VIOTEL Accelerometer Vibration Node User Manual

Contents

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SMARTER DATA

VIOTEL Accelerometer Vibration Node

Introduction

Warning

This guide intends to assist in the preferred mounting, operation and usage of Viotel's Accelerometer 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. 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.

Theory of Operation

The Accelerometer is a low touch Internet of Things (IoT) device. It is designed to as simple as possible to install and activate, set and forget. Data is retrieved from the device via our cloud-based platform or via API to yours using the integrated LTE/CAT-M1 cellular communications. The device also uses GPS for time synchronisation where comparison of events between nodes is required. The device sensor is always monitoring for events, and can be continuously monitoring, or set to a triggered state. Remote configuration is possible to change the acquisition and upload frequency.

Parts List

Required Tools

Tools are not required for installation other than hand tools specific to your installation scenario. The following tools are required for changing the batteries

- T10 Torx Screwdriver
- Thin Needle Nose pliers

Dimensions

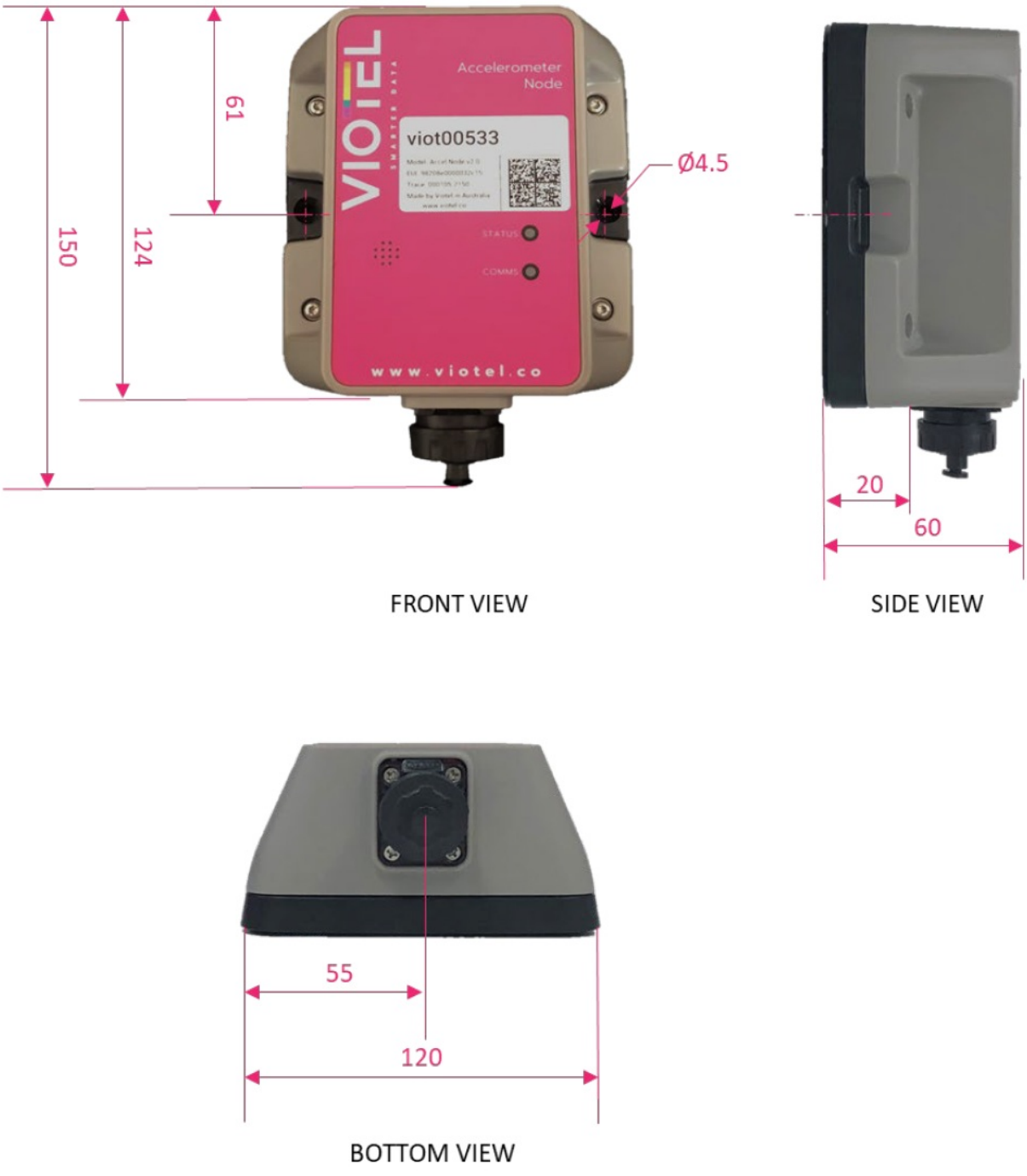


Figure 1 Dimensions in mm

Usage

Mounting Options

Viotel's Accelerometer Node comes with three primary mounting options. It is recommended that a combination of two is used for optimal use

MOUNTING	DESCRIPTION
1. **Two-Sided Adhesive** 2. **Threaded M3 Holes suitable for optional pole mount bracket or mounting to an enclosure.**	Clean and dry the mounting locations surface. Peel off the red plastic layer on the back of the node and firmly press it onto the required location. Keep the device and surface under this same pressure for approximately 20 minutes (to achieve 50% bond strength in room temperature).  *Figure 2 Node Rear*
3. **Side Mounting holes**	Side mounting points designed for M5 countersunk bolts or screws.  *Figure 3 Node Front*

Table 2 Mounting Options

Orientation Description

Figure 4 Photo showing X, Y, Z Axis Orientation

Indicated Key Location

The switch that the magnetic key (Part 4) operates on the accelerometer (Part 1) is located between the STATUS LED and the COMMS LED.

Figure 5 Photo highlighting location of the magnetic key

Operating Instructions

Operation

By default, your Viotel Accelerometer Node will be set to Off mode. To change the mode that the node is currently in; simply take the magnetic key (Part 4) and hover it over the Error! Reference source not found.. All operations and LED indications refer to firmware version: 3.02.14, please be aware future states may change some functionality

TAP INSTRUCTIONS	FUNCTION	DESCRIPTION
Tap once (while in Off)	Current Status	This will light up the LED indicating the current status that this system is in.
Tap once (while On)	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
On	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 On status automatically.
Communicating	The device is currently trying to communicate with the server to update firmware, loa d data and status information.
Off	The device will check for any wake-up commands, such as the Magnetic Key (Part 3) or user defined data collection interval. Every 7-days, the device will initiate a connection to provide status updates and chec k for system updates. Then it shall return to Off unless otherwise specified by the ser ver.

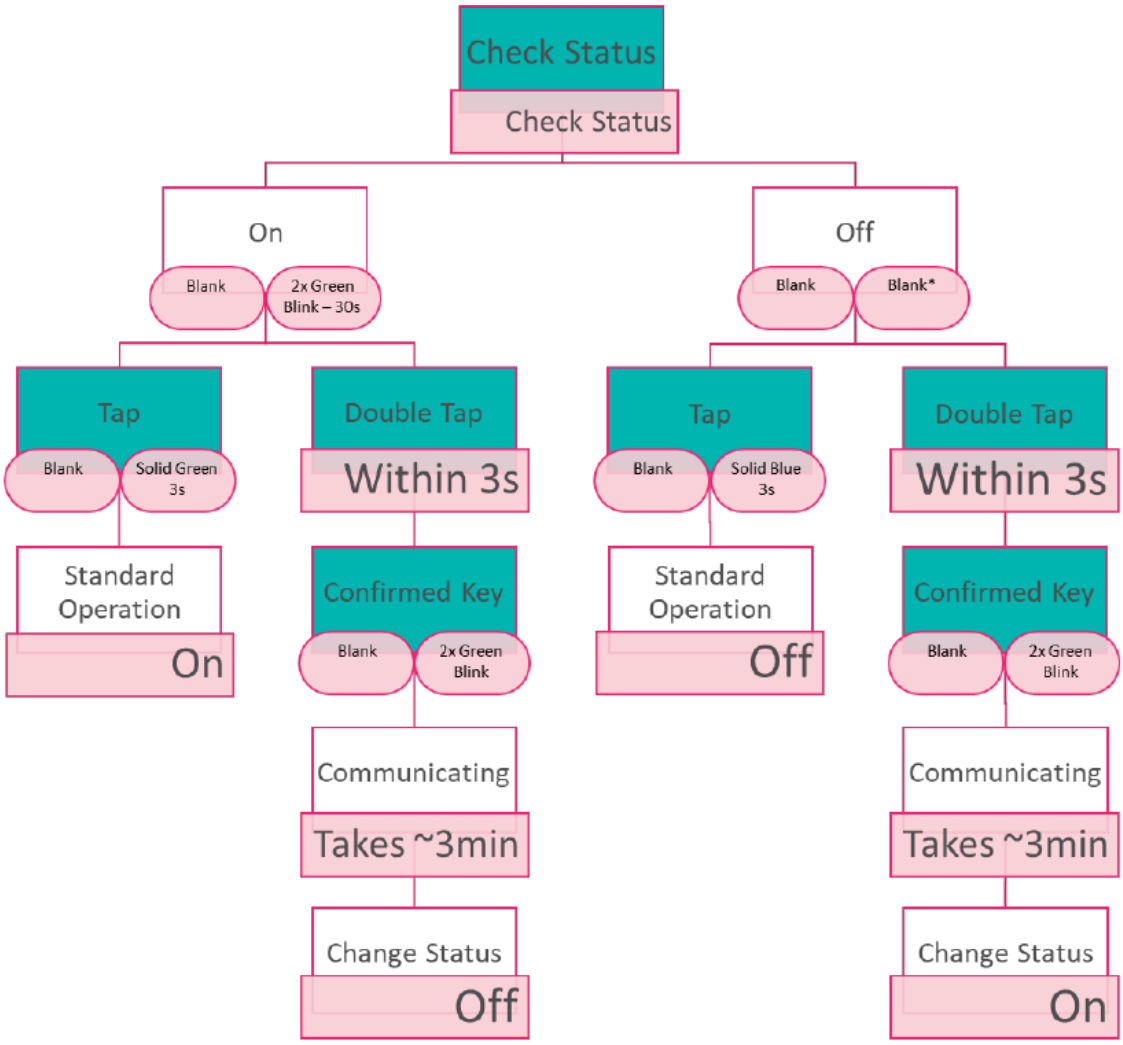


Figure 6 Flow Diagram for Cycling System Status with Magnetic Key

System Status Indicator

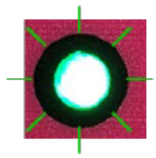
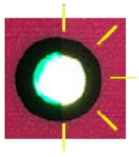
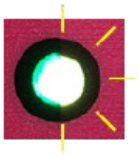
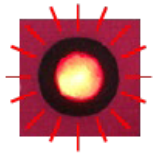
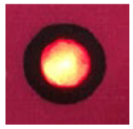
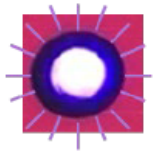
LIGHT	INTERVAL	MEANING	DESCRIPTION	VISUAL
Green Blink four times	1s	Successful Firmware Update	Firmware update requested, downloaded and installed successfully.	
Green Blink Twice (100ms)	every 30s	On	Device is On, running normally. See the section 3.2 System Status for details.	
Green Blink Twice (50ms)		Status Change Confirmation	The device has confirmed that it will now switch from Off to On.	
Solid Green	<3s	Status Change Confirmation	The device has confirmed that it will now switch from On to Off	
Solid Green + Yellow Blink	3s 1s	Status Change Confirmation	Device is On and preparing to run a Diagnostic.	
Solid Green + Yellow Blink	3s 1s	Status Change Confirmation	Device is On and preparing to run a Diagnostic.	
Red Blink four times	1s	Failed Firmware Update	Firmware update requested and failed to download.	
Solid Red (300ms)		Device is Busy	The device is currently busy and will not accept commands from the magnet.	
Solid Blue	3s	Off	Device is in Off. See the section 3.2 System Status for details.	
Purple Blink Twice (100ms)	Every 30s	Diagnostic	Device is On, running Diagnostic. See the section 3.2 System Status for details.	
Blank	N/A	Off	Device is in Off. See the section 3.2 System Status for details.	

Table 5 System Status Indicator

System Communications Indicator

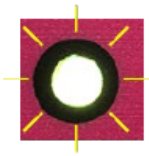
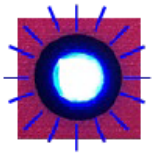
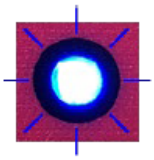
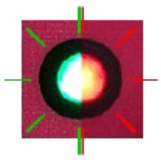
LIGHT	INTERVAL	MEANING	DESCRIPTION	VISUAL
Solid Green	1s	Communicating	The device will stop Communicating, successfully reporting all available data.	
Yellow Blink (100ms)	Every 1s	GPS Fixing	The device is currently acquiring a GPS signal.	
Solid Yellow	1s	GPS Fixing	The GPS signal has been acquired and successfully got a valid position.	
Solid Red	1s	GPS Fixing	The GPS signal has not been acquired and failed to get a valid position.	
Solid Red	2s	Communicating	The device will stop Communicating, failing to reporting any data.	
Blue Blink Twice (150ms)		Communicating	The device has begun Communicating, network has successfully connected.	
Blue Blink (150ms)		Communicating	The device is Communicating, turning on its internal modem.	
Solid Blue	2s	Communicating	The device is Communicating, successful connection to the AWS server is established.	
Green/Red Alternating		Firmware Update	Firmware update requested, downloading and installation underway.	
Blank	N/A	N/A	Device is not communicating.	

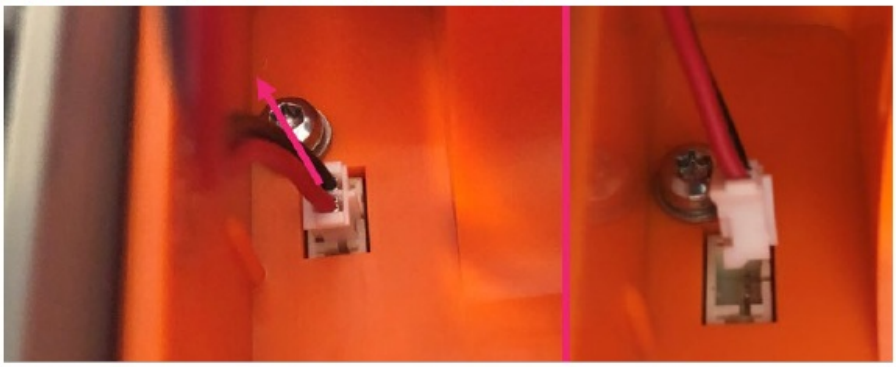
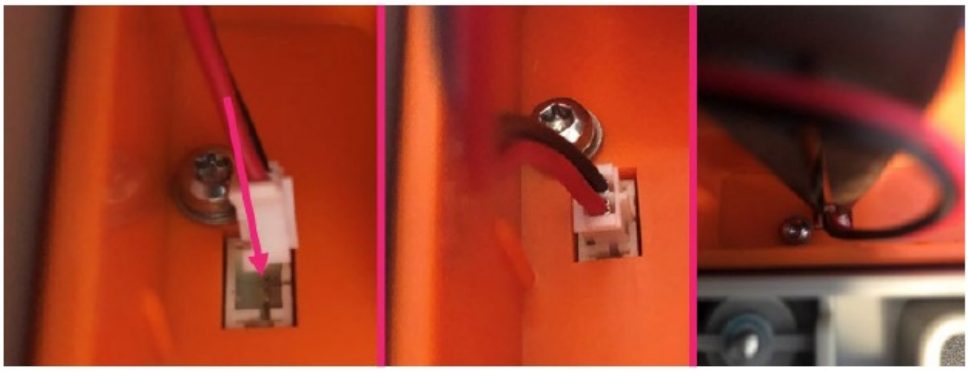
Table 6 System Communications Indicator

Maintenance

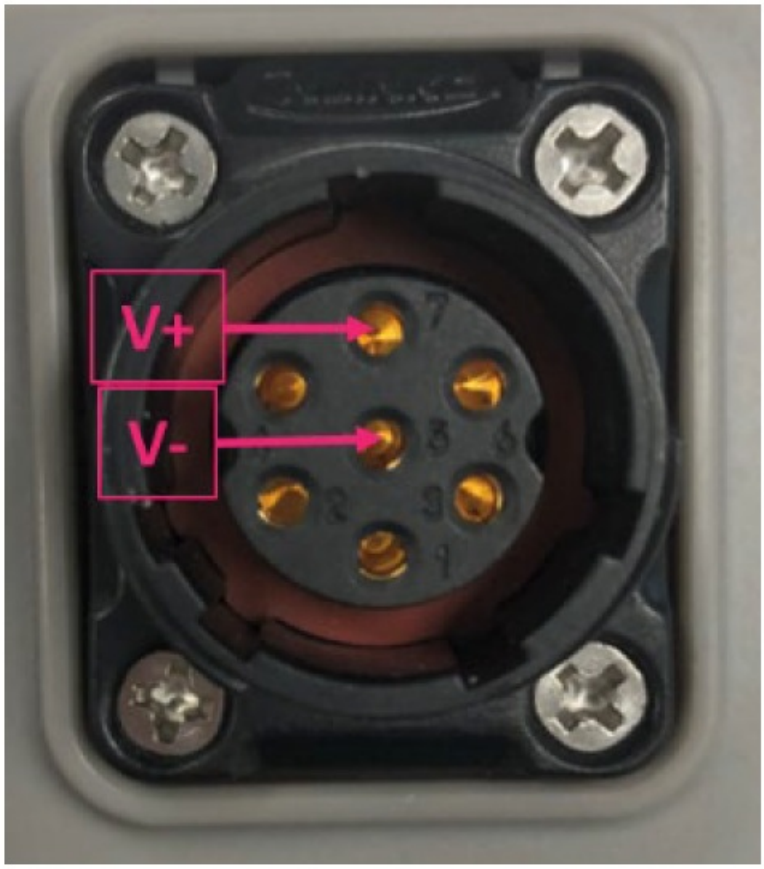
The product should not require any maintenance after installation. If the need to clean the product should arise, use only a damp cloth and mild detergent. Do not use any solvents as this may damage the enclosure. Only service personnel authorised by the manufacturer may open the inner enclosure. No user serviceable parts are located inside.

Changing Batteries

STEP	DESCRIPTION
1	Please ensure the node is in Off mode (see Section 3 – Operations for details)
2	Using the T10 Torx Screwdriver, unscrew until the 4 bolts on the front of the node's enclosure are loose. Please note that the bolts are designed to remain in device section. 
3	Flip over the top half of the enclosure making the battery pack is clearly visible. Position two fingers around the battery and firmly pull up; the battery should pop out of its holder. Ensure you do not pull or rip the red & black cables attaching the battery pack to the device. 

4	Gently pull out the exposed plug connecting the battery to the device. Please dispose of this used battery pack correctly based on legislative requirements. 
5	Gently push the new battery packs plug into the devices socket. A pair of thin needle nose pliers may be required to confirm it has been adequately plugged in. 
6	Slide the battery pack into position and push firmly on the battery until it clicks into place. 
7	Once the device is screwed back into the base, your node can be safely turned back to On mode for use. 

External Power



Please ensure the node is in Off mode. It is strongly recommended that the battery be taken out of the enclosure by following steps 1 to 4 and step 7 in the changing batteries section. A seven-pin male CNLinko plug will be required to power externally. PIN 5: Ground PIN 7: Positive Voltage POWER REQUIREMENTS: 7.5 VDC only.

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.

Viotel Offices Sydney Suite 3.17, 32 Delhi Road Macquarie Park, NSW, 2113 Auckland Suite 1.2, 89 Grafton Road Parnell, Auckland, 1010 Remote Offices: Brisbane, Hobart **support@viotel.co** viotel.co

Documents / Resources

	**VIOTEL Accelerometer Vibration Node** [pdf] User Manual Accelerometer Vibration Node, Accelerometer, Vibration Node, Vibration Accelerometer, Node Accelerometer, viot00571

References

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