IME

www.imeitaly.com

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Nemo 96 HDe

07/18 10783612 WEB E cod.MF96E06

Multimeasure

They measure and display more measurement units at the same time

Energy counting

They quantify the energy consumption

Communication

They communicate the measurements carried out remotely
They interface different communication modes

Measuring and monitoring

They measure and report special conditions

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Level 1 **Password = 1000**

1.0 Password page 4 and 6
1.1 Customised display page page 4 and 6
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1.2 Connection page 4 and 8
1.3 Average power and current integration time page 4 and 8
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1.5 RTU/TCP ModBus RS485 communication page 4 and 9
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Level 2 **Password = 2001**

2.0 Password page 5 and 10
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(3N-3E) three phase 4 wire configuration page 12 and 13
(1N-1E) single phase configuration page 14 and 15

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The product technical documentation is available on the **www.imeitaly.com** site in the **"Technical documentation"** section, type in the following field **"Technical Note Code: NT900"**.

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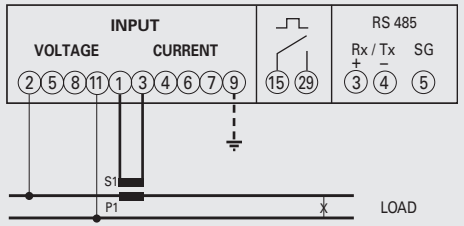
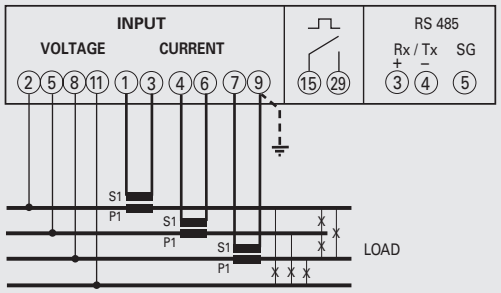
Wiring Diagrams

F : 1A gG

S 1000/467
1N1E



S 1000/468
3N3E



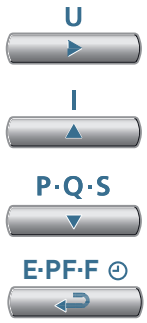
Mounting instructions

This product must be installed in conformity with the installation rules and preferably by a qualified electrician. Incorrect installation and/or incorrect use of this product could lead to risks of electrical shock or fire.
Before installing, read the instructions carefully and according to the product identify a suitable place of assembly.
Do not open, disassemble, alter or modify the equipment unless specially indicated in the manual.
All IME products must only be opened and repaired by suitably trained staff authorised by IME. Any unauthorised opening or repair involves the exclusion of any responsabilities, rights to replacement and guarantees.
Check that the device rating plate data (measurement voltage, measurement current and frequency) correspond to the effective data of the network to which the instrument is connected.
In the wirings scrupulously respect the connection diagram; inexactness in the connections is inevitably a cause of false measurements or damage to the instrument.

When the instrument is connected complete the installation by configuring the device.

Programming

The programming is divided on two levels protected by two different numerical passwords and takes place by means of the **front keypad with 4 keys.**



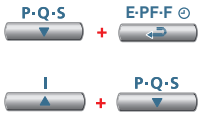
Move the cursor

Increase the set value
In the pages with selection between fixed values, scroll the settable values

Decrease the set value
In the pages with selection between fixed values, scroll the settable values

Confirm

During installation
keep simultaneously pressed **2 keys** for:



One page backward

Input and output without save

Level 1
Password = 1000

1.0 Password
1.1 Customised display page
1.2 Connection
1.3 Average power and current integration time
1.4 Hour-meter counting start
1.5 RTU/TCP ModBus RS485 communication
1.6 Energy pulses

Level 2
Password = 2001

2.0 Password
2.1 External CT ratio

Programmable parameters

Level 1
Password = 1000

1.1 Customised display page

It is possible to set a customised display page where to select which magnitudes should appear in the three display lines.
If the user sets a customised page, this will become the standard display when the device is switched on (as an alternative to the display giving the line voltages). The magnitudes which can be selected for the customised page are given in the tables on page 7

1.2 Connection

The instrument can be used for single-phase or three-phase 4-wire line.
The connections that can be selected are:

Symbol	Line	Load	n° external CT	Diagram	Connection
1N1E	Single-phase	-	1	S 1000/467	
3N3E	3 phase 4 wire	Unbalanced	3	S 1000/468	

1.3 Average power and current integration time

Selectable integration time: 5, 8, 10, 15, 20, 30, 60minutes
The selected time is valid for both the current and the average power

1.4 Hour-meter counting start

Select the magnitude which starts the hour-meter counting: voltege or power
Voltage: counting starts with phase voltage > 10V
Power: 3-phase active and rared power
Programmable value 0...50%Pn
Pn = 3-phase active rated power = 3-phase rated voltage Un x rated current In x √3
Un = 400V
In = 1A or 5A
Pn = 400V x5A x √3=3464W or 400V x1A x √3=692,8W

1.5 RS485 communication (where provided)

Depending on the model, the instrument may not have communication or may have RS485 ModBus RTU/TCP communication
No. of address: 1...255
Parity bit: none – even – odd
Waiting time before the answer: 3...100ms
Transmission speed: 4800 – 9600 – 19200 bit/s

1.6 Energy pulses (max. 27V 50mA)

Associable Measurement: active or reactive energy
Pulse weight: 1pulse/10Wh(varh) – 100Wh(varh) – 1kWh(kvarh) - 10kWh(kvarh) - 100kWh(kvarh) - 1MWh(Mvarh) - 10MWh(Mvarh)
Pulse duration: 50 – 100 – 200 – 300 – 400 – 500ms

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Level 2
Password = 2001

2.1 External CT ratio

Ct = External CT primary/secondary ratio (e.g. CT 800/5A Ct = 160)
External CT ratio (Ct): 1...9999 (maximum primary current 50000/5A – 10000/1A)
On modifying the ratios the power counters are automatically reset

Phase sequence diagnostic

In the software there is a diagnostic and correction algorithm of the voltmetric and amperometric connection sequence.
The function can be activated on request and password protected: it can display and edit the wiring sequence with the following limitations:

1) The neutral conductor (in the 4-wire wirings) must be correctly positioned (terminal 11)

2) There must not be any crossings between the currents

3) The power factor must be between 0.9cap and 0.7ind for each phase

See www.imeitaly.com "TECHNICAL SUPPORT".

1.0 Password 1000

Keep pressed I + P·Q·S keys until you display page:

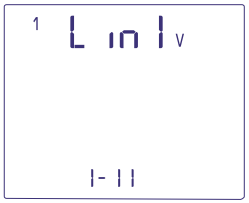
Set **password 1000** and confirm E·PF·F

▶ move the cursor
▲▼ increase/decrease the set value
↵ to confirm

1.1 Customised display page

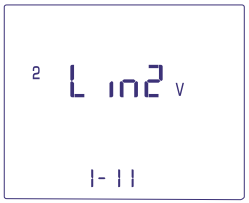
It is possible to select which magnitudes will appear in the three display lines.
To customise the page, select the desired magnitude for **line 1**
(among those indicated in **Table 1**)

▲▼ ↵ select the measurement to confirm



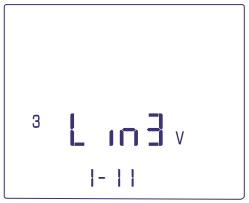
Select the desired measurement for the **line 2**
(among those indicated in **Table 2**)

▲▼ ↵ select the measurement to confirm



Select the desired measurement for the **line 3**
(among those indicated in **Table 3**)

▲▼ ↵ select the measurement to confirm



The customised page will become the standard display when the instrument is switched on.

Note If you do not want to configure the customised page go directly to **point 1.2 Connection** pressing the **key** several times E·PF·F

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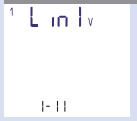
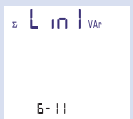
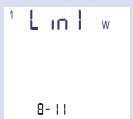
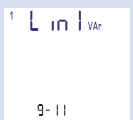
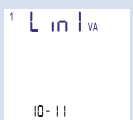
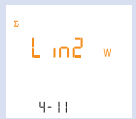
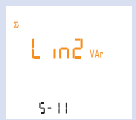
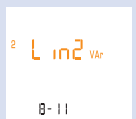
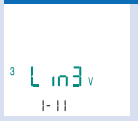
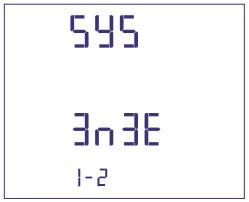
Line 1	Table 1
	L1 Voltage
	L1-L2 Voltage
	L1 Current
	Sum of the currents (I1 + I2 + I3) / 3
	Three Phase Active Power
	Three Phase Reactive Power
	Three Phase Apparent Power
	L1 Active Power
	L1 Reactive Power
	L1 Apparent Power
	Three Phase Power Factor

Line 2	Table 2
	L1 Voltage
	L1-L2 Voltage
	L2 Current
	Three Phase Active Power
	Three Phase Reactive Power
	Three Phase Apparent Power
	L2 Active Power
	L2 Reactive Power
	L2 Apparent Power
	Frequency
	L1 Current

Line 3	Table 3
	L1 Voltage
	L3-L1 Voltage
	L3 Current
	Three Phase Active Power
	Three Phase Reactive Power
	Three Phase Apparent Power
	L3 Active Power
	L3 Reactive Power
	L3 Apparent Power
	L1 Active Power
	L1 Current

1.2 Connection



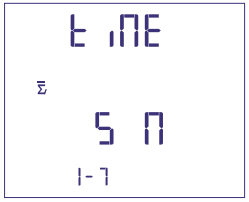
▲▼ ↵ select the connection
to confirm

Select the type of connection required, scrupulously respecting the connected wiring diagram.
The connections that can be selected are:

Symbol	Line	Load	n° external CT	Diagram	Connection
1N1E	Single-phase	-	1	S 1000/467	
3N3E	3 phase 4 wire	Unbalanced	3	S 1000/468	

1.3 Average power and current integration time

Selectable integration time: 5, 8, 10, 15, 20, 30, 60 minutes
The selected time is valid for both the current and the average power



▲▼ ↵ select the time value
to confirm

1.4 Hour-meter counting start

Select the magnitude which starts the hour-meter counting: **Voltage or Power**

1.4a Voltage counting start

Voltage: counting start with > 10V phase voltage

▲▼ ↵ select voltage or power
to confirm

1.4b Power counting start

Power: counting start with 3-phase programmable active power

▲▼ ↵ select voltage or power
to confirm

0...50%Pn

▶ ▲▼ ↵ move the cursor
increase/decrease the set value
to confirm

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1.5 RTU / TCP ModBus RS485 communication

Depending on the model, the instrument may not have communication or may have **RS485 ModBus RTU / TCP** communication.

N° of address: 1...255

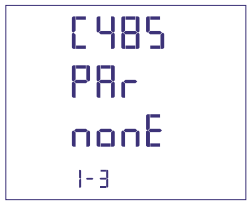
▶ move the cursor
▲▼ increase/decrease the set value
↵ to confirm

Transmission speed: 4800 – 9600 – 19200 bit/s

▲▼ select speed
↵ to confirm

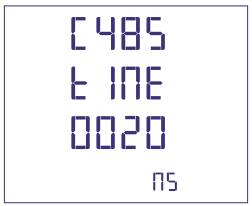
Parity bit: none – even – odd

▲▼ parity selection
↵ to confirm



Waiting time before the answer: 3...100ms

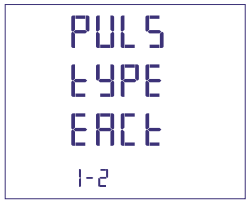
▶ move the cursor
▲▼ increase/decrease the set value
↵ to confirm



1.6 Energy pulses

Associable Measurement: active or reactive energy

▲▼ select active/reactive
↵ to confirm

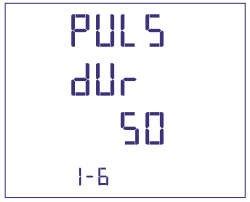


Pulse weight: 1pulse/10Wh(varh) – 100Wh(varh) – 1kWh(kvarh) - 10kWh(kvarh) - 100kWh(kvarh) – 1MWh(Mvarh) - 10MWh(Mvarh)

▲▼ select pulse weight
↵ to confirm

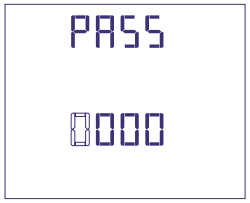
Pulse duration: 50 – 100 – 200 – 300 – 400 – 500ms

▲▼ select pulse duration
↵ to confirm



Confirm programmed data

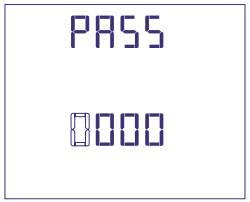
↵ to confirm



↵ to confirm

2.0 Password 2001

Keep pressed I + P·Q·S **keys** until you display page:



Set **password 2001** and confirm E·PF·F

▶ ▲▼ ↵ move the cursor
increase/decrease the set value
to confirm

2.1 External CT ratio

Ct = External CT primary/secondary ratio (e.g. CT 800/5A Ct = 160)
External CT ratio (Ct): 1...9999 (maximum primary current 50000/5A – 10000/1A)

▶ ▲▼ ↵ move the cursor
increase/decrease the set value
to confirm

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Display

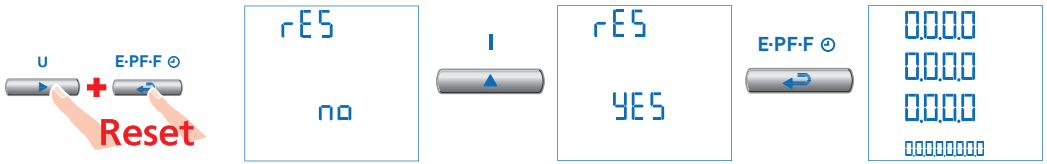
The display is divided into four menus which can be accessed with the function keys: the display magnitudes and modes vary according to the connection selected (three-phaser 4-wire line, single-phase, etc.) All the measurements displayed are indicated in the following pages according to the connection selected.

U	I	P·Q·S	E·PF·F
Phase voltage	Phase current	Active power	Active energy
Interlinked voltage	Neutral current	Reactive power	Reactive energy
Minimum voltage value	Average current	Apparent power	Power factor
Maximum voltage value	Average current peak	Distortion power	Frequency
Voltage harmonic distortion	Average 3 currents	Average power	Hour meter
Configuration data*	Current harmonic distortion	Average power peak	Configuration data*
	Configuration data*	Configuration data*	

*See Configuration Data display, page 16

Reset

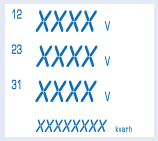
Simultaneously acting on the function keys, it is possible to reset the display pages:



U

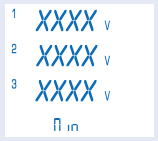
Tensione di fase **L1-N**
Tensione di fase **L2-N**
Tensione di fase **L3-N**

Energia Attiva Positiva



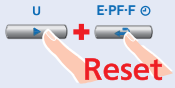
Tensione concatenata **L1-L2**
Tensione concatenata **L2-L3**
Tensione concatenata **L3-L1**

Energia Reattiva Positiva



Tensione di fase **L1-N**
Tensione di fase **L2-N**
Tensione di fase **L3-N**

Valore Minimo



Tensione di fase **L1-N**
Tensione di fase **L2-N**
Tensione di fase **L3-N**

Valore Massimo

Distorsione Armonica
Tensione di fase

Energia Attiva Positiva

Inserzione

Versione

I

Corrente di fase **L1**
Corrente di fase **L2**
Corrente di fase **L3**

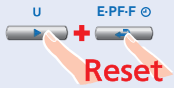
Energia Attiva Positiva

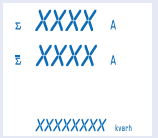
Corrente media di fase **L1**
Corrente media di fase **L2**
Corrente media di fase **L3**

Energia Reattiva Positiva

Picco corrente media di fase **L1**
Picco corrente media di fase **L2**
Picco corrente media di fase **L3**

Energia Attiva Positiva





Corrente di neutro
Somma di correnti $\frac{I1+I2+I3}{3}$

Energia Reattiva Positiva

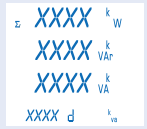
Distorsione Armonica
Corrente di fase

Energia Attiva Positiva

Inserzione

Versione

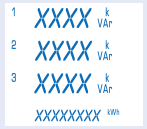
P·Q·S



Potenza attiva trifase
Potenza reattiva trifase
Potenza apparente trifase
Potenza distorcente trifase

Potenza attiva di fase **L1**
Potenza attiva di fase **L2**
Potenza attiva di fase **L3**

Energia Reattiva Positiva



Potenza reattiva di fase **L1**
Potenza reattiva di fase **L2**
Potenza reattiva di fase **L3**

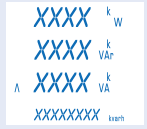
Energia Attiva Positiva

Potenza apparente di fase **L1**
Potenza apparente di fase **L2**
Potenza apparente di fase **L3**

Energia Reattiva Positiva

Potenza media attiva trifase
Potenza media reattiva trifase
Potenza media apparente trifase

Energia Attiva Positiva



Picco potenza media attiva trifase
Picco potenza media reattiva trifase
Picco potenza media apparente trifase

Energia Reattiva Positiva

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Versione

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Fattore di potenza
Frequenza

Contaore

Fattore di potenza fase **L1**
Fattore di potenza fase **L2**
Fattore di potenza fase **L3**

Energia Reattiva Positiva

Numero azzeramenti contatore

Energia Attiva Positiva

Numero azzeramenti contatore

Energia Reattiva Positiva

Numero azzeramenti contatore

Energia Attiva Positiva

Numero azzeramenti contatore

Energia Reattiva Positiva

E·T

Pagina personalizzata

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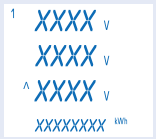
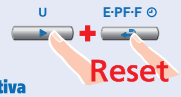
Versione

U



Tensione
Tensione minima
Tensione massima



Energia Attiva Positiva

Distorsione armonica tensione

Energia Attiva Positiva

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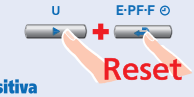
Corrente
Corrente media
Picco corrente media



Energia Attiva Positiva

Distorsione armonica corrente

Energia Attiva Positiva

Inserzione

Versione

07/18 10783612 WEB I cod.MF96E06

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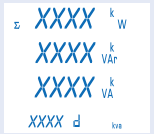
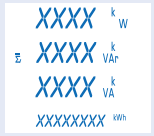
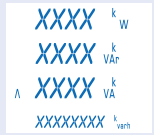


Potenza attiva
Potenza reattiva
Potenza apparente
Potenza distorcente



Potenza media attiva
Potenza media reattiva
Potenza media apparente

Energia Attiva Positiva



Picco potenza media attiva
Picco potenza media reattiva
Picco potenza media apparente

Energia Reattiva Positiva

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Versione

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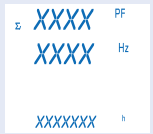

Fattore di potenza
Frequenza

Contaore

Numero azzeramenti contatore

Energia Attiva Positiva

Numero azzeramenti contatore

Energia Reattiva Positiva

Numero azzeramenti contatore

Energia Attiva Positiva

Numero azzeramenti contatore

Energia Reattiva Positiva

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Factory Settings

Password 1000

Customised page
[1]Lin1v Voltage L1
[2]Lin2v Voltage L2
[3]Lin3v Voltage L3
Connection: **3n3E** line 4 wires 3 systems
Average time: **5m** 5 minutes
Hour-meter counting: **U** Voltage start
RS485
Address: 255
Speed: 9.600
Parity: none
Time: 20ms
Pulse output
Energy: active
Pulse weight: 0,01kWh
Pulse duration: 50ms

Password 2001

CT ratio: 0001direct connection

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