

# BETA 90



## Operating Manual

The **BETA 90** are digital panel instruments for measurement of DC current and DC voltage with 9 measuring ranges. Seven ranges for power supply are available.

### Operation:

The measuring ranges and zero point are selectable using jumpers at the back. The choice of many factory pre-set measuring ranges is included, with user adjustments available for the zero and full scale values.

### Technical data:

|                                 |                                     |  |                    |
|---------------------------------|-------------------------------------|--|--------------------|
| <b>Display</b>                  | Display range                       | 1999   |                    |
|                                 | Decimal point position              | selectable                                   |                    |
|                                 | Negative display indication         | "-"  |                    |
|                                 | Digit height                        | 14 mm / 7 segment digits                     |                    |
|                                 | Overload indication                 | last 3 digits blank                          |                    |
|                                 | Setting time                        | < 1 s (0 ... 99 %)                           |                    |
| <b>Measuring ranges</b>         | Direct current                      | 0 ... 1 mA                                   |                    |
|                                 | (voltage drop < 600 mV)             | 0... 20 mA                                   |                    |
|                                 |                                     | 0 ... 200 mA                                 |                    |
|                                 | Direct voltage                      | 0 ... 0.2 V (1 V)                            |                    |
|                                 | (input current < 300 mA)            | 0 ... 1 V (5 V)                              |                    |
|                                 |                                     | 0 ... 5 V (25 V)                             |                    |
|                                 |                                     | 0... 25 V (100V)                             |                    |
|                                 |                                     | 0... 100 V (300 V)                           |                    |
|                                 |                                     | 0 ... 300 V                                  |                    |
|                                 |                                     | Range adjustment span                        | from 20 % to 100 % |
|                                 | Zero offset (suppression)           | up to -1000                                  |                    |
|                                 | Accuracy                            | < 0.2 % of range + 1 digit                   |                    |
|                                 | Temperature coefficient             | 100 ppm/°C, plus                             |                    |
|                                 | Zero point drift                    | 100 ppm / °C                                 |                    |
| <b>Digital input Options</b>    | HOLD (option)                       | "0"  |                    |
|                                 | Brightness adjustment               |  |                    |
|                                 | Zero point adjustment               |  |                    |
|                                 | Hold input                          |  |                    |
| <b>Power supply</b>             | Direct voltage DC                   | 12 V DC (± 10 %)                             | 4 W approx.        |
|                                 |                                     | 21 ... 30 V DC                               | 4 W approx.        |
|                                 |                                     | 48 V DC (± 10 %)                             | 5.5W approx.       |
|                                 |                                     | 110 V DC (± 10 %)                            | 5.5W approx.       |
|                                 | common mode voltage                 | -0,5 V... 1,5 V max.                         |                    |
|                                 | Alternating voltage AC (47 - 60 Hz) | 21 ... 30 V ±15 %                            | 4,0 W approx.      |
|                                 | 110 V +10 %, -15 %                  | 2.0 W approx.                                |                    |
|                                 | 230 V +10 %, -15 %                  | 2.0 W approx.                                |                    |
| <b>Environmental conditions</b> | Climatic class                      | Class 2 to VDE/ DIN 3540                     |                    |
|                                 | Operating temperature               | 0... 50 °C                                   |                    |
|                                 | Storage temperature                 | 40 °C ... +80 °C                             |                    |
|                                 | Safety class                        | II to IEC 348/VDE 0411                       |                    |
|                                 | Protection class                    | IIP 20 to IEC EN 60 529                      |                    |
|                                 | Front                               | IP 54 (IP 65 on request)                     |                    |
|                                 | Device safety                       | corresp. IEC EN 61 010                       |                    |
|                                 | EMC immunity                        | corresp. DIN EN 61 000-4-1 to 4              |                    |
| EMC radiated interference       | corresp. DIN EN 50 081 class B      |  |                    |
| <b>Dimensions and weight</b>    | Front frame                         | 24 mm x 96 mm to DIN 43 718                  |                    |
|                                 | Panel cut-out                       | 22.2 +0.3 mm x 92 +0.8 mm                    |                    |
|                                 | Overall depth                       | 72 mm  |                    |
|                                 | Weight                              | approx. 90 g (210 g if power supply >5 V DC) |                    |
| <b>Sundry</b>                   | Connections                         | Plug-in screw terminal blocks                |                    |

Connections

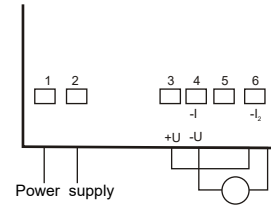
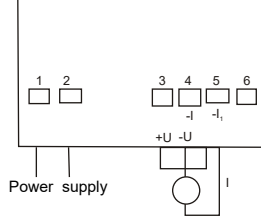
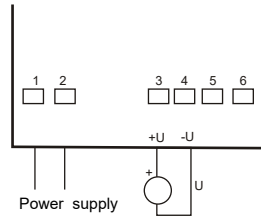
Rating plate

|  |                                       |  |                         |               |
|--|---------------------------------------|--|-------------------------|---------------|
| <b>ST BETA 90</b>  |                                       | Range : 0..20 mA                                   | ⚠                       |               |
| Sr. No.  |                                       | Display : 1999                                     |                         |               |
|  |                                       | U <sub>H</sub> : Aux. Supply : 280 VAC ±10 % / 45% |                         |               |
| Auto Zero  | Input Voltage                         |  | Input Current           |               |
|  | U <sub>m</sub> : Voltage Range Jumper | I <sub>m</sub> : Current Range Jumper              |                         |               |
|  | 0.2 ..... 1 V                         | 2  | 1.0.....4.0 mA          | 2             |
|  | 1 ..... 5 V                           | 3  | 4.0.....16.0 mA         | 3             |
|  | 5 .....25 V                           | 4  | 16.0.....64.0 mA        | 2, 8          |
|  | 25 .....100 V                         | 5  | 64.0.....300.0 mA       | 3, 8          |
| 100 .....300 V   | 6                                     | 100.0.....300.0 mA                                 | 2                       |               |
| ⚠ For Live Zero adjustment put jumper 1 and adjust pot 'LZ' at front |                                       |  |                         |               |
| ⚠ For FSD adjustment, use Pot 'Adj' at front                         |                                       |  |                         |               |
| Aux Supply   | jumpers                               |  |                         | Input         |
| L - N  | 1 2 3 4 5 6 7 8 9 10 11 12 9 HOLD     | 10 XXX.X   | Decimal Point Selection | + U - U +   + |
| U <sub>H</sub> -   |                                       | 11 XX.XX   |                         | 3 4 5 6       |
|  |                                       | 12 X.XXX   |                         |               |

Measuring input

voltage measurement

Current measurement



(1mA... 100mA)

...300mA)

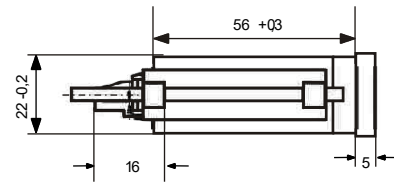
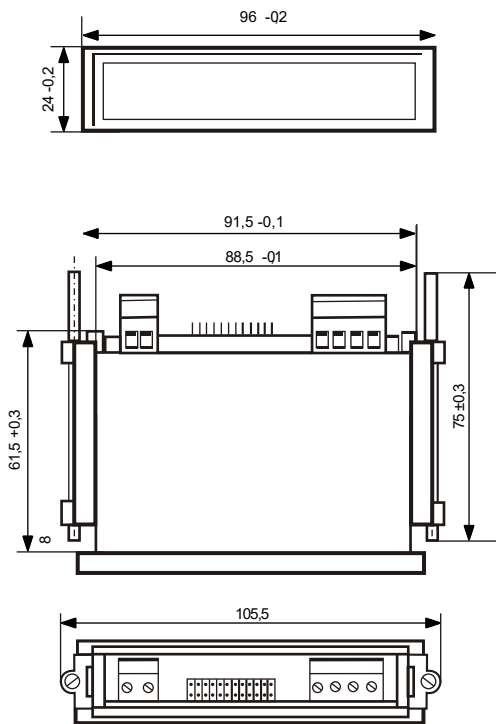
(100mA)

\*) For current measurement, the user has to externally link terminals 3 (+U) and 5 (+I1), or terminals 3 (+U) and 6 (+I2).

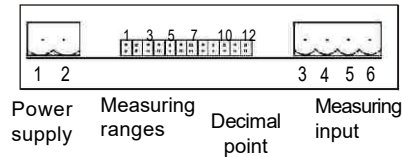
Note:

- 1) In order to avoid errors or an unstable readout, the measuring circuits be shielded or at least twisted.
- 2) To set the basic range, first remove the safety cover over the pin connector at the rear of the instrument. To set the basic range and decimal point, plug in jumpers according to the assignment table. It is possible up to 25 % of the full-scale range.

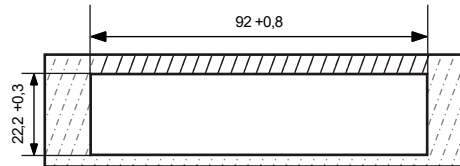
Design and installation



Connections



Panel cut-out



Subject to change without notice!

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