FIOD-EN-0404-C

Energy Measurement Module with Digital I/O

Energy Measurement Module with Digital I/O

Features :-

- Low cost compact 3 phase Energy measurement module
- 3 phase voltage input up to 300 Vrms (Line-Neutral) and current input up to 5 A can be measured
- Measures Voltage, Current, Frequency, Active Power, Reactive Power, True Power, Average Power and Power Factor
- Facility for 4 bi-directional digital inputs and 4 digital NPN outputs (open collector)
- High Speed Modbus RTU (Slave) communication
- 2 wire RS-485 Communication port (isolated) on pluggable terminal block
- User definable Address, Baud rate and Parity through convenient DIP Switches
- LED indication for each Input and Output, COM port and Power ON
- No configuration software required

Specifications

Power : +10 to +30 VDC
Communication Port : 2 wire RS485

Digital Inputs -
Number of Inputs : 4
Rated Input Voltage : 24 VDC (Max : 28 VDC)
Input Impedance : 5.6 k
Rated Input Current : 4 mA
Logic '0' Voltage : 0 to 5 VDC
Logic '1' Voltage : 12 to 28 VDC

Analog Inputs -
Number of Inputs : 3 phase alternating current and voltage input

Accuracy -
I) Single Phase Voltage : +/-3.45V (i.e. 1.5 % of rated voltage 230 V)
ii) Current : +/- 2 % of Full Scale 5A * CT ratio.
iii) Active Power : +/- 2 % of Full Scale (230V * 5A * CT ratio)
Measurable Frequency range : 40Hz to 70Hz

Digital Outputs (Transistor)
Number of Outputs : 4 (NPN Transistor)
Maximum Load current : 500 mA
Voltage drop during Power ON : 0.4 V or less

Temperature
Operating : 0° to 60° C
Storage : -20° to 80° C
Humidity : 10% to 95% (Non condensing)
Mounting : DIN rail mounting
Size : 100 W x 70 H x 35 D mm
Immunity to ESD : Level 3 as per IEC1000-4-2
Immunity to Transients : Level 3 as per IEC1000-4-4
Immunity to Radiated RF : Level 3 as per IEC1000-4-3
Immunity to Conducted RF : Level 3 as per IEC1000-4-6
Emissions : EN55011 CISPR A

Basic Operation

Function
FIOD-EN-0404-C measures 3 phase Energy and adds digital capability to a PLC / SCADA system.The module has 3 phase isolated Voltage and Current inputs . It also has 4 digital inputs and 4 digital outputs that can be read and controlled by the Modbus master. The digital inputs and outputs are isolated from the host device. The module has one RS485 (2 wire) communication port to connect to the host device. Communication settings like baud rate, parity and station ID can be set by DIP switches.

Communication with Host
The module supports Modbus RTU (Slave) Protocol. It communicates with the Host through 2 wire RS 485 Network. In case of communication failure with Host, the user can configure watchdog time-out and failure mode for the outputs.

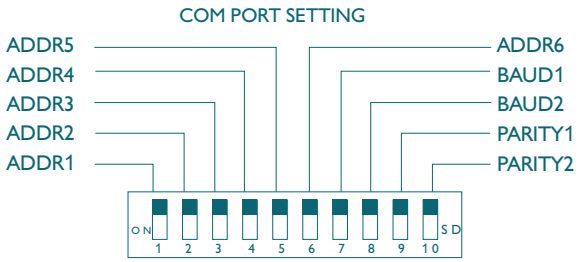
Modbus Parameters

Modbus Tag	Parameter description	Display
40001	Digital Inputs (bitwise)	
40002	Voltage PhR (V_{RN})	x10
40003	Voltage PhY (V_{YN})	x10
40004	Voltage PhB (V_{BN})	x10
40005	Average V_{LN}	x10
40006	Voltage V_{RY}	x10
40007	Voltage V_{YB}	x10
40008	Voltage V_{BR}	x10
40009	Average V_{LL}	x10
40010	Current I_R	x100
40011	Current I_Y	x100
40012	Current I_B	x100
40013	Total Current	x100
40014	Average Current	x100
40015	Frequency	x100
40016	Power factor Ph1	x100
40017	Power factor Ph2	x100
40018	Power factor Ph3	x100
40019	Average PF	x100
40020	KW_R	x10
40021	KW_Y	x10

Modbus Tag	Parameter description	Display
40022	KW_B	x10
40023	Total KW	x10
40024	Average KW	x10
40025	KVA_R	x10
40026	KVA_Y	x10
40027	KVA_B	x10
40028	Total KVA	x10
40029	Average KVA	x10
40030	$KVAR_R$	x10
40031	$KVAR_Y$	x10
40032	$KVAR_B$	x10
40033	Total KVAR	x10
40034	Average KVAR	x10
40065	Digital outputs (bitwise)	
40070	Communication timeout For own frame	N*
40071	Communication timeout for idle communication line	N*
40072	Communication timeout selection bit	1 or 0**
40073	CT Ratio	
40074	Firmware Revision	

*N = value entered by the user in seconds . N is internally multiplied by a factor of 0.1
**1 = Selects timeout for own frame (40070) **0 = Selects timeout for idle communication line (40071)

DIP Switch Setting



UNIT ID	ADDR6	ADDR5	ADDR4	ADDR3	ADDR2	ADDR1
1	0	0	0	0	0	0
2	0	0	0	0	0	1
3	0	0	0	0	1	0
4	0	0	0	0	1	1
:	:	:	:	:	:	:
64	1	1	1	1	1	1

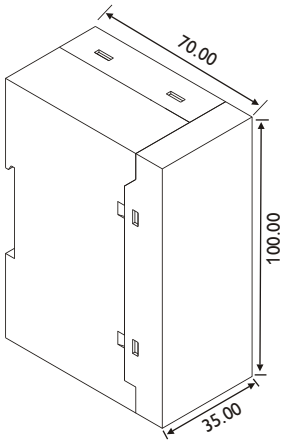
BAUD RATE	BAUD2	BAUD1
9600	0	0
19200	0	1
57600	1	0
115200	1	1

PARITY	PARITY2	PARITY1
NONE	0	0
ODD	0	1
EVEN	1	0

Models

Model	Inputs	Outputs
FIOD-EN-0404-C	4	4 (NPN Transistor)

Dimensions



All dimensions are in mm.

RENU
ELECTRONICS PVT. LTD.

FACTORY
Survey No. 2/6, Baner Road, Pune - 411045, India.
Tel : +91 20 2729 2840 Fax : +91 20 2729 2839
Email : info@renuelectronics.com
Website: www.renuelectronics.com

An ISO 9001 : 2008 and ISO 14001 : 2004 certified company