

SEM330/360/370/375 Energy Logger manual



SEM330



- 3 Phase 4-Line Energy Logger**
- *75A, 120A, 200A, 350A, 500A current clamp**
- *Micro SD Card data logger**
- *Modbus RS-485, TCP/IP, USB**
- *Wi-Fi, RF433MHz, LORA**
- *Web Cloud service: <http://mywatt.org>**
- *Application: "mywatt30"**
- *Temperature, Humidity, Pressure sensor**

SEM330 and SEM370 are using the same main pcb board except the extra function.

SEM330 basic version:

has Micro SD-Card slot, Modbus RS-485, TCP/IP, 3 Phase 4-Line voltage input, 3 clamp connection terminal and extra sensor terminals. We also provide Battery clock back-up device.

"B" type USB terminal is included.

In case of TCP/IP, you can get web cloud service directly by connecting LAN cable (2-channel service is free) 30channel service is option.

SEM330 optional items:

- *Temperature and humidity sensor
- *WIFI module
- *LORA module (FULL MESH networking service up to 100 channels)
- *Pressure sensor (0 to 10bar)
- *Dust sensor (3 channel)

SEM330 have 5 push buttons and 3 led display but not useful except the following button.

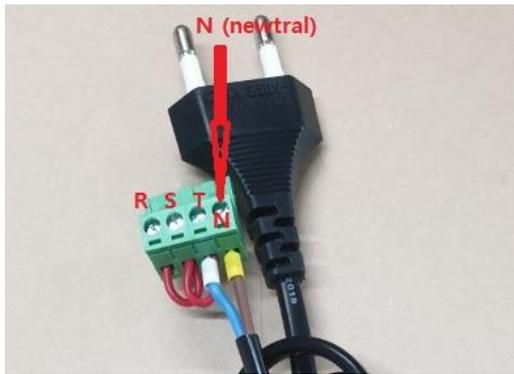
LED lamp:

red led: power on indication

SEM330 Piano switch on top side

Please press the piano switch #3 before start the SEM330.

If you are using WIFI module on SEM330, please press No. 5 button for WIFI pairing start. And press 3 seconds continuously, the green led lamp will blinking for WIFI pairing start.



If you want to measure Single phase but 3-channel application, please make the cable connection as the above photo.

But if your cable connection method is reverse, you can see "-" data when you are using rs-485 software which we provide free cost..

nevertheless if you see "-" data, please change the clamp connection position.

If you need to measure only single phase and 1 channel energy measuring, please connect only "N" and "T" pole.

"B" type USB terminal:

If you connect 5V DC power, SEM330 power is on and the clock is start to work.

In this case, you can measure with optional sensors.



SEM330 Test Report dated on January 2019 by Official Lab.



2. AC Current Calibration (A, 60 Hz)

Range	Applide Value	Indicated Value	Correction Value	Measurement Uncertainty (신뢰수준 약 95 %, $k = 2$)
60 A	5.00 A	4.97 A	0.03 A	0.02 A
	10.00 A	9.93 A	0.07 A	0.03 A
	20.00 A	19.87 A	0.13 A	0.07 A
	30.00 A	29.87 A	0.13 A	0.10 A
	40.00 A	39.75 A	0.25 A	0.12 A
	50.00 A	49.72 A	0.28 A	0.14 A
	55.00 A	54.71 A	0.29 A	0.61 A

3. Power Calibration (A, 60 Hz, PF = 1)

Range	Applide Value	Indicated Value	Correction Value	Measurement Uncertainty (신뢰수준 약 95 %, $k = 2$)
AUTO	120 W	119 W	1 W	1 W
	240 W	239 W	1 W	1 W
	600 W	598 W	2 W	1 W
	1 200 W	1 196 W	4 W	1 W
	2 400 W	2 392 W	8 W	1 W
	3 600 W	3 596 W	4 W	2 W
	4 800 W	4 784 W	16 W	2 W
	7 200 W	7 192 W	8 W	3 W

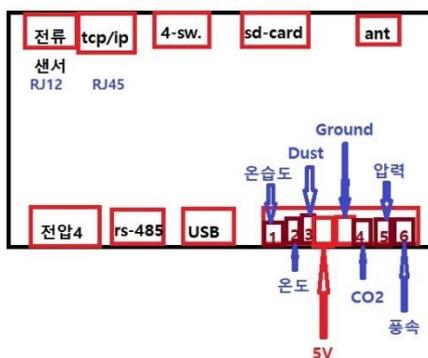
4. Power factor Calibration (A, 60 Hz)

Applide Value	Indicated Value	Correction Value	Measurement Uncertainty (신뢰수준 약 95 %, $k = 2$)
1	1.00	0.00	0.01
0.8 (Lead)	0.79	0.01	0.01
0.8 (Lag)	0.82	-0.02	0.01
0.5 (Lead)	0.47	0.03	0.01
0.5 (Lag)	0.52	-0.02	0.01
0.3 (Lead)	0.27	0.03	0.01
0.3 (Lag)	0.33	-0.03	0.01

PCB board layer



SEM330 Smart Energy Logger



SEM370 3-Phase Energy Logger



3 Phase 4-Line Energy Logger

- *2.4" TFT lcd display
- *75A, 120A, 200A, 350A, 500A current clamp
- *Micro SD Card data logger
- *Modbus RS-485, TCP/IP, USB
- *Wi-Fi, RF433MHz, LORA
- *Web Cloud service: <http://mywatt.org>
- *Application: "mywatt30"
- *Temperature, Humidity, Pressure sensor

SEM370 basic version:

has Micro SD-Card slot, Modbus RS-485, TCP/IP, 3 Phase 4-Line voltage input, 3 clamp connection terminal and extra sensor terminals. We also provide Battery clock back-up device.

"B" type USB terminal is included. 2.4" TFT lcd.

In case of TCP/IP, you can get web cloud service directly by connecting LAN cable (2-channel service is free) 30channel service is option.

SEM370 optional items:

*Temperature and humidity sensor

*WIFI module

*LORA module (FULL MESH networking service up to 100 channels)

*Pressure sensor (0 to 10bar)

*Dust sensor (3 channel)

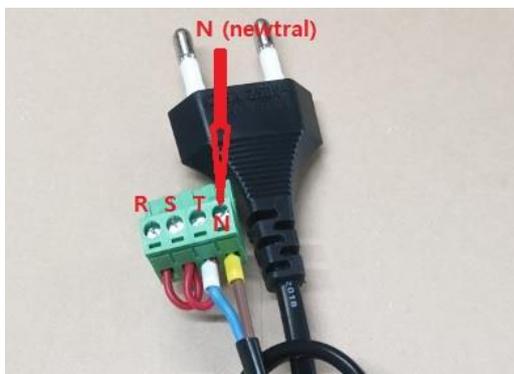
SEM370 have 5 push buttons and 3 led display.

LED lamp:

red led: power on indication

SEM330 Piano switch on top side

Please press piano switch #3 before start the indicator if necessary.



If you want to measure Single phase but 3-channel application, please make the cable as the above photo.

But if your cable connection method is reverse, you can see "-" data when you are using rs-485 software which we provide free cost..

nevertheless if you see "-"data, please change the clamp connection position.

If you need to measure only single phase and 1 channel energy measuring, please connect only "N" and "T" pole.

"B" type USB terminal:

If you connect 5V DC power, SEM330 power is on and the clock is start to work.

In this case, you can measure with optional sensors.

3-Phase 4-Line voltage energy measuring

Please connect 4-Line voltage connector with 4-line cables.



Please connect the RJ12 jack with 3-clamps on top of SEM370 case.



if you see "--" data on lcd display, please rotate the clamp connecting position

SEM370 clamps:

SEM370 clamps must be ordered separately. You must use the clamps which is confirmed by the We provide 30A, 60A, 100A, 200A, 500A clamps.

SEM370 LCD operation method.

SEM370 have 5 buttons. (MODE, UP, DOWN, ENTER, OTHERS)



#1: Mode Button

If you press Mode button, You can see 18 menu.

*ENERGY1:

You can see Active power(W), Total Energy power (Wh or kWh), Power Factor, Voltage, Frequency.

*ENERGY2:

Active power(W), Total Energy power (Wh or kWh), Reactive Power (AVR), Apparent Power (VA), AVRh, Vah,

*COST & GRAPH:

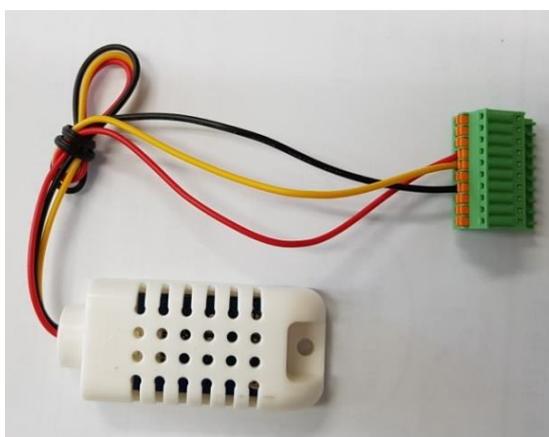
Daily and Monthly Energy cost calculation will be provided in the future.

We will also provide Daily/Monthly/Yearly graph in the future.



*T&H (Temperature and Humidity): Option

*Pressure sensor: Option



Model THS Temperature & Humidity Sensor for CRT5000



Clamp Type (200A, 500A, 60A)



DUST Sensor: Option. Will be available in the future



*SMART FARM: Will be available in the future.

*RS-485 (Modbus RS-485)

You can connect up to 30chnnels. If you use multi-channel, you must set the channel number on each device by using supplied RS-485 software.

*RF433MHZ

Will be available in the future.

*WIFI:

If you buy WIFI module and insert it onto the main pcb, you can use WIFI mode.

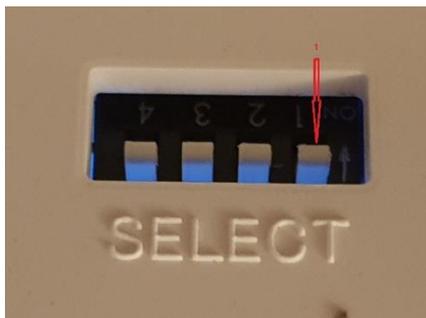
Please move to WIFI mode and press the START icon and press the COMPLETE icon.

Then you could see the ENERGY1 lcd page and could see the green led is blinking continuously.

Then the WIFI pairing mode is starting now.

*LAN: (Web cloud service)

Please connect the LAN cable on to the tcp/ip slot and press the #1 piano switch down to up for the web cloud service starting.



***CLOCK**

You can change the clock by using up/down/enter button. Or You can change the clock by using RS-485 software. Or you can change the clock by using WIFI or LAN web cloud service automatically.

***LANGUAGE:**

Now we provide English mode only.

***MODBUS RS-485**

Please use the rs-485 software for to see the data,

***AUTO SCROLL:**

Will be available in the future

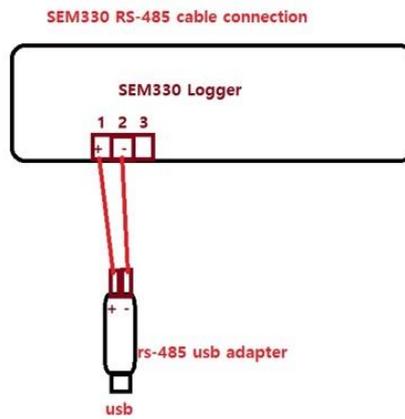
***ADMIN:**

You can adjust the CT/PT ratio with this mode.

*** RS-485 software operation method:**

We supply RS-485 to USB adapter as below photo.

Please connect "+" to "+" and "-" to "-" by cable. You must provide the cable.



Please also use the pc software which we provide separately. You can see 30 kinds of data on one page with 2 seconds interval.

download site: www.mywatt.biz/download/485soft.zip

Port Connection
 Port: COM1 Baudrate: 9600 [Open] [Close]

Computer time/date 2017-07-25 14:54:21
Time duration from start 0 hour 28 min, 7 sec.

Slave ID selection
 Device (1 to 31)
 Slave ID: 1 Last ID: 1

Poll count: 843

Power Data 1		Power Data 2	
Current, Phase A	0,11	Reactive Power, Phase A	-22,25
Current, Phase B	0,07	Reactive Power, Phase B	-13,93
Current, Phase C	0,10	Reactive Power, Phase C	-20,89
Current, 3-Phase Average	0,09	Power Factor A	-0,03
Voltage, A-N	213,76	Power Factor B	-0,02
Voltage, B-N	213,76	Power Factor C	-0,04
Voltage, C-N	213,76	Frequency	59,72
Active Power, Phase A	-0,64	WATT_T3 Total	0,00
Active Power, Phase B	-0,32	VA_T3 Total	0,00
Active Power, Phase C	-0,84	VAR_T3 Total	0,00
Total energy from start		Total Wh record (A,B,C)	
		WHA_POS	0,00
		WHB_POS	0,00
		WHC_POS	0,00
		Average	
		VT_RMS	213,76
		PF_T	-0,03
		Apparent power	
		VA_A	23,32
		VA_B	15,15
		VA_C	21,99
		3-phase total	
		WATT_T3	-1,83
		VA_T3	60,43
		VAR_T3	-57,33

Temperature-Humidity
 Temperature: 0,00
 Humid: 0,00
 Temperature(Humid): 0,00
Temp/Humidity sensor

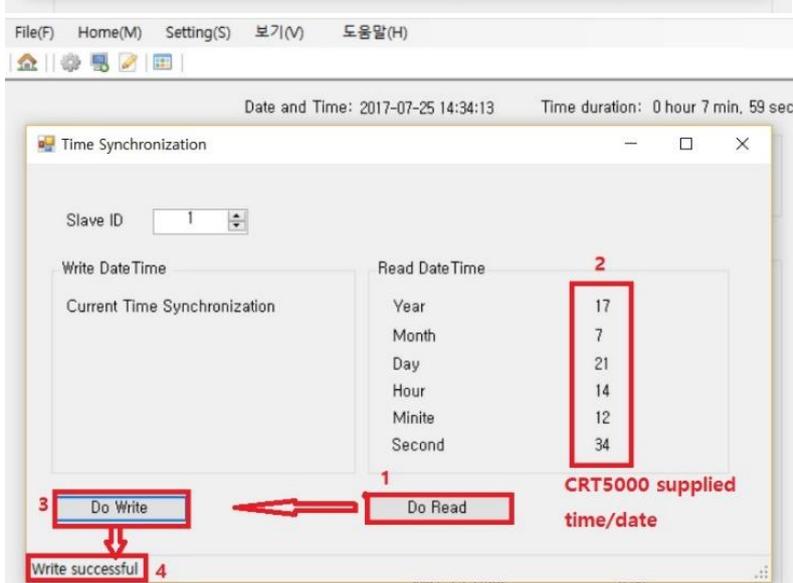
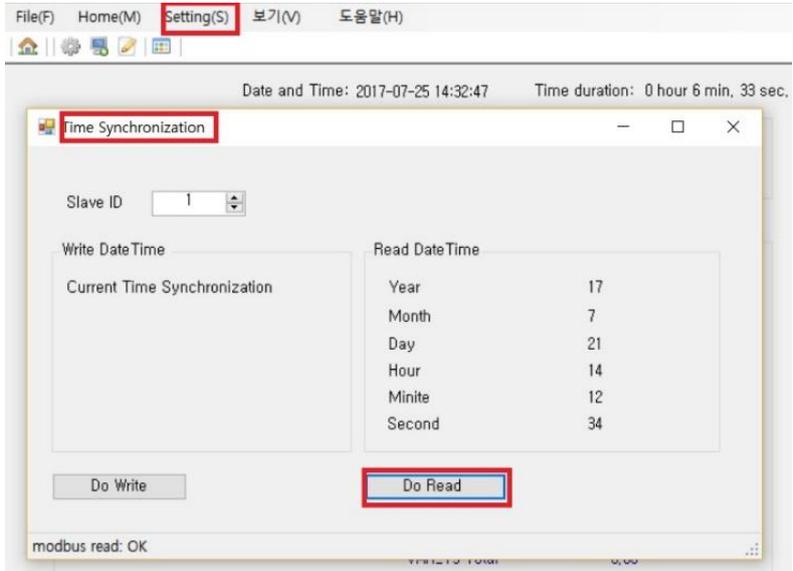
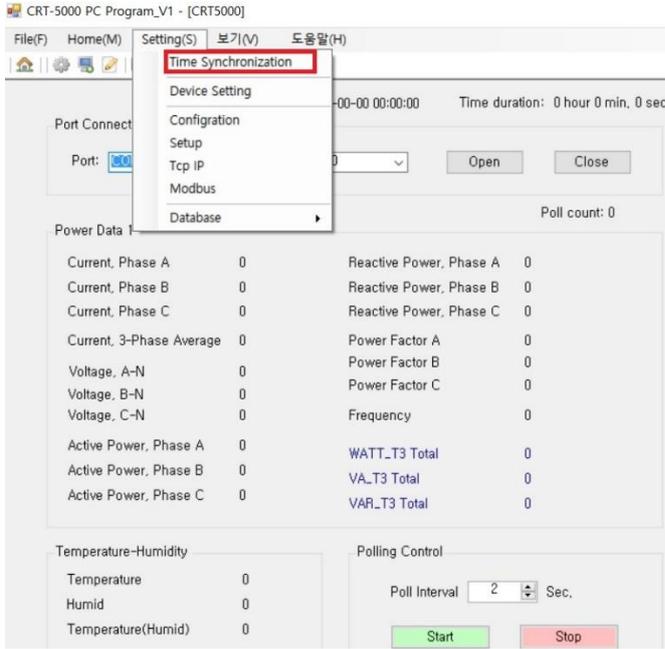
Polling interval setting
 Polling Control (2 sec to 200 sec)
 Poll Interval: 2 Sec. [Start] [Stop]

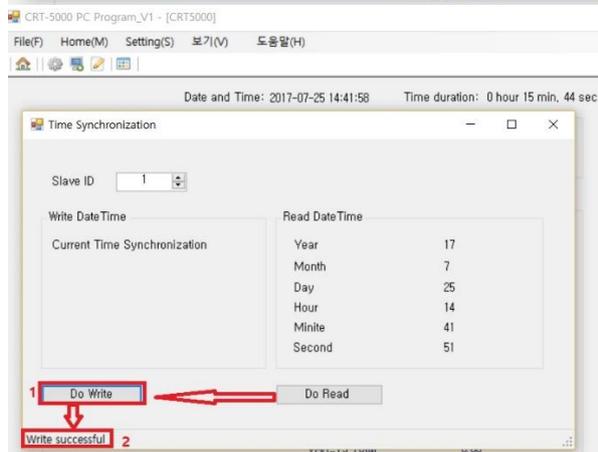
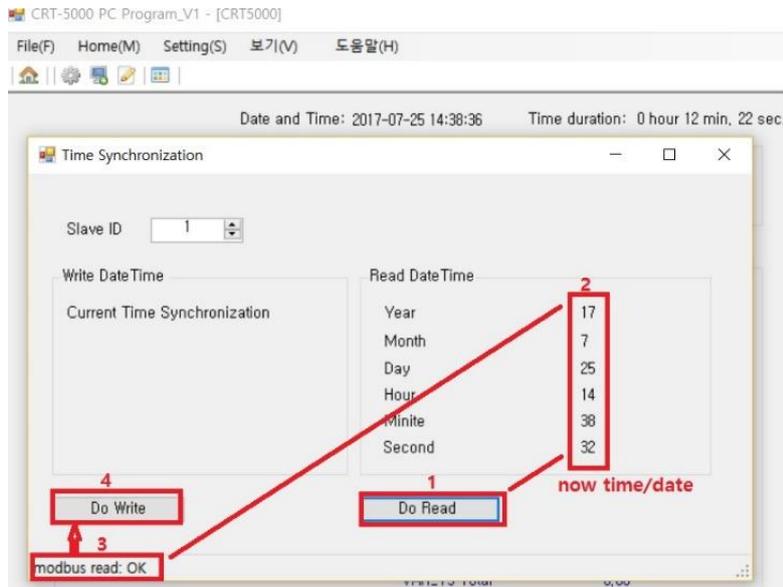
Slave ID: 1 [Once Read]

nodbus read: OK

When starting the software, please check the "Port" number is correct or not. If it is okay, please press the "Open" button then you could see the 30 kinds of data at once with 2 seconds interval. If you are not satisfied, you can change from 2 seconds to 200 seconds.

If you see "-" figure on Active power (W or kW), please rotate the clamp position or change the voltage pole when you made mistake.

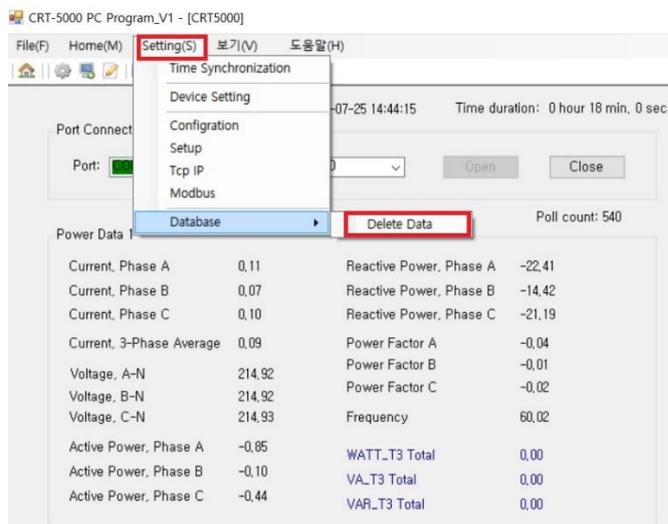




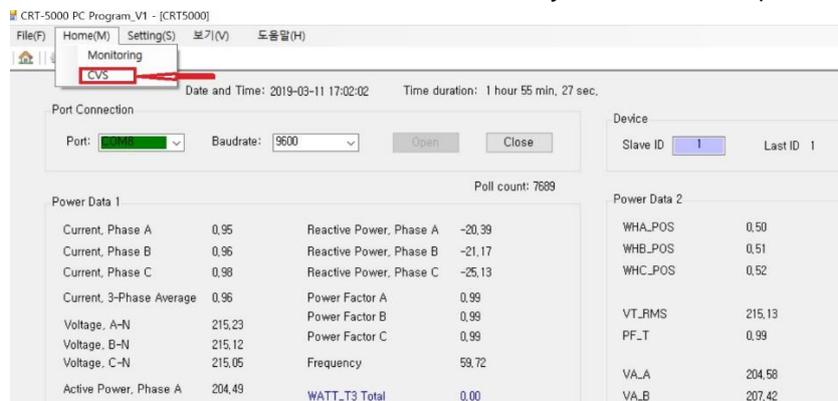
If you want to erase the PC software logged data, please do the following action:

Setting -> Database -> Delete Data

You can see the logged data is deleting.

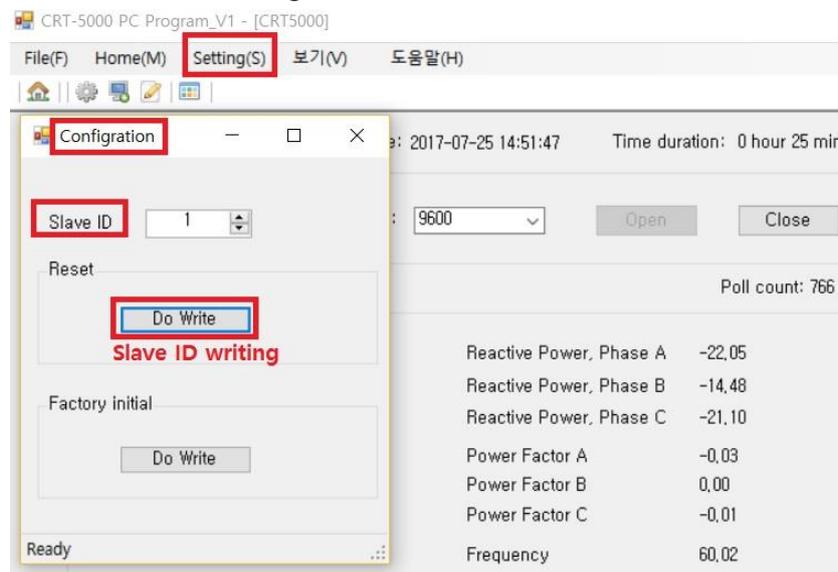


If you want to save the logged data to PC, Please do as below:
 Home -> CVS selection and save the file to your wanted file position.



If you want to connect up to 30 channels of SEM370, you must memorize the Device Number by using RS-485 software.

Slave ID number setting as below



Micro SD card data logging: 1-minute interval data logging. 1 month 1 file is saving now.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1			Current				Voltage			Active Power			Reactive Power		
2	DEV ID	DATETIME	CPR	CPS	CPT	C3PA	VRN	VSN	VTN	PPR	APPS	APPT	RPPR	RPPS	RPPT
3	1	2017-02-08 0:00	2.28	0.99	0.19	1.15	220.53	220.6	220.57	323.4	67.33	33.99	-205.65	-156.77	-20.13
4	2	2017-02-08 0:01	2.62	0.99	0.19	1.27	220.49	220.53	220.42	415.19	66.69	34.33	-210.39	-156.92	-20.34
5	3	2017-02-08 0:02	2.45	0.99	0.19	1.21	220.35	220.42	220.39	381.59	66	34	-211.61	-157.23	-20.84
6	4	2017-02-08 0:03	2.67	1.18	0.19	1.35	219.93	220.02	219.94	435.66	137.72	34.11	-202.1	-159.77	-20.72
7	5	2017-02-08 0:04	2.29	1.01	0.18	1.16	220.56	220.55	220.5	315.13	61.29	33.8	-210.49	-162.13	-19.96
8	6	2017-02-08 0:05	2.69	0.98	0.18	1.28	220.24	220.31	220.26	443.24	66.82	33.2	-205.7	-155.55	-20.16
9	7	2017-02-08 0:06	2.27	0.99	0.19	1.15	220.16	220.23	220.2	320.31	67.78	33.88	-207.02	-155.7	-20.41
10	8	2017-02-08 0:07	2.41	1.01	0.19	1.2	220.37	220.36	220.3	354.52	62.11	33.79	-212	-160.69	-20.66
11	9	2017-02-08 0:08	2.29	0.99	0.19	1.16	220.47	220.55	220.42	316.29	64.76	33.73	-204.68	-156.75	-20.71
12	10	2017-02-08 0:09	2.7	0.98	0.19	1.31	220.19	220.27	220.23	443.73	65.08	34.25	-208.88	-156.25	-20.52
13	11	2017-02-08 0:10	2.65	1.07	0.18	1.24	219.88	219.88	219.84	418.52	80.18	33.63	-213.98	-160.27	-20.23
14	12	2017-02-08 0:11	2.94	0.98	0.18	1.42	220.22	220.29	220.22	556.96	64.88	33.9	-30.33	-156.05	-19.66
15	13	2017-02-08 0:12	2.02	0.99	0.19	1.06	220.39	220.38	220.36	251.26	63.76	33.94	-211.97	-157.76	-20.47
16	14	2017-02-08 0:13	4.18	1.04	0.19	1.83	219.81	219.87	219.76	778.8	80.7	34.21	-313.8	-154.94	-20.62
17	15	2017-02-08 0:14	2.2	0.98	0.19	1.18	220.3	220.36	220.24	313.01	65.41	33.71	-206.89	-155.81	-20.89
18	16	2017-02-08 0:15	2.17	1.09	0.18	1.14	220.25	220.23	220.2	302.92	118.18	33.78	-206.78	-160.98	-20.01
19	17	2017-02-08 0:16	2.01	0.98	0.18	1.06	220.19	220.24	220.13	251.96	66.8	33.14	-202.52	-156.3	-21.06

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Count	저장시간	전류R상	전류S상	전류T상	3상평균전	상전압R상	상전압S상	상전압T상	무효전력R	무효전력S	무효전력T	무효전력R	무효전력S	무효전력T	역률R상
2	COUNT	DATETIME	IR	IS	IT	I_A	VR	VS	VT	WATT_R	WATT_S	WATT_T	VAR_R	VAR_S	VAR_T	PFR
3	4215	2017-02-02 0:00	0.05	0.04	0.04	0.04	215.27	215.27	215.28	2.37	2.79	2.8	0.29	0.02	0	0.23
4	4216	2017-02-02 0:01	0.05	0.04	0.04	0.04	216.67	216.68	216.68	1.57	2.56	2.31	-0.01	0.23	0.31	0.16
5	4217	2017-02-02 0:02	0.05	0.04	0.04	0.04	216.48	216.48	216.48	2.02	2.74	2.31	-0.2	-0.11	0.25	0.19
6	4218	2017-02-02 0:03	0.05	0.04	0.04	0.04	217.05	217.05	217.05	1.69	2.41	3	-0.28	-0.3	0.22	0.17
7	4219	2017-02-02 0:04	0.05	0.04	0.04	0.04	216.4	216.4	216.4	2.74	2.68	2.28	-0.31	-0.12	-0.38	0.27

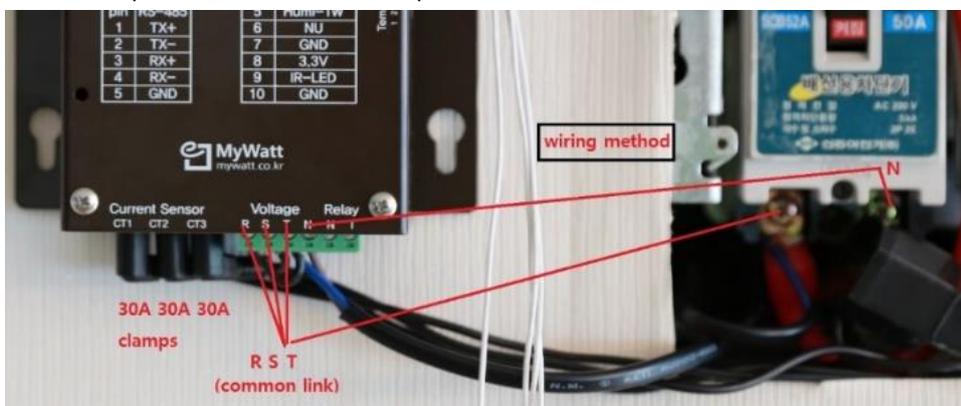
	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1	역률S상	역률T상	주파수	무효전력R	무효전력S	무효전력T	3상 무효전	무효전력R	무효전력S	무효전력T	3상 무효전	DI_TempA	DI_TempB	DI_HumidI	DI_1A(Co	DI_1B(Co	DI_2A(Co	DI_2B(Co
2	PFS	PFT	HZ	WHR_POS	WHS_POS	WHT_POS	WHTOTAL	VARHR	PCVARHS	PCVARHT	PCVARHTOT	DI_TempA	DI_TempB	DI_HumidI	DI_1A(Co	DI_1B(Co	DI_2A(Co	DI_2B(Co
3	0.31	0.3	60	47	57	55	159	0	1	2	3	0	0	0	0	0	0	0
4	0.27	0.25	59.97	47	57	55	159	0	1	2	3	0	0	0	0	0	0	0
5	0.29	0.25	60	47	57	55	159	0	1	2	3	0	0	0	0	0	0	0
6	0.25	0.31	59.95	47	57	55	159	0	1	2	3	0	0	0	0	0	0	0
7	0.3	0.25	59.97	47	57	55	159	0	1	2	3	0	0	0	0	0	0	0
8	0.26	0.23	59.97	48	57	55	160	0	1	2	3	0	0	0	0	0	0	0

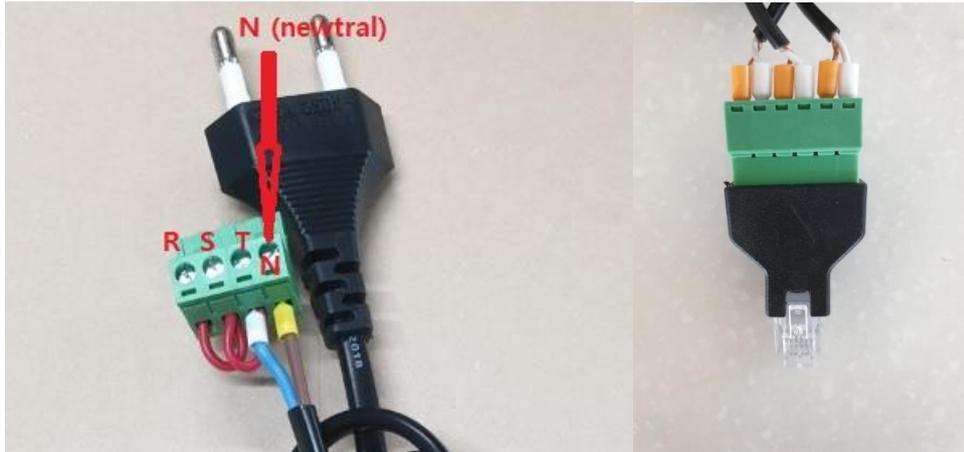
SD CARD: Please do take in and take out when you are necessary.

Temperature unit adjustment: Please press the "ENTER" button and you could see the unit is changing.

Electricity energy phase change: You can change L1/L2/L3/3P phase by pressing the ENTER button.

If you have problem to connect R/S/T/N 4-pole now due to the factory electricity line problem, you can use 2 pole connect as below photo:





TCP/IP WEB CLOUD SERVICE

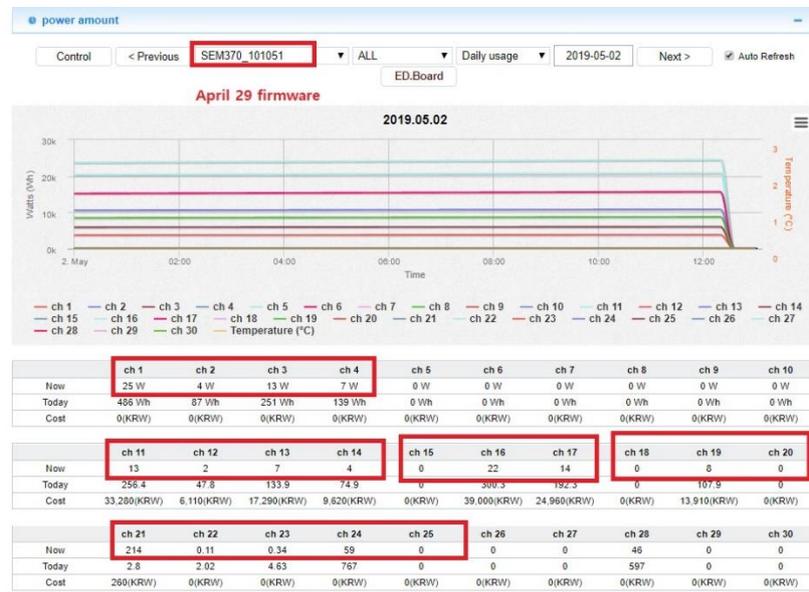
You can use TCP/IP web cloud service with free of charge service but only 2-channels.
 But if you want to get 30 channel service, please contact to Korins Inc. directly.

Korins Inc. www.mywatt.biz

Phone : +82-31-777-1588, Mobile: +82-10-8905-1244

Email: hyh@korins.kr

30 Channel web cloud service



If the company or factory have problem with WIFI, you can use 4G router instead. Please connect I to TCP/IP line as below photo:



WIFI

WIFI module operation method:

A) If you buy WIFI module and insert it onto the main pcb, you can use WIFI mode.

Please move to WIFI mode and press the START icon and press the COMPLETE icon.

Then you could see the ENERGY1 lcd page and could see the green led is blinking continuously.

Then the WIFI pairing mode is starting now.

B) Please download the "mywatt30" App from Google shop or IOS Shop to your mobile phone.

And you must register your ID with your email address or company email address on this App site.

1) Please log on the MYWATT30 app with your ID and password.

2) Please select the NEW DEVICE icon and select the WIFI icon and select the SEM360 device.

3) Please go to WIFI channel display mode on your smart phone:



4) Please find and select the "SEM370_XXX123" number which is matching your SEM370 serial number.

5) After selection, the above SEM370_XXX123 will be chosen as your default WIFI line.

6) Please insert the password number "korins1234".

7) After finish the above process, please move to the remained APP process.

8) Please write your office or factory available WIFI line (2.4G line only) ID.

9) Please also write your WIFI line password.

10) Then please press 'NEXT" icon until it stop the pairing process.



11)If the pairing process is finishing, please write an email or call a phone to Korins for to register the DEVICE number at the web server.

Korins staff will support on this final process.

SEM360 Model



SEM375 Model

SEM375 is suitable for wall mounting or stand type for the service staffs. It has magnet on back side plastic part and could easily attach on to the steel plate.

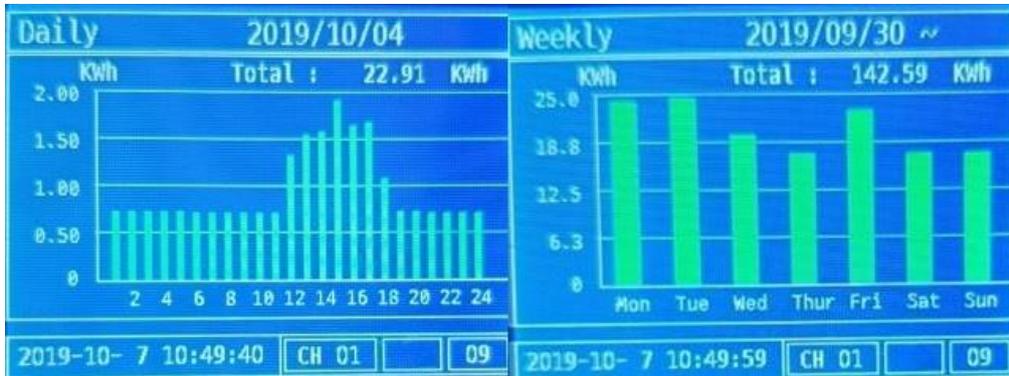
SEM375 also have rechargeable battery for the clock backup.



New lcd menu for SEM375 and SEM370PRO

1) Graph (Day/Week/Month/Year)

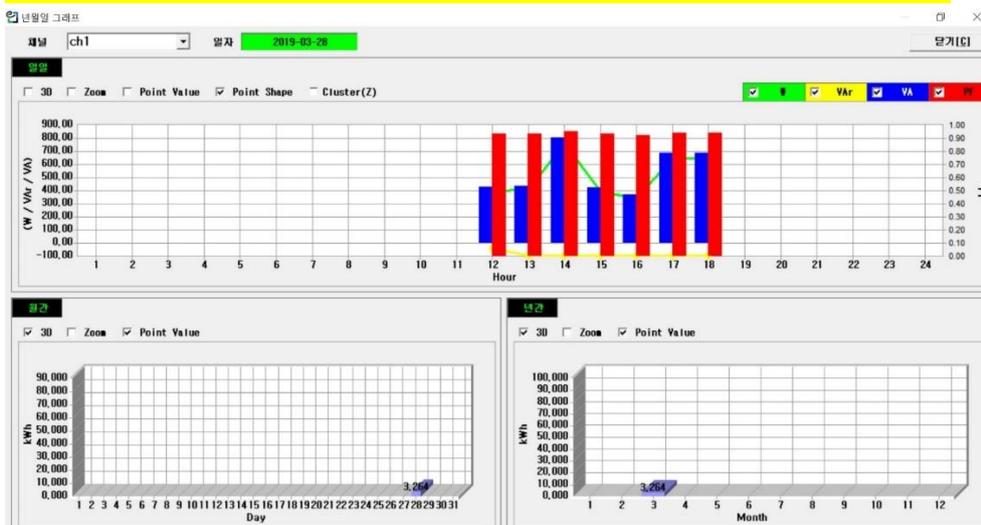
You can change the date by up/down key. You can change the day/week/month/year by using the Enter key.

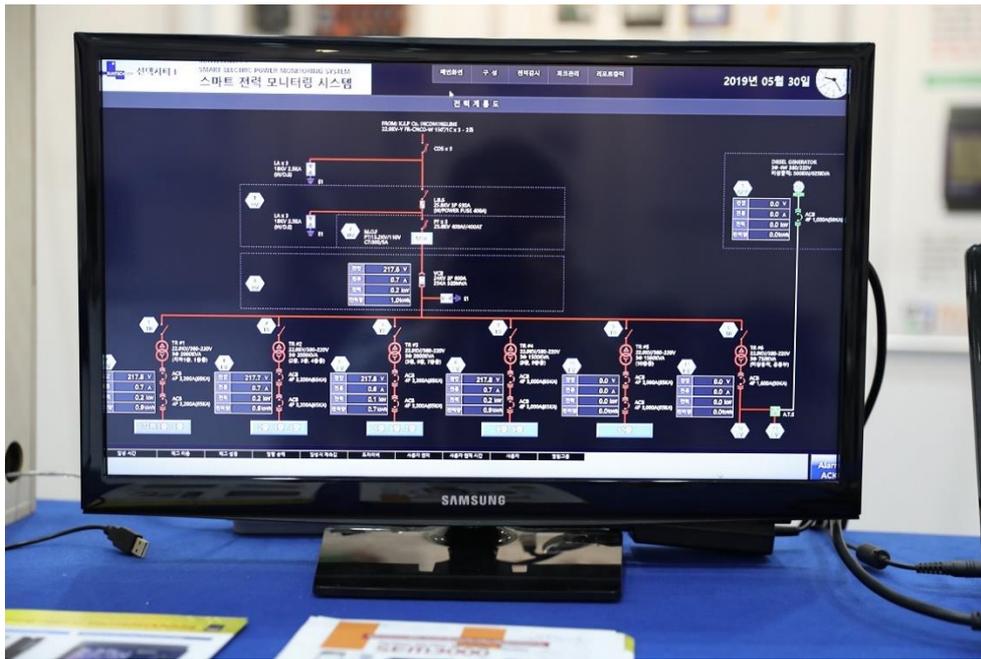


2) Chart (Day/Month/Year)



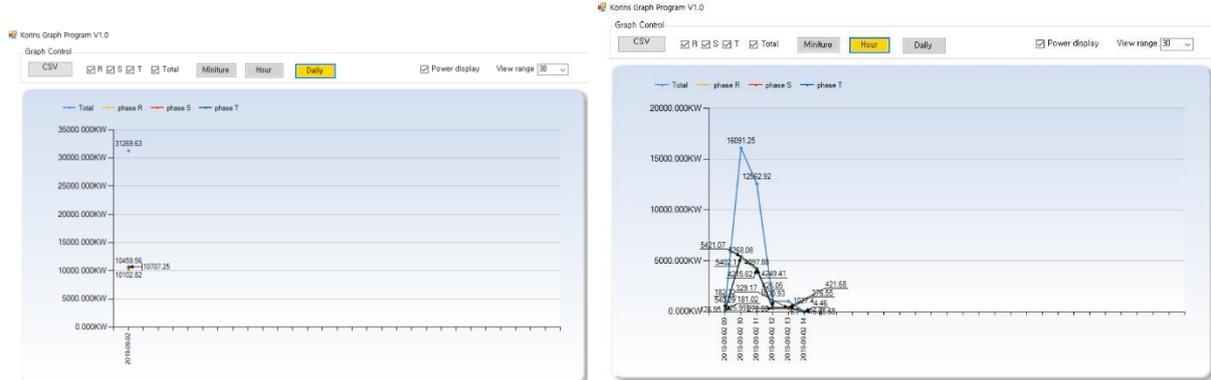
Optional Graphic software – MYWATT-GRAPH: \$300.00



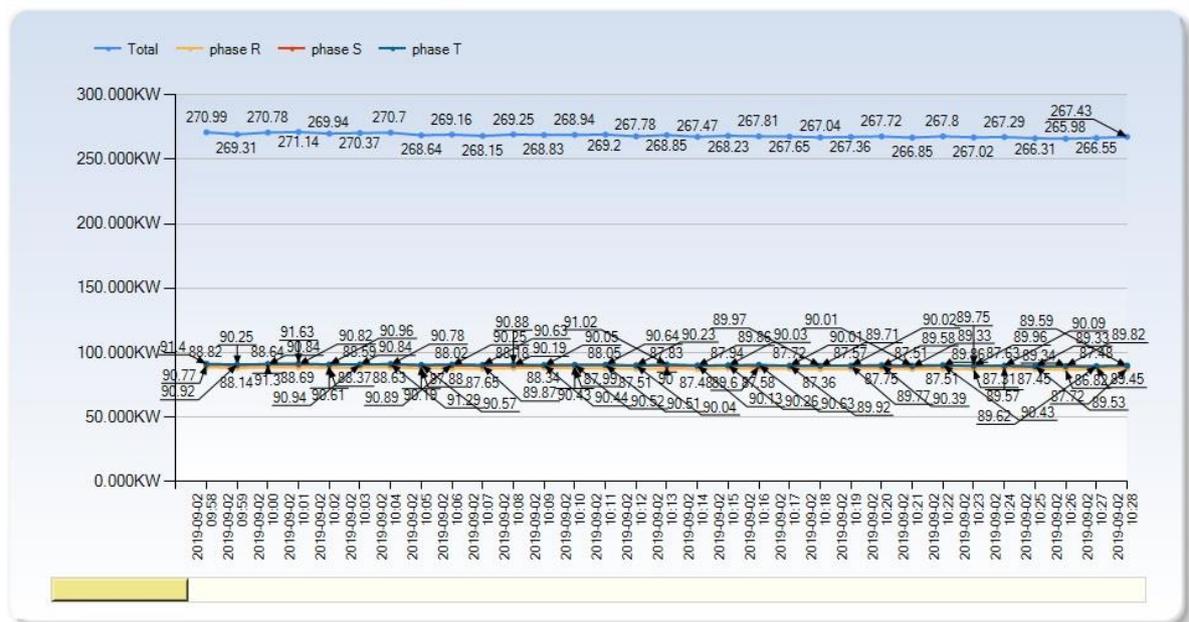


Optional sd card file software: \$300.00

You can see realtime/hour/day graph for W/P/F/Ampere/Voltage with this new software



Korins Graph Program V1.0



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