



96x96

SPECIFICATIONS

DISPLAY

Liquid crystal display with backlight
4 lines, 4 digits per line to show electrical Parameters
5th line, 8 digits to show energy
Bar graph for current indication as percentage of CT rating

LCD INDICATIONS

- I** - Integration of energy
- PRG** - Unit is in configuration menu
- ↔** - Communication in progress
- MAX DMD** - Maximum & Minimum Demand of Power

WIRING INPUT

3 Ø - 4 wire, 1 Ø - 2 wire, 3 Ø - 3 wire

RATED INPUT VOLTAGE

100 to 240V AC (L-N) ; 173 to 415V AC (L-L)

FREQUENCY RANGE

45-65 Hz

CT PRIMARY

5A to 6,000A (Programmable for any Value)

CT SECONDARY

5A

PT PRIMARY

100V to 600V (Programmable for any value)

PT SECONDARY

173 to 415V AC (L-L)(Programmable for any value)

DISPLAY UPDATE TIME

1 sec for all parameters

DISPLAY SCROLLING

Automatic / Manual

AUXILIARY

85 to 270V AC, 50/60Hz

TEMPERATURE

Operating : 10 to 55°C
Storage : -20 to 75°C

HUMIDITY

85% non-condensing

MOUNTING

Panel mounting

WEIGHT

230gms

OUTPUT

- Pulse Output** : Voltage range: External 24VDC max. Current capacity : 100 mA max
- Pulse Duration** : Selectable between 50, 100, 150, 200, 250, 300 ms.
- Pulse Width** : Selectable between 0.1 to 9.99kWh

TO COMPLY WITH MID CERTIFICATION THE CT RATIO MUST BE SET BEFORE PUTTING THE METER INTO SERVICE

ACCURACY		
Measurement	Accuracy	
Voltage V_{L-N}	±0.5% of Full scale	
Voltage V_{L-L}	±0.5% of Full scale	
Current	±0.5% of Full scale	
Frequency	±0.1% For L-N Voltage >20V , For L-L Voltage >35V	
Active Power	1%	
Apparent power	1%	
Reactive Power	1%	
Power factor	±0.01	
Active energy	EN50470-1/3 : Cl.B	
Reactive energy	EN62053-23 : Cl.2	
Apparent energy	1%	
MAX / MIN Active Power	1%	
MAX / MIN Reactive Power	1%	
MAX Apparent Power	1%	
PT Ratio x CT Ratio	kWh	
<15	0.01K	0.01K
<150	0.1K	0.1K
<1500	1K	1K
<4161	0.01M	0.01M

NOTE :

- 1) For Voltage, Current, Power, resolution is automatically adjusted.
- 2) For power factor, resolution is 0.01
- 3) For RI-F-100-C : Total energy is highest resolution of loads.

Configuration Lock Parameters

When the configuration mode is entered and any of the parameters are changed the user has only 15 minutes to make changes. After this time the parameters below are locked and cannot be changed.

The meter can only be unlocked by returning it to the factory for the lock out.

PARAMETERS ARE :

- Network Selection CT Primary/Secondary
- PT Primary/Secondary Factory Default
- Energy Reset Pulse width/Duration

WIRING GUIDELINES

WARNING :

1. To prevent the risk of electric shock, power supply to the equipment must be isolated during installation.
2. Wiring shall be done strictly according to the terminal layout. Confirm that all connections are correct.
3. To reduce electromagnetic interference use of wires with adequate ratings and twists of the same in equal size shall be made with shortest connections.
4. Routing of connecting cables shall be away from any internal EMI source.
5. Cable used for connection to power source, must have a cross section of 0.5mm² to 2.5mm². (20 to 14AWG ; 75°C (min))
6. Copper cable should be used.
7. Before attempting work on device, ensure absence of voltages using appropriate voltage detection device.
8. All wiring to be accordance with applicable local standards.

INSTALLATION GUIDELINES

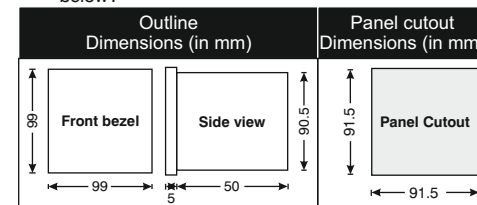
CAUTION :

1. This equipment, being built-in-type, normally becomes a part of main control panel and in such case the terminals do not remain accessible to the end user after installation and internal wiring.
2. Conductors must not come in contact with the internal circuitry of the equipment or else it may lead to a safety hazard that may in turn endanger life or cause electrical shock to the operator.
3. Circuit breaker or mains switch must be installed between power source and supply terminals to facilitate power 'ON' or 'OFF' function. However this switch or breaker must be installed in a convenient position normally accessible to the operator.
4. The equipment shall not be installed in environmental conditions other than those mentioned in this manual.
5. The equipment does not have a built-in-type fuse. Installation of an external fuse of suitable rating for the electric circuit is highly recommended.

MECHANICAL INSTALLATION

For installing the meter

1. Prepare the panel cutout with dimensions as shown below :



2. Push the meter into the panel cutout. Secure the meter in place by fitting the clamps from the rear side. Fit clamps on both sides, diagonally opposite for optimum fitting.
3. For proper sealing, tighten the screws evenly with required torque.
4. Recommended conductor cross section = 1.5mm² Screw clamp tightening torque = 0.1N-m

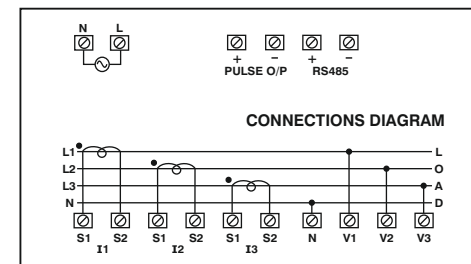
CAUTION

When installed the equipment must not come in close proximity to any heating sources, oil, caustic vapors, steam or other unwanted process by-products.

EMC Guidelines :

1. Input power cables should be kept as short as possible.
2. Layout of connecting cables shall be away from any

TERMINAL CONNECTIONS



SERIAL COMMUNICATION

Interface standard and protocol	RS485 MODBUS RTU
Communication address	1 to 255
Transmission mode	Half duplex
Data types	Float, Hex and Integer
Transmission distance	500 Metre maximum
Transmission speed	300, 600,1200, 2400, 4800, 9600,19200 (in bps)
Parity	None, Odd, Even
Stop bits	1 or 2
Response time	100 ms (max and independent of baud rate)

FRONT PANEL DESCRIPTION



ONLINE PAGE DESCRIPTION

There are 6 dedicated keys labelled as V, I, VAF, PF, P, E. Use these 6 keys to read meter parameters. Simply press these keys to read the parameters.

KEY PRESS	ONLINE PAGE DESCRIPTION
Press "V"	<p>The first screen : Displays line to neutral Voltage of three phase and average line to neutral voltage.</p> <p>The second screen : Displays line to line voltage of three phase and average line to line voltage.</p> <p>The third screen : Displays total percentage harmonics of line to neutral voltage of three phase and average line to neutral voltage.</p> <p>The fourth screen : Displays total percentage harmonics of line to line voltage of three phase and average line to line voltage.</p> <p>The fifth screen : Press for 3 sec, Displays phase sequence indication.</p> <p>Note : 1) For 3 Ø 3 wire system, for only the second and fourth screen will be available. 2) In 1 Ø 2 wire system only first, third and fifth screen will be available.</p>
Press "I"	<p>The first screen : Displays phase current of three phase and neutral current.</p> <p>The second screen : Displays phase maximum current demand of three phase and average current.</p> <p>The third screen : Displays total percentage harmonic of current of three phase and average phase current.</p> <p>The fourth screen : Press for 3 sec, Displays current connection indication page.</p> <p>Note : For 3 Ø 3 wire system only first, second and third screen will be available. Displays average current instead of neutral current.</p>
Press "VAF"	<p>The first screen : Displays voltage, current, power factor of first phase and frequency.</p> <p>The second screen : Displays voltage, current, power factor of second phase and frequency.</p> <p>The third screen : Displays voltage, current, power factor of third phase and frequency.</p> <p>The fourth screen : Displays average value of voltage, current and power factor of three phase and frequency.</p> <p>Note : 1) In 3 Ø 3 wire system voltage current power factor and freq. will be line to line. 2) In 1 Ø 2 wire system only first screen will be</p>
Press "PF"	<p>The first screen : Displays power factor of three phase and average power factor.</p> <p>Note : For 3 Ø 3 wire system, only average power factor will be available on this screen.</p>

KEY PRESS	ONLINE PAGE DESCRIPTION
Press "P"	<p>The first screen : Displays active power of three phase and total active power.</p> <p>The second screen : Displays reactive power of three phase and total reactive power.</p> <p>The third screen : Displays apparent power of Three phase and total apparent power.</p> <p>The fourth screen : Displays active, reactive, apparent power and power factor of first phase.</p> <p>The fifth screen : Displays active, reactive, apparent power and power factor of second phase.</p> <p>The sixth screen : Displays active, reactive, apparent power and power factor of third phase.</p> <p>The seventh screen : Displays total active, reactive, apparent power and average power factor of three phase.</p> <p>The eighth screen : Displays maximum active power demand, reactive power demand and apparent power demand.</p> <p>The ninth screen : Displays minimum active power demand and reactive power demand.</p> <p>Note : 1) For 3 Ø 3 wire system only seventh, eighth and ninth screen will be available. 2) In 1 Ø 2 wire system only first, second, third,</p>
Press "E"	<p>The first Screen : Displays import active energy of first phase.</p> <p>The second screen : Displays import active energy of second phase.</p> <p>The third screen : Displays import active energy of third phase.</p> <p>The fourth screen : Displays export active energy of first phase.</p> <p>The fifth screen : Displays export active energy of second phase.</p> <p>The sixth screen : Displays export active energy of third phase.</p> <p>The seventh screen : Displays total import active energy of three phase.</p> <p>The eighth screen : Displays total export active energy of three phase.</p> <p>The ninth screen : Displays total net active energy of three phase.</p> <p>The tenth Screen : Displays import reactive energy of first phase.</p> <p>The eleventh screen : Displays import reactive energy of second phase.</p> <p>The twelfth screen : Displays import reactive energy of third phase.</p> <p>The thirteenth screen : Displays export reactive energy of first phase.</p> <p>The fourteenth screen : Displays export reactive energy of second phase.</p> <p>The fifteenth screen : Displays export reactive energy of third phase.</p> <p>The sixteenth screen : Displays total import reactive energy of three phase.</p> <p>The seventeenth screen : Displays total export reactive energy of three phase.</p> <p>The eighteenth screen : Displays total net reactive energy of three phase.</p> <p>The nineteenth screen : Displays apparent energy of first phase.</p> <p>The twenty first screen : Displays apparent energy of second phase.</p> <p>The twenty second screen : Displays total net apparent energy of three phase.</p>
<p>NOTE : 1) For 1 phase 2 wire network, all page will be same as 3 phase 4 wire. 2) For 3 phase 3 wire network only total import, total export and total net energy will display.</p>	

Safety Precautions

Safety related codifications, symbols and instructions that appear in this operating manual or on the equipment must be strictly followed to ensure the safety of the operating personnel as well as the instrument.

If the equipment is not used in a manner specified by the manufacturer it might impair the protection provided by the equipment.

Do not use the equipment if there is any mechanical damage.
Ensure that the equipment is supplied with correct voltage.

CAUTION :

1. Read complete instructions prior to installation and operation of the unit.
2. Risk of electric shock.
3. The equipment in its installed state must not come in close proximity to any heating sources, oils, steam, Caustic vapors or other unwanted process by products.

CONFIGURATION

There are 6 dedicated keys with symbols marked as use these 6 keys to enter into configuration menu / change setting.

NOTE : The settings should be done by a professional, after going through this users manual and after having understood the application situation.

For the configuration setting mode :

- Use + keys for 3 sec to enter or exit from the configuration menu.
- Use or keys to move cursor left or right by one digit each time.
- Use or keys for increasing or decreasing parameters value.
- Use key to go back to previous page.
- Use key to save the setting and move on to next Page.

Config. page.	Function	Range or Selection	Factory Setting
	Password	0000 to 9998	1000
1	Change Password	No / Yes	No
1.1	New Password	0000 to 9998	1000
2	Network Selection	3P4W, 3P3W 1P2W-P1	3P4W
3	CT Secondary	Preset	5
4	CT Primary	5A to 6,000A	160
5	PT Secondary	173V to 415V	350
6	PT primary	100V to 600V	350
7	Slave Id	1 to 255	1
8	Baud Rate	300, 600, 1200, 2400, 4800, 9600 and 19200	9600
9	Parity	None, Even, Odd	None
10	Stop Bit	1 or 2	1
11	Back Light	0 to 7200 sec.	0000
12	Demand interval method	Sliding / Fixed	Sliding
13	Demand interval duration	1 to 30	15
14	Demand interval length	1 to 30 min	1
15	Max Page Auto	1 to 21	21

Config page.	Function	Range or Selection	Factory Setting
16	Change Page Sequence	No / Yes	No
16.01	Page sequence 1	Page 1 to 21	1
16.02	Page sequence 2	Page 1 to 21	2
16.03	Page sequence 3	Page 1 to 21	3
16.04	Page sequence 4	Page 1 to 21	4
16.05	Page sequence 5	Page 1 to 21	5
16.06	Page sequence 6	Page 1 to 21	6
16.07	Page sequence 7	Page 1 to 21	7
16.08	Page sequence 8	Page 1 to 21	8
16.09	Page sequence 9	Page 1 to 21	9
16.10	Page sequence 10	Page 1 to 21	10
16.11	Page sequence 11	Page 1 to 21	11
16.12	Page sequence 12	Page 1 to 21	12
16.13	Page sequence 13	Page 1 to 21	13
16.14	Page sequence 14	Page 1 to 21	14
16.15	Page sequence 15	Page 1 to 21	15
16.16	Page sequence 16	Page 1 to 21	16
16.17	Page sequence 17	Page 1 to 21	17
16.18	Page sequence 18	Page 1 to 21	18
16.19	Page sequence 19	Page 1 to 21	19
16.20	Page sequence 20	Page 1 to 21	20
16.21	Page sequence 21	Page 1 to 21	21
17	Pulse Length	00.01 to 99.99	0.10
18	Pulse duration	50, 100, 150, 200, 250, 300	200
19	Factory Default	No	NO
20	Reset Energy and Max Demand	No	NO
20.1	Password	0001 To 9999	1001
20.01	Reset Active Energy	No	NO
20.02	Reset Reactive Energy	No	NO
20.03	Reset Apparent Energy	No	NO
20.04	Reset Max Power	No / Yes	NO
20.05	Reset Run Hour	No / Yes	NO

For resetting energy parameters user will be prompted for password. If correct password is entered, the user will be able to reset only the parameters that have not been Locked. This password will be value which will be greater than the configuration password by 1.

PRODUCT DESCRIPTION

Press PF key for 10 sec display CRC in first two row, version in 3rd or 4th row & serial no in last row.

AUTOMATIC / MANUAL MODE DESCRIPTION

Press E () button for 3 seconds to toggle between Automatic and Manual mode.
Note : By default unit operates in automatic mode. In automatic mode online pages scroll automatically at the rate of 5 seconds per page. In automatic mode when any key is pressed, unit temporarily switches to manual mode and the appropriate page is displayed, also if no key is pressed for 5 sec, unit resumes automatic mode.

MODBUS REGISTER ADDRESSES LIST

Readable / writable parameters : [Data Structure : Integer]

Formula to find address of individual Harmonic

$$\{143 + [(Harmonic\ no-2) \times 2] + 60 \times Constant\ Parameter\}$$

For Example,

To find the 14th Harmonic address of Voltage V31 following formula can be used :

Formula with the parameter :

$$\{143 + [(Harmonic\ no-2) \times 2] + 60 \times C\ P\}$$

$$Eg. \{143 + [(14-2) \times 2] + 60 \times 5\} = 467$$

So, Check the 14th Harmonic of Voltage V31 at 467 address.

Constant Parameter	Meaning
0	Voltage V1N
1	Voltage V2N
2	Voltage V3N
3	Voltage V12
4	Voltage V23
5	Voltage V31
6	Current I1
7	Current I2
8	Current I3

Address	Hex Address	Parameter	Range		Length (Register)
			Min value	Max value	
40000	0x00	Password	Min value : 0	Max value : 9998	1
40001	0x01	N/W Selection	Value : 0x0000	Meaning : 3P4W	1
			Value : 0x0001	Meaning : 3P3W	1
			Value : 0x0002	Meaning : 1P2W-P1	1
40002	0x02	CT Secondary (Readable Only)	Min value : 5	Max value : 5	1
40003	0x03	CT primary	Min value : 5	Max value : 6000	1
40004	0x04	PT Secondary	Min value : 173	Max value : 415	1
40005	0x05	PT primary	Min value : 100	Max value : 600	2
40007	0x07	Slave id	Value : 1	Meaning : 255	1
40008	0x08	Baud rate	Value : 0x0000	Meaning : 300	1
			Value : 0x0001	Meaning : 600	
			Value : 0x0002	Meaning : 1200	
			Value : 0x0003	Meaning : 2400	
			Value : 0x0004	Meaning : 4800	
			Value : 0x0005	Meaning : 9600	
40009	0x09	Parity	Value : 0x0000	Meaning : None	1
			Value : 0x0001	Meaning : Odd	
			Value : 0x0002	Meaning : Even	
40010	0x0A	Stop bit	Value : 0x0000	Meaning : 1	1
			Value : 0x0001	Meaning : 2	1
			Min value	Max value	
40011	0x0B	Backlight OFF	0	7200	1
40012	0x0C	Factory Default	1	Set to factory setting range	1
40016	0x10	Auto Mode Pages	Min Value : 1	Max Value : 21	
			Page No	Meaning	
40017	0x11	Page Address Sequence	1-21	1-First Page ; 21-Last Page	1
40018	0x12	Page Address Sequence	1-21	1-First Page ; 21-Last Page	1
40019	0x13	Page Address Sequence	1-21	1-First Page ; 21-Last Page	1
40020	0x14	Page Address Sequence	1-21	1-First Page ; 21-Last Page	1
40021	0x15	Page Address Sequence	1-21	1-First Page ; 21-Last Page	1
40022	0x16	Page Address Sequence	1-21	1-First Page ; 21-Last Page	1
40023	0x17	Page Address Sequence	1-21	1-First Page ; 21-Last Page	1
40024	0x18	Page Address Sequence	1-21	1-First Page ; 21-Last Page	1
40025	0x19	Page Address Sequence	1-21	1-First Page ; 21-Last Page	1
40026	0x1A	Page Address Sequence	1-21	1-First Page ; 21-Last Page	1
40027	0x1B	Page Address Sequence	1-21	1-First Page ; 21-Last Page	1

Address	Hex Address	Parameter	Range		Length (Register)
			Page No	Meaning	
40028	0x1C	Page Address Sequence	1-21	1-First Page ; 21-Last Page	1
40029	0x1D	Page Address Sequence	1-21	1-First Page ; 21-Last Page	1
40030	0x1E	Page Address Sequence	1-21	1-First Page ; 21-Last Page	1
40031	0x1F	Page Address Sequence	1-21	1-First Page ; 21-Last Page	1
40032	0x20	Page Address Sequence	1-21	1-First Page ; 21-Last Page	1
40033	0x21	Page Address Sequence	1-21	1-First Page ; 21-Last Page	1
40054	0x36	Page Address Sequence	1-21	1-First Page ; 21-Last Page	1
40055	0x37	Page Address Sequence	1-21	1-First Page ; 21-Last Page	1
40059	0x3B	Page Address Sequence	1-21	1-First Page ; 21-Last Page	1
40060	0x3C	Page Address Sequence	1-21	1-First Page ; 21-Last Page	1
			Value	Meaning	
40034	0x22	Demand Interval Method	0x0000	Sliding	1
			0x0001	Fixed	
40035	0x23	Demand Interval Duration	MIN Value : 1	MAX Value : 30	1
40036	0x24	Demand Interval Length	MIN Value : 1	MAX Value : 30	1
40043	0x2B	Reset Max	1	Reset all Max power	1
40044	0x2C	Reset Energy	1	Reset all energy to factory setting range	1
40045	0x2D	Reset Run Hour	1	Reset Run hour	1
40057	0x39	Pulse Duration	Value : 0x0000	Meaning : 50	1
			Value : 0x0001	Meaning : 100	
			Value : 0x0002	Meaning : 150	
			Value : 0x0003	Meaning : 200	
			Value : 0x0004	Meaning : 250	
			Value : 0x0005	Meaning : 300	
40058	0x3A	Pulse Weight	Min value : 00.10	Max value : 99.99	1
40063	0x3F	Reset Max Current	Value : 1	Meaning : Reset Max Current	1

Readable Parameters : [Length (Register) : 2 ; Data Structure : Float]

Address	Hex Address	Parameter	Address	Hex Address	Parameter
30000	0x00	Voltage V1N	30034	0x22	kVA3
30002	0x02	Voltage V2N	30036	0x24	kVA1
30004	0x04	Voltage V3N	30038	0x26	kVA2
30006	0x06	Average Voltage LN	30040	0x28	kVA3
30008	0x08	Voltage V12	30042	0x2A	Total KW
30010	0x0A	Voltage V23	30044	0x2C	Total KVA
30012	0x0C	Voltage V31	30046	0x2E	Total KVA1
30014	0x0E	Average Voltage LL	30048	0x30	PF1
30016	0x10	Current I1	30050	0x32	PF2
30018	0x12	Current I2	30052	0x34	PF3
30020	0x14	Current I3	30054	0x36	Average PF
30022	0x16	Average Current	30056	0x38	Frequency
30024	0x18	kW1	30058	0x3A	Total net kWh
30026	0x1A	kW2	30060	0x3C	Total net kWh
30028	0x1C	kW3	30062	0x3E	Total net kWh
30030	0x1E	kVA1	30064	0x40	kW Max Active Power
30032	0x20	kVA2	30066	0x42	kW Min Active Power

MODBUS REGISTER ADDRESSES LIST

Address	Hex Address	Parameter
30068	0x44	kVAr Max Reactive Power
30070	0x46	kVAr Min Reactive Power
30072	0x48	kVA Max Apparent Power
30074	0x4A	MAX I1 Demand
30076	0x4C	MAX I2 Demand
30078	0x4E	MAX I3 Demand
30080	0x50	MAX Avg Demand
30082	0x52	Run hour
30084	0x54	kWh1 (Imp)
30086	0x56	kWh2 (Imp)
30088	0x58	kWh3 (Imp)
30090	0x5A	kWh1 (Exp)
30092	0x5C	kWh2 (Exp)
30094	0x5E	kWh3 (Exp)
30096	0x60	Total kWh (Imp)
30098	0x62	Total kWh (Exp)
30100	0x64	kVArh1 (Imp)
30102	0x66	kVArh2 (Imp)
30104	0x68	kVArh3 (Imp)
30106	0x6A	kVArh1 (Exp)
30108	0x6C	kVArh2 (Exp)
30110	0x6E	kVArh3 (Exp)
30112	0x70	Total kVArh (Imp)
30114	0x72	Total kVArh (Exp)
30116	0x74	kVAh1
30118	0x76	kVAh2
30120	0x78	kVAh3
30122	0x7A	Neutral Current
30124	0x7C	THD of 1st Phase Voltage
30126	0x7E	THD of 2nd Phase Voltage
30128	0x80	THD of 3rd Phase Voltage
30130	0x82	THD of Voltage V12
30132	0x84	THD of Voltage V23
30134	0x88	THD of Voltage V31
30136	0x8A	THD of Current I1
30138	0x8C	THD of Current I2
30140	0x8E	THD of Current I3
30684	0x2AC	Serial no. (Data Structure : Hex)
30700	0x2BC	Phase Sequence Indication
30702	0x2BE	Existing KW MAX Active Power
30704	0x2C0	Existing KW MIN Active Power
30706	0x2C2	Existing KVAr MAX Reactive Power
30708	0x2C4	Existing KVAr MIN Reactive Power
30710	0x2C6	Existing KVA MAX Apparent Power
30712	0x2C8	Existing MAX I1 Demand
30714	0x2CA	Existing MAX I2 Demand
30716	0x2CC	Existing MAX I3 Demand
30718	0x2CE	Existing MAX Avg. I Demand

For RI-F100 parameters			
Address	Hex Address	Parameter	Length
31000	0x3E8	Voltage V1N	2
31002	0x3EA	VoltageV2N	2
31004	0x3EC	Voltage V3N	2
31006	0x3EE	Average Voltage LN	2
31008	0x3F0	Voltage V12	2
31010	0x3F2	Voltage V23	2
31012	0x3F4	Voltage V31	2
31014	0x3F6	Average VoltageLL	2
31016	0x3F8	Current I1	2
31018	0x3FA	Current I2	2
31020	0x3FC	Current I3	2
31022	0x3FE	Average current	2
31024	0x400	Kw1	2
31026	0x402	Kw2	2
31028	0x404	Kw3	2
31030	0x406	Kva1	2
31032	0x408	Kva2	2
31034	0x40A	Kva3	2
31036	0x40C	Kvar1	2
31038	0x40E	Kvar2	2
31040	0x410	Kvar3	2
31042	0x412	Total Kw	2
31044	0x414	Total Kva	2
31046	0x416	Total Kvar	2
31048	0x418	Neutral Current	2
31050	0x41A	PF1	1
31051	0x41B	PF2	1
31052	0x41C	PF3	1
31053	0x41D	Avg PF	1
31054	0x41E	Total net Kwh	3
31057	0x421	Total net Kvah	3
31060	0x424	Total net Kvarh	3
31063	0x427	Frequency	1
31064	0x428	Kw max Active Power	2
31066	0x42A	Kw Min Active Power	2
31068	0x42C	Kvar Max Reactive Power	2
31070	0x42E	Kvar Min Reactive Power	2
31072	0x430	Kva Max Apperant Power	2
31074	0x432	Max I1 Demand	2
31076	0x434	Max I2 Demand	2
31078	0x436	Max I3 Demand	2
31080	0x438	Max Avg Demand	2
31082	0x43A	Run Hour	2
31084	0x43C	Kwh1(imp)	3
31087	0x43F	Kwh2(imp)	3
31090	0x442	Kwh3(imp)	3

Address	Hex Address	Parameter	Length
31093	0x445	Kwh1(Exp)	3
31096	0x448	Kwh2(Exp)	3
31099	0x44B	Kwh3(Exp)	3
31102	0x44E	Total Kwh (Imp)	3
31105	0x451	Total Kwh (Exp)	3
31108	0x454	Kvarh1 (Imp)	3
31111	0x457	Kvarh2 (Imp)	3
31114	0x45A	Kvarh3 (Imp)	3
31117	0x45D	Kvarh1 (Exp)	3
31120	0x460	Kvarh2 (Exp)	3
31123	0x463	Kvarh3 (Exp)	3
31126	0x466	Total Kvarh (Imp)	3
31129	0x469	Total Kvarh (Exp)	3
31132	0x46C	Kvah1	3
31135	0x46F	Kvah2	3
31138	0x472	Kvah3	3

Note -
Voltage and current will display in mV and mA .
Power will display in W (Active), VAr (Reactive) & VA (Apparent).
Energy will display in Wh (Active) and VArh (Reactive).

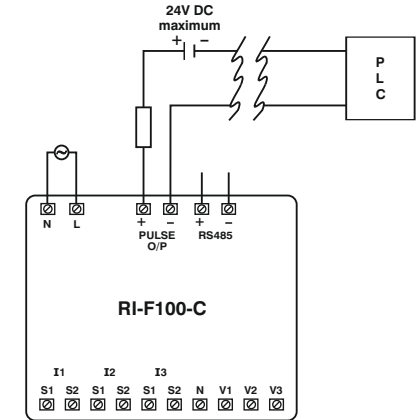
Energy rollover counter addresses : This counter will increment when energy is rollover from 9999999 to 0.

31190	4A6	IMP Kwh1 RC*	1
31191	4A7	IMP Kwh2 RC*	1
31192	4A8	IMP Kwh3 RC*	1
31193	4A9	EXP Kwh1 RC*	1
31194	4AA	EXP Kwh2 RC*	1
31195	4AB	EXP Kwh3 RC*	1
31196	4AC	Toatl IMP Kwh RC*	1
31197	4AD	Total EXP Kwh RC*	1
31198	4AE	Total Net Kwh RC*	1
31199	4AF	Kvah1 RC*	1
31200	4B0	Kvah2 RC*	1
31201	4B1	Kvah3 RC*	1
31202	4B2	Total Net Kvah RC*	1
31203	4B3	IMP Kvarh1 RC*	1
31204	4B4	IMP Kvarh2 RC*	1
31205	4B5	IMP Kvarh3 RC*	1
31206	4B6	EXP Kvarh1 RC*	1
31207	4B7	EXP Kvarh2 RC*	1
31208	4B8	EXP Kvarh3 RC*	1
31209	4B9	Total IMP Kvarh RC*	1
31210	4BA	Total EXP Kvarh RC*	1
31211	4BB	Total Net Kvarh RC*	1

NOTE : RC* : Rollover counter

APPLICATION OF PULSE OUTPUT

PROCESS INTEGRATION



Pulse output from RI-F100-C meter can be interfaced into a process through a PLC for on line control of energy content in the process.
If the PLC has a self excited digital input, external DC supply is not needed.
The kWh pulse is also used to derive average kWh information at the PLC.

EST. 1964

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DECLARATION OF CONFORMITY

According to Directive 2014/32/EU
EC Type Examination Certificate Number: TCM 221/16-5392
MID Annex B
Issued by: Czech Metrology Institute
Report Number: 6911-PP-73005-16

Product : Three Phase Energy Meter
Model No. : RI-F100 Series
Rating : 0.05-5(6)A

The test sample has been tested in accordance with the requirements of:

Standards:
EN 50470-1
EN 50470-3

The technical documentation required to demonstrate that the products meet the requirements of the above EU directives have been compiled and are available for inspection by relevant enforcement authorities.
The fulfilment of the essential requirements set out in Annex I and in the relevant instrument-specific Annexes has been demonstrated.
This declaration of conformity is issued under the sole responsibility of the manufacturer.
The object of the declaration described above is in conformity with the relevant Union harmonization legislation.

Approved by/Date: *[Signature]* / 16/10/16

General Information:
- Energy Metering
- Energy Billing
- Data
- Measurement & Process
- Energy Metering
- Software

(Specifications subject to change as development is a continuous process.)

Rayleigh Instruments

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