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Features:

ION9000T
(product/1)

CM4000T
(product/8)

ION9000
(product/2)

ION7650
(product/7)

Form factor:

DIN mount transducer with
optional remote display

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Panel mount with integral display

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Accuracy:

Current accuracy

0.001

0.0007

0.001

0.001

Voltage accuracy

0.001

0.0007

0.001

0.001

Power accuracy

0.001

0.002

0.001

0.002

Samples per cycle or sample
frequency

10 Mhz

5 MHz

1024

1024

Control power:

AC

•

•

•

•

DC

•

•

•

•

Low Voltage DC

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Current sensor type:

CT

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Input metering capability:

Number of measurement
channels

5

10

5

5

Direct voltage connection (max)

600V

690V

600V

600V



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Wiring self-test	•	•	•	•
Instantaneous values:				
Current (I) total and per phase	•	•	•	•
Voltage (V) total and per phase	•	•	•	•
Frequency (F)	•	•	•	•
Active Power (kW) total and per phase	•	•	•	•
Reactive Power (kVAR) total and per phase	•	•	•	•
Apparent Power (kVA) total and per phase	•	•	•	•
Power factor (PF) total and per phase	•	•	•	•
Energy values:				
Active Energy (kWh) total and per phase	•	•	•	•
Reactive Energy (kVARh) total and per phase	•	•	•	•
Apparent Energy (kVAh) total and per phase	•	•	•	•
Settable accumulation modes	•	•	•	•
Demand values:				
Current demand (Id) present and max values	•	•	•	•



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Active Power demand (kWd) present and max values	•	•	•	•
Reactive Power demand (kVARd) present and max values	•	•	•	•
Apparent Power demand (kVAd) present and max values	•	•	•	•
Predicted Power demand, Active (kWd), Reactive (kVARd), and Apparent (kVAd)	•	•	•	•
Synchronization of the demand measurement window	•	•	•	•
Demand modes: Fixed block, sliding, rolling, etc.	•	•	•	•
Power quality measurements:				
Harmonic distortion - Current & voltage	•	•	—	•
Individual harmonics - Via front panel	63	63	63	63
Individual harmonics - Via software	511	255	511	511
Waveform capture	•	•	•	•
Transient capture	100 nS	200 nS	20 µS	20 µS
Detection of voltage sags and swells	•	•	•	•
Disturbance direction detection	•	•	•	•
IEC 61000-4-30 class A /S	A	—	A	—



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IEC 61000-4-15 (Flicker)	•	•	•	•
High speed data recording	Half-cycle	Each cycle	Half-cycle	20 mS
EN50160 compliance reporting	•	•	•	•
Programmable (logic and math functions)	•	•	•	•
Data recording:				
Onboard Memory (in Mbytes)	2000	32	2000	10
Revenue logs	•	—	•	•
Min/max of instantaneous values	•	•	•	•
Data logs	•	•	•	•
Event logs	•	•	•	•
Trending/forecasting	•	•	•	•
Alarms	•	•	•	•
Alarm setpoint learning	•	•	•	•
Alarm notification via e-Mail	•	•	•	•
Sequence of event recording	•	•	•	•
Historical logs	•	•	•	•
Harmonics logs	•	—	•	•
Sag/swell logs	•	•	•	•
Data update rate	1/2 cycle	1/2 cycle	1/2 cycle	1/2 cycle
Transient logs	•	•	•	•



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Time stamping:

Time stamp resolution	1 mS	1 mS	1 mS	1 mS
Time synchronization - IRIG-B	•	—	•	—
Time synchronization - PTP	•	—	•	—
Time synchronization - DCF-77	—	•	—	—

Inputs/Outputs (I/O):

Pulse output (front panel LED)	2	1	2	1
Base digital inputs DI	8	—	8	8
Base digital outputs DO solid state	4	1	4	4
Base digital outputs DO relay	2	—	2	3
Option digital inputs DI (max)	24	17	24	8
Option digital outputs DO relay (max)	8	6	8	—
Option analog inputs AI (max)	16	4	16	4
Option analog outputs AO (max)	8	4	8	4
Option digital outputs DO solid state (max)	—	10	—	—

Communication ports:

ANSI 12.18 Type II optical port	•	—	•	•
USB	•	—	•	—
RS485 2 wire	2	—	2	1



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Ethernet 10/100BaseTx	2	ECC21	2	1
IRIG-B port	•	—	•	—
RS485 2/4 wire	—	1	—	—
RS232	—	1	—	—
100Base-FX	—	ECC21	—	•
RS 485 / RS 232 port	—	—	—	1
Internal modem	—	—	—	•
Serial protocols:				
Modbus RTU	•	•	•	•
Modbus ASCII	•	•	•	•
ION	•	—	•	•
DNP 3	•	—	•	•
Ethernet protocols:				
Modbus TCP/IP	•	•	•	•
ION TCP	•	•	•	•
DNP 3 TCP	•	•	•	•
IEC61850	•	•	•	•
COMTRADE IEC 60255-24	•	•	•	•
HTTP web server	•	•	•	•
SNMP	•	•	•	•
SMTP email	•	•	•	•



Features:

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FTP file transfer	•	•	•	•
NTP time synchronization	•	•	•	•
SNTP time synchronization	•	•	•	•
PTP time synchronization	•	—	•	—
XML	—	—	—	•

Gateway function:

Ethernet Modbus gateway	•	•	•	•
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