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UBN309RGW ‹KIT30, KIT45, KIT70, KIT90›
DIN 96x96 multifunction three-phase meter with Rogowski coils

- DIN 96x96 ultra compact version, only 39 mm depth
- Fully bi-directional four quadrants measurements for 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
- MODBUS RTU communication by RS485 port or MODBUS TCP communication by Ethernet port
- Possibility to manage the instrument in remote mode by WintoolNET software or by Web interface
- 2 digital outputs, 1 digital input
- Accuracy class 0.5 according to IEC/EN 61557-12 for active power/energy

» General features

UBN309 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.

UBN309 is the ideal instrument to establish the measurement points on the plant.

The instrument can communicate through the RS485 serial port by MODBUS RTU protocol or through Ethernet port by MODBUS TCP protocol.

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 PC connected on the network.

» Benefits

- UBN309 provides fully and accurate information on the load in the measurement point and it allows to calculate the costs of the energy consumption.
- Data read by 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
- WintoolNET

» Available features

CURRENT INPUTS	Rogowski inputs (3 MFC150 included)	●
AUXILIARY POWER SUPPLY (**make one choice only**)	115 VAC ±15% (only for instrument with RS485 port)	●
	230 VAC ±15% (only for instrument with RS485 port)	●
	85…265 VAC / 110 VDC ±15%	●
COMMUNICATION PORT (**make one choice only**)	RS485 for MODBUS RTU communication	●
	Ethernet for HTTP, MODBUS TCP 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	●
2 DIGITAL OUTPUTS	For alarm events or pulse emissions	●
DIGITAL INPUT	To synchronise the DMD value calculation	●
DMD VALUE CALCULATION MODE	Digital input synchronisation, 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, 3 currents (3.3.3)	●
	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	●

LEGEND
● = Standard

» Technical drawing
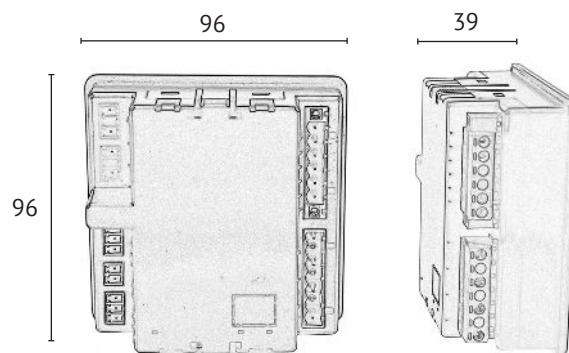
» Measurements & recordings

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**
POWER FACTOR (ind&cap)	PF_{L1} - PF_{L2} - PF_{L3} - PF_{Σ}	● **MAM**
DPF (+/-)	DPF_{L1} - DPF_{L2} - DPF_{L3}	● **MAM**
TANGENT Ø (+/-)	$TAN\emptyset_{L1}$ - $TAN\emptyset_{L2}$ - $TAN\emptyset_{L3}$ - $TAN\emptyset_{\Sigma}$	● **MAM**
VOLTAGE THD	$THDV_{L1}$ - $THDV_{L2}$ - $THDV_{L3}$ - $THDV_{L1-L2}$ - $THDV_{L2-L3}$ - $THDV_{L3-L1}$ [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 POWER FACTOR (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 POWER FACTOR (imp&exp)	PF_{L1MAX} - PF_{L2MAX} - PF_{L3MAX} - $PF_{\Sigma MAX}$	●
MAX TANGENT Ø (imp&exp)	$TAN\emptyset_{L1MAX}$ - $TAN\emptyset_{L2MAX}$ - $TAN\emptyset_{L3MAX}$ - $TAN\emptyset_{\Sigma MAX}$	●
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 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	DMDBAL = Difference between the positive and negative demand value: [DMD+] - [DMD-]
imp&exp = Values splitted in imported and exported	BAL = Difference between the imported and exported value: [imp] - [exp]
abs = Absolute value	
ind&cap = Values splitted in inductive and capacitive	

» Specifications

POWER SUPPLY

Voltage range (according to the model):	Instrument with RS485 port: 230 VAC ±15%
	115 VAC ±15% **on request**
	85...265 VAC / 110 VDC ±15% **on request**
	Instrument with Ethernet port: 85...265 VAC / 110 VDC ±15%
Safety:	300 V CAT III
Frequency:	50/60 Hz

VOLTAGE INPUTS

Maximum measurable voltage:	600 VAC L-L
Safety:	300 V CAT III
Minimum voltage for FFT calculation:	20/35 VAC (multiplied by PT ratio in case of PT use) with direct connection
Input impedance:	›1.3 MOhm
Frequency:	45 - 65 Hz

CURRENT INPUTS

Maximum value:	3 selectable scales, 500/4000/20000 A
Starting current (I_{st}):	0.3 A for FSA 500 A, 1 A for FSA 4000 A, 10 A for FSA 20000 A
Minimum current for FFT calculation:	70 A for FSA 500 A, 400 A for FSA 4000 A, 1500 A for FSA 20000 A

TYPICAL ACCURACY / PERFORMANCE CLASS (device only)

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
Frequency:	±0.1% reading ±1 digit in 45...65 Hz range
Active power/energy:	Class 0.5 according to IEC/EN 61557-12
Reactive power/energy:	Class 2 according to IEC/EN 61557-12

DISPLAY & KEYBOARD

Display:	Backlighted LCD, 78x61 mm
	3 rows, 4 digits + symbols
Keyboard:	4 front buttons

COMMUNICATION PORT

Type:	RS485 optoisolated or Ethernet (RJ45)
Protocols:	MODBUS RTU in case of RS485 port
	HTTP, NTP, DHCP, MODBUS TCP in case of Ethernet port
Baud rate:	300 a 57600 bps in case of RS485 port
	10/100 Mbps in case of Ethernet port

2 DIGITAL OUTPUTS (DO)

Type:	NPN or PNP, passive optoisolated
Maximum values (according to IEC/EN 62053-31):	27 VDC - 27 mA
Energy pulse length (only for DO in pulse mode):	50 ±2ms ON time
Max output reaction time (only for DO in alarm mode):	1 s

DIGITAL INPUT (DI)

Type:	Optoisolated
Voltage range:	80 ... 265 VAC-DC

WIRE DIAMETER FOR TERMINALS

Measuring terminals (A&V):	2.5 mm² / 14 AWG
Terminals for I/O, AUX, RS485 port:	1.5 mm² / 16 AWG

SIZE & WEIGHT

LxHxP, W:	96x96x39 mm, max 310 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:	IP54 (granted only in case of installation in a cabinet with at least IP54 protection degree)
Protection degree - terminals:	IP20
Pollution degree:	2
Installation and use:	Internal

STANDARD COMPLIANCE (for the parts applicable for instrument)

Directives:	2014/30/EU, 2014/35/EU
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

ORDER CODE	ROGOWSKI KIT DETAIL Length [cm]	nt. diam. [cm]	VER. ENH	POWER SUPPLY Auxiliary	COMM. PORT with SIGN BIT in Modbus RS485	ETHERNET	APPARENT EN. COUNTER (VAh) SEPARATED Ind&Cap	I/O DI	DO	REMOTE MANAGEMENT WintoolNET	Web Server
ROGOWSKI COIL KIT: NO. 3 MFC150 INCLUDED, 3 m CABLE											
1212.0001.0001	30	~7 (7x9)	●	230VAC ±15%	●		●	●	●	●	
1212.0002.0001	45	~13	●	230VAC ±15%	●		●	●	●	●	
1212.0003.0001	70	~21	●	230VAC ±15%	●		●	●	●	●	
1212.0004.0001	90	~27	●	230VAC ±15%	●		●	●	●	●	
1212.0009.0001	30	~7 (7x9)	●	85...265VAC/110VDC ±15%		●	●	●	●	●	●
1212.0010.0001	45	~13	●	85...265VAC/110VDC ±15%		●	●	●	●	●	●
1212.0011.0001	70	~21	●	85...265VAC/110VDC ±15%		●	●	●	●	●	●
1212.0012.0001	90	~27	●	85...265VAC/110VDC ±15%		●	●	●	●	●	●

OPTIONS AVAILABLE ONLY ON REQUEST (MOQ 30 PCS)

2'S COMPLEMENT for sign representation in Modbus protocol

TOTAL apparent energy counters (Ind+Cap)

PNP type digital outputs

115VAC ±15% or 85...265VAC/110VDC ±15% power suppply

CABLE LENGTH different from standard (3m): 5, 7, 10 m

To be indicated together with the selected order code from the list above.

<u>**LEGEND**</u>
ENH: Extended parameter set and functions - 8MB memory, real time parameters MIN/AVG/MAX recording (up to 24 parameters programmable), energy counter recording.
DI: 1 digital input to synchronise demand value calculation.
DO: 2 NPN type digital outputs for alarm or pulse emission.
WintoolNET: Software for instrument remote management

NOTE: Subject to change without notice

Energy- and Load Management
OPTIMIZE

CONSULT
Energy Services

berg

MEASURE
Measurement- and Data Technology

Berg GmbH
Fraunhoferstr. 22
82152 Martinsried
T +49 89 379 160 0
F +49 89 379 160-199
info@berg-energie.de
www.berg-energie.de