finder®
SWITCH TO THE FUTURE

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

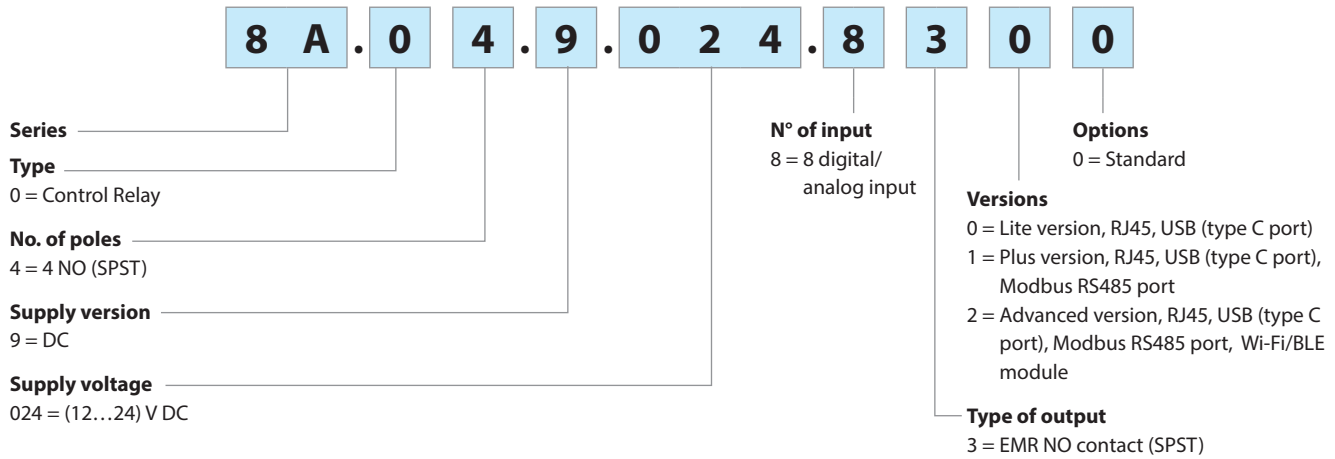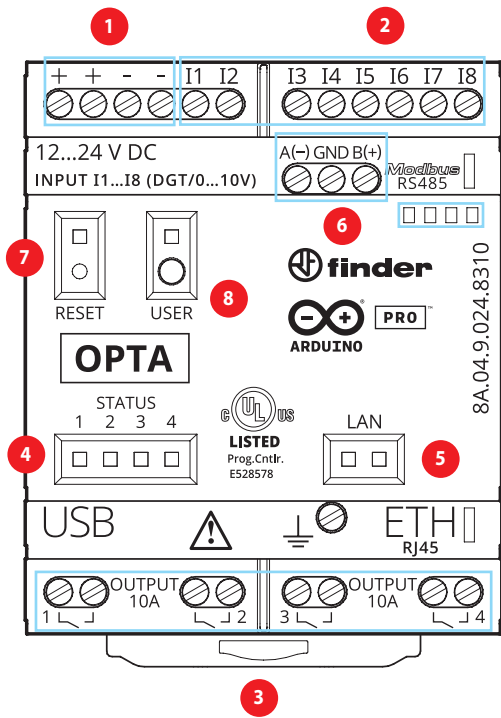| NEW 8A.04-8300	NEW 8A.04-8310	NEW 8A.04-8320
• Lite version • USB Port • RJ45 Port for ETH and Modbus TCP/IP	• Plus version • USB Port • RJ45 Port for ETH and Modbus TCP/IP • Modbus RS485 Port	• Advanced version • USB Port • RJ45 Port for ETH and Modbus TCP/IP • Modbus RS485 Port • Wi-Fi/BLE internal module

OPTA

Partnership with

ARDUINO
PRO

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 (configurable)
Type	Digital/Analog
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 VDC / > 5.9 VDC
Input compatibility	NPN/Sink
Reverse polarity protection	YES
Technical data	
Programm language	Arduino via IDE , as option IEC-61131-3 (LD - SFC - FBD - ST - IL)
Minimum input signal ms	0.2
Electrical life at rated load in AC1 cycles	$100 \cdot 10^3$
Ambient temperature range °C	−20…+55
Protection category	IP 20
Approvals (according to type)	CE UKCA ᶜULᵘˢ

H

Ordering information

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

N° of input
8 = 8 digital/
analog input

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

Type of output
3 = EMR NO contact (SPST)

Options
0 = Standard

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	10	
⊕ Screw torque	Nm	0.8	
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 6 / 2 x 4	1 x 4 / 2 x 2.5
	AWG	1 x 10 / 2 x 12	1 x 12 / 2 x 14

H

Front view

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).

Contact specification

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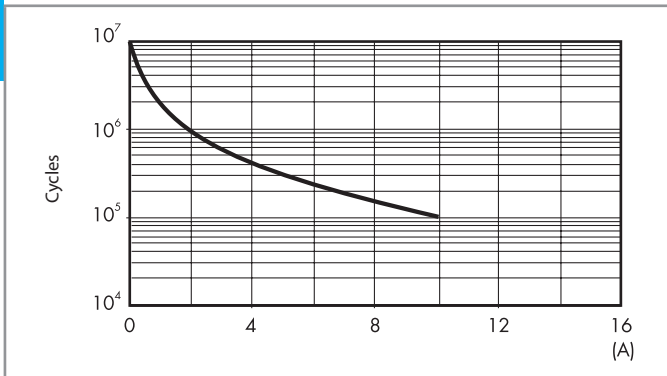

**H 8A - Maximum DC1 breaking capacity**
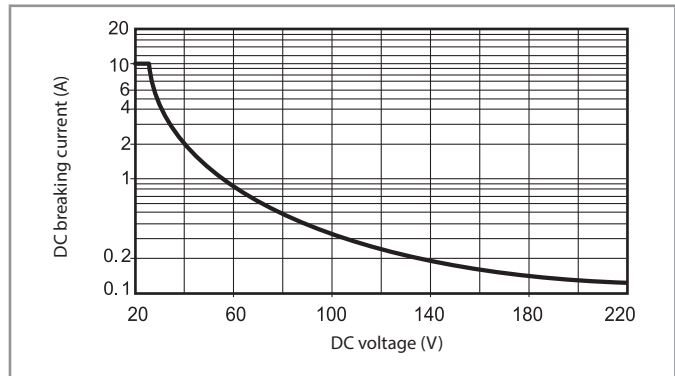
- When switching a resistive load (DC1) having voltage and current values under the curve, an electrical life of $\geq 100 \cdot 10^3$ can be expected.
- In the case of DC13 loads, the connection of a diode in parallel with the load will permit a similar electrical life as for a DC1 load.
  Note: the release time for the load will be increased.

Wiring diagrams

Type 8A.04-8300
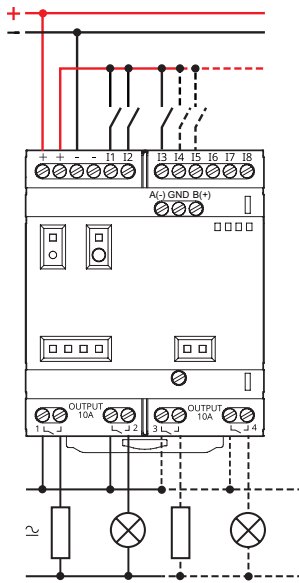
Type 8A.04-8310/8320
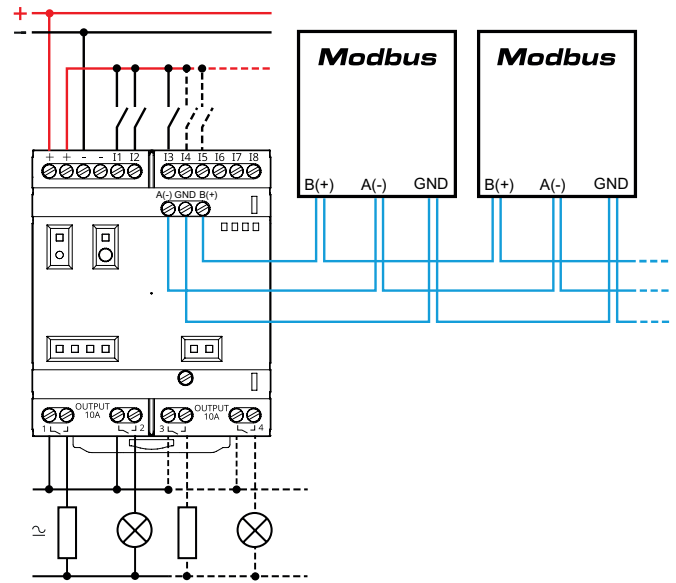
Getting "Started Guide"

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://www.arduino.cc/en/Main/Software

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://create.arduino.cc/editor
https://create.arduino.cc/projecthub/Arduino_Genuino/getting-started-with-arduino-web-editor-4b3e4a

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
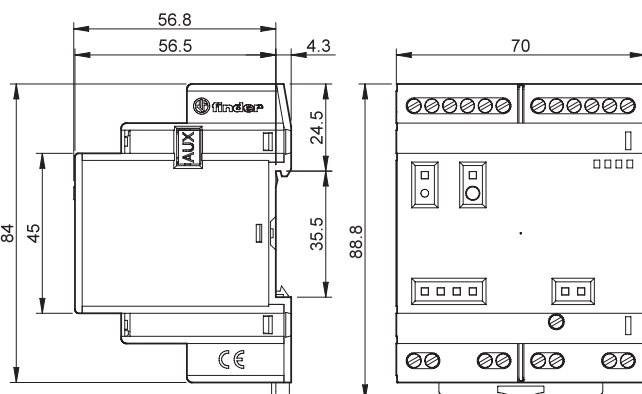https://www.arduino.cc/reference/en/

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.

Outline drawings

Type 8A.04-8300
Screw terminal

Type 8A.04-8310
Screw terminal