

# MVE

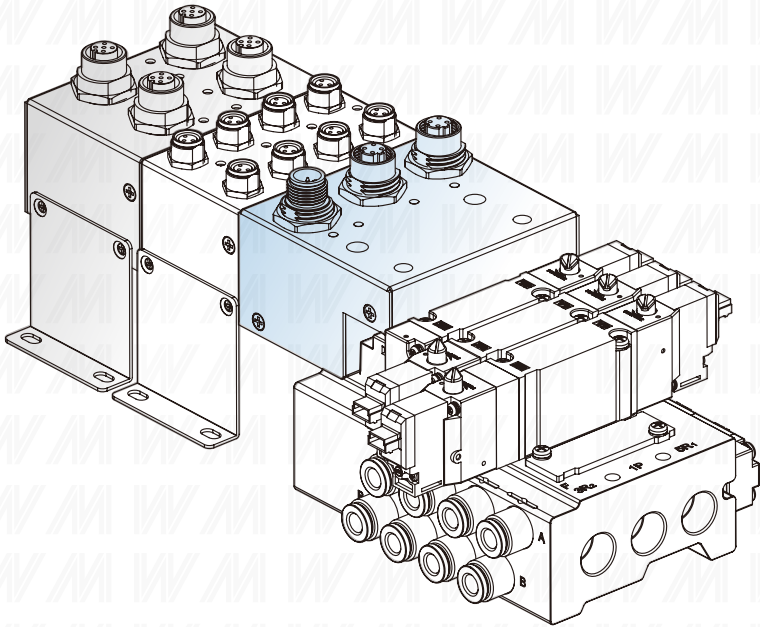
100 / 156

User Manual EI.0.0

DO unit

DI unit

SI unit



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# 1. Information

MVE-100-SEA-\* supports the EtherNet/IP protocol. It can be extended with 23 channels valve-output and eight I/O modules. Users can modify the network configurations by the Web browser (UI) or the Configuration Utility. There are three LED indicators on the SI module, users can observe the communication status with these.

The valve interface contains 23 channels digital output and there are 4-byte length output counter for each channels. The MVE-100-DO\*B contain 8 channels digital output and the MVE-100-DI\*A contain 8 channels digital input. They all can be work in the PNP or the NPN mode. (Please refer to the figure 1.)

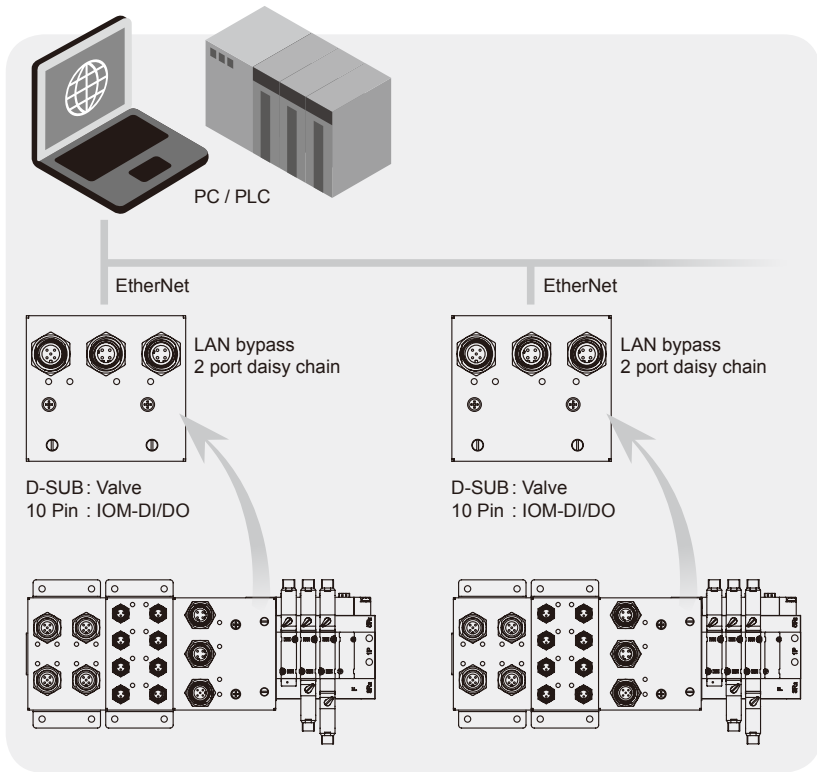


Figure 1

## 2. Features

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### 2.1 Hardware

- Power Input 24V DC °
- External Terminator
- Two Ethernet Port
- 2 Port 10/100Mbps Ethernet with LAN bypass feature and Daisy Chain Connectivity °
- LED Indicator °
- Extended I/O Modules(maximum supports 8 modules) °
  - └ Digital Output Module -MVE-100-DO\*B
  - └ Digital Input Module -MVE-100-DI\*A
- Metal Mechanism
- Suitable for valve : DC24V,MVSY-100 / MVSY-156 / MVSP-156

### 2.2 Software

- Supports EtherNet/IP
- Supports ARP, TCP, UDP, ICMP, DHCP, BOOTP and TFTP Protocol
- Supports Web UI
- Utility
  - └ Firmware Upgrade
  - └ I/O Status
  - └ Network Configuration
  - └ EDS file Generator

### 3. Specification

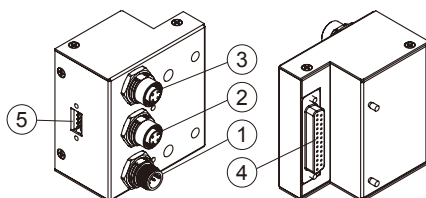
#### 3.1 SI unit MVE-100-SEA-\*

##### Specification

	Model	SI unit
Interface	Protocol	Ethernet/IP
	Communication speed	10/100 Mbps
	Configuration file	EDS file
Power supply	Power connector	M12 ( 5 pins) plug
	Control & input	24VDC class2, 2A
	Output	24VDC class2, 2A
	Consumption	12W
Valve output	Polarity of output	PNP(-com) or NPN(+com)
	Power supply	24VDC Class2, 2A
	Number of outputs	23 outputs
	Connected load	Solenoid valve, MVSY-100 / MVSY-156 / MVSP-156 series, DC24V
	Fail safe	Hold / Off / Setting value
	Protective function	Short circuit protection.
Environment	Working temperature	-20°C ~ +50°C
	Working humidity	10% ~ 90% RH

##### Connector

No.	Item	Description
1	Power	M12 B-coded plug
2	EtherNet/IP port1	M12 D-coded socket
3	EtherNet/IP port2	M12 D-coded socket
4	Valve output	25 PIN D-sub
5	Extended I/O	10 pins connector



Pin arrangement

Power

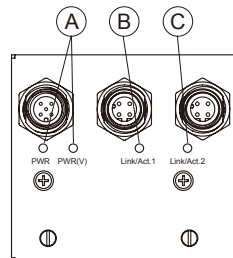
Plug, B-coded	
Pin	Signal
1	24 V (Output)
2	0 V (Output)
3	24 V (Control and input)
4	0 V (Control and input)
5	FE

Ethernet/IP

Socket, D-coded	
Pin	Signal
1	TX +
2	RX+
3	TX-
4	RX-

LED Indicator

NO.	LED	Status	Description
A	PWR (Yellow)	ON	Power-ON
		OFF	Power-OFF
B	LAN1 (Green)	Flash	Data Transmission
		OFF	No Link / Activity
		ON	Link / Activity
C	LAN2 (Green)	Flash	Data Transmission
		OFF	No Link / Activity
		ON	Link / Activity



## 3.2 DI unit MVE-100-DI\*A

### Specification

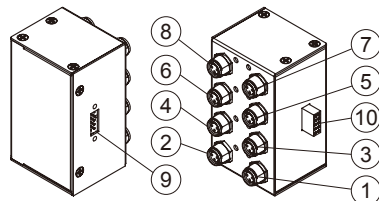
Model		DI unit
Input spec.	Input type	PNP or NPN
	Input connector	M8 (3PIN) socket
	Number of inputs	8 input (1 input / connector)
	Sensor supplied voltage	DC24V
	Maximum sensor supplied current	0.25A / Connector & 2A / Unit
	Rated input current	9mA
	ON voltage	≥ 17V *
	OFF voltage	≤ 5V *
Feature	Short-Circuit Detection & Open-Circuit Detection	
Power	Power supply voltage (control and input)	DC24V, Class2, 2A
Environment	Working temperature	-10°C ~ +50°C
	Storage temperature	-20°C ~ +60°C
	Working humidity	35% ~ 85% RH
	Isolation	500VAC, 10MΩ

\* At NPN input, between the pin for input terminal and supplied voltage of +24V.

\* At PNP input, between the pin for input terminal and supplied voltage of 0V.

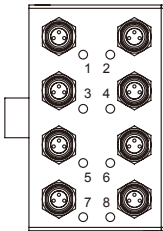
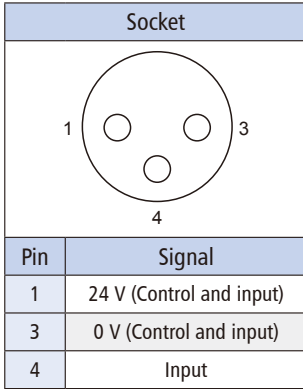
### Connector

No.	Item	Description
1	DI 0	M8, 3PIN socket (Female)
2	DI 1	
3	DI 2	
4	DI 3	
5	DI 4	
6	DI 5	
7	DI 6	
8	DI 7	
9	IOM Interface	10PIN connector (Male)
10	IOM Interface	10PIN connector (Female)



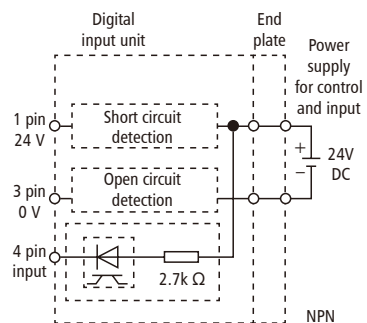
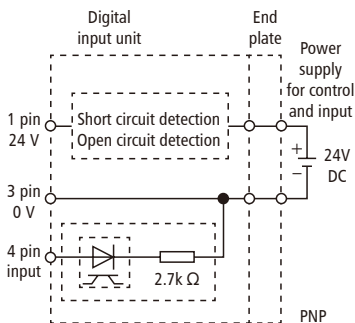


Pin arrangement



LED Indicator

NO.	LED	Status	Description
1	DI 0	ON	Input device is ON
		OFF	Input device is OFF
2	DI 1	ON	Input device is ON
		OFF	Input device is OFF
3	DI 2	ON	Input device is ON
		OFF	Input device is OFF
4	DI 3	ON	Input device is ON
		OFF	Input device is OFF
5	DI 4	ON	Input device is ON
		OFF	Input device is OFF
6	DI 5	ON	Input device is ON
		OFF	Input device is OFF
7	DI 6	ON	Input device is ON
		OFF	Input device is OFF
8	DI 7	ON	Input device is ON
		OFF	Input device is OFF



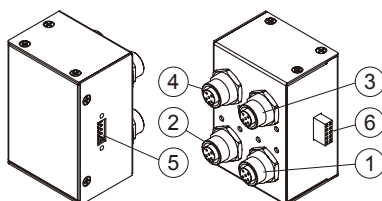
## 3.3 DO unit MVE-100-DO\*B

### Specification

Model		DO unit
Output spec.	Output type	PNP or NPN
	Output connector	M12 (5PIN) socket
	Number of outputs	8 output (2 output / connector)
	Rated load voltage	DC24V
	Maximum load current	0.5A / Connector & 2A / Unit
Feature		Short-Circuit Detection & Open-Circuit Detection
Power	Power supply voltage (output)	DC24V, Class2, 2A
Environment	Working temperature	-10°C ~ +50°C
	Storage temperature	-20°C ~ +60°C
	Working humidity	35% ~ 85% RH
	Isolation	500VAC, 10MΩ

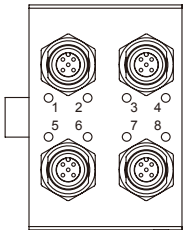
### Connector

No.	Item	Description
1	DO 0, DO 1	M12, 5PIN socket (Female)
2	DO 2, DO 3	
3	DO 4, DO 5	
4	DO 6, DO 7	
5	IOM Interface	10PIN connector (Male)
6	IOM Interface	10PIN connector (Female)



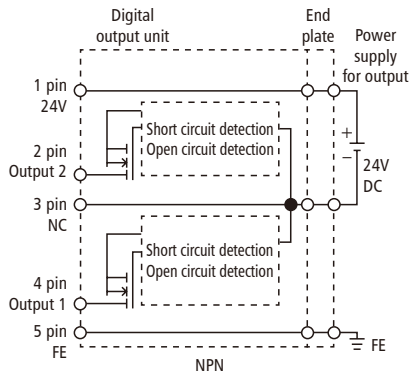
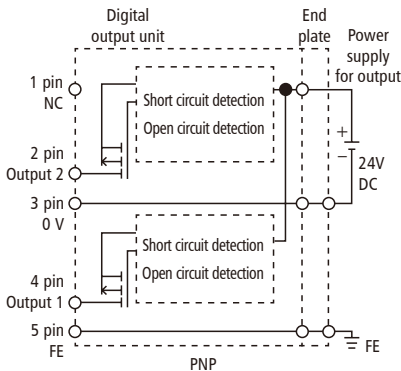
Pin arrangement

Socket, A-coded		
Pin	Signal	
	PNP	NPN
1	NC	24 V (Output)
2	Output 2	Output 2
3	0 V (Output)	NC
4	Output1	Output1
5	FE	FE

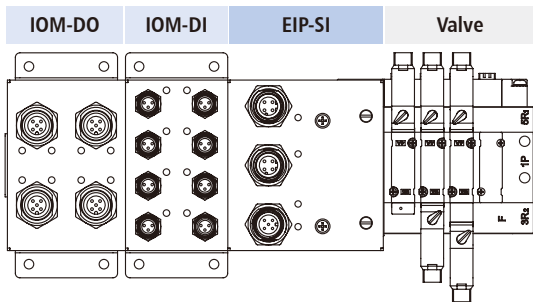
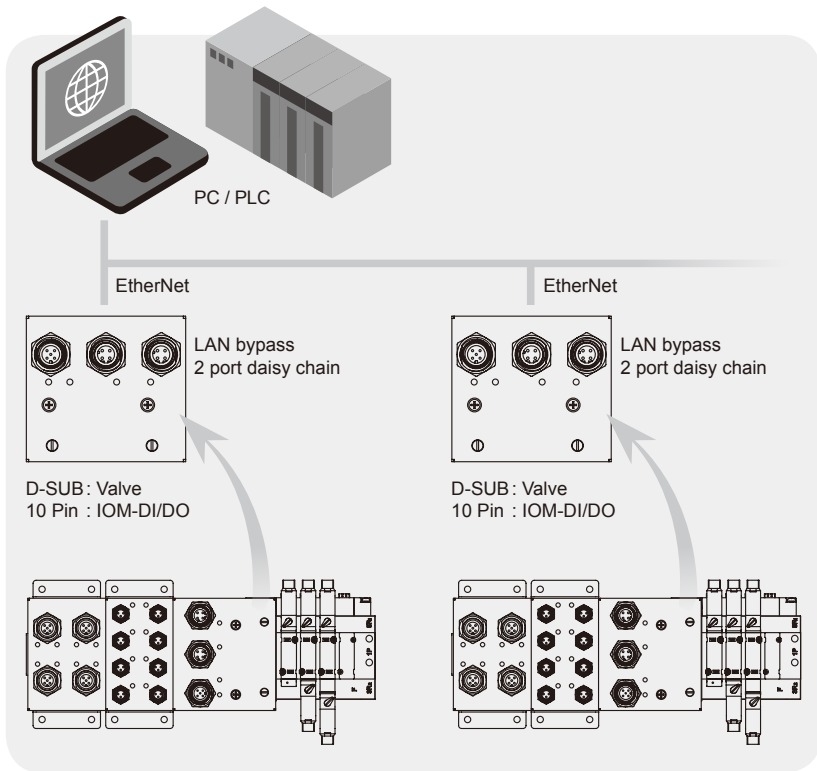


LED Indicator

NO.	LED	Status	Description
1	DO 0	ON	DO Output
		OFF	No DO Output
2	DO 1	ON	DO Output
		OFF	No DO Output
3	DO 2	ON	DO Output
		OFF	No DO Output
4	DO 3	ON	DO Output
		OFF	No DO Output
5	DO 4	ON	DO Output
		OFF	No DO Output
6	DO 5	ON	DO Output
		OFF	No DO Output
7	DO 6	ON	DO Output
		OFF	No DO Output
8	DO 7	ON	DO Output
		OFF	No DO Output

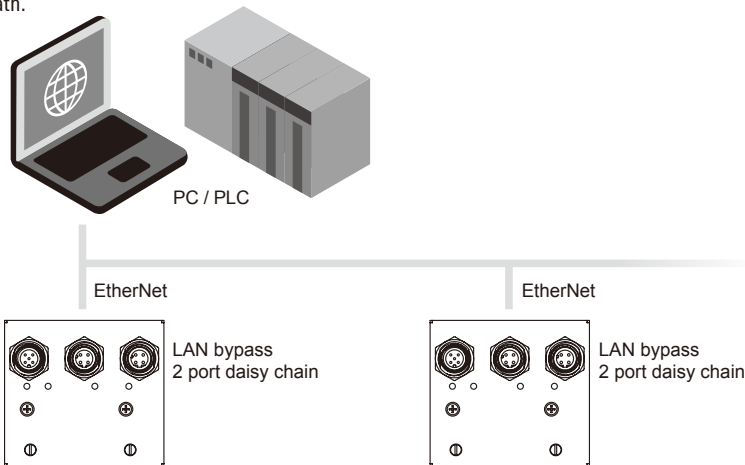


## 4. Quick start



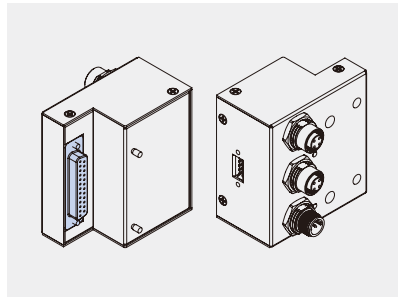
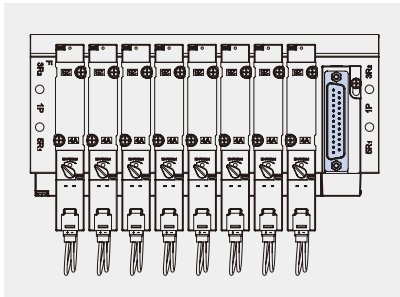
## 4.1 Daisy-Chain Connection

SI module supports daisy-chain connection. The Ethernet cable connects with LAN 1 and the signal can be extended by the LAN 2. All the SI module can be connected by the same Ethernet path.



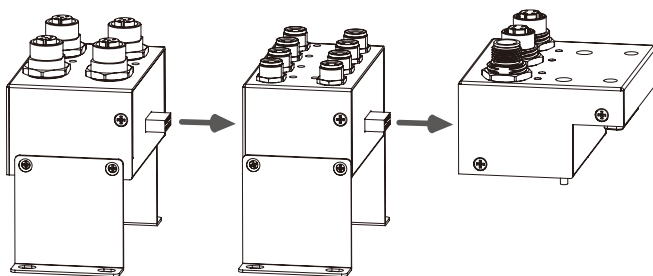
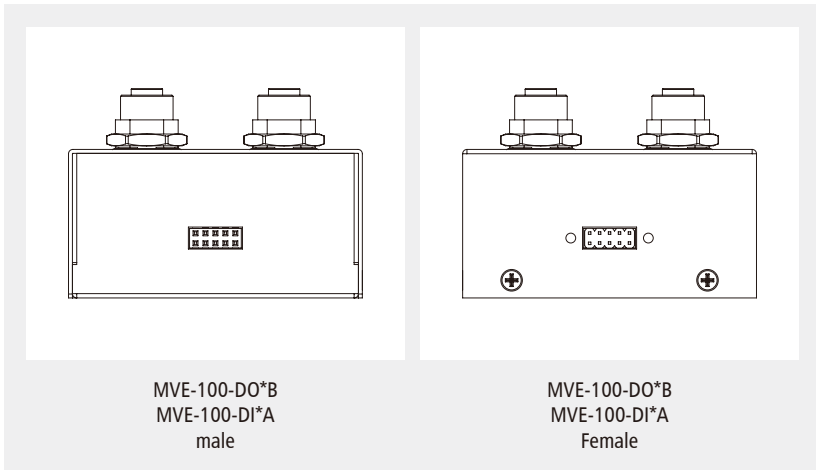
## 4.2 MVE-100-SEA-\* and the valve

The valve can be connected via the 25-pin D-Sub.



### 4.3 IOM Module installation

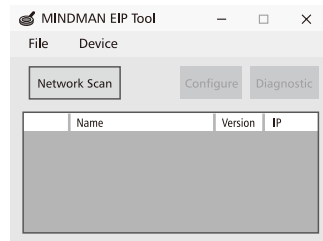
The IOM can be connected via the 10-pin connector.



## 5. Connection and setting

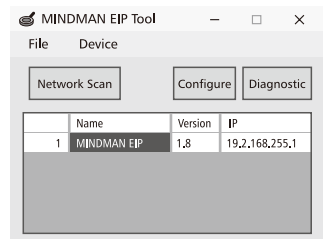
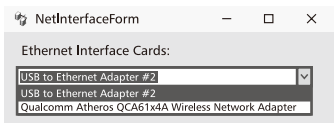
### 5.1 Utility : MVE-100-SEA-\* configuration (Test tool ①~⑤)

- ① Double click <Utility> icon      ② Click <Network Scan>



- ③ Select the network interface      ④ Select the module from the list

(default IP: 192.168.255.1)



- ⑤ Click <Configure> button for related settings

5.1 Utility : MVE-100-SEA-\* configuration (Test tool ⑥~⑧)

⑥ Click <Diagnostic> to test EIP connection

Please refer to the section of packet format.

Valve Clear valve Counter IOM-DO

Class 1 Connection Class 2 Connection

Forward Open Class 1 Behavior

Connect Disconnect

Output Count 2 RPI(dec) 300 ms Update

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
0	FF	FF	FF	FF	FF	FF	FF	AA							
1															
2															
3															
4															
5															

Input Count 34237

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2	00	00	08	00	00	00	04	00	00	00	03	00	00	00	00
3	00	00	00	03	00	00	00	02	00	00	00	03	00	00	00
4	05	00	00	00	03	00	00	00	05	00	00	00	03	00	00
5	00	04	00	00	00	04	00	00	00	03	00	00	00	02	00
6	00	00	03	00	00	00	00	00	00	00	04	00	00	00	00
7															

Response Message

Common Industrial Protocol

O\_to\_T Network Connection ID: 0x181C0014  
T\_to\_0 Network Connection ID: 0x4F7D8943  
Connection Serial Number: 0x2289  
Originator Vendor ID: 0xBB  
Originator Serial Number: 0x01  
O\_to\_T API: 300ms (0x493E0)  
T\_to\_0 API: 300ms (0x493E0)  
Application Reply Size: 0 (words)  
Reserved: 0x00  
Application Reply:

Common Packet

Item Count: 2  
Address Type ID: 0x8002  
Address Length: 8 (byte)  
Connection Identifier: 0x4F7D8943  
Sequence Number: 200  
Data Type ID: 0xB1  
Data Length: 103  
Sequence Count: 52472

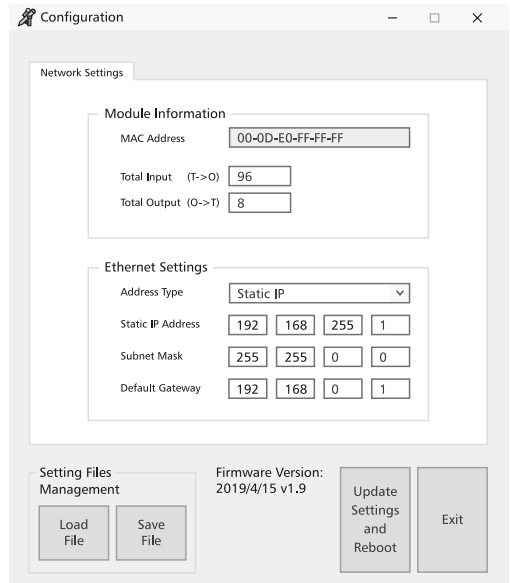
EXIT

BK IOM-DI



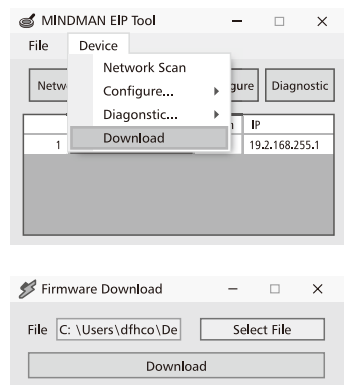
## ⑦ Click <Configuration> for network configuration

The total input (T → O) size is the size of the Input assembly, and the Total Output (O → T) is the size of the output Assembly. The I/O length is calculate automatically when the module boots up. Users can configure the IP address, mask and the gateway from this page. The EDS file is generated in the Utility file path when users press <Update Settings and Reboot> button.



## ⑧ Click <Download> for updating firmware

The folder path of the new firmware can't include the character " " (the space character) and other special characters. NOTE: When the update fails, please disable firewall, antivirus software, windows defender and use single network interface.



## 5.2 Web user interface

Users can type the MVE IP address on the browser URL. The Ethernet settings and the IO diagnostic can be shown on the web page.

### EIP-SI

Configure

---

Ethernet Configure

**Basic Network Settings**

Factory Default

IO TABLE

**IP Setting:**

255.255.255.255

**SUBNET MASK:**

255.255.255.255

**Gateway:**

255.255.255.255

### EIP-SI

Configure

---

Ethernet Configure

**IO TABLE**

Confirmed

IO TABLE

SPI[#]	VALUE
SPI_DO0	<input type="text" value="00"/>
SPI_DO1	<input type="text" value="00"/>
SPI_DO2	<input type="text" value="00"/>
Clear SPI_DO0	<input type="text" value="00"/>
Clear SPI_DO1	<input type="text" value="00"/>
Clear SPI_DO2	<input type="text" value="00"/>

**SPI-DI TABLE**

DI	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14
00	00	00	00	00	00	00	00	00	09	00	00	00	08	00	00
01	00	07	00	00	00	06	00	00	06	00	00	00	06	00	00
02	00	00	06	00	00	00	02	00	00	00	02	00	00	00	02
03	00	00	00	02	00	00	00	02	00	00	00	02	00	00	00
04	02	00	00	00	02	00	00	00	02	00	00	00	02	00	00
05	00	02	00	00	00	02	00	00	02	00	00	00	02	00	00
06	00	00	02	00	00	00	00	00	ff	00	00	00	00	00	00

### 5.3 Packet Format

MVE-100-SEA-P / MVE-100-SEA-N			
Instance	Byte Order	Description	
Input (0×65)	1st	DO Status	DO0~DO7 status
	2nd		DO8~DO15 status
	3rd		DO16~DO23 status
	4th	N/A	N/A
	5th ~96th	DO Counters	DO0~DO22 counters, 4 bytes for each channel
	97th	DO break-detect	DO0~DO7 break-detect
	98th		DO8~DO15 break-detect
	99th		DO16~DO23 break-detect
	100th	N/A	N/A
Output (0×66)	1st	Set DO status	Set DO0~DO7 status
	2nd		Set DO8~DO15 status
	3rd		Set DO16~DO23 status
	4th	N/A	N/A
	5th	Clear valve counters	Clear DO0~DO7 counters
	6th		Clear DO8~DO15 counters
	7th		Clear DO16~DO23 counters
	8th	N/A	N/A

MVE-100-DO*B			
Instance	Byte Count	Byte Order	Description
Output (0×66)	1 Byte	1st	DO0~DO7 status

MVE-100-DI*A			
Instance	Byte Count	Byte Order	Description
Input (0×65)	1 Byte	1st	DI0~DI7 status

