MAP Range

HV / MV / LV electrical power quality analyzers – Class A

PRODUCT ADVANTAGES

- **COMPLIANT** with the EN 61000-4-30 standard, Class A
- **DETECTION** of the fault **LOCATION DIRECTION** (upstream/downstream) for products with current channels
- **ANALYSIS OF TRANSIENTS** with a high, variable sampling frequency
- **MEASUREMENT OF HARMONICS** (up to 50th order) and **INTERHARMONICS** (up to 50th group)
- **FLICKER MEASUREMENT:** Ifl, Pst, Plt
- **PROCESSING** of the data according to the EN 50160 standard

Communication port: local, modem, integrated Ethernet, multi-point

Status LED: phase order and template overrun

Communication couplers: local, modem, Ethernet

General specifications

The products in the **MAP** range, mounted on a platen or on the cabinet backplate, measure all the parameters of HV/MV/LV electrical networks: RMS voltage, frequency, THD, level of unbalance, positive/negative/zero sequence voltage, flicker, harmonics up to the 50th order, interharmonics up to the 50th group. For products with current channels: RMS current, THDI, active, reactive and apparent power, cos φ, power factor, power values of harmonics, energy values (calculated by the software).

The products in the **MAP** range record and, via the associated software, provide detailed, comprehensive and continuous analysis of the quality of the electricity supplied according to the applicable standards, particularly EN 50160: voltage variations (voltage dips, swells and outages), rapid variations (transient overvoltages), flicker or rapid voltage fluctuations…

Various communication modes are available for remote retrieval of the data and detailed analysis of all the parameters recorded. On some models, additional 20 mA analogue inputs can be used to:

- monitor physical parameters from a 20 mA transducer
- monitor statuses such as circuit-breaker contacts and protection relays via suitable couplers
- trigger waveform capture by a digital channel via a digital input/20 mA signal coupler
- check the equipment transmitting binary signals

MAP 607

Single-phase analyzer – Class A

- 2 voltage channels: phase/neutral and phase/neutral-earth
- Plug & play: no driver required
- USB 2.0 communication port
- Configuration for voltage dips, overvoltages and transient disturbances
- Class A according to IEC 61000-4-30
- Measurement of all the power quality parameters according to the predefined standard (EN 50160, etc.)
- Direct indication on the product:
  Green LED: parameters OK
  Red LED: parameters outside profile

Management and analysis software

- Qual-SRT: configuration and real-time display
- Qual-view: analysis and reports

Inputs			
Voltage input (Phase-Neutral)	0-300 V RMS	Standard measurement (Class A)	1
Voltage input (Phase/Neutral-Earth)	0-300 V RMS, 700 Vpk		1
Power supply			
Power supply range		Power supply via voltage input	Yes
Internal back-up			Yes
Compliance with standards			
Sliding reference			Yes
IEC 61000-4-30, Class A	< 0.1%	Reference equipment	Yes
IEC 61000-4-7		Measurement of harmonics	Yes
IEC 61000-4-15		Flicker measurement	Yes
EN 50 160 (European Norm)		Calculated in the unit	Yes
PQDIF format			Option
Hardware			
Memory		Circular Flash Memory (NAND)	64 MB
Sampling rate			12.8 kHz (x 2)
Accuracy		Class A	< 0.1%
Resolution			16 bits
Input impedance – Input voltage			10 MΩ
Anti-aliasing filter			Yes
Bandwidth			3.5 kHz
PLL Synchronization			Yes
Communication			
USB port	2.0 (full-speed)	For PC connection, detected automatically Driver not required	Yes
Measurement specifications			
All power quality parameters are measured and stored		Voltage (avg/min/max), Frequency, THD, Harmonics (up to 50th order), Flicker (Ifl, Pst, Plt)	Yes
Analysis of rapid disturbances		Dips/swells (RMS 1/2 cycle), transients	Yes
Waveform capture		Programmable pre-time and post-time	Max. duration 200 cycles
Mechanical specifications			
Housing	For 230 V socket	Humidity: 10% - 85% without condensation	
Dimensions (L x H x D)	120 x 65 x 65 mm		
Weight	0.3 kg	Safety: EN 61 010-1	
Operating temperature	-10°C +55°C	EMC: EN 58 081-1,2; EN 50 082-1,2	

TO ORDER

	Reference
Package includes: - MAP607 - mini USB cable - Qual-view and Qual-SRT software - carrying case	MAP607-P

MAP Range

Permanent analyzers - Three-phase

		Voltage	Voltage / Current	
Inputs	**Specifications**	**MAP 610**	**MAP 620**	**MAP 640**
Voltage	0-275/400 VRMS, 400/690 V (option)	3	3	3
HF voltage	0-275 VRMS (6 kV), high frequency (2 MHz)	-	-	3
Current	0-6 A RMS	-	4	4
General	0-20 mA analogue inputs	-	4	4
Network quality parameters				
Voltage	Min, Max, average values	X	X	X
Frequency		X	X	X
Unbalance		X	X	X
Lfl, Pst and Plt flicker	Pst 10 min, Plt 2 h, Selectable storage range	X	X	X
Signalling voltages	< 3,000 Hz	X	X	X
THD-F		X	X	X
Individual harmonics	Up to 50th order	X	X	X
Interharmonics	Up to 50th group	X	X	X
Voltage surges	Number of times and variation (%)	X	X	X
Sliding reference	Complies with IEC 61000-4-30 Class A	X	X	X
Other parameters				
Current	Min, Max and average values	-	X	X
Current harmonics	Up to 50th order	-	X	X
Power measurement	P/Q/S, PF/cosφ	-	X	X
Energy measurement in the software	active, reactive, apparent	-	X	X
Event-related				
Dips / overvoltages / interruptions / outages	1/2-1 cycles RMS, Class A	X	X	X
Calculation of event direction	Upstream/Downstream	-	X	X
Signature recording	12.8 kHz, half-period RMS curve	X	X	X
Pre-/post-triggering	Pre/post configurable, Pre+Post ≤15 s	X	X	X
Waveform recording	Configurable up to 12.8 kHz	X	X	X
Pre-/post-triggering	Pre/post configurable, Pre+Post ≤20 cycles	610-300	X	X
HF transients, peak detection	2 MHz	610-300	X	X
Recording of waveforms and HF transients		-	-	X
Power supply				
Power supply input range	85-264 Vac / 110-375 Vdc, (47-63 Hz)	X	X	X
Internal back-up		X	X	X
Compliance with standards				
IEC 61000-4-30, Class A	< 0.1%, reference standard	X	X	X
IEC 61000-4-7	Measurement of harmonics	X	X	X
IEC 61000-4-15	Flicker measurement	X	X	X
EN 50 160	Calculated in the equipment	X	X	X
Customized reports	Calculated in the equipment	X	X	X
PQDIF format		Option	Option	Option
Hardware				
Memory	128 MB Flash memory (NAND)	X	X	X
Sampling frequency		12.8 kHz	12.8 kHz	12.8 kHz / 2 MHz
Voltage accuracy		< 0.1 %	< 0.1 %	< 0.1 %
Resolution		16 bit	16 bit	16/10 bit
Standard bandwidth / HF		3.5 kHz / -	3.5 kHz / -	3.5 kHz / 1 MHz
Input impedance - voltage input		1 MΩ	1 MΩ	1 MΩ
Input impedance – current input		-	10 mΩ	10 mΩ
Anti-aliasing filter		X	X	X
Communication				
RS-232	PC port	X	X	X
RS-232	Modems, external couplers, etc.	X	X	X
CL port	Current loop port	X	X	X
Ethernet port (RJ-45)	Ethernet port	Option	Option	Option
Mechanical specifications				
Dimensions (L x H x D) in mm		160 x 240 x 60	160 x 240 x 90	160 x 240 x 90
Weight		1.3 kg	1.3 kg	1.7 kg
Operating temperature		-10°C / +50°C	-10°C / +50°C	-10°C / +50°C

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Non-intrusive analyzers - Three-phase

		Voltage	Voltage / Current
Inputs	**Specifications**	**MAP 612-NI**	**MAP 620-NI**
Voltage	275/400 VRMS, reference equipment (Class A)	3	3
Voltage range	400/690 V RMS	Option	Option
HF voltage	high frequency (2 MHz)	-	-
Current via external sensor	120 A, 1.2 kA, 1 kA flex RMS selectable	-	4*
Network quality parameters			
Voltage	Min, Max and average values	X	X
Frequency		X	X
Unbalance		X	X
Lfl, Pst and Plt flicker	Pst 10 min, Plt 2 h, Selectable storage range	X	X
Signalling voltages	< 3,000 Hz	X	X
THD-F		X	X
Individual harmonics	Up to 50th order	X	X
Interharmonics	Up to 50th group	X	X
Voltage surges	Number of times and variation (%)	X	X
Sliding reference	Complies with IEC 61000-4-30 Class A	X	X
Other parameters			
Current	Min, Max and average values	-	X
Current harmonics	Up to 50th order	-	X
Power measurement	P/Q/S, FP/cosφ	-	X
Energy measurement in the software	active, reactive, apparent	-	X
Event-related			
Dips / overvoltages / interruptions / outages	1/2-1 cycles RMS, Class A	X	X
Calculation of event direction	Upstream/Downstream	-	X
Signature recording	12.8 kHz, half-period RMS curve	X	X
Pre-/post-triggering	Pre/post configurable, Pre+Post ≤15 s	X	X
Waveform recording	Configurable up to 12.8 kHz	-	X
Pre-/post-triggering	Pre/post configurable, Pre+Post ≤20 cycles	-	X
HF transients, peak detection	2 MHz	-	-
Recording of waveforms and HF transients		-	-
Power supply			
Power supply input range	85-264 Vac, (47-63 Hz) powered on phase 1 measurement	X	X
Separate power supply input	85-264 Vac / 110-375 Vdc, (47-63 Hz)	Option	Option
Internal back-up		X	X
Compliance with standards			
IEC 61000-4-30, Class A	< 0.1%, reference standard	X	X
IEC 61000-4-7	Measurement of harmonics	X	X
IEC 61000-4-15	Flicker measurement	X	X
EN 50 160	Calculated in the equipment	X	X
Customized reports	Calculated in the equipment	X	X
PQDIF format		Option	Option
Hardware			
Memory	128 MB Flash memory (NAND)	X	X
Sampling frequency		12.8 kHz	12.8 kHz
Voltage accuracy		< 0.1 %	< 0.1 %
Resolution		16 bits	16 bits
Standard bandwidth / HF		3.5 kHz / -	3.5 kHz / -
Input impedance – voltage input		1 MΩ	1 MΩ
Input impedance – current input		-	ext. sensor
Anti-aliasing filter		X	X
Communication			
RS 232	PC port	X	X
RS 232	Modems, external couplers, etc.	X	X
CL Port	Current loop port	-	-
Ethernet port (RJ-45)	Ethernet port	Option	Option
Mechanical specifications			
Dimensions (L x H x D) in mm		160 x 240 x 60	160 x 240 x 90
IP65 casing and connections		-	-
Weight		1.3 kg	1.3 kg
Operating temperature		-10 °C / +50 °C	-10 °C / +50 °C

* Accessory for external power supply for flex

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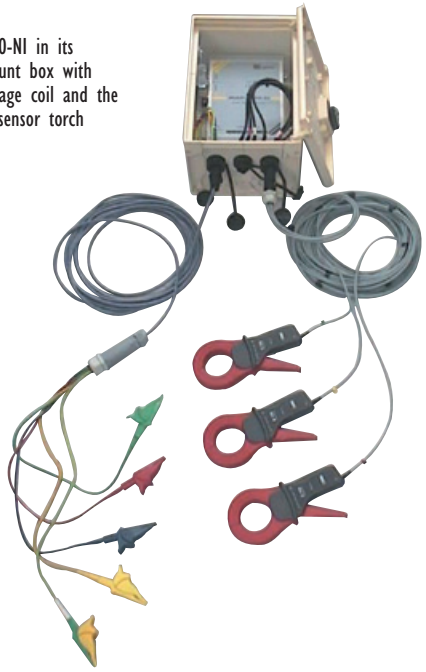
MAP Range

Self-powered analyzer – Measurement in pole-mounted boxes

MAP 620-NI in its pole-mount box with the voltage coil and the current-sensor torch



Output via leakproof connectors on the underside of the box

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Environment

Operating temperature:
-10°C to + 50°C
Relative humidity:
10% - 85%, without condensation
Installation category:
Category III, 600 V (300 V for the MAP607)
Pollution level: 2

Compliance with standards

Measurements:
- EN 61000-4-30: Voltage quality measurement method (Class A RMS values)
- EN 61000-4-7: General guide to harmonic and interharmonic measurements
- EN 61000-4-15: Test and measurement technique: flickermeter

Safety (Low Voltage Directive):
- EN 61010-1: Safety rules for electrical equipment for measurement, testing and laboratory use
- EN 60950: Safety of data processing equipment

Communication:
- Protocol compatible with the associated Qual-SRT, E.Qual-Premium and E.Qual-Premium Server software, TCP/IP encapsulation on internal Ethernet port (option)

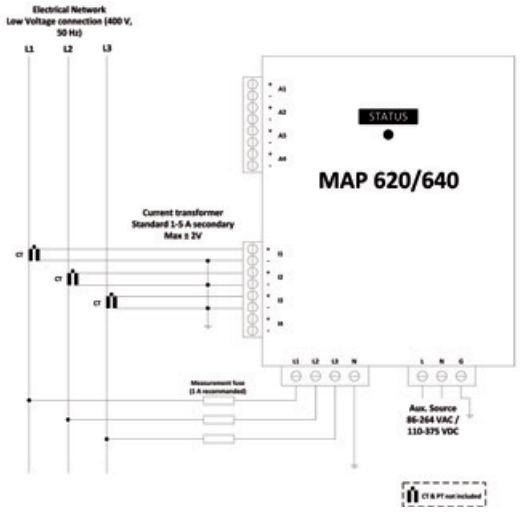
Electromagnetic compatibility:
- EN 61326-1: Instructions concerning EMC for electrical measurement, control and laboratory equipment including:
- EN 61000-4-2: Electrostatic discharge Level 3 (Air 8 kV / Contact 4 kV)
- EN 61000-4-3: Immunity to radiated electrostatic fields – Level 3 (10 V/m)
- EN 61000-4-4: Fast electrical transients – Level 4 (2 kV)
- EN 61000-4-5: Immunity to voltage surges – Level 4 (common mode 2 kV, differential mode 1 kV)
- EN 61000-4-6: Immunity to conducted disturbances – Level 3 (3 Vrms)
- EN 61000-4-8: Level 4 (30 A/m)
- EN 61000-4-11: Level 0 (duration 0.5 period – voltage dip and short interruption 100% U)
- EN 61000-4-12: Level 3 (common mode 2.5 kV / diff. mode 1.0 kV)
- CISPR 16-2-1, CISPR 16-2-3, EN55011 (EN5022 required by the generic standard EN 61326)

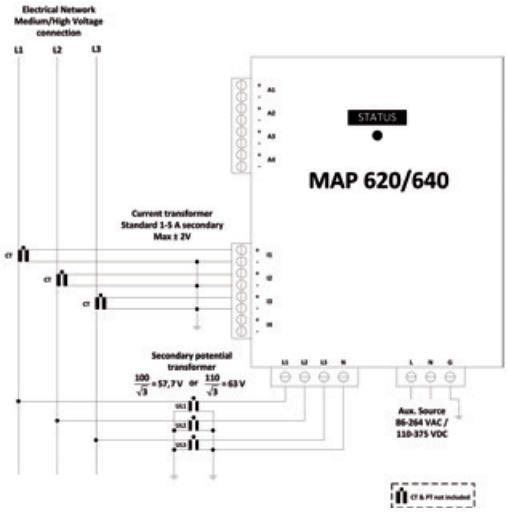
Mechanical specifications

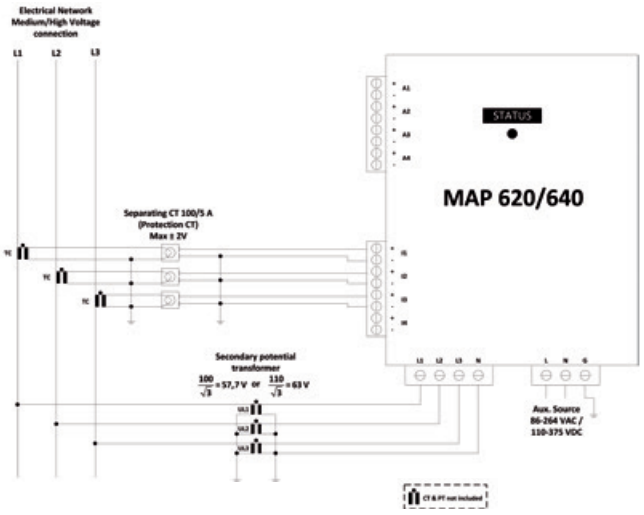
Weight:
- 1.3 kg (MAP 610, MAP612-NI, MAP 620 and MAP640)
- Mechanical shock test: EN60068-2-27: table 1: 30 g/18 m sec

Connection:
- 4 mm² cable for U and I
- 2.5 mm² cable for inputs/outputs

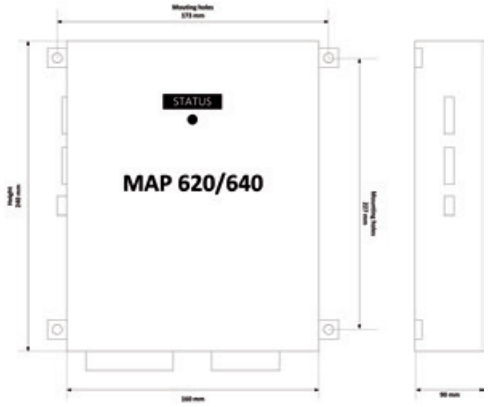
Electrical connections

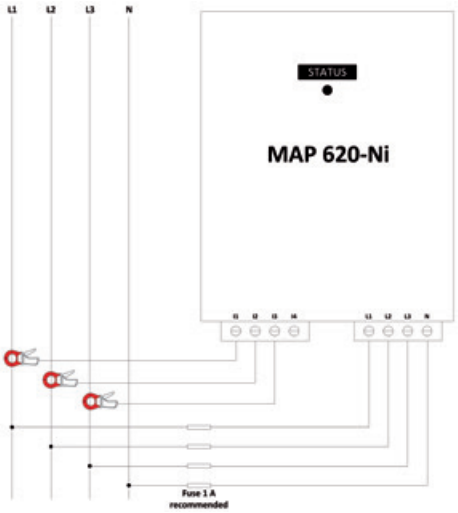






Dimensions

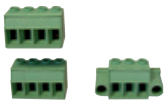
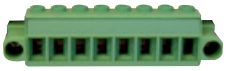




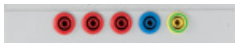
MAP Range

Connection systems

Permanent analyzers MAP

	MAP 610	MAP 620	MAP 640	MAP Compact
	Screw-on connectors			Screw-on connectors
Voltage				
Current	-			

Non-intrusive MAP

MAP 612-NI / Nix	MAP 620-NI / Nix
Quick connection systems	¼ turn connection systems
612-NI 	620-NI 
612-Nix (independent power supply) 	620-Nix (independent power supply) 

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Model
- 1: Three-phase voltage only
- 2: Three-phase voltage + Current
- 4: Three-phase voltage + Current + HF transient capture

Digital outputs
- -: No digital outputs
- C: Digital outputs

Communication
- 0: Without Ethernet port (only COM and MODEM)
- E: Without Ethernet port (+ COM and MODEM)

Power supply
- 0: Standard power supply (85-264 Vac / 110-375 Vdc)
- 4: 48 Vdc power supply

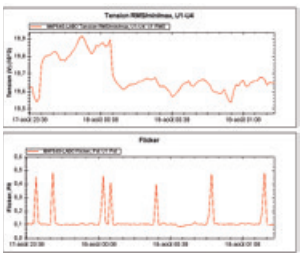
Voltage input range
- 0: Standard voltage input range (0-275/400 VRMS)
- 6: 690 VRMS (L-L) voltage input

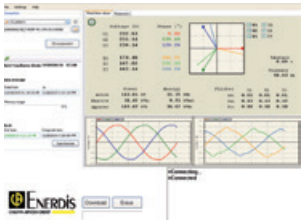
Example: • **order MAP640-E40** for a MAP640 Model + Without digital outputs + Ethernet port + 48 Vdc power supply
• **order MAP610C046** for a MAP610 Model + With digital outputs + Without Ethernet port + 48 Vdc power supply + 690 VRMS voltage inputs

MAP Compact

Compact Power Quality Analyzer– Class A with monitoring of EN50160 template and calculation of energy values

- Built-in display
- Measurement compliant with IEC 61000-4-30 Class A
- Integrated EN50160 report generation function
- Recording of voltage dips / swells / outages
- Waveform capture with programmable pre-time and post-time
- Measurement of power and energy values as primary quantities
- Communication interfaces
- Compact format for installation in existing cabinets
- Configuration and display software: Qual-SRTc, Qual-View
- Management and analysis software: E.Qual-Premium Server





Specifications

Inputs		Characteristics	
PH/N, PH/PH voltage input	3	0-364/0-630 VRMS	Impedance 1 MΩ
Current input	3	0-6 A RMS	Impedance 10 mΩ
CT and VT ratio	•	-	-
Sampling and algorithmic conformity			
Sampling	-	12.8 kHz / 16 bits	Anti-aliasing filter and PLL synchronization
Bandwidth	-	3.5 kHz	-
Network quality	-	IEC 61000-4-30 Class A	-
Harmonics	-	IEC 61000-4-7	50th order
Flicker	-	IEC 61000-4-15	-
Voltage surges	-	IEC 61000-3-3	-
Template monitoring	-	EN50160	-
Parameters measured			
Voltage	•	-	EN 50160
Frequency	•	-	EN 50160
Unbalance	•	-	EN 50160
Harmonics	•	-	EN 50160
Flicker (Pst, Plt, Ifl)	•	-	EN 50160
Current	•	-	10 mn
Power	•	P/Q/S, FP, cosφ	Selectable integration
Energy	•	kWh, kVArh	Selectable integration
Storage, communication and display			
Mini-USB	•	-	-
CL port	•	-	-
RS232 port	•	-	-
Ethernet port	Available as an option	-	-
Storage capacity	Flash, circular	64 MB	-
Display	Navigation keys	3 lines	U, I, events
Power supply and power reserve			
Power supply	-	175 Vac to 255 Vac	-
Internal power reserve	-	10 s	-
Mechanical specifications			
Dimensions	-	155 x 165 x 68 mm	-
Weight	-	0.9 kg	-
Operating temperature	-	-10°C to +55°C	-
Advantages	Integrated EN50160 reports Display Measurement of network quality and energy in kWh / kVarh Compact format		

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