

ION7300 series

Functions and characteristics



PowerLogic ION 7330.

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.
- IEC class 0,5S energy metering.
- 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

Analyse power quality

Use meter data to analyse problems and avoid repeat interruptions by uncovering the sources of harmonics and voltage dips and swells.

Allocate costs

Determine cost centers, identify opportunities for demand control, and check energy consumption patterns.

Increase efficiency

Determine the capacity of your electrical network and run at peak efficiency.

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.

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.

Monitor dips and swells

Detect dips and swells on any voltage channel.

Memory (ION7330/7350)

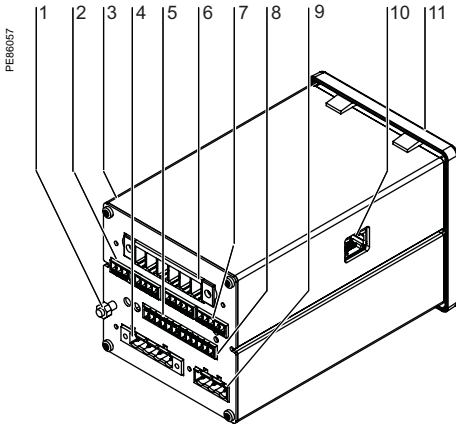
Non-volatile memory (300kB) ensures that valuable information can be preserved between intervals.

Part numbers

ION7300 series	
ION7300	M7300
ION7330	M7330
ION7350	M7350

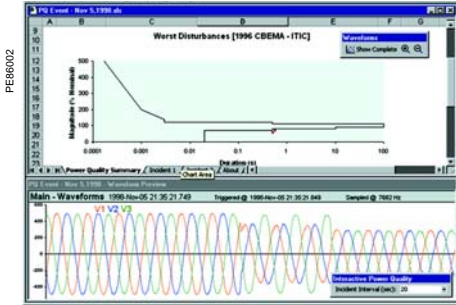
See page 6 for part number explanations.

(1) Analog I/O is not available with all form factors and communications configurations. Please check our on-line order forms for supported configurations.



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.

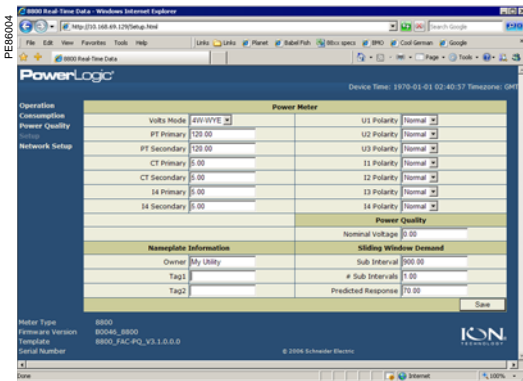
Selection guide		ION7300	ION7330	ION7350
General				
Use on LV and HV systems		■	■	■
Current and voltage accuracy		0.25%	0.25%	0.25%
Energy and power accuracy		1.5% reading	1.5% reading	1.5% reading
Number of samples per cycle		32	32	64
Instantaneous rms values				
Current, voltage, frequency		■	■	■
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		■	■	■
Data logs		-	2	6
Event logs		-	■	■
Trending / forecasting		-	-	■
Alarms		-	■	■
SER (sequence of event recording)		-	■	■
Time stamping		-	■	■
300 Kbyte memory		-	■	■
Display and I/O				
Display		■	■	■
Wiring self-test		■	■	■
Pulse output		-	■	■
Digital outputs and pulse outputs		8	8	8
Digital inputs		4	8	8
Direct voltage connection (Wye/Delta)		347/600V	347/600V	347/600V
Communication				
RS-485 port		■	■	■
HTML page web server (WebMeter)		■	■	■
Modbus protocol		■	■	■
Ethernet (Modbus/TCP/IP protocols)		■	■	■
Ethernet gateway (EtherGate)		-	■	■
Internal modem		-	■	■
Modem gateway (ModemGate)		-	■	■
Infrared optical port		■	■	■
Profibus DP port		■	-	-



PowerLogic ION7300 switchboard meter.

Electrical characteristics		
Type of measurement		True rms up to the 15th harmonic (31st for 7350) 32 samples/cycle (64 for 7350)
Measurement accuracy	Current and voltage	0.25% + 0.05%
	Power	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: IEC 60687 class 0.5S & ANSI C12.20 class 0.5 kVAh: 1.0% reading kvarh: 1.5% reading
Data update rate		1 second
Input-voltage characteristics	Measured voltage	50 - 347 VAC L-N
	Metering over-range	25%
	Overload withstand	1500 VAC continuous 3250 VAC for 1 second non-recurring
	Impedance	>2 M Ohms/phase (phase - Vref)
	Frequency measurement range	40 - 70 Hz
	Input-current characteristics	CT ratings
Measurement range		20 mA - 10 A
Overload withstand		20 A continuous 500 A for 1 second non-recurring
Burden		Worst case (at 10 A): 0.0625 VA
Power supply	Impedance	> 2 M Ohms/phase (phase-Vref)
	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 <i>0-1 mA option same as above except: Input impedance: 475 Ohms</i>
	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 <i>0-1 mA option same as above except: Max load drive capability: 10 kOhms</i>
Mechanical characteristics		
Weight		1.8 kg
IP degree of protection		IEC 60529
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 specifications comply with IEC 687 class 0.5S specifications 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 or 10Base-FL
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

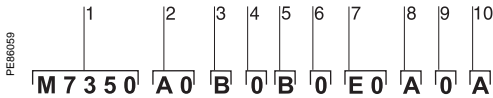
Data logs	Scheduled or event driven 7330: Maximum of 2 data logs, 32 parameters 7350: Maximum of 6 data logs, 96 parameters
Harmonic distortion	Individual and total up to the 15th harmonic (31st for 7350)
Sag/swell detection	Detects dips and swells on any voltage channel (ION7350)
Instantaneous	True 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	ION7330, ION7350: 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 ION7330/7350 only

(2) Call-back feature on ION7350 only



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
		A2 Same as A0, but with CWC (captured wire connector); max 277 VAC on voltage inputs
		A6 Same as A0, but meter installed in S1 switchboard retrofit cage (with cover and casing)
		A7 Same as A0, but meter installed in FT21 (D4B-7F, D4B-3F) switchboard retrofit cage (with cover and casing)
		A8 Same as A0, but meter installed in S1 switchboard retrofit cage (with cover, but no casing)
		A9 Same as A0, but meter installed in FT21 (D4B-7F, D4B-3F) switchboard retrofit cage (with cover, but no casing)
		R0 Transducer with RMD (remote display), with front optical port. DOES NOT support Analog Input and/or Analog Output options.
		D0 Integrated display-only model. No communications. No digital outputs, no analog inputs or outputs). Not available with Security options RMICAN or RMICAN-SEAL. ION7300 model only
		D2 Same as D0, but with CWC (captured wire connector) inputs. Not available with Security options RMICAN or RMICAN-SEAL. ION7300 model only.
		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.
		R2 Same as R0, but with CWC (captured wire connector) inputs on the transducer; maximum 277 VAC on voltage inputs. DOES NOT support Analog Input and/or Analog Output options.
		R3 Same as R0, but with DIN rail mounts and CWC (captured wire connector) inputs on the transducer; maximum 277 VAC on voltage inputs. 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.
		T1 Transducer (no display) with DIN rail mount. 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.
		T2 Transducer (no display) with CWC (captured wire connector) inputs; maximum 277VAC on voltage inputs. 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.
	T3 Transducer (no display) with DIN rail mount and CWC (captured wire connector) inputs; maximum 277VAC on voltage inputs. 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
4	Voltage inputs	0 Autoranging (50 to 347 VAC +25%) Warning: Maximum 277 VAC for CWC connector type.
5	Power supply	B P240 power supply (95-240 VAC/47-4f40 Hz/120-310 VDC)
		C P24 power supply (20 to 65 VDC)
6	System frequency	0 Autoranging (50 and 60 Hz)

Part numbers (cont'd)			
Item	Code	Description	
7	Communications	Z0	No communications. You must choose this option if you selected Display model (Form Factor D0 or D2 above).
		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.
		C3	Same as C1, but with CWC (captured wire connectors) for the 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.
		M3	Same as M1, but with CWC (captured wire connectors) for the modem.
		E0	One RS-485 port, one 10Base-T Ethernet (RJ45)
		P0	One RS-485 port, one Profibus communications. Available only on Integrated Display models (Form Factor type "A" only).
8	Inputs/Outputs	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").
		D	Four 0 to 1 mA analog inputs. NOT AVAILABLE with RMD or Ethernet options
		E	Four 0 to 20 mA analog inputs. NOT AVAILABLE with RMD or Ethernet options
		J	Four 0 to 1 mA analog outputs. NOT AVAILABLE with RMD or Ethernet options
		K	Four 0 to 20 mA analog outputs. NOT AVAILABLE with RMD or Ethernet options
		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
	With CWC inputs; max 277 VAC on voltage inputs	T2
	With DIN rail mount & CWC inputs; max 277 VAC on voltage inputs	T3
ION7330 TRAN	No display	T0
	With DIN rail mount	T1
	With CWC inputs; max 277 VAC on voltage inputs	T2
	With DIN rail mount & CWC inputs; max 277 VAC on voltage inputs	T3
ION7350 TRAN	No display	T0
	With DIN rail mount	T1
	With CWC inputs; max 277 VAC on voltage inputs	T2
	With DIN rail mount & CWC inputs; max 277 VAC on voltage inputs	T3

Communications

ION7300	No communications. (You must choose this option if you selected Display model)	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
	Same as C1, but with CWC for the modem ¹	C3
	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
	Same as M1, but with CWC for the modem	M3
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
	Same as C1, but with CWC for the modem ¹	C3
	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
	Same as M1, but with CWC for the modem	M3

⁽¹⁾ Does NOT support Analog Input and/or Analog Output options.

PE80061



ION7300 relay extension board (REB)

Relay extension board (REB)

Relay expansion board: 4-position Grayhill I/O board and external P240 power supply.	REB
Same as REB, but comes with 20-60VDC power supply instead.	REB-P24/48

Output modules for external I/O card (REB)

120 VAC, 3.5A, N.O. solid state relay digital output module	GDOAC120
120 VAC, 3.5A, N.O. solid state relay digital output module with manual override	GDOAC120MO
240 VAC, 3.5A, N.O. solid state relay digital output module	GDOAC240
240 VAC, 3.5A, N.O. solid state relay digital output module with manual override	GDOAC240MO
60 VDC, 3.5A, N.O. solid state relay digital output module	GDODC60
60 VDC, 3.5A, N.O. solid state relay digital output module with manual override	GDODC60MO
60 VDC, 1.0A, low leakage, N.O. solid state relay digital output module	GDODC60L
200 VDC, 1.0A, N.O. solid state relay digital output module	GDODC200
100 VDC, 0.5A, N.O. mechanical relay digital output module	GDODC100M

Adapter plates

Adapter plate enabling an ION7300 series meter to fit a 3710/3720 panel cutout	ADPT-37XX-73XX
Adapter plate to mount an ION7300 series meter in an ANSI C39.1 (round hole) cutout	RAP

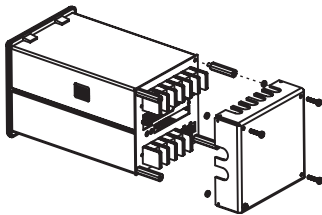
Switchboard meter casing

S1 switchboard meter casing	73XXCS-S1
FT21 switchboard meter casing	73XXCS-FT21

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

PE80062



Terminal strip cover.

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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