Iono RP Datasheet

POWER SUPPLY	
Power supply operating voltage (VS)	⎓dc 24 V nominal (range 12-28 V), max 1.1 A Reverse polarity protection with 1.1 A resettable fuse. Surge protection up to ±500 V / 2 Ohms 1.2/50 µs
Current consumption at VS+ 12V⎓ unconnected inputs and relays off	43 mA
Current consumption at VS+ 12V⎓ digital inputs closed to VSO and relays on	122 mA
Current consumption at VS+ 24V⎓ unconnected inputs and relays off	28 mA
Current consumption at VS+ 24V⎓ digital inputs closed to VSO and relays on	66 mA
VSO output voltage (min.)	VS - 1 V
VSO output current (max.)	300 mA
5VO output voltage (typ.)	5.0 V (no load)
5VO output current (max.)	350 mA
5VO overcurrent protection threshold	420 mA
USB port output current (max.)	500 mA
ARCHITECTURE	
Microcontroller	Raspberry Pi RP2040 dual-core Arm Cortex M0+, 133 MHz, 264KB SRAM 16MB on-board Flash memory
COMMUNICATION PORTS	
Serial communication ports	RS-485 Half-Duplex with manual or automatic TX/RX management
Baud Rates	1200 to 115200
ESD-Protection Voltage on RS-485 A/B	±15 kV human body model ±8 kV contact discharge
Surge protection on RS-485 A/B	Surge protection up to ±500 V / 2 Ohms 1.2/50 µs; 600 W peak pulse power capability at 10/1000 µs waveform
Fail safe feature on RS-485	Optional with jumpers (not installed)
USB port	Micro-USB B Receptacle USB 1.1, host and device support

AV1-AV4: ANALOG VOLTAGE INPUTS	
Input voltage range	+0…+30 V
Input impedance	> 450 kOhm
ADC characteristics	SAR ADC 500kS/s max, with 48MHz clock 12-bit with 8.7 ENOB
Max cable length	15 meters
AI1-AI4: ANALOG CURRENT INPUTS	
Input current range	+0…+25 mA
Input impedance	120 Ohm
ADC characteristics	SAR ADC 500kS/s max, with 48MHz clock 12-bit with 8.7 ENOB
Max cable length	15 meters
AO1: ANALOG VOLTAGE OUTPUT	
Output range	+0…+10 V
Output drive current	30 mA (Max)
Total Error	±2 % of full-scale (Max)
Max cable length	15 meters
DI1-DI4: DIGITAL INPUTS	
Input voltage range	+0…+40 V
Input impedance	49 kOhm
Voltage threshold	VIH: 4.9 V VIL: 3.4 V
Max cable length	30 meters
DI5-DI6: DIGITAL INPUTS	
Input voltage range	+0…+40 V
Input impedance	6.5 kOhm
Voltage threshold	VIH: 5.1 V VIL: 3.4 V
Max cable length	30 meters

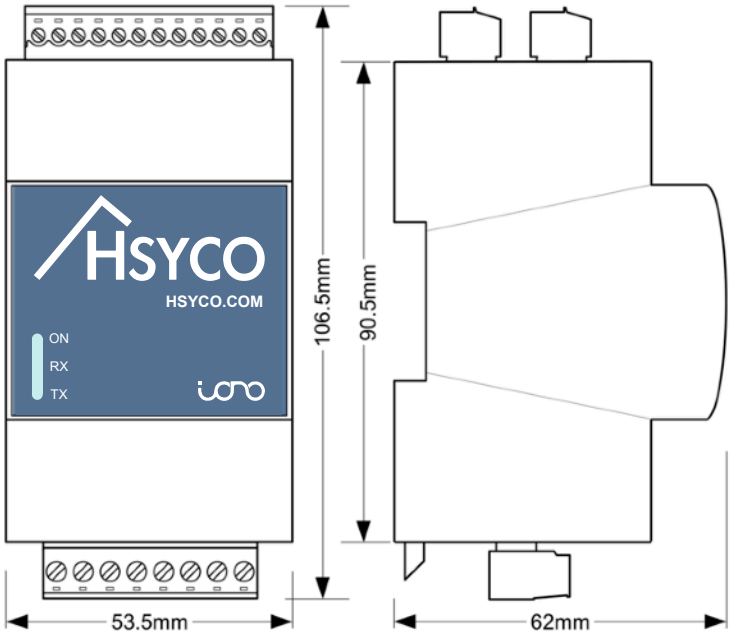
Iono RP Datasheet (cont)

DI5-DI6: DIGITAL INPUT/OUTPUT	
Input voltage threshold	VIH: 1.4 V VIL: 1.1 V
Pull-up (+5 V)	10 kOhm
Max cable length	10 meters
O1-O4: RELAYS	
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
REAL TIME CLOCK	
Oscillator frequency	32768 Hz
Frequency Tolerance	±20.00 ppm
Backup battery	Only use CR1025 Lithium / Manganese Dioxide (Li/MnO2) batteries. Expected battery life without main power supply: ~2 years. The battery and RTC backup power circuit are not UL evaluated.
EERAM	
Capacity	16 Kbit (2048 x 8 bits)
SRAM r/w cycles	Infinite
EEPROM store cycles	> 1000000
Data retention	> 200 years

Iono RP Datasheet (cont)

EMI IMMUNITY STANDARDS	
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)
ENVIRONMENTAL	
Operating temperature	-20…+60 °C (not UL evaluated)
Storage temperature	-30…+80 °C
Altitude	Up to 2000 m
Humidity	5% to 95% RH noncondensing
Protection degree	IP20
MECHANICAL	
3.81 mm pitch terminal block characteristics	Maximum conductor cross section: 1.3 mm2 (16AWG), or 0.5 mm2 when using ferrules (highly recommended) Recommended stripping length: 6 mm Screw thread: M2 Maximum screws tightening torque: 0.3 Nm
5.08 mm pitch terminal block characteristics (relays)	Maximum conductor cross section: 3.3 mm2 (12AWG) Recommended stripping length: 7 mm Screw thread: M3 Maximum screws tightening torque: 0.5 Nm
Dimensions	3 module Din Rail enclosure width: 53.5 mm height: 90.5mm depth: 62.0mm
Weight	150 gr

Dimensions



DIMENSIONS

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, please 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 RP optionally contains a small non rechargeable manganese dioxide lithium coin battery. The battery is not accessible from the outside. You should first remove the case body to gain access to the Iono RP circuit boards. 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 data sheet of the product
- ✓ after completing the previous steps, switch on the 230 Vac supplying the power supply and the 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:

- ✓ EN60664-1:2020 - Insulation coordination for equipment within low-voltage systems
- ✓ EN61000-6-1:2019 - EMC Immunity for residential, commercial and light-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(B).

Cet appareil numérique de la classe B est conforme à la norme NMB-003(B) 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.