

Primary element PE1-...

1. Use

Remote water level gauge connected with the evaluating device ERW Lcd 1.0 for steam boilers or containers with conductive liquids. The standard instrument contains 4 free adjustable limit values.

The probes can be arranged with variable distances (Fig. 2) on the control unit. The indicating range can be defined in any way. Thus, even the critical boiler ranges can be reliably controlled.

2. Technical data

| | | | | | | |
|--------|-----|-----|-----|-----|-----|-----|
| PN | 40 | 63 | 100 | 160 | 250 | 320 |
| PB bar | 32 | 50 | 80 | 100 | 160 | 200 |
| TB °C | 239 | 265 | 296 | 312 | 348 | 367 |

Material of standpipe and process connection as per DIN or ASTM.

| | |
|-----------------------|-----------------|
| Probe type | EL 60 |
| Mechanical connection | G ½ |
| Width across flats | SW 27 |
| Bolts | stainless steel |
| Probe tip | stainless steel |
| Insulator | ceramic |

The delivery includes the insulation.

Dimensions

| | |
|------------------|--------------------------------------|
| Centre distance | A (please indicate in case of order) |
| Measuring range | E (please indicate in case of order) |
| Number of probes | 8 12 16 20 24 28 |
| Probe distance | min. 36 mm for staggered mounting |

Process connection

Flanges or welding ends as per DIN or ANSI, other standards on request.

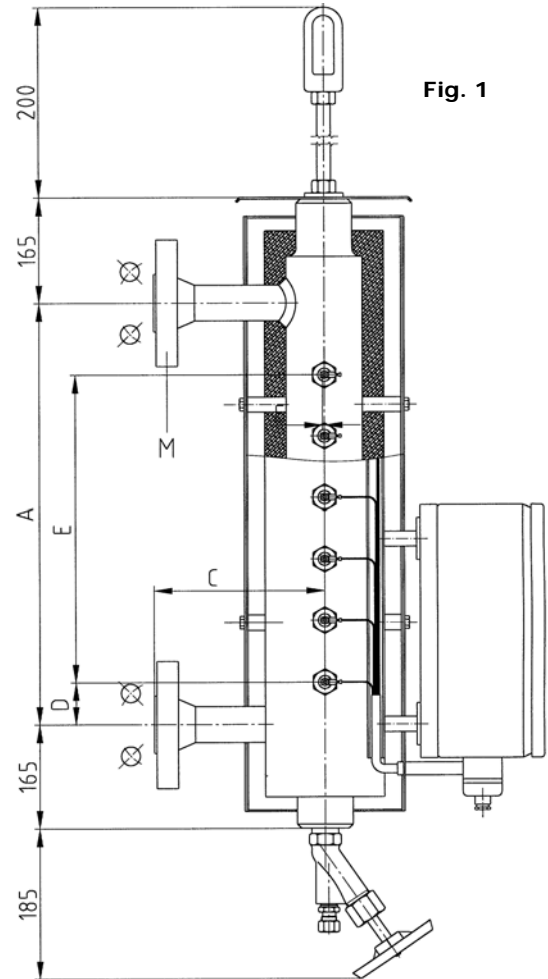


Fig. 1

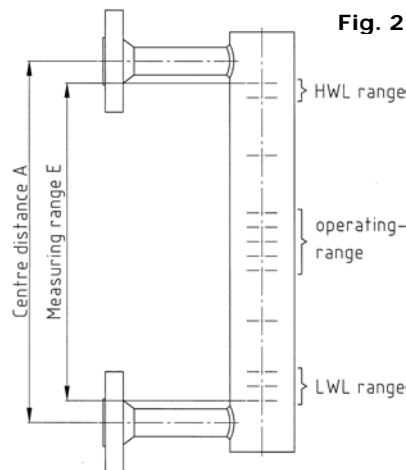
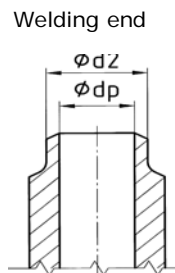
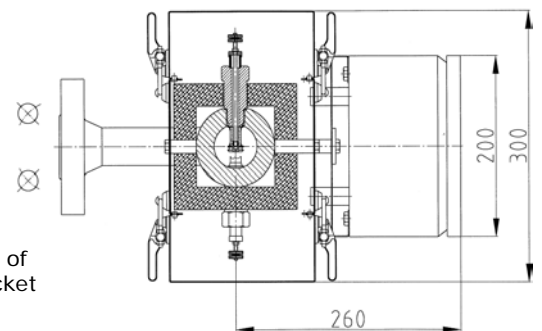


Fig. 2



1) $\phi d3$ = External diameter of corresponding socket



| | | | | | | | |
|-------------------------------------|--|-------------|-------------|------------|----------------------|-----------|----------------|
| PN | | Dim. A [mm] | Dim. E [mm] | Dim. D[mm] | Process connection M | | Material |
| PB bar | | | | | Flange | | |
| TB °C | | | | | PN | DN | |
| Probes type | | Number | | | Sealing surface | Form | |
| Shutoff valve type | | Leaflet | | Number | Process connection M | | Weight kg |
| Drain valve type | | | | | Welding end | | |
| Spare parts list | | | | | PN | DN | |
| Mounting and operating instructions | | | | | ϕdp | $\phi d2$ | $\phi d3^{1)}$ |
| IGEMA project no.: | | Equipment | | | | | |

Control and evaluation unit type ERW Lcd 1.0

1. General description

In the third generation of remote water-level indicators for steam boilers and tanks, Jgema brought out the new ERW lcd 1.0.

The characters " E R W " stand for "electronic remote water-level" and "l c d " for the use of a "liquid crystal display" to indicate all states.

The ERW lcd 1.0 is built in a panel instrument case acc. to DIN 43700.

Modern computer technology, a bus system and a new kind of indication were the base of development.

A special feature of the ERW lcd 1.0 is the first use of Jgema's Self-Monitoring-Control-Technol on a remote water-level indicator.

The SMC-Technology leans on the ruleworks for low-water limiters and brings reliable functioning and most possible safety into your process. The ERW lcd 1.0 is designed for control and limiter applications. Four standard relays work as limit switches with separate switch points.

Two additional special relays work together as a SMC-limit switch, behaving as a 'low-level-cut-off'.

A further amazing feature is the use of two 4..20mA interfaces. Both of them indicate the water-level as standard 4..20mA signal.

They are capable to drive loads up to 500 ohms. In the third generation of remote water-level indicators, there is no longer need to wire expensive cables separately for each probe to the controller.

Furthermore, linear distances between the probes are not required. Each distance and the corresponding water-level can be programmed to the controller by customer or by producer.

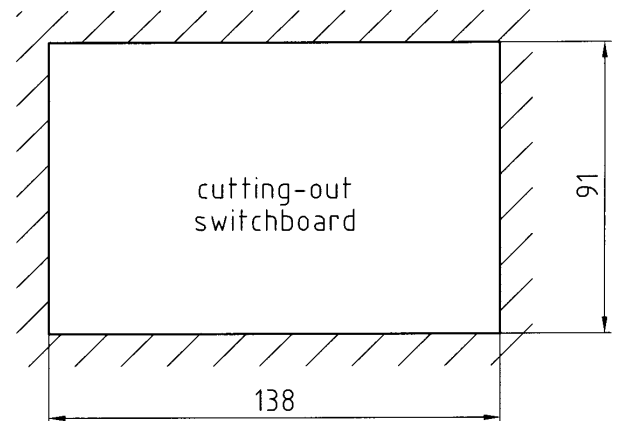
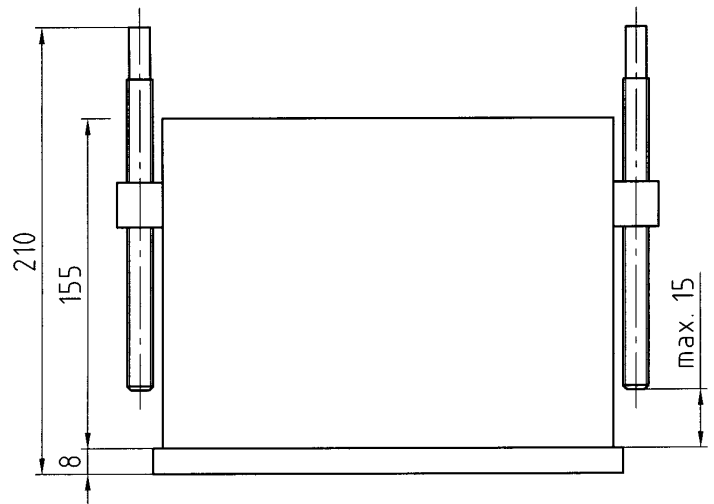
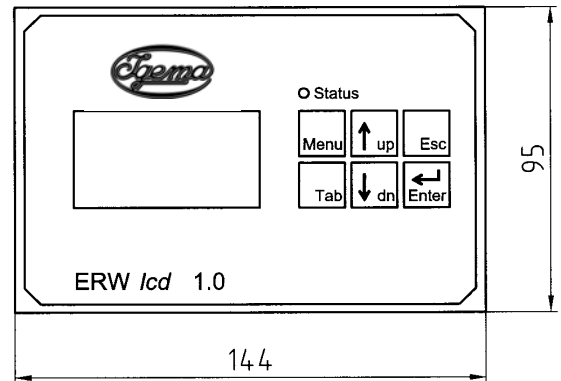
According to that, it is possible to concentrate probe in important areas and to spread them in less important areas.

Due to this fact, the costs of purchase and maintena will be reduced without restricting the quality of level-information.

The controller's parameters get set within a four language based menu. Only six keys are necessary to navigate and to program.

The units of level indication can be programmed as " %, mm, L " with relative or absolute values in the range of ± 999 .

The ERW lcd 1.0 gives the customers a free programmable and complex controller to handle eas all required applications.



| | | |
|--|-----------------------|-------------------|
| Primary element type PE1-.. | Leaflet | Weight 0,85 kg |
| Panelmeter type | | |
| Drain valve type | | |
| Maintenance instruction type ERW Lcd 1.0 | 8-BAS 892-GB | |
| Jgema-Project no.: | Equipment no.: | |

Control and evaluation unit type ERW Lcd 1.0

2. Execution

- Back-light LC display
- Digital display
- Indicates the actual level in percentage or in absolute or relative numbers
- The modular design of the ERW supports 4 - 28 probes
- For additional applications the ERW supports two separate 4-20 mA interfaces for loads of up to 500 ohms
- Four adjustable switch-points and one additional fail-safe switch-point

3. Technical data

Power-attachment: 14 Vdc 2 A by separate power-supply

Interfaces:

- RS232C connector D-sub 9
- RS485 6-port plug
- Limit-switches 12-port-plug

Panel instrument cases

Panel instrument cases acc. to DIN 43700

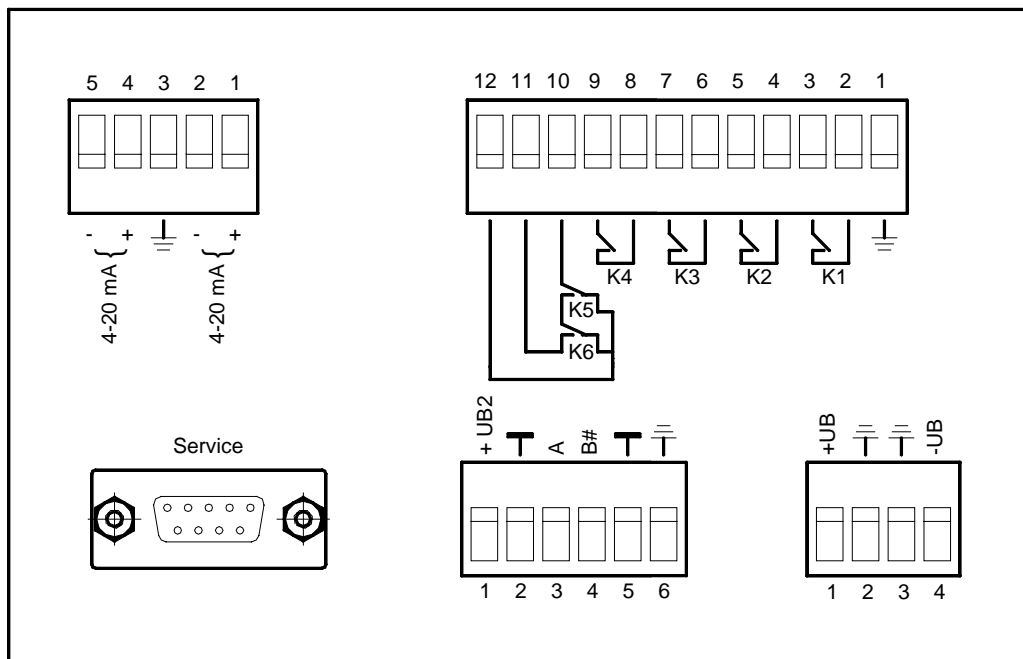
Fixing clamps type C, DIN 43853 approx. 185 mm long

Protection acc. DIN VED 0470: IP40

Max. ambient temperature: 55 °C

Material: constructed from glassfibre reinforced "Noryl" GFN SE1

Fire protection UL 94V1.



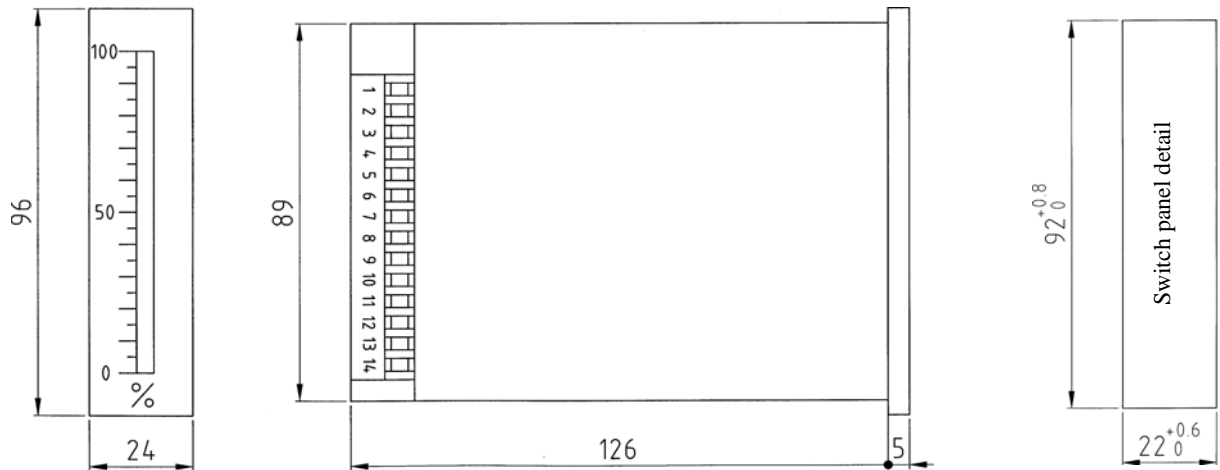
Indicating instrument type bar-graph BV03.001.310B

1. Application

Indication of any physical size.

2. Version

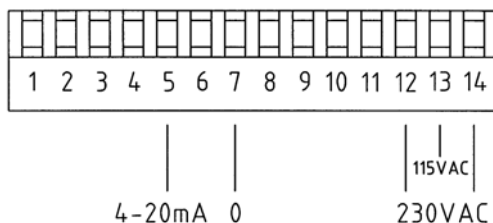
Switch panel instrument as per DIN 43700 with screw terminals and lockable quick attachment through plastic clamps for a wall thickness up to 50 mm.



3. Technical data

| | | |
|--------------------|-----------------------|--|
| Case | Material | PC/ABS-screen, black and self-quenching as per UL94V-0 |
| | Protection | at the front side IP40 |
| | Connection | IP00 |
| | Weight | approx. 0,300 kg |
| | Connection | at the back side with clamps up to 2,5 mm ² |
| Inlet | Measuring range | 4 – 20 mA |
| | Inlet resistance | 100 Ω |
| Precision | Resolution | 20 segments |
| | Measuring error | +/-1 Digit |
| | Temp. coefficient | 100 ppm/K |
| | Measuring principle | Dual-Slope-Integration |
| Power supply | Supply voltage | 230/115 V +/- 10% (50-60 Hz) |
| | Input | approx. 2 VA |
| Indication | Display | bar indication with 20 points |
| | Overflow | EEE |
| | Measuring rate | 250 ms |
| Ambient conditions | Operating temperature | 0 up to +60 °C |
| | Storage temperature | -20 up to +80 °C |

4. Electrical connection



CE – mark

The analogue incoming circuits must be laid in a screened way to guarantee an unrestricted use of the instrument according to the 89/336/EWG rules for electromagnetic tolerance. The screen must be put on one side.

Panelmeter type PM151

1 General

The fluorescent bar graph indicator PM151 is a fully electronic measuring value indicator.

A special feature of this instrument is the high-intensity fluorescent bar graph for the simultaneous analogue indication of the measured value and the alarm limits. A digital display which shows the exact values completes the indication.

Standard processing signals in the ranges 0 ... 10 V, (-10 V ... +10 V), 0 ... 20 mA, (-20 mA ... +20 mA) or 4 mA ... 20 mA can be applied. An auxiliary voltage output of 24 V / 25 mA supports the connection of 2- or 3-wire measuring transducers.

The set-up procedure for the instrument parameters is especially easy due to the menu prompting in the numerical display and only 2 keys on the front panel to control the instrument. This procedure is, among other things, used to set a range for the numerical measuring value and limit display.

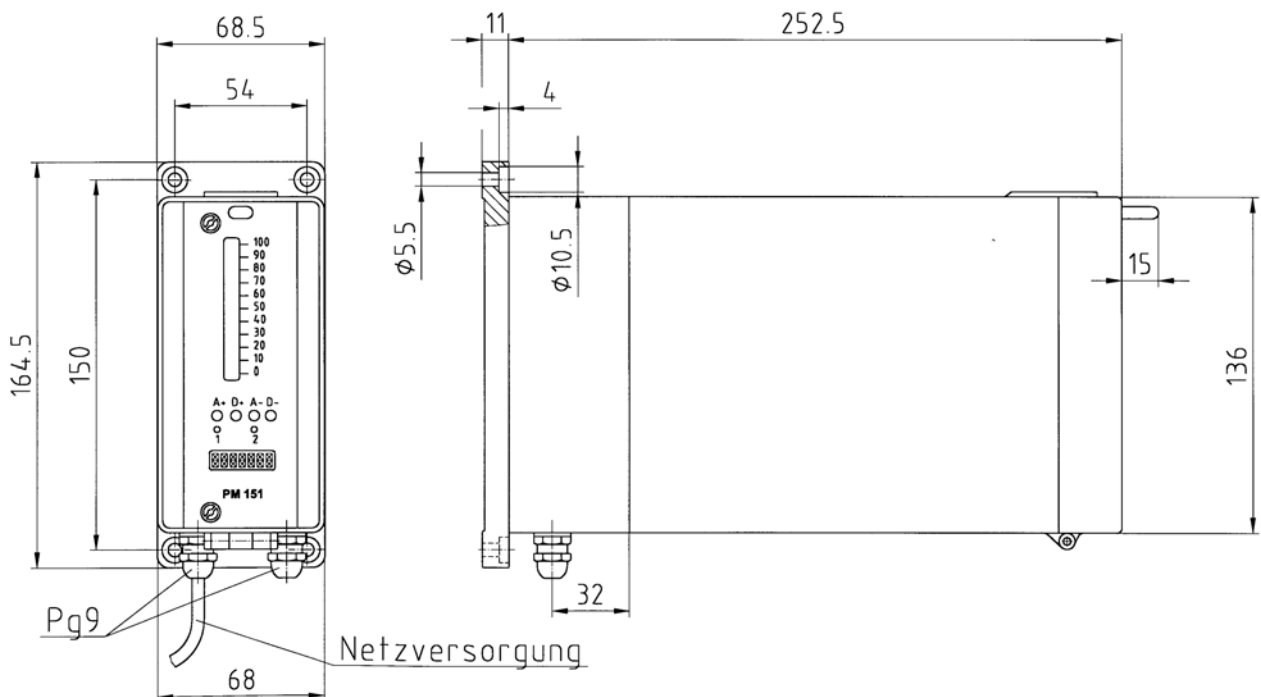
This can be useful to display the true value of the processing variable.

The user can easily recalibrate the instrument to full scale by applying a calibrating signal of 5 to 10 V / 10 to 20 mA.

2 Technical Data

2.1 Design

The panelmeter consists of a euro-format plug-in card with front panel. It is mounted in a plug-in module for racks to fix it on the wall.



2.2 Display

Analogue display: quasi-analogue, bar graph with 51 segments, length 50 mm

Digital display : 4 digits, total range 1099, display for 1000...1099 with decimal point: *00 ... *99

Decimal point : programmable, either 000, 0.00 or 00.0

Ovrange : special characters + + + + / - - - - - in the digital display in case of over- or underrange

Value range : display programmable for 0 V or 0(4) mA and for 10 V or 20 mA (hill scale)

Standard scale : 0 to 100 in black numbers on eloxal front panel



Panelmeter type PM151

2.3 Inputs and Outputs

Measuring inputs: 1) voltage 0 ... 10 V or -10 V ... +10 V
2) current 0 ... 20 mA or 4 ... 20 mA or -20 mA ... +20 mA.

| |
|--|
| The two inputs must not be connected simultaneously |
|--|

Ri approx. 1 MOhms (volt.) or 70 Ohms (current).

Limits : 2 minimum- and 2 maximum limits, programmable by front keys.
Digital outputs : one change-over relay contact per limit, load capacity 250 V / 5 mA (4 relays).
Auxiliary voltage : approx. 5 V / 11 mA for testing purposes and approx. 24 V / 25 mA for transducer connection.
Measuring method : Dual-slope-integration, approx. 30 samples per second, resolution 13 bits.
Response time : 40 ms at the most when a limit is exceeded.
Calibration : The user can recalibrate the instrument by applying an external calibration signal or 10.00 V / 20.00 mA via the keys.
Configuration : All programmable parameters can be set via the 2 keys on the front panel. These parameters are stored non volatile.

2.4 Other Data

2.4.1 Panelmeter

Auxiliary energy : voltage see type plate:
230 VAC $\pm 20\%$, 7 VA, 4 W, 45 ... 400 Hz
115 VAC $\pm 20\%$, 7 VA, 4 W, 45 ... 400 Hz
24 VDC $\pm 20\%$, 4 W (other voltages are available on demand)
Protection Class : I in accordance with 1EC348, VDE041 1
Protection System : IP20 in accordance with D1N40050
Front panel : standard front panel IP 30,
as special type IP 54
Temperature range: 0 ... 55°C
Connections : 32-pin connector, DIN 41612, type F

2.4.2 Plug-in module for racks

Material : ABS with highly transparent front door
Colour : base part: light grey similar to RAL 7035
back part: graphite grey similar to RAL 7024
Protection System : type CC 500 TK/NGTK IP 65 DIN VDE 0470
Resistance to heat : according to ISO 75: 80°C
Cable inlet : 2 x Pg. 9
1 x Pg. 9 coated with power supply cable with sprayed sparkplug
16 A / 250 V DIN 49441, R2, CEE 7, standard sheet VII with double protective conductor system
Cable type: HO5 W-F 3 G 1,5 mm

Panelmeter type PM190

1 General

The fluorescent bar graph indicator PM190 is a fully electronic measuring value indicator.

A special feature of this instrument is the high-intensity fluorescent bar graph for the simultaneous analogue indication of the measured value and the alarm limits. A digital display which shows the exact values completes the indication.

Standard processing signals in the ranges 0 ... 10 V, (-10 V ... +10 V), 0 ... 20 mA, (-20 mA ... +20 mA) or 4 mA ... 20 mA can be applied. An auxiliary voltage output of 24 V / 25 mA supports the connection of 2- or 3-wire measuring transducers.

The set-up procedure for the instrument parameters is especially easy due to the menu prompting in the numerical display and only 2 keys on the front panel to control the instrument. This procedure is, among other things, used to set a range for the numerical measuring value and limit display.

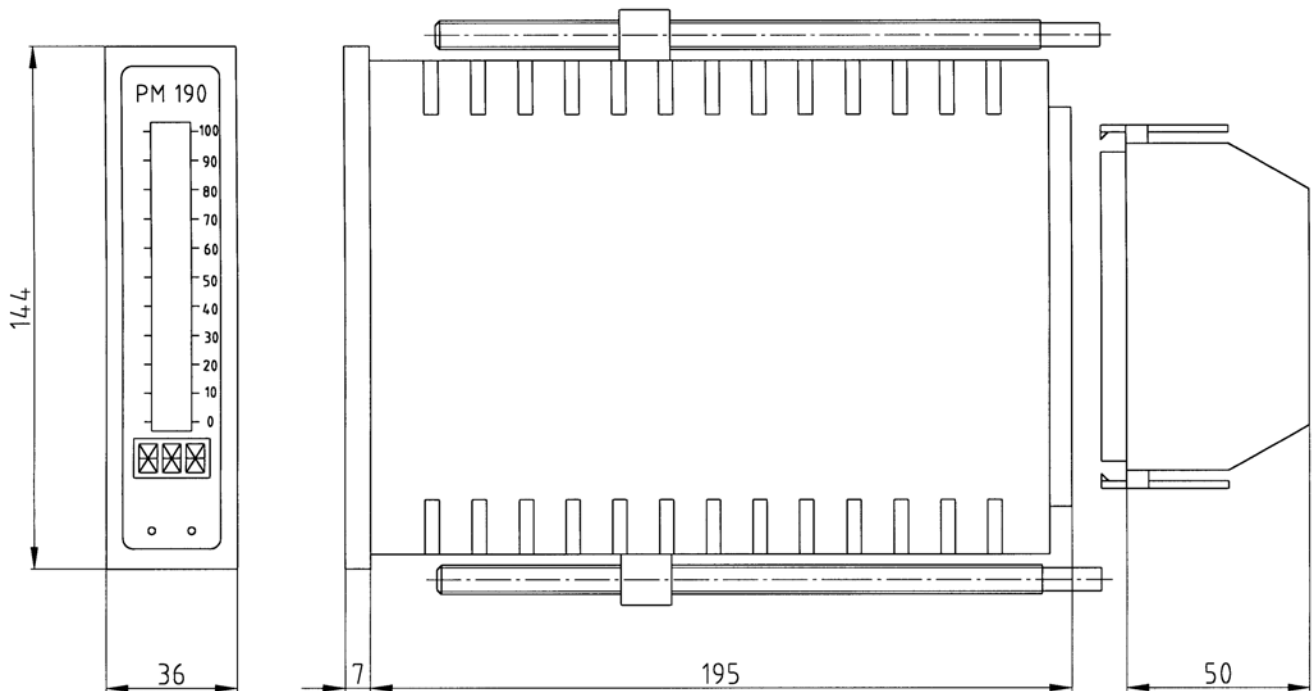
This can be useful to display the true value of the processing variable.

The user can easily recalibrate the instrument to full scale by applying a calibrating signal of 5 to 10 V / 10 to 20 mA.

2 Technical Data

2.1 Design

Compact steel case for panel mounting. Front 36 mm x 144 mm (w x h), mounting depth 200 mm without connector, panel breakthrough according to DIN 43700 33 + 0,6 mm x 138 + 0,8 mm (w x h).



2.2 Display

Analogue display: quasi-analogue, bar graph with 100 segments, length 84 mm

Digital display : 3 digits, total range 1099, display for 1000...1099 with decimal point: °00 ... °99

Decimal point : programmable, either 000, 0.00 or 00.0

Ovrange : special characters ^^^/vvv in the digital display in case of over- or underrange

Value range : display programmable for 0 V or 0(4) mA and for 10 V or 20 mA (hill scale)

Standard scale : 0 to 100 in white numbers on black background



Panelmeter type PM190

2.3 Inputs and Outputs

Measuring inputs: 1) voltage 0 ... 10 V or -10 V ... +10 V
2) current 0 ... 20 mA or 4 ... 20 mA or -20 mA ... +20 mA.

The two inputs must not be connected simultaneously

Ri approx. 1 MOhms (volt.) or 70 Ohms (current).

Limits : 2 minimum- and 2 maximum limits, programmable by front keys.

Digital outputs : one change-over relay contact per limit, load capacity 250 V / 5 mA (4 relays).

Auxiliary voltage : approx. 5 V / 11 mA for testing purposes and approx. 24 V / 25 mA for transducer connection.

Measuring method: Dual-slope-integration, approx. 30 samples per second, resolution 13 bits.

Response time : 40 ms at the most when a limit is exceeded.

Calibration : The user can recalibrate the instrument by applying an external calibration signal or 10.00 V / 20.00 mA via the keys.

Configuration : All programmable parameters can be set via the 2 keys on the front panel. These parameters are stored non volatile.

2.4 Other Data

2.4.1 Panelmeter

Auxiliary energy : voltage see type plate:
230 VAC $\pm 20\%$, 7 VA, 4 W, 45 ... 400 Hz
115 VAC $\pm 20\%$, 7 VA, 4 W, 45 ... 400 Hz
24 VDC $\pm 20\%$, 4 W (other voltages are available on demand)

Protection Class : I in accordance with 1EC348, VDE041 1

Protection System : IP20 in accordance with D1N40050

Front panel : standard front panel IP 30,
as special type IP 54

Temperature range: 0 ... 55°C

Connections : 32-pin connector, DIN 41612, type F