

4-Port Remote I/O Controller

CIE-H14G User Manual

Version 1.1

Sollae Systems Co., Ltd.

<https://www.ezTCP.com>



This symbol, found on your product or on its packaging, indicates that this product should not be treated as household waste when you wish to dispose of it. Instead, it should be handed over to an applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences to the environment and human health, which could otherwise be caused by inappropriate disposal of this product. The recycling of materials will help to conserve natural resources. For more detailed information about the recycling of this product, please contact your local city office, household waste disposal service or the retail store where you purchased this product.

※ This equipment obtained certification by using 1.5M serial cable.

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1 Overview

1.1 Overview

CIE-H14G provides the functionality of remotely monitoring sensors such as temperature, humidity, and pressure, as well as controlling power supplies remotely. CIE-H14G detects ON/OFF by receiving digital output from sensors and controls output ports through remote requests. It supports Modbus/TCP, HTTP, and macro functions for input/output control. Additionally, this product is equipped with an RS232 port for serial-ethernet conversion.

1.2 Main Features

- 4 digital input ports (photocoupler interface)
- 4 digital output ports (relay interface)
- Support Modbus/TCP for I/O control function
- Support HTTP for I/O control function
- Provide custom web page function
- Support macro function for output control
- Support for IPv6 (IPv4/IPv6 dual stack)
- 1 RS232 port: Provide serial-ethernet conversion function

1.3 Application Examples

- 1:1 Connection with a remote host (HMI)

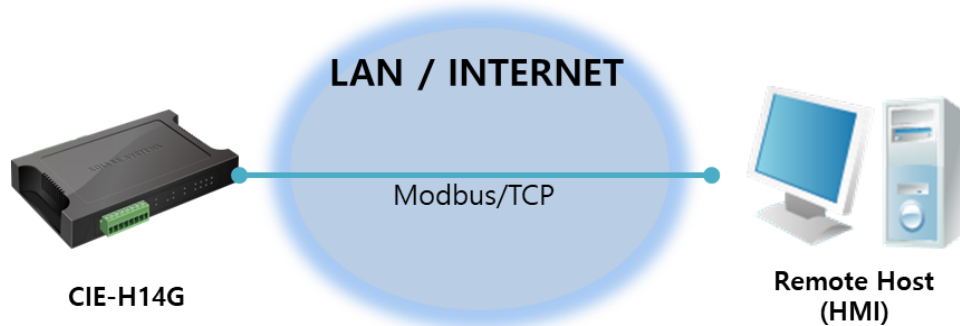


Figure 1-1 1:1 Connection with a remote host (HMI)

- 1:N Connection with a remote host (Web)

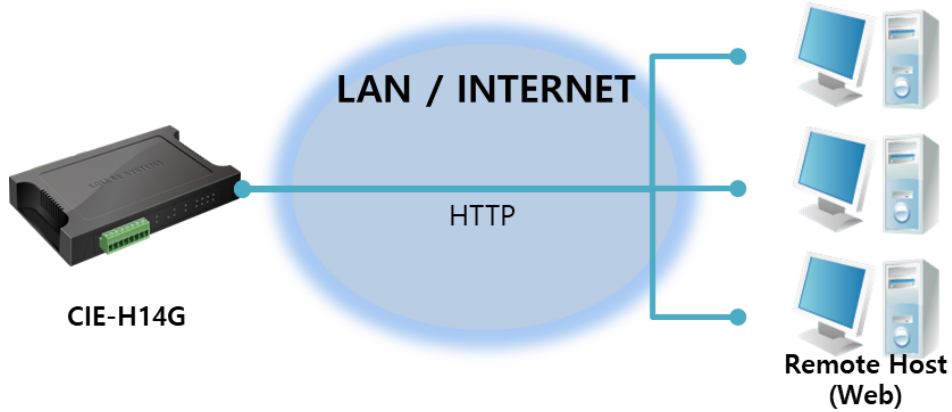


Figure 1-2 1:N Connection with a remote host (Web)

- Internet switch

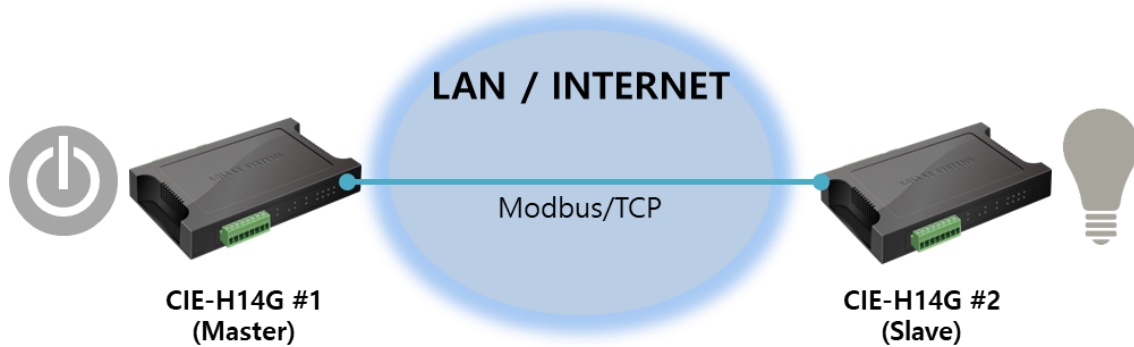


Figure 1-3 Internet switch

1.4 Specification

1.4.1 H/W specification

Power	Input Power	DC 8.5 ~ 38V
	Power Consumption	2W typical
Size	174mm x 123mm x 28mm	
Weight	Approximately 260g	
Interfaces	Digital Input	4 ports with photocouplers
	Digital Output	4 ports with relays
	Serial Port	DSUB 9 pins male
	Ethernet	RJ45
Network	Ethernet 10Base-T or 100Base-TX (Auto-Sensing) Auto MDI/MDIX(Cable Auto-sensing)	
Temperature	Operate: - 40 ~ 70°C / Storage: -40 ~ 85°C	
Certification	KC, CE	
Environment	Follows Europe RoHS Directive	

Table 1-1 H/W specification

1.4.2 S/W specification

Protocol	TCP, UDP, ICMP, IPv4/IPv6 dual stack, ICMPv6/TCPv6/UDPv6, ARP, DHCP, DNS, DDNS, Modbus/TCP, HTTP, Telnet COM Port Control Option(RFC2217), TELNET	
Operation mode	Normal	Normal communication mode
	ISP	F/W upgrade
	Serial Configuration	Configuration with the RS232 port
Communication Mode	I/O server	Modbus/TCP – Slave/Master, Passive/Active Web Browser(HTTP), Macro(Stand-alone), Serialized Modbus/TCP
	Serial devices server	TCP Server/Client, AT emulation, UDP
Programs	ezManager	Configuration program via LAN
	ModMap	Modbus/TCP Application for Windows

Table 1-2 S/W specification

1.5 Interface

1.5.1 Input Ports

Each input port of the CIE-H14G is insulated through a photocoupler and detects ON/OFF through a level of DC voltage. Each port automatically detects polarity.

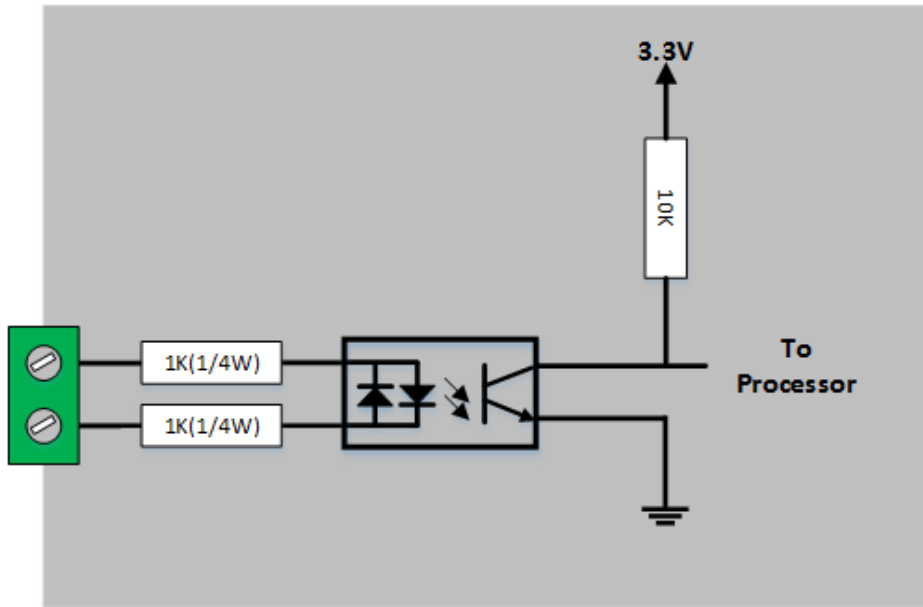


Figure 1-4 a circuit of the input port

The maximum input voltage for each input port is DC 24V, and the ON/OFF determination conditions are as follows:

Voltage Condition(DC)	State	Value
4.5V ~ 24V	HIGH (ON)	1
1.2V ~ 4.5V	Undefined	
0V ~ 1.2V	LOW (OFF)	0

Table 1-3 Conditions for determining ON/OFF of input ports

- ☞ *The input port is interfaced with a 5mm terminal block. Thus, use a (-) shaped screwdriver to connect it with the user device.*

- Types for giving input

The input type of CIE-H14G is a wet contact. That means the signal has to two lines with a potential difference to input High. To change the input type to a dry contact, you need to use a Dry Contact Adapter (DCA) or configure an additional circuit.

Division	Without DCA	With DCA
Input Condition	1: over DC4.5V between the input ports 0: under DC1.2V between the input ports	1: two ports are short 0: two ports are open
Diagram		
Adaptable devices	Devices or sensors which output DC voltage	Relays or Switches

Table 1-4 Dry contact input

The input ports are designed only for monitoring signals.

1.5.2 Output Ports

The output ports of CIE-H14G are interfaced to relays (NO : Normal Open) as shown below.

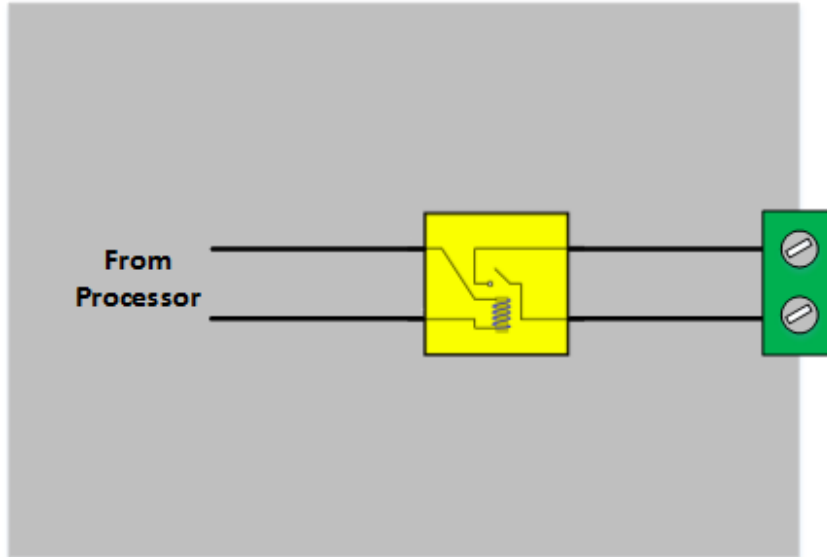


Figure 1-5 a circuit of the output port

The operations of an output port are as follows:

Value	Relay contact
0	OFF (open)
1	ON (short)

Table 1-5 Operations of an output port

The maximum allowable current according to the voltage condition of the output port is as follows.

Voltage Condition	Allowable current
DC 28V	5A

Table 1-6 The maximum allowable current

- ☞ *The maximum allowable current is for resistive loads. It is recommended to design about 10 ~ 20% of the maximum allowable current for capacitive loads such as SMPS and inductive loads such as motors.*
- ☞ *Use a (-) shaped screwdriver to connect it with users' devices since the output ports are interfaced with a 5mm terminal block.*
- ☞ *Note: The digital output port order of CIE-H14G is the same as CIE-H14A and opposite to CIE-H14.*

1.5.3 RS232 Port (DB9M)

CIE-H14G has an RS232 port supporting from 300 bps to 230,400 bps. This port is for connecting users' serial devices to Ethernet (TCP/IP) including the "Serialized Modbus/TCP".

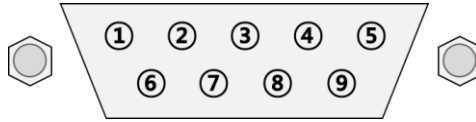


Figure 1-6 RS232 port

● Pin assignment

Number	Name	Description	I/O	Wiring
1	DCD	Data Carrier Detect	In	Optional
2	RXD	Receive Data	In	Required
3	TXD	Transmit Data	Out	Required
4	DTR	Data Terminal Ready * when a TCP session is established or in UDP mode – Active, otherwise – Inactive	Out	Optional
5	GND	Ground	-	Required
6	DSR	Data Set Ready	In	Optional
7	RTS	Request To Send	Out	Optional
8	CTS	Clear To Send	In	Optional
9	RI	Ring Indicator	In	Optional

Table 1-7 Pin assignment

● Serial Port Parameters

Parameter	Value
Number	1
Type	RS232
Baud rate	300 ~ 230,400 [bps]
Parity	NONE / EVEN / ODD / MARK / SPACE
Data bit	8 / 7
Stop bit	1 / 2
Flow control	NONE, RTS/CTS, Xon/Xoff

Table 1-8 serial port parameters

- ☞ *7 data bits with NONE parity is not supported.*
- ☞ *Single idle bit is automatically added after every stop bit by the MCU function.*

1.5.4 Ethernet Interface

The Ethernet port of CIE-H14G is support 10M/100Mbps and users can use both 1:1 cable and crossover cable. There is a built in RJ45 connector for interfacing Ethernet and its specifications are as follows:

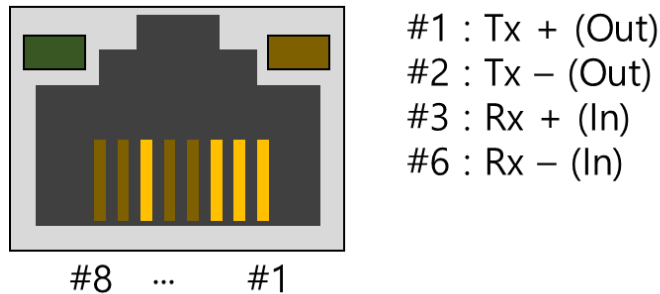


Figure 1-7 Ethernet connector

● LED operations

Color	LED status	Description
Yellow	Off	connected to 10Mbps network or disconnected
	On	connected to 100Mbps network
Green	On	connected to network
	Off	disconnected
	Blinking	sent/received data to/from network

Table 1-9 LED operations

1.5.5 Power

Power is interfaced with a terminal block and requires DC 8.5~38V with polarity differentiation for connection. An adapter provided by our company is DC 12V / 1A.

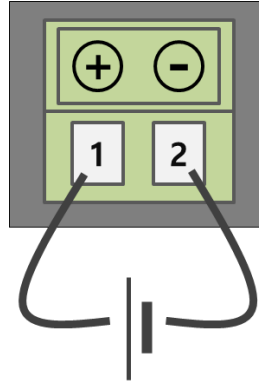


Figure 1-8 power

1.5.6 System LED

CIE-H14G has 15 LEDs to indicate the current system status. Each LED represents the following status:

mode	name	color	LED status	description
Common	PWR	Red	On	Power is supplied
	LINK	Green	On	Connected with network
			Blinking	When sending/receiving network data
	RXD	Yellow	Blinking	Receiving data from the Ethernet
	TXD	Green	Blinking	Transferring data to the Ethernet
Normal	STS	Yellow	Blinking every second	Assigned an IP address
			Blinking 4 times at once	Without being assigned an IP address by DHCP or PPPoE
			On	Establishing a Modbus/TCP connection
	DI	Yellow	On	When input ports' signal is ON
	DO	Green	On	When output ports' signal is ON
Serial Configuration	STS, RXD, TXD	-	Blinking simultaneously	Under the serial configuration mode
ISP	STS	Yellow	Off	Under the ISP mode

Table 1-10 system LED

1.5.7 ISP Switch

There is an ISP switch on the side of the product. You can use this switch to operate the CIE-H14G in ISP mode or serial configuration mode. Additionally, this switch is used to reset the environmental values of the product.

2 Installation and Test

2.1 Installation

connect the Ethernet port to your PC directly or through a switching hub.



Figure 2-1 Installation

2.1.1 Setting Network Aera

This step is for setting both CIE-H14G and your PC to be located on the same network to establish a TCP connection.

- Setting of the PC

Set the IP address to the Ethernet adapter of the PC connected to the product as follows.

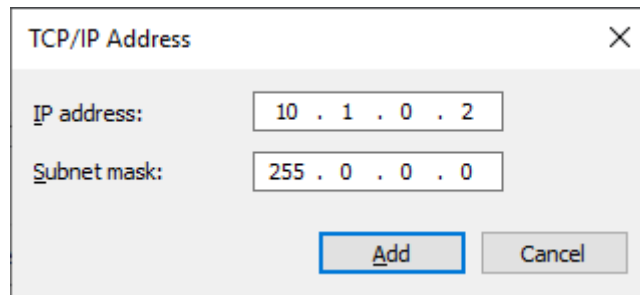


Figure 2-2 Setting an IP address of the PC

- Setting of CIE-H14G

CIE-H14G uses ezManager as it's a configuration program. The Simple Test is performed with the environmental variables of CIE-H14G set to their default values. The main environmental variables and their default values of CIE-H14G are as follows:

Parameters		Default Values
Network	Local IP Address	10.1.0.1
	Subnet Mask	255.0.0.0
Serial Port	Serial Type	RS232
	Baud Rate	19,200bps
	Parity	NONE
	Data Bits	8
	Stop Bit	1
	Flow	NONE
	Communication Mode	T2S – TCP Server
	Local Port	1470
I/O Port	Web (HTTP)	Checked
	Web (HTTP) Port	80
	Modbus/TCP	Checked
	Master/Slave	Slave
	Connection Mode	Passive Connection
	Multiple Connection	1
	Local Port	502
Option	Telnet	Checked
	IP Address Search	Checked

Table 2-1 default values of some major parameters

2.2 Simple Test

2.2.1 Modbus/TCP

This is a test for monitoring and controlling with Modbus/TCP. This test uses the Modbus/TCP program in ezManager.

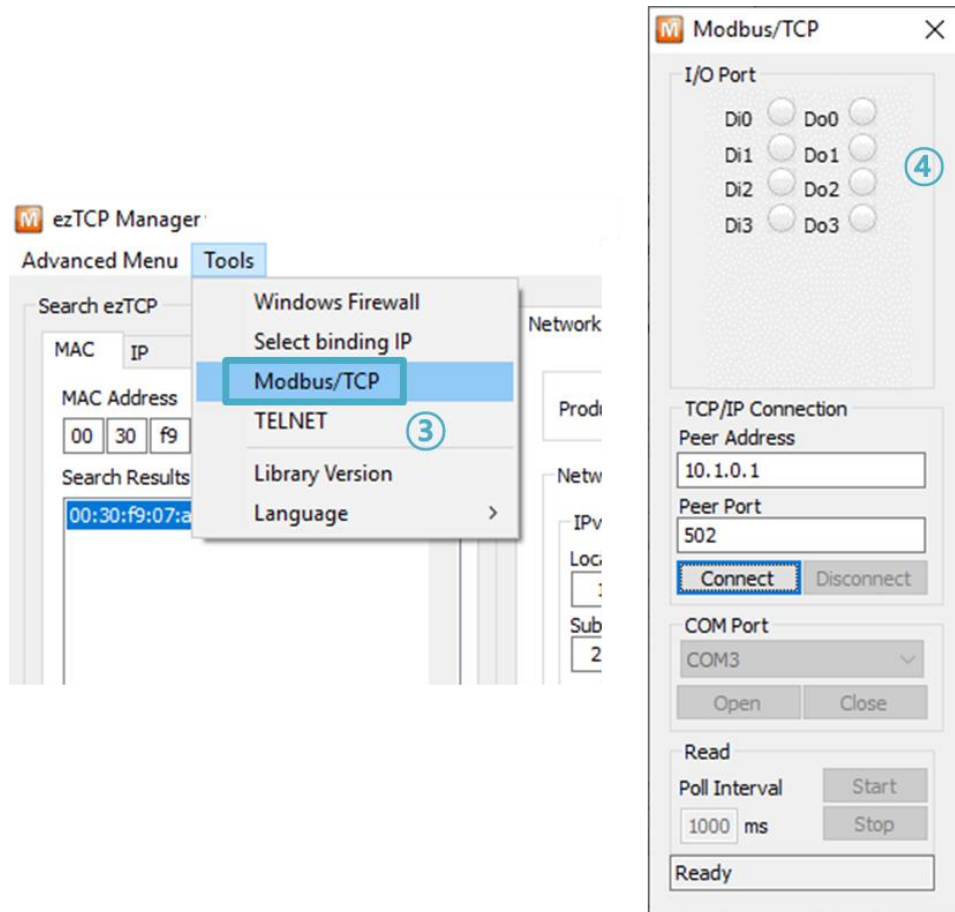


Figure 2-3 Modbus/TCP test program

- ① Search the connected CIE-H14G with [Search All] button.
- ② Select a MAC address of searched product on the [search result].
- ③ Click the [Tools] - [Modbus/TCP] button.
- ④ The test program will appear on the right side of the ezManager.

● Modbus/TCP test

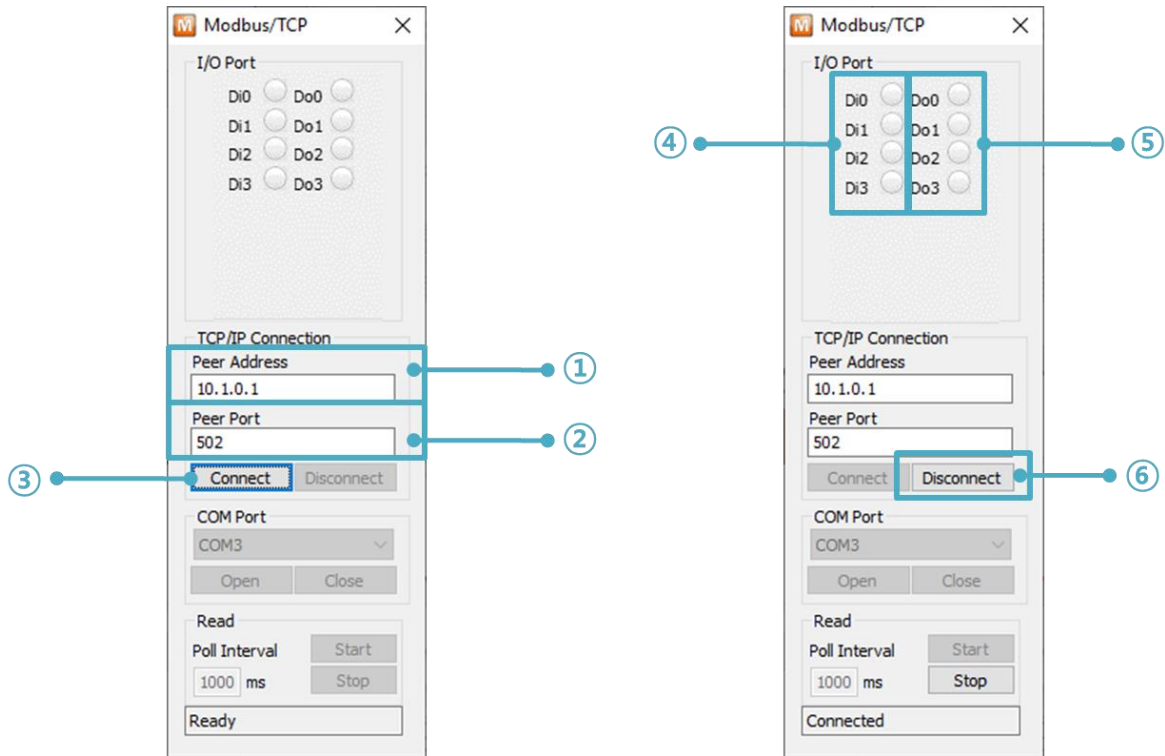


Figure 2-4 Modbus/TCP test

- ① Input the IP address of CIE-H14G
- ② Input the local port for Modbus/TCP of CIE-H14G
- ③ Connect by pressing [Connect] button
- ④ Under the connection, check if the Di LEDs are turned on or off with signal input
- ⑤ Check if Do LEDs are turned on or off with clicking the LEDs
- ⑥ Click the [Disconnect] button after the test is completed

2.2.2 HTTP Test with a WEB browser

This is for testing the operation of Input and output ports of CIE-H14G via HTTP. The test was implemented on a WEB browser.

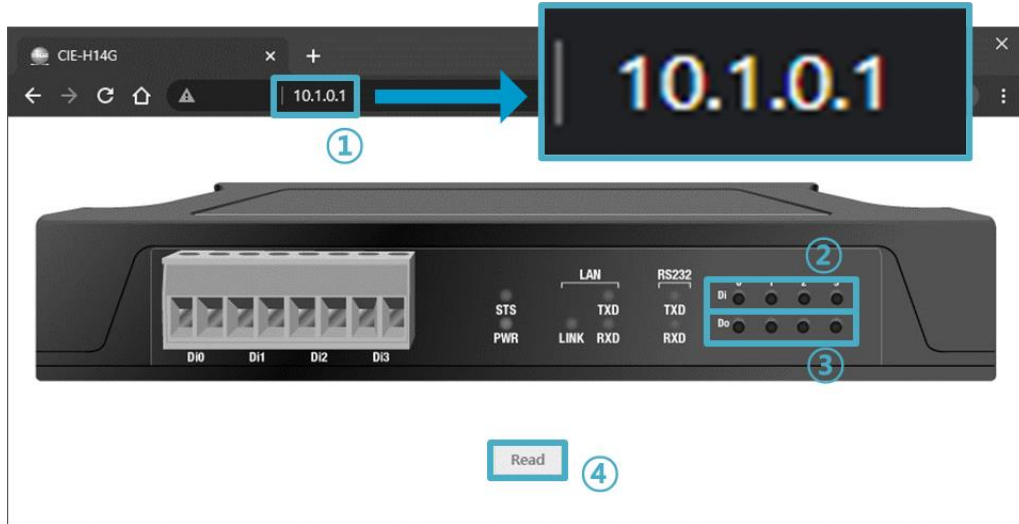


Figure 2-5 HTTP test

- ① Input the IP address of your CIE-H14G on the address field (default: 10.1.0.1).
- ② Check if the DI LEDs are turned on or off with HIGH signal.
- ③ Check if DO LEDs are turned on or off with clicking the each of LEDs.
- ④ Press the [Reload] button to update the status.

● The way to control output ports manually

Division	On/Off		Pulse
Parameter	oi (Lower case, i is port number)		pi (Lower case, i is port number)
Value	ON	OFF	Time (ms)
	1	0	1~10000
Example	http://10.1.0.1/index.html?o0=1		http://10.1.0.1/index.html?p0=1000

Table 2-2 The way to control output ports manually

3 Configuration

3.1 Configuration with ezManager

3.1.1 Configuration via LAN

- Checklists

Make sure of the connection between your PC and CIE-H14G via Ethernet. If they are in the same network, [MAC Address search] button can be used. Otherwise, only [IP Address search] is allowed to use.

- Procedures

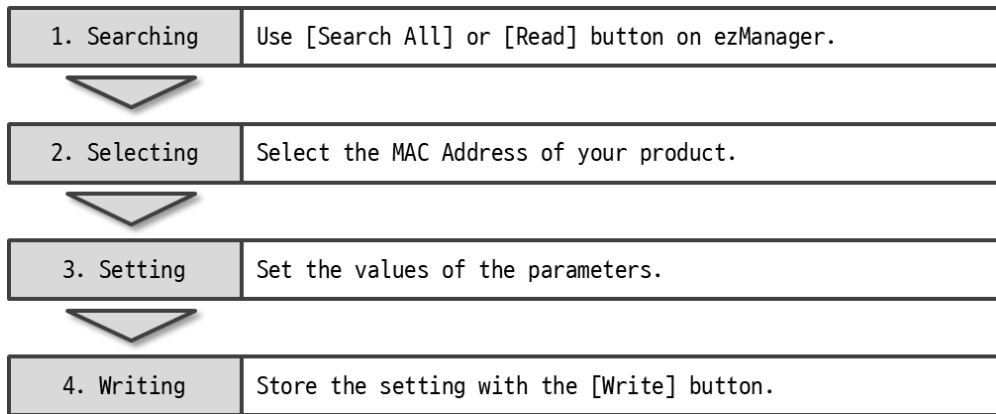


Figure 3-1 Configuration via LAN

3.1.2 Configuration via Serial

- Checklists

Make sure of the connection between your PC and CIE-H14G using a RS232 cross cable. CIE-H14G has to be operating in the [Serial Configuration] mode. You make CIE-H14G operate in the serial configuration mode by pressing the ISP-button less than 1 second. After then, read the setting on the [Serial] tab.

- Procedures

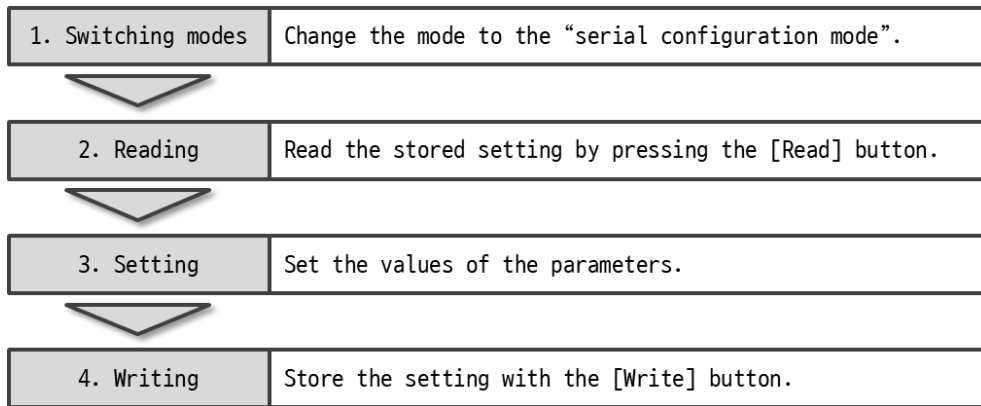


Figure 3-2 Configuration via serial

- Step 2, Reading

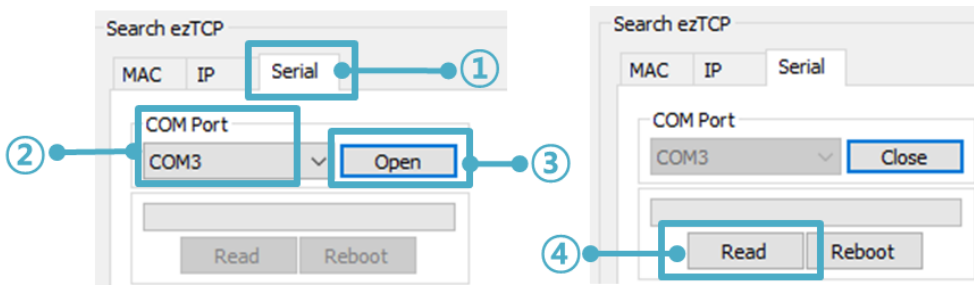


Figure 3-3 Step 2, Reading

- ① Choose the [Serial] tab.
- ② Select the COM port which is the device is connected.
- ③ Open the COM port pressing the [Open] button.
- ④ Load the setting with the [Read] button.

4 Operation Modes

4.1 Operation Modes

Each of three operation modes are designed for specific purposes, and those are as follows:

- Normal mode
This mode is for normal data communication. Configuring parameters is also available in this mode.
- Serial configuration mode
This mode is for configuring environmental parameters through the RS232 port.
- ISP mode
This mode is for changing firmware. In addition, you can set environmental parameters even though the security options are activated. You can also reset the security options.

4.2 How to enter each mode

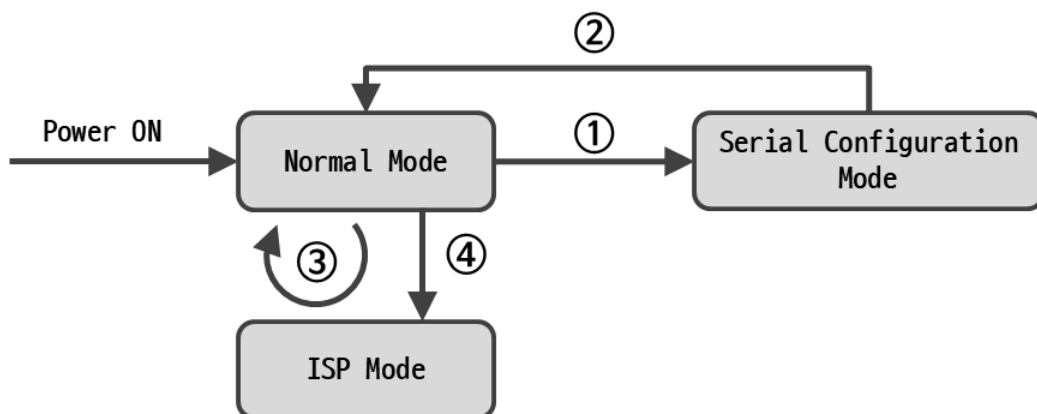


Figure 4-1 How to enter each mode

- ① Push the ISP button less than 1 second.
- ② Reset
- ③ Transfer a firmware via ezManager
- ④ Push the function button over than 1 second.

4.3 Normal Mode

In the normal mode, there are four types of I/O control methods and four types of communication modes as a serial-Ethernet converter.

- I/O control methods

Methods	Descriptions
Modbus/TCP	Monitor/Control the I/O ports via Modbus/TCP
Serialized Modbus/TCP	Monitor/Control the I/O ports via the serial port using Modbus/TCP
Macro	Control the Output ports via Macro function
Web(HTTP)	Monitor/Control the I/O ports via HTTP

Table 4-1 I/O control methods

- Communication modes as a serial-Ethernet converter

Communication modes	Protocol	Connection	Modifying software of serial devices	Topology
TCP Server	TCP	Passive	-	1:1
TCP Client		Active	-	1:1
AT Command		Both	Required	1:1
UDP	UDP	N/A	-	N:M

Table 4-2 communication modes

4.4 Serial Configuration mode

4.4.1 Configuring Parameters

This is a mode for setting environmental variables via the serial port. If it is not possible to set the CIE-H14G through network connection, you can use the serial port to change the settings. You can set the environmental values through the "Serial" tab in ezManager by pressing the "Read" button. In serial configuration mode, even if a password is set, it will not be checked during the configuration. Therefore, it can be used for recovering the password if it is forgotten.

4.4.2 Factory Reset

When entering the serial configuration mode, you can perform the factory reset function to reset the environmental values of the product to the factory default settings.

4.5 ISP mode

4.5.1 Configuring Parameters

In ISP mode, you can also configure the environmental variables just like in normal mode. In particular, the product access restriction feature is disabled in ISP mode. Therefore, it is possible to perform the configuration even in situations where the product cannot be searched in normal mode due to product access restrictions. Additionally, in ISP mode, even if a password is set, the password will not be verified during configuration. Therefore, it can be used to recover the password if it is forgotten.

4.5.2 Changing Firmware

When entering ISP mode, you can change the firmware of the product via LAN.

5 I/O Control

5.1 MODBUS/TCP

CIE-H14G supports Modbus/TCP as the default protocol for I/O control.

5.1.1 Related Parameters

Parameter	Description
Modbus/TCP	Using Modbus/TCP for controlling I/O ports of CIE-H14G.
Slave	The slave responses by queries from the Master
Master	The Master sends queries to the slaves
Poll Interval	the period for sending queries (Unit: ms, Minimum value: 10)
Unit ID	ID for identifying the device or the pair of devices.
Input Port Base Address	Initial address of the input ports
Output Port Base Address	Initial address of the output ports
Passive Connection	waiting for accepting a Modbus/TCP connection
Active Connection	requesting a Modbus/TCP connection
Multiple Connection	The numbers for multiple Modbus/TCP connections.
Control Method of (FC XX)	Control method for the output ports of the slave (Single / Multiple)
Control Method of (AND/OR)	Control method for the output ports of the master (AND / OR)
Peer Address	Peer's IP address when CIE-H14G performs active connections.
Peer Port	Peer's port when CIE-H14G performs active connections.
Local port	CIE-H14G's local port when CIE-H14G performs passive connections.
Input Change Notification	A function for immediate notification of changing the IP address.
Initialize the output port state	The Output port will be changed to the [Initial State] when Modbus/TCP is disconnected. (Upper version 1.5A)
Macro	Applying macro function on the output port
Initial State	Output port value when CIE-H14G boots up.

Table 5-1 Related parameters

5.1.2 Modbus/TCP Slave Mode

According to the standard Modbus/TCP, users can use a Modbus/TCP manager to control and monitor their I/O devices. You can set CIE-H14G to the [Slave] item to [Slave] mode. The [Passive] connection is recommended in this mode and the [Peer Port] should be 502.

Modbus/TCP Mode	Slave
TCP Connection	Passive
TCP Port	502

Table 5-2 values for standard Modbus/TCP

Configure the proper values of [Unit ID], [Input Port Base Address], and [Output Port Base Address]

5.1.3 Modbus/TCP Master Mode

In this mode, CIE-H14G operates as a Modbus/TCP master. As a master CIE-H14G transmits its input information to the slave and outputs the slave's input value to its output port after reading the value periodically.

The master mode is intended to be used only in Internet switch configurations.

5.1.4 TCP Connection Modes

In the standard of Modbus TCP, the master program makes a connection to the slave using port number 502. However, sometimes Modbus/TCP devices try connecting to the master actively. For this case, CIE-H14G supports the active connection mode.

The passive connection	<ul style="list-style-type: none"> - Standard Modbus/TCP. - Remote host connects to CIE-H14G. - Port number that is used for communication must be designated. - Depending on the setting of multiple connections, up to 8 hosts can be connected simultaneously.
The active connection	<ul style="list-style-type: none"> - CIE-H14G tries to establish a connection to the remote host. - The IP address (or host name) and port number of the remote host is required.

Table 5-3 TCP connection modes

5.1.5 Initial Output Value

The initial value of CIE-H14G's output port can be configured. The output ports are set to ON or OFF according to the value of [Initial State] at the boot time.

5.1.6 Write Pulse

By using the FC105, you can give the signal of pulse type to the output ports. This means the output signal is kept during the specific time configured by users.

5.1.7 Communication with HMI

In case of communication HMI with CIE-H14G, please refer to the address table below.

- Examples of HMI address references

Port	Unit	R/W	Function Code	Address (Device)	Address (HMI)
Input	word	R	03	0	40001
			04		30001
Output		R	03	8	40009
		W	06, 16		
Input #0	bit	R	02	0	10001
			03	0	40001.0
			04		30001.0
Input #3		R	02	3	10004
			03	0	40001.3
			04		30001.3
Output #0		R	01	8	00009
		W	05, 15, 105		
		R	03	8	40009.0
		W	06, 16		
Output #3		R	01	11	00012
		W	05, 15, 105		
	R	03	8	40009.3	
	W	06, 16			

Table 5-4 Examples of HMI address references

5.2 Serialized Modbus/TCP

In this mode, CIE-H14G sends and receives Modbus/TCP data via the serial port. By using this mode, you can monitor and control the I/O ports of CIE-H14G through the RS232 port.

- ☞ *Note that you can't control the output ports of CIE-H14G with HTTP or Modbus/TCP in this mode. Also, the TCP and UDP data communication for serial devices cannot be activated.*

5.3 Macro Mode

This mode lets users set the values of the output ports with simple macros. Since CIE-H14G reflects the values according to the macro expressions which are configured by users in advance, it is useful to make a specific device operate automatically using signals from various sensors. Check [Macro] options on ezManager to activate this mode.

- ☞ *If a port is set to Macro mode, it cannot be controlled through HTTP or Modbus/TCP.*

5.3.1 Operators

The equation used in the Macro mode is Boolean algebra. In this case, the AND, OR, NOT are used as operators. Parenthesis may also be used. The operators are executed in order of precedence: parenthesis > NOT > AND > OR. Each operator is represented by the following symbols.

Name		Description
Parenthesis	()	Since calculations within the parenthesis have the highest priority, they will be calculated first. Nested parentheses are allowed.
NOT	/	An operand that follows a NOT operator is toggled. (If an operand is 0, it will be changed to 1. If it is 1, it will be changed to 0.)
AND	*	If both operand values surrounding an AND operator are 1, the result value will be 1. Otherwise, the result will be 0.
OR	+	If both operand values surrounding an OR operator are 0, the result value will be 0. Otherwise, the result will be 1.

Table 5-5 Operators

5.3.2 Operands

Operands used in macro mode are each input port. Each input port is designated with $i0 \sim i3$ symbol based on their sequence. Since operands are case-insensitive, they can also be written as $I0 \sim I3$.

☞ *The output ports could not be used as an operand.*

5.3.3 Examples of Equations

Here are some examples. In the expressions, spaces between the two operands will be ignored.

Port	Equations	Description
Do0	$i0 + i1$	Perform OR for $i0$ and $i1$.
Do2	$i0 * /(i1 + i3)$	The part of the expression within the parentheses, $(i1 + i3)$ is evaluated first, and then the value is toggled due to a NOT operator. This result is used to perform an AND operator with $i0$.

Table 5-6 examples of equations

The following is the output values coming out as a result of expressions of input values.

Input port value			Output port value	
$i0$	$i1$	$i3$	Do0	Do2
0	0	0	0	0
0	0	1	0	0
0	1	0	1	0
0	1	1	1	0
1	0	0	1	1
1	0	1	1	0
1	1	0	1	0
1	1	1	1	0

Table 5-7 truth table of the examples

5.4 Web (HTTP)

After starting the web browser, type CIE-H14G's IP address after typing http:// in the address bar to connect to CIE-H14G

If a password for CIE-H14G is set, the following window will be popped up.

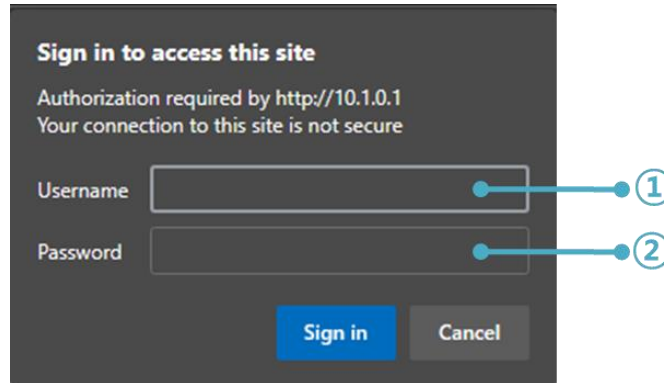


Figure 5-1 authentication with a password

- ① [User name] is not required.
- ② [Password] should be the same with a password which is set through the ezManager.

5.4.1 Changing port number for HTTP

In case you cannot use the port number 80(default port number for HTTP) because the ISP (Internet Service Provider) blocks the port, you can change that port number.

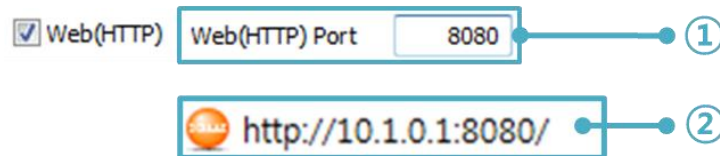


Figure 5-2 changing port number for HTTP

- ① Change HTTP port number on CIE-H14G via ezManager.
- ② Enter the port number including ':' (colon) after the IP address.

5.4.2 Changing a web page

The CIE-H14G provides changing a web page function. Users can modify or create new web pages for the CIE-H14G, instead of using the default web page, as long as they know simple script syntax. Our website provides various web page samples in different formats to use in creating user's own web page.

☞ *Please refer to the [Upload Users' Homepage] document on our website for details.*

6 Serial-Ethernet Conversion

6.1 TCP Server

In this mode, CIE-H14G functions as a TCP server. You can use this mode when the remote host is a TCP client. CIE-H14G listens to a TCP connection from remote host. Once a host tries to connect to CIE-H14G and the module responds that request. After the connection is established, CIE-H14G converts the raw data from the serial port to TCP/IP data and sends them to the network and vice versa.

6.1.1 Required parameters

- Local Port

This is a server's port number which is used in the TCP connection.

6.1.2 Optional parameters

- Event Byte

With setting event bytes, users can handle the serial data before a TCP connection is established.

Value	Serial data handling before TCP connection establishment
0	Discard - do not transmit
Otherwise	Transmit to the remote host immediately upon connection establishment, with the recommended setting of 512 bytes or less

Table 6-1 Event Byte

- Timeout

If there is no transmission of data for amount of time which is set to this parameter, CIE-H14G tries to terminate established TCP connection.

- Notify IP Change

This function is for notifying information about changed IP address to a server. Not only the TCP/UDP protocol but Dynamic Domain Name Service (DDNS) can be used.

- Restriction of Access

Users can block TCP connections from unauthorized hosts by using this option. Both IP and MAC address are available.

6.2 TCP Client

In this mode, CIE-H14G functions as a TCP client. You can use this mode when the remote host is a TCP server. CIE-H14G sends request segments to a remote host with [Peer Address] and [Peer Port]. Once a host is listening and works correctly, the connection will be established. After then, CIE-H14G converts the raw data from the serial port to TCP/IP data and sends them to the network and vice versa.

6.2.1 Required parameters

- Peer Address

This item should be a domain name or an IP address of a remote host.

- Peer Port

This item should be a port number of a remote host.

6.2.2 Optional parameters

- Event Byte

CIE-H14G decides the time to send the connection request frame with this parameter.

Value	When to initiate the connection
0	Connect immediately after boot up or 5 seconds after terminating a TCP connection
Otherwise	Connect immediately after receiving the configured number of bytes through the serial port

Table 6-2 the operation of Event Byte 1

In addition, users can handle the serial data before a TCP connection is established with this parameter.

Value	Serial data handling before TCP connection establishment
0	Discard - do not transmit
Otherwise	Transmit to the remote host immediately upon connection establishment

Table 6-3 the operation of Event Byte 2

☞ *We recommend setting this value to 512 bytes or less.*

- Timeout

If there is no transmission of data for amount of time which is set to this parameter, CIE-H14G tries to terminate established TCP connection.

- TCP Server

This check option enables the TCP server / client mode. In this mode, CIE-H14G can be operated as a TCP server or client without changing its setting.

- DNS IP Address

[DNS IP Address] needs when you use host name instead of the IP address.

6.3 AT Command

AT command is a mode which users' control CIE-H14G with AT command like controlling modem. In this mode, active and passive TCP connections are available. And users are allowed to configure some environmental parameters with extended commands.

6.3.1 Key parameters

The configuration should be implemented via the serial port of CIE-H14G.

Commands	Description	Examples
+PLIP	Local IP Address	at+plip=10.1.0.1<CR>
+PLP	Local Port	at+plp=1470<CR>
+PRIP	Peer IP Address	at+prip=10.1.0.2<CR>
+PRP	Peer Port	at+prp=1470<CR>
+PDC	DHCP	at+pdc=1 (ON)<CR>
+PPE	PPPoE	at+ppe=1 (ON)<CR>
+PTO	Timeout	at+pto=10<CR>
+PWP	Store setting	at+pwp<CR>

Table 6-4 some of extended commands for configuration

- Related items with IP Address and Local Port
Local port can be set as well as IP address related parameters like IP Address, Subnet Mask and Gateway IP Address.
- Peer Address / Peer Port
IP address and local port of a remote host are can be set.
- Type of assigning IP address: Manual, DHCP, PPPoE
Not only manual setting, also automatic assigning protocol (DHCP, PPPoE) are available.
- Others
Some of options including [Timeout] can be configured in this mode.

☞ Refer to the "ATC – AT Command Mode" document for more details.

6.4 UDP

This mode transmits/receives data without connection.

6.4.1 Required parameters

- Local Port

This item is a port for receiving UDP datagram.

- Peer Address

This item is a hostname or an IP address of a remote hosts.

- Peer Port

This item is a port for transmitting UDP datagram.

☞ *If you set the value of [Peer Address] to nothing and set the value of [Peer Port] to 0, [dynamic update of peer host] function is activated. By using this function, CIE-H14G can communicate to multiple hosts without additional setting.*

6.4.2 Optional parameters

- Block Size (Byte)

[Block Size (Byte)] means the size of a block in UDP mode. Its unit is byte. The size of bytes come into the serial port, CIE-H14G sends them as one block to the network. The maximum value could be 1460 bytes.

- Data Frame

[Data Frame] means the time for gathering data to make one block. Its unit is 10ms. If there are no transmission during the time which is set to this value, CIE-H14G sends gathered data in the buffer as one block to the network. The maximum size of single block is 1460 bytes in IPv4 and 1200 bytes in IPv6.

☞ *Once one of the both parameters is sufficient, the block size is decided as the condition.*

7 Management

7.1 Changing Firmware

7.1.1 Firmware

Firmware is a type of software for operation of CIE-H14G. If there are needs for adding function or fixing bugs, the firmware is modified and released. We recommend that users keep use the latest released firmware.

7.1.2 Processes

- Downloading the latest released firmware
Download the newest firmware file. We update our homepage when a new firmware is released. You can find it on our website.
- Entering ISP mode
Enter ISP mode to download firmware file to CIE-H14G.
- Run a TFTP client and ready to send the F/W file
Run a TFTP client program. ezManager is equipped the client program. Click the [Change F/W / HTML] button.

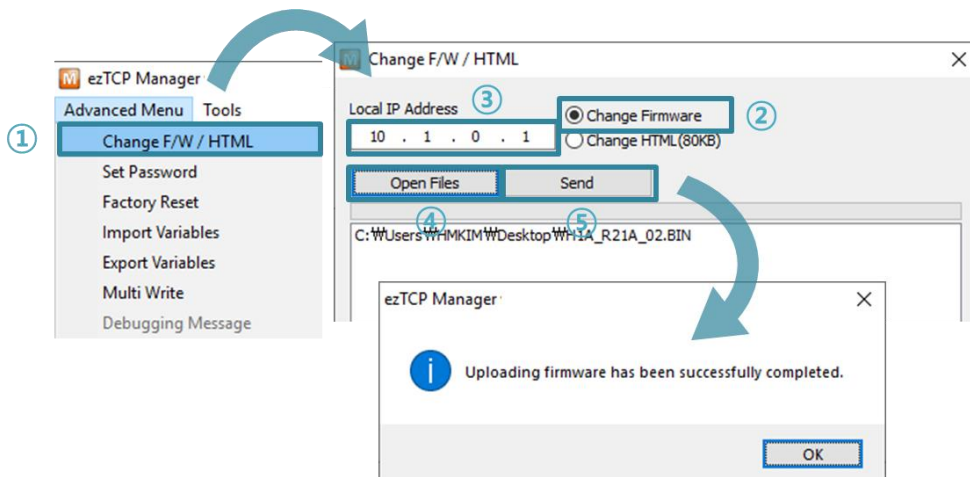


Figure 7-1 changing Firmware

- ① Click the [Advanced Menu] > [Change F/W / HTML].
- ② Select the [Change Firmware] radio button.
- ③ Input the IP address of CIE-H14G to the [Local IP Address] box.
- ④ Press the [Open Files] button and choose the firmware file.
- ⑤ Click the [Send] button
- ⑥ Confirm the completed message

7.2 Changing a Web page

CIE-H14G comes with a default web page stored when it leaves the factory. Follow the steps below to change the web page to a another one.

7.2.1 Processes

- Creating a web page / Downloading a sample web page
Create a new web page or download a sample web page on our web site.
- Searching your product by ezManager
Search your product by ezManager
- Running a TFTP client and Sending files
Run a TFTP client to send files of a web page. The TFTP client will be popped up when you click the [Advanced Menu] > [Change F/W / HTML] on ezManager.

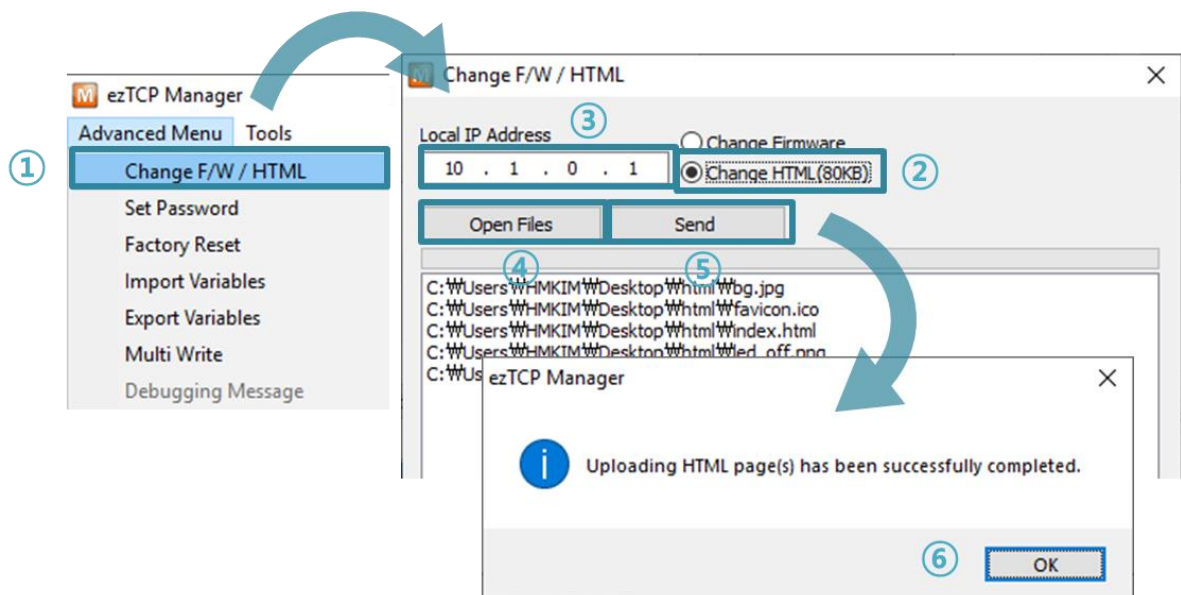


Figure 7-2 changing a web page

- ① Click [Advanced Menu] – [Change F/W /HTML] menu to run TFTP client.
- ② Select the [Change HTML] radio button.
- ③ Input the IP address of CIE-H14G to the [Local IP Address] text box.
- ④ Press the [Open Files] button and choose the HTML files.
- ⑤ Click the [Send] button.
- ⑥ Confirm the completed message.

☞ *The size of web page files is limited to less than 96KB.*

7.3 Status Monitoring

7.3.1 Using TELNET

If the [TELNET] function in the [Option] tab of ezManager is enabled, users can log in to the CIE-H14G via Telnet. The login password used is the password set in the product, and if no password is set, the default password is 'sollae'.

```
CIE-H14G Management Console v1.0A Sollae Systems
lsh>
```

Figure 7-3 TELNET log in

● TELNET commands

Command	option	description	usage
st	net	IPv4 network status	lsh>st net
	net6	IPv6 network status	lsh>st net6
	sio	Serial port status	lsh>st sio
	uptime	System uptime	lsh>st uptime
sc	[OP1][OP2]	Session control	lsh>sc com1 close
sd	[OP1][OP2]	Capturing serial data	lsh>sd 1 100
		Termination of capturing data	lsh>sd 1 0
exit		Termination of telnet session	lsh>exit

Table 7-1 TELNET commands

- st net

This command shows session information of IPv4 network.

```
CIE-H14G Management Console v1.0A Sollae Systems
lsh>st net
proto name          local address          peer address  sendq  state
-----
TCP   tty             10.1.0.1( 23)         10.11.0.67(50904)  219   ESTABLISHED
TCP   http7             0.0.0.0( 80)         0.0.0.0( 0)      0     LISTEN
TCP   http6             0.0.0.0( 80)         0.0.0.0( 0)      0     LISTEN
TCP   http5             0.0.0.0( 80)         0.0.0.0( 0)      0     LISTEN
TCP   http4             0.0.0.0( 80)         0.0.0.0( 0)      0     LISTEN
TCP   http3             0.0.0.0( 80)         0.0.0.0( 0)      0     LISTEN
TCP   http2             0.0.0.0( 80)         0.0.0.0( 0)      0     LISTEN
TCP   http1             0.0.0.0( 80)         0.0.0.0( 0)      0     LISTEN
TCP   mbus0             0.0.0.0( 502)        0.0.0.0( 0)      0     LISTEN
TCP   com1              0.0.0.0( 1470)       0.0.0.0( 0)      0     LISTEN
lsh>
```

Figure 7-4 st net

- st net6

This command shows session information of IPv6 network.

```
lsh>st net6
proto name          local/peer address          sendq  state
-----
TCP6  tty               fe80::230:f9ff:fe12:1002( 23)  127   ESTABLISHED
                        fe80::f965:11c7:ea03:9987(55717)
lsh>
```

Figure 7-5 st net6

- st sio

This command shows information of a serial port.

```
lsh>st sio
port fmax rbmax rxbuf txbuf rx_count tx_count
-----
com1  0    0    0    0    0    0
lsh>
```

Figure 7-6 st sio

- st uptime

This command shows your device's uptime.

```
lsh>st uptime
00:05:19.16 up 0 days
lsh>
```

Figure 7-7 st uptime

- sc

This command closes a session. [OP1] represents the name of session and [OP2] represents the action. The “close” (lower-case letters) is the only action for [OP2] for now.

```
lsh>sc com1 close
com1: closed
lsh>
```

Figure 7-8 sc

- sd

This command captures serial port data and displays it. [OP1] represents the session name and [OP2] represents the capture interval. The unit of [OP2] is 10ms.

```
lsh>sd 1 100
com1 dump start
com1 dump buffering time : 1000ms
lsh>tx1 => 30 31 32 33 34 35 36 37          | 01234567
rx1 <= 30 31 32 33 34 35 36 37          | 01234567
```

Figure 7-9 sd

How to stop capturing data on the serial port is as follows:

```
lsh>sd 1 0
com1 dump stop
lsh>
```

Figure 7-10 dump stop

- exit

This command terminates the telnet session.

```
lsh>exit
```

Figure 7-11 exit

7.3.2 Using ezManager

Status of CIE-H14G can be monitored by [Status] button on ezManager. By using the [Refresh Every 1 Second] option in the status window, the status is automatically updated in every second.

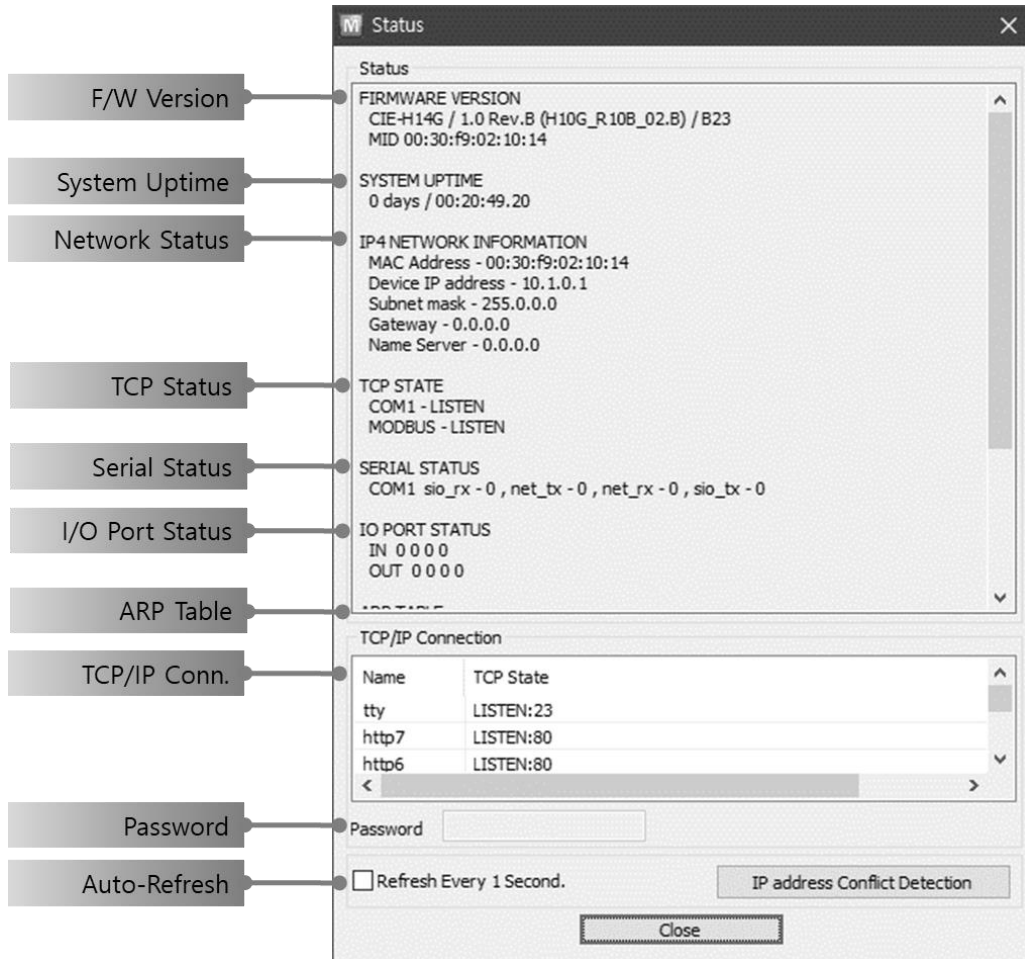


Figure 7-12 Status window of ezManager

- **FIRMWARE VERSION**
This shows the name of model, the version of firmware and the MAC address.
- **SYSTEM UPTIME**
This shows the device's uptime.
- **IP4 NETWORK INFORMATION**
All information about related items with IPv4 Address is shown here.
- **IP6 NETWORK INFORMATION**
All information about related items with IPv6 Address is shown here. This item is activated when the IPv6 is enabled.

- TCP STATE

TCP status of each port is shown this section.

Message	Description
LISTEN	listening TCP connection
CLOSE	TCP connection is closed
SYN_SENT	Send "SYN" segment to make TCP connection
ESTABLISHED	When TCP connection is established
N/A	In UDP mode

Table 7-2 TCP STATE

- SERIAL STATUS

This shows statistics of data communication. (Unit: Byte)

Buffer	Description
sio_rx	The number of data which is received from the COM port
net_tx	The number of data which is sent to the remote host
net_rx	The number of data which is received from the remote host
sio_tx	The number of data which is sent to the COM port

Table 7-3 SERIAL STATUS

- I/O PORT STATUS

This represents I/O ports' status. '1' means HIGH(ON) and '0' means LOW(OFF).

- ARP/ND CACHE TABLE

This part shows ARP table on CIE-H14G. When TCP connection is established or UDP data communication is performed, the information of IP and MAC address is automatically stored in the ARP table. This information is held for 1 minute. When 50 seconds is passed, CIE-H14G starts broadcasting the ARP packet again. If there is no response until the time is 0, the information is removed. If there is response, the time is updated 60 seconds again.

In IPv6 case, it shows ND cache list. User can check by the ND cache messages. The messages are as follows.

Status	Description
INCOMPLETE	This means the device is standing by after it sends the request message, Neighbor Solicitation, to MAC and link local address of an opponent in the initial communication.
REACHABLE	This means the device has information about the opponent after it sends Neighbor Solicitation, and receives Neighbor Advertisement.
STALE	The device will change into STALE state after some time later reaching REACHABLE.
DELAY	The device will change into DELAY state if there is no response to Neighbor Solicitation. In this case, CIE-H14G will not be able to communicate with the device.
PROBE	CIE-H14G will resend the request message to the device in DELAY state. CIE-H14G will keep sending Neighbor Solicitation until it replies.

Table 7-4 5 States displayed on ND Cache table

- TCP/IP Connection

In this section, the same information with TCP STATE is displayed with IP address and port number. A difference is that users can terminate TCP connection. When right click on a session, a small pop-up window is created.

- Password

This text box is activated when CIE-H14G has a password. If users want to close TCP connection with right click of mouse on the session, this password has to be correctly filled.

- Refresh Every 1 Second.

If this option is checked, ezManager send query in every second.

- IP address Conflict Detection

By clicking this button, you can find devices which have the same IP address to yours on the network.



Figure 7-13 Without IP address conflict detection

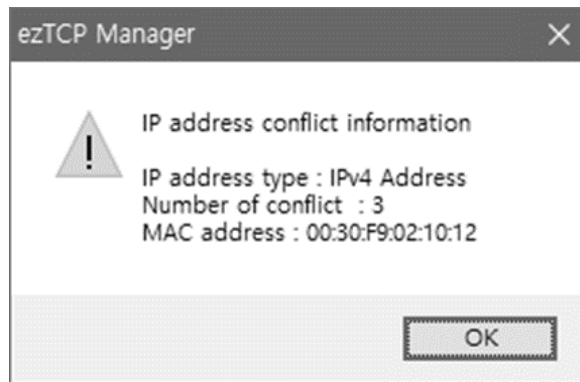


Figure 7-14 IP address conflict detection

7.4 Factory Reset

Performing factory reset restores all setting values except for a password to the factory default. How to perform the factory reset is as follows.

- Entering to Serial configuration mode
Press the ISP button shortly (less than 1 second) and release it. STS, RXD and TXD LED blink simultaneously in this state.
- Performing factory reset
When keep pressing the ISP button over 10 seconds, STS, RXD and TXD LED are turned on one by one. Release the button after all the three LEDs light up.
- Power on the device to enter normal mode.
After performing factory reset, the product will operate in serial configuration mode again. Therefore, please power off and then power on the device to enter normal mode.

8 Additional Functions

8.1 General

8.1.1 ezTCP Firewall

On the [Option] tab of ezManager, users can set restriction of access function with filtering MAC and IP address.

- Allowed MAC Address

If this option has a value of MAC address, the device which has the MAC address is only permitted to access.

- Allowed IP Address

This is to define hosts with IP address or range of IP address allowed to access. The range is defined by multiplying [IP address] and [Network Mask] in bit unit.

- Examples of IPv4

IPv4 Address	Network Mask	Allowed Address Range
10.1.0.1	255.0.0.0	10.1.0.1 ~ 10.255.255.254
10.1.0.1	255.255.255.0	10.1.0.1 ~ 10.1.0.254
192.168.1.4	255.255.255.255	192.168.1.4

Table 8-1 examples of IPv4

- Apply to ezManager

[Apply to ezManager] is for applying above two restrictions to ezManager functions like [Search], [Read], [Write], etc.

- Examples of IPv6

IPv6 Address	Prefix	Allowed Address Range
2001:DB8::100	64	2001:DB8::1 ~ 2001:DB8::FFFF:FFFF:FFFF:FFFF
2001:DB8::100	128	2001:DB8::100

Table 8-2 examples of IPv6

8.1.2 Setting Password

A password can be used for protecting CIE-H14G from TELNET login or changing environmental parameters by hosts which are not qualified. The maximum length is 8 bytes of Alphabet or number.

☞ *When you want to revoke all of these restrictions, operate CIE-H14G as ISP mode. In the mode, all restrictions are removable and communication with ezManager is revoked.*

8.1.3 Notify IPv4 Change

CIE-H14G can be TCP server even though it assigned IP address automatically. Using [Notify IP Change] function, CIE-H14G sends its IP address with the host name to the designed server. There are 3 types- DDNS, TCP and UDP- for this service.

- Dynamic Domain Name Service (DDNS)

CIE-H14G supports DDNS service offered by DynDNS to manage its changed IP address as a host name. Because of this, you have to make an account and create host names on the website of DynDNS before use this.

☞ *All about service usage of an account could be changed according to the policy of DynDNS.*

Figure 8-1 setting DDNS

- ① Select the [DDNS(dyndns.org)]
- ② 40,320 is a fixed value
- ③ Input the ID of DDNS account
- ④ Input the password of the account
- ⑤ Input a host name which you create on your account

- TCP/UDP

In case you have an own server and want to manage the information about changed IP addresses, you allowed used TCP/UDP for using this option. The [Data Type] can be selected as ASCII or hexadecimal, and the [Interval] is available on configuration.

☞ *Please refer to “Notify IP Change” document for details.*

8.2 I/O Control

8.2.1 Notify Input Port Change

This is a feature that immediately sends a response packet to the master without a query from the master when the input port status of CIE-H14G changes. This feature can be used when CIE-H14G is operating as a slave.

8.2.2 Valid Time

CIE-H14G recognizes a signal on its input port as a valid signal only if it is maintained for the duration of the Valid Time. If the signal on the input port is not maintained for the time set in this item, it will be ignored. The unit is 1ms.

8.2.3 Delay

CIE-H14G reflects the output value to the output port after the time set in [Delay]. If it is set to 0, CIE-H14G reflects the output value to the output port immediately. [Delay] applies to all cases including Modbus/TCP, Macro and HTTP. The unit is 1ms.

8.2.4 Master function for configuring Internet switches

CIE-H14G provides master functionality for configuring an Internet switch. An Internet switch is a configuration method that connects devices to devices via Modbus/TCP, transmitting digital inputs to digital outputs. In this configuration, one side must be set as a master and the other as a slave. The master sends queries to the slave, and the slave responds to the master's queries. Digital signals are transmitted in both directions.

Master	
Poll Interval	<input type="text" value="1000"/> ms
Control Method of Slave's Output Ports	FC 16 (Multiple) ▾
Control Method of Master's Output Ports	AND ▾

Figure 8-2 Master

- Poll Interval

This is the setting to configure the query interval for the master. The unit is milliseconds, and the default value is 1 second (1000).

- Control Method of Slave's Output Ports

This item sets the Modbus/TCP function code to use in the master's control query. FC 16 controls the word units, and FC 05 controls the bit units. The default value is FC 16.

- Control Method of Master's Output Ports

This is the setting to control the master's output port when there are two or more slaves. With the AND setting, the master controls the output port by logical AND operation with the status of the corresponding input port of all slaves, while with the OR setting, the master controls the output port by logical OR operation with the status of the corresponding input port of all slaves.

☞ *Refer to the [Internet Switch], [Combinations of digital I/O Controllers] documents on our web site for details.*

8.3 Serial-Ethernet Conversion

8.3.1 Sending MAC Address

[Sending MAC Address] is a function that CIE-H14G sends its MAC address to the remote host right after the connection is established. By using this function, a server can identify multiple devices with the information.

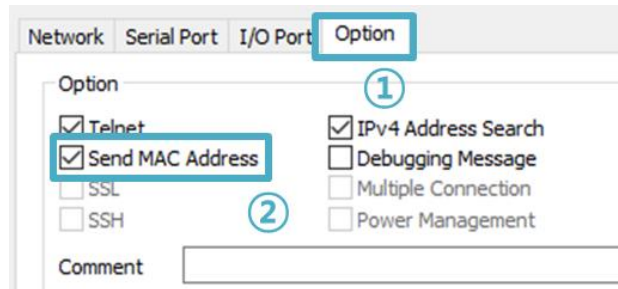


Figure 8-3 setting of Sending MAC Address function

- ① Move to the [Option] tab.
- ② Check the [Send MAC Address] option.

☞ Please refer to the “MAC ID Function” document for details.

8.3.2 TELNET COM port Control Option (RFC 2217)

This option is for sending and receiving serial port states between two devices. Users can send and receive control signals like RTS/CTS when the states are changed.

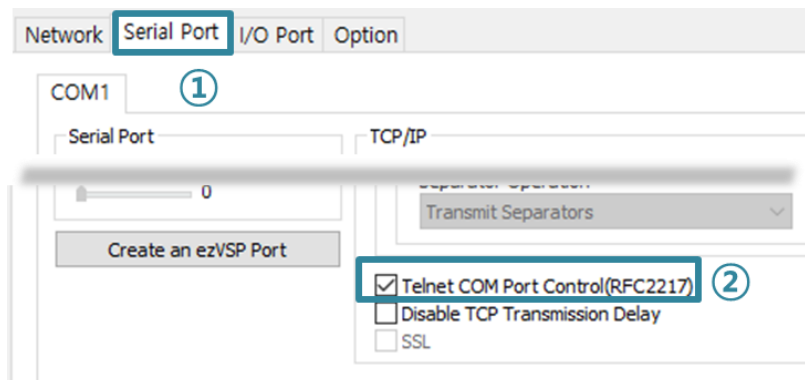


Figure 8-4 setting of TELNET COM Port Control option

- ① Move to the [Serial Port] tab.
- ② Check the [Telnet COM Port Control (RFC2217)] option.

☞ If you want details about the [TELNET COM port Control Option], please refer to “Telnet COM Port Control Option” document.

8.3.3 Disable TCP Transmission Delay

The TCP Transmission delay function is a feature that delays TCP segment transmission for about 40ms for congestion control. This option determines whether the TCP transmission delay function is enabled or not. Enabling this option allows TCP segments to be transmitted quickly without delay.

8.3.4 Data Frame Interval

Serial received data is transmitted over the network in frame units. When serial data is received continuously, frames are separated according to the maximum packet size that can be transmitted over the network. However, when serial data is received discontinuously, frames are separated by the interval set in this option. The setting unit is 10ms and the default value is 0. If the value of this option is 0, the time it takes to transmit 2 bytes at the set communication speed (Baudrate) is applied as the data frame interval.

- ☞ *If you use this option in TCP, it may be affected by the transmission delay function. Therefore, if you want to use this option, please make sure to also enable the "[Disable TCP Transmission Delay]" option.*

8.3.5 Separator

This is the item to set the delimiter to distinguish the frame of serial received data. CIE-H14G generates TCP segments (or UDP packets) based on the separated frame unit and sends them to TCP (or UDP). The size of one frame cannot exceed 512 bytes. The setting can be configured from 1 byte to 4 bytes in hexadecimal format.

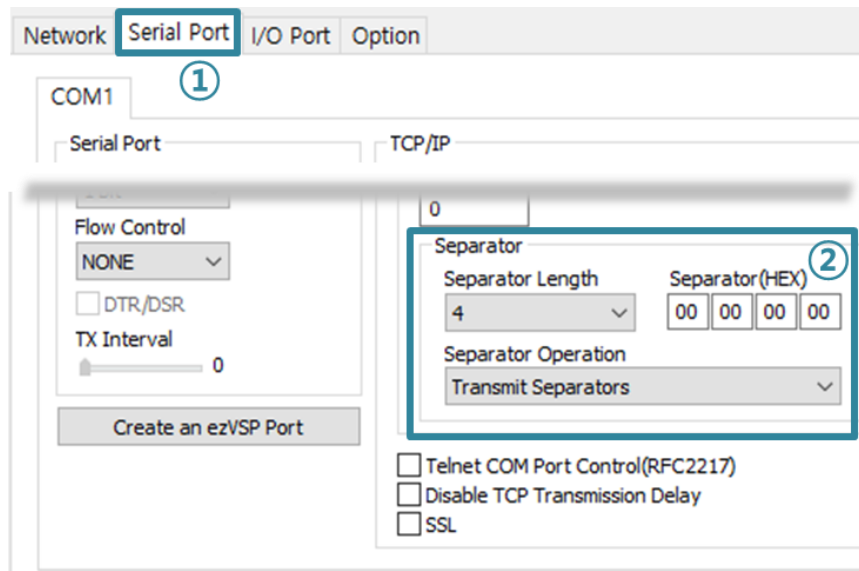


Figure 8-5 separator

- ① Click the [Serial Port] tab.
- ② Set separators and click [Write] button.

Separator	Options
Length	select the length between 0 ~ 4 bytes
Operation	Transmit Separators without additional bytes
	Transmit Separators + 1 byte
	Transmit Separators + 2 bytes

Table 8-3 separator

9 Self-Test in Trouble

When users are in trouble with using CIE-H14G, make sure of the following steps first.

9.1 Searching problem with ezManager

- Confirming types of configuration utility
CIE-H14G can be configured by ezManager.
- Cancelling the Firewall operation
In case of being blocked by firewalls of a personal computer or network block, you must cancel all the firewalls before searching CIE-H14G.

☞ *Most of vaccine programs have firewall functions so it can cause some trouble to search CIE-H14G. Close or pause these programs before searching the product.*

- Stable supply of the power
Check if the power is supplied continually. The red LED on CIE-H14G shows that the power is switched on.
- Connection with the network
Make sure that the network connection is fine including Ethernet cable. In this step, we recommend that users connect CIE-H14G with PC directly or in the same network hub.
- Checking options of restriction
In case that restriction of access is activated, the communication with ezManager will be unavailable. When users are in this situation, make CIE-H14G operate in ISP mode.

9.2 Connection Problem over Modbus/TCP

- Checking parameters related with TCP/IP

When CIE-H14G has a private network IP address, personal computer's IP address has to be on the same sub network. Check if the IP address and local port number are correct. In case of a fixed IP address, the subnet mask, gateway IP address and DNS IP address should be configured.

Slave or Master
Local IP Address, the connection mode (Active / Passive), Peer Address and Peer Port, Subnet Mask, Gateway IP Address, DNS IP Address, DDNS option and etc.

Table 9-1 major parameters related with Modbus/TCP

- PING Test

Confirm the connection over the network by PING test. If CIE-H14G does not send any reply from the request, check the network environment.

- Firewall

In case the networks which need strong security, the access may be denied by their firewall. Under this circumstance, users should ask the person in charge of their network to release ports which will be used. (Ex: TCP 502, UDP 50005)

- Operation Mode

A TCP connection is not possible when CIE-H14G is operating in the ISP or Serial Configuration mode.

- Connection Mode

To make a TCP connection, both a server (passive mode) and a client (active mode) should exist. If there are only servers or clients, the TCP connection cannot be established.

- ezTCP Firewall

When users set the ezTCP firewall with MAC and IP address, any hosts cannot be reachable to it except for the hosts who have the allowed MAC and IP address. Inactivate the option or check the setting is correct.

- Checking the TCP status

TCP is a protocol connected one to one without multiple connections function. Because of this, if a device is on a TCP connection, other requests are denied. If users are in this situation, check the network status by connecting on TELNET or using ezManager.

9.3 Communication Problem over Modbus/TCP

- Checking Modbus/TCP parameters

Check all the related parameters that [Unit ID], [Input Port Base Address], [Output Port Base Address], [Poll Interval] and [Notify Input change].

- Checking which mode is using

In case of MACRO or serialized Modbus/TCP, you can control the outputs of CIE-H14G. Turn the mode off if those modes are using.

☞ *Contact us if you have any questions about above steps or our products.*

10 Technical Support and Warranty

10.1 Technical Support

If you have any question regarding operation of the product, visit Customer Support FAQ corner and the message board on Sollae Systems' web site or send us an email at the following address:

- E-mail: support@eztcp.com
- Website Address for Customer Support: <http://www.eztcp.com/en/support/>

10.2 Warranty

10.2.1 Free Repair Services

For product failures occurring within 2 years after purchase, Sollae Systems provides free repair services or exchange the product. However, if the product failure is due to user's fault, repair service fees will be charged or the product will be replaced at user's expense.

10.2.2 Charged Repair Services

For product failures occurring after the warranty period (2 years) or resulting from user's fault, repair service fees will be charged and the product will be replaced at user's expense.

11 Precaution and Exemption from Liability

11.1 Precaution

- Sollae Systems is not responsible for product failures occurring due to user's alternation of the product.
- Specifications of the product are subject to change without prior notice for performance improvement.
- Sollae Systems does not guarantee successful operation of the product if the product was used under conditions deviating from the product specifications.
- Reverse engineering of firmware and applications provided by Sollae Systems is prohibited.
- Use of firmware and applications provided by Sollae Systems for purposes other than those for which they were designed is prohibited.
- Do not use the product in an extremely cold or hot place or in a place where vibration is severe.
- Do not use the product in an environment in which humidity is high or a lot of oil exists.
- Do not use the product where there is caustic or combustible gas.
- Sollae Systems does not guarantee normal operation of the product under the conditions a lot of noise exists.
- Do not use the product for a purpose that requires exceptional quality and reliability relating to user's injuries or accidents – aerospace, aviation, health care, nuclear power, transportation, and safety purposes.
- Sollae Systems is not responsible for any accident or damage occurring while using the product.

11.2 Exemption from Liability

11.2.1 English version

In no event shall Sollae Systems Co., Ltd. And its distributors be liable for any damages whatsoever (including, without limitation, damages for loss of profit, operating cost for commercial interruption, loss of information, or any other financial loss) from the use or inability to use the CIE-H14G even if Sollae Systems Co., Ltd. Or its distributors have been informed of such damages.

The CIE-H14G is not designed and not authorized for use in military applications, in nuclear applications, in airport applications or for use in applications involving explosives, or in medical applications, or for use in security alarm, or for use in a fire alarm, or in applications involving elevators, or in embedded applications in vehicles such as but not limited to cars, planes, trucks, boats, aircraft, helicopters, etc..

In the same way, the CIE-H14G is not designed, or intended, or authorized to test, develop, or be built into applications where failure could create a dangerous situation that may result in financial losses, damage to property, personal injury, or the death of people or animals. If you use the CIE-H14G voluntarily or involuntarily for such unauthorized applications, you agree to subtract Sollae Systems Co., Ltd. And its distributors from all liability for any claim for compensation.

Sollae Systems Co., Ltd. And its distributors entire liability and your exclusive remedy shall be Sollae Systems Co., Ltd. And its distributors option for the return of the price paid for, or repair, or replacement of the CIE-H14G.

Sollae Systems Co., Ltd. And its distributors disclaim all other warranties, either expressed or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose, with respect to the CIE-H14G including accompanying written material, hardware and firmware.

11.2.2 French version

- Documentation

La documentation du boîtier CIE-H14G est conçue avec la plus grande attention. Tous les efforts ont été mis en œuvre pour éviter les anomalies. Toutefois, nous ne pouvons garantir que cette documentation soit à 100% exempt de toute erreur. Les informations présentes dans cette documentation sont données à titre indicatif. Les caractéristiques techniques peuvent changer à tout moment sans aucun préavis dans le but d'améliorer la qualité et les possibilités des produits.

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Tous les boîtiers CIE-H14G sont testés avant expédition. Toute utilisation en dehors des spécifications et limites indiquées dans cette documentation ainsi que les court-circuit, les chocs, les utilisations non autorisées, pourront affecter la fiabilité, créer des dysfonctionnements et/ou la destruction du boîtier CIE-H14G sans que la responsabilité de Sollae Systems Co., Ltd. et de ses distributeurs ne puissent être mise en cause, ni que le boîtier CIE-H14G puisse être échangé au titre de la garantie.

- Rappel sur l'évacuation des équipements électroniques usagés

Le symbole de la poubelle barré présent sur le boîtier CIE-H14G indique que vous ne pouvez pas vous débarrasser de ce dernier de la même façon que vos déchets courants. Au contraire, vous êtes responsable de l'évacuation du boîtier CIE-H14G lorsqu'il arrive en fin de vie (ou qu'il est hors d'usage) et à cet effet, vous êtes tenu de le remettre à un point de collecte agréé pour le recyclage des équipements électriques et électroniques usagés. Le tri, l'évacuation et le recyclage séparés de vos équipements usagés permettent de préserver les ressources naturelles et de s'assurer que ces équipements sont recyclés dans le respect de la santé humaine et de l'environnement. Pour plus d'informations sur les lieux de collecte des équipements électroniques usagés, contacter votre mairie ou votre service local de traitement des déchets.

12 History

Date	Version	Comments	Author
2023.03.20.	1.0	○ Created	Roy LEE
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