

Digital Panel Meters Modular Indicator and Controller Type UDM35

CARLO GAVAZZI



- Front protection degree: IP67, NEMA4x

- Multi-input modular instrument 3 1/2 dgt LED
- 0.1% RDG basic accuracy
- TRMS AC current and voltage measurements
- AC/DC current measurements: selectable full scales (200µA to 5A)
- AC/DC voltage measurements: selectable full scales (200mV to 500V)
- °C or °F temperature measurements (Pt100-250-500-1000, Ni100, TC J-K-S-T-E)
- Resistance measurements: selectable full scales (20Ω to 20kΩ)
- Up to 4 independent alarm set-points (optional)
- 20mA/10VDC analog output (optional)
- Serial port RS485 or RS232 (optional)
- MODBUS, JBUS communication protocol

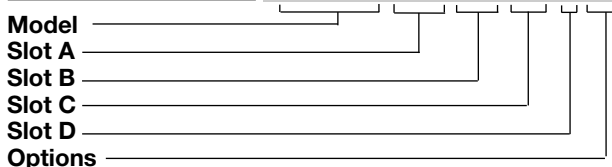
Product Description

µp-based digital panel meter, 3 1/2 dgt LED indicator, for current, voltage, temperature and resistance measurements. Measuring ranges and functions easily programmable from the keypad or from the PC by

means of optional UdmSoft software. UDM35 includes storage min-max functions and double level protection password. Housing for panel mounting with front protection degree: IP67, NEMA4x.

How to order

UDM35 XXX XX XX X XX



How to order

UdmSoft-kit

UdmSoft-kit: software plus "UCOM1" communication cable for programming UDM35 by means of PC.

Type Selection

| Slot A (measuring inputs) | Slot B (communication) | Slot C (communication and alarm) | Slot D (power supply) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| LSX: signal inputs: 0.2-2-20mA DC/AC; 0.2-2-20V DC/AC LSE/ LSF: signal inputs + AUX: 0.2-2-20mA DC/AC; 0.2-2-20V DC/AC HSX: signal inputs: 0.2-2-5A DC/AC; 20-200-500V DC/AC TRX: signal inputs: TC temperature probes (J-K-S-T-E, Pt100-250-500-1000) and resistance (0.02-0.2-2-20kΩ) | XX: None SX: Serial port RS485 SY: Serial port RS232 AV (*): Single analogue output, 0 to 20mA DC and 0 to 10V DC (*): The two analogue outputs cannot be used at the same time. It is possible to plug in only one module by instrument. | XX: None R1: single relay output, (AC1-8AAC, 250VAC) R2: Dual relay output, (AC1-8AAC, 250VAC) R4: Dual relay output (AC1-8AAC, 250VAC) + dual open collector output (NPN, 100mA) R5: 4 relay outputs (AC1-5AAC, 250VAC) AV(*): Single analogue output, 0 to 20mA DC and 0 to 10V DC | H: 90 to 260V AC/DC L: 18 to 60V AC/DC Options XX: None TX: Tropicalization |

Input Specifications

| | | | |
|--------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Analogue inputs BQ LSX module BQ LSE/BQ LSF module BQ HSX module BQ TRX module BQ TRX module | Channels and variable 1, mA and V DC/AC 1, mA and V DC/AC + AUX 1, A and V DC/AC 1, temperature 1, resistance | Contact reading signal Close contact resistance Open contact resistance Insulation | BQ xxx: <0.1mA, <3,5V DC BQ LSE/BQ LSF: <2.5mA, <14V DC Max 1kΩ Min 500kΩ Non-insulated |
| Digital inputs Number of inputs Use | Incl. in the measuring module 1 (voltage-free) key-pad lock Display hold Reset of latch alarms | Accuracy (display, RS485) | See table "Measuring accuracy", temperature drifts and minimum-maximum indications" |

Input specifications (cont.)

| | | | | |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Additional errors | Humidity Input frequency Magnetic field | 0.3% RDG, 60% to 90% R.H. 0.4% RDG, 62 to 440 Hz 0.5% RDG @ 400 A/m | Coupling type Crest factor | waves. Direct ≤ 3 ; $A_{Pmax}=1.7In$; $V_{Pmax}=1.7Un$ |
| Temperature drift | See table "Measurement accuracy, temperature drifts, and max/min indications" | | Input impedance | See table "input impedances and overloads" |
| Sampling rate | 500 samples/s @ 50 Hz | | Frequency | 40 to 440 Hz |
| Display refresh time | 200 msec @ 50Hz | | Overload | See table "input impedances and overloads" |
| Display | 3 1/2 DGT, 7 segments height 14.2 mm Colour: red | | Compensation | Only temperature measurement module. - For Pt 100-250-500-1000, 3-wire connection: up to 10 Ω - For resistance measur. with 20 Ω range: up to max 0.1 Ω - For resistance measurements with $\geq 200\Omega$ range: up to max 10 Ω Internal cold junction, within the temperature range from 0 to +50°C. Automatic compensation or manual from 0 to 50°C. |
| Max and min indication | See table "Measurement accuracy, temperature drifts and max min indications" | | RTD | |
| Measurements | Current, voltage, temperature and resistance. For the current and voltage measurements: TRMS measurement of distorted sine | | TC | |

Measurement accuracy, temperature drifts, max and min indications

All accuracies and min/max indications are referred to an ambient temperature range of 25°C \pm 5°C, relevant humidity \leq 60% and scale ratio (electrical/displayed scale) equal to 1. The conversion into °F is obtained acting on the electrical/displayed scale ratio.

| Module | Inputs | Type | Accuracy | Temp. drift | Min. indicat. (■) | Max. indicat. (■) |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| BQ LSX/ BQ LSE/ BQ LSF | -200 μ A to +200 μ A -2mA to +2mA -20mA to +20mA -200mV to +200mV -2V to +2V -20V to +20V | DC/AC | DC: $\pm(0.1\%RDG+3DGT)$ 0% to 25% FS; $\pm(0.1\%RDG+2DGT)$ 25% to 110% FS. TRMS (45 to 65Hz)*: $\pm(0.3\%RDG+3DGT)$ 0% to 25% FS; $\pm(0.3\%RDG+2DGT)$ 25% to 110% FS. | ± 150 ppm/°C | - 199.9 - 1.999 - 19.99 - 199.9 - 1.999 - 19.99 | + 199.9 + 1.999 + 19.99 + 199.9 + 1.999 + 19.99 |
| BQ HSX | -200mA to +200mA -2A to +2A -5A to +5A -20V to +20V -200V to +200V -500V to +500V | DC/AC | DC: $\pm(0.1\%RDG+3DGT)$ 0% to 25% FS; $\pm(0.1\%RDG+2DGT)$ 25% to 110% FS. TRMS (45 to 65Hz)*: $\pm(0.3\%RDG+3DGT)$ 0% to 25% FS; $\pm(0.3\%RDG+2DGT)$ 25% to 110% FS. | ± 150 ppm/°C | - 199.9 - 1.999 - 5.00 - 19.99 - 199.9 - 500 | + 199.9 + 1.999 + 5.00 + 19.99 + 199.9 + 500 |
| BQ TRX thermo- couple | -50°C to +760°C -58 °F to +1400 °F -200°C to +1260°C -328 °F to +2000°F -200°C to +1000°C -328°F to +1832°F -50°C to +1750°C -58°F to +2000°F -200°C to +400°C -328°F to +752°F | J J K K E E S S T T | $\pm(0.2\%RDG+1DGT)$ $\pm(0.2\%RDG+2DGT)$ $\pm(0.2\%RDG+2DGT)$ $\pm(0.2\%RDG+4DGT)$ $\pm(0.2\%RDG+2DGT)$ $\pm(0.2\%RDG+4DGT)$ $\pm(0.2\%RDG+2DGT)$ $\pm(0.2\%RDG+4DGT)$ $\pm(0.2\%RDG+2DGT)$ $\pm(0.2\%RDG+4DGT)$ | ± 150 ppm/°C | - 50°C - 58°F - 200°C - 328°F - 200°C - 328°F - 50°C - 58°F - 200°C - 328°F | + 760°C + 1400°F + 1260°C + 1999°F + 1000°C + 1832°F + 1750°C + 1999°F + 400°C + 752°F |

* <45Hz >65Hz= $\pm(0.5\%RDG+3DGT)$ 0% to 25% FS; $\pm(0.5\%RDG+2DGT)$ 25% to 110% FS.

(■) The min. indication for TRMS measurement (AC or DC) is 0; it is possible to modify the decimal point position.

Measurement accuracy, temp. drifts, min max indications (cont.)

All accuracies and min/max indications refer to an ambient temperature range of 25°C ±5°C, relevant humidity ≤60% and scale ratio (electrical scale / displayed scale) equal to 1. The conversion into °F is obtained acting on the electrical scale / displayed scale.

| Module | Inputs | Type | Accuracy | Temp. Drift | Min. Indication | Max. Indication |
|--------------------------------------|----------------------|-------------------|-------------------|-------------|-----------------|-----------------|
| BQ TRX Ther- moresis- tance | -200°C to +850°C | Pt100 | ±(0.2%RDG + 2DGT) | ±150 ppm/°C | - 200 | + 850 |
| | -328°F to +1562°F | Pt100 | ±(0.2%RDG + 4DGT) | | - 328 | + 1562 |
| | -200.0°C to +200.0°C | Pt100 | ±(0.5%RDG + 5DGT) | | -199.9 | +199.9 |
| | -328°F to +392°F | Pt100 | ±(0.5%RDG + 5DGT) | | -199.9 | +199.9 |
| | -200.0°C to +200.0°C | Pt250 | ±(0.5%RDG + 5DGT) | | -199.9 | +199.9 |
| | -328°F to +392°F | Pt250 | ±(0.5%RDG + 5DGT) | | -199.9 | +199.9 |
| | -200.0°C to +200.0°C | Pt500 | ±(0.5%RDG + 5DGT) | | -199.9 | +199.9 |
| | -328°F to +392°F | Pt500 | ±(0.5%RDG + 5DGT) | | -199.9 | +199.9 |
| | -200.0°C to +200.0°C | Pt1000 | ±(0.5%RDG + 5DGT) | | -199.9 | +199.9 |
| -328°F to +392°F | Pt1000 | ±(0.5%RDG + 5DGT) | -199.9 | +199.9 | | |
| -60°C to +180°C | Ni100 | ±(0.5%RDG + 1DGT) | - 60 | + 180 | | |
| -76°F to +356°F | Ni100 | ±(0.5%RDG + 2DGT) | - 76 | + 356 | | |
| BQ TRX Resis- tance | 0 to 20Ω | Ω | ±(0.2%RDG+2DGT) | ±150 ppm/°C | 0 | 19.99 (■) |
| | 0 to 200Ω | | 25% to 110% FS | | 0 | 199.9 (■) |
| | 0 to 2000Ω | | ±(0.2%RDG+3DGT) | | 0 | 1999 (■) |
| | 0 to 20.00kΩ | | 0% to 25% FS | | 0 | 19.99 (■) |

(■) It is possible to modify the decimal point position.

Input impedances and overloads

| Module | Inputs | Type | Impedance | Overload (continuous) | Overloads (1s) |
|---------------------------------|----------------------|--------------|-------------------------|-----------------------|----------------|
| BQ LSX/ BQ LSE/ BQ LSF | -200μA to +200μA | DC/AC | ≤2.2kΩ | 5mA | 10mA |
| | -2mA to +2mA | DC/AC | ≤22Ω | 50mA | 150mA |
| | -20mA to +20mA | DC/AC | ≤22Ω | 50mA | 150mA |
| | -200mV to +200mV | DC/AC | ≥2.2kΩ | 10V | 20V |
| | -2V to +2V | DC/AC | ≥200kΩ | 50V | 100V |
| BQ HSX | -20V to +20V | DC/AC | ≥200kΩ | 50V | 100V |
| | -200mA to +200mA | DC/AC | ≤1Ω | 0.8A | 1A |
| | -2A to +2A | DC/AC | ≤0.012Ω | 7.5A | 100A |
| | -5A to +5A | DC/AC | ≤0.012Ω | 7.5A | 100A |
| | -20V to +20V | DC/AC | ≥2MΩ | 750V | 1000V |
| BQ TRX Thermo- couple | -200V to +200V | DC/AC | ≥2MΩ | 750V | 1000V |
| | -500V to +500V | DC/AC | ≥2MΩ | 750V | 1000V |
| | -50°C to +760°C | J | I _{LK} < 0.5μA | Max 5V | Max 10V |
| | -58 °F to +1400 °F | J | | | |
| | -200°C to +1260°C | K | | | |
| -328 °F to +2000°F | K | | | | |
| -200°C to +1000°C | E | | | | |
| BQ TRX Thermo- resistance | -328°F to +1832°F | E | | | |
| | -50°C to +1750°C | S | | | |
| | -58°F to +2000°F | S | | | |
| | -200°C to +400°C | T | | | |
| | -328°F to +752°F | T | | | |
| BQ TRX Thermo- resistance | -200°C to +850°C | Pt100 | 800μA (*) | Max 5V | Max 10V |
| | -328°F to +1562°F | Pt100 | 800μA (*) | | |
| | -200.0°C to +200.0°C | Pt250/Pt100 | 90μA (*) | | |
| | -328°F to +392°F | Pt250/Pt100 | 90μA (*) | | |
| | -200.0°C to +200.0°C | Pt1000/Pt500 | 800μA (*) | | |
| | -328°F to +392°F | Pt1000/Pt500 | 800μA (*) | | |
| | -60°C to +180°C | Ni100 | 800μA (*) | | |
| -76°F to +356°F | Ni100 | 800μA (*) | | | |
| BQ TRX Resistance | 0 to 20Ω | Ω | 800μA (*) | Max 5V | Max 10V |
| | 0 to 200Ω | | 90μA (*) | | |
| | 0 to 2000Ω | | 800μA (*) | | |
| | 0 to 20.00kΩ | | 90μA (*) | | |

(*) Maximum measuring current generated for resistance equal to 0.

Output specifications

| | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RS422/RS485 Serial output LED Connections Distance Terminalization Addresses Protocol Data (bidirectional) Dynamic (reading only) Static (reading/writing) Data format Baud rate Insulation | (on request) Module: BR SX Bidirectional (static and dynamic variables). Display of data reception/transmission Multidrop, 2 or 4 wires 1000m Directly on the module by means of jumper 1 to 255, selectable by means of key-pad MODBUS RTU/JBUS Measurement, min value max value alarm status All programming parameters, min max reset reset of latch alarm 8 data bit, no parity, 1 stop bit selectable 4800, 9600, 19200 and 38400 bit/s By means of opto-couplers 4000 V _{rms} output to measuring inputs 4000 V _{rms} output to power supply input | Relay output BO R1, R2, R4 Relay output BOR5 Insulation Open collector output Insulation | Type SPDT AC 1: 8A, 250VAC DC 12: 5A, 24VDC AC 15: 2,5A, 250VAC DC 13: 2,5A, 24VDC Type SPDT (normally open) AC 1: 5A, 250VAC DC 12: 3A, 24VDC AC 15: 1,5A, 250VAC DC 13: 1,5A, 24VDC 4000 V _{RMS} output to measuring input, 4000 V _{RMS} output to power supply input. NPN transistor type V _{ON} 1.2 VDC/ max. 100 mA V _{OFF} 30 VDC max. By means of opto-couplers, 4000 V _{RMS} output to measuring input, 4000 V _{RMS} output to power supply input |
| RS232 Serial output Connections Distance Data format Baud rate Other features | (on request) Module: BR SY Bidirectional (static and dynamic variables) 3 wires, max. 15m 1 start bit, 8 data bit, no parity, 1 stop bit Selectable 4800, 9600, 19200 and 38400 bit/s Same as RS422/485 | Analogue output Range Scaling factor Accuracy Response time Temperature drift Load: 20 mA output 10 V output Insulation | (on request) Module: BO AV 0 to 20 mADC, 0 to 10 VDC Programmable within the whole retransmission range; it allows to manage the retransmission of all values from 0 to 20 mA / 0 to 10V ± 0.2% FS (@ 25°C ± 5°C) ≤ 10 ms ± 200 ppm/°C ≤ 700 Ω ≥ 10 kΩ By means of optocouplers 4000V _{rms} output to measuring input 4000V _{rms} output to power supply input |
| Alarm outputs Alarm type Alarm set-point Hysteresis On-time delay Off-time delay Output status Min response time Output channels | (on request) Active alarm for out-of-range, up alarm, down alarm, down alarm with start-up deactivation, up alarm with latch, down alarm with latch Adjustable from 0 to 100% of displayed electric range 0 to 100% of displayed range 0 to 255 s 0 to 255 s Selectable: normally energized/de-energized 500 ms, with filter excluded, without alarm activation delay 1 with BO R1 module (relay output). 2, independent with module BO R2 (2 relay outputs). 4, independent with BO R4 module (2 relay outputs + 2 open collector outputs). BOR5 (4 relay outputs) | Notes: Excitation output BQ LSE module Voltage Insulation BQ LSF module Voltage Insulation | (on request) 13 VDC ±10% max. 50 mA 25V _{rms} output to measuring input 4000 V _{rms} output to power supply input 25 VDC ±10% max. 25 mA 25V _{rms} output to measuring input 4000 V _{rms} output to power supply input |

Software functions

| | | | |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Min / Max storage | Automatic storage (in the EEPROM) of the minimum and maximum measured value from the previous memory reset | Diagnostics | The display flashes when the limits of the display range are exceeded and the data are updated up to 20% of the rated display range. Only temperature inputs. Opening of probe's connection: EEE indication Opening of probe's connection: EEE indication probe's short circuit: -EEE indication. |
| Password | Numeric code max 4 dgt 2 levels of data protection. 0 to 4999 completely protected. 5000 to 9999 access to programming is protected. Alarm set-points are directly programmable from the measuring mode. | Burn-out: TC RTD | |
| 1st level 2nd level | | | |
| Measurement selection | Depending on the module: measuring range and type of probe (resistance, RTD thermoresistance, TC thermocouple) or measuring type (TRMS or DC). | Digital filter Filter operating range Filtering coefficient | 0 to 1999 1 to 32 |
| Integration time selection | Automatic or from 100.0 to 999.9 ms only in the current and voltage measurement. | Display selection | 3 1/2 DGT or 3 DGT plus dummy zero |
| Scaling factor Operating mode | Electrical scale compression, displayed scale compression/expansion (max. 2 without filter, up to 10 with filter) | Scaling | Selection of min value of the input range. Selection of max value of the input range. Selection of decimal point position. Selection of min displayable value. Selection of max displayable value. |
| Electrical range | Programmable within the whole measuring range | UdmSoft | Software for programming UDM35 by means of PC (Windows 95, 98se, ME, XP) by means of serial port RS485 and relevant connection cable. The software is available in English, Spanish, Italian, German and French. See also "Programming of UDM35 by means of PC". |
| Decimal point position | Programmable within the display range | | |
| Displayed range of the variable | Programmable within the display range | | |

General Specifications

| | | | |
|-------------------------------------|------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------------------|
| Operating temperature | 0° to 50°C (32° to 122°F) (R. H. < 90% non-condensing) | Safety Standards Safety | EN 61010-1, IEC 61010-1 |
| Storage temperature | -10° to 60°C (14° to 140°F) (R.H. < 90% non-condensing) | Connections Wire section | Screw type Max 2.5mm ² |
| Insulation reference voltage | 300 V _{RMS} to ground (500V input) | Housing Dimensions Material | 1/8 DIN, 48 x 96 x 105 mm PC-ABS, self-extinguishing: UL 94 V-0 |
| Insulation | See table "Insulation between inputs and outputs" | Protection degree | Front: IP67, NEMA4x Connections: IP20 |
| Dielectric strength | 4000 V _{RMS} for 1 minute | Weight | 520 g approx (included all modules and packing) |
| Rejection NMRR CMRR | 40 dB, 40 to 60 Hz 100 dB, 40 to 60 Hz | Approvals | CE, UR, CSA |
| EMC | EN61000-6-2, IEC61000-6-2 EN61000-6-3, IEC61000-6-3 | | |

Supply Specifications

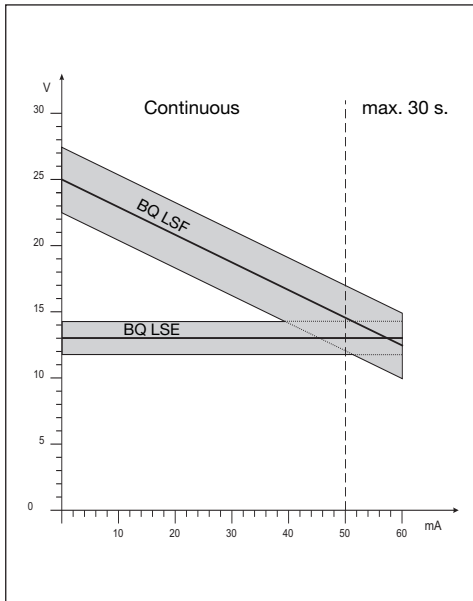
AC/DC voltage

90 to 260V (standard)
18 to 60V (on request)

Energy consumption

≤ 30VA/12W (90 to 260V)
≤ 20VA/12W (18 to 60V)

Excitation output



Insulation between inputs and outputs

| | Meas. inputs | Relay output | Static output | Analogue output | Serial Port | AUX p.supply | 90-260VAC/DC p.supply | 18-60VAC/DC p.supply |
|-----------------------|--------------|--------------|---------------|-----------------|-------------|--------------|-----------------------|----------------------|
| Meas. inputs | - | 4kV | 4kV | 4kV | 4kV | 25V | 4kV | 4kV |
| Relay Output | 4kV | - | 2kV | 4kV | 4kV | 4kV | 4kV | 4kV |
| Static Output | 4kV | 2kV | - | 4kV | 4kV | 4kV | 4kV | 4kV |
| Analogue Output | 4kV | 4kV | 4kV | - | 4kV | 4kV | 4kV | 4kV |
| Serial Port | 4kV | 4kV | 4kV | 4kV | - | 4kV | 4kV | 4kV |
| AUX p.supply | 25V | 4kV | 4kV | 4kV | 4kV | - | 4kV | 4kV |
| 90-260VAC/DC p.supply | 4kV | 4kV | 4kV | 4kV | 4kV | 4kV | - | - |
| 18-60VAC/DC p.supply | 4kV | 4kV | 4kV | 4kV | 4kV | 4kV | - | - |

Available modules

| Type | N. of channels | Ordering code |
|-------------------------------------------------------------------|----------------|-------------------|
| UDM35 main unit | | BD 35 |
| DC/AC input: 200μA, 2mA, 20mA, 200mA, 2V, 20V | 1 | BQ LSX |
| DC/AC input: 200μA, 2mA, 20mA, 200mA, 2V, 20V + excitation output | 1 | BQ LSE/ BQ LSF |
| DC/AC input: 200mA, 2A, 5A, 20V, 200V, 500V | 1 | BQ HSX |
| Input: 20Ω, 200Ω, 2kΩ, 20kΩ | 1 | BQ TRX |
| TC: J-K-S-T-E, Pt100-250-500-1000 | 1 | BQ TRX |
| Analogue output 0 to 20mA, 0 to 10VDC | 1 | BO AV |
| Relay output | 1 | BO R1 |
| Relay output | 2 | BO R2 |
| Outputs: 2 relays + 2 open collectors | 4 | BO R4 |
| Relay output | 4 | BO R5 |
| RS485 Serial Port | 1 | BR SX |
| RS232 Serial Port | 1 | BR SY |
| Power supply 18 to 60V AC/DC | | BP L |
| Power supply 90 to 260V AC/DC | | BP H |

Possible module combinations

| Basic Unit | Slot A | Slot B | Slot C | Slot D |
|-----------------------------------------------------|--------|--------|--------|--------|
| Measuring inputs: LSX, LSE, LSF, HSX, TRX | ● | | | |
| RS485 Serial port: SX | | ● | | |
| RS232 Serial port: SY | | ● | | |
| Analogue output: AV (*) | | ● | ● | |
| Relay outputs and/or open collector: R1, R2, R4, R5 | | | ● | |
| Power supply: H, L | | | | ● |

(*) Up to 1 module max.

Used calculation formulas

Only for TRMS Measurements

Instantaneous effective voltage (TRMS)

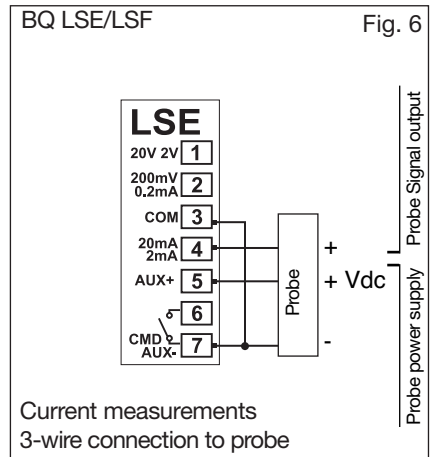
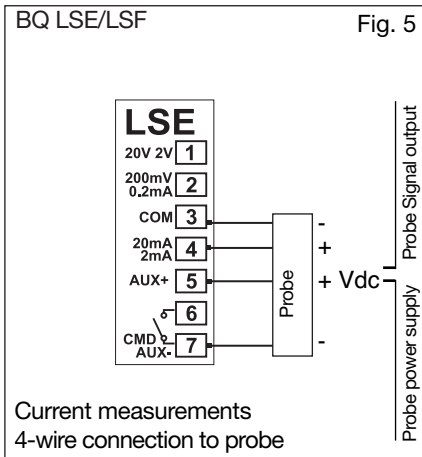
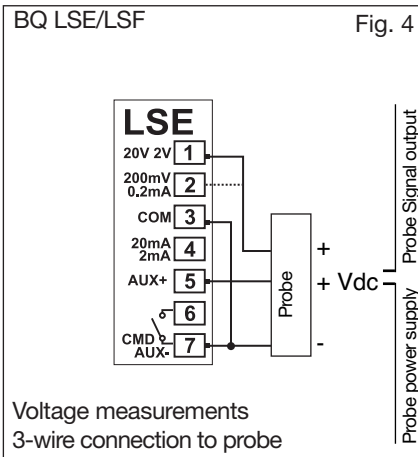
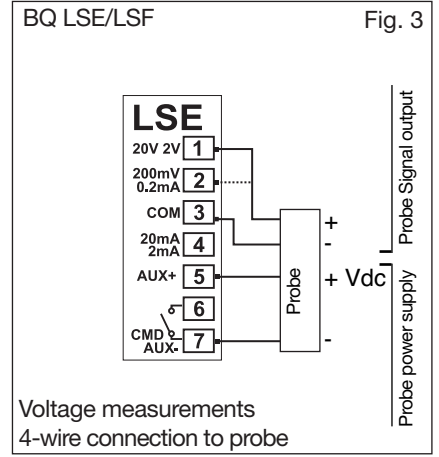
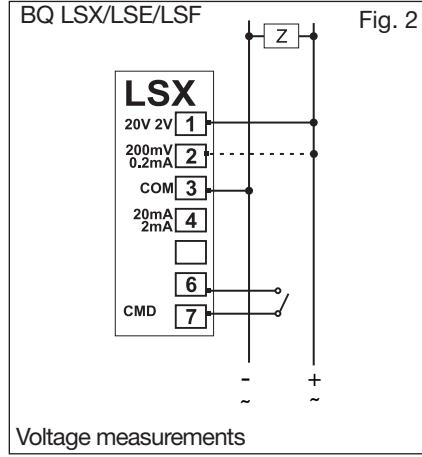
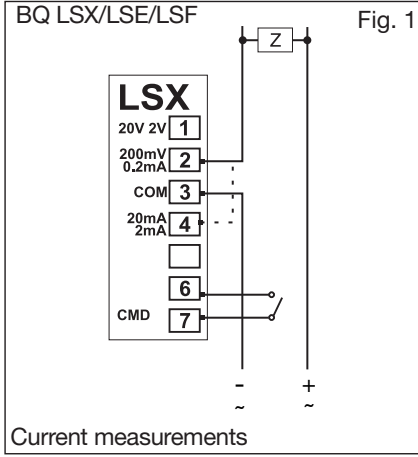
$$V_1 = \sqrt{\frac{1}{n} \cdot \sum_1^n (V_1)_i^2}$$

Instantaneous effective current (TRMS)

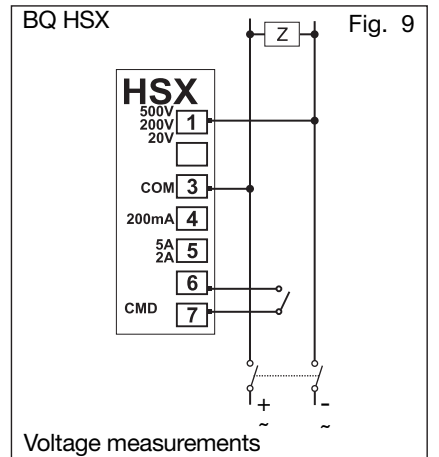
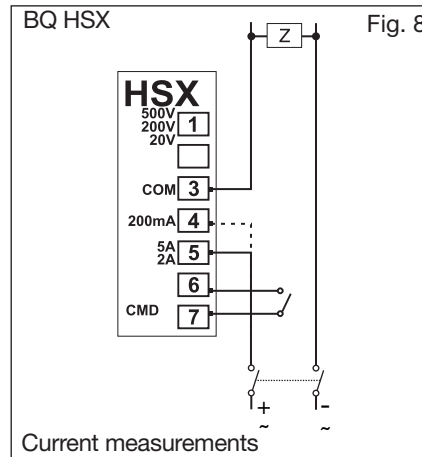
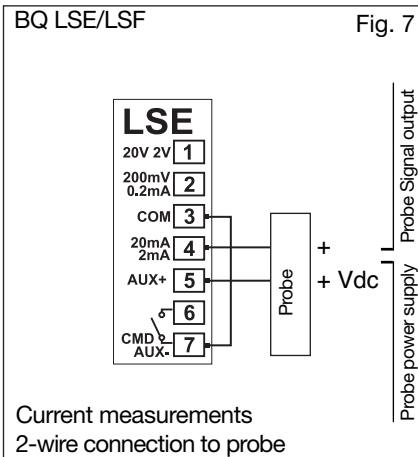
$$A_1 = \sqrt{\frac{1}{n} \cdot \sum_1^n (A_1)_i^2}$$

Wiring diagrams

Process signal wiring diagrams

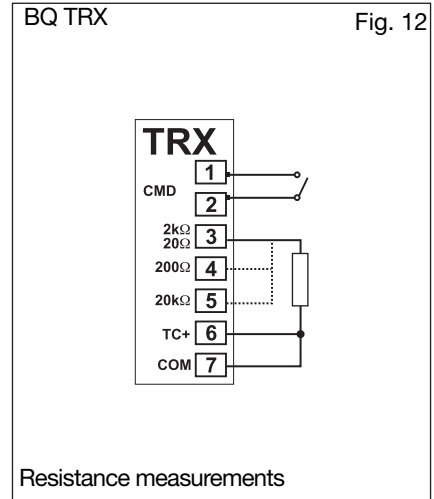
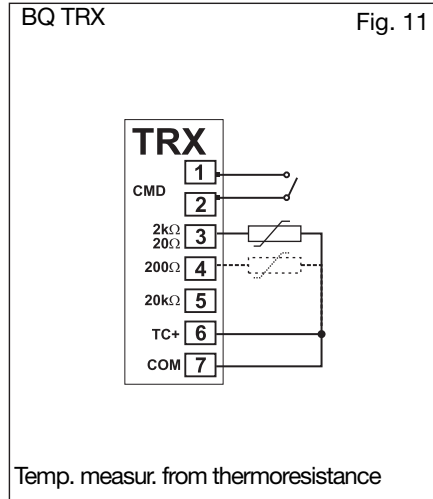
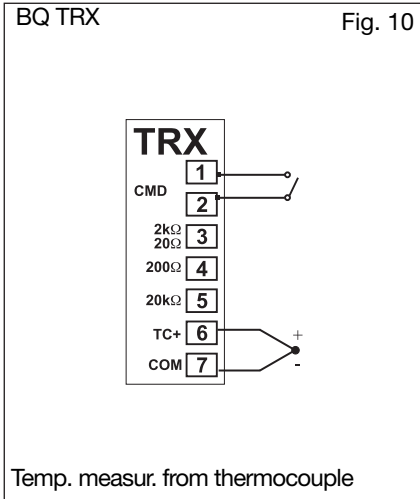


Wirings for high-level signals

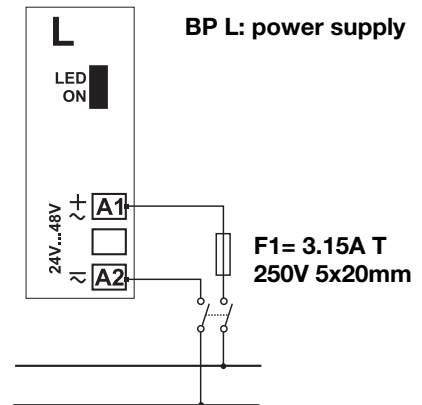
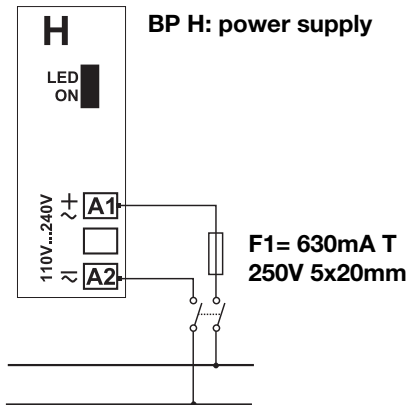


Wiring diagrams (cont.)

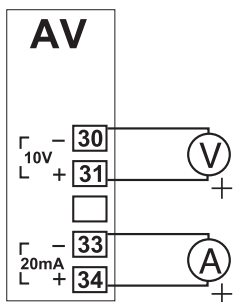
Wiring diagrams for temperature measurements



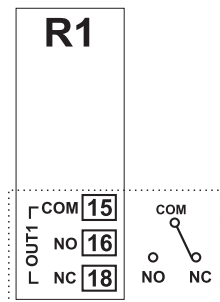
Wiring diagrams for power supply



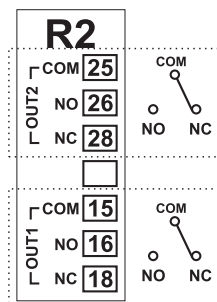
Wiring diagrams of optional modules



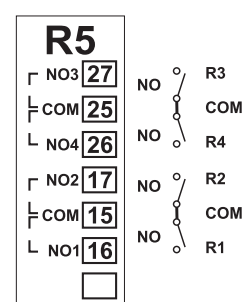
BO AV: analogue output (10V, 20mA DC)



BO R1: 1 relay output

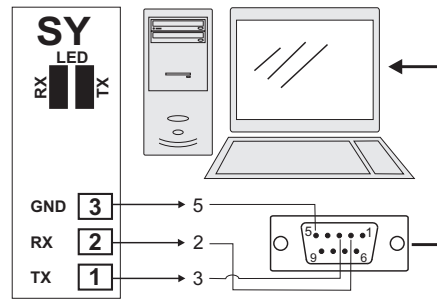
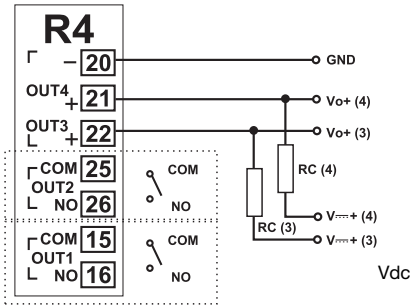


BO R2: 2 relay outputs



BO R5: 4 relay outputs

Wiring diagrams of optional modules (cont.)



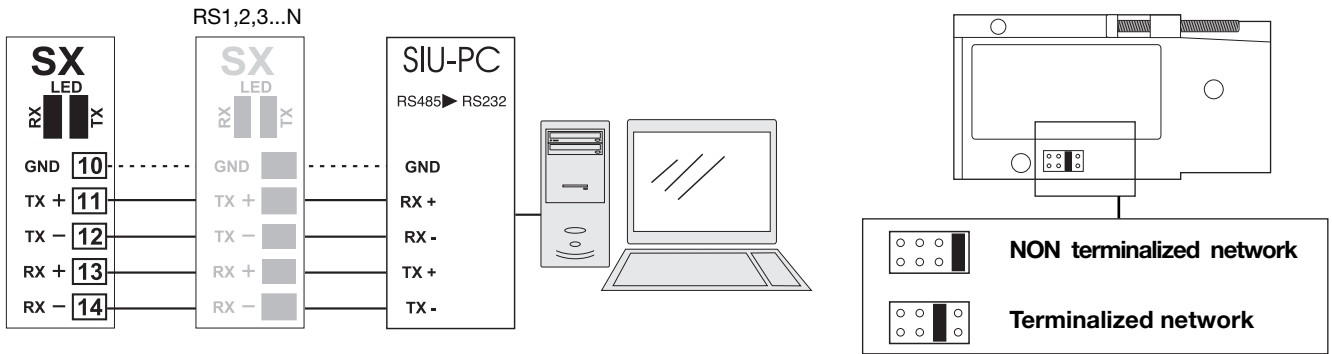
BO SY: RS232 direct connection to PC by means of COM port. RS232 has no termination.

BO R4: dual relay output + dual open collector output: the load resistances (Rc) must be designed so that the close contact current is lower than 100mA; the VDC voltage must be lower than or equal to 30VDC.

VDC: power supply output

Vo+: positive output (open collector transistor).

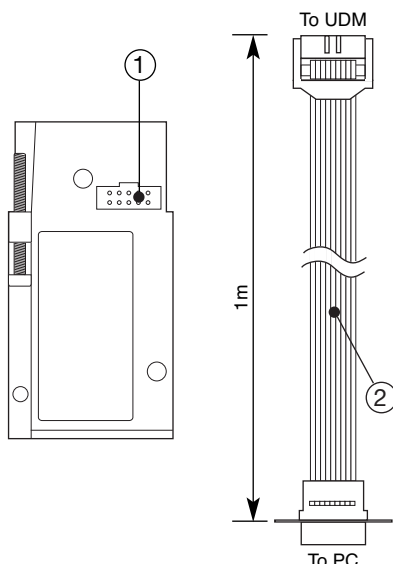
GND: ground collector (open collector transistor).



BR SX: RS485 4-wire connection: additional devices provided with RS485 port (indicated as RS1,2,3...N) are connected in parallel. The termination of the serial port is carried out only on the last instrument of the network. The serial module is provided with a jumper for the termination of the RS485 network as shown in the figure above.

Note: particular types of cables or plants may require an external termination. For the network connections use twisted cable type AWG26.

Programming UDM35 by means of PC

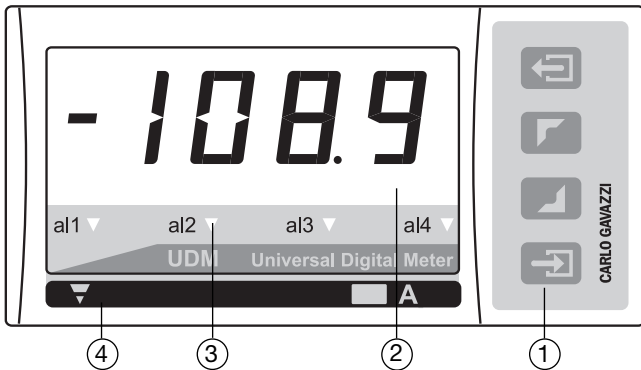


UDM35 is programmable by PC by means of the UdmSoft software (available on request). The user can program all parameters of UDM35 that will be subsequently uploaded and set in the instrument by the RS485 network (BR SX). Should UDM35 be without the RS485 serial module, all programming parameters will be uploaded and set in the instrument by the RS232 auxiliary serial connection (1) located on the side of the measuring input module using the special connection cable (2) available on request, as shown in the figures on the left. It is also possible to program the instrument using the dot connector (1) by means of the HyperTerminal Windows functions of a PC.

Note: the RS232 auxiliary port IS NOT insulated from the measuring inputs.


Ordering code of the cable (2): UCOM1

Front panel description




1. Key-pad

The programming of the configuration parameters and the display may be easily controlled by means of the 4 function keys.

 : to enter the programming phase and to confirm the password.



- to program values;
 - to select functions;
 - to scroll display pages.
-  : for special functions.

2. Display

Instantaneous measurements:

- 3 1/2 digit (max display 1999).

Alphanumeric indications by means of LED display for:

- Display of configuration parameters;
- The measured variable.

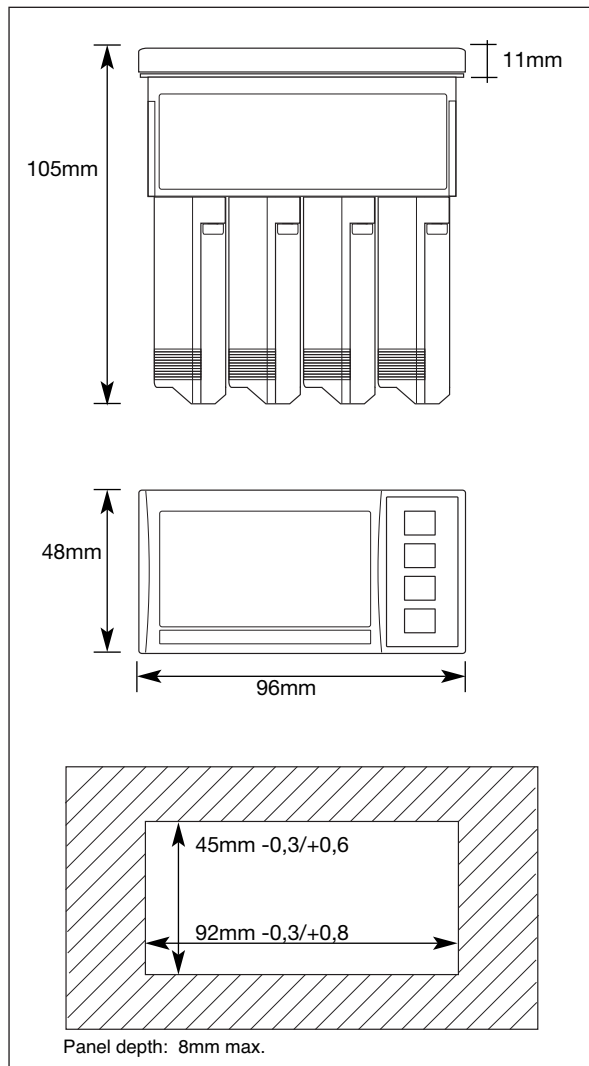
3. Alarm status LED

Display any alarm condition

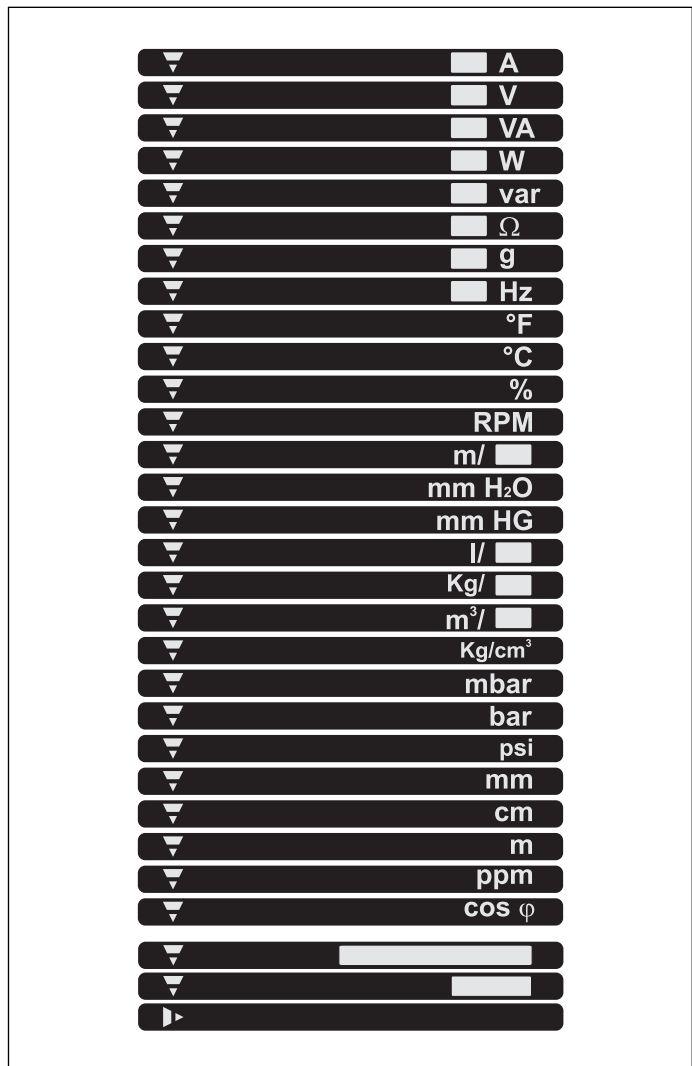
4. Engineering unit

The instrument is supplied with a complete set of self-sticking labels with the main engineering units.

Dimensions

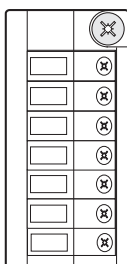


Engineering Units



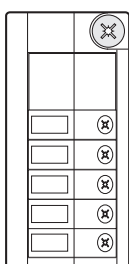
Modules

Input modules

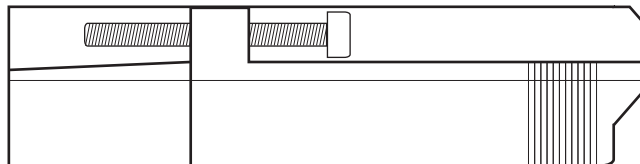


BQ LSX, BQ LSE, BQ LSF, BQ HSX, BQ TRX
Measuring inputs

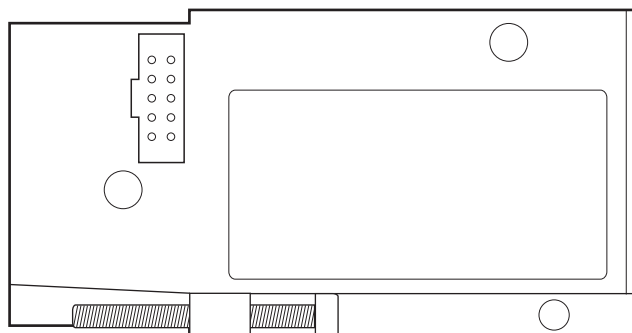
Output modules



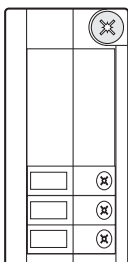
BO AV
Single analogue output 10V, 20mA DC



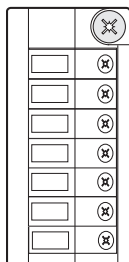
Scale 1:1



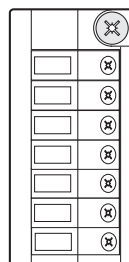
Output modules



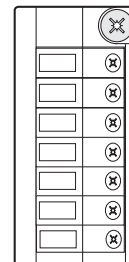
BO R1
Single relay output



BO R2
Dual relay output

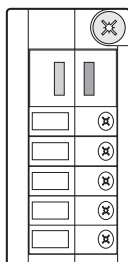


BO R4
Dual relay output +
Dual open collector

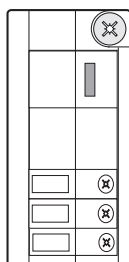


BO R5
4 relay outputs

Serial port modules

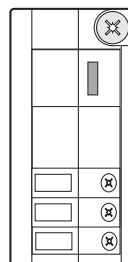


BR SX
RS485 Serial port

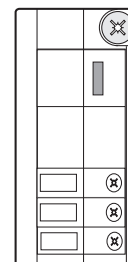


BR SY
RS232 Serial port

Power supply modules



BP H
Power supply:
60 to 260V AC/DC



BP L
Power supply:
18 to 60V AC/DC