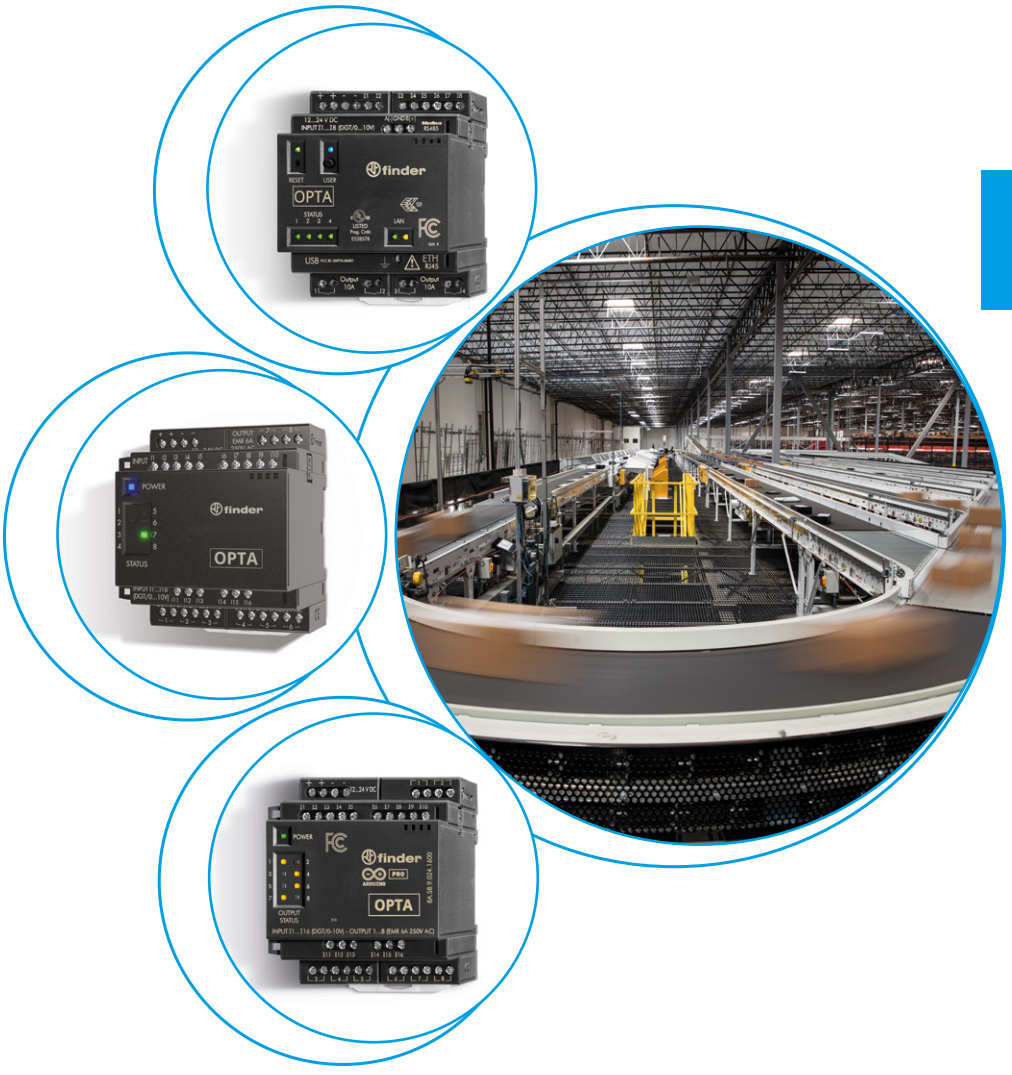
finder
RELAYING INNOVATION

Programmable Logic Relays

- Panels for electrical distribution
- Packaging machines
- Control and management of water
- Control panels for pumps
- Air Conditioner
- Building automation
- Forced-air ventilators



8A
SERIES

Programmable Logic Relays (PLRs) with 8 input and 4 output relays

Type 8A.04-8300
- Lite version with USB (type C port), ETH

Type 8A.04-8310
- Plus version with USB (type C port), ETH and Modbus RS485

Type 8A.04-8320
Type 8A.04-832C
- Advanced version with USB (type C port), ETH, Modbus RS485, Wi-Fi and BLE

- 8 digital or analog (0…10 V) input
- 4 relay output 10 A
- USB (type C port) port for programming, data logging and powering during configuration
- RJ45 port
- Connectivity (*according to type):
  - USB
  - 1 Gbit Ethernet TCP/IP or Modbus TCP/IP
  - Modbus RS485*
  - Wi-Fi + BLE*
- LED status indicator for each output
- Programmable USER button
- Programming language via IDE as an option IEC-61131-3 (LD - SFC - FBD - ST - IL)
- Programmable via Codesys (only 8A.04-832C)
- 70 mm wide
- 35 mm rail (EN 60715) mount

8A.04
Box clamp

For outline drawing see page 12

8A.04-8300	8A.04-8310	8A.04-832x
		
• Lite version • USB Port • RJ45 Port for ETH and Modbus TCP/IP	• Plus version • USB Port • RJ45 Port for ETH and Modbus TCP/IP • Modbus RS485 Port	• Advanced version • USB Port • RJ45 Port for ETH and Modbus TCP/IP • Modbus RS485 Port • Wi-Fi/BLE internal module • Codesys version available
	OPTA Partnership with ARDUINO PRO	OPTA Partnership with ARDUINO PRO CODESYS

Output specification		
Contact configuration		4 NO (SPST)
Rated current/Maximum peak current	A	10/15
Rated voltage/ Maximum switching voltage	V AC	250/400
Rated load AC1	VA	2500
Rated load AC15 (230 V AC)	VA	500
Breaking capacity DC1: 24/110/220 V	A	10/0.3/0.12
Minimum switching load	mW(V/mA)	300 (5/5)
Output operate/release time	ms	6/4
Standard contact material		AgNi
Input circuit		
Number of inputs		8
Type		Digital/Analog (configurable)
Analog input type	V	0…10
Analog input resolution		16 to 12 bit user configurable
Input frequency	kHz	4.5
Input voltage	signal 0/signal 1	< 4 V DC / > 5.9 V DC (Max. 24 V DC)
Maximum input voltage	V DC	24
Input compatibility		PNP/NPN
Reverse polarity protection		YES
Supply specification		
Nominal voltage (U_N)	V DC	12…24
Rated power	W	0.6…2.2 (according to type)
Operating range	V DC	10.2…27.6
Technical data		
Programming language		Arduino IDE, via Arduino PLC-IDE, Codesys (8A.04-832C)
Minimum input signal	ms	0.02
Electrical life at rated load in AC1	cycles	$100 \cdot 10^3$
Ambient temperature range	°C	–20…+50
Protection category		IP 20
Approvals (according to type)		CE UKCA EAC cULus

Expansion modules

Type 8A.58-1600
Type 8A.58-160C
- 16 digital or analog (0…10 V) inputs
- 8 EMR 6 A outputs

Type 8A.88-1600
Type 8A.88-160C
- 16 digital or analog (0…10 V) inputs
- 8 SSR 3 A outputs

- LED power status indicator
- 8 output status LEDs
- Auxiliary port
- Up to 5 expansion modules connectable
- Programming language via Arduino IDE or via Arduino PLC-IDE for IEC 61131-3 languages (LD - SFC - FBD - ST - IL)
- Programmable via Codesys (only 8A.x8-160C)
- 70 mm wide
- 35 mm rail (EN 60715) mount

8A.58/8A.88
Box clamp

For outline drawing see page 12

	8A.58-160x	8A.88-160x
		
	• 16 digital/analog (0…10 V) inputs • 8 EMR 6 A outputs • Nominal voltage 12…24 V DC • Codesys version available	• 16 digital/analog (0…10 V) inputs • 8 SSR 3 A outputs • Nominal voltage 12…24 V DC • Codesys version available

OEM PROJECTS | BUILDING AUTOMATION | INDUSTRIAL APPLICATIONS

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Output specification			
Contact configuration		8 NO (SPST)	8 NO (SPST)
Rated current/Maximum peak current	A	6/10	3/50
Rated voltage/ Maximum switching voltage	V	250/400 V AC	24/33 V DC
Switching voltage range	V DC	—	1.5…30
Rated load AC1	VA	1500	—
Rated load AC15 (230 V AC)	VA	300	—
Rated load DC13	W	—	36
Minimum switching current	mA	—	1
Breaking capacity DC1: 24/110/220 V	A	6/0.2/0.12	—
Minimum switching load	mW (V/mA)	500 (12/10)	—
Max "OFF-state" leakage current	mA	—	0.001
Max "ON-state" voltage drop	V	—	0.4
Output operate/release time	ms	6/4	0.02/0.2
Standard contact material		AgNi	—
Input circuit			
Number of inputs		16	
Type		Digital/analogue	
Analog input type	V	0…10	
Analog input resolution		configurable 12 bit Max. - 8 bit Min.	
Input frequency	kHz	4.5	
Input voltage	signal 0/signal 1	< 4 V / > 5.9 V DC (Max. 24 V DC)	
Maximum input voltage	V DC	24	
Input compatibility		PNP/NPN	
Reverse polarity protection		YES	
Supply specification			
Nominal voltage (U_N)	V DC	12…24	
Rated power	W	1	
Operating range	V DC	10.6…27.5	
Technical data			
Programming language		Via OPTA main module through Arduino IDE or Arduino PLC-IDE, Codesys (8A.x8-160C)	
Minimum input signal	ms	0.02	
Electrical life at rated load in AC1	cycles	$60 \cdot 10^3$	$> 10^6$
Ambient temperature range	°C	–20…+50	
Protection category		IP 20	
Approvals (according to type)			

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Expansion modules **Type 8A.26-0600** **Type 8A.26-060C** - 6 analog inputs 0…10 V, 4…20 mA, PT 100 (2-3 wires) - 2 analog outputs 0…10 V, 4…20 mA - 4 PWM outputs - Nominal voltage 12…24 V DC • LED power status indicator • 8 programmable LEDs • Auxiliary port • Up to 5 expansion modules connectable • Programming language via Arduino IDE or via Arduino PLC-IDE for IEC 61131-3 languages (LD - SFC - FBD - ST - IL) • Programmable via Codesys (only 8A.26-060C) • 70 mm wide • 35 mm rail (EN 60715) mount For outline drawing see page 12	**8A.26-060x**  • 6 analog inputs 0…10 V, 4…20 mA, PT100 (2-3 wires) • 2 analog outputs 0…10 V, 4…20 mA • 4 PWM outputs • Nominal voltage 12…24 V DC • Codesys version available

Analog outputs specification		
Number of analog outputs		2 (programmable up to 8)
Type of analog outputs		Analog voltage 0…10 V and current 4…20 mA
Analog outputs resolution	bit	13
Voltage output mode		
Analog output voltage	V DC	0…10
Short-circuit current per channel (sourcing)	mA	Min. 25 - Max. 32
Short-circuit current per channel (sinking)	mA	Min. 3.0 - Max. 4.5
Accuracy		+/– 1 %
Repeatability		+/– 1 %
Current output mode		
Analog output current	mA	0/4…20
Maximum output voltage @ 20 mA	V	11.9 ± 20%
Open circuit voltage	V	16.9 ± 20%
Output impedance	MΩ	Min. 1.5 - Max. 4
Accuracy		1% in 0…10 mA range, 2% in 10…20 mA range
Repeatability		1% in 0…10 mA range, 2% in 10…20 mA range
PWM output channels		
Number of PWM outputs		4
Source voltage supported	V DC	8…28.8
PWM frequency	kHz	10
Max current	mA	100
Period		Programmable
Duty-cycle		Programmable (0-100%)
Input analog specification		
Number of analog inputs		6 (programmable up to 8)
Type of analog inputs		Analog voltage 0…10 V, current 4…20 mA, PT100
Inputs overvoltage protection		Yes (Up to 40 V)
Antipolarity protection		No
Analog Input resolution	bit	16
Voltage Input Mode		
Analog input voltage	V	0…10
Input impedance	MΩ	Min. 175
Accuracy		+/– 1%
Repeatability		+/– 1%
Current Input Mode		
Analog input current	mA	0/4…20
Short circuit current limit	mA	Min. 25 - Max 35
Programmable current limit	mA	0.5…24.5
Accuracy		+/– 1%
Repeatability		+/– 1%
RTD Input Mode		
RTD input type		PT 100
Wiring type (Input)		2 wires (I1…I6, O1, O2) 3 wires (I1, I2)
Input range	MΩ	0…1
Bias voltage	V	2.5
Temperature range	°C	–25…+400
Accuracy		+/– 1.5 °C (in the ambient T range –20°C…50°C)
Supply specification		
Nominal voltage (U_N)	V DC	12…24
Rated power	W	1
Operating range	V	9.6…28.8
Technical data		
Programming language		Via OPTA main module through Arduino IDE or Arduino PLC-IDE, Codesys (8A.26-060C)
LED signaling		1 power LED + 8 user programmable LEDs
Ambient temperature range	°C	–20…+50
Protection category		IP 20
Approvals (according to type)		

Ordering information

Example: 8A Series, Lite PLR version, 4 NO (SPST) - 10 A, 8 digital/analog inputs, 12…24 V DC.

8 A . 0 4 . 9 . 0 2 4 . 8 3 0 0

Series

Type
0 = Control Relay

No. of poles
4 = 4 NO (SPST)

Supply version
9 = DC

Supply voltage
024 = (12…24) V DC
(for OPTA and digital output modules)

N° of inputs
8 = 8 digital/
analog inputs

Type of output
3 = EMR NO contact (SPST)

Versions
0 = Lite version, RJ45, USB (type C port)
1 = Plus version, RJ45, USB (type C port), Modbus RS485 port
2 = Advanced version, RJ45, USB (type C port), Modbus RS485 port, Wi-Fi/BLE module

Options
0 = Standard
C= Codesys (only for 8A.04-832C)

Example: 8A Series, digital EMR expansion, 8 EMR outputs - 6 A, 16 digital/analog inputs, supply 12…24 V DC.

8 A . 5 8 . 9 . 0 2 4 . 1 6 0 0

Series

Type
2 = Analogue modules
5 = EMR output modules
8 = SSR output modules

No. of poles
6 = Outputs (PWM and analog)
(only for analog modules)
8 = 8 NO (only for digital outputs modules)

Supply version
9 = DC

Supply voltage
024 = 12…24 V DC

N° of inputs
06 = 6 analog inputs (Type 8A.26 only)
16 = 16 digital/analog inputs (0…10)
(Types 8A.58 and 8A.88 only)

Options
00 = Standard
0C= Codesys

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Technical data

Insulation				
	between input and output circuit	V AC	4000	
	between open contacts	V AC	1000	
Insulation (1.2/50 µs) between input and output		kV	6	
EMC specifications				
Type of test			**Reference standard**	
Electrostatic discharge	contact discharge		EN 61000-4-2	4 kV
	air discharge		EN 61000-4-2	8 kV
Radio-frequency electromagnetic field (80 ÷ 1000 MHz)			EN 61000-4-3	10 V/m
Fast transients (burst) (5-50 ns, 5 kHz) on Supply terminals			EN 61000-4-4	4 kV
Surges (1.2/50 µs) on Supply terminals	common mode		EN 61000-4-5	4 kV
	differential mode		EN 61000-4-5	4 kV
on input terminals	common mode		EN 61000-4-5	4 kV
	differential mode		EN 61000-4-5	4 kV
Radio-frequency common mode (0.15 ÷ 80 MHz) on Supply terminals			EN 61000-4-6	10 V
Radiated and conducted emission			EN 55022	class B
Other data				
Power lost to the environment	without contact current	W	1.4	
	with rated current	W	3.2	
PLC to PLC communication and PLC to network communication (Ethernet)			**Ethernet:** – For Modbus TCP communication – As standard TCP/IP – RJ45 connector CAT5 cable, 2X LAN status led indicators **RS485:** – For Modbus RTU communication – For custom serial communication	
Wireless connectivity			Wi-Fi and Bluetooth® Low Energy	
Maximum program memory			1 MB internal	
External memory module			USB-C pendrive	
Data Logging			USB-C Stick + internal flash memory	
Flash memory			2MB int + 16MB Flash QSPI	
RESET button			YES	
USER button			Push-button configurable for user purposes	
MCU			STMicroelectronics STM32H747XI Dual ARM® Cortex® M7/M4 IC: 1x ARM® Cortex® -M7 core up to 480 MHz 1x ARM® Cortex® -M4 core up to 240 MHz	
Secure element			ATECC608B	
Programming interface			USB-C + OTA via Web Editor (Cloud) + Ethernet	
RTC power reserve			10 days at 25 °C	
RTC accuracy			10 min/year @25 °C 37.5 min/year @ –10…+70 °C	
Cloud support			Arduino Cloud via Wi-Fi and Ethernet or the Cloud services	
Response time ON/OFF (8A.04/8A.58)		ms	6/4 (EMR)	
Response time ON/OFF (8A.88)		ms	0.02/0.2 (SSR)	
Bounce time NO		ms	3	
Terminals			**Box clamp**	
Wire strip length		mm	9	
Screw torque		Nm	0.5	
Min. wire size			solid cable	stranded cable
		mm²	0.5	0.5
		AWG	20	20
Max. wire size			solid cable	stranded cable
		mm²	1 x 2.5 / 2 x 1.5	1 x 2.5 / 2 x 1
		AWG	1 x 14 / 2 x 16	1 x 14 / 2 x 16

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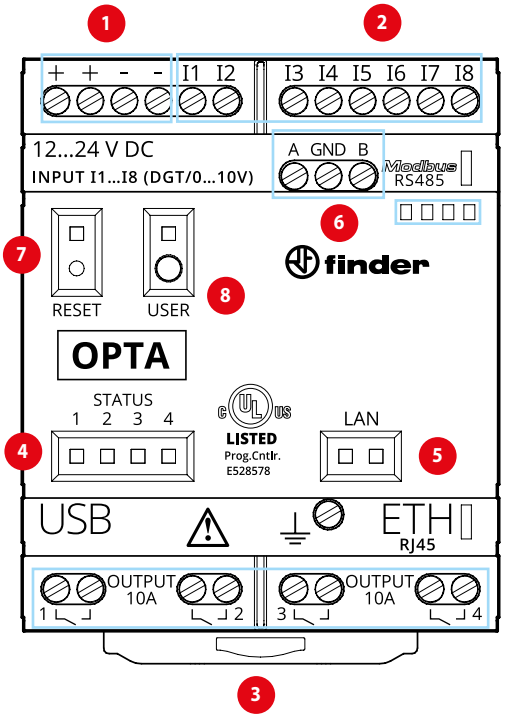
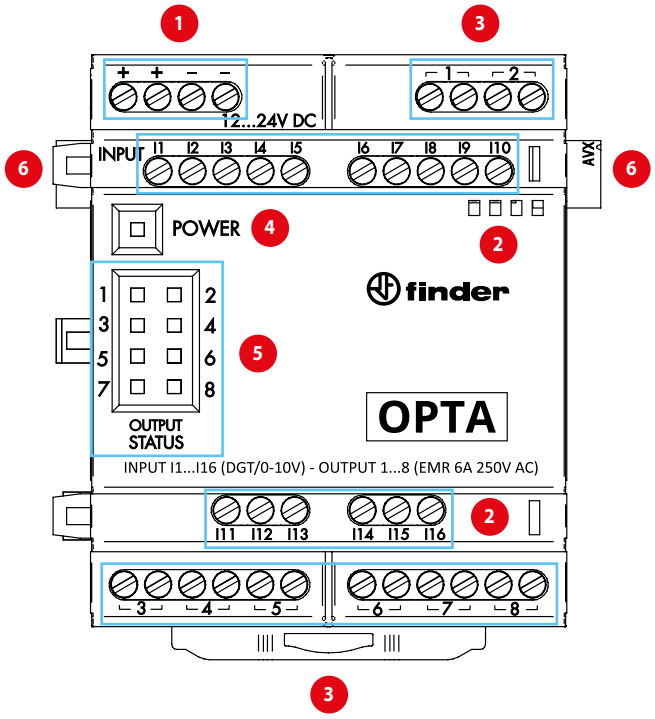
Front view - Type 8A.04.9.024.83xx



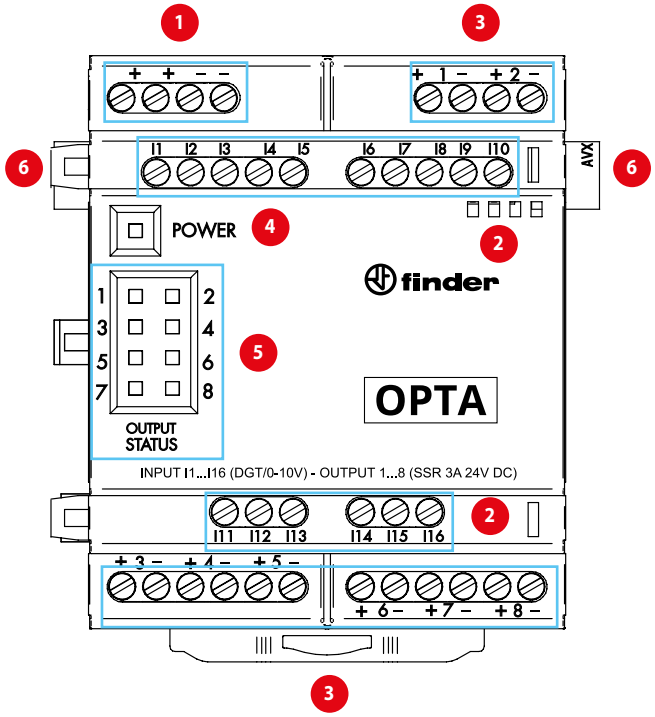
1. **Supply terminals**
   12…24 V DC, Split terminals to facilitate wiring.
2. **Input terminals**
   I1…I8 digital/analog (0…10 V) input configurable via IDE.
3. **Output terminals**
   1…4 Output relay, 10 A - 250 V AC, NO contact.
4. **LED Status**
   1…4 LED Status configurable via IDE.
   For exemple for 1…4 output relay LED ON = Contact CLOSE.
5. **LED Ethernet port status**
   Status of ETH connection.
6. **Modbus RS485 Port**
   Terminals for Modbus over RS485 protocol.
7. **HARDWARE RESET**
   Button for hardware reset. BE CAREFUL. Press the 'RESET' button with the tip of a small non-metallic insulated tool.
8. **Programmable USER button**
   Button configurable via IDE by user, according to application (ex. RUN/STOP, ON/OFF, BLE pair).

Front view - Digital EMR - Type 8A.58.9.024.160x



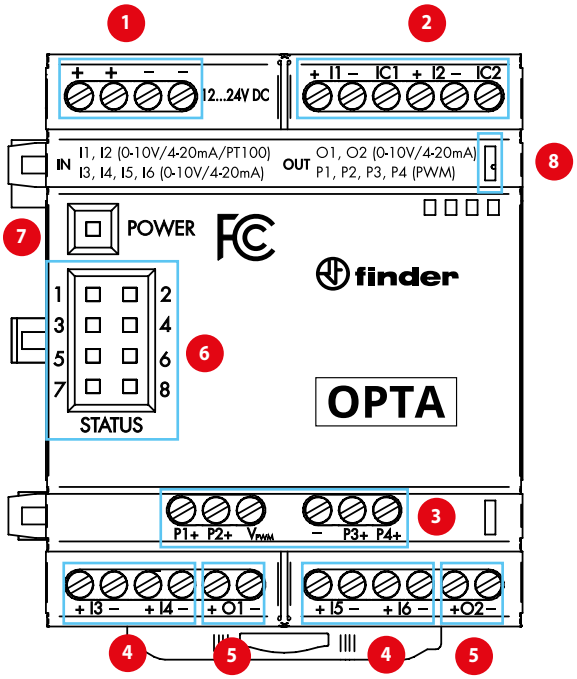
1. **Supply terminals**
   12…24 V DC, Bifourcated terminals
2. **Input terminals**
   I1…I16 digital/analog (0…10 V) input configurable via IDE.
3. **EMR Output terminals**
   1…8 EMR output, 6 A - 250 V AC
4. **LED Status**
   LED RGB
5. **Output status LED**
   Yellow LED output status
6. **AUXILIARY PORT**

Front view - Digital SSR - Type 8A.88.9.024.160x



1. **Supply terminals**
   12…24 V DC, Bifourcated terminals
2. **Input terminals**
   I1…I16 digital/analog (0…10 V) input configurable via IDE.
3. **SSR Output terminals**
   1…8 SSR output, 3 A - 24 V DC
4. **LED Status**
   LED RGB
5. **Output status LED**
   Yellow LED output status
6. **AUXILIARY PORT**

Front view - Analogue - Type 8A.26.9.024.160x



1. **Supply terminals**
   12…24 V DC, Bifourcated terminals
2. **Input terminals**
   I1,I2 Analog input 0…10 V, 0/4…20 mA, PT100 (2 or 3 wires)
3. **PWM Output terminals**
   P1…P4 PWM positive output terminals, Vpwm voltage PWM terminal, - negative PWM terminal
4. **Input terminals**
   I3…I6 Analog input 0…10 V, 0/4…20 mA, PT100 (2 wires)
5. **Output terminals**
   O1, O2 Analog output 0…10 V, 0/4…20 mA
6. **Output status LED**
   Yellow programmable status LED
7. **Power LED status**
   LED RGB
8. **AUXILIARY PORT**

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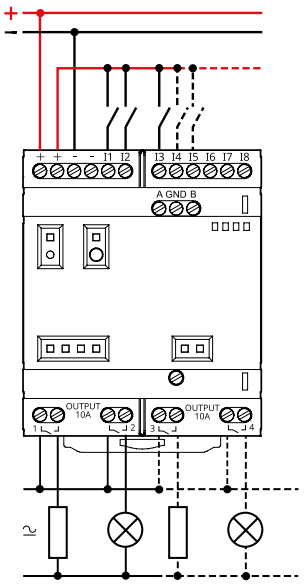
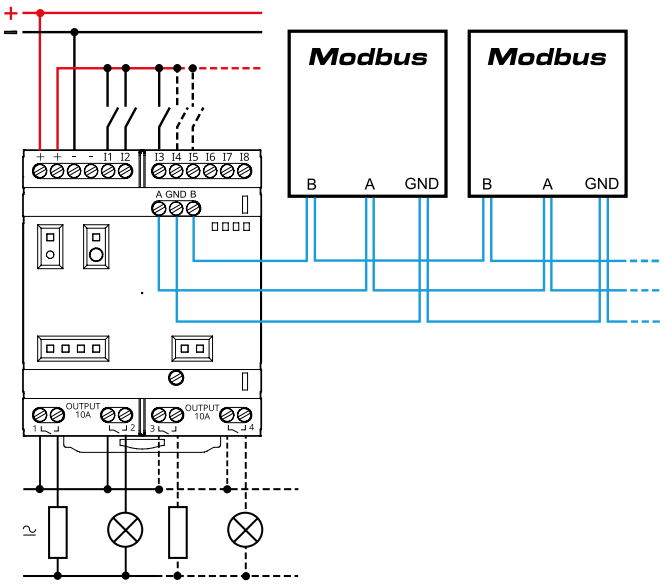
Wiring diagrams

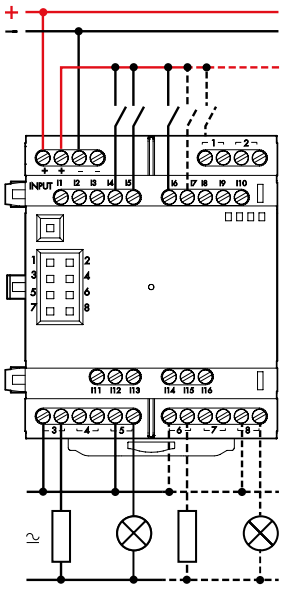
Type 8A.04-8300



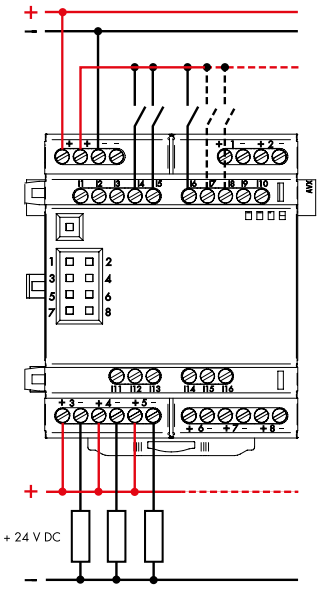
Type 8A.04-8310/832x



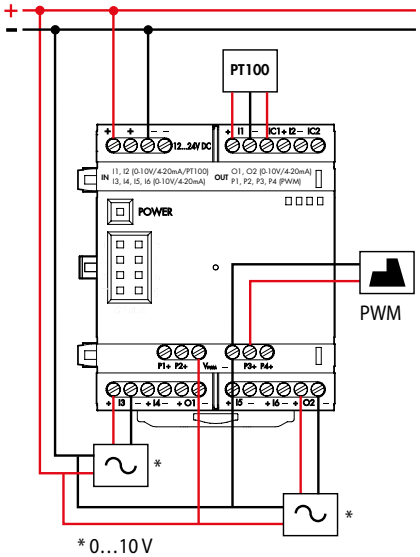
Type 8A.58-160x



Type 8A.88-160x



Type 8A.26-060x



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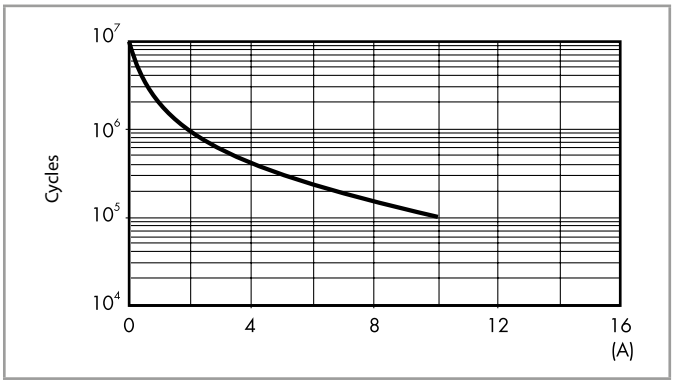
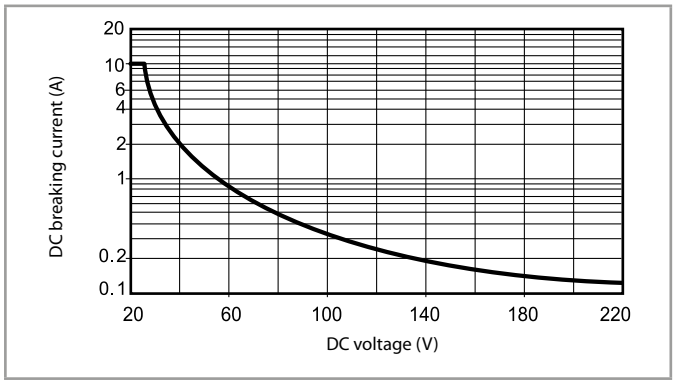
Contact specification

F 8A - Electrical life (AC) v contact current



H 8A - Maximum DC1 breaking capacity



- When switching a resistive load (DC1) having voltage and current values under the curve, an electrical life of ≥ $100 \cdot 10^3$ can be expected.
- In the case of DC13 loads, the connection of a diode in parallel with the load will permit a similar electrical life as for a DC1 load.
  Note: the release time for the load will be increased.

Getting "Started Guide"

GETTING STARTED GUIDE: opta.findernet.com

If you want to program your OPTA while offline you need to install the Arduino Desktop IDE, Arduino Cloud or Arduino PLC-IDE, Codesys.
To connect the OPTA to your computer, you'll need a USB cable.
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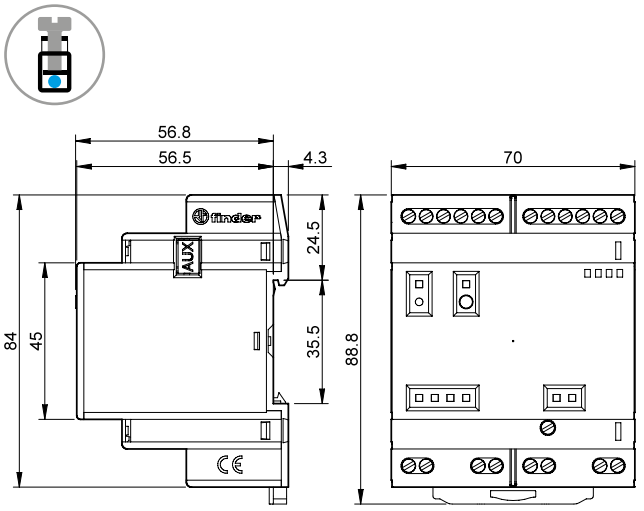
GETTING STARTED - ARDUINO CLOUD

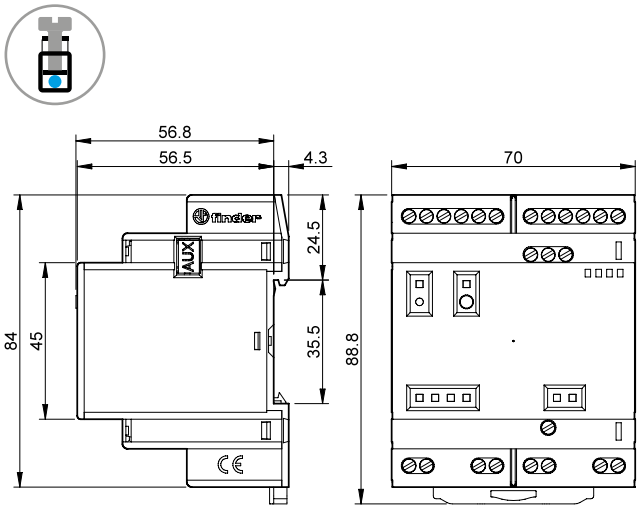
All Arduino IoT enabled products are supported on Arduino Cloud which allows you to Log, graph and analyze sensor data, trigger events, and automate your home or business.
The Arduino Cloud is hosted online, therefore it will always be up-to-date with the latest features and support for all boards.
Follow to start coding on the browser and upload your sketches onto your board.
https://cloud.arduino.cc

Outline drawings

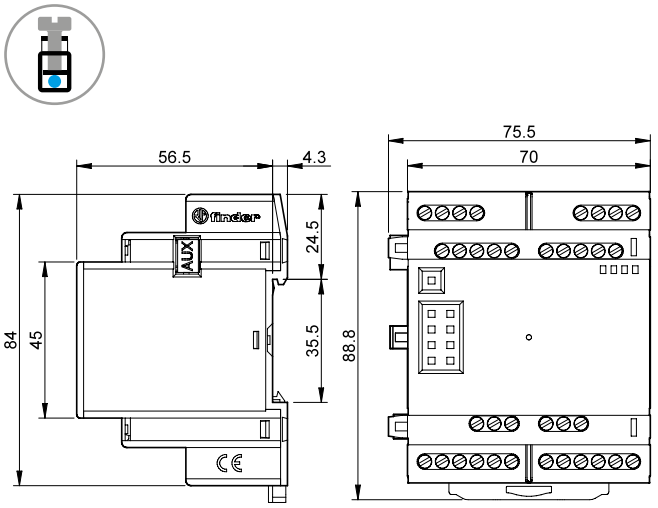
Type 8A.04-8300
Box clamp



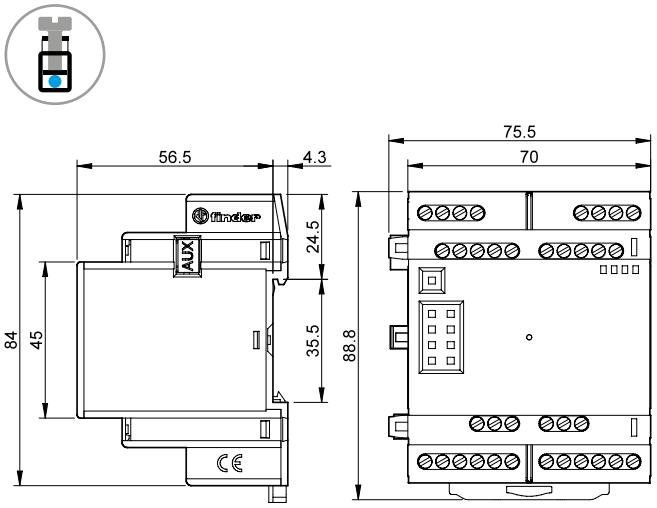
Type 8A.04-8310/832x
Box clamp



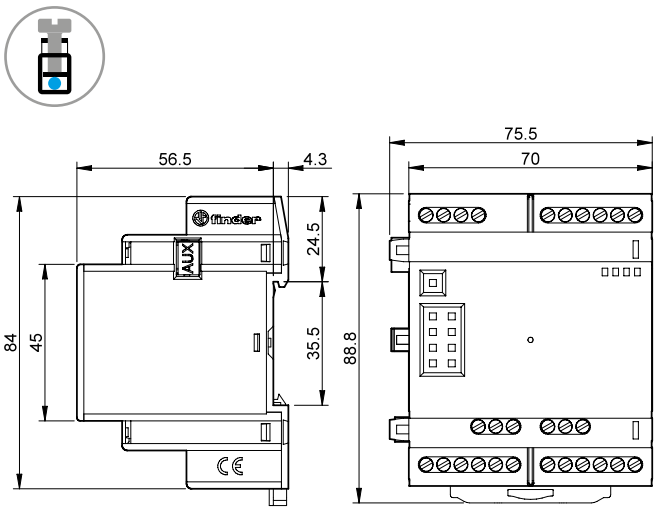
Type 8A.58-160x
Box clamp



Type 8A.88-160x
Box clamp



Type 8A.26-060x
Box clamp



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Please see general technical information

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