

ELCO Logic Series of PLC





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Logic Series of PLC

The LogicX1 series PLC meets various needs of users for small and medium-sized automation equipment.

The LogicX3 series compact PLC is a high-end controller for medium to big-sized programs and multi-axis complex motion control. This product further improves the ELCO automation product system, adapts to a wide range of automatic control application, and provides customers with more choices.



The product adopts modular design, supports local backplane expansion, and seamlessly connects with the ELCO FX20 series IO modules.

This product meets various needs on automation control, such as,

- Fieldbus communication
- Motion control
- Local and fieldbus extension ios
- Informationization functions for IT technology



The controllers run the latest CodeSys Runtime system, an open and standardized programming platform CodeSys V3.5 SP19, which is in line with mainstream programming trends.



Logic Series of PLC

Type Code

Logic

X1

—

0

08

N

0

0

1

Quantity of RJ45
ports for EtherCAT

1: 1 port for EtherCAT

2: 2 RJ45 ports for EtherCAT

Support high speed I/O or not

0: None

1: Support

Other fieldbus type support

0: None

1: RS485

2: RS232

3: RS485+RS232

4: CANopen

Type of digital output : NPN /PNP

N: NPN type DO output

P: PNP type DO output

ELCO Logic Series

Type Code

X1: series X1

X3: series X3

Quantity of pulse signals for servo axes

0: No pulse signal

2: 2 pulse signal

4: 4 pulse signal

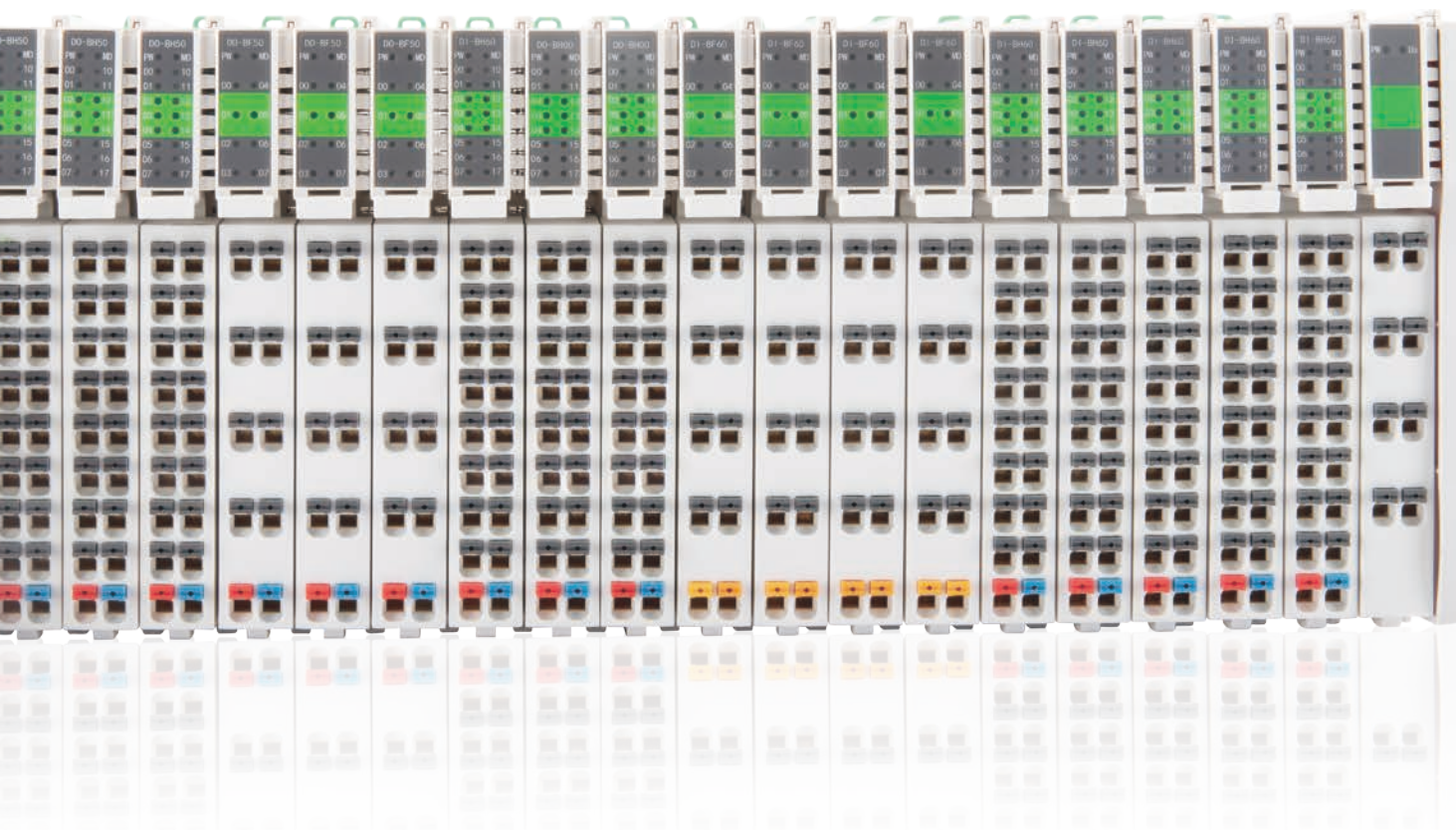
Servo axes processing capacity by EtherCAT

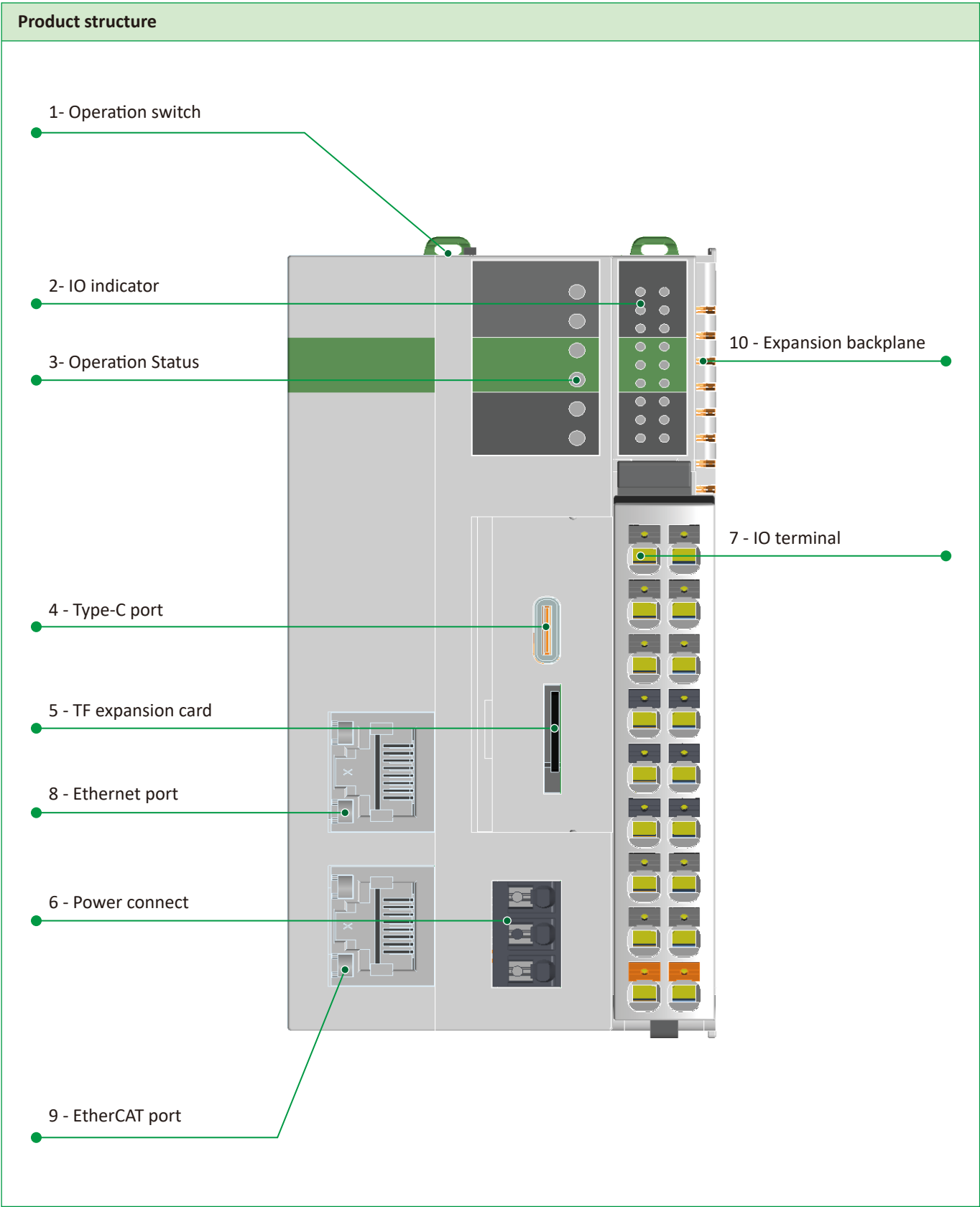
08: 8 servo axes

16: 16 servo axes

24: 24 servo axes

32: 32 servo axes





LogicX1 PLC

Item	Port Type	Identification	Define	Indicator color	Instruction
1	Operation switch	RUN/STOP	Operation mode switching		
2	IO indicator	IN/OUT	IO Status Display	Green	ON: Indicates that the input or output is valid OFF: Indicates invalid inputs or outputs
3	Operation Status	PWR	The power supply is normal.	Green	ON: indicates normal power supply OFF: Indicates abnormal power supply
		RUN	Running normally	Green	ON: Indicates that the user program is running OFF: Indicates that the user program is stopped
		ERR	Run-time error (in computing)	Red	OFF: Indicates no serious error Flashing: Indicates a serious error has occurred
		REV*3	Reserve	-	
4	Type-C port		Communication with PC		-
5	TF Expansion Card	TF	Firmware Upgrade	-	
6	Power connect	+24 V	DC 24 V Power Positive	-	-
		0V	DC 24 V Power Supply Negative	-	-
			PE	-	-
7	IO terminal	—	8 inputs, 8 outputs	-	-
8	Ethernet port	EtherNet	Ethernet communication RJ45 interface	-	-
9	EtherCAT port	EtherCAT	For EtherCAT communication	-	-
10	Expansion backplane		Expansion backplane for Expanded IO		-

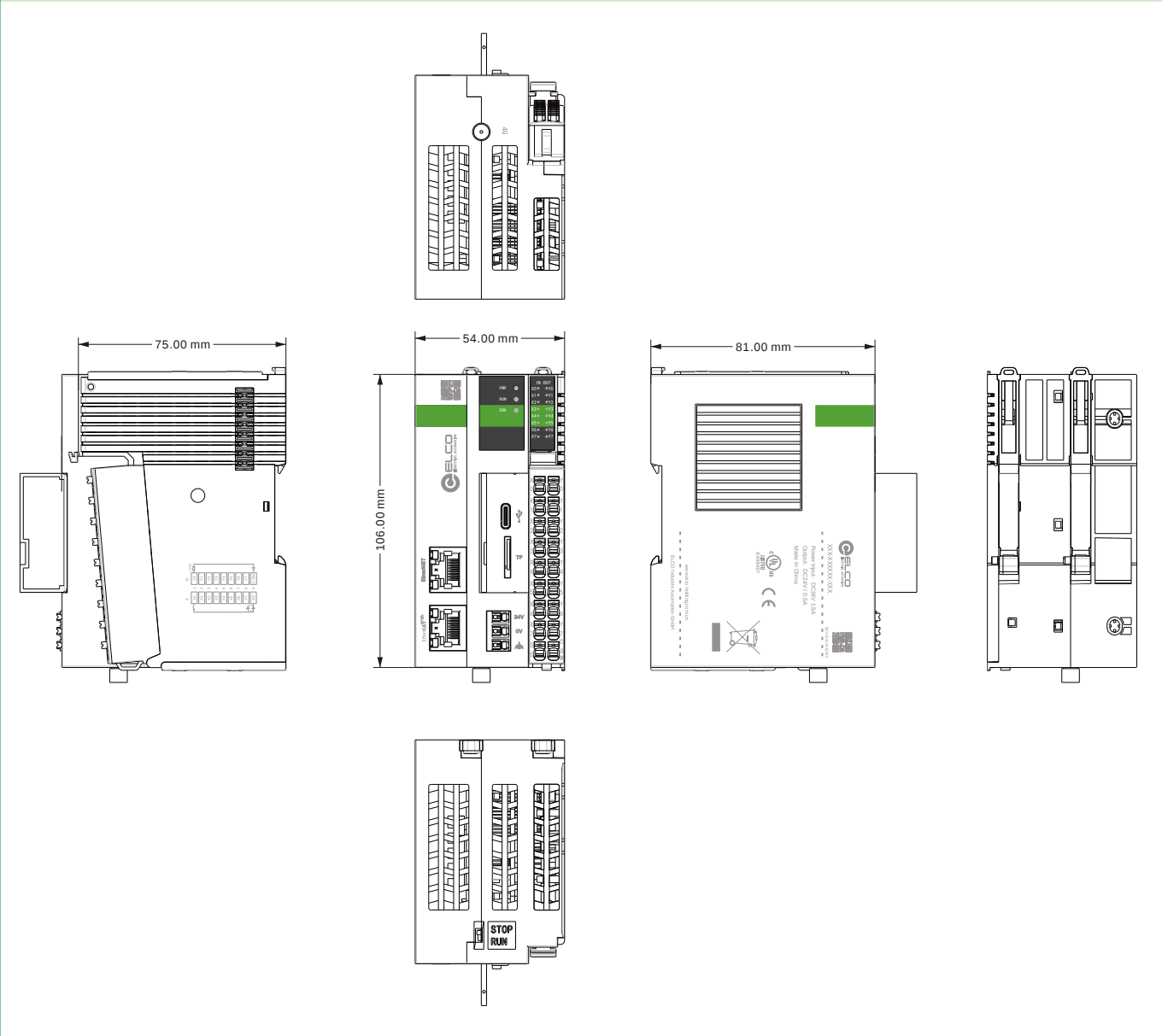
LogicX1 PLC



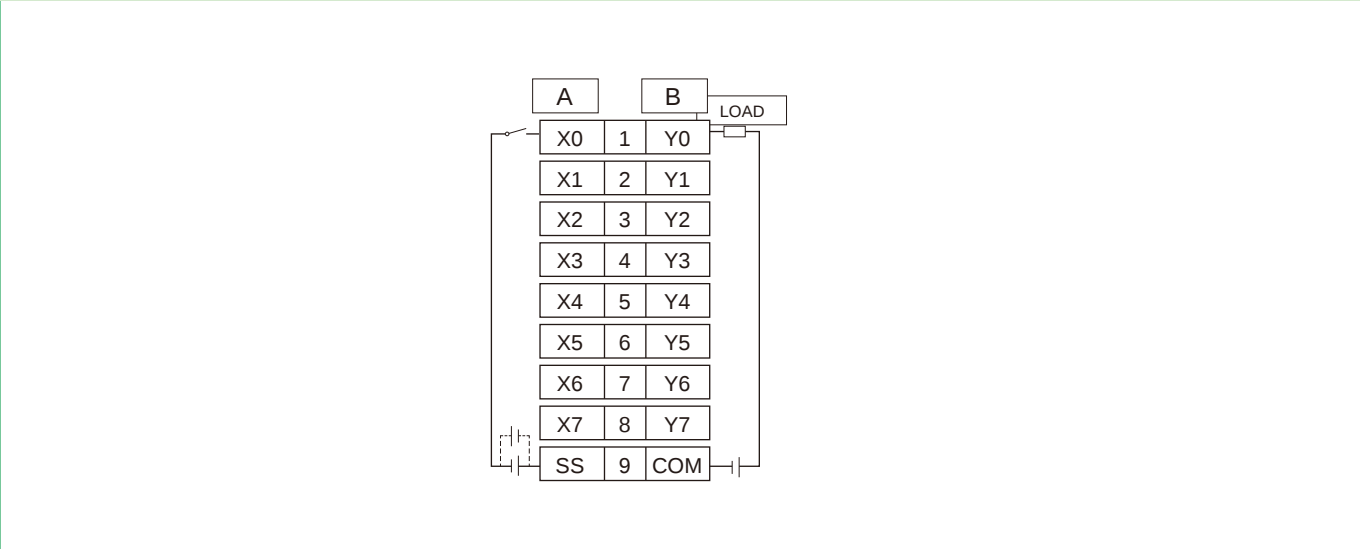
Hardware	
CPU	4-core ARM cortex-A7 processor design, per core frequency up to 1.2 GHz
Memory	16 M user program space; 2 M Byte of custom variables, of which 128 kByte non-volatile
Computing power	C = NOT (A&B) 20000 cycles :
	BOOL : 180 us
	BYTE: 195 us
	INT: 201 us
	DINT: 200 us
	REAL: (A=A*2+1) 264 us
EtherNet	Support socket custom communication, program on the download and debugging
Ethercat communication	Supports 1 EtherCAT master, up to 72 EtherCAT slaves
Number of axes available (EtherCAT port)	8 axes (bus cycle 1 ms) / 16 axes (bus cycle 4 ms)
Local input	8 points
Local 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	Supports part1, part2 of the PLC open motion control specification, i.e. single axis motion, electronic gears, electronic cams.
Type-C	System commissioning, diagnostics, upgrades
Power supply specifications	
Terminal input rated voltage	24 V DC $\pm$ 10% (21.6 V DC~26.4 V DC)
Terminal input rated current	1A (max. at 24 V DC)
24v 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
	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.

LogicX1 PLC

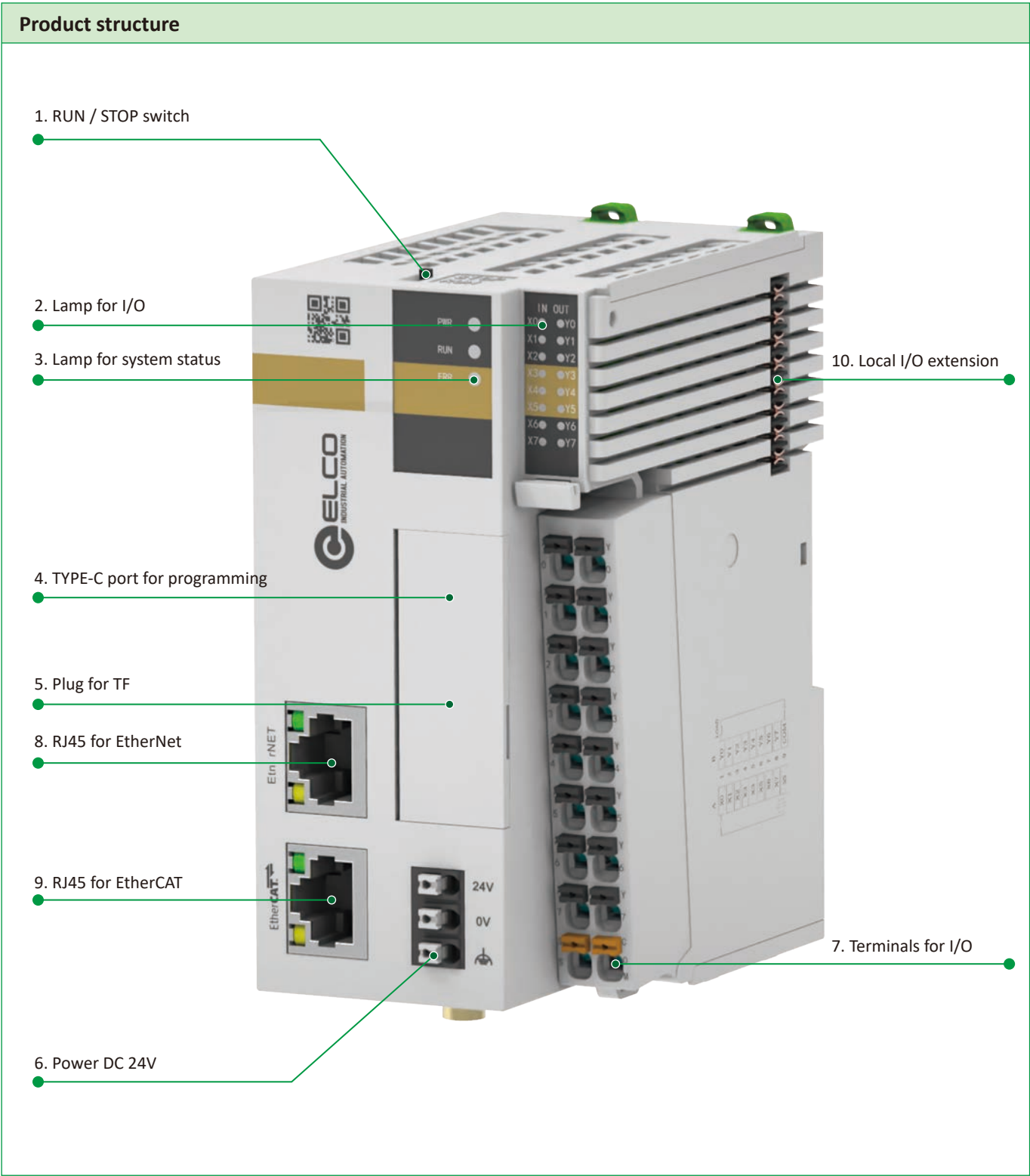
Product Dimension



Wiring diagram



LogicX3 compact PLC



LogicX3 compact 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	● ON: Indicates that the input or output is valid. ● OFF: Indicates invalid inputs or outputs.
3	Lamp for system status	PWR	The power supply is normal	Green	● ON: indicates normal power supply. ● OFF: Indicates abnormal power supply.
		RUN	running normally	Green	● ON: Indicates that the user program is running. ● OFF: Indicates that the user program is stopped.
		ERR	Run-time error (in computing)	Red	● OFF: Indicates no serious error. ● Flashing: Indicates a serious error has occurred.
		BUS	Bus state	Green	● OFF: EC bus is running. ● Flashing: EC bus is stopped.
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	-	-

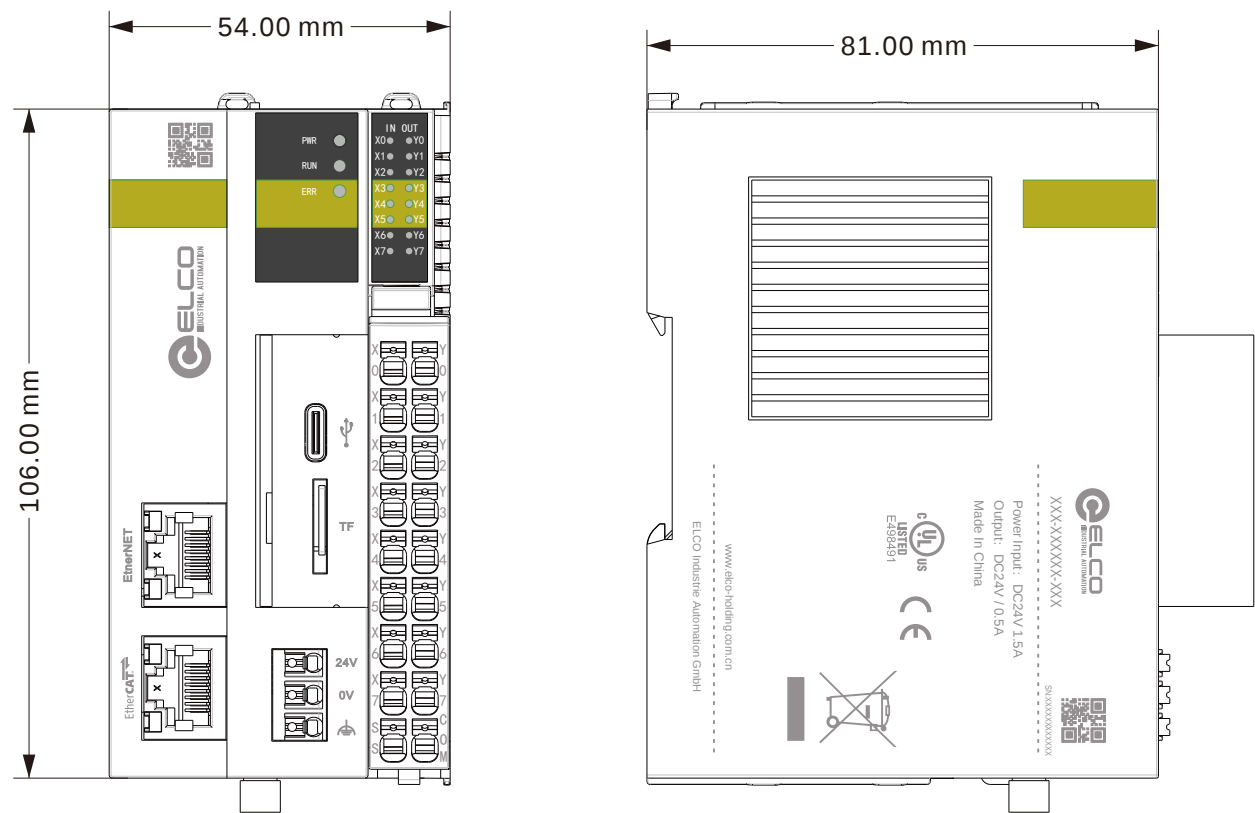
LogicX3 compact PLC



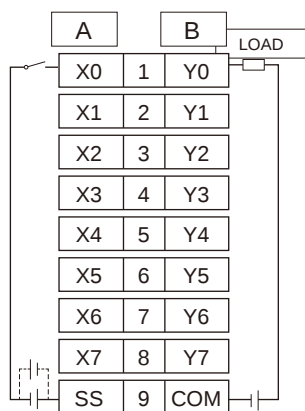
Hardware parameters	
CPU	4-core ARM cortex-A55 64 bit processor design, per core frequency up to 1.8 GHz
Memory	64 M user program space; 2 M Byte of custom variables, of which 128 kByte non-volatile
Program operating speed	C = NOT (A&B) 20000 cycles : BOOL: 89 μ s BYTE: 100 μ s INT: 101 μ s DINT: 104 μ s REAL: (A = A*2+1) 167 μ s
EtherNet	Support socket custom communication, program on the download and debugging
EtherCAT communication	Supports 1 EtherCAT master, up to 72 EtherCAT slaves
Number of axes available (EtherCAT port)	16 axis (1 ms) / 32 axis (4 ms)
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),
Motion control library	FBD (Function Block Diagram), SFC (Sequential Function Chart) Supports part1, part2, part4 of the PLC open motion control specification,
Type-C	i.e. single axis motion, electronic gears, electronic cams. 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 $^{\circ}$ C ... 70 $^{\circ}$ C Relative humidity: < 90%RH, no condensation
Transport temperature and humidity	Transport temperature: -40 $^{\circ}$ C ... 70 $^{\circ}$ C Relative humidity: < 90%RH, no condensation
Operating temperature and humidity	Operating temperature: -20 $^{\circ}$ C ... 55 $^{\circ}$ C Relative humidity: < 90%RH, no condensation 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.

LogicX3 compact PLC

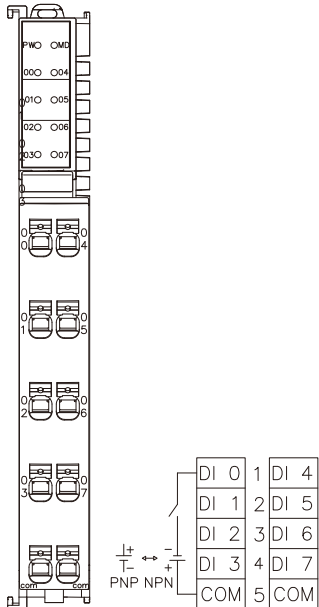
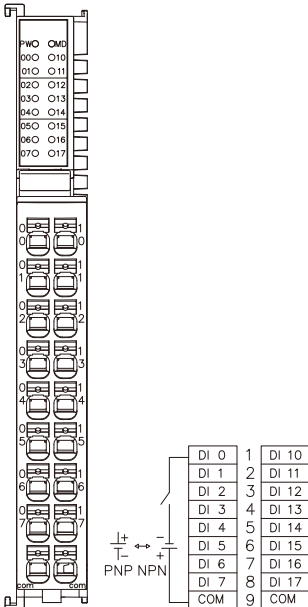
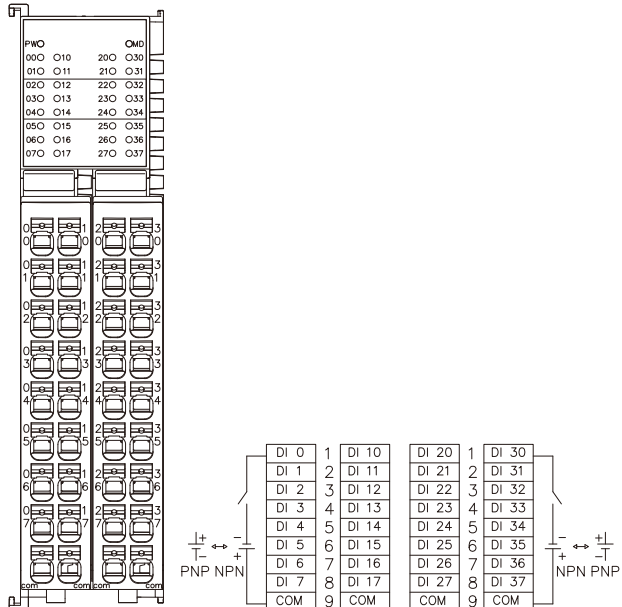
Product Dimension



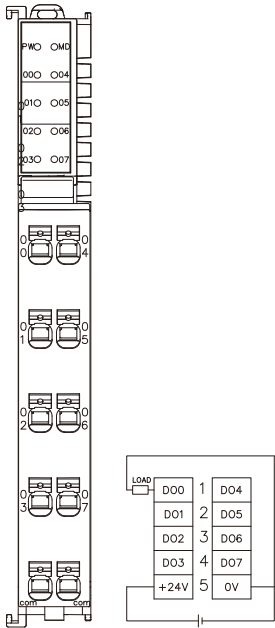
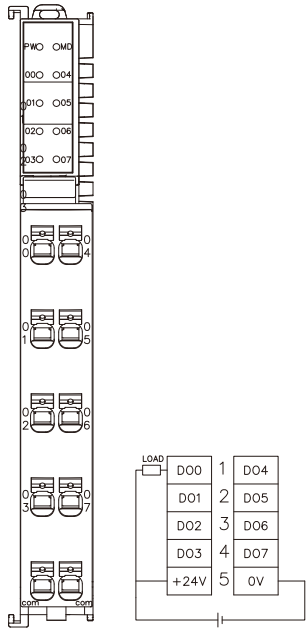
Wiring diagram



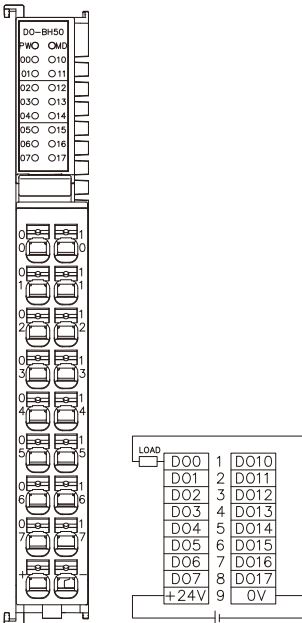
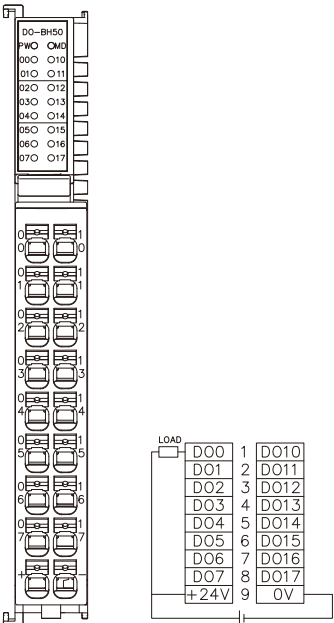
IP20 distributed I/O - digital input module

			
Order			
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 (5V)	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		
Temperature range	Working temperature: -5 °C to 60 °C, storage temperature: -25 °C to 70 °C		
Relative humidity		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	8-channel input module  16-channel input module  32-channel input module 		

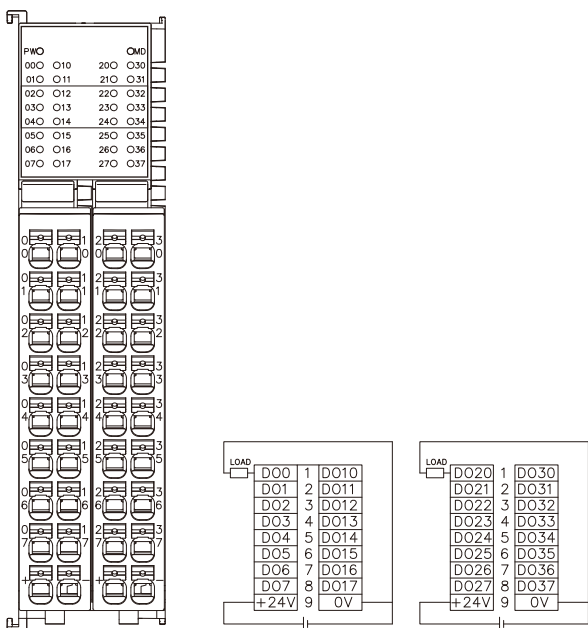
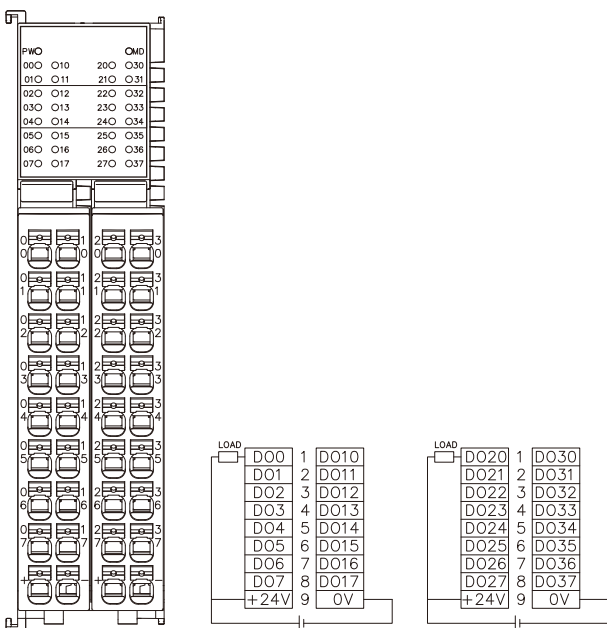
IP20 distributed I/O - digital output module

		
Order		
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. 0.5A per channel, total 4A	Max. 0.5A per channel, total 4A
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 (5V)	60 mA	60 mA
Process data length	1 byte	1 byte
General data		
Protection grade	IP20	
Installation	Standard 35 mm DIN rail installation	
Temperature range	Working temperature: -5 °C to 60 °C, storage temperature: -25 °C to 70 °C	
Relative humidity	95 %, non condensation	
Module weight	66 g	
Module size (H × W × D)	79 mm × 15 mm × 110 mm	
Wiring diagram		
		

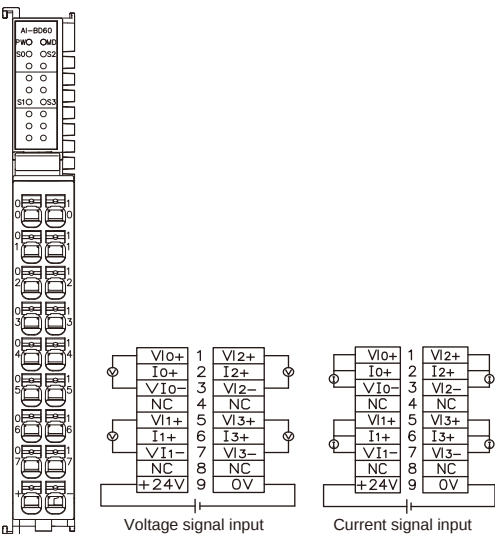
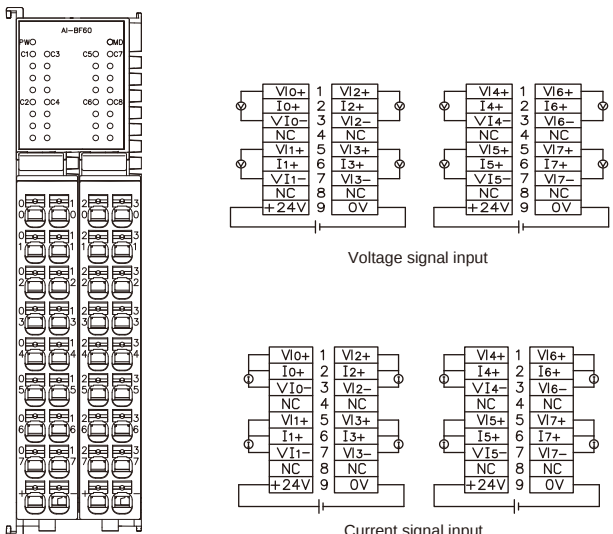
IP20 distributed I/O - digital output module

		
Order		
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 2 A	Max. 0.5 A per channel, total 2 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 1KHz/Max1Hz/Max 10Hz
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	
Temperature range	Working temperature: -5 °C to 60 °C, storage temperature: -25 °C to 70 °C	
Relative humidity	95 %, non condensation	
Module weight	66 g	
Module size (H × W × D)	79 mm × 15 mm × 110 mm	
Wiring diagram		
		

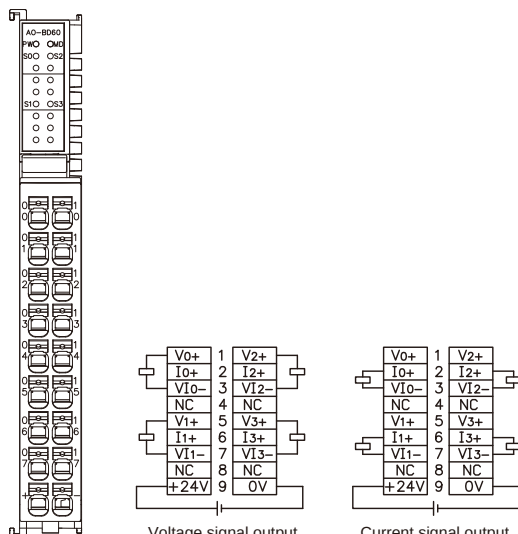
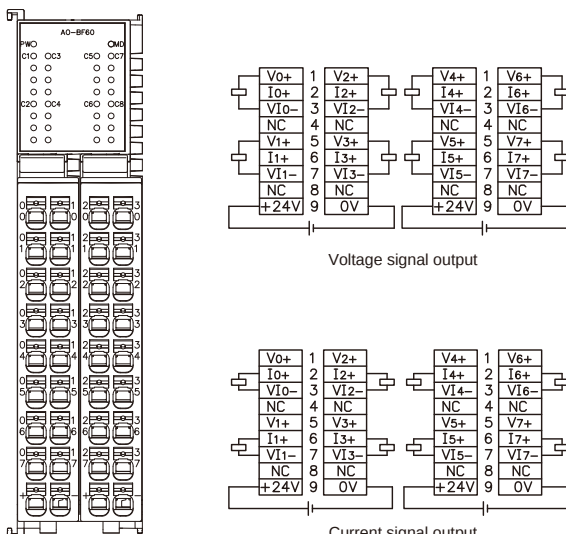
IP20 distributed I/O - digital output module

		
Order		
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	
Temperature range	Working temperature: -5 °C to 60 °C, storage temperature: -25 °C to 70 °C	
Relative humidity	95 %, non condensation	
Module weight	128 g	
Module size (H × W × D)	79 mm × 28 mm × 110 mm	
Wiring diagram		
PNP  NPN 		

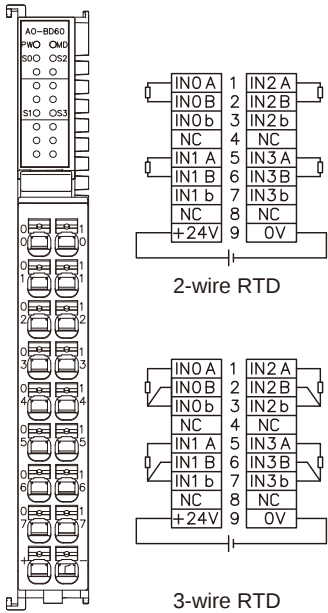
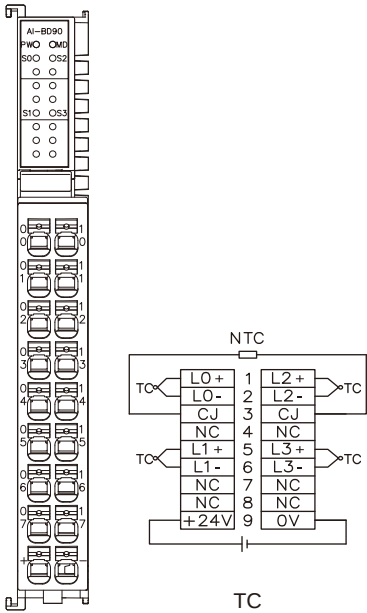
IP20 distributed I/O - analog input/output module

		
Order		
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: 1M Ω	Current type: 250 Ω; Voltage type: 1M Ω
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 °C to 60 °C, storage temperature: -25 °C to 70 °C	
Relative humidity	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		
FX20-AI-BD60  Voltage signal input Current signal input		FX20-AI-BF60  Voltage signal input Current signal input

IP20 distributed I/O - analog input/output module

		
Order		
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, ± 10 V, 0/4-20 mA	1-5 V, 0-10 V, ± 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 °C to 60 °C, storage temperature: -25 °C to 70 °C	
Relative humidity	95 %, non condensation	
Module weight	70 g	130 g
Module size (H × W × D)	79 mm × 15 mm × 110 mm	79 mm × 28 mm × 110mm
Wiring diagram		
FX20-AO-BD60 		FX20-AO-BF60 

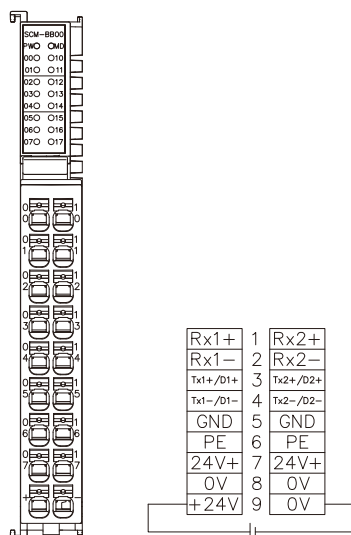
IP20 distributed I/O - temperature measuring module

		
Order		
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	
Temperature range	Working temperature: -5 °C to 60 °C, storage temperature: -25 °C to 70 °C	
Relative humidity	95 %, non condensation	
Module weight	70 g	
Module size (H × W × D)	79 mm × 15 mm × 110 mm	
Wiring diagram	 	

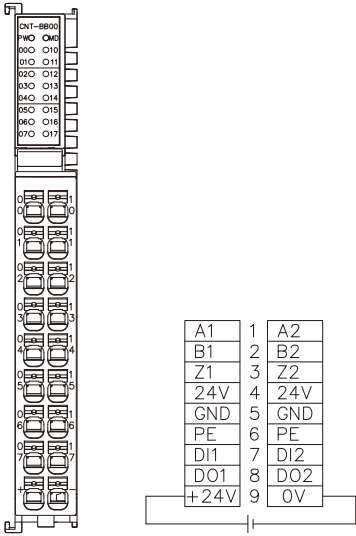
IP20 distributed I/O - serial communication module



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;
	RS422: 4-wire, full duplex;
	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 115200bps, 300bps-921600bps 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, 2-65535ms 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
temperature range	Working temperature: -5 °C to 60 °C, storage temperature: -25 °C to 70 °C
relative humidity	95 %, non condensing
Module weight	70 g
Module size (H x W x D)	79 mm x 15 mm x 110 mm
Wiring diagram	



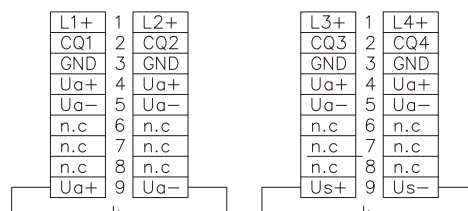
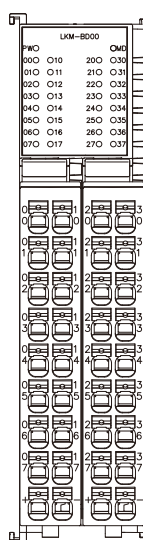
IP20 distributed I/O - high speed counting module

	
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	0-10 ms 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
temperature range	Working temperature: -5 °C to 60 °C, storage temperature: -25 °C to 70 °C
relative humidity	95 %, non condensing
Module weight	70g
Module size (H x W x D)	79 mm x 15 mm x 110 mm
Wiring diagram	

FX20 series IP20 distributed I/O - IO Link Master Station Module



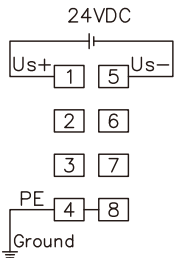
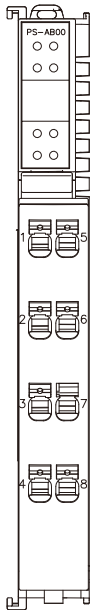
Ordering data	
Product model	FX20-LKM-BD00
Description	4-channel IO Link master station, compatible with ClassA and ClassB
Electrical parameters	
Working voltage	24 VDC
System power supply Us current	4 A
Auxiliary power supply Ua current	4 A
IO Link Channel Count	4
IO Link type	IO Link Master ClassA / 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)
Input channel	Max. 8
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. 8
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
Temperature range	Working temperature: -5 °C to 60 °C, storage temperature: -25 °C to 70 °C
Relative humidity	95 %, non condensing
Module weight	128 g
Module size (H x W x D)	79 mm x 28 mm x 110 mm
Wiring diagram	



IP20 distributed I/O - auxiliary power module

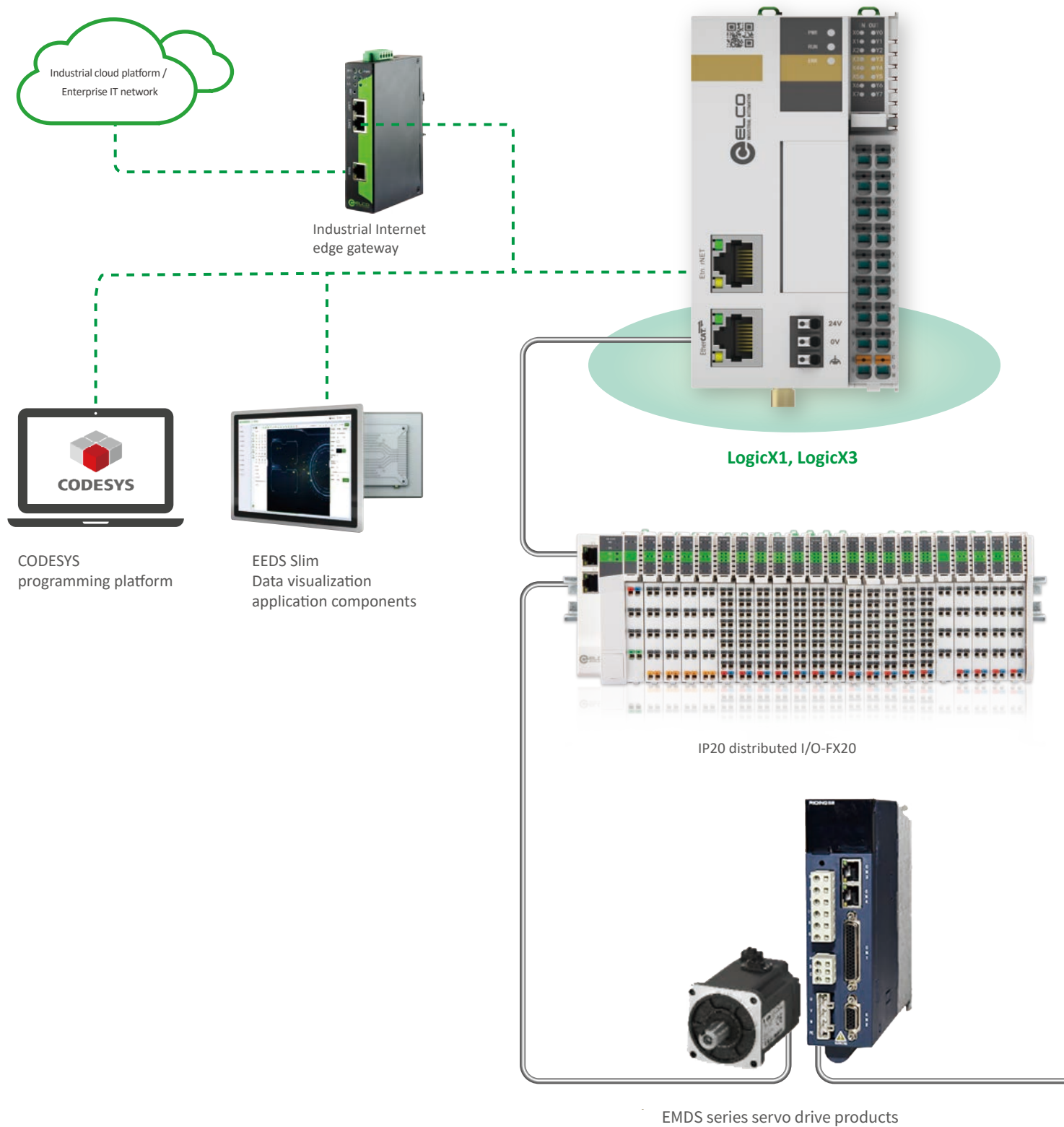


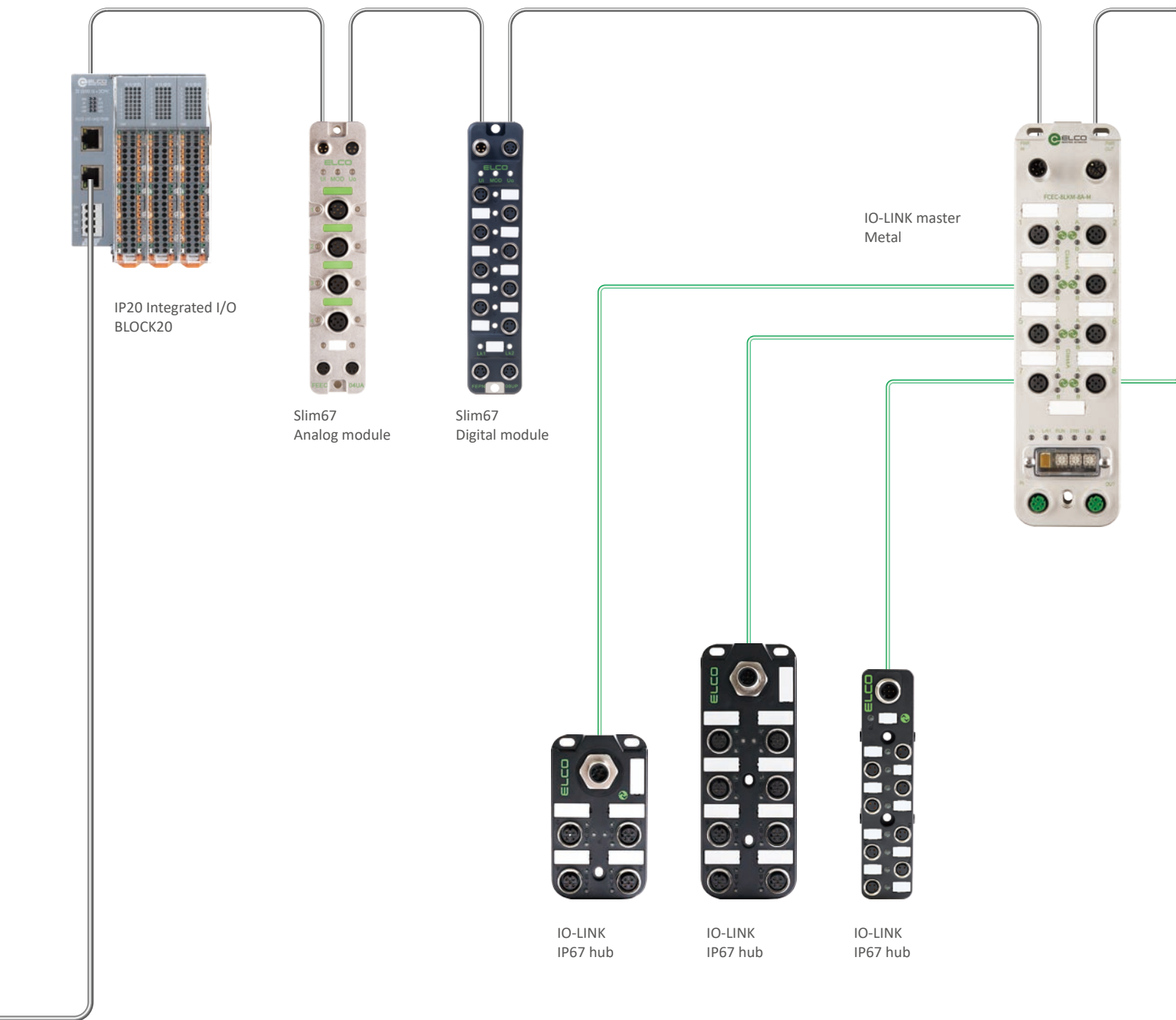
Order	
Model	FX20-PS-AB00
Description	Power auxiliary module, 5 V
Electrical parameters	
Input voltage	24 VDC
Input voltage range	DC 20.4 V-DC 28.8 V
Output voltage	5 V
Output current	Max 3 A
Power protection	Over current and reverse polarity protection
Efficiency	95 %
General data	
Protection grade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

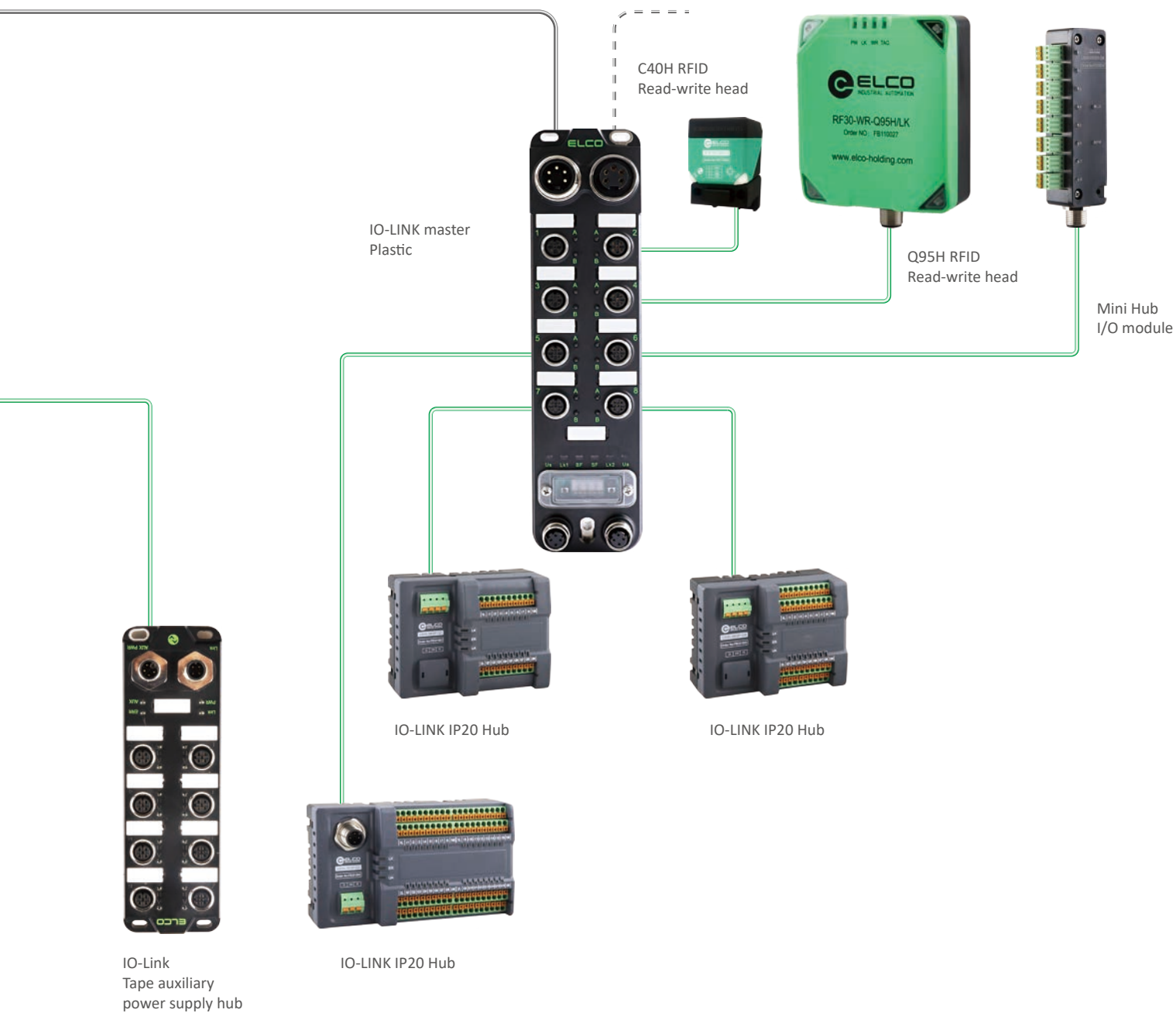


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