

Installation Guide

Captis Pulse Lite



Contents

Introduction.....	3
Captis Technical Information.....	3
Captis Pulse Lite Dimensions	3
Captis Pulse Lite	3
Installation	4
Before You Begin	4
What is in the Captis Box?	4
Installing the Captis	5
Mounting the captis	5
Terminating the device.....	6
Termination Precautions	7
Selecting an external antenna	8
Installing the external antenna	9
Checking Sensor & Cellular Connections	10
Troubleshooting	11
Maintenance & Safety	12
Maintenance.....	12
Electromagnetic Radiation – Human Exposure	12
Battery handling & disposal.....	12

INTRODUCTION

The Captis cellular data logger has been developed to fill measurement requirements across a broad range of applications and remote locations.

The Captis Pulse Lite has the following features:

- The device measures 90 x 75 x 50 mm and weighs less than 500g.
- Is designed to interface with existing mechanical water meter via a pulse pick up unit.
- It is battery operated and does not require an external power supply.
- It operates on LTE-M or NB-IoT cellular networks.
- The enclosure is IP68 rated.

CAPTIS TECHNICAL INFORMATION

CAPTIS PULSE LITE DIMENSIONS

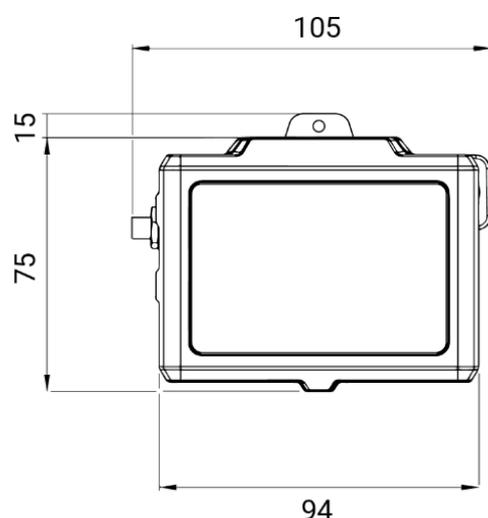


Figure 1 Captis dimensions front view

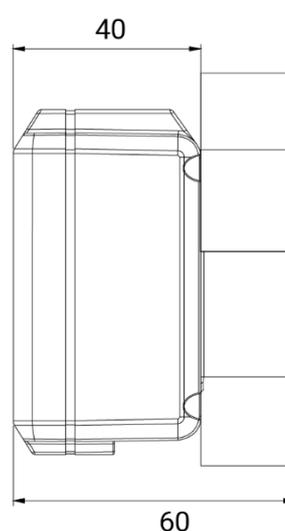


Figure 2 Captis dimensions side view

CAPTIS PULSE LITE

1x Pulse Input	Passive Suitable for Reed SW + Open Collector + Dry Contact
Maximum Pulse Frequency	10Hz
Sensor Minimum Open Resistance	1.25MΩ
Sensor Maximum Closed Resistance	60kΩ
Physical Size	90mm x 75mm x 50mm
Weight	Less than 500g
IP Rating	IP68

INSTALLATION

BEFORE YOU BEGIN

Before starting this installation, you will need the following items:

- The contents of the Captis box.
- The water meter that will be connected to the Captis
- A 3mm Allen key and small flat blade screwdriver
- An internet-connected device, such as a phone or tablet.

WHAT IS IN THE CAPTIS BOX?

In the Captis box you will find:

- Captis data logger
- Attachment Bracket



- Activation Magnet Tool
Used to wake up and reset the device.



INSTALLING THE CAPTIS

To successfully install the Captis you must perform the following steps. Each step is described in more detail in the following sections.

1. Decide where to mount the Captis
2. Mount the Captis Pulse Lite to your selected location/ water meter
3. Test the wiring, sensor and cellular connection.
4. Complete the physical installation after testing.

MOUNTING THE CAPTIS

Consider the following points when deciding on the mounting location for the Captis:

- If the Captis device is installed underground or inside a metal cabinet, an external LTE antenna must be used. Ensure that your Captis device supports external antenna connection. The antenna lead must be routed to an open area where cell signal is less obstructed.
- Ensure there are no physical obstructions to the cell signal reaching the antenna. This applies to both models of Captis devices with an internal antenna or an external antenna.

The Captis devices can be mounted in a range of positions and methods. Around the Captis enclosure there are:

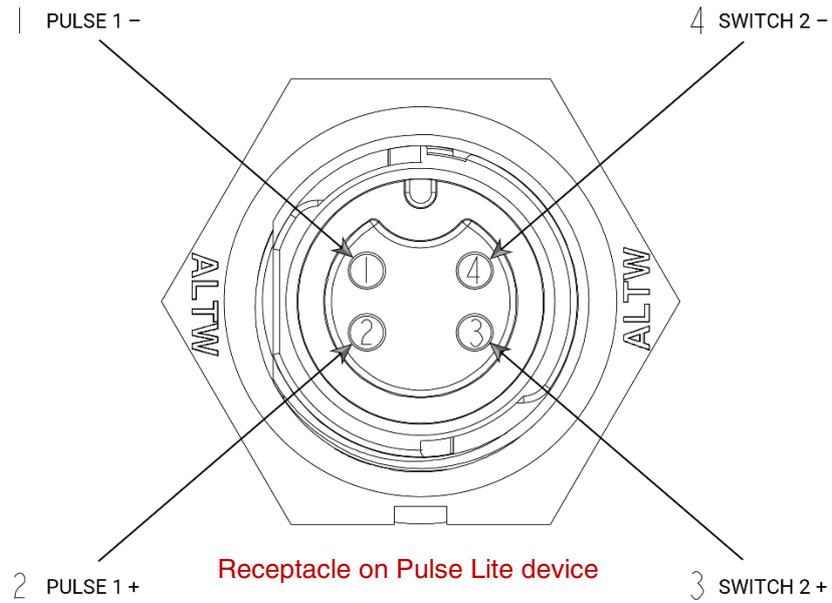
- 2 Screw tabs for wall mounting.
- Vertical and Horizontal channels to accommodate a standard 15mm pipe clamp or cable ties.



TERMINATING THE DEVICE

The Captis Pulse Lite is provided with a four-pin plug that can be connected to one or two sensors and/or measurement devices. Use the table below to determine how to wire the connections between the Captis Pulse Lite and the sensor.

PIN	Description
1	Pulse -
2	Pulse +
3	Switch +
4	Switch -



TERMINATION PRECAUTIONS

When connecting the Captis to a sensor:

- Ensure that the connection is sealed and insulated appropriately.
- Ensure that the connection is made electrically safe.
- Isolate any unused cables.

To ensure the efficacy of your Captis on-site installation and the on-going safety and sustainability of your installation, mIoT recommends that you follow these best practice procedures for terminating and waterproofing your sensor connection.

TERMINATION:

To ensure on-site sensor connections remain intact, the Captis can be configured with a loopback cable cut detection. It is recommended that this loopback is performed as close to the sensor as possible, giving the best possible tamper coverage of the sensor cable.

WATERPROOFING & PROTECTION OF TERMINATIONS:

mIoT recommends that standard electrical termination waterproofing procedures are followed, including the use of suitably IP rated junction boxes, scotch locks, solder terminations and other terminal style connections.

These terminations are recommended to be water-proofed by means of resin-filled heat shrink or self-amalgamating tape or other standard, secure electrical waterproofing means.



WATERPROOFING & PROTECTION OF SMA CONNECTOR:

When the SMA connector is securely fastened (finger tight only) to the Captis' SMA connector, the seal which is enclosed within the connector (on the antenna side) creates a seal against the housing preventing moisture intrusion.

Further protection can be added if required by the installer by using a small piece of resin filled heat shrink or self-amalgamating tape to further protect the connector.

OTHER BEST PRACTICE CONSIDERATIONS:

Do not suspend the Captis by the cable.

Do not stress the exit port of the Captis unit.

Do not introduce any severe or unnecessary bends to the cable.

SELECTING AN EXTERNAL ANTENNA

mIoT recommended antennas include:

<p>Taoglas Cyclops WM.90</p>	
<p>698 – 960MHz/1719-2690MHz Wide-Band High Efficiency Flexible Inner Steel Core Whip, IP65 3M CFD-200 SMA(M)ST RoHS & Reach Compliant</p>	
<p>Taoglas Phoenix GSA.8827</p>	
<p>698-960MHz/1575.42MHz/1710MHz-2700MHz No Ground Plane Required 1M RG-174 SMA(M) 105mm x 30mm x 7.7mm</p>	
<p>Taoglas T-Bar GSA.8822</p>	
<p>4G/3G/2G LTE T-Bar Adhesive Antenna GSM/CDMA/PCS/DCS/UMTS/WCDMA/LTE 700/850/900/1800/1900/2100/2600MHz 3M RG-174 SMA(M) 106mm x 13mm x 6.7mm</p>	
<p>Poynting OMNI-510-01</p>	
<p>690MHz – 2700MHz Max Omni-Directional IP68/UL 94-HB/IK10 1M RTK-031, RA SMA(M) 138mm x 26mm x 10mm</p>	

INSTALLING THE EXTERNAL ANTENNA

Note: This step is only applicable if your device supports an external antenna.

Connect an LTE antenna to the device's external SMA connector. Make sure not to over tension the antenna screw. No tools are required for this task.



Figure 3 External antenna connection

The external antenna must be installed in a location with the following characteristics:

- No physical obstruction to the signal reaching the antenna.
- Limited proximity to metal bodies.

If the Captis is installed in an enclosed area, an external antenna must be used. The end of the antenna must be outside the enclosed area.

If there are no suitable surfaces on which to mount the external antenna, it can be attached to one of the flat surfaces of the Captis enclosure.

CHECKING SENSOR & CELLULAR CONNECTIONS

Before leaving the installation site, you must check that the connection between the device and the sensor is functional and that there is adequate cellular signal for the Captis to work as required.

1. Activate your sensor to create some measurements. How you do this will depend on the sensor.
2. Wake up the Captis using the magnet. If the device has been installed correctly and is able to connect to a cellular signal, then it will then transmit the recorded data to the cloud platform.
3. Check that the data has successfully transmitted to the cloud platform in the correct format, and that no alarms have been recorded.

If the data has been submitted correctly, the registration and installation are a success. If the data does not appear, see Next Step: 'Troubleshooting'.

CHECKING THE CELLULAR CONNECTION OF AN ENCLOSED DEVICE

If you are installing your Captis device in an enclosed space (i.e. a pit or cabinet) then you must check the connectivity of the device in the environment in which it will ordinarily operation.

For example, if you are installing a Captis device inside a metal cabinet, then you must test that the device is able to connect to the cellular network when the cabinet is closed.

Note: It is insufficient to test connectivity with the cabinet open.

Follow the below steps to check that the Captis device can connect to the cellular network in its final, enclosed installation location.

1. Wake the Captis device and ensure that it is installed in its final, enclosed environment.
2. You will have 10 seconds to encase the device before it attempts to connect to the network.
3. Wait 5 minutes and then check that the device has connected to the cloud platform.
4. If the device appears in the platform, then the device can achieve enough connectivity and has successfully connected in its final installation location.

TROUBLESHOOTING

Symptom	Meaning	What to do
Status LED flashing 20 times	Device is on/ awake	Device is working as it should, leave device to collect data
Cellular LED solid	Device connected to LTE network	Device is working as it should, leave device to collect data
Status LED won't turn on after using the magnet	The device battery may be depleted, or a device fault may have occurred	Use a different device and contact the supplier
Status LED flashing in sequence: 2 long 1 short	No cellular registration (connection to the network) is being achieved.	Check with the Telstra coverage map to ensure the site is covered by the LTE-M or NBIoT cellular network. If the area is covered, and the device cannot connect, contact the supplier.
Status LED flashing in sequence: 2 long 8 short	Captis device cellular module failed to boot	Return the device to the supplier if the issue persists.
Sensor connection not working (not flashing the LED after LED flash turned on in Captis Configuration Toolset)	Connection wired incorrectly	Confirm that the sensor is properly attached. Contact support if issue persists
Sensor readings not uploading to/appearing in the cloud platform	Sensor not triggering	Ensure the sensor can be triggered by checking that the sensor is securely installed. Contact support if issue persists
	No cellular signal	Check Status and Cellular LED. If flashing, complete troubleshooting for a flashing Cellular LED. Contact support if issue persists

MAINTENANCE & SAFETY

MAINTENANCE

The Captis device does not require any maintenance once installed. The Captis uses a non-rechargeable Lithium ION battery, and there are no user serviceable parts inside the device.

If you encounter any issues with the device during its standard operation, contact your support team.

ELECTROMAGNETIC RADIATION – HUMAN EXPOSURE



Warning: This device has a Maximum Permissible Exposure (MPE) radius of 20cm.

It is the installer's and end customer's responsibility to ensure that no person has any body parts within 20cm of the device or antenna while device is transmitting. Device is transmitting when the 'Cellular' LED is lit.

BATTERY HANDLING & DISPOSAL

This Captis devices uses a Lithium ION Battery.

The Captis device should not be tampered with, drilled directly into for mounting purposes, otherwise opened, or crushed. If necessary, the Captis device should only be disposed or destroyed of in a safe and environmentally compliant manner.

Visit the Australian Battery Recycling Initiative (ABRI): <https://batteryrecycling.org.au/recycle-batteries/why/find-a-recycler/> for more information on lithium battery disposal in your state and across Australia.

Note: There are no user serviceable parts inside the Captis device.

Opening the Captis device will void the device warranty, and could cause significant damage to the device.