



Figure 2.6. User access for the ORB

To open the cover:

1. Un-fasten the 6 hex-head screws that secure the cover using the 3mm Allen key provided. The screws are captive and will not fall out when loose. Do not attempt to remove the screws from the lid.



Figure 2.7. Six cover screws

2. Open the hinged lid by lifting the bottom of the lid toward yourself and up. When the lid is opened, an internal light detector will recognise the increase in brightness and will enable the LEDs and configuration switches.

Note When closing the ORB, please ensure that the seal is correctly seated and is clean. A poorly seated or dirty seal may result in water ingress.

2.4 Anti Tamper Screw

In some installations, evidence needs to be provided where unauthorised access to the Senquip ORB has occurred. All devices include a tamper feature that can be configured to raise an alert when the lid is opened. In some instances however, a physical tamper indication is required. Senquip can provide tamper evident screws for the lid of the Senquip ORB. Once a tamper evident screw is in place, opening the device will require breaking the seal on the tamper evident screw.

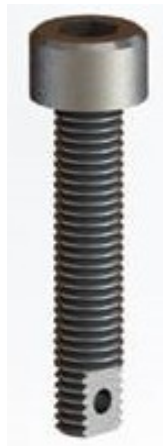


Figure 2.8. Tamper evident screw

To fit a tamper evident screw, remove one of the lid screws closest to the cable gland using the 3mm Allen key provided. Replace the lid screw with the tamper evident version. The tamper screw is compatible with most available seals.

Note The tamper evident screw should be inserted last and removed first. The tamper evident screw should be inserted and removed with a 4mm Allen key.



Figure 2.9. Tamper evident screw in place on an ORB

2.5 AA Battery Install

The Senquip ORB can be operated on four AA batteries. If this is an application where there will be no power source, the batteries should be installed at this point.

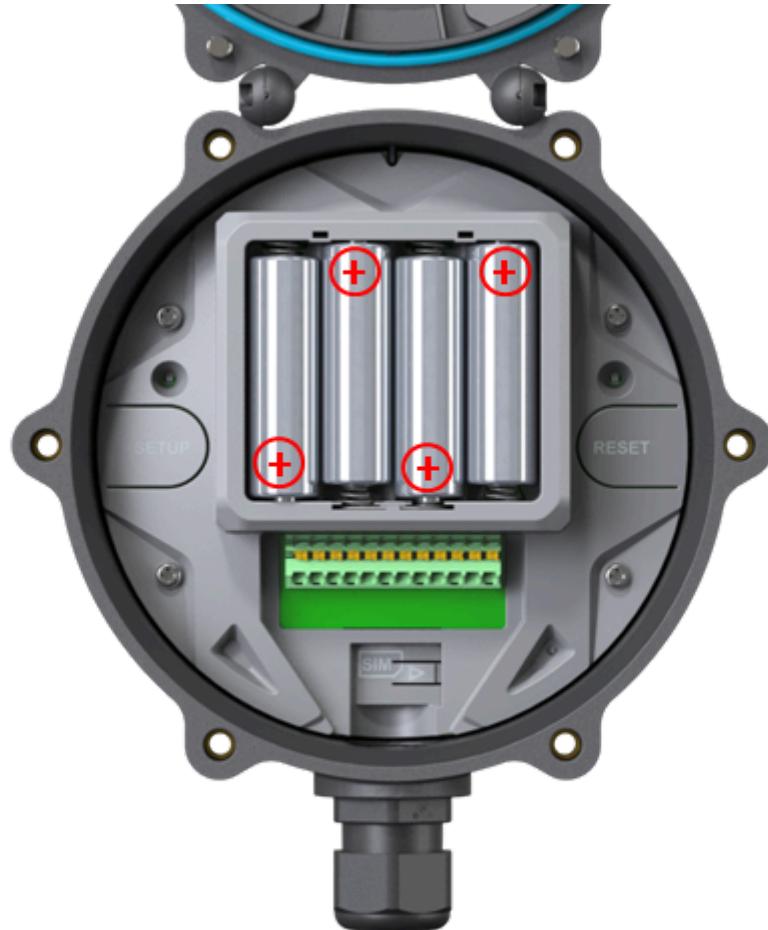


Figure 2.10. Correct battery placement

The AA batteries are to be placed in a battery holder which is exposed when the front cover is opened. Please insert the batteries, noting the correct polarity which is indicated on the base of the battery holder.

2.6 SIM Card Install

The ORB uses a micro-SIM card with dimensions as shown in the figure below. Both 1.8V and 3.3V SIM Cards are supported.

If 4G LTE is the chosen communications method, then a SIM card should be installed now. In most instances, the ORB is shipped with an internal SIM card included. An internal SIM card provides for the most reliable communications in high-vibration environments.

Note If your ORB has an internal SIM card, you do not need to install an additional card.

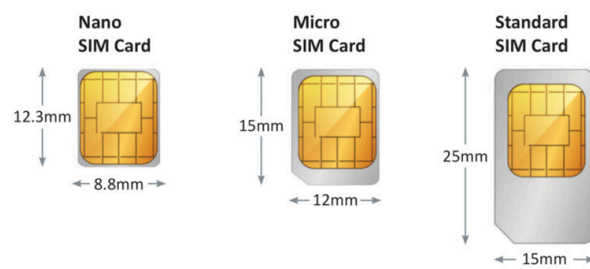


Figure 2.11. SIM Card sizes

To access the SIM card holder, the ORB lid must be opened. The SIM card holder is located at position 1 in the diagram below. The holder is a "push-push" type, meaning that the SIM card is pushed in to install and is then pushed and released to eject.

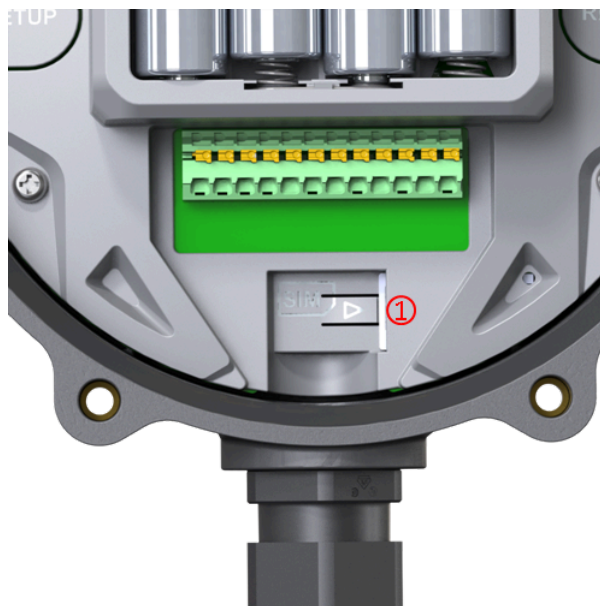


Figure 2.12. Identifying the SIM card slot

To insert a micro-SIM card into the holder, place it in the recess to the left of the SIM card slot and apply a gentle pressure to the right. The SIM card should be orientated with contacts facing up and the removed corner on the bottom right as in the diagram below.

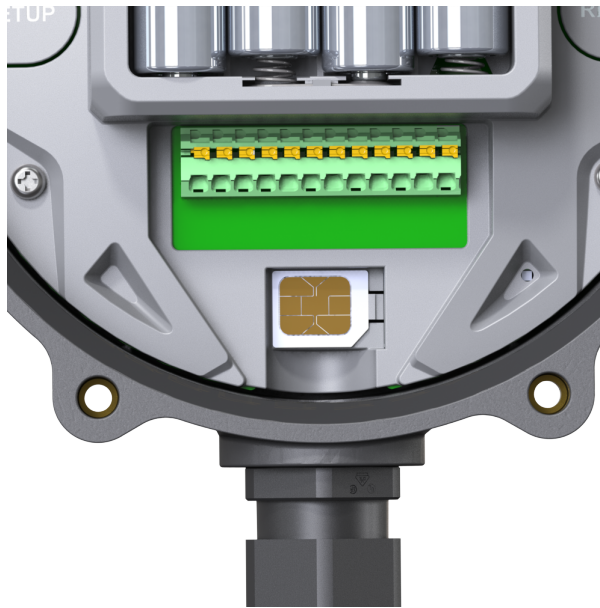


Figure 2.13. Correct insertion of a SIM card

Because the ORB is expected to be used in harsh environments, there is a plastic sprung locking mechanism moulded into the plastics. Once the SIM card is inserted, the plastic lock will lift, securing the SIM card in the holder.



Figure 2.14. Insert SIM to the right

It is recommended that the ORB be reset, by pressing the reset button, after inserting a SIM card.

To remove the SIM card, hold the locking mechanism down; press the edge of the SIM card gently and let go. The SIM card will be ejected.

2.7 Wiring guide

The ORB is fitted with a 12 way 3.5mm pitch terminal block that can be used to provide power and for connection to external sensors and systems. With the cable gland facing down, pin 1 is on the left hand side of the header and pin 12 on the right. All references to pin numbers in this document will assume this definition.

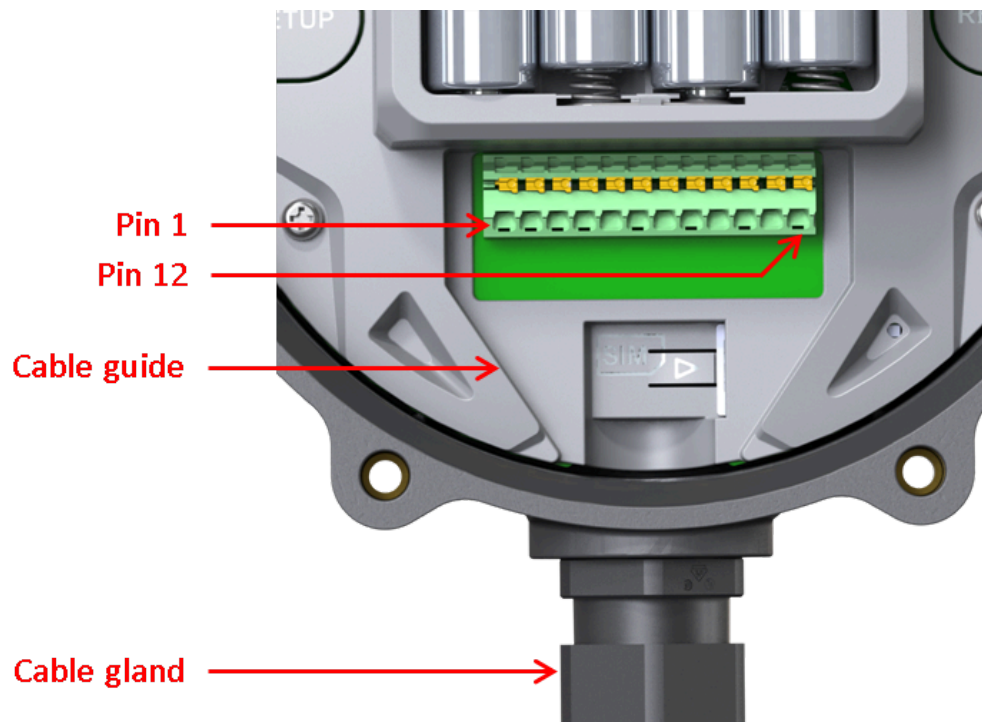


Figure 2.15. Interface pin numbers

The following pinout applies to the 12 way terminal block:

Pin number	Name	Terminal block marking	Application
1	Positive voltage in	PWR+	Positive system power; either permanent or intermittent such as from a solar panel
2	Negative voltage in (ground)	GND	Negative system power or ground
3	Source 1	SRC1	Switchable output with current measurement for powering sensors such as 4-20mA devices
4	Ground	GND	Spare ground for sensor connection
5	Source 2	SRC2	Switchable output with current measurement for powering sensors such as 4-20mA devices
6	Serial in	B / RX	RS485B in RS485 mode and receive in RS232 mode
7	Serial out	A / TX	RS485A in RS485 mode and transmit in RS232 mode
8	Input 1	IN1	Analog or digital input with edge detect capability

9	Input 2	IN2	Analog or digital input
10	Output	OUT1	Open collector output
ORB-X1			
11	Thermocouple	TC-	Thermocouple negative pin
12	Thermocouple	TC+	Thermocouple positive pin
ORB-C1			
11	CAN High	CAN H	CAN bus CAN high input
12	CAN Low	CAN L	CAN bus CAN low input

The terminal block allows for push-in connection, meaning that no tools are required. A defined contact force ensures that the contact remains stable over the long term and is high vibration environments. A finger operated release button for each terminal allows for convenient, tool-free operation.

Wire Specification:	
Wire stripping length	8 mm
Conductor cross section solid min.	0.2 mm
Conductor cross section solid max.	1.5 mm
Conductor cross section flexible min.	0.2 mm
Conductor cross section flexible max.	1.5 mm
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16

Please ensure that all external power is removed from the ORB before wiring fitment begins.

Power and ground wires must be rated to at least 1A and should have a voltage rating suitable for the application. A 1A fuse in-line with the power connection is recommended. Signal wires should be chosen based on the application and may require specific features such as individual shielding, twisted pairs or impedance matching. In extremely noisy electrical environments, it is recommended that a shielded cable be used and that the shield only be connected to ground on the power supply end. Do not ground the shield on both ends.

The material from which the chosen cable is manufactured should be suitable for the environment in which it is used. Be sure to check chemical resistance, UV stability and flex durability of the cable being used.