

# UBN3060

## DIN 144x144 LED Power Meter



- Fully Bi-Directional Four Quadrants Readings
- Neutral Current Monitoring
- Up to Two Plug-In Option Boards
- Large and Bright LED Alphanumeric Display
- UL Recognized Under UL61010B-1 and CAN/CSA-C22.2 No.1010.1-92, File #E231725
- Power and Current Demand Calculation During User-Definable Time Period
- THD and Individual FFT Harmonic Analysis up to 31<sup>st</sup> Order
- On-Board Memory up to 2MB
- Programmable Min/Avg/Max & Energy Data Logging
- Event and Alarm Recording



### General Description

The UBN3060 is a multifunction metering device suitable to measure the electrical parameters.

It provides accurate True RMS measurements on bright LED display, or via serial communication port.

Four 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.

The UBN3060 stores minimum, average and maximum values on eight selectable parameters and daily energy consumption values.

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.

The UBN3060 offers a good configuration flexibility: in the rear side of the instrument it is possible to plug in up to two add-on option boards. The modularity and the upgrade path allow a low initial investment, but as well, to meet future needs. These features allow to build specific meter configurations as required.

WINTOOL Communication Software  
available for free on the Web

### Benefits

- The UBN3060 provides hundreds of accurate True RMS metering values at low cost.
- The UBN3060 offers complete and accurate information about circuit loading; it calculates neutral current and performs load trending memorization. This data is essential for network overloads detection and circuit optimization.
- 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.
- The UBN3060 allow 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 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
- Harmonics monitoring
- 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 readings
- Volts, Amps, Power, PF, Frequency, Energy, Min/Max values, Demand and more
- Individual & total harmonic distortion for voltage and current up to the 31<sup>st</sup> order
- Direct measurement up to 600 (750)V<sub>AC</sub>
- Programmable 1A / 5A current full scale.

**Modularity**

- Two slots for plug-in option boards
- Various mounting combinations to fit the requirements of new installations as well as retrofit applications

**On-Board Memory**

- 128k or 2MBytes 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 eight selectable parameters
- Total and daily energy consumption recording. Are stored the individual consumptions of more than 300 days
- Event, alarm and digital outputs ON/OFF recording

**Communication**

- Both RS232 and RS485 included in the basic unit. The selection is made by dip-switches
- Modbus protocol or standard ASCII protocol
- Communication speed programmable up to 57,600 bps
- Optional 10/100 Ethernet, Profibus or Lonbus interfaces

**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

**Other**

- Real time waveform downloading via communication port. This function allows to represent graphically on the PC the three voltages and the three currents with 128 samples per cycle.
- On-board HTML Web Page server or direct communication through Ethernet / Internet network using Modbus or standard ASCII protocol
- Real Time Clock with battery backup

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 <sub>L1</sub> - PF <sub>L2</sub> - PF <sub>L3</sub>	●
SYSTEM POWER FACTOR	PF	●
COSØ	DPF <sub>L1</sub> - DPF <sub>L2</sub> - DPF <sub>L3</sub>	○
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)	$P_{AV} - S_{AV} - Q_{AV} - I_{AV}$	●
THERMAL CURRENT	$I_{L1} - I_{L2} - I_{L3}$ [A <sup>2</sup> s]	□
VOLTAGE THD	THD <sub>L1</sub> - THD <sub>L2</sub> - THD <sub>L3</sub> [%]	○
CURRENT THD	THD <sub>L1</sub> - THD <sub>L2</sub> - THD <sub>L3</sub> [%]	○
FFT ANALYSIS 31 <sup>ST</sup>	$V_{L1-N} - V_{L2-N} - V_{L3-N} - I_{L1} - I_{L2} - I_{L3}$ [% , 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 <sup>(1)</sup>	7xV, 5xI, f, 4xPF, 6xTHD	□
PEAK VALUES	$P_{AV} - S_{AV} - Q_{AV} - I_{AV}$	●
PROGRAMMABLE RECORDINGS		
DAILY CONSUMPTION (More than 300 days)	[Wh, VAh, varh]	■
ALARM / EVENT LOG	4 Set Points, Outputs ON/OFF, Instrument ON/OFF	□
MIN / AVG / MAX VALUES <sup>(2)</sup>	[ <sup>(2)</sup> ]	●

● = Standard    ■ = Bi-directional value  
 ○ = Optional    □ = Extended Measurement Package

(1) Time reference information (date and hour) is available only via serial port  
 (2) Programmable every 1, 5, 10, 15, 30, 60 min - Maximum 8 parameters selected among voltage, current, power, THD, frequency, PF, unbalance (□), thermal current (□).

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**Specifications**

**Power supply**

Rated voltage: 65 - 250 Vac 50/60Hz or 90 - 250 Vdc  
(19 - 60 Vdc - option)

Consumption: 5VA max

**Voltage inputs**

Maximum measurable voltage: 600 (750)VAC max L-L

Input impedance: >1.3 MOhm

Burden: max 0.15 VA per phase

Frequency: 45 - 65 Hz

**Current inputs**

Rated current (I<sub>b</sub>): 1 / 5 A<sub>RMS</sub> programmable

Min / max measurable current: 20 mA / 7 A<sub>RMS</sub>

Maximum overload: 10A<sub>RMS</sub> continuous - 100 A<sub>RMS</sub> for 1 sec.

Input impedance: 0.02 Ohm approximately

Burden: max 0,5 VA per phase

Insulation voltage: 150 VAC 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: High brightness LED display  
three lines x 4 alphanumeric digits 13,8 mm  
one line x 6 digits 10mm for energy counting  
4 push-buttons

Keypad:

**Data memory**

Type: On-Board non-volatile FLASH, 128kB or 2 MB

**Communication port**

Type: No.1 selectable RS232 or RS485, optoisolated  
No.1 infrared port on the front panel  
No.1 available for plug-in comm. boards  
Baud Rate: 300 to 57600 bps

**Real Time Clock**

Type: with battery backup

Accuracy: ± 30 ppm

**Digital outputs**

Type: No.2 isolated Optomos (50V - 300mA<sub>AC-DC</sub>)

**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: Metal enclosure

Protection degree: IP54 (front panel); IP20 (terminals)

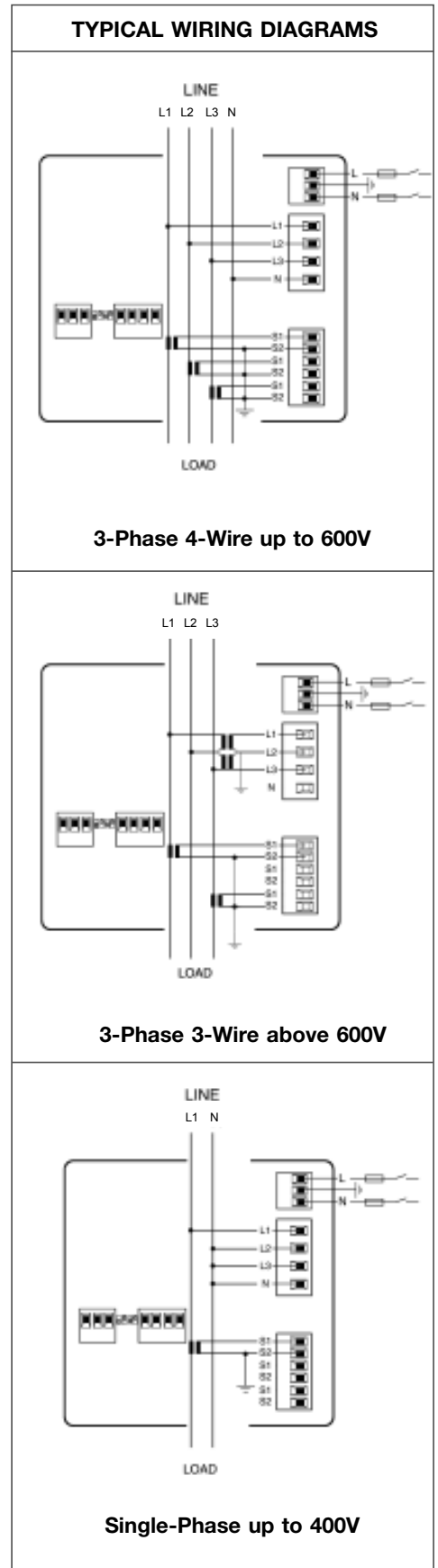
Terminals: Pluggable terminal blocks  
(Barrier terminal strips - OPTION)

Size / Weight: 144 x 144 x 95 mm 750 gr

**Standards compliance**

Safety: UL recognized under UL61010B-1and CAN/  
CSA-C22.2 No. 1010-1-92 File # E231725,  
73/23/EEC, 93/68/EEC directives, EN61010-1  
89/366/EEC directive and following  
modifications 93/31/EEC and 93/68/EEC,  
EN50081-2, EN50082-2, EN61326/A1

EMC:



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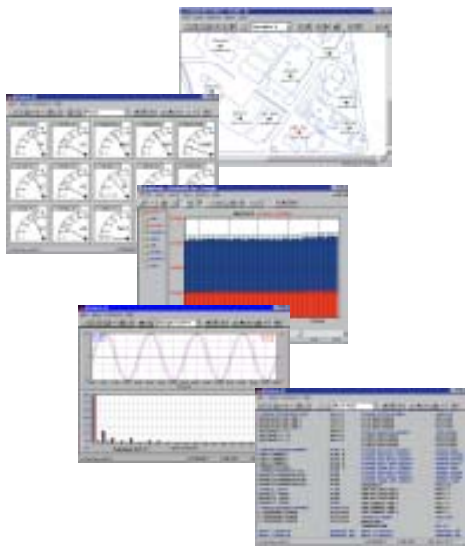
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**DEDALO Communication Software**

- 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 ALGODUE 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).

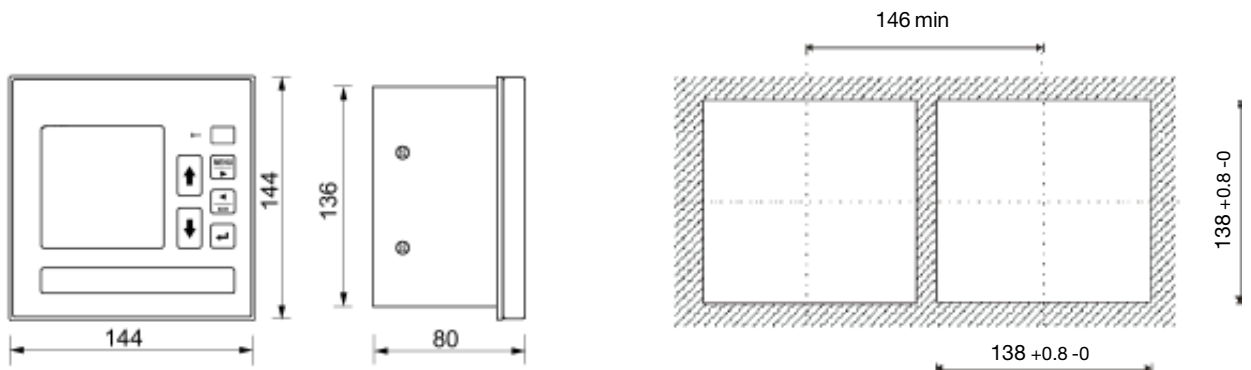
**Main Features**

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.

Size and panel cutout - mm



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### ORDERING INFORMATION

ALN

B

5

X

**UBN3060**

**Series**

**User's Manual Language**  
 D = German  
 I = Italian  
 U = English

**Communication Protocol**  
 B = ASCII Standard  
 C = Modbus  
 E = Ethernet board  
 L = Lonbus board  
 P = Profibus board

**Aux Power Supply**  
 A = 65 ÷ 250V<sub>AC</sub> / 90 ÷ 250V<sub>DC</sub>  
 R = 19 ÷ 60V<sub>DC</sub>

**Serial Port**  
 5 = RS232/485 selectable by dip-switches (1)

**Memory**  
 1 = 128 kBytes (1)  
 6 = 2 MBytes + Enhanced package

**Firmware Options**  
 2 = Basic version (1)  
 3 = Harmonics to 31<sup>st</sup> + DPF  
 4 = Enhanced package + Harmonics + DPF + 2MBytes

**Other**  
 A = Standard Pluggable Terminals (EU) (1)  
 G = Barrier Terminal Strips (USA)

**Inputs (2)**  
 X = None  
 4 = No.1 DI4-TR board - (No.4 digital inputs)

**Analog Outputs (2)**  
 X = None  
 2 = No.1 AO2-0420 board - (No.2 programmable analog outputs)  
 4 = No.2 AO2-0420 boards - (No.4 programmable analog outputs)

**Digital Outputs (2)**  
 2 = Basic version with No.2 built-in optomos outputs (50V - 300mA<sub>AC-DC</sub>) (1)  
 4 = No.1 DO2-ML board - (No.2 ML outputs)  
 6 = No.1 DO4-ML boards - (No.4 ML outputs)  
 R = No.1 DO2-R board - (No.2 relay outputs)  
 S = No.1 DO4-RML board - (No.2 relay outputs + No.2 ML outputs)  
 V = No.1 DO2-MH board - (No.2 MH outputs)  
 W = No.1 DO4-MH boards - (No.4 MH outputs)

**Unused**  
 X = None

PLUG-IN BOARDS				NOTES
DO2-ML	No.2 Optomos Outputs (50V - 300mA <sub>AC-DC</sub> )	DI4-TR	No.4 Digital Inputs for Voltage-Free Contacts	1) The basic instrument configuration includes: <ul style="list-style-type: none"> <li>Power Supply 65 ÷ 250V<sub>AC</sub> / 90 ÷ 250V<sub>DC</sub></li> <li>No.2 Optomos Outputs (50V - 300mA<sub>AC-DC</sub>)</li> <li>RS232 / 485 selectable by dip-switches</li> <li>Front panel infrared port</li> <li>128 kBytes data recording memory</li> <li>Real Time Clock with battery backup</li> </ul> 2) The basic instrument can be equipped with maximum 2 option boards.
DO2-MH	No.2 Optomos Outputs (250V - 80mA <sub>AC-DC</sub> )	PROFI	Profibus DP Interface	
DO2-R	No.2 Relay Outputs (250V - 2A <sub>AC</sub> resistive)	LON	Lonbus Interface	
DO4-ML	No.4 Optomos Outputs (50V - 300mA <sub>AC-DC</sub> )	ETH	10/100 Ethernet Interface	
DO4-MH	No.4 Optomos Outputs (250V - 80mA <sub>AC-DC</sub> )			
DO4-RML	No.2 Relay + No.2 Optomos (ML) Outputs			
AO2-0420	No.2 0÷20 or 4÷20mA Analog Outputs			

Subject to change without notice



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