

UPM209

Multifunction three-phase meter connectable to MFC150 Rogowski coils

- 4 DIN modules compact version
- Fully bi-directional four quadrants measurements for all energies and powers
- Main electrical parameters measured and displayed for a cost-effective consumption analysis
- Version for 1 or 5A CT, for direct connection up to 6A or 80A or for Rogowski coils
- 4 current measurement scales for Rogowski model
- Up to 8 MB for data recording
- Possibility to record demand values for active & reactive powers (basic version) or MIN/AVG/MAX for all powers (ENH version)
- On request MODBUS RTU/ASCII communication by RS485 port or MODBUS TCP communication by LAN port
- Possibility to manage the instrument in remote mode by Wintool NET209 software or by Web server 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.

For the version with Rogowski coils, connections are very quick and easy, very useful for retrofitting applications on existing switchboards or for energy audit.

UPM209 is the ideal instrument to establish the measurement points on the plant.

On request, the instrument can communicate through the RS485 serial port by MODBUS RTU/ASCII protocol or through LAN port by MODBUS TCP protocol.

Furthermore, it is available the Wintool NET209 software for the instrument remote management. Web server interface is also available in case of instrument with LAN port: a very useful function that gives the possibility to manage the instrument by any PC connected on the LAN/Internet network.

» Benefits

- UPM209 provides fully and accurate information on the load in the measurement point and it allows to calculate the costs of the energy consumption.
- Data sent to PC allows 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 case of 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.
- Remote metering and cost allocation.

» Related Products

- MFC150
- Wintool NET209

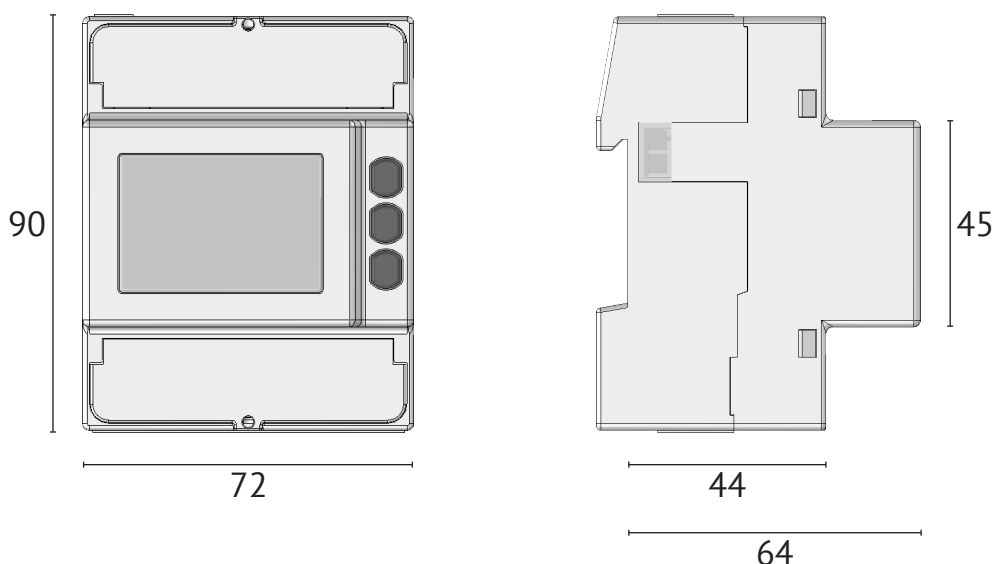
» Available configurations

		Basic	ENH
CURRENT INPUTS (make one choice only)	For 1/5A CT	●	●
	Direct connection up to 80A	●	●
	Rogowski inputs	●	●
POWER SUPPLY (make one choice only)	Self-powered (only for instrument without COM port)	●	
	AUX power supply (only for instrument with COM port)	●	●
COMMUNICATION PORT (make one choice only) (only for instrument with AUX power supply)	RS485 for MODBUS RTU/ASCII communication	○	●
	LAN for HTTP, MODBUS TCP communication	○	●
INSTRUMENT REMOTE MANAGEMENT (only for instrument with communication port)	Wintool NET209	●	●
	Web server (only for instrument with LAN port)	●	●
SIGN REPRESENTATION IN MODBUS PROTOCOL (make one choice only) (only for instrument with communication port)	Sign bit	●	●
	2's complement	●	●
MODBUS PROTOCOL RETRO-COMPATIBILITY - measurements reading (only for instrument with RS485 port)	UPT210	○	
1 or 2 DIGITAL OUTPUTS (DO) (1DO=only instrument with RS485 port, 2DO=only self-powered instrument)	For alarm events or pulse emissions	●	●
DIGITAL INPUT (only for self-powered instrument)	To synchronise the DMD values calculation	●	
SYNCHRONISATION MODE FOR THE DMD VALUES CALCULATION (*Digital input available only for self-powered instrument)	Fixed window/Digital input*, programmable	●	
	Fixed/Sliding window, programmable		●
MEMORY (only for instrument with AUX power supply)	1 MB	●	
	8 MB		●
RECORDINGS	AVG values for active and reactive powers	●	
	MIN/AVG/MAX values for all powers (programmable)		●
WIRING MODES (some modes may not be available for self-powered instrument)	Three phase, 4 wires, 3 currents (3.4.3)	●	●
	Three phase, 3 wires, 2 currents (3.3.2) (no Self-powered)	●	●
	Single phase (1ph)	●	●
THD & HARMONICS	Voltage and current THD values	○	
	Voltage and current THD values + Harmonics up to 15 th		○
APPARENT ENERGY COUNTERS (make one choice only)	Total counters	●	●
	Separated Inductive&Capacitive counters	●	●

LEGEND

- = Standard
- = Optional

» Technical drawing



» Measurements & recordings

INSTANTANEOUS VALUES		Basic	ENH
VOLTAGES	$V_{L1-N} - V_{L2-N} - V_{L3-N} - V_{L1-L2} - V_{L2-L3} - V_{L3-L1} - V_{\Sigma}$ [V]	●	●
CURRENTS (+/-)	$I_{L1} - I_{L2} - I_{L3} - I_N - I_{\Sigma}$ [A]	●	●
ACTIVE POWERS (+/-)	$P_{L1} - P_{L2} - P_{L3} - P_{\Sigma}$ [W]	●	●
REACTIVE POWERS (+/-)	$Q_{L1} - Q_{L2} - Q_{L3} - Q_{\Sigma}$ [var]	●	●
APPARENT POWERS (+/-)	$S_{L1} - S_{L2} - S_{L3} - S_{\Sigma}$ [VA]	●	●
POWER FACTORS (ind&cap)	$PF_{L1} - PF_{L2} - PF_{L3} - PF_{\Sigma}$	●	●
COS Ø (+/-)	$COS\varnothing_{L1} - COS\varnothing_{L2} - COS\varnothing_{L3}$	○	○
TANGENT Ø (+/-)	$TAN\varnothing_{L1} - TAN\varnothing_{L2} - TAN\varnothing_{L3} - TAN\varnothing_{\Sigma}$	●	●
VOLTAGE THD	$THDV_{L1} - THDV_{L2} - THDV_{L3} - THDV_{L1-L2} - THDV_{L2-L3} - THDV_{L3-L1}$ [V]	○	○
CURRENT THD	$THDA_{L1} - THDA_{L2} - THDA_{L3} - THDA_N$ [A]	○	○
FREQUENCY	f [Hz]	●	●
PHASE ORDER	Ph	●	●
DEMAND VALUES (DMD)		Basic	ENH
DMD CURRENTS (abs)	$I_{L1DMD} - I_{L2DMD} - I_{L3DMD} - I_{NDMD} - I_{\Sigma DMD}$ [A]	●	●
DMD ACTIVE POWERS (imp&exp)	$P_{L1DMD} - P_{L2DMD} - P_{L3DMD} - P_{\Sigma DMD}$ [W]	●	●
BALANCE OF DMD SYSTEM ACTIVE POWERS (+/-)	$P_{\Sigma DMDBAL}$ [W]	●	●
DMD REACTIVE POWERS (imp&exp)	$Q_{L1DMD} - Q_{L2DMD} - Q_{L3DMD} - Q_{\Sigma DMD}$ [var]	●	●
BALANCE OF DMD SYSTEM REACTIVE POWERS (+/-)	$Q_{\Sigma DMDBAL}$ [var]	●	●
DMD APPARENT POWERS (imp&exp)	$S_{L1DMD} - S_{L2DMD} - S_{L3DMD} - S_{\Sigma DMD}$ [VA]	●	●
BALANCE OF DMD SYSTEM APPARENT POWERS (+/-)	$S_{\Sigma DMDBAL}$ [VA]	●	●
DMD POWER FACTORS (imp&exp)	$PF_{L1DMD} - PF_{L2DMD} - PF_{L3DMD} - PF_{\Sigma DMD}$	●	●
MAX VALUES		Basic	ENH
MAX VOLTAGES	$V_{L1-NMAX} - V_{L2-NMAX} - V_{L3-NMAX} - V_{L1-L2MAX} - V_{L2-L3MAX} - V_{L3-L1MAX} - V_{\Sigma MAX}$ [V]	●	●
MAX CURRENTS (abs)	$I_{L1MAX} - I_{L2MAX} - I_{L3MAX} - I_{NMAX} - I_{\Sigma MAX}$ [A]	●	●
MAX ACTIVE POWERS (imp&exp)	$P_{L1MAX} - P_{L2MAX} - P_{L3MAX} - P_{\Sigma MAX}$ [W]	●	●
MAX REACTIVE POWERS (imp&exp)	$Q_{L1MAX} - Q_{L2MAX} - Q_{L3MAX} - Q_{\Sigma MAX}$ [var]	●	●
MAX APPARENT POWERS (imp&exp)	$S_{L1MAX} - S_{L2MAX} - S_{L3MAX} - S_{\Sigma MAX}$ [VA]	●	●
MAX POWER FACTORS (imp&exp)	$PF_{L1MAX} - PF_{L2MAX} - PF_{L3MAX} - PF_{\Sigma MAX}$	●	●
MAX TANGENT Ø (imp&exp)	$TAN\varnothing_{L1MAX} - TAN\varnothing_{L2MAX} - TAN\varnothing_{L3MAX} - TAN\varnothing_{\Sigma MAX}$	●	●
MAX VOLTAGE THD	$THDV_{L1MAX} - THDV_{L2MAX} - THDV_{L3MAX} - THDV_{L1-L2MAX} - THDV_{L2-L3MAX} - THDV_{L3-L1MAX}$ [V]	○	○
MAX CURRENT THD	$THDA_{L1MAX} - THDA_{L2MAX} - THDA_{L3MAX} - THDA_{NMAX}$ [A]	○	○
MAX DMD CURRENTS	$I_{L1MAXDMD} - I_{L2MAXDMD} - I_{L3MAXDMD} - I_{\Sigma MAXDMD}$ [A]	●	●
MAX DMD ACTIVE POWERS (imp&exp)	$P_{L1MAXDMD} - P_{L2MAXDMD} - P_{L3MAXDMD} - P_{\Sigma MAXDMD}$ [W]	●	●
MAX DMD REACTIVE POWERS (imp&exp)	$Q_{L1MAXDMD} - Q_{L2MAXDMD} - Q_{L3MAXDMD} - Q_{\Sigma MAXDMD}$ [var]	●	●
MAX DMD APPARENT POWERS (imp&exp)	$S_{L1MAXDMD} - S_{L2MAXDMD} - S_{L3MAXDMD} - S_{\Sigma MAXDMD}$ [VA]	●	●
MIN VALUES		Basic	ENH
MIN ACTIVE POWERS	$P_{\Sigma MIN}$ [W]	●	●
MIN REACTIVE POWERS	$Q_{\Sigma MIN}$ [var]	●	●
MIN APPARENT POWERS	$S_{\Sigma MIN}$ [VA]	●	●
COUNTERS		Basic	ENH
ACTIVE ENERGY (imp&exp)	$kWh_{L1} - kWh_{L2} - kWh_{L3} - kWh_{\Sigma}$ [Wh]	●	●
BALANCE OF SYSTEM ACTIVE ENERGY	$kWh_{\Sigma BAL}$ [Wh]	●	●
REACTIVE ENERGY (imp&exp) (ind&cap)	$kvarh_{L1} - kvarh_{L2} - kvarh_{L3} - kvarh_{\Sigma}$ [Wh]	●	●
BALANCE OF SYSTEM REACTIVE ENERGY (ind&cap)	$kvarh_{\Sigma BAL}$ [Wh]	●	●
APPARENT ENERGY (imp&exp) (ind&cap on request)	$kVAh_{L1} - kVAh_{L2} - kVAh_{L3} - kVAh_{\Sigma}$ [Wh]	●	●
BALANCE OF SYSTEM APPARENT ENERGY (ind&cap on request)	$kVAh_{\Sigma BAL}$ [Wh]	●	●
INSTALLATION HOUR COUNTER	HRCNTi [h]	●	●
MEASUREMENT HOUR COUNTER	HRCNTm [h]	●	●
HARMONIC ANALYSIS UP TO 15 th		Basic	ENH
VOLTAGE HARMONICS	$V_{L1-N} - V_{L2-N} - V_{L3-N} - V_{L1-L2} - V_{L2-L3} - V_{L3-L1}$ [V]	○	○
CURRENT HARMONICS	$I_{L1} - I_{L2} - I_{L3} - I_N$ [A]	○	○
RECORDINGS (function not available for instrument without communication port)		Basic	ENH
AVG ACTIVE POWERS (imp&exp)	$P_{L1} - P_{L2} - P_{L3} - P_{\Sigma}$ [W]	●	●
AVG REACTIVE POWERS (imp&exp)	$Q_{L1} - Q_{L2} - Q_{L3} - Q_{\Sigma}$ [var]	●	●
MIN/AVG/MAX ACTIVE, REACTIVE, APPARENT POWERS, programmable (imp&exp)	$P_{L1} - P_{L2} - P_{L3} - P_{\Sigma} - Q_{L1} - Q_{L2} - Q_{L3} - Q_{\Sigma} - S_{L1} - S_{L2} - S_{L3} - S_{\Sigma}$	●	●

LEGEND

● = Standard

○ = Optional

+/- = 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:	Self-powered model: 180 ... 285 VAC (Line-Neutral) Auxiliary power supply (AUX) model: 85 ... 265 VAC
Max consumption (per phase):	3,5 VA - 1W
Frequency:	50/60 Hz
VOLTAGE INPUTS	
Voltage range:	Self-powered model: 3x180/310 ... 3x285/495 VAC Auxiliary power supply (AUX) model: 3x10/17 ... 3x285/495 VAC
CURRENT INPUTS	
Maximum value:	A) 1/5A CT model: 6A B) 80A model: 80A C) Rogowski model: 4 selectable scales, 70/500/3000/25000A
TYPICAL ACCURACY	
Voltage:	±0.2% reading, 10% fs...fs
Current:	±0.4% reading, 5% fs...fs
Power:	±0.5% reading ±0.1% fs (PF=1)
Frequency:	±0.1% reading ±1 digit from 45 to 65 Hz
Active energy class 1 according to:	IEC/EN 62053-21
Reactive energy class 2 according to:	IEC/EN 62053-23
DISPLAY & KEYBOARD	
Display:	Backlighted LCD, 43x29 mm 3 rows, 4 digits + symbols
Keyboard:	3 front buttons + 1 protected button
COMMUNICATION PORT	
Type:	RS485 optoisolated, on request LAN on request, RJ-45 connector
Protocols:	MODBUS RTU/ASCII in case of RS485 port HTTP, NTP, DHCP, MODBUS TCP in case of LAN port
Baud rate:	300 a 57600 bps in case of RS485 port 10/100 Mbps in case of LAN port
DIGITAL OUTPUT/S (DO)	
Type:	Passive optoisolated
Maximum values (according to IEC/EN 62053-31):	27 V _{DC} - 27 mA
Energy pulse length (only for DO in pulse mode):	50 ±20ms ON time
Output reaction time (only for DO in alarm mode):	max 1 s
WIRE DIAMETER FOR TERMINALS	
Measuring terminals (A & V):	A) 1/5A CT model: 1,5 ... 6 mm ² B) 80A model: 1,5 ... 35 mm ² C) Rogowski model: 1,5 ... 6 mm ²
Terminals for digital output, digital/AUX input, RS485 port:	0,14 ... 2,5 mm ²
SIZE & WEIGHT	
LxHxP, W:	72x90x65 mm, max 436 g
ENVIRONMENTAL CONDITIONS	
Mechanical environmental:	M1
Electromagnetic environmental:	E2
Operating temperature:	tra -25°C e +55°C
Storage temperature:	tra -25°C e +75°C
Humidity (without condensation):	max 80%
Sinusoidal vibration amplitude:	50 Hz ±0,075 mm
Protection degree - frontal part (granted only in case of installation in a cabinet with at least IP51 protection degree):	IP51
Protection degree - terminals:	IP20

INTERNAL USE

15 DIGIT ORDER CODE

UPM209 BASIC

Labelling

A = Algodue

C = Custom (instrument name on display, label, manual, key colour)

User instructions

M = Multilingual guide

Power supply

S = Self-powered (only with Communication port X)

A = Auxiliary power supply, 85 ... 265 VAC (only with Communication port 5 or W)

Current inputs

6 = For 1/5A CT

8 = 80A direct connection

R = Rogowski inputs

Communication port

X = None (only with Power supply S)

5 = RS485 for MODBUS RTU/ASCII communication (only with Power supply A)

W = LAN for HTTP, MODBUS TCP communication (only with Power supply A)

Sign representation in Modbus protocol

X = None (only with Communication port X)

1 = Sign bit (only with Communication port 5 or W)

2 = 2's complement (only with Communication port 5 or W)

Modbus protocol retro-compatibility

X = None

A = UPT210 measurements reading (only with Communication port 5)

Version

B = Basic - up to 25 measurements, active & reactive power
DMD recording (only with Communication port 5 or W), Wintool NET209
management software (only with Communication port 5 or W)

Memory

X = None (only with Power supply S)

1 = 1 MB

THD

X = None

2 = Voltage and current THD values (only with Communication port 5 or W)

Apparent energy counter

S = Separated Inductive & Capacitive counters

T = Total counters

APR

M

B

X

DEFAULT FEATURES

	UPM209 BASIC		
	NO COM instrument	RS485 instrument	LAN instrument
DI - Digital input	1		
DO - Digital output/s	2	1	
Wintool NET209 for instrument remote management		•	•
Web server for instrument remote management			•

NOTE:

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

15 DIGIT ORDER CODE

UPM209 ENH

Labelling

A = Algodue**C** = Custom (instrument name on display, label, manual, key colour)

User instructions

M = Multilingual guide

Power supply

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

Current inputs

6 = For 1/5A CT**8** = 80A direct connection**R** = Rogowski inputs

Communication port

5 = RS485 for MODBUS RTU/ASCII communication**W** = LAN for HTTP, MODBUS TCP communication

Sign representation in Modbus protocol

1 = Sign bit**2** = 2's complement

Version

H = ENH - up to 45 measurements, MIN/AVG/MAX power recording (programmable), Wintool NET209 management software

Memory

8 = 8 MB

THD & Harmonics

X = None**3** = Voltage and current THD values + Harmonics up to 15th

Apparent energy counter

S = Separated Inductive & Capacitive counters**T** = Total counters

APR

M

A

X

H

8

X

DEFAULT FEATURES

	UPM209 ENH	
	RS485 instrument	LAN instrument
DO - Digital output	1	
Wintool NET209 for instrument remote management	•	•
Web server for instrument remote management		•

NOTE:

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