VIOTEL V1.0C and V1.0D Smart Barrier User Manual

Contents

VIOTEL V1.0C and V1.0D Smart Barrier

Introduction

Warning

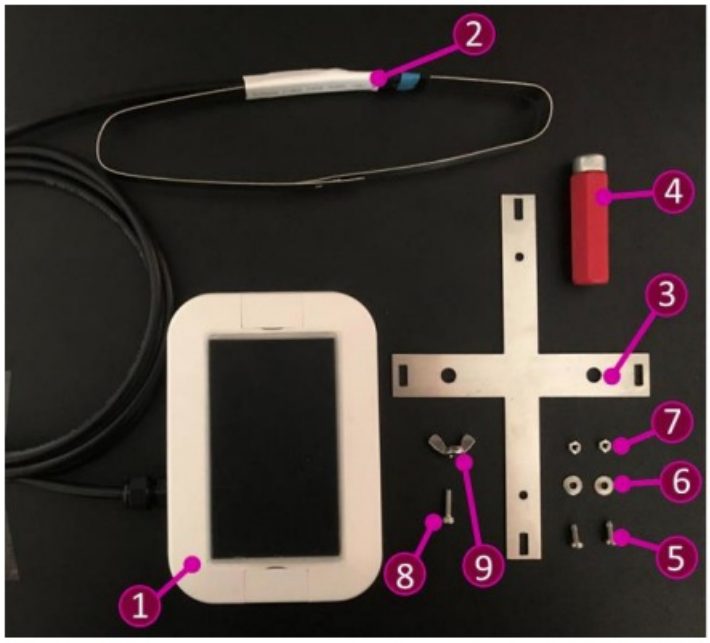
This guide intends to assist in the preferred mounting, operation and usage of Viotel’s Smart Barrier Node. Please read and completely understand this user guide in order to make sure the safe and correct use of the system as well as maintain the longevity of the device.

Please read and completely understand this user guide in order to make sure the safe and correct use of the system as well as maintain the longevity of the device. Protection provided by the equipment may be impaired if used in a manner contrary to this user manual.

Changes or modifications not expressly approved by Viotel Limited could void the user’s authority to operate the equipment. This product must not be disposed of in the normal waste stream. It contains a battery pack and electronic components and so should be recycled appropriately.

Parts List

PART	QTY	DESCRIPTION
1	1	Smart Barrier Node with integrated solar panel
2	1	Strain Gauge Band with cable
3	1	SS Mounting Bracket
4	1	Magnetic Key
5	2	M3x8mm PH1 bolt
6	2	M3 Washer
7	2	M3 hex nut
8	1	M3x 12mm 2.5 hex head bolt
9	1	M3 butterfly nut or M3 nylocnut



Required Tools
Tools may be required specific to your installation scenario. Common tools include:

- 2.5mm Hex key
- M5.5mm x 50mm hex nut driver and a coil spring compressor clamp
- Zip ties (plastic & stainless steel)

Usage

Recommended Mounting Procedure
It is highly recommended that the Viotel SMART Barrier Node be installed on the last full barrier section before the anchor block downstream of the flow of traffic. The device can efficiently detect strain and crashes along the entire length of the barrier from this position.

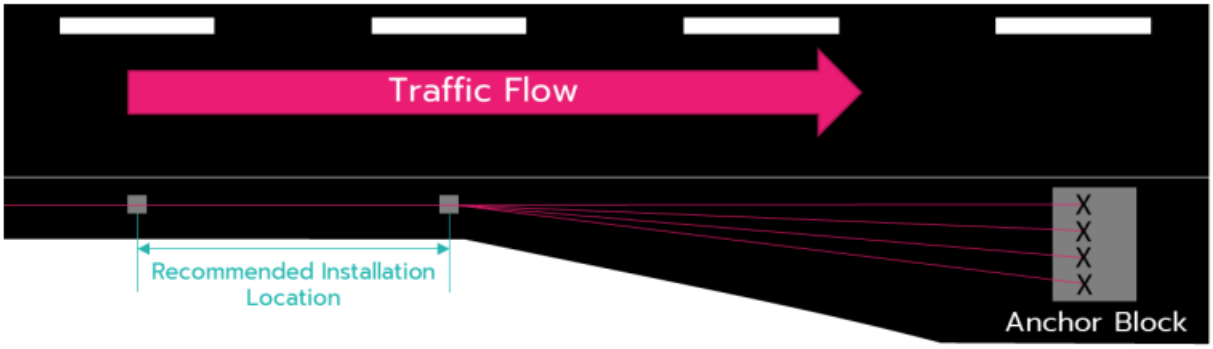


Figure 1 Locate wire rope node close to the end of barrier

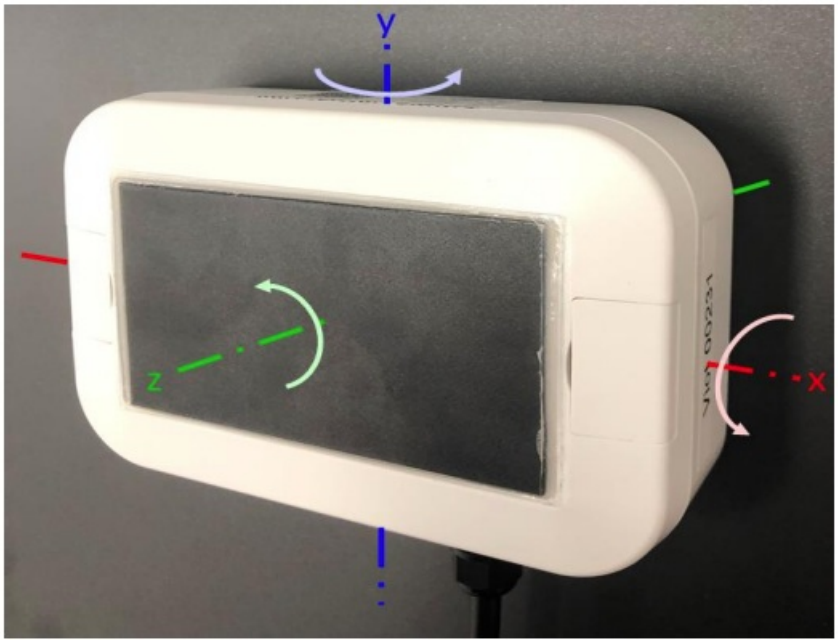
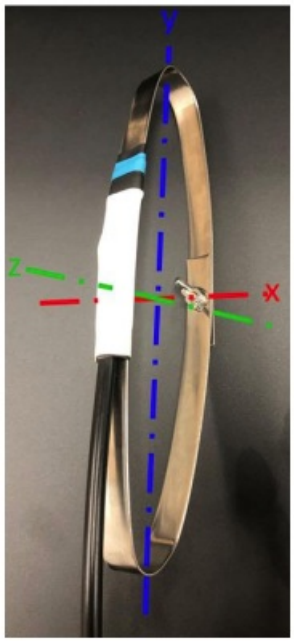
Indicated Key Location

The switch that the magnetic key (Part 4) operates on the barrier node (Part 1) is located next to the QR code located on the top of the device.

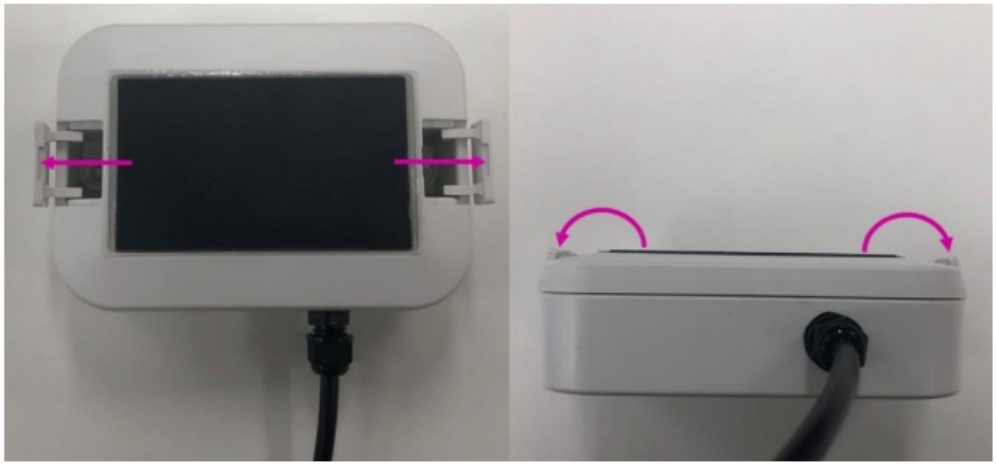
Figure 2 Magnetic Key Location

Mounting Orientation (Recommended)

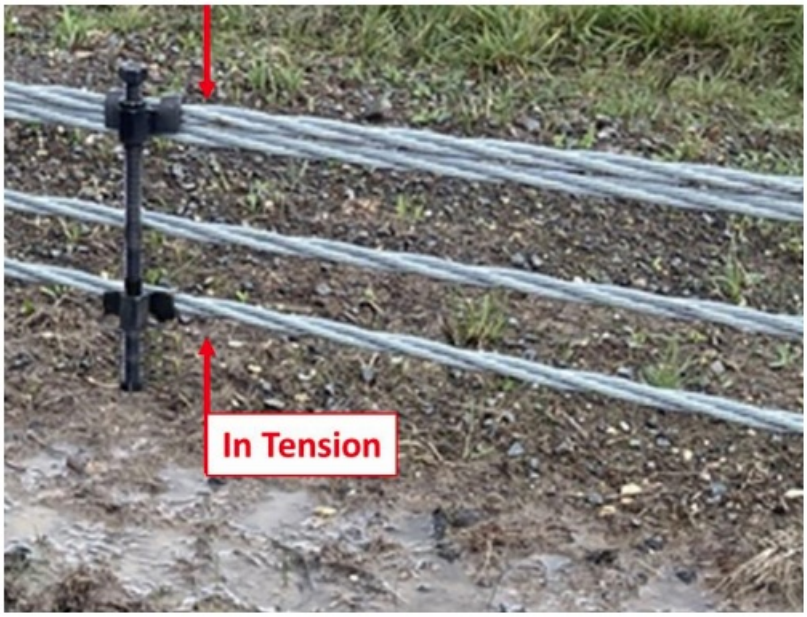
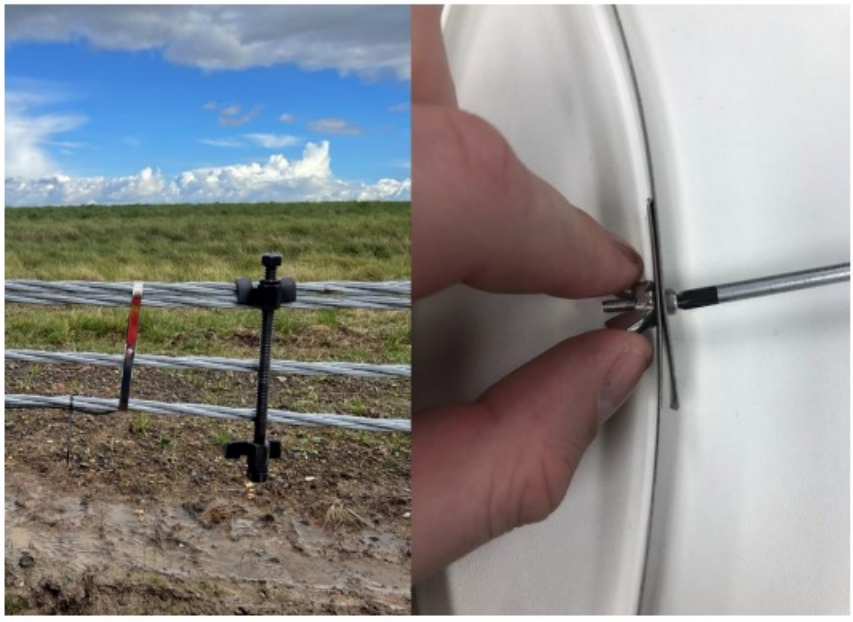
It is important to position the solar panel on the side of the barrier for maximum sun exposure. In Australia and New Zealand then is a northerly aspect and consideration should be given to position of overhead structures and trees that throw shade during the date (particularly if the installation occurs at night with road lane closures).

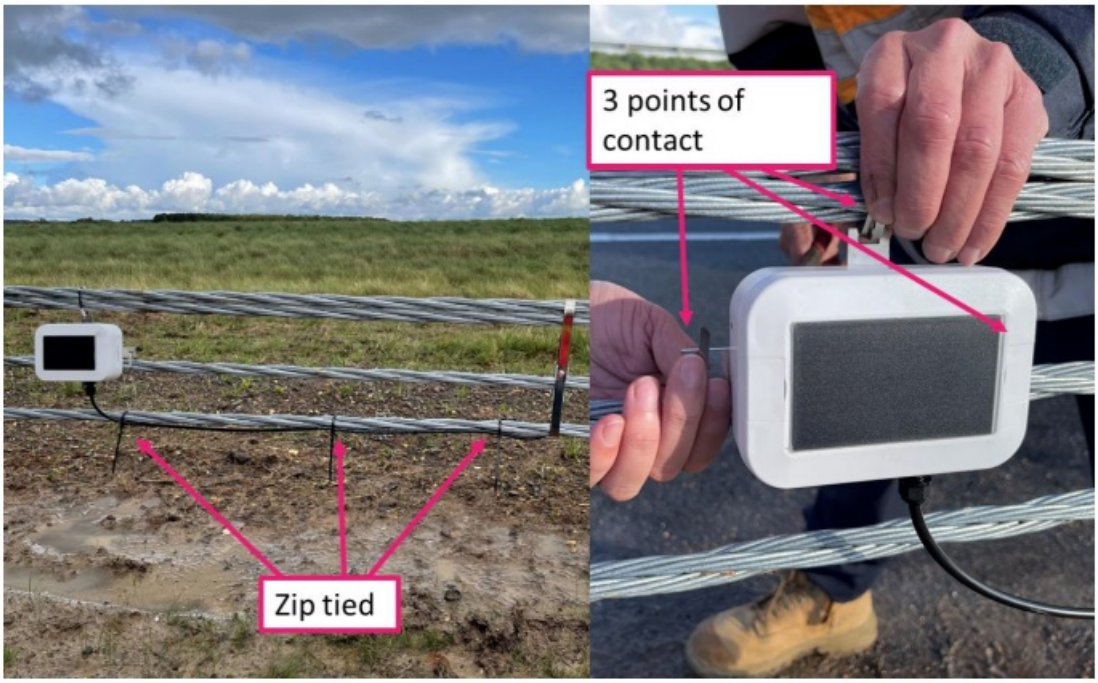
SMART BARRIER ORIENTATION	STRAIN GAUGE BAND ORIENTATION
	

Mount Bracket to Device

STEP	DESCRIPTION
1	Remove all components from their packaging
2	On the Smart Barrier Node (Part 1); find and open the top and lower flaps. 
3	Align the mounting holes seen underneath the flaps on the node (Part 1) with the holes on the top side of the stainless-steel mounting bracket (Part 3). Feed a bolt (Part 5) through the aligned hole from under the bracket. With the bolt's seen through the n ode (Part 1), place a washer (Part 6) and tighten a bolt (Part 7) on. Repeat this process until the smart barrier node (Part 1) is firmly attached to the bracket (Part 3). 

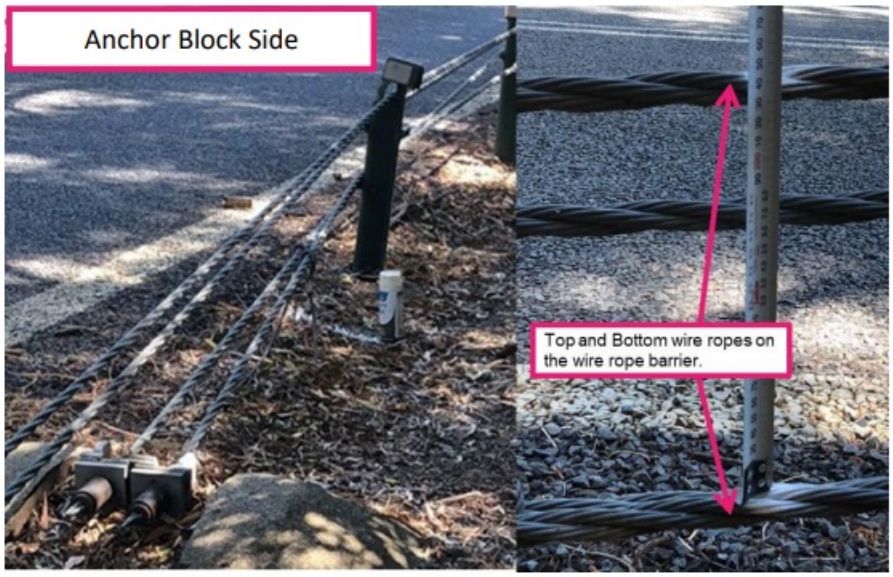
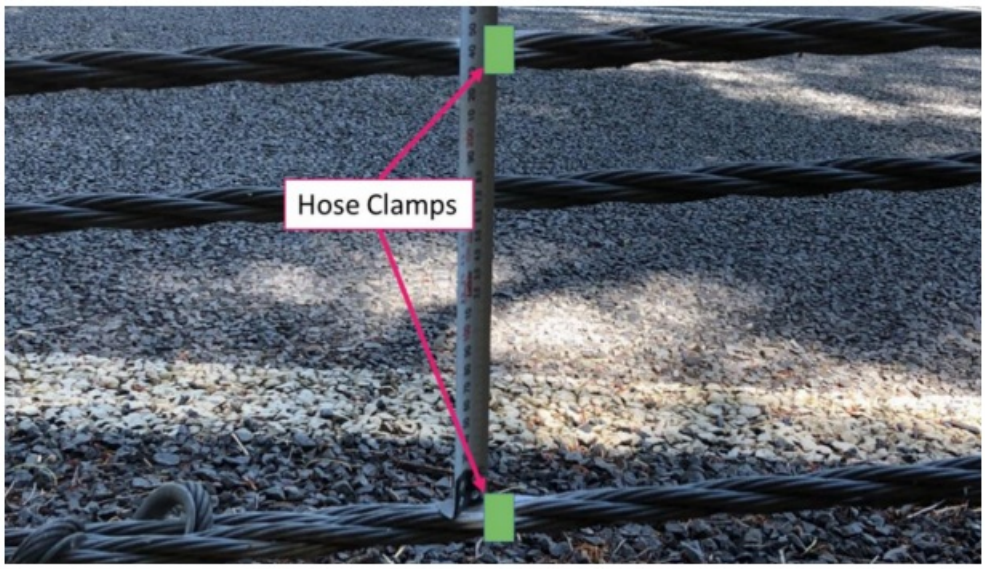
Standard Wire Rope Installation

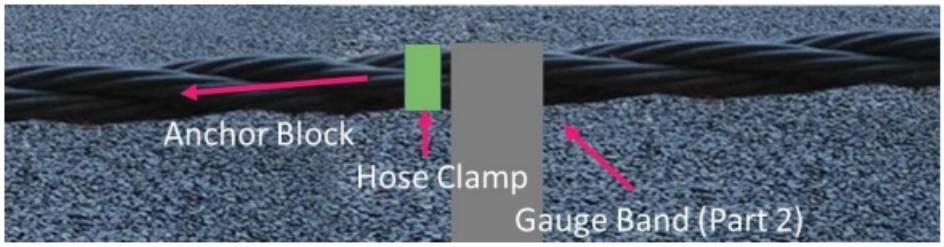
STEP	DESCRIPTION
1	Using a tool like coil spring compressor clamp: compress both the top and bottom wire ropes. If mounting on highly angled wire ropes, it is recommended that hose clamps be installed to support th e gauge band (Part 2). Follow steps listed in the **Error! Reference source not found.** section before p roceeding to Step 2. 
2	Wrap the strain gauge band (Part 2) around the compressed wires. Feed the M3x12mm bolt (Part 8) th rough the aligned holes in the back of the band (Part 2) and tighten the butterfly/nyloc nut (Part 9). The tool/coil spring compressor can now be slowly released. If attached to non-parallel wires; ensure the gauge band (Part 2) is supported by hose clamps on the w ire rope (see the **Error! Reference source not found.** section for details). 

3	Using steel ties, attach the smart barrier node (Part 1) to the wire rope barrier ensuring at least three points of contact. Zip-tie the band-cable (Part 2) along the lower wire rope. It is recommended the node (Part 1) is mounted onto the wire rope; however, it can be attached to posts if needed. 

Anchored Wire Rope Installation (Not Recommended)

STEP	DESCRIPTION

1	Locate the top and bottom wires in the wire rope barrier on the side of the anchor block. Using a tool lik e coil spring compressor clamp: compress both the identified top and bottom wire ropes. 
2	Install hose clamps on the side of the strain band closest to the anchor block, to prevent band slipping down the wires. 

3	Proceed to steps 2 and 3 listed in the **2.5Error! No bookmark name given.** section. 

Operating Instructions

Operation

By default, your Viotel Smart Barrier Node will be set to Deep Sleep mode. To change the mode that the smart barrier node is in; simply take the magnetic key (Part 4) and double tap it over the Indicated Key Location. A double green blink every 30s on status LED (lower) will indicate that the device is now in Awake Mode.
All operations and LED indications refer to firmware version: 2.01.01, please be aware future states may change some functionality.

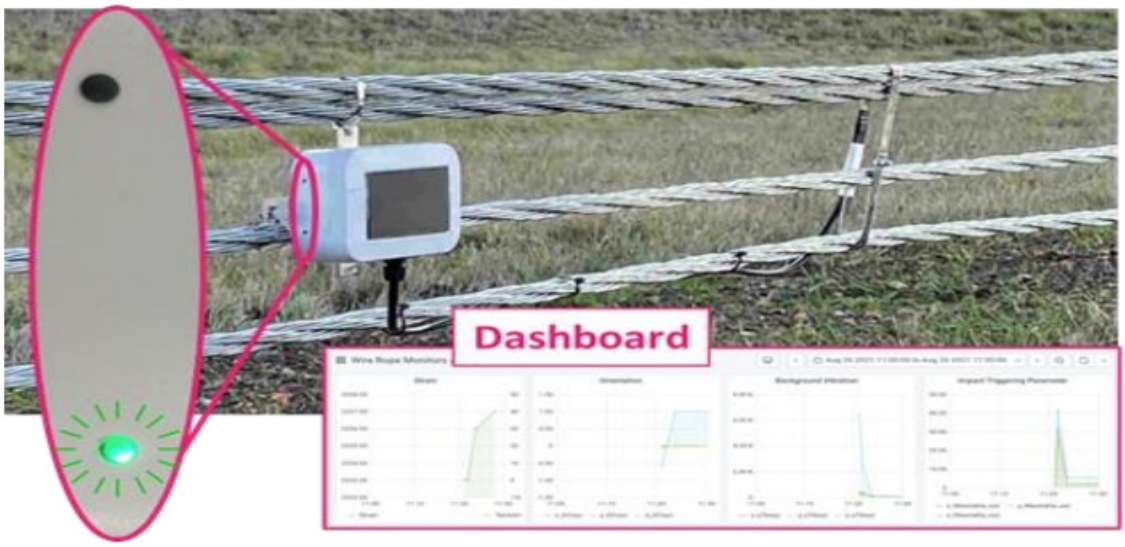
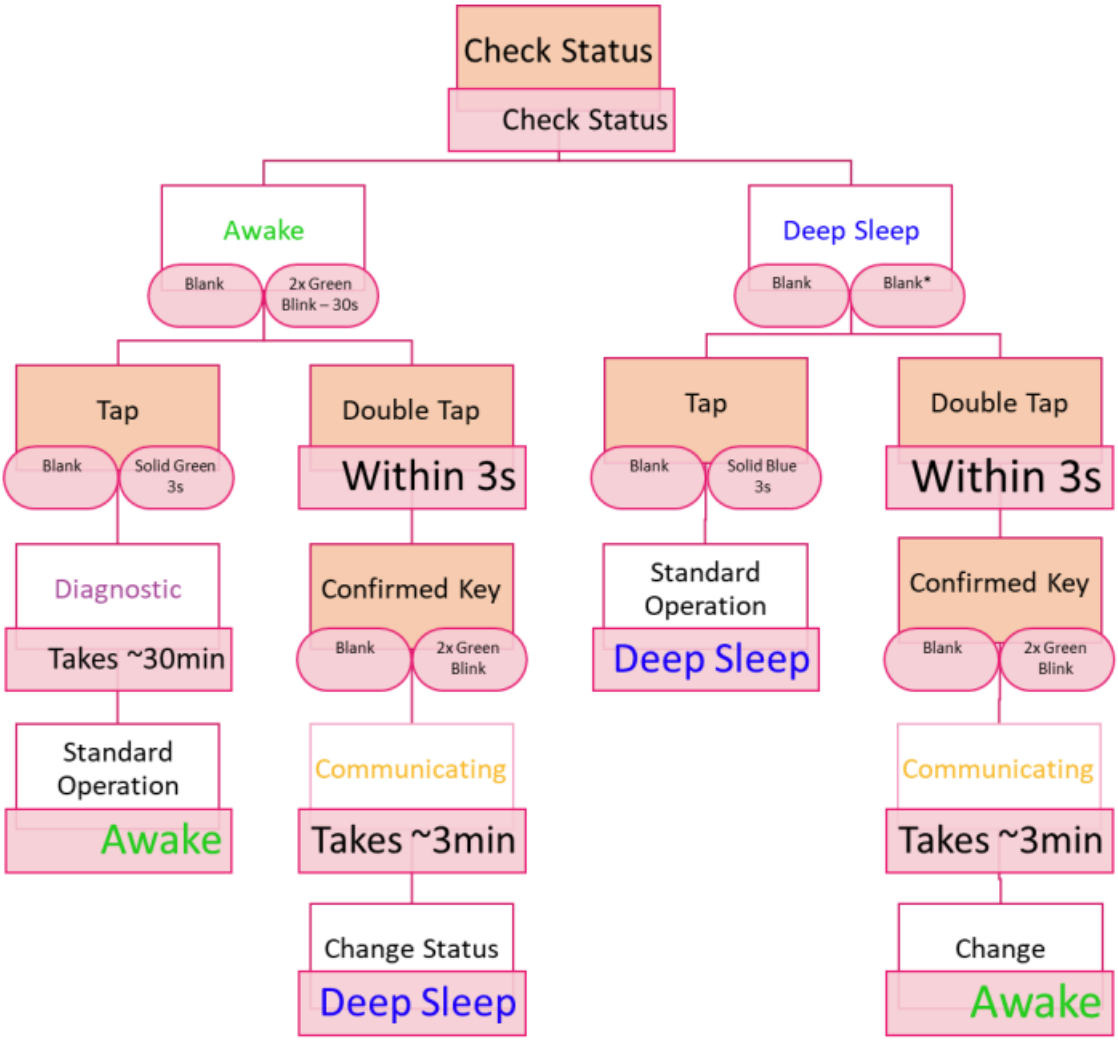


Figure 3 LED Location and Dashboard Data

TAP INSTRUCTIONS	FUNCTION	DESCRIPTION
Tap once (while in Deep Sleep)	Current Status	This will light up the LED indicating the current status that this system is in.
Tap once (while Awake)	Diagnostic	The device will quickly record 10 data entries and upload them. O nce this data has been logged, the device will return back to its st andard operation automatically.
Tap once, Tap again wit hin 3 seconds	Upload and chan ge status	This will cause the device to initiate the upload and update seque nce. In total; this process should take a few seconds to complete and then set the device automatically to a new status.

System Status

STATUS	DESCRIPTION
Awake	In this status, the device will consistently record data given the user defined interval, check for firmware updates, monitor for user defined triggers and check for Magnetic Key inputs (Part 4).
Diagnostic	This status will set the data recorded interval to 3 minutes and quickly record 10 entri es along with GPS data. After approximately 30 minutes, the device will return to its Awake status automatically.
Communicating	The device is currently trying to communicating with the server to update firmware, lo ad data and status information. The Comms LED (Upper) will go through four stages: Stage 1. Attempting Communications & Check for Updates: indicated by Green Blink every second. Stage 2. Link Established & Communicating Correctly: indicated by Three Blue Blinks. Stage 3. Firmware Updates: indicated by Green Blink or Red/Green Blink (see **E rror! Reference source not found.** for details). Communication Complete: indicated by Solid Aqua.
Deep Sleep	The device will check for any wake-up commands, such as the Magnetic Key (Part 4) or user defined data collection interval. If there is enough power for the device to be in Awake mode, it will be indicated by Bl ue Blink Twice every 30 seconds. Every 7-days, the device will initiate a connection to provide status updates and chec k for system updates. Then it shall return to a Deep Sleep unless otherwise specified by the server.



Changes depending on battery level. See Deep Sleep Mode in the System Status section for details.

System Communications Indicator (Upper LED)
Please refer to table below in conjunction with section 3.2 for details.

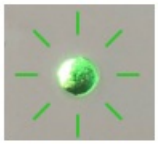
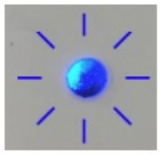
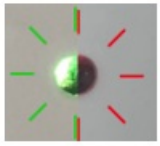
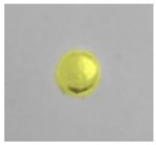
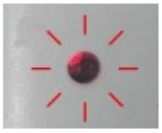
LIGHT	INTERVAL	MEANING	DESCRIPTION	VISUAL
Green Blink	1s	Communicating	Stage 1)	
Three Blue Blinks	3s apart	Communicating	Stage 2)	
Green Blink	N/A	Communicating	Stage 3) The Link has been established and there are no firmware updates.	
Red/Green Blink	Alternating every few seconds	Communicating	Stage 3) The node is undergoing a firmware update. It will resume previously set operation shortly.	
Blank	N/A	No Activity	The device is not communicating.	
Yellow Blink	N/A	Acquiring GPS	The device is currently obtaining its GPS coordinates. This occurs once per day.	
Red Blink	1s	Communication Issue	The smart barrier node cannot connect to the server.	

Table 4 System Status Indicator

System Status Indicator (Lower LED)

Please refer to table below in conjunction with section 3.4 for details.

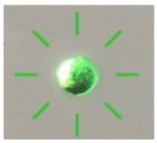
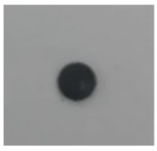
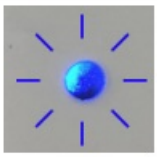
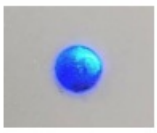
LIGHT	INTERVAL	MEANING	DESCRIPTION	VISUAL
Green Blink Twice	30s	Awake - Normal Operation	See the section 3.2 for details.	
Green Blink	2s (after second tap)	Confirmed Key Input	This indicates that the device has detected the key and will begin its next process.	
Solid Green	3s (after key tap)	Diagnostic	See the section 3.2 for details.	
Blank	N/A	No activity	The Device is currently in Deep Sleep status.	
Red Blink	1s	GPS Timeout	The GPS was unable to connect and has timed out.	
Blue Blink Twice	30s	Deep Sleep*	The device is currently in Deep Sleep mode, however there is enough power to safety run in Awake mode.	
Solid Blue	3s (after key tap)	Deep Sleep	See the section 3.2 for details.	
Solid Aqua	3s	Communicating	0).	

Table 5 System Communications Indicator

Maintenance

The product should not require any maintenance after installation. Only service personnel authorised by the manufacturer may open the inner enclosure. No user serviceable parts are located inside.

Cleaning

If the need to clean the product should arise, use only a damp cloth and mild detergent. Do not use any solvents as this may damage the enclosure.

Downloading Data

The only way to retrieve data is over the cellular communications. This can be activated on demand using the magnetic key. However, if the device is in the field and is unable to upload data, the device is programmed to keep trying in decreasing increments to conserve battery. If after 4 days of attempting to upload, it will reboot. Data is stored on non-volatile memory; therefore, it is stored when rebooted and after power loss. Data is deleted from the device once successfully uploaded.

Further Support

For further support, please email our friendly staff at **support@viotel.co** with your name and number and we will

get back to you.

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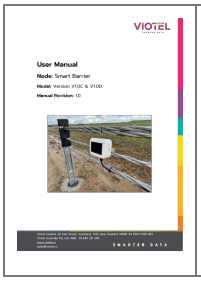
Documents / Resources

	VIOTEL V1.0C and V1.0D Smart Barrier [pdf] User Manual V1.0C and V1.0D Smart Barrier, V1.0C Smart Barrier, V1.0D, V1.0C, V1.0D Smart Barrier, Smart Barrier

References

- Viotel - Smart Monitoring Solutions
- Viotel - Smart Monitoring Solutions
- Viotel - Smart Monitoring Solutions