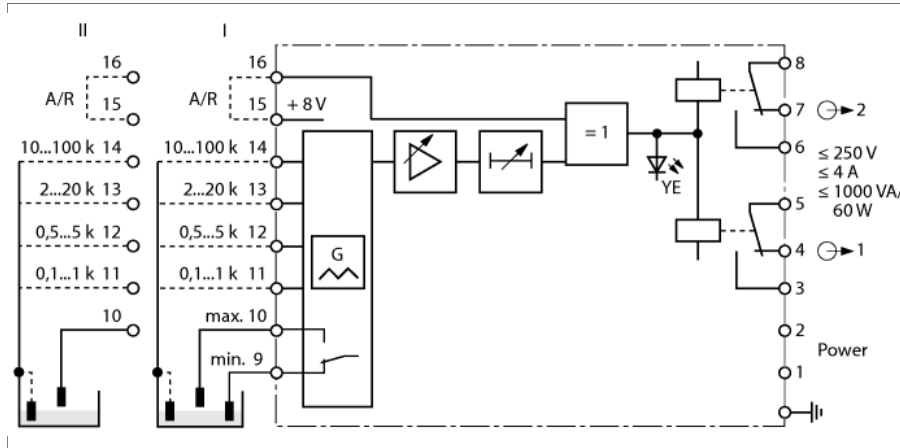


**Level controller
1-channel
MS91-12-R (UNT)**



The 1-channel level control MS91-12-R monitors and regulates conductive liquid levels (II). As a dual level regulator, it can be used to control pumps and solenoid valves (I). As monitoring device it is designed for run-dry or over flow protection.

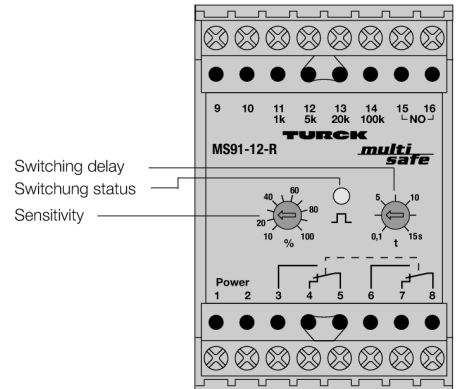
The sensitivity (liquid resistance) is adjustable between 0.1 ... 100 kΩ. One of the four sensitivity ranges is selected by the terminal configuration. Fine adjustment of the switch point within the selected range is achieved with a front cover potentiometer. The level controller not only provides optimum reliability in differentiating liquids, it is also suited for the distinction between foam and liquid .

The adjustable switch-on and switch-off delay is very important for turbulent liquid levels. A delay time between 0.1 ... 15 s can be set via the potentiometer on the front.

Two parallelly operating relay outputs with one changeover contact each are provided to output the switching commands. The output configuration of both outputs can be changed from NC mode (no bridge between terminal 15/16) to NO mode (with bridge between terminals 15/16).

The switching status is indicated by a yellow LED.

The switching status of the output is indicated by a yellow LED and operational readiness by a green LED.

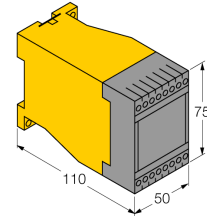


- **Output: 2 relays with changeover contact**
- **Responsivity: 0.2...100 kΩ**
- **Removable terminal blocks**
- **Switching of electrodes via auxiliary relay**
- **Switch-on/off delay adjustable 0.1...15 s**
- **Reliable distinction between foam and liquid**
- **Galvanic isolation of input circuits, output circuits and power supply**

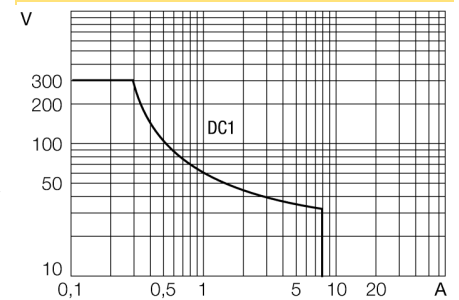
**Level controller
1-channel
MS91-12-R (UNT)**

Type designation	MS91-12-R (UNT)
Ident no.	5220110
Nominal voltage	Universal voltage supply unit
Operating voltage	20...250 VAC
Frequency	40...70 Hz
Operating voltage range	20...250 VDC
Power consumption	≤ 3 W
Input circuits	2 electrodes or alternatively 3 electrodes
Schaltpunkt	0,1-100 kΩ
Probe voltage	5 V _{pp} /100 Hz (triangle)
Schaltsschwelle	0,1...1 kΩ
Schaltsschwelle	0,5...5 kΩ
Schaltsschwelle	0,8...4 kΩ
Schaltsschwelle	10...100 kΩ
Einschaltverzögerung	0,1...15s
Ausschaltverzögerung	0,1...15s
Hysterese	10%
Output circuits (digital)	2 x relays (change-over)
Output switching voltage relay	≤ 60 VDC / ≤ 250 VAC
Switching current per output	≤ 4 A
Switching capacity per output	≤ 1000 VA/60 W
Switching frequency	≤ 10 Hz
Contact quality	AgNi, 3μ Au
Galvanic isolation	
Test voltage	2.5 kV
Indication	
Switching state	Yellow
Protection class	IP20
Ambient temperature	-25...+60 °C
Dimensions	75 x 50 x 110 mm
Weight	246 g
Mounting instructions	DIN rail (NS35) or panel
Housing material	Polycarbonate/ABS
Electrical connection	2 × 8-pin removable terminal blocks, reverse polarity protected, screw terminal
Terminal cross-section	1 x 2.5 mm ² / 2 x 1.5 mm ²

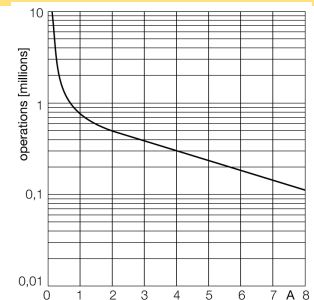
Dimensions



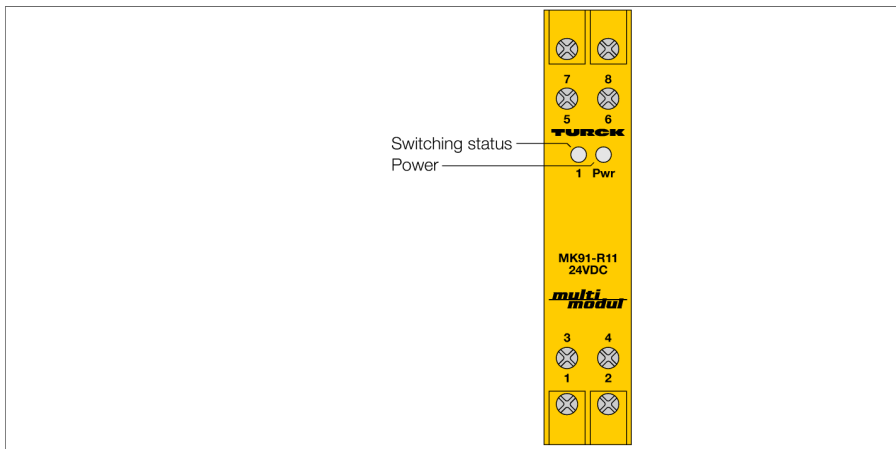
Output relay – Load curve



Output relay – Electrical lifetime



Level controller
1-channel
MK91-R11/24VDC



The 1-channel level controller MK91-R11/24VDC regulates conductive liquid levels. Electrodes connected to the device analyse the resistance of the liquid against the container mass.

A square-wave AC voltage signal is applied to the electrode. This enables DC-free and therefore electrolytic-free measurement of the liquid resistance.

The device has a relay output with a changeover contact.

The switchpoint of the level controller is set to $R_w = 40 \text{ k}\Omega$ (different values on request). If the response sensitivity falls below the set point, the relay is energized with a delay of 10 s.

The switching status of the output is indicated by a yellow LED and operational readiness by a green LED.

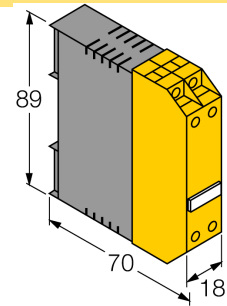
The device provides protection against reverse polarity and transient surge protection.

- **Switching point at 40 k Ω**
- **Hysteresis approx. 5%**
- **Output: Relay with 1 changeover contact**
- **Complete galvanic isolation**
- **Input reverse-polarity protected**

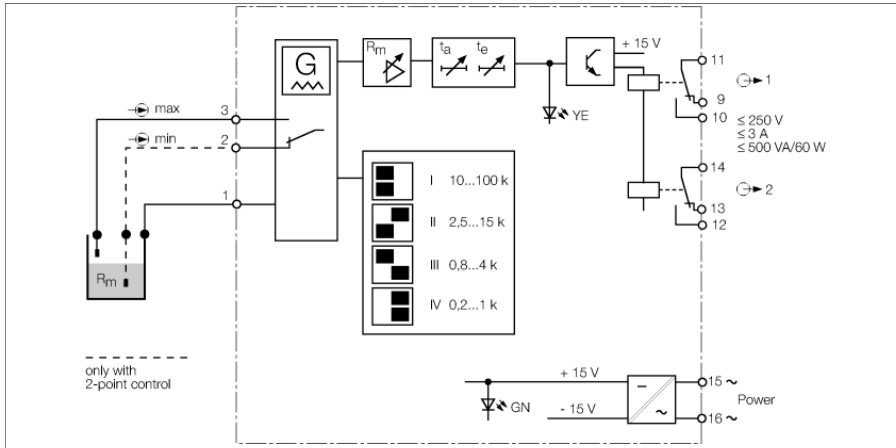
**Level controller
1-channel
MK91-R11/24VDC**

Type designation	MK91-R11/24VDC
Ident no.	7525202
Nominal voltage	24 VDC
Operating voltage range	19...29 VDC
Power consumption	≤ 0.5 W
Input circuits	2 electrodes
Schaltpunkt	40 kΩ
Probe voltage	±2 V/50 μA/3 Hz
Hysterese	5%
Output circuits (digital)	1 x relay (change-over)
Output switching voltage relay	≤ 30 VDC / ≤ 250 VAC
Switching current per output	≤ 3 A
Switching frequency	≤ 5 Hz
Contact quality	AgNi, 3μ Au
Galvanic isolation	
Test voltage	4.0 kV
Indication	
Operational readiness	green
Switching state	Yellow
Protection class	IP20
Ambient temperature	-25...+60 °C
Storage temperature	-40...+80 °C
Dimensions	89 x 18 x 70 mm
Weight	78 g
Mounting instructions	DIN rail (NS35) or panel
Housing material	Polycarbonate/ABS
Electrical connection	4 × 2-pin flat terminals with self-lifting pressure plates
Terminal cross-section	1 x 2.5 mm ² / 2 x 1.5 mm ²

Dimensions



**Level controller
1-channel
MK91-12-R/230VAC**



The 1-channel level controller MK91-12-R/230VAC monitors and regulates conductive liquid levels.

As a dual level regulator, it can be used to control pumps or solenoid valves, as monitoring device it is designed for run-dry or over flow protection.

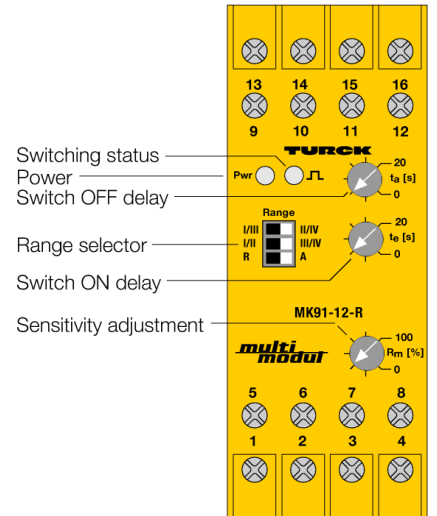
The level controller not only provides optimum reliability in differentiating liquids, it is also suited for the distinction between foam and liquid. The responsivity (liquid resistance) is adjustable between 0.2 ... 100 kΩ. First, select one of the four sensitivities with the "Range" switch. Then you can finetune the switchpoint via the potentiometer at the front.

The separately adjustable switch-on and switch-off delay is very important for turbulent liquid levels. You can set a delay time between 0 ... 20 s via the potentiometers at the front.

Two relay outputs each with one changeover contact are available to output the switching commands. You can toggle between closed current (R) and working current (A) with the "Range" switch.

The switching status of the output is indicated by a yellow LED and operational readiness by a green LED.

For further information, please order out installation guidelines.

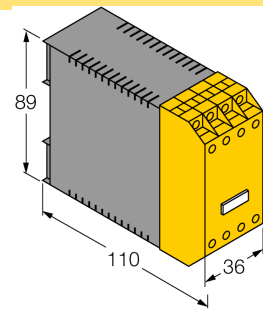


- **Responsivity: 0.2...100 kΩ**
- **Hysteresis: 10%**
- **Output: 2 relays with 1 changeover contact**
- **Electronic switching of electrodes**
- **Switch-on/off delay 0...20 s, separately adjustable**
- **Reliable distinction between foam and liquid**
- **Galvanic isolation of input circuits, output circuits and power supply**

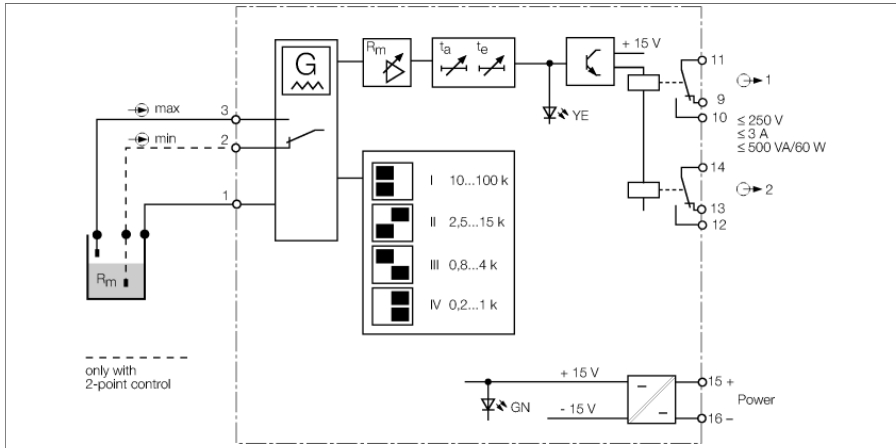
**Level controller
1-channel
MK91-12-R/230VAC**

Type designation	MK91-12-R/230VAC
Ident no.	7545070
Nominal voltage	230 VAC
Operating voltage	184...264 VAC
Frequency	48...62 Hz
Power consumption	≤ 3 VA
Input circuits	2 electrodes or alternatively 3 electrodes
Schaltpunkt	0,2-100 kΩ
Probe voltage	0,02...5 Vpp/150 Hz (triangle)
Schaltschwelle	0,2...1 kΩ
Schaltschwelle	0,8...4 kΩ
Schaltschwelle	2,5...15 kΩ
Schaltschwelle	10...100 kΩ
Einschaltverzögerung	0...20 s
Ausschaltverzögerung	0...20 s
Hysterese	10%
Output circuits (digital)	2 x relays (change-over)
Output switching voltage relay	≤ 30 VDC / ≤ 250 VAC
Switching current per output	≤ 3 A
Switching capacity per output	≤ 500 VA/60 W
Switching frequency	≤ 5 Hz
Contact quality	AgNi, 3μ Au
Galvanic isolation	
Test voltage	2.5 kV
Indication	
Operational readiness	green
Switching state	Yellow
Protection class	IP20
Ambient temperature	-25...+60 °C
Storage temperature	-40...+80 °C
Dimensions	89 x 36 x 110 mm
Weight	262 g
Mounting instructions	DIN rail (NS35) or panel
Housing material	Polycarbonate/ABS
Electrical connection	4 × 4-pin flat terminals with self-lifting pressure plates
Terminal cross-section	1 x 2.5 mm ² / 2 x 1.5 mm ²

Dimensions



**Level controller
1-channel
MK91-12-R/24VDC**



The 1-channel level controller MK91-12-R/24VDC monitors and regulates conductive liquid levels.

As a dual level regulator, it can be used to control pumps or solenoid valves, as monitoring device it is designed for run-dry or over flow protection.

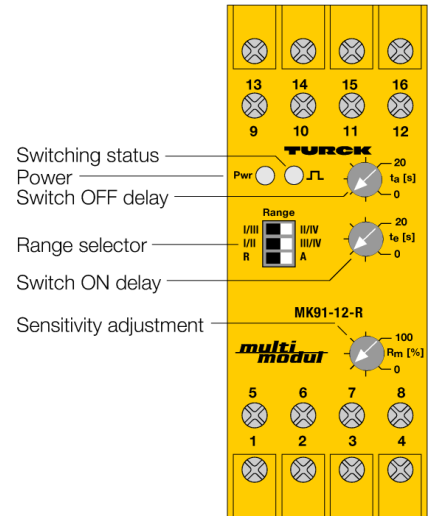
The level controller not only provides optimum reliability in differentiating liquids, it is also suited for the distinction between foam and liquid. The responsivity (liquid resistance) is adjustable between 0.2 ... 100 kΩ. First, select one of the four sensitivities with the "Range" switch. Then you can finetune the switchpoint via the potentiometer at the front.

The separately adjustable switch-on and switch-off delay is very important for turbulent liquid levels. You can set a delay time between 0 ... 20 s via the potentiometers at the front.

Two relay outputs each with one changeover contact are available to output the switching commands. The output configuration of both outputs can be changed from NC mode (R) to NO mode (A) for all measuring ranges using the "Range" switch.

The switching status of the output is indicated by a yellow LED and operational readiness by a green LED.

For further information, please order out installation guidelines.

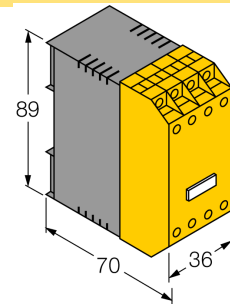


- **Responsivity: 0.2...100 kΩ**
- **Hysteresis: 10%**
- **Output: 2 relays with 1 changeover contact**
- **Electronic switching of electrodes**
- **Switch-on/off delay 0...20 s, separately adjustable**
- **Reliable distinction between foam and liquid**
- **Galvanic isolation of input circuits, output circuits and power supply**

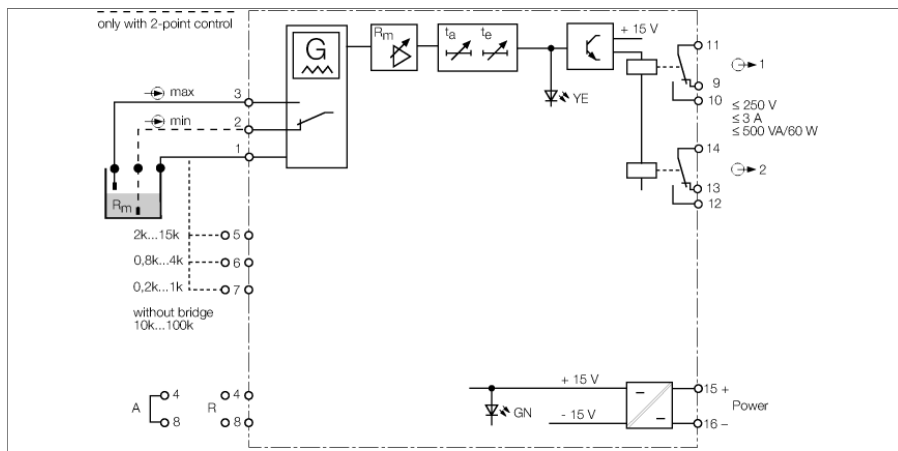
Level controller
1-channel
MK91-12-R/24VDC

Type designation	MK91-12-R/24VDC
Ident no.	7545077
Nominal voltage	24 VDC
Operating voltage range	20...28 VDC
Power consumption	≤ 1.5 W
Input circuits	2 electrodes or alternatively 3 electrodes
Schaltpunkt	0,2-100 kΩ
Probe voltage	0,02...5 Vpp/150 Hz (triangle)
Schaltswelle	0,2...1 kΩ
Schaltswelle	0,8...4 kΩ
Schaltswelle	2,5...15 kΩ
Schaltswelle	10...100 kΩ
Einschaltverzögerung	0...20 s
Ausschaltverzögerung	0...20 s
Hysterese	10%
Output circuits (digital)	2 x relays (change-over)
Output switching voltage relay	≤ 30 VDC / ≤ 250 VAC
Switching current per output	≤ 3 A
Switching capacity per output	≤ 500 VA/60 W
Switching frequency	≤ 5 Hz
Contact quality	AgNi, 3μ Au
Galvanic isolation	
Test voltage	2.5 kV
Indication	
Operational readiness	green
Switching state	Yellow
Protection class	IP20
Ambient temperature	-25...+60 °C
Storage temperature	-40...+80 °C
Dimensions	89 x 36 x 70 mm
Weight	150 g
Mounting instructions	DIN rail (NS35) or panel
Housing material	Polycarbonate/ABS
Electrical connection	4 × 4-pin flat terminals with self-lifting pressure plates
Terminal cross-section	1 x 2.5 mm ² / 2 x 1.5 mm ²

Dimensions



**Level controller
1-channel
MK91-121-R/24VDC**



The 1-channel level controller MK91-121-R/24VDC monitors and regulates conductive liquid levels. As a dual level regulator, it can be used to control pumps and solenoid valves, as monitoring device it is designed for run-dry or over flow protection

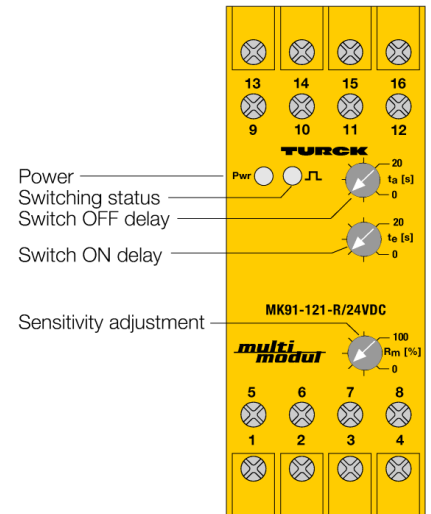
The level controller not only provides optimum reliability in differentiating liquids, it is also suited for the distinction between foam and liquid.

The responsivity (liquid resistance) is adjustable between 0.2 ... 100 kΩ. One of the four sensitivity ranges is selected by bridging the input terminals. Then you can finetune the switchpoint via the potentiometer at the front.

The possibility of setting the switch-on and switch-off delay separately is very important when dealing with turbulent liquid levels. You can set a delay time between 0 ... 20 s via the potentiometers at the front.

Two relay outputs each with one changeover contact are available to output the switching commands. The output configuration of both outputs can be changed from NC mode R (no bridge between terminals 4/8) to NO mode A (bridge between terminals 4/8).

The switching status of the output is indicated by a yellow LED and operational readiness by a green LED.

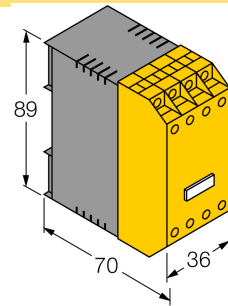


- **Responsivity: 0.2...100 kΩ**
- **Hysteresis: 10%**
- **Output: 2 relays with 1 changeover contact**
- **Electronic switching of electrodes**
- **Switch-on/off delay 0...20 s, separately adjustable**
- **Reliable distinction between foam and liquid**
- **Galvanic isolation of input circuits, output circuits and power supply**

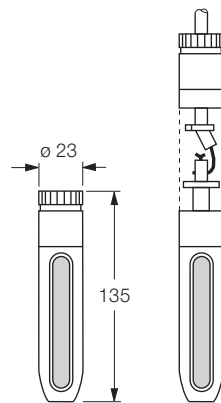
**Level controller
1-channel
MK91-121-R/24VDC**

Type designation	MK91-121-R/24VDC
Ident no.	7545087
Nominal voltage	24 VDC
Operating voltage range	20...28 VDC
Power consumption	≤ 1.5 W
Input circuits	2 electrodes or alternatively 3 electrodes
Schaltpunkt	0,2-100 kΩ
Probe voltage	0,02...5 Vpp/150 Hz (triangle)
Schaltswelle	0,2...1 kΩ
Schaltswelle	0,8...4 kΩ
Schaltswelle	2,5...15 kΩ
Schaltswelle	10...100 kΩ
Einschaltverzögerung	0...20 s
Ausschaltverzögerung	0...20 s
Hysterese	10%
Output circuits (digital)	2 x relays (change-over)
Output switching voltage relay	≤ 30 VDC / ≤ 250 VAC
Switching current per output	≤ 3 A
Switching capacity per output	≤ 500 VA/60 W
Switching frequency	≤ 5 Hz
Contact quality	AgNi, 3μ Au
Galvanic isolation	
Test voltage	2.5 kV
Indication	
Operational readiness	green
Switching state	Yellow
Protection class	IP20
Ambient temperature	-25...+60 °C
Storage temperature	-40...+80 °C
Dimensions	89 x 36 x 70 mm
Weight	160 g
Mounting instructions	DIN rail (NS35) or panel
Housing material	Polycarbonate/ABS
Electrical connection	4 × 4-pin flat terminals with self-lifting pressure plates
Terminal cross-section	1 x 2.5 mm ² / 2 x 1.5 mm ²

Dimensions



Immersion Electrode EL1/1



- **Immersion electrode for use in conjunction with TURCK level controls**
- **Temperature range 0...60 °C**

The immersion electrode EL1 is an accessory for TURCK's level controls. The device is particularly suited for use in open containers within a temperature range of 0...60 °C. If required, the connection of the electrode to the single-wire cable can be fully encapsulated for water-proofness by the customer.

Type	EL1/1
Ident-no.	69672
Electrode material	X12CrMoS17
Electrode surface	30 cm ²
Protective sleeve and cap cover	low-pressure polyethylene „Lupolen 8011 Lnt“
Ventilation	via longitudinal slot
Weight	190 g
Note	other versions such as single or multiple electrodes for aggressive media, higher temperatures and extended pressure ranges available on request