

RISH Integra 1540 - Digital Metering System

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
- » DIN 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

Typical Applications

- Switchgear
- Distribution Systems
- Generator sets
- Control Systems
- Energy Management
- Building management
- Utility power monitoring
- Process control
- Motor control



Rish 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 Rish Integra 1540 has pulsed and digital communication outputs and is ideal for all power and quality monitoring applications.

Operation

Rish Integra 1540 offers high functionality and uncomplicated operation. Rish 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 “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 Rish 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

Rish 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.

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Specifications

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 seconds intervals
System PT Ratio (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	100V - 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 .. 66 Hz
Power Factor	0.5 inductive - 1- 0.8 capacitive
THD	To 15th Harmonic V & A
Energy	7 digit
Accuracy	
Voltage	± 0.3% of range +/-0.4% of reading
Current	± 0.3% of range +/-0.4% of reading
Power	± 0.5% of range +/-0.4% 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	DIN 43700
Compliant With:	EC 1010 / BSEN 61010-1
Material	Polycarbonate base & ABS case
Terminals	Shruded screw clamp
Dielectric Voltage	Withstand test 2.2kV RMS 50Hz for 1 minute between all electrical circuits
Operating Temperature	-20°C to +70°C
Storage Temperature	-30°C to +80°C
Relative Humidity	0 .. 95% non condensing
Warm-up Time	1 minute
Enclosure Integrity	IP54 (front face)
Vibration	10 .. 55 Hz, 0.15mm amplitude

** 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



RISHABH
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Display Mode

The switchboard *Rish 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. kW Hr (7 digit resolution)
11. kVAr Hr (7 digit resolution)
12. kW Demand
Current Demand
13. kW Maximum Demand
Current Maximum Demand

Programming

Rish 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	Rish <i>Integra</i> 1540 3 phase 4 wire 5A CT input
INT - 1543 - *** - 5 - * - option	Rish <i>Integra</i> 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	RS 485 Modbus RTU or Johnson controls Metasys N2
W	kW Hr Pulsed output

Order Code Example:

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



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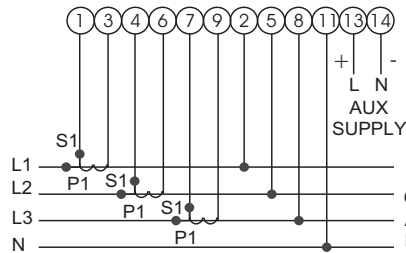
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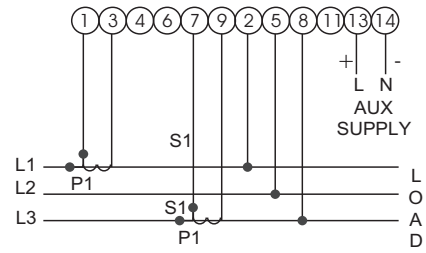
Connection Diagrams

Input connections are made directly to shrouded screw clamp terminals. Numbering is clearly marked on the both current and voltage inputs will accept up to two 12 AWG diameter cables.

3-Phase 4-Wire Unbalanced Load Digital Metering System



3-Phase 3-Wire Unbalanced Load Digital Metering System



Auxiliary Supply

The *Rish Integra* 1540 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.

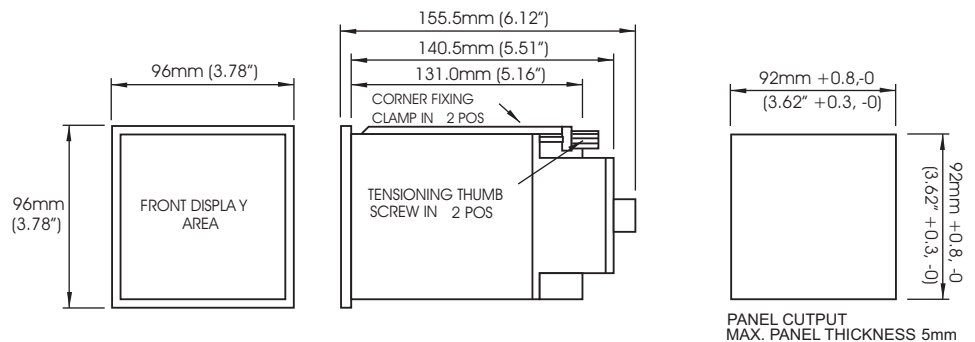
Fusing

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.

Dimensions



Printed in India, Subject to change without notice.



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