UPM304
DIN 96x96 compact LED power meter

- Depth 60 mm only

- True RMS measurement

- More than 60 electrical parameters displayed

- Neutral current monitoring

- Bi-directional, four quadrants values on serial communication port

- High contrast bright LED display

- Power and current demand calculation during user-definable time period

- No PTs required up to 600 (750) V_{AC}

- Programmable CT and PT ratios

- User friendly

General description

UPM304 is a digital meter able to measure the electrical parameters on three-phase systems.

It provides accurate measurements even by distorted waveform.

Three high brightness LED displays ensure maximum visibility even in difficult environment lighting condition.

The working parameters can be easily set up by instrument keypad.

The RS232 or RS485 serial communication port allows to transfer the three-phase electrical parameters from the instrument.

The WINTOOL software, available for free on the Internet, allows to show on a PC all the measured values and to do setting faster.

UPM304 replaces multiple analog meters as well as single function meters such as voltmeters, ammeters, wattmeters, varmeters, frequency-meters, powerfactor-meters, energy-meters, etc.

UPM304 is a compact, cost effective meter operating both as a stand-alone device or as an integral part of a more extensive energy monitoring and management network.

Benefits

- UPM304 is the low cost solution for monitoring of all the main electrical parameters.

- It provides peak average current and power demand information. This data is essential to work out proper strategies aimed at avoiding uncontrolled power peaks and consequent penalties.

- UPM304 being ultra-compact and easy to mount is suitable for replacing conventional meters. UPM304 provides powerful capabilities not offered by traditional analog meters.

- UPM304 allows time and cost saving on mounting, compared to many individual single-function instruments.

- Via communication port it is possible to read and log on a PC all the readings. The remote connection allows to generate on a PC consumption profiles, logged values trends, cost allocation and reports as well as to identify critical values.

Applications

- Switchboards, gensets, motor control centers, etc.

- Power monitoring & control systems

- Individual machine load monitoring

- Demand management

- Remote metering and cost allocation

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Main features

Measurements

- Three-phase 3-wire or 4-wire unbalanced load operation.
- True RMS metering provides accurate measurement even for distorted waveform.
- Fully bi-directional four-quadrant values both on serial communication port and display.
- More than 60 electrical parameters measured (instantaneous, demand, peak values, energies, etc.).
- On request THD calculation on voltage and current.
- Direct measurement up to 600 (750) V_{AC}.
- Programmable 1A / 5A current full scale.
- Programmable CT & PT ratios.

Front panel display

- High contrast bright, easy to read, LED display.
- Up to three parameters displayed on the same page, with four digits plus sign digit.
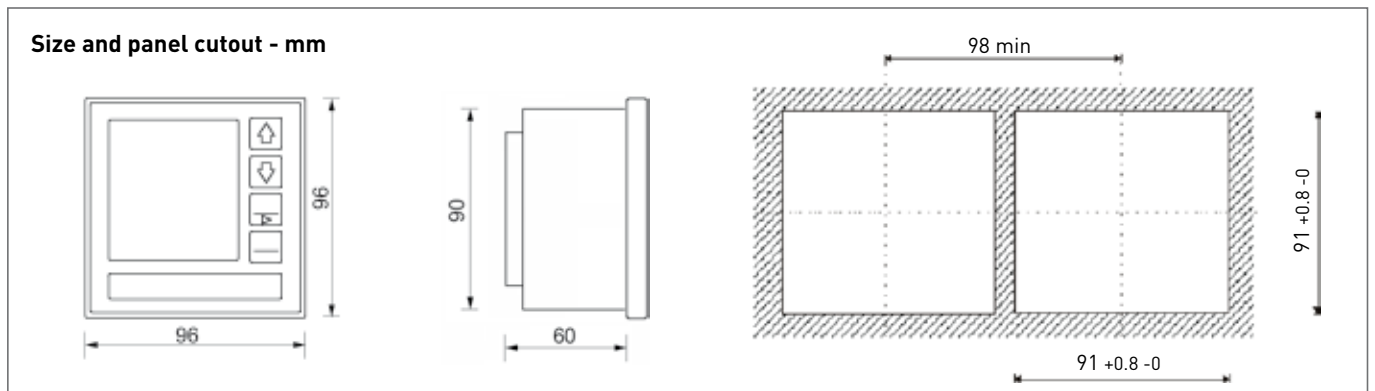- Password protection for setup and reset.

Communication

- RS232 or RS485 optoisolated communication port.
- MODBUS or A2 ASCII protocol.
- Communication speed programmable up to 57600 bps.
- Optional built-in Profibus, Lonbus, Ethernet interfaces.

Inputs & outputs

- Two digital outputs for energy pulsing or for alarm tripping.
- On request input for Rogowski coils.

INSTANTANEOUS MEASUREMENTS		DISPLAY	COMM
PHASE VOLTAGE	$V_{L1-N} - V_{L2-N} - V_{L3-N}$ [V]	●	●
LINE VOLTAGE	$V_{L1-L2} - V_{L2-L3} - V_{L3-L1}$ [V]	●	●
SYSTEM VOLTAGE	V [V]		●
LINE CURRENT	$I_{L1} - I_{L2} - I_{L3} - I_N$ [A]	■	■
SYSTEM CURRENT	I [A]		■
NEUTRAL CURRENT	I_N [A]	■	■
POWER FACTOR	$PF_{L1} - PF_{L2} - PF_{L3}$	●	●
SYSTEM POWER FACTOR	PF		●
APPARENT POWER	$S_{L1} - S_{L2} - S_{L3}$ [VA]	■	■
SYSTEM APPARENT POWER	S [VA]	■	■
ACTIVE POWER	$P_{L1} - P_{L2} - P_{L3}$ [W]	■	■
SYSTEM ACTIVE POWER	P [W]	■	■
REACTIVE POWER	$Q_{L1} - Q_{L2} - Q_{L3}$ [var]	■	■
SYSTEM REACTIVE POWER	Q [var]	■	■
FREQUENCY	f [Hz]	●	●
DEMAND (AVERAGE VALUES)	$3 \times I_{AVG} - S_{AVG} - P_{AVG}$	■	■
VOLTAGE THD	$THD_{L1} - THD_{L2} - THD_{L3}$ [%]	O	O
CURRENT THD	$THD_{L1} - THD_{L2} - THD_{L3}$ [%]	O	O
PHASE REVERSAL	123 / 132	●	●

STORED DATA			
SYSTEM ACTIVE ENERGY	[Wh]	●	■
SYSTEM APPARENT ENERGY	[VAh]	●	■
SYSTEM LAGGING REACTIVE ENERGY	[varh ind]	●	■
SYSTEM LEADING REACTIVE ENERGY	[varh cap]	●	■
PEAK VALUES	$3 \times V_{L-N} - 3 \times V_{L-L} - 3 \times I_L - 3 \times I_{AVG} - I_N - P_{AVG} - S_{AVG}$	●	●

● = Standard   ■ = Bi-directional value   O = Optional

DISPLAY = on the display   **COMM** = on communication port

Size and panel cutout - mm

96 / 96 / 90 / 60 / 98 min / 91 +0.8 -0 / 91 +0.8 -0

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Specifications

Power supply
Rated voltage:	115 V_{AC} or 230 V_{AC} +15% -20% on request
	65÷250 V_{AC} / 90÷250 V_{DC} on request
	19÷60 V_{DC} on request
Consumption:	2 VA max

Voltage inputs
Maximum measurable voltage:	600 (750) V_{AC} max L-L
Input impedance:	›1.3 MOhm
Burden:	max 0.15 VA per phase
Frequency:	45 - 65 Hz

Current inputs
Rated current (Ib):	1 / 5 A_{RMS} programmable
Min / max measurable current:	20 mA / 7 A_{RMS}
Maximum overload:	10A_{RMS} continuous - 100 A_{RMS} for 1 sec.
Input impedance:	0.02 Ohm approximately
Burden:	max 0.5 VA per phase
Insulation voltage:	150 V_{AC} max between phases
Rogowski input:	200÷49995 A on request

Typical accuracy
Voltage:	±0.2% reading ±0.1% full scale
Current:	±0.2% reading ±0.1% full scale
Active power:	±1% reading ±0.2% full scale (PF=1)
Power factor:	±1% reading (0.5 inductive - 0.8 capacitive)
Active energy:	±1% reading (0.5 inductive - 0.8 capacitive)
Frequency:	±0.05% reading ±1 digit from 45 to 65 Hz

Display and operating controls
Display:	high brightness 14 mm LED display three lines, four digits (eight for energies)
Keypad:	4 push-buttons

Communication port
Type:	RS232 or RS485 on request, optoisolated
Baud rate:	programmable from 300 to 57600 bps
	78 kbps fixed, in case of LONBUS
	up to 12 Mbps, in case of PROFIBUS
	10/100 Mbps, in case of ETHERNET on LAN side

Digital outputs
Type:	2 optoisolated (50V-100mA$_{AC-DC}$)

Environmental conditions
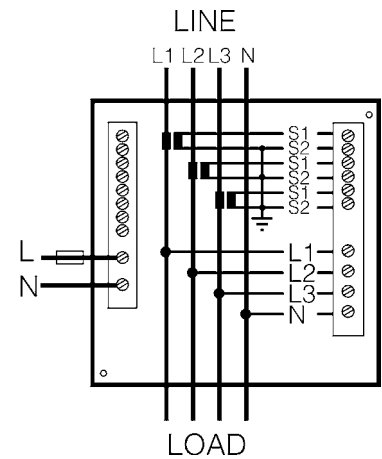|	
Operating temperature:	from -15°C to +60°C
Storage temperature:	from -30°C to +75°C
Relative humidity:	80% max. without condensation

Mechanical characteristics
Material:	plastic enclosure
Protection degree:	IP54 (front panel); IP20 (terminals)
Terminals:	conductors 2.5 mm^2
Size / weight:	96x96x60 mm or 96x96x100 mm
	500 gr max, depending on the configuration

Standards compliance
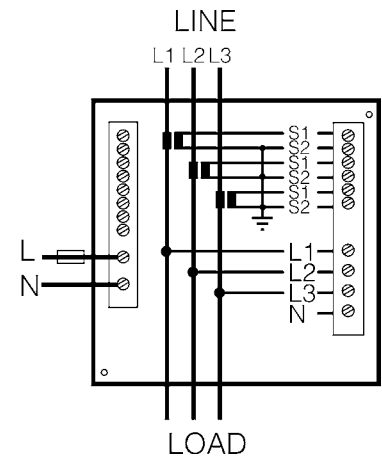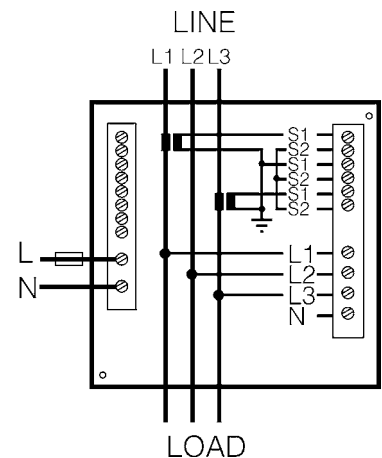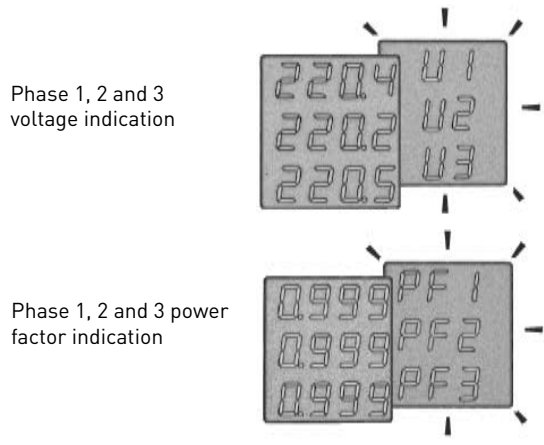|	
Safety:	73/23/EEC and 93/68/EEC directives, EN61010.1 safety standard
EMC:	89/366/EEC directive and following modifications 93/31/EEC and 93/68/EEC, EN50081-2, EN50082-2, EN61326/A1

WIRING DIAGRAMS

3.4.3 - direct connection

3.3.3 - direct connection

3.3.2 - direct connection

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Measuring units indication

The measuring units are indicated by the display, that switches from the measured value to the units.
The advantage is a very good visibility in all light conditions even if the instrument is far away.
The display exchange can be made every 10 seconds automatically or pressing the ? key on the instrument keypad.
The drawings below show some examples.

Phase 1, 2 and 3
voltage indication

Phase 1, 2 and 3 power
factor indication

WINTOOL - Communication and monitoring software

- For Microsoft Windows environment
- User-friendly
- Real time data viewing
- Quick instruments setup
- Parameters verification
- Available for free on the web

WINTOOL software enables the power meters to be connected to a PC for measured data viewing.

It allows an easy and fast way to set the instrument parameters by a desktop or portable PC.

The remote monitoring is carried out through serial communication port (RS232 or RS485) or Ethernet TCP/IP/Internet connection.

It is a multilanguage software, at present the available languages are: English, German, Italian, French, Spanish, Hungarian.

It is the "free-of-charge" solution to configure and display the readings from instruments with or without display.

Real time data viewing

WINTOOL displays real time values from the instruments.

The available information includes:

- Real time values (voltage, current, power, PF, power)
- Energy consumption values (active, reactive and apparent)

Quick instrument setup

Because of a user-friendly approach, the power meter can be configured more quickly by the WINTOOL software than by using keypad.

The software shows the hardware configuration of the connected meter.

A SEARCH function allows to automatically detect the connected meter without the need of writing the serial number.

DOWNLOAD IT FROM OUR WEB SITE

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ORDER CODE

| ALF | | | | | | X | | X | | X | | X |

UPM304

Series
A = Algodue
C = Custom

Language
I = Italian
U = English
D = German

Communication protocol
X = None (without serial port)
B = A2 ASCII
C = MODBUS
L = LONBUS
(only with power supply C or R)
P = PROFIBUS
(only with power supply C or R)
E = ETHERNET*
(only with power supply C or R)

Aux power supply
A = 115 V_{AC} +15% -20%
(60 mm instrument depth)
B = 230 V_{AC} +15% -20%
(60 mm instrument depth)
C = 65÷250 V_{AC} / 90÷250 V_{DC}
(100 mm instrument depth)
R = 19÷60 V_{DC}
(100 mm instrument depth)

Serial port
X = None
2 = RS232
5 = RS485

Firmware options
3 = Basic version (with energy counters)
5 = ENH version (with THD on voltage and current)

Inputs
X = None
R = Rogowski input 200÷49995A
(value to be specified)

Digital outputs
2 = 2 NPN outputs (50V - 100mA$_{AC-DC}$)
3 = 2 PNP outputs (50V - 100mA$_{AC-DC}$)

* In case of ETHERNET, default protocol is A2 ASCII.
For MODBUS protocol specify it in the order.

Digital outputs - NPN type

Digital outputs - PNP type

Subject to change without notice