UPT210
DIN rail multifunction energy meter

- Compact 6 DIN modules size
- High contrast LCD display
- True RMS measurement
- Active, reactive and apparent energy (4 counters)
- Neutral current measurement
- More than 30 electrical parameters measured and displayed
- RS485 communication port
- Programmable transformer ratios
- Two digital outputs for energy pulsing
- Indication of phase sequence and wrong CT connection

» General description

UPT210 is a programmable multi-function energy meter able to measure the energy consumption and the main electrical parameters on three-phase systems. It provides accurate measurements even for distorted waveform.
Up to two energies can be re-emitted on the optoisolated outputs.
The high contrast LCD display allows the user to check all the measured values. The working parameters can be easily set up by instrument keypad.
The optional RS485 serial communication port allows to transfer the three phase electrical parameters from the instrument.
The WINTOOL software can be downloaded for free from Algodue web site and allows to show on a PC all the measured values and to carry out settings in a faster way.
UPT210 replaces multiple analog meters as well as single function meters such as voltmeters, ammeters, wattmeters, varmeters, frequency-meters, powerfactor-meters, energy-meters, etc.
UPT210 is a compact, cost effective multifunction transducer suitable for energy monitoring and electrical network management.

» Benefits

- UPT210 basic version provides four energy counters (two quadrants) and the main electrical parameters for a quick and easy check of the load conditions.
- The programmable transformer ratios allow to count and display the primary values.
- A diagnostic function detects the current transformer polarity and the phase sequence in order to indicate on the LCD any connection or installation error.
- It is suitable for conventional meters replacing since it is ultracompact and easy on mounting.
- Via communication port it is possible to read and log on a PC all the readings (more than 30 electrical parameters). The remote connection allow to generate on a PC consumption profiles, logged values trends, cost allocation and reports as well as to identify critic values.

» Applications

- Switchboards, gensets, motor control centers, etc.
- Replacement of electromechanical meters for household, industrial and commercial applications
- Power monitoring & control systems
- Individual machine load monitoring
- Capacitor bank operation supervision
- Remote metering and cost allocation

» Related Products

- MFC150
- Dedalo Software
- Wintool Software

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» Main features

Measurements
- Single phase and three-phase 3-wire or 4-wire unbalanced load operation.
- True RMS metering provides accurate measurement even for distorted waveform.
- More than 30 electrical parameters are measured. The system values are displayed on the LCD for a quick and easy check of the load conditions.
- Programmable 1A / 5A current full scale allows to fit the standard CTs.
- CT ratio value is programmable up to 9999 to show the real energy consumption values.

Front panel display
- High contrast LCD display.
- Two keys ensure the selection of the information on the LCD display and the instrument programming.
- Protection from undesired access to setup and reset.

Communication
- On request RS485 optoisolated communication port.
- Selectable MODBUS or A2 ASCII protocol.
- Communication speed programmable up to 57600 bps.

Inputs & outputs
- Two digital outputs for energy pulsing. The pulse value is programmable.
- On request input for Rogowski coils.

Advanced diagnostic functions
- Wrong current transformer polarity and phase sequence connection errors are indicated on the LCD display.
- Over / undervoltage, overcurrent and frequency out of range are detected to indicate the uncorrect working conditions.
- Pulse emission frequency too high or CT too high are checked to indicate programming mistakes.

» Technical drawing
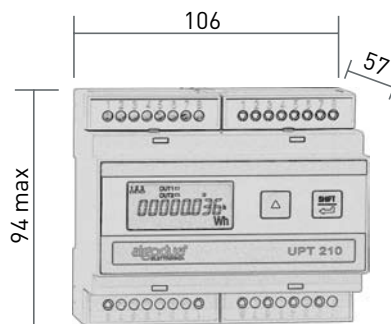
INSTANTANEOUS MEASUREMENTS	
PHASE VOLTAGE	V_{L1-N} - V_{L2-N} - V_{L3-N} [V]
LINE VOLTAGE	V_{L1-L2} - V_{L2-L3} - V_{L3-L1} [V]
SYSTEM VOLTAGE	V [V]
LINE CURRENT	I_{L1} - I_{L2} - I_{L3} - I_N [A]
SYSTEM CURRENT	I [A]
POWER FACTOR	PF_{L1} - PF_{L2} - PF_{L3}
SYSTEM POWER FACTOR	PF
APPARENT POWER	S_{L1} - 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]
PHASE SEQUENCE	123 / 132

STORED DATA	
SYSTEM ACTIVE ENERGY	[Wh]
SYSTEM APPARENT ENERGY	[VAh]
SYSTEM LAGGING REACTIVE ENERGY	[varh ind]
SYSTEM LEADING REACTIVE ENERGY	[varh cap]

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» Specifications

POWER SUPPLY [1]	
Rated voltage:	powered from measuring inputs
Consumption:	0.8 VA max

VOLTAGE INPUTS	
Maximum measurable voltage:	• 3x230/400 VAC +15% -20%, 4 wires
	• 3x400 VAC +15% -20%, 3 wires
	• 3x100...120 VAC +15% -20%, 3 wires
Input impedance:	›1.3 MOhm
Burden:	0.15 VA max per phase
Frequency:	45 - 65 Hz

CURRENT INPUTS (TRMS)	
Rated current (Ib):	1 / 5 A programmable
Min / max measurable current:	20 mA / 7 A
Maximum overload:	10 A continuous - 100 A for 1 sec
Input impedance:	0.02 Ohm approximately
Burden:	0.5 VA max per phase
Insulation voltage:	480 VAC max between phases
Rogowski input:	200...49995 A on request

TYPICAL ACCURACY	
Voltage:	±0.3% reading ±0.05% full scale
Current:	±0.5% reading ±0.05% full scale
Active power:	±1% reading ±0.1% full scale (PF=1)
Power factor:	±1.5% reading (0.5 inductive - 0.8 capacitive)
Active energy:	class 2 according to EN 61036 and EN 62053 standards
Frequency:	±0.05% reading ±2 digits from 45 to 65 Hz

DISPLAY AND OPERATING CONTROLS	
Display:	high contrast LCD display 43x19 mm
	8 digits for energies and other parameters + symbols
Keypad:	2 push-buttons

COMMUNICATION PORT [2]	
Type:	RS485 optoisolated, on request
Baud rate:	programmable from 2400 to 57600 bps
Protocols:	A2 ASCII, MODBUS

DIGITAL OUTPUTS	
Type:	2 NPN or PNP optoisolated (50 V - 100 mADC)

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:	plastic enclosure, noryl UL94-V0
Protection degree:	IP51 (front panel); IP20 (terminals)
Terminals:	conductors 2.5 mm^2
Size / weight:	106x90x57 mm, 6 DIN rail modules / 300 g

STANDARD COMPLIANCE	
Safety:	73/23/EEC and 93/68/EEC directives, EN 61010.1 safety standard
EMC:	89/366/EEC directive and following modifications
	93/31/EEC and 93/68/EEC, EN50081-2, EN50082-2, EN61326/A1

(1) The basic instrument is powered from L1, L2, L3 and N (4-wire version) or L1, L2, L3 (3-wire version). The presence of only one of the three phases (4-wire version) or two phases (3-wire version) ensures the normal counting and displaying operations.

(2) The serial port is powered from L1 and N (4-wire version) or L1 and L2 (3-wire version). The communication function is ensured only if the L1 phase (or L1 and L2 for 3-wire) is present and within the specified range.

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ORDER CODE	VOLTAGE INPUT	COM PORT	SELECTABLE COM PROTOCOL		MEASUREMENTS	I/O	REMOTE MANAGEMENT
	Self-powered	RS485	A2 ASCII	MODBUS (Sign bit)	Monodirectional (2 quadrants)	DO	WINTOOL (only with A2 ASCII)
FOR 1/5A CTs (not included)							
1201.0001.0001	3x230/400VAC				●	●	
1201.0002.0001	3x400VAC				●	●	
1201.0003.0001	3x100...120VAC				●	●	
1201.0009.0001	3x230/400VAC	●	●		●	●	●
1201.0010.0001	3x400VAC	●	●		●	●	●
1201.0011.0001	3x100...120VAC	●	●		●	●	●
1201.0016.0001	3x230/400VAC	●		●	●	●	●
FOR NO. 3 MFC150 ROGOWSKI COILS (not included) - *Current full scale value to be specified*							
1201.0007.0001	3x230/400VAC				●	●	
1201.0014.0001	3x230/400VAC	●	●		●	●	●
1201.0018.0001	3x230/400VAC	●		●	●	●	●

OPTION available only on request (MOQ 30 pcs), to be indicated together with the selected order code from the list above:
 • PNP type digital outputs

LEGEND
SELECTABLE COM PROTOCOL: A2 ASCII/MODBUS user selectable. The instrument is factory preset on the protocol checked in the table.
DO: 2 NPN type digital outputs for pulse emission.
WINTOOL: Software for instrument remote management, downloadable for free at www.algodue.it, in the Client protected area.

NOTE: Subject to change without notice