# SFERA LABS IPMB20R48 Iono Pi Industrial Raspberry Pi IO Module User Guide



**IPMB20R48 Iono Pi Industrial Raspberry Pi IO Module User Guide**

Contents



## IPMB20R48 Iono Pi Industrial Raspberry Pi IO Module

**Iono Pi** IPMB20R IPMB20RP IPMB20R41 IPMB20R42 IPMB20R44 IPMB20R48
**Iono Pi** Max ICMX10XS ICMX10XPL ICMX10XP1 ICMX10XP2 ICMX10XP3
**Iono RP** IRMB10X IRMB10R IRMB10S
**Iono RP** D16 IRMD10X IRMD10R IRMD10S
**Be sure to always remove the power supply before inserting or removing the Raspberry Pi from the Iono.**
**In order to meet the relevant CE requirements, Iono must be operated fully enclosed in a DIN-rail cabinet.**
**Follow all applicable electrical safety standards, guidelines, specifications, and regulations for installation, wiring, and operations of Iono.**
**Carefully and fully read the Iono user guide before installation: https://www.sferalabs.cc/iono/**
Iono is not authorized for use in safety-critical applications where a failure of the product would reasonably be expected to cause personal injury or death. Safety-critical applications include, without limitation, life support devices and systems, equipment or systems for the operation of nuclear facilities, and weapons systems. Iono is neither designed nor intended for use in critical military or aerospace applications or environments and for automotive applications or environments. Customer acknowledges and agrees that any such use of Iono is solely at Customer's risk and that Customer is solely responsible for compliance with all legal and regulatory requirements in connection with such use. Sfera Labs S.r.l. may make changes to specifications and product descriptions at any time, without notice. The product information on the website or materials is subject to change without notice.
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## Safety information

Carefully and fully read the user guide before installation and retain it for future reference.
**Qualified personnel**
The product described in this manual must be operated only by personnel qualified for the specific task and installation environment, in accordance with all relevant documentation and safety instructions. A qualified person should be capable of fully identifying all installation and operation risks and avoiding potential hazards when working with this product.
**Hazard levels**
This manual contains information you must observe to ensure your personal safety and prevent damage to property. Safety information in this manual is highlighted by the safety symbols below, graded according to the degree of danger.

**DANGER**
Indicates a hazardous situation that, if not avoided, will result in death or serious personal injury.

**WARNING**
Indicates a hazardous situation that, if not avoided, may result in death or serious personal injury.

**CAUTION**

Indicates a hazardous situation that, if not avoided, can result in minor or moderate personal injury.

**NOTICE**

Indicates a situation that, if not avoided, can result in damage to property.

**Safety instructions**

**General safety instructions**

Protect the unit against moisture, dirt, and any kind of damage during transport, storage, and operation. Do not operate the unit outside the specified technical data.

Never open the housing. If not otherwise specified, install in a closed housing (e.g. distribution cabinet). Earth the unit at the terminals provided, if existing, for this purpose.

Do not obstruct the cooling of the unit. Keep out of the reach of children.

**⚠WARNING**

Life-threatening voltages are present within and around an open control cabinet.

When installing this product in a control cabinet or any other areas where dangerous voltages are present, always switch off the power supply to the cabinet or equipment.

**⚠WARNING**

Risk of fire if not installed and operated properly.

Follow all applicable electrical safety standards, guidelines, specifications, and regulations for installation, wiring, and operations of this product.

The internal components could generate a substantial amount of heat. Ensure that the product is properly installed and ventilated to prevent overheating.

When present, an internal fan significantly improves the airflow and heat dissipation.

Depending on external environmental conditions, the fan could collect a significant amount of dust or other impurities, that could prevent it from spinning or could reduce its effectiveness. Periodically check that the fan is not blocked or partially obstructed.

**NOTICE**

The connection of expansion devices to this product may damage the product and other connected systems and may violate safety rules and regulations regarding radio interference and electromagnetic compatibility.

Use only appropriate tools when installing this product. Using excessive force with tools may damage the product, alter its characteristics or degrade its safety.

**Battery**

This product may include a small lithium non-rechargeable battery to power its internal real-time clock (RTC). Some models also optionally use an external rechargeable lead-acid battery for the uninterruptible power supply.

**⚠WARNING**

Improper handling of lithium batteries can result in an explosion of the batteries and/or the release of harmful substances.

Worn-out or defective batteries can compromise the function of this product.

Replace the RTC lithium battery before it is completely discharged. The lithium battery must be replaced only with an identical battery. See the “Replacing the RTC backup battery” section for instructions.

Do not throw lithium batteries into fire, do not solder on the cell body, do not recharge, do not open, do not short-circuit, do not reverse polarity, do not heat above 100°C, and protect from direct sunlight, moisture, and condensation.

Only use a lead-acid battery with electrical ratings recommended in the technical specifications for this product.

Follow the battery manufacturer’s instructions when installing the external UPS battery (not provided).

Dispose of used batteries according to local regulations and the battery manufacturer’s instructions.

## Warranty

Sfera Labs S.r.l. warrants that its products will conform to the specifications. This limited warranty lasts for one (1) year from the date of the sale. Sfera Labs S.r.l. shall not be liable for any defects that are caused by neglect, misuse, or mistreatment by Customer, including improper installation or testing, or for any products that have been altered or modified in any way by Customer. Moreover, Sfera Labs S.r.l. shall not be liable for any defects that result from Customer’s design, specifications, or instructions for such products. Testing and other quality control techniques are used to the extent that Sfera Labs S.r.l. deems necessary.

Warranty will not apply in the event of:

- installation, maintenance, and use contrary to the instructions and warnings provided by Sfera Labs S.r.l. or in conflict with legal regulations or technical specifications;
- damages occurred due to: defects and/or abnormalities of the electrical wirings, defects or abnormal distribution, failure or fluctuation of electrical power, abnormal environmental conditions (such as dust or smoke, including cigarette smoke), and damages related to air conditioning systems or humidity control systems;
- tampering;
- damage due to natural events or force majeure or not related to the original defects, such as damage due to fire, flood, war, vandalism, and similar events;
- damage caused by the use of the product outside of the limitations set in the technical specifications;
- removal, modification of the serial number of the products, or any other action which prevents its unique identification;
- damage caused during transportation and shipment.

The complete Terms and Conditions document applies to this product is available here:
**https://www.sferalabs.cc/terms-and-conditions/**

## 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 may include a small non-rechargeable manganese dioxide lithium coin battery. This battery is not accessible from the outside. You should first remove the case body to gain access to the Iono 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, and laws 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**

The declaration of conformity is available on the internet at the following address: **https://www.sferalabs.cc/iono/**

**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.

**RCM AUSTRALIA / NEW ZEALAND**

This product meets the requirements of the standard EN 61000-6-3 – Emission for residential, commercial, and light-industrial environments. See the product's User Guide for additional information.

**Compliance information for Raspberry Pi Model B**

IPMB20R contains a standard Raspberry Pi 3 Model B single-board computer. IPMB20RP contains a standard Raspberry Pi 3 Model B+ single board computer. IPMB20R41, IPMB20R42, IPMB20R44, and 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 co-located or operating in conjunction with any other antenna or transmitter, except in accordance with FCC multi-transmitter product guidelines. This (WiFi DTS) device has a 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.

August 2022,
Revision 031

## Documents / Resources

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|  | SFERA LABS IPMB20R48 Iono Pi Industrial Raspberry Pi IO Module [pdf] User Guide<br>IPMB20R48, Iono Pi Industrial Raspberry Pi IO Module, IPMB20R48 Iono Pi Industrial Raspberry Pi IO Module |

## References

- Iono - Sfera Labs
- Terms and Conditions - Sfera Labs

Manuals+,