Ardbox Q datasheet

The first industrial PLC with Arduino UNO Q · Analog and Relay versions

Ardbox Q is the first industrial PLC with Arduino UNO Q. It combines two processors in one DIN rail device: a microcontroller for real-time control and a Linux processor for data, dashboards, communications and AI models running on the device itself.

Control and Linux run on separate processors. If a Linux application stops, the control program keeps running. Data can be processed where it is generated, without extra modules or an external PC.

Two versions: **Analog** (20 I/O), for measurement and proportional control with 0 to 10 V signals, and **Relay** (20 I/O), to switch motors, pumps and valves directly. Each version is available with 2 GB or 4 GB of RAM.



Ardbox Q Relay



Ardbox Q Analog

Architecture

Block	Function	Runs
Real-time side	STM32U585 microcontroller (Arm Cortex-M33)	Control program in C++ (Arduino IDE)
Linux side	Qualcomm Dragonwing QRB2210, quad-core 64-bit, with GPU	Debian Linux: Arduino App Lab, Python, Node-RED, Docker, AI models

Inputs and outputs

	Analog	Relay
Digital inputs	4: I0.0 and I0.1 optoisolated, 12 to 24 Vdc; I0.2 and I0.3, 7 to 24 Vdc	4: I0.0 and I0.1 optoisolated, 12 to 24 Vdc; I0.2 and I0.3, 7 to 24 Vdc
Analog or digital inputs	6, 0 to 10 V, 10 bit	6, 0 to 10 V, 10 bit
Digital outputs	3	None
Analog outputs	7, 0 to 10 V, up to 14 bit. Also usable as digital	2, 0 to 10 V, up to 14 bit
PWM outputs	Same 7 pins, 5 to 24 V	Same 2 pins, 5 to 24 V
Relay outputs	None	8
Total I/O	20	20

Communications

Interface	Details
RS-485	Half or full duplex, 120 ohm termination, Modbus RTU
RS-232	Serial communication. Not available at the same time as RS-485
SPI	Available
Wi-Fi	Wi-Fi 5, dual band, on the Linux side, internal antenna
Bluetooth	Bluetooth 5.1, on the Linux side, internal antenna
USB	USB-C on the front. It is also the programming port. Connected peripherals must be externally powered.

Processing and memory

Item	Value
Application processor	Qualcomm Dragonwing QRB2210, quad-core 64-bit, with GPU
Real-time microcontroller	STM32U585, Arm Cortex-M33
Memory and storage	2 GB RAM + 16 GB eMMC, or 4 GB RAM + 32 GB eMMC
Operating system	Debian Linux

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Software

Side	Tools
Real-time control	Arduino IDE with the Industrial Shields boards package and libraries
Linux	Arduino App Lab, Python, Node-RED, Docker
Licences	No licence fees

Power supply and consumption

	Analog	Relay
Supply voltage	12 to 24 Vdc	12 to 24 Vdc
Consumption at 12 Vdc	1.67 to 4.12 W	1.67 to 5.54 W
Consumption at 24 Vdc	1.56 to 3.72 W	1.56 to 4.80 W

Mechanical and environmental

Item	Value
Dimensions	100 x 45 x 115 mm
Weight	350 g
Mounting	DIN rail, inside an electrical cabinet
Protection	IP20
Operating temperature	0 to 60 °C
Storage temperature	-20 to 60 °C
Marking	CE

Security features

Secure boot, secure key provisioning, Arm TrustZone, QTEE, hardware-backed KeyStore, TRNG/DRBG and hardware support for AES, SHA, RSA and ECC encryption.

Ordering information

Reference	Version	Memory
001000000100	Ardbox Q Analog	2 GB RAM + 16 GB eMMC
001003000100	Ardbox Q Analog	4 GB RAM + 32 GB eMMC
001000000200	Ardbox Q Relay	2 GB RAM + 16 GB eMMC
001003000200	Ardbox Q Relay	4 GB RAM + 32 GB eMMC

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