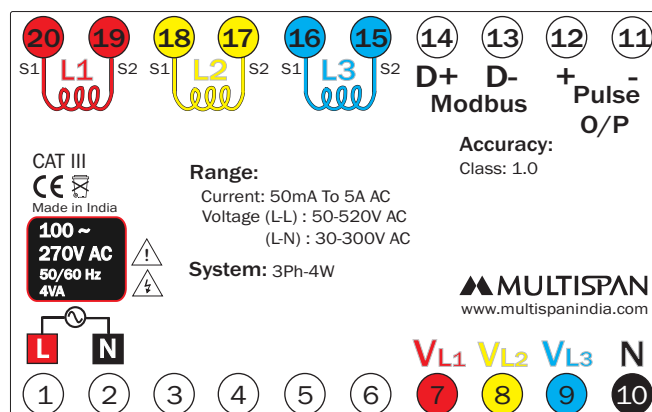


### Technical Specification

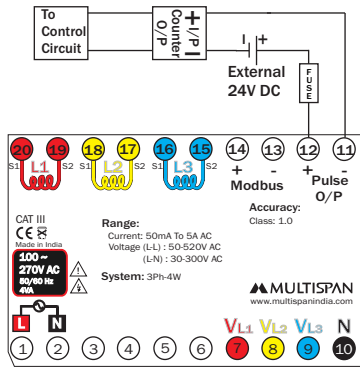


<b>Model</b>	EPM-14-M1
<b>Display</b>	UPPER: 7 Seg, 8digit,0.39", RED LED display for KWH LOWER: 7 Seg, 4digit,0.39", GREEN LED display for KW
<b>Size (mm)</b>	96(H) X 96 (W) X 54 (D) mm
<b>Panel Cutout</b>	92 X 92 mm
<b>Voltage Input</b>	50 To 520V AC L-L CAT III 30 To 300V AC L-N
<b>Current Input</b>	50mA To 5Amp AC direct or C.T Selectable up to 6000/5 ratio
<b>Active Power (KW)</b>	0000-9999 KW
<b>Active Energy (KWh)</b>	0-99999999 KWH
<b>Power Supply</b>	100 to 270V AC,50/60Hz,Approx 4VA
<b>Output</b>	Pulse Output : Voltage range 24V DC Max (External) Pulse Width : 10 to 500ms Selectable & With Modbus
<b>Frequency</b>	45 To 65 Hz
<b>Wiring System</b>	3Ph-4W
<b>Protection Level (As per request)</b>	IP-65 (Front side) As per IS/IEC 60529 : 2001
<b>Operating Temperature</b>	0°C To 50°C
<b>Relative Humidity</b>	Up to 95% RH Non Condensing

### CONNECTION DIAGRAM:



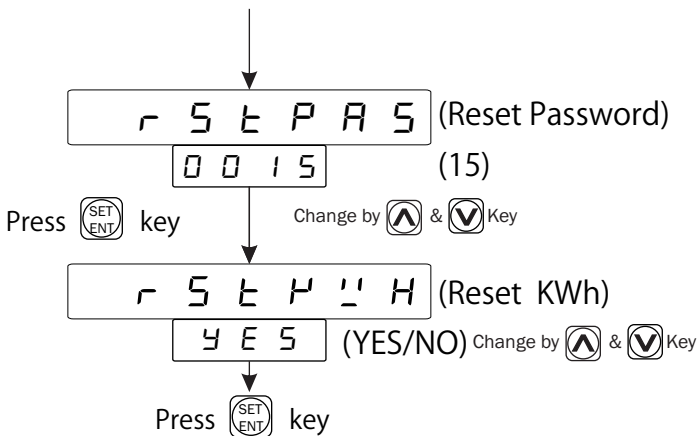
## ENERGY CONTROLLER



Pulse output from meter can be used alarm generator or total energy controller by interfacing it with pre settable counter and control circuits (Contactors, Relay, trip Circuit). The counter is loaded with the maximum energy consumption. When count is reaches setpoint it provides output to control Circuit to take action.

## RESETTING kWh.

Press **RESET** key For 5 Sec



## APPLICATION:

- Power Management
- Control Panels
- Gensets
- Power Distribution Switchboards
- Building Management System
- Quality Control System
- Quality Control System
- Plant Maintenance
- Energy Audit

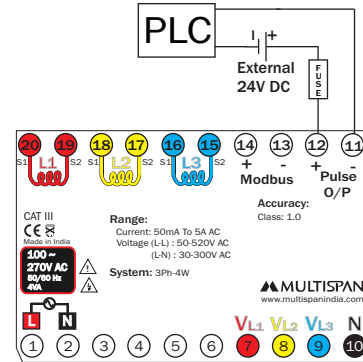
## Resolution

CT Primary	Energy Rate Pulse Output
5 to 75	0.01 KWH
76 to 750	0.1 KWH
751 to 7500	1 KWH
7501 to 9999	1 KWH

## PULSE OUTPUT

It is an optically isolated solid state pulse output which drives the remote counter, PLC, DCS stations etc.

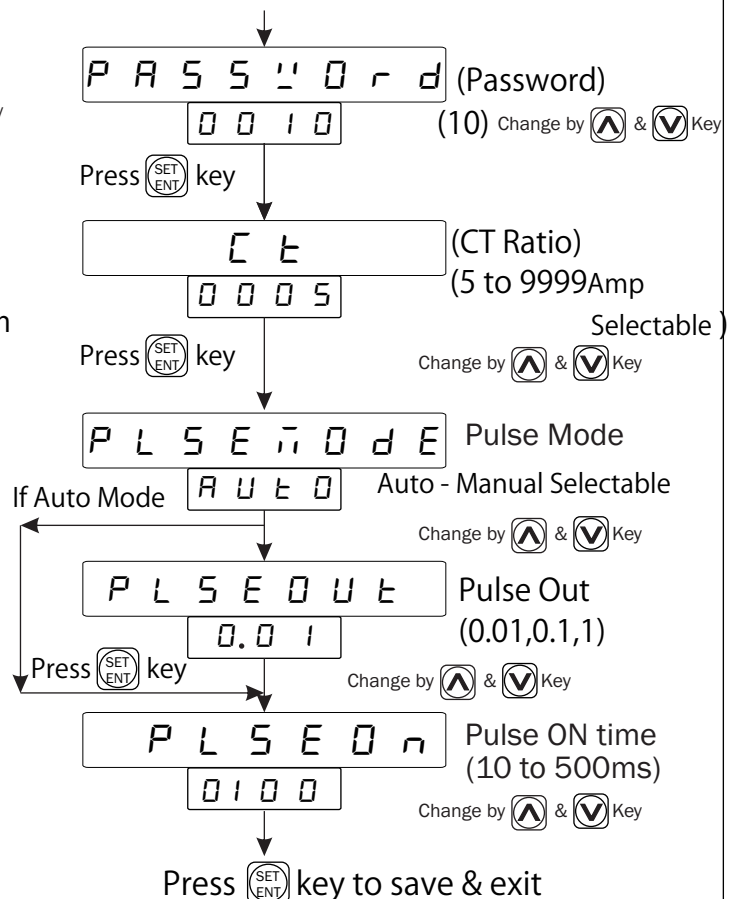
It does not require multiplication factor. Pulse output settings (like Energy per Pulse and Pulse on Time) are user programmable in the field.



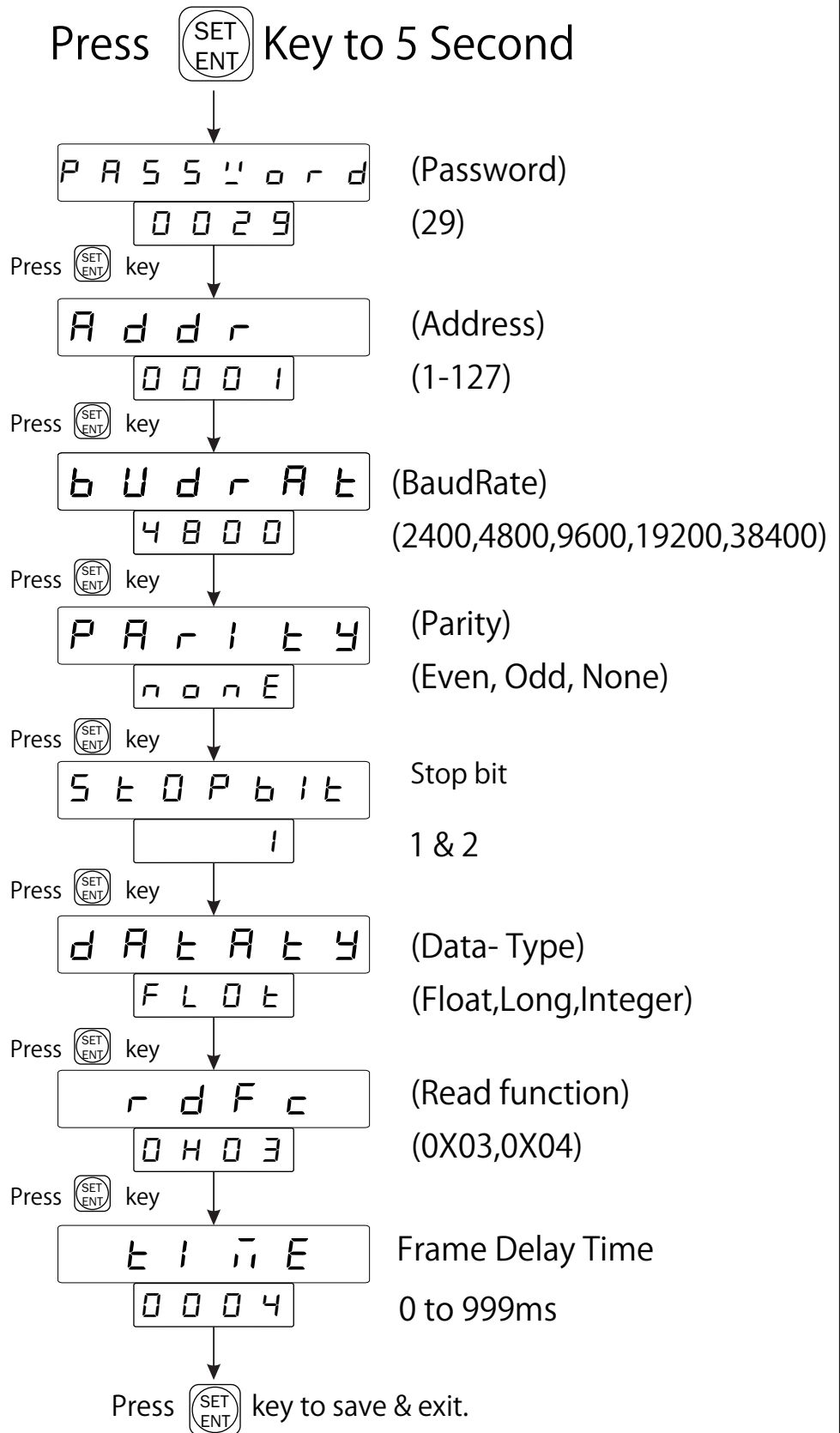
Pulse output from meter can be interfaced into a process through a PLC for on line control of energy content in the process. If the PLC has a self Excited digital input, external DC supply is not needed. The kwh pulse is also used to derive average kwh information at the PLC.



## CT PRIMARY SELECTION:

Press **SET ENT** key For 5 Sec



## To select MODBUS Parameter :



- Range of parameters can be changed by pressing  &  key.

## Modbus Setting:

- 1). Device Address                    1 to 127
- 2). Baudrate                            2400, 4800, 9600,19200, 38400 (bps)
- 3). Parity                                None,Even,Odd
- 4). Stop bit                             1 , 2
- 5). Data Type                          Int, Long, Float
- 6). Read Function Register    0x03 and 0x04
- 7). Frame delay Time                0 to 999ms

## For Long & Float :

Sr.No	Access Type	Parameter	Register													
			Data Type													
			Float	Long												
1	R	Kwh	0	0												
2	R	NA	NA	NA												
3	R	Kw	4	4												
4	R	Kwh DP	NA	6												
5	R	Kw DP	NA	8												
6	R/W	CT Ratio	10	10												
7	R/W	Pulse mode : <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Auto</td> <td>0</td> </tr> <tr> <td>Manual</td> <td>1</td> </tr> </table>	Auto	0	Manual	1	12	12								
Auto	0															
Manual	1															
8	R/W	Energy Rate <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>0.01</td> <td>0</td> </tr> <tr> <td>0.1</td> <td>1</td> </tr> <tr> <td>1</td> <td>2</td> </tr> </table>	0.01	0	0.1	1	1	2	14	14						
0.01	0															
0.1	1															
1	2															
9	R/W	Pulse on time	16	16												
10	R/W	Address	18	18												
11	R/W	Baudrete : <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Selection</th> <th>Value</th> </tr> <tr> <td>2400</td> <td>0</td> </tr> <tr> <td>4800</td> <td>1</td> </tr> <tr> <td>9600</td> <td>2</td> </tr> <tr> <td>19200</td> <td>3</td> </tr> <tr> <td>38400</td> <td>4</td> </tr> </table>	Selection	Value	2400	0	4800	1	9600	2	19200	3	38400	4	20	20
Selection	Value															
2400	0															
4800	1															
9600	2															
19200	3															
38400	4															
12	R/W	Parity : <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>NONE</td> <td>0</td> </tr> <tr> <td>Even</td> <td>1</td> </tr> <tr> <td>Odd</td> <td>2</td> </tr> </table>	NONE	0	Even	1	Odd	2	22	22						
NONE	0															
Even	1															
Odd	2															

13	R/W	Stop bit : <table border="1" style="margin-left: 20px;"> <tr> <td>Stop bit</td> <td>0</td> </tr> <tr> <td>Stop bit</td> <td>1</td> </tr> </table>	Stop bit	0	Stop bit	1	24	24		
Stop bit	0									
Stop bit	1									
14	R/W	Data type : <table border="1" style="margin-left: 20px;"> <tr> <td>Integer</td> <td>0</td> </tr> <tr> <td>Long</td> <td>1</td> </tr> <tr> <td>Float</td> <td>2</td> </tr> </table>	Integer	0	Long	1	Float	2	26	26
Integer	0									
Long	1									
Float	2									
15	R/W	RDFC : <table border="1" style="margin-left: 20px;"> <tr> <td>0 x 03</td> <td>0</td> </tr> <tr> <td>0 x 04</td> <td>1</td> </tr> </table>	0 x 03	0	0 x 04	1	28	28		
0 x 03	0									
0 x 04	1									
16	R/W	Frame delay Time	30	30						
17	R/W	Kwh Reset	32	32						

**Note : To reset energy write 15 value in 32 Address :**

## For Integer :

Sr.No	Access Type	Parameter	Register												
			Data Type Integer :												
1	R	Kwh (fist 4 digit)	0												
2	R	Kwh (last 4 digit)	1												
3	R	Kw	2												
4	R	Kwh DP	3												
5	R	Kw DP	4												
6	R/W	CT Ratio	5												
7	R/W	Pulse mode <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Auto</td> <td>0</td> </tr> <tr> <td>Manual</td> <td>1</td> </tr> </table>	Auto	0	Manual	1	6								
Auto	0														
Manual	1														
8	R/W	Energy Rate <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>0.01</td> <td>0</td> </tr> <tr> <td>0.1</td> <td>1</td> </tr> <tr> <td>1</td> <td>2</td> </tr> </table>	0.01	0	0.1	1	1	2	7						
0.01	0														
0.1	1														
1	2														
9	R/W	Pulse ON Time	8												
10	R/W	Address	9												
11	R/W	Baudrate <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Selection</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>2400</td> <td>0</td> </tr> <tr> <td>4800</td> <td>1</td> </tr> <tr> <td>9600</td> <td>2</td> </tr> <tr> <td>19200</td> <td>3</td> </tr> <tr> <td>38400</td> <td>4</td> </tr> </tbody> </table>	Selection	Value	2400	0	4800	1	9600	2	19200	3	38400	4	10
Selection	Value														
2400	0														
4800	1														
9600	2														
19200	3														
38400	4														
12	R/W	Parity <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>NONE</td> <td>0</td> </tr> <tr> <td>Even</td> <td>1</td> </tr> <tr> <td>Odd</td> <td>2</td> </tr> </table>	NONE	0	Even	1	Odd	2	11						
NONE	0														
Even	1														
Odd	2														
13	R/W	Stop Bit <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Stop bit</td> <td>0</td> </tr> <tr> <td>Stop bit</td> <td>1</td> </tr> </table>	Stop bit	0	Stop bit	1	12								
Stop bit	0														
Stop bit	1														
14	R/W	Datatype <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Integer</td> <td>0</td> </tr> <tr> <td>Long</td> <td>1</td> </tr> <tr> <td>Float</td> <td>2</td> </tr> </table>	Integer	0	Long	1	Float	2	13						
Integer	0														
Long	1														
Float	2														
15	R/W	RDFC <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>0 x 03</td> <td>0</td> </tr> <tr> <td>0 x 04</td> <td>1</td> </tr> </table>	0 x 03	0	0 x 04	1	14								
0 x 03	0														
0 x 04	1														
16	R/W	Time	15												
17	R/W	Kwh Reset	16												

**Note : To reset energy write 15 value in 32 Address :**

## if datatype is long or integer :

if KWh dp = 1  
actual value of KWh = KWh/10

if KWh dp = 2  
actual value of KWh = KWh/100

if KWh dp = 3  
actual value of KWh = KWh/1000

if KW dp = 1  
actual value of KW = KW /10

if KW dp = 2  
actual value of KW = KW/100

if KW dp = 3  
actual value of KW = KW/1000

## Safety Precautions

All 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 all the equipment is not handled in a manner specified by the manufacturer, it might impair the protection provided by the equipment .

=> Read complete instructions prior to installation and operation of the unit.



**WARNING** : Risk of electric shock.

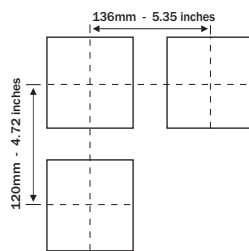
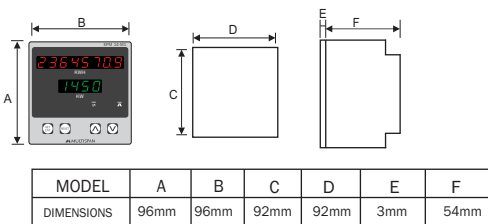
## Warning Guidelines

- 1) To prevent the risk of electric shock power supply to the equipment must be kept OFF while doing the wiring arrangement. Do not touch the terminals while power is being supplied.
- 2) To reduce electro magnetic interference, use wire with adequate rating and twists of the same of equal size shall be made with shortest connection.
- 3) Cable used for connection to power source, must have a cross section of  $1\text{mm}^2$  or greater. These wires should have insulations capacity made of at least 1.5kV.
- 4) A better anti-noise effect can be expected by using standard power supply cable for the instrument.

## Installation Guidelines

- 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) Do not allow pieces of metal, wire clippings, or fine metallic fillings from installation to enter the product 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 terminal to facilitate power 'ON' or 'OFF' function. However this mains switch or circuit breaker must be installed at convenient place normally accessible to the operator.
- 4) Use and store the instrument within the specified ambient temperature and humidity ranges as mentioned in this manual.

## Mechanical Installation



- 1) Prepare the panel cutout with proper dimensions as show above.
- 2) Fit the unit into the panel with the help of clamp given.
- 3) The equipment in its installed state must not come in close proximity to any heating source, caustic vapors, oils steam, or other unwanted process by products.
- 4) Use the specified size of crimp terminal (M3.5 screws) to wire the terminal block. Tightening the screws on the terminal block using the tightening torque of the range of 1.2 N.m.
- 5) Do not connect anything to unused terminals.

## Maintenance

- 1) The equipment should be cleaned regularly to avoid blockage of ventilating parts.
- 2) Clean the equipment with a clean soft cloth. Do not use isopropyl alcohol or any other cleaning agent.
- 3) Fusible resistor must not be replaced by operator.