Prometer 540

Prometer 540 is a series of next-generation energy meters designed for bulk power transfer points requiring accurate and precise measurements, revenue protection and cyber security compliance. Flexible and highly modular communication interfaces ensure integration with AMR / AMI and the latest generation substation automation systems. Four quadrant of energy measurement allow for various types of revenue metering applications in electricity networks. Additionally, power quality measurements and reporting provide enhanced value to the utility.

Applications

- Bulk energy transfer and reconciliation. Examples: Power generation plants, conventional or renewable and transmission networks
- Online monitoring of bulk exchange points in the power network
- Integration into substation automation and SCADA / EMS systems to provide accurate electrical measurements
- Retrofit existing main and check statistical meters for grid code compliance

Benefits

- · Highest precision measurement for accurate billing and settlement at bulk energy transfer points
- · Measurements for supply quality assessment
- · Easy integration through multiple communication protocol interface
- Suitable for diverse applications through wide-range voltage, current and auxiliary supply inputs
- Easy to use and highly configurable communication modules
- Support of industry-standard DLMS, MODBUS and IEC 61850 reading protocols
- Field replaceable hot-pluggable communication modules
- Multilingual support on display (English, Swedish, German, French, Spanish, Italian, Russian, Arabic, Vietnamese and Indonesian)

Features

- 0.1 S accuracy for energy measurement as per IEC 62053-22 standard (edition 2.0)
- Wide-range dual auxiliary supply with options for AC / DC and self-power (VT powered)
- Large memory capacity for data storage
- Modular communication option with in-built 4G / RS-232 / RS-485 and Ethernet. All these ports are capable of simultaneous communication
- Multi communication protocols DLMS, MODBUS and IEC 61850 (editions 1 and 2)
- High-level DLMS security (data encryption and authentication)
- Harmonic measurement for voltage and current up to 50th order
- Powered RS-232 / RS-485 port for third-party modem integration
- Touch sense keypad
- Advance power quality features, including THD, sag, swell, voltage unbalance and interruption recording
- Dynamic error compensation for CT / VT
- Transformer / line loss adjustment (copper and iron losses)
- Intuitive graphical display including vector diagram, waveforms and bar chart for consumption
- Support of meter display over field-replaceable battery
- User configurable meter constant
- Dual loggers for energy and instantaneous parameters
- Flexible time-of-day tariff, maximum demand support, DST (daylight saving time) support with automatic billing dates
- Anomaly system events include critical meter cover and terminal cover open detection





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Data

security



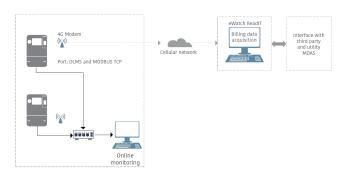
Prometer 540

Selection option for pluggable modules

Option	Left side module Select any one	Right side module Select any one
1	RS-232	RS-232 / RS-485 / Ethernet / IEC 61850
2	RS-485	RS-232 / RS-485 / Ethernet / IEC 61850
3	4G modem	RS-232 / RS-485 / Ethernet / IEC 61850
4	Ethernet	RS-232 / RS-485 / IEC 61850
5	IEC 61850	RS-232 / RS-485 / Ethernet

Note: Auxiliary supply is required if comms modules are selected as 4G modem in left side slot 1 and IEC 61850 in right side slot 2. In the absence of an auxiliary supply, self-powered supply priority would be applicable for IEC 61850.

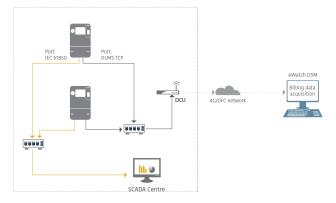
Billing data over 4G network and real time monitoring over Ethernet



Real time monitoring through multi-drop scheme over RS-485



Real time monitoring over IEC 61850 and billing data over Ethernet using gateway





Technical data display

Electrical

Connection type	HV3 / HV4 / LV4		
Measurement voltage range	Nominal voltage 57.7 to 240 V (L-N) / 100 to 415 V (L-L) 3P4W, 100 V to 120 V (L-L) 3P3W		
Measurement current range	1-10 A (configurable)		
Frequency	50 / 60 Hz As per compliance standards Class 0.1 S / 0.2 S		
Burden with auxiliary / self (VT) powered			
Accuracy			
Maximum withstand voltage	1.3 times of nominal voltage continuously 2 times of nominal voltage for 0.5 second		
Maximum withstand current	1.3 times of Imax continuously 10 times Imax for 1 second 20 times Imax for 0.5 second Standards IEC 62052-11, IEC 62053-22, IEC 62053-24, (as per edition 2.0) IEC 62052-31, IEC 62059-31-1, IEC 62056-21, CE, UKCA CoP, IEC 61850		
Compliance			
Environmental			
Ingress protection	IP54		
Operating temperature	-10°C to +55°C		
Limit range of operation	-25°C to +70°C		
Storage temperature	-25°C to +70°C		
Temperature coefficient	<0.05% / 10°C (UPF)		
Mechanical			
Dimension	276 x 176 x 90 mm (± 2 mm) (H x W x D)		
Weight	2 kg (+/- 200 gm)		
Software	 Two data loggers: Maximum 50 parameters configurable in each logger. Logging of up to 34 energy channels and 80+ instantaneous values, with integration period 1/5/10/15/20/30/60 minutes ~4800 Parameter-days capacity at 30-minute intervals in each logger, resolution up to 0.1mWh, data compression option to reduce meter reading time. Option for cumulative or consumption-based logging Configurable parameters: 16 time-of-use tariffs, 16 Seasons, 16 Day types and 16 time zones, 53 billing dates, DST for 25 years. Logging of up to 100 days for daily energy snapshots, 7 configurable display sequences along with fixed, auto and sealed button sequences, 50+ alarms and 10+ compartments for event logging Logging of up to 15 sets of historical data Up to 50th individual harmonic component measurement Power quality features, including voltage sag, swell, and unbalance recording. Supply quality report 		

Prometer 540

Technical specifications

Features

Burden: <10VA (Without communication) Display Graphical, with white backlight extended temperature range -20°C to +70°C Size: 69 x 39 mm (H x W), 128x80 pixels Pixel size: 0.5 mm² Max display character size 10 x 5 mm (H x W) Battery Field-replaceable battery for RTC backup and display viewing during power outage Imputs and outputs 4 fixed pulse outputs 4 configurable as pulse inputs / outputs • Pulse outputs: • Type: Volt-free, 100 mA Voltage: 48 - 240 V AC / DC Pulse width: 20 - 1000 ms (for both 50Hz and 60H2) • Configurable as pulse input / output: Pulse input type: Optical isolator Voltage: 24 - 240 V AC / DC Pulse input type: Optical isolator Voltage: 24 - 240 V AC / DC • Indicator: Four LEBS: 2 for alarms / events Communication Optical port R5-232 port Built-in supply of 9V, 4W, Protocol: DLMS, Baud rate: (300 bps sign on) 9600 - 19200 bps, Half duplex, MODE-E R5-2465 port Built-in supply of 9V, 4W, Protocol: DLMS, Baud rate; Inbuilt antenna, optional high gain extended antenna; Frequency bands 850, 900, 1800, 2100 MHz	Power supply	Self-powered supply Auxiliary supply 48-240 V DC ±10% or 110-240 V AC ±10%
extended temperature range -20°C to +70°C Size: 69: X 39 mm (H x W), T28x80 pixels Pixel size: 0.5 mm ³ Max display character size 10 x 5 mm (H x W) Battery Field-replaceable battery for RTC backup and display viewing during power outage Inputs and outputs 4 fixed pulse outputs 4 configurable as pulse inputs / outputs - Pulse output type: Volt-free, 100 mA - Voltage: 24 - 240 V AC / DC - Pulse input / output: - Pulse output type: Volt-free, 100mA - Pulse input type: Volt-free, 100mA - Pulse output type: Volt-free, 100mA - Pulse output type: Volt-free, 100mA - Pulse input		Burden: <10VA (without communication)
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Pixel size: 0.5 mm ² Max display character size 10 x 5 mm (H x W) Battery Field-replaceable battery for RTC backup and display viewing during power outage Inputs and outputs 4 fixed pulse outputs 4 configurable as pulse inputs / outputs - Pulse outputs: Type: Volt-free, 100 mA Voltage: 48 - 240 V AC / DC Pulse width: 20 - 1000 ms (for both 50Hz and 60Hz) - Configurable as pulse input / output: Pulse output ype: Volt-free, 100mA Voltage: 48 - 240 V AC / DC - Indicator: Four LEDs: 2 for metrology, 2 for alarms / events Communication Optical port Protocol: DLMS, Baud rate: (300 bps sign on) 9600 - 19200 bps, Half duplex, MODE-E Bs-232 port Baud rate: 9600 - 57600 bps, half duplex, MODE-E RS-485 port Baud rate: 9600 - 57600 bps, half duplex, MOBUS RTU, Baud rate: 9600 - 57600 bps, Mal0, 2100 MHz RS-485 port Protocol: Configurable and bulks / MOBBUS RTU, Baud rate: 9600 - 57600 bps, MoBUS STCP simultaneous client and IEC 61850 (separate communication module) Time synchronisation Internal crystal time or mains based time synchronised SNTP Connector type Standard R145 for all the ports except optical Accessories (optional) Panel mounting kit / RS-232 communication module / RS-485 communication		extended temperature range -20°C to +70°C
Max display character size 10 x 5 mm (H x W) Battery Field-replaceable battery for RTC backup and display viewing during power outage Inputs and outputs 4 fixed pulse outputs 4 configurable as pulse inputs / outputs • Pulse outputs: Type: Volt-free, 100 mA Voltage: 48 - 240 V AC / DC Pulse width: 20 - 1000 ms (for both 50Hz and 60Hz) • Configurable as pulse input / output: Pulse output type: Volt-free, 100mA Voltage: 48 - 240 V AC / DC • Pulse width: 20 - 1000 ms (for both 50Hz and 60Hz) • Configurable as pulse input / youtput: Pulse output type: Volt-free, 100mA Pulse input type: Optical Isolator • Voltage: 24 - 240 V AC / DC • Indicator: Four LEDs: 2 for metrology, 2 for alarms / events Communication Optical port R5-222 port Built-in supply of 9V, 4W, Protocol: DLMS, Baud rate: 9600 - 57600 bps, Half duplex Cellular comms module 40 fallback to 20, SIM: 40 enabled nano SIM card; Inbuilt antenna, optional high gain extended antenna; Frequency bands B50, 900, 1800, 2100 MHz R5-485 port Protocol: Configurable DLMS / MOBBUS RTU, Baud rate: 9600 - 57600 bps, Half duplex Ethernet port 10 / 100 Mbps, Protocol: DLMS, MOBUS RTU, Baud rate: 9600 - 57600 bps, Half duplex Cilent and IEC (61850 (separate communication module) Internal crystal time or mains based time synchronised SNTP Connector type Standard R145 for all t		Size: 69 x 39 mm (H x W), 128x80 pixels
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RS-485 port Protocol: Configurable DLMS / MODBUS RTU, Baud rate: 9600 – 57600 bps, Half duplex Ethernet port 10 / 100 Mbps, Protocol: DLMS, MODBUS TCP simultaneous client and IEC 61850 (separate communication module) Time synchronisation Internal crystal time or mains based time synchronised SNTP Connector type Standard RJ45 for all the ports except optical Accessories (optional) Panel mounting kit / RS-232 communication module / RS-485 communication		Inbuilt antenna, optional high gain extended antenna;
Baud rate: 9600 - 57600 bps, Half duplexEthernet port10 / 100 Mbps, Protocol: DLMS, MODBUS TCP simultaneous client and IEC 61850 (separate communication module)Time synchronisationInternal crystal time or mains based time synchronised SNTPConnector typeStandard RJ45 for all the ports except opticalAccessories (optional)Panel mounting kit / RS-232 communication module / RS-485 communication		Frequency bands 850, 900, 1800, 2100 MHz
Ethernet port10 / 100 Mbps, Protocol: DLMS, MODBUS TCP simultaneous client and IEC 61850 (separate communication module)Time synchronisationInternal crystal time or mains based time synchronised SNTPConnector typeStandard RJ45 for all the ports except opticalAccessories (optional)Panel mounting kit / RS-232 communication module / RS-485 communication	RS-485 port	Protocol: Configurable DLMS / MODBUS RTU,
client and IEC 61850 (separate communication module) Time synchronisation Internal crystal time or mains based time synchronised SNTP Connector type Standard RJ45 for all the ports except optical Accessories (optional) Panel mounting kit / RS-232 communication module / RS-485 communication		Baud rate: 9600 – 57600 bps, Half duplex
Time synchronisation Internal crystal time or mains based time synchronised SNTP Standard RJ45 for all the ports except optical Accessories (optional) Panel mounting kit / RS-232 communication module / RS-485 communication	Ethernet port	10 / 100 Mbps, Protocol: DLMS, MODBUS TCP simultaneous
SNTP Connector type Standard RJ45 for all the ports except optical Accessories (optional) Panel mounting kit / RS-232 communication module / RS-485 communication		client and IEC 61850 (separate communication module)
SNTP Connector type Standard RJ45 for all the ports except optical Accessories (optional) Panel mounting kit / RS-232 communication module / RS-485 communication	Time synchronisation	Internal crystal time or mains based time synchronised
Accessories (optional) Panel mounting kit / RS-232 communication module / RS-485 communication	-	
	Connector type	Standard RJ45 for all the ports except optical
	Accessories (optional)	Panel mounting kit / RS-232 communication module / RS-485 communication
	()	-

* Electrical, compliance, mechanical, software, features options depend on variant selected

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