



## Crompton Instruments Integra 1530 Digital Metering Systems



# Integra 1530 Digital Metering System

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 enclosure 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.

## System Input

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 480V AC with 5A CT inputs is standard, and 1A 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.

## System Outputs

Integra dms pre-calibrated plug-in option cards allow cost effective upgrades with combinations of pulsed, analogue and digital communication outputs. Cards slot simply into the back of the unit and products do not need to be removed from the installation or recalibrated.

## Modbus RTU RS485

Integra 1530 meter offers a communication port for systems using Modbus RTU or Johnson Controls Metasys NII protocols. Modbus communications can be used together with pulse and analogue output options.

## Lonworks Protocol Interface

The Lonworks protocol interface option is designed according to the LonMark Interoperability Guidelines version 3.2. This ensures Integra meters can be integrated into a single control network without requiring custom node or network tool development.

## 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. Status information can be viewed by scrolling through 15 screens featuring a high contrast three-line, four-digit LED display, with separate annunciators for each of the 34 measured parameters.



## Application

- Switchgear
- Distribution systems
- Control panels
- Embedded generation
- Energy management
- Building management
- Utility power monitoring
- Process control
- Motor monitoring

## Features

- Measure and display up to 34 electrical and power parameters
- Measure and communicate up to 50 electrical and power parameters
- High-contrast red LED display
- LED annunciators for each measured parameter
- 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

## 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

## Standards

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



## 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.

## Product Codes

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

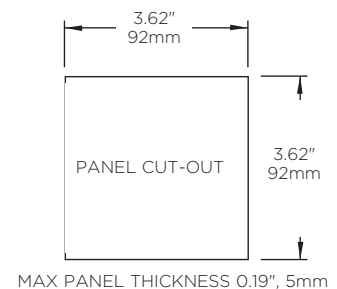
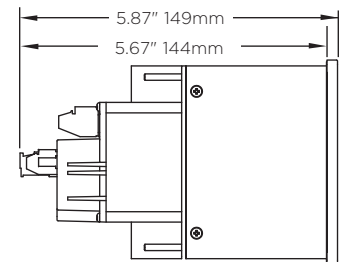
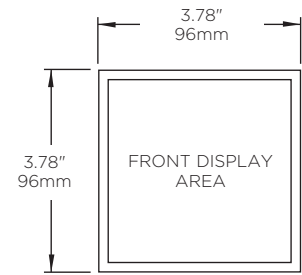
## Programmable Parameters

Parameter	Range
Password:	4-digit, 0000-9999
Primary current:	Max 9999:5A (360MW max**)
VT primary:	400kV (360MW 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 360MW 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

## Specifications

Nominal input voltage:	57.7 to 277V L-N, 100 to 480V 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 400kV **
Nominal input voltage burden:	< 0.2 VA
Nominal input current:	5A (1A option)
System CT primary values:	9999:5A or 9999:1A max 360MW **
Max continuous input current:	120% nominal
Max short duration current input:	20 x for 1 second, repeated 5 times at 5 second intervals
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 360MW at 120% of relevant input
<b>Outputs (optional)</b>	
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
<b>Auxiliary</b>	
Standard nominal supply voltage:	100-250V, AC or DC (85-287V, AC absolute) (85-312V, DC absolute)
AC supply frequency range:	45-66Hz
AC supply burden:	6VA
Optional auxiliary DC supply:	12-48V, DC (10.2-60V, DC absolute)
DC supply burden:	6 VA
<b>Measuring ranges</b>	
Voltage:	80-120% of nominal (functional 5-120%)
Current:	5-120% of nominal
Frequency:	45-66Hz
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
<b>Reference conditions</b>	
Ambient temperature:	23°31°C
Input frequency:	50 or 60Hz 32%
Input waveform:	Sinusoidal (distortion factor < 0.005)
Auxiliary supply voltage:	Nominal 31%
Auxiliary supply frequency:	Nominal 31%
AC auxiliary supply waveform:	Sinusoidal (distortion factor < 0.05)
Magnetic field of origin:	Terrestrial flux
<b>Accuracy</b>	
Voltage:	30.17% of range maximum
Current:	30.17% of nominal
Frequency:	0.15% of mid frequency
Active power:	30.2% of range maximum
Power factor:	1% of unity
Reactive power (VAr):	30.5% of range maximum
Apparent power (VA):	30.2% of range maximum
THD:	31%
Neutral current calculated:	30.95% of nominal
Neutral current measured:	30.17%
Energy:	0.3% or range maximum (Better than class 1 IEC1036 Sect 4.6)
KVArh:	0.6% of range maximum
Temperature coefficient:	Voltage & current typical: 0.013%/°C
Watts typical:	0.018%/°C
Update time:	Display: 1 second. Optional digital port: 250ms
Analogue output:	30.2%

## Dimensions



MAX PANEL THICKNESS 0.19", 5mm

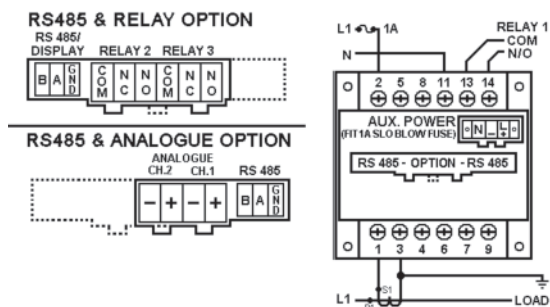
## Specifications continued

### Enclosure

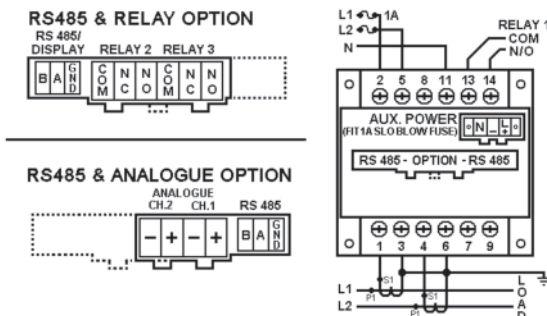
Enclosure style:	DIN 96 panel mount
Compliant with:	UL E20300, UL61010B-1, IEC 1010-1/ BSEN 61010-1 CATIII, EMC and LVD
Material:	Polycarbonate
Terminals:	Shrouded screw-clamp
Dielectric voltage:	Withstand test 3.25kV rms 50Hz for 1 minute between all electrical circuits
Operating temperature:	-20 to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

## Connections

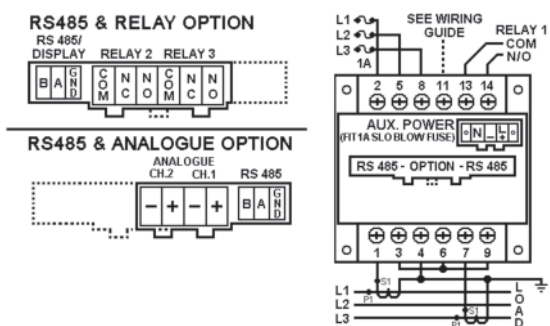
### Single-phase



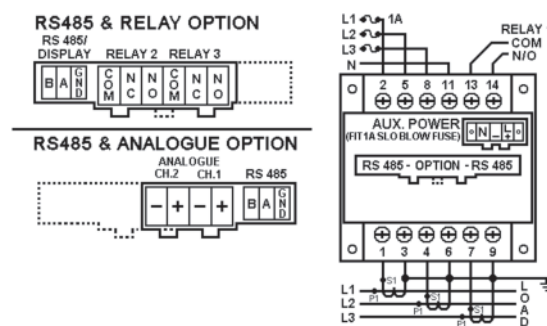
### Single-phase 3-wire



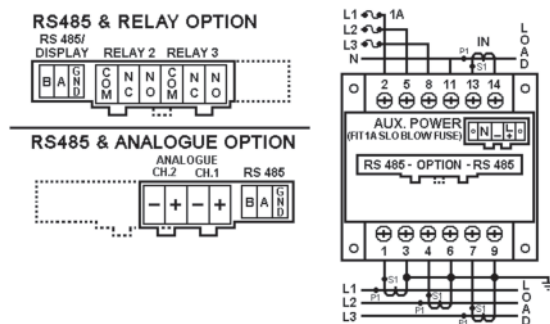
### 3-phase 3-wire



### 3-phase 4-wire



### 3-phase 4-wire with neutral CT





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