Industrial Shields Raspberry PLC 38AR+

Technical Features CONECTABLE PLC RASPBERRY PI 24Vcc

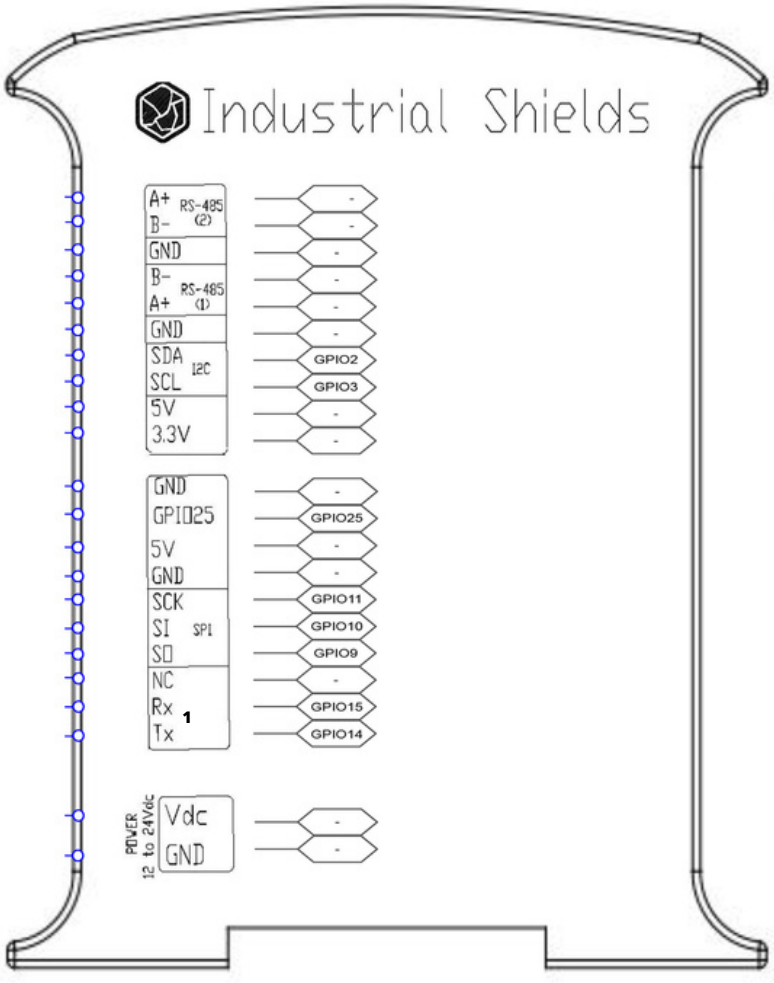
MODEL TYPE	Raspberry PLC - 012003000700
Input Voltage	12 to 24Vdc (Fuse protection (2.5A) Polarity protection)
Input rated voltage	24Vdc
Rated Power	30 W
I max.	1.5A
Size	119.5x133.80x101mm
SRAM	8 GB
Communications	I2C, Ethernet (x2), USB (x4), RS485 (x2 HALF-Duplex), SPI , Wi-Fi, Bluetooth, Serial TTL, CAN, µSD, RTC, µHDMI (x2)

General Features

Power supply voltage	DC power supply	12 to 24Vdc
Operating voltage range	DC power supply	11.4 to 25.4Vdc
Power consumption	DC power supply	30 W MAX.
External power supply	Power supply voltage	24Vdc
	Power supply voltage	700 mA
Insulation resistance	20mΩ min.at 500Vdc between the AC terminals and the protective earth terminal.	
Dielectric strength	2.300 VAC at 50/60 Hz for one minute with a leakage current of 10mA max. Between all the external AC terminals and the protective ground terminal.	
Shock resistance	80m/s2 in the X, Y and Z direction 2 times each.	
Ambient temperature (operating)	0° to 50°C with Raspberry OS Lite / 0° to 40°C with Raspberry OS Desktop	
Ambient humidity (operating)	10% to 90% (no condensation)	
Ambient environment (operating)	With no corrosive gas	
Ambient temperature (storage)	-20° to 60°C	
Power supply holding time	2ms min.	
Weight	598g	

Notes

1. GPRS PLC's do not have available the Serial Tx (GPIO14) and Rx (GPIO15) pins. You can see them as Not Connected (NC).



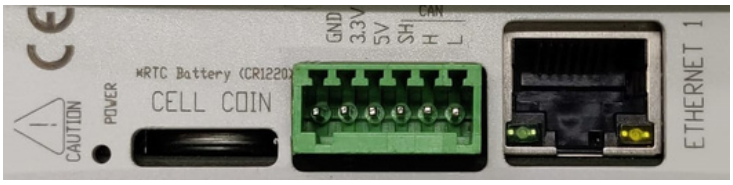
GPIO(x1)

Digital GPIO25 (3.3V)

Expandability

I2C - 127 elements
(x2) ModbusRTU with RS485: 32 elements

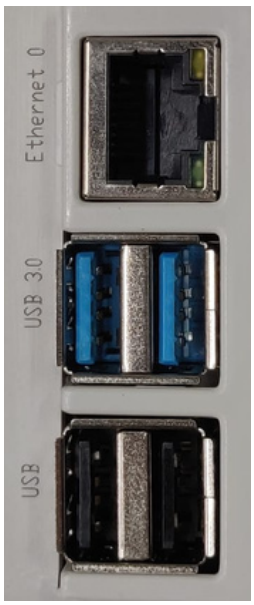
Upper Side 1



Left side

Upper side 2

Right Side



I/Os Table

		IOs Table				
Model	**Reference 3**	**Analog Input**	**Digital Isolated Input[2]**	**Digital Isolated Output**	**Digital/Analogic Output**	**Relay Output**
38AR	01200X000700	10	9	5	6	8

Notes

2. GPRS PLC's have one digital isolated input less than the Ethernet version.
3. The X on the reference number shows the RAM Memory model. See the Reference Table. Example:
   - xxxxx2xxxxxx - 2GB RAM Memory
   - xxxxx3xxxxxx - 4GB RAM Memory
   - xxxxx4xxxxxx - 8GB RAM Memory

Reference Table

Reference Table				
Model	**RAM Memory**			**Accessory**
	2GB RAM	**4GB RAM**	**8GB RAM**	**with FAN**
PLC Raspberry General Family				
Raspberry PLC Ethernet 38AR I/Os Analog/Digital PLUS (Raspberry Pi 4B X GB RAM Included + 8GB pSLC SIM W/Linux)	012002000700	012003000700	012004000700	xxxxxxxxxxxF

I/Os Ranges

- Analogic I/Os voltage: 0 - 10 Vdc
- Digital I/Os voltage: 5 - 24 Vdc (300 mA)
- Relay's voltage: 220 Vac (5 A)

Analog I/Os equivalence

Analog Inputs		
PLC Pinout	**Chip ADDR**	**Chip INDEX**
Zone A		
I0.7	0x4a	0
I0.8	0x4a	1
I0.9	0x4b	0
I0.10	0x48	2
I0.11	0x48	0
I0.12	0x48	1

Analog Outputs		
PLC Pinout	**Chip ADDR**	**Chip INDEX**
Zone A		
A0.5	0x40	10
A0.6	0x40	1
A0.7	0x40	0

Digital Inputs			
PLC Pinout	**Chip ADDR**	**Chip INDEX**	**GPIO**
Zone A			
I0.0	ADDR = 0x21	5	-
I0.1	ADDR = 0x21	3	-
I0.2	ADDR = 0x21	2	-
I0.3	ADDR = 0x21	1	-
I0.4	ADDR = 0x21	0	-
I0.5	-	-	GPIO = 13
I0.6	-	-	GPIO = 12

Digital Outputs		
PLC Pinout	**Chip ADDR**	**Chip INDEX**
Zone A		
Q0.0	0x40	15
Q0.1	0x40	14
Q0.2	0x40	13
Q0.3	0x40	12
Q0.4	0x40	11
Q0.5	0x40	10
Q0.6	0x40	1
Q0.7	0x40	0

Rele I/Os equivalence

Analog Inputs		
PLC Pinout	Chip ADDR	Chip INDEX
Zone B		
I1.2	0x49	0
I1.3	0x4a	3
I1.4	0x4b	2
I1.5	0x4b	3

Analog Outputs		
PLC Pinout	Chip ADDR	Chip INDEX
Zone B		
A1.0	0x40	3
A1.1	0x40	5
A1.2	0x40	8

Digital Inputs	
PLC Pinout	GPIO
Zone B	
I1.0	27
I1.1	4

Digital Outputs		
PLC Pinout	Chip ADDR	Chip INDEX
Zone B		
Q1.0	0x40	3
Q1.1	0x40	5
Q1.2	0x40	8

Relay I/Os equivalence

Relay		
PLC Pinout	**Chip ADDR**	**Chip INDEX**
Zone B		
R1.1	0x20	1
R1.2	0x20	2
R1.3	0x21	7
R1.4	0x20	0
R1.5	0x40	7
R1.6	0x40	4
R1.7	0x40	6
R1.8	0x40	9

Industrial Shields

Performance Specifications

Raspberry Board	Raspberry Pi 4
I/O control method	Combination of the cyclic scan and immediate refresh processing methods.
Programming language	Linux applications: Python, C++, etc.
CPU	Broadcom BCM2711, Quad core Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz
Website	https://www.raspberrypi.org/

Raspberry PLC Access

How to access to the Raspberry PLC:

-Linux users: using ssh specifying the IP address: 10.10.10.20/24.

-Windows users: we recommend to use PuTTY ssh client. The IP address have to be specified: 10.10.10.20/24.
You can download the latest release of PuTTY here:
https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html

UPS Shield

This PLC has integrated an UPS Shield, a device which provides an anti-voltage drop protection system designed to avoid data corruption when the current is suddenly cut off.

RTC

This PLC has integrated the DS3231 Real Time Clock model which is powered by a button battery (CR1216 or CR1220).

Fan

This PLC has the option to include a fan to refrigerate the CPU and the other components if the working envirionment requires it.

Warnings

Unused pins should not be connected. Ignoring the directive may damage the controller.

Before using this product, it is the responsibility of the user to read the product's User Guide and all accompanying documentation.

Industrial Shields PLCs must be powered between 12Vdc and 24Vdc. If a higher voltage is supplied to the equipment can suffer irreversible damage.

Maintenance must be performed by qualified personnel familiarized with the construction, operation, and hazards involved with the control.

Maintenance should be performed with the control out of operation and disconnected from all sources of power.

The Industrial Shields Family PLCs are Open Type Controllers. It is required that you install the Raspberry PLC in a housing, cabinet, or electric control room. Entry to the housing, cabinet, or electric control room should be limited to authorized personnel.

Inside the housting, cabinet or electric control room, the Industrial Shields PLC must be at a minimum distance from the rest of the components of a minimum of 25 cm, it can be severely damaged.

Failure to follow these installation requirements could result in severe personal injury and/or property damage. Always follow these requirements when installing Raspberry family PLCs.

In case of installation or maintenance of the PLC please follow the instructions marked in the Installation and Maintenance section on the User Guide.

Do not disconnect equipment when a flammable or combustible atmosphere is present.

Disconnection of equipment when a flammable or combustible atmosphere is present may cause a fire or explosion which could result in death, serious injury and/or property damage.

Inside the encapsulated, there are supercapacitors if 25F which can be dangerous. Be careful with them.

Symbology

⎓	Indicates that the equipment is suitable for direct current only; to identify relevant terminals
~	Indicates that the equipment is suitable for alternating current only; to identify relevant terminals
⎍	To identify the control by which a pulse is started.
⏚	To identify an earth (ground) terminal in cases where neither the symbol 5018 nor 5019 is explicily required.
⊗	To identify the switch by means of which the signal lamp(s) is (are) switched on or off.
CE	CE marking indicates that a product complies with applicable European Union regulations
⚠	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury
ϟ	To indicate hazards arising from dangerous voltages

Technical Support

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support@industrialshields.com

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