Iono MKR Datasheet

Power supply	12…28V⎓ nom. (11…30V⎓) Reverse polarity and surge protection up to ±500V/ 2ohms 1.2/50µs using an auto resetting fuse and diodes
Current consumption at VS+ 12V⎓ unconnected inputs and relays off	70mA with Arduino MKR1000 WiFi
Current consumption at VS+ 12V⎓ digital inputs closed to VSO and relays on	165mA with Arduino MKR1000 WiFi
Current consumption at VS+ 24V⎓ unconnected inputs and relays off	40mA with Arduino MKR1000 WiFi
Current consumption at VS+ 24V⎓ digital inputs closed to VSO and relays on	115mA with Arduino MKR1000 WiFi
Hardware Platform	Iono MKR with one preinstalled Arduino Board • Arduino MKR ZERO • Arduino MKR WiFi 1010 • Arduino MKR WAN 1300
Inputs	4 multi-mode (digital or analog 0…30V or 0…25mA) 2 digital (also configurable as TTL I/O)
Voltage range at digital inputs (1-4)	0…40V⎓
Current for each digital input (1-4)	2.9mA at VS+ 12V⎓ 5.8mA at VS+ 24V⎓
Voltage threshold digital inputs 1-4 (typ.)	VIH: 4.6V VIL: 3.8V
Voltage range at digital inputs (5-6)	0…40V⎓ in normal mode 0…5V⎓ in TTL mode
Current for each digital input (5-6)	1.8mA at VS+ 12V⎓ 3.5mA at VS+ 24V⎓
Voltage threshold digital inputs 5-6 (typ.)	VIH: 4.7V VIL: 3.9V
Impedance for analog 0…10V inputs (1¸4)	410kΩ
Impedance for analog 0…20mA inputs (1-4)	130Ω

Iono MKR Datasheet (cont)

Analog inputs characteristics	Resolution: 12 bits Linearity: ±1LSB MAX error: ±2% of full scale
Max cable length for digital inputs (1-6)	30 meters
Max cable length for analog inputs (1-4)	15 meters
Digital outputs	4 power relays with single coil

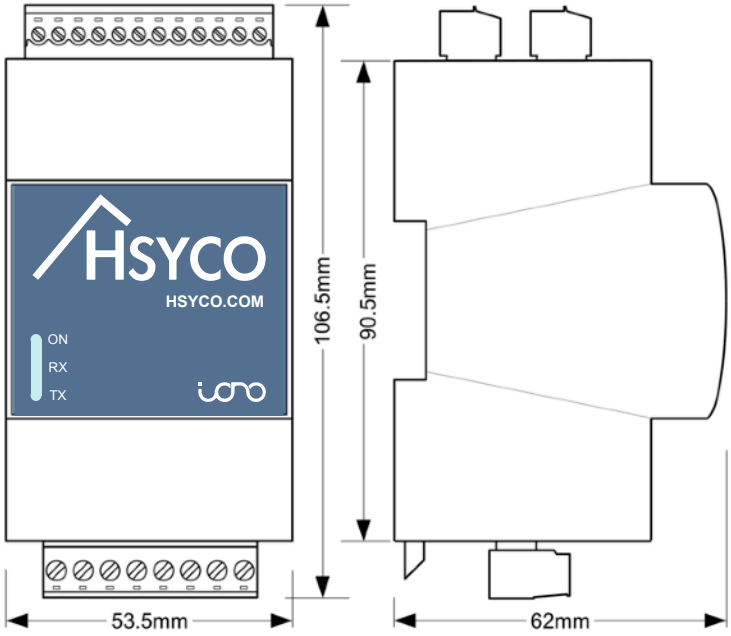
Relay outputs rating	• Rated current: 6 A
	• Rated voltage: 250 V AC
	• Rated load (AC1, resistive load): 1500 VA
	• Rated load (AC15, cos ϕ = 0.5): 250 VA
	• Single phase motor rating (230 V AC): 185 W
	• Breaking capacity (DC1):
	  - 3 A at 30 V DC
	  - 0.35 A at 110 V DC
	  - 0.2 A at 220 V DC
	• 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

Analog output (AO1)	0…10V PWM controlled by Arduino PWM out max 30 mA source/sink current
Analog output (AO1) voltage output error	2% of full scale
AUX VSO	Max allowable current: 300mA Min voltage: (Supply voltage) - 1V
AUX 5VO	Max allowable current: 50mA Min voltage: 4.5V
Communication ports	RS-485 half-duplex with data direction management controlled by Arduino MKR pin 4
Baud Rates on COMM ports	1200 to 115200
ESD-Protection Voltage on RS-485 A/B	±15kV human body model ±8kV contact discharge
Surge protection on RS-485 A/B	Surge protection up to ±500V/2ohms 1.2/50µs; 600W peak pulse power capability at 10/1000µs waveform

Iono mkr Datasheet (cont)

Fail safe feature on RS-485	Optional with jumpers (not installed)
12-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
Housing	standard 3M for DIN rail
Operating temperature	0…+50 °C
Storage temperature	-20…+70 °C
Relative humidity	5% to 90% noncondensing
Protection degree	IP20
Weight	128 g (Iono MKR) 160 g (Iono MKR with Arduino MKR1010 WiFi)

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.

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

The declaration of conformity is available on the internet at the following address:

https://www.sferalabs.cc/iono-mkr/

EU

This device complies with the essential requirements of the following directives and harmonised standards:

- ✓ 2014/35/UE (Low Voltage)
- ✓ 2014/30/UE (EMC)
- ✓ EN61000-6-1:2007 (EMC Immunity for residential, commercial and light-industrial environments)
- ✓ EN60664-1:2007 (Electrical safety)
- ✓ EN 61000-6-3:2007/A1:2011/AC:2012 (EMC Emission for residential, commercial and light-industrial environments)
- ✓ 2011/65/EU and 2015/863/EU - Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

USA

FCC Radio Frequency Interference Statement:

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:

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

Modifications:

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Conditions of Operations:

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.