ProQ 100

Revenue meter with leading edge power quality features

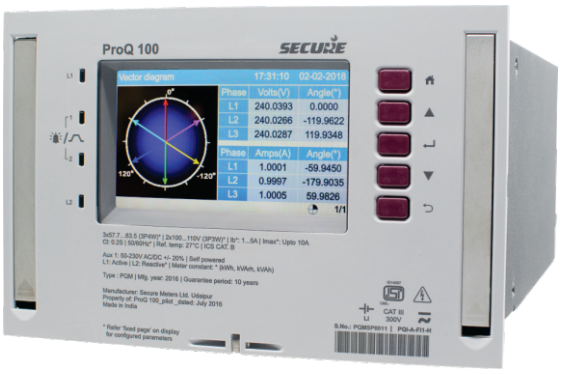
Advanced communications | High precision revenue metering | Power quality analytics

High precision, comprehensive power quality measurements multiple communications channels, easy integration

ProQ 100 is a true innovation that combines precision class revenue metering with leading edge power quality measurement. The product range covers HV and MV configurations for applications at different hierarchy levels in generation, transmission and distribution grids. ProQ 100 provides a wide range of features and meets high accuracy standards while providing power quality measurements in line with the latest power quality standards. ProQ 100 is well suited for use by grid operators and industrial customers to:

- Monitor and manage electricity grids and energy contracts
- Monitor supply quality and ensure regulatory compliance
- Analyze industrial plant supply networks for disturbances (origin) and impact on sensitive loads

With the flexibility to retrofit/upgrade existing systems, multiple communications channels and standard protocol support, ProQ 100 is easy to integrate with multiple systems for simultaneous communications (e.g. power quality monitoring, SCADA and remote meter reading applications).



Application

- High precision revenue metering
- Contracts requiring compliance with latest power quality standards e.g. IEC 61000-4-30 Class A
- Installations requiring compliance verification with voltage supply standards e.g. EN50160, IS 17036
- Requirement of harmonic control i.e. IEEE 519
- Harmonic analysis for power quality problems for both voltage & current upto 50th harmonic
- Integrated power quality monitoring and analysis solution for utility supply and industrial networks
- Providing metering and power quality (PQ) data to substation and industrial automation systems

Benefits

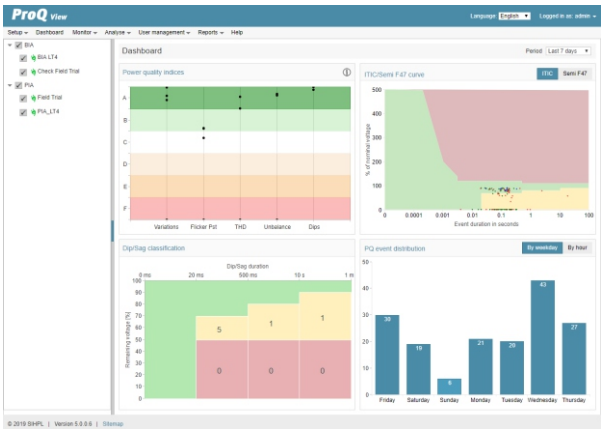
- Accurate measurements for energy contracts
- Power quality measurements in accordance with latest standards
- Multiple industry standard communications ports
- Multiple protocols for integration with SCADA and other automation systems (e.g. IEC 61850, Modbus)
- Easy retrofit for all rack-mounting meters
- Large, high-resolution graphical display with intuitive interface
- Comprehensive power quality monitoring and analytics, using ProQ View® software

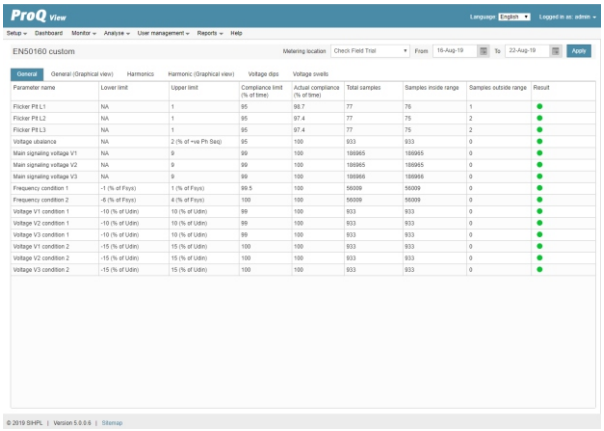
Features

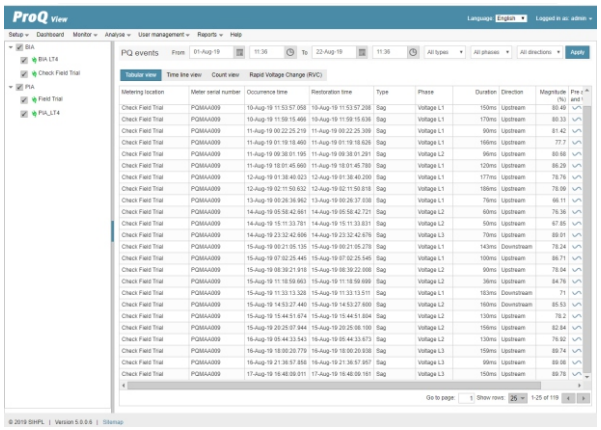
- PQ measurements certified to IEC 61000-4-30 class A and instrument to IEC 62586-2
- Power quality events logging for sag, swell, interruption and rapid voltage change
- Harmonics and inter-harmonics up to 50th order
- Distortion factors THD, TDD, THD-I, THD2550 and waveform quality indices e.g. K factor and crest factor
- Transients recording and reporting
- Unbalance including positive, negative and zero sequence measurements
- Comprehensive logging of instantaneous, energy and power quality parameters (dual loggers)
- Voltage and current recording for pre and post event analysis with RMS value (half-cycle) capture
- Built-in web server to access real-time values and powerful analytical capability through ProQ View
- Power Quality data interface using PQDIF over ftp

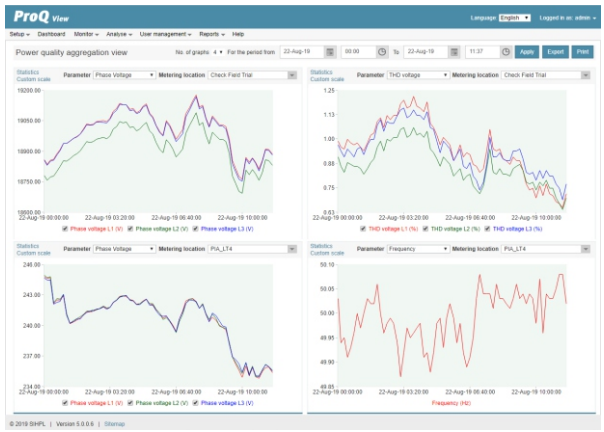
SECURE energy together

ProQ 100









High precision revenue metering

- Range covers HV3 and HV4 connections
- Accuracy as per IEC 62053-22 (Active, Class 0.2S) and IEC 62053-24 (Reactive, Class 0.5S)
- Highly accurate instantaneous parameter measurement. e.g. voltage, current power, frequency
- Error compensation for CT/VT and line losses (linear/non-linear)
- Two metrology LEDs for accuracy testing
- Wide-range dual auxiliary power supply
- Sealing options for utility metering
- Advanced revenue protection features

Power quality monitoring and analytics

ProQ 100 combined with ProQ View - Secure's web-based, state of the art software - provides power quality data acquisition and analysis for comprehensive monitoring of electrical and power quality parameters and overall system health.

Through the acquisition of instantaneous values, energy and power quality parameters, ProQ View provides data in graphical and tabular formats, as well as voltage compliance and harmonic reports.

From the raw data provided by ProQ 100, ProQ View provides a wide range of analytics, including:

- Intuitive dashboard for all critical power quality parameters
- Monitoring of power quality parameters and events
- Power quality compliance reporting to EN 50160, ITIC and SEMI F47
- Supply quality indices - SAIFI, SAIDI, CAIDI
- Monitoring TDD and THD for voltage and current
- Real-time data monitoring
- Reports and trend monitoring

Advanced features

- 1 Gb/s fibre/copper for high-speed data exchange between meter and system
- DLMS (serial and TCP), Modbus (RTU and TCP), with optional IEC 61850 protocol support
- Optical port for IEC1107 and ANSI C12.18 communications
- Simultaneous communication on all ports, including multiple sessions on ethernet
- Independent pulse input and output for integration with other devices/systems
- Time synchronization options through SNTP
- Large intuitive colour graphical display for real-time data viewing, vector diagrams, waveforms, harmonic spectrum analysis and configuration settings
- Two LEDs for status/event indication
- PQ data export in CSV format

Technical specifications

Electrical	
Connection types	HV4/HV3
Measurement voltage range	3 x 57.7/100 or 3 x 63.5/110 (3P4W) | 2 x 100....120 V (3P3W)
Measurement current range	In: 1..5A | Imax: up to 10 A (configurable)
Accuracy	
• Energy	Class: 0.2S
• Voltage	0.1% for measurement range of voltage & current
• Current	0.1% for measurement range of voltage & current
• Power	Class: 0.2S, or better for measurement range of voltage & current
• Frequency	±0.01 Hz
Burden of measurement inputs with auxiliary supply	Current circuit: <0.01 VA/phase @1A | <0.25 VA/phase @5A
Maximum overload voltage on voltage measurement inputs	1.5 x Vnom continuously | 2 x Vnom for 0.5 sec
Maximum overload current on current measurement inputs	1.2 x Imax continuously | 10 x Imax for 3 sec | 20 x Imax for 1 sec
Compliance	
Metering	IEC62052-11 and IEC62053-22, IEC62053-24, IS14697, IS15959
Power quality	IEC61000-4-30 Ed. 3 (Class A), IEC62586-2, IEC61000-4-7, IEC61000-2-4, IEC61000-3-8, IEC61000-4-15, EN50160, IS 17036, IEEE 519-2014, IEEE 1159.3 (PQDIF)
Safety	IEC61010-1
Electromagnetic compliance	CISPR 22 (class A) for radiated and conducted emissions IEC61000-4-2 (electrostatic discharge), IEC61000-4-3 (radiated susceptibility), IEC61000-4-4 (electric fast transients), IEC61000-4-5 (surge & impulse), IEC61000-4-6 (conducted susceptibility), IEC61000-4-12 (damped oscillatory waves)
Mechanical	
Dimensions	Rack as per DIN 43862 and IEC 60297
Sealing provision	Meter, rack and back terminals
Environmental	
IP compliance	Meter front fascia: IP 54 | Inside panel: IP20
Operating temperature	-20 ˚C to +60 ˚C
Limit range of operation	-40 ˚C to +70 ˚C
Storage temperature	-40 ˚C to +70 ˚C
Essailec® connectors	-10 ˚C to +55 ˚C
Communication	
Optical port	IEC1107 & ANSI C12.18
RS-232 port	Protocol: DLMS, Modbus (configurable) Baud rate: 1200 bit/s to 56 kbit/s, half duplex
RS-485 port	Protocol: configurable DLMS/MODBUS RTU Baud rate: 1200 bit/s to 56 kbit/s, half duplex
Ethernet port	Ethernet 1 over RJ-45, 10/100 Mbit/s Ethernet 2 SFP port 1 Gbit/s (for ethernet or FO termination) Optional IEC 61850 edition 1.0 and 2.0 on both ports
Power quality data	Power quality data exchange through IEEE 1159.3 PQDIF
USB port	Micro-B connector (DLMS)
Time synchronization	Through SNTP protocol

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Technical specifications

Power supply

Type	Self powered and auxiliary supply
Auxiliary supply range	50-230 V AC/DC +/- 20%, 50 Hz/60 Hz

Inputs and outputs

Independent fixed outputs	Fixed 4 outputs (24-230 V AC/DC @ 100 mA)
Independent configurable I/O	Configurable block of 4 I/Os (24-230 V AC/DC)

Display characteristics

Display type	4.3 inch colour graphical TFT display, size(105.5 x 67.2 mm), 480 x 272 pixels, pixel size (0.198 x 0.198 mm)
Languages	English, Swedish, German, French, Italian, Russian, Arabic (field configurable)
Remote display	Web server for monitoring and basic configuration Browser support: Google Chrome, IE9 or above

Measurements, data logging and analytics

Load profiling (typical)	- Two time-based loggers - Total 150 parameters configurable including both loggers - 28 energy channels, with integration period 1 to 60 minutes - Logging of more than 80 instantaneous and PQ parameters, with integration period 1 to 60minutes - Up to 300 days (@ 30 minute SIP for parameters 1..100) Up to 10 days (@ 1 minute SIP for parameters 1..100)
Logging and configurable parameters	- 16 time-of-use tariff, 16 seasons, 16 day types and 16 time zones, 53 billing dates, daylight saving dates for 25 years - Alarms and compartments for event logging - Logging of 24 sets of historical data logging - Logging of 65 days for daily energy snapshot
PQ measurement and event logging	- Measurements as per IEC 61000-4-30 ed. 3 class A - Logging of sags/swells, interruptions and RVC - Short- and long-term flicker values as per IEC 61000-4-15 - Unbalance and individual sequence parameters logging - Alarms on display for PQ and revenue events - Transients logging
Harmonic distortion	- Up to 50th individual harmonic for voltage and current inputs - THD, TDD, THD-I, THD2550 and K factor, Crest factor
Analytics	- Comprehensive analytics through ProQ View software

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