

**Integra 1540, 1000, 0640, 0440 and 0340
Digital Metering Systems**





A comprehensive range of high accuracy multi function digital metering systems, specifically designed to provide switchboard builders with the exact level of functionality required for individual power monitoring applications. For example, the 0340 model provides basic measuring and monitoring capabilities, rising up to the 1540 which offers detailed parameter status information, inclusive of harmonic distortion. All products offer programmable potential and current transformer ratios, and power measurement parameters via a simple menu driven user interface. The status of all parameters can be viewed by scrolling through a number of screens featuring a high quality LED display. Integra digital metering systems are ideal for new projects, and can provide a technological facelift with reduced space and wiring benefits to retrofit projects.

Features

- Multi function digital metering
- Energy pulsed outputs
- Digital communications
- Fully programmable PT and CT ratios
- Simple menu driven interface
- ANSI Switchboard case style
- High quality LED display
- True RMS measurement
- 3 phase, 3 wire or 4 wire unbalanced load options

Benefits

- Replaces numerous traditional analog meters
- Significant cost savings
- Reduced wiring times
- High accuracy
- Remote monitoring
- Investment protection
- Delinquency avoidance

Applications

- Switchgear
- Distribution systems
- Generator sets
- Control panels
- Energy management
- Building management
- Utility power monitoring
- Process control
- Motor control
- Ground power units

Approvals

- UL Approved File No. 140578
- IEC 1010/BSEN 61010-1
- CSA Pending

Switchboard Integra 1540

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The Integra 1540 provides programmable measurement, display and communication of 31 major electrical and power quality parameters, including total harmonic distortion (THD) measurement and power quality data. The Integra 1540 offers detailed parameter status with pulsed and digital communication outputs, and is ideally suited for all power monitoring applications.

Switchboard Integra 1000

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A multi function digital RMS meter with accurate measurement, display and communication of up to 23 major electrical parameters, and incorporating pulsed and digital communication outputs. This innovative design offers a self-contained unit for maximum space utilization, or a two-part version consisting of a display and separate transducer which removes the need for high voltage connections on the front panel. A transducer only version is available for digital connection to building management systems.

Switchboard Integra 0640

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The Integra 0640 provides programmable measurement and display of the 12 electrical parameters critical for power generation applications. Utilizing true RMS techniques, Integra 0640 accurately measures and displays three-phase voltage, current and frequency with extended measurement of line voltage on each phase and phase current.

Switchboard Integra 0440

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Designed for Shipboard and Aviation ground power applications, the Integra 0440 provides programmable measurement and display of the 12 electrical parameters critical to the power monitoring application at a 400Hz nominal operating frequency. Utilising true RMS techniques, Integra 0440 provides accurate measurement and indication of three phase voltage, current and system frequency.

Switchboard Integra 0340

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The switchboard Integra 0340 is designed for simplified feeder applications where minimal data is required by the end user. This simple to use unit provides accurate measurement and display of 11 electrical parameters including voltage and current for the system, and for each individual phase. This simple unit is an invaluable tool for all power monitoring applications.

Dimensions

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Connections

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Specification Overview

	INTEGRA 1540	INTEGRA 1000	INTEGRA 0640	INTEGRA 0440	INTEGRA 0340
Dimensions – Self Contained					
4.31" high x 4.31" wide x 6.7" deep	✓	✓	✓	✓	✓
Dimensions – Display Only					
4.31" high x 4.31" wide x 2.90" deep		✓			
Dimensions – Transducer					
6.0" high (max) x 3.72" wide x 5.26" deep		✓			
Configurations					
3 Phase 3 wire	✓	✓	✓	✓	✓
3 Phase 4 wire	✓	✓	✓	✓	✓
Measured Parameters					
Voltage Line to line	✓	✓	✓	✓	✓
Voltage Line to Neutral	✓	✓	✓	✓	✓
System Voltage	✓	✓	✓	✓	✓
Current L1, L2, L3	✓	✓	✓	✓	✓
System Current	✓	✓	✓	✓	✓
Neutral Current	✓	✓			
Frequency (45-66Hz)	✓	✓	✓		
Frequency 400Hz				✓	
Demand Current	✓	✓			
Max Demand Current	✓	✓			
Demand Active Power	✓	✓			
Max Demand Active Power	✓	✓			
Power Factor	✓	✓			
Active Power W	✓	✓			
Reactive Power VAR	✓	✓			
Apparent Power VA	✓	✓			
Active Energy kWh	✓	✓			
Reactive Energy kVARh	✓	✓			
Voltage % THD Average	✓				
Voltage % THD L1, L2, L3	✓				
Current % THD Average	✓				
Current % THD L1, L2, L3	✓				
Communication Options					
Digital RS485 RTU Interface Option	✓	✓			
Pulsed Output Option	✓	✓			
Approvals					
UL File No. 140758	✓	✓	✓	✓	✓
IEC 1010 / BSEN 61010-1	✓	✓	✓	✓	✓



Integra 1540 provides programmable measurement, display and communication of up to 31 major electrical and power quality parameters, including true RMS system values, total harmonic distortion (THD) measurement and power quality data. The meter offers simple user-friendly programming of voltage, current, and power measurement parameters using a menu driven interface. Status of all parameters can be viewed through 13 screens on the 3 line, 4 digit LED display. The Integra 1540 has pulsed and digital communication outputs and is ideal for all power and quality monitoring applications

Features

- Measurement, display and communication of up to 31 power parameters
- THD measurement and power quality data
- True RMS measurement
- Pulsed energy outputs
- Digital communications
- Fully programmable PT and CT ratios
- Simple menu driven interface
- ANSI case style
- High quality LED display

Monitors

- Voltage: line to line & line to neutral
- Current, phase and neutral
- Frequency
- Power factor
- Power (active, apparent and reactive)
- Energy (reactive & active)
- Total harmonic distortion

Applications

- Switchgear
- Distribution systems
- Generator sets
- Control panels
- Energy management
- Building management
- Utility power monitoring
- Process control
- Motor control

Operation

Integra 1540 offers high functionality and uncomplicated operation. Integra 1540 measures all the values needed to monitor power, including early warning of power quality problems for the protection of expensive power assets.

A two-button interface on the front panel gives simple access to the measuring, display and configuration screens. The ">> NEXT" button has access to 31 major electrical and power quality parameters to be viewed through 13 display screens. These include measurement of three-phase voltage and current, frequency, power factor, and total harmonic distortion measurement of both phase and system, current and voltage.

The set-up screens are easily accessed using both a "↑ ADJUST" and ">>NEXT" front panel buttons. A menu driven interface provides simple programming of the PT and CT ratio settings, configuration of the communications options, and adjustment of other operating parameters. To prevent unauthorized access to the product configuration settings, all set-up screens can be protected by an optional customer programmable password.

Once configured, the status of each parameter can be viewed by using the ">>NEXT" button to scroll through each screen. Measurements are clearly displayed via a 3 line, 4 digit LED display.

System Input

Designed for all low, medium and high voltage switchgear and distribution systems, the Integra 1540 has customer programmable PT and CT ratio capability. Direct connected up to 600V AC with 5A CT inputs as standard, and 1A CT inputs available as an option.

Pulsed Outputs

Integra 1540 offers an optional pulse output module enabling the retransmission of time based demand parameters. Outputs are pulsed at a rate proportional to the measured kWh active energy, with pulse width and rate easily programmable via the set-up screens. The output relay has a fully isolated volt free contact, with connection via screw clamp terminals.

Digital Communications

An optional RS485 communications module is available for direct connection to SCADA systems using the Modbus RTU protocol. Johnson Controls Metasys NII protocol is also offered as an option. Remote monitoring enables the user to record the systems parameters in real time, using high resolution numbers.

The Modbus protocol establishes the format for the master's query by placing it into the device address. The slave's response is also constructed using the Modbus protocol; it contains the fields confirming the action taken, the data to be returned, and an error-checking field.



Specification

Input	
Nominal Input Voltage	57.7 to 346V L-N, 100 to 600V L-L
Max Continuous Input Voltage	120% nominal
Max Short Duration Input Voltage	2 x for 1 second, repeated 10 times at 10 second intervals
System PT Ratios (primary)	400kV or 360MW **
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
Outputs	
RS485 Communications	Two wire half duplex
Baud Rates	2400, 4800, 9600, 19200
Pulsed	Clean contact SPNO, 100V DC 0.5A max
Pulse Duration	60, 100 or 200 milliseconds
Auxiliary	
Standard Nominal Supply Voltage	100 V – 250 V AC or DC (85 V – 287 V AC Absolute) (85 V – 312 V DC Absolute)
AC Supply Frequency Range	45 – 66 Hz
AC Supply Burden	6VA
Optional Auxiliary DC Supply	12 V - 48 V DC (10.2 V – 60 V DC Absolute)
DC Supply Burden	6VA
Measuring Ranges	
Voltage	50 .. 120% of nominal (functional 5..120%)
Current	5 .. 120% of nominal (50%..120% for THD)
Frequency	45 .. 66Hz
Power Factor	0.5 inductive – 1 – 0.8 capacitive
THD	To 15th Harmonic V & A
Energy	7 digit resolution
Accuracy	
Voltage	±0.1% of range ±0.4% of reading
Current	±0.1% of range ±0.4% of reading
Power	±0.1% of range ±0.9% of reading
THD	±1%
Neutral Current	±4% of range
Energy	kWh 1% IEC1036 (PF 0.8-1-0.8)
KVArh	2% IEC1036 (PF 0.8-1-0.8)
Temperature Coefficient	0.013%/°C typical
Update Time	500ms display 250ms optional digital port
Enclosure	
Enclosure Style	ANSI C39.1
Compliant With:	UL 140758 and IEC 1010 / BSEN 61010-1
Material	Polycarbonate front and base, steel case
Terminals	Barrier terminal strip 6-32 binding head screw
Dielectric Voltage	Withstand test 3.25kV RMS 50Hz for 1 minute between all electrical circuits
Operating Temperature	-20 to +70°C
Storage Temperature	-30 to +80°C
Relative Humidity	0 .. 95% non condensing
Warm-up Time	1 minute
Shock	30g in 3 planes
Vibration	10 .. 55 Hz, 0.15mm amplitude
Enclosure Integrity	IP54 (front face)
Dimensions	4 .31" high x 4.31" wide x 6.7" deep
Panel Cut Out:	4.06" diameter, 4 stud positions

** maximum PT or CT ratios are limited so that the combination of primary voltage and current do not exceed 360MW at 120% of relevant input

Display Mode

The switchboard Integra 1540 displays measured parameters via a 3 line 4 digit LED display. The displayed parameters appear in the following order.

1. System Volts
System Current
System kW
2. System Volts THD %
System Current THD %
3. Volts L1 – N
Volts L2 – N
Volts L3 – N
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
Frequency
Power Factor
9. kVAr
kVA
kW
10. kWh (7 digit resolution)
11. kVAr Hr (7 digit resolution)
12. kW Demand
Current Demand
13. kW Maximum Demand
Current Maximum Demand

Programming

Integra 1540 is easily programmed and parameters displayed using the two push buttons on the front panel. All configuration screens can be protected by an optional programmable password.

Parameter	Range
Password	4 digit 0000 - 9999
Primary Current	Max 9999:5 (360MW max**)
PT Primary	400kV (360MW max**)
	** maximum PT or CT ratios are limited so that the combination of primary voltage and current do not exceed 360MW at 120% of relevant inputs
Demand Integration Time	8, 15, 20, 30 minutes
Reset	Max demand & active energy registers
Pulse Output Duration	60, 100, 200 ms
Pulse Rate Divisors	1, 10, 100, 1000
RS 485 Interface Baud Rate	2.4, 4.8, 9.6, 19.2 kB
RS 485 Parity	Odd / Even / No, 1 or 2 stop bits
Modbus Address	1 - 247

Ordering Codes

Ordering Code	Product Configuration
INT-1544-***-5-* -option	Integra 1540 3 phase 4 wire 5A CT input
INT-1543-***-5-* -option	Integra 1540 3 phase 3 wire 5A CT input
Input Voltage Suffix ***	
100	100V L-L (57.7V L-N)
110	110V L-L (63.5V L-N)
115	115V L-L (66.4V L-N)
120	120V L-L (69.3V L-N)
139	139V L-L (80.2V L-N)
208	208V L-L (120V L-N)
240	240V L-L (139V L-N)
277	277V L-L (160V L-N)
380	380V L-L (220V L-N)
400	400V L-L (230V L-N)
415	415V L-L (240V L-N)
480	480V L-L (277V L-N)
600	600V L-L (346V L-N)
Auxiliary Voltage Suffix*	
L	12 – 48V DC
M	100 - 250V AC/DC
Communications Options	
M	RS485 Modbus RTU or Johnson Controls Metasys N2
W	kWh Pulsed output

Order Code Example:

INT-1544-120-5-L-W Integra 1540 3 phase 4 wire, 120V L-L nominal voltage, 5A CT input, 12-48V DC auxiliary supply, with pulsed output option.



A multi function digital meter providing accurate measurement, display and communication of up to 23 major electrical parameters, including true RMS measurement of distorted waveforms. The unit incorporates pulsed and digital communication outputs, and is fully programmable via a simple two button menu driven user interface. This innovative design offers a self contained unit for maximum space utilization or a two part display combination consisting of a display unit and separate transducer. This is ideal for avoiding high voltage on the front panel. An optional transducer only version is ideal for digital connection to building management systems.

Features

Measurement, display and communication of up to 23 power parameters

True RMS measurement

Energy pulsed outputs

Digital communications

Fully programmable PT and CT ratios

Simple menu driven interface

ANSI case style

High quality LED display

Monitors

Voltage line to line & line to neutral, current, phase and neutral

Frequency

Power factor

Power (active, apparent and reactive)

Energy (reactive & Active)

Applications

Switchgear

Distribution systems

Generator sets

Control panels

Energy management

Building management

Utility power monitoring

Process control

Motor control

Operation

Switchboard Integra 1000 offers straightforward operation and a comprehensive range of functions required to monitor power. A two button interface on the front panel gives access to the measuring display and configuration screens. The ">> NEXT" button allows up to 23 major electrical and power quality parameters to be viewed through 11 display screens. These include three phase voltage and current measurements, and system measurements for frequency, power factor, and all of the most popular power parameters.

The set-up screens are easily accessed using both "↑↑ ADJUST" and ">> NEXT" front panel buttons. A menu driven interface allows simple programming of the PT and CT ratio settings, configuration of the communications options, and adjustment of other operating parameters. To prevent unauthorized access to the product configuration settings, all set-up screens can be protected by an optional programmable password.

Once configured, the status of each parameter can be viewed by using the ">>NEXT" button to scroll through each screen. Measurements are clearly displayed via a 3 line, 4 digit LED display.

System Input

Designed for all low, medium and high voltage switchgear and distribution systems, the Integra 1000 offers programmable PT and CT ratio capability. Direct connected up to 600V AC with 5A CT inputs standard, and 1A CT inputs available as an option.

Pulsed Outputs

Integra 1000 offers an optional pulse output module enabling the retransmission of time based parameters. The output pulses at a rate proportional to the measured kWh active energy, with pulse width and rate easily programmable via the set-up screens. The output relay has a fully isolated volt free contact, with connection via screw clamp terminals.

Digital Communications

An optional RS485 communications module is available for direct connection to SCADA systems using the Modbus RTU protocol, or optionally the Johnson Controls Metasys NII protocol. Remote monitoring enables the user to record the systems parameters in real time, using high resolution numbers.

The Modbus protocol establishes the format for the master's query by placing it into the device address. The slave's response is also constructed using the Modbus protocol; it contains the fields confirming the action taken, the data to be returned, and an error-checking field.

Switchboard Integra 1000



Specification

Input	
Nominal Input Voltage	57.7 to 346V L-N, 100 to 600V L-L
Max Continuous Input Voltage	120% nominal
Max Short Duration Input Voltage	2 x for 1 second, repeated 10 times at 10 second intervals
System PT Ratios (primary)	400kV or 360MW **
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
Outputs	
RS485 Communications	Two wire half duplex
Baud Rates	2400, 4800, 9600, 19200
Pulsed	Clean contact SPNO, 100V DC 0.5A max
Pulse Duration	60, 100 or 200 milliseconds
Auxiliary	
Standard Nominal Supply Voltage	100 V – 250 V AC or DC (85 V – 287 V AC Absolute) (85 V – 312 V DC Absolute)
AC Supply Frequency Range	45 – 66 Hz
AC Supply Burden	6VA
Optional Auxiliary DC Supply	12 V - 48 V DC (10.2 V – 60 V DC Absolute)
DC Supply Burden	6VA
Measuring Ranges	
Voltage	50 .. 120% of nominal (functional 5..120%)
Current	5 .. 120% of nominal (functional 5..120%)
Frequency	45 .. 66Hz
Power Factor	0.5 capacitive – 1 – 0.8 inductive
Energy	7 digit resolution 360MW max
Accuracy	
Voltage	±0.1% of range ±0.4% of reading
Current	±0.1% of range ±0.4% of reading
Power	±0.1% of range ±0.9% of reading
Neutral Current	±4% of range
Energy	kWh 1% IEC1036 (PF 0.8-1-0.8)
KVArh	2% IEC1036 (PF 0.8-1-0.8)
Temperature Coefficient	0.013%/°C typical
Update Time	500ms display 250ms optional digital port
Enclosure	
Enclosure Style	ANSI C39.1
Compliant With:	UL 140758 and IEC 1010 / BSEN 61010-1
Material	Polycarbonate front and base, steel case
Terminals	Barrier terminal strip 6-32 binding head screw
Dielectric Voltage	Withstand test 3.25kV RMS 50Hz for 1 minute between all electrical circuits
Operating Temperature	-20 to +70°C
Storage Temperature	-30 to +80°C
Relative Humidity	0 .. 95% non condensing
Warm-up Time	1 minute
Shock	30g in 3 planes
Vibration	10 .. 55 Hz, 0.15mm amplitude
Enclosure	Integrity (front face only) IP54
Self Contained Dimensions	4.31" high x 4.31" wide x 6.7" deep
Transducer Dimensions	6.0" high x 3.72" wide x 5.26" deep
Transducer Display	4.31" high x 4.31" wide x 2.9" deep
Panel Cut Out:	4.06" diameter, 4 stud positions

** maximum PT or CT ratios are limited so that the combination of primary voltage and current do not exceed 360MW at 120% of relevant input.

Display Mode

The switchboard Integra 1000 displays measured parameters via a 3 line 4 digit LED display. The displayed parameters appear in the following order.

- 1 System Volts
System Current
System kW
- 2 Volts L1 – N
Volts L2 – N
Volts L3 – N
- 3 Volts L1 – L2
Volts L2 – L3
Volts L3 – L1
- 4 Current L1
Current L2
Current L3
- 5 Neutral Current
Frequency
Power Factor
- 6 kVAr
kVA
kW
- 7 kWh (7 digit resolution)
- 8 kVAr Hr (7 digit resolution)
- 9 kW Demand
Current Demand
- 10 kW Maximum Demand
Current Maximum Demand

Programming

Integra 1000 is easily programmed and parameters displayed using the two push buttons on the front panel. All configuration screens can be protected by an optional programmable password.

Parameter	Range
Password	4 digit 0000 - 9999
Primary Current	Max 9999:5 (360MW max**)
PT Primary	400kV (360MW max**)
	** maximum PT or CT ratios are limited so that the combination of primary voltage and current do not exceed 360MW at 120% of relevant input
Demand Integration Time	8, 15, 20, 30 minutes
Reset	Max demand & active energy registers
Pulse Output Duration	60, 100, 200 ms
Pulse Rate Divisors	1, 10, 100, 1000
RS 485 Interface Baud Rate	2.4, 4.8, 9.6, 19.2 kB
RS 485 Parity	Odd / Even / No, 1 or 2 stop bits
Modbus Address	1 - 247

Ordering Codes - Self Contained

Ordering Code and Product Configuration	Ordering Code and Product Configuration
Integra 1000 3 phase 3 wire	Integra 1000 3 phase 4 wire
Code: 077-IJMU- ** ## - options	Code: 077-IJWU- ** ## - options
Input Voltage & Current Suffix**	Input Voltage & Current Suffix**
VU 100V L-L, 5A CT	VN 110V L-L (63.5V L-N), 5A CT
QP 110V L-L, 5A CT	Z7 115V L-L (66.4V L-N), 5A CT
BF 115V L-L, 5A CT	QL 120V L-L (69.3V L-N), 5A CT
QQ 120V L-L, 5A CT	QM 173V L-L (100V L-N), 5A CT
QR 208V L-L, 5A CT	PN 190V L-L (110V L-N), 5A CT
RQ 230V L-L, 5A CT	QP 200V L-L (115V L-N), 5A CT
QS 240V L-L, 5A CT	QQ 208V L-L (120V L-N), 5A CT
QX 380V L-L, 5A CT	QN 240V L-L (139V L-N), 5A CT
SC 400V L-L, 5A CT	Z3 380V L-L (220V L-N), 5A CT
QW 415V L-L, 5A CT	VR 400V L-L (230V L-N), 5A CT
Z3 460V L-L, 5A CT	QR 415V L-L (240V L-N), 5A CT
QT 480V L-L, 5A CT	QY 480V L-L (277V L-N), 5A CT
VY 600V L-L, 5A CT	QZ 600V L-L (346V L-N), 5A CT
Auxiliary Voltage Suffix ##	Auxiliary Voltage Suffix ##
A5 12 - 48V DC	A5 12 - 48V DC
A2 100 - 250V AC/DC	A2 100 - 250V AC/DC
Communications Options	Communications Options
RS RS485 Modbus RTU	RS RS485 Modbus RTU
JC Johnson Controls Metasys N2	JC Johnson Controls Metasys N2
P1 kWh Pulsed Output	P1 kWh Pulsed Output

Order Code Examples:

077-IJWU-QQA2-P1-RS

Integra 1000 3 phase 4 wire, 208V L-L (120V L-N) nominal voltage, 5A CT input, 100-250V AC/DC auxiliary supply, with kWh pulsed output and RS485 Modbus RTU communications option.

077-IJMU-QRA5-P1

Integra 1000 3 phase 3 wire, 208V L-L nominal voltage, 5A CT input, 12-48V DC auxiliary supply, with kWh pulsed output.

Switchboard Integra 1000



Order Code Examples:

85K-IJJU-QERR-P1

Integra transducer, single phase 3 wire, 120V L-N (240V L-L) nominal voltage, 5A CT input, 240V AC auxiliary supply, with kWh pulse output option.

85K-IJWU-QQPQ-RS

Integra transducer, 3 phase 4 wire, 120V L-N (208V L-L) nominal voltage, 5A CT input, 120V AC auxiliary supply, with RS485 Modbus option.

85K-IJMU-QRRM-P1

Integra transducer, 3 phase 3 wire, 208V L-L nominal voltage, 5A CT input, 208V AC auxiliary supply, with kWh pulse output option.

Ordering Codes – Transducer and Display

Transducer Single Phase 3 Wire	Code: 85K-IJJU- ** ## - option
Optional Transducer Display	Code: 077-DKBU
Input Voltage & Current Suffix **	
PR	220V L-L (110V L-N), 5A CT
QE	240V L-L (120V L-N), 5A CT
Transducer, Single Phase 2 Wire	Code: 85K-IJKU- ** ## - option
Transducer, 3 phase 4 Wire	Code: 85K-IJWU- ** ## - option
Optional Transducer Display	Code: 077-DKBU
Input Voltage & Current Suffix **	
VM	100V L-L (57.7V L-N), 5A CT
VN	110V L-L (63.5V L-N), 5A CT
QL	120V L-L (69V L-N), 5A CT
QM	173V L-L (100V L-N), 5A CT
PN	190V L-L (110V L-N), 5A CT
QP	200V L-L (115V L-N), 5A CT
QQ	208V L-L (120V L-N), 5A CT
VQ	380V L-L (220V L-N), 5A CT
QT	400V L-L (230V L-N), 5A CT
QS	415V L-L (240V L-N), 5A CT
QY	480V L-L (277V L-N), 5A CT
QZ	600V L-L (346V L-N), 5A CT
Transducer, 3 phase 3 Wire	Code: 85K-IJMU- ** ## - option
Optional Transducer Display	Code: 077-DKBU
Input Voltage & Current Suffix **	
PK	100V L-L, 5A CT
QP	110V L-L, 5A CT
BF	115V L-L, 5A CT
QQ	120V L-L, 5A CT
QR	208V L-L, 5A CT
VQ	220V L-L, 5A CT
RQ	230V L-L, 5A CT
QX	380V L-L, 5A CT
QZ	400V L-L, 5A CT
QW	415V L-L, 5A CT
QT	480V L-L, 5A CT
Z3	600V L-L, 5A CT
Auxiliary Voltage Suffix ##	
Z1	
PA	69V
PK	100V
PM	110V
PO	115V
PQ	120V
P7	127V
RM	208V
R4	220V
RQ	230V
RR	240V
R6	277V
AS	346V
RU	380V
SC	400V
SB	415V
SE	480V
SJ	600V AC
Communications Options	
JC	RS485 Johnson Controls Metasys N2
RS	RS485 Modbus RTU
P1	kWh Pulsed Output



The Integra 0640 provides programmable measurement and display of up to 12 electrical parameters critical for power generation applications. Utilizing true RMS techniques, Integra 0640 provides accurate measurement and indication of three phase voltage, current and system frequency. The unit offers simple programming of voltage and current transformer ratios, using the simple menu driven user interface. Status of all parameters can be viewed through 4 screens via a 3 line, 4 digit LED display.

Features

- Measurement and display of voltage, current & frequency
- True RMS measurement
- Fully programmable PT and CT ratios
- Simple menu driven interface
- ANSI case style
- High quality LED display

Monitors

- Voltage: line to line & line to neutral
- Current per phase
- Frequency

Applications

- Switchgear
- Distribution systems
- Generator sets
- Control panels
- Utility power monitoring

Operation

Integra 0640 offers a simple to operate unit providing multi function measurement and display of the functions required to monitor power.

A two button interface on the front panel allows simple access to the measuring display and configuration screens. The ">> NEXT" button allows up to 12 major electrical parameters to be viewed through 4 display screens. These include three phase voltage and current measurements, and system measurements for frequency.

The set-up screens are easily accessed using both "↑↑ ADJUST" and ">> NEXT" front panel buttons. A menu driven interface allows simple programming of the PT and CT ratio settings. To prevent unauthorized access to the product configuration settings, all set-up screens can be protected by an optional programmable password.

Once configured, the status of each parameter can be viewed by using the ">>NEXT" button to scroll through each screen. Measurements are clearly displayed via a 3 line, 4 digit LED display.

System Input

Designed for all low, medium and high voltage switchgear and distribution systems, the Integra 0640 offers programmable PT and CT ratio capability. Direct connected up to 600V AC with 5A CT inputs as standard, and 1A CT inputs are an available option.

Ordering Codes

Ordering Code	Product Configuration
INT-0644-***-5 - *	Integra 0640 3 phase 4 wire 5A CT input
INT-0643-***-5 - *	Integra 0640 3 phase 3 wire 5A CT input
Input Voltage Suffix***	
ELV	100 - 120 V L-L (57.7 - 70V L-N)
LOV	121 - 240 V L-L (70.1 - 139V L-N)
MIV	241 - 480 V L-L (140 - 277V L-N)
HIV	481 - 600 V L-L (278 - 346V L-N)
Auxilliary Voltage Suffix*	
L	12 - 48 V DC
M	100 - 250 V AC/DC

Order Code Example:

INT-0643-MIV-5-L Integra 0640 3 phase 3 wire, 241 – 480 V L-L voltage, 5A CT input, 12-48V DC auxiliary supply.



Display Mode

The switchboard Integra 0640 displays measured parameters on a 3 line 4 digit LED display. The displayed parameters appear in the following order.

- 1 System Volts
System Current
System Frequency
- 2 Volts L1 – N (4 wire only)
Volts L2 – N (4 wire only)
Volts L3 – N (4 wire only)
- 3 Volts L1 – L2
Volts L2 – L3
Volts L3 – L1
- 4 Current L1
Current L2
Current L3

** maximum PT or CT ratios are limited so that the combination of primary voltage and current do not exceed 360MW at 120% of relevant input.

Programming

The switchboard Integra 0640 is easily programmed and measured values are displayed using the two push buttons on the front panel. All configuration screens can be protected by an optional programmable password.

Parameter	Range
Password	4 digit 0000 - 9999
Primary Current	Max 9999:5 (360MW max**)
PT Primary	400kV (360MW max**)
PT Secondary	Set to correspond to secondary value

Specification

Input	
Nominal Input Voltage	57.7 to 346V L-N, 100 to 600V L-L
Max Continuous Input Voltage	120% nominal
Max Short Duration Input Voltage	2 x for 1 second, repeated 10 times at 10 second intervals
System PT ratios (primary)	400kV or 360MW **
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
Auxiliary	
Standard Nominal Supply Voltage	100 V – 250 V AC or DC (85 V – 287 V AC Absolute) (85 V – 312 V DC Absolute)
AC Supply Frequency Range	45 – 66 Hz
AC Supply Burden	6VA
Optional Auxiliary DC Supply	12 V - 48 V DC (10.2 V – 60 V DC Absolute)
DC Supply Burden	6VA
Measuring Ranges	
Voltage	70 .. 120% of nominal (functional 4 - 120%)
Current	5 .. 120% of nominal (functional 5 - 120%)
Frequency	45 to 66Hz
Accuracy	
Voltage	±0.1% of range ±0.4% of reading
Current	±0.1% of range ±0.4% of reading
Frequency	0.15% of mid frequency
Temperature Coefficient	0.013%/°C typical
Update Time	500ms display
Enclosure	
Enclosure Style	ANSI C39.1
Compliant With:	UL 140758 and IEC 1010 / BSEN 61010-1
Material	Polycarbonate front and base, steel case
Terminals	Barrier terminal strip 6-32 binding head screw
Dielectric Voltage	Withstand test 3.5kV RMS 50Hz for 1 minute between all electrical circuits
Operating Temperature	-20 to +70°C
Storage Temperature	-30 to +80°C
Relative Humidity	0 .. 95% non condensing
Warm-up Time	1 minute
Shock	30g in 3 planes
Vibration	10 .. 55 Hz, 0.15mm amplitude
Enclosure	Integrity (front face only) IP54
Dimensions	4.31" high x 4.31" wide x 6.7" deep
Panel Cut Out:	4.06" diameter, 4 stud positions



Designed for the Shipboard and Aviation ground power application, the Integra 0440 provides programmable measurement and display of the 12 electrical parameters critical to the power monitoring application at a 400Hz nominal operating frequency. Utilizing true RMS techniques, Integra 0440 provides accurate measurement and indication of three phase voltage, current and system frequency. The unit offers simple programming of voltage and current transformer ratios, using the simple menu driven user interface. Status of all parameters can be viewed through 4 screens via a 3 line, 4 digit LED display.

Features

- Measurement and display of voltage, current and frequency
- 400Hz nominal frequency
- True RMS measurement
- Fully programmable PT and CT ratios
- Simple menu driven interface
- ANSI case style
- High quality LED display

Monitors

- Voltage line to line & line to neutral and current per phase
- Frequency

Applications

- Aviation ground power systems
- Shipboard systems
- Generator sets
- Control panels

Operation

Integra 0440 offers a simple multi function unit providing measurement and display for power monitoring applications at a 400Hz nominal operating frequency.

A two button interface on the front panel allows simple access to the measuring display and configuration screens. The ">> NEXT" button allows up to 12 major electrical parameters to be viewed through 4 display screens. These include three phase voltage and current measurements, and system measurements for frequency.

The set-up screens are easily accessed using both "↑↑ ADJUST" and ">> NEXT" front panel buttons. A menu driven interface allows simple programming of the PT and CT ratio settings. To prevent unauthorized access to the product configuration settings, all set-up screens can be protected by an optional programmable password.

Once configured, the status of each parameter can be viewed by using the ">>NEXT" button to scroll through each screen. Measurements are clearly displayed via a 3 line, 4 digit LED display.

System Input

Operating at a nominal 400Hz designed for all low, medium and high voltage ground power applications, the Integra 0440 offers programmable PT and CT ratio capability. Direct connected up to 600V AC with 5A CT inputs as standard, and 1A CT inputs are an available option.

Ordering Codes

Ordering Code	Product Configuration
INT-0444-***-5 - *	Integra 0440 3 phase 4 wire 5A CT input
INT-0443-***- 5 - *	Integra 0440 3 phase 3 wire 5A CT input
Input Voltage Suffix***	
ELV	100 - 120 V L-L (57.7 - 70V L-N)
LOV	121 - 240 V L-L (70.1 - 139V L-N)
MIV	241 - 480 V L-L (140 - 277V L-N)
HIV	481 - 600 V L-L (278 - 346V L-N)
Auxilliary Voltage Suffix*	
L	12 - 48 V DC
M	100 - 250 V AC/DC

Order Code Example:

INT-0443-MIV-5-L Integra 0440 3 phase 3 wire, 241 – 480 V L-L voltage, 5A CT input, 12 48V DC auxiliary supply.



Display Mode

The switchboard Integra 0440 displays measured parameters on a 3 line 4 digit LED display. The displayed parameters appear in the following order.

- 1 System Volts
System Current
System Frequency
- 2 Volts L1 – N (4 wire only)
Volts L2 – N (4 wire only)
Volts L3 – N (4 wire only)
- 3 Volts L1 – L2
Volts L2 – L3
Volts L3 – L1
- 4 Current L1
Current L2
Current L3

** maximum PT or CT ratios are limited so that the combination of primary voltage and current do not exceed 360MW at 120% of relevant input.

Programming

The switchboard Integra 0440 is easily programmed and measured values are displayed using the two push buttons on the front panel. All configuration screens can be protected by an optional programmable password.

Parameter	Range
Password	4 digit 0000 - 9999
Primary Current	Max 9999:5 (360MW max**)
PT Primary	400kV (360MW max**)
PT Secondary	Set to correspond to secondary value

Specification

Input	
Nominal Input Voltage	57.7 to 346V L-N, 100 to 600V L-L
Max Continuous Input Voltage	120% nominal
Max Short Duration Input Voltage	2 x for 1 second, repeated 10 times at 10 second intervals
System PT ratios (primary)	400kV or 360MW **
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
Auxiliary	
Standard Nominal Supply Voltage	100 V – 250 V AC or DC (85 V – 287 V AC Absolute) (85 V – 312 V DC Absolute)
AC Supply Frequency Range	360 – 440 Hz
AC Supply Burden	6VA
Optional Auxiliary DC Supply	12 V - 48 V DC (10.2 V – 60 V DC Absolute)
DC Supply Burden	6VA
Measuring Ranges	
Voltage	70 .. 120% of nominal (functional 40..120%)
Current	5 .. 120% of nominal (functional 5..120%)
Frequency	360 to 440Hz
Accuracy	
Voltage	1% of range
Current	1% of range
Frequency	1% of mid frequency
Temperature Coefficient	0.013%/°C typical
Update Time	500ms display
Enclosure	
Enclosure Style	ANSI C39.1
Compliant With:	UL 140758 and IEC 1010 / BSEN 61010-1
Material	Polycarbonate front and base, steel case
Terminals	Barrier terminal strip 6-32 binding head screw
Dielectric Voltage	Withstand test 3.25kV RMS 50Hz for 1 minute between all electrical circuits
Operating Temperature	-20 to +70°C
Storage Temperature	-30 to +80°C
Relative Humidity	0 .. 95% non condensing
Warm-up Time	1 minute
Shock	30g in 3 planes
Vibration	10 .. 55 Hz, 0.15mm amplitude
Enclosure	Integrity (front face only) IP54
Dimensions	4.31" high x 4.31" wide x 6.7" deep
Panel Cut Out:	4.06" diameter, 4 stud positions



The switchboard Integra 0340 is designed for simplified feeder applications where minimal data is required by the end user. This simple to use meter provides accurate measurement and display of up to 11 electrical parameters including voltage and current for the system, plus line to line and line to neutral measurements. The 0340 has programmable voltage and current transformer ratios and true RMS indication for accurate measurement of distorted waveforms, which can be viewed through 4 screens via a high visibility LED display. Integra 0340 presents an invaluable tool for all power monitoring applications.

Features

- Measurement and display of voltage and current
- True RMS measurement
- Fully programmable PT and CT ratios
- Simple menu driven interface
- ANSI case style
- High quality LED display

Monitors

- Voltage line to line & line to neutral and current per phase

Applications

- Switchgear
- Feeder panels
- Distribution systems
- Generator sets
- Control panels
- Utility power monitoring
- Motor control

Operation

This simple self contained digital metering system provides the basic measurement and display functions required to monitor power and protect expensive power assets.

A two button interface on the front panel allows simple access to the display and configuration screens. The ">> NEXT" button allows up to 11 major electrical parameters to be viewed through 4 display screens. These include three phase voltage and current measurements, and current and voltage averages.

The set-up screens are easily accessed using both "↑↑ ADJUST" and ">> NEXT" front panel buttons. A menu driven interface allows simple programming of the PT and CT ratio settings. To prevent unauthorized access to the product configuration settings, all set-up screens can be protected by an optional programmable password.

Once configured, the status of each parameter can be viewed by using the ">>NEXT" button to scroll through each screen. Measurements are clearly displayed via a 3 line, 4 digit LED display.

System Input

Designed for all low, medium and high voltage switchgear and distribution systems, the Integra 0340 offers programmable PT and CT ratio capability. Direct connected up to 600V AC with 5A CT inputs as standard, and 1A CT inputs available as an option.

Ordering Codes

Ordering Code	Product Configuration
INT-0344-***-5-*	Integra 0340 3 phase 4 wire 5A CT input
INT-0343-***-5-*	Integra 0340 3 phase 3 wire 5A CT input
Input Voltage Suffix***	
ELV	100 - 120 V L-L (57.7 - 70V L-N)
LOV	121 - 240 V L-L (70.1 - 139V L-N)
MIV	241 - 480 V L-L (140 - 277V L-N)
HIV	481 - 600 V L-L (278 - 346V L-N)
Auxiliary Voltage Suffix*	
L	12 - 48 V DC
M	100 - 250 V AC/DC

Order Code Example:

INT-0344-MIV-5-L Integra 0340 3 phase 4 wire, 241 – 480 V L-L voltage, 5A CT input, 12-48V DC auxiliary supply.

Switchboard Integra 0340



Display Mode

The switchboard Integra 0340 displays measured parameters via a 3 line 4 digit LED display. The displayed parameters appear in the following order.

- 1 System Volts
System Current
- 2 Volts L1 – N (4 wire only)
Volts L2 – N (4 wire only)
Volts L3 – N (4 wire only)
- 3 Volts L1 – L2
Volts L2 – L3
Volts L3 – L1
- 4 Current L1
Current L2
Current L3

** maximum PT or CT ratios are limited so that the combination of primary voltage and current do not exceed 360MW at 120% of relevant input.

Programming

Integra 0340 is easily programmed and parameters displayed using the two push buttons on the front panel. All configuration screens can be protected by an optional programmable password.

Parameter	Range
Password	4 digit 0000 - 9999
Primary Current	Max 9999:5 (360MW max**)
PT Primary	400kV (360MW max**)
PT Secondary	Set to correspond to secondary value

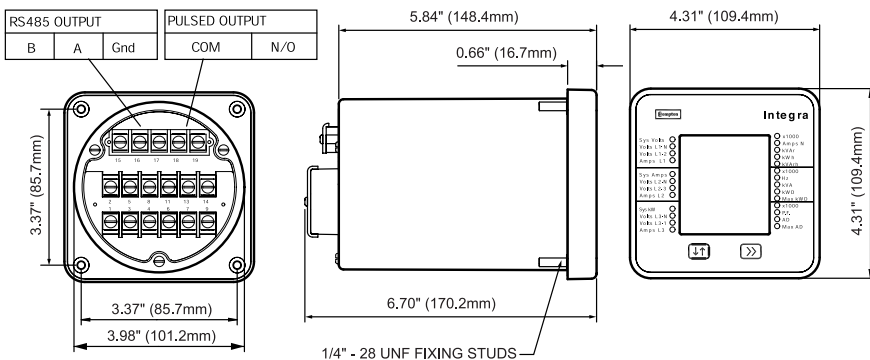
Specification

Input	
Nominal Input Voltage	57.7 to 346V L-N, 100 to 600V L-L
Max Continuous Input Voltage	120% nominal
Max Short Duration Input Voltage	2 x for 1 second, repeated 10 times at 10 second intervals
System PT ratios (primary)	400kV or 360MW **
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
Auxiliary	
Standard Nominal Supply Voltage	100 V – 250 V AC or DC +/- 15% (85 V – 287 V AC Absolute) (85 V – 312 V DC Absolute)
AC Supply Frequency Range	45 – 66 Hz
AC Supply Burden	6VA
Optional Auxiliary DC Supply	12 V - 48 V DC (10.2 V – 60 V DC Absolute)
DC Supply Burden	6VA
Measuring Ranges	
Voltage	70 .. 120% of nominal (functional 40..120%)
Current	5 .. 120% of nominal (functional 5..120%)
Accuracy	
Voltage	±0.1% of range ±0.4% of reading
Current	±0.1% of range ±0.4% of reading
Temperature Coefficient	0.013%/°C typical
Update Time	500ms display
Enclosure	
Enclosure Style	ANSI C39.1
Compliant With:	UL 140758 and IEC 1010 / BSEN 61010-1
Material	Polycarbonate front and base, steel case
Terminals	Barrier terminal strip 6-32 binding head screw
Dielectric Voltage	Withstand test 3.25kV RMS 50Hz for 1 minute between all electrical circuits
Operating Temperature	-20 to +70°C
Storage Temperature	-30 to +80°C
Relative Humidity	0 .. 95% non condensing
Warm-up Time	1 minute
Shock	30g in 3 planes
Vibration	10 .. 55 Hz, 0.15mm amplitude
Enclosure	Integrity (front face only) IP54
Dimensions	4.31" high x 4.31" wide x 6.7" deep
Panel Cut Out:	4.06" diameter, 4 stud positions

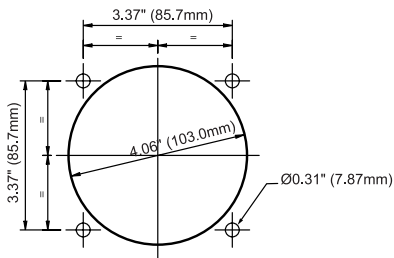


Dimensions

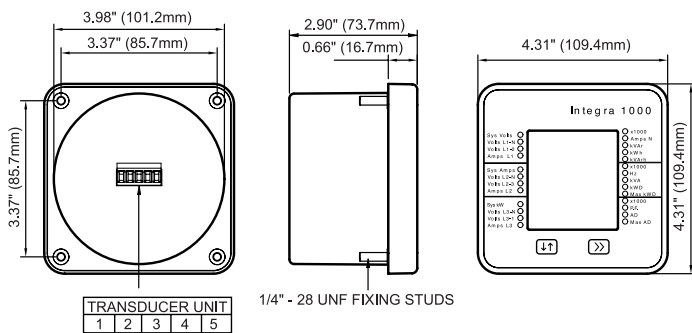
Self Contained Integra 1540, 1000, 0640, 0440 and 0340



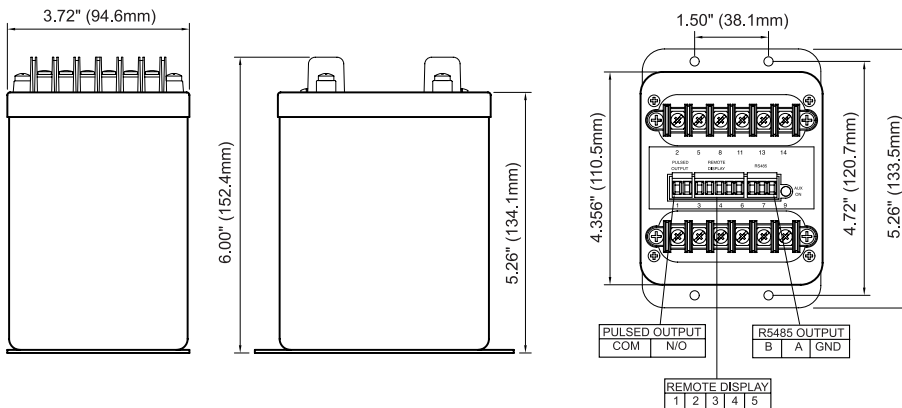
Panel Cut Out



Integra 1000 Remote Display (for use with Integra 1000 Transducer)



Integra 1000 Transducer

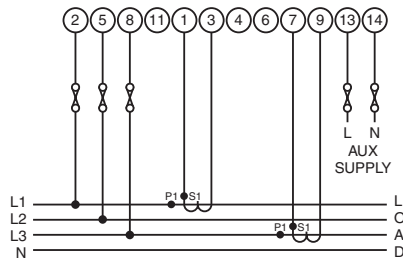




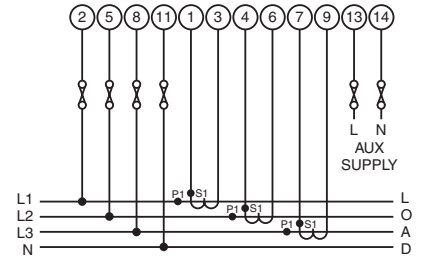
Wiring

Input connections are made to screw clamp terminals. Terminals for both current and voltage connections are sized to accept two #9 AWG (3mm²) solid or stranded wires, or ring lugs suitable for 6-32 screws. Connections for communications and pulse outputs use identical style terminals, except for the 85K transducer series and 077-DKB display, which use two part detachable screw clamp connectors suitable for one #10 AWG (2.5mm²) solid or stranded wire.

3-PHASE 3-WIRE UNBALANCED LOAD
DIGITAL METERING SYSTEM



3-PHASE 4-WIRE UNBALANCED LOAD
DIGITAL METERING SYSTEM



Auxiliary Supply

The Integra family should ideally be powered from a dedicated supply, either 100 – 250V AC or DC (85V – 280V AC Absolute or 85V – 312V DC Absolute) or 12-48V DC (10.2V – 60V DC Absolute). However the device may be powered from the signal source, provided the source remains within the working range of the chosen auxiliary supply.

Fusing

It is recommended that all voltage lines be fitted with 1 amp HRC fuses.

Safety / Ground Connections

For safety reasons all CT secondary connections should be grounded in accordance with local regulations.

All of the above information, including drawings, illustrations and graphic designs, reflects our present understanding and is to the best of our knowledge and belief correct and reliable. Users, however, should independently evaluate the suitability of each product for the desired application. Under no circumstances does this constitute an assurance of any particular quality or performance. Such an assurance is only provided in the context of our product specifications or explicit contractual arrangements. Our liability for these products is set forth in our standard terms and conditions of sale. ALR, AMP, AXICOM, B&H, BOWTHORPE EMP, CROMPTON INSTRUMENTS, DORMAN SMITH, DULMISON, GURO, HELLSTERN, LA PRAIRIE, MORLYNN, RAYCHEM, and SIMEL are trademarks.

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Fax: ++1 905 671 3661

Mexico

Phone: ++52 55 5729 0405
Fax: ++52 55 5361 8545

Mexico

Phone: ++52 55 5383 1585
Fax: ++52 55 5382 0016

Brazil

Phone: ++55 11 3611 1862
Fax: ++55 11 3611 2457

Colombia

Phone: ++571 240 9396
Fax: ++571 660 0084

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Phone: ++562 209 8211
Fax: ++562 223 1477

Peru

Phone: ++511 442 4242
Fax: ++511 421 0368

Argentina

Phone: ++54 11 4733 2277
Fax: ++54 11 4733 2267

Venezuela

Phone: ++58 414 249 8857
Fax: ++58 212 963 2561

Central America

Phone: ++1 954 602 5001
Fax: ++1 954 602 5021

Caribbean

Phone: ++1 954 602 5001
Fax: ++1 954 602 5021



Tyco Electronics Corporation, Crompton Instruments

1610 Cobb International Blvd, Suite 4, Kennesaw, GA, 30152, USA
Phone: 1 800 327 6996 Fax: 1 770 423 7194

<http://energy.tycoelectronics.com>