Ardbox Q quick start guide

From the box to your first program · Analog and Relay versions

Ardbox Q is an industrial PLC with two processors: a microcontroller for real-time control, programmed with the Arduino IDE, and a Linux processor for data, dashboards, communications and AI models. This guide covers the first steps from unboxing to your first program.

In the box

Ardbox Q unit (Analog or Relay version, 2 GB or 4 GB of RAM, depending on your order).

Safety first

- Installation and wiring must be done by qualified personnel, following the applicable electrical regulations.
- Install Ardbox Q inside an electrical cabinet, on a DIN rail. The device is IP20.
- Always disconnect the power supply before wiring or changing connections.
- Supply voltage: 12 to 24 Vdc. Check the polarity before switching on.
- Respect the signal ranges marked on the device: digital inputs 12 to 24 Vdc (I0.0, I0.1) and 7 to 24 Vdc (I0.2, I0.3), analog inputs and outputs 0 to 10 V, PWM outputs 5 to 24 V.

Getting started

1 Mount it on the DIN rail

- Clip the unit onto a standard DIN rail inside the cabinet.
- Leave space around the terminals for wiring and for the USB-C connector.

2 Connect the power supply

- With the power off, connect a 12 to 24 Vdc supply to the power terminals marked on the device.
- Check the polarity, then switch the supply on.

3 Wire the inputs and outputs

- Each terminal is labelled on the device. Use those labels to connect sensors and actuators.
- Digital inputs: I0.0 and I0.1 are optoisolated, 12 to 24 Vdc; I0.2 and I0.3, 7 to 24 Vdc. Analog inputs: 0 to 10 V.
- Analog version: 3 digital outputs and 7 analog outputs (0 to 10 V), also usable as digital or as PWM outputs (5 to 24 V). Relay version: 8 relay outputs and 2 analog outputs (0 to 10 V), also usable as PWM outputs (5 to 24 V).
- Field devices over RS-485 (Modbus RTU, half or full duplex) or RS-232 connect to their marked terminals. RS-485 and RS-232 cannot be used at the same time.

4 Connect to your computer

- Connect your computer to the USB-C port on the front of Ardbox Q. It is also the programming port.
- USB peripherals connected to Ardbox Q, such as cameras or storage, must have their own power supply or be connected through a powered hub.

5 Program the real-time control

- Install the Arduino IDE on your computer.
- Open the Boards Manager and install the Industrial Shields boards package.
- Select the Ardbox Q board from the Industrial Shields boards, then write and upload your control program.
- The control program runs on its own microcontroller, separate from Linux.

6 Use the Linux side

- The Linux side runs Debian. Use Arduino App Lab to build applications that share data with the control program.
- You can also run Python scripts, Node-RED flows and Docker containers for data logging, dashboards, protocol bridges and AI models.
- If a Linux application stops, the control program keeps running.

7 Connect to the network

- Wi-Fi 5 and Bluetooth 5.1 are available on the Linux side, with an internal antenna.
- Set up the Wi-Fi connection from the Linux side, using the network settings of the operating system or Arduino App Lab.

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Good practices

- Keep the machine or installation logic in the real-time control program. Use the Linux side for data, dashboards, communications and AI.
- Test new Linux applications without stopping the process: the control program does not depend on them.
- Choose 4 GB of RAM if you plan to run several containers or heavier Linux applications next to the control program.
- Keep the documentation of your wiring and programs with the cabinet drawings.

More information

Resource	Where
Product page	www.industrialshields.com/ardbox-q-arduino-uno-q-plc-ai
Documentation, libraries and examples	www.industrialshields.com
Technical support	info@industrialshields.com · +34 938 760 191

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