

PIGEON RB700

versions: **ESSENCE, STANDARD, ADVANCE**

Pigeon RB700 is a computer designed for use in industrial control and automation systems. Pigeon RB700 is powered by Raspberry Pi Compute Module 4 and Linux system. RB700 model is available in three versions: ESSENCE, STANDARD and ADVANCE. The versions differ in the number of available interfaces. The ESSENCE version is the simplest and does not have UPS, HDMI, analog I/O and TPM compared to the STANDARD version. The ADVANCE version, compared to the STANDARD version, has two M.2 connectors and two additional RS-232 ports. M.2 connectors allow mounting a modem with support for dual SIM and SSD disk or any other module that supports PCIe 2.0. Built-in UPS based on supercapacitors ensures elimination of short power interruptions and safe system shutdown. The UPS is controlled by the microcontroller, which ensures the restart of the system in the event of the return of the power supply. All versions have the following interfaces: two RS-485, two Ethernet, CAN, 1-WIRE, RS-232, 12 digital inputs (8 opto-isolated, 4 dry contact) and 8 digital outputs.

FEATURES

■ Powered by Raspberry Pi CM 4

Broadcom BCM2711 quad-core
ARM Cortex-A72 64-bit SoC 1.5GHz
1 GB RAM LPDDR4 (optionally up to 8GB)
8 GB eMMC Flash (optionally up to 32GB)

■ A lot of inputs and outputs

8 x digital opto-isolated inputs
4 x dry contact inputs
8 x open drain outputs
4 x analog inputs 0-10V
2 x analog outputs 0-10V

■ Rich set of interfaces

3 x USB 2.0
3 x RS-232
2 x RS-485
2 x Ethernet
CAN
1-Wire
HDMI

■ Expansion connectors

M.2 2242 key B, PCIe 2.0 x1
M.2 3042 key B, modem with dual SIM

■ Real Time Clock

Real Time Clock with battery backup

■ Robust design

Two watchdogs
Meets requirements of EN IEC 61326-1:2021 for basic and industrial electromagnetic environments

■ Trusted Platform Module

Compliant to TPM Main Specification, Family 2.0

■ Integrated UPS

Supercapacitor based UPS
Safe shut down procedure
Power button
Battery-free, eco-friendly

■ Created for long life

Designed, developed and produced in European Union
No electrolytic capacitors (except UPS supercaps)
No moving parts

■ Low power consumption

High efficiency DC/DC converters
Peripherals power supply control

■ Linux on board

Small and stable distribution that is fully compatible with official Raspberry Pi OS
Large community
Full support for all interfaces

■ Easy programmable

Installed Linux supports almost all of the major programming languages (C/C++, Python, , Java, etc.)
Open source and commercial software for automation and control systems

■ DIN rail enclosure

DIN rail enclosure with the optional wall mount

APPLICATIONS

- Industrial control and automation systems
- Building automation
- Factory automation
- Industrial control networks

1. TECHNICAL SPECIFICATIONS

CPU & memory			
SoC	BCM2711, quad core Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz ¹		
RAM memory	1 GB LPDDR4 (optionally up to 8GB)		
Flash memory	8 GB eMMC (optionally up to 32GB)		
Power supply			
Supply voltage	24V DC (20 ... 32V)		
Power consumption ²	Conditions	Supply current @ 24V	
	CPU 100% load	0,25A	
	CPU 1% load	0,16A	
Interfaces & I/O			
	Version		
	Essence	Standard	Advance
Ethernet 1Gbit, RJ-45	Yes	Yes	Yes
Ethernet 100Mbit, RJ-45	Yes	Yes	Yes
2 x RS-485, terminal blocks	Yes	Yes	Yes
RS-232, DB9 male	Yes	Yes	Yes
2 x RS-232, terminal blocks	No	No	Yes
1-WIRE, terminal blocks	Yes	Yes	Yes
CAN FD, terminal blocks	Yes	Yes	Yes
8 x digital opto-isolated inputs	Yes	Yes	Yes
4 x dry contact inputs	Yes	Yes	Yes
8 x open drain outputs	Yes	Yes	Yes
4 x analog inputs	No	Yes	Yes
2 x analog outputs	No	Yes	Yes
M.2 2242 key B, PCIe 2.0 x1	No	No	Yes
M.2 3042 key B, dual SIM, nano SIM	No	No	Yes
Trusted Platform Module	No	Yes	Yes
Supercapacitor based UPS	No	Yes	Yes
Mini USB 2.0 Type B	Yes	Yes	Yes
USB host 2.0 Type A	3	3	2
I/O parameters			
Digital opto-isolated inputs	Low-level input voltage	0 ... +5 V DC	
	High-level input voltage	+10 ... +28V DC	
	Isolation voltage	5 kV _{RMS}	
	Input resistance	≥10kΩ	
Open drain outputs	Maximum current	500 mA	
	Maximum voltage	28 V DC	
Analog inputs	Voltage Range	0 ... +10V	
	Resolution	10-bit	
Analog outputs	Voltage Range	0 ... +10V	
	Resolution	10-bit	

1) depending on processor workload, CPU throttling may occur

2) power consumption of devices connected to USB and M.2 is not included

5V output DC	Maximum current	0.1 A
Terminal blocks	Wire range	0.5 - 1.5 mm ² , 28 -16 AWG
	Torque	0.2 Nm
	Strip length	7 mm
Standards		
EU standard	EN IEC 61326-1:2021	
Environment		
EMC emission	Group 1 class A and class B equipment according to EN IEC 61326-1:2021	
EMC immunity	Industrial electromagnetic environment according to EN IEC 61326-1:2021	
Operating Temperature	0 °C ~ 50 °C	
Operating Relative Humidity	5 ~ 90%, non-condensing	
Storage Temperature	-25 °C ~ 50 °C	
Protection Rating	IP20	
Miscellaneous		
Watchdog	Two watchdogs: - SoC BCM2711 built-in, - connected to GPIO.	
RTC backup battery	CR2032, 3V	
Dimension	212 x 114 x 59 mm (including terminal blocks connectors)	
Enclosure	Mount	Din-rail, wall mount
	Material	ABS
Weight	Essence: 306g Standard: 351g Advance: 358g	

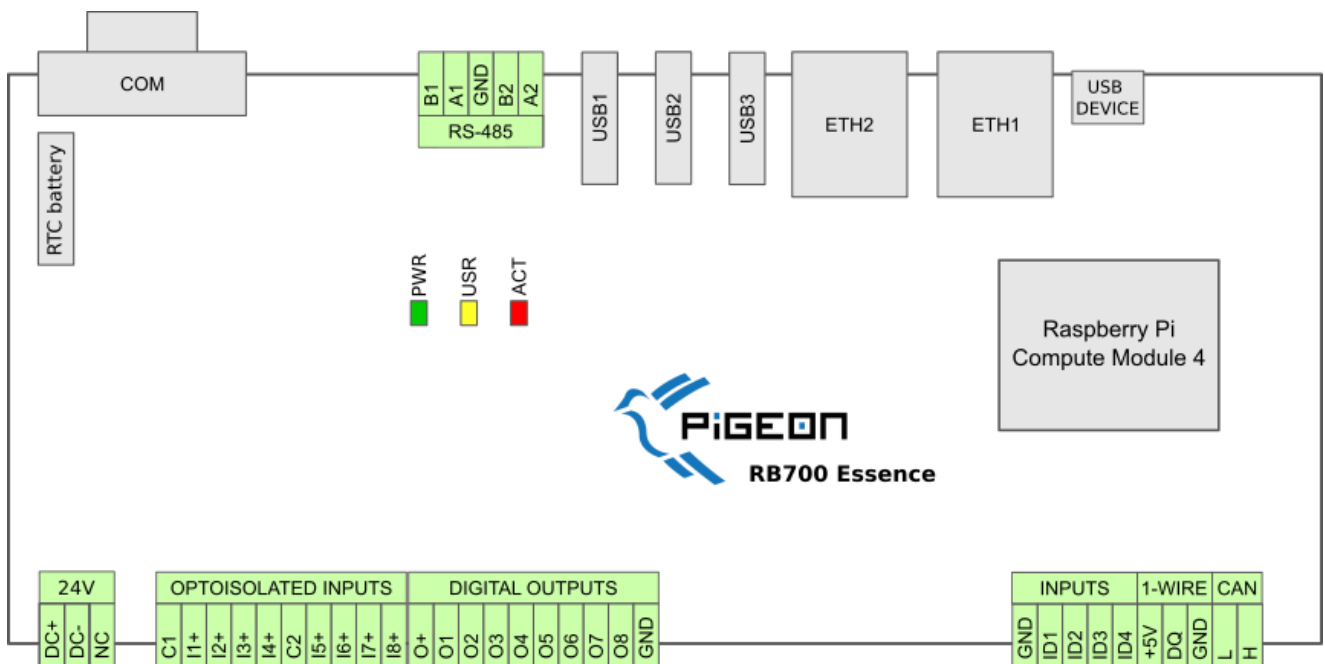


Fig. 1. RB700 version Essence

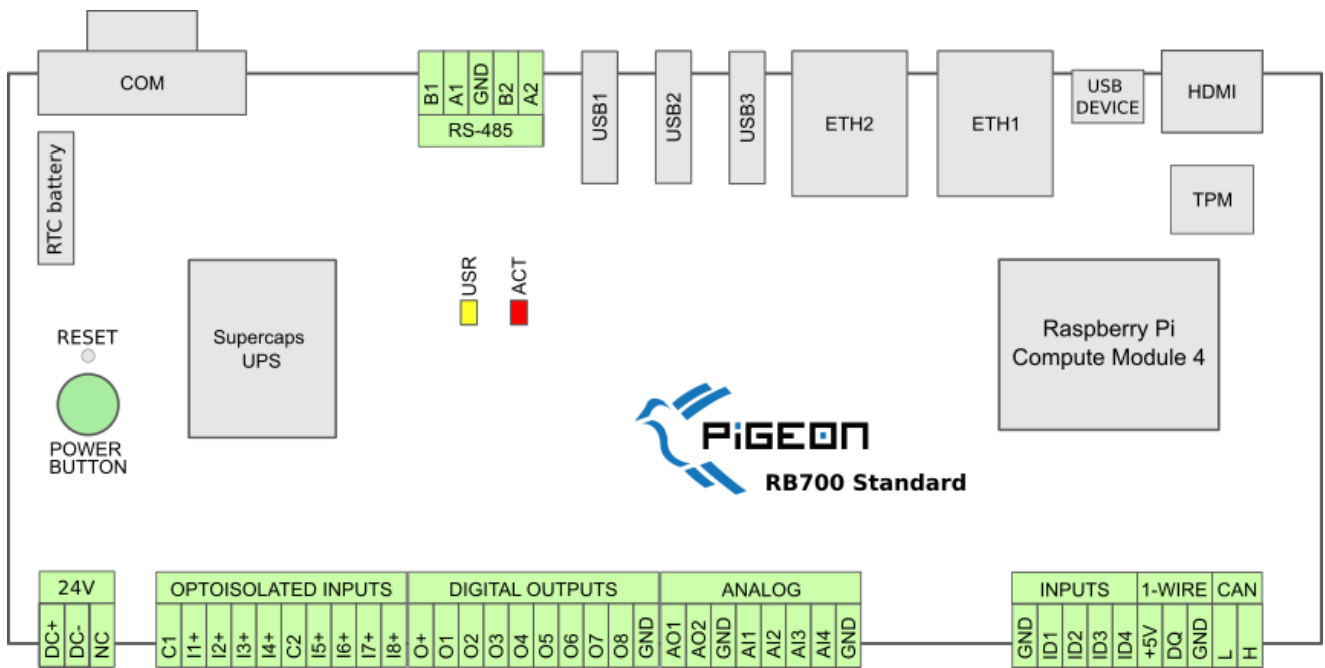


Fig. 2. RB700 version Standards

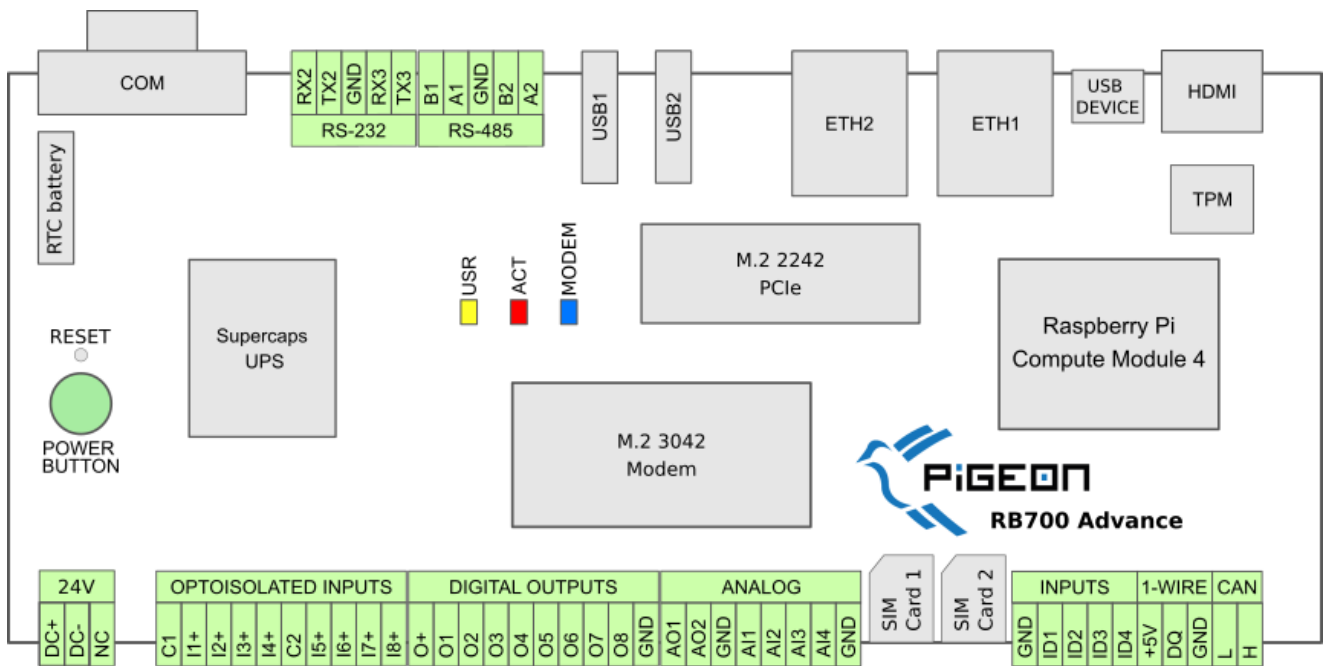


Fig. 3. RB700 version Advance

2. CONNECTIONS

2.1. POWER SUPPLY

Pigeon RB700 should be connected to AC mains using an AC/DC power supply.
 Recommended power supply: MEAN WELL model HDR-30-24 (24V DC, 1,5A).

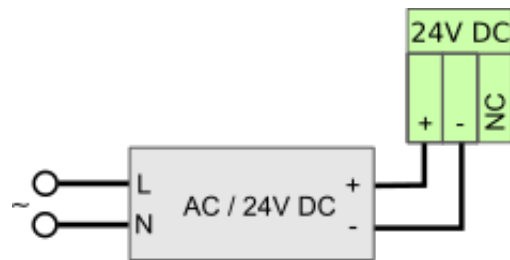


Fig. 4. Dry contact inputs connections

2.2. DRY CONTACT INPUTS

Fig. 5 shows dry contact inputs connections.

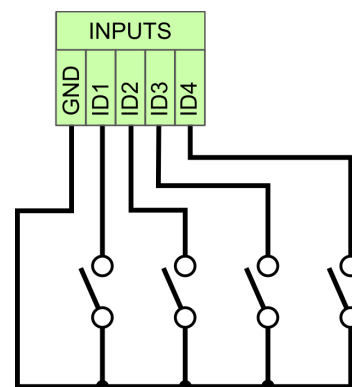


Fig. 5. Dry contact inputs connections

2.3. DIGITAL OPTO-ISOLATED INPUTS

Fig. 6 shows digital opto-isolated inputs connections.

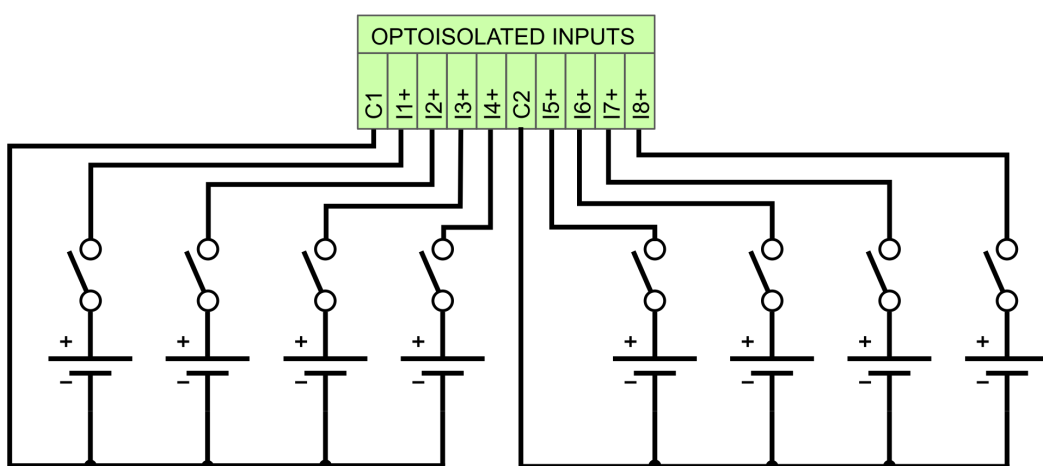


Fig. 6. Digital opto-isolated inputs connections

2.4. OPEN DRAIN OUTPUTS

Recommended connection of LED (a) and relays (b,c) to open drain outputs is shown on fig. 7. O+ is terminal to connect + potential when switching inductive load. The internal diodes protect the output transistors from transient voltage peaks (b). In case of long cables to relay, connection with external diode (c) is recommended.

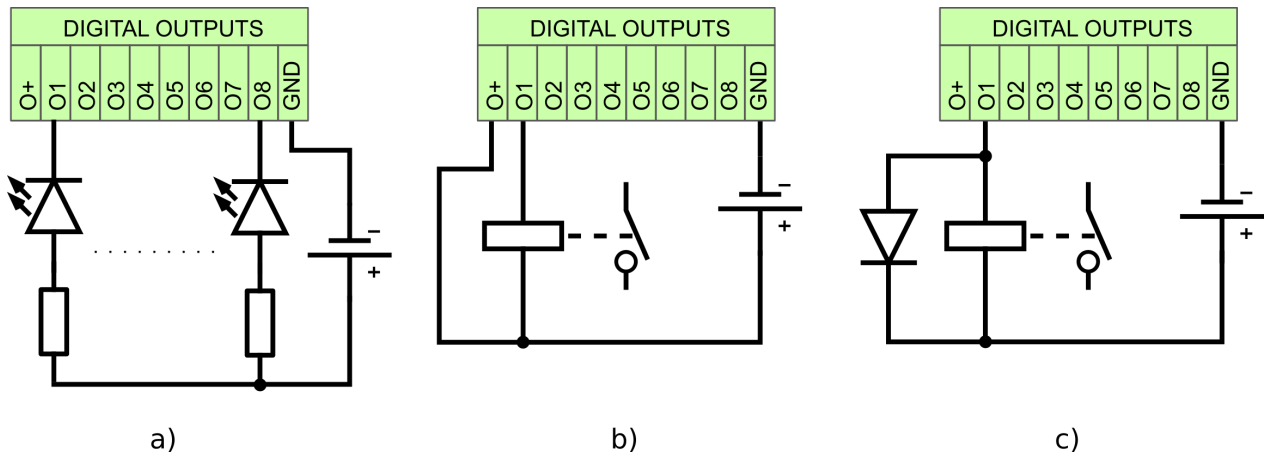


Fig. 7. Example digital outputs connections: (a) LED, (b,c) relay

2.5. ANALOG INPUTS AND OUTPUTS

Fig. 8 shows analog inputs and outputs connections.

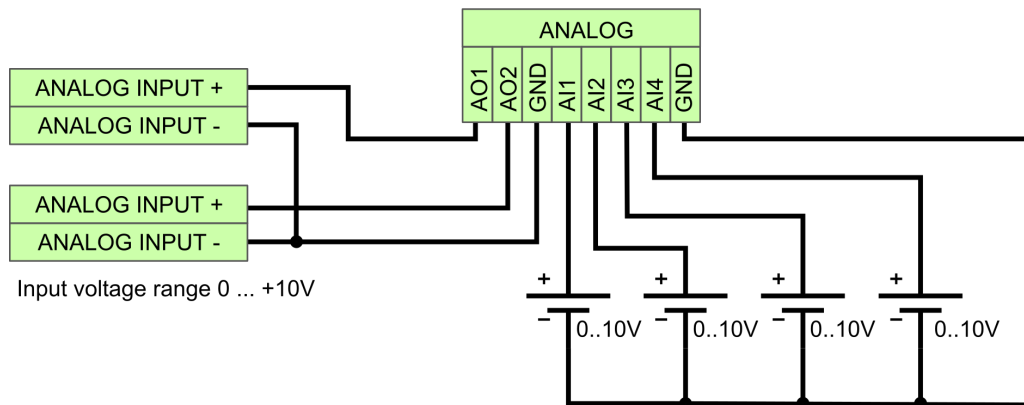


Fig. 8. Analog inputs and outputs connections

2.6. CABLE LENGTH

Connector	Maximum cable length
Power supply	3 m
USB	3 m
HDMI	3 m
1-wire	3 m
Analog inputs/outputs	3 m
Digital inputs/outputs	3 m
RS-232	3 m
Ethernet	30 m
CAN	30 m
RS-485	30 m

3. DIMENSIONS

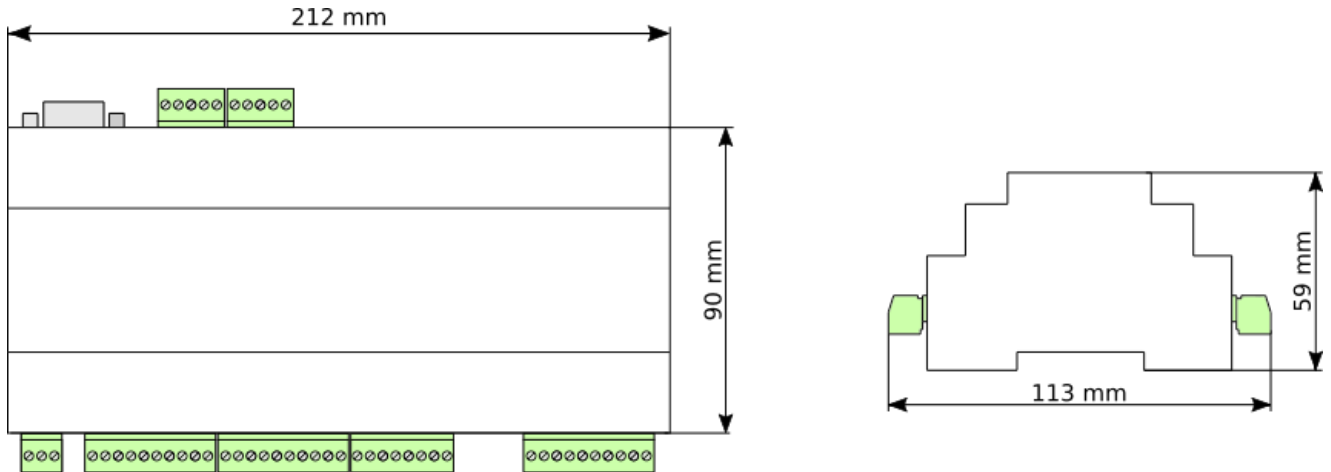


Fig. 9. RB700 dimensions

4. ENVIRONMENTAL PROTECTION



This marking on the product, accessories or literature indicates that the product and its electronic accessories should not be disposed of with other household waste. To prevent possible harm to the environment please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.

5. ORDER CODES

We offer customization of this product. Rebranding and hardware customization are possible. For available options or for further information on any aspect of this device, please contact KRISTECH.

Order codes	Descriptions
RB700-ESSENCE	RB700 ESSENCE version
RB700-STANDARD	RB700 STANDARD version
RB700-ADVANCE	RB700 ADVANCE version



For more information, please visit:
<http://pigeoncomputers.com>

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