

Looking to submeter  
without giving up advanced  
metering functionality?

PowerLogic® ION7300  
series meters  
monitor feeders and  
submetering point.



PowerLogic ION7300 series  
power and energy meter

Make the most of  
your energy<sup>SM</sup>



by Schneider Electric

**Schneider**  
Electric

# PowerLogic ION7300

## series power and energy meters

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 PowerLogic ION Enterprise® software or other automation systems to give all users fast information sharing and analysis.

The ION7300 series 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.\*

\* Not all features are available with every model. Please refer to the detailed descriptions within for a complete list of feature availability.

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### Applications summary

- High-accuracy power and energy metering
- Revenue certified models for billing, bill verification and sub-metering
- Power quality analysis
- Cost allocation and billing
- Demand and power factor control
- Load studies and circuit optimization
- Equipment monitoring and control
- Preventative maintenance

## Features

### > Measurements

- Energy: bi-directional, absolute and net
- Demand: rolling block, predicted and thermal
- Harmonics: individual and total harmonic distortion up to the 15<sup>th</sup> or 31<sup>st</sup>
- Advanced logic and mathematical functions

### > Internet-enabled communications

- Two RS-485 ports
- Optional built-in modem with ModemGate allows modem access for 31 other devices
- Optional Ethernet port with EtherGate allows direct Ethernet-to-RS-485 data transfer to 31 other devices
- Infrared data port standard
- Modbus<sup>®</sup> RTU, Modbus TCP, DNP 3.0 and PROFIBUS DP communication protocols
- Call-back feature offers fast alarm response
- Web server, MeterM@il<sup>®</sup> allow distribution of metered data and alarms over the Internet

### > On-board data logging

- Scheduled or event-driven logging of up to 96 parameters
- Sequence-of-events and min./max. logging

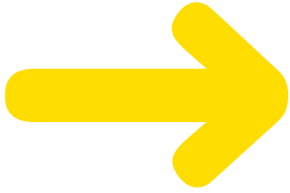
### > Setpoints for control and alarms

- Setpoint on any parameter or condition
- 1 sec operation

### > Inputs and outputs

- 4 digital inputs for status/counter functions
- 4 digital outputs for control/pulse functions
- Optional analog inputs and outputs





## Operational specifications

### > Serial RS-485 ports

- ION7300 has a single RS-485 port
- ION7330 and ION7350 meters can have two RS-485 ports
- Supports DNP 3.0

### > Infrared data port

- Front panel optical port
- Compatible with an ANSI Type 2 magnetic optical communications coupler
- Data rates up to 19,200bps

### > Ethernet port (optional)

- Optional 10Base-T port for direct access to metering information via Ethernet LAN/WAN
- EtherGate (data transfer between Ethernet and RS-485)

Note: The meter COM2 port functions as a dedicated EtherGate port (RS-485 Master) on ION7330 and ION7350 meters with the Ethernet option

### > PROFIBUS port (optional)

- PROFIBUS DP standard protocol support via sub-D 9-pin female connector

### > Internal modem

- ION7330 and ION7350 offer internal modems
- Data rates from 300bps to 33,600bps
- ModemGate (data transfer between modem and RS-485)

Note: The meter COM1 port functions as a dedicated ModemGate port (RS-485 Master) on ION7330 and ION7350 meters with the internal modem option

- Compatible with power monitoring software that supports Modbus RTU, ION or DNP 3.0 RJ-11 or a captured wire connector (CWC)
- The ION7350 meter is offered with a call-back feature for quick alarm response

### > Interoperability

ION7330 and ION7350 communicate via multiple protocols to extend existing Modbus, DNP or ION Enterprise networks. Logs and real-time values are available via Modbus. Meters supported by UTS MV-90® software platforms via serial and Ethernet.

### > Voltage inputs

- 50 to 347Vac L-N
- 25% overrange
- CWC option: Pluggable captured-wire connectors
- All options: Overload withstand for 1500Vac continuous, 3250Vac for 1sec non-recurring. Input impedance: > 2MΩ/phase (phase-Vref)

### > Current inputs

- 5A nominal/10A full scale
- Starting current: 20mA
- Overload withstand: 20A continuous, 500A for 1 sec non-recurring
- Worst case burden (at 10A): 0.0625VA
- 20% overrange full accuracy

### > Power supply

- Basic: 95 to 240Vac (±10%), (47 to 440Hz)
- 120 to 310Vdc (±10%), 0.2A worst case loading (12W) at 100Vac at 25°C (77°F)

### > Digital outputs

- 4 optically isolated digital outputs
- Max. forward current: 80mA
- Max. voltage: 30V

### > Status inputs (ION7330 and ION7350 meters)

- Self-excited, dry contact, no external voltage source required
- +30Vdc differential SCOM output to S1 through S4 inputs
- Min. pulse width: 25msec

### > Analog inputs\*

- Accuracy: < ±0.3% of full scale
- Update rate: 1sec
- Input impedance: 24.3W, 475W (0 to 20mA, 0 to 1mA)
- Max. source impedance (W): 500W, 10kΩ (0 to 20mA, 0 to 1mA)
- Channel to channel isolation: None
- Max. common mode voltage: 30V

### > Analog outputs\*

- Accuracy: < ±0.3% of full scale
- Max. load drive capability: 500W (0 to 20mA), 10kW (0 to 1mA)
- Channel to channel isolation: None
- Max. common mode voltage: 30V

### > Waveform (digital fault) recording

- The ION7350 meter simultaneously captures events on all channels, up to 48 cycles each:
- Resolution: 64 samples/cycle  
The max. number of cycles for contiguous waveform capture is 6,900 (based on 16 samples/cycle x 48 cycles)



\*Analog I/O is not available with all form factors and communications configurations.



#### > Event logging and alarming

- Configurable event priorities allow you to define alarm conditions.
- Sequence-of-events time-stamped to  $\pm 10$ msec accuracy
- Time-stamped record of all configuration changes, setpoint and min./max. events

#### > Logic, math and control

The ION7330 and ION7350 meters offer sophisticated logic and mathematical functions to perform on-board calculations on any measured value.

#### > Mathematical functions offered

- Arithmetic (+, x, -,  $\div$ )
- Comparison (>, <, =,  $\geq$ ,  $\leq$ ,  $\neq$ )
- Logical (AND, OR, NOT, TRUE, FALSE, IF)
- Trigonometric (SIN, COS, TAN, ASIN, ACOS, ATAN)
- Math (PI, SQRT, POWER, SUM, SUMSQ, AVG, RMS, LOG10, LN, MAX, MIN)

#### > Programmable logic and setpoints

The ION7330 and ION7350 meters use logical operators and setpoints to set alarms, define basic control algorithms, and implement back-up protection. Setpoints can trigger:

- Data logging
- Digital outputs, pulse outputs
- Clearing and reset functions
- Call-back (ION7350)

#### > Environmental conditions

- Operation:  $-20^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$  to  $+140^{\circ}\text{F}$ ) ambient air
- Storage:  $-30^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  ( $-22^{\circ}\text{F}$  to  $+185^{\circ}\text{F}$ )
- Humidity: 5% to 95% non-condensing

#### > Mounting

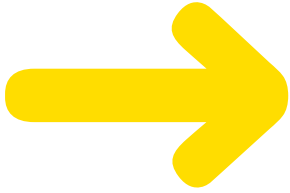
- Integrated display to fit DIN standard 92 x 92mm (3.6" x 3.6") panel cutout
- TRAN models – no integrated display, flush-mounted against any flat surface
- Optional DIN rail mount. RMD (remote display module), fits a DIN standard cutout up to 1.8m (6ft) from the base meter
- Panel punches available
- Weighs approx. 1.8kg (4lbs) in box 38 x 28 x 18cm (15" x 11" x 7")

#### > Switchboard draw-out cases

- Complete switchboard hardware kit (internal cage with external casing) or "retro-fit" kit for existing GE S1 or ABB FT21 switchboard cases
- The FT21 implementation supports D4B-7F (in Delta volts mode) or D4B-3F (in 4-wire Wye volts mode)

#### > Relay extension board

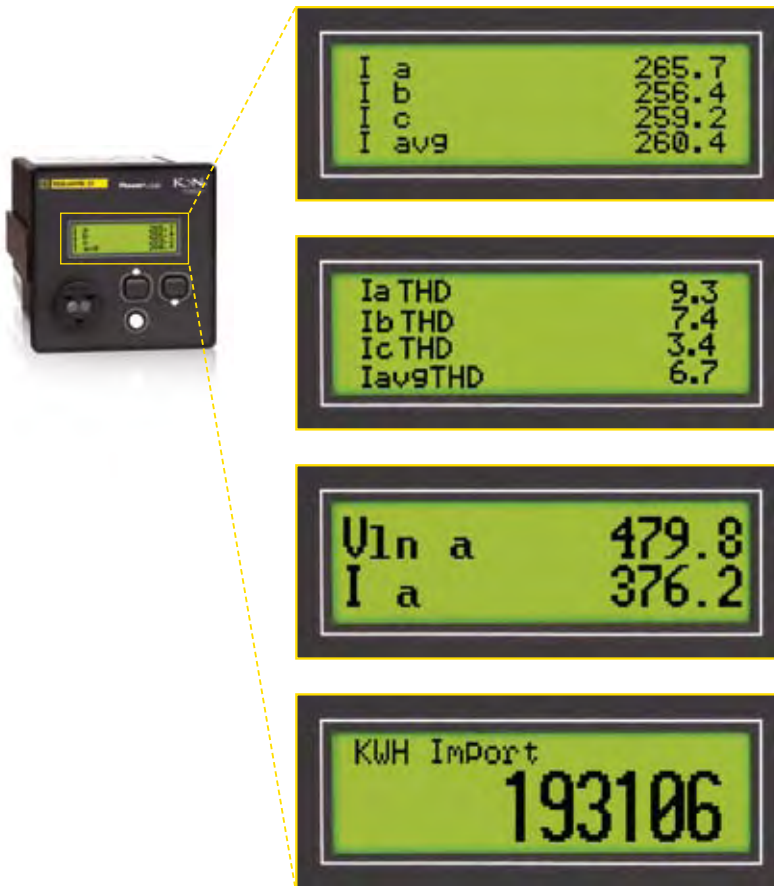
An optional digital output extension board extends the meter's output capabilities with additional relay options



## Front panel display

- LCD supports local data display and basic setup
- Easy to read backlit LCD
- Adjustable contrast
- Remote display option to 1.8m (6ft) from base unit
- 8 data display screens that can be customized through the communications port to show chosen parameters, scrolled manually or automatically
- Four display formats: four parameter, to single-parameter large character displays
- Customer parameter labels (programmable via communications) alarms over the Internet

### > Example meter display formats



## Energy metering

### > Energy

- The meters are fully bi-directional and monitor energy in all four quadrants. They provide all traditional active, reactive and apparent energy parameters.
- kWh, imported, exported, net (imported and exported), and total (imported and exported)
  - kVARh imported, exported, net (imported and exported), and total (imported and exported)
  - kVAh total
  - kVAh, imported, exported, net (ION7330 and ION7350 meters only)
  - Volt-hours and Amp-hours
  - Integration of any instantaneous measurement

### > Demand

- Supports rolling block, thermal, and predicted demand calculations.
- kW demand and min./max.
  - kVAR demand and min./max.
  - kVA demand and min./max.
  - Amps demand and min./max.
  - Volts demand and min./max.
  - Demand on any instantaneous measurement

### > Time of use (TOU)

- The ION7330 and ION7350 series meters provide:
- Two-year internal calendar
  - Up to 15 daily tariff profiles
  - Programmable triggers
  - Separate energy and demand accumulators

### > Operational measurements

- Offers the most comprehensive array of instantaneous (real-time) measurements. Measurements include true RMS, per phase and total for:
- Voltage and current
  - kW, kVAR and kVA
  - Power factor
  - Frequency
  - Voltage and current unbalance

### > Min./max. recording

- Records each new min. and new max. value with date and time-stamp for the following parameters:
- Voltage and current min./max.
  - kW, kVAR, and kVA min./max.
  - Power factor
  - Frequency
  - Voltage unbalance, plus any measured value

## Connections

### > Installation

- 4-wire Wye, Delta, 3-wire Wye, Direct Delta and Single-phase systems
- 3 voltage and 3 current inputs
- No PTs required on voltage inputs for Wye systems up to 347/600Vac and Delta systems up to 600Vac
- All inputs pass ANSI/IEEE C37.90.1-1989 surge withstand and fast transient tests

### > Inputs/outputs\*

The analog I/O option is available to monitor flow rates, device cycles (RPM), fuel levels, oil pressures and transformer temperatures, etc. Output energy pulses to an RTU or control equipment.

### > Control power supply

The meter's basic power supply has a voltage range of 95 to 240Vac and 120 to 310Vdc.

### Measurement specifications<sup>[1]</sup> (at 50.0Hz and 60.0Hz at 25°C/77°F)

Parameter	Accuracy ± (% reading + % fs <sup>[2]</sup> )
Metering	
Voltage	0.25% + 0.05%
Frequency	±0.01Hz
Current	0.25% + 0.05%
kVA	0.05% + 0.1%
kWh	0.5% reading
kVAR (>5% fs)	1.5%
kVAh	1.0%
kVARh	1.5%
Power Factor (at Unity PF)	1.5%
Harmonics	
Total harmonic distortion	1.0% full scale
I4 derivation	1.0% reading + 0.2% unbalanced
K Factor	5.0% full scale

Display resolution meets or exceeds accuracy.

<sup>[1]</sup> 50 to 347Vac + 25%

<sup>[2]</sup> % full scale voltage and current

## User programmable log capacity

### > Example log configurations:

Waveform Recording Settings							
Meter	Event	Data	Channel	Samples/Channel	Cycles	Record Depth	Days
7330	500	A	-	-	-	-	29
	500	B	-	-	-	-	118
	500	C	-	-	-	-	96
	500	D	-	-	-	-	383
7350	500	A	6	32	12	3	28
	500	B	6	32	12	3	111
	500	C	6	16	48	3	26
	500	D	6	64	16	3	331

<sup>[A]</sup> 16 parameters recorded every 15min

<sup>[B]</sup> 16 parameters recorded hourly

<sup>[C]</sup> 4 parameters recorded every 15min

<sup>[D]</sup> 4 parameters recorded every hour

## Standards compliance

- CE marked
- EMC compliant to:
  - ◆ EN 55014-1: 1993
  - ◆ EN 61000-4-4
  - ◆ EN 60687: 1993 for immunity to electromagnetic HF fields
  - ◆ EN 60687: 1993 for immunity to electrostatic discharges
- IEC 1010-1
- IEC 60687 accuracy class 0.5sec compliant
- Analog I/O: each analog I/O pin passes IEC 61000-4-4 (4kVp-p @ 2.5kHz for 1min)
- ANSI C12.16 accuracy compliant
- ANSI class 10, (5A nominal, 10A max.)
- Surge withstand: all inputs pass ANSI/IEEE C37.90-1989 surge withstand and fast transient tests
- OFGEM approved (UK)
- FCC: Part 15, FCC rules for Class A digital device
- UL: Certified to UL 3111
- CAN/CSA C22.2 No.1010-1
- Measurement Canada AE-0788



\*Analog I/O is not available with all form factors and communications configurations.

# PowerLogic ION7300 series features and options

Features and options	ION7300	ION7330	ION7350
<b>Metering</b>			
Power, energy and demand	■	■	■
<b>Power quality</b>			
Sag/swell monitoring	–	–	■
Harmonics: individual, even, odd, up to	15 <sup>th</sup>	15 <sup>th</sup>	31 <sup>st</sup>
Sampling rate, max. samples per cycle	32	32	64
<b>Logging and recording</b>			
Standard memory	–	300kB	300kB
Min./max. logging for any parameter	–	■	■
Historical logs, max. # of channels	–	32	96
Waveform logs, max. # of cycles	–	–	48
Time-stamp resolution in seconds	–	0.001	0.001
<b>Communications and I/O</b>			
RS-485 ports; Ethernet; Optical; IRIG-B	1	2	2
Ethernet/infrared optical ports	1/ 1	1/ 1	1/ 1
Internal modem	–	1	1
PROFIBUS DP port	1	–	–
DNP 3.0 through serial, modem, and I/R ports	–	■	■
Modbus RTU slave on serial, modem, and I/R ports	■	■	■
Modbus TCP through Ethernet port	■	■	■
EtherGate data transfer between Ethernet and RS-485	–	■	■
ModemGate data transfer between internal modem and RS-485	–	■	■
MeterM@il, logged data alarms via email <sup>[1]</sup>	–	■	■
Webmeter, on-board web server	■	■	■
Analog inputs/analog outputs	4/4	4/4	4/4
Digital status inputs/counter	–	4	4
Digital relay outputs	4	4	4
<b>Setpoints, alarming and control</b>			
Setpoints, number/min. response time	–	1sec	1sec
Math, logic, trig, log, linearization formulas	–	■	■
Single and multi-condition alarms	–	■	■
Call-out on alarms	–	–	■
<b>Revenue metering</b>			
MV-90 on serial, Ethernet ports	–	■	■
Multi-year scheduling: hourly activity profiles	–	■	■

<sup>[1]</sup> The ION7330 meter cannot send email alerts as it does not have an alert module.

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## Software integration

Easy integration with energy management or SCADA systems for remote display of all measured parameters at a PC workstation, remote configuration and manual control abilities.

- PowerLogic ION Enterprise compatible
- ION Setup™ compatible
- Internet connectivity
- MeterM@il
- WebMeter®

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