

CRT5001 operation manual

CRT5000 can measure 3-current & 4-Line voltage for 3-phase application.

Wire signal output: Modbus RS-485, TCP/IP

Wireless signal output : not yet.

Micro SD card logging: yes

Relay output : not yet

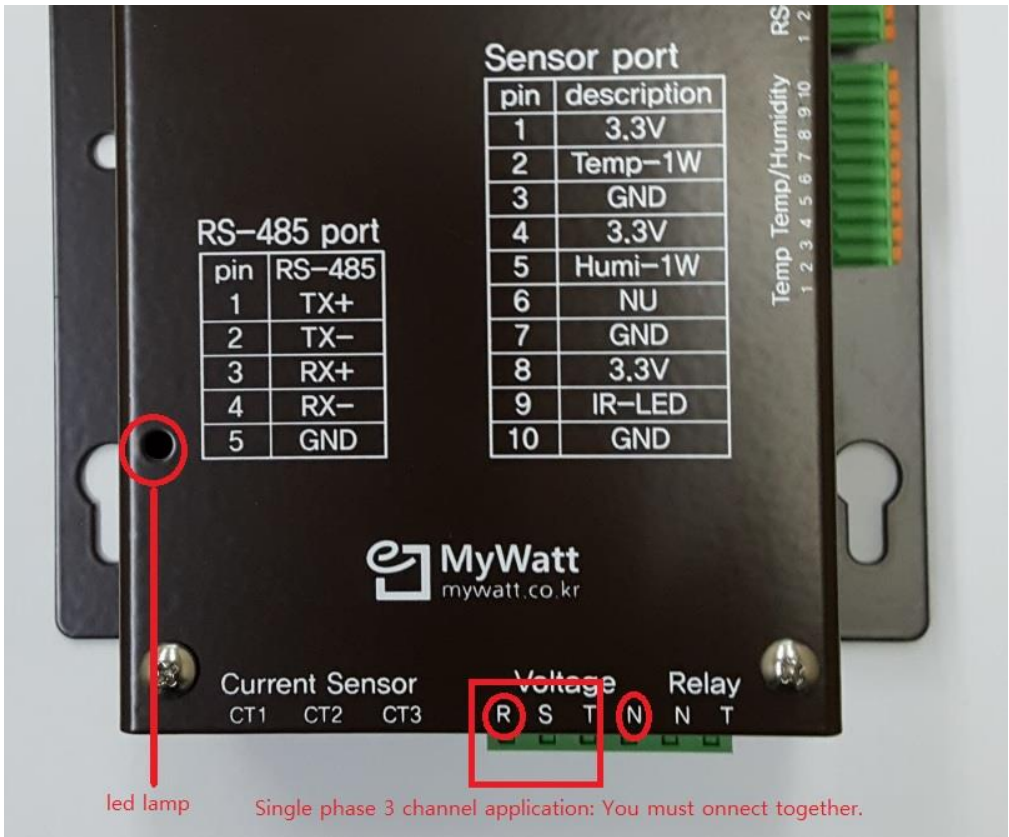


Setup method:

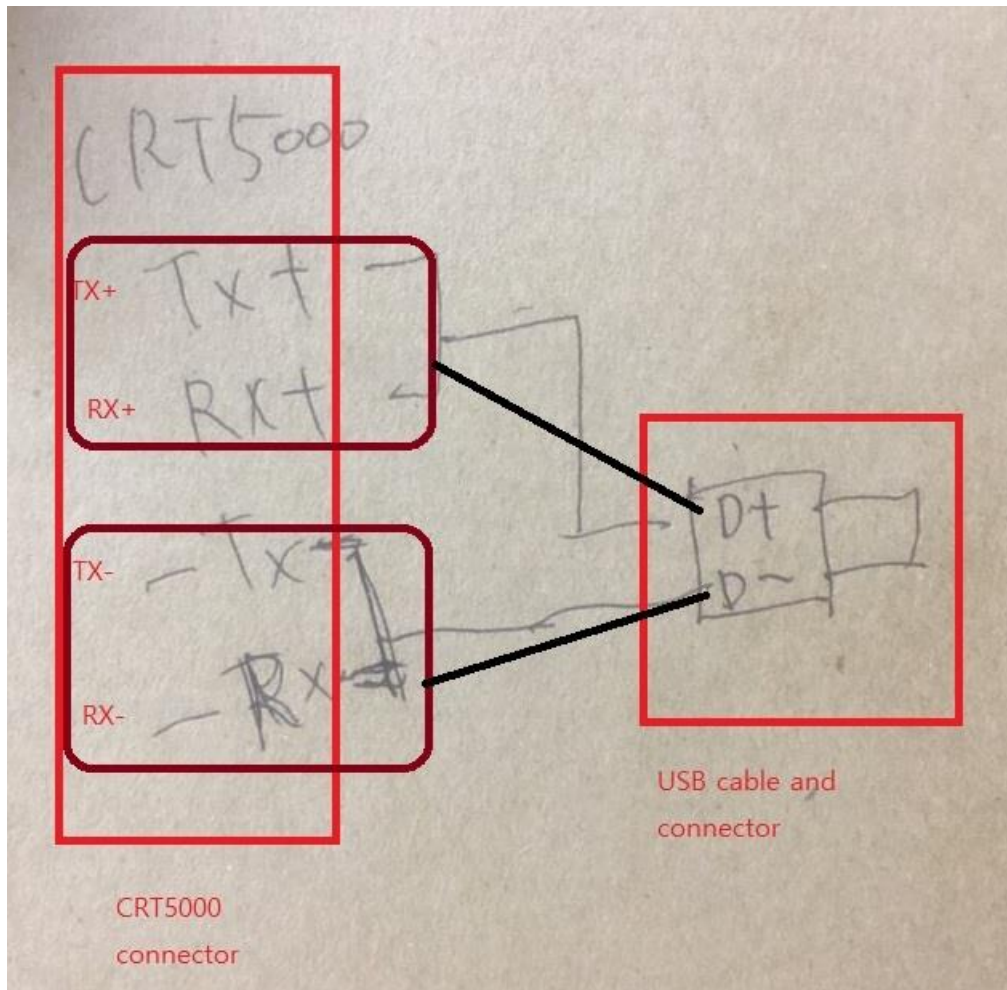
Please connect 3pcs of 30A to 500A clamp as the below photo.



Voltage cable wiring method:



RS-485 -> USB cable wiring method:



We have 6 models: better than 1% accuracy (5% to 95% of current sensor)

CRT5001(60A): 60A clamps: \$60 for 3pcs

CRT5001(80A): 80A clamps: \$80 for 3pcs

CRT5001(120A): 120A clamps: \$120 for 3pcs

CRT5001(200A): 200A clamps: \$150 for 3pcs

CRT5001(350A): 350A clamps: \$200 for 3pcs

CRT5001(500A): 500A clamps: \$250 for 3pcs

AC power: N (neutral), R phase, S phase, P phase 4-wire connection

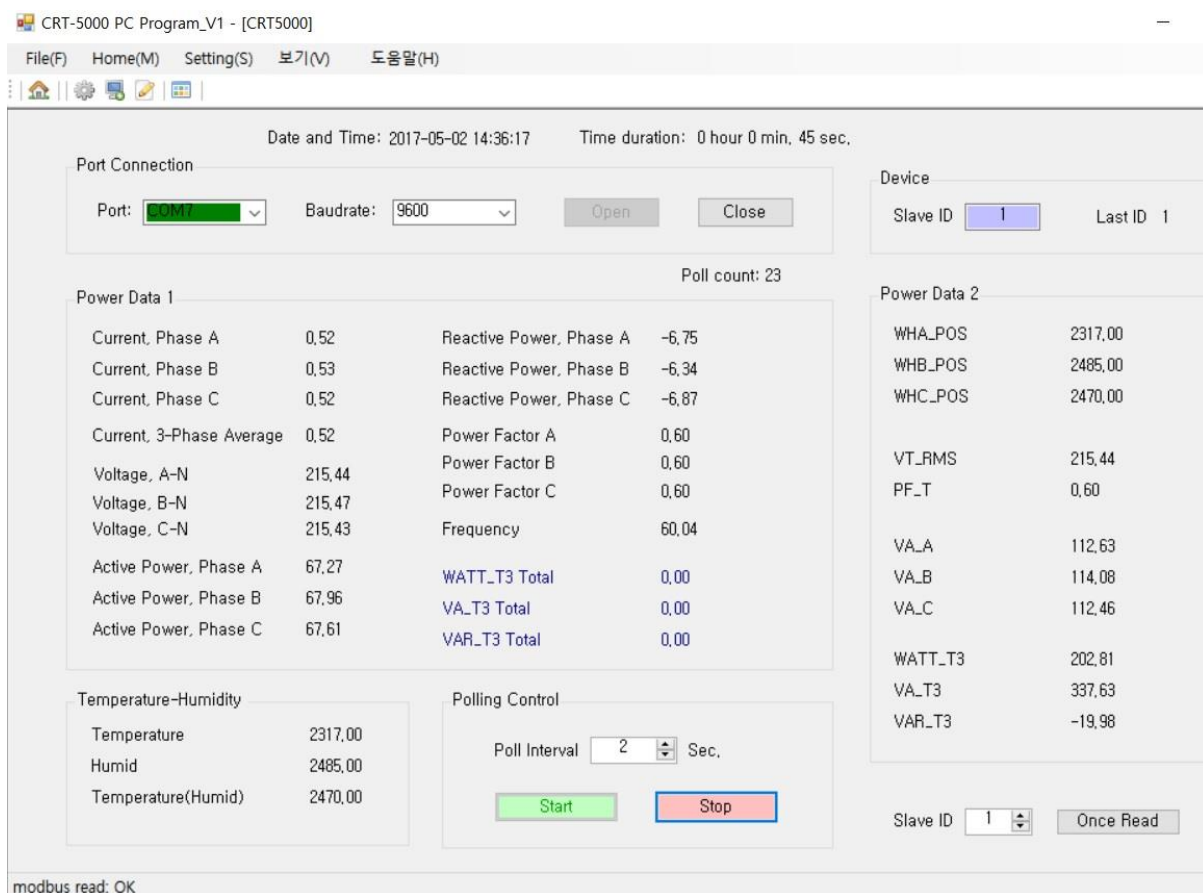
RS-485 communication: You can use 31pcs of CRT5001 with supplied pc software.

You can use option item: "485 -> usb" connector (\$20)

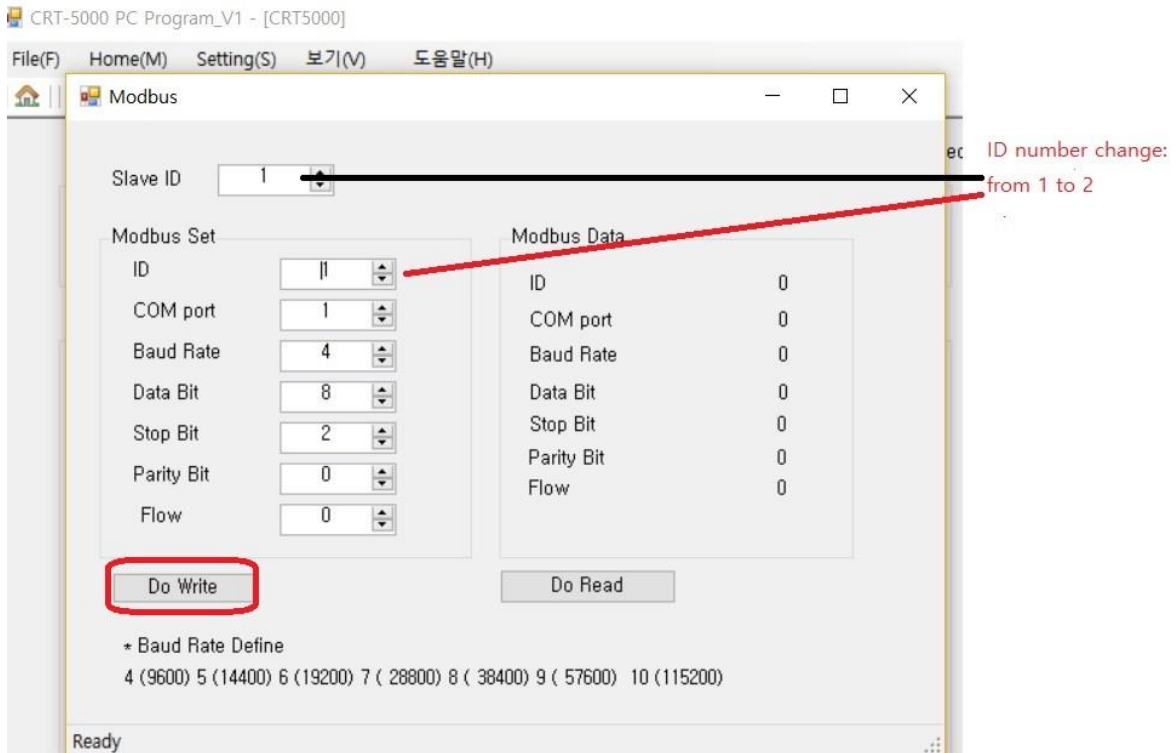
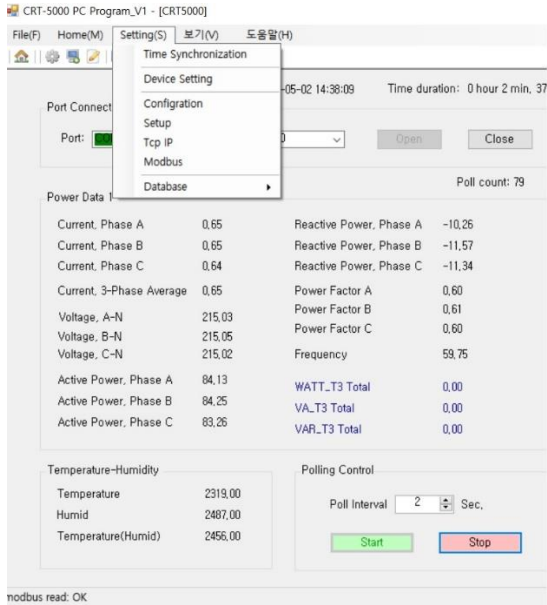
PC software: Please use the supplied software for Windows 10. (\$100)

If you are using Windows 7, you must download the driver to your pc.

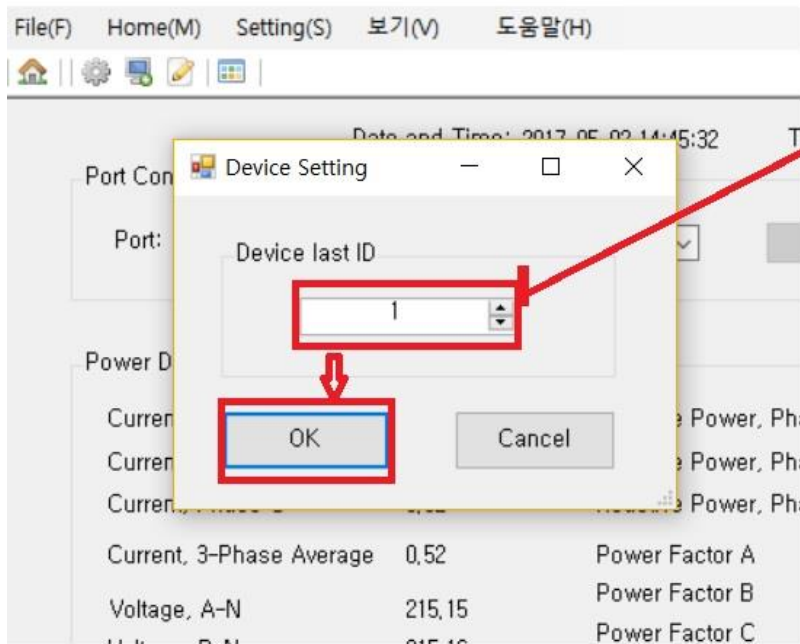
- 1) Please connect the power to the CRT5000
- 2) Please connect the "485-use" adapter to the CRT5000 and PC.
- 3) Please open the software on PC.
- 4) Please select the "Port" number.
- 5) Please click "Open" icon.
- 6) Polling interval: 2 seconds are default. You can choose from 2 to 200 seconds.
- 7) Please start to run by click the "Start" icon.



- 8) If you have 2 sets of CRT5000, you must memorize the Modbus "ID" number. For this purpose, you must link the 2ND CRT5000 only by PC. And click "Settings" and "Modbus" icon step by step.



9) For to see the several CRT5000 data, you must make modification of Device ID as follows:
You can see the whole channel data on the PC now.



If you have more than a CRT5000, you must change the device last ID 1 to X for to see the whole channels on the pc software.

10) For to change the CRT5000 time and date, you need the following process.

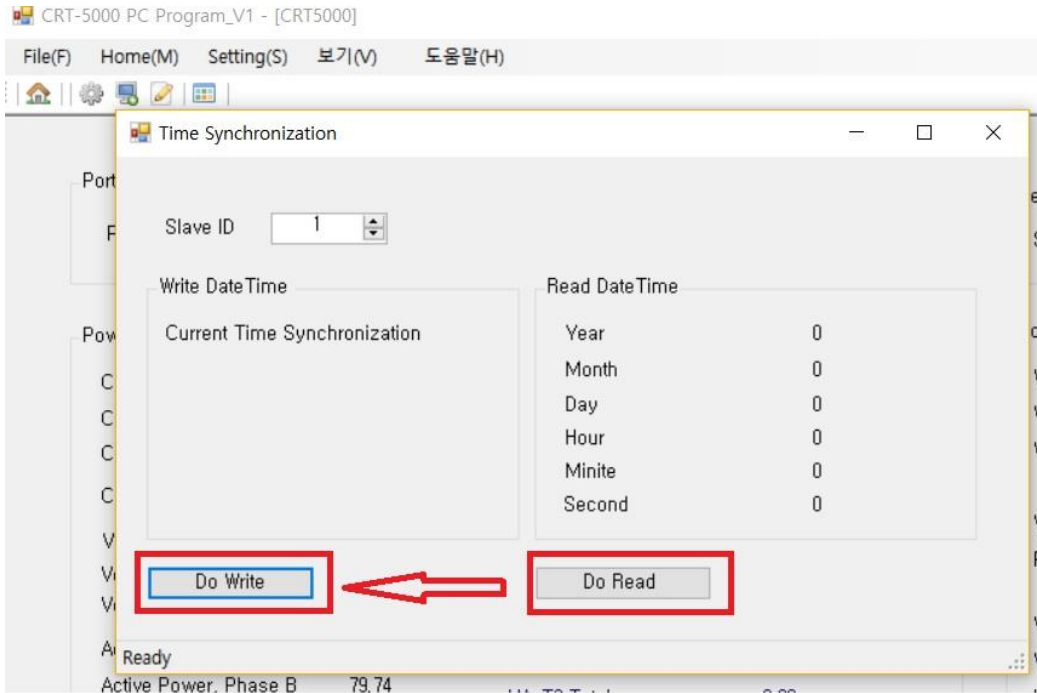
If not changing the time, you can see only factory setting time and date.

If you click the "Do Read" icon, you can see the factory setting time and date only.

Then please click "Do write" icon.

Then please click "Do Read" icon and you can see the computer real time and date under the "Read Date Time."

Then please click "Do Write" icon. Now you have saved the real time data on your CRT5000.



11) Micro SD card memory

The above time setting process is very important when you are using the SD card memory.

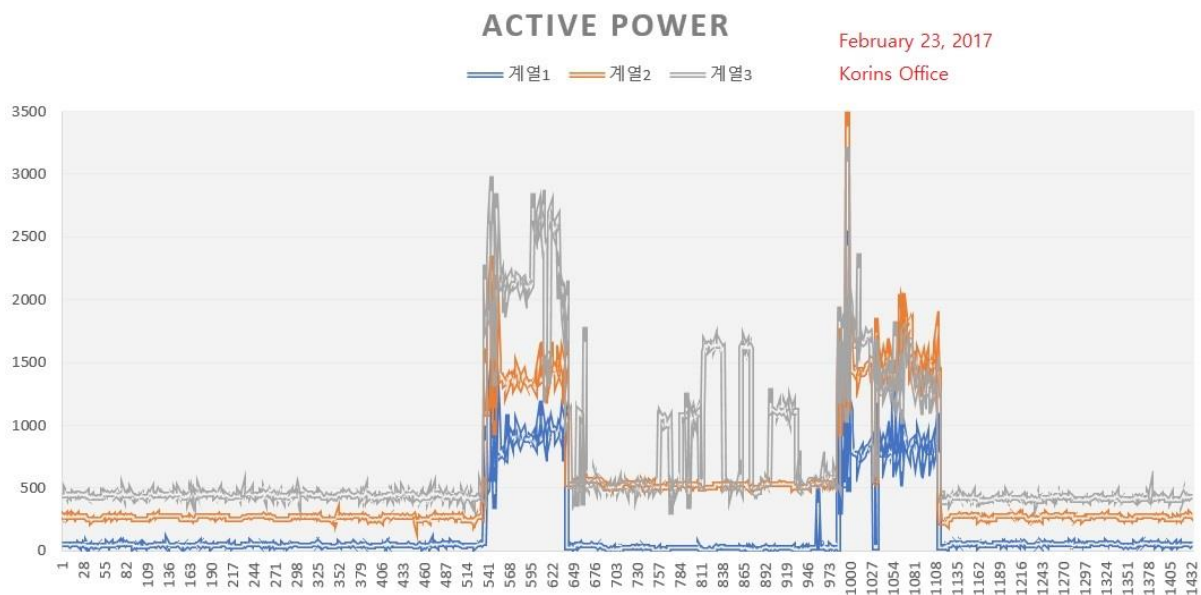
SD card memorize energy data with time every day with a CSV file.

You can use a SD card for one year continuously. For to download the data to PC, just pull and push the SD card several times without touch the power cord on CRT5000.

SD card logging the data every 1 minute interval and make a CSV file every day. You can make 30 files on a month.

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Count	저장시간 Clock	전류R상 Current R	전류S상	전류T상	3상평균전류 Current Average	상전압R상 Voltage R	상전압S상 Voltage S	상전압T상	유효전력R상 Active Power R	유효전력S상	유효전력T상	무효전력R Reactive Power	무효전력S
1	2016-06-24 12:00	0.22	0.22	0.22	0.22	235.86	235.82	235.82	31.06	31.58	31.29	29.58	30.16
2	2016-06-24 12:01	0.23	0.23	0.23	0.23	235.88	235.96	235.93	32.65	33.81	33.04	-2.46	-2.05
3	2016-06-24 12:02	0.22	0.22	0.21	0.22	235.81	235.87	235.83	30.72	31.11	30.67	-1.79	-1.63
4	2016-06-24 12:03	0.22	0.22	0.22	0.22	236.12	236.13	236.14	32.04	32.17	31.49	-2.04	-1.94
5	2016-06-24 12:04	0.22	0.22	0.21	0.22	235.39	235.43	235.39	30.76	31.4	30.43	-2.16	-1.73
6	2016-06-24 12:05	0.21	0.22	0.21	0.21	235.76	235.74	235.69	30.35	30.92	30.75	-1.99	-1.66
7	2016-06-24 12:06	0.21	0.21	0.21	0.21	234.95	234.98	234.98	30.46	31.01	30.77	-1.57	-1.35
8	2016-06-24 12:07	0.22	0.22	0.22	0.22	235.22	235.25	235.25	31.08	31.24	30.7	-2	-1.36
9	2016-06-24 12:08	0.23	0.23	0.23	0.23	235.47	235.52	235.42	32.5	33.03	32.86	-2.27	-2.05
10	2016-06-24 12:09	0.22	0.22	0.22	0.22	235.52	235.54	235.55	31.11	31.68	30.98	-2.15	-1.3
11	2016-06-24 12:10	0.21	0.22	0.21	0.21	235.05	235.12	235.01	30.66	31.38	30.14	-1.58	-1.37
12	2016-06-24 12:11	0.22	0.22	0.22	0.22	235.08	235.15	235.1	30.88	30.98	30.85	-1.67	-1.19
13	2016-06-24 12:12	0.24	0.24	0.24	0.24	236.06	236.08	236.1	33.5	34.47	33.69	-2.52	-2.03

And you can make graph by using Excel software.



12) Energy data logging with pc software:

Please click "Home" and "CVS" icon.

And make directory on PC for to save the "CSV" file.

CRT-5000 PC Program_V1 - [CRT5000]

File(F) Home(M) Setting(S) 보기(V) 도움말(H)

Monitoring
CVS

Date and Time: 2017-05-02 14:50:20 Time duration:

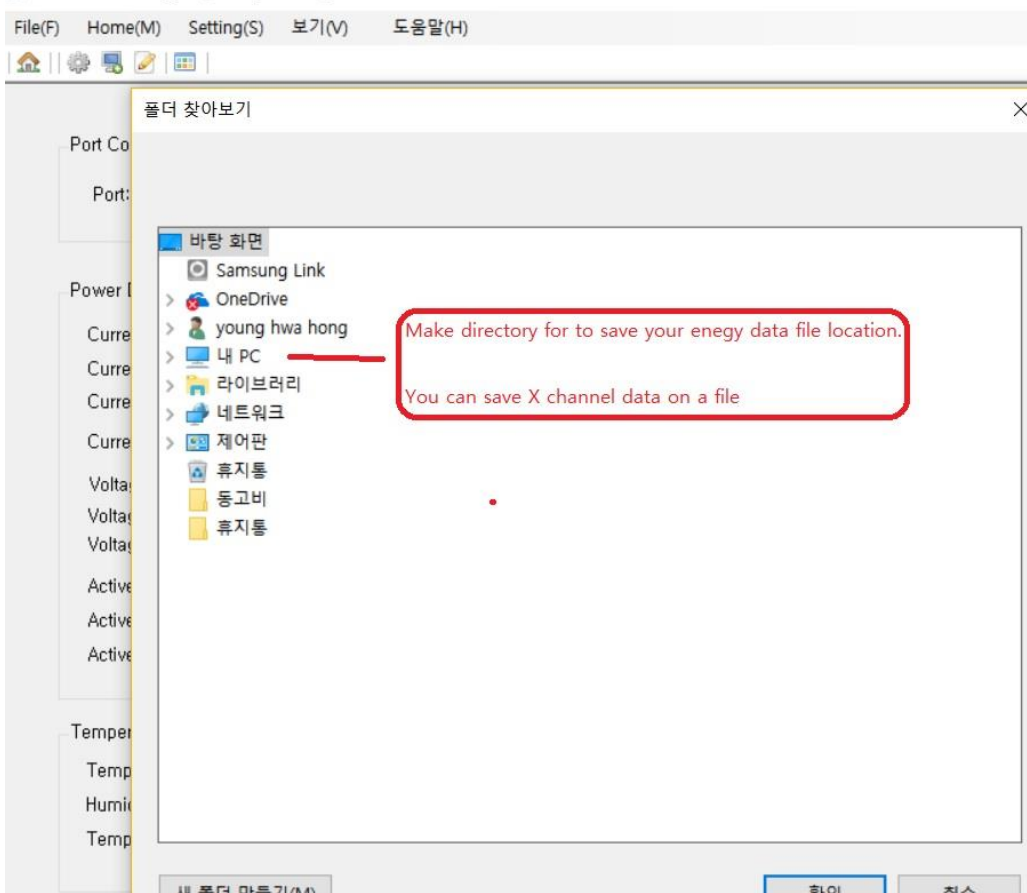
Port Connection

Port: COM7 Baudrate: 9600 Open

Power Data 1

Current, Phase A	0,48	Reactive Power, Phase A	-5,0
Current, Phase B	0,49	Reactive Power, Phase B	-5,3
Current, Phase C	0,49	Reactive Power, Phase C	-5,7
Current, 3-Phase Average	0,49	Power Factor A	0,50

Saving the energy data on pc, please click the "CVS" icon.



File saving by using pc software.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
DEV ID	DATE TIME	CPR	CPS	CPT	C3PA	VRN	VSIN	VTN	APPR	APPS	APPT	RPPR	RPPS	RPPT	PFR	PFS	PFT	HZ	TEMP	HUMID
1	11:52:04 AM	0.410507	0.412781	0.420495	0.414584	215.0215	213.999	215.0115	52.626	53.29442	54.30508	-4.01044	-3.44764	-2.07925	0.599083	0.596633	0.59678	60.01595	14.30641	1.67E+18
1	11:52:06 AM	0.397418	0.396817	0.401977	0.39937	215.0072	215.0114	215.0168	51.29242	51.86534	52.85025	-3.31246	-3.20578	-1.85901	0.596412	0.603988	0.60465	60.01595	14.30642	-38448
1	11:52:08 AM	0.414155	0.41513	0.421385	0.418178	215.149	215.151	215.1534	53.51973	53.84159	54.74387	-4.29368	-3.26096	-1.899	0.596775	0.596139	0.599884	60.01595	14.30642	7.41E+33
1	11:52:10 AM	0.414155	0.41513	0.421385	0.418178	215.149	215.151	215.1534	53.51973	53.84159	54.74387	-4.29368	-3.26096	-1.899	0.596775	0.596139	0.599884	60.01595	14.30642	7.41E+33
1	11:52:12 AM	0.439227	0.43941	0.446641	0.443702	215.0039	215.0159	215.0182	56.46906	56.85425	57.93033	-5.1949	-4.61648	-2.74598	0.595157	0.595952	0.596789	60.03679	14.30643	-4.59E-30
1	11:52:14 AM	0.410152	0.411311	0.418747	0.414691	213.9788	213.988	213.9745	53.26867	52.98005	54.15807	-4.51992	-3.51202	-2.41399	0.597389	0.599162	0.600501	60.03679	14.30644	1.26E-05
1	11:52:16 AM	0.410152	0.411311	0.418747	0.414691	213.9788	213.988	213.9745	53.26867	52.98005	54.15807	-4.51992	-3.51202	-2.41399	0.597389	0.599162	0.600501	60.03679	14.30644	1.26E-05
1	11:52:18 AM	0.383567	0.387311	0.391666	0.386205	213.9769	213.9702	213.9857	49.20779	49.98026	50.86112	-3.77226	-2.90966	-1.81532	0.595909	0.603296	0.597161	60.03679	14.30644	1.47E+23
1	11:52:20 AM	0.385079	0.389639	0.393459	0.389382	213.9924	213.966	213.9802	48.87949	50.23132	50.90723	-3.46971	-2.40755	-1.56933	0.589564	0.602723	0.600937	60.01595	14.30645	-7.62E-33
1	11:52:22 AM	0.385079	0.389639	0.393459	0.389382	213.9924	213.966	213.9802	48.87949	50.23132	50.90723	-3.46971	-2.40755	-1.56933	0.589564	0.602723	0.600937	60.01595	14.30645	-7.62E-33
1	11:52:24 AM	0.46384	0.467724	0.470062	0.465899	213.9911	213.9975	215.0033	60.2982	61.07712	61.14898	-5.33746	-4.8151	-3.20303	0.60077	0.60739	0.601107	60.01595	14.30646	4.27E-27
1	11:52:26 AM	0.38538	0.387858	0.399038	0.391399	213.9805	213.9645	213.9843	49.23354	50.82893	51.51772	-3.80445	-2.63654	-1.899	0.593376	0.606594	0.596651	60.01595	14.30646	162.2188

If you have problem with CRT5000 and pc software, please contact us.

13)Wattage Total calculation method:

CRT-5000 PC Program_V1 - [CRT5000]

File(F) Home(M) Setting(S) 보기(V) 도움말(H)

Date and Time: 2017-05-02 14:36:17 Time duration: 0 hour 0 min, 45 sec.

Port Connection
 Port: COM1 Baudrate: 9600 Open Close

Device
 Slave ID 1 Last ID 1

Power Data 1
 Poll count: 23

Current, Phase A	0.52	Reactive Power, Phase A	-6.75
Current, Phase B	0.53	Reactive Power, Phase B	-6.34
Current, Phase C	0.52	Reactive Power, Phase C	-6.87
Current, 3-Phase Average	0.52	Power Factor A	0.60
Voltage, A-N	215.44	Power Factor B	0.60
Voltage, B-N	215.47	Power Factor C	0.60
Voltage, C-N	215.43	Frequency	60.04
Active Power, Phase A	67.27	WATT_T3 Total	0.00
Active Power, Phase B	67.96	VA_T3 Total	0.00
Active Power, Phase C	67.61	VAR_T3 Total	0.00

Temperature-Humidity
 Temperature 2317.00
 Humid 2485.00
 Temperature(Humid) 2470.00

Polling Control
 Poll Interval 2 Sec.
 Start Stop

Power Data 2

WHA_POS	2317.00
WHB_POS	2485.00
WHC_POS	2470.00
VT_RMS	215.44
PF_T	0.60
VA_A	112.63
VA_B	114.08
VA_C	112.46
WATT_T3	202.81
VA_T3	337.63
VAR_T3	-19.98

Slave ID 1 Once Read

modbus read: OK

For to calculate the kWh, we have 2 method:

This data is increasing from zero to now.
 Please check the starting time data (A)
 Please check now data (B)

B - A = total energy data during the terms in kWh

If you are using 3-phase application,
 WATT_T3 is realtime wattage in W or kW.

Please add all the WATT_T3 during the terms
 by using data logging method at
 "Home" -> CVS -> saving data by csv file.

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