

ION7300 series

Functions and characteristics

ROCKWELL CROSS REFERENCE PART NUMBER #PP9128



PowerLogic™ ION 7300 meter.

Used in enterprise energy management applications such as feeder monitoring and sub-metering, ION7300 series meters offer unmatched value, functionality, and ease of use. ION7300 series meters interface to ION Enterprise™ software or other automation systems to give all users fast information sharing and analysis.

ION7300 meters are an ideal replacement for analog meters, with a multitude of power and energy measurements, analog and digital I/O, communication ports, and industry-standard protocols. The ION7330 meter adds on-board data storage, emails of logged data, and an optional modem. The ION7350 meter is further augmented by more sophisticated power quality analysis, alarms and a call-back-on-alarm feature.

Applications

- Power monitoring and control operations.
- Power quality analysis.
- Cost allocation and billing.
- Demand and power factor control.
- Load studies and circuit optimisation.
- Equipment monitoring and control.
- Preventative maintenance.

Main characteristics

Accurate metering

Ensure metering accuracy with compliance to IEC 60687 class 0,5S standard.

Multiple communications options: Ethernet - Serial - Modem

Gateway functionality simplifies communications architecture and reduces leased line or connection costs. Concurrent, independent ports communicate with a variety of protocols such as ION, DNP 3.0, Modbus RTU, Modbus TCP and PROFIBUS DP.

Easy to read display

An easy-to-read front panel with a back-lit LCD screen supports local data display and basic setup.

Set automatic alarms

Use configurable event priorities, logical operators, and setpoints to define alarm conditions and set alarms.

Integrate with software

Easily integrate ION7300 meters with an energy management or SCADA system to provide remote display at a PC workstation, as well as remote configuration and manual control capabilities.

Notification of alarms via email

Alarm notifications sent via email to any workstation, cell phone, pager, or PDA.

Server for custom HTML pages

An on-board Web server combined with an Ethernet port offers quick and easy access to real-time energy and basic power quality information without special software.

Monitor dips and swells (ION7350)

Detect dips and swells on any voltage channel.

Interoperability expands existing networks (ION7330/7350)

The ION7330/ION7350 concurrently communicates via multiple protocols, allowing you to extend an existing Modbus, DNP, or Enterprise network.

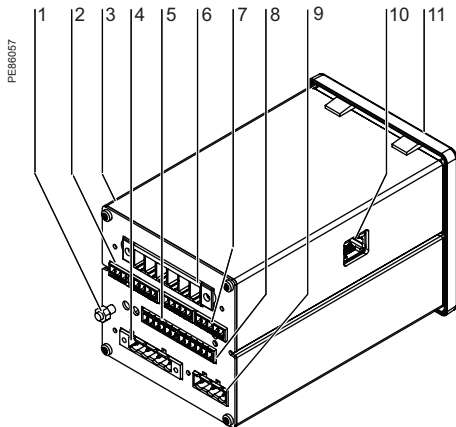
Memory (ION7330/7350)

Non-volatile memory (300kB) ensures that valuable information can be preserved between intervals.

Part numbers

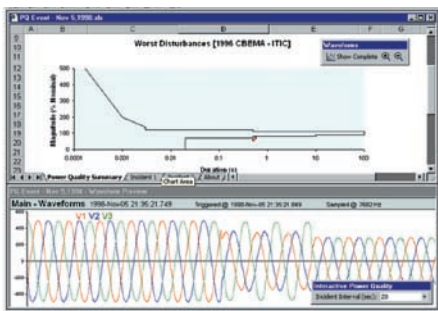
ION7300 series	
ION7300	M7300
ION7330	M7330
ION7350	M7350

Refer to the part number section for further explanations.



PowerLogic ION7300/ION7330/ION7350

- 1 Chassis Ground
- 2 Analog Inputs
- 3 Internal Modem Port
- 4 Voltage Inputs
- 5 Digital Outputs
- 6 Current Inputs
- 7 Digital Inputs
- 8 RS-485 Bus
- 9 Power Supply
- 10 Ethernet Port
- 11 IR Port



Disturbance waveform capture and power quality report.

Selection guide		ION7300	ION7330	ION7350
General				
Use on LV and HV systems		■	■	■
Current and voltage accuracy		0.25% + 0.05 % full scale		
Power accuracy	Real (kW)	0.5% reading		
	Apparent (kVA)	0.5% + 0.1%		
	Reactive (kvar)	1.5% reading		
Energy accuracy	Real (kWh)	0.5% reading		
	Apparent (kVAh)	1.0% reading		
	Reactive (kvarh)	1.5% reading		
Number of samples per cycle		32	32	64
Instantaneous rms values				
Current, voltage, frequency		■	■	■
Active, reactive, apparent power Total and per phase		■	■	■
Power factor Total and per phase		■	■	■
Energy values				
Active, reactive, apparent energy		■	■	■
Settable accumulation modes		-	■	■
Demand values				
Current Present and max.		■	■	■
Active, reactive, apparent power Present and max.		■	■	■
Predicted active, reactive, apparent power		■	■	■
Synchronisation of the measurement window		■	■	■
Setting of calculation mode Block, sliding		■	■	■
Power quality measurements				
Harmonic distortion Current, voltage		■	■	■
Individual harmonics		15th	15th	31st
Waveform capture		-	-	■
Detection of voltage dips and swells		-	-	■
Data recording				
Min/max of instantaneous values		■	■	■
Historical logs max. # of channels		-	32	96
Waveform logs max. # of channels		-	-	48
Trending / forecasting		-	-	■
Alarms		-	■	■
Time stamp resolution (s)		-	0.001	0.001
300 Kbyte memory		-	■	■
Display and I/O				
Display		■	■	■
Wiring self-test		■	■	■
Analog inputs / analog outputs		4/4	4/4	4/4
Digital status inputs/counter		-	4	4
Digital relay outputs		4	4	4
Communication				
RS-485 port		1	2	2
Modbus protocol		■	■	■
Ethernet (Modbus/TCP/IP protocols)		1	1	1
Ethernet gateway (EtherGate)		-	■	■
Internal modem		-	1	1
Modem gateway (ModemGate)		-	■	■
Infrared optical port		1	1	1
Profibus DP port		1	-	-
DNP 3.0 via serial, modem, IR ports		-	■	■
HTML page web server (WebMeter)		■	■	■

ION7300 series

Functions and characteristics (cont.)

PE66236



PowerLogic ION7300 remote terminal display.

Electrical characteristics

Type of measurement	True rms up to the 15th harmonic (31st for ION7350) 32 samples/cycle (64 for ION7350)		
Measurement accuracy	Current and voltage	0.25% + 0.05%	
	Power	Real: 0.5% reading Apparent: 0.5% + 0.1% Reactive (>5% FS): 1.5% reading	
		Frequency	± 0.01 Hz
		Power factor (at Unity PF)	± 1.5% reading
	Energy ⁽¹⁾	kWh: 0.5% reading kVAh: 1.0% reading kvarh: 1.5% reading	
Data update rate	1 second		
Input-voltage characteristics	Measured voltage	50 - 347 VAC L-N 3-phase (87-600 L-L) 50 - 300 VAC L-N single phase (100 - 600 L-L)	
	Metering over-range	25%	
	Overload withstand	1500 VAC continuous 3250 VAC for 1 second non-recurring	
	Impedance	>2 M Ohms/phase (phase - Vref)	
	Frequency range	40 - 70 Hz	
	Input-current characteristics	CT ratings	5 A nominal / 10 A full scale
Measurement range		20 mA - 10 A rms (+20%, 300 V rms to ground)	
Overload withstand		20 A continuous 500 A for 1 second non-recurring	
Burden		Worst case (at 10 A): 0.0625 VA	
Impedance		> 2 M Ohms/phase (phase-Vref)	
Power supply	AC	95 - 240 VAC (± 10%), (47 - 440 Hz)	
	DC	120 - 310 VDC (± 10%) 0.2 A worst case loading (12 W) at 100 VAC at 25°C	
	P24 option	20 to 60 VDC (± 10%)	
Input/outputs	4 Digital status inputs (7330/7350)	Self-excited (internal 30 VDC supply); Min pulse width: 25 msec; Max 40 transitions/sec	
	4 digital outputs	Form A Solid State; Max forward current: 80 mA Max voltage: 30 V	
	4 optional analog inputs	0-20 mA (scalable to 4-20 mA) option Input impedance: 24.3 Ohms; Accuracy: < ± 0.3% of full-scale; Update rate: 1 second; Max common mode voltage: 30 V; Sample rate: 16 samples/second 0-1 mA option same as above except: Input impedance: 475 Ohms	
	4 optional analog outputs	0-20 mA (scalable to 4-20 mA) option Max load drive capability: 500 Ohms; Accuracy: ± 0.3% of full-scale; Max common mode voltage: 30 V 0-1 mA option same as above except: Max load drive capability: 10 kOhms	

Mechanical characteristics

Weight	1.8 kg	
IP degree of protection	Integrated display: front IP 50; back IP 40 Transducer unit (no display): IP 40	
Dimensions	Standard model	96 x 96 x 162.2 mm
	TRAN model	60 x 100 x 164.5 mm

Environmental conditions

Operating temperature	-20 to +60° C ambient air	
Storage temperature	-30 to +85°C	
Humidity rating	5% to 95% non-condensing	
Altitude	Less than 2000 m above sea level	
Installation category	III, for distribution systems	
Pollution degree	2	
Dielectric withstand	As per IEC 61010, UL3111	

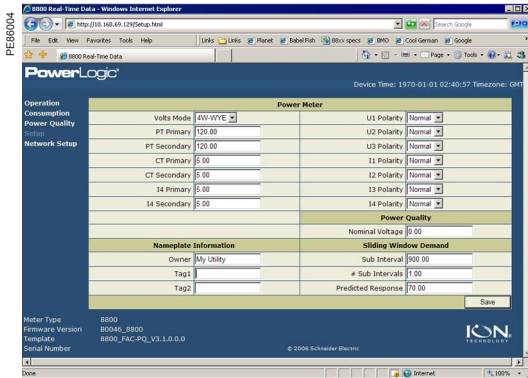
Electromagnetic compatibility

Electrostatic discharge	EN 60687:1993	
Immunity to electromagnetic HF fields	EN 60687:1993	
Immunity to fast transients	IEC 61000-4-4	
Conducted and radiated emissions	EN 55014-1:1993	

Safety

Europe	IEC 1010-1	
USA and Canada	UL 3111 and CSA C22.2 No. 1010-1	

⁽¹⁾ Accuracy complies with IEC 687 class 0.5S and ANSI 12.20 class 0.5 at 25°C.



Example WebMeter page showing realtime values.

Communication

RS-485 ports	Optically isolated Up to 19,200 bauds Protocols: ION, DNP 3.0, Modbus RTU, GPS
Ethernet port (Modbus TCP protocol)	Up to 10 Mbps With EtherGate Optional 10Base-T
Infrared optical port	Front panel ANSI Type 2 Up to 19,200 bauds Protocols: ION, Modbus RTU, DNP 3.0
Internal modem ⁽¹⁾	From 300 to 33,600 bauds ModemGate Call-back feature ⁽²⁾
PROFIBUS DP port (ION7300)	Up to 12 Mbps baud rate

Firmware characteristics

Data logs	Scheduled or event driven 7330: Maximum of 2 data logs, 32 parameters 7350: Maximum of 6 data logs, 96 parameters
Harmonic distortion	Individual and total up to the 15th harmonic (31st for 7350)
Sag/swell detection ⁽²⁾	Detects dips and swells on any voltage channel
Instantaneous	True rms, per phase, and total for: - Voltage and current - Active (kW), reactive (kvar), and apparent (kVA) power - Power factor and frequency - Voltage and current unbalance
Min/max logging	Perform on any parameter, over any time interval Min and max values for all basic power parameters: - Voltage per phase - Current per phase - Active (kW), reactive (kvar), apparent (kVA) power - Power factor & frequency - Rolling block demand for kW, kvar, kVA
Waveform captures	Simultaneous capture of events on all channels. up to 48 cycles each, 64 samples/cycle. Maximum of 6,900 cycles for contiguous waveform capture
Alarms	Single- and multi-condition alarms, call-out on alarms, define alarms conditions with configurable event priorities
Memory ⁽¹⁾	300 kB standard

Display characteristics

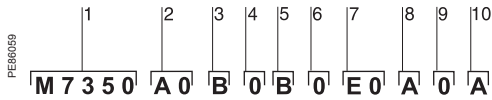
Integrated display	4-parameter to single parameter large character displays, back-lit LCD with adjustable contrast
Languages	English

⁽¹⁾ Available with ION7330 and ION7350 only

⁽²⁾ Available on ION7350 only

ION7300 series

Functions and characteristics (cont.)



Example and explanation of product part number.

- 1 Model.
- 2 Form factor.
- 3 Current inputs.
- 4 Voltage inputs.
- 5 Power supply.
- 6 System frequency.
- 7 Communications.
- 8 Inputs/outputs.
- 9 Security.
- 10 Special order.

Part numbers		
Item	Code	Description
1 Model	M7350	ION7350: Advanced power meter with basic sag/swell detection, waveform recording, harmonics (up to the 31st), high-speed data logging and automatic modem dial-out, multiport communications, 4 digital inputs and 4 digital outputs.
	M7330	ION7330: Advanced power meter with over 200 high-accuracy, 3-phase measurements, data logging, multiport communications, 4 digital inputs and 4 outputs
	M7300	ION7300: Advanced power meter with over 100 high accuracy, 3-phase measurements, 1 RS-485 communication port and 4 digital outputs. Supports ION and Modbus-RTU protocols.
2 Form factor	A0	Integrated display, with front optical port
	R0	Transducer with RMD (remote display), with front optical port. DOES NOT support Analog Input and/or Analog Output options. Not available with Security options RMICAN or RMICAN-SEAL.
	R1	Same as R0, but with DIN rail mounts on the transducer. DOES NOT support Analog Input and/or Analog Output options.
	T0	Transducer (no display). Note you cannot use an RMD on this meter if you order the Analog Input and/or Analog Output options. Not available with Security options RMICAN or RMICAN-SEAL.
3 Current inputs	B	5 Amp nominal, 10 Amp full scale current input
	0	Autoranging (50 to 347 VAC +25%)
4 Voltage inputs	B	P240 power supply (95-240 VAC/47-4f40 Hz/120-310 VDC)
	C	P24 power supply (20 to 65 VDC)
5 Power supply	0	Autoranging (50 and 60 Hz)
6 System frequency	Z0	No communications.
7 Communications	A0	One RS-485 port (if ION7300), two RS-485 ports (if ION7330 or ION 7350)
	C1	One RS-485 EtherGate port, one RS-485 ModemGate port, 10Base-T Ethernet (RJ45), 33.6k universal internal modem. DOES NOT support Analog Input and/or Analog Output options.
	M1	One 33.6k universal internal modem (RJ11) port, one RS-485 port, one RS-485 ModemGate port.
	E0	One RS-485 port, one 10Base-T Ethernet (RJ45)
8 Inputs/Outputs	P0	One RS-485 port, one Profibus communications. Available only on Integrated Display models (Form Factor type "A" only).
	A	No analog inputs/outputs. You must choose this option if ordering Display-only or RMD remote display options (Form Factor types "D" or "R"), or Ethernet or Profibus port options (Communications options "E0", or "P0").
	M	Four 0 to 1 mA analog inputs & four 0 to 1 mA analog outputs. NOT AVAILABLE with RMD or Ethernet options
	N	Four 0 to 20 mA analog inputs & four 0 to 20 mA analog outputs. NOT AVAILABLE with RMD or Ethernet options
9 Security	0	Password protected, no hardware lock
	2	Password protected with hardware lock enabled
	3	(ION7300, ION7330 models only) RMICAN Measurement Canada approved
	4	(ION7300, ION7330 models only) RMICAN-SEAL Measurement Canada approved, factory sealed ⁽¹⁾
	6	Password protected with security lock enabled, terminal cover and UK OFGEM labels
10 Special order	A	None
	B	Pre-set to MODBUS (available for Form Factor T0, T1, T2 and T3 only). Not available with Security options RMICAN or RMICAN-SEAL.
	C	Tropicalisation treatment applied
	D	Tropicalisation treatment applied and pre-set to MODBUS (available for Form Factor T0, T1, T2 and T3 only). Not available with Security options RMICAN or RMICAN-SEAL.

⁽¹⁾A completed ION7300 series RMICAN-SEAL checklist must accompany each RMICAN-SEAL meter order.



PowerLogic ION7300 TRAN

Part numbers (cont'd)

Transducer unit

ION7300 TRAN	No display	T0
	With DIN rail mount	T1
ION7330 TRAN	No display	T0
	With DIN rail mount	T1
ION7350 TRAN	No display	T0
	With DIN rail mount	T1

Communications

ION7300	No communications.	Z0
	One RS-485 port	A0
	One RS-485 port, one 10Base-T Ethernet (RJ45)	E0
	One RS-485 port, one Profibus communications. (Available only on integrated display models)	P0
ION7330	Two RS-485 ports	A0
	One RS-485 EtherGate port, one RS-485 ModemGate port, 10Base-T Ethernet (RJ45), 33.6k universal internal modem ¹	C1
	One 10Base-T Ethernet (RJ45) port, one RS-485 port, one RS485 EtherGate port ¹	E0
	One 33.6k universal internal modem (RJ11) port, one RS-485 port, one RS-485 ModemGate port	M1
ION7350	Two RS-485 ports	A0
	One RS-485 EtherGate port, one RS-485 ModemGate port, 10Base-T Ethernet (RJ45), 33.6k universal internal modem (RJ11) ¹	C1
	One 10Base-T Ethernet (RJ45) port, one RS-485 port, one RS-485 EtherGate port ¹	E0
	One 33.6k universal internal modem (RJ11) port, one RS-485 port, one RS-485 ModemGate port	M1

Remote modular display

Remote Modular Display with 6 foot DB25 cable	RMD-7300
Remote Modular Display with 6 foot DB25 cable	RMD-7330
Remote Modular Display with 6 foot DB25 cable	RMD-7350

Terminal strip cover

Terminal strip cover	TERMCVR-73XX
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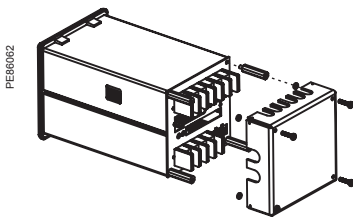
DB9 optical probe

Optical probe (DB-9) for use with ION7300 series meters	OPTICAL-PROBE
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Water resistant gasket

Water resistant gasket	GSKT
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(1) Does NOT support Analog Input and/or Analog Output options.



Terminal strip cover.