

MULTIMETER EPM-07 / EPM-07S

trA Programming the Turn Number:

This menu is available for CT-25 adapted devices. User enter the turn number, which is the number of how many tour the current cable has rounded into the CT-25. Numbers can be selected between 1-20. Greater the number of turn means greater the sensitivity.

trn	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
min(A)	2.00	1.00	0.66	0.50	0.40	0.33	0.28	0.24	0.22	0.20	0.18	0.16	0.15	0.14	0.13	0.12	0.11	0.10	0.10	0.10
max(A)	120	60.0	40.0	30.0	24.0	20.0	17.1	15.0	13.3	12.0	10.9	10.0	9.23	8.57	8.00	7.50	7.06	6.66	6.31	6.00

Voltage Transformer Ratio Setup

In this menu, voltage transformer ratio is set between 0000,1 - 4000,0.

Note: If the voltage transformer is not used between the system and EPM-07/07S, voltage transformer ratio is entered as '1'.
Example: If a voltage transformer which has a ratio of 34.5KV/100V is used between the system and EPM-07/07S, Voltage transformer ratio is entered as 345. (34500/100)

Reactive Energy Calculation Method Setting

Three different methods exist for reactive energy calculation in EPM-07/07S. Brief informations about these methods are explained in below table.
Related values which must be entered in the menu are also indicated in the table in order to select reactive power calculation method for mechanical and digital energymeters.

Mechanical Energymeter (Vectorial summation of 3 phase)	Digital Energymeter (Each phase separately)	Reactive Energy (Q)	Description
0	1	90° rotation of voltage vector and multiply with current	It is the most preferred reactive power calculation method.
2	3	$\sum V_n \cdot I_n \cdot \sin(\varphi_n)$	Total value of the multiplication of V_n and I_n values up to 19 th harmonics. This calculation method is mostly preferred for network analysers.
4	5	Power Triangle Methode : According to this methode; $Q = S \cdot P$ (Q : Reactive power, S : Active power, P : Apparent power)	

- Press SET button for 3 seconds (trA Fo menu is displayed)
- Press SET button (trA Fo Ctr menu is displayed)
- By using UP-DOWN buttons, find "CAL CLT" menu.
- Press SET button.
- By using UP-DOWN buttons, select energy calculation method.
- Press SET button.
- Press ESC button one by one until "SAU E SET yES" is displayed.
- Press SET button. When "SAU E SET yES" is displayed, if you press ESC button or choose "no" option instead of "yES" option by using UP-DOWN buttons, new data will be cancelled and previous value will be activated.

Demand Time Setup:

In this menu, demand time is set between 1-60 minutes.

- Press SET button for 3 seconds (trA Fo menu is displayed)
- By using UP-DOWN buttons find "dE t1" menu.
- Press SET button (First digit blinks.)
- By using UP-DOWN buttons, enter the value to the first digit.
- Press SET button (Second digit blinks)
- By using UP-DOWN buttons, enter the value to the second digit.
- Press SET button, "dE t1" is displayed. (Data is entered but is not activated yet. For activating the new data please follow the below steps).
- Press ESC button one by one until "SAU E SET yES" is displayed.
- Press SET button. When "SAU E SET yES" is displayed, if you press ESC button or choose "no" option instead of "yES" option by using UP-DOWN buttons, new data will be cancelled and previous value will be activated.

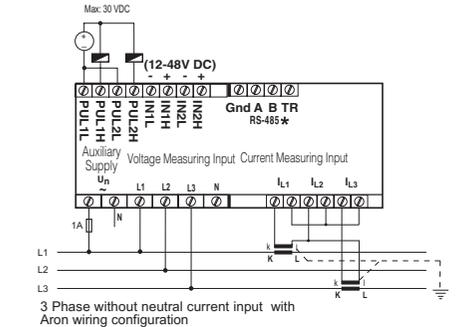
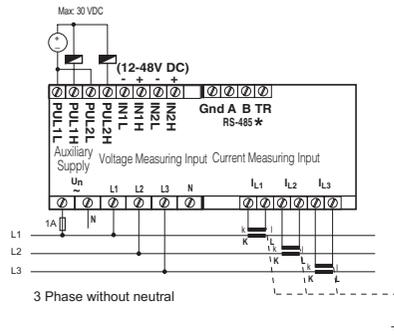
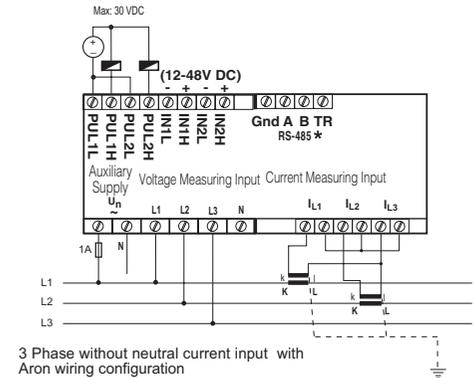
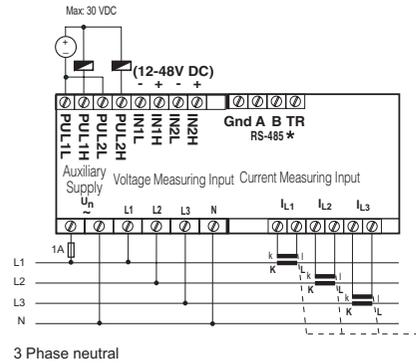
Monitoring and Erasing of minimum, maximum and energy values:

In this menu, values of min., max. or energy counters are erased. It saves the instantaneously measured min. and max. values of EPM-07/07S into its memory. Please kindly look at to the section of **FUNCTIONS OF BUTTONS** for min. and max. values.
Note: Measured electrical parameters which are saved to the memory are not affected from the electric interruptions. In the "rESet" menu; when you quit from all menus, if you confirm the changes, min. and max. values of all parameters or energy counter values are erased at the same time.

- For erasing the values of min. and max. or energy counter, In the measurement mode :**
- Press SET button for 3 seconds (trA Fo menu is displayed)
 - By using UP-DOWN buttons, find "rES Et" menu.
 - Press SET button. ("rESet HL" menu is displayed)
 - By using UP-DOWN buttons, select which parameter you want to reset.
 - Press SET button
 - By using UP-DOWN buttons, if you want to delete the parameter select "yES" option otherwise select "no" option.
 - Press SET button. ("rES Et" is displayed)
 - Press ESC button one by one until "SAU E SET yES" is displayed.
 - Press SET button. When "SAU E SET yES" is displayed, if you press ESC button or choose "no" option instead of "yES" option by using UP-DOWN buttons, new data will be cancelled and previous value will be activated.

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PK 26 Box Connection Diagram

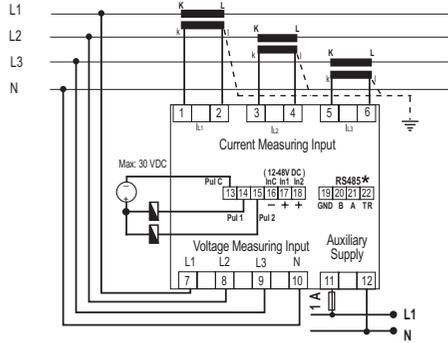


*Available only for EPM-07S

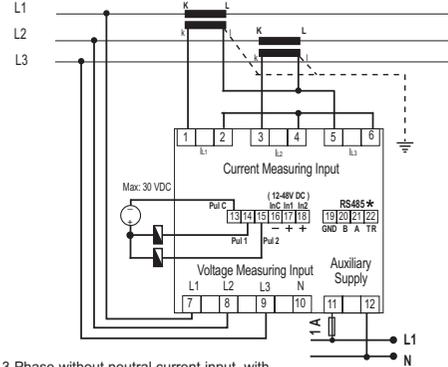
Note: For CT-25 models:
k: When CT-25 is used, Red cable is connected to k terminal.
l: When CT-25 is used, Black cable is connected to l terminal.

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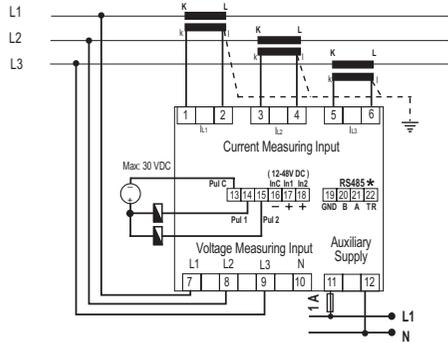
PR 19 Box Connection Diagram



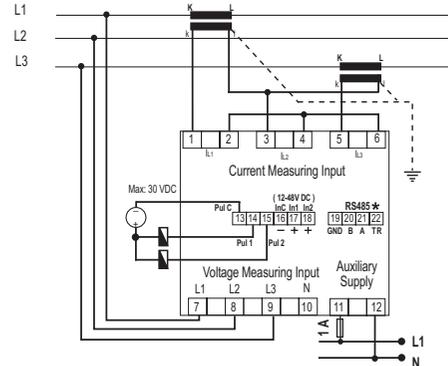
3 Phase neutral



3 Phase without neutral current input with Aron wiring configuration



3 Phase without neutral



3 Phase without neutral current input with Aron wiring configuration

*Available only for EPM-07S

Note: For CT-25 models:

- k: When CT-25 is used, Red cable is connected to k terminal.
- l: When CT-25 is used, Black cable is connected to l terminal.

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Pulse Menu

In this menu, three parameters can be selected: "PUL SE rAt io", "PUL SE o-1", "PUL SE o-2".

PUL SE **PUL SE rAt io**: Pulse ratio can be set as:
1, 10, 100 (wh/kVAh/MVA); 1, 10, 100 (kwh/kVAh/kVA);
1 Mwh/MVAh/MVA.

PUL SE o-1: If this parameter is selected, in every increase in output 1, one pulse is counted. Output 1 parameter can be set as:
ACT (Export/Import), A-I (Active Import), A-E (Active Export), rEA (Inductive / Capacitive), r-L (Reactive Inductive), r-C (Reactive Capacitive).

PUL SE o-2: If this parameter is selected, in every increase in output 2, one pulse is counted. Output 2 parameter can be set as:
ACT (Export/Import), A-I (Active Import), A-E (Active Export), rEA (Inductive / Capacitive), r-L (Reactive Inductive), r-C (Reactive Capacitive).

- Press SET button for 3 seconds (trA Fo menu is displayed)
- By using UP-DOWN buttons, find "PULSE" menu.
- Press SET button ("PUL SE rAt io" menu is displayed)
- By using UP-DOWN buttons, select "PUL SE rAt io", "PUL SE o-1" or "PUL SE o-2".
- Press SET button.
- By using UP-DOWN buttons, select required parameter. **PUL SE**
- Press SET button.
- Press ESC button one by one until "SAU E SET yES" is displayed.
- Press SET button. When "SAU E SET yES" is displayed, if you press ESC button or choose "no" option instead of "yES" option by using UP-DOWN buttons, new data will be cancelled and previous value will be activated.

Energy Counter (Eng Cnt) Menu

EPM-07/07S has 2 energy counters:
Energy counter 1 (E-1), Energy counter 2 (E-2).

E-1 / E-2" have 4 parameters:
on: Activate "E-1 / E-2" counters for energy counting without depending on any parameter.

+1: Activate "E-1 / E-2" counters, when digital input 1 is on (=1).
+2: Activate "E-1 / E-2" counters, when digital input 2 is on (=1).
E-2: "E-1" does not count when "E-2" is activated. (Only for "E-1")
E-1: "E-2" does not count when "E-1" is activated. (Only for "E-2")

Note: Counting status is undefined if E-2 is selected on E-1 and if E-1 is selected on E-2. When the status is defined as above, both energy counters count while digital input is not on (=1), but if either one or both digital inputs are on (=1) then counters will not count.

- Press SET button for 3 seconds (trA Fo menu is displayed)
- By using UP-DOWN buttons, find "Eng Cnt" menu.
- Press SET button ("Eng Cnt E-1" menu is displayed)
- By using UP-DOWN buttons, select "E-1" or "E-2".
- Press SET button.
- By using UP-DOWN buttons, select "on", "+1", "+2" or "E-1 / E-2". **Eng Cnt**
- Press SET button.
- Press ESC button one by one until "SAU E SET yES" is displayed.
- Press SET button. When "SAU E SET yES" is displayed, if you press ESC button or choose "no" option instead of "yES" option by using UP-DOWN buttons, new data will be cancelled and previous value will be activated.

User password Setup:

In this menu user password is defined and activated.

You must define and activate a 4 digit user password for preventing device settings from the illegal usage. There are 2 sub menus under the "Pin" menu.

Changing of User Password:

This menu is used to change the user password.
Note: Factory default value for user password is "0000"

To change the user password, in the monitoring mode:

- Press SET button for 3 seconds (trA Fo menu is displayed)
- By using UP-DOWN buttons, find "Pin" menu.
- Press SET button ("Pin Act IUA tE" menu is displayed)
- By using the UP-DOWN buttons, find "Pin CHA nGE" menu.
- By using UP-DOWN-SET buttons, enter the old password
- By using UP-DOWN-SET buttons, enter the new password
- By using UP-DOWN-SET buttons, re-enter the new password.
- Press SET button, "Pin CHA nGE" is displayed. (Data is entered but is not activated yet. For activating the new data please follow the below steps).
- Press ESC button one by one until "SAU E SET yES" is displayed. **Pin CHA nGE**
- Press SET button. When "SAU E SET yES" is displayed, if you press ESC button or choose "no" option instead of "yES" option by using UP-DOWN buttons, new data will be cancelled and previous value will be activated.

Activating the user password:

This menu is used for activating the user password. After the user password is activated, while the instant values are observed, user password is required in order to enter to the menu. If the wrong user password is entered, user can not enter to the menu.

Note: Factory default value of user password is "0000"

- Press SET button for 3 seconds (trA Fo menu is displayed)
- By using UP-DOWN buttons, find "Pin" menu.
- Press SET button ("Pin Act IUA tE" menu is displayed)
- Press SET button. First digit of the displayed value is blinking.
- Enter the blinking digit value by scrolling UP/DOWN buttons. Switch to the other digits by using SET button, use ESC button to go to previous digit. After you entered the last digit press SET button, "Pin Act oF" is displayed. "on" can be selected by scrolling UP/DOWN buttons. (Data is entered but is not activated yet. For activating the new data please follow the below steps).
- Press ESC button one by one until "SAU E SET yES" is displayed.
- Press SET button. When "SAU E SET yES" is displayed, if you press ESC button or choose "no" option instead of "yES" option by using UP-DOWN buttons, new data will be cancelled and previous value will be activated.

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Serial Communication (Available only for EPM-07S)

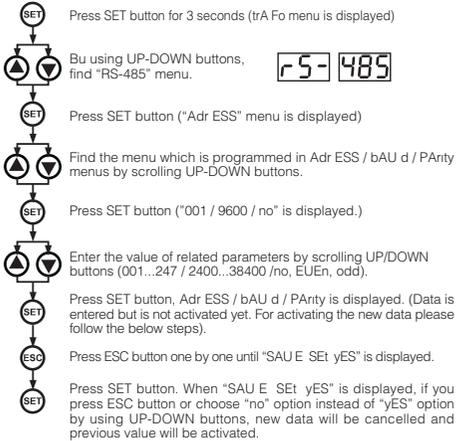
EPM-07S has MODBUS RTU communication protocol which is optical isolated. All measured parameters can be transfer to the computer. Transformer ratios and communication parameters can be set. Saved demand and energy values can be reset.

Parameter Settings

Address Parameters : Value can be enter between 001-247.

Baud Rate Parameters : Value can be selected as 2400, 4800, 9600, 19200 and 38400 bps.

Parity Parameters : "no", "odd" and "EUn" can be selected.



MODBUS RTU PROTOCOL (Available only for EPM-07S)

Standart MODBUS RTU message is shown below.

T	ADDRESS 8 BIT	FUNCTION 8 BIT	DATA NX8BIT	CRCH	CRCL	T
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The T times corresponds to a time in which data must not be exchanged on the communication bus to allow the connected devices to recognize the end of one message and the beginning of another. This time must be at least 3.5 characters at the selected baud rate. Address range (1-247) is address of the connected device. The data field contains data sent to the slave by master or data sent to master by slave. CRC is a error check method by using MODBUS RTU protocol and consists of 2 bytes.

Available Modbus Function:

03H	READ HOLD REGISTERS
06H	PRESET SINGLE REGISTER
10H	PRESET MULTIPLE REGISTERS

Read Hold (03) function is used for reading measured values and set value. If any request of reading of a register, excepted mentioned in register table, device will send an error message. For example to read phase1 voltage by sending a message to the device.

01 03 00 00 00 02 XX XX
01 Device address
03 Function
00 MSB address
00 LSB address
00 Register number
MSB
02 Register number LSB
XX CRC MSB
XX CRC LSB

Preset Single Register (06) function is used for writing the setting values, erasing the energy counter or resetting the min., max., demand values. Current transformers ratio can be set 0-2000, voltage transformer ratio can be set 1-40000. Min., Max. and Demand values can be only clear. If sent value is outside of this range device responds with an error message.

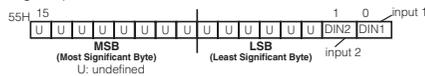
i.e. Setting CT as 100;
01 06 80 02 00 64 XX XX
01 Device address
06 Function
80 MSB address
02 LSB address
00 Data MSB
64 Data LSB
XX CRC MSB
XX CRC LSB

Preset Multiple Register(10H) is used to set more than one register at same time.

i.e. Setting CT as 100, Ut as 20.0;
01 10 80 00 00 02 04 00 C8 00 64 XX XX
01 Device Address
10 Function
80 MSB address
00 LSB address
00 Register number MSB
02 Register number LSB
04 Byte count
00 Data MSB
C8 Data LSB
00 Data MSB
64 Data LSB
XX CRC MSB
XX CRC LSB

Digital Inputs (Available only for EPM-07S)

Digital input are sent in 16 bit hexadecimal format as below:



If 12-48 V AC / DC is applied to In1 (Input 1), 0 (zero) bit of DIN register is set as "1". Otherwise, 0 (zero) bit is set as "0".
If 12-48 V AC / DC is applied to In2 (Input 2), 1st bit of DIN register is set as "1". Otherwise, 1st bit is set as "0".

The Parameters are sent in 32bit Hexadecimal format. For Example, 230.0V voltage will be sent as 000008FCH. Cosφ values shall be divided to 1000. 0.980 Cosφ will be sent as 000003D4H. Energy values are sent in 64 bytes.
1234567890123456789 Wh = AB 54 A9 8C EB 1F 0A 02 Wh

Specifications for data cable :

- 24 AWG or thicker
- Less than 100 ohm/ km
- Nominal characteristic impedance at 100 kHz of 100 ohms
- Less than 60 pF/m mutual capacitance (between two wires in a pair)
- Less than 120 pF/m mutual pair capacitance (the capacitance between one wire and all others connected to earth).
- Twisted Pair

ERROR CODES (Available only for EPM-07S)

Slave device (EPM-07S) sends error message when receive any missing query. Error codes are given below.

01 Invalid Function: If any message except given above is used, then 01 error messages will be sent.

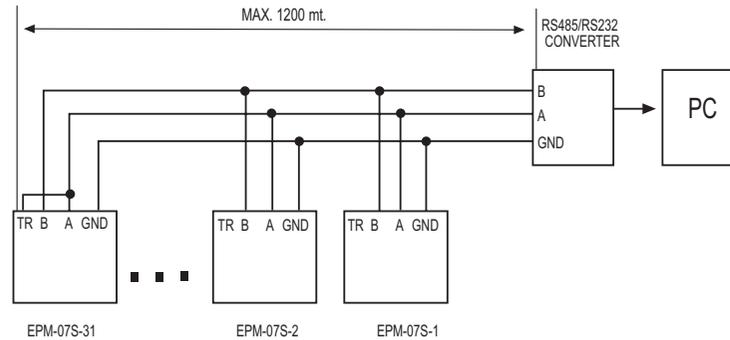
02 Invalid Register: Error 02 will be send when a reading of a register is requested, except the registers which mentioned in table.

03 Invalid data: If any different value is been set for dedicated Transformer values and nonzero for demand value, then error message 03 will be sent.

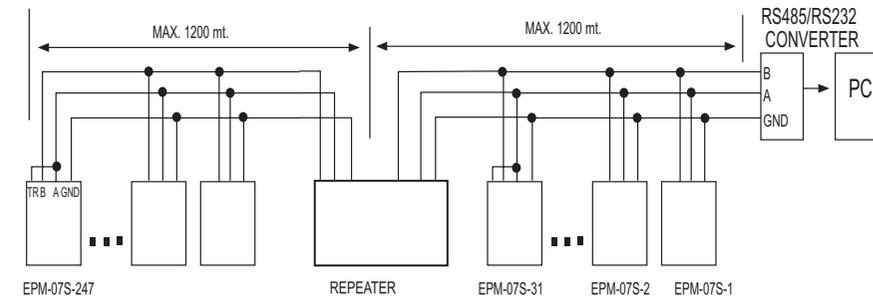
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EPM-07S COMPUTER CONNECTION

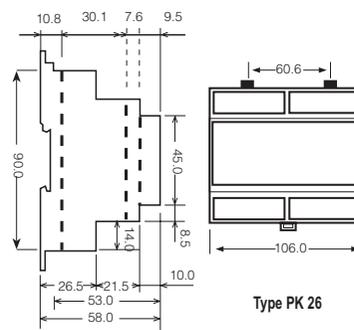
31 DEVICES CAN BE CONNECTED AT THE SAME LINE



MAX. 247 DEVICES CAN BE CONNECTED AT SAME LINE BY USING REPEATER.



Dimensions



MODBUS REGISTER MAP

ADDRESS	ADDRESS (HEX)	REGISTER	R/W	RANGE	UNIT	MULTIPLIER	FORMAT
0	0000	L1 PHASE VOLTAGE	R	(0-3000)xUT	Volt	0.1	unsigned int
2	0002	L2 PHASE VOLTAGE	R	(0-3000)xUT	Volt	0.1	unsigned int
4	0004	L3 PHASE VOLTAGE	R	(0-3000)xUT	Volt	0.1	unsigned int
6	0006	L1 PHASE CURRENT	R	(0-6000)xCT	Amper	0.001	unsigned int
8	0008	L2 PHASE CURRENT	R	(0-6000)xCT	Amper	0.001	unsigned int
10	000A	L3 PHASE CURRENT	R	(0-6000)xCT	Amper	0.001	unsigned int
12	000C	NEUTRAL CURRENT	R	(0-6000)xCT	Amper	0.001	unsigned int
14	000E	L1-L2 PHASE-PHASE VOLTAGE	R	(0-5000)xUT	Volt	0.1	unsigned int
16	0010	L2-L3 PHASE-PHASE VOLTAGE	R	(0-5000)xUT	Volt	0.1	unsigned int
18	0012	L3-L1 PHASE-PHASE VOLTAGE	R	(0-5000)xUT	Volt	0.1	unsigned int
20	0014	L1 PHASE ACTIVE POWER	R	(-18000 - 18000)xCTxVT	Watt	0.1	int
22	0016	L2 PHASE ACTIVE POWER	R	(-18000 - 18000)xCTxVT	Watt	0.1	int
24	0018	L3 PHASE ACTIVE POWER	R	(-18000 - 18000)xCTxVT	Watt	0.1	int
26	001A	L1 PHASE REACTIVE POWER	R	(-18000 - 18000)xCTxVT	Var	0.1	int
28	001C	L2 PHASE REACTIVE POWER	R	(-18000 - 18000)xCTxVT	Var	0.1	int
30	001E	L3 PHASE REACTIVE POWER	R	(-18000 - 18000)xCTxVT	Var	0.1	int
32	0020	L1 PHASE APPARENT POWER	R	(0 - 18000)xCTxVT	VA	0.1	unsigned int
34	0022	L2 PHASE APPARENT POWER	R	(0 - 18000)xCTxVT	VA	0.1	unsigned int
36	0024	L3 PHASE APPARENT POWER	R	(0 - 18000)xCTxVT	VA	0.1	unsigned int
38	0026	L1 PHASE COS ϕ	R	(-1000 - 1000)	-	0.001	int
40	0028	L2 PHASE COS ϕ	R	(-1000 - 1000)	-	0.001	int
42	002A	L3 PHASE COS ϕ	R	(-1000 - 1000)	-	0.001	int
44	002C	TOTAL IMPORT ACTIVE POWER	R	(0 - 54000)xCTxVT	Watt	0.1	int
46	002E	TOTAL EXPORT ACTIVE POWER	R	(0 - 54000)xCTxVT	Watt	0.1	int
48	0030	TOTAL INDUCTIVE REACTIVE POWER	R	(0 - 54000)xCTxVT	Var	0.1	int
50	0032	TOTAL CAPACITIVE REACTIVE POWER	R	(0 - 54000)xCTxVT	Var	0.1	int
52	0034	TOTAL APPARENT POWER	R	(0 - 54000)xCTxVT	VA	0.1	unsigned int
54	0036	AVERAGE INDUCTIVE COS ϕ	R	(-1000 - 1000)	-	0.001	int
56	0038	AVERAGE CAPACITIVE COS ϕ	R	(-1000 - 1000)	-	0.001	int
58	003A	FREQUENCY	R	(4000 - 7000)	Hz	0.01	unsigned int
60	003C	L1 PHASE VOLTAGE ANGLE	R	0-360	Degree	1	unsigned int
62	003E	L2 PHASE VOLTAGE ANGLE	R	0-360	Degree	1	unsigned int
64	0040	L3 PHASE VOLTAGE ANGLE	R	0-360	Degree	1	unsigned int
66	0042	L1 PHASE CURRENT ANGLE	R	0-360	Degree	1	unsigned int
68	0044	L2 PHASE CURRENT ANGLE	R	0-360	Degree	1	unsigned int
70	0046	L3 PHASE CURRENT ANGLE	R	0-360	Degree	1	unsigned int
72	0048						
74	004A						
76	004C						
78	004E						
80	0050						
82	0052						
84	0054	DIGITAL INPUT STATUS	R	-	-	-	-
86	0056	IMPORT ACTIVE ENERGY-1	R/W	0-FFFFFFFFFFFFFF	Wh	1	long int
88	0058	EXPORT ACTIVE ENERGY-1	R/W	0-FFFFFFFFFFFFFF	Wh	1	long int
90	005A	INDUCTIVE REACTIVE ENERGY-1	R/W	0-FFFFFFFFFFFFFF	VArh	1	long int
92	005C	CAPACITIVE REACTIVE ENERGY-1	R/W	0-FFFFFFFFFFFFFF	VArh	1	long int
94	005E	IMPORT ACTIVE ENERGY-2	R/W	0-FFFFFFFFFFFFFF	Wh	1	long int
96	0060	EXPORT ACTIVE ENERGY-2	R/W	0-FFFFFFFFFFFFFF	Wh	1	long int
98	0062	INDUCTIVE REACTIVE ENERGY-2	R/W	0-FFFFFFFFFFFFFF	VArh	1	long int
100	0064	CAPACITIVE REACTIVE ENERGY-2	R/W	0-FFFFFFFFFFFFFF	VArh	1	long int
102	0066						
104	0068						
106	006A						
108	006C						
110	006E						
112	0070						
114	0072	L1 PHASE MIN. VOLTAGE	R/W	(0-3000)xUT	Volt	0.1	unsigned int
116	0074	L2 PHASE MIN. VOLTAGE	R/W	(0-3000)xUT	Volt	0.1	unsigned int
118	0076	L3 PHASE MIN. VOLTAGE	R/W	(0-3000)xUT	Volt	0.1	unsigned int
120	0078	L1-L2 PHASE-PHASE MIN. VOLTAGE	R/W	(0-3000)xUT	Volt	0.1	unsigned int
122	007A	L2-L3 PHASE-PHASE MIN. VOLTAGE	R/W	(0-3000)xUT	Volt	0.1	unsigned int
124	007C	L3-L1 PHASE-PHASE MIN. VOLTAGE	R/W	(0-3000)xUT	Volt	0.1	unsigned int
126	007E	L1 PHASE MIN. CURRENT	R/W	(0-6000)xCT	Amper	0.001	unsigned int
128	0080	L2 PHASE MIN. CURRENT	R/W	(0-6000)xCT	Amper	0.001	unsigned int
130	0082	L3 PHASE MIN. CURRENT	R/W	(0-6000)xCT	Amper	0.001	unsigned int
132	0084	L1 PHASE MIN. ACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Watt	0.1	int
134	0086	L2 PHASE MIN. ACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Watt	0.1	int
136	0088	L3 PHASE MIN. ACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Watt	0.1	int
138	008A	L1 PHASE MIN. REACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Var	0.1	int
140	008C	L2 PHASE MIN. REACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Var	0.1	int
142	008E	L3 PHASE MIN. REACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Var	0.1	int
144	0090	L1 PHASE MIN. APPARENT POWER	R/W	(0 - 18000)xCTxVT	VA	0.1	unsigned int
146	0092	L2 PHASE MIN. APPARENT POWER	R/W	(0 - 18000)xCTxVT	VA	0.1	unsigned int
148	0094	L3 PHASE MIN. APPARENT POWER	R/W	(0 - 18000)xCTxVT	VA	0.1	unsigned int
150	0096						

*Available only for EPM-07S

MODBUS REGISTER MAP

ADDRESS	ADDRESS (HEX)	REGISTER	R/W	RANGE	UNIT	MULTIPLIER	FORMAT
152	0098	L3 PHASE MIN. APPARENT POWER	R/W	(0 - 18000)xCTxVT	VA	0.1	unsigned int
154	009A	TOTAL MIN. IMPORT ACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Watt	0.1	int
156	009C	TOTAL MIN. EXPORT ACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Watt	0.1	int
158	009E	TOTAL MIN. IMPORT REACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Var	0.1	int
160	00A0	TOTAL MIN. EXPORT REACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Var	0.1	int
162	00A2	TOTAL MIN. APPARENT POWER	R/W	(0 - 18000)xCTxVT	VA	0.1	unsigned int
164	00A4	L1 PHASE MAX. VOLTAGE	R/W	(0-3000)xUT	Volt	0.1	unsigned int
166	00A6	L2 PHASE MAX. VOLTAGE	R/W	(0-3000)xUT	Volt	0.1	unsigned int
168	00A8	L3 PHASE MAX. VOLTAGE	R/W	(0-3000)xUT	Volt	0.1	unsigned int
170	00AA	L1-L2 PHASE-PHASE MAX. VOLTAGE	R/W	(0-5000)xUT	Volt	0.1	unsigned int
172	00AC	L2-L3 PHASE-PHASE MAX. VOLTAGE	R/W	(0-5000)xUT	Volt	0.1	unsigned int
174	00AE	L3-L1 PHASE-PHASE MAX. VOLTAGE	R/W	(0-5000)xUT	Volt	0.1	unsigned int
176	00B0	L1 PHASE MAX. CURRENT	R/W	(0-6000)xCT	Amper	0.001	unsigned int
178	00B2	L2 PHASE MAX. CURRENT	R/W	(0-6000)xCT	Amper	0.001	unsigned int
180	00B4	L3 PHASE MAX. CURRENT	R/W	(0-6000)xCT	Amper	0.001	unsigned int
182	00B6	L1 PHASE MAX. ACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Watt	0.1	int
184	00B8	L2 PHASE MAX. ACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Watt	0.1	int
186	00BA	L3 PHASE MAX. ACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Watt	0.1	int
188	00BC	L1 PHASE MAX. REACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Var	0.1	int
190	00BE	L2 PHASE MAX. REACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Var	0.1	int
192	00C0	L3 PHASE MAX. REACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Var	0.1	int
194	00C2	L1 PHASE MAX. APPARENT POWER	R/W	(0 - 18000)xCTxVT	VA	0.1	unsigned int
196	00C4	L2 PHASE MAX. APPARENT POWER	R/W	(0 - 18000)xCTxVT	VA	0.1	unsigned int
198	00C6	L3 PHASE MAX. APPARENT POWER	R/W	(0 - 18000)xCTxVT	VA	0.1	unsigned int
200	00C8	TOTAL MAX. IMPORT ACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Watt	0.1	int
202	00CA	TOTAL MAX. EXPORT ACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Watt	0.1	int
204	00CC	TOTAL MAX. IMPORT REACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Var	0.1	int
206	00CE	TOTAL MAX. EXPORT REACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Var	0.1	int
208	00D0	TOTAL MAX. APPARENT POWER	R/W	(0 - 18000)xCTxVT	VA	0.1	unsigned int
210	00D2	L1 PHASE MAX. CURRENT DEMAND	R/W	(0-6000)xCT	Amper	0.001	unsigned int
212	00D4	L2 PHASE MAX. CURRENT DEMAND	R/W	(0-6000)xCT	Amper	0.001	unsigned int
214	00D6	L3 PHASE MAX. CURRENT DEMAND	R/W	(0-6000)xCT	Amper	0.001	unsigned int
216	00D8	L1 PHASE IMPORT MAX. DEMAND ACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Watt	0.1	int
218	00DA	L1 PHASE EXPORT MAX. DEMAND ACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Watt	0.1	int
220	00DC	L2 PHASE IMPORT MAX. DEMAND ACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Watt	0.1	int
222	00DE	L2 PHASE EXPORT MAX. DEMAND ACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Watt	0.1	int
224	00E0	L3 PHASE IMPORT MAX. DEMAND ACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Watt	0.1	int
226	00E2	L3 PHASE EXPORT MAX. DEMAND ACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Watt	0.1	int
228	00E4	L1 PHASE IMPORT MAX. DEMAND REACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Var	0.1	int
230	00E6	L1 PHASE EXPORT MAX. DEMAND REACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Var	0.1	int
232	00E8	L2 PHASE IMPORT MAX. DEMAND REACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Var	0.1	int
234	00EA	L2 PHASE EXPORT MAX. DEMAND REACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Var	0.1	int
236	00EC	L3 PHASE IMPORT MAX. DEMAND REACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Var	0.1	int
238	00EE	L3 PHASE EXPORT MAX. DEMAND REACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Var	0.1	int
240	00F0	L1 PHASE MAX. DEMAND APPARENT POWER	R/W	(0 - 18000)xCTxVT	VA	0.1	unsigned int
242	00F2	L2 PHASE MAX. DEMAND APPARENT POWER	R/W	(0 - 18000)xCTxVT	VA	0.1	unsigned int
244	00F4	L3 PHASE MAX. DEMAND APPARENT POWER	R/W	(0 - 18000)xCTxVT	VA	0.1	unsigned int
246	00F6	TOTAL IMPORT MAX. DEMAND ACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Watt	0.1	int
248	00F8	TOTAL EXPORT MAX. DEMAND ACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Watt	0.1	int
250	00FA	TOTAL IMPORT MAX. DEMAND REACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Var	0.1	int
252	00FC	TOTAL EXPORT MAX. DEMAND REACTIVE POWER	R/W	(-18000 - 18000)xCTxVT	Var	0.1	int
254	00FE	TOTAL MAX. DEMAND APPARENT POWER	R/W	(0 - 18000)xCTxVT	VA	0.1	unsigned int

ADDRESS	ADDRESS (HEX)	REGISTER	R/W	RANGE	UNIT	MULTIPLIER	FORMAT
32768	8000	VOLTAGE TRANSFORMER RATIO	R/W	0-40000	-	-	short-int
32769	8001	CURRENT TRANSFORMER RATIO	R/W	0-2000	-	0.1	short-int
32770	8002	CALCULATION METHOD	R/W	0-5	-	-	short-int
32771	8003	DEMAND TIME	R/W	1-60	minute	-	short-int
32772	8004	PULSE RATIO	R/W	0-6	-	-	short-int
32773	8005	PULSE OUTPUT 1 PARAMETER SETTING	R/W	0-5	-	-	short-int
32774	8006	PULSE OUTPUT 2 PARAMETER SETTING	R/W	0-5	-	-	short-int
32775	8007	ENERGY COUNTER 1 SELECTION	R/W	0-3	-	-	short-int
32776	8008	ENERGY COUNTER 2 SELECTION	R/W	0-3	-	-	short-int
32777	8009	COMMUNICATION ADDRESS	R/W	0 - 247	-	-	short-int
32778	800A	BAUD RATE	R/W	1 - 5	-	-	short-int
32779	800B	PARITY	R/W	0 - 2	-	-	short-int
32780	800C	PASSWORD ENABLE	R/W	0-1	-	-	short-int
32781	800D	PASSWORD	R/W	0-9999	-	-	short-int

PULSE OUTPUT 1-2

- PARAMETER SETTING 0-5 :**
 0: Active
 1: Active Import
 2: Active Export
 3: Reactive
 4: Reactive Import
 5: Reactive Export

PULSE RATIO 0-6 :

- 0: 1 Watt / Pulse
 1: 10 Watt / Pulse
 2: 100 Watt / Pulse
 3: 1 kW / Pulse
 4: 10 kW / Pulse
 5: 100 kW / Pulse
 6: 1 MW / Pulse

ENERGY COUNTER 1 SELECTION 0-3 :

- 0: On (EC -Energy counter- will count on all conditions)
 1: EC will count when Digital Input1 is 1 (1=active)
 2: EC will count when Digital Input2 is 1 (1=active)
 3: Inverse Energy Counter 2 (It will count when EC2 is not counted)

ENERGY COUNTER 2 SELECTION 0-3 :

- 0: On (EC -Energy counter- will count on all conditions)
 1: EC will count when Digital Input1 is 1 (1=active)
 2: EC will count when Digital Input2 is 1 (1=active)
 3: Inverse Energy Counter 1 (It will count when EC1 is not counted)

BAUD RATE 1-5 :

- 1: 38400 bps
 2: 19200 bps
 3: 9600 bps
 4: 4800 bps
 5: 2400 bps

PARITY 0-2 :

- 0: No
 1: Odd
 2: Even

PASSWORD ENABLE 0-1 :

- 0: Disable
 1: Enable

CALCULATION 0-5 :

Refer to "Reactive Energy Calculation Method Setting" on page 2.