UPM209RGW‹KIT30, KIT45, KIT70, KIT90›

Multifunction three-phase meter with 3 MFC150Rogowski coils

- 4 DIN modules compact version
- Fully bi-directional four quadrants measurementsfor all energies and powers
- Main electrical parameters measured and displayed for a cost-effective consumption analysis
- 4 available KITs: 30, 45, 70, 90 cm coil length
- 3 selectable current scales
- Possibility to connect by PT
- Up to 8 MB for data recording
- Possibility to record all energy counters
- Up to 24 parameters selectable among real time measurements for MIN/AVG/MAX recording
- MODBUSRTU/ASCII communication by RS485 port or MODBUSTCP communication by Ethernet port
- Possibility to manage the instrument in remote mode by WintoolNET software or by Web interface

» General features

UPM209 is an innovative instrument for measurement and recording of the electrical parameters. It is particularly suitable for consumption analysis and control, with an excellent quality/price ratio.

The connections are very quick and easy,very useful for retrofitting applications on existing switchboards or for energy audit.

UPM209is the ideal instrument to establish the measurementpoints on the plant.

The instrument can communicate through the RS485serial port by MODBUSRTU/ASCIIprotocol or through Ethernet port by MODBUS TCPprotocol.

Furthermore, it is available the WintoolNET software for the instrument remote management. Web interface is also available in case of instrument with Ethernet port: a very useful function that gives the possibility to manage the instrument by any PCconnected on the network.

» Benefits

- UPM209provides fully and accurateinformation on the load in the measurementpoint and it allows to calculate the costs of the energy consumption.
- Data read by PCallows to generate consumption profiles, recorded values trend, alarms/events report and costs calculation as well as critical values identification.
- The use of Rogowski coils for current measurement grants a quick installation, particularly on existing plants. In caseof changes on the plant, the instrument can be fit for the current consumption without replacing the transducer.
- Available the remote firmware upgrade of the instrument.

» Applications

- Energy audit.
- Monitoring system and energy control.
- Individual machine load monitoring.
- Power peak control.
- Switchboards, gensets, motor control centers, etc.
- Remotemetering and cost allocation.

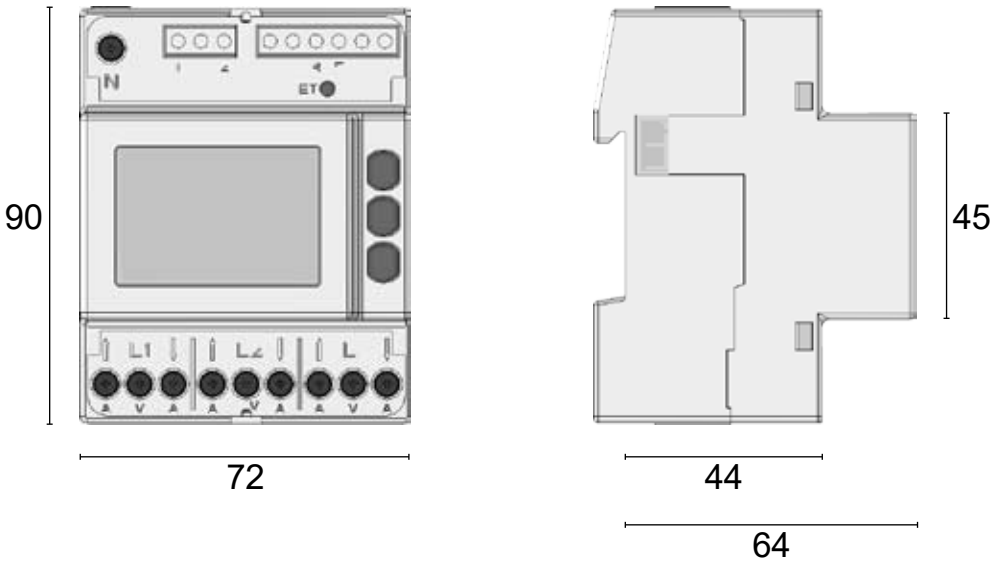
» Related products

- MFC150
- WintoolNET

» Available features

CURRENT INPUTS	Rogowski inputs (3 MFC150 included)	●
AUXILIARY POWER SUPPLY	85...265 VAC	●
COMMUNICATION PORT (make one choice only)	RS485 for MODBUSRTU/ASCII communication	●
	Ethernet for HTTP,MODBUSTCP communication	●
INSTRUMENT REMOTE MANAGEMENT	WintoolNET	●
	Web server (only for instrument with Ethernet port)	●
SIGN REPRESENTATION IN MODBUS PROTOCOL (make one choice only)	Sign bit	●
	2's complement	●
DIGITAL OUTPUT (only for instrument with RS485 port)	For alarm events or pulse emissions	●
DMD VALUE CALCULATION MODE	Fixed or Sliding window	●
MEMORY	8 MB	●
RECORDINGS	Real time params MIN/AVG/MAX values (up to 24 params programmable)	●
	Energy counters	●
WIRING MODES	Three phase, 4 wires, 3 currents (3.4.3)	●
	Three phase,3 wires,2 currents (3.3.2)	●
	Single phase (1ph)	●
THD & HARMONICS	Voltage and current THD values	●
	Voltage and current harmonics up to 15th	●
APPARENT ENERGY COUNTERS (make one choice only)	Total counters	●
	Separated Inductive&Capacitive counters	●

» Technical drawing



» Measurements & recordings

INSTANTANEOUS VALUES		
VOLTAGE	V_{L1-N} - V_{L2-N} - V_{L3-N} - V_{L1-L2} - V_{L2-L3} - V_{L3-L1} - V_{Σ} [V]	● MAM
CURRENT(+/-)	I_{L1} - I_{L2} - I_{L3} - I_N - I_{Σ} [A]	● MAM
ACTIVE POWER(+/-)	P_{L1} - P_{L2} - P_{L3} - P_{Σ} [W]	● MAM
REACTIVE POWER(+/-)	Q_{L1} - Q_{L2} - Q_{L3} - Q_{Σ} [var]	● MAM
APPARENT POWER(+/-)	S_{L1} - S_{L2} - S_{L3} - S_{Σ} [VA]	● MAM
POWERFACTOR(ind&cap)	PF_{L1} - PF_{L2} - PF_{L3} - PF_{Σ}	● MAM
DPF (+/-)	DPF_{L1} - DPF_{L2} - DPF_{L3}	● MAM
TANGENT Ø (+/-)	$TANØ_{L1}$ - $TANØ_{L2}$ - $TANØ_{L3}$ - $TANØ_{\Sigma}$	● MAM
VOLTAGE THD	$THDV_{L1}$-$THDV_{L2}$-$THDV_{L3}$-$THDV_{L1L2}$-$THDV_{L2L3}$-$THDV_{L3L1}$[V]	● MAM
CURRENT THD	$THDA_{L1}$ - $THDA_{L2}$ - $THDA_{L3}$ - $THDA_N$ [A]	● MAM
FREQUENCY	f [Hz]	● MAM
PHASE ORDER	Ph	●
DEMAND VALUES (DMD)		
DMD CURRENT(abs)	I_{L1DMD} - I_{L2DMD} - I_{L3DMD} - I_{NDMD} - $I_{\Sigma DMD}$ [A]	●
DMD ACTIVE POWER(imp&exp)	P_{L1DMD} - P_{L2DMD} - P_{L3DMD} - $P_{\Sigma DMD}$ [W]	●
BALANCE OF DMD SYSTEM ACTIVE POWER (+/-)	$P_{\Sigma DMDBAL}$ [W]	●
DMD REACTIVE POWER(imp&exp)	Q_{L1DMD} - Q_{L2DMD} - Q_{L3DMD} - $Q_{\Sigma DMD}$ [var]	●
BALANCE OF DMD SYSTEM REACTIVE POWER(+/-)	$Q_{\Sigma DMDBAL}$ [var]	●
DMD APPARENT POWER(imp&exp)	S_{L1DMD} - S_{L2DMD} - S_{L3DMD} - $S_{\Sigma DMD}$ [VA]	●
BALANCE OF DMD SYSTEM APPARENT POWER (+/-)	$S_{\Sigma DMDBAL}$ [VA]	●
DMD POWERFACTOR(imp&exp)	PF_{L1DMD} - PF_{L2DMD} - PF_{L3DMD} - $PF_{\Sigma DMD}$	●
MAX VALUES		
MAX VOLTAGE	$V_{L1-NMAX}$-$V_{L2-NMAX}$-$V_{L3-NMAX}$-$V_{L1-L2MAX}$-$V_{L2-L3MAX}$-$V_{L3-L1MAX}$-$V_{\Sigma MAX}$[V]	●
MAX CURRENT (abs)	I_{L1MAX} - I_{L2MAX} - I_{L3MAX} - I_{NMAX} - $I_{\Sigma MAX}$ [A]	●
MAX ACTIVE POWER(imp&exp)	P_{L1MAX} - P_{L2MAX} - P_{L3MAX} - $P_{\Sigma MAX}$ [W]	●
MAX REACTIVE POWER(imp&exp)	Q_{L1MAX} - Q_{L2MAX} - Q_{L3MAX} - $Q_{\Sigma MAX}$ [var]	●
MAX APPARENT POWER(imp&exp)	S_{L1MAX} - S_{L2MAX} - S_{L3MAX} - $S_{\Sigma MAX}$ [VA]	●
MAX POWERFACTOR(imp&exp)	PF_{L1MAX} - PF_{L2MAX} - PF_{L3MAX} - $PF_{\Sigma MAX}$	●
MAX TANGENT Ø (imp&exp)	$TANØ_{L1MAX}$ - $TANØ_{L2MAX}$ - $TANØ_{L3MAX}$ - $TANØ_{\Sigma MAX}$	●
MAX VOLTAGE THD	$THDV_{L1MAX}$-$THDV_{L2MAX}$-$THDV_{L3MAX}$-$THDV_{L1L2MAX}$-$THDV_{L2L3MAX}$-$THDV_{L3L1MAX}$[V]	●
MAX CURRENT THD	$THDA_{L1MAX}$ - $THDA_{L2MAX}$ - $THDA_{L3MAX}$ - $THDA_{NMAX}$ [A]	●
MAX DMD CURRENT	$I_{L1MAXDMD}$ - $I_{L2MAXDMD}$ - $I_{L3MAXDMD}$ - $I_{\Sigma MAXDMD}$ [A]	●
MAX DMD ACTIVE POWER(imp&exp)	$P_{L1MAXDMD}$ - $P_{L2MAXDMD}$ - $P_{L3MAXDMD}$ - $P_{\Sigma MAXDMD}$ [W]	●
MAX DMD REACTIVE POWER(imp&exp)	$Q_{L1MAXDMD}$ - $Q_{L2MAXDMD}$ - $Q_{L3MAXDMD}$ - $Q_{\Sigma MAXDMD}$ [var]	●
MAX DMD APPARENT POWER(imp&exp)	$S_{L1MAXDMD}$ - $S_{L2MAXDMD}$ - $S_{L3MAXDMD}$ - $S_{\Sigma MAXDMD}$ [VA]	●
MIN VALUES		
MIN SYSTEM ACTIVE POWER	$P_{\Sigma MIN}$ [W]	●
MIN SYSTEM REACTIVE POWER	$Q_{\Sigma MIN}$ [var]	●
MIN SYSTEM APPARENT POWER	$S_{\Sigma MIN}$ [VA]	●
COUNTERS		
ACTIVE ENERGY(imp&exp)	kWh_{L1} - kWh_{L2} - kWh_{L3} - kWh_{Σ} [Wh]	● EC
BALANCE OF SYSTEM ACTIVE ENERGY	$kWh_{\Sigma BAL}$ [Wh]	● EC
REACTIVE ENERGY(imp&exp) (ind&cap)	$kvarh_{L1}$ - $kvarh_{L2}$ - $kvarh_{L3}$ - $kvarh_{\Sigma}$ [varh]	● EC
BALANCE OF SYSTEM REACTIVE ENERGY(ind&cap)	$kvarh_{\Sigma BAL}$ [varh]	● EC
APPARENT ENERGY(imp&exp) *(ind&cap on request)*	$kVAh_{L1}$ - $kVAh_{L2}$ - $kVAh_{L3}$ - $kVAh_{\Sigma}$ [VAh]	● EC
BALANCE OF SYSTEM APPARENT ENERGY *(ind&cap on request)*	$kVAh_{\Sigma BAL}$ [VAh]	● EC
INSTALLATION HOUR COUNTER	HRCNTi [h]	●
MEASUREMENT HOUR COUNTER	HRCNTm [h]	●
HARMONIC ANALYSIS UP TO 15th		
VOLTAGE HARMONICS	V_{L1-N} - V_{L2-N} - V_{L3-N} - V_{L1-L2} - V_{L2-L3} - V_{L3-L1} [V]	● MAM
CURRENT HARMONICS	I_{L1} - I_{L2} - I_{L3} - I_N [A]	● MAM

LEGEND

● = Standard

MAM = Parameters for MIN/AVG/MAX recording (up to 24 params programmable)

EC = Parameters for Energy counter recording (fixed)

+/- = Signed value

imp&exp = Values splitted in imported and exported

abs = Absolute value

ind&cap = Values splitted in inductive and capacitive

DMDBAL = Difference between the positive and negative demand value: [DMD+]- [DMD-]

BAL = Difference between the imported and exported value: [imp] - [exp]

» Specifications

POWER SUPPLY	
Voltage range:	85 ... 265 VAC,CAT II
Maximum consumption:	Instrument with RS485 port: 1.6 VA- 1 W
	Instrument with Ethernet port: 4.5 VA- 1.6 W
Frequency:	50/60 Hz
VOLTAGE INPUTS	
Voltage range:	3x10/17 ... 3x285/495 VAC,CAT III 300 V
Minimum voltage for FFT calculation:	20/35 VAC (multiplied by PT ratio in case of PT use) with direct connection
CURRENT INPUTS	
Maximum value:	3 selectable scales,500/4000/20000A
Starting current (I_{st}):	0.3 A for FSA500 A, 1 A for FSA4000 A, 10 A for FSA20000 A
Minimum current for FFT calculation:	70 A for FSA500 A, 400 A for FSA4000 A, 1500 A for FSA20000 A
TYPICAL ACCURACY	
Voltage:	±0.2% reading in 10% FS...FS range (FS=Full Scale value)
Current:	±0.4% reading in 5% FS...FS range
	2% harmonic accuracy ±2 digits
Power:	±0.5% reading ±0.1% FS (PF=1)
Frequency:	±0.1% reading ±1 digit in 45...65 Hz range
Active energy:	Class 1 according to IEC/EN62053-21
Reactive energy:	Class 2 according to IEC/EN62053-23
DISPLAY & KEYBOARD	
Display:	Backlighted LCD,43x29 mm
	3 rows,4 digits + symbols
Keyboard:	3 front buttons + 1 protected button
COMMUNICATION PORT	
Type:	RS485 optoisolated or Ethernet (RJ45)
Protocols:	MODBUS RTU/ASCII in case of RS485 port
	HTTP, NTP,DHCP,MODBUS TCP in case of Ethernet port
Baud rate:	300 ... 57600 bps in case of RS485 port
	10/100 Mbps in case of Ethernet port
DIGITAL OUTPUT (DO)	
Type:	Passive optoisolated
Maximum values (according to IEC/EN62053-31):	27 VDC- 27 mA
Energy pulse length (only for DO in pulse mode):	50 ±2ms ON time
Maximum output reaction time (only for DO in alarm mode):	1 s
WIRE DIAMETER FOR TERMINALS	
Measuring terminals (A & V):	1.5 ... 6 mm^2
Terminals for digital output,AUX input,RS485 port:	0.14 ... 2.5 mm^2
SIZE & WEIGHT	
LxHxP, W:	72x90x65 mm,max 436 g
ENVIRONMENTAL CONDITIONS	
Operating temperature:	-25°C... +55°C(3K6)
Storage temperature:	-25°C... +75°C(2K3)
Max humidity (without condensation):	80%
Sinusoidal vibration amplitude:	50 Hz ±0,075 mm
Protection degree- frontal part:	IP51 (granted only in case of installation in a cabinet with at least IP51 protection degree)
Protection degree - terminals:	IP20
Pollution degree:	2
Installation and use:	Internal
STANDARD COMPLIANCE (for the parts applicable for the instrument)	
Directives:	2006/95/EC,2004/108/EC
Safety:	EN 61010-1,EN 61010-2-030
EMC:	EN 61326-1, EN 55011, EN 61000-4-2, EN61000-4-3, EN61000-4-4,
	EN61000-4-5,EN61000-4-6,EN61000-4-11,EN61000-6-2

15 DIGIT ORDER CODE

UPM209RGW

Labelling — APK
A = Algodue
C= Custom (instrument name on display,label,manual,Web server if present)

User instructions — M
M = Multilingual guide (English, Italian, German,French)

Auxiliary power supply — A
A = 85...265 VAC

Rogowski coil length
3 = No. 3 MFC150 30 cm (internal Ø~10 cm),3 m cable
4 = No. 3 MFC150 45 cm (internal Ø~14 cm),3 m cable
7 = No. 3 MFC150 70 cm (internal Ø~22 cm),3 m cable
9 = No. 3 MFC150 90 cm (internal Ø~29 cm),3 m cable

Communication port
5 = RS485 for MODBUSRTU/ASCII communication
W = Ethernet for HTTP,MODBUSTCP communication

Sign representation in Modbus protocol
1 = Sign bit
2 = 2's complement

X

Version — H
H = ENH- extended parameter set and functions

Memory — 8
8 = 8 MB

Voltage and current THD & Harmonics — 3
3 = THD values + Harmonics up to 15th

Apparent energy counter
S = Separated Inductive&Capacitive counters
T = Total counters (Ind+Cap)

X

AVAILABLE FEATURES	RS485	Ethernet
DO- Digital output	✓	
WintoolNET for instrument remote management	✓	✓
Web server for instrument remote management		✓

LEGEND:

MAM+EC=8MBmemory,real time params MIN/AVG/MAXrecording (up to 24 params programmable), energy counter recording
DO=1digital output

DEFAULT CONFIGURATION	ORDER CODE	VERSION	NO.3 MFC150 INCLUDED		COMMUNICATION (Sign Bit in Modbus)		RECORDINGS	VAh COUNTER	I / O
		ENH	Length [cm]	Ø [cm]	RS485	ETH	MAM+EC	Sep. Ind&Cap	DO
UPM209RGW ENH KIT30 RS485	APKAMA351XH83SX	●	30	~10	●		●	●	●
UPM209RGW ENH KIT45 RS485	APKAMA451XH83SX	●	45	~14	●		●	●	●
UPM209RGW ENH KIT70 RS485	APKAMA751XH83SX	●	70	~22	●		●	●	●
UPM209RGW ENH KIT90 RS485	APKAMA951XH83SX	●	90	~29	●		●	●	●
UPM209RGW ENH KIT30 ETHERNET	APKAMA3W1XH83SX	●	30	~10		●	●	●	
UPM209RGW ENH KIT45 ETHERNET	APKAMA4W1XH83SX	●	45	~14		●	●	●	
UPM209RGW ENH KIT70 ETHERNET	APKAMA7W1XH83SX	●	70	~22		●	●	●	
UPM209RGW ENH KIT90 ETHERNET	APKAMA9W1XH83SX	●	90	~29		●	●	●	

Other order codes on request (MOQ 30 pcs)

NOTE:
- Subject to change without notice
- The code made up of 15 digits including the X

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