

**USER GUIDE**



**DIGITAL METER  
- 96x48**



- accuracy class D.C.  $\leq 0,2$  , A.C.  $\leq 0,5$
- resolution A/D converter  $\pm 20000$  count
- 6 digits high efficiency 7 segments led displays
- settings protected with password
- cont DIN 43700 panel mounting case (96 x 48)

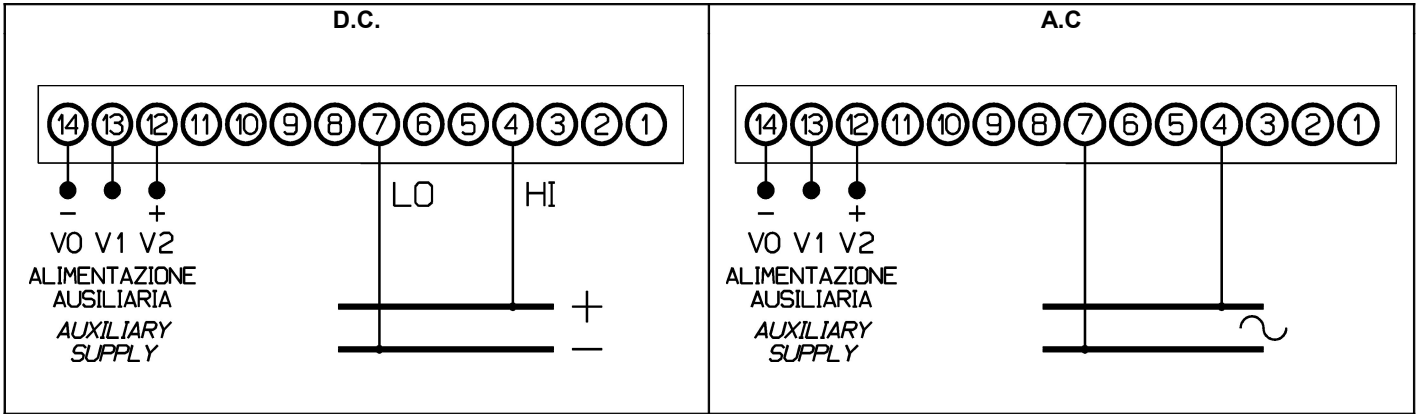
The digital meter **ID500x** designed and developed wholly by **ESAM** - is built to comply with all the requirements of measure . Adoption of the latest generation microprocessor, of a new measuring circuit, the careful choice of every component and the calibration with **EAL-SIT** certificated devices, provide the highest prec

Decription	Models
D.C. VOLTMETERS	ID5001
A.C. VOLTMETERS	ID5002
A.C. VOLTMETERS RMS	ID5002-TRMS
D.C. AMMETERS	ID5001
A.C. AMMETERS	ID5004
A.C. AMMETERS RMS	ID5004-TRMS
OHMMETERS	ID5005
FREQUENCY METERS	ID5006
THERMOMETERS	ID5007
TACHYMETERS	ID5008

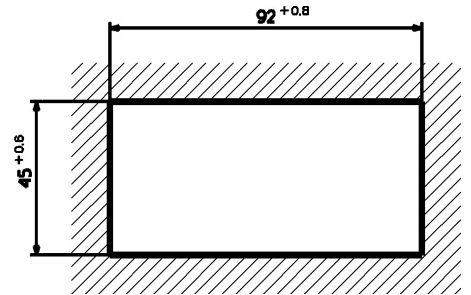
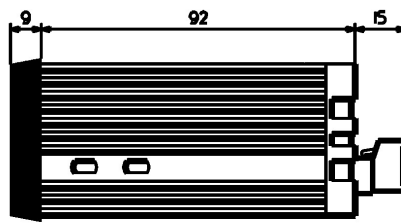
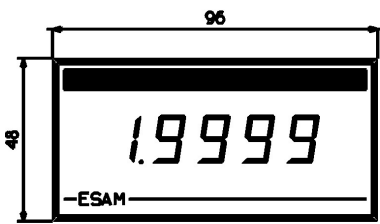
**Technical data**

- password: 4 digits
- 6 digits high efficiency 7 segment led displays, digit height: 15 mm (0,42")
- accuracy class for dc  $\leq 0,2\%$
- accuracy class for dc input  $\leq 0,5\%$
- number of decimal digits: 0 ...6
- programmable low range, high range
- temperature measurement: RTD Pt100 (100 $\Omega$  a 0°C)
- a.c. auxiliary power (standard): 115 - 230V  $\pm 10\%$  50/60Hz, on request: 24V
- d.c. auxiliary power (on request): 12V or 24V or 48V or 110V or 220V  $\pm 10\%$
- self-consumption  $\leq 5VA$  a.c., 5W d.c
- connections through screw terminal boards
- DIN 43700 panel mounting case in Noryl self-extinguishing material (UL94 V-0)

**Wiring diagrams**



**Overall dimensions**



**Reference standards**

Electrical features are according to the standards: CEI 85-15, EN60688, IEC688.  
 Safety features are according to the standards: CEI 66-5, EN61010-1, IEC 348, VDE 0411.  
 Standards for the electromagnetic compatibility: EN 50081-2 EN 50082-2, EN 55011

**Environmental conditions**

Operating temperature: -10°C ... +55°C  
 Working temperature: +5°C ... +40°C  
 Storage temperature: -30°C ... +70°C  
 Reference temperature: +20°C  
 Temperature coefficient: ±0,01%/°C

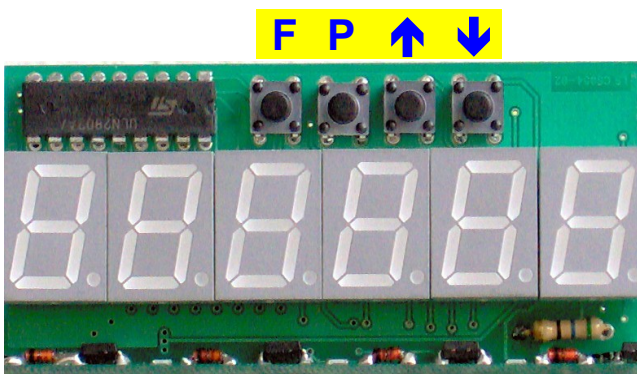
Environmental humidity 85% without condensation with 35°C temperature for maximum 60 gg./year; average year humidity must not exceed 65% (DIN40040).

**Galvanic insulation**

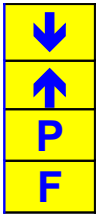
Insulation between:

- analog inputs and auxiliary power 2kV/60 sec. 50Hz
- digital inputs and auxiliary power 2kV/60 sec. 50Hz
- digital inputs and analog inputs 1kV/60 sec. 50Hz

**KEY POSITION**



## FUNCTION OF THE BUTTONS DURING CONFIGURATION



- CHOOSE THE PARAMETER TO CHANGE / DECREMENT THE BLINKING DIGIT
- CHOOSE THE PARAMETER TO CHANGE / INCREMENT THE BLINKING DIGIT
- EDIT THE DISPLAYED VALUE / SAVE THE MODIFICATIONS
- EXIT PROGRAMMING

## FUNCTION OF THE BUTTONS DURING NORMAL OPERATION



ENTER ADVANCED CONFIGURATION MENU (parameters protected with password)

**NOTE 1: THE VALUE SELECTED WITH “↑↓” KEYS WILL BE DISPLAYED FOR 60 SECONDS, AFTER THIS TIME**

## GENERAL SETTING OF A NUMBER

To modify any value, no matter its length, it is possible to use the following command sequence:

The blinking cursor can be moved right with “F” key. The number indicated by the cursor can be incremented with “↑” key or decremented with “↓” key.

In case of numbers with sign, The positive is indicated by “P” letter, the negative by “-” sign.

To modify the sign press “↑” or “↓” keys.

Set the first digit then move the cursor right to the next digit with “F” key; repeat until all digits have been set.

To modify non numerical value press “↑” or “↓” keys and choose among the proposed choices

At the end of the setting press “P” key to confirm the modification.

Key “F” allows to come back to normal measuring at any time and from any sub menu

If you set a number greater than the maximum number allowed, the label “tooHi” will be displayed for a few seconds and the number replaced with the maximum valid value.

If you set a number lower than the minimum number allowed, the label “tooLo” will be displayed for a few seconds and the number replaced with the minimum valid value.

## SWITCHING ON THE DEVICE

At power on, the following message will be displayed for 2 seconds

**ID5000.... x.x**


The label **id5000...** indicates the model and the options (if present), the number **x.x** indicates software version.

## CONFIGURATION MENU

Press in sequence “F” and “P” keys to enter the advanced configuration menu (password protected).

The default password is 0000, which disables password requests.

If any other password value has been previously set (see in the following how to do it), the message **ConFig Enter Password** will be displayed: enter the correct one and press “P” key to confirm.

All the parameters marked with  are accessible only in the advanced configuration menu

### • **SETTING THE NUMBER OF DECIMAL DIGITS OF DISPLAYED MEASURE**



**ndEc**

Valid values: 0 ... 4

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

### • **SETTING ZERO THRESHOLD**



**Min**

If value < Min, value is zero.

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

- **SETTING THE LOW LIMIT OF THE MEASURING RANGE**

**irnGL**

To set the beginning of the measuring range.

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

- **SETTING OF THE HIGH LIMIT OF THE MEASURING RANGE**

**irnGH**

To set the end the measuring range.

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

- **SETTING DISPLAYED RANGE LOW LIMIT**

**rnGL**

To set the DISPLAYED value corresponding to a measured value equal to the beginning of the measuring range

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

- **SETTING DISPLAYED RANGE HIGH LIMIT**

**rnGH**

To set the DISPLAYED value corresponding to a measured value equal to the end of the measuring range.

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

- **SETTING OF MEASURE FILTER**

**FiLteR**This setting allows to stabilize the reading.  
Valid values: from 1 to 20 (1 ≅ 100msec, 20 ≅ 2 sec ).

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

- **PASSWORD SETTING**

**PASS**

To change the password required to enter advanced configuration menu

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

- **SETTING THE FUNCTION OF DIGITAL INPUT 1**

**di1 Func**

To associate a function to digital input 1.

Possible choices: **nonE** disable function, **MUL** see GFUN1, **HOId** freeze display value, **dec** enable decimal point 1.

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

- **SETTING DIGITAL INPUT 1 GAIN**

**GFun1**The variable is multiplied by this constant if "d1 Func" is **MUL**

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

- **SETTING THE FUNCTION OF DIGITAL INPUT 2**

**di2 Func**

To associate a function to digital input 2.

Possible choices: **nonE** disable function, **MUL** see GFUN2, **HOId** freeze display value, **dec** enable decimal point 2.

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

- **SETTING DIGITAL INPUT 2 GAIN**



**GFun2**

The variable is multiplied by this constant if "d2 Func" is **MUL**

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING THE FUNCTION OF DIGITAL INPUT 3**



**di3 Func**

To associate a function to digital input 3.

Possible choices: **nonE** disable function, **MUL** see GFUN3, **HOId** freeze display value, **dec** enable decimal point 3.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING DIGITAL INPUT 3 GAIN**



**GFun3**

The variable is multiplied by this constant if "d3 Func" is **MUL**

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING THE FUNCTION OF DIGITAL INPUT 4**



**di4 Func**

To associate a function to digital input 4.

Possible choices: **nonE** disable function, **MUL** see GFUN4, **HOId** freeze display value, **dec** enable decimal point 4.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING DIGITAL INPUT 4 GAIN**



**GFun4**

The variable is multiplied by this constant if "d4 Func" is **MUL**

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING THE FUNCTION OF DIGITAL INPUT 5**



**di5 Func**

To associate a function to digital input 5.

Possible choices: **nonE** disable function, **MUL** see GFUN5, **HOId** freeze display value, **dec** enable decimal point 5.

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING DIGITAL INPUT 5 GAIN**



**GFun5**

The variable is multiplied by this constant if "d5 Func" is **MUL**

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING STATION ADDRESS**



**S adr**

To assigns an identification number from 1 to 255

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

- **SETTING COMMUNICATION RATE**



**S baud**

The following rates can be selected: 1200, 2400, 4800, 9600, 19200

To skip the setting press "↓" key; save the data pressing "P" key, change the value with "↑" and "↓" key. "F" key allows to exit.

• **SETTING MIN. DELAY BEFORE REPLY**



**S tdEL**

This is the minimum delay between query and reply for serial communication. The default value is 5 msec and is normally adequate. Valid values: 0 ... 255 msec.

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

• **SETTING FLOATING POINT FORMAT**



**FP Fmt**

A floating point value is 32 bits long and is sent by Modbus as 2 words (16 bits each).

There is no standard agreement about which word has to be sent first, so set this parameters to have them sent in order that your master Modbus equipment understands. (for more details see **SID8\_Modbus RTU\_1M** user’s guide).

To skip the setting press “↓” key; save the data pressing “P” key, change the value with “↑” and “↓” key. “F” key allows to exit.

• **LOADING OF DEFAULT PARAMETERS**



**LoAd dEF**

Load default factory values for all parameters (see Table 2 “**DEFAULT VALUES**”). Press “P”, then “CR” to confirm. Press any other keys to exit

**Table 2      DEFAULT VALUES**

Parametri	Descrizione	Valori default
ndec	number of decimal point	0
Min	zero threshold	0
irnGL	beginning of measuring range	0
irnGH	end of measuring range	20000
rnGL	low scale displayed value	0
rnGH	high scale displayed value	20000
FilTEr	filter	4
PASS	password	0000
d1Func	setting the function of digital inputs 1	nonE
GFun1	setting digital input 1 gain	1.000
d2Func	setting the function of digital inputs 2	nonE
GFun2	setting digital input 2 gain	1.000
d3Func	setting the function of digital inputs 3	nonE
GFun3	setting digital input 3 gain	1.000
d4Func	setting the function of digital inputs 4	nonE
GFun4	setting digital input 4 gain	1.000
d5Func	setting the function of digital inputs 5	nonE
GFun5	setting digital input 5 gain	1.000
S adr	setting station address	001
S baud	setting communication rate	9600
S tdEL	setting min. delay before display	005
FP Fmt	setting floating point format	normal

ESAM reserves the right to make modifications in every moment to improve the project and to give the best product.