

**Trane Technologies TKV5LA  
Installation and User Manual**

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## Component Overview

### Jolt Characteristics

Requirements	Conditions
Operating Temperature	-40° C to 85° C (-40° F to 185° F)
Operating Voltage	10.2 Volts DC to 27.6 Volts DC
Operating Current	1100mA max @ 10.2V
	500mA max @ 27.6V

The Jolt system has no user-serviceable parts. The Jolt contains a 2500mAh rechargeable lithium battery for maintaining the real time clock and for maintaining function for a short period of time when VIN is removed.

Proper recycling or disposal per local law is required for all components of the Jolt.

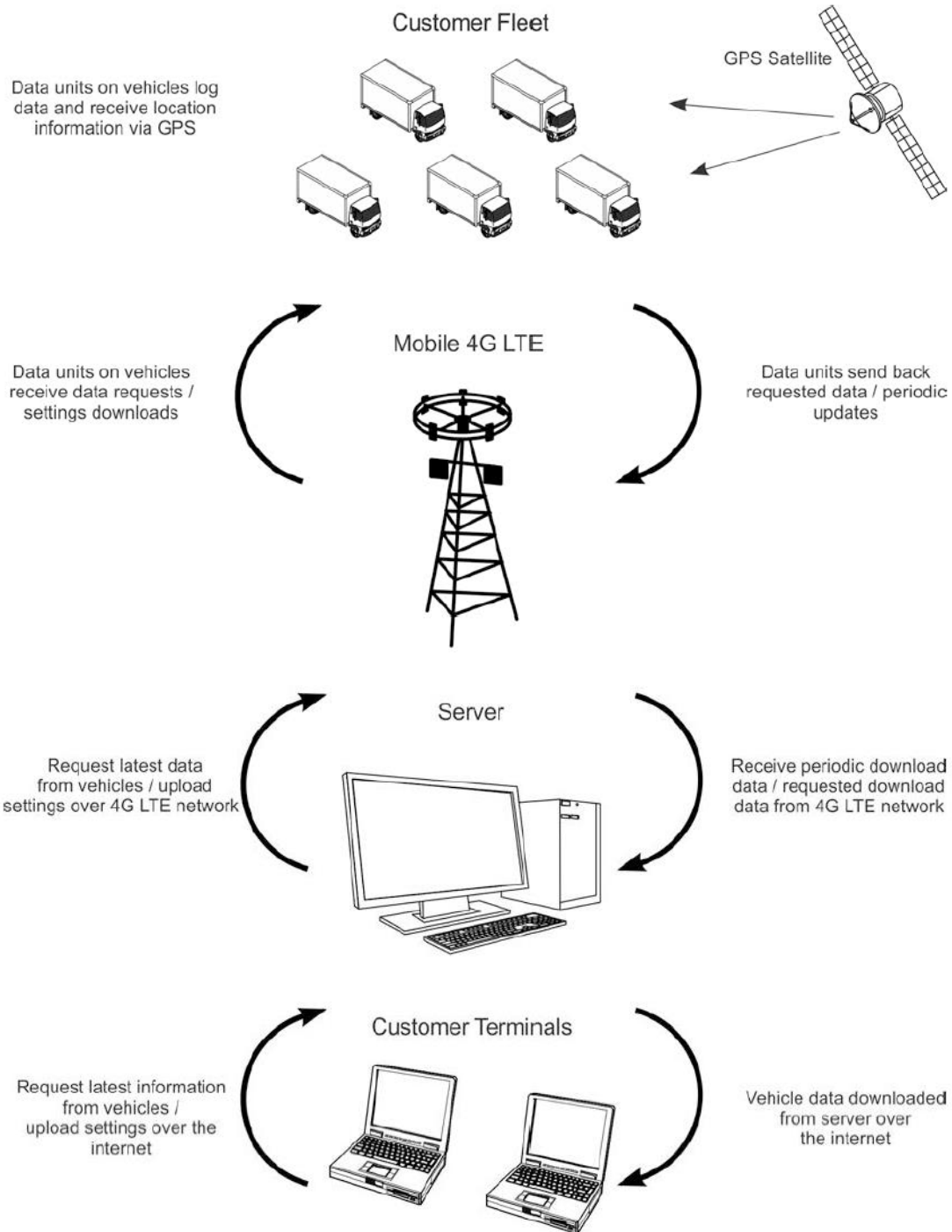
## Component Description

The Jolt is a wireless communication platform that offers refrigerated truck fleet owners the ability to monitor their refrigeration units on the refrigerated trucks. 4G cellular capabilities are used to communicate with web-based applications. Bluetooth® and Cellular options are available on the Jolt to monitor the refrigeration units. It has an internal antenna system through which it communicates with the telematics system or locally via Bluetooth for supported devices.

The Jolt mounts in the refrigeration unit. The Jolt communicates with the refrigeration unit through the CAN connector on the unit. A user interface with the Jolt offers a gateway for telematics providers to communicate with the refrigeration units.

The Jolt also has an internal battery that is used to provide backup power if the main battery power is lost or interrupted. The Jolt contains an intelligent battery charger that keeps the Internal battery charged during normal unit operation.

# Component Operating Instructions



The customer fleet can consist of any number of vehicles. Those which need to be monitored must have the correct hardware installed, which includes the Jolt module and appropriate harness to connect to the unit controller.

The hardware performs a number of functions:

- It receives constant updates from the GPS satellite network which enables it to log the vehicle location.
- It contains an array of signal pins to monitor sensor details such as temperature, speed, and engine status.
- It is 4G LTE enabled, which allows it to communicate the data it has logged (location data and sensor readings) back to the server.

Data is transferred to the server:

- At predefined intervals.
- When a request for the latest data is received by the unit.
- Predefined events e.g., Setpoint Change.
- Alarm notification.

The server communicates with the hardware installed in the vehicles over the 4G LTE network. It can use a combination of SMS (Short Message Service) messages and 4G Cellular (Data Service). 4G Cellular allows the transfer of larger amounts of information more efficiently. For this reason, each hardware has a specific mobile number assigned to it.

The server sits at the heart of the monitoring system. It provides the interface between the monitoring software run in browsers on customer sites, and the customer fleet. The server also stores configuration detail and user settings so that a user can log on at any PC terminal and experience the same user interface and personalized settings.

Configuration data is also transferred from the server to the Jolt device in response to user actions. Typically, this includes 2-way commands, Geofence updates, etc.

Customers can monitor their fleet activity using an application by logging onto a specific site with a valid username and password.

<b>Trane Jolt TKV5LA Product Specifications</b>		
<b>Platform</b>	CPU	Cortex A8
	RAM	512 MB DDR3
	Flash	8 GB eMMC
<b>Interface</b>	Connector	35-way Deutsch
	CAN	2 x CAN
	RS232	2 x RS232
	USB	1 x Full Speed USB
<b>Power Supply</b>	Voltage	Nominal Input voltage 12V / 24V Power Input range: 6V – 32V
<b>Backup Supply</b>		Lithium Battery 2500mAh
<b>Rated Current</b>		1100mA @ 12V 500mA @ 24V
<b>Sleep Current</b>		0.6mA
<b>Analog Inputs</b>		2 x Analog Inputs (0 – 32V)
<b>Digital Inputs</b>		4 x Digital Input (0 – 32V) V(in, low) max = 0.9V V(in, high) min = 2.2V
<b>Digital Outputs</b>		3 x High-side Drive 1 x Low-side Drive
<b>Internal Temperature Sensor</b>		±0.5°C accuracy
<b>RTC</b>		Yes, backed up by Lithium Battery
<b>External Shell</b>	Housing Material	PC
	Colour	Black
<b>Mounting</b>	Item	Screw mount on surface
<b>Protection-Class</b>	Ingress Protection	IP67

<b>Environment</b>	Storage Temperature	-50°C to +85°C
	Operating Temperature	-40°C to +85°C
<b>Protections</b>	Reverse Voltage	up to -36V
	Load Dump	SAE J1113-11 Test Pulse 5C, up to 150V
	ESD	+/-15kV Air, +/-8kV Contact
<b>Operating System</b>		Linux
<b>Physical Specification</b>	Dimensions	161 x 53 x 86 mm
<b>Cellular Bands</b>	LTE FDD Cat 1	1, 2, 3, 4, 5, 7, 8, 28, 66
	WCDMA	1, 2, 5, 8
	GSM	850/900/1800/1900
<b>GNSS</b>	Constellations	GPS, Glonass, Galileo, Beidou
<b>Bluetooth</b>		5.1
<b>Antennas</b>		Internal

## FCC Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

### Radiation Exposure Statement:

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

### - Frequency bands

Frequency band(s) in which the radio equipment operates:

#### Cellular:

Module	LTE Bands (with Rx-diversity) <sup>2)</sup>	WCDMA (with Rx-diversity) <sup>2)</sup>	GSM
TKV5LA	FDD:		
	B1/B2/B3/B4/B5/B7/B8 B28/B66	B1/B2/B5/B8	850/900/1800/ 1900 MHz

#### Bluetooth:

Bluetooth 5.1 @ 2.4GHz



## Installation Planning

### Safety, Reliability, and Accessibility

- Use eye protection when using a drill/performing work that may be hazardous to the eyes.
- Use ear protection in noisy work areas.
- Wear appropriate clothing/uniforms and safety shoes.
- Maintain three points of contact when climbing in and out of cab.
- Make sure you know what is behind the area before you drill.
- Install equipment so it will not cause damage to the vehicle or work loose over time.
- Make sure there are no loose components/cables and no unsecured components.
- Use solid mounting surfaces.
- Route all cables away from hot or abrasive areas.
- Choose installation locations where components can be easily serviced.
- Choose installation locations where components are safe from tampering and damage

## IMPORTANT SAFETY INFORMATION

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### **WARNING**

*Do not locate the product where it obstructs the driver's field of vision, distracts the driver from the driving task, interferes with the driver's operation of controls or displays, or creates a safety hazard. Follow all laws and regulations governing the placement of equipment and mounts.*

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### **DO locate the product where:**

- it can be safely installed on a secured bracket that is robust enough to minimize any vibration and sustain the weight of the product.
- the mounting surface is strong enough to support the mounting hardware.
- the mounting surface is flat.
- it does not block the view of the road or mirrors.
- the surrounding area is clear of dash controls and gauges.

- it does not limit a passenger's leg room or block access to any other compartments.
- it does not interfere with anyone entering or exiting the vehicle cab.
- it is not likely to impact the driver or passenger in case of an accident or collision.

***MAY CONTAIN U.S. AND INTERNATIONAL EXPORT CONTROLLED INFORMATION***

**DO NOT locate the Product where it:**

- obstructs the driver's field of vision.
- distracts the driver from the driving task.
- interferes with the driver's operation of controls or shifting.
- obstructs moving parts of the vehicle, if any.
- blocks the deployment of an airbag.

**Additional information for selecting an installation location:**

- Installations should not obstruct the driver's field of vision while operating the vehicle, and should comply with all applicable federal and state laws and regulations regarding
- appropriate installation locations (including restrictions against the mounting of objects on a vehicle's windshield) and driver distraction.
- Consider the owner's preference in selecting the installation location and whether there is a team or a single driver.
- Once a suitable location is selected, verify that there is nothing behind the mounting surface that might be damaged by drilling holes.

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**WARNING**

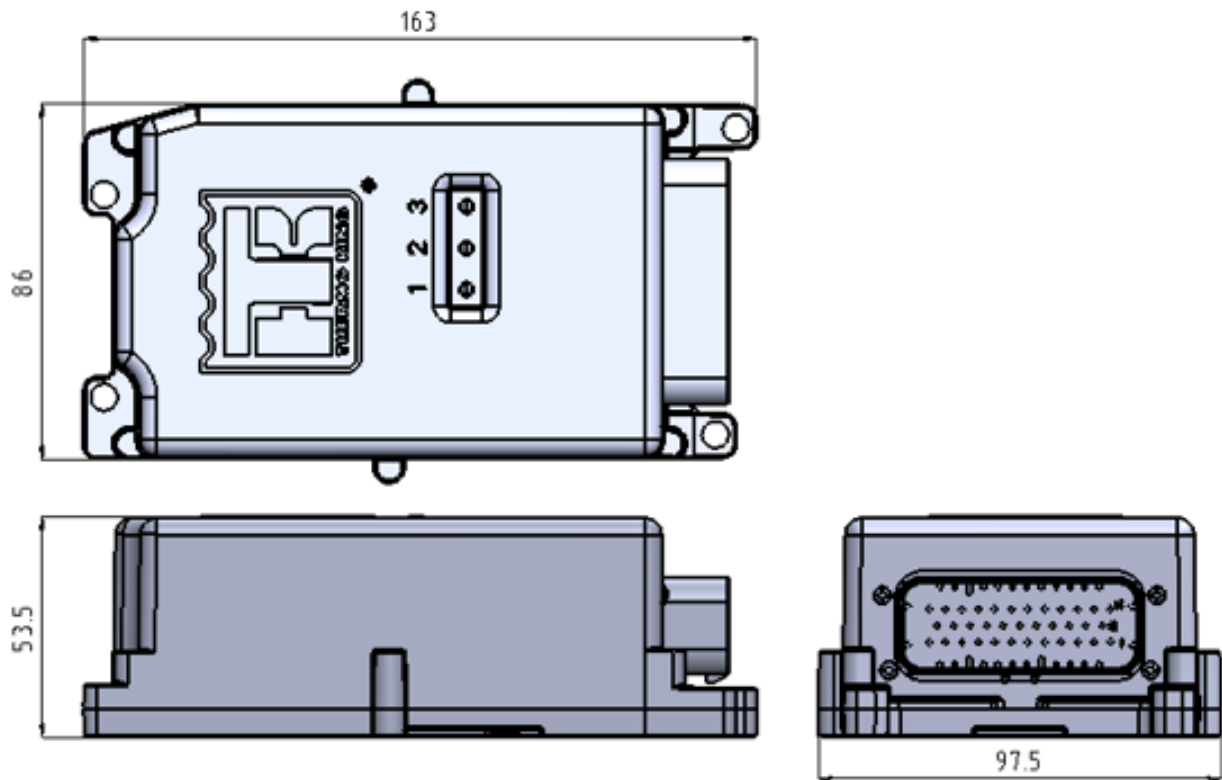
*Excess cable can be a tripping hazard. Ensure cable is not draped where it will interfere with either the driver or passenger as they move within the cab.*

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## Mounting:

Mounting Screw Locations.

There are a total of 4 mounting screw holes, one at each corner.



Units are in millimeters.