# Tiger Optics, LLC

V1.4.11.33 or higher

## HALO Series

## Serial Driver

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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Select a TOP model and an external device.

3. TOP communication setting Page 4

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4. External device setting Page 10

Describes how to set up communication for external devices.

5. Cable table

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Describe the cable specifications required for connection.

### 6. Supported addresses Page 12

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

## 1. System configuration

The system configuration of TOP and Tiger Optics, LLC – HALO Series is as follows:

Series	Link I/F	Communication method	System setting	Cable
halo ka halo 3	Serial interface on rear panel	RS-232C RS-485	3. TOP communication setting 4. External device setting	<u>5. Cable table</u>

#### Connectable configuration

• 1:1 connection



## 2. External device selection

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

					2
PLC select [CC	)M1]				
Filter : [All]		$\sim$		Search :	
				Mode	I 🔿 Vendor
Vendor		Model			
FANUC Co., Ltd.		^ 🌮 HALOS	Series		
MINEBEA Co., Ltd.					
Azbil Corporation					
KORO TECHNOLOGY					
ROBOSTAR					
Ebmpapst					
CoDeSys Automation Alli	ance				
Ophir Optronics Solution	s Ltd.				
SERVOMEX					
Tiger Optics, LLC					
B & R Automation					
Peripheral Device					
OTHERS Manufacture					
		~			
				-	
elect Device PLC Setting[ HAL0	Series ]				3
Alias Name :	PLC1				
Interface :	Serial	$\sim$			
Protocol	Remote Com	mand 🗸		6.	ana Manual
FIOLOCOI :	interno de com			0	mm Manual
String Save Mode :	First LH HL	Change		Co	mm Manual
String Save Mode :	First LH HL	Change			mm Manual
String Save Mode :	First LH HL	Change			mm Manual
String Save Mode :	First LH HL Y ND ~ TimeOut	Change 5 🗘 (Secc	ond)		
String Save Mode : Use Redundance Operate Condition :	First LH HL Y TimeOut Condition	Change 5 🗘 (Secc	ond)		Edit
String Save Mode : Use Redundance Operate Condition : A Change Condition : Primary Option	First LH HL Y ND V TimeOut Condition	Change 5 🔷 (Secc	ond)		Edit
String Save Mode : Use Redundance Operate Condition : Primary Option Timeout	First LH HL Y TimeOut Condition 500	Change 5 \$ (Secc	and)		Edit
String Save Mode :     Use Redundanc Operate Condition :     A Change Condition :     Primary Option Timeout Send Wait	First LH HL Y TimeOut Condition 500	Change 5 (Secc ) msec ) msec	and)		Edit
Protection : String Save Mode : Use Redundance Operate Condition : A Change Condition : A Primary Option Timeout Send Wait Retry	First LH HL Y ND V TimeOut Condition 500 5	Change 5 (Seco ) msec ) msec	ond)		Edit
Protection : String Save Mode : Use Redundance Operate Condition : A Change Condition : A Primary Option Timeout Send Wait Retry Series	First LH HL Y ND V TimeOut Condition 500 5 6 HALO KA	Change	ond)		Edit
Primary Option  Timeout Send Wait Retry Series	First LH HL Y ND ~ TimeOut Condition 500 5 HALO KA ~	Change	ond)		Edit
Primary Option  Timeout Send Wait Retry Series	First LH HL Y ND Condition 500 5 C HALO KA	Change	ond)		Edit
Primary Option  Timeout Service  Primary Option  Timeout Send Wait Retry Service	First LH HL V VD TimeOut Condition 5 5 K HALO KA	Change	ond)		Edit
Primary Option Timeout Series	First LH HL Y VD ~ TimeOut Condition 500 5 5 5 HALO KA ~	Change 5 (Secc ) msec ) msec	and)		Edit
Protection : String Save Mode : Use Redundance Operate Condition : A Change Condition : A Primary Option Timeout Send Wait Retry Series	First LH HL Y VID ~ V Condition	Change 5 (Secc ) msec ) msec	ond)		Edit

Settings		Contents			
ТОР	Model	Check the display and process of TOP to select the touch model.			
		Select the vendor of the externa	Select the vendor of the external device to be connected to TOP.		
External device	Vendor	Select "Tiger Optics, LLC".			
	PLC	Select an external device to connect to TOP.			
		Model	Interface	Protocol	
		HALO Series	Serial	Remote Command	
		Please check the system configuration in Chapter 1 to see if the external device you want to 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

- $\blacksquare [Project] \rightarrow [Property] \rightarrow [TOP Setting] \rightarrow [HMI Setup] \rightarrow [Use HMI Setup Check] \rightarrow [Edit] \rightarrow [Serial]$
- Set the TOP communication interface in TOP Design Studio.



Items	ТОР	External device	Remarks
Signal Level	RS-232C	RS-232C	
	RS-485	RS-485	
Baud Rate	115		
Data Bit	8		
Stop Bit	1		
Parity Bit	No		

\* 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

Timeout

Series

Send Wait

- $\blacksquare [Project ] \rightarrow [Project Property] \rightarrow [Device Setting > COM1 > HALO Series]$ 
  - Set the options of the HALO Series communication driver in TOP Design Studio.

Project Option		×
Change HMI[H]	Add PLC [A] TTT Change PLC[C] X Delete PLC[D]	
✓ ·□ TOP Setting		
SYS : RD 1520X	PLC Setting[ HALO Series ]	
Option Module Setting	Alias Name : PLC1	
RFID (0)	Interface : Serial	
<ul> <li>Weight Device Setting</li> </ul>	Protocol : Remote Command	Comm Manual
V TOM1 (1)	String Save Mode : First LH HL Change	
COM2 (0)	Use Redundancy	
Ethernet (0)	Operate Condition : AND V	
- 👘 Wireless (0)	Change Condition : TimeOut 5 (Second)	
IIII USBDevice (0)	Condition Edit	
	Primary Option	
	Timeout 500 💭 msec	
	Send Wait 0 msec	
	Retry 5	
	: Series HALO KA 🗸	
		Apply Close
ems	Settings	Remarks
terface	Select "Serial".	Refer to "2. Extern
otocol	Select "Remote Command".	device selection"

Set the time to wait for a response from an external device.

Select the series of the external device.

Set the waiting time before sending a data request to an 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]



ТОР	External device	Remarks
RS-232C	RS-232C	
RS-485	RS-485	
115		
8		
No	ne.	
	TOP           RS-232C           RS-485           115	TOP         External device           RS-232C         RS-232C           RS-485         RS-485           115200         8           1         None.

\* 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

■ [Control Panel]  $\rightarrow$  [PLC]

	ŏ	1001	PLC	×
	🔯 Syste	Driver(COM1)	PLC1(HALO Series) -	
Run		Interface	Serial •	
	PLC	Protocol Timeout	Remote Command ▼ 300 ♣ msec	
VNC		Send Wait	0 msec	
Viewer	(۵)	Retry	5	
	Ethernet	Series	HALO V	
Screen	HAT NO			
snot	Diagnostic			
	[System	Diagnostic	A	pply Cancel
	Settings			Remarks

Items	Settings	Remarks
Interface	Select "Serial".	Refer to "2. External
Protocol	Select "Remote Command".	device selection".
Timeout	Set the time to wait for a response from an external device.	
Send Wait	Set the waiting time before sending a data request to an external device.	
Series	Select the series 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 that the settings of the connected ports in [Control Panel]  $\rightarrow$  [Serial] are the same as the settings of the external device.
- $\blacksquare$  Diagnosis of whether the port communication is normal or not
- Touch "Communication Diagnostics" in [Control Panel]  $\rightarrow$  [PLC].
- Check whether communication is connected or not.

Communication	Communication setting normal
diagnostics	
succeeded	
Error message	Communication setting abnormal
	- Check the cable. TOP, and external device settings. (Refer to 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		Ch	eck	Remarks
System	How to connect the system		ОК	NG	1 Custom configuration
configuration	Connection cable name		ОК	NG	1. System configuration
ТОР	Version information		ОК	NG	
	Port in use		ОК	NG	
	Driver name		ОК	NG	
	Other detailed setting	S	ОК	NG	
	Relative prefix	Project setting	ОК	NG	
		Communication	ОК	NG	2. External device selection
	Serial Parameter	Transmission Speed	ОК	NG	5. communication setting
		Data Bit	ОК	NG	
		Stop Bit	ОК	NG	
		Parity Bit	OK	NG	
External device	CPU name		ОК	NG	
	Communication port name (module name)		ОК	NG	
	Protocol (mode)		ОК	NG	
	Setup Prefix		ОК	NG	
	Other detailed settings		OK	NG	4. External device setting
	Serial Parameter	Transmission Speed	ОК	NG	4. External device setting
		Data Bit	ОК	NG	
		Stop Bit	ОК	NG	
		Parity Bit	ОК	NG	
	Check address range		OK	NG	6. Supported addresses

- Refer to the user manual of the external device and configure the communication options.

## 5. Cable table

This chapter introduces a cable diagram for communication between the TOP and the external device.

(The cable diagrams in this section may differ from the vendor's recommendations.)

#### ■ RS-232C

TOP				External device			
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin	
arrangement <sup>*Note 1)</sup>	name	number		number	name	arrangement <sup>*Note 1)</sup>	
1 5		1		1		1 5	
	RD	2		2	RD		
6 9	SD	3		3	SD	6 9	
Based on		4		4		Based on	
communication	SG	5		5	SG	communication	
cable connector		6		6		cable connector	
front,		7		7		front,	
D-SUB 9 Pin male		8		8		D-SUB 9 Pin male	
(male, convex)		9		9		(male, convex)	

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

#### ■ RS-485

TOP				External device		
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin
arrangement <sup>*Note 1)</sup>	name	number		number	name	arrangement <sup>*Note 1)</sup>
1 5	RDA	1	•	1	+	1 5
		2		2	-	(° °)
		3		3		
Based on	RDB	4	<b>├   ●</b>	4		Based on
communication	SG	5		5	SG	communication
cable connector	SDA	6		6		cable connector
front,		7		7		front,
D-SUB 9 Pin male		8		8		D-SUB 9 Pin male
(male, convex)	SDB	9		9		(male, convex)

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

#### ■ RS-485

ТОР			External device			
Din orrangement	Signal	Cable connection	Pin	Signal	Pin	
Pin arrangement	name		number	name	arrangement <sup>*Note 1)</sup>	
	+ '		1	+	1 5	
	-		2	-		
0	SG		3		6 9	
) O J SG			4		Based on	
10 J -			5	SG	communication	
01+			6		cable connector	
0			7		front,	
			8		D-SUB 9 Pin male	
			9		(male, convex)	

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

## 6. Supported addresses

The addresses available in TOP are as follows:

Depending on the external device model, the supported address range may vary. Be careful not to use an address that deviates from the supported range by referring to the user manual of the external device.

\* Depending on the device type, the available address may vary. Refer to the chapter "Remote Operations" in the user manual of the external device for more details.

Address	Description	Bit	Word	Data type	Remarks
CONC	Final measurement	-	CONC	FLOAT	
FILTER	Smoothing filter	-	FILTER	DEC	
GASTYPE	Gas type	-	GASTYPE	ASCII	
LOCK	Locked front display	LOCK	LOCK	BIT	
LOGINT	Data logging cycle	-	LOGINT	DEC	
OPMODE	Operation mode	-	OPMODE	DEC	*Note 1
PASSCODE	Password	-	PASSCODE	DEC	
TAU	On-peak ring download time	-	TAU	FLOAT	
	On-peak ring download time	-	TAUSTD	FLOAT	
TAUSTD	(Standard deviation)				
TAUEMPTY	Off-peak ring download time	-	TAUEMPTY	FLOAT	
TALIECTO	Off-peak ring download time	-	TAUSTD	FLOAT	
IAUESTD	(Standard deviation)				

\*Note 1) Mode dependent value

Value	Mode
0	SERVICE
1	TUNE
2	MEASURE
3	SHUTDOWN