

Technical specifications

Note: all values typical, at +25 °C and under normal operating conditions.

POWER SUPPLY	
Power supply operating voltage(VS)	10...50 V _{DC} (VDC) Reverse polarity protection with 3.3 A resettable fuse. Surge protection up to ±1000 V / 2 Ohms 1.2/50 µs
Current consumption at VS+ 12 V _{DC} including Raspberry Pi CM3+, with Ethernet connected, no USB devices, VSO off, 5V0 off, UPS enabled, battery fully charged, relays off	low CPU load: 0.31 A, 100% CPU load, before throttling: 510 mA
Current consumption at VS+ 12 V _{DC} including Raspberry Pi CM3+, with Ethernet connected, no USB devices, VSO on 24 V 8 W, 5V0 on 500 mA, UPS enabled, battery fully charged, relays off	low CPU load: 1.40 A
Current consumption at VS+ 12 V _{DC} including Raspberry Pi CM3+, with Ethernet connected, no USB devices, VSO on 24 V 8 W, 5V0 on 500 mA, UPS enabled, battery charging, relays all on	100% CPU load, before throttling: 1.95 A
Current consumption at VS+ 24 V _{DC} including Raspberry Pi CM3+, with Ethernet connected, no USB devices, VSO off, 5V0 off, UPS enabled, battery fully charged, relays off	low CPU load: 0.17 A, 100% CPU load, before throttling: 0.27 A
Current consumption at VS+ 24 V _{DC} including Raspberry Pi CM3+, with Ethernet connected, no USB devices, VSO on 24 V 8 W, 5V0 on 500 mA, UPS enabled, battery fully charged, relays off	low CPU load: 0.67 A
Current consumption at VS+ 24 V _{DC} including Raspberry Pi CM3+, with Ethernet connected, no USB devices, VSO on 24 V 8 W, 5V0 on 500 mA, UPS enabled, battery charging, relays all on	100% CPU load, before throttling: 0.90 A
UPS external battery (not included)	12 V or 24 V lead acid battery. Suggested capacity: 1.2 Ah to 7 Ah. Reverse polarity protection with 3.3 A resettable fuse. Surge protection up to ±500 V / 2 Ohms 1.2/50 µs
UPS battery charge voltage	28.5 V (Max. for 24V batteries)
UPS battery charge current	500 mA (Max. for 12V batteries)
Voltage threshold for switching to battery mode	below 7.0 V
VSO output voltage range	+11.5...+24.5 V

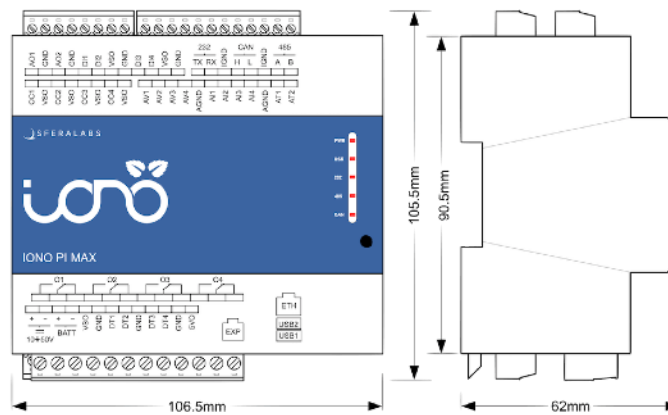
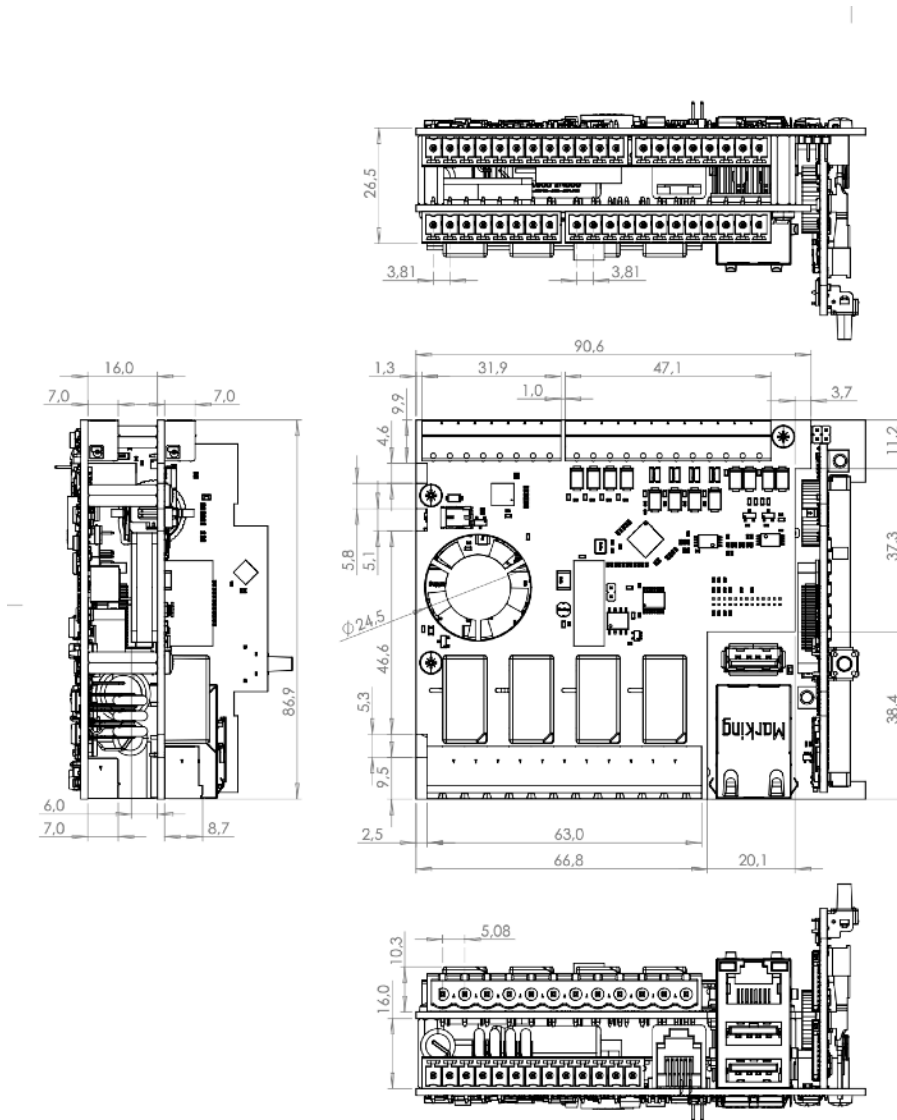
VSO output power	8W (Max)
VSO output resettable fuse	1.1 A
5VO output voltage	4.7 V (no load) 4.6 V (10 Ohm load)
5VO output current	500 mA (Max)
USB1 port output current	500 mA (Max)
USB2 + USB_INTERNAL port output current	500 mA (Max)
EXP port output voltage	5 V
EXP port output current	500 mA (Max)
RASPBERRY PI COMPATIBILITY	
Raspberry platform compatibility	Raspberry Pi Compute Module 1 Raspberry Pi Compute Module 3 Raspberry Pi Compute Module 3 Lite Raspberry Pi Compute Module 3+ 8GB Raspberry Pi Compute Module 3+ 16GB Raspberry Pi Compute Module 3+ 32GB Raspberry Pi Compute Module 3+ Lite (tested with Pi Compute Module 3+ for regulatory compliance)
COMMUNICATION PORTS	
Serial communication ports	RS-485 Half-Duplex with automatic data direction management RS-232 Full-Duplex
Baud Rates on COMM ports	1200 to 115200
ESD-Protection Voltage on RS-232 TX/RX	±15 kV human body model ±8 kV contact discharge
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	Yes
CAN interface	8 Mbps (Max. CAN-FD)
ESD-Protection Voltage on CANH, CANL	±14 kV human body model ±8 kV contact discharge
Transient Voltage protection on CANH, CANL	-150 V to +100 V (waveforms of the applied transients in accordance with ISO-7637, Part 1, test pulses 1, 2, 3a and 3b)
USB ports	USB 2.0 Type A
Ethernet Port	10/100 Mbps

AVx: ANALOG VOLTAGE INPUTS	
Input voltage range	0...20 V
Input impedance	> 1 MOhm
Total Unadjusted Error (TUE)	±0.06 % of full-scale
Resolution	24 bits (Max)
AIx: ANALOG CURRENT INPUTS	
Input current range	-0.5...+24 mA
Input impedance	240 Ohm
Total Unadjusted Error (TUE)	±0.08 % of full-scale
Resolution	24 bits (Max)
ATx: TEMPERATURE SENSORS INPUTS (PT100, PT1000)	
Temperature range	-150...+400 °C
Accuracy (not including Pt and cable errors)	± 0.3 °C ± 0.05 % of reading
Resolution	24 bits (Max)
AOx: ANALOG VOLTAGE OUTPUTS	
Output range	0...+10 V
Output drive current	15 mA (Max)
Total Error	±0.5 % of full-scale (Max)
Resolution	12 bits
AOx: ANALOG CURRENT OUTPUTS	
Output range	0...+20 mA
Output drive voltage	12 V (Max)
Total Error	±0.5 % of full-scale (Max)
Resolution	12 bits
Dix: DIGITAL INPUTS	
Input voltage range	0...40 V
Input impedance	6.9 kOhm
Voltage threshold	VIH: 4.2 V VIL: 3.4 V
OCx: OPEN COLLECTOR OUTPUTS	
Sink current	200 mA (Max)
On resistance	3 Ohm
Voltage range	0...50 V

DTx: DIGITAL INPUT/OUTPUT	
Output voltage	VOL: 0.2 V VOH: 5.0 V
Input voltage threshold	VIH: 2.4 V VIL: 0.8 V
Pull-up (+5 V)	10 kOhm
Ox: RELAYS	
Maximum output contact rating (each output)	Resistive load ($\cos \phi = 1$): 6A at 250V~ (1500VA) Inductive load ($\cos \phi = 0.5$): 1A at 250V~ (250VA) Fluorescent lamps: 150W with 20uF MAX power factor correction capacitor Resistive load (DC1): <ul style="list-style-type: none"> • 3 A at 30 Vdc • 0.35 A at 110 Vdc • 0.2 A at 220Vdc
Electrical life at rated load AC1	50000 cycles
Mechanical life	20000000 cycles
REAL TIME CLOCK	
Oscillator frequency	32768 Hz
Frequency Tolerance	± 20.00 ppm
Backup battery	Internal RTCC circuit with backup lithium battery. Only use CR1220 or BR1220 batteries. Expected battery life without main power supply: ~2 years
EERAM	
Capacity	16 Kbit (2048 x 8 bits)
SRAM r/w cycles	Infinite
EEPROM store cycles	> 1000000
Data retention	> 200 years
INTERNAL TEMPERATURE SENSORS	
Temperature accuracy	± 2 °C
Resolution	11 bits (0.125 °C)
INTERNAL VOLTAGE SENSORS (VS, BATT, VSO)	
Voltage range	0...58 V (VS) 0...30 V (BATT, VSO)
Total Unadjusted Error (TUE)	± 0.25 % of full-scale
Resolution	12 bits
INTERNAL CURRENT SENSORS (VS, BATT, VSO)	
Current range	0...4 A (VS) 0...1 A (BATT, VSO)

Total Unadjusted Error (TUE)	±2.5 % of full-scale
Resolution	12 bits
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 (non-condensing humidity)
Storage temperature	-30...+80 °C
Protection degree	IP20
MECHANICAL	
3.81 mm pitch terminal block characteristics	Maximum conductor cross section: 1.3 mm ² (16AWG), or 0.5 mm ² 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 mm ² (12AWG) Recommended stripping length: 7 mm Screw thread: M3 Maximum screws tightening torque: 0.5 Nm
Dimensions	6 module Din Rail enclosure width: 106.5 mm height: 90.5mm depth: 62.0mm
Weight	330 g (including Raspberry Pi Compute Module)

Dimensions



DIMENSIONS (mm)