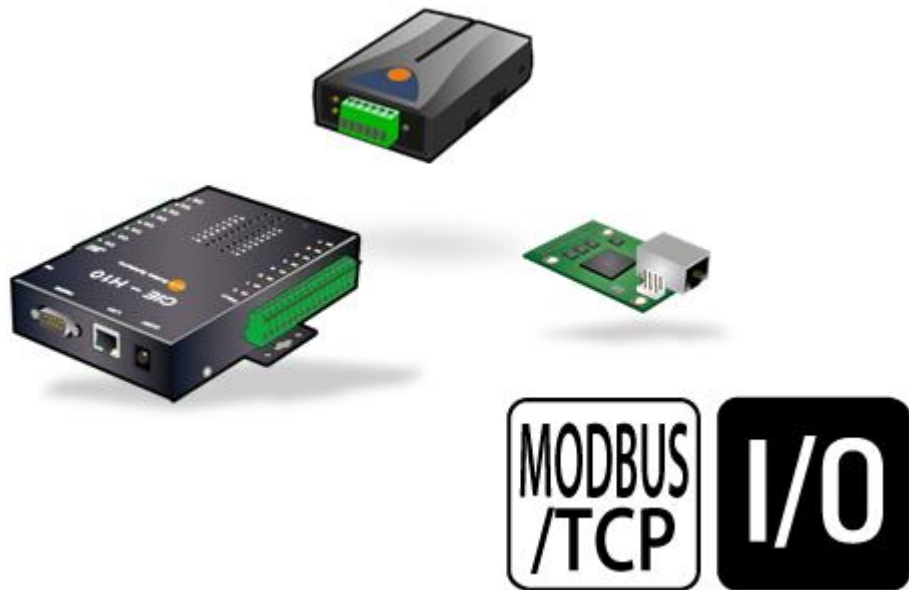


ezTCP Technical Documents

Combinations of digital I/O Controllers

Version 1.1



☞ **Caution:** Specifications of this document may be changed without prior notice for improvement.

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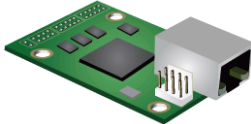


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1 Overview

As one of the control methods, all of our digital I/O controllers support Modbus/TCP. According to the standard of this protocol, a system is composed of master and slave. Our controllers support both master and slave modes, so you can make various systems such as 1:1 or 1:N by combining some of the products. The I/O controllers are listed on the table below.

Table 1-1 I/O controllers

Product	Type	Number of Port			Multiple-connections (Max.)
		Digital		Analog	
		Input	Output	Input	
CIE-H10 	External	8	8	0	Support (8)
CIE-M10 	Modular	8	8	1	Support (8)
CIE-H12 	External	2	1	0	Support (8)
EZI-10 	External	1	1	0	NOT Support

Some of useful applications by combining above products like 1:N communication are covered in this documents.

☞ ***Because of CIE-H10 and CIE-M10 has the same numbers of digital ports, only the CIE-H10 is stated in this document.***

2 Applications

2.1 Combination of CIE-H10 and EZI-10

In this combination, a CIE-H10 and a number of EZI-10s are needed. Possible cases are as follows:

Table 2-1 possible cases

Product	CIE-H10(Slave)	EZI-10(Master)	Note
Number of Products	1	1 ~ 8	Maximum 1:8

2.1.1 System Diagram

- Control of Masters' output ports

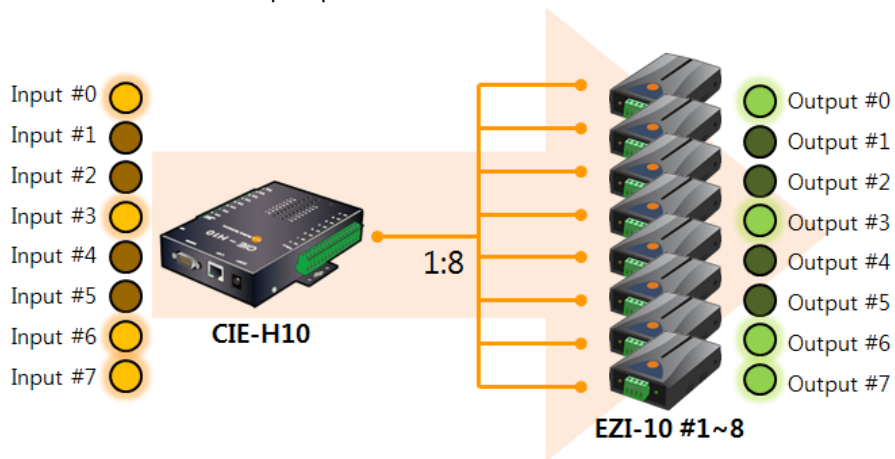


Figure 2-1 control of masters' output ports

- Control of Slave's output ports

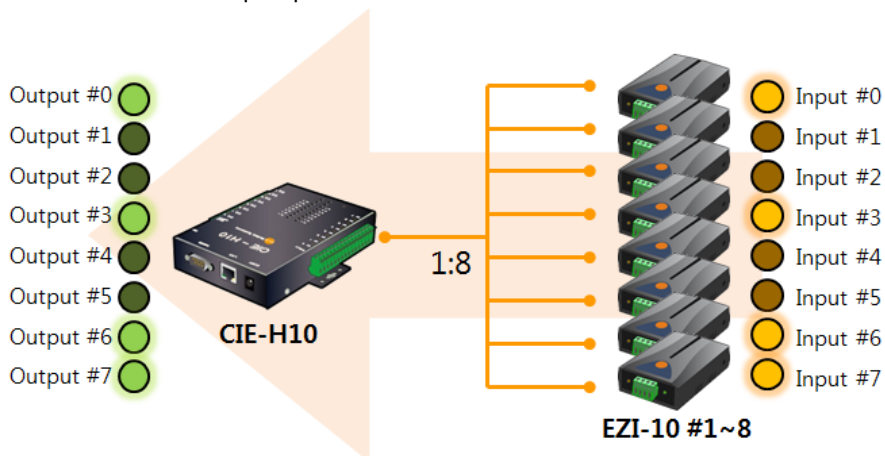


Figure 2-2 control of slave's output ports

2.1.2 Setting Example

Table 2-2 setting examples (1)

Variable	CIE-H10	EZI-10 #1	EZI-10 #2	EZI-10 #3
IP Address	10.1.0.1	10.2.0.1	10.2.0.2	10.2.0.3
Master / Slave	Slave	Master	Master	Master
Unit ID	1	1	1	1
Input Port Base Address	0	0	1	2
Output Port Base Address	8	8	9	10
Control Method of	N/A	FC 05	FC 05	FC 05
Connection mode	Passive	Active	Active	Active
Peer Address	N/A	10.1.0.1	10.1.0.1	10.1.0.1
Multiple Connection	8	N/A	N/A	N/A

Table 2-3 setting examples (2)

Variable	EZI-10 #4	EZI-10 #5	EZI-10 #6	EZI-10 #7
IP Address	10.2.0.4	10.2.0.5	10.2.0.6	10.2.0.7
Master / Slave	Master	Master	Master	Master
Unit ID	1	1	1	1
Input Port Base Address	3	4	5	6
Output Port Base Address	11	12	13	14
Control Method of	FC 05	FC 05	FC 05	FC 05
Connection mode	Active	Active	Active	Active
Peer Address	10.1.0.1	10.1.0.1	10.1.0.1	10.1.0.1
Multiple Connection	N/A	N/A	N/A	N/A

Table 2-4 setting examples (3)

Variable	EZI-10 #8
IP Address	10.2.0.8
Master / Slave	Master
Unit ID	1
Input Port Base Address	7
Output Port Base Address	15
Control Method of	FC 05
Connection mode	Active
Peer Address	10.1.0.1
Multiple Connection	N/A

☞ **N/A: Not Available**

2.2 Combination of CIE-H10 and CIE-H12

In this combination, a CIE-H10 and a number of CIE-H12s are needed. Possible cases are as follows:

Table 2-5 possible cases

Product	CIE-H10(Slave)	CIE-H12(Master)	Note
Number of Products	1	1 ~ 4	Maximum 1:4

2.2.1 System Diagram

- Control of Masters' output ports

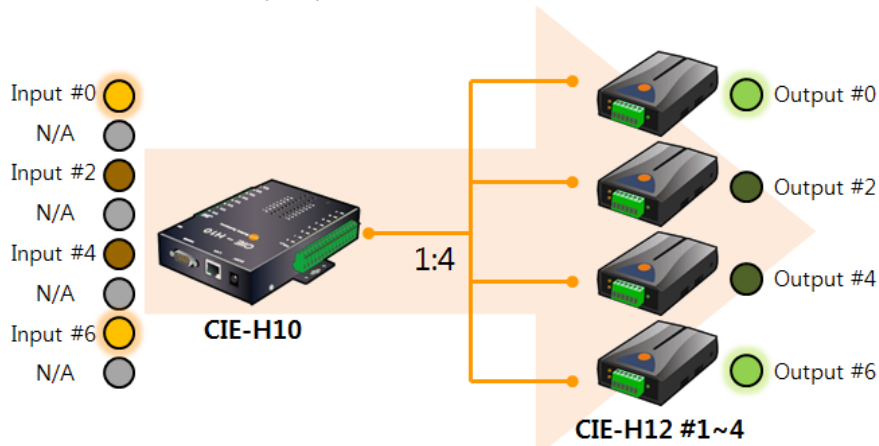


Figure 2-3 control of masters' output ports

- Control of Slave's output ports

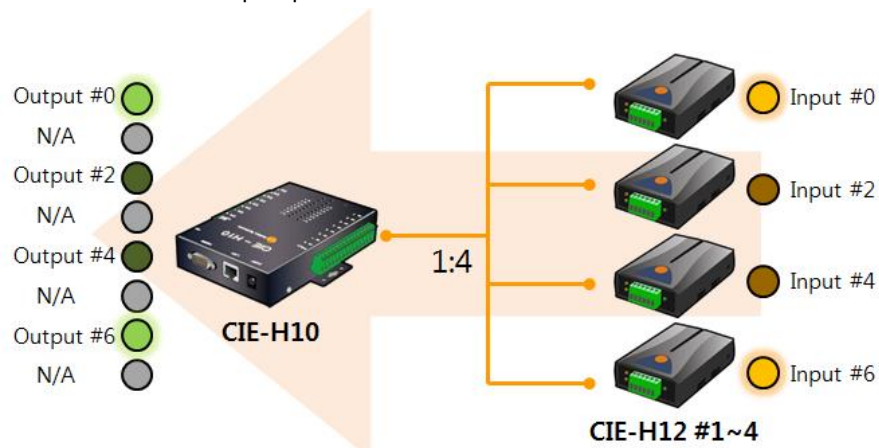


Figure 2-4 control of slave's output ports

☞ *In the above diagrams, not available ports (N/A) could be controlled by other methods (HTTP and Macro).*

2.2.2 setting examples

Table 2-6 setting examples (1)

Variable	CIE-H10	CIE-H12 #1	CIE-H12 #2	CIE-H12 #3
IP Address	10.1.0.1	10.2.0.1	10.2.0.2	10.2.0.3
Master / Slave	Slave	Master	Master	Master
Unit ID	1	1	1	1
Input Port Base Address	0	0	2	4
Output Port Base Address	8	8	10	12
Control Method of	N/A	FC 05	FC 05	FC 05
Connection mode	Passive	Active	Active	Active
Peer Address	N/A	10.1.0.1	10.1.0.1	10.1.0.1
Multiple Connection	8	N/A	N/A	N/A

Table 2-7 setting examples (2)

Variable	CIE-H12 #4
IP Address	10.2.0.4
Master / Slave	Master
Unit ID	1
Input Port Base Address	6
Output Port Base Address	14
Control Method of	FC 05
Connection mode	Active
Peer Address	10.1.0.1
Multiple Connection	N/A

2.3 Combinations of CIE-H10

With only a number of CIE-H10s, you can make 1:N system. Possible cases are as follows:

Table 2-8 possible cases

Product	CIE-H10(Master)	CIE-H10(Slave)	Note
Number of Products	1	1 ~ 8	Maximum 1:8

2.3.1 System Diagram

- Control of Slaves' output ports

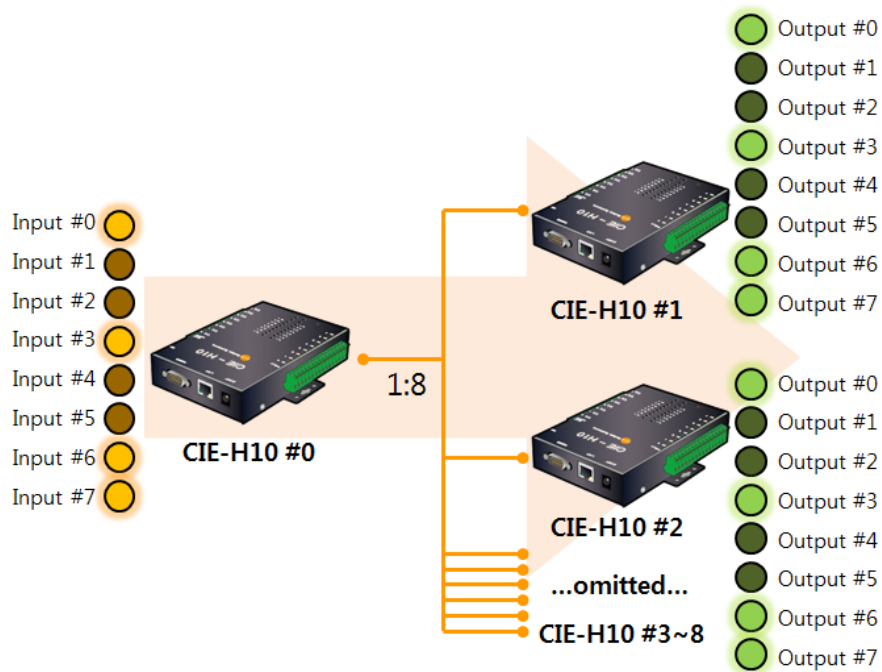


Figure 2-5 control of slaves' output ports

In the above system, the output ports of each slave are controlled exactly the same to another slave by the master's input states.

- Control of Master's output ports: OR

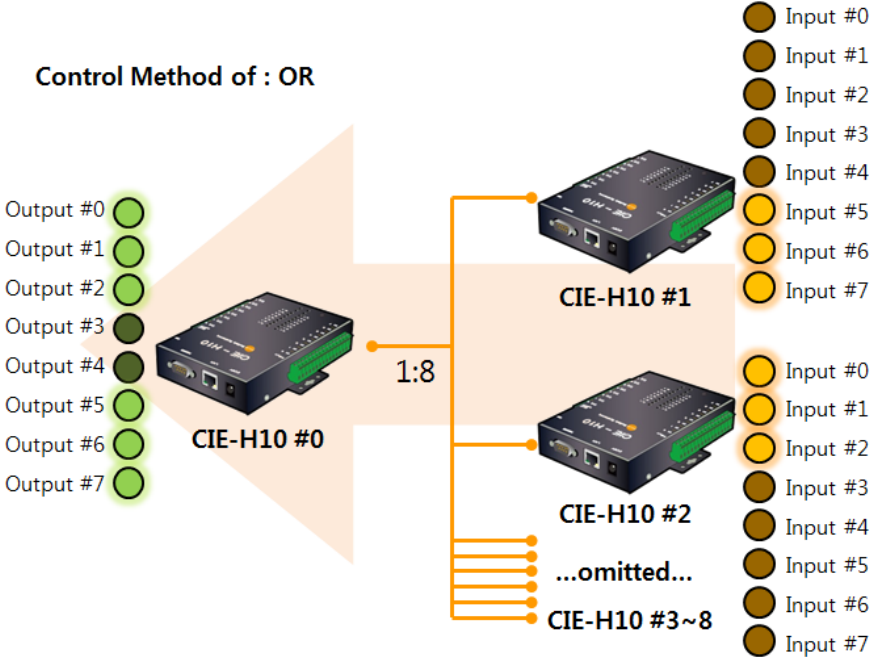


Figure 2-6 control of master's output ports 1

- Control of Master's output ports:: AND

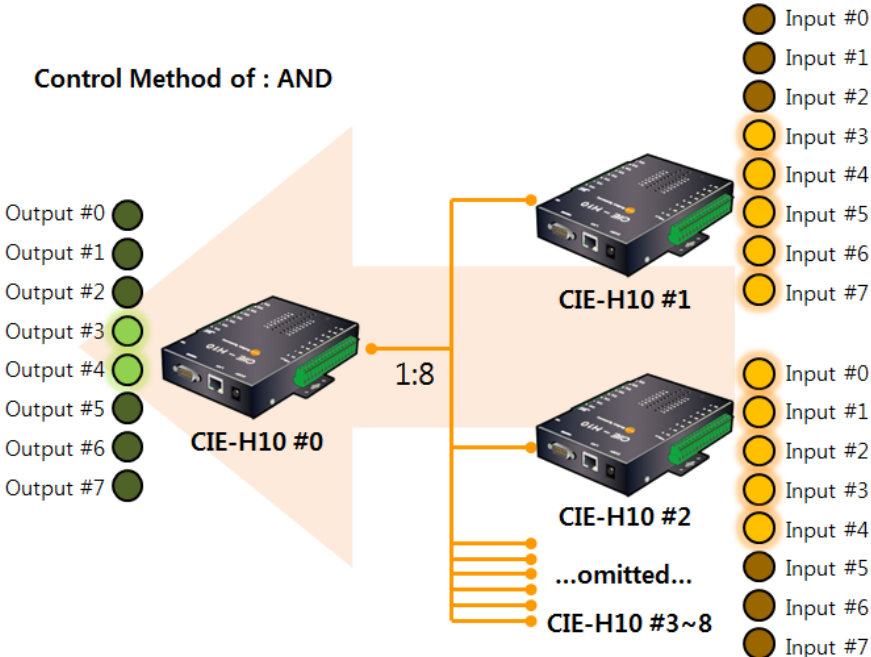


Figure 2-7 control of master's output ports 2

You can choose one of two different methods for controlling master's output ports.

2.3.2 setting examples

Table 2-9 setting examples (1)

Variable	CIE-H10 #0	CIE-H10 #1	CIE-H10 #2	CIE-H10 #3
IP Address	10.1.0.1	10.2.0.1	10.2.0.2	10.2.0.3
Master / Slave	Master	Slave	Slave	Slave
Unit ID	1	1	1	1
Input Port Base Address	0	0	0	0
Output Port Base Address	8	8	8	8
Control Method of	OR / AND	N/A	N/A	N/A
Connection mode	Passive	Active	Active	Active
Peer Address	N/A	10.1.0.1	10.1.0.1	10.1.0.1
Multiple Connection	8	N/A	N/A	N/A

Table 2-10 setting examples (2)

Variable	CIE-H10 #4	CIE-H10 #5	CIE-H10 #6	CIE-H10 #7
IP Address	10.2.0.4	10.2.0.5	10.2.0.6	10.2.0.7
Master / Slave	Slave	Slave	Slave	Slave
Unit ID	1	1	1	1
Input Port Base Address	0	0	0	0
Output Port Base Address	8	8	8	8
Control Method of	N/A	N/A	N/A	N/A
Connection mode	Active	Active	Active	Active
Peer Address	10.1.0.1	10.1.0.1	10.1.0.1	10.1.0.1
Multiple Connection	N/A	N/A	N/A	N/A

Table 2-11 setting examples (3)

Variable	CIE-H10 #8
IP Address	10.2.0.8
Master / Slave	Slave
Unit ID	1
Input Port Base Address	0
Output Port Base Address	8
Control Method of	N/A
Connection mode	Active
Peer Address	10.1.0.1
Multiple Connection	N/A

2.4 Combination of CIE-H12 and EZI-10

This combination needs one CIE-H12 and two EZI-10s.

Table 2-12 possible cases

Product	CIE-H12(Master)	EZI-10(Slave)	Note
Number of products	1	1 ~ 2	Maximum 1:2

2.4.1 System Diagram

- Control of Slaves' output ports

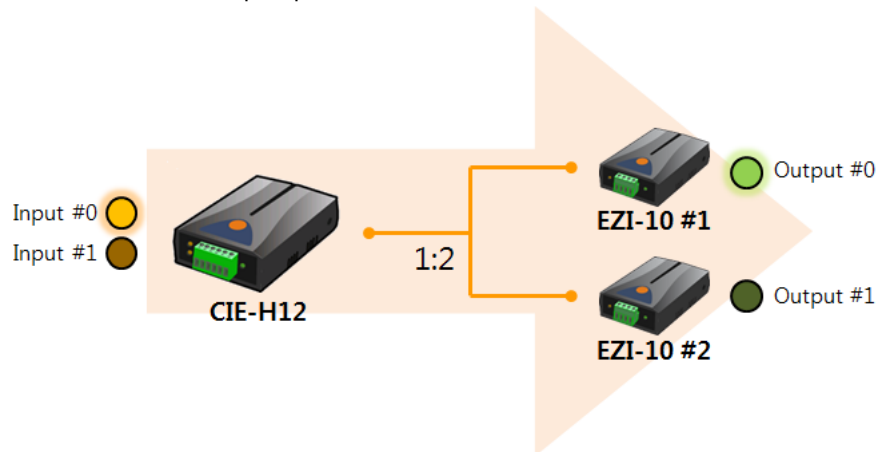


Figure 2-8 control of slaves' output ports

- Control of Master's output port

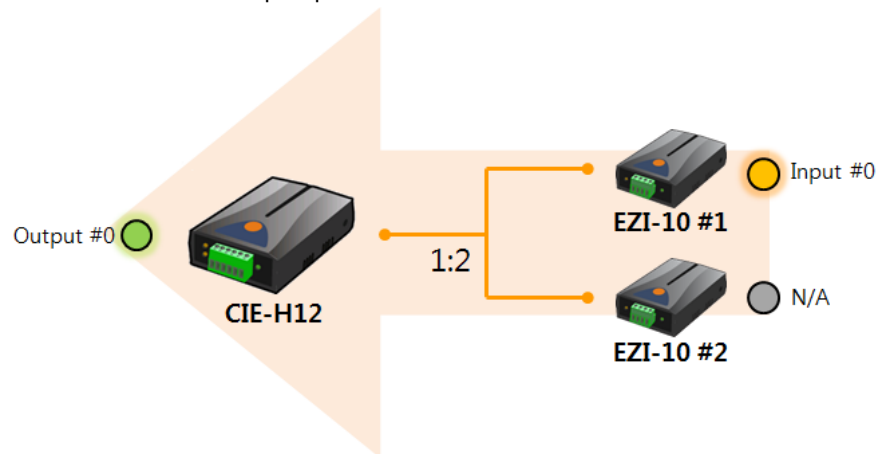


Figure 2-9 control of master's output port

☞ *In the above system, the output port of EZI-10 #2 is not available.*

2.4.2 setting examples

Table 2-13 setting examples

Variable	CIE-H12	EZI-10 #1	EZI-10 #2
IP Address	10.1.0.1	10.2.0.1	10.2.0.2
Master / Slave	Master	Slave	Slave
Unit ID	1	1	1
Input Port Base Address	0	0	1
Output Port Base Address	8	8	9
Control Method of	OR / AND	N/A	N/A
Connection mode	Passive	Active	Active
Peer Address	N/A	10.1.0.1	10.1.0.1
Multiple Connection	8	N/A	N/A

2.5 Combinations of CIE-H12

With using several CIE-H12, you can compose 1:N I/O structure. Available structure is shown in the table 2-14:

Table 2-14 possible cases

Product	CIE-H12(Slave)	CIE-H12(Master)	Note
Number of Products	1	1 ~ 8	Maximum 1:8

2.5.1 System Diagram

- Control of Master's output ports (#0 input port – dry contact)

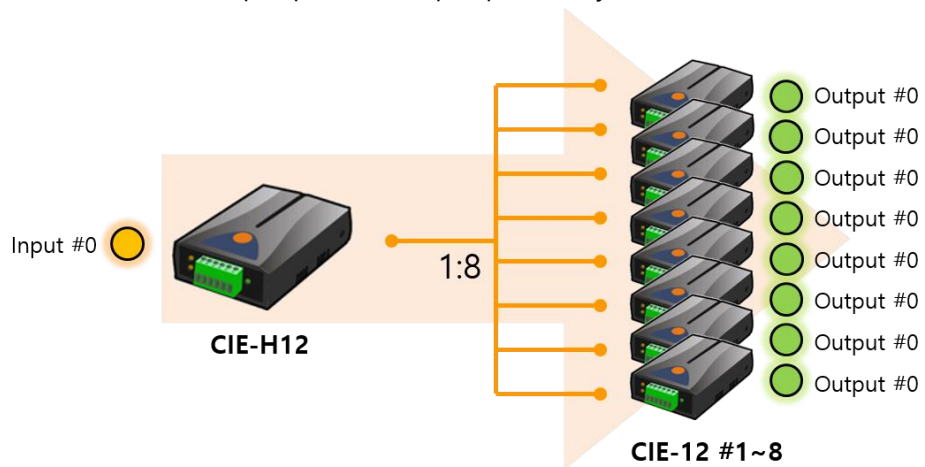


Figure 2-10 Control of Master's output ports (dry contact input)

In the above system, the output ports of each master control exactly the same to another master by the slave's dry contact input states.

- Control of Master's output ports (#1 input port – wet contact)

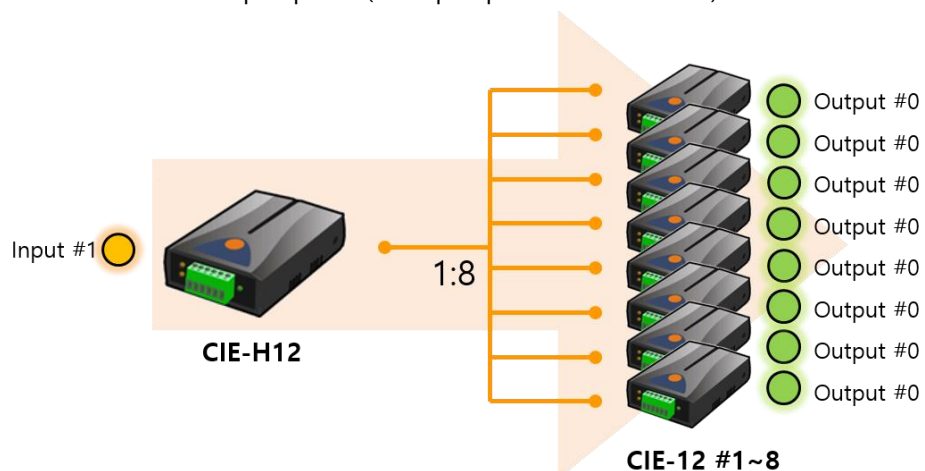


Figure 2-11 Control of Master's output ports (wet contact input)

In the above system, the output ports of each master control exactly the same to another master by the slave's wet contact input states.

2.5.2 setting examples

- dry contact input

Table 2-15 setting examples (1)

Variable	CIE-H12	CIE-H12 #1	CIE-H12 #2	CIE-H12 #3
IP Address	10.1.0.1	10.2.0.1	10.2.0.2	10.2.0.3
Master / Slave	Slave	Master	Master	Master
Unit ID	1	1	1	1
Input Port Base Address	0	0	0	0
Output Port Base Address	8	8	8	8
Control Method of	N/A	FC 05	FC 05	FC 05
Connection mode	Passive	Active	Active	Active
Peer Address	N/A	10.1.0.1	10.1.0.1	10.1.0.1
Multiple Connection	8	N/A	N/A	N/A

Table 2-16 setting examples (2)

Variable	CIE-H12 #4	CIE-H12 #5	CIE-H12 #6	CIE-H12 #7
IP Address	10.2.0.4	10.2.0.5	10.2.0.6	10.2.0.7
Master / Slave	Master	Master	Master	Master
Unit ID	1	1	1	1
Input Port Base Address	0	0	0	0
Output Port Base Address	8	8	8	8
Control Method of	FC 05	FC 05	FC 05	FC 05
Connection mode	Active	Active	Active	Active
Peer Address	10.1.0.1	10.1.0.1	10.1.0.1	10.1.0.1
Multiple Connection	N/A	N/A	N/A	N/A

Table 2-17 setting examples (3)

Variable	CIE-H12 #8
IP Address	10.2.0.8
Master / Slave	Master
Unit ID	1
Input Port Base Address	0
Output Port Base Address	8
Control Method of	FC 05
Connection mode	Active
Peer Address	10.1.0.1
Multiple Connection	N/A

- wet contact input

Table 2-18 setting examples (1)

Variable	CIE-H12	CIE-H12 #1	CIE-H12 #2	CIE-H12 #3
IP Address	10.1.0.1	10.2.0.1	10.2.0.2	10.2.0.3
Master / Slave	Slave	Master	Master	Master
Unit ID	1	1	1	1
Input Port Base Address	0	1	1	1
Output Port Base Address	8	9	9	9
Control Method of	N/A	FC 05	FC 05	FC 05
Connection mode	Passive	Active	Active	Active
Peer Address	N/A	10.1.0.1	10.1.0.1	10.1.0.1
Multiple Connection	8	N/A	N/A	N/A

Table 2-19 setting examples (2)

Variable	CIE-H12 #4	CIE-H12 #5	CIE-H12 #6	CIE-H12 #7
IP Address	10.2.0.4	10.2.0.5	10.2.0.6	10.2.0.7
Master / Slave	Master	Master	Master	Master
Unit ID	1	1	1	1
Input Port Base Address	1	1	1	1
Output Port Base Address	9	9	9	9
Control Method of	FC 05	FC 05	FC 05	FC 05
Connection mode	Active	Active	Active	Active
Peer Address	10.1.0.1	10.1.0.1	10.1.0.1	10.1.0.1
Multiple Connection	N/A	N/A	N/A	N/A

Table 2-20 setting examples (3)

Variable	CIE-H12 #8
IP Address	10.2.0.8
Master / Slave	Master
Unit ID	1
Input Port Base Address	1
Output Port Base Address	9
Control Method of	FC 05
Connection mode	Active
Peer Address	10.1.0.1
Multiple Connection	N/A

3 Revision History

Date	Version	Description	Author
2011.08.23	1.0	○ initial release	Roy Lee
2017.10.19	1.1	○ Add Chapter 2.5 'Combinations of CIE-H12'	Sara Lee