E TEST-4 VOLTAGE/CURRENT MEASUREMENT DEVICE - GENERATOR WITH OLED DISPLAY.

General Description

The Test-4 instrument is a process calibrator that generates (even in the ramp mode) or measures the canonical variables of an industrial process, voltage between 0 and 1 1 V and current between 0 and 21 mA. The instrument also enables displaying the values measured or generated via MODBUS-RTU protocol.
The Test-4 can be powered by two rechargeable NiMh batteries that ensure a minimum 8 hours range at full charge or by the mains at 220 V through the special power supply unit/battery charger.
The menu allows the user to set the operating mode (Generation or Measurement) and the type of signal (Voltage or Current). The user can also choose the language (Italian, English, French, German and Spanish) and other parameters such as contrast and sensitivity of the dial.
Test-4 is equipped with two keys to **Confirm** or **Exit** an operating mode, and a dial for setting the value of electrical variables generated or to browse the menu options.
The only two bushes on the top are used both for generation and measurement. Instead, the micro AB USB connector enables communication or acquisition of data through Modbus ADD#1, 9600,8,N,1*, by default.

Technical Specifications

Power supply: Consumption: Battery Charger:	-2 NiMh type AA batteries 2650mAh, Minimum lifetime: 8 hours at maximum load (*). -From 220 Vac mains through a power feeder/battery charger. Max 300 mA 6 V, 300 mA stabilised (central positive)
Input/Output:	Voltage: 0..11 V, Current: 0.0.21 mA Protection: ± 30 V
Serial communication ports: Protocol:	USB, 9600 Baud, Address: 1, Party: NO, Data: 8 bit; Stop bit: 1. MODBUS-RTU
Precision: Rejection: Sampling Frequency: Protection rating: Environmental conditions: Connections:	0,1 % for all IN/OUT signals At both 50 Hz and 60 Hz 10 Hz IP20 Temperature 0..50 °C Humidity 30..90 % non condensing Altitude: up to 2000 m a.s.l. -In/Out: Bushes, Power supply: Battery compartment at rear (under the cover in protective rubber). -micro AB communication USB.

(*) For the first time, the batteries must be charged for at least 12 hours

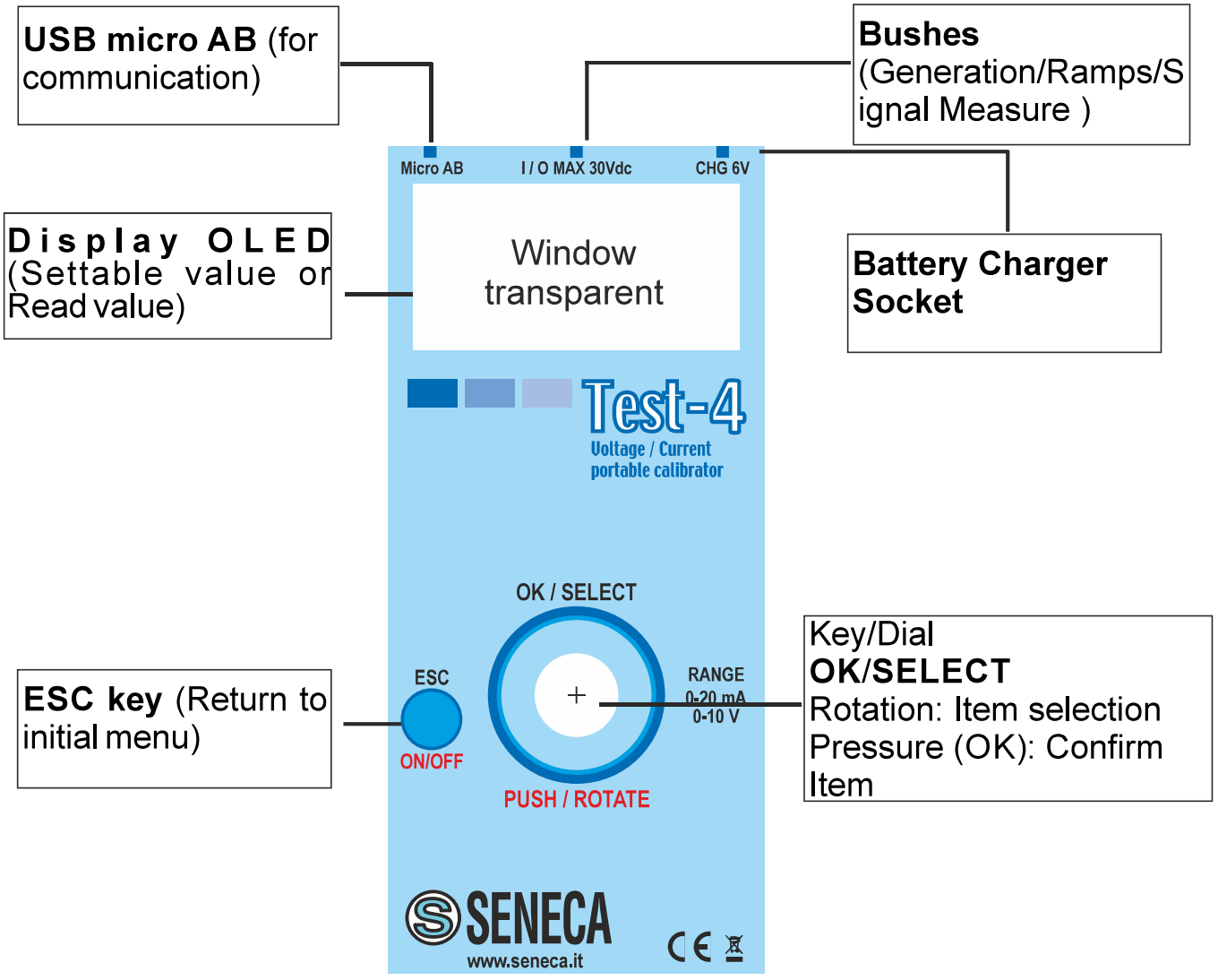
Dimensions, Weight:	140 x 75 x 33 mm, 250 g.
Standards: CE	EN61000-6-4 (electromagnetic emission, industrial surroundings) EN61000-6-2 (electromagnetic immunity, industrial surroundings) EN61010-1 (safety)

Operating Logic

Test 4 is an instrument able to:
-Measure voltage/current/active current.
-Generate voltage/current/passive current, even in "ramp" mode.

Instrument Control

Test-4 is equipped with two buttons and a dial. Below is shown the layout of the instrument:



Measure / Generation of voltage or active/passive current

Test -4 is an instrument able to:
• Measure voltage in the range 0..11 V.
• Measure current in the range 0..21 mA.
• Generate current within the range 0..21 mA, powered by the loop.
• Generate voltage within the range 0..11 V, even in “ramp” mode.
• Generate current within the range 0..21 mA, even in “ramp” mode.
• Generate current within the range 0..21 mA, powered by the loop, even in “ramp” mode.
• Reading of voltage is restricted to -0.2 V to +11 V, whereas for current, the ranges are from 0.1 mA to +21 mA. Linearity is not ensured outside the nominal ranges of 0..20 mA and 0..10 V. The operation of the instrument is set by user's selections in the menu. If a voltage or current value is being read, the value respectively in mA or Volts is shown directly on the display.

Example: Setting value during generation

If generating current or voltage, turn push-button **OK/SELECT** clockwise to increase the set value, or anti-clockwise to reduce it; conversely, by pressing the same push-button, you can vary the position of the figure being modified (value*1, value*10, value*100, value*1000).
The modification of the position is indicated by an arrow under the relative figure.
Rotation of the dial enables the user to display the selected value. For example, we have:

19.000 mA

Anti-clockwise rotation of the **OK/SELECT** push-button entails:

18.999 mA

i.e. the reduction of 0.001 mA of the generated value.
We also have:

19.000 mA

Pressing the **OK/SELECT** push-button entails the change of position of the figure to be modified:

18.990 mA

i.e. the rotation has reduced the generated value by 0.010 mA, i.e. a value 10 greater than the previous one.

Rotate the dial to select an item within the menu. To confirm the choice press the **OK/SELECT** key.
By pressing **ESC**, the user can exit the operating mode and return to the previous menu.

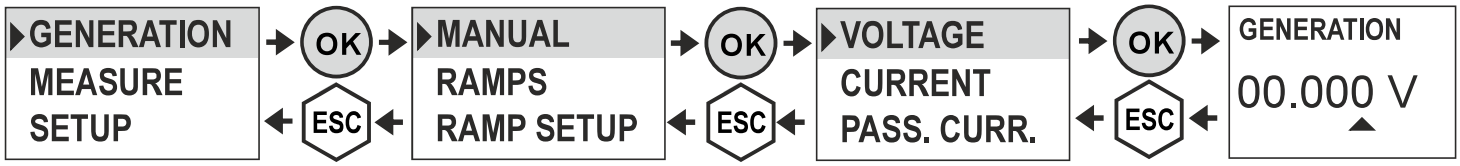
FAST NAVIGATION DIAL CONTROLS

Dial rotation.	**Press OK.**	**Rotate and Confirm.**

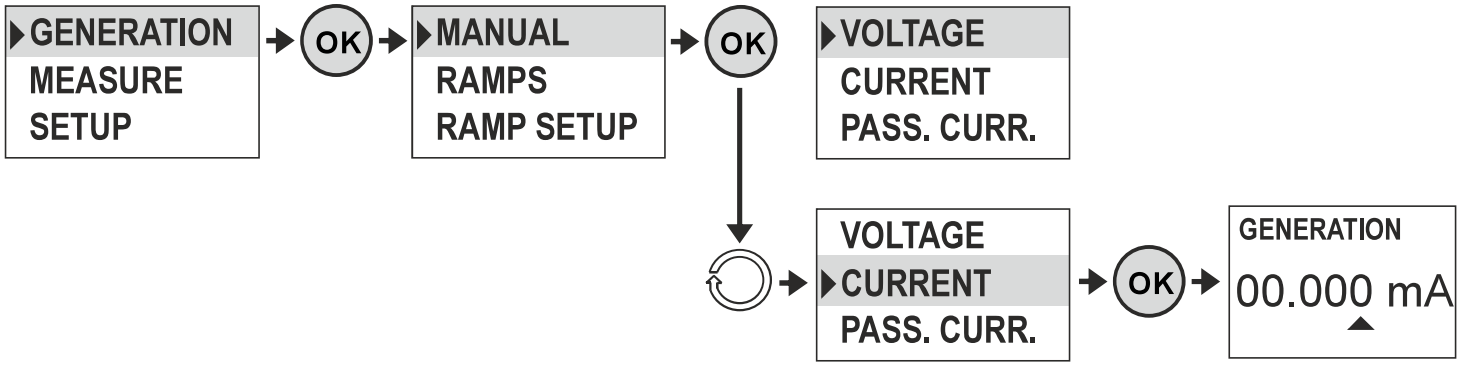
Press ESC. → **By pressing this key, the user returns to the previous menu.** By pressing ESC in the "RAMP SETUP" sub-menu, it is possible to save the settings.

SCHEMES FOR SETTING THE TEST-4 DURING GENERATION

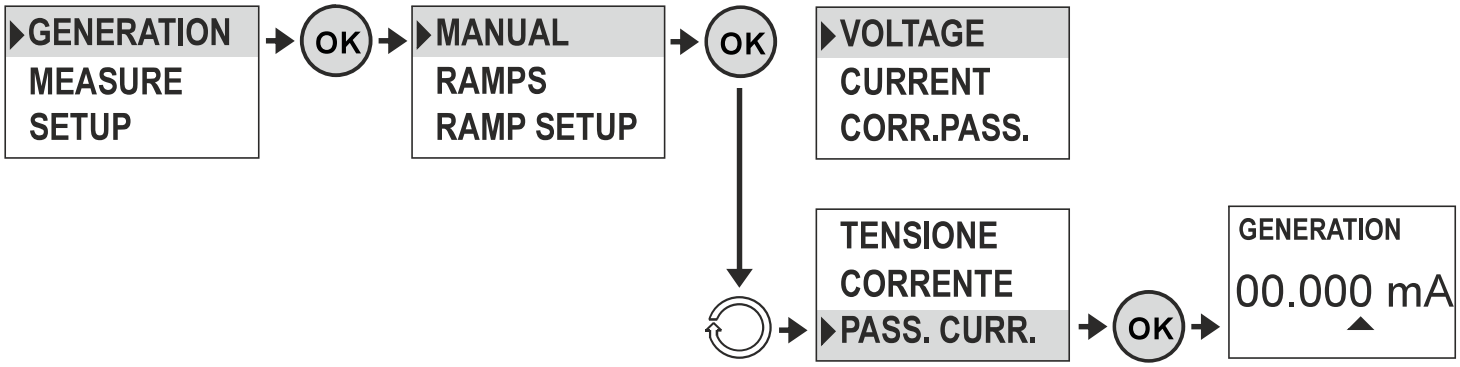
Example: navigation through the "generation" menu for Vdc voltage



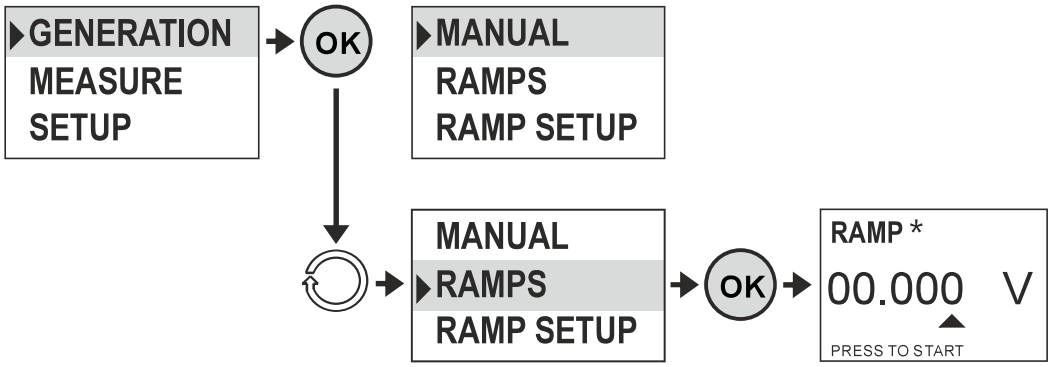
Example: navigation through the "generation" menu for mA current



Example: navigation through the "generation" menu for passive mA current

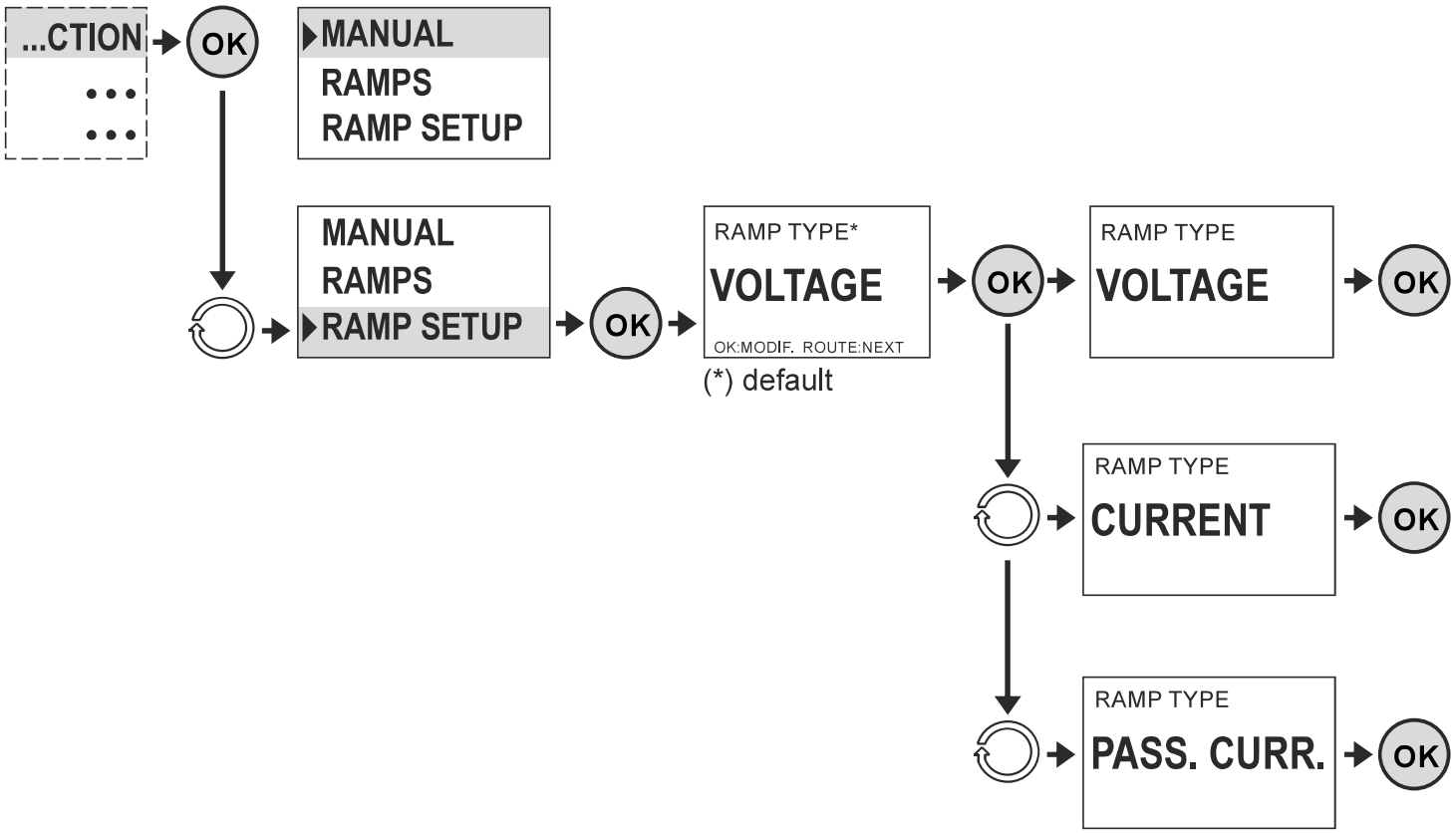


Example: navigation through the "generation" menu for ramp set mA/Vdc

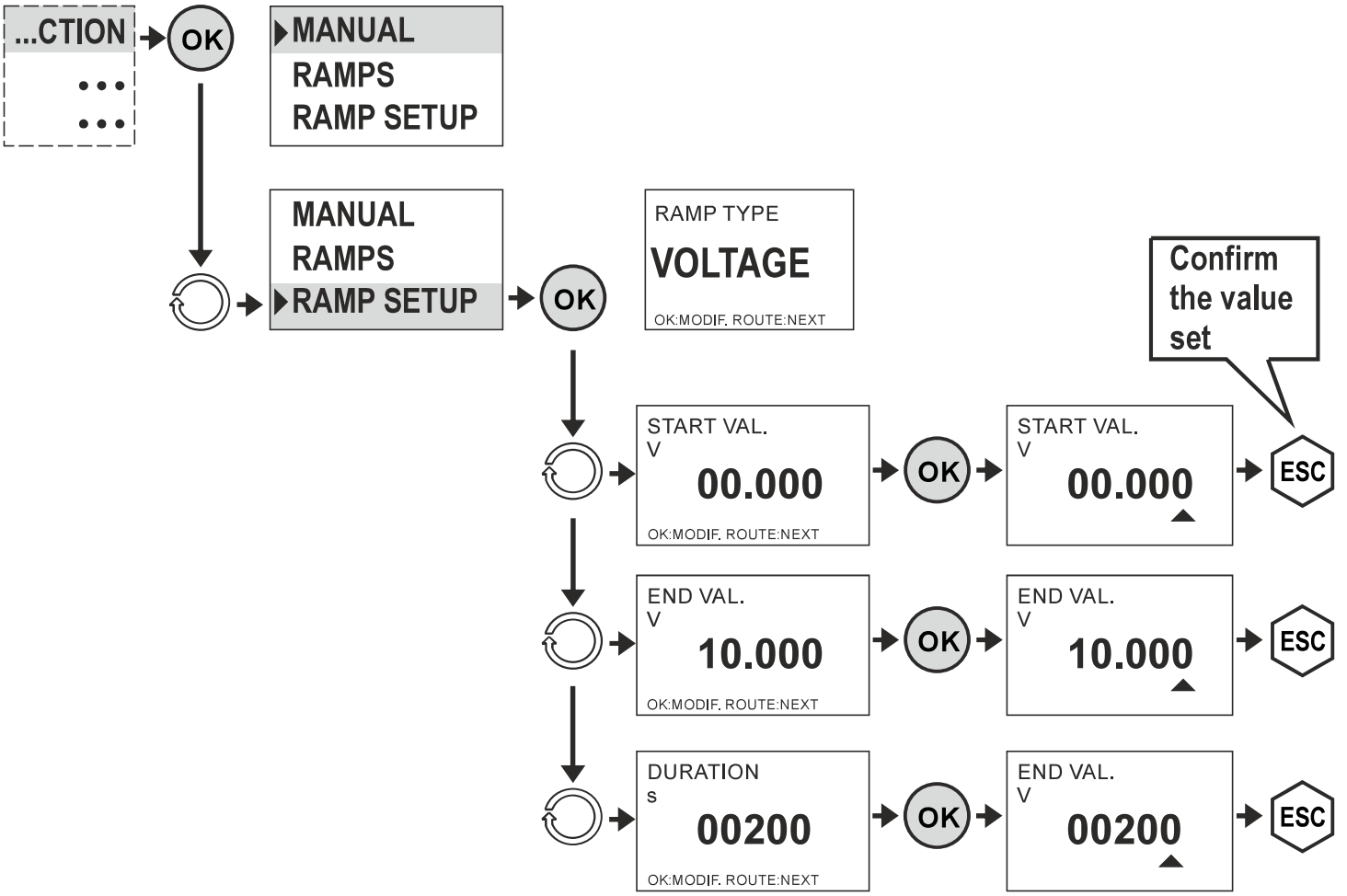


(*) default

Example: navigation through the “generation” Ramp setup mA/Vdc

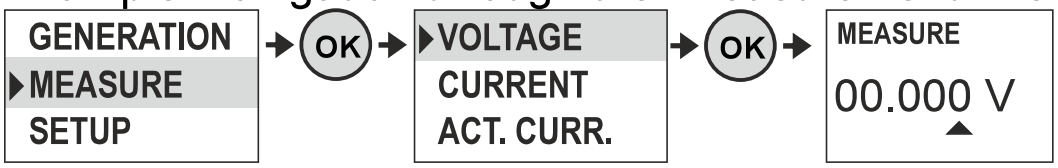


Example: navigation through the “generation” menu Parameter ramp setup

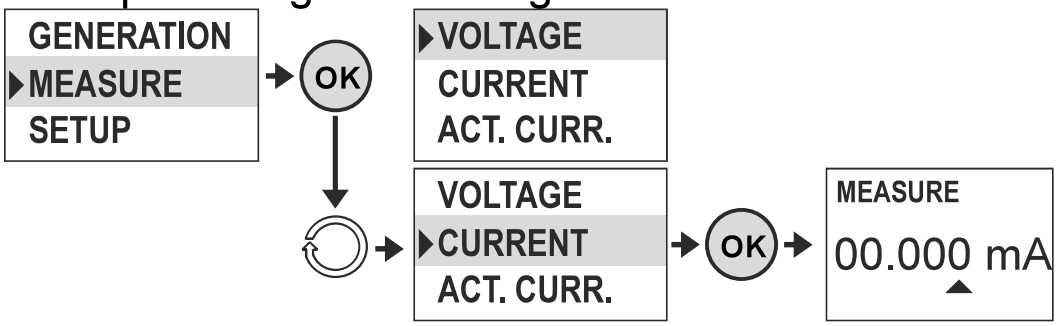


SCHEMES FOR SETTING THE TEST-4 DURING MEASUREMENT

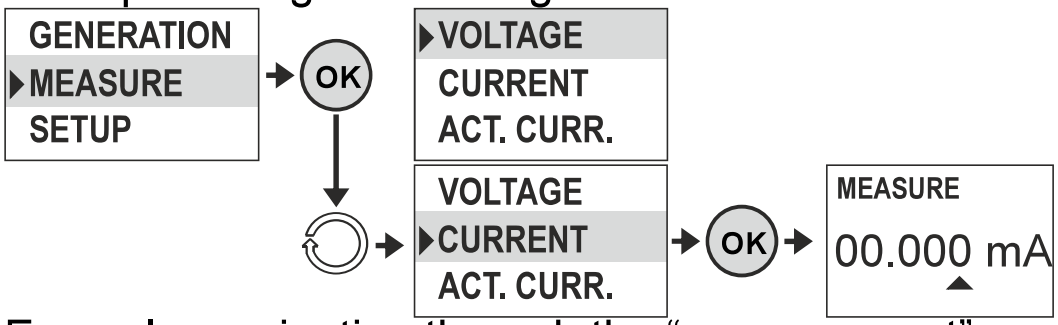
Example: navigation through the “measurement” menu for Vdc voltage



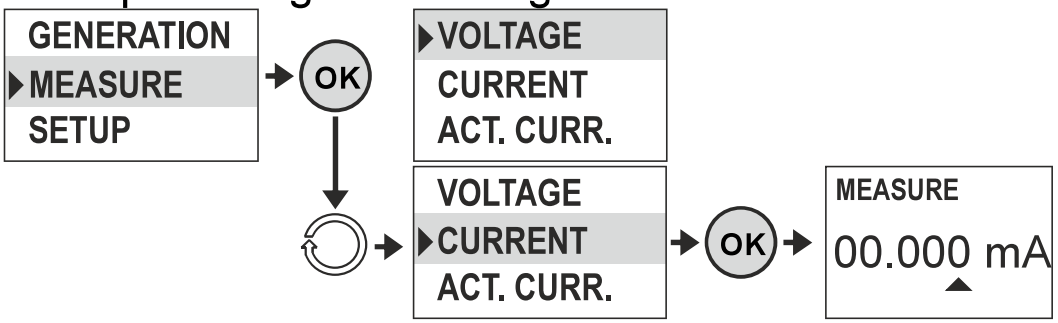
Example: navigation through the “measurement” menu for Vdc voltage



Example: navigation through the “measurement” menu for current

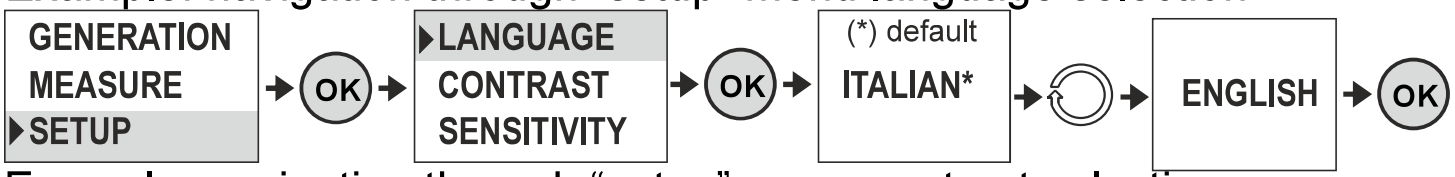


Example: navigation through the “measurement” menu for current

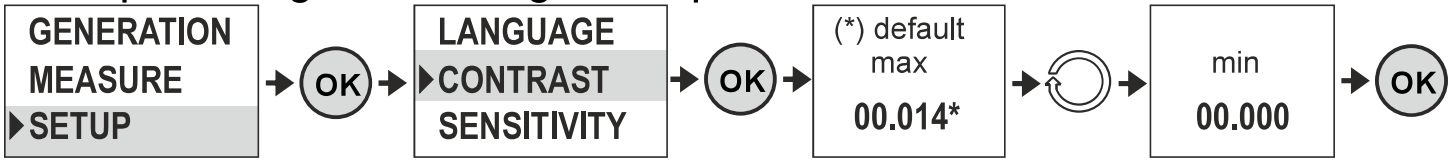


SCHEMES FOR SETTING THE TEST-4 DURING SETUP

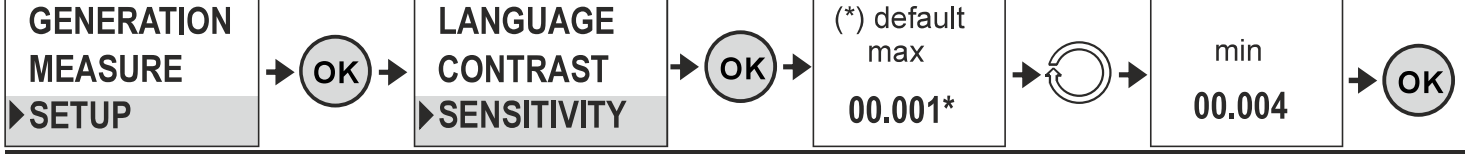
Example: navigation through “setup” menu language selection



Example: navigation through “setup” menu contrast selection



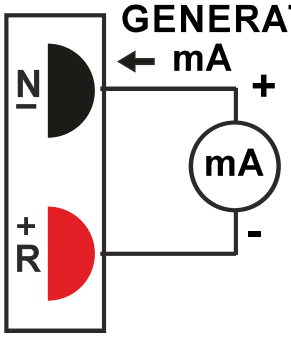
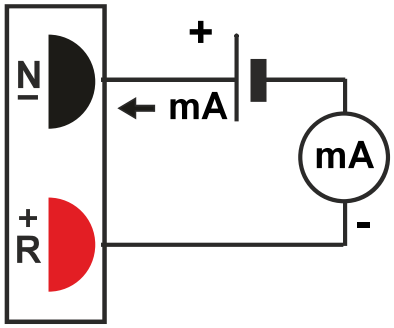
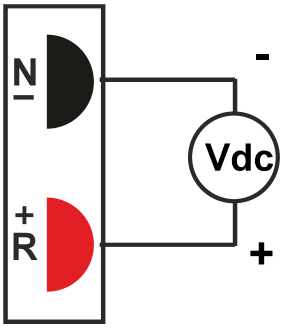
Example: navigation through “setup” menu encoder sensitivity selection



ELECTRICAL CONNECTIONS

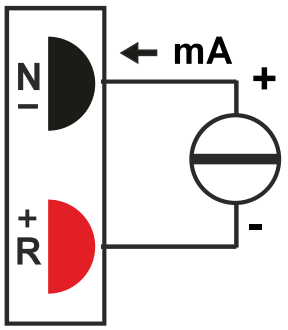
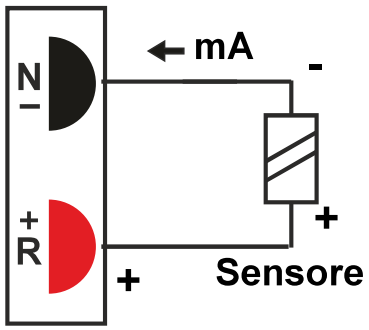
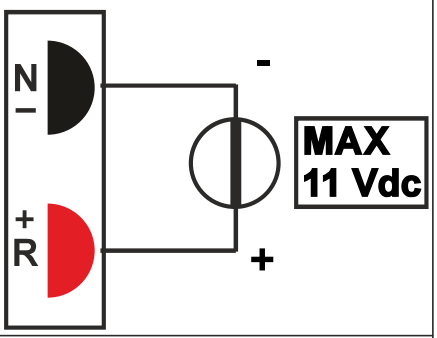
Wiring diagrams: GENERATION

The following are the wiring diagrams with the instrument set as generator:

CURR. GENERATION	PASSIVE CURR. GENER.	VOLTAGE GENERATION
		
Current generation 0..21 mA with loop powered by Test-4 (Maximum Load Impendance 400 Ohm).	Current generator 0..21 mA with loop powered by an external power unit (Vmax: 24 Vdc).	Voltage generator 0..11 V (minimum load impedance: 1 kOhm)

Wiring diagrams: MEASURE

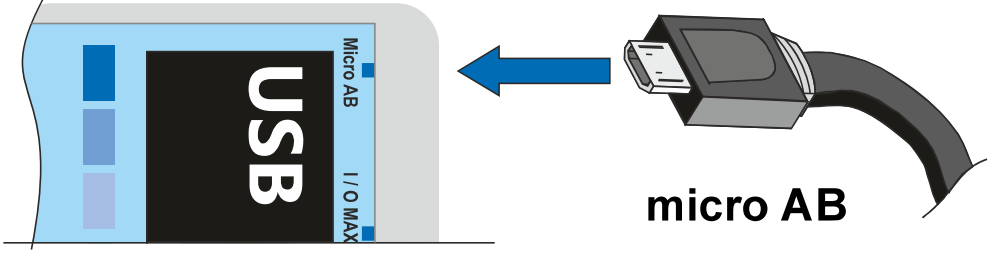
The following are the wiring diagrams with the instrument set for measuring current or voltage signals:

CURR. MEASUREMENT	ACTIVE CURR. MEAS.	CURR. GENERATION
		
Measurement of 0..21 mA current signal (internal impedance Test-4 20 Ohm)	Measurement of the current of a sensor for loop 4..21 mA, with power supply at **11 Vdc provided by Test-4.**	Measuring a **0..11 V** voltage signal (internal impedance 100 kOhm)

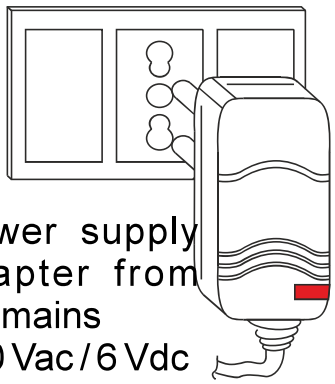
USB micro AB connection

In order to communicate and acquire data connect the cable (**optional** order code: CU-A-MICROB) to the USB micro AB port. Modbus Protocol ADD#1, 9600,8,N,1* default.

For further details see: **USER MANUAL.**

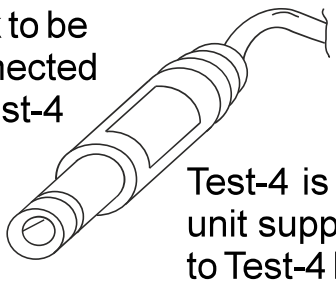


Power supplied by the power unit supplied 6Vdc, 500 mA



Power supply adapter from the mains 220 Vac / 6 Vdc

Jack to be connected to Test-4



Test-4 is supplied by the dedicated power unit supplied 6 Vdc @ 500 mA, connected to Test-4 by means of the jack.

ADVANCED SETTINGS AND SIGNALS

Screen saver

- Set Screensaver: after one of the keys has not been used for 6-7 minutes, the video content is scrolled vertically until one of the buttons is pressed. During generation or measurement the values are written again with minimum contrast. During generation, the user can exit the Screensaver mode without modifying the value generated, by pressing the dial button. During measurement, the user can exit the Screensaver by turning the dial or by pressing any button.
- Set Auto Off: If you hold down the dial button in the start menu for more than 4 seconds, the instrument will switch from Auto Off ON mode to Auto Off Off mode or vice versa. This configuration will remain saved in the memory as well. In Auto Off ON mode, after 6-7 minutes of inactivity, the screensaver will not be set but the instrument will turn off automatically. Default Auto off OFF.

Error signalling

Any errors will be shown directly on display. Below are given the possible signals and their meaning:

Messages during measurement or generation:

- **OVER VOLTAGE**: voltage read exceeds 11 V.
- **UNDER VOLTAGE**: voltage read below -0.2 V.
- **OVER CURRENT**: current read exceeds 21 mA.
- **UNDER CURRENT**: current read below -0.1 mA.
- If, for example, you wish to generate a voltage and, for some reason (e.g. the prods are short circuited with each other), the instrument cannot impose it, the indicator of the type of generation will start to flash, indicating an unreliable generation value.

ISO9001-2000

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