GREENPOWER

STK CPS MASTER

Supported version TOP Design Studio

o V1.4.9.84 or higher



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We want to thank our customers who use the Touch Operation Panel.

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Describes how to set up communication for external devices.

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Describes the cable specifications required for connection.

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Refer to this section to check the addresses which can communicate with an external device.



1. System configuration

The system configuration of TOP and "GREENPOWER – STK CPS Master" is as follows:

Series	СРИ	Communication method	System setting	Cable
greenpower – STK CPS	Converter	RS485	3.1 Settings example 1 (Page 4)	4. Cable table Page 10

■ Connection configuration

• 1:1 connection

TOPR	Converter	
• 1:N connection		

	Converter	Converter		Converter
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2. External device selection

■ Select a TOP model and a port, and then select an external device.

PLC select [C	OM2]				
Filter : [All]			\sim	Search :	
				Mo	del 🔿 Vendor
Vendor		Model			
MISUMI		^ 🌮	STK/BTB CPS SLAVE		
PARKER HANNIFIN Cor	poration	Ŕ	STK CPS MASTER		
TOSHIBA			OUG ODS MASTER		
ATLAS COPCO			OHS CPS MASTER		
TOSHIBA MACHINE Co	., Ltd				
GREEN POWER					
ROOTECH					
ROOTECH					
UKD Corporation					
CSCAM					
IDEC Corporation					
HAWE HYDRAULIK					
SEHAN Electools					
TOHO Electronics Inc.					
IAI Corporation		~			
PLC Setting[STK	CPS MASTE	R]			
Alias Name	: PLC1				
Interface	: Serial		\sim		
				_	
Protocol	I: WPS Link	Cha	~		Comm Manual
Protocol String Save Mode	I : WPS Link : First LH HL	Cha	ange		Comm Manual
Protocol String Save Mode	I : WPS Link : First LH HL CY	Cha	ange		Comm Manual
Protocol String Save Mode	I : WPS Link : First LH HL CY AND ~	Cha	ange		Comm Manual
Protocol String Save Mode	I : WPS Link : First LH HL CY AND ~ TimeOut Condition	Cha	second)		Comm Manual
Protocol String Save Mode	I : WPS Link :: First LH HL CY AND ~ TimeOut Condition	5	v nge ↓ (Second)		Comm Manual
Protocol String Save Mode	I : WPS Link : First LH HL CY AND ~ TimeOut Condition	5	singe		Comm Manual
Protocol String Save Mode	I: WPS Link First LH HL CY AND ~ Condition 300	Cha 5 msec	second)		Edit
Protocol String Save Mode	I: WPS Link First LH HL CY AND ~ Condition 300 E	Cha 5 ■ ■ msec msec	(Second)		Edit
Protocol String Save Mode Use Redundan Operate Condition : Change Condition : Change Condition : I Primary Option Timeout Send Wait Retry	I: WPS Link First LH HL CY AND ~ TimeOut Condition 300 E 5 E	5 msec msec	(Second)		Edit
Protocol String Save Mode Use Redundan Operate Condition : Change Condition : Primary Option Timeout Send Wait Retry Station No	I: WPS Link I: First LH HL CY AND TimeOut Condition 300 II 5 II 1 II	Cha 5 msec msec	singe (Second)		Edit
Protocol String Save Mode Operate Condition : Change Condition : Primary Option Timeout Send Wait Retry Station No Rev	Image: WPS Link Image: First LH HL Cy TimeOut Condition 0 5 1 0 1 0	Cha 5 msec • msec • msec	(Second)		Edit
Protocol String Save Mode Operate Condition : Change Condition : Primary Option Timeout Send Wait Retry Station No Rev	Image: WPS Link Image: First LH HL Cy TimeOut Condition 300 0 5 1 0 1 0	Che 5 msec • msec • msec	(Second)		Edit
Protocol String Save Mode Operate Condition : Change Condition : Primary Option Timeout Send Wait Retry Station No Rev	I: WPS Link I: First LH HL CY AND Condition 3000 S S 1 E S S S S S S S S S S S S S S S S	Cha 5 msec msec • •	(Second)		Edit
Protocol String Save Mode Operate Condition : Change Condition : Primary Option Timeout Send Wait Retry Station No Rev	Solution Service Servi	Cha 5 msec The msec	(Second)		Edit
Protocol String Save Mode Operate Condition : Change Condition : Primary Option Timeout Send Wait Retry Station No Rev	Solution Service Servi	Cha 5 msec • • • •	(Second)		Edit

Sett	tings	Contents				
ТОР	Model	Check the display and process of TOP to select the touch model.				
External device	Vendor	Select the vendor of the external device to be connected to TOP. Select "GREENPOWER".				
	PLC	Select an external device to connect to TOP.				
		Model Interface Protocol				
		STK CPS MASTER Serial WPS Link				
		Please check the system configuration in Chapter 1 to see if the external device you connect is a model whose system can be configured.				



3. TOP communication setting

The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

- [Project > Project Property > TOP Setting] → [HMI Setup > "Use HMI Setup" Check > Edit > Serial]
 - Set the TOP communication interface in TOP Design Studio. Project Option × Change HMI[H] Kald PLC [A] The Change PLC[C] Change PLC[C] TOP Setting Date / Time Sync. Screen Option Unit Convert Option Module Setting Project Option Screen Change HmiSetup Global Lock & Touch Project Style Splash PLC Buffer Sync. FieldBus (0) FieldBus (0) FID (0) Covice Setting FieldBus (0) Use HMI Setup Initialization Edit COM2 (1) Project Setting HMIDisable=0 Project Name=New proje Start Mode=Menu Start Screen No.=1 COM2 (1)
 PLC1 : STK CPS MASTER [
 COM3 (0)
 Ethernet (0) Yrup. Start Mou. Start Screen No. Latch Use=0 Latch Set=0~0 Communication Error Messa USBErrorMessage=0 StorageErrorMessage=1 👦 Wireless (0) USBDevice (0) Control Panel Devices 🚞 Service E. System TOP **Option** 🚥 Serial \times . 1 Serial Port: COM1 • PLC. Security Date/Time Signal Level ○ RS-232C ○ RS-422(4) ● RS-485(2) Baud Rate: 9600 • \checkmark \checkmark Data Bit: 8 • Ethernet Serial HDM I Stop Bit: 1 • Parity Bit: None • Flow: Off \sim /Ping Auto Search Loopback Test Ping **Diagnostic** File Manager Cancel Apply

Items	ТОР	External device	Remarks
Signal Level (port)	RS-485	RS-485	
Baud Rate	960	0	
Data Bit	8		
Stop Bit	1		
Parity Bit	nor	le	

* The above settings are examples recommended by the company.

Items	Description
Signal Level	Select the serial communication method between the TOP and an external device.
Baud Rate	Select the serial communication speed between the TOP and an external device.
Data Bit	Select the serial communication data bit between the TOP and an external device.
Stop Bit	Select the serial communication stop bit between the TOP and an external device.
Parity Bit	Select the serial communication parity bit check method between the TOP and an external device.



(2) Communication option setting

- [Project > Project Property > Device Setting > COM > "PLC1 : STK CPS MASTER"]
 - Set the options of the STK CPS MASTER communication driver in TOP Design Studio.

Project Option				×
Change HMI[H] Add P	LC [A] TTT Change PL	IC Delete PLCD		
Change HMI[H] Change HMI[H] SYS: RD 1220X Goption Module Setting FieldBus (0) COM1 (0) COM2 (1) COM3 (0) Ethernet (0) USBDevice (0) COM3 (0) CO	LC [A] The Change PL PLC Setting[STK CF Alias Name : Interface : Protocol : String Save Mode : Use RedundanCy Operate Condition : Primary Option Timeout Send Wait Retry Station No Rev	IC X Delete PLC[D] S MASTER] LC1 VPS Link VPS Link ImeOut S Image: Signal and	Co	mm Manual
٢ >				
			Apply	Close

Items	Settings	Remarks
Interface	Select "Serial".	Refer to "2. External
Protocol	Select "WPS Link".	device selection".
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set the waiting time between TOP's receiving a response from an external device	
	and sending the next command request.	
Retry	Configure the amount of request attempts from TOP to external device.	
Station No	Prefix	
Rev	Revised version	



3.2. Communication setting in TOP

* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

■ Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.



(1) Communication interface setting

■ [Main Screen > Control Panel > Serial]



Items	ТОР	External device	Remarks	
Signal Level (port)	RS-485	RS-485		
Baud Rate	9600			
Data Bit	8			
Stop Bit	1			
Parity Bit	nor	ne		

* The above settings are setting examples recommended by the company.

Items	Description
Signal Level	Select the serial communication method between the TOP and an external device.
Baud Rate	Select the serial communication speed between the TOP and an external device.
Data Bit	Select the serial communication data bit between the TOP and an external device.
Stop Bit	Select the serial communication stop bit between the TOP and an external device.
Parity Bit	Select the serial communication parity bit check method between the TOP and an external device.



(2) Communication option setting

Retry

Rev

Station No

Prefix

Revised version

■ [Main Screen > Control Panel > PLC]

	õ	1001	PLC	×
	🙆 System	Driver(COM2)	PLC1(STK CPS MASTER) -	
Run		Interface Protocol	Serial V	
	PLC Se	Timeout	300 smsec	
YNC Yiewer	<u>_</u>	Send Wait Retry	0 • msec	
	Ethernet S	Station N Rev		
Screen shot	Diagnostic M			
	[System]	Diagnostic		Apply Cancel
Items	Settings			Remarks
nterface	Select "Serial".			Refer to "2. Exter
Protocol	Select "WPS Li	nk".		device selection
TimeOut (ms)	Set the time for	or the TOP to wait f	or a response from an external device.	
SendWait (ms)	Set the waiting and sending th	g time between TOP he next command re	's receiving a response from an external devi equest.	ice

Configure the amount of request attempts from TOP to external device.



3.3 Communication diagnostics

■ Check the interface setting status between the TOP and an external device.

- Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.
- Check if the COM port settings you want to use in [Control Panel > Serial] are the same as those of the external device.
- Diagnosis of whether the port communication is normal or not
- Touch "Communication diagnostics" in [Control Panel > PLC].
- The Diagnostics dialog box pops up on the screen and determines the diagnostic status.

ОК	Communication setting normal
Time Out Error	Communication setting abnormal
	- Check the cable, TOP, and external device setting status. (Reference: Communication diagnostics sheet)

Communication diagnostics sheet

- If there is a problem with the communication connection with an external terminal, please check the settings in the sheet below.

Items	Contents		Check		Remarks
System	How to connect the sys	stem	OK	NG	1 Custom configuration
configuration	Connection cable name		ОК	NG	<u>1. system configuration</u>
ТОР	Version information		OK	NG	
	Port in use		OK	NG	
	Driver name		OK	NG	
	Other detailed settings		OK	NG	
	Relative prefix	Project setting	OK	NG	
		Communication	OK	NC	2. External device selection
		diagnostics	ÜK	NG	3. Communication setting
	Serial Parameter	Transmission	OK	NC	
		Speed	ÜK	NG	
		Data Bit	OK	NG	
		Stop Bit	OK	NG	
		Parity Bit	OK	NG	
External device	CPU name		OK	NG	
	Communication port na	ame (module name)	OK	NG	
	Protocol (mode)		OK	NG	
	Setup Prefix		OK	NG	
	Other detailed settings		OK	NG	
	Serial Parameter	Transmission	OK	NC	
		Speed	ÜK	NG	
		Data Bit	OK	NG	
		Stop Bit	OK	NG	
		Parity Bit	OK	NG	
	Check address range				5. Supported addresses
			OK	NG	(For details, please refer to the PLC
					vendor's manual.)



Refer to the vendor's user manual to identically configure the communication settings of the external device to that of the TOP.



5. Cable table

This chapter introduces a cable diagram for normal communication between the TOP and the corresponding device. (The cable diagram described in this section may differ from the recommendations of "**GREENPOWER – STK CPS MASTER**")

■ **RS-485** (1:1 connection)

TC	OP				PLC
Pin	Signal	Pin	Cable connection	Signal	
arrangement*Note 1)	name	number		name	
1 5	RDA(+)	1	- • •	SDA(+)	
			•	SDB(-)	
			│	RDA(+)	
Based on	RDB(-)	4	├	RDB(-)	
communication	SG	5		- SG	
cable connector	SDA(+)	6			
front,					
D-SUB 9 Pin male					
(male, convex)	SDB(-)	9	•		

*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.



6. Supported addresses

The devices available in TOP are as follows:

The device range (address) may differ depending on the CPU module series/type. The TOP series supports the maximum address range used by the external device series. Please refer to each CPU module user manual and be take caution to not deviate from the address range supported by the device you want to use.

Device	Data	R/W	Size	Description
G00	ID	R	16bit	Unit category
G01	Status	R	16bit	Unit status information 0 : STOP
				1 : RUN
				2 : Fault
				3 : Warning
				4 : FailOver
G02	Voltage	R	16bit	Rectified voltage
G03	Voltage	R	16bit	Boost voltage
G04	Current	R	16bit	Boost current 1
G05	Current	R	16bit	Boost current 2
G06	Current	R	16bit	Inverter output current
G07	Current	R	16bit	Track current
G08	Frequency	R	16bit	Output frequency
G09	Temp	R	16bit	Converter heat sink temperature
G10	Error code	R	16bit	Converter Error Code
G11	Voltage RS	R	16bit	Input voltage RS
G12	Voltage ST	R	16bit	Input voltage ST
G13	Voltage TR	R	16bit	Input voltage TR
G14	Current R	R	16bit	Input current R -
G15	Current S	R	16bit	Input current S
G16	Current T	R	16bit	Input current t -
G17	Total kw	R	16bit	3-phase Total Power
G18	Kwh	R	16bit	Power



Converter Error list

Error_Code	Error Name	Description	Converter LCD window
1	Erec_peakVoltage	Input voltage greater than 420 V results in overvoltage	Erec P.V
2	Erec_OverVoltage	Input voltage greater than 400 V results in overvoltage	Erec O.V
3	Erec_UnderVoltage	Input voltage lesser than 230 V results in undervoltage	Erec U.V
4	Eboost_PeakVoltage	DC voltage greater than 650 V results in overvoltage	Eboost P.V
5	Eboost_OverVoltage	DC voltage greater than 680 V results in overvoltage	Eboost O.V
6	Eboost_UnderVoltage	BOE B10 - Unused	Eboost U.V
7	Ebuck_PeakVoltage	BOE B10 - Unused	Ebuck P.V
8	Ebuck_OverVoltage	BOE B10 - Unused	Ebuck O.V
9	Ebuck_UnderVoltage	BOE B10 - Unused	Ebuck U.V
10	Iboost_PeakCurrent	Boost IGBT greater than 140 A results in overcurrent	Iboost P.C
11	lboost_OverCurrent	Boost IGBT greater than 150 A results in overcurrent	lboost O.C
12	Iboost2_PeakCurrent	Boost IGBT greater than 140 A results in overcurrent	Iboost2 P.C
13	lboost2_OverCurrent	Boost IGBT greater than 150 A results in overcurrent	Iboost2 O.C
14	Ibuck_PeakCurrent	BOE B10 - Unused	Ibuck P.C
15	Ibuck_OverCurrent	BOE B10 - Unused	Ibuck O.C
16	lsrc_PeakCurrent	Track current greater than 180 A	Isrc P.C
17	lsrc_OverCurrent	Track current greater than 170 A	Isrc O.C
18	lsrc_UnderCurrent	Track current lesser than 100 A	Isrc U.C
19	lsrc_FO_PeakCurrent	BOE B10 - Unused	F/O Isrc P.C.
20	lsrc_FO_OverCurrent	BOE B10 - Unused	F/O Isrc O.C.
21	Isrc_FO_UnderCurrent	BOE B10 - Unused	F/O Isrc U.C.
22	lout_PeakCurrent	Inv IGBT current greater than 180 A	lout P.C
23	lout_OverCurrent	Inv IGBT current greater than 170 A	lout O.C
24	Boost1_Gate_Fault	Boost1 IGBT malfunction	BoostA GateFault
25	Boost2_Gate_Fault	Boost2 IGBT malfunction	BoostB GateFault
26	Buck_Gate_Fault	BOE B10 - Unused	Buck GateFault
27	Inv1_Gate_Fault	Inverter1 IGBT malfunction	InvA GateFault
28	Inv2_Gate_Fault	Inverter2 IGBT malfunction	InvB GateFault
29	Initial_Charge_Fail	Failed initial charging during RUN operation	InitCharge Fail
30	EMO_Stop_Int	Internal emergency operation for converter	EMO Stop Int

705	대한민	국대표	터치패널
	Touch	Operat	ion Panel

Error_Code	Error Name	Description	Converter LCD window
31	EMO_Stop_Ext	Internal emergency operation for converter	EMO Stop Ext
32	Interlock_by_Ext	External interlock	Ext Interlock
33	Fuse_Open	Input Fuse Open	Fuse Open
34	Sag_Gen_Fault	Power outage lasts longer than 1 s	Sag Gen Fault
35	Main_Fan_Fault	Faulty operation of main fan	Main Fan Fault
36	HeatSink_OverHeat_80	Heat sink overheats to 80 °C (Bimetal)	HeatSink OverHeat
37	IGBT_OverHeat	IGBT overheats to 80 °C (NTC)	IGBT OverHeat
38	Track_Cable_OverHeat	Track Power Cable 90 °C thermal wire operation	OutCable OverHeat
39	Inside_Cable_OverHeat	Converter's Internal Power Cable 90 °C thermal wire operation	InCable OverHeat
40	Busbar_OverHeat	Output busbar overheats to 80 °C (Bimetal)	Busbar OverTemp
41	FO_Track_Cable_OverHeat	BOE B10 - Unused	F/O OutCable O.T.
42	FO_Inside_Cable_OverHeat	BOE B10 - Unused	F/O InCable O.T.
43	FO_Busbar_OverHeat	BOE B10 - Unused	F/O Busbar O.T.
44	Panel_OverTemp_Fault	BOE B10 - Unused	Panel O.T Fault
45	Smoke_Detect_Fault	BOE B10 - Unused	INT Smoke Fault
46	Regulator Fault(Interlock)	Regulator Fault (Bypass break)	Regulator Fault
47	eeprom_ad_check_sum_fail	Controller EEPROM Data Load error	Ad Data R/W Fail
48	eeprom_sys_check_sum_fail	Controller EEPROM Data Load error	Sys Data R/W Fail
49	eeprom_gain_check_sum_fail	Faulty controller EEPROM data load	GainData R/W Fail
50	Watchdog_fault	Faulty controller operation	WatchDog Fault
51	CANA_comm_Fail	BOE B10 - Unused	CANA Comm Fail
52	CANB_comm_Fail	BOE B10 - Unused	CANB Comm Fail
53	Master_Output_MC_Fail	BOE B10 - Unused	Master F/O MC Fail
54	Slave_Output_MC_Fail	BOE B10 - Unused	Slave F/O MC Fail
55	EXT_Input_Check_Fault	BOE B10 - Unused	EXT Input Fault
56	AD_Connector_Open	BOE B10 - Unused	AD Connector OPE
57	est_Eboost_PV	BOE B10 - Unused	est Eboost PV
58	est_Eboost_OV	BOE B10 - Unused	est Eboost OV
59	Reserved	Reserved	Reserved
60	Reserved	Reserved	Reserved
61	Reserved	Reserved	Reserved
62	Reserved	Reserved	Reserved
63	Reserved	Reserved	Reserved
64	Reserved	Reserved	Reserved
65	FailOver_MC_Short	BOE B10 - Unused	Failover MC Short

BOE B10 - Unused

BOE B10 - Unused

CPS2_Main_MC_Short

CPS2_Sub_MC_Short

66

67

Failover MC Short

Failover MC Short

	A	대충
	Con Str	-

대한민국대표 터치패널 Touch Operation Panel

Error_Code	Error Name	Description	Converter LCD window
68	Reserved	Reserved	Reserved
69	Reserved	Reserved	Reserved
70	Reserved	Reserved	Reserved
71	Reserved	Reserved	Reserved
72	Reserved	Reserved	Reserved
73	Cap OverHeat	Resonating capacitor overheats to 75 °C (Bimetal)	Cap OverTemp
74	Reserved	Reserved	Reserved
75	Reserved	Reserved	Reserved
76	Reserved	Reserved	Reserved
77	Reserved	Reserved	Reserved
78	Reserved	Reserved	Reserved
79	Reserved	Reserved	Reserved
80	Reserved	Reserved	Reserved
81	HeatSink_OverHeat_60	Heat sink overheats to 60 °C (Bimetal)	HeatSink Warning
82	Panel_OverTemp_Warning	BOE B10 - Unused	Panel O.T Warning
83	IGBT_OverHeat_Waning	IGBT overheats to 60 °C	IGBT O.T Warning
84	Main_Fan_Warning	Main fan malfunction	Main Fan Warning
85	Sub_FAN1_Warning	Side FAN1 malfunction	Side FAN1 Warning
86	Sub_FAN2_Warning	Side FAN2 malfunction	Side FAN2 Warning
87	Sub_FAN3_Warning	Side FAN3 malfunction	Side FAN3 Warning
88	Sub_FAN4_Warning	Side FAN4 malfunction	Side FAN4 Warning
89	Fail-Over	BOE B10 - Unused	Fail-Over
90	Reserved	Reserved	Reserved
91	Reserved	Reserved	Reserved
92	Reserved	Reserved	Reserved
93	Reserved	Reserved	Reserved
94	Reserved	Reserved	Reserved
95	Reserved	Reserved	Reserved
96	Reserved	Reserved	Reserved
97	RS232_Comm_Fail	Failed communication with watt-hour meter	RS232 Comm Fail
98	RS485_Comm_Fail	Master Panel Communication Fail	RS485 Comm Fail
99	BlueTooth_Fail	BOE B10 - Unused	BlueTooth_Fail
100	Reserved	Reserved	Reserved
101	Reserved	Reserved	Reserved
102	Reserved	Reserved	Reserved
103	Reserved	Reserved	Reserved
104	Reserved	Reserved	Reserved
105	Reserved	Reserved	Reserved



-	-	비표	-	시쎄글
:h	0	perat	ion	Pane

Error_Code	Error Name	Description	Converter LCD window
106	Reserved	Reserved	Reserved
107	Reserved	Reserved	Reserved
108	Reserved	Reserved	Reserved
109	Reserved	Reserved	Reserved
110	Reserved	Reserved	Reserved
111	Reserved	Reserved	Reserved
112	Reserved	Reserved	Reserved