

**ATMO INSTALLATION MANUAL - V06**

Planet Devices Ltd

Friday 3<sup>rd</sup> May 2024

## VERSION HISTORY

Version	Date	Author	Notes
V01	2023-09-07	JD	Initial release
V02	2023-09-22	JD	N/A
V03	2024-01-03	JD	Introduce Planet Devices app for on-boarding
V04	2024-02-22	JD	<ul style="list-style-type: none"> <li>Rename to Atmo</li> <li>Add operating hours time zone</li> <li>Add post-installation checklist</li> <li>Update Atmo part number</li> <li>Update technical specifications</li> </ul>
V05	2024-03-20	JD	<ul style="list-style-type: none"> <li>Update technical specifications</li> <li>Update ferrule colours</li> <li>Warn against using multiple Modbus controllers</li> </ul>
V06	2024-05-03	JD	<ul style="list-style-type: none"> <li>Add Error Code appendix</li> <li>Add Free subscription restrictions</li> <li>Update RS-485 wiring checklist item</li> <li>Add hyperlink to compatibility table</li> <li>Update technical specifications</li> <li>Update Voltage Meter part name</li> <li>Add Blue LED state to Green LED checklist item</li> <li>Expand hyperlinks for offline usability</li> </ul>

## PREFACE

Atmo RS-485 Modbus RTU [P/N 386363-249] devices permit control and monitoring of heat pump systems, using the Modbus RTU communication protocol.

Atmo cannot be used simultaneously with other Modbus controllers. If RS-485 signal lines are already in use, the existing Modbus controller must be removed before undertaking an Atmo installation.

Heat pump systems may require an additional Modbus RTU interface in order to communicate with Atmo. Please consult the compatibility table ([planetdevices.com/compatibility](https://planetdevices.com/compatibility)), or your invoice.

### SAFETY PRECAUTIONS

In the interest of adhering to local laws and regulations, the installer accepts the following obligations:

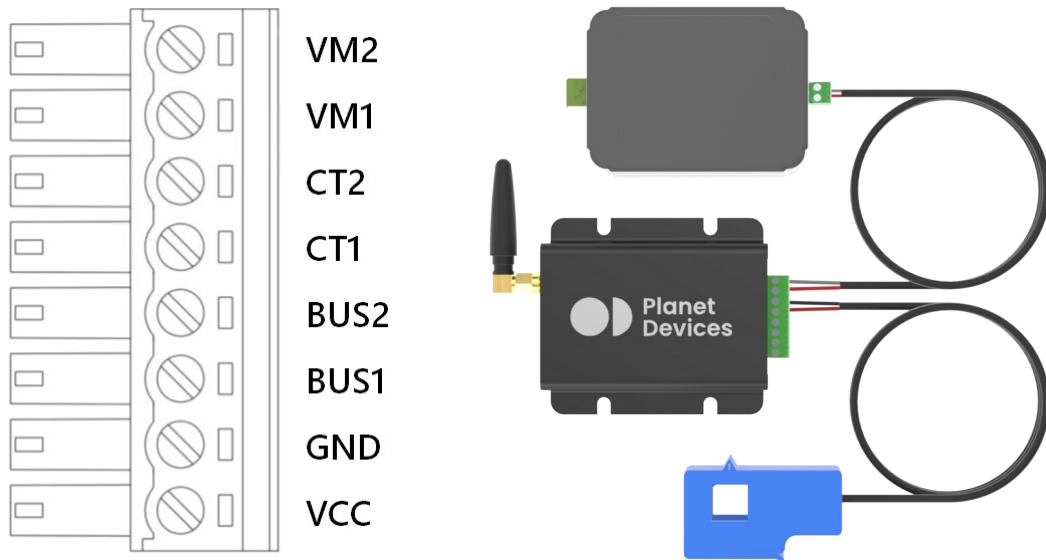
- A qualified electrician must be present to carry out all electrical works
- An F-Gas certified engineer must be present (in cases where a heat pump system requires modification prior to the installation of a Atmo device)

### DISCLAIMER

Planet Devices accept no liability for damage or loss of any kind.

### WIRING INSTRUCTIONS

Atmo devices must be wired according to the below pinout diagram:



- VCC and GND are required to power an Atmo device

Atmo devices accept power sources operating between 5V to 24V DC, at a maximum of 120mA – see *Appendix A – Technical Specifications*.

The Atmo Power Supply can be used for this purpose. If another power source is used, the power cable must be of adequate wire size (gauge).

- BUS1 and BUS2 are required to facilitate Modbus (RS-485) communications

The A and B signal lines from the Modbus interface must conform to BUS1 and BUS2 on the Atmo device respectively. Please refer to your heat pumps’ Quick Start Guide for more information.

Shielded twisted pair (STP) cabling is not included with Atmo devices – see *RS-485 Requirements*.

- (Optional) CT1 and CT2 are used to connect the CT Clamp
  - The red ferrule at the end of the CT Clamp must be connected to CT1
  - The black/blue ferrule at the end of the CT Clamp must be connected to CT2If wired incorrectly, the current reading from the CT clamp will be inaccurate.
- (Optional) VM1 and VM2 are used to connect the Voltage Meter
  - The red ferrule at the end of the Voltage Meter must be connected to VM1
  - The black ferrule at the end of the Voltage Meter must be connected to VM2If wired incorrectly, the Voltage Meter will not receive power or provide voltage readings.

### ATMO DEVICE PLACEMENT RECOMMENDATIONS

- To ensure a reliable internet connection, Atmo devices must be within distance of a wireless access point. A Magnetic Antenna Extender [P/N 027805] is available to increase WiFi signal strength  
Alternatively, a longer power cable or RS-485 cable may be used – see *RS-485 Requirements*.
- If placement is restricted by distance to a suitable power source, a longer RS-485 cable may be used – see *RS-485 Requirements*
- Atmo devices should be positioned in a location serviceable by a competent person

### RS-485 REQUIREMENTS

- RS-485 stipulates that shielded twisted pair (STP) be used for the main cable
  - A and B signal lines must use the same main cable
  - Common signal reference ground is not required
- RS-485 imposes a maximum length of 700 metres (around 2,300 feet) for the main cable
  - Or 1,200 metres (around 4,000 feet) for branch cables
- RS-485 specifies that a 120 Ohm ( $\Omega$ ) termination resistor be applied to each end of the main cable when the main cable exceeds 50 metres (around 160 feet) in length

Planet Devices recommend using a shielded Cat5 (or greater) cable, which can be used across all eight pins. In this scenario, you must ensure that each twisted pair is used for VCC/GND, BUS1/BUS2, CT1/CT2, and VM1/VM2 respectively.

## INSTALLATION INSTRUCTIONS

1. Open the Quick Start Guide for your heat pump system's Modbus interface and follow the instructions therein
2. Wire the Atmo device according to the pinout diagram in *Wiring Instructions*
3. Install the Planet Devices app and follow the on-screen instructions

Download from the Google Play Store (Android) ([play.google.com/store/apps/details?id=com.planetdevices.mobile](https://play.google.com/store/apps/details?id=com.planetdevices.mobile)), or the App Store (iOS) ([apps.apple.com/gb/app/planet-devices/id6473628556](https://apps.apple.com/gb/app/planet-devices/id6473628556)).

## POST-INSTALLATION CHECKLIST

Before leaving site, conduct this checklist to establish that the device has been installed correctly.

- Is the LED on the Atmo emitting a solid green light?

If the LED is blue, the Atmo device is ready for initial set up, or WiFi recovery using the Planet Devices app.

If the LED is red, the Atmo device is not connected to a WiFi network. Ensure that the WiFi network and password details are correct. Alternatively, power cycle the Atmo to enter WiFi recovery mode (described above).

If the LED is yellow, the Atmo device either has no internet connection, or is unable to reach Sphere. Ensure that the router has an internet connection, and that [sphere.planetdevices.com](https://sphere.planetdevices.com) can be accessed over the network.

- Has shielded twisted pair (STP) been used for the RS-485 main cable?

- Have the RS-485 A and B signal lines been wired according to the Wiring Instructions?

Sphere will display error code 1 or 2 if there is an issue with the RS-485 connection. Please refer to *Appendix B – Error Codes*.

- When logged into Sphere and viewing the Atmo device's readings, does the timestamp change once every 5-15 seconds?

- If the timestamp does not change, but the device is online, have you paid for a subscription in the Settings → Billing tab?

Atmo devices can be used on a Free subscription, resulting in one reading per hour.

- Have the CT Clamp and/or Voltage Meter been wired according to the Wiring Instructions?

- If a CT Clamp or Voltage Meter have been connected to the Atmo, were they selected in Sphere's Manage Devices page?

- If a Voltage Meter was not used, has a voltage reading been taken and entered into Sphere's Manage Devices page?

**TECHNICAL SUPPORT**

If all of the checklist items have been completed, and you encounter unforeseen issues with Atmo or Sphere, please contact our Support team.

Planet Devices operate Monday to Friday, between the hours of 09:00 and 17:30 (UTC/GMT/BST):

Email Address	<a href="mailto:support@planetdevices.com">support@planetdevices.com</a>
Telephone Number	+44 (0) 1752 680 128

**APPENDIX A - ATMO TECHNICAL SPECIFICATIONS**

Parameter	Minimum	Typical (Nominal)	Maximum	Unit
Supply Voltage (VCC)	5	12 – 24	24	V (DC)
Current	10	30	120	mA
Power	90	345	720	mW
Modbus Baud Rate	1200	9600	460800	bps
Antenna Gain	-	-	2	dBi
Current Transformer (CT) Clamp	10	30	100	A
Voltage Meter	50	230	380	V (AC)

**APPENDIX B - ERROR CODES**

Error Code	Description	Causes	Resolutions
1	No response from the Worker	<ul style="list-style-type: none"> <li>Invalid serial settings</li> <li>Invalid Worker address</li> </ul>	Follow the instructions seen in the Atmo Installation Manual, and the Quick Start Guide for your chosen renewable energy technology.
2	Data is corrupted	<ul style="list-style-type: none"> <li>Substandard BUS1/BUS2 cabling, or absence of cabling</li> <li>Crossing BUS1 and BUS2 connections</li> </ul>	Ensure that shielded twisted pair (STP) is used when wiring BUS1 and BUS2.