

Programmable Logic Relays

**8A
SERIES**



Panels for
electrical
distribution



Packaging
machines



Control and
management
of water



Control
panels for
pumps



Air
Conditioner



Building
automation



Forced-air
ventilators



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

- Advanced version with USB (type C port), ETH, Modbus RS485, Wi-Fi and BLE
- 8 digital or analog (0...10V) 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)
- 70 mm wide
- 35 mm rail (EN 60715) mount

8A.04
Screw terminal



For outline drawing see page 7

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
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
Input circuit		
Number of input		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/Sink
Reverse polarity protection		YES
Technical data		
Programm language		Arduino IDE, IEC-61131-3 (LD - SFC - FBD - ST - IL) via Arduino PLC-IDE
Minimum input signal	ms	0.2
Electrical life at rated load in AC1	cycles	100 · 10 ³
Ambient temperature range	°C	-20...+55
Protection category		IP 20
Approvals (according to type)		

NEW 8A.04-8300



- Lite version
- USB Port
- RJ45 Port for ETH and Modbus TCP/IP

NEW 8A.04-8310



- Plus version
- USB Port
- RJ45 Port for ETH and Modbus TCP/IP
- Modbus RS485 Port

NEW 8A.04-8320



- Advanced version
- USB Port
- RJ45 Port for ETH and Modbus TCP/IP
- Modbus RS485 Port
- Wi-Fi/BLE internal module

OPTA

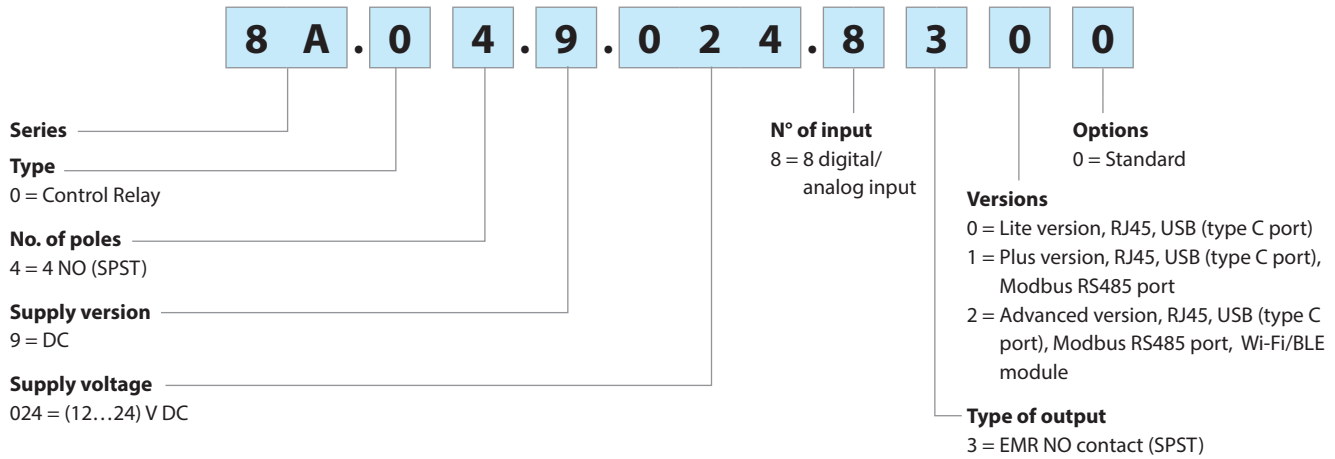
Partnership with



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Ordering information

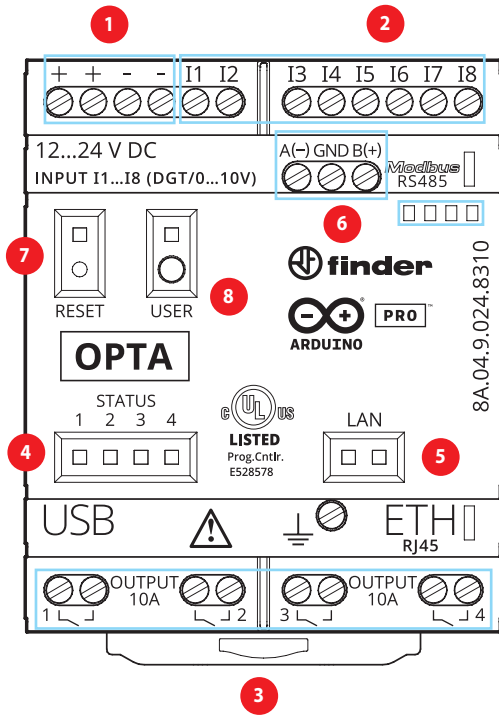
Example: 8A series, Lite PLR version, 4 NO (SPST) - 10 A, 8 digital/analog input, 12...24 V DC.



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		ms	6/4	
Bounce time NO/NC		ms	3/6	
Terminals		Screw terminals		
Wire strip length		mm	9	
Screw torque		Nm	0.5	
Min. wire size		solid cable	stranded cable	
	mm ²	0.5	0.5	
	AWG	20	20	
Max. wire size		solid cable	stranded cable	
	mm ²	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	

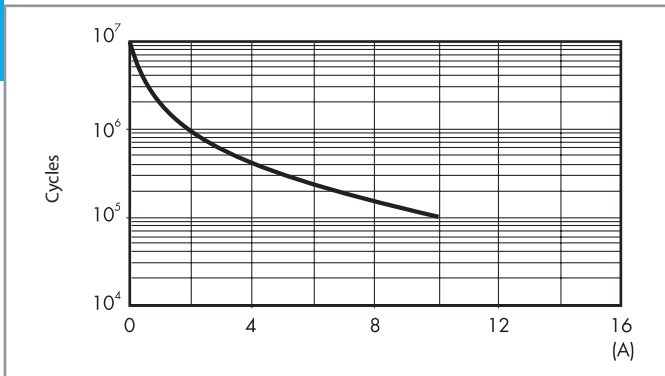
Front view



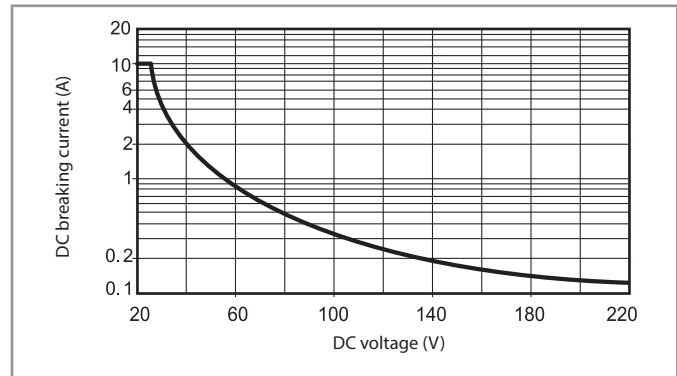
- 1 Supply terminals**
12...24 V DC, Split terminals to facilitate wiring.
- 2 Input terminals**
11...18 digital/analog (0...10 V) input configurable via IDE.
- 3 Output terminals**
1...4 Output relay, 10 A 250 V AC, NO contact.
- 4 LED Status**
1...4 LED Status configurable via IDE.
For example for 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).

Contact specification

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



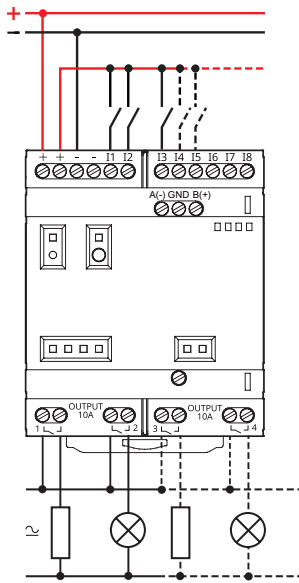
H 8A - Maximum DC1 breaking capacity



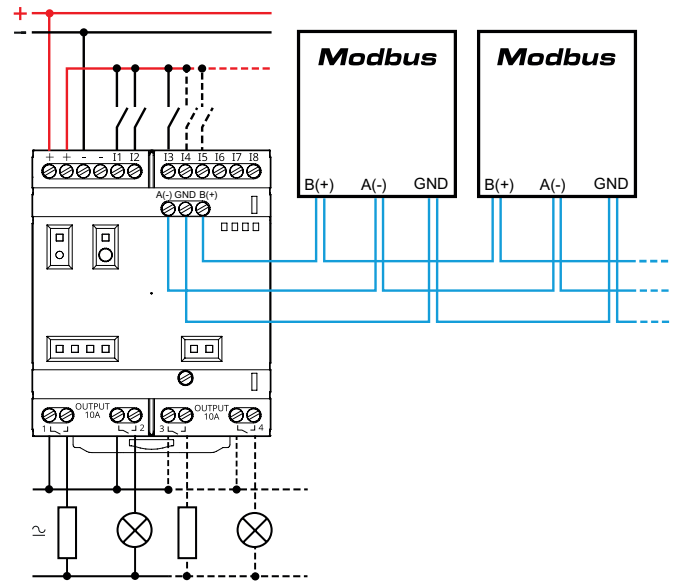
- When switching a resistive load (DC1) having voltage and current values under the curve, an electrical life of $\geq 100 \cdot 10^3$ can be expected.
- In the case of DC13 loads, the connection of a diode in parallel with the load will permit a similar electrical life as for a DC1 load.
Note: the release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

Wiring diagrams

Type 8A.04-8300



Type 8A.04-8310/8320



Getting "Started Guide"

Getting started - IDE

If you want to program your 8A.04 while offline you need to install the Arduino Desktop IDE. To connect the 8A.04 to your computer, you'll need a USB-C cable. This also provides power to the board, as indicated by the LED. <https://opta.findernet.com/en/tutorial/getting-started>

Getting started - Arduino Web Editor

All Arduino boards, including this one, work out-of-the-box on the Arduino Web Editor, by just installing a simple plugin. The Arduino Web Editor 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://opta.findernet.com/en/#software>

Getting started - Arduino IoT Cloud

All Arduino IoT enabled products are supported on Arduino IoT Cloud which allows you to Log, graph and analyze sensor data, trigger events, and automate your home or business.

Online resources

Now that you have gone through the basics of what you can do with the board you can explore the endless possibilities it provides by checking exciting projects on ProjectHub and the Arduino Library Reference <https://opta.findernet.com/en/>

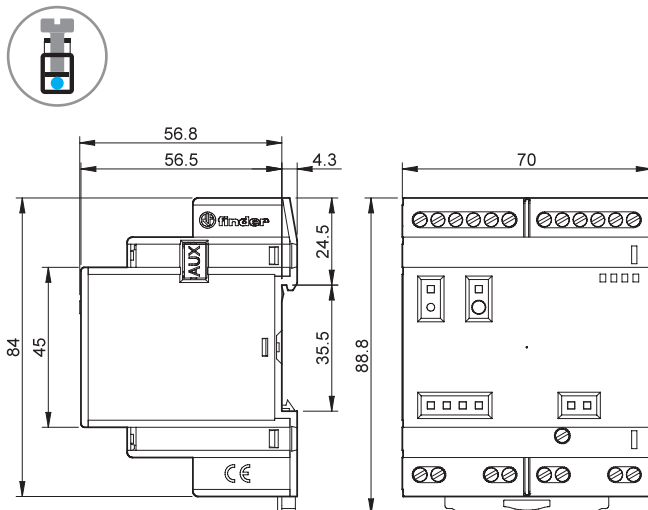
Board Recovery

All Arduino boards have a built-in bootloader which allows flashing the board via USB. In case a sketch locks up the processor and the board is not reachable anymore via USB it is possible to enter bootloader mode by double-tapping the reset button right after power up.

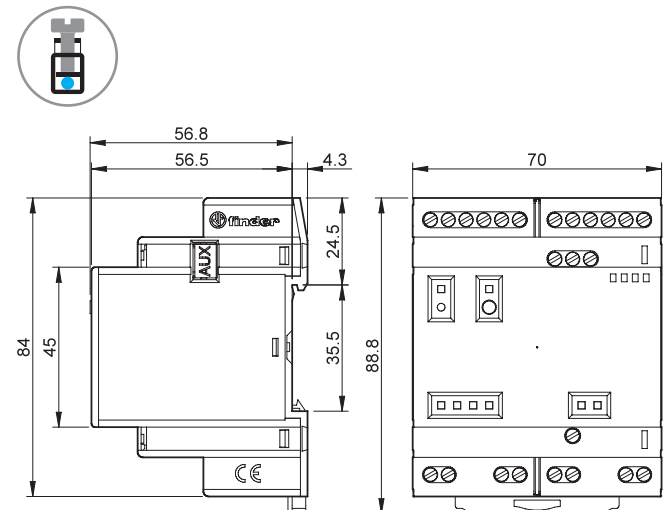
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Outline drawings

Type 8A.04-8300
Screw terminal



Type 8A.04-8310/8320
Screw terminal



X1-2023, www.findernet.com

