

ezTCP Technical Documents

EZI-10's I/O Ports

Version 1.1



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

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1 Overall

EZI-10 is a device that monitors and controls digital input and output port with TCP/IP. Each Port is monitored and controlled by Modbus/TCP or HTTP. You can make them operate as an Internet Switch by using two EZI-10s.

Input ports and output ports are not operated same way. There are a lot of questions that if the input and output ports are dependently operated each other. This technical document is for description of form and performance of the input/output ports and notification of the easy way to practical use with EZI-10 as shows an example.



2 Digital I/O Ports

2.1 Independence of I/O ports

EZI-10 has input and output port and the names of them are listed on the below table

Division	Name	Description
Input port	DI 0	Digital Input #0
Output port	DO 0	Digital Output #0

Table 2-1 Names of I/O ports of EZI-10

User might regard the input and output port to be mutually operated. For example, the DI 0 forwards its signal to DO 0. However, the each port is operated independently. For help to understand this, we'll look into the Input and output ports in the next chapter.

2.2 Input Ports

The input port of EZI-10 is isolated with photo coupler interface. Photo coupler is an element which transfers electric input signal to its output port using the light. The input port and output port are completely isolated. This is used for the case like forwarding signal between two circuits with different voltage level. This means EZI-10's input port is received electric signal and judges the signal to 0 or 1. Thus, it is impossible to set the port to high with switch which didn't have any voltage difference. Form of the input port is shown in the below figure.

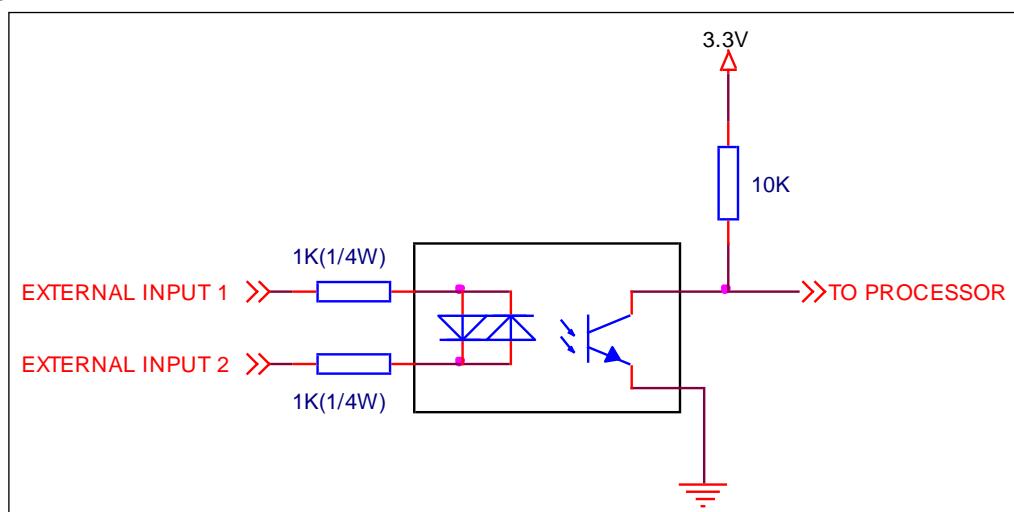


Fig 2-1 Form of an input port of EZI-10

[EXTERNAL INPUT 1] and [EXTERNAL INPUT 2] are parts of interfacing with user's device.



We already know input ports need voltage difference. If so, can we input a signal with 100 volt to the ports? What is the basis for deciding between 0 and 1? Maximum value of input ports is 24 V and EZI-10 decides the signal as 0 in case of lower voltage than 1.8V and decides as 1 in case of higher voltage than 2.2V. Input ports are terminal blocks with 5mm spaces, so user can use them with screwdriver of (-) shape.

Max Input Voltage		DC 24V	
Input Voltage(H)	Min 2.2V	HIGH	1
Input Voltage(L)	Max 1.8V	LOW	0

Table 2-2 Voltage of input ports

EZI-10 recognizes input port signals only if the signal lasts over the value of [Valid Time]. If the signal is not maintained for the time, the input signal will be ignored. [Valid Time] is applied to all the monitoring methods, Modbus/TCP and HTTP. The unit of [Valid Time] is 1 millisecond. However, since the accuracy is only guaranteed in 10 ms, the designated values will round down in units of 10 ms according to the values set by the users.

Ex) 158 ms -> 150 ms

2.3 Output Port

Output port of EZI-10 consists of relay. This is a switch. This means the output port does not make any signal with voltage difference but connect or disconnect the circuit so as to turn on/off their devices. Therefore a device which needs to be supplied power does not work even though it is connected with output ports of EZI-10 if the power is not supplied. The circuit diagram of output port is followed.

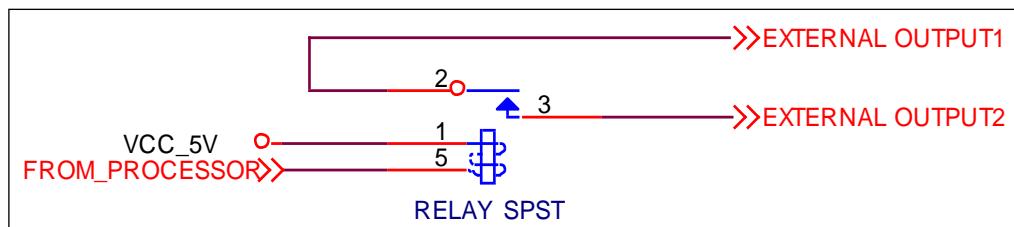


Fig 2-2 Form of an output port of EZI-10

[EXTERNAL OUTPUT 1], [EXTERNAL OUTPUT 2] are parts of interfacing with user's device. This port is connected of terminal blocks same as input ports, so you could use of this with screwdriver a (-) shape.



The output port functions to make short or open circuit like a switch. Thus, devices which need to be supplied power have to be provided voltage input irrespective of EZI-10's power. In values of the output port, 0(OFF) means open circuit, 1(ON) means short circuit. A permissible range of current in each output port's condition is followed.

Condition	DC 28V
Max. Permissible Current	5A

Table 2-3 maximum permissible current

- ☞ ***Controlling output for AC power is not officially supported. A device such as a magnet switch might be additionally needed in that case.***

Users can give delay before the output port operates for the value of [Delay]. Of course, the signal has to be maintained for that time. If not, EZI-10 does not reflect the signal as valid output. However, in case of setting [Delay] to 0, EZI-10 operates its output ports right after the order is detected. The unit of [Delay] is 1 millisecond. However, since the accuracy is only guaranteed in 10 ms, the designated values will round down in units of 10 ms according to the values set by the users.



3 Practical use of EZI-10

- Remote Monitoring a Digital Input

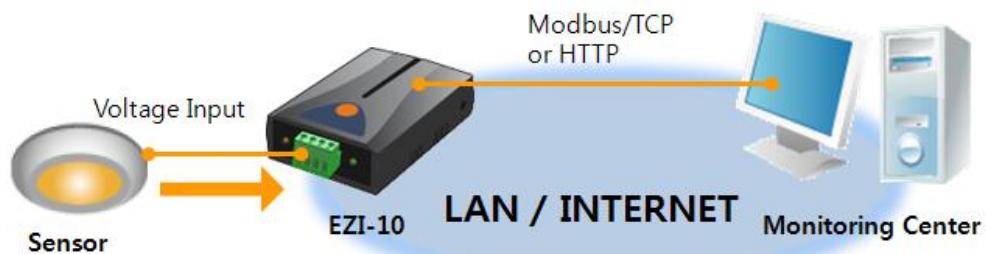


Fig 3-1 remote monitoring

- Remote Controlling a Digital Output

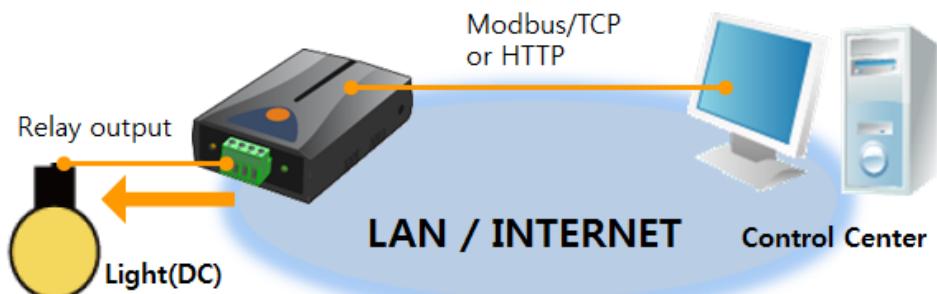


Fig 3-2 remote control

- Automatic Controlling by 1:1 connection

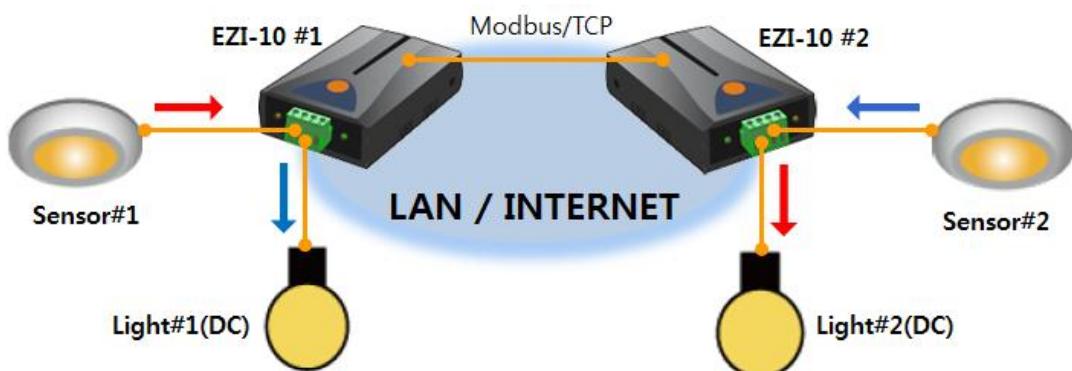


Fig 3-3 automatic control system

4 Revision History

Date	Version	Comments	Author
2010.07.06	1.0	○ Initial Release	Roy LEE
2013.02.07	1.1	○ Remove contents about controlling AC power	Roy LEE

