HSYCO I/O Pi Datasheet

Power supply (VS)	⎓dc 24 V nominal (range 9-28 V), max 2.2 A Reverse polarity protection with 2.2 A resettable fuse. Surge protection up to ±1000 V / 2 ohms 1.2/50 µs
Current consumption at VS+ 12 V⎓ including Raspberry Pi 4, with Ethernet connected, no USB devices	low CPU load: 320 mA, 100% CPU load, before throttling: 590 mA 100% CPU load, throttled: 500 mA All relays ON add: 90 mA SPBF10X fan option, add: 50 mA Actual current consumption may vary based on working conditions
Current consumption at VS+ 24 V⎓ including Raspberry Pi 4, with Ethernet connected, no USB devices	low CPU load: 190 mA, 100% CPU load, before throttling: 320 mA 100% CPU load, throttled: 280 mA All relays ON add 50 mA SPBF10X fan option, add: 25 mA Actual current consumption may vary based on working conditions
Hardware Platform	Iono PI Raspberry Pi 4 Model B 2GB Industrial μSD card 8GB
Voltage range at digital inputs	DI1..DI3: 0÷40 V ⎓ in normal mode; 0÷5 V ⎓ in TTL mode DI4..DI6: 0÷VS+ ⎓
Current for each digital input in normal mode	DI1..DI3: • 1.7 mA at VS+=12 V ⎓ • 3.4 mA at VS+=24 V ⎓ DI4..DI6: • 1.9 mA at VS+=12 V ⎓ • 3.9 mA at VS+=24 V ⎓
Voltage threshold digital inputs in normal mode	• VIH: 4.2 V • VIL: 3.4 V
Voltage threshold digital inputs in TTL mode	• VIH: 2.4 V • VIL: 0.8 V
Range for analog inputs	• AI1..AI2: 0÷30 V ⎓ • AI3..AI4: 0÷3 V ⎓
Impedance for analog inputs	AI1..AI4: 200 kOhm
Analog inputs characteristics	• Resolution: 12 bits • Linearity: ±1 LSB • MAX error: ±2% of full scale

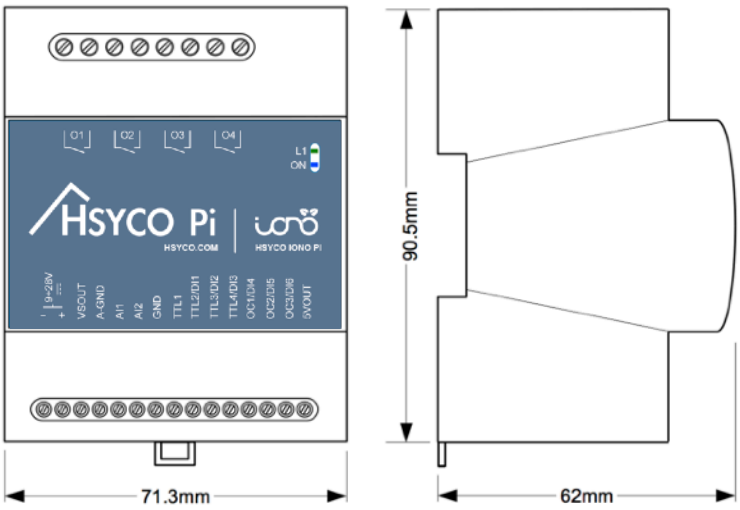
HSYCO I/O Pi Datasheet (cont)

Maximum recommended cable length for digital inputs	• normal mode: 30 m • TTL mode: 2 m
Maximum recommended cable length for analog inputs 1-2	15 m
Maximum recommended cable length for open collector outputs	2 m
Relay outputs rating	• Rated current: 6 A • UL rated voltage: 60 Vdc • Rated voltage: 250 V AC (not UL evaluated) • Rated load (AC1, resistive load): 1500 VA (not UL evaluated) • Rated load (AC15, cos ϕ = 0.5): 250 VA (not UL evaluated) • Single phase motor rating (230 V AC): 185 W (not UL evaluated) • Breaking capacity (DC1): - 3 A at 30 V DC - 0.35 A at 110 V DC (not UL evaluated) - 0.2 A at 220 V DC (not UL evaluated) • Electrical life at rated load AC1: 50000 cycles • Mechanical life: 20000000 cycles • Operate/release time: 6/4 ms • Dielectric strength between open contacts: 1000 V AC • Type of insulation between coil and contacts: Basic • Dielectric strength between coil and contacts: 4000 V AC
Open collector outputs rating	NPN type, shared with DI4..DI6, common on VSOUT, short circuit protected 100 mA MAX output current
AUX VSOUT	• Max allowable current: 300 mA • Min voltage: Supply voltage – 1 V
AUX 5VOUT	• Max allowable current: 50 mA • Min voltage: 4.5 V
Real time clock	Internal RTCC circuit with backup lithium battery. Only use CR1025 Lithium / Manganese Dioxide (Li/MnO2) batteries. Expected battery life without main power supply: ~2 years.
15-pin terminal block characteristics	Maximum conductor cross section: 1.5 mm2 (16 AWG), or 0.5 mm2 when using ferrules (highly recommended) Recommended stripping length: 5 mm Screw thread: M2 Maximum screws tightening torque: 0.25 Nm
8-pin terminal block characteristics	Maximum conductor cross section: 2.5 mm2 (12 AWG) Recommended stripping length: 7 mm Screw thread: M3 Maximum screws tightening torque: 0.6 Nm

HSYCO I/O Pi Datasheet (cont)

Electromagnetic immunity compliance	EN 61000-4-2 (ESD) EN 61000-4-3 (Radiated RF Field) EN 61000-4-4 (Burst/fast transient) EN 61000-4-5 (Surge) EN 61000-4-6 (Conducted) EN 61000-4-8 (Power frequency magnetic field)
Housing	standard 4M for DIN rail
Operating temperature	-20…+50 °C
Storage temperature	-30…+70 °C
Altitude	Up to 2000 m
Humidity	5% to 95% RH noncondensing
Protection degree	IP20
Fan noise (with SPBF10X fan option)	23.6 dBA
Weight	190 g

Dimensions



DIMENSIONS (mm)

Disposal

Waste Electrical & Electronic Equipment

(Applicable in the European Union and other European countries with separate collection systems). This marking on the product, accessories or literature indicates that the product should not be disposed of with other household waste at the end of their working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources. Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take these items for environmentally safe recycling. This product and its electronic accessories should not be mixed with other commercial wastes for disposal.

Iono Pi RTC contains a small non rechargeable manganese dioxide lithium coin battery.

In the Iono Pi RTC, the battery is not accessible from the outside. You should first remove the case top body to gain access to the Iono Pi circuit board. Always remove the battery before disposing of this product.

Installation and use restrictions

Standards and regulations

The design and the setting up of electrical systems must be performed according to the relevant standards, guidelines, specifications and regulations of the relevant country. The installation, configuration and programming of the devices must be carried out by trained personnel.

The installation and wiring of connected devices must be performed according to the recommendations of the manufacturers (reported on the specific data sheet of the product) and according to the applicable standards.

All the relevant safety regulations, e.g. accident prevention regulations, law on technical work equipment, must also be observed.

Safety instructions

Carefully read the safety information section at the beginning of this document.

Set-up

For the first installation of the device proceed according to the following procedure:

- ✓ make sure all power supplies are disconnected
- ✓ install and wire the device according to the schematic diagrams on the specific product user guide
- ✓ after completing the previous steps, switch on the power supply and other related circuits.

Conformity Information

EU

This device complies with the following applicable European Community harmonised standards:

- ✓ 2014/30/EU - Electromagnetic Compatibility Directive (EMC)
- ✓ 2014/35/EU - Low Voltage Directive (LVD)
- ✓ 2011/65/EU and 2015/863/EU - Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

The following harmonised standards have been used to demonstrate conformity to these directives:

- ✓ EN60664-1:2007 - Insulation coordination for equipment within low-voltage systems
- ✓ EN61000-6-2:2019 - EMC Immunity standard for industrial environments
- ✓ EN 61000-6-3:2007/A1:2011/AC:2012 - EMC Emission standard for residential, commercial and light-industrial environments

The declaration of conformity is available at: https://www.sferalabs.cc

USA

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

Shielded cables must be used with this equipment to maintain compliance with FCC regulations.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CANADA

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

RCM AUSTRALIA / NEW ZEALAND

This product meets the requirements of the standard EN 61000-6-3:2007/A1:2011/ AC:2012 - Emission for residential, commercial and light-industrial environments.

Compliance information for Raspberry Pi

Iono Pi model IPMB20R contains a standard Raspberry Pi 3 Model B single board computer. Iono Pi model IPMB20RP contains a standard Raspberry Pi 3 Model B+ single board computer. Iono Pi model IPMB20R41, IPMB20R42, IPMB20R44, IPMB20R48 contain a standard Raspberry Pi 4 Model B single board computer. These boards have WiFi and Bluetooth radios. They are user accessible and replaceable.

EU

Raspberry Pi 3 Model B, Raspberry Pi 3 Model B+ and Raspberry Pi 4 Model B are in conformity with the essential requirements and other relevant requirements of the Radio Equipment Directive 2014/53/EU.

USA

Raspberry Pi 3 Model B FCC IDENTIFIER: **2ABCB-RPI32**

Raspberry Pi 3 Model B+ FCC IDENTIFIER: **2ABCB-RPI3BP**

Raspberry Pi 4 Model B FCC IDENTIFIER: **2ABCB-RPI4B**

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be colocated or operating in conjunction with any other antenna or transmitter, except in accordance with FCC multitransmitter product guidelines. This (WiFi DTS) device has 20 MHz bandwidth mode.

CANADA

Raspberry Pi 3 Model B IC CERTIFICATION No.: **20953-RPI32**

Raspberry Pi 3 Model B+ IC CERTIFICATION No.: **20953-RPI3BP**

Raspberry Pi 4 Model B IC CERTIFICATION No.: **20953-RPI4B**

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.