

UPM3080

DIN 144x144 LCD power meter

- Fully bi-directional four quadrant readings
- Neutral current Measurement
- Large graphic LCD display with excellent visibility
- Up to two plug-in options
- Infrared communication port
- THD even, odd and individual FFT harmonic analysis up to 50th order
- Power and current demand calculation
- On-board memory up to 2 MB
- Programmable Min/Avg/Max and energy data logging
- Event and alarm recording, waveform capture, waveform display, phasor diagrams, hystorical trending, time-of-use and more...



General description

UPM3080 is a multifunction metering device with advanced functionality features, suitable for electrical parameters measurement and power quality analysis.

It provides accurate True RMS values on graphic LCD display, or via communication port. Six or more parameters displayed simultaneously give the complete situation of the electrical line at first sight.

The basic unit includes RS232 / RS485 switchable communication port and one front panel infrared port.

UPM3080 performs clear graphical functions such as: waveforms of voltage and current, harmonic spectrum, phasor diagrams and trends of measured values.

UPM3080 stores minimum, average and maximum values on eight selectable parameters and daily energy consumption values.

A simple menu structure makes the instrument easy-to-use and allows a quick check of the instrument set-up and memory status. Five languages can be selected easily: English, German, Italian, French and Spanish.

The backlit LCD display is highly efficient therefore it guarantees perfect visibility in all light conditions.

The power meter replaces multiple existing analog meters as well as all single function meters or transducers. The powerful capabilities offered by the instruments make it ideal for stand-alone metering or energy management systems.

Benefits

- UPM3080 provides hundreds of accurate True RMS metering values at low cost.
- It provides peak average current and power demand information that allow to work out proper strategies aimed at avoiding uncontrolled power peaks and consequent penalties.
- UPM3080 offers complete and accurate information about circuit loading; it calculates neutral current and performs load trending. This data is essential for network overloads detection and circuit optimization.
- UPM3080 offers time and cost saving on mounting, compared to many individual single-function instruments.
- Via communication port it is possible to read, set and log on a PC all the readings and download the stored data.
- The recorded data allows to generate on a PC consumption profiles, logged values trends, event and alarm reporting, 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
- Power demand analysis and management
- Harmonics monitoring
- Remote metering and cost allocation

Main features

Measurements

- Single-phase and three-phase 3-wire or 4-wire unbalanced load operation.
- Direct measurement up to $600 (750)V_{AC}$.
- Programmable 1A / 5A current full scale.
- True RMS metering provides accurate measurement even by distorted waveform.
- Fully bi-directional, four-quadrant readings. 10 energy counters are available, the apparent energy is splitted in four counters: import lagging, import leading, export lagging, export leading.
- Volts, Amps, Power, PF, Frequency, Energy, Min/Max values, Demand, Harmonics, etc. The full version instrument provides more than 600 measured/calculated parameters and shows on the LCD more than 35 graphical pages.
- Individual & total harmonic distortion for voltage and current up to the 50th order. The harmonic content is represented like even, odd and total.
- Advanced waveform capture function. The instrument can store, after a trigger, up to 200 waves with a resolution from 16 to 128 samples (depending on the number of waveforms). The trigger can be programmed on a digital input or output change, on a set point crossing or the capture can be started from the keypad. The stored waveform is downloadable through the communication port.

Modularity

- Two slots for plug-in options boards.

Graphics

- The excellent graphical display performs clear graphical representations allowing an immediate comprehension of the measured parameters. The voltage and current waveforms, the harmonic spectrum and the phasor diagrams are displayed.
- Moreover 6 measured values can be represented as a graphical trend on the display. The scale of the trend can be selected between 15 min, 1 hour, 1 day and 1 month.

On-board memory

- 128 kB or 2 MB non-volatile memory for data storage.
- Programmable start/stop time of recordings.
- Wraparound or Fill (FIFO/Stack) selectable recording mode.
- Min/Avg/Max logging every 1, 5, 10, 15, 30, 60 minutes, programmable up to 8 selectable parameters.
- Total and daily energy consumption recording. The consumptions of more than 300 days is recorded.
- Time-of-Use (TOU) programmable data recording. The TOU function stores the energy consumption in different registers according the programmed time-scheme. A group of 200 registers gives the situation of the previous and current day, and of the previous and current month. This feature is designed to fit different tariff structures. It's possible to program up to 10 daily tariff schedules containing up to 3 tariffs and 8 tariff changes. Each schedule can be assigned to the days of the week and months as requested. Up to 20 holidays can be assigned to the lowest tariff. A diagnostic algorithm checks and notifies any setup overlapping.
- In case of more than one electricity supplier, if three tariffs are not enough it's possible to start from the recorded demand values instead of the daily ones. Each value is recorded with date and time and can be exported for example, in .xls format. This allows to create a flexible map that considers the different electricity suppliers. The DMD value is the AVG value (see programmable recordings). It can be synchronized by an external pulse applied to one of the inputs (option DI4-TR inputs board). In case, UPM3080 can be customized with up to 5 tariffs (only on request).
- Event, alarm and digital outputs ON/OFF recording. The instrument records the status change of 8 programmable set points, the digital outputs ON/OFF and the instrument supply ON/OFF. All the events are integrated by date and time reference.

Communication

- Both RS232 and RS485 included in the basic unit. The selection is made by DIP-switches accessible from outside.
- Selectable MODBUS or A2 ASCII protocol.
- Communication speed up to 57600 bps.
- Optional 10/100 Ethernet, Profibus or Lonbus interfaces.
- Direct communication through Ethernet / Internet network using MODBUS or A2 ASCII protocol.

Inputs & outputs

- Up to 6 digital outputs for energy pulsing or for alarm tripping. Two digital optomos ML outputs are included in the basic unit.
- Up to 4 analog outputs 0-20 or 4-20 mA.

- Optional four digital inputs for pulse counting and trigger for wave capture. A multiplier is programmable for each input in order to store the real quantities, as well different measurement units are selectable (kWh, kVAh, kvarh, m³, etc.).
- One of the digital inputs can be programmed as demand period synchronization input.

Other

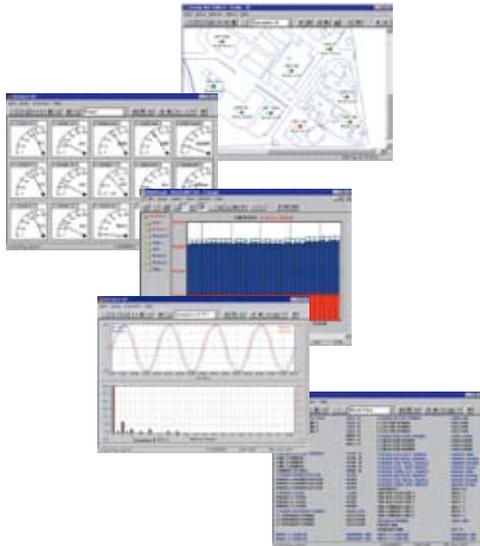
- Real Time Clock with battery backup.
- Calculation of capacitor bank value for PF compensation.
- No.1 programmable user page with 6 parameters selected among measured values.
- Five alpha-numeric characters password to avoid unauthorized setup access.
- Downloadable firmware via serial port.

INSTANTANEOUS MEASUREMENTS	
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] ■
POWER FACTOR	$PF_{L1} - PF_{L2} - PF_{L3}$ ●
SYSTEM POWER FACTOR	PF ●
COS Ø	$DPF_{L1} - DPF_{L2} - DPF_{L3}$ ○
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)	$I_{L1} - I_{L2} - I_{L3} - I_{Lx}$ Therm- $I_N - P_{AV} - S_{AV} - I_{AV}$ ●
THERMAL CURRENT	$I_{L1} - I_{L2} - I_{L3}$ [A ² s] □
K FACTOR	$K_1 - K_2 - K_3$ □
VOLTAGE & CURRENT THD (Total)	$THDV_{L1, L2, L3} - THDI_{L1, L2, L3}$ [%] ●
VOLTAGE & CURRENT THD (Even, Odd)	$THDV_{L1, L2, L3} - THDI_{L1, L2, L3}$ [%] □
FFT ANALYSIS 31 St	$V_{L1-N} - V_{L2-N} - V_{L3-N} - I_{L1} - I_{L2} - I_{L3}$ [% , V, A] ○
FFT ANALYSIS 50 Th	$V_{L1-N} - V_{L2-N} - V_{L3-N} - I_{L1} - I_{L2} - I_{L3}$ [% , V, A] □
UNBALANCE	V, I [%] □
PHASE REVERSAL	123 / 132 ●
REAL TIME CLOCK	Date, Time ●

STORED DATA	
SYSTEM ACTIVE ENERGY	[Wh] ■
SYSTEM APPARENT ENERGY	[VAh] ■
SYSTEM LAGGING REACTIVE ENERGY	[varh ind] ■
SYSTEM LEADING REACTIVE ENERGY	[varh cap] ■
MIN / MAX VALUES WITH TIME REFERENCE	7xV, 5xI, f, 4xPF, 6xTHD □
PEAK VALUES	$P_{AV} - S_{AV} - I_{AV} - I_{L1} - I_{L2} - I_{L3} - I_{L1TH} - I_{L2TH} - I_{L3TH} - I_{L4TH} - I_N$ ●
PROGRAMMABLE RECORDINGS	
DAILY CONSUMPTION (More than 300 days)	[Wh, VAh, varh] ■
ALARM / EVENT LOG8 Set Points, Outputs ON/OFF, Instrument ON/OFF	□
MIN / AVG / MAX VALUES ⁽¹⁾	[⁽¹⁾] ●
ADVANCED FEATURES	
GRAPHICAL TRENDS	Max 6 parameters [15min/1hrs/1day/1month] □
TIME OF USE (TARIFF REGISTERS)	[Wh, VAh, varh] □
WAVEFORM CAPTURE	$V_{L1-N} - V_{L2-N} - V_{L3-N} - I_{L1} - I_{L2} - I_{L3}$ [128 samples max] □
CALCULATION OF PF COMPENSATION	Capacitor bank [kvar] ●
DIGITAL INPUT COUNTERS	[Wh] ○
● = Standard ■ = Bi-directional value ○ = Optional □ = ENH version	
(1) Programmable every 1, 5, 10, 15, 30, 60 min - Maximum 8 measured parameters.	

DEDALO communication software

- For Microsoft Windows environments
- User-friendly
- Single point and network version
- Real time data viewing and trending
- Quick instruments setup
- Up to 5 data logging files



DEDALO software enables power meters to be connected to a PC. It allows to download, to display, to collect and analyse all electrical parameters.

It is also an easy and fast tool for direct or remote connection. It allows to connect to the meters by serial communication port (RS232 or RS485) or by external devices such as telephone line or Ethernet/Internet. This remote monitoring function allows to carry out all the functions from instrument setup to data monitoring or downloading.

The DEDALO software is available in two different versions:

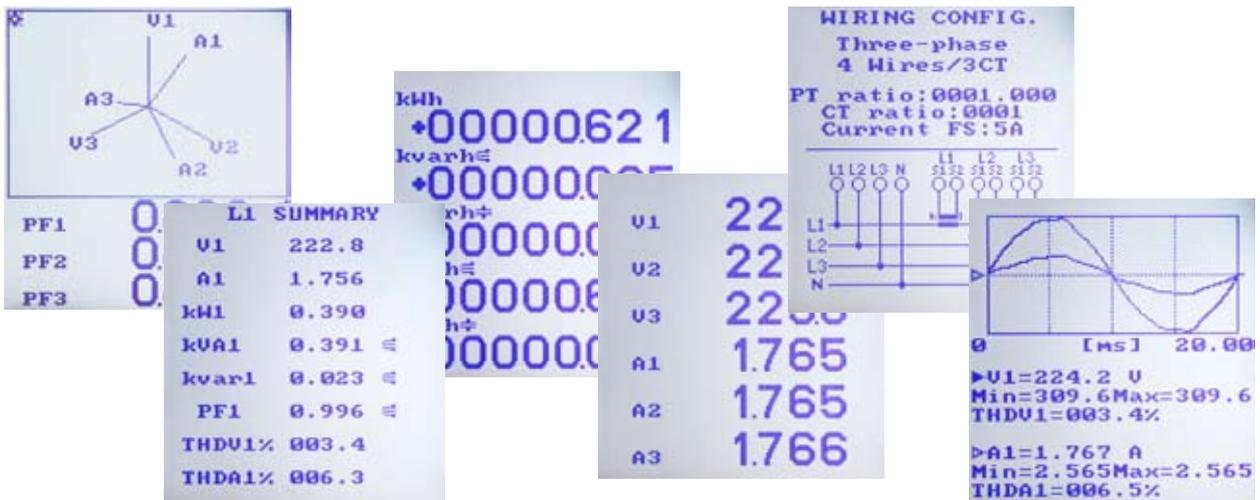
- DEDALO SP: software for single meter connection.
- DEDALO NET: software version for a meter network up to 512 instruments. It is available as workstation package or for multiple user access (LAN version).

Main features

DEDALO software performs the following main functions:

- Real time data viewing and trending
- Instrument recordings download
- Quick instrument setup
- Alarms & limits
- Up to 5 data logging files & printouts
- Export data file

Both the software basic versions can grow by additional functions as the requirements change.



Specifications

Power supply

Rated voltage: 65±250 V_{AC} / 90±250 V_{DC}
 on request 19±60 V_{DC}
 Consumption: 5 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 (I_b): 1 / 5 A_{RMS} programmable
 Min / max measurable current: 20 mA / 7 A_{RMS}
 Maximum overload: 10 A_{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

Typical accuracy

Voltage: ±0.1% reading ±0.03% full scale
 Current: ±0.1% reading ±0.05% full scale
 Active power: ±0.5% reading ±0.1% 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 ±2 digits from 45 to 65 Hz

Display and operating controls

Display: backlighted graphic LCD display
 160 x 144 dots
 Keypad: 5 push-buttons

Data memory

Type: on-board non-volatile FLASH, 128 kB or 2 MB

Communication port

Type: 1 selectable RS232 or RS485, optoisolated
 1 infrared port on the front panel
 1 available for plug-in comm. boards
 programmable from 300 to 57600 bps

Baud Rate:

Real time clock

Type: with battery backup
 Accuracy: ± 30 ppm

Digital outputs

Type: 2 isolated optomos (50V - 300mA_{AC-DC})

Environmental conditions

Operating temperature: from -15°C to +60°C
 Storage temperature: from -25°C to +75°C
 Relative humidity: 80% max. without condensation

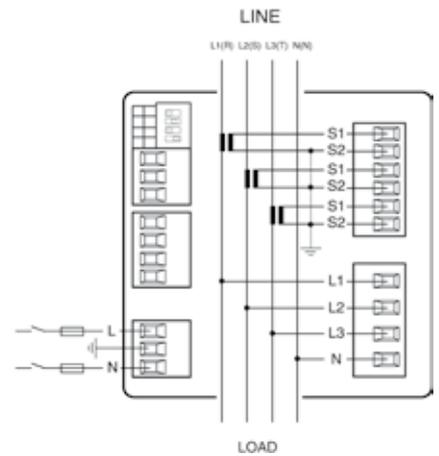
Mechanical characteristics

Material: metal enclosure
 Protection degree: IP54 (front panel); IP20 (terminals)
 Terminals: standard pluggable terminals (EU)
 barrier terminal strips (USA)
 Size / weight: 144x144x95 mm / 750 gr

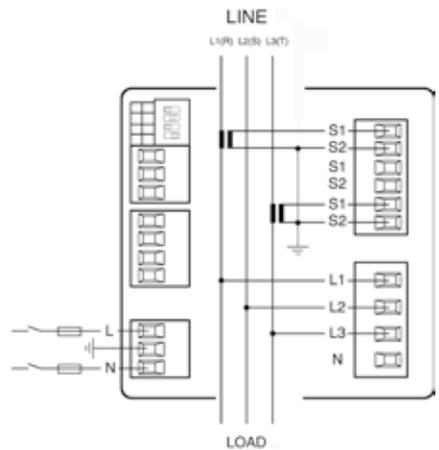
Standards compliance

Safety: UL recognized under UL61010B-1 and
 CAN/CSA-C22.2 no. 1010.1-92, 73/23/EEC,
 93/68/EEC directives, EN61010.1
 EMC: 89/366/EEC directive and following
 modifications 93/31/EEC and 93/68/EEC,
 EN50081-2, EN50082-2, EN61326/A1

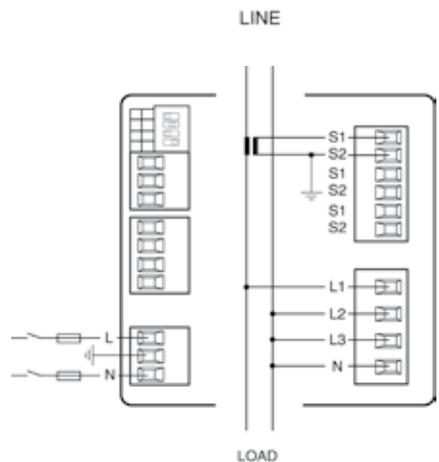
WIRING DIAGRAMS



3.4.3 - direct connection



3.3.2 - direct connection



1 phase - direct connection

ORDER CODE											
ALM											
<p>UPM3080</p> <p>Series A = Algodue C = Custom</p> <p>Language I = Italian U = English D = German</p> <p>Communication protocol B = A2 ASCII C = MODBUS L = LONBUS P = PROFIBUS E = ETHERNET*</p> <p>Aux power supply A = 65 ÷ 250V_{AC} / 90 ÷ 250V_{DC} R = 19 ÷ 60V_{DC}</p> <p>Serial port 5 = Selectable RS232/485 + infrared port 4 = ACOM plug-in board (additional RS232/485 on COM2)</p> <p>Memory 1 = 128 kB basic version 6 = 2 MB ENH version (only with firmware option 4)</p> <p>Firmware options 2 = Basic version 3 = Version with harmonics up to 31st + DPF 4 = ENH version with harmonics up to 50th + DPF (only with memory 6)</p>						<p>Physical configuration A = Standard pluggable terminals (EU) G = Barrier terminal strips (USA)</p> <p>Inputs** X = None 4 = DI4-TR plug-in board</p> <p>Analog outputs** X = None 2 = A02-0420 plug-in board (2 programmable outputs) 4 = 2 A02-0420 plug-in boards (4 programmable outputs)</p> <p>Digital outputs** 2 = Basic version with 2 outputs (50V - 300mA_{AC-DC}) 4 = D02-ML plug-in board 6 = D04-ML plug-in board R = D02-R plug-in board V = D02-MH plug-in board W = D04-MH plug-in board</p> <p>Time of use (TOU) - only with ENH version X = None 2 = 5 time of use (120 schedules) R = 3 time of use (10 schedules) S = 4 time of use (10 schedules)</p>					
<p>* In case of ETHERNET, default protocol is A2 ASCII. For MODBUS protocol specify it in the order.</p> <p>** Max 2 slots for plug-in optional boards.</p>											

Subject to change without notice



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