

## LogicX0 Series of Compact Controller





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## Logic Series of PLC

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The LogicX0 series programmable controller is equipped with a rich variety of automation communication interfaces and flexible I/O configuration solutions. It can support RS232 and multiple RS485 interfaces, and multiple communication protocols such as ModBus TCP, ModBus RTU, CANopen, EtherCAT, Pro Net, etc. It also supports backplane and bus I/O expansion capabilities, and has high-speed pulse input and output functions on its body. The product is positioned for basic logic control needs and is aimed at comprehensive functions and broader industry demands.



This series of products meets various needs of users for small-size automation equipment:

- Multiple industrial communication methods
- Local back-plane extension IO, bus extended IO
- Information technology functions oriented towards the upper level
- Modular design scheme, seamlessly connects with FX20 series IO modules



- Based on CODESYS platform with CODESYS realtime Runtime
- According to IEC 61131-3(ST/LD/FBD/SFC/CFC/IL)
- Program with CodeSys V3.5 SP19 and later version



## Logic Series of PLC

### Type Code

**LogicX0**

**-**

**0**

**A**

**N**

**-**

**E**

Fieldbus Type

E: EtherCAT

P: ProfiNet

C: CANopen

DO connection type

N: NPN

P: PNP

ELCO Logic Series

Series Code

X0: X0 series

Back-plane I/O extention

0: Not support

1: Support

Standard configuration:

\* ModbusTCP

\* 1xRS485

\* TF card slot

I/O config

A: 8DI+8DO

B: 12DI+4DO

C: 8DI+4DO+2HDO(NPN)

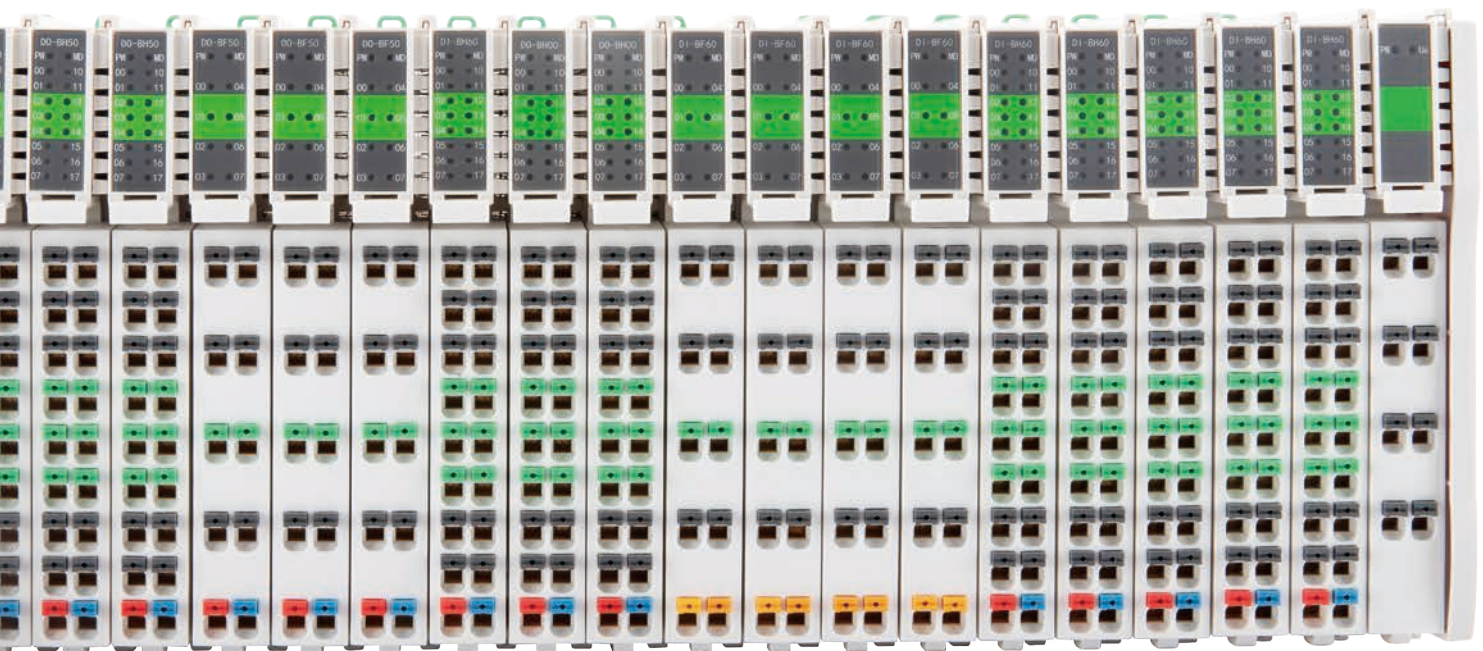
D: 6DI+2DO+4HDI(NPN)

E: 6DI+2DO+4HDO(NPN)

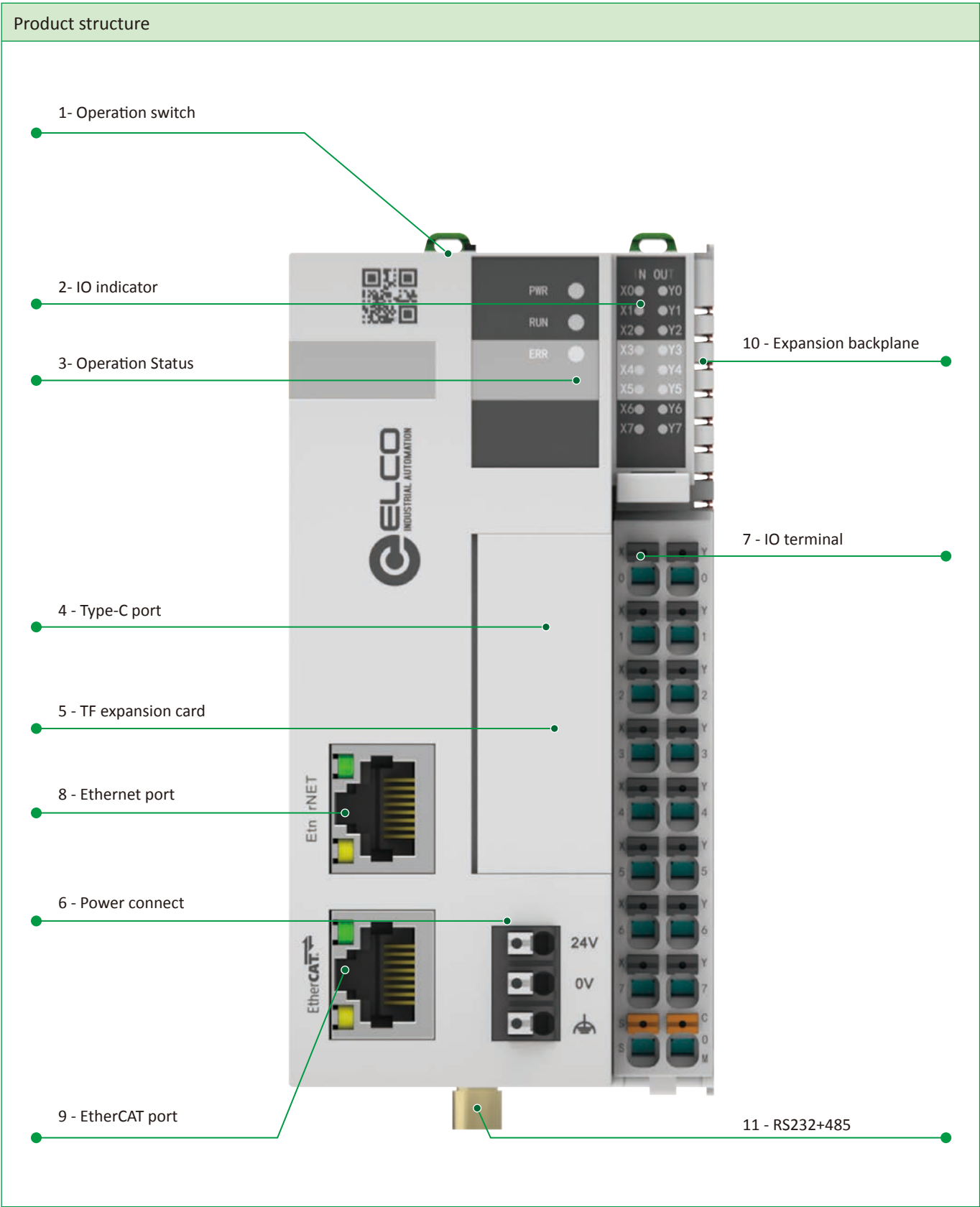
F: 6DI+2DO+2HDI+2HDO(NPN)

G: 8DI+4DO+2AI( $\pm 5V, \pm 10V, 0-20mA, 4-20mA$ )

... Please consult before order



# LogicX0 PLC



| Item No | Port Type              | Interface Identification                                                            | Define                                         | Indicator Color | Instruction                                                                                                                                                     |
|---------|------------------------|-------------------------------------------------------------------------------------|------------------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | RUN / STOP switch      | RUN/STOP                                                                            | Operation mode switching                       |                 |                                                                                                                                                                 |
| 2       | Lamp for I/O           | IN/OUT                                                                              | IO Status Display                              | Green           | <ul style="list-style-type: none"> <li>● ON: Indicates that the input or output is valid.</li> <li>● OFF: Indicates invalid inputs or outputs.</li> </ul>       |
| 3       | Lamp for system status | PWR                                                                                 | The power supply is normal                     | Green           | <ul style="list-style-type: none"> <li>● ON: indicates normal power supply.</li> <li>● OFF: Indicates abnormal power supply.</li> </ul>                         |
|         |                        | RUN                                                                                 | running normally                               | Green           | <ul style="list-style-type: none"> <li>● ON: Indicates that the user program is running.</li> <li>● OFF: Indicates that the user program is stopped.</li> </ul> |
|         |                        | ERR                                                                                 | Run-time error (in computing)                  | Red             | <ul style="list-style-type: none"> <li>● OFF: Indicates no serious error.</li> <li>● Flashing: Indicates a serious error has occurred.</li> </ul>               |
|         |                        | BUS                                                                                 | Bus state                                      | Green           | <ul style="list-style-type: none"> <li>● OFF: EC bus is running.</li> <li>● Flashing: EC bus is stopped.</li> </ul>                                             |
| 4       | Type-C Port            |    | Communication with PC                          | -               | -                                                                                                                                                               |
| 5       | Plug for TF            | TF                                                                                  | Firmware Upgrade                               | -               | -                                                                                                                                                               |
| 6       | Power DC 24 V          | +24V                                                                                | DC 24V Power Positive                          | -               | -                                                                                                                                                               |
|         |                        | 0V                                                                                  | DC 24V Power Supply Negative                   | -               | -                                                                                                                                                               |
|         |                        |  | PE                                             | -               | -                                                                                                                                                               |
| 7       | Terminals for I/O      | —                                                                                   | 8 inputs, 8 outputs                            | -               | -                                                                                                                                                               |
| 8       | RJ45 for EtherNet      | EtherNet                                                                            | Ethernet communication RJ45 interface          | -               | -                                                                                                                                                               |
| 9       | RJ45 for EtherCAT      | EtherCAT                                                                            | For EtherCAT communication                     | -               | -                                                                                                                                                               |
| 10      | Local I/O extension    |                                                                                     | Expansion Card Slot for Expanded Functionality | -               | -                                                                                                                                                               |
| 11      | RS232+485              | RS232+485                                                                           |                                                | -               | -                                                                                                                                                               |

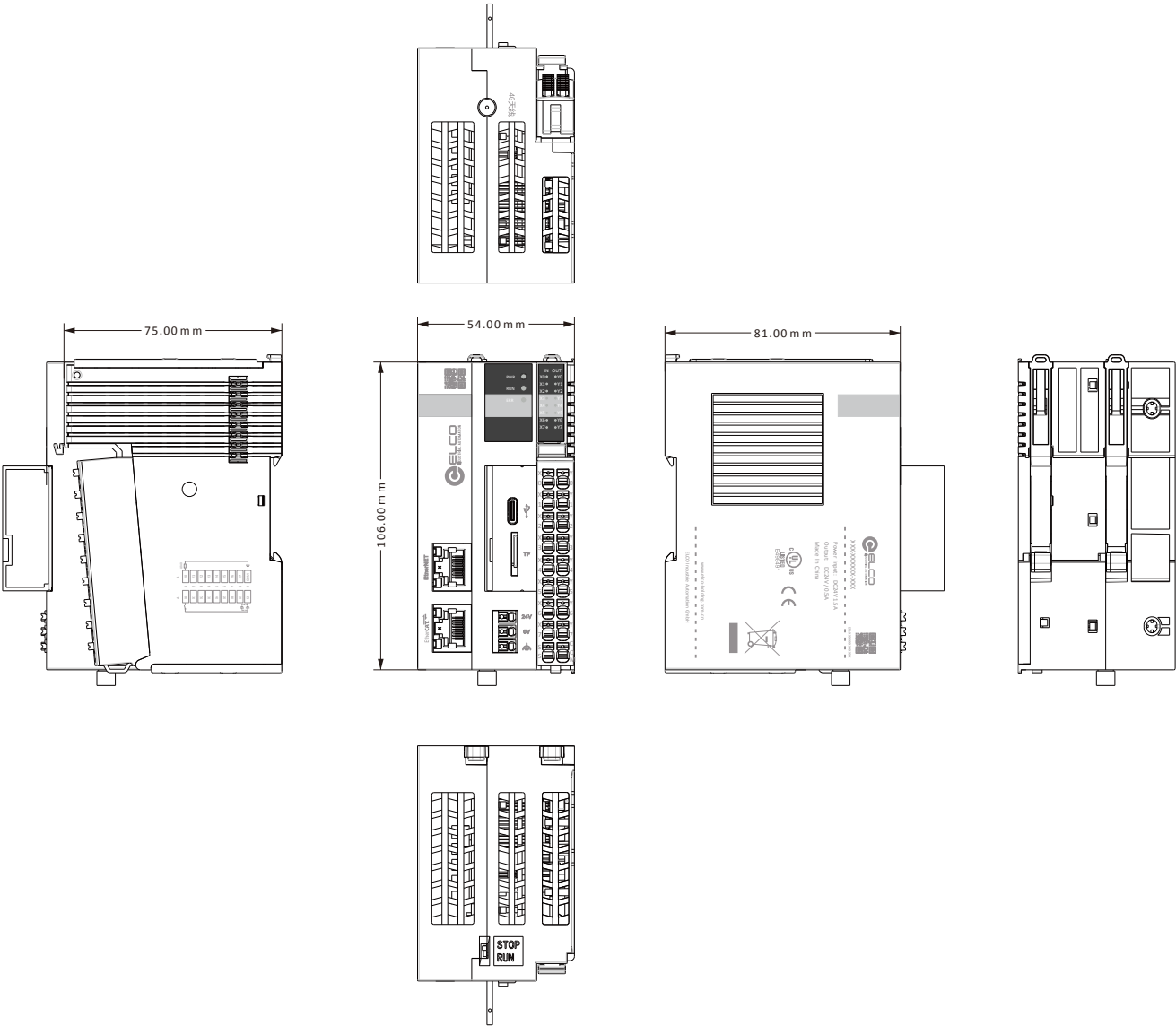
## LogicX0 PLC



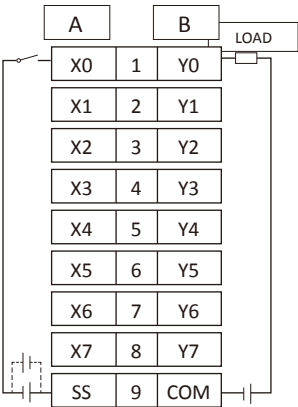
|                                           |                                                                                                                                                                                                                                                            |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hardware parameters                       |                                                                                                                                                                                                                                                            |
| Hardware platform                         | High precision real-time operating system                                                                                                                                                                                                                  |
| Memory                                    | 2 M for program, 512 k for data, 128 k for power-off persistence retain                                                                                                                                                                                    |
| Program operating speed                   | C = NOT (A&B) 20000 cycles:<br>BOOL: 552 us<br>BYTE: 591 us<br>INT: 627 us<br>DINT: 527 us<br>REAL: (A=A*2+1 ) 1950 us                                                                                                                                     |
| EtherNet                                  | Support socket custom communication, program on the download and debugging                                                                                                                                                                                 |
| EtherCAT communication                    | Supports 1 EtherCAT master, up to 72 EtherCAT slaves                                                                                                                                                                                                       |
| Motion axis                               | PDO mode on EtherCAT/4 channel PTO                                                                                                                                                                                                                         |
| Local ordinary input                      | 8 points                                                                                                                                                                                                                                                   |
| Local ordinary output                     | 8 points                                                                                                                                                                                                                                                   |
| Expansion module                          | Supports up to 16 local expansion modules                                                                                                                                                                                                                  |
| TF card                                   | Supports up to 1 TF card, firmware upgradeable                                                                                                                                                                                                             |
| Programming platform                      | CODESYS V3.5 SP19                                                                                                                                                                                                                                          |
| Programming standards                     | IEC61131-3                                                                                                                                                                                                                                                 |
| Programming language                      | ST (Structured Text), LD (Ladder Logic Diagram), CFC (Continuous Function Chart), FBD (Function Block Diagram), SFC (Sequential Function Chart)                                                                                                            |
| Motion control library                    | Single Axis, speed and position                                                                                                                                                                                                                            |
| Type-C                                    | System commissioning, diagnostics, upgrades                                                                                                                                                                                                                |
| Power supply specifications               |                                                                                                                                                                                                                                                            |
| Terminal input power supply rated voltage | 24 V DC $\pm$ 10% (21.6 V DC~26.4 V DC)                                                                                                                                                                                                                    |
| Terminal input power supply rated current | 1 A (max. at 24 V DC)                                                                                                                                                                                                                                      |
| 24 V input power protection               | Support short circuit protection, support reverse connection protection                                                                                                                                                                                    |
| Module hot swap function                  | unsupported                                                                                                                                                                                                                                                |
| General data                              |                                                                                                                                                                                                                                                            |
| Use environment                           | No corrosive, combustible gas, conductive dust (dust) is not serious occasions                                                                                                                                                                             |
| Altitude                                  | Up to 2000 m (80 kPa)                                                                                                                                                                                                                                      |
| Pollution level                           | Level 2                                                                                                                                                                                                                                                    |
| Anti-interference degree                  | IEC 61000-6-2                                                                                                                                                                                                                                              |
| EMC anti-interference level               | Zone B, IEC61131-2                                                                                                                                                                                                                                         |
| Overcurrent protection device             | 2.5 A fuse                                                                                                                                                                                                                                                 |
| Storage temperature and humidity          | Storage temperature: -20 °C ... 70 °C Relative humidity: < 90%RH, no condensation                                                                                                                                                                          |
| Transport temperature and humidity        | Transport temperature: -40 °C ... 70 °C Relative humidity: < 90%RH, no condensation                                                                                                                                                                        |
| Operating temperature and humidity        | Operating temperature: -20 °C ... 55 °C Relative humidity: < 90%RH, no condensation<br>Note: When the operating temperature is higher than the maximum temperature, install a forced fan or air conditioner in the direction of the heat dissipation hole. |

# LogicX0 PLC

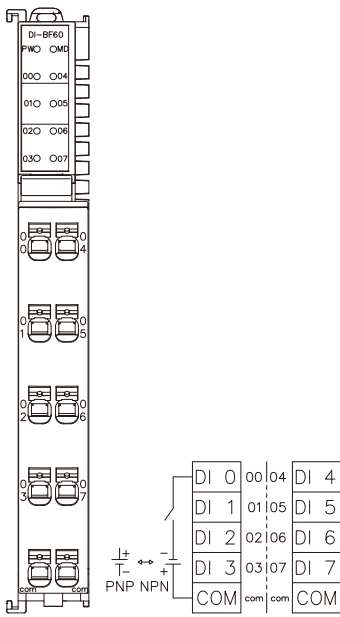
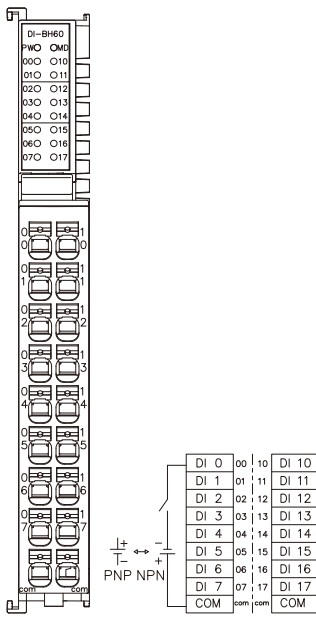
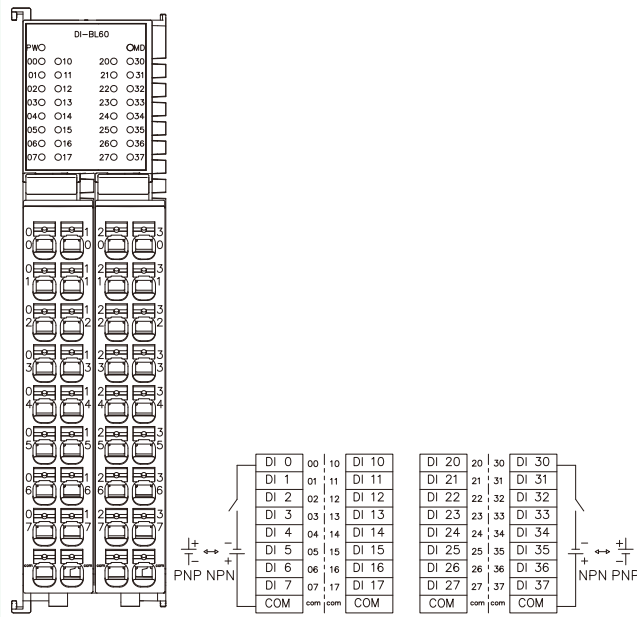
## Product Dimension



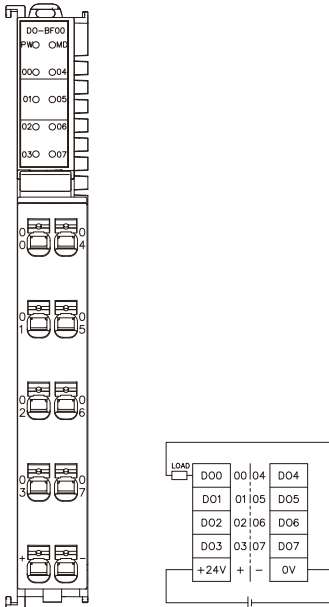
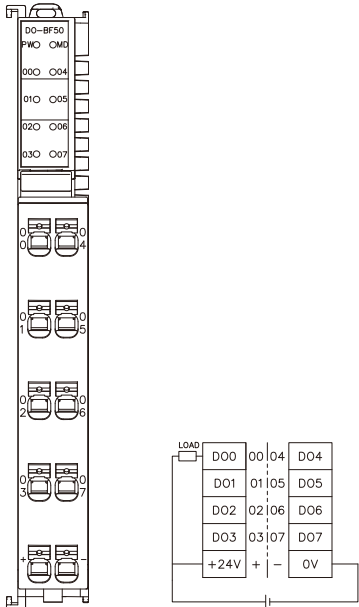
## Wiring diagram



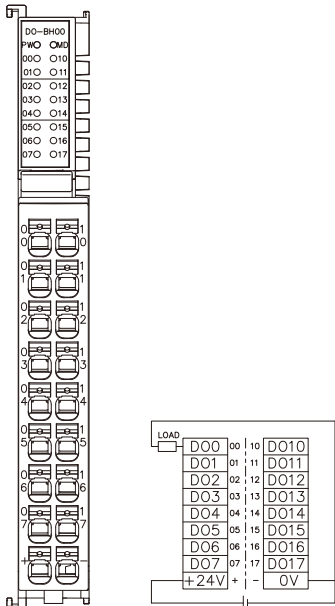
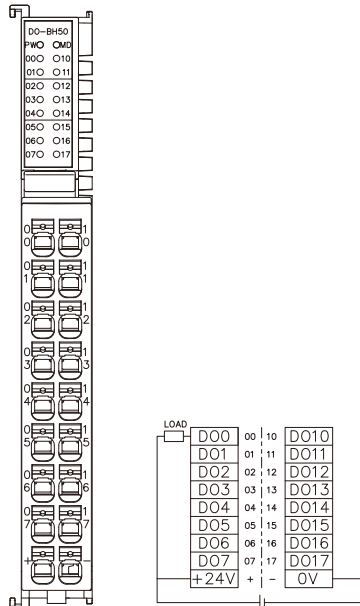
## IP20 Modular I/O system - digital input module

|                           |                                                                                                                                                                                                                                                                                                                                                                              |                                                                                    |                                                                                     |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                           |                                                                                                                                                                                                                                                                                             |  |  |
| Ordering data             |                                                                                                                                                                                                                                                                                                                                                                              |                                                                                    |                                                                                     |
| Product model             | FX20-DI-BF60                                                                                                                                                                                                                                                                                                                                                                 | FX20-DI-BH60                                                                       | FX20-DI-BL60                                                                        |
| Description               | 8-channel input PNP/NPN universal module                                                                                                                                                                                                                                                                                                                                     | 16-channel input PNP/NPN universal module                                          | 32-channel input PNP/NPN universal module                                           |
| Electrical parameters     |                                                                                                                                                                                                                                                                                                                                                                              |                                                                                    |                                                                                     |
| Input channel             | 8                                                                                                                                                                                                                                                                                                                                                                            | 16                                                                                 | 32                                                                                  |
| Input type                | Universal for PNP/NPN                                                                                                                                                                                                                                                                                                                                                        | Universal for PNP/NPN                                                              | Universal for PNP/NPN                                                               |
| Input signal '0'          | DC 0 ... 5 V                                                                                                                                                                                                                                                                                                                                                                 | DC 0 ... 5 V                                                                       | DC 0 ... 5 V                                                                        |
| Input signal '1'          | DC 18 ... 30 V                                                                                                                                                                                                                                                                                                                                                               | DC 18 ... 30 V                                                                     | DC 18 ... 30 V                                                                      |
| Input current             | typ. 4 mA                                                                                                                                                                                                                                                                                                                                                                    | typ. 4 mA                                                                          | typ. 4 mA                                                                           |
| Input filtering delay     | 0 ms, 1 ms, 3 ms, 10 ms                                                                                                                                                                                                                                                                                                                                                      | 0 ms, 1 ms, 3 ms, 10 ms                                                            | 0 ms, 1 ms, 3 ms, 10 ms                                                             |
| Current consumption (5 V) | 60 mA                                                                                                                                                                                                                                                                                                                                                                        | 60 mA                                                                              | 60 mA                                                                               |
| Process data length       | 1 byte                                                                                                                                                                                                                                                                                                                                                                       | 2 bytes                                                                            | 4 bytes                                                                             |
| General data              |                                                                                                                                                                                                                                                                                                                                                                              |                                                                                    |                                                                                     |
| Protection grade          | IP20                                                                                                                                                                                                                                                                                                                                                                         |                                                                                    |                                                                                     |
| Installation              | Standard 35 mm DIN rail installation, for indoor use only                                                                                                                                                                                                                                                                                                                    |                                                                                    |                                                                                     |
| Temperature range         | Working temperature: -5 ... +60 °C, storage temperature: -25 ... +70 °C                                                                                                                                                                                                                                                                                                      |                                                                                    |                                                                                     |
| Working altitude          | 0 ... 2000 m                                                                                                                                                                                                                                                                                                                                                                 |                                                                                    |                                                                                     |
| Relative humidity         | 15%-95%, non condensation                                                                                                                                                                                                                                                                                                                                                    |                                                                                    |                                                                                     |
| Module weight             | 63 g                                                                                                                                                                                                                                                                                                                                                                         | 63 g                                                                               | 128 g                                                                               |
| Module size (H × W × D)   | 79 mm × 15 mm × 110 mm                                                                                                                                                                                                                                                                                                                                                       | 79 mm × 15 mm × 110 mm                                                             | 79 mm × 28 mm × 110 mm                                                              |
| Wiring diagram            | <div> <div> <p>FX20-DI-BF60</p>  </div> <div> <p>FX20-DI-BH60</p>  </div> <div> <p>FX20-DI-BL60</p>  </div> </div> |                                                                                    |                                                                                     |

## IP20 Modular I/O system - digital output module

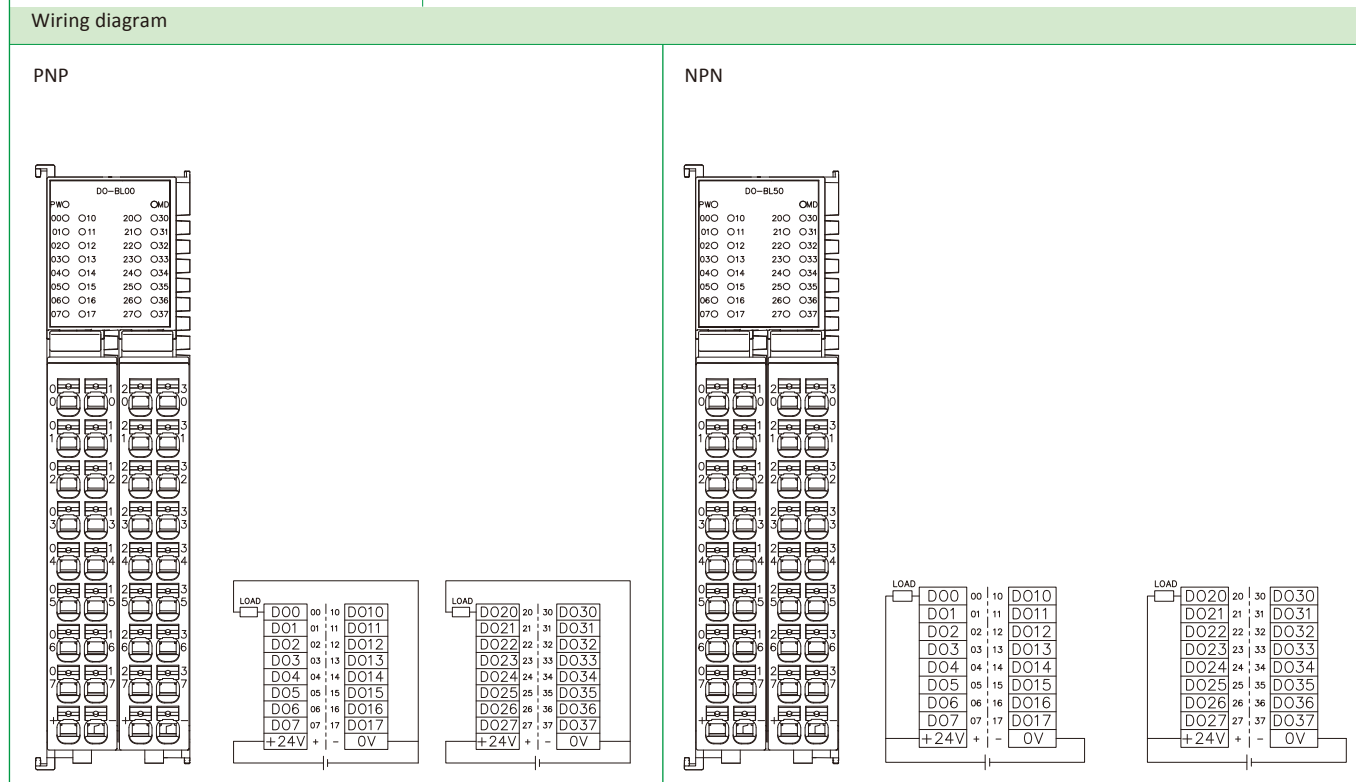
|                           |                                                                                     |                                                                                       |
|---------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                           |    |    |
| Ordering data             |                                                                                     |                                                                                       |
| Product model             | FX20-DO-BF00                                                                        | FX20-DO-BF50                                                                          |
| Description               | 8-channel output module for PNP                                                     | 8-channel output module for NPN                                                       |
| Electrical parameters     |                                                                                     |                                                                                       |
| Output channel            | 8                                                                                   | 8                                                                                     |
| Output type               | PNP                                                                                 | NPN                                                                                   |
| Output current            | Max. 0.5 A per channel, total 4 A                                                   | Max. 0.5 A per channel, total 4 A                                                     |
| Load type                 | Resistive load/inductive load/lamp load                                             | Resistive load/inductive load/lamp load                                               |
| Switching frequency       | Max 1 KHz/Max 1 Hz/Max 10 Hz                                                        | Max 1 KHz/Max 1 Hz/Max 10 Hz                                                          |
| Current consumption (5 V) | 60 mA                                                                               | 60 mA                                                                                 |
| Process data length       | 1 byte                                                                              | 1 byte                                                                                |
| General data              |                                                                                     |                                                                                       |
| Protection grade          | IP20                                                                                |                                                                                       |
| Installation              | Standard 35 mm DIN rail installation, for indoor use only                           |                                                                                       |
| Temperature range         | Working temperature: -5 ... +60 °C, storage temperature: -25 ... +70 °C             |                                                                                       |
| Working altitude          | 0 ... 2000 m                                                                        |                                                                                       |
| Relative humidity         | 15%-95%, non condensation                                                           |                                                                                       |
| Module weight             | 66 g                                                                                |                                                                                       |
| Module size (H × W × D)   | 79 mm × 15 mm × 110 mm                                                              |                                                                                       |
| Wiring diagram            |                                                                                     |                                                                                       |
|                           |  |  |

## IP20 Modular I/O system - digital output module

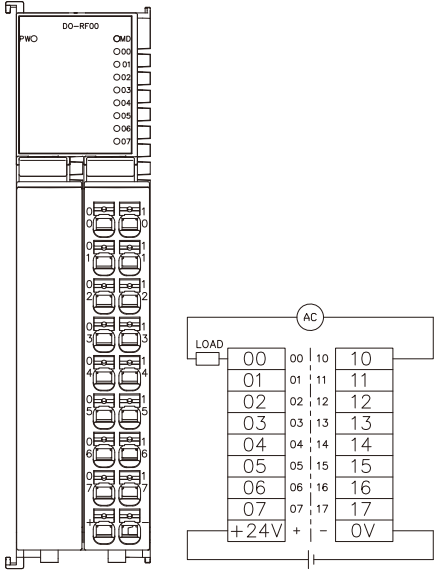
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|---------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                           |    |    |
| Ordering data             |                                                                                     |                                                                                       |
| Product model             | FX20-DO-BH00                                                                        | FX20-DO-BH50                                                                          |
| Description               | 16-channel output module for PNP                                                    | 16-channel output module for NPN                                                      |
| Electrical parameters     |                                                                                     |                                                                                       |
| Output channel            | 16                                                                                  | 16                                                                                    |
| Output type               | PNP                                                                                 | NPN                                                                                   |
| Output current            | Max. 0.5 A per channel, total 4 A                                                   | Max. 0.5 A per channel, total 4 A                                                     |
| Load type                 | Resistive load/inductive load/lamp load                                             | Resistive load/inductive load/lamp load                                               |
| Switching frequency       | Max 1 KHz/Max 1 Hz/Max 10 Hz                                                        | Max 1 KHz/Max 1 Hz/Max 10 Hz                                                          |
| Current consumption (5 V) | 65 mA                                                                               | 65 mA                                                                                 |
| Process data length       | 2 bytes                                                                             | 2 bytes                                                                               |
| General data              |                                                                                     |                                                                                       |
| Protection grade          | IP20                                                                                |                                                                                       |
| Installation              | Standard 35 mm DIN rail installation, for indoor use only                           |                                                                                       |
| Temperature range         | Working temperature: -5 ... +60 °C, storage temperature: -25 ... +70 °C             |                                                                                       |
| Working altitude          | 0 ... 2000 m                                                                        |                                                                                       |
| Relative humidity         | 15%-95%, non condensation                                                           |                                                                                       |
| Module weight             | 66 g                                                                                |                                                                                       |
| Module size (H × W × D)   | 79 mm × 15 mm × 110 mm                                                              |                                                                                       |
| Wiring diagram            |                                                                                     |                                                                                       |
|                           |  |  |



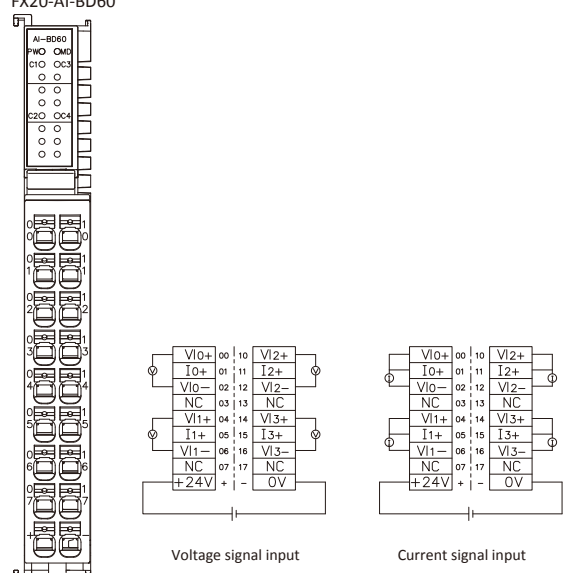
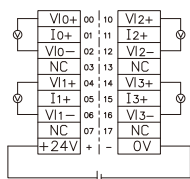
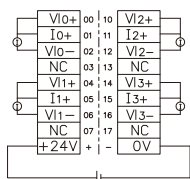
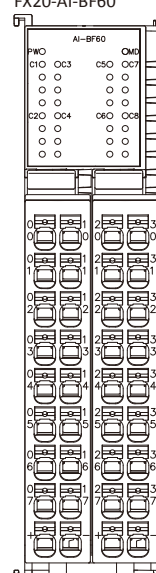
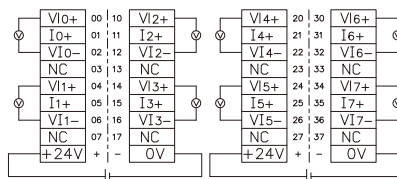
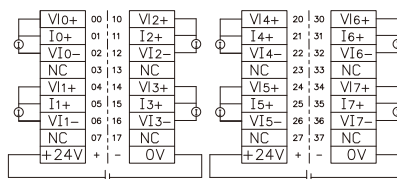
| Ordering data              |                                                                         |                                         |
|----------------------------|-------------------------------------------------------------------------|-----------------------------------------|
| Product model              | FX20-DO-BL00                                                            | FX20-DO-BL50                            |
| Description                | 32-channel output module for PNP                                        | 32-channel output module for NPN        |
| Electrical parameters      |                                                                         |                                         |
| Output channel             | 32                                                                      | 32                                      |
| Output type                | PNP                                                                     | NPN                                     |
| Output current per channel | Max. 0.5 A per channel, total 4 A                                       | Max. 0.5 A per channel, total 4 A       |
| Load type                  | Resistive load/inductive load/lamp load                                 | Resistive load/inductive load/lamp load |
| Switching frequency        | Max 1 KHz/Max 1 Hz/Max 10 Hz                                            | Max 1 KHz/Max 1 Hz/Max 10 Hz            |
| Current consumption (5 V)  | 65 mA                                                                   | 65 mA                                   |
| Process data length        | 4 bytes                                                                 | 4 bytes                                 |
| General data               |                                                                         |                                         |
| Protection grade           | IP20                                                                    |                                         |
| Installation               | Standard 35 mm DIN rail installation, for indoor use only               |                                         |
| Temperature range          | Working temperature: -5 ... +60 °C, storage temperature: -25 ... +70 °C |                                         |
| Working altitude           | 0 ... 2000 m                                                            |                                         |
| Relative humidity          | 15%-95%, non condensation                                               |                                         |
| Module weight              | 128 g                                                                   |                                         |
| Module size (H × W × D)    | 79 mm × 28 mm × 110 mm                                                  |                                         |



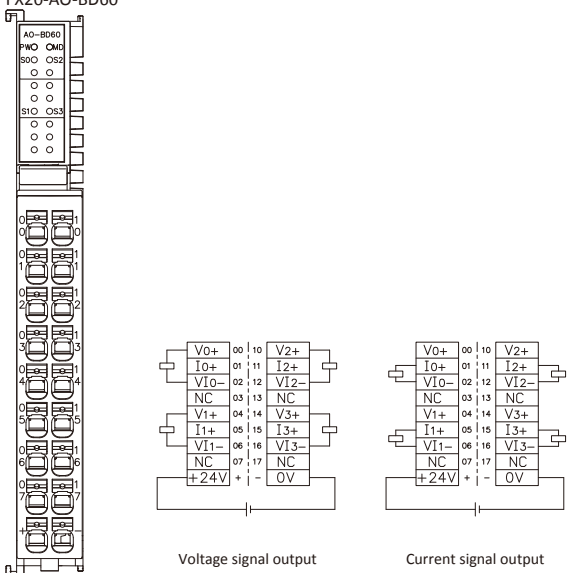
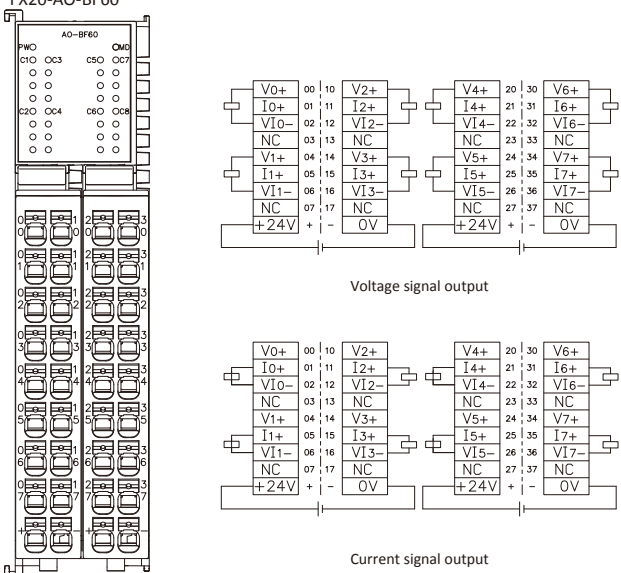
## IP20 Modular I/O system - relay output module

|                              |                                                                                      |                                                                                     |
|------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                              |     |  |
| Ordering data                |                                                                                      |                                                                                     |
| Product model                | FX20-DO-RF00                                                                         | FX20-DO-RF50                                                                        |
| Description                  | 8DO, SSR, floating ground, AC 230 V, 0.5 A                                           | 8DO, Relay, floating ground, AC 250 V/DC 30 V, 2 A                                  |
| Electrical parameters        |                                                                                      |                                                                                     |
| Output channel               | 8                                                                                    | 8                                                                                   |
| Output Type                  | AC solid state relay                                                                 | Mechanical relay                                                                    |
| Output voltage               | 220 V AC                                                                             | 250 V AC/30 V DC                                                                    |
| Output load (Resistive load) | 500 mA/point, 4 A/model                                                              | 2 A/point, 8 A/model                                                                |
| Output load (Inductive load) | —                                                                                    | 1 A/point, 4 A/model                                                                |
| Output load (Lamp load)      | 250 mA/point, 2 A/model                                                              | 30 W/point, 120 W/model                                                             |
| Relay response time          | 3 ... 10 ms                                                                          | about 15 ms                                                                         |
| Switching frequency          | Max. 0.5 Hz (Resistive load)                                                         | ≤6 times/minute                                                                     |
| Electrical life              | 20 million times                                                                     | 100,000 times                                                                       |
| Current consumption (5 V)    | 80 mA                                                                                | 65 mA                                                                               |
| Process data length          | 1 byte                                                                               | 1 byte                                                                              |
| General data                 |                                                                                      |                                                                                     |
| Protection grade             | IP20                                                                                 |                                                                                     |
| Installation                 | Standard 35 mm DIN rail installation, for indoor use only                            |                                                                                     |
| Temperature range            | Working temperature: -5 ... +60 °C, storage temperature: -25 ... +70 °C              |                                                                                     |
| Working altitude             | 0 ... 2000 m                                                                         |                                                                                     |
| Relative humidity            | 15%-95%, non condensation                                                            |                                                                                     |
| Module weight                | 128 g                                                                                |                                                                                     |
| Module size (H × W × D)      | 79 × 28 × 110 mm                                                                     |                                                                                     |
| Wiring diagram               |  |                                                                                     |

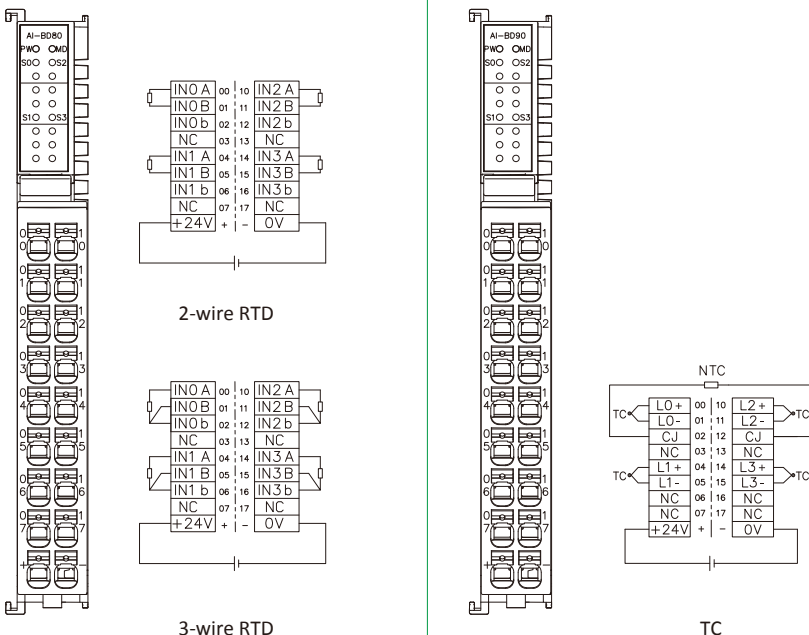
## IP20 Modular I/O system - analog input/output module

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                   |                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |
| Ordering data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                   |                                                                                     |
| Product model                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | FX20-AI-BD60                                                                      | FX20-AI-BF60                                                                        |
| Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 4-channel input module for voltage and current types                              | 8-channel input module for voltage and current types                                |
| Electrical parameters                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                   |                                                                                     |
| Input channel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 4                                                                                 | 8                                                                                   |
| Input Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0 ... 10 V, +/-10 V, 1 ... 5 V, 0/4 ... 20 mA, +/-20 mA                           | 0 ... 10 V, +/-10 V, 1 ... 5 V, 0/4 ... 20 mA, +/-20 mA                             |
| Input impedance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Current type: 250 Ω; Voltage type: 1 MΩ                                           | Current type: 250 Ω; Voltage type: 1 MΩ                                             |
| Input resolution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 16 Bits                                                                           | 16 Bits                                                                             |
| Conversion time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3 ms                                                                              | 3 ms                                                                                |
| Measurement accuracy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ± 0.2%                                                                            | ± 0.2%                                                                              |
| Output channel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | /                                                                                 | /                                                                                   |
| Output type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | /                                                                                 | /                                                                                   |
| Output resolution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | /                                                                                 | /                                                                                   |
| Conversion time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | /                                                                                 | /                                                                                   |
| Output accuracy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | /                                                                                 | /                                                                                   |
| Process data length                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 8 bytes                                                                           | 16 bytes                                                                            |
| General data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                   |                                                                                     |
| Protection grade                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | IP20                                                                              |                                                                                     |
| Installation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Standard 35 mm DIN rail installation                                              |                                                                                     |
| Temperature range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Working temperature: -5 ... +60 °C, storage temperature: -25 ... +70 °C           |                                                                                     |
| Working altitude                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0-2000 m                                                                          |                                                                                     |
| Relative humidity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 15%-95%, non condensation                                                         |                                                                                     |
| Module weight                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 70 g                                                                              | 130 g                                                                               |
| Module size (H × W × D)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 79 mm × 15 mm × 110 mm                                                            | 79 mm × 28 mm × 110 mm                                                              |
| Wiring diagram                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                   |                                                                                     |
| <div><div><div><p>FX20-AI-BD60</p></div><div><p>Voltage signal input</p></div><div><p>Current signal input</p></div></div><div><div><p>FX20-AI-BF60</p></div><div><p>Voltage signal input</p></div><div><p>Current signal input</p></div></div></div> |                                                                                   |                                                                                     |

## IP20 Modular I/O system - analog input/output module

|                                                                                                                                                                          |                                                                         |                                                                                                                                                                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                         |                                                                         |                                                                                        |
| Ordering data                                                                                                                                                            |                                                                         |                                                                                                                                                                           |
| Product model                                                                                                                                                            | FX20-AO-BD60                                                            | FX20-AO-BF60                                                                                                                                                              |
| Description                                                                                                                                                              | 4-channel output module for voltage and current types                   | 8-channel output module for voltage and current types                                                                                                                     |
| Electrical parameters                                                                                                                                                    |                                                                         |                                                                                                                                                                           |
| Input channel                                                                                                                                                            | /                                                                       | /                                                                                                                                                                         |
| Input Type                                                                                                                                                               | /                                                                       | /                                                                                                                                                                         |
| Input impedance                                                                                                                                                          | /                                                                       | /                                                                                                                                                                         |
| Input resolution                                                                                                                                                         | /                                                                       | /                                                                                                                                                                         |
| Conversion time                                                                                                                                                          | /                                                                       | /                                                                                                                                                                         |
| Measurement accuracy                                                                                                                                                     | /                                                                       | /                                                                                                                                                                         |
| Output channel                                                                                                                                                           | 4                                                                       | 8                                                                                                                                                                         |
| Output type                                                                                                                                                              | 1 ... 5 V, 0 ... 10 V, $\pm 10$ V, 0/4 ... 20 mA                        | 1 ... 5 V, 0 ... 10 V, $\pm 10$ V, 0/4 ... 20 mA                                                                                                                          |
| Output resolution                                                                                                                                                        | 16 Bits                                                                 | 16 Bits                                                                                                                                                                   |
| Conversion time                                                                                                                                                          | 2 ms                                                                    | 2 ms                                                                                                                                                                      |
| Output accuracy                                                                                                                                                          | $\pm 0.2\%$                                                             | $\pm 0.2\%$                                                                                                                                                               |
| Process data length                                                                                                                                                      | 8 bytes                                                                 | 16 bytes                                                                                                                                                                  |
| General data                                                                                                                                                             |                                                                         |                                                                                                                                                                           |
| Protection grade                                                                                                                                                         | IP20                                                                    |                                                                                                                                                                           |
| Installation                                                                                                                                                             | Standard 35 mm DIN rail installation                                    |                                                                                                                                                                           |
| Temperature range                                                                                                                                                        | Working temperature: -5 ... +60 °C, storage temperature: -25 ... +70 °C |                                                                                                                                                                           |
| Working altitude                                                                                                                                                         | 0-2000 m                                                                |                                                                                                                                                                           |
| Relative humidity                                                                                                                                                        | 15%-95%, non condensation                                               |                                                                                                                                                                           |
| Module weight                                                                                                                                                            | 70 g                                                                    | 130 g                                                                                                                                                                     |
| Module size (H × W × D)                                                                                                                                                  | 79 mm × 15 mm × 110 mm                                                  | 79 mm × 28 mm × 110 mm                                                                                                                                                    |
| Wiring diagram                                                                                                                                                           |                                                                         |                                                                                                                                                                           |
| <p><b>FX20-AO-BD60</b></p>  <p>Voltage signal output</p> <p>Current signal output</p> |                                                                         | <p><b>FX20-AO-BF60</b></p>  <p>Voltage signal output</p> <p>Current signal output</p> |

# IP20 Modular I/O system - temperature measuring module

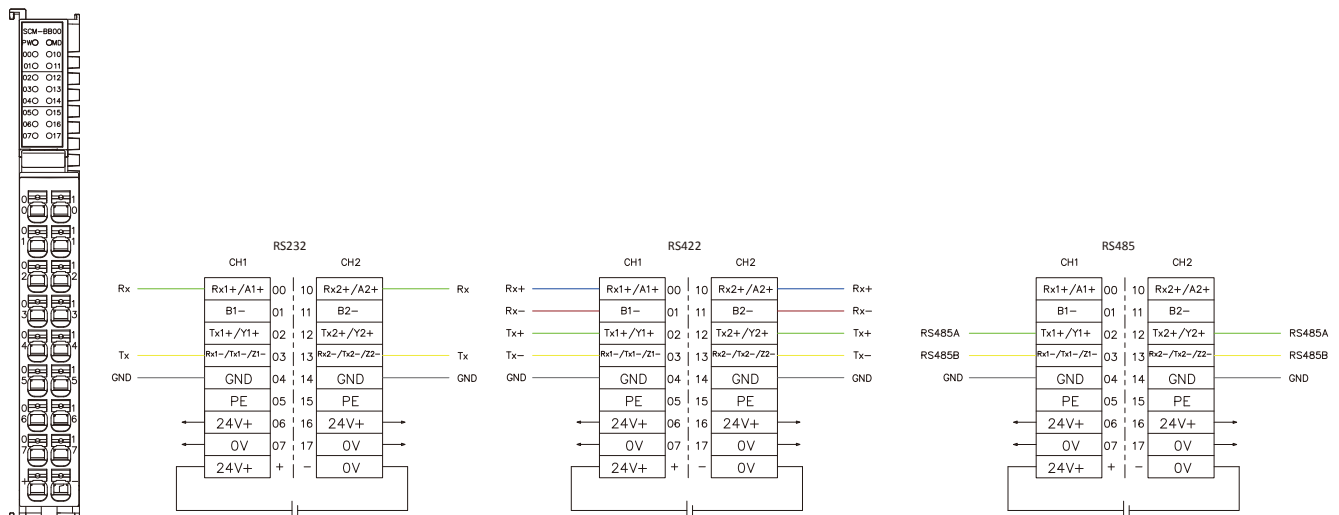
|                         |                                                                                                                                    |                                                                                     |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                         |                                                   |  |
| Ordering data           |                                                                                                                                    |                                                                                     |
| Product model           | FX20-AI-BD80                                                                                                                       | FX20-AI-BD90                                                                        |
| Description             | 4-channel, RTD measurement module                                                                                                  | 4-channel, TC measurement module                                                    |
| Electrical parameters   |                                                                                                                                    |                                                                                     |
| Input channel           | 4                                                                                                                                  | 4                                                                                   |
| Input type              | Thermal resistance, (2-wire, 3-wire)                                                                                               | Thermocouple: J, K, T, N, E type                                                    |
| Resolution              | 16 Bits                                                                                                                            | 16 Bits                                                                             |
| Sensitivity             | 0.1 °C                                                                                                                             | 0.1 °C                                                                              |
| Measurement accuracy    | Within 2 °C                                                                                                                        | Within 2 °C                                                                         |
| Process data length     | 8 bytes                                                                                                                            | 8 bytes                                                                             |
| General data            |                                                                                                                                    |                                                                                     |
| Protection grade        | IP20                                                                                                                               |                                                                                     |
| Installation            | Standard 35 mm DIN rail installation, for indoor use only                                                                          |                                                                                     |
| Temperature range       | Working temperature: -5 ... +60 °C, storage temperature: -25 ... +70 °C                                                            |                                                                                     |
| Working altitude        | 0 ... 2000 m                                                                                                                       |                                                                                     |
| Relative humidity       | 15%-95%, non condensation                                                                                                          |                                                                                     |
| Module weight           | 70 g                                                                                                                               |                                                                                     |
| Module size (H × W × D) | 79 mm × 15 mm × 110 mm                                                                                                             |                                                                                     |
| Wiring diagram          |  <p>2-wire RTD</p> <p>3-wire RTD</p> <p>TC</p> |                                                                                     |

## IP20 Modular I/O system - serial communication module



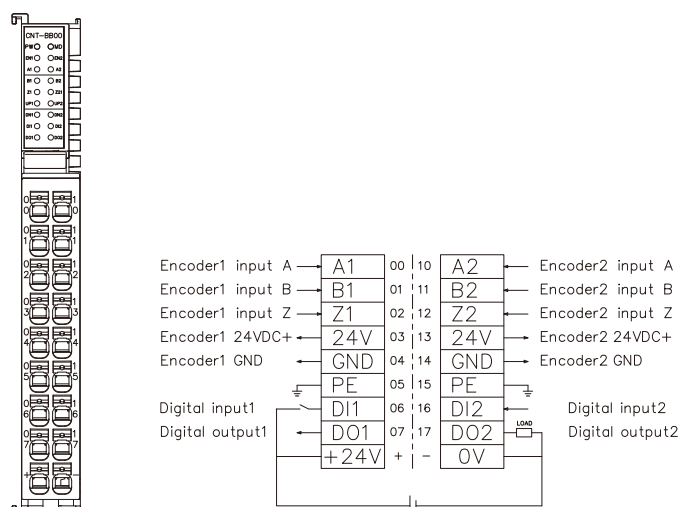
|                         |                                                                                           |
|-------------------------|-------------------------------------------------------------------------------------------|
| Ordering data           |                                                                                           |
| Product model           | FX20-SCM-BB00                                                                             |
| Description             | Dual channel, compatible with RS485 / RS422 / RS232                                       |
| Electrical parameters   |                                                                                           |
| Input channel           | 2                                                                                         |
| Interface type          | Terminal type                                                                             |
| Communication methods   | RS485: 2-wire, half duplex;<br>RS422: 4-wire, full duplex;<br>RS232: 2-wire, half duplex; |
| Working mode            | MODBUS master station, slave station, free transparent transmission                       |
| Communication protocol  | MODBUS RTU, MODBUS ASCII, free port                                                       |
| Baud rate               | Default 115200 bps, 300 bps-921600 bps can be set                                         |
| Data bits               | 7-bit or 8-bit                                                                            |
| Stop bit                | 1 or 2 stop bits can be set                                                               |
| Check bit               | No checksum, odd or even checksum can be set                                              |
| Timeout time            | Default 100ms, 2-65535 ms can be set                                                      |
| Slave station number    | 1-247                                                                                     |
| Communication distance  | RS485/RS422: max. 30 m; RS232: max. 10 m                                                  |
| Process data length     | Received data: 21 bytes, sent data: 15 bytes                                              |
| General data            |                                                                                           |
| Protection level        | IP20                                                                                      |
| Installation method     | Standard 35 mm DIN rail installation, for indoor use only                                 |
| Temperature range       | Working temperature: -5 ... +60 °C, storage temperature: -25 ... +70 °C                   |
| Working altitude        | 0 ... 2000 m                                                                              |
| Relative humidity       | 15%-95%, non condensation                                                                 |
| Module weight           | 70 g                                                                                      |
| Module size (H x W x D) | 79 mm x 15 mm x 110 mm                                                                    |

### Wiring diagram

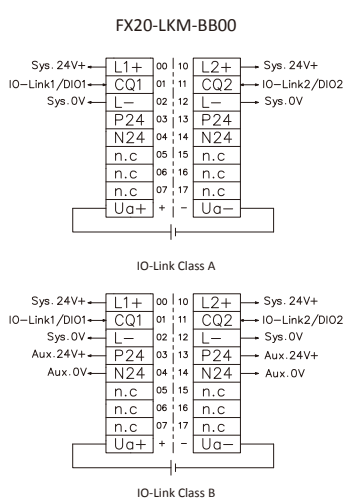
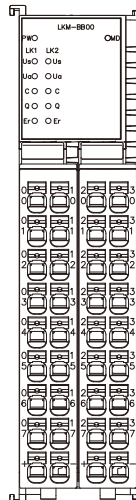
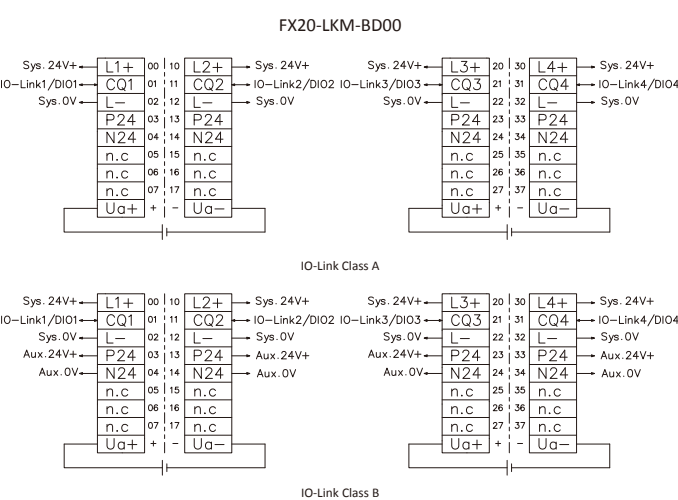
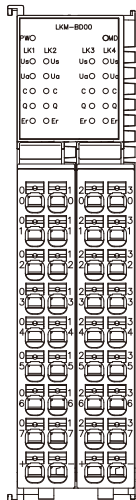


# IP20 Modular I/O system - high speed counting module



|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ordering data                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Product model                   | FX20-CNT-BB00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Description                     | Dual channel ABZ three-phase high-speed counting module, 24 V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Electrical parameters           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Input channel                   | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Interface type                  | Terminal type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Encoder power supply terminal   | 2 x 24 VDC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Encoder input                   | ABZ three-phase, 24 V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Input type                      | Source type, leakage type, and push-pull type can be set                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Counting mode                   | B pulse mode, B pulse+A direction mode, A+B mode, A+B+Z mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Counting frequency              | Max. 500 kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Encoder frequency doubling mode | x1/x2/x4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Count data length               | 32 bits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Counting range                  | -2147483648 ... 2147483647                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Count comparison function       | Support                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Forward and reverse counting    | Support                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Counting alarm function         | Support                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Filtering function              | 0-10ms can be set                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| IO channel                      | Input: 2 PNP/NPN, output: 2 PNP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| General data                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Protection level                | IP20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Installation method             | Standard 35 mm DIN rail installation, for indoor use only                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Temperature range               | Working temperature: -5 ... +60 °C, storage temperature: -25 ... +70 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Working altitude                | 0 ... 2000 m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Relative humidity               | 15%-95%, non condensation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Module weight                   | 70 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Module size (H x W x D)         | 79 mm x 15 mm x 110 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Wiring diagram                  |  <p>Encoder1 input A → A1 00   10 A2 → Encoder2 input A</p> <p>Encoder1 input B → B1 01   11 B2 → Encoder2 input B</p> <p>Encoder1 input Z → Z1 02   12 Z2 → Encoder2 input Z</p> <p>Encoder1 24VDC+ → 24V 03   13 24V → Encoder2 24VDC+</p> <p>Encoder1 GND → GND 04   14 GND → Encoder2 GND</p> <p>PE 05   15 PE →</p> <p>Digital input1 → DI1 06   16 DI2 → Digital input2</p> <p>Digital output1 → DO1 07   17 DO2 → Digital output2</p> <p>+24V + - 0V</p> |

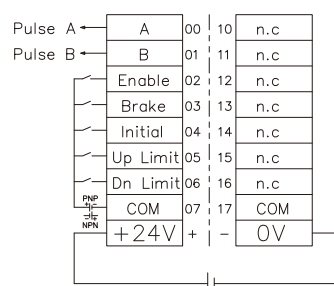
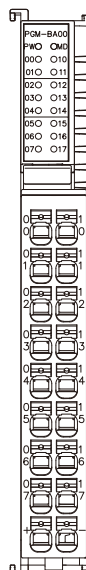
## IP20 Modular I/O system - IO Link master station module

|                                                                                                                                                                                                                                                                                                                                                                                |  |                                                                         |                                                                                     |                                                    |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------|--|
|                                                                                                                                                                                                                                                                                               |  |                                                                         |  |                                                    |  |
| Ordering data                                                                                                                                                                                                                                                                                                                                                                  |  |                                                                         |                                                                                     |                                                    |  |
| Product model                                                                                                                                                                                                                                                                                                                                                                  |  | FX20-LKM-BB00                                                           |                                                                                     | FX20-LKM-BD00                                      |  |
| Description                                                                                                                                                                                                                                                                                                                                                                    |  | 2-channel IO-Link master, ClassA/ClassB, 2*32 bytes                     |                                                                                     | 4-channel IO-Link master, ClassA/ClassB, 4*8 bytes |  |
| Electrical parameters                                                                                                                                                                                                                                                                                                                                                          |  |                                                                         |                                                                                     |                                                    |  |
| Working voltage                                                                                                                                                                                                                                                                                                                                                                |  | 24 V DC                                                                 |                                                                                     |                                                    |  |
| System power supply $U_s$ current                                                                                                                                                                                                                                                                                                                                              |  | 4 A                                                                     |                                                                                     |                                                    |  |
| Auxiliary power supply $U_a$ current                                                                                                                                                                                                                                                                                                                                           |  | 4 A                                                                     |                                                                                     |                                                    |  |
| IO Link Channel Count                                                                                                                                                                                                                                                                                                                                                          |  | 2                                                                       |                                                                                     | 4                                                  |  |
| IO Link type                                                                                                                                                                                                                                                                                                                                                                   |  | IO-Link master ClassA/ClassB                                            |                                                                                     |                                                    |  |
| IO Link version                                                                                                                                                                                                                                                                                                                                                                |  | IO-Link V 1.1.2                                                         |                                                                                     |                                                    |  |
| IO Link communication speed                                                                                                                                                                                                                                                                                                                                                    |  | COM1 (4.8 kbps), COM2 (38.4 kbps), COM3 (230.4 kbps)                    |                                                                                     |                                                    |  |
| Process data length                                                                                                                                                                                                                                                                                                                                                            |  | 32 bytes per channel                                                    |                                                                                     | 8 bytes per channel                                |  |
| Input channel                                                                                                                                                                                                                                                                                                                                                                  |  | Max. 2                                                                  |                                                                                     | Max. 4                                             |  |
| Input power supply current                                                                                                                                                                                                                                                                                                                                                     |  | Pin1: 200 mA per channel                                                |                                                                                     |                                                    |  |
| Input signal type                                                                                                                                                                                                                                                                                                                                                              |  | PNP type sensors, travel switches, dry contacts, etc. (SIO mode)        |                                                                                     |                                                    |  |
| Input filtering delay                                                                                                                                                                                                                                                                                                                                                          |  | 1.6 ms                                                                  |                                                                                     |                                                    |  |
| Number of output channels                                                                                                                                                                                                                                                                                                                                                      |  | Max. 2                                                                  |                                                                                     | Max. 4                                             |  |
| Output current                                                                                                                                                                                                                                                                                                                                                                 |  | Pin2: max. 2 A; Pin4: max. 100 mA                                       |                                                                                     |                                                    |  |
| Type of output                                                                                                                                                                                                                                                                                                                                                                 |  | Indicator lights, micro solenoid valves, etc. (SIO mode)                |                                                                                     |                                                    |  |
| General data                                                                                                                                                                                                                                                                                                                                                                   |  |                                                                         |                                                                                     |                                                    |  |
| Protection level                                                                                                                                                                                                                                                                                                                                                               |  | IP20                                                                    |                                                                                     |                                                    |  |
| Installation method                                                                                                                                                                                                                                                                                                                                                            |  | Standard 35 mm DIN rail installation, for indoor use only               |                                                                                     |                                                    |  |
| Temperature range                                                                                                                                                                                                                                                                                                                                                              |  | Working temperature: -5 ... +60 °C, storage temperature: -25 ... +70 °C |                                                                                     |                                                    |  |
| Working altitude                                                                                                                                                                                                                                                                                                                                                               |  | 0 ... 2000 m                                                            |                                                                                     |                                                    |  |
| Relative humidity                                                                                                                                                                                                                                                                                                                                                              |  | 15%-95%, non condensation                                               |                                                                                     |                                                    |  |
| Module weight                                                                                                                                                                                                                                                                                                                                                                  |  | 128 g                                                                   |                                                                                     |                                                    |  |
| Module size (H x W x D)                                                                                                                                                                                                                                                                                                                                                        |  | 79 x 28 x 110 mm                                                        |                                                                                     |                                                    |  |
| Wiring diagram                                                                                                                                                                                                                                                                                                                                                                 |  |                                                                         |                                                                                     |                                                    |  |
| <div><div></div><div></div></div> |  |                                                                         |                                                                                     |                                                    |  |

## IP20 Modular I/O system - pulse output module



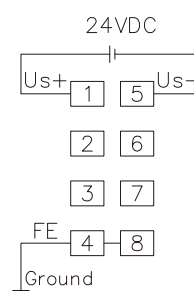
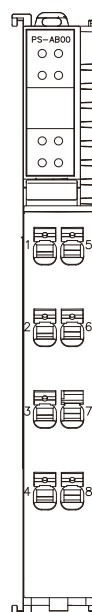
|                                    |                                                                         |
|------------------------------------|-------------------------------------------------------------------------|
| Ordering data                      |                                                                         |
| Product model                      | FX20-PGM-BA00                                                           |
| Description                        | Single channel pulse output module, 24 V                                |
| Electrical parameters              |                                                                         |
| Supply voltage                     | 24 V DC ( $\pm 20\%$ )                                                  |
| Output channel                     | 1                                                                       |
| Interface type                     | Termianl                                                                |
| Supply terminal                    | 1 x 24 V DC                                                             |
| Output frequency range             | 1 ... 200 kHz                                                           |
| Pulse mode                         | Single pulse (pulse + direction), double pulse (CW/CCW)                 |
| Input channel                      | 4-channel, PNP/NPN                                                      |
| Input channel function             | Brake, origin switch, upper limit, lower limit                          |
| Process data length                | Input: 12 bytes; output: 12 bytes                                       |
| Configure channel-level parameters | Support                                                                 |
| Return-to-zero mode                | Support                                                                 |
| Force on the brakes                | Support                                                                 |
| General data                       |                                                                         |
| Protection grade                   | IP20                                                                    |
| Installation                       | Standard 35 mm DIN rail installation, for indoor use only               |
| Temperature range                  | Working temperature: -5 ... +60 °C, storage temperature: -25 ... +70 °C |
| Working altitude                   | 0 ... 2000 m                                                            |
| Relative humidity                  | 15%-95%, non condensation                                               |
| Module weight                      | 70 g                                                                    |
| Module size (H x W x D)            | 79 x 15 x 110 mm                                                        |
| Wiring diagram                     |                                                                         |



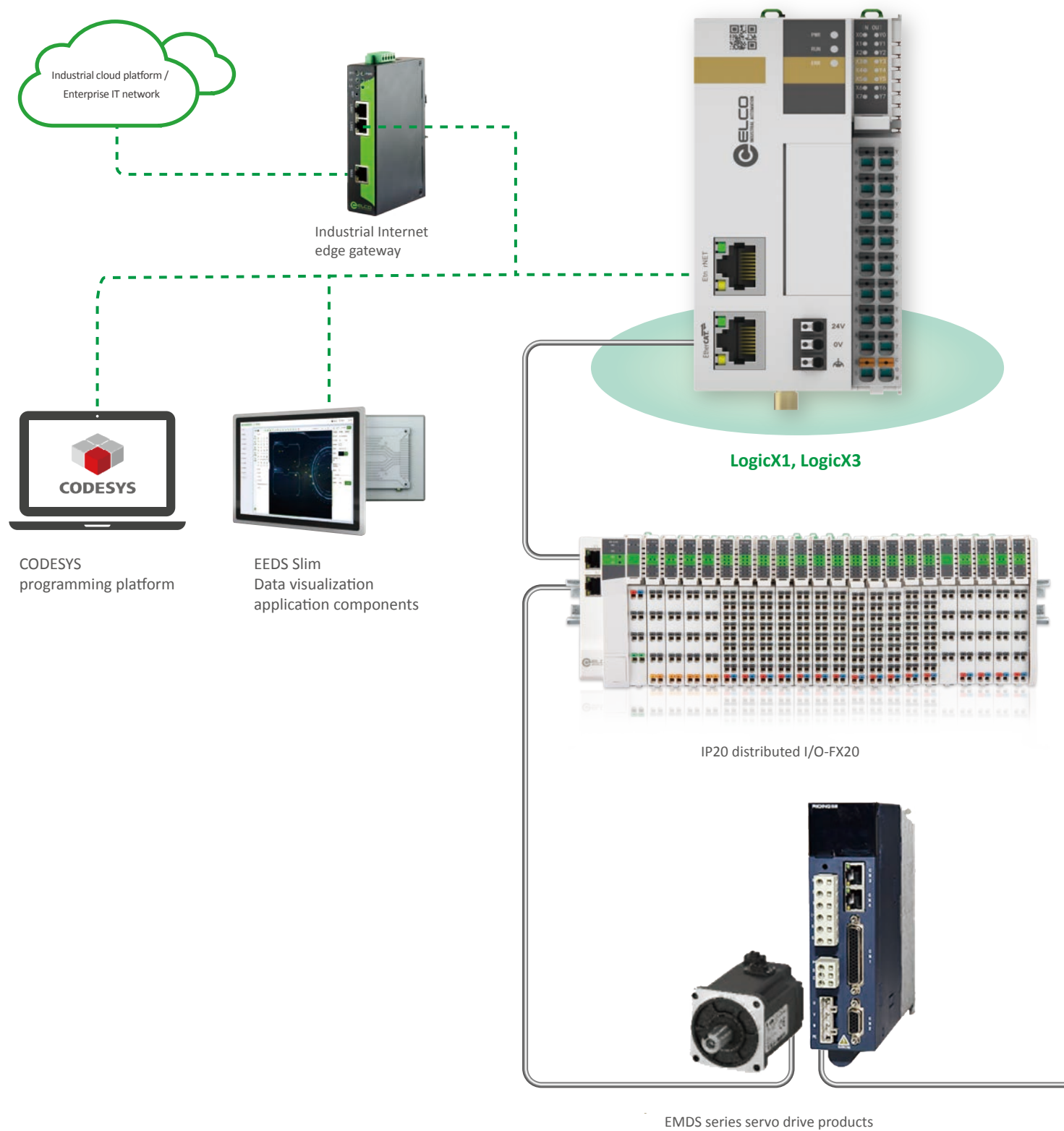
## IP20 Modular I/O system - auxiliary power module

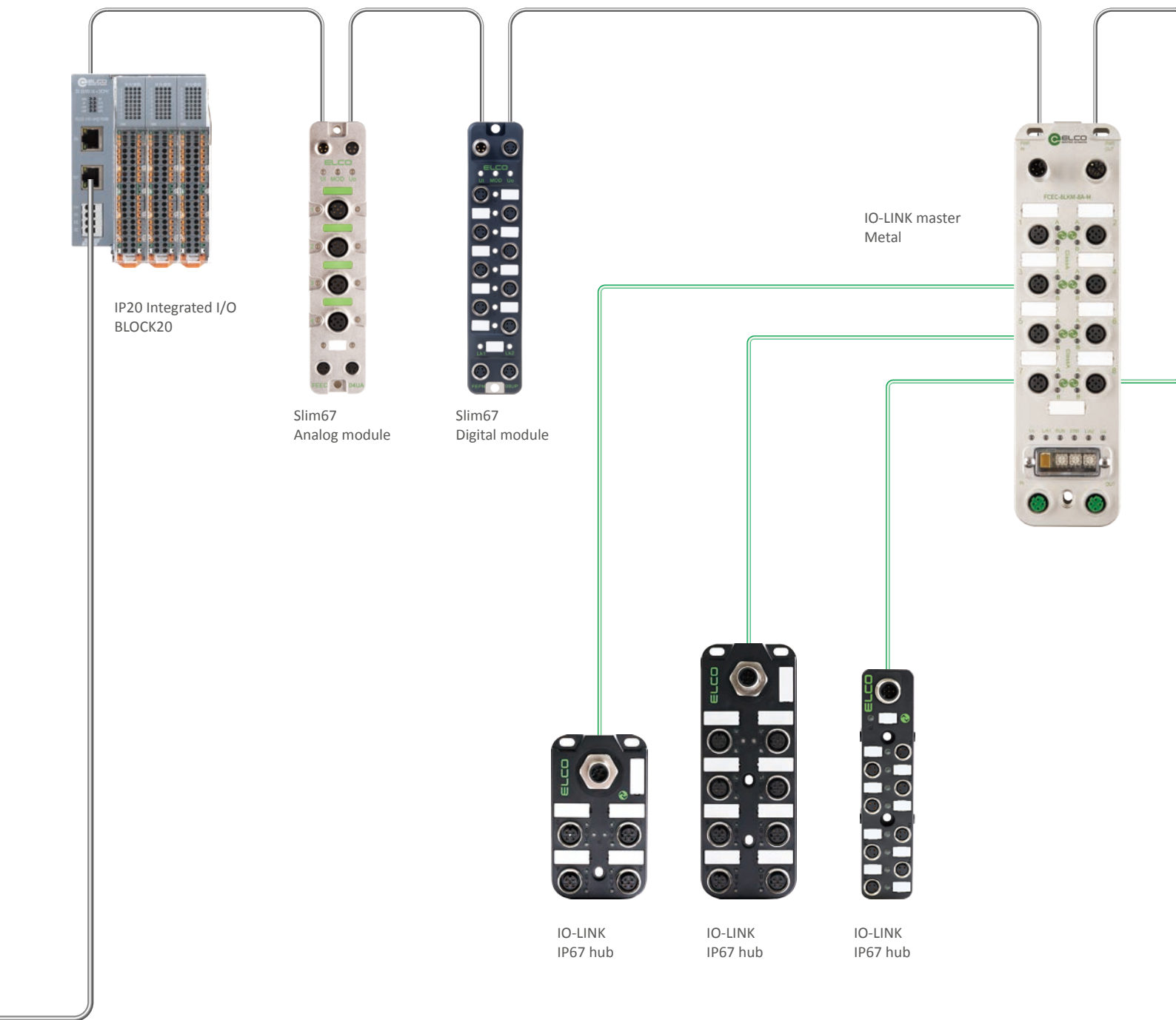


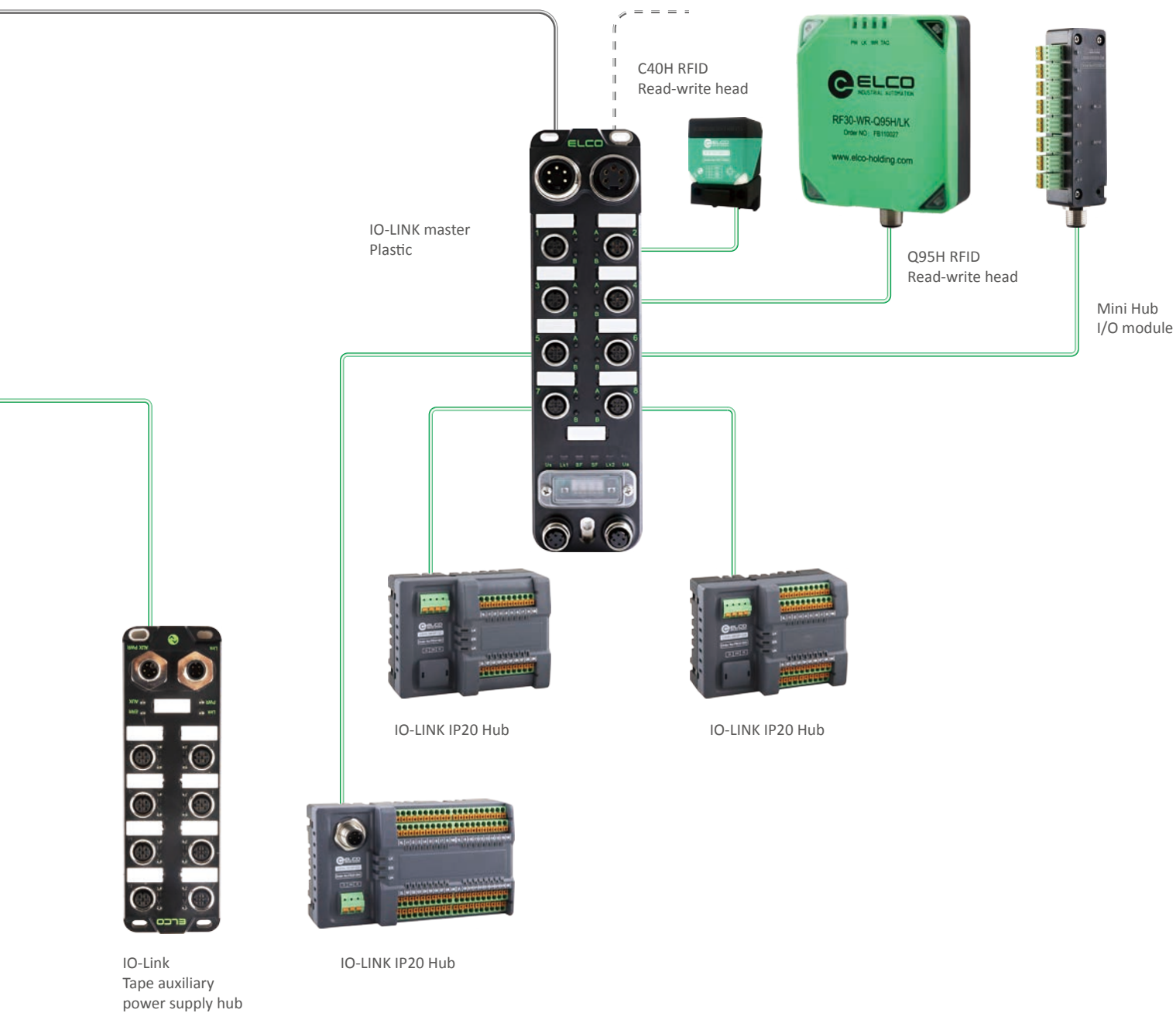
|                         |                                                                         |
|-------------------------|-------------------------------------------------------------------------|
| Ordering data           |                                                                         |
| Product model           | FX20-PS-AB00                                                            |
| Description             | Power auxiliary module, 5 V                                             |
| Electrical parameters   |                                                                         |
| Input voltage           | 24 V DC                                                                 |
| Input voltage range     | DC 20.4 V-DC 28.8 V                                                     |
| Output voltage          | 5 V                                                                     |
| Output current          | Max 3 A                                                                 |
| Power protection        | Over current and reverse polarity protection                            |
| Efficiency              | 95 %                                                                    |
| General data            |                                                                         |
| Protection grade        | IP20                                                                    |
| Installation            | Standard 35 mm DIN rail installation, for indoor use only               |
| Temperature range       | Working temperature: -5 ... +60 °C, storage temperature: -25 ... +70 °C |
| Working altitude        | 0 ... 2000 m                                                            |
| Relative humidity       | 15%-95%, non condensation                                               |
| Module weight           | 66 g                                                                    |
| Module size (H × W × D) | 79 mm × 15 mm × 110 mm                                                  |
| Wiring diagram          |                                                                         |



# Integrated control system solutions









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