

# Digital Panel Meters Modular Measuring Indicator and Controller Type UDM40



- The alarm status can be coupled to the different colour of the display
- Linearization of V and A inputs up to 16 points

## Product Description

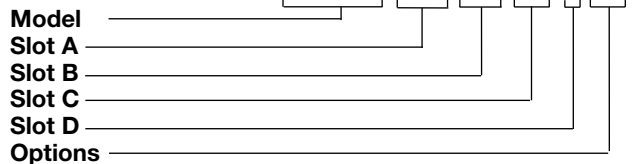
µp-based digital panel meter, 4-dgt LED indicator, for current, voltage, temperature and resistance measurements. Measuring ranges and functions easily programmable from the keypad or from the PC by

means of optional UdmSoft software. UDM40 includes storage min-max functions and double level protection password. Housing for panel mounting with front protection degree: IP67, NEMA4.

- Multi-input modular instrument 4 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
- Front protection degree: IP67, NEMA4
- LED display, selectable colour (red, amber, green)

## How to order

**UDM40 XXX XX XX X XX**



## How to order

**UdmSoft-kit**

UdmSoft-kit: software plus "UCOM1" communication cable for programming UDM40 by means of PC.

## Type Selection

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

## Input Specifications

<b>Analogue inputs</b> BQ LSX module BQ LSE 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: <2.5mA, <14V DC Max 1kΩ Min 500kΩ Non-insulated
<b>Digital inputs</b> Number of inputs Use	Incl. in the measuring module 1 (voltage-free) key-pad lock Display hold Reset of latch alarms	<b>Accuracy</b> (display, RS485)	See table "Measuring accuracy", temperature drifts and minimum-maximum indications"

## Input specifications (cont.)

<b>Additional errors</b>	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	Direct $\leq 3$ ; $A_{Pmax}=1.7I_n$ ; $V_{Pmax}=1.7U_n$
<b>Temperature drift</b>	See table "Measurement accuracy, temperature drifts, and max/min indications"		<b>Input impedance</b>	See table "input impedances and overloads"
<b>Sampling rate</b>	5 times/s @ 50Hz		<b>Frequency</b>	40 to 440 Hz
<b>Display</b>	4 DGT, 7 segments height 14.2 mm Colour Selectable (red, amber, green)		<b>Overload</b>	See table "input impedances and overloads"
<b>Max and min indication</b>	See table "Measurement accuracy, temperature drifts and max min indications"		<b>Compensation</b>	Only temperature measurement module. - For Pt 100-250-500-1000, 3-wire connection: up to 10 $\Omega$ - For resistance measur. with 20 $\Omega$ range: up to max 0.1 $\Omega$ - For resistance measurements with $\geq 200\Omega$ range: up to max 10 $\Omega$ Internal cold junction, within temperature range from 0 to +50 $^{\circ}$ C. Automatic or manual compensation from 0 to 50 $^{\circ}$ C.
<b>Measurements</b>	Current, voltage, temperature and resistance. For the current and voltage measurements: TRMS measurement of distorted sine waves.		RTD	
			TC	

## Measurement accuracy, temp. drifts, max and min indications

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

Module	Inputs	Type	Accuracy	Temp. drift	Min. indication (■)	Max. indicat. (■)
BQ LSX/ BQ LSE	-200 $\mu$ A to +200 $\mu$ A -2mA to +2mA -20mA to +20mA -200mA to +200mA -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 (da 45 a 65Hz)*: $\pm(0.3\%RDG+3DGT)$ 0% to 25% FS; $\pm(0.3\%RDG+2DGT)$ 25% to 110% FS.	$\pm 150$ ppm/ $^{\circ}$ C	- 200.0 - 2.000 - 20.00 - 200.0 - 2.000 - 20.00	+ 200.0 + 2.000 + 20.00 + 200.0 + 2.000 + 20.00
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.	$\pm 150$ ppm/ $^{\circ}$ C	- 200.0 - 2.000 - 5.000 - 20.00 - 200.0 - 500.0	+ 200.0 + 2.000 + 5.000 + 20.00 + 200.0 + 500.0
BQ TRX Thermo- couple	-50 $^{\circ}$ C to +760 $^{\circ}$ C -58 $^{\circ}$ F to +1400 $^{\circ}$ F -200 $^{\circ}$ C to +1260 $^{\circ}$ C -328 $^{\circ}$ F to +2300 $^{\circ}$ F -200 $^{\circ}$ C to +1000 $^{\circ}$ C -328 $^{\circ}$ F to +1832 $^{\circ}$ F -50 $^{\circ}$ C to +1750 $^{\circ}$ C -58 $^{\circ}$ F to +3182 $^{\circ}$ F -200 $^{\circ}$ C to +400 $^{\circ}$ C -328 $^{\circ}$ F to +752 $^{\circ}$ F	J J K K E E S S T T	$\pm(0.2\%RDG+1DGT)$ $\pm(0.2\%RDG+2DGT)$ $\pm(0.2\%RDG+2DGT)$ $\pm(0.2\%RDG+4DGT)$ $\pm(0.2\%RDG+2DGT)$ $\pm(0.2\%RDG+4DGT)$ $\pm(0.2\%RDG+2DGT)$ $\pm(0.2\%RDG+4DGT)$ $\pm(0.2\%RDG+2DGT)$ $\pm(0.2\%RDG+4DGT)$	$\pm 150$ ppm/ $^{\circ}$ C	- 50 $^{\circ}$ C - 58 $^{\circ}$ F - 200 $^{\circ}$ C - 328 $^{\circ}$ F - 200 $^{\circ}$ C - 328 $^{\circ}$ F - 50 $^{\circ}$ C - 58 $^{\circ}$ F - 200 $^{\circ}$ C - 328 $^{\circ}$ F	+ 760 $^{\circ}$ C + 1400 $^{\circ}$ F + 1260 $^{\circ}$ C + 2300 $^{\circ}$ F + 1000 $^{\circ}$ C + 1832 $^{\circ}$ F + 1750 $^{\circ}$ C + 3182 $^{\circ}$ F + 400 $^{\circ}$ C + 752 $^{\circ}$ 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/displayed scale ratio.

Module	Inputs	Type	Accuracy	Temp. Drift	Min. Indication	Max. Indication
BQ TRX Thermoresistance	-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)		- 200.0	+ 200.0
	-328°F to +392°F	Pt100	±(0.5%RDG +5DGT)		- 328.0	+ 392.0
	-200.0°C to +200.0°C	Pt250	±(0.5%RDG +5DGT)		- 200.0	+ 200.0
	-328°F to +392°F	Pt250	±(0.5%RDG +5DGT)		- 328.0	+ 392.0
	-200.0°C to +200.0°C	Pt500	±(0.5%RDG +5DGT)		- 200.0	+ 200.0
	-328°F to +392°F	Pt500	±(0.5%RDG +5DGT)		- 328.0	+ 392.0
	-200.0°C to +200.0°C	Pt1000	±(0.5%RDG +5DGT)		- 200.0	+ 200.0
	-328°F to +392°F	Pt1000	±(0.5%RDG +5DGT)		- 328.0	+ 392.0
BQ TRX Resistance	-60°C to +180°C	Ni100	±(0.5%RDG +1DGT)	±150 ppm/°C	- 60	+ 180
	-76°F to +356°F	Ni100	±(0.5%RDG +2DGT)		- 76	+ 356
BQ TRX Resistance	0 to 20Ω	Ω	±(0.2%RDG+2DGT)	±150 ppm/°C	0	20.00 (■)
	0 to 200Ω		25% to 110% FS		0	200.0 (■)
	0 to 2000Ω		±(0.2%RDG+3DGT)		0	2000 (■)
	0 to 20.00kΩ		0% to 25% FS		0	20.00 (■)

(■) 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	-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
	-20V to +20V	DC/AC	≥200kΩ	50V	100V
BQ HSX	-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
	-200V to +200V	DC/AC	≥2MΩ	750V	1000V
	-500V to +500V	DC/AC	≥2MΩ	750V	1000V
BQ TRX Thermocouple	-50°C to +760°C	J	I <sub>LK</sub> < 0.5μA	Max 5V	Max 10V
	-58 °F to +1400 °F	J			
	-200°C to +1260°C	K			
	-328 °F to +2300°F	K			
	-200°C to +1000°C	E			
	-328°F to +1832°F	E			
	-50°C to +1750°C	S			
	-58°F to +3182°F	S			
BQ TRX Thermoresistance	-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		800μA (*)		
	0 to 20.00kΩ		90μA (*)		

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

## Output specifications

<b>RS422/RS485</b>	<b>(on request)</b> Module: BR SX Bidirectional (static and dynamic variables). Display of data reception/transmission Multidrop, 2 or 4 wires, 1000 m Directly on the module by means of jumper 1 to 255, selectable by means of key-pad MODBUS RTU/JBUS		2, independent with module BO R2 (2 relay outputs). 4, independent with module BO R4 (2 relay outputs + 2 open collector outputs). BO R5 (4 relay outputs) Type SPDT AC 1: 8A, 250VAC DC 12: 5A, 24VDC AC 15: 2.5A, 250VAAC DC 13: 2.5A, 24VDC Type SPST (NO) AC 1: 5A, 250VAC DC 12: 3A, 24VDC AC 15: 1,5A, 250VAAC DC 13: 1,5A, 24VDC 4000 V <sub>RMS</sub> output to measuring input, 4000 V <sub>RMS</sub> output to power supply input. NPN transistor type V <sub>ON</sub> 1.2 VDC/ max. 100 mA V <sub>OFF</sub> 30 VDC max. By means of opto-couplers 4000 V <sub>RMS</sub> output to measuring input 4000 V <sub>RMS</sub> output to power supply input
Serial output		Relay output BO R4	
LED		Relay output BO R5	
Connections Distance Terminalization		Insulation	
Addresses		Open collector output	
Protocol Data (bidirectional) Dynamic (reading only)	Measurement, min value max value alarm status	Insulation	
Static (reading/writing)	All programming parameters, min max reset reset of latch alarm		
Data format	8 data bit, no parity, 1 stop bit		
Baud rate	selectable 4800, 9600, 19200 and 38400 bit/s		
Insulation	By means of opto-couplers 4000 V <sub>ms</sub> output to measuring inputs 4000 V <sub>ms</sub> output to power supply input		
<b>RS232</b>	<b>(on request)</b> 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	<b>Analogue output</b>	<b>(on request)</b> Module: BO AV 0 to 20 mADC, 0 to 10 VDC Programmable within the entire retransmission range; allows to manage the retransmission of all the 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 opto-couplers 4000V <sub>ms</sub> output to measuring input 4000V <sub>ms</sub> output to power supply input The two outputs cannot be used at the same time.
Serial output		Range	
Connections Distance		Scaling factor	
Data format			
Baud rate		Accuracy	
Other features		Response time	
<b>Alarm outputs</b>	<b>(on request)</b> Over-range alarm, up alarm, down alarm, down alarm with start-up deactivation up alarm with latch, down alarm with latch	Load: 20 mA output 10 V output	
Alarm type		Insulation	
Alarm set-point	Adjustable from 0 to 100% of displayed electric range	Notes:	
Hysteresis	0 to 100% of displayed range	<b>Excitation output</b>	<b>(on request)</b> Module BQ LSE 13 VDC ±10% max. 50 mA 25V <sub>ms</sub> output to measuring input 4000 V <sub>ms</sub> output to power supply input
On-time delay	0 to 255 s	Voltage	
Off-time delay	0 to 255 s	Insulation	
Output status	Selectable: normally energized /de-energized		
Display colour for alarms	Three available colours (green, amber, red) can be coupled to the alarm status (traffic-light function).		
Min response time	500 ms, with filter excluded, without alarm activation delay		
Output channels	1 with module BO R1 (relay output).		

## Software functions

<b>Min / Max storage</b>	Automatic storage (in the EEPROM) of the minimum and maximum measured value from the previous memory reset	TC	Opening of probe's connection: EEE indication
<b>Password</b>	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.	RTD	Opening of probe's connection: EEE indication probe's short circuit: -EEE indication.
1st level		<b>Digital filter</b>	
2nd level		Filter operating range	0 to 9999
		Filtering coefficient	1 to 32
<b>Measurement selection</b>	Depending on the module: measuring range and type of probe (resistance, RTD thermoresistance, TC thermocouple) or measuring type (TRMS or DC).	<b>Scaling</b>	Selection of min value of the input range. Selection of max value of the input range. Selection of decimal point position. Selection of min display value. Selection of max display value.
<b>Integration time selection</b>	Automatic or from 100.0 to 999.9 ms only in the current and voltage measurement.	<b>Linearization</b>	
<b>Scaling factors</b>		Points	Up to 16
Operating mode	Electrical scale compression, displayed scale compression/expansion (max. 2 without filter, up to 10 with filter)	Input range	Selectable by every single point
Electrical range	Programmable within the whole measuring range	Output range	Selectable by every single point
Decimal point position	Programmable within the display range	<b>UdmSoft</b>	Software for programming UDM40 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, French. See also "Programming of UDM40 by means of PC" .
Displayed range of the variable	Programmable within the display range		
<b>Diagnostics</b>	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.		
Burn-out:	Only temperature inputs		

## General Specifications

<b>Operating temperature</b>	0° to 50°C (32° to 122°F) (H.R. < 90% non-condensing)	<b>Safety Standards</b>	
<b>Storage temperature</b>	-10° to 60°C (14° to 140°F) (H.R. < 90% non-condensing)	Safety	EN 61010-1, IEC 61010-1
<b>Insulation reference voltage</b>	300 V <sub>RMS</sub> to ground (500V input)	<b>Connections</b>	
<b>Insulation</b>	See table "Insulation between inputs and outputs"	Wire section	Screw type Max 2.5mm <sup>2</sup>
<b>Dielectric strength</b>	4000 V <sub>RMS</sub> for 1 minute	<b>Housing</b>	
<b>Rejection</b>		Dimensions	1/8 DIN, 48 x 96 x 105 mm
NMRR	40 dB, 40 to 60 Hz	Material	PC-ABS, self-extinguishing: UL 94 V-0
CMRR	100 dB, 40 to 60 Hz	<b>Protection degree</b>	Front: IP67, NEMA4 Connections: IP20
<b>EMC</b>		<b>Weight</b>	520 g approx (included all modules and packing)
	EN61000-6-2, IEC61000-6-2 EN61000-6-3, IEC61000-6-3	<b>Approvals</b>	CE

## Supply Specifications

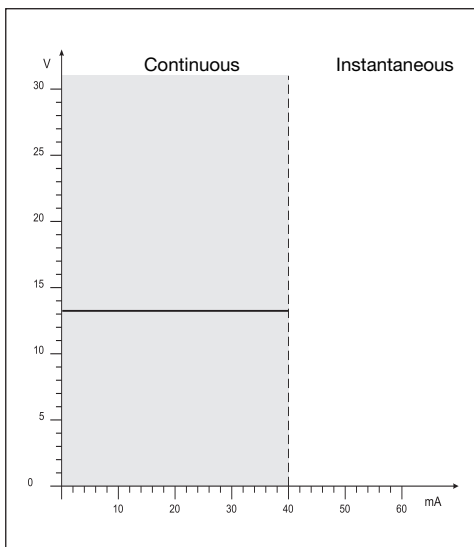
### AC/DC voltage

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

### Energy consumption

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

## Excitation output



Excitation output is constant and independent of power supply's voltage.

## 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
UDM40 main unit		BD 40
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
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, 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

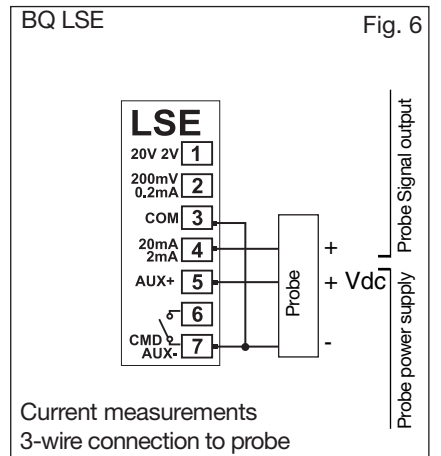
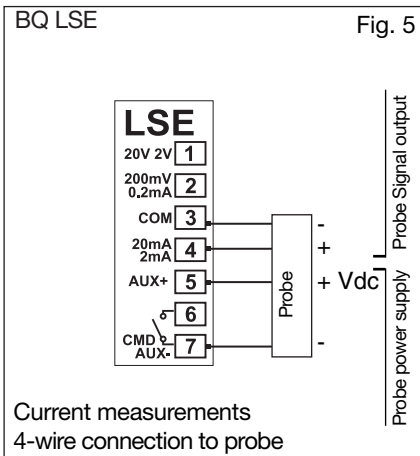
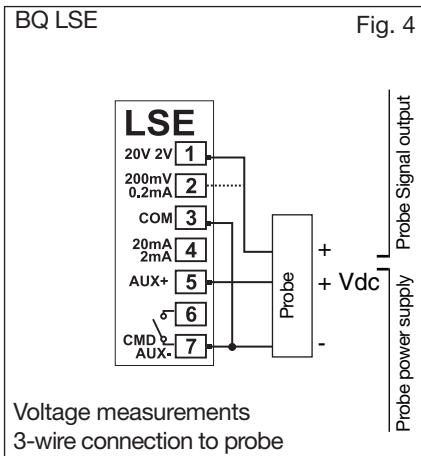
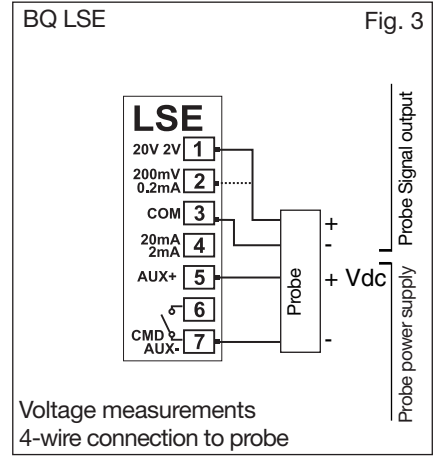
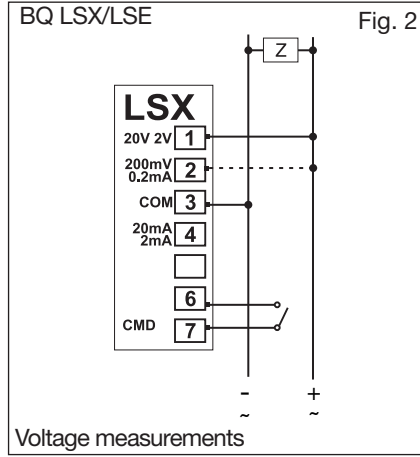
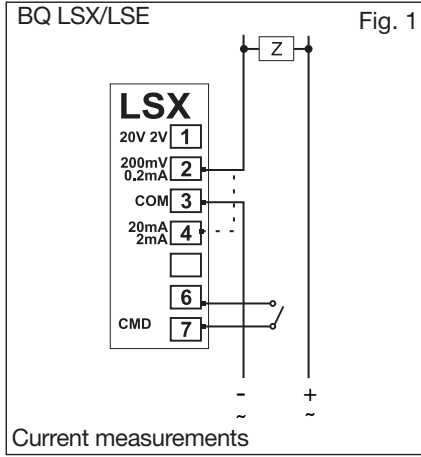
Only for TRMS Measurements

$$\text{Instantaneous effective voltage (TRMS)} \quad V_1 = \sqrt{\frac{1}{n} \cdot \sum_1^n (V_1)_i^2}$$

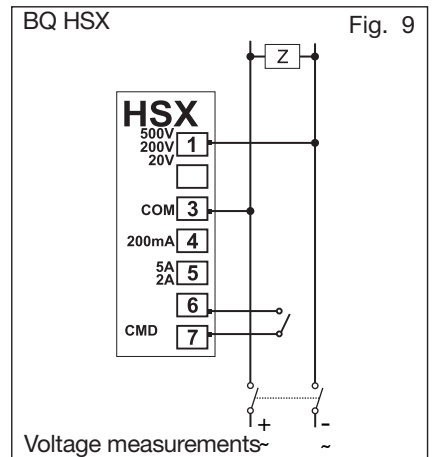
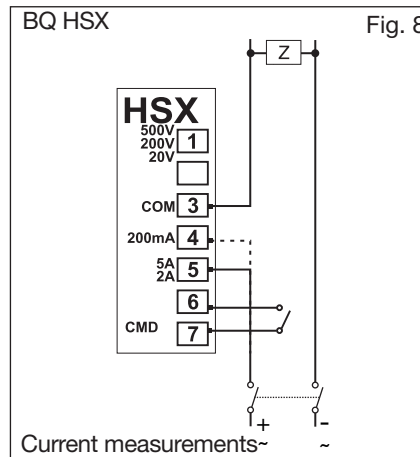
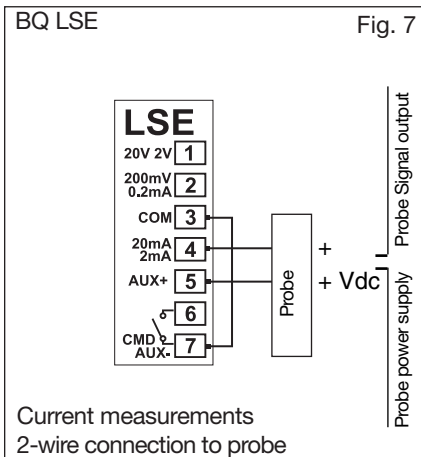
$$\text{Instantaneous effective current (TRMS)} \quad A_1 = \sqrt{\frac{1}{n} \cdot \sum_1^n (A_1)_i^2}$$

# Wiring diagrams

## Process signal wiring diagrams

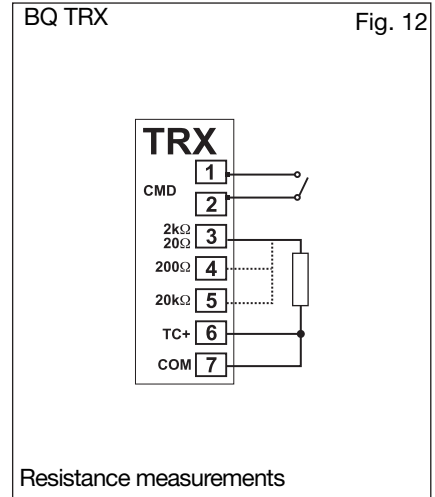
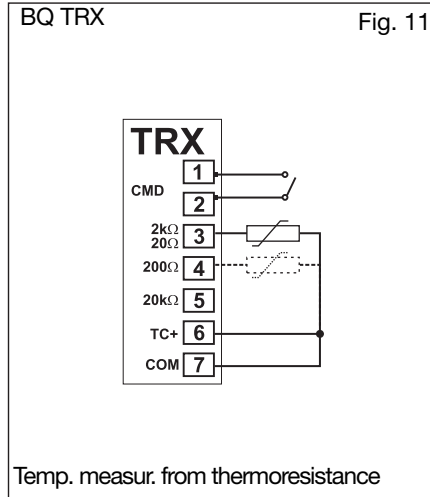
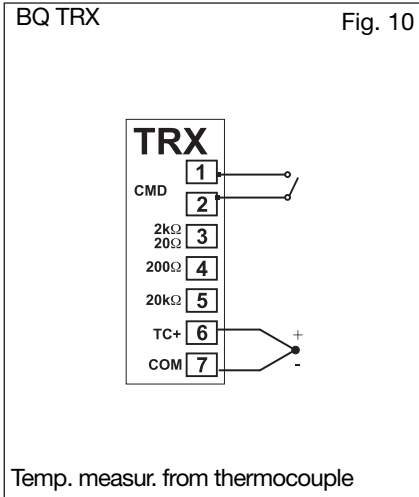


## Wirings for high-level signals

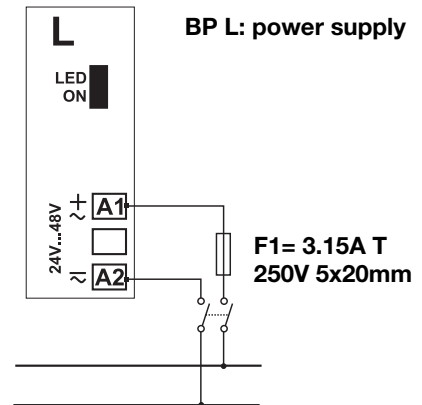
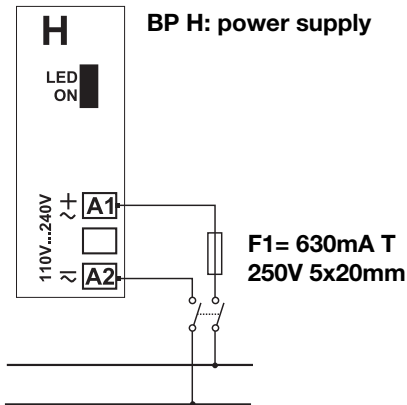


## Wiring diagrams (cont.)

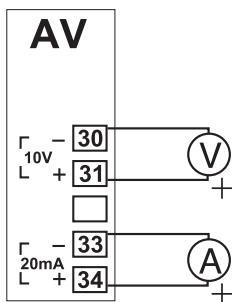
### Wiring diagrams for temperature measurements



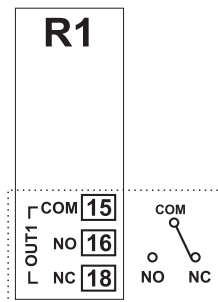
### Wiring diagrams for power supply



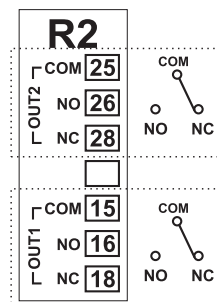
## Wiring diagrams of optional modules



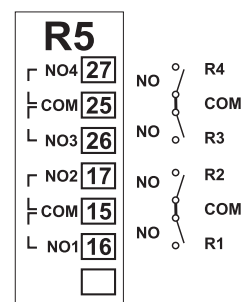
BO AV: analogue output  
(10V, 20mA DC)



BO R1: 1 relay output



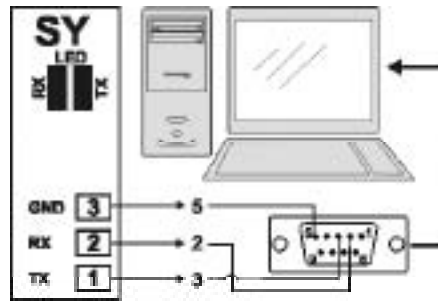
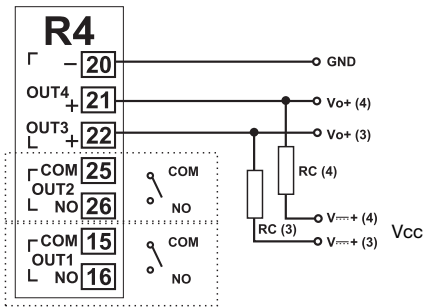
BO R2: 2 relay outputs



BO R5: 4 relay outputs



## Wiring diagrams of optional modules (cont.)



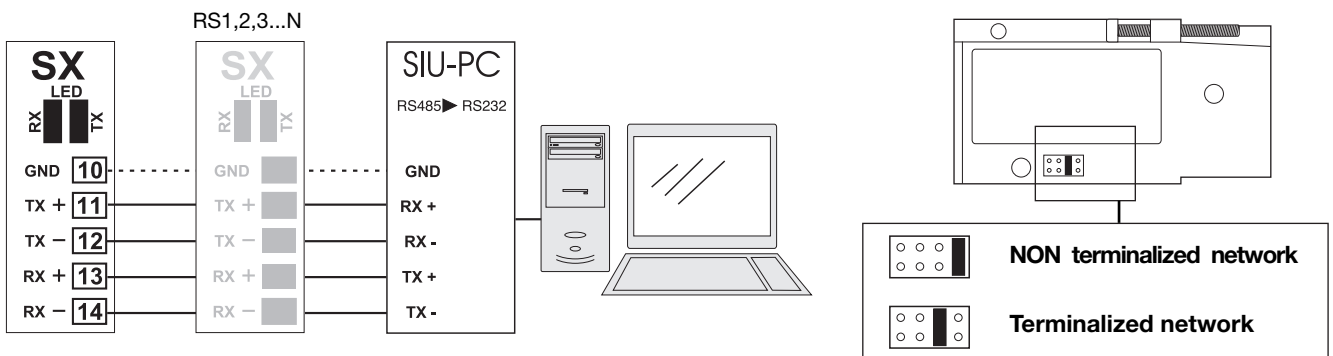
**BO SY:** RS232 direct connection to PC by means of COM port. RS232 has no termination.

**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).

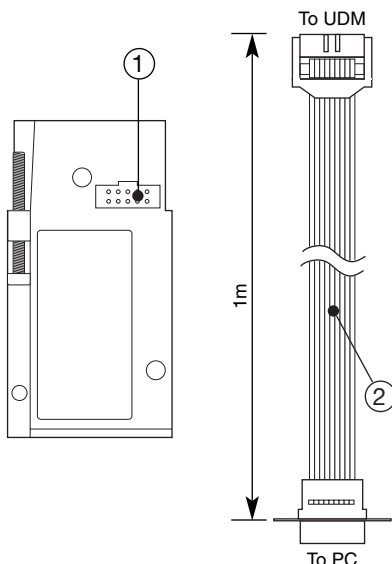
GND: ground collector (open collector transistor).



**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 UDM40 by means of PC



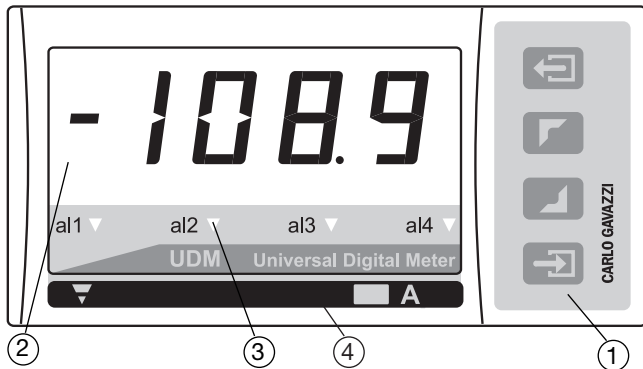
UDM40 is programmable by PC by means of the UdmSoft software (available on request). The user can program all parameters of UDM40 that will be subsequently uploaded and set in the instrument by the RS485 network (BR SX).

Should UDM40 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:

- 4 digit (max display 9999).

Alphanumeric indications by means of LED display for:

- Display of configuration parameters;
- The measured variable.

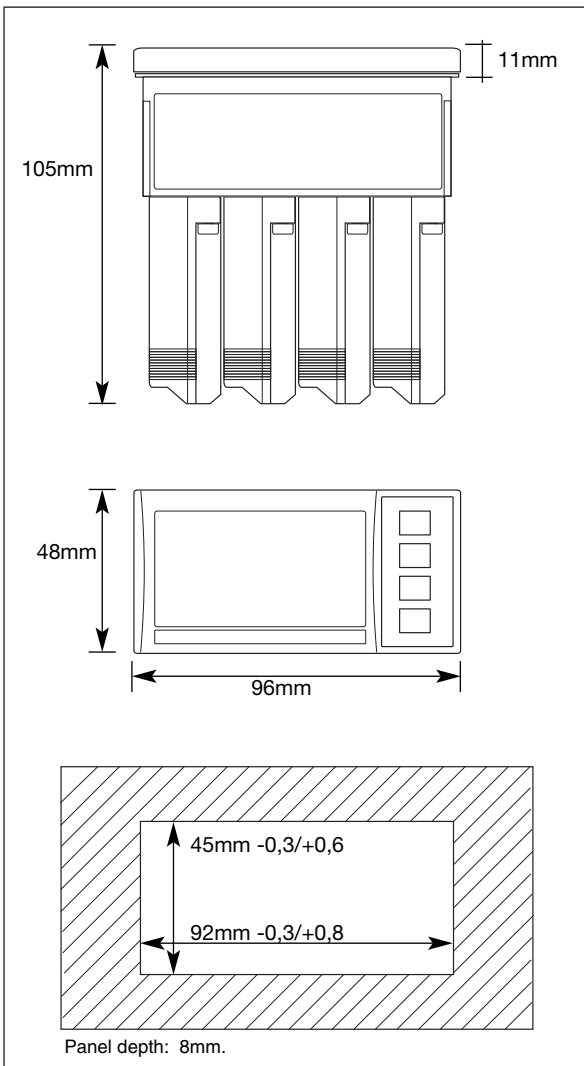
### 3. Alarm status LED

Display any alarm condition

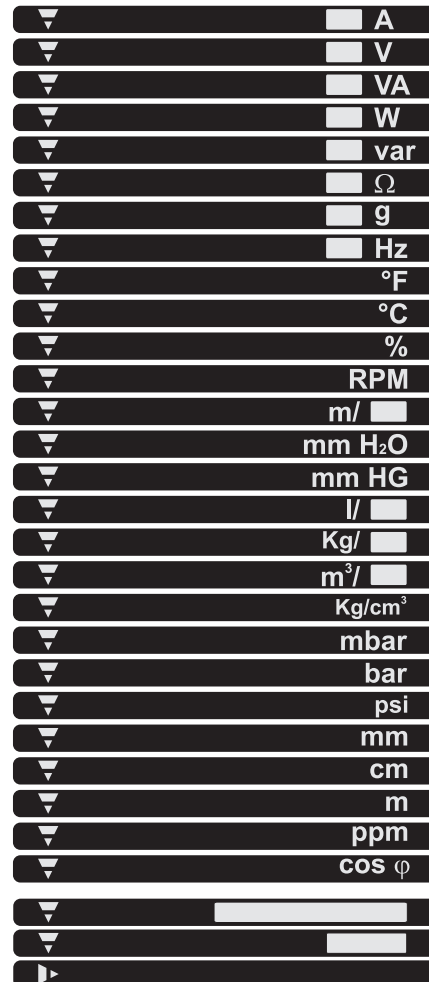
### 4. Engineering unit

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

## Dimensions

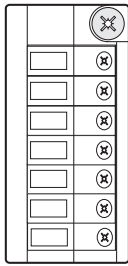


## Engineering Units



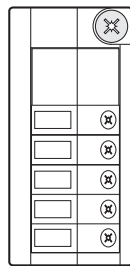
# Modules

## Input modules

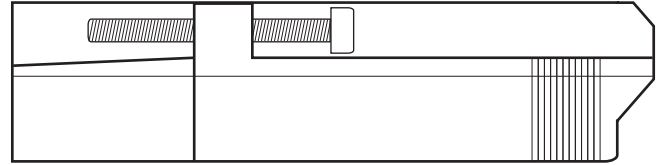


**BQ LSX, BQ LSE,  
BQ HSX, BQ TRX**  
Measuring inputs

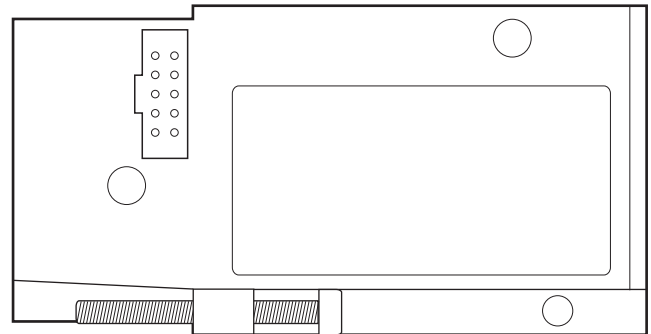
## Output modules



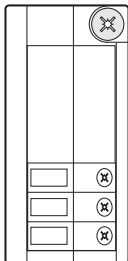
**BO AV**  
Single analogue  
output 10V, 20mA DC



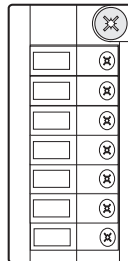
Scale 1:1



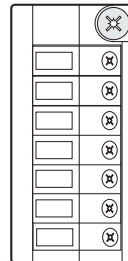
## Output modules



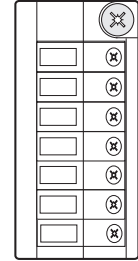
**BO R1**  
Single relay output



**BO R2**  
Dual relay output

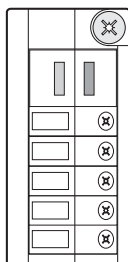


**BO R4**  
Dual relay output +  
Dual open collector



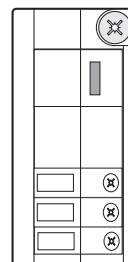
**BO R5**  
4 relay outputs

## Serial port module

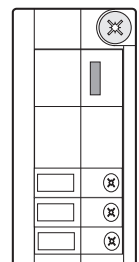


**BR SX**  
RS485 Serial port

## Power supply module



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



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