

TRUBOMAT TMM 119 Measuring Amplifier



Safety Precautions

- Installation, initial start-up and maintenance may only be performed by trained personnel! All applicable European and national regulations regarding installation of electrical equipment must be adhered to.
- The device may only be connected to supply power which complies with the specifications included in the technical data and on the serial plate!
- The device must be disconnected from all sources of power during installation and maintenance work!
- The device may only be operated under the conditions specified in the operating instructions!

Characteristics:

- Bar graph display from 0 to 100 (1% steps)
- 4½ place digital display with adjustable decimal point
- %; TE/F, EBC, NTU, FTU, mA and g/ltr units can be assigned
- Integrated linearisation function
- Adjustable measured value interference filter
- 4 relay threshold values – separately adjustable delay time and hysteresis
- Measuring signal (mA) can be freely assigned to desired bar graph display value
- Bar graph display can be freely assigned to desired digital display value
- Hold input for “freezing” the current value

Controls and Display LEDs

- 4 control keys
Esc = up one menu level / back
Enter = down one menu level / next submenu
↑+ = cursor up / increase value
↓- = cursor down / decrease value
- 4 LEDs = threshold value relays pulled in

Technical Data

Supply power

230 V ± 10%, 50/60 Hz / 24 V DC ± 10% (see serial plate)

Note:

The device may only be connected to supply power via a disconnecting device which is located nearby.

Connected load

Approx. 8 VA / approx. 8 W

Ambient temperature

-20 to +60 °C

Housing

Euro plug-in module for 19" rack, 3 std. height x 12 std. width units

DIN 41612 plug connector type F 32 d-z

DIN panel mount housing: 138⁺¹ x 68⁺¹ mm, IP 65

Wall mount housing: 246 x 135 x 249 mm, IP 65

Note:

Contact protection per DIN EN 61010-1 is only assured when installed to a closed switch cabinet or housing with at least IP 54 protection!

Relay outputs

4 floating changeover contacts

Switching voltage: max. 250 V, 50 to 60 Hz

max. 115 V DC

Switching current: max. 3 A AC, 0.5 A DC

Min. load: 10 mA at 5V DC

Note:

Contacts are not protected against overload – use external protective device!

Current/voltage outputs:

1 ea. 0 to 20 mA 400 Ω max. load / 0.5% accuracy

1 ea. 4 to 20 mA 400 Ω max. load / 0.5% accuracy

1 ea. 0 to 10 V 3.3 kΩ min. load / 1% accuracy

Auxiliary power output for sensors

15 V DC / max. 100 mA

Indicators

LCD panel with bar graph and digital display, setup menu with alphanumeric display

4 LEDs = threshold value relays pulled in

Threshold value relay on and off delay

Adjustable from 0.1 to 10 s

Measuring circuit

4 to 20 mA

Measuring accuracy

< 0.5% of measuring range upper limit

Refresh frequency

Digital display: approx. 5 Hz

Bar graph display: approx. 20 Hz

Current/voltage output: approx. 20 Hz

CE mark

In accordance with low-voltage directive (73/23/EWG), EMC directive (89/336/EWG) and EN 50 081-1:1992; EN 50 082-2:1995; EN 61 010-1:2001



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Menu Structure: (see also overview diagram)

Main Menu (A)

- - Threshold values
- - Scale
- - Decimal point
- - Unit of measure
- - Linearisation
- - Extras
- - Info

“Threshold Values” Submenu (B)

Relay selection 1 – 4, switching point adjustment, on-delay and hysteresis adjustment

Switching threshold (H1-4):

Adjustable from 0 to 100% relative to the selected min-max mA range (see menu C)

Delay time (K1-4):

Adjustable from 0.1 to 10 seconds

Reset hysteresis (P1-4):

Adjustable from 0 to 99%

“Scale” Submenu (C)

Assignment of input signal (mA) to digital display and bar graph values

mA max. value (J)

Adjustable from 0 to 20.0 mA

mA min. value (L)

Adjustable from 0 to 20.0 mA

Maximum scale value (M)

Adjustable from 0.1 to 1999.9 (U/M from menu E)

Minimum scale value (N)

Adjustable from 0.1 to 1999.9 (U/M from menu E)

“Decimal Point” Submenu (D)

- Decimal place shifting within the digital display value using $\uparrow+$ and $\downarrow-$ keys

“Unit of Measure” Submenu (E)

- Assignment of a U/M to the display value

“Extras” Submenu (F)

- Selections for following functions:
 - Linearisation
 - Language

“Info” Submenu (G)

- Device and manufacturer information
- Software version
- IER phone number

“Linearisation” Submenu (O)

- **Linear+:** for turbidity measurement (standard)
- Linear-: Inversion, for special applications
- e function: for special applications
- EPROM, optional: curve per customer requirements (programmed by the manufacturer)

“Filter” Submenu (T)

Adjustable filter for attenuating measured value fluctuations and interference

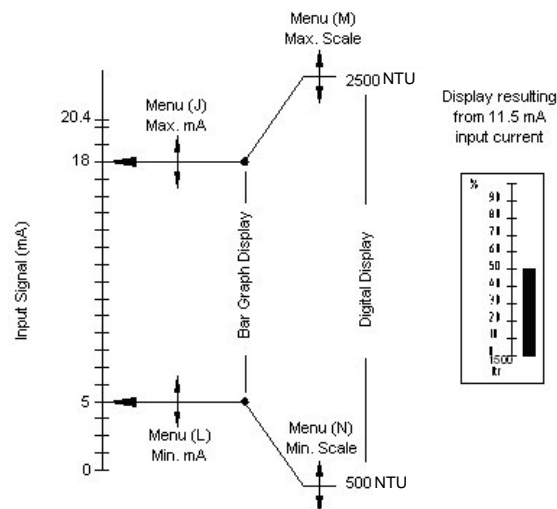
Integration time constant: 0.01 to 5.00 seconds

“Language” Submenu (S)

One of the following user interface languages can be selected:

- German
- English
- French

Assigning display values to the input signal:



Example:

A range (i.e. portion of the input signal) can be selected with menu items (J) and (L).

In this example: 5 to 18 mA

Result:

With an input current of 5 mA, the bar graph indicates “0”, and at 18 mA it indicates full value (100).

A digital display value can be assigned to the **selected range** with menu items (M) and (N).

In this example: 5 mA = 500 and 18 mA = 2500

Result:

With an input current of 5 mA, the digital display indicates “500”, and at 18 mA it indicates “2500”.

The appropriate unit of measure can be assigned to the display with menu item (E).

In this example: TE/F

Result:

The “TE/F” U/M appears underneath the digital display.

General Information

Overranging display:

As soon as the measuring signal violates the mA range selected in the “Scale” submenu (C), overranging is indicated at the left-hand side of the standard display by means of an arrow (\uparrow/\downarrow).

If none of the keys is activated for a duration of **greater than 2 minutes** when the main menu is open, the device is automatically returned to the standard display (bar graph and digital value).

Device reset

Reset to default values:

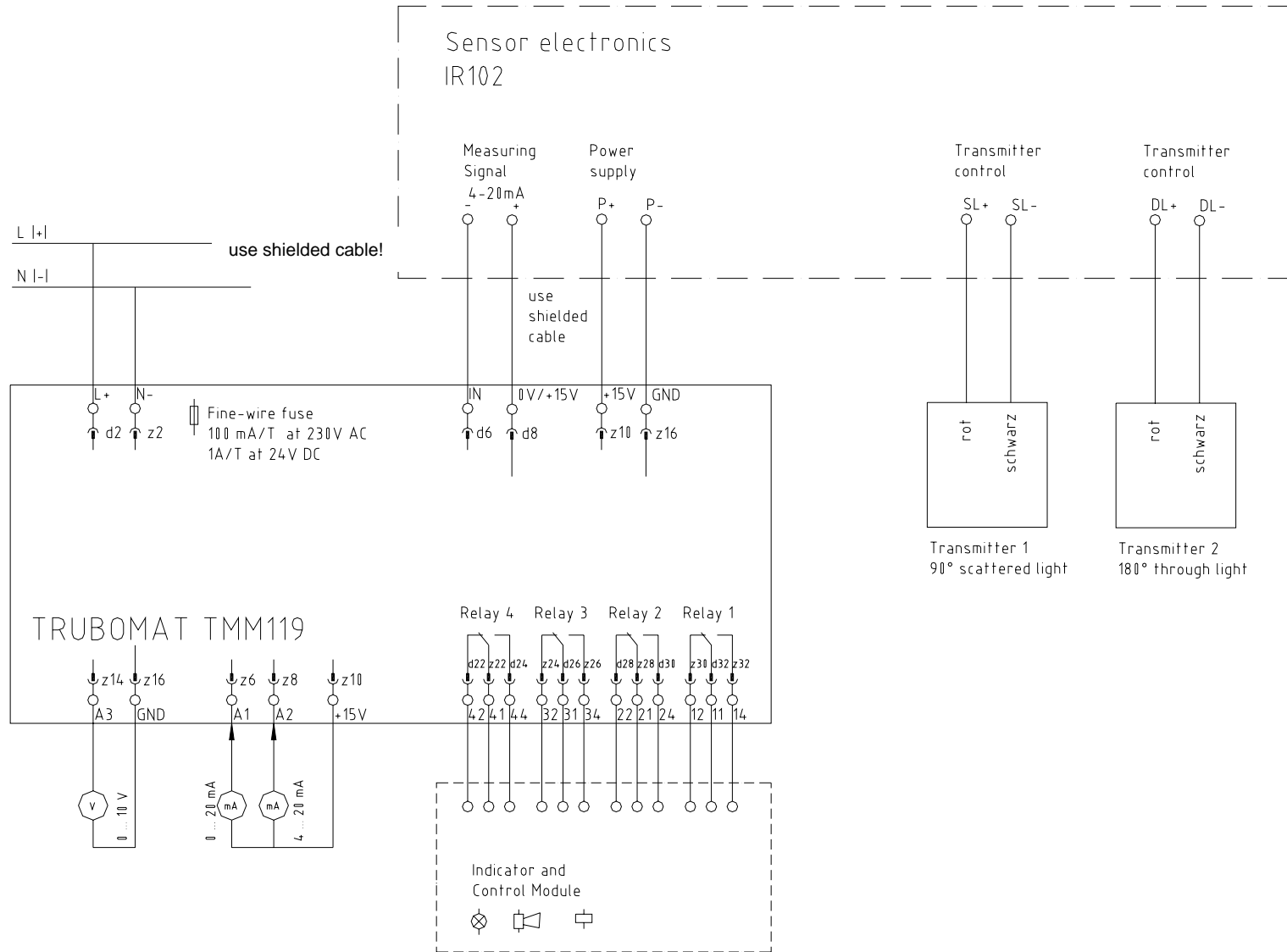
- Disconnect from supply power, i.e. unplug the device.
- Wait for 1 to 2 seconds.
- Reconnect to supply power, i.e. plug back in.
- Press and hold all four keys for approximately 2 seconds.

The following default values are written to the EPROM:

- Limit value 1 = 80%
- Limit value 2 = 60%
- Limit value 3 = 40%
- Limit value 4 = 20%
- Delay time = 0.1 seconds
- Hysteresis = 0%
- mA min. value = 4.0 mA
- mA max. value = 20.0 mA
- Scale minimum = 0.0
- Scale maximum = 100.0
- Decimal place = once place
- Unit of measure = %
- Linearisation = Linear+
- Filter = 0.1 s integration time
- Language = German

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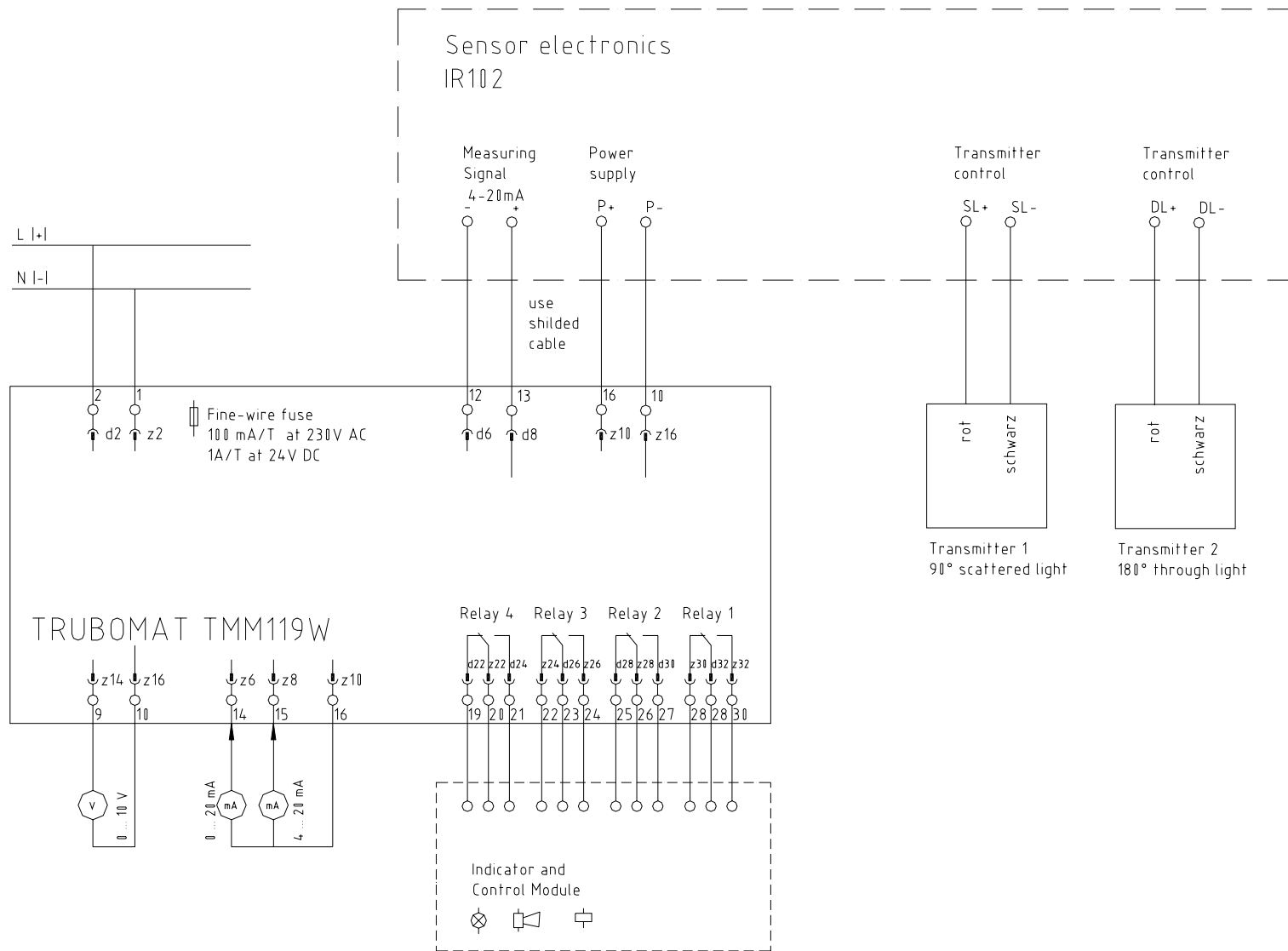
Electrical Connection:



Connecting the IR102 sensor set to the TRUBOMAT TMM119 measuring amplifier

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Electrical Connection:



Connecting the IR102 sensor set to the TRUBOMAT TMM119W (Wall mounted type) measuring amplifier

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Menu Structure Overview Diagram

