Netanalyser NA96

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

Index

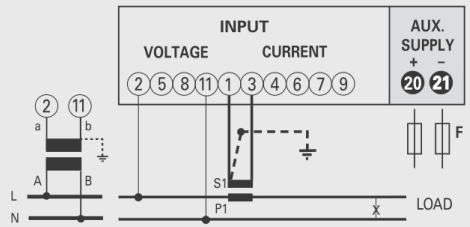
Netanalyser NA96

Wiring Diagrams

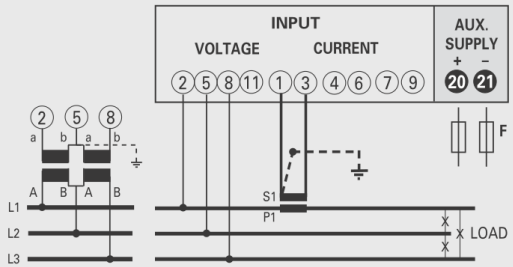
ATTENTION!
Aux. supply must be connected to terminals 20 and 21.

F : 1A gG

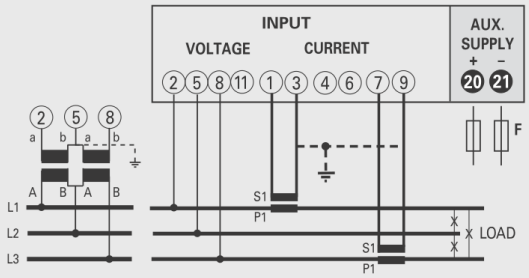
S 1000/292
1N1E



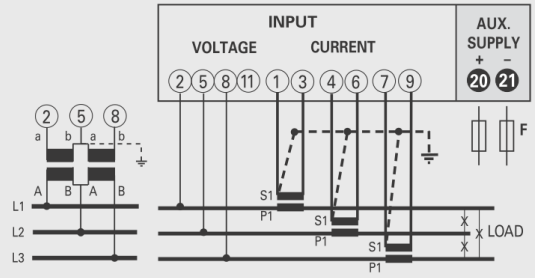
S 1000/314
3-1E



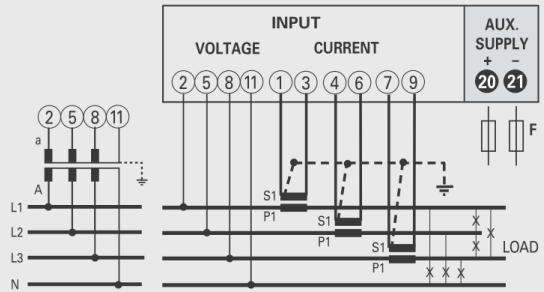
S 1000/293
3-2E



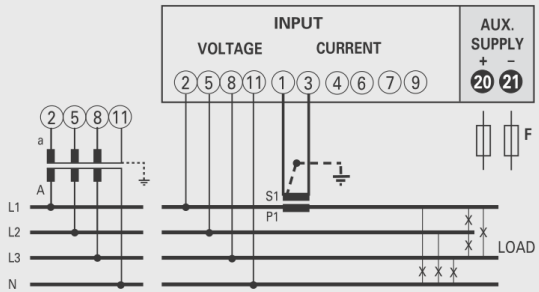
S 1000/294
3-3E



S 1000/295
3N3E



S 1000/317
3N1E



Mounting instructions

Mounting of this equipment must be carried out just by skilled 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 measurements or damages to the meter.

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

Netanalyser NA96

Programming

Menu is divided on two levels, protected by 3 different numerical passwords.
Programming is carried out **by front 4-key touch screen keyboard**

U — **Moves the cursor**

I — **Increases the loaded value**
In the pages with choice among the fixed values, it scrolls the loadable values

P·Q·S — **Decreases the loaded value**
In the pages with choice among the fixed values, it scrolls the loadable values

E·T — **Confirms**

During programming, keep simultaneously pressed 2 keys for:

P·Q·S + E·T — **One page backward**

I + P·Q·S — **Input and output without save**

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 contrast
- **1.5** Backlighted display
- **1.6** Rated current
- **1.7** Run hour meter count start

Level 2 **Password = 2001**
- **2.0** Password
- **2.1** External VT and CT transformers

Level 3 **Password = 3002**
- **3.0** Communication protocol

Programmable Parameters

Level 1 **Password = 1000**

1.1 Customized display page

Possibility to load a costumized 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 to the one showing the line voltages).
The selectable displays for the customized page are mentioned in the tables at 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	n° external CT'S	Wiring	Connection
1N1E	Sigle-phase	-	1	S 1000/292	
3-1E	3-phase 3 wires	Balanced	1	S 1000/314	
3N1E	3-phase 4 wires	Balanced	1	S 1000/317	
3-2E	3-phase 3 wires	Unbalanced	2	S 1000/293	Aron L1 - L3
3-3E	3-phase 3 wires	Unbalanced	3	S 1000/294	
3N3E	3-phase 4 wires	Unbalanced	3	S 1000/295	

1.3 Current delay time and average power

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

1.4 Display contrast

4 values to adjust display contrast

1.5 Backlighted display

The 4 selectable levels (0 – 30 – 70 – 100%) show the display lighting percentage in standard conditions (keyboard idle time higher than 20 seconds).
By pressing any key, display is fully lighted (100%)
With loaded level = 100%, the lighting is steady and does not change by pressing a key

1.6 Rated current (external CT secondary winding)

Rated value 1A (external CT secondary winding /1A) or 5A (external CT secondary winding /5A)

1.7 Run hour meter count start

Select the quantity which starts the run hour meter count: voltage or power
Voltage: phase voltage > 10V
Power: 3-phase active rated 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

Netanalyser NA96

Level 2 Password = 2001

2.1 External VT or CT ratio

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

Ct = Selection in the field 1...9999 (max. primary current CT 50kA/5A – 10kA/1A)

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

Vt = Selection in the field 1,00...10,00 (max. primary voltage TV 1200V)
For voltage direct connection (without external VT) load **Vt** =1,00
By modifying the Ct and/or Vt ratios, the kWh meters are automatically reset

Level 3 Password = 3002

3.0 Communication protocols (See point 3 page 19)

Phase sequence diagnostic

In the software of the device we 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 number 1)

2) No crossings between cables connected to CT's (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 "TECHNICAL SUPPORT".

Netanalyser NA96

1.0 Password 1000

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

Load **password 1000** and confirm E·T

▶
▲ ▼ moves the cursor
increases/decreases the loaded value
↵ confirms

1.1 Customized diplay page

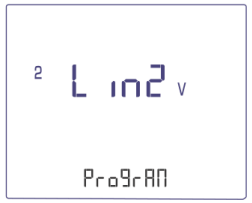
Possibility to choose which quantities the three display lines must show.

To customize the page, please select the quantity required for **line 1**
(among the ones shown in the **Table 1**)

▲ ▼ selects the quantities
↵ confirms

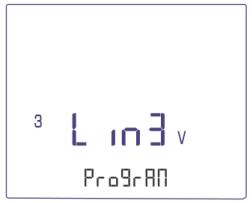
Select the quantity required for **line 2**
(among the ones shown in the **Table 2**)

▲ ▼ selects the quantities
↵ confirms



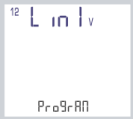
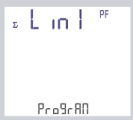
Select the quantity required for **line 3**
(among the ones shown in the **Table 3**)

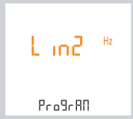
▲ ▼ selects the quantities
↵ confirms



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** E T

Netanalyser NA96

Line 1	Table 1
	Voltege L1
	Voltage L1-L2
	Current L1
	Neutral Current
	3-phase Active Power
	3-phase Reactive Power
	3-phase Apparent Power
	Active Power L1
	Reactive Power L1
	Apparent Power L1
	3-phase Power Factor

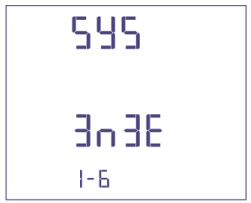
Line 2	Table 2
	Voltage L2
	Voltage L2-L3
	Current L2
	3-phase Active Power
	3-phase Reactive Power
	3-phase Apparent Power
	Active Power L2
	Reactive Power L2
	Apparent Power L2
	Frequency
	Current L1

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

Netanalyser NA96

1.2 Connection

▲ ▼ selects connection
↵ confirms



select the desired connection and scrupulously respect the linked wiring diagram.
The selectable wiring diagrams are:

Symbol	Line	Load	n° external CT'S	Wiring	Connection
1N1E	Sigle-phase	-	1	S 1000/292	
3-1E	3-phase 3 wires	Balanced	1	S 1000/314	
3N1E	3-phase 4 wires	Balanced	1	S 1000/317	
3-2E	3-phase 3 wires	Unbalanced	2	S 1000/293	Aron L1 - L3
3-3E	3-phase 3 wires	Unbalanced	3	S 1000/294	
3N3E	3-phase 4 wires	Unbalanced	3	S 1000/295	

1.3 Current delay time and average power

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

▲ ▼ selects the contrast level
↵ confirms

1.4 Display contrast

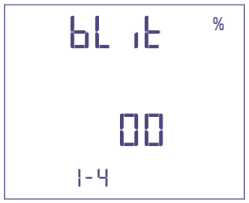
4 value display to adjust display contrast

▲ ▼ selects the contrast level
↵ confirms

1.5 Display contrast

The 4 selectable levels (0 – 30 – 70 – 100%) show the display lighting percentage

▲ ▼ selects the lighting level
↵ confirms



1.6 Rated current (external CT secondary winding)

Rated value 1A (external CT with secondary /1A) or 5A (external CT with secondary /5A)

▲ ▼ selects 1A or 5A
↵ confirms

Netanalyser NA96

1.7 Run hour meter count start

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

1.7a Voltage count start

Voltage: count start with phase voltage > 10V

▲ ▼ selects voltage or power
↵ confirms

1.7b Power count start

Power: count start with progragrammable 3-phase active power

▲ ▼ selects voltage or power
↵ confirms

0...50%Pn

▶ moves the cursor
▲ ▼ increases/decreases the loaded value
↵ confirms

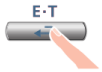
Programmed data confirmation

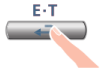
↵ confirms

↵ confirms

Netanalyser NA96

2.0 Password 2001

Press **key** 

Load **password 2001** and confirm 

▶ moves the cursor
▲ ▼ increases/decreases the loaded value
↵ confirms

2.1 External CT ratio

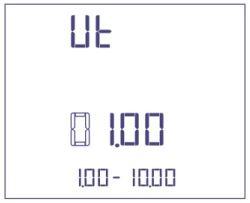
Ct = External primary/secondary (ex. CT 800/5A **Ct** = 160)
Selection in the field 1...9999 (max. primary current 50kA/5A – 10kA/1A)

▶ moves the cursor
▲ ▼ increases/decreases the loaded value
↵ confirms

External VT ratio

Vt = External primary/secondary VT ratio (ex. VT 600/100V **Vt** = 6)
Selection in the field 1,00...10,00 (max. primary voltage VT 1200V)
For voltage direct connection (without external VT) load **Vt =1,00**
By modifying the **Ct** and/or **Vt** ratios, the KWH meters are automatically reset.

▶ moves the cursor
▲ ▼ increases/decreases the loaded value
↵ confirms



Netanalyser NA96

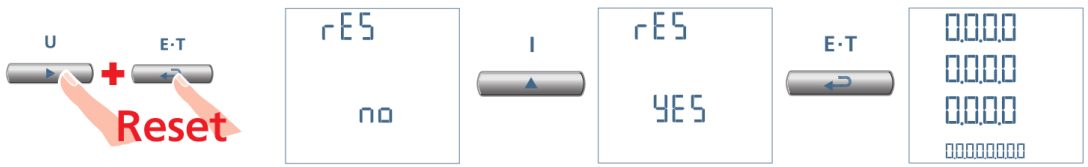
Display

Display is divided into four menus, accessible with their relevant function keys. Acting on the function keys it is possible to scroll the different available measurements:

U	I	P·Q·S	E·T
Phase voltage	Phase current	Active power	Active energy
Interlinked voltage	Neutral current	Reactive power	Reactive energy
Min. voltage value	Average current	Apparent power	Power factor
Max. voltage value	Medium current peak	Average power	Frequency
Voltage harmonic distortion	Average 3 currents	Average power peak	Run hour meter
Configuration data	Current harmonic distortion	Configuration data	Page custom view
	Configuration data		Configuration data

Reset

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



Netanalyser NA96

U

1 XXXX V
2 XXXX V
3 XXXX V
XXXXXXXX kWh

Phase voltage **L1-N**
Phase voltage **L2-N**
Phase voltage **L3-N**

Active Energy

12 XXXX V
23 XXXX V
31 XXXX V
XXXXXXXX kvarh

Interlinked voltage **L1-L2**
Interlinked voltage **L2-L3**
Interlinked voltage **L3-L1**

Reactive Energy

1 XXXX V
2 XXXX V
3 XXXX V
Min

Phase voltage **L1-N**
Phase voltage **L2-N**
Phase voltage **L3-N**

Min. Value

U E·T Reset

1 XXXX V
2 XXXX V
3 XXXX V
MAX

Phase voltage **L1-N**
Phase voltage **L2-N**
Phase voltage **L3-N**

Max. Value

U E·T Reset

1 XXXX %
2 XXXX
3 XXXX V THD
XXXXXXXX kWh

Harmonic distortion
Phase voltage

Active Energy

I

1 XXXX A
2 XXXX A
3 XXXX A
XXXXXXXX kWh

Phase current **L1**
Phase current **L2**
Phase current **L3**

Active Energy

1 XXXX A
Σ/3 XXXX A
3 XXXX A
XXXXXXXX kvarh

Phase average current **L1**
Phase average current **L2**
Phase average current **L3**

Reactive Energy

1 XXXX A
2 XXXX A
3 XXXX A
XXXXXXXX kWh

Phase average current peak **L1**
Phase average current peak **L2**
Phase average current peak **L3**

Active Energy

U E·T Reset

Σ XXXX A
Σ/3 XXXX A
XXXXXXXX kvarh

Neutral current
Current sum $\frac{I1+I2+I3}{3}$

Reactive Energy

1 XXXX %
2 XXXX
3 XXXX A THD
XXXXXXXX kWh

Harmonic distortion
Phase current

Active Energy

Netanalyser NA96

P·Q·S

Σ XXXX kW
XXXX kVAr
XXXX kVA
XXXXXXXX kWh

3-phase active power
3-phase reactive power
3-phase apparent power

Active Energy

1 XXXX kW
2 XXXX kW
3 XXXX kW
XXXXXXXX kvarh

3-phase active power **L1**
3-phase active power **L2**
3-phase active power **L3**

Reactive Energy

1 XXXX kVAr
2 XXXX kVAr
3 XXXX kVAr
XXXXXXXX kWh

3-phase reactive power **L1**
3-phase reactive power **L2**
3-phase reactive power **L3**

Active Energy

1 XXXX kVA
2 XXXX kVA
3 XXXX kVA
XXXXXXXX kvarh

Phase apparent power **L1**
Phase apparent power **L2**
Phase apparent power **L3**

Reactive Energy

XXXX kW
Σ XXXX kVAr
XXXX kVA
XXXXXXXX kWh

3-phase average active power
3-phase average reactive power
3-phase average apparent power

Active Energy

XXXX kW
XXXX kVAr
Λ XXXX kVA
XXXXXXXX kvarh

3-phase average active power peak
3-phase average reactive power peak
3-phase average apparent power peak

Reactive Energy

E·T

Σ XXXX PF
XXXX Hz
XXXXXXX h

Power factor
Frequency

Run hour meter

1 XXXX PF
2 XXXX
3 XXXX
XXXXXXXX kvarh

Power factor-phase **L1**
Power factor-phase **L2**
Power factor-phase **L3**

Reactive Energy

EnEr
ACt
POS
XXXXXXXX kWh

Positive Active Energy

EnEr
rEAC
POS
XXXXXXXX kvarh

Positive Reactive Energy

EnEr
ACt
nEG
XXXXXXXX kWh

Negative active Energy

EnEr
rEAC
nEG
XXXXXXXX kvarh

Negative reactive Energy

E·T

EnEr
ACt
PArt
XXXXXXXX kWh

Partial active energy

EnEr
rEAC
PArt
XXXXXXXX kvarh

Partial reactive energy

? ? ? ?

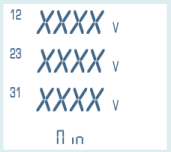
Customized page

Netanalyser NA96

U

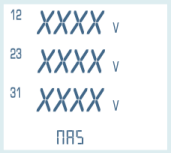
Interlinked voltage **L1-L2**
Interlinked voltage **L2-L3**
Interlinked voltage **L3-L1**

Reactive Energy



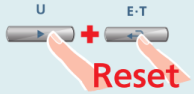
Interlinked voltage **L1-L2**
Interlinked voltage **L2-L3**
Interlinked voltage **L3-L1**

Min. Value



Interlinked voltage **L1-L2**
Interlinked voltage **L2-L3**
Interlinked voltage **L3-L1**

Max. Value



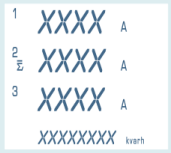
Interlinked voltage
harmonic distortion

Active Energy

I

Phase current **L1**
Phase current **L2**
Phase current **L3**

Active Energy



Phase average current **L1**
Phase average current **L2**
Phase average current **L3**

Reactive Energy

Phase average current peak **L1**
Phase average current peak **L2**
Phase average current peak **L3**

Active Energy

Phase current
harmonic distortion

Active Energy

Netanalyser NA96

P·Q·S

Active power
Reactive power
Apparent power

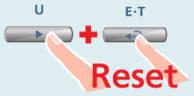
Active Energy

Average active power
Average reactive power
Average apparent power

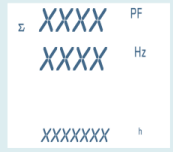
Active Energy

Average active power peak
Average reactive power peak
Average apparent power peak

Reactive Energy



E·T



Power factor
Frequency

Run hour meter

Positive Active Energy

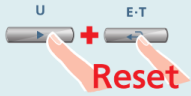
Positive Reactive Energy

Negative Active Energy

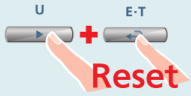
Negative Reactive Energy

E·T

Partial active energy

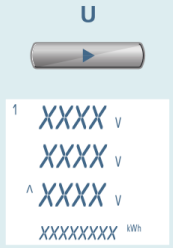


Partial reactive energy

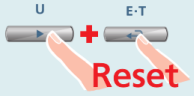


Customized page

Netanalyser NA96



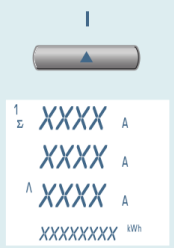
Voltage
Min. voltage
Max. voltage



Active Energy

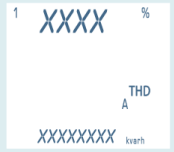
Voltage harmonic distortion

Reactive Energy



Current
Average current
Average current peak

Active Energy

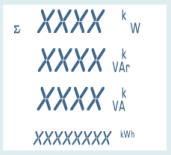


Current harmonic distortion

Reactive Energy

Netanalyser NA96

P·Q·S



Active power
Reactive power
Apparent power

Active Energy

Average active power
Average reactive power
Average apparent power

Active Energy

Average active power peak
Average reactive power peak
Average apparent power peak

Active Energy

E·T

Power factor
Frequency

Run hour meter

Positive Active Energy

Positive Reactive Energy

Negative Active Energy

Negative Reactive Energy

E·T

Partial active energy

Partial reactive energy

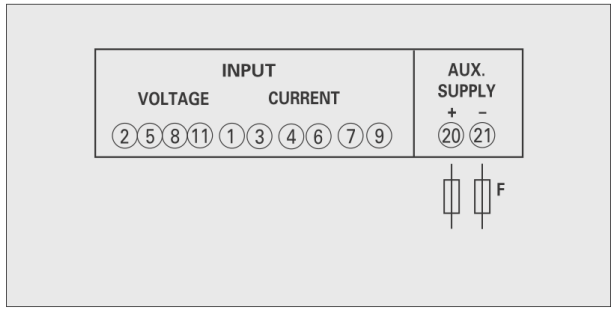
Customized page

Netanalyser NA96

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 / 110...300Vdc) the meter can be fed with alternating voltage 80...265Vac or direct voltage 110...300Vdc.
In case of direct voltage supply please respect the shown polarities **20+** and **21-**.



F : 1A gG

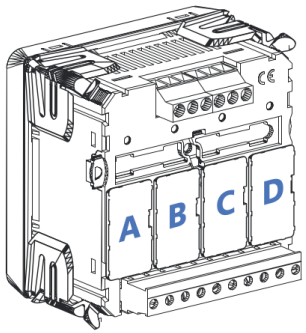
Optional Modules

In the meter up to four optional modules can be connected.
Communication modules are as an alternative to them (they cannot coexist).
For the options pulse outputs, analog output and alarms, it is possible to connect one or two modules. In the table are listed module composition constrictions: max. number of modules and connection position. (see table)

Code	Description	N. Max.	Position				Firmware²	Technical Note
			A	B	C	D		
MGF3900R--	RS485 Communication	1	•				All	NT675
*[IF96002]**	RS232 Communication	1	•				All	NT676
MGF3900I--	2 energy pulse outputs	2	•	•	•	•	All	NT677
*[IF96004]**	2 analogue outputs 0/4...20mA	2			•	•	1.08	NT678
MGF3900A--	2 alarms	2	•	•	•	•	All	NT679
*[IF96006]**	Neutral current	1			•		1.08	NT683
MGF3900P--	PROFIBUS Communication	1	•				3.12	NT682
MGF3900L--	LONWORKS Communication	1	•				2.00	NT684
*[IF96010]**	I/O 2 Inputs SPST - 2 Outputs SPST	2			•	•	2.06	NT702
*[IF96001]**	I/O 2 Inputs 12-24Vcc - 2 Outputs SPST	2			•	•	2.06	NT703
MGF3900S--	RS485 - Energy value storage	1	•				2.06	NT704
MGF3900B--	MBUS Outputs	1	•				2.06	NT707
*[IF96014]**	BACNET Outputs	1	•				2.08	NT743
MGF3900E--	ETHERNET Outputs	1	•				2.00	NT785
*[IF96016]**	Measure Temperature	1				•	2.30	NT810

*[IF96xxx]** Can be ordered on request

By using an IF96001 (RS485) or IF96002 (RS232) communication module it is possible to update the firmware version (starting from 2.00 version) directly on field, with the help of a PC and the download software.

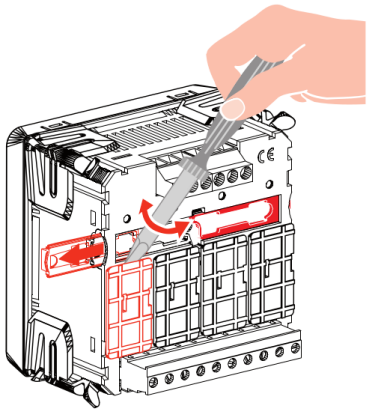


Netanalyser NA96

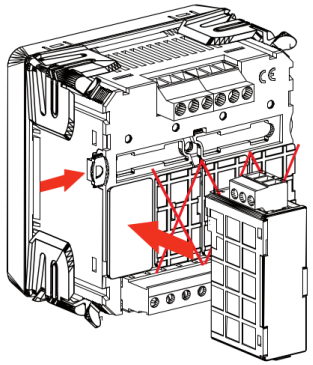
ATTENTION!

Module connection must be carried out with non-fed meter

1



2

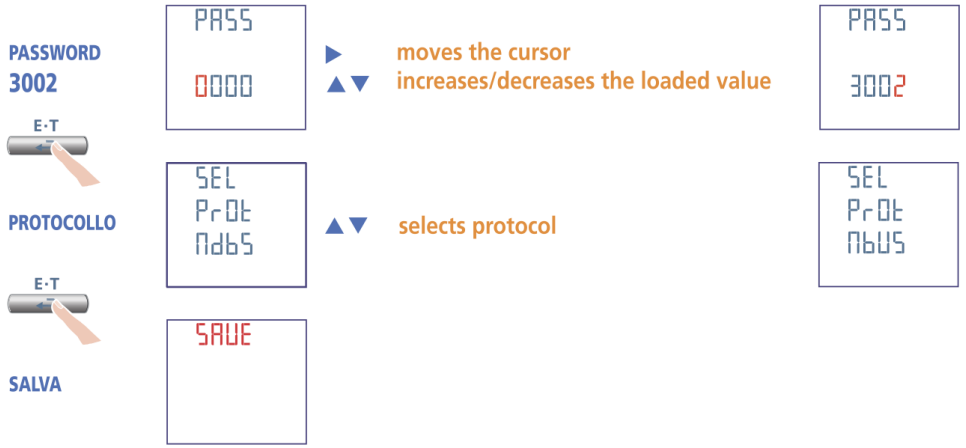


Connection of Optional Modules

Turn off the meter
Connect th optional module
Feed the meter and wait some seconds for the module recognition
To program the parameters of each module, please refer to the relevant manual

3.0 Password 3002

Communication Protocole.
For the communication modules (see table) it is necessary to set the Communication Protocol.
Load password **3002** and select the communiction protocol (See table).



	IF96001 RS485	IF96002 RS232	IF96007A PROFIBUS	IF96009 LonWorks	IF96012 Memoria	IF96013 M-Bus	IF96014 Bacnet	IF96015 Ethernet
PROTOCOL	MdbS MtCP	MdbS MtCP	MdbS MtCP	MdbS MtCP	MdbS MtCP	Mbus* Mb 2*	bACn	MdbS MtCP

*For details, please see the communication protocol.

Netanalyser NA96

Factory setting

Password 1000

Customized page
[1]Lin1v voltage L1
[2]Lin2v voltage L2
[3]Lin3v voltage L3
Connection: 3n3E 4-wires 3-system line
Average time: 5m 5 minutes
Contrast: 03 level 3
Backlight: 30%
Rated current: 5A
Run hour meter: U Voltage start

Password 2001

CT ratio: 0001 direct connection
VT ratio: 01,00 direct connection

Password 3002

Protocol: MdbS Modbus RTU