

GATEWAY | **SENSBLUE**
MONARCH



Rugged.
Reliable.
Ready for any environment.

SENSBLUE MONARCH was designed for remote monitoring in demanding and harsh installation locations.



Datasheet Index

Index.....	2
2. Features.....	3
2.1 Table of SENSBLE MONARCH References ID Model Number.....	3
3.General Description.....	4
3.1 Main Features.....	4
3.2 Technical Specifications.....	4
4. Communication Interfaces.....	5
5. RSSI levels, valid for Wi-Fi and LTE.....	6
6. Power Supply.....	6
7. Hardware Block Diagram.....	7
8. Internal Pinout Diagram.....	8
9. External Connectors Electrical Pinout Diagram & Mechanical Dimensions (mm).....	9
10. Probes.....	11
11. Accessories.....	11
12. Document History.....	12
13. MONARCH in-the-field images.....	13



2. Features

Built for the Wild. Engineered for Industry.

Remote monitoring is often required in the most unforgiving places. SENSBLUE MONARCH was explicitly designed for demanding and harsh installation locations where standard equipment often fails.

True efficiency isn't about doing less. It's about timing.

Engineered to master the balance between granular monitoring and energy conservation. If values are not within range, it will send the data as soon as possible so you can act on time. It is autonomy, redefined.

2.1 Table of SENSBLUE MONARCH Reference ID Model Number

	Solar Panel	Probe Connectors	External LTE Antenna
PA000000076	x	x1	-
PA000000079	x	x2	-
PA000000080	x	x1	x
PA000000074	x	x2	x
PA000000081	-	x1	-
PA000000082	-	x2	-
PA000000083	-	x1	x
PA000000084	-	x2	x



3. General Description

SENSBLUE MONARCH is a multifunctional embedded system designed for industrial and remote monitoring applications.

It integrates a wide range of communication interfaces, sensor inputs, and control outputs, making it suitable for IoT, telemetry, and simple automation solutions. Powered by a solar panel and internal battery for remote, demanding and harsh installation locations, or, alternatively, by an external power supply.

3.1 Main Features

- Integrated Solar Panel (in specific model versions)
- Internal 18650 lithium-ion Battery
- RS485 Interface
- ESP32-WROOM-32E Microcontroller
- Internal USB-C for charging
- Internal Sensors (Humidity, Barometric Pressure and Temperature)
- Human-Machine Interface (RGB LEDs, push-button)
- FOTA (Firmware Over the Air Update)

3.2 Technical Specifications

Parameter	Value
Microcontroller	ESP32-WROOM-32E
Communication Interfaces	RS485, GSM (2G, LTE-M), Wi-Fi
Power Supply	- (Li-Ion 18650) Internal battery + Solar panel - 12-24V External power
Protections	Transient Voltage Protection, ESD Protection, Reverse Polarity Protection
Connectors	USB-C, standard headers, Male, Female *PA dependable
Operating Temperature / Humidity Range	-20 ~ 60 °C 95% HR Non-condensing
Enclosure and lid material	Polycarbonate



4. Communication Interfaces

SENSBLUE MONARCH supports the following communication interfaces:

RS485				
local 12V DC/DC boost converter (max100mA)				
Wi-Fi				
2.4 GHz Wi-Fi 802.11 b/g/n with HT20 / HT40				
Centre frequency range of operating channel: 2412 ~ 2484 MHz				
GSM - Quectel BG95-M3:				
Cat M1	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/ B25/B26/B27/B28/B66/B85			
	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/ B25/B28/B66/B71/B85			
Cat NB2	GSM850/EGSM900/DCS1800/PCS1900			
EGPRS	Power Class 5 (21 dBm)			
LTE Bands Power Class				
HMI				
RGB LEDs				
Internal OLED Display 0.96”				
Push-button, Reset-button				
Led behaviour				
Colour	Meaning	Description		
	Cyan	Normal Operation	The device is starting up.	
			Sensors are being initialized or read.	
			The system is operating normally.	
	Blue	Connectivity	The device is connecting to the network (GSM or Wi-Fi).	
			The device is communicating with the server.	
			A periodic blue blink means the device is waiting for network access.	
	Green	Success	Data is being transmitted.	
			A short green blink indicates each data transmission.	
			A steady green light means the communication was completed successfully.	
	Orange	Warning	Data was sent but no confirmation was received.	
			A temporary or partial communication issue occurred.	
	Red	Error	Blinking patterns indicate different types of errors:	1 blink: Communication error
				2 blinks: SIM card error
				3 blinks: Network or configuration error



5. RSSI levels, valid for Wi-Fi and LTE:

Excellent	From 0 to -51 dBm
Good	From -52 to -64 dBm
Medium	From -65 to -94 dBm
Poor	From -95 to -125 dBm

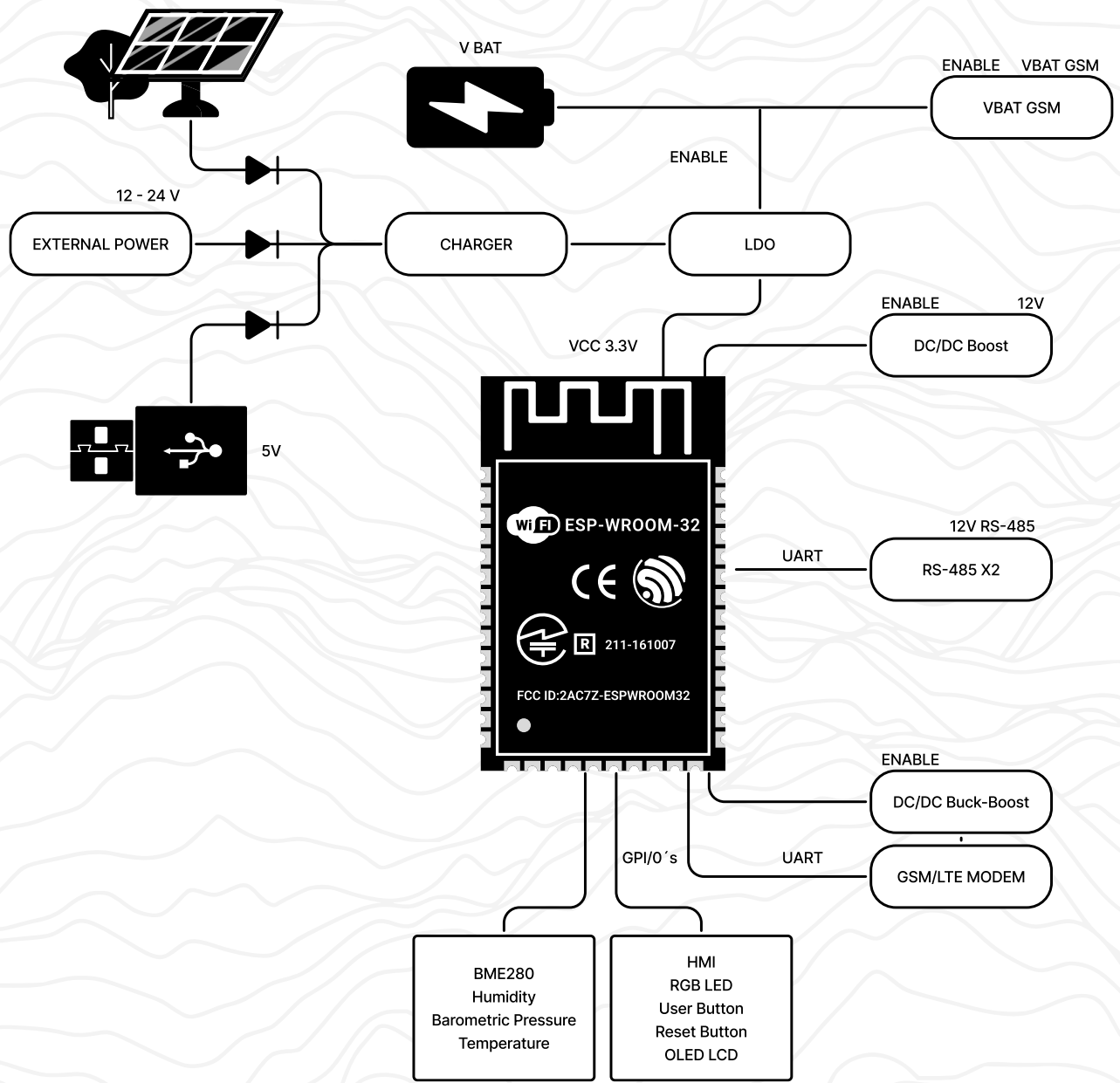
6. Power Supply

Multiple power inputs characteristics

External DC/DC Power Supply	12 – 24VDC	
Battery Input	4.2V Battery Li-Ion 18650	
	2900mAh	
	Working Temperature	Charge: -20°C ~ 60°C
		Discharge: -40°C ~ 85°C
	On-board measurement	Range: 0–100%
		Resolution: 1%
USB	Type C connector	
	5V only	
Solar panel	For charging internal battery only	

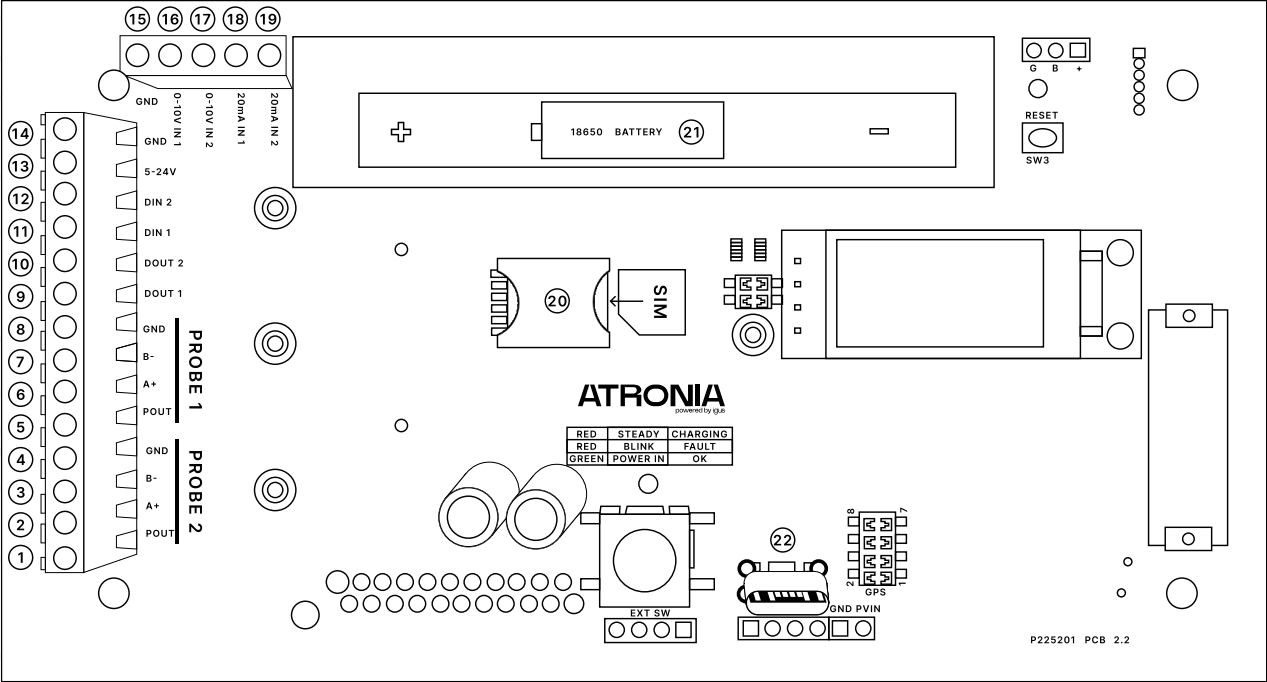


7. Hardware Block Diagram





8. Internal Pinout Diagram

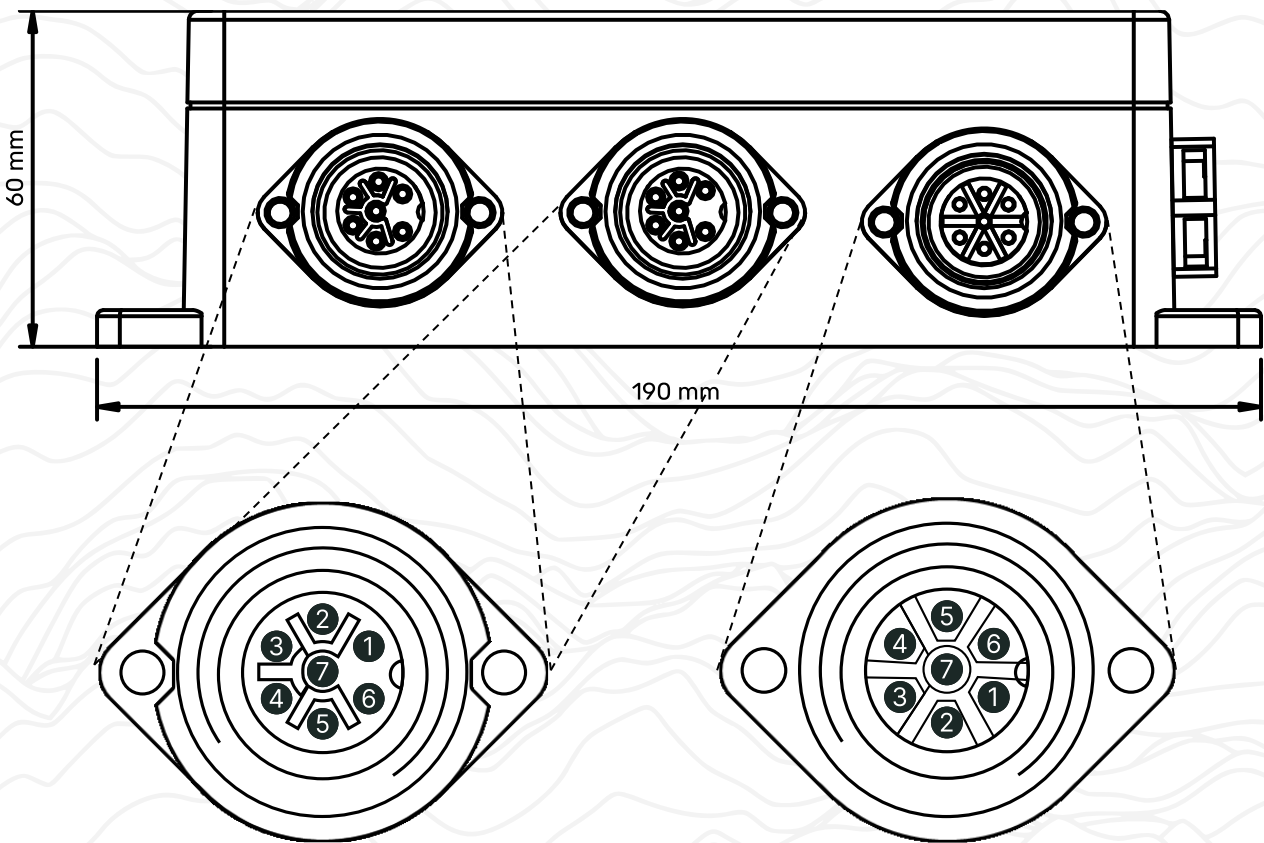


1	12V Sensor power Out	12	ASP (Application-Specific Port)
2	RS485 A+	13	5-24V External Power Supply
3	RS485 B-	14	GND
4	GND	15	GND
5	Same as 1	16	ASP (Application-Specific Port)
6	Same as 2	17	ASP (Application-Specific Port)
7	Same as 3	18	ASP (Application-Specific Port)
8	Same as 4	19	ASP (Application-Specific Port)
9	ASP (Application-Specific Port)	20	Nano Sim Holder
10	ASP (Application-Specific Port)	21	18650 Battery
11	ASP (Application-Specific Port)	22	Type C USB connector



9. External Connectors Electrical Pinout Diagram & Mechanical Dimensions (mm)

PA000000074 Side View

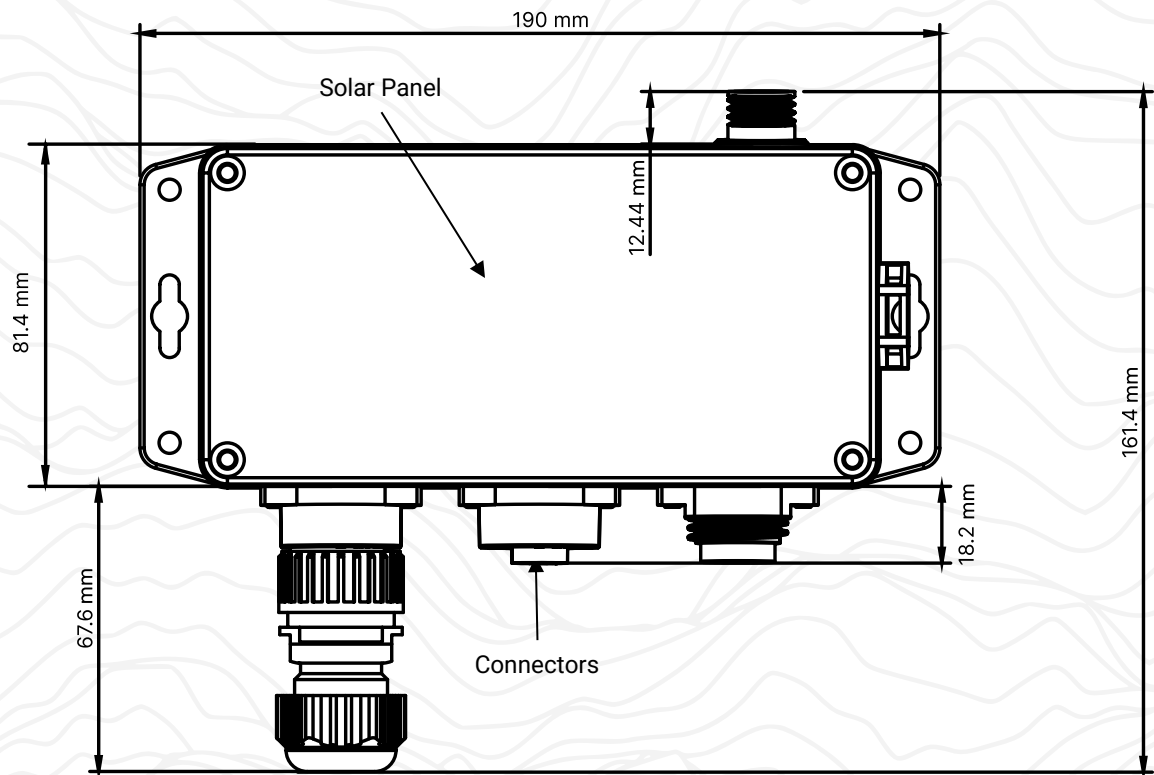


Left/Centre Connector
CA6GD Female 7-pin (6+PE) IP67 HIRSCHMANN Pinout:
1 - 12V Sensor power Out
2 - GND
3 - RS485 A+
4 - RS485 B-
5 - ASP (Application-Specific Port)
6 - External power supply (12V-24V)
7 - ASP (Application-Specific Port)

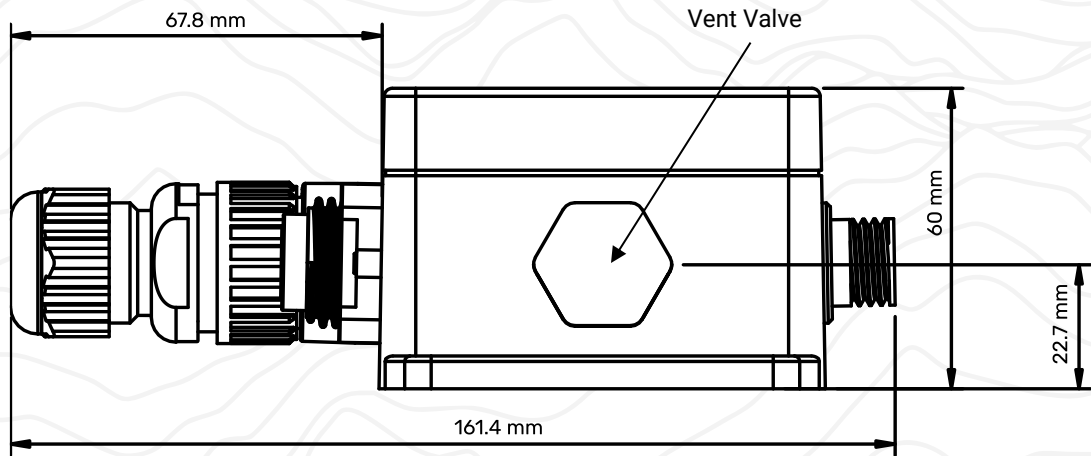
Right Connector
CA6GS Male 7-pin (6+PE) IP67 HIRSCHMANN Pinout:
1 - External Power Supply (12V-24V)
2 - GND
3 - ASP (Application-Specific Port)
4 - ASP (Application-Specific Port)
5 - RS485 B-
6 - RS485 A+
7 - 12V Sensor power Out



PA000000074 Top View



PA000000074 Front View



European Directives	Applicable harmonized standards
Directive 2014/53/EU (RED)	EN 61326-1
Directive 2014/30/EU (EMC)	EN 62368-1
Directive 2011/65/EU (RoHS)	ETSI EN 301 489-1 / -17 / -52
	ETSI EN 300 328
	ETSI EN 301 908-1 / -13



10. Probes

	Name	Firmware v.	Requirements
PA000000085	SENSBLUE RS-485 Dissolved Oxygen Probe AT-SB-PROBE-DO-T-C1, w/ 15m cable w/connector	10.70	
PA000000066	SENSBLUE RS-485 Turbidity Probe AT-SB-PROBE-T-P-C1, w/ 15m cable w/connector	10.70	
PA000000067	SENSBLUE RS-485 pH Probe AT-SB-PROBE-pH-P-C1, w/ 15m cable w/connector	10.70	
PA000000086	SENSBLUE RS-485 Low Conductivity Probe AT-SB-PROBE-LC-P-C1, w/ 15m cable w/connector	10.70	
PA000000087	SENSBLUE RS-485 Medium Conductivity Probe AT-SB-PROBE-MC-P-C1, w/ 15m cable w/connector	10.70	
PA000000068	SENSBLUE RS-485 High Conductivity Probe AT-SB-PROBE-HC-P-C1, w/ 15m cable w/connector	10.70	
PA000000069	SENSBLUE RS-485 Nitrates (NO3) Probe AT-SB-PROBE-NO3-P-C1, w/ 15m cable w/connector	10.70	
PA000000088	SENSBLUE RS-485 ORP Probe AT-SB-PROBE-ORP-P-C1, w/ 15m cable w/connector	10.70	
PA000000089	SENSBLUE RS-485 Salinity/Conductivity/TDS Probe AT-SB-PROBE-S-P-C1, w/ 15m cable w/connector	10.70	
PA000000090	SENSBLUE RS-485 Ammonia Nitrogen (NH4-N) Sensor Probe AT-SB-PROBE-NH4-P-C1, w/ 15m cable w/connector	10.70	
PA000000091	SENSBLUE RS-485 Dissolved CO2 Sensor Probe AT-SB-PROBE-CO2-P-5000-C1, w/ 15m cable w/connector	10.70	
PA000000073	SENSBLUE RS-485 Multiparameter Probe AT-SB-PROBE-MP-P-C1, w/ 15m cable w/connector	10,71	

11. Accessories

	Name	Requirements
PA000000020	SENSBLUE MONARCH RS485 Probe Splitter Box (1 input -> 2 outputs)	
PA000000046	SENSBLUE MONARCH Power Supply (EU) 230VAC/12V@1A CA6LD	
PA000000092	SENSBLUE MONARCH External Solar Panel 60W W/ Battery LiFePO4 12v 20Ah	
MP000000428	SENSBLUE IoT Data Card 500MB	
MP000000431	N-Type Antenna Cable 1m Male to Male	
MP000000432	N-Type Antenna Cable 1m Male to Female	
MP000000429	Straight N-Type Outdoor Antenna	
MP000000430	Panel Mount Cellular N Type Antenna	



12. Document History

Version	Description	Date
SBMDATA v1.0	First version of SENSBLUE MONARCH Datasheet	16/02/2026



13. MONARCH in-the-field





SENSBLUE MONARCH DATASHEET

Rua do Norte 9,
Ílhavo, 3830-167
Portugal

T: +351 934 886 253
E: info@atronia.eu
<https://atronia.eu/>

Powered by:



Atronia assumes no responsibility for any loss or damage resulting from the use of this product under conditions other than those recommended or for purposes not intended. While the information provided in this datasheet is considered accurate and reliable, Atronia does not guarantee its complete accuracy and is not liable for decisions made based on this information. This product should only be used by qualified professionals in accordance with applicable technical standards and regulations.

Copyright © 2025, ATRONIA. Specifications and information given in this document are subject to change by ATRONIA without prior notice.