



## IME 10783331 Multifunction With Active Energy Count User Manual

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- 3 Mounting instructions
- 4 Programming
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## 10783331 Multifunction With Active Energy Count



### Multimetering

They measure and display simultaneously more quantities



### Energy counting

They quantify the energy consumption



### Communication

They communicate the measurements carried at a distance

Interface different ways of communication



### Measuring and Monitoring

They measure and report specific involved conditions

The technical documentation for the product is available on [www.imeitaly.com](http://www.imeitaly.com) website in the “Technical documentation” area, type in the field “Technical note code NT879.”

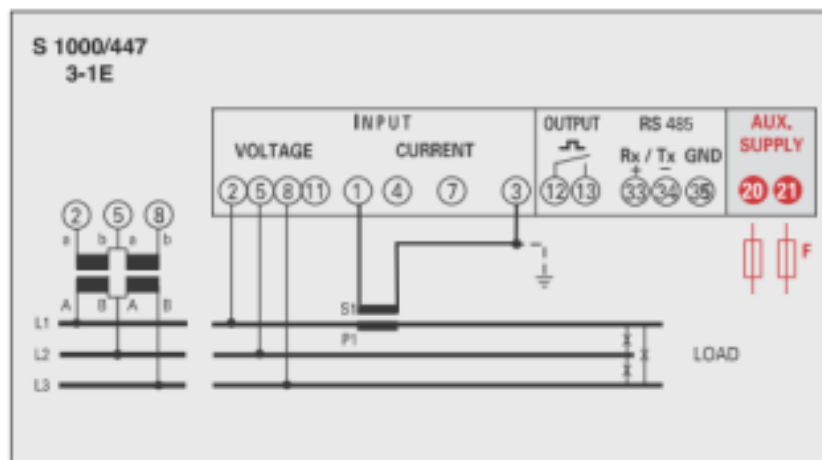
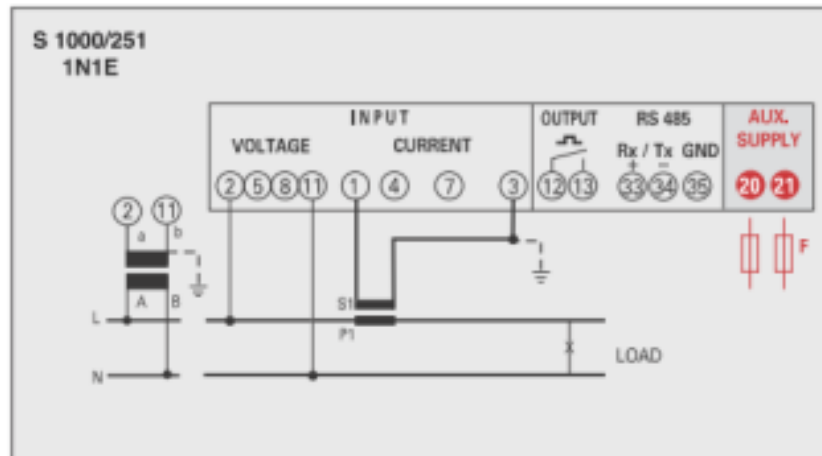
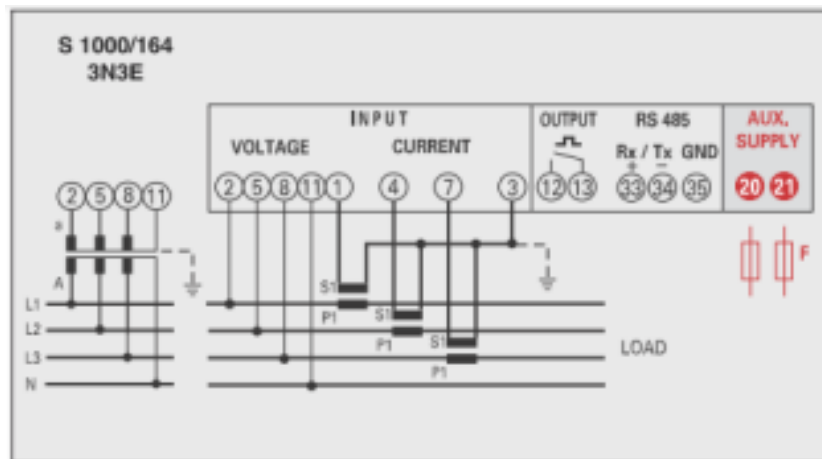
## Waring Diagrams

**F: 0,5A gG**

### NOTE

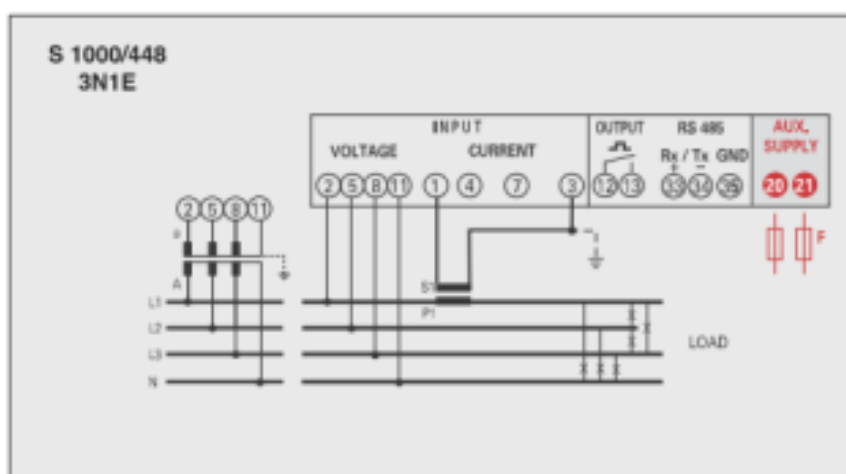
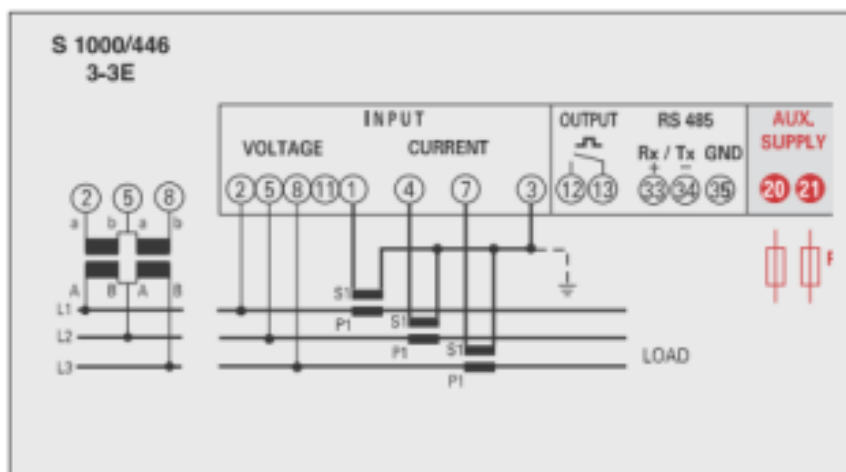
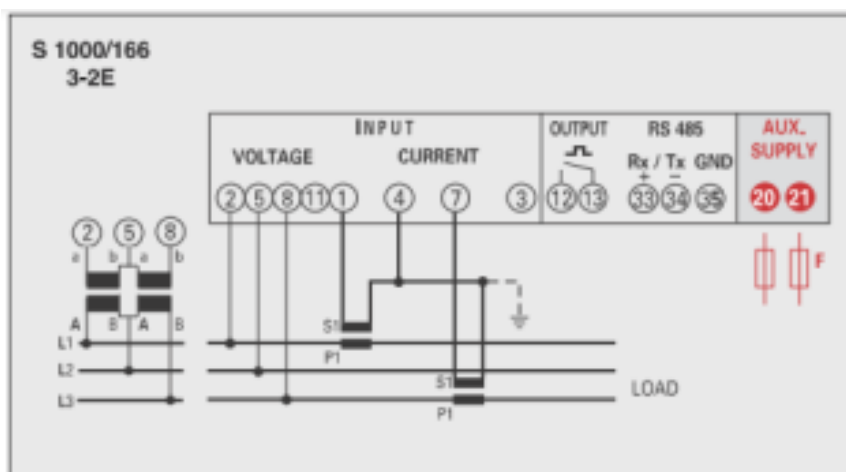
The wiring diagrams show the device complete with pulse output and RS485 interface.

In case of version without these features, the corresponding terminals must not be considered.



**ATTENTION!**

Aux. supply must be connected to terminals 20 and 21



## Mounting instructions

Mounting of this equipment must be carried out just by skil-led personnel.

Please make sure that the data on the label (measuring voltage, measuring current, extra supply voltage, frequency) correspond to the network on which the meter must be connected. In the wiring scrupulously respect the wiring diagram; an error in connection unavoidably leads to wrong measure-ments or damages to the meter.

When the meter is connected, conclude the mounting with the configuration as described in the user's manual.

## Programming

Menu is divided on two levels, protected by two different numerical passwords. Programming is carried out by front 3-key touch screen keyboard







#### Moves the cursor

In the pages with choice among the fixed values, it scrolls the loadable values

#### Increases the loaded value

In the pages with choice among the fixed values, it scrolls the loadable values

#### Confirms

During programming by keeping pressed keys  +  you return to the previous page by keeping pressed keys  +  you leave the programming menu, without save nothing

#### Level 1

##### Password = 1000

- 1.0 Password
- 1.1 Customized display page
- 1.2 Connection
- 1.3 Current delay time and average power
- 1.4 Display lighting
- 1.5 Run hour meter count start
- 1.6 RS485 ModBus RTU/TCP or BACNET communication
- 1.7 Relay output function: Energy pulses, Alarm, State of relay switching (remote-controlled)

#### Level 2

##### Password = 2001

- 2.0 Password
- 2.1 External CT and VT ratio

#### Programmable Parameters

#### Level 1

##### Password = 1000

#### 1.1 Customized display page

Possibility to load a customized display page on which you can choose which quantities the three display lines must show.

If the user loads a customized page, this will become the standard display when the meter is switched on (as alternative the one showing the line voltages).

The selectable displays for the customized page are mentioned in the tables page 7.

#### 1.2 Connection

The meter can be used for single phase or three phase 3- and 4-wire network.

The selectable connections are:

Symbol	Line	Load	Coils	Wiring	Connection
1N1E	Single-phase	–	1	S 1000/251	
3-1E	3-phase 3 wires	Balanced	1	S 1000/447	
3N1 E	3-phase 4 wires	Balanced	1	S 1000/448	
3-2E	3-phase 3 wires	Unbalanced	2	S 1000/166	Aron L1 – L3
3-3E	3-phase 3 wires	Unbalanced	3	S 1000/446	
3N3E	3-phase 4 wires	Unbalanced	3	S 1000/164	

### 1.3 Current delay time and average power

Selectable delay time: 5, 8, 10, 15, 20, 30, 60 minutes

The selected time is valid both for the current and the average power

### 1.4 Display lighting

The 4 selectable levels (0-35-70-100%) show the display lighting percentage

### 1.5 Run hour meter count start

Select the quantity which starts the run hour meter count: voltage or power.

Voltage: count start with phase voltage > 20V

Power: total active power, programmable value 0,5...50%P<sub>n</sub> (rated power)

### 1.6 RS485 communication (where provided)

According to the models, this meter can be without communication or equipped with RS485 ModBus RTU/TCP or RS485 BACNET communication

#### 1.6a RS485 ModBus RTU/TCP communication

Address number: 1...255

Parity bit: none – even – odd

Waiting time before answer: 3...100ms

Transmission speed: 4800-9600-19200-38400 bit/s

ModBus message word format: Big Endian – Little Endian – Swap

Just for 32-bit quantities

#### 1.6b RS485 BACNET communication

Address number: 0...127

Transmission speed: 9600-19200-38400-76800 bit/s

Parity bit: none – even – odd

Network address: 0...4000

Just for 32-bit quantities

### 1.7 Relay output function: energy pulses, alarm, state of relay switching

The output relay (terminals 15-29) can be used as energy pulse repeater, as alarm relay or for remote-controlled state of relay switching (function available just for models with communication).

#### 1.7a Energy pulses

Quantity that can be coupled: active or reactive energy

Pulse weight: 1 pulse/10Wh(varh) – 100Wh(varh) – 1kWh(kvarh)-10 kWh(kvarh) -100kWh(kvarh) – 1MWh (Mvarh) – 10MWh (Mvarh)

Width of the pulse: 50-100-200-300-400-500 ms

#### 1.7b Alarm

Quantity that can be coupled: phase voltage (L1-N, L2-N, L3-N), interlinked voltage (L1-L2, L2-L3, L3-L1), phase current (11, 12, 13), three-phase active power, three-phase reactive power.

Intervention threshold: intervention point, decimal point, metering unit

Alarm type: min. or max.

Relay output contact: normally open (no) or normally closed (nC)

Hysteresis: 0...20%

Intervention delay: 0...99s

Reset delay: 0...99s

#### 1.7c Remote-controlled state of relay switching, bistable mode (rMtb)

Relay output contact: normally open (no) or normally closed (nC)

t on: delay elapsed between the activation remote command and the change in the state of relay of: delay elapsed

between the reset remote command and the change in the state of relay t selectable values ton / t of: 0...99s

### 1.7d Remote-controlled state of relay switching, time mode (rMtt)

Relay output contact: normally open (no) or normally closed (nC)

t on: delay elapsed between the activation remote command and the change in the state of relay

t of: delay elapsed between the reset remote command and the change in the state of relay selectable values ton / t of: 0...995

### Level 2

**Password = 2001**

#### 2.1 External VT or CT ratio

Vt External primary/secondary VT ratio (ex. VT 600/100V Vt = 6)

Ct External primary/secondary CT ratio (ex. CT 800/5A Ct = 160)

External CT ratio (Ct): 1...9999 (max. primary current 50000/5A-10000/1A)

External VT ratio (Vt): 1,00...10,00 (max. primary voltage TV 1200V)

For voltage direct connection (with external voltage transformer) load Vt=1,00

By modifying the CT and/or VT ratios, the KWH meters are automatically reset

Phase sequence diagnostic

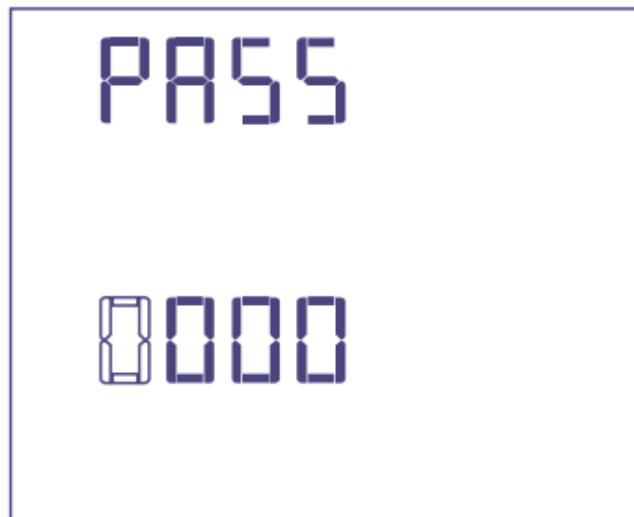
In the software of the device have added a specific functionality to detect and correct many problems concerning voltage and/or current connection.


This function can be activated through password and allows to display and modify the connection sequence provided that the following conditions are respected:

1. The neutral wire (in a 4-wire network) is connected to the right terminal (normally number1).
2. No crossings between cables connected to CTs (e.g. avoid that on phase 1 of the meter-terminals 1 and 3-are connected some way both to CT1 and CT2).
3. The power factor is between 1 and 0,5- Inductive load – for each phase. See [www.imeitaly.com](http://www.imeitaly.com) "TECHNICAL SUPPORT".

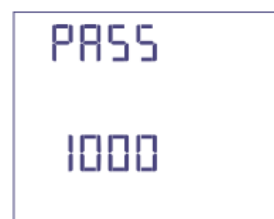
### 1.0 Password 1000

Pressing at the same time the keys  + , you display page:



Load password 1000 and confirms 

→ moves the cursor  
↑ increases the loaded value  
← confirms

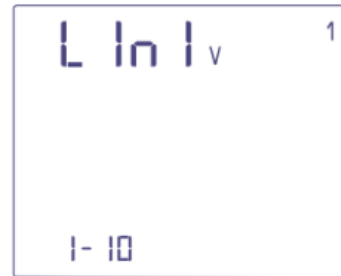


### 1.1 Customized display page

Possibility to choose which quantities the three display lines must show. To customize the page, please select the quantity required for line 1 (among the ones shown in the Table 1)



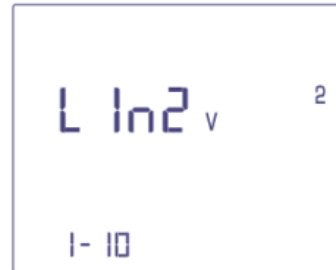
selects the quantities  
confirms



Select the quantity required for line 2 (among the ones shown in the Table 2)



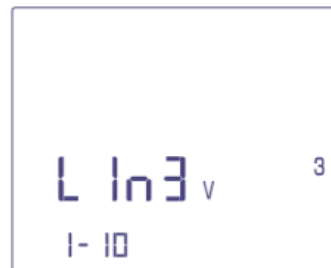
selects the quantities  
confirms




Select the quantity required for line 3 (among the ones shown in the Table 3)



selects the quantities  
confirms



### Note

The customized page will become the standard display when the meter is turned on. If you don't want to display the customized page, you can directly go to point 1.2 Connection by pressing several times  **key** until you display

Line 1	Table 1	Line 2	Table 2	Line 3	Table 3
L ln1 v	Voltage L1	L ln2 v	Voltage L2	L ln3 v	Voltage L3
1-10		1-10		1-10	
L ln1 v	Voltage L1-L2	L ln2 v		L ln3 v	
2-10		2-10		2-10	
L ln1 v	Current L1	L ln2 v		L ln3 v	
3-10		3-10		3-10	
L ln1 v	3-phase Current	L ln2 v		L ln3 v	
4-10		4-10		L ln3 v	
L ln1 v	3	L ln2 v		L ln3 v	
5-10		L ln2 v		L ln3 v	
L ln1 v		L ln2 v		L ln3 v	
6-10		L ln2 v		L ln3 v	
L ln1 v		L ln2 v		L ln3 v	
7-10		L ln2 v		L ln3 v	
L ln1 v		L ln2 v		L ln3 v	
8-10		L ln2 v		L ln3 v	
L ln1 v		L ln2 v		L ln3 v	
9-10		L ln2 v		L ln3 v	
L ln1 v		L ln2 v		L ln3 v	
10-10		L ln2 v		L ln3 v	
		Apparent Power L3			

### 1.2 Connection





selects the connection  
Confirms



Select the desired connection and scrupulously respect the linked wiring diagram.

The selectable wiring diagrams are:

Symbol	Line	Load	Coils	Wiring	Connection
1N1E	Sig le-phase		1	S 1000/251	
3-1E	3-phase 3 wires	Balanced	1	S 1000/447	
3N1E	3-phase 4 wires	Balanced	1	S 1000/448	
3-2E	3-phase 3 wires	Unbalanced	2	S 1000/166	Aron L1- L3
3-3E	3-phase 3 wires	Unbalanced	3	S 1000/446	
3N3E	3-phase 4 wires	Unbalanced	3	S 1000/164	

### 1.3 Current delay time and average power

Selectable delay time: 5, 8, 10, 15, 20, 30, 60 minutes

The selected time is valid both for the current and the average power



selects the time value  
confirms

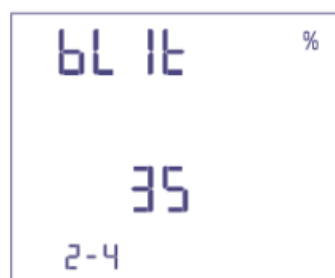


### 1.4 Display lighting

The 4 selectable levels (0-35-70-100%) show the display lighting percentage



selects the lighting level  
confirms



### 1.5 Run hour meter count start

Select the quantity which starts the run hour meter count:  
Voltage or Power.

#### 1.5a Voltage count start

Voltage: count start with phase voltage > 20V

↑  
← selects voltage or current  
confirms

rUn  
hoUr  
VoLt  
1-2

### 1.5b Power count start

↑  
← selects voltage or power  
confirms

rUn  
hoUr  
PUr  
2-2

Power: total active power, programmable value 0,5...50% Pn (rated power)

→  
↑  
← moves the cursor  
increases the loaded value  
confirms

rUn %  
UAL  
00.50  
0-50

### 1.6 RS485 Communication

According to the models, this meter can be without communication or equipped with RS485 ModBus RTU/TCP or RS485 BACNET communication.

#### 1.6a RS485 ModBus RTU / TCP Communication

Address number:: 1...255  
→ moves the cursor  
↑ increases the loaded value  
← confirms

ModbS  
Addr  
155  
1-255

Transmission speed: 4800-9600-19200-38400 bit/s

↑  
← selects speed  
confirms

ModbS  
bAUD  
9.600 k  
2-4

Parity bit: none – even – odd

↑  
← selects parity  
confirms

Modbus  
PAR  
none  
1-3

Waiting time before answer: 3...99ms

→  
↑  
← moves the cursor  
increases the loaded value  
confirms

Time  
0  
msec

ModBus message word format: Big Endian – Little Endian – Swap

↑  
← selects format  
confirms

Modbus  
Word  
bEndian  
1-3

### 1.6b RS485 BACNET Communication

Address: 0...127

→  
↑  
← moves the cursor  
increases/decreases the loaded value  
confirms

BACnet  
Addr  
0  
1-127

Transmission speed: 9600-19200-38400- 76800 bit/s

↑  
← selects speed  
confirms

BACnet  
Baud  
9600 k  
1-4

Parity bit: none – even – odd

↑  
← selects parity  
confirms

BACnet  
PAR  
none  
1-3

Indirizzo di rete: 0...4000

→ moves the cursor  
↑ aumenta il valore impostato  
↵ conferma

bACn  
nEt  
00 10  
1-4000

## 1.7 Relay output function:: energy pulses, alarm, state of relay switching (remote-controlled)

↑ selects output  
↵ confirms

out  
inp  
1-4

inp = Pulse output  
ALr n = Alarm  
r nEt b = Bistable  
r nEt t = Time

The output relay (terminals 15-29) can be used as energy pulses (see point 1.7a) repeater or as alarm relay (see point 1.7b) or as remote-controlled state of relay switching (see point 1.7c- point 1.7c).

### 1.7a Energy pulses

Quantity that can be coupled: active or reactive energy

↑ selects active / reactive  
↵ confirms

PULS  
tYPE  
ACt  
1-2

Pulse weight: 1pulse/10Wh(varh) – 100Wh(varh) – 1kWh(kvarh) – kWh(kvarh)-100kWh(kvarh) – 1MWh (Mvarh) – 10MWh (Mvarh)

↑ selects pulse weight  
↵ confirms

PULS  
VAL  
100.0 k  
5-7

Width of the pulse: 50-100-200-300-400 – 500ms

↑ selects width of the pulse  
↵ confirms

PULS  
dur  
50  
1-6

### 1.7b Alarm

Alarm type: min. or max.



**selects alarm type**  
**confirms**



Quantity that can be coupled: phase voltage (L1-N, L2-N, L3-N)  
interlinked voltage (L1-L2, L2-L3, L3-L1)  
phase current (11, 12, 13)  
frequency  
3-phase active power  
3-phase reactive power



**selects quantity**  
**confirms**



Intervention threshold: intervention point, decimal point, metering unit



**selects decimal point and metering unit**  
**confirms**



**moves the cursor**  
**increases the loaded value**  
**confirms**



State relay: normally open (no) or normally closed (nC)



selects state relay  
confirms

ALrN  
rELE  
no  
1-2

ALrN  
rELE  
nC  
2-2

Hysteresis: 0...20%



moves the cursor  
increases the loaded value  
confirms

ALrN %  
hyst  
19  
0-20

Intervention delay: 0...99s



moves the cursor  
increases the loaded value  
confirms

ALrN  
t on  
89  
0-99 SEC

Reset delay: 0...99s



moves the cursor  
increases the loaded value  
confirms

ALrN  
t of  
89  
0-99 SEC

### 1.7c Remote-controlled state of relay switching, bistable mode (rMtb)

Relay output contact: normally open (no) or normally closed (nC)



select state  
confirms

rNtb  
rELE  
no  
1-2

rNtb  
rELE  
nC  
2-2

t on: 0...99s



moves the cursor  
increases the loaded value  
confirms

rNtb  
t on  
00  
0-99 SEC

t of: 0...99s



moves the cursor  
increases the loaded value  
confirms

rNtb  
t of  
00  
0-99 SEC

### 1.7d Remote-controlled state of relay switching, time mode (rMtt)

Relay output contact: normally open (no) or normally closed (nC)



selecet state  
confirms



t on: 0...99s



moves the cursor  
increases the loaded value  
confirms



t oF: 0...99s



moves the cursor  
increases the loaded value  
confirms



Programmed data confirmation



confirms

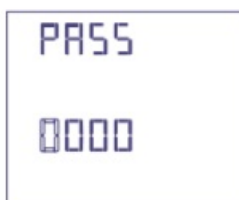


confirms



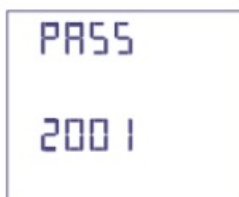
2.0 Password 2001

Pressing at the same time the **keys**  + , you display page:



Load **password 2001** and confirms 

→ moves the cursor  
↑ increases the loaded value  
← confirms



## 2.1 External CT ratio

Ct = external primary/secondary CT ratio (ex.: CT 800/5A Ct = 160) External CT ratio (Ct): 1...9999 (max. primary current 50000/5A – 10000/1A)

→ moves the cursor  
↑ increases the loaded value  
← confirms



## External VT ratio

Vt = external primary/secondary VT ratio (ex.: TV 600/100V Vt = 6) External VT ratio (Vt): 1,00... 10,00 (max. primary voltage TV 1200V)

For voltage direct connection (with external voltage transformer) load Vt=1,00

By modifying the CT and/or VT ratios, the KWH meters are automatically reset

→ moves the cursor  
↑ increases the loaded value  
← confirms






## Display

Display is divided into 3 menus, accessible with their relevant function keys:



The quantities and the display modes vary according to the selected connection (3-phase 3- or 4-wire line, single phase, etc. In the following pages you could find all the displayed measurements based on the selected connection.

Acting on the function keys it is possible to scroll the different available measurements:

			
Phase voltage	Phase current and neutral current	Active, reactive, apparent, distorting 3-phase power	Total and partial, positive active energy
Interlinked voltage	Current demand	Active, reactive, apparent phase power	Total and partial, positive reactive energy
Interlinked voltage	Max. current demand	Active, reactive, apparent power	Total and partial, negative active energy
Max. voltage value	Average currents	Max. demand active, reactive, apparent power	Total and partial, negative reactive energy
Voltage harmonic distortion	Current harmonic distortion	Phase and 3-phase power factor	Configuration data*
Voltage harmonic analysis	Current harmonic analysis	Phase angle voltages – Phase and 3-phase current	
Voltage peak factor	Current peak factor	Frequency	
Phase angle between the voltages	Phase angle between the currents	Run hour meter	
Configuration data*	Configuration data*	Configuration data*	

\*See configuration factory setting at page 20

### Alarm Display

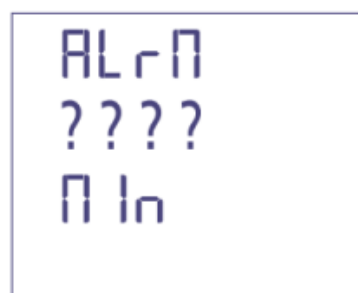
If the meter has been programmed for **relay output = alarm function (see point 1.7)**, in case of alarm intervention, the display blinks in order to detect the anomaly.

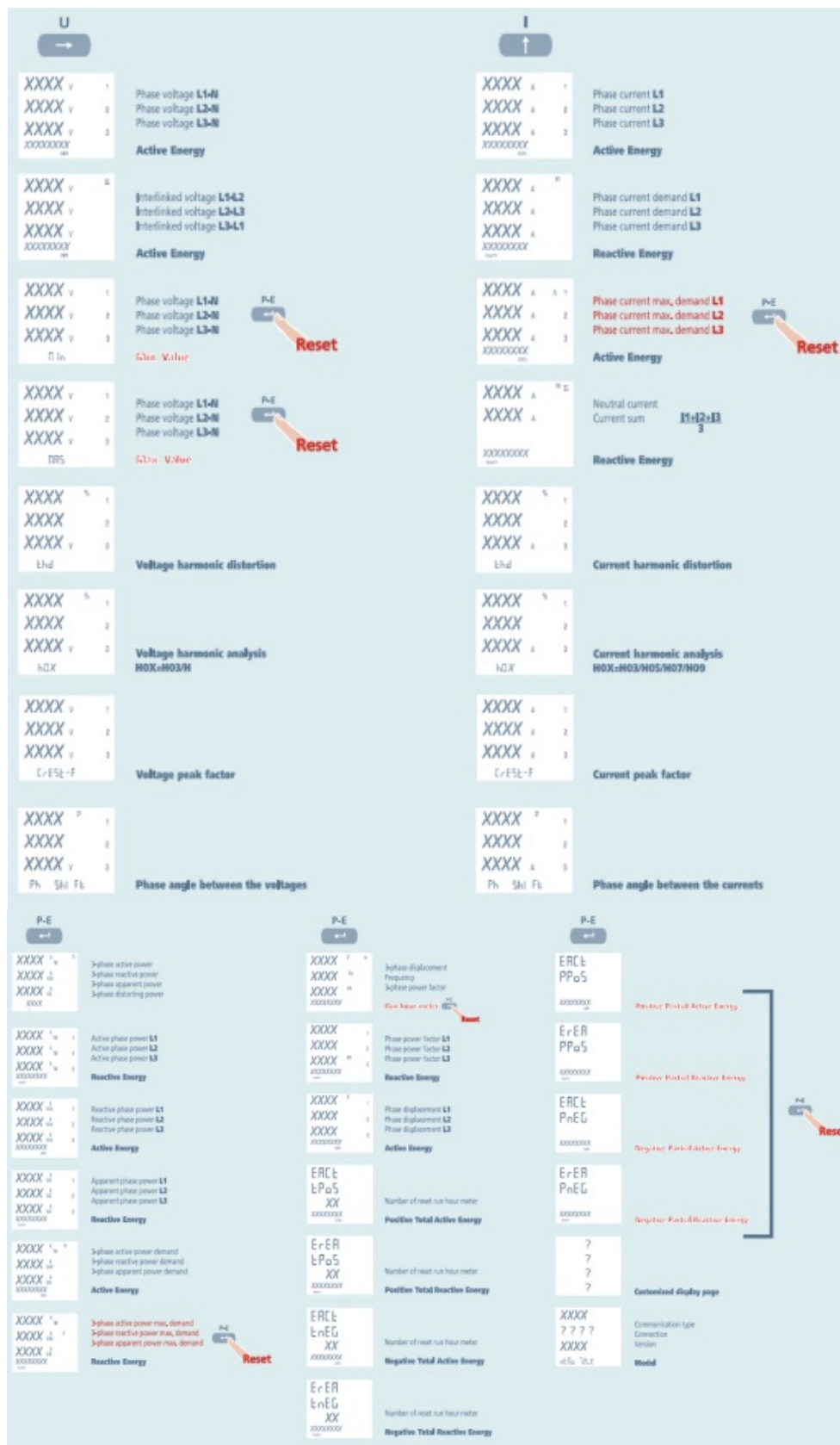
Pressing any of the front keys, the display stops blinking.

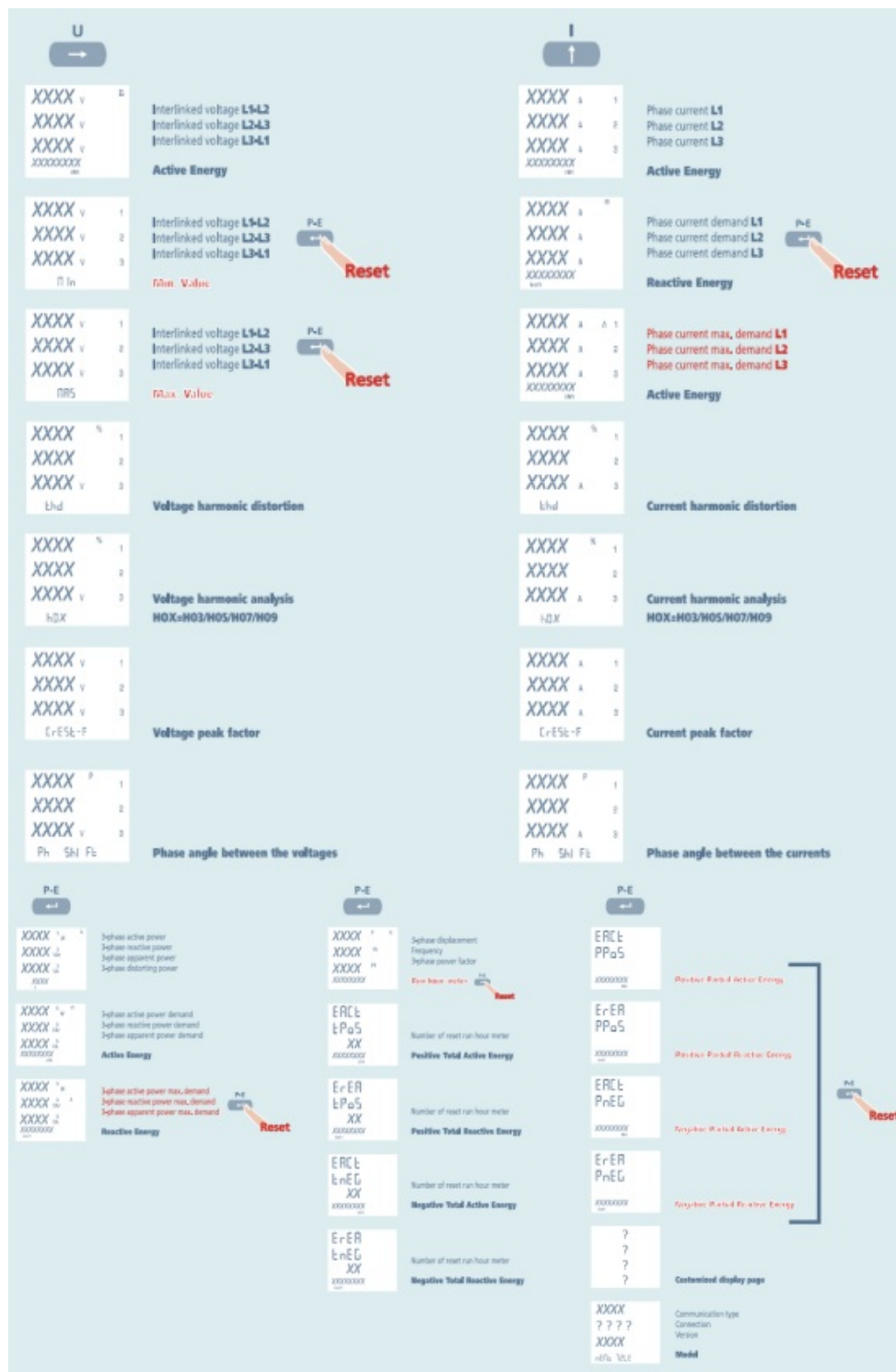
When the alarm is intervened, press several times  key, until you display the alarm. page.

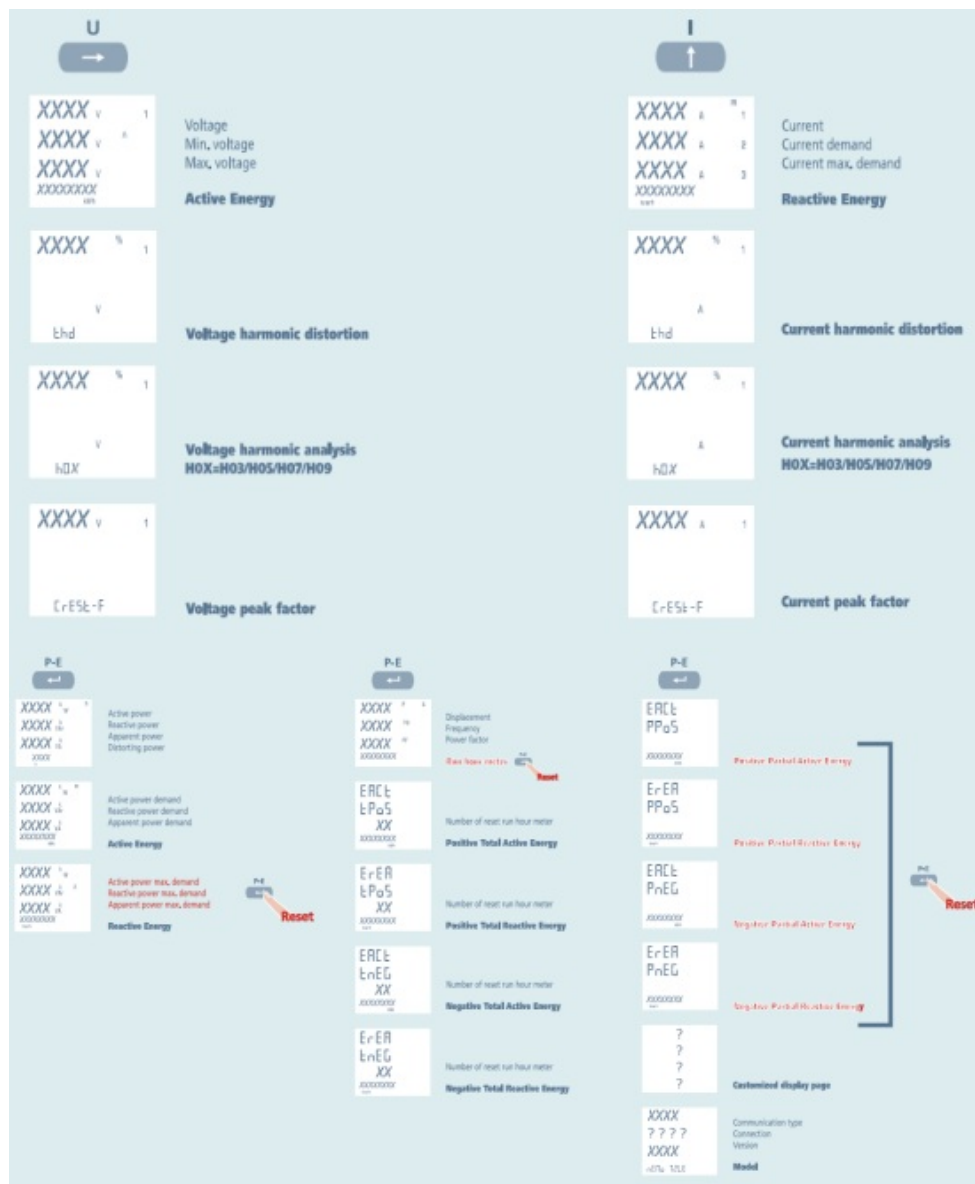
Quantity associated with the alarm

Alarm type (min/max)









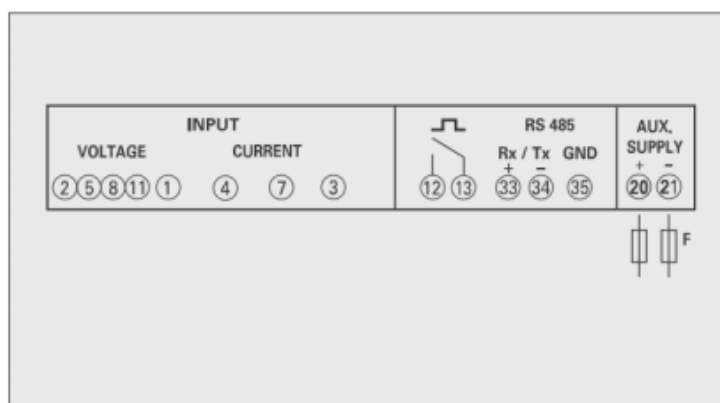
## Auxiliary Supply

### Terminals 20 and 21

**Auxiliary supply:** direct or alternating current electrical supply which is necessary for proper working of the device. Please verify that the available supply voltage meets the one shown on the data label of the meter (voltage value and any frequency).

Where a double voltage is shown (for instance 80...265Vac/80...265Vdc) the meter can be fed with alternating voltage 80...265Vac or direct voltage 100...300Vdc.

In case of direct voltage supply please respect the shown polarities 20+ and 21.



**F : 0,5A gG**

## Factory setting

## Password 1000

### Customized page

1 Lin 1v voltage L1

2Lin2v voltage L2

3Lin3v voltage L3

Connection: 3n3E 4-wires 3-system line

Average time: 15m 15 minutes

Backlight: 35%

Run hour meter: U Voltage start

RS485

Address: 255

Speed: 9.600

Parity: none

Transmission delay: 15ms

Word: bend

Relay output: pulse

Pulse output

Energy: active

Pulse weight: 0,01kWh

Width of the pulse: 50ms

## Password 2001

CT ratio: 0001

VT ratio: 01,00



## Documents / Resources



[IME 10783331 Multifunction With Active Energy Count](#) [pdf] User Manual  
10783331, 10783331 Multifunction With Active Energy Count, 10783331, Multifunction With Active Energy Count, Active Energy Count, Energy Count

## References

- [User Manual](#)

[Manuals+](#), [Privacy Policy](#)

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