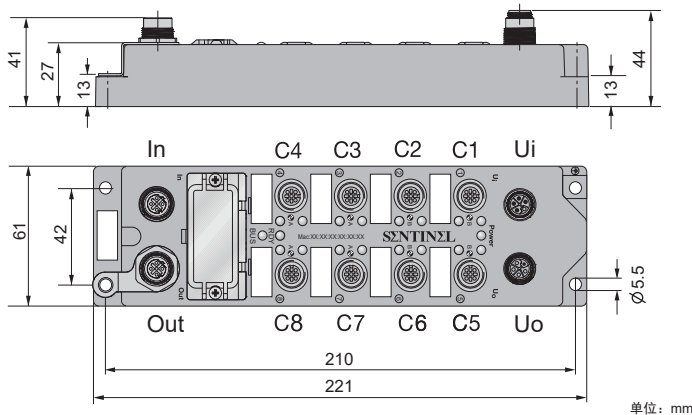


# IO-Link modules for EtherNet/IP

## 8 IO-Link Master Channels

### ELIP-8IOL-L04B

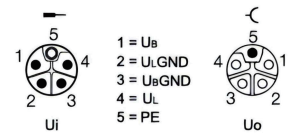
**SENTINEL**  
INDUSTRIAL AUTOMATION



- Ethernet/IP IO-Link Master
- Integrated Ethernet Switch
- Support 100Base-TX
- 2 x M12, 4-pin, D-code, Ethernet Fieldbus connection
- 8 IO-Link Master Channels
- IO-Link V1.1
- IO-Link Master Port 4 class A+4 class B
- IO-Link master port M12 A code
- Metal connector with high-strength plastic housing
- Impact and vibration resistance
- Fully potted module electronics
- Protection class IP67

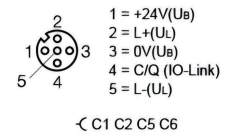
|                                   |                                                                                                                                                         |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Model                             | ELIP-8IOL-L04B                                                                                                                                          |
| Supply voltage                    | 24VDC $\pm$ 10%                                                                                                                                         |
| Operating current                 | < 200mA                                                                                                                                                 |
| Module power ( $U_B$ )            | $\leq$ 8A                                                                                                                                               |
| Load power ( $U_L$ )              | $\leq$ 8A                                                                                                                                               |
| IO-Link port parameters           |                                                                                                                                                         |
| Number of ports                   | 8 (C1...C8)                                                                                                                                             |
| Connectivity inputs               | M12, A-coded, Female                                                                                                                                    |
| Common IO pins                    | Not supported. The second hole needs to be left empty.                                                                                                  |
| Port supply current               | Rated 1A, max 2A: $U_B$ from pins 1,3;<br>Among: C1...C4, C5...C8 $\leq$ 4A each.<br>Max 2A: $U_L$ from pins 2,5<br>Among: C1,C2, C5,C6 $\leq$ 4A each. |
| IO-Link parameters                |                                                                                                                                                         |
| SIO model                         | Not Supported, The 4th hole cannot be used as a normal I/O.                                                                                             |
| IO-Link Pin definition            | Pin 4 in IOL mode                                                                                                                                       |
| IO-Link Port type                 | Class A (C3 C4 C7 C8)+Class B (C1 C2 C5 C6)                                                                                                             |
| IO-Link specification             | V1.1                                                                                                                                                    |
| Frame type                        | Supports all specified frame types                                                                                                                      |
| Support Device                    | Maximum 32Bytes Input / 32Bytes Output                                                                                                                  |
| Transmission rate                 | 4.8kbps(COM1) / 38.4kbps(COM2) /<br>230.4kbps(COM3)                                                                                                     |
| Ethernet/IP                       |                                                                                                                                                         |
| Number of communication interface | 2                                                                                                                                                       |
| Transmission standard             | 100Base-TX                                                                                                                                              |
| Auto-negotiation                  | Supported                                                                                                                                               |
| Auto-MDI/MDIX                     | Supported                                                                                                                                               |
| Maximum transmission rate         | 100Mbit/s                                                                                                                                               |
| Connector                         | M12, D-coded, Female                                                                                                                                    |
| Default IP address segment        | 192.168.0.*                                                                                                                                             |
| IP address setting function       | support DHCP                                                                                                                                            |
| Default subnet mask               | 255.255.255.0                                                                                                                                           |
| Communication data format         | Binary                                                                                                                                                  |
| Operating temperature             | -20~55°C                                                                                                                                                |

#### Power Supply Connector L-coded

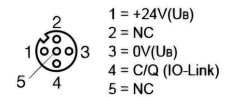


Note:  $U_B$  is the module power supply, and  $U_L$  is the load power supply.

#### IO-Link Port Connector M12

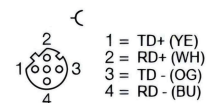


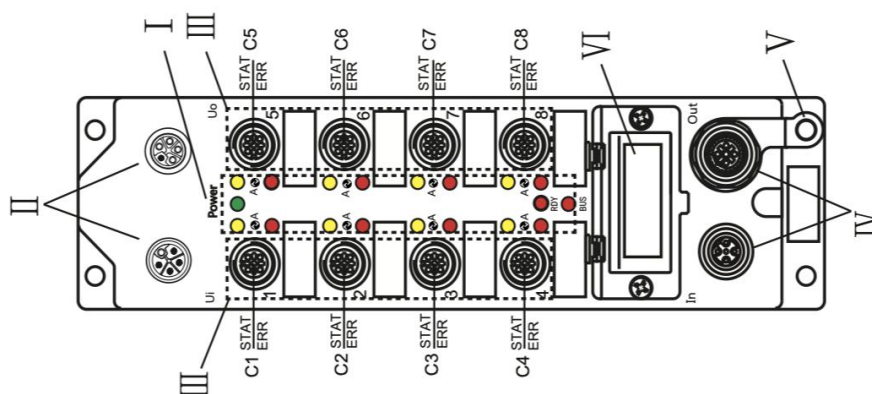
← C1 C2 C5 C6



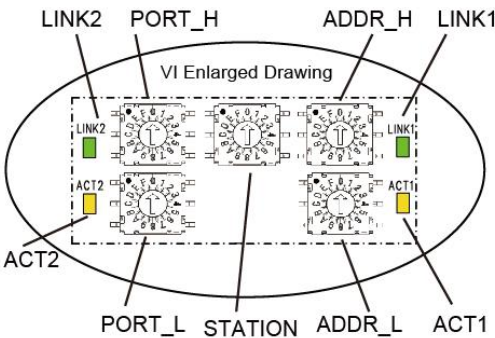
← C3 C4 C7 C8

#### Bus Connector M12





| Area Code | Project      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                          |
|-----------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| I         | Module LEDs  | LED name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Detail                                                                                                                                                                                                                                                                                                   |
|           |              | Power                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Green LED lights:<br>ON: The module power supply (U <sub>b</sub> )<br>OFF: The module power supply is disconnected                                                                                                                                                                                       |
|           |              | BUS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Green LED lights:<br>ON: Ethernet/IP Communication is normal<br>Red LED lights:<br>ON: Ethernet/IP Communication interruption;<br>Flashing: In DHCP mode, waiting for IP assignment                                                                                                                      |
|           |              | RDY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Red LED lights:<br>ON: IO-Link There is an error in the port, which is inconsistent with the configuration;                                                                                                                                                                                              |
|           |              | STAT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Yellow LED lights: The IO-Link communication status of the port (C1-C8)<br>ON: The IO-Link communication is normal;<br>OFF: The IO-Link communication is not established;                                                                                                                                |
|           |              | ERR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Red LED lights: Working state of the port<br>ON: The port is working abnormally; please check the IO-Link cable or the IO-Link port settings in the dial code<br>OFF: There is no abnormality in this port; IO-Link is communicating normally or this port is closed or disabled during the dial switch. |
| II        | Power Supply | U <sub>i</sub> (left): Power supply input, L-coded, 5-pin, male<br>U <sub>o</sub> (right): Power supply output, L-coded, 5-pin, female                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                          |
| III       | IO-Link PORT | 1. M12 A-coded, 5-pin, female; Pin 4 is IO-Link, Dose not support SIO, i.e., Standard I/O mode; Pin 2 is empty, no external signals can be connected;<br>2. In the figure, which port does C* represent; The STAT represents the communication status indicator lamp; The ERR represents the working status indicator lamp;<br>For example: C1 STAT/ERR represents that the port is PORT1, The LED above the right of the port is STAT and the LED below is ERR; For detailed information on the indicator lights, please refer to Area Code I ;<br>3. Totally is 8 IO-Link port class A, every port is independent lamp for START&ERR. External power supply is required for class B device;<br><b>Note: Please close the port in the profinet configuration when not used, try not let the module have a red light;</b> |                                                                                                                                                                                                                                                                                                          |
| IV        | BUS          | In ( left ): Ethernet/IP Bus in, M12 D-Code, 5-pin, female<br>Out (right): Ethernet/IP Bus out, M12 D-Code, 5-pin, female                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                          |
| V         | PE           | Ground                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                          |



|                     |                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                        |   |        |   |   |   |  |  |             |                                                     |  |  |  |        |  |  |  |      |                                                    |   |   |   |   |   |   |   |             |                                                                                                      |  |  |  |  |  |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|---|--------|---|---|---|--|--|-------------|-----------------------------------------------------|--|--|--|--------|--|--|--|------|----------------------------------------------------|---|---|---|---|---|---|---|-------------|------------------------------------------------------------------------------------------------------|--|--|--|--|--|
| VI                  | Network Status LEDs                                                                                                                                                                              | LINK2                                                                                                                                                                                                                                                                                                                                                            | Bus in Green LED lights:<br>ON: The communication rate of this port is 100M;<br>OFF: The communication rate of this port is not 100M;  |   |        |   |   |   |  |  |             |                                                     |  |  |  |        |  |  |  |      |                                                    |   |   |   |   |   |   |   |             |                                                                                                      |  |  |  |  |  |
|                     |                                                                                                                                                                                                  | ACT2                                                                                                                                                                                                                                                                                                                                                             | Bus in Yellow LED lights:<br>ON: This establishes a physical connection;<br>OFF: No connection; Flashing: There is data exchange;      |   |        |   |   |   |  |  |             |                                                     |  |  |  |        |  |  |  |      |                                                    |   |   |   |   |   |   |   |             |                                                                                                      |  |  |  |  |  |
|                     |                                                                                                                                                                                                  | LINK1                                                                                                                                                                                                                                                                                                                                                            | Bus out Green LED lights:<br>ON: The communication rate of this port is 100M;<br>OFF: The communication rate of this port is not 100M; |   |        |   |   |   |  |  |             |                                                     |  |  |  |        |  |  |  |      |                                                    |   |   |   |   |   |   |   |             |                                                                                                      |  |  |  |  |  |
|                     |                                                                                                                                                                                                  | ACT1                                                                                                                                                                                                                                                                                                                                                             | Bus in Green LED lights:<br>ON: This establishes a physical connection;<br>OFF: No connection; Flashing: There is data exchange;       |   |        |   |   |   |  |  |             |                                                     |  |  |  |        |  |  |  |      |                                                    |   |   |   |   |   |   |   |             |                                                                                                      |  |  |  |  |  |
|                     | IP Address Settings                                                                                                                                                                              | ADDR_H is the high bit of the hexadecimal address; ADDR_L is the low bit of the hexadecimal address; the corresponding functions of different dial codes are as follows:                                                                                                                                                                                         |                                                                                                                                        |   |        |   |   |   |  |  |             |                                                     |  |  |  |        |  |  |  |      |                                                    |   |   |   |   |   |   |   |             |                                                                                                      |  |  |  |  |  |
|                     |                                                                                                                                                                                                  | <table><tr><td>0xFF</td><td colspan="8">DHCP mode, waiting for IP allocation after power on</td></tr><tr><td>0x00</td><td colspan="8">Run according to the last DHCP assigned IP address</td></tr><tr><td>0x01 - 0xFE</td><td colspan="8">Set the 4th digit of the IP address. The first 3 digits of the network segment are assigned by DHCP.</td></tr></table> |                                                                                                                                        |   |        |   |   |   |  |  | 0xFF        | DHCP mode, waiting for IP allocation after power on |  |  |  |        |  |  |  | 0x00 | Run according to the last DHCP assigned IP address |   |   |   |   |   |   |   | 0x01 - 0xFE | Set the 4th digit of the IP address. The first 3 digits of the network segment are assigned by DHCP. |  |  |  |  |  |
| 0xFF                | DHCP mode, waiting for IP allocation after power on                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                        |   |        |   |   |   |  |  |             |                                                     |  |  |  |        |  |  |  |      |                                                    |   |   |   |   |   |   |   |             |                                                                                                      |  |  |  |  |  |
| 0x00                | Run according to the last DHCP assigned IP address                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                        |   |        |   |   |   |  |  |             |                                                     |  |  |  |        |  |  |  |      |                                                    |   |   |   |   |   |   |   |             |                                                                                                      |  |  |  |  |  |
| 0x01 - 0xFE         | Set the 4th digit of the IP address. The first 3 digits of the network segment are assigned by DHCP.                                                                                             |                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                        |   |        |   |   |   |  |  |             |                                                     |  |  |  |        |  |  |  |      |                                                    |   |   |   |   |   |   |   |             |                                                                                                      |  |  |  |  |  |
| IO-Link Port vacant | For example: ADDR_H is A, ADDR_L is 9, then ADDR is 0xA9, and the IP address is: *.*.*.169;<br><b>Note: After the code is changed, it will take effect after power is turned on again</b>        |                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                        |   |        |   |   |   |  |  |             |                                                     |  |  |  |        |  |  |  |      |                                                    |   |   |   |   |   |   |   |             |                                                                                                      |  |  |  |  |  |
|                     | Rotary code PORT_H, PORT_L: 0x00: open and close the IO-Link port according to the "configuration data"; non-0x00: open and close the IO-Link port according to the "dial code" (as shown below) |                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                        |   |        |   |   |   |  |  |             |                                                     |  |  |  |        |  |  |  |      |                                                    |   |   |   |   |   |   |   |             |                                                                                                      |  |  |  |  |  |
|                     |                                                                                                                                                                                                  | <table><tr><td>Rotary Code</td><td colspan="4">PORT_H</td><td colspan="4">PORT_L</td></tr><tr><td>Port</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr></table>                                                                                                                                                         |                                                                                                                                        |   |        |   |   |   |  |  | Rotary Code | PORT_H                                              |  |  |  | PORT_L |  |  |  | Port | 8                                                  | 7 | 6 | 5 | 4 | 3 | 2 | 1 |             |                                                                                                      |  |  |  |  |  |
| Rotary Code         | PORT_H                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                        |   | PORT_L |   |   |   |  |  |             |                                                     |  |  |  |        |  |  |  |      |                                                    |   |   |   |   |   |   |   |             |                                                                                                      |  |  |  |  |  |
| Port                | 8                                                                                                                                                                                                | 7                                                                                                                                                                                                                                                                                                                                                                | 6                                                                                                                                      | 5 | 4      | 3 | 2 | 1 |  |  |             |                                                     |  |  |  |        |  |  |  |      |                                                    |   |   |   |   |   |   |   |             |                                                                                                      |  |  |  |  |  |
|                     |                                                                                                                                                                                                  | For example: PORT_H: 0x02; PORT_L: 0x05; the corresponding binary is: 0010 0101 represents: open ports C1, C3, C6, and close other ports;<br><b>Note: After the code is changed, it will take effect after power is turned on again</b>                                                                                                                          |                                                                                                                                        |   |        |   |   |   |  |  |             |                                                     |  |  |  |        |  |  |  |      |                                                    |   |   |   |   |   |   |   |             |                                                                                                      |  |  |  |  |  |

IO-Link Port Byte Mapping

| Data               | Instance ID | Data length (Byte) |
|--------------------|-------------|--------------------|
| Configuration Data | 151         | 4                  |
| Input Data         | 100         | 266                |
| Output Data        | 150         | 256                |

## 1.IO-Link Configuration Data (Occupy 4 Byte)

| Byte  | Description                                                                                                                                                                                                                                                                                                             |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----|----|----|----|----|---|---|------|----|----|----|----|----|----|----|----|
| Byte0 | <div>8 bits represent the configuration of 8 ports IO-Link status: 0 off, 1 on</div> <table><tr><td>Bit</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td></tr><tr><td>Port</td><td>C8</td><td>C7</td><td>C6</td><td>C5</td><td>C4</td><td>C3</td><td>C2</td><td>C1</td></tr></table> | Bit | 7  | 6  | 5  | 4  | 3  | 2  | 1 | 0 | Port | C8 | C7 | C6 | C5 | C4 | C3 | C2 | C1 |
| Bit   | 7                                                                                                                                                                                                                                                                                                                       | 6   | 5  | 4  | 3  | 2  | 1  | 0  |   |   |      |    |    |    |    |    |    |    |    |
| Port  | C8                                                                                                                                                                                                                                                                                                                      | C7  | C6 | C5 | C4 | C3 | C2 | C1 |   |   |      |    |    |    |    |    |    |    |    |
| Byte1 | reserve                                                                                                                                                                                                                                                                                                                 |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
| Byte2 | reserve                                                                                                                                                                                                                                                                                                                 |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
| Byte3 | reserve                                                                                                                                                                                                                                                                                                                 |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |

## 2.IO-Link Process Data Input (Occupy 266 Byte)

| Byte            | Description                                                                                                                                                                                                                        |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----|----|----|----|----|---|---|------|----|----|----|----|----|----|----|----|
| Byte0           | 8 bits represent the current IO-Link status of 8 ports: 1 is normal communication, 0 is no communication                                                                                                                           |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
|                 | <table><tr><td>Bit</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td></tr><tr><td>Port</td><td>C8</td><td>C7</td><td>C6</td><td>C5</td><td>C4</td><td>C3</td><td>C2</td><td>C1</td></tr></table> | Bit | 7  | 6  | 5  | 4  | 3  | 2  | 1 | 0 | Port | C8 | C7 | C6 | C5 | C4 | C3 | C2 | C1 |
|                 | Bit                                                                                                                                                                                                                                | 7   | 6  | 5  | 4  | 3  | 2  | 1  | 0 |   |      |    |    |    |    |    |    |    |    |
| Port            | C8                                                                                                                                                                                                                                 | C7  | C6 | C5 | C4 | C3 | C2 | C1 |   |   |      |    |    |    |    |    |    |    |    |
|                 |                                                                                                                                                                                                                                    |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
| Byte1           | 8 bits represent IO-Link disconnection records of 8 ports: 1 means disconnection, 0 means no disconnection                                                                                                                         |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
|                 | <table><tr><td>Bit</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td></tr><tr><td>Port</td><td>C8</td><td>C7</td><td>C6</td><td>C5</td><td>C4</td><td>C3</td><td>C2</td><td>C1</td></tr></table> | Bit | 7  | 6  | 5  | 4  | 3  | 2  | 1 | 0 | Port | C8 | C7 | C6 | C5 | C4 | C3 | C2 | C1 |
|                 | Bit                                                                                                                                                                                                                                | 7   | 6  | 5  | 4  | 3  | 2  | 1  | 0 |   |      |    |    |    |    |    |    |    |    |
| Port            | C8                                                                                                                                                                                                                                 | C7  | C6 | C5 | C4 | C3 | C2 | C1 |   |   |      |    |    |    |    |    |    |    |    |
|                 |                                                                                                                                                                                                                                    |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
| Byte2           | C1 Port disconnection times                                                                                                                                                                                                        |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
| Byte3           | C2 Port disconnection times                                                                                                                                                                                                        |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
| Byte4           | C3 Port disconnection times                                                                                                                                                                                                        |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
| Byte5           | C4 Port disconnection times                                                                                                                                                                                                        |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
| Byte6           | C5 Port disconnection times                                                                                                                                                                                                        |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
| Byte7           | C6 Port disconnection times                                                                                                                                                                                                        |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
| Byte8           | C7 Port disconnection times                                                                                                                                                                                                        |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
| Byte9           | C8 Port disconnection times                                                                                                                                                                                                        |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
| Byte10-Byte41   | C1 Port process input data (32Byte)                                                                                                                                                                                                |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
| Byte42-Byte73   | C2 Port process input data (32Byte)                                                                                                                                                                                                |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
| Byte74-Byte105  | C3 Port process input data (32Byte)                                                                                                                                                                                                |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
| Byte106-Byte137 | C4 Port process input data (32Byte)                                                                                                                                                                                                |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
| Byte138-Byte169 | C5 Port process input data (32Byte)                                                                                                                                                                                                |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
| Byte170-Byte201 | C6 Port process input data (32Byte)                                                                                                                                                                                                |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
| Byte202-Byte233 | C7 Port process input data (32Byte)                                                                                                                                                                                                |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |
| Byte234-Byte265 | C8 Port process input data (32Byte)                                                                                                                                                                                                |     |    |    |    |    |    |    |   |   |      |    |    |    |    |    |    |    |    |



### 3.IO-Link Process Data Output (Occupy 256 Byte)

| Byte            | Description                          |
|-----------------|--------------------------------------|
| Byte0-Byte31    | C1 Port process output data (32Byte) |
| Byte32-Byte63   | C2 Port process output data (32Byte) |
| Byte64-Byte95   | C3 Port process output data (32Byte) |
| Byte96-Byte127  | C4 Port process output data (32Byte) |
| Byte128-Byte159 | C5 Port process output data (32Byte) |
| Byte160-Byte191 | C6 Port process output data (32Byte) |
| Byte192-Byte223 | C7 Port process output data (32Byte) |
| Byte224-Byte255 | C8 Port process output data (32Byte) |