Integra 1530 digital metering system

FEATURES

- Measure and display up to 34 electrical and power parameters
- High-contrast red LED display
- THD measurement and power quality data to 31st harmonic
- True rms measurement
- Pulsed, analogue and digital outputs
- Modbus, Johnson Controls and Lonworks protocol interface options
- Fully programmable VT and CT ratios

APPROVALS

- UL file no: E20300
- UL 61010B-1
- IEC 1010-1/BSEN 61010-1 CAT III

BENEFITS

- Replaces multiple single function instruments
- Pre-calibrated plug-in options
- High accuracy <0.2%
- Configurable via software package or menu driven interface
- Import and export monitoring
- Neutral CT input option
- True 3-and 4-wire measurement

The Integra 1530 series instruments provide high accuracy <0.2% measurement, display and communication of all major electrical and power quality parameters, including true rms system values, and total harmonic distortion (THD) up to the 31st harmonic.

This DIN 96 panel mounting offers programming and display of up to 34 power measurement parameters. Optional pulsed, analogue and digital communication outputs, allow the communication of information of up to 50 measured parameters into building management systems. A Windows-based software package is available to remotely configure the Integra dms and display all 60 major parameters.

OPERATION

Integra 1530 digital metering system (dms) offers uncomplicated operation and high accuracy measurement of three-phase voltage, current, frequency, Watts, VAr, VA, energy, power factor, and total harmonic distortion of both phase and system, current and voltage. Integra 1530 dms includes true measurement of both line-to-neutral, and line-to-line voltages, ensuring accurate readings.

PROGRAMMABLE DISPLAY

A two-button interface on the front panel provides configuration programming of system (three-phase four-wire etc), VT and CT ratio settings, selected communication options and adjustment of operating parameters. All set-up screens offer password protection.

SYSTEM INPUTS

Designed for all low, medium and high voltage switchgear and distribution systems, the Integra 1530 meter offers programmable VT and CT ratio capability. Direct connection for up to 480 V AC with 5 A CT inputs is standard, and 1 A CT inputs available as an option.

NEUTRAL CT INPUT OPTION

Integra 1530 dms offers a three-phase four-wire version with a neutral 4th CT, allowing true neutral current measurement and protection in high harmonic environments.

COMMUNICATION

Integra 1630 dms offers a wide range of communication protocols including:

- Pulsed outputs
- Modbus RTU RS 485 Protocol
- Lonworks Protocol

PROGRAMMABLE PARAMETERS

Parameter	Range
Password	4-digit 0000-9999
Primary current	Max 9999:5 A (360 MW max**)
VT primary	400 kV (360 MW max**)
Secondary voltage	Nominal system voltage ** maximum VT and CT ratios are limited so that the combination of primary voltage and current does not exceed 360 MW at 120% of relevant input
Demand integration time	8, 15, 20, 30 and 60 minutes
Reset	Max demand and active energy registers
Pulse output duration	60, 100, 200 ms
Pulse rate divisors	1, 10, 100, 1000
RS485 interface baud rate	2.4, 4.8, 9.6, 19.2kB
RS485 parity	Odd/even/no, 1 or 2 stop bits
Modbus RTU RS485 protocol address	1-247
Analogue outputs	User definable

PRODUCT CODES

Description	Cat. no.
1-phase 2-wire 100 – 240 V L-L, 5 A CT input. Aux. 100-250 V AC/DC	INT-1630-L-5-M-option
1-phase 2-wire 241 – 480 V L-L, 5 A CT input. Aux. 100-250 V AC/DC	INT-1531-M-5-M-option
1-phase 3-wire 100 – 240 V L-L, 5 A CT input. Aux. 100-250 V AC/DC	INT-1532-L-5-M-option
1-phase 3-wire 241 – 480 V L-L, 5 A CT input. Aux. 100-250 V AC/DC	INT-1532-M-5-M-option
3-phase 3-wire 100 – 240 V L-L, 5 A CT input. Aux. 100-250 V AC/DC	INT-1533-L-5-M-option
3-phase 3-wire 241 – 480 V L-L, 5 A CT input. Aux. 100-250 V AC/DC	INT-1533-M-5-M-option
3-phase 4-wire 100 – 240 V L-L, 5 A CT input. Aux. 100-250 V AC/DC	INT-1534-L-5-M-option
3-phase 4-wire 241 – 480 V L-L, 5 A CT input. Aux. 100-250 V AC/DC	INT-1534-M-5-M-option
3-phase 4-wire with true neutral measurement 100-240 V L-L, 5 A CT input, Aux 100 – 250 V AC/DC	INT-1535-L-5-M-option
3-phase 4-wire with true neutral measurement 241 – 480 V L-L, 5 A CT input, Aux 100 – 250 V AC/DC	INT-1535-M-5-M-option
Options	
Lonworks protocol	030
1 analogue output (0/20 mA)	001=1
2 analogue outputs (0/20 mA)	002=1

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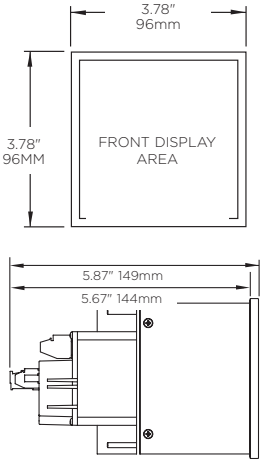
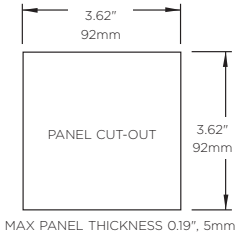
DIMENSIONS



PANEL CUT-OUT



MAX PANEL THICKNESS 0.19", 5mm

SPECIFICATIONS

Input	
Nominal input voltage	57.7 to 277 V L-N, 100 to 480 V L-L
Max. continuous input voltage	120% of nominal
Max. short duration input voltage	2 x for 1 second, repeated 10 times at 10 second intervals
System VT ratios (primary)	Any value up to 400 kV **
Nominal input voltage burden	<0.2 VA
Nominal input current	5 A (1 option)
System CT primary values	9999:5 A or 9999:1 A max 360 MW **
Max. continuous input current	120% nominal
Max. short duration input current	20 x for 1 second, repeated 5 times at 5 second intervals
Optional auxiliary DC supply	12 – 48 V DC (10.2 – 60 V DC absolute limits)
Nominal input current burden	< 0.6 VA ** maximum VT and CT ratios are limited so the combination of primary voltage and current does not exceed 360 MW at 120% of relevant input
Output (optional)	
RS485 communications	2-wire half duplex
Baud rates	2400, 4800, 9600, 19200
Pulsed	Clean contact SPNO
Pulse duration	60, 100 or 200 milliseconds
Pulsed outputs	1 or 2
Analogue outputs	1 or 2
Auxiliary	
Standard nominal supply voltage	100 – 250 V, AC or DC 85 – 287 V, AC absolute) (85 – 312 V, DC absolute)
AC supply frequency range	45 – 66 Hz
AC supply burden	6 VA
Optional auxiliary DC supply	12 – 48 V DC (10.2 – 60 V DC absolute)
DC supply burden	6 VA
Measuring Ranges	
Voltage	80 – 120% of nominal (functional 5 – 120%)
Current	5 – 120% of nominal
Frequency	45 – 66 Hz
Power factor	0.8 capacitive–1–0.8 inductive (functional 4 quadrant, 0-1 lag/lead)
THD	Up to 31st harmonic (0% – 40%)
Energy	7-digit resolution
Reference conditions	
Ambient temperature	23 ±1°C
Input frequency	50 or 60 Hz ±2%
Input waveform	Sinusoidal (distortion factor < 0.005)
Auxiliary supply voltage	Nominal ±1%
Auxiliary supply frequency	Nominal ±1%
AC auxiliary supply waveform	Sinusoidal (distortion factor < 0.05)
Magnetic field of external origin	Terrestrial flux
Accuracy	
Voltage	±0.17% of range maximum
Current	±0.17% of nominal
Frequency	±0.15% of mid frequency
Active power	±0.2% of range maximum
Power factor	1% of unity
Reactive power (VAr)	±0.5% of range maximum
Apparent power (VA)	±0.2% of range maximum
THD	±1%
Neutral current calculated	±0.95% of nominal
Energy	0.3% of range maximum (Better than class 1) IEC1036 Sect 4.6)
kVArh	0.6% of range maximum
Temperature coefficient	Voltage and current typical: 0.013%/°C Watts typical: 0.018%/°C

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MEASUREMENT AND DISPLAY

Up to 34 electrical and power quality parameters can be configured and displayed on the Integra 1530 dms unit.

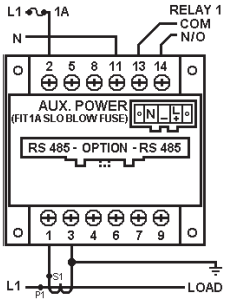
1 System volts
System current
System kW
2 System volts THD %
System current THD %
3 Volts L1 – N (4-wire only)
Volts L2 – N (4-wire only)
Volts L3 – N (4-wire only)
4 Volts L1 – L2
Volts L2 – L3
Volts L3 – L1
5 Volts line 1 THD %
Volts line 2 THD %
Volts line 3 THD %
6 Current L1
Current L2
Current L3
7 Current line 1 THD %
Current line 2 THD %
Current line 3 THD %
8 Neutral current (4-wire only)
Frequency
Power factor
9 kVAr
kVA
kW
10 kWh import (7-digit resolution)
11 kVArh import (7-digit resolution)
12 kWh export (7-digit resolution)
13 kVArh export (7-digit resolution)
14 kW demand
Current demand
15 kW maximum demand
Current maximum demand

Enhanced status information of up to 50 parameters can be communicated into building management systems via optional pulsed, analogue and digital outputs.

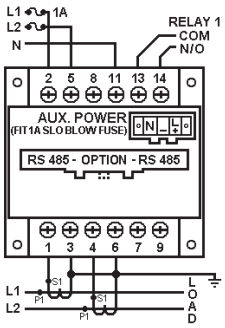
SPECIFICATIONS

Enclosure	
Enclosure style	DIN 96 panel mount
Compliant with	UL E20300, UL61010B-1, IEC 1010-1/BSEN 61010-1 CATIII, EMC and LVD
Material	Polycarbonate
Terminals	Shrouded screw-clamp
Dielectric voltage	Withstand test 3.25 kV rms 50 Hz for 1 minute between all electrical circuits
Operating temperature	-20 to +60°C
Storage temperature	-30 to +80°C
Relative humidity	0 – 90% (non condensing)
Warm-up time	1 minute
Shock	30 g in 3 planes
Vibration	10-15 Hz, 1.5 mm peak-to-peak/15-150 Hz @ 1 g IP protection: IP54
Dimensions	96 mm wide x 96 mm high x 149 mm deep (max) 3.78" wide x 3.78" high x 5.87" deep (max)
Panel cut-out	92 mm x 92 mm, 3.62" x 3.62"

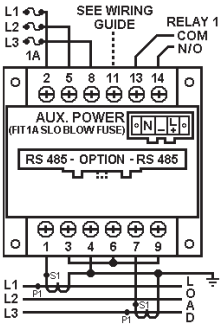
CONNECTIONS



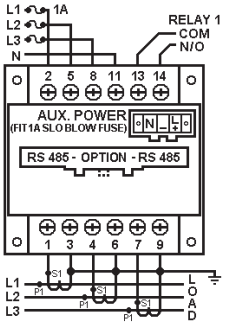
Single-phase



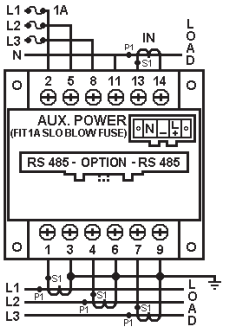
Single-phase 3-wire



3-phase 3-wire



3-phase 4-wire



3-phase 4-wire with neutral CT