# SEWHA CNM CO., LTD. Digital Weighing Indicator SI Series (Command Mode)

# **Serial Driver**

V1.3.3.2 or higher

Supported version TOP Design Studio



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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 "SEWHA CNM Co., Ltd. – Digital Weighing Indicator SI Series (Command Mode) Computer Link" is as follows.

Indicator Model	Link I/F	Communication method	System setting	Cable
SI - 3500 SI - 4000 SI - 4010 SI - 4010R SI - 4100 SI - 4200 SI - 4300 SI - 4400 SI - 4400 SI - 4420 SI - 4420 SI - 4500 SI - 4630E	Serial I/F	RS–232C RS-422 RS-485	<u>3. TOP</u> communication setting <u>4. External device</u> setting	<u>5. Cable table</u>

## Connection configuration

• 1 : 1 (one TOP and one external device) connection - possible configuration in RS232C communication.



• 1:N (one TOP and multiple external devices) connection -possible configuration in RS422/485 communication.





# 2. External device selection

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

PLC select [C	0М11				
Filter : [All]	,	~		Search :	
2.43				Mod	lel 🔿 Vendor
Vendor		Model			
FASTECH Co., Ltd.		` 🜮 Inc	dicator SI Series		
HYOSUNG					
NMEA					
AJINEXTEK Co., Ltd.					
EC Standard					
CAS					
A&D					
SEHWA CNM					
SHINHAN Electronics					
BONGSHIN LOADCELL					
FANUC Co., Ltd.					
MINEBEA Co., Ltd.					
Azbil Corporation					
lect Device			Back	Next	X Cancel
lect Device PLC Setting[ Indic Alias Name	ator SI Ser	ies ]	<b>Back</b>	Next	X Cancel
lect Device PLC Setting[ India Alias Name Interface	cator SI Seri : PLC1 : Serial	ies]	& Back	Next	Cancel
lect Device PLC Setting[ Indic Alias Name Interface Protocol	ator SI Seri PLC1 Serial	ies] vide v	Back	Next	Cancel
Hect Device PLC Setting[Indic Alias Name Interface Protocol String Save Mode	PLC1 Serial Command Mc	ies] vde v Change	Back	Next	Cancel
ect Device PLC Setting[ India Alias Name Interface Protocol String Save Mode Use Redundan	ator SI Seri : PLC1 : Serial : Command Mc : First LH HL CY	ies] vide v Change	Back	Next	omm Manual
Hect Device PLC Setting[ India Alias Name Interface Protocol String Save Mode Use Redundann Operate Condition :	cator SI Seri PLC1 Serial Command Mc First LH HL CY ND ~	ies] vde v Change	Back	Next	omm Manual
Hect Device PLC Setting[India Alias Name Interface Protocol String Save Mode Use Redundann Operate Condition :  Change Condition :	ator SI Seri : PLC1 : Serial : Command Mc : First LH HL CY ND ~ TimeOut Condition	ies] vide ~ Change 5 \$ (;	Eack Back	Next	omm Manual
elect Device PLC Setting[India Alas Name Interface Protocol String Save Mode Use Redundan Operate Condition : Change Condition :	ator SI Seri : [PLC1 : Serial : Command Mc : First LH HL CY ND V TimeOut Condition	ies] ide ~ Change 5 ()	Eack Back	Next	omm Manual
elect Device PLC Setting[India Alias Name Interface Protocol String Save Mode Use Redundan Operate Condition : Change Condition : Primary Option	is PLC1 : PLC1 : Serial : Command Mc : First LH HL CY ND * Condition	ies ] vde v Change 5 \$ (	Second)	Next	omm Manual
elect Device PLC Setting[India Alias Name Interface Protocol String Save Mode Use Redundan Operate Condition : Change Condition : Primary Option Timeout	is PLC1 : PLC1 : Serial : Command Mc : First LH HL CY ND COndition : Condition	ies ] de Change 5 (1)	Eack Back	Next	omm Manual
Hect Device PLC Setting[India Alias Name Interface Protocol String Save Mode Use Redundann Operate Condition : Change Condition : Primary Option Timeout Send Wait	ator SI Seri : PLC1 : Serial : Command Mc : First LH HL CY ND ' 1 TimeOut 1 Condition 300 2 0 2 2 2 2 2 2 2 2 2 2 2 2 2	ies ] ade v Change 5 \$ () msec msec	Second)	Next	omm Manual
Hect Device PLC Setting[Indic Alias Name Interface Protocol String Save Mode Use Redundann Operate Condition : Change Condition : Primary Option Timeout Send Wait Retry	Common Series         Clission           : Exercise         Serial <td: serial<="" td="">         : Common Mu           : Erist LH HL         CV           V         V           1 TimeOut         1 TimeOut           300         C           5         C</td:>	ies] ode v Change 5 \$ () msec msec msec	Second)	Next	omm Manual
Hect Device PLC Setting[Indic Alas Name Interface Protocol String Save Mode Use Redundan Operate Condition : Primary Option Timeout Send Wait Retry Equipment No.	ator SI Seri PLC1 Serial Command Mc First LH HL Cy ND ~ TimeOut Condition 300 5 5 1 7 7 7 7 7 7 7 7 7 7 7 7 7	ies ] ode ~ Change 5 \$ () 1 msec 2 msec 2 msec 2 msec	Second)	Next C	omm Manual
elect Device PLC Setting[India Alas Name Interface Protocol String Save Mode Use Redundan Operate Condition : Primary Option Timeout Send Wait Retry Equipment No. Series.	ator SI Seri PLC1 Serial Command Mc First LH HL CY TimeOut Condition 300 5 5 1 5 5 5 1 6 5 5 5 5 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 1 6 1 1 1 1 1 1 1 1 1 1 1 1 1	ies ]	Second)	Next	omm Manual
elect Device  PLC Setting[India Alias Name Interface Protocol String Save Mode Use Redundan Operate Condition :  Primary Option Timeout Send Wait Retry Equipment No. Series.	Sator SI Serial           : PLC1           : Serial           : Command Mc           : First LH HL           CY           ND           1 TimeOut           1 Condition           300           5           1           S1480/580/4	ies ] vide ∨ Change 5 ◆ (2 0 msec 0 msec 0 msec 0 msec 0 msec 0 msec	Second)	Next	omm Manual
elect Device PLC Setting[India Alias Name Interface Protocol String Save Mode Use Redundan Operate Condition : Primary Option Timeout Send Wait Retry Equipment No. Series.	Sator SI Serial           : PLC1           : Serial           : Command Mc           : First LH HL           CY           ND           *           1 TimeOut           300           5           5           1           SI 480/580/4	ies ]	Second)	C	omm Manual

Settings			Contents	
TOP	Model	Check the TOP display and process to se	elect the touch model.	
External device	Vendor	Select the vendor of the external device	to be connected to TOP.	
		Select "Indicator Series".		
	PLC	Select an external device to connect to	TOP.	
		Model	Interface	Protocol
SEWHA CNM SI Series Serial		Serial	Command Mode	
		Please check the system configuration connect is a model whose system can b	in Chapter 1 to see if the e configured.	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 > Project properties > TOP settings] → [Project option > Check "Use HMI settings" > Edit > Serial ]



Items	ТОР	External device	Remarks
Signal Loval (part)	RS-232C	RS-232C	
Signal Level (port)	RS-422/485	RS-422/485	
Baud Rate	96	00	
Data Bit	8	3	
Stop Bit	1		
Parity Bit	Nc	ne.	

\* 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 properties > PLC settings > COM > "PLC1 : SEWHA CNM SI Series" ]
  - Set the options of the communication driver of SEWHA CNM Co., Ltd. Digital Weighing Indicator SI Series Serial in TOP Design Studio.

Project Option		×
Change HMI[ <u>H</u> ] Add PLG	C [A] TI Change PLC[C] Delete PLC[D]	
<ul> <li>TOP Setting</li> <li>SYS : RD 1520X</li> <li>Option Module Setting</li> <li>FieldBus (0)</li> <li>RFID (0)</li> <li>Device Setting</li> <li>COM1 (1)</li> <li>PLC1 : Indicator SI Series</li> <li>COM2 (0)</li> <li>Ethernet (0)</li> <li>Wireless (0)</li> <li>USBDevice (0)</li> </ul>	PLC Setting[ Indicator SI Series ]         Alas Name : PLC1         Interface : Serial         Protocol : Command Mode         String Save Mode : First LH HL         Change Condition :         Imeout         300         Condition         Edit         Primary Option         Timeout       300         Send Wait         Image: Series.         StateOldson /	Comm Manual
	Ap	ply Close

Items	Settings	Remarks
Interface	Select "Serial".	Refer to "2. External
Protocol	Select the communication protocol between the TOP and an external device.	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.	
Equipment No.	Enter the equipment number of the 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

■ [ Main screen > Control panel > Serial ]



Items	ТОР	External device	Remarks
Circuit (a ant)	RS-232C	External device           RS-232C           RS-422/485           0600           8	
Signal Level (port)	RS-422/485	RS-422/485	
Baud Rate	96	00	
Data Bit	8	3	
Stop Bit		1	
Parity Bit	No	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

■ [ Main screen > Control panel > PLC ]

	õ	m	PLC	×
Run	🔯 System	Driver(COM1)	PLC1(Indicator SI Series) -	
		Interface Protocol	Serial 🔹	
	PLC Se	Timeout	300 🜩 msec	
VNC Viewer		Send Wait Retry	0 🜩 msec	
	Ethernet S	Equipment		
Corson		Series.	S1480/580/  ▼	
shot	Diagnost ic			
	Ma			
	[System]	Diagnostic		Apply Cancel

Items	Settings	Remarks
Interface	Select "Serial".	Refer to "2. External
Protocol	Select the communication protocol between the TOP and an external device.	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.	
Equipment No.	Enter the equipment number of the 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	Conte	ents	Check		Remarks
System	How to connect the sy	stem	OK	NG	1 System configuration
configuration	Connection cable name	e	ОК	NG	
TOP	Version information		OK	NG	
	Port in use		OK	NG	
	Driver name		OK	NG	
	Other detailed settings	i	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	NG	
		Speed	ÜK	NG	
		Data Bit	OK	NG	
		Stop Bit	OK	NG	
		Parity Bit	OK	NG	
External device	CPU name	OK	NG		
	Communication port n	OK	NG		
	Protocol (mode)	OK	NG		
	Setup Prefix	OK	NG		
	Other detailed settings	i	OK	NG	4. External device setting
	Serial Parameter	Transmission	OK	NC	4. External device setting
		Speed	ÜK	NG	
		Data Bit	OK	NG	
		Stop Bit	OK	NG	
		Parity Bit	OK	NG	
	Check address range				6. Supported addresses
			OK	NG	(For details, please refer to the PLC
					vendor's manual.)



# 4. External device setting

\* Refer to the manual of the SI model in use to set the Serial I/F as follows.

**Step 1.** Enter the F-FUNCTION setting mode.

Step 2. Refer to F-FUNCTION LIST to set the items for Serial I/F as follows.

Items	Settings	Remarks
Equipment number setting	1	
Serial communication speed	9600 bps	
Serial communication data bit	8 bits	
Serial communication stop bit	1 bit	
Serial communication parity bit	None	
Data transmission method setting	Command Mode	Fixed
Set "Check Sum" detection in Command Mode.	Error detection characters not included in the transmission data	Fixed



# 5. Cable table

This chapter introduces a cable diagram for normal communication between the TOP and the corresponding device. **X** Refer to the manual of the SI model in use to make the cable.

СОМ				Externa	l device
Pin	Signal	Pin	Cable connection	Cignal name	
arrangement*Note 1)	name	number		Signal name	
1 5	CD	1			
$(\circ \circ)$	RD	2		ТХ	
	SD	3		RX	
6 9 Basad an	DTR	4			
	SG	5		SG	Serial I/F
cable connector	DSR	6			
front	RTS	7			
D-SUB 9 Pin male	CTS	8			
(male, convex)		9			

#### ■ **RS-422** (1:1 connection)

CC	M			Externa	l device
Pin	Signal	Pin	Cable connection	Signal name	
arrangement*Note 1)	name	number		Signal name	
1 5	RDA(+)	1		TxD (+)	
$\left( \circ \circ \right)$		2	•	TxD (-)	
		3	•	RxD (+)	
6 9 Deced or	RDB(-)	4		RxD (-)	
	SG	5		SG	Serial I/F
cable connector	SDA(+)	6	<b>•</b>		
front		7			
D-SUB 9 Pin male		8			
(male, convex)	SDB(-)	9			

#### ■ **RS-485** (1:1 connection)

СОМ				Externa	l device
Pin	Signal	Pin	Cable connection	Cignal name	
arrangement*Note 1)	name	number		Signal name	
15	RDA(+)	1	•	TxD (+)	
$(\circ \circ)$		2	•	TxD (-)	
		3	• •	RxD (+)	
6 Y	RDB(-)	4	<b>─↓ ↓</b>	RxD (-)	
communication	SG	5		SG	Serial I/F
cable connector	SDA(+)	6	<b>6</b>		
front		7			
D-SUB 9 Pin male		8			
(male, convex)	SDB(-)	9			

Solution Continued on next page.



#### ■ **RS-485** (1:1 connection)

СОМ			External	device
Pin arrangement	Signal name	Cable connection	Signal name	
O B B B C C C C C C C C C C C C C C C C	rame + - SG		TxD (+) TxD (-) RxD (+) RxD (-) SG	Serial I/F

**RS-422** 1 : N connection - Refer to 1:1 connection to connect in the following method.

TOP	Cable connection and signal	External device	Cable connection and signal	External device
Signal name	direction	Signal name	direction	Signal name
RDA(+)		TxD (+)		TxD (+)
RDB(-)		TxD (-)		TxD (-)
SDA(+)		RxD (+)		RxD (+)
SDB(-)		RxD (-)	·	RxD (-)
SG		SG		SG

**RS-485** (1 : N connection) - Refer to 1:1 connection to connect in the following method.

TOP	Cable connection and signal	External device	Cable connection and signal	External device
Signal name	direction	Signal name	direction	Signal name
RDA(+)	• •	TxD (+)	• •	TxD (+)
RDB(-)		TxD (-)		TxD (-)
SDA(+)	-•   •	RxD (+)	╞━┥│    │┕━─	RxD (+)
SDB(-)	<b>⊢_</b> • •	RxD (-)	<b>└──</b>	RxD (-)
SG		SG		SG



# 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	Displayed contents (or function)	Bit Address	Word Address	Read/Write	SI command	Remarks
CWT.WEIGHT	Current weight value	_	CWT.WEIGHT			*Note 1)
		CWT.STS0 ~	CIVITATO			
CW1.515	Stable status	CWT.STS2	CW1.515	Deed	DCM/T	^INOTE 2)
CWT.GSNT	Total weight/Net weight	CWT.GSNT0 ~ CWT.GSNT1	CWT.GSNT	Redu	RCWT	*Note 3)
CWT.UNIT	Weight unit	_	CWT.UNIT			*Note 4)
SUB.WEIGHT	Subtotal weight value	_	SUB.WEIGHT			*Note 1)
SUB.P/N	P/N	-	SUB.P/N			
SUB.COUNT	Subtotal number of weighings	_	SUB.COUNT	Read	RSUB	
SUB.UNIT	Weight unit	_	SUB.UNIT			*Note 4)
GRD.WEIGHT	Total weight value	_	GRD.WEIGHT			*Note 1)
GRD.P/N	P/N	_	GRD.P/N			
GRD.COUNT	Total number of weighings	_	GRD.COUNT	Read	RGRD	
GRD.UNIT	Weight unit	_	GRD.UNIT			*Note 4)
SNO	Subtotal number of weighings	_	SNO	Read/Write	RSNO/WSNO	
FIN	Complete weighing value	_	FIN	Read/Write	RFIN/WFIN	*Note 5)
HOUR	Hour	_	HOUR			
MIN	Min	-	MIN	Read/Write	RTIM/WTIM	*Note 6)
SEC	Sec	_	SEC			
YEAR	Year	_	YEAR			
MONTH	Month	-	MONTH	Read/Write	RDAT/WDAT	*Note 7)
DAY	Day	-	DAY			
TAR	Tare set value	-	TAR	Read	RTAR	
SP	SP1~4 set value	-	SP1 ~ SP4	Read/Write	RSP1~4/WSP1~4	*Note 5)
PNO	Current part number	-	PNO	Read/Write	RPNO/WPNO	
CNO	Code set value	-	CNO	Read/Write	RCNO/WCNO	
FML	Weighing formula number	_	FML	Read/Write	RFML/WFML	
BIN	Curren BIN number	_	BIN	Read/Write	RBIN/WBIN	
DRI	Small supply set value	_	DRI	Read/Write	RDRI/WDRI	
FRE	Drop value	_	FRE	Read/Write	RFRE/WFRE	
TTL	Cumulative weight value	-	TTL	Read	RTTL	*Note 5)
PR	1~2 layer set value	-	PR1 ~ PR2	Read/Write	RPR1~2/WPR1~2	
FIL	Set value	-	FIL	Read/Write	RFIL/WFIL	
		DIGITAL.INPUT1				
DIGITAL.INPUT	External input status	~ DIGITAL.INPUT4	DIGITAL.INPUT	Read	RWRS	
RELAY.OUT	Relay output status	RELAY.OUT1 ~ RELAY.OUT6	RELAY.OUT	Read		
WZER	Zero setting	WZER	WZER	Write	WZER	

#### \* Device availability differs according to the SI model. Be sure to refer to 'Command Mode' in the SI manual for use.

Device	Displayed contents (or function)	Bit Address	Word Address	Read/Write	SI command	Remarks
WTAR	Tare ON	WTAR	WTAR	Write	WTAR	
WZRS	Tare OFF	WZRS	WZRS	Write	WZRS	
WHOL	Hold ON	WHOL	WHOL	Write	WHOL	
WHRS	Hold OFF	WHRS	WHRS	Write	WHRS	
WPRT	Print	WPRT	WPRT	Write	WPRT	
WSPR	Subtotal print	WSPR	WSPR	Write	WSPR	
WGPR	Total print	WGPR	WGPR	Write	WGPR	
WSTC	Subtotal deletion	WSTC	WSTC	Write	WSTC	
WGTC	Total deletion	WGTC	WGTC	Write	WGTC	
WSTR	Start operation	WSTR	WSTR	Write	WSTR	
WSTP	Stop operation	WSTP	WSTP	Write	WSTP	
WAUT	Print auto	WAUT	WAUT	Write	WAUT	
WGRO	GROSS/NET KEY	WGRO	WGRO	Write	WGRO	
WRUN	Start weighing	WRUN	WRUN	Write	WRUN	
WSTB	Stop weighing	WSTB	WSTB	Write	WSTB	
WBRS	Batch weighing initialization	WBRS	WBRS	Write	WBRS	
WRDY	Batch reset	WRDY	WRDY	Write	WRDY	

#### \*Note 1) Float-type data.

In order to update data such as STS, GSNT, P/N, COUNT, UNIT, etc. that use the same command, it must be registered with this device on the same screen.

#### \*Note 2)

Response data when the next bit is ON					
STS0	Stable				
STS1	Unstable				
STS2	Overload				

#### \*Note 3)

Response data when the next bit is ON					
GSNT0	Net weight				
GSNT1	Gross weight				

\*Note 4) It means the unit being displayed by the indicator. Use it as a string only. (Length: 2)

#### \*Note 5) Float-type data

\*Note 5) In order to update data of "HOUR" and "SEC" devices, "MIN" devices must be registered together on the same screen.

\*Note 6) In order to update data of "YEAR" and "MONTH" devices, "DAY" devices must be registered together on the same screen.

대한민국대표 터치패널 Touch Operation Panel



#### **% Write-only Device** Use Method

(1) Pop-up the object's property window  $\rightarrow$  (2) Effects and actions  $\rightarrow$  (3) Condition setting  $\rightarrow$  (4) Action setting Set to enter data to the corresponding device when a condition occurs in the action setting.

Rectangle Property					>	×
PREVIEW	Shape	Text	Effect & Action			
	No	No Condition		Effect	Action	ור
WRUN	1		Touch Down	None	[PLC1:WRUN:1:DEC] =ON group:0	
	🔶 Up	[U] ·	- Down [O]		∓ Add [A] 📝 Modify [ <u>M]</u> 🗶 Delete [D	5
	Condi	tion	Effect Action			Ĩ
	Max Exc	ute Coun	nt: 1 🗘 (0=∞)	Interval : 0 🗘 (100r	ms) Delay Time : 0 🖨 (100ms) 🕂	
ID:6 SE0:5					×	:
X: 530 + Y: 304 +	0				Group Index : 0	r
Width : 73 🔹 Height : 68 🔹	Bit		<b>e</b> 🖳	ତ ଢ଼ିଁ ଢ଼ୁଁ	Pulse Time : 10 🔷 (100ms)	F
Security Level : 0						Ц
Create Security Log						
If Security level is low then						
Hide Object						
Visible Pemission Icon						
Display on top when changed						
Memo :						
					OK Cancel	