SEHAN ELECTOOLS

SHC Series

Serial Driver

V1.4.9.12 or higher

Supported version TOP Design Studio



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Describes how to set up communication for external devices.

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Describes the cable specifications required for connection.

6. Supported addresses

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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 "Sehan Electric Power - SHC Series" is as follows:

Series	Model	Port	Communication method	System setting	Cable
SHC	SHC-□□□	Comm 0A Comm 0B	RS-232C RS-485	<u>3. TOP</u> communication setting	<u>5. Cable table</u>

Connectable configuration

• 1 : 1 (RS-232C/485)



• 1 : N (RS-485)





2. External device selection

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

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Sett	ings		Contents	
TOP	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 "SEHAN Electools".		
	PLC	Select an external device to connect to TOP-R.		
		Model	Interface	Protocol
		SHC Series	Serial	SHC Private
		Please check the system config connect is a model whose syste	guration in Chapter 1 to see if em can be configured.	the external device you want to



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] → [Property] → [TOP Setting] → [HMI Setup] → [Use HMI Setup Check] → [Edit] → [Serial]

- Set the TOP communication interface in TOP Design Studio.



Items	ТОР	External device	Remarks
Signal Level (port)	RS-232C / RS-485		
Baud Rate	57600		
Data Bit	8		
Stop Bit	1		
Parity Bit	Nor	e.	

* 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] > [PLC Settings > COM > "PLC1 : SHC Series"]
 - Set the options of the SHC Series communication driver in TOP Design Studio.

Project Option			×
Change HMI[H] Add I	PLC [A] TIT Change PLC[C] Celete PLC[D]		
Change HMI[H] Add I	Image Change PLC(E) Image Delete PLC(D) PLC Setting[SHC Series] Interface : Serial Interface : Serial Image Protocol : SHC Private Image Operate Condition : AND Change Condition : Image Image Condition : Image Image Condition : Image Primary Option Image Image Condition : Image Send Wait Image Image Condition : Image Image Condit		nm Manual
		Apply	Close

Items	Settings	Remarks
Interface	Select Serial.	Refer to "2. External
Protocol	Select the serial communication protocol between the TOP and an external device.	device selection".
TimeOut (ms)	Set the time 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 request.	
Driver ID	Enter ID for external device.	



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

■ [Control Panel] → [Serial]



Items	ТОР	External device	Remarks
Signal Level (port)	RS-232C /		
Baud Rate	5760		
Data Bit	8		
Stop Bit	1		
Parity Bit	Non	e.	

* 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

■ [Control Panel] \rightarrow [PLC]

	õ		PLC	×
Run	🔇 System	Driver(COM1)	PLC1(SHC Series) -	
		Interface Protocol	Serial	
YNC	PLC	Timeout Send Wait	300	
Viewer	Et hernet	Retry Driver IE	5	
Screen	wint			
shot	Diagnostic			
	[Sustar]	Diagnostic		

Items	Settings	Remarks
Interface	Select Serial.	Refer to "2. External
Protocol	Select the serial communication protocol between the TOP and an external device.	device selection".
TimeOut (ms)	Set the time 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 request.	
Driver ID	Enter ID for 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].

ОК	Communication setting normal
Time Out Error	Communication setting abnormal
	- Check the communication settings of the communication cable, TOP and external device.

■ 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	Conte	Check		Remarks		
System	How to connect the sys	stem	OK	NG	1 Custom and investiga	
configuration	Connection cable name	2	OK	NG	1. System configuration	
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 diagnostics	ОК	NG	2. External device selection 3. TOP communication setting	
	Serial Parameter	Transmission Speed	ОК	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)	ОК	NG		
	Protocol (mode)	OK	NG			
	Setup Prefix	OK	NG			
	Other detailed settings	OK	NG	4 External device setting		
	Serial Parameter	Transmission Speed	ОК	NG	4. External device setting	
		Data Bit	OK	NG		
		Stop Bit	OK	NG		
		Parity Bit	OK	NG		
	Check address range		OK	NG	6. Supported addresses	



4. External device setting

Refer to the manual of the external device and configure the SHC parameters.

Parameter	Contents	Value	Remarks
P304	Finalize Data Output Mode	1	Fixed
P319	For serial communication, use ETX at the end of the transmission statement	1	Fixed
P501	SHC ID	1	
P502	Serial communication settings	5	



5. Cable table

This is the cable table. The cable table below may vary depending on the SHC model. Please refer to the manual provided by Sehan Electric Power for more information.

■ RS-232C (1:1 connection)

ТОР				External device			
Pin	Signal	Pin	Cable connection	Signal	Pin	Pin	
arrangement*Note 1)	name	number		name	number	arrangement*Note 1)	
1 5		1		ΤX	1		
$(\circ \circ)$	RX	2		RX	2	Pin 1	
	ΤX	3			3	<u>\</u>	
6 9 Pased on		4		GND	4	, eeee	
communication	SG	5			5	hees)	
		6			6		
front		7					
D-SLIB 9 Pin male		8				Pin 2 Pin 6	
(male, convex)		9				1012	

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

■ **RS-485** (1:1 connection)

ТОР				External device			
Pin	Signal	Pin	Cable connection	Signal	Pin	Pin	
arrangement*Note 1)	name	number		name	number	arrangement*Note 1)	
15	RDA(+)	1			1		
$(\circ \circ)$		2			2	Pin 1	
		3			3	<u>\</u>	
6 9 Based on	RDB(-)	4		GND	4	/	
communication	SG	5	•	DX+	5		
cable connector	SDA(+)	6	•	DX-	6		
front		7					
D-SUB 9 Pin male		8				Pin 2 Pin 6	
(male, convex)	SDB(-)	9					

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

TOP			External device			
Din orrangement	Signal	Cable connection	Signal	Pin	Pin	
Pin arrangement	name		name	number	arrangement*Note 1)	
	+			1	Pin 1	
0	-			2	<u> </u>	
101 56	SG			3	7	
6 -			GND	4		
664 +			DX+	5		
			DX-	6		
U					Pin 2 Pin 6	

RS-485	(1:N connection) – Refer to 1:1 c	connection to connect in the following way.
--------	-----------------------------------	---

			5 ,	
TOP	Cable connection and signal direction	External device	Cable connection and signal	External device
Signal name	Cable connection and signal direction	Signal name	direction	Signal name
RDA(+)		DX+		DX+
RDB(-)		DX-		DX-
SDA(+)	•			
SDB(-)				



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.

Address	Data	Bit	Word	Size	Read/Write	Remarks
STR	Parameter	STR000.00 ~ STR999.31	STR000 ~ STR999	32 bit	Read/Write	*Note 1)
СНР	Parameter	CHP000.00 ~ CHP999.31	CHP000 ~ CHP999	32 bit	Read/Write	
MOR	Monitoring data	MOR01.00 ~ MOR12.31	MOR01 ~ MOR12	32 bit	Read	*Note 2)
VER	Version	-	VER	32 bit	Read	
RST	Alarm reset	RST	RST		Write	*Note 3)

*Note 1) On write, it is stored in flash memory.

*Note 2) Data depends on number

MOR 1 : Serial No.

MOR 2 : Fastening / Loosening time (ms)

MOR 3 : Preset No.

MOR 4: Target torque (unit 0.01)

MOR 5: Target torque (unit 0.01)

MOR 6 : RPM

MOR 7 : A1

MOR 8 : A2

MOR 9 : Rotation angle (unit 0.01)

MOR 10: Error (error if larger than 0)

MOR 11: Fastening / Loosening status (0 for Fastening, 1 for Loosening)

MOR 12: Complete or Not (Complete if larger than 0)

*Note 3) Command transmission address



% Command transmission method

Addresses for sending special function performance commands are write-only and can be used by registering the object's action to turn on or off bits of that address, or to enter any value.

- E.g.) Click on a switch object to transmit a hold setup command
 - 1. Registers a switch object whose ramp attributes are touched.
 - 2. In [effects and actions] set [condition] to [event > touch down].
 - 3. Set [action] to [Bit > RST Address Input > ON].
 - (Set the maximum number of runs to 1, set the cycle, and set the delay to zero.)
 - 4. Press the switch object in TOP to transmit the alarm reset command.

witch Property									×
Preview	Basic	Shape	Option	Effect & A	ction				
	No		Conditio	n	Eff	fect		Action	
RST	1		Touch Do	wn	No	one		None	
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ID:5 SEQ:4 X:227 X:328 X Width:60 Height:64 X Security Level: 0 Create Security Log Groeate Security Log Ignore GlobalLock If Security level is low then Hide Object Visible InterLock Icon Visible Pemission Icon Display on top when changed	Cond Max Ex Bit	p	Down (Q Effect PLC1	action (0=∞) : RST	Interval : 0 (1	Add [A 00ms) Delay Tir Group I Pulse	I ▲ Modify M ne : 0 (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	00ms) + (100ms) + (100ms) +
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