

Smarttrig BT



User Manual



Smarttrig BT User Manual

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1 Introduction

The Smarrtrig BT is a dual (SPP/EDR and BLE 1M) Bluetooth transceiver module from Pointguard with multiple triggers and RS232 serial interface. As a Bluetooth module it is the link between mobile devices (such as tablets and mobile phones) and hardware with serial communication, such as digital roof lights (Figure 1), taximeters (Figure 2), printers etc. The Smarrtrig BT can also be used as a trigger, that reads state changes on up to 5 inputs and then sends different serial commands over Bluetooth, RS232, or both based on these inputs.

Part No: EP-BTM-ITOP-6 - Bluetooth BLE Classic module iToplight

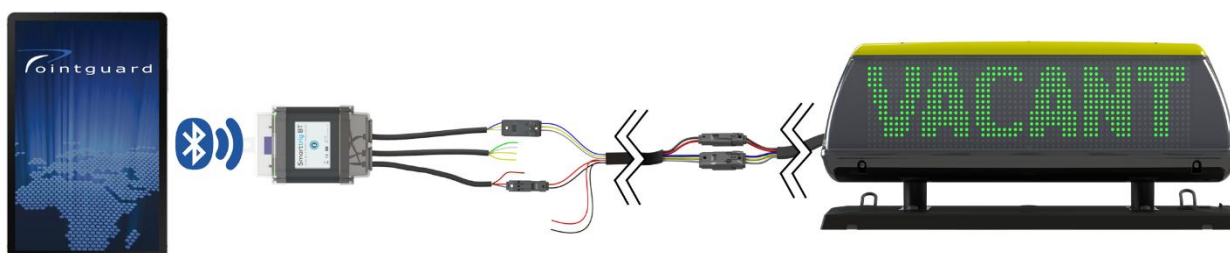


Figure 1 Example setup of the Smarrtrig BT with a taximeter app and a digital taxi roof light.

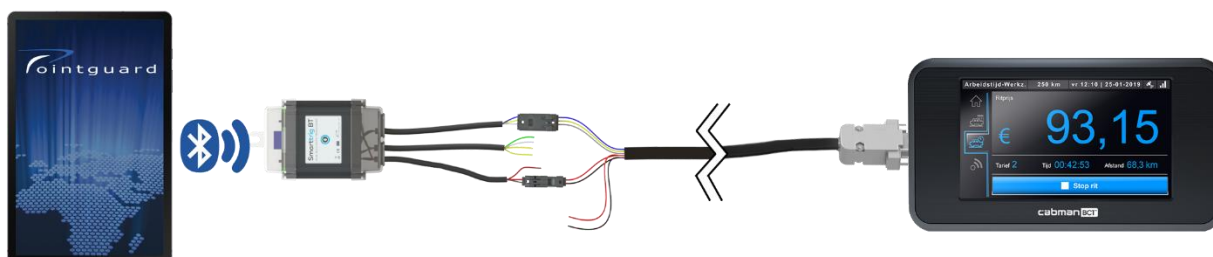


Figure 2 Example setup of the Smarrtrig BT with a fleet management system app and a taximeter.

2 Overview

2.1 Pinout

Figure 3 shows the rear side of the Smarttrig BT with the different parts and connectors, which are described in Table 2-1.

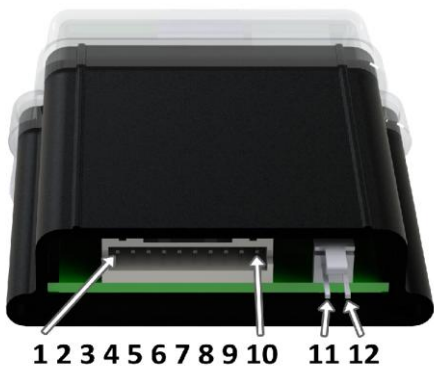


Figure 3 The Smarttrig BT pinout

Table 2-1 Smarttrig BT pinout

Pin	Description
1	+V Power In
2	GND Input
3	Trigger 1
4	Trigger 2
5	Trigger 3
6	Serial GND
7	TX
8	RX
9	Trigger 4
10	Shut off delay trigger
11	Trigger 0, V feed
12	Trigger 0, V sense

2.2 SPP/EDR vs BLE switch

Figure 4 shows the switch that is used to select Bluetooth mode (BLE or SPP/EDR), the firmware update position and how to activate/ deactivate the shut off delay trigger. Figure 5 shows the position of the indicator LED. Table 2-2 describes the LED patterns and their meanings.

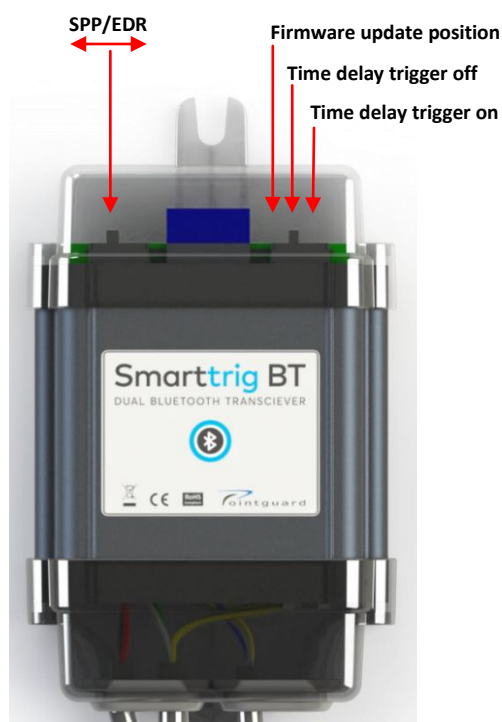


Figure 4 BLE vs SPP/EDR Switch.

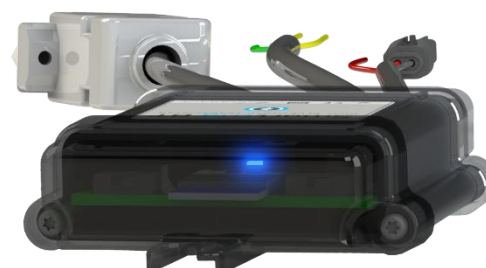


Figure 5 Indicator LED.

Table 2-2 LED patterns and their meanings

Pattern	Description
Constant light	Connected to power
Slow flashing (60 flashes / minute)	Has received a pairing request and is waiting to receive correct password.
Fast flashing (120 flashes / minute)	Pairing established and RS232 connection is active

3 Cable Sets and Pinouts

3.1 Cable sets

Depending on the application, Pointguard equips the Smarttrig BT with different cable sets. Some of these cable sets feature a DB9 connector for serial communication, while other have custom connectors. Some of the more common cable sets are listed below with more details on pinout and cable colors.

Pointguard can also customize a cable set to your requirements.

3.2 Default cable set for iToplight (Molex 2p + Molex 3p)

The default cable set for Pointguard's iToplight taxi signs is equipped with a two-pin Molex Mizu P25 connector (for power and ground), a three-pin Molex Mizu P25 connector for serial communication with the and 4 open wires for default triggers.

Figure 6 Default cable set for iToplight taxi lights.

Table 3-1 Specification of cables and connectors for the Smarttrig BT iToplight cable set



Key	Connector	Color	Description
A	Molex 2-pin	Red	+V In
	Molex 2-pin	Black	GND In
B	Open wire	Dark red	Shut off delay trigger
C	Open wire	Yellow	Loop trigger
	Open wire	Yellow	Loop trigger
D	Open wire	White	Trigger for Vacant / Hired iToplight V.2
E	Open wire	Green	Trigger for Vacant / Hired iToplight V.1
F	Molex 3-pin	Gray	GND
	Molex 3-pin	Yellow	Serial, TX
	Molex 3-pin	Blue	Serial, RX

3.3 Default cable set for taximeters

The cable set most used when connecting the Smarrtrig BT with taximeters is shown below. It has a power input cable with Molex connectors for quick and easy maintenance. It is equipped with a male 9 pin D-sub with a standard RS232 pinout, see Figure 7 and Table 3-2 for details.



Figure 7 Cable set with male 9-pin D-sub.

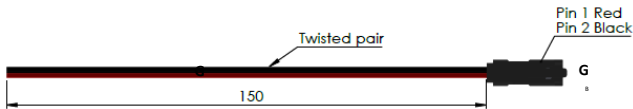


Table 3-2 Cable set connectors and pins

Key	Connector	Color	Description
A	Molex 2-pin	Red	+V In
	Molex 2-pin	Black	GND In
B	Open wire	Dark red	Shut off delay trigger
C	Open wire	Yellow	Loop trigger
	Open wire	Yellow	Loop trigger
D	Open wire	White	Trigger for Vacant / Hired iToplight V.2

E	Open wire	Green	Trigger for Vacant / Hired iToplight V.1
F	DB9 male with locking nut		
	Pin 5	Gray	GND
	Pin 3	Yellow	Serial, TX
	Pin 2	Blue	Serial, RX
G	Extension cable with Molex 2 pin connector		

4 Installation

4.1 Intro

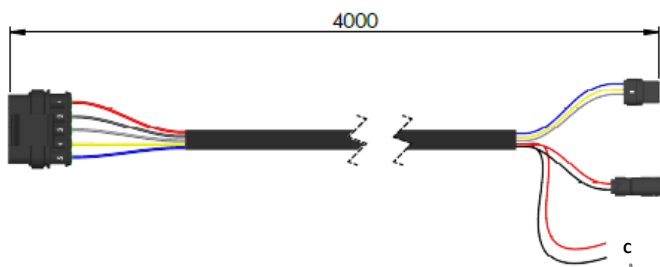
The Smarrtrig should be connected to a 5-24V power source. We highly recommend that the Smarrtrig is connected in a way that makes it possible to reboot power in a simple way. This can, for example be a power switch or If the device that the Smarrtrig BT is connected to also has the ability to control the power logic. For example, if the Smarrtrig is used to transfer taximeter data and the taximeter has an output that can be configured to turn on at login this is a good option. The reason for this is that, if the connection between the Smarrtrig and the Bluetooth masters is interrupted by external sources, the Smarrtrig might need a reboot to be able to reconnect.

The detailed steps of the installation depends on which product the Smarrtrig is installed with and which cable set is used. Two of the most common use cases are described below.

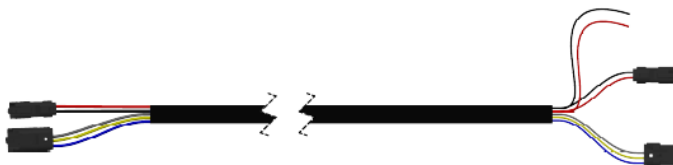
4.2 Connect to iToplight

The two cables below are used to connect to the iToplight.

Part number: KAB-AMP-HA



Part number: KAB-MX2-MX2



- Connect Smarrtrig power connector **A** → iToplight cable connector **A**.
- Connect Smarrtrig serial connector **F** → iToplight cable connector **B**.
- Both iToplight and Smarrtrig will be powered through iToplight cable open end wires **C**.

For more detailed information about how we recommend powering the iToplight see the iToplight installation manual.

If you want the Smarrtrig to automatically trigger Vacant and Hired status from the taximeter connect as below.

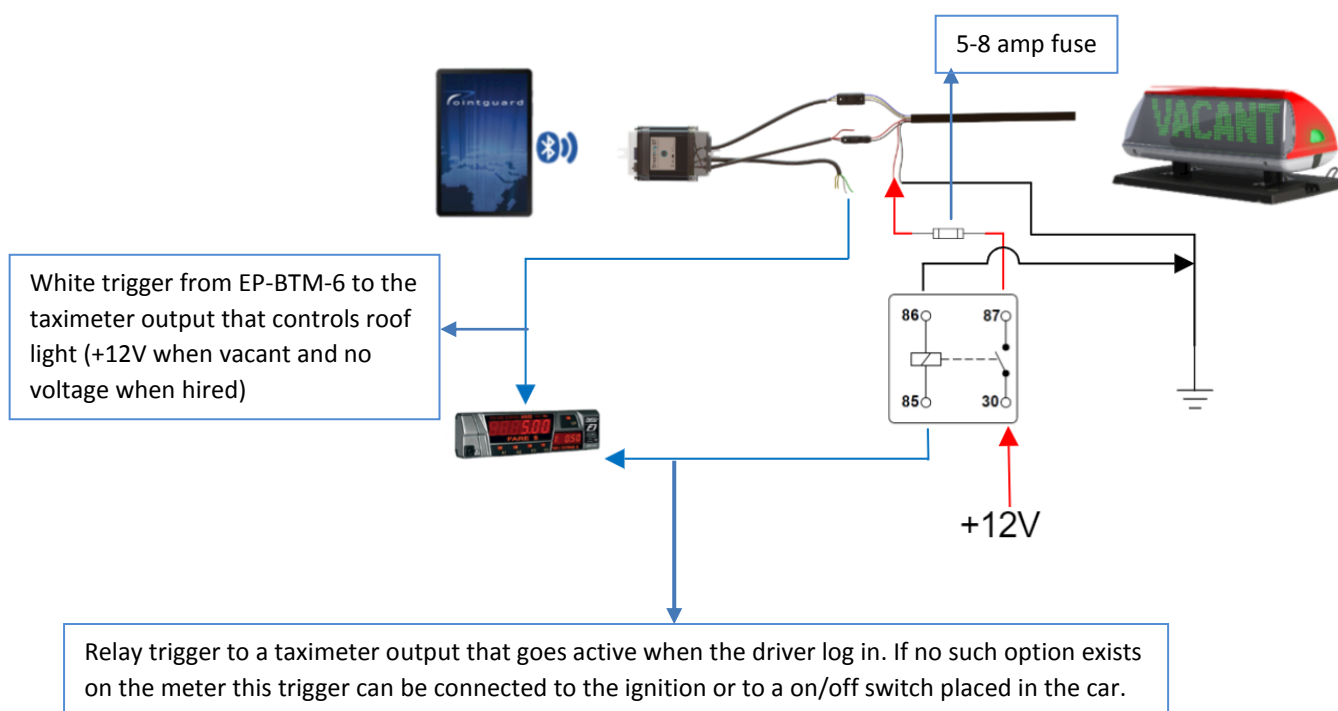
If you are connecting to iToplight version 1.

- Connect Smarrtrig cable **E** (green color) to the taximeter output that has voltage when meter status is Vacant and no voltage when meter status is Hired.

If you are connecting to iToplight version 2.

- Connect Smarrtrig cable **D** (white color) to the taximeter output that has voltage when meter status is Vacant and no voltage when meter status is Hired.
- If an alarm button is used, connect it to Smarrtrig cables **C**.

Example diagram of connection to an iToplight version 2.

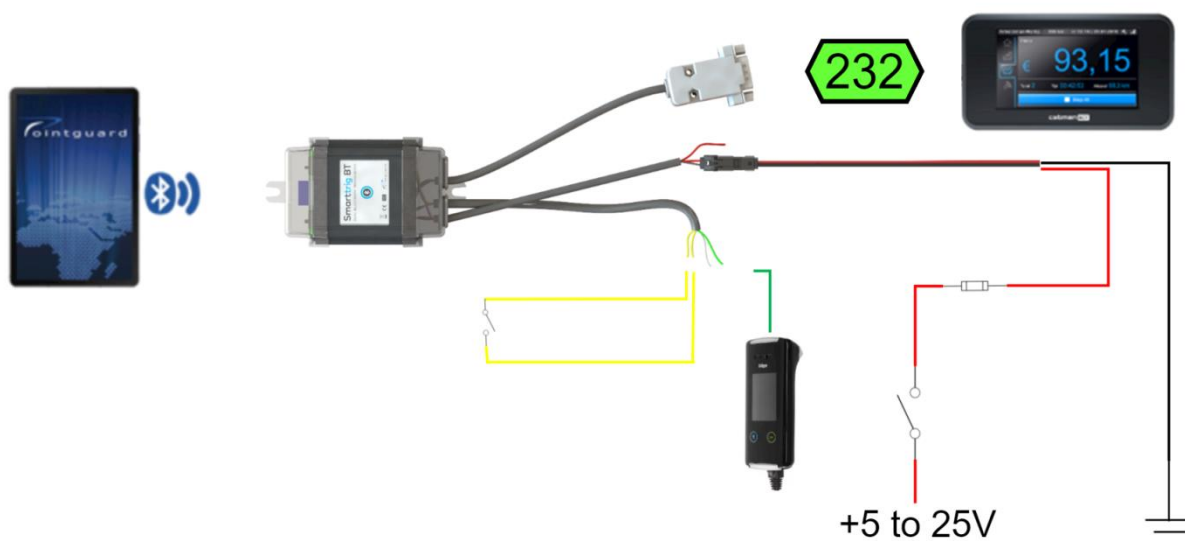


4.3 Connect to a taximeter



- Connect Smarrtrig extension cable **G** → to 5-24V power via a switch or other connection point that can be remotely turned on/off if a reboot is needed.
- Connect Smarrtrig power connector **A** → iToplight extension cable **G**.
- Connect Smarrtrig serial connector **F** → Taximeter serial port.
- If you want to connect an emergency button, trigger cables **C, D and E** can be used depending on your preferred setup. Please see section 9 for information on how the triggers can be connected.

Example diagram of connection to a taximeter with emergency trigger button using loop trigger and breathalyzer triggering failed test message.



4.4 Perform Tests

After the installation is complete test by performing below steps. If any of the steps are failing, see section 10 for more information on how to troubleshoot.

- Turn on power to the Smarttrig → status led will flash 5 times when Smarttrig is initializing then show a constant light.
- Scan for available Bluetooth modules on the device you want to pair → check that iTopxxxx (your serial number on back of the Smarttrig, see picture) is visible in available devices.
- Pair with the Smarttrig.
For Bluetooth classic users, pair in the operating system by choosing your iTop serial number → Smarttrig status led will start flashing slowly indication that a pairing request has been received and a 45v second pairing window has been opened. Enter pin 1234 before the 45 se window has closed to pair.

For Bluetooth BLE users, open the app that will connect to the Smarttrig and follow the instructions on how to pair.
- Start the app and connect to the Smarttrig. When the connection is established the Smarttrig status led should have a fast-flashing light.
- Send data from the app and check that it is received by the connected unit.
- Send data from the connected unit and check that it is received by the app.
- If a trigger has been connected, activate the trigger and check that the expected behavior is achieved.

If all above steps are ok the installation is successful.

5 Communication

5.1 Intro

The Smarrtrig BT communicates via Bluetooth, both Bluetooth Classic EDR (BT2) and Bluetooth 4.2 (Bluetooth Low Energy /BLE). Below are the default values needed for the serial communication with the module.

5.2 Default values

The default values that the Smarrtrig BT module uses for serial communication are:

Supported profiles: BR/EDR-SPP, LE-GATT

Baud rate: 230 400 bps

Data bit: 8

Parity: None

Stop bit: 1

Flow control: none

Device name: itopxxxxxx (xxxxxx is last 6 characters in MAC id)

SPP/EDR Pin: 1234 (to add an extra level of security with unique PIN see more info in section 6)

5.3 Data length limits and transfer speeds

The data rate of Bluetooth 4.2 can be up to 2Mbps. However, the Smarrtrig BT has an internal baud rate of 230 400 bps, so the used transmission must be kept below this to avoid data loss. Also for data transferred through the serial interface, it must be made sure that the data speed of what is transmitted in to the Smarrtrig BT through the BT interface does not exceed the data speed (baud rate) of the serial interface for outgoing data. Otherwise, the internal buffer of the Smarrtrig BT, which is 10 kb, will be overflowed and data will be lost. Depending on your baud rate settings the time interval between transmissions must be adjusted so that the data stored in the buffer can be forwarded to the serial port before it receives the next transmission.

When communicating with Pointguard's iToplight the Baud rate through the serial interface is 230 400 bps and this transmission speed can therefore be used in both directions.

5.3.1 From Bluetooth device, via Smarrtrig BT, to serial port

When sending data from a Bluetooth device, through the Smarrtrig BT to the serial port we recommend that you **send 5000 bytes with 100 ms interval**. If a baud rate below 230400 is used time interval and chunk size must be calculated accordingly.

5.3.2 From serial port, via Smarrtrig BT, to Bluetooth device

When data is sent from the serial port, through the Smarrtrig BT to a Bluetooth device (tablet, etc) we recommend that you **send 5000 bytes with 100 ms interval**. If a baud rate below 230400 is used time interval and chunk size must be calculated accordingly.

6 Pairing when in EDR/SPP mode

6.1 Intro

The below section describes how to connect the Pointguard Bluetooth RS 232 transceiver with a remote client application (RCA) running on Android, IOS or PC.

6.2 Pairing process

Pairing should first be done in the operating system. Android developer guidelines

<https://developer.android.com/guide/topics/connectivity/bluetooth>

Using this version the user is only required to enter default pin 1234 in the operation system to pair with the device.

6.3 Pairing Process increased security mode

1. Pairing should first be done in the operating system using pin code 1234. Android developer guidelines <https://developer.android.com/guide/topics/connectivity/bluetooth>

2. When the RCA establishes contact for the first time, the BT module will initiate a 45 sec authentication window and send a pin code request according to the format below (BT module will have slow flashing light).

3. Depending on the security level needed the RCA can automatically return password or display a keyboard which allows user to input password and send. Password should be sent according to the format below. This procedure only needs to be made first time the BT module is paired with a new device. BT module will then store the device MAC id and then allow future communication without asking for password.

Table 6-1 Pairing request initiation (sent from Smarttrig BT to RCA)

Type	Description	Possible Values
String	BT module Authentication request	"Please input password"

Table 6-2 Pin code submission (sent from RCA to Smarttrig BT)

Type	Description	Possible Values
String	Pin code to get access to RS232 communication through the BT module	"PinCode:3887" or "PinCode:xxxx21" where xxxx is last 4 characters of BT module Mac ID.

Table 6-3 Pairing acknowledgement (sent from Smarttrig BT to RCA)

Type	Description	Possible Values
String	Pin code correct	"Ack:PinCode:0"
String	Pin code not correct	"Ack:PinCode:1"

7 Pairing in BLE Mode

7.1 Pairing Process

1. Pairing should be done using Bluetooth LE – GATT profile

Scan for available Bluetooth LE devices.

IOS guidelines: <https://developer.apple.com/bluetooth/>

Android guidelines: <https://developer.android.com/guide/topics/connectivity/bluetooth-le#java>

7.2 Pairing Process Increased security Mode

1. When user has chosen BT module and the RCA establishes contact for the first time, the BT module will initiate a 45 sec authentication window and send a Pin code request according to below Format (BT module will have slow flashing light).

2. Depending on the security level needed the RCA can automatically return a password or display a keyboard which allows the user to input password and send. Password should be sent according to the format below.

Table 7-1 Authentication request string (sent from Smarttrig BT to RCA)

Type	Description	Possible Values
String	BT module Authentication request	"Please input password"

Table 7-2 Authentication code (should be sent from RCA to Smarttrig BT to pair)

Type	Description	Possible Values
String	Pin code to get access to RS232 communication through the BT module	"PinCode:3887" or "PinCode:xxxx41" where xxxx is last 4 characters of BT module Mac ID.

Table 7-3 Authentication confirmation response (sent from Smarttrig BT to RCA)

Type	Description	Possible Values
String	Pin code correct	"Ack:PinCode:0"
String	Pin code not correct	"Ack:PinCode:1"

8 Configuration commands

8.1 Overview of available commands

After having paired with the Smarttrig BT, the module supports several configuration and setup commands. An overview of these is given in Table 8-1.

Note: All commands are sent as plain ASCII encoded text without [CR] and [LF].

Table 8-1 Overview of configuration commands supported by the Smarttrig BT

Function	Command
Sets baudrate	SET:BaudRate:
Reads baudrate	READ:BaudRate
Reads firmware version	READ:FWVersion
Scans status of triggers after boot up and send programmed message	SET:ScanTriggerOnBoot:
Reads scanned triggers	READ:ScanTriggerOnBoot
Sets trigger event logic	Contact Pointguard for protocol
Reads trigger event logic	Contact Pointguard for protocol
Sets trigger message content	Contact Pointguard for protocol
Reads trigger message content	Contact Pointguard for protocol
Sets status message	Contact Pointguard for protocol
Reads status message	Contact Pointguard for protocol
Sets a delay before trigger sends the stored message	Contact Pointguard for protocol
Reads trigger delay	Contact Pointguard for protocol
Customizes the response that will stop a trigger message if “stop on reply” is activated.	Contact Pointguard for protocol
Reads the customized “stop on reply” message	Contact Pointguard for protocol
Command used to stop trigger message if a custom	Contact Pointguard for protocol

message has been set.	
Renames Smarttrig BT	Contact Pointguard for protocol
Resets Smarttrig BT name back to default iTopxxxxx	Contact Pointguard for protocol
Sets delayed power off if shut off delay trigger is used.	Contact Pointguard for protocol
Reads shut of delay trigger	Contact Pointguard for protocol

8.2 Set baudrate

The baud rate of the Smarttrig BT module can be configured and Table 8-2 describes the command that is used for this, while Table 8-3 describes the answer that the module will send to this command.

Table 8-2 Command to set baud rate

Type	Description	Possible Values
String	Change serial port baud rate	SET:BaudRate:"xxxxxx" "xxxxxx" can be following values. 9600,14400,19200,38400,56000,57600,115200,230400,460800,921600

Table 8-3 Response to SET:BaudRate command

Type	Description	Possible Values
String	Acknowledgement to SET:BaudRate command	Ack:BaudRate:xxxxxx
		Error:n n=0 value error n=1 set baudrate failed

Example 1

Application: SET:BaudRate:38400

Smarttrig BT: Ack:BaudRate:38400

Example 2

Application: SET:BaudRate: 115200

Smarttrig BT: Error:0

Read baudrate

To read the configured baud rate, use the command `READ:BaudRate` as described in Table 8-4. The response from the Smarttrig BT module to this command is listed in Table 8-5.

Table 8-4 Command to read the programmed baud rate

Type	Description	Possible Values
String	Read programmed baud rate	READ:BaudRate

Table 8-5 Response to `READ:BaudRate` command

Type	Description	Possible Values
String	Acknowledgement	Ack:READ:BaudRate:xxxxxx where xxxxx is the baudrate value

Read baud rate - Example

Below is an example of how to read the programmed baud rate from the Smarttrig BT:

Application: `READ:BaudRate`

Smarttrig BT: `Ack:READ:BaudRate:38400`

8.3 Read Firmware version

To read the current firmware of your Smarttrig BT module, use the command `READ:FWVersion` as described in Table 8-5 and Table 8-7.

Table 8-6 Command used to read the current firmware version

Type	Description	Possible Values
String	Read firmware version	READ:FWVersion

Table 8-7 Response from the Smarttrig BT to the READ:FWVersion command

Type	Description	Possible Values
String	Acknowledgement	Ack:READ:FWVersion:xxxxxx where xxxxxx is a string describing the name of the current firmware version

Example - Reading the Firmware version

Example that will read out the current firmware version of the module:

Application: READ:FWVersion

Smarttrig BT: Ack:READ:FWVersion:XYZ

8.4 Scan trigger on boot up

When the Smarttrig is booting up it takes 5 seconds before it has completed its initialization sequence. If the Smarttrig receives a trig during these 5 seconds, it will not “react” and send the corresponding message. By activating the ScanTriggerOnBoot function (see Table 8-8 and Table 8-9) the Smarttrig will scan the inputs of your choice after boot up has finished and send the programmed message.

Table 8-8 Command to set

Type	Description	Possible Values
String	Scans status of triggers after boot up and send programmed message	SET:ScanTriggerOnBoot:xxxxx x=0, Do not scan this trigger. Default value. x=1, Do scan this trigger, if it is at high/low voltage, do action that defined by voltage H/L condition in TriggerEvent.

Table 8-9 Response to SET:ScanTriggerOnBoot command

Type	Description	Possible Values
String	Acknowledgement	Ack: SET:ScanTriggerOnBoot:xxxxx
		Error:TriggerMaskLengthIncorrect Error:InvalidParameter

Example – Set ScanTriggerOnBoot

Example that will read set which triggers to scan at boot up.

Application: SET:ScanTriggerOnBoot:10010

Smarttrig BT: Ack: SET:ScanTriggerOnBoot:10010

8.5 Read triggers on Boot

To find out which triggers that are scanned after boot up use the bellow command.

Table 8-10 Command to set

Type	Description	Possible Values
String	Read scanned triggers on boot	READ:ScanTriggerOnBoot

Table 8-11 Response to SET:ScanTriggerOnBoot command

Type	Description	Possible Values
String	Acknowledgement	Ack: READ:ScanTriggerOnBoot:xxxxx
		Error

Application: READ:ScanTriggerOnBoot

Smarttrig BT: Ack: READ:ScanTriggerOnBoot:10010

9 Triggers

9.1 Overview

The Smarrtrig BT has support for 6 hardware triggers, but depending on the version and cable set used, only some of these are available externally. As default the Smarrtrig BT cables sets supports two triggers that can be connected to outputs that gives 5 – 24V and one “loop” trigger where the Smarrtrig itself feeds the trigger voltage. While activated by triggers the Smarrtrig BT can send different commands over either the serial port to the connected equipment, or over Bluetooth to the connected application. Which strings are sent, and in which directions they are sent varies for the different triggers and is detailed in the following sections.

9.2 Activation of triggers 1 and 2

Triggers 1 and 2 are both activated when they receive a pulse which exceeds 3.5V and when the pulse goes from above 3.5V to no voltage. Input voltage is maximum 24V. In the example below you can see that triggers 1 and 2 will send a stored message every time voltage passed trigger threshold 3.5V on the way up to maximum 24V and then on the way down, see Figure 8.

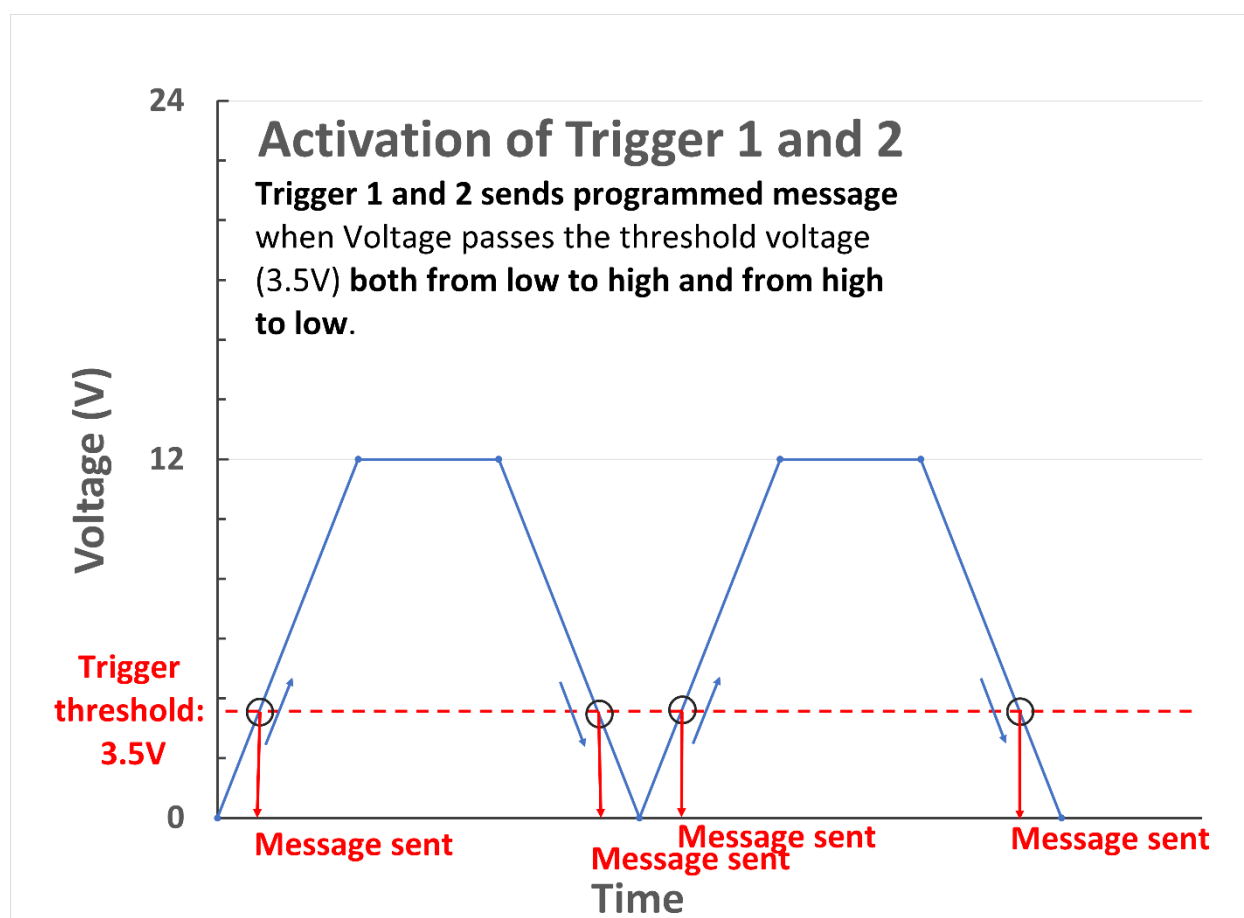


Figure 8 Illustration of Trigger 1 and 2 activation.

9.3 Trigger 1 and 2 strings and direction

When activated, the Smarttrig BT module will send the following strings as default. This string and the direction of the communication can be customized.

Trigger 1: Plain text ASCII encoded through serial port.

From low to high:

```
~C{"Type":"ShowPlaylistRequest","ShowAll":[{"CallWord":"vacant"}],"ReqNr":999999999}}|kf3
z~A|<@ÙÓz
```

From high to low:

```
~C{"Type":"ShowPlaylistRequest","ShowAll":[{"CallWord":"hired"}],"ReqNr":999999998}}|
#ò~z~A|<@ÙÓz
```

Trigger 2: Plain text ASCII encoded through serial port.

From low to high: D:1[CR]

From high to low: D:2[CR]

9.4 Trigger 0 (loop, prepared emergency trigger)

Activation

Trigger 0 is activated each time the loop between pin 11 and 12 is either opened or closed, see Figure 9.

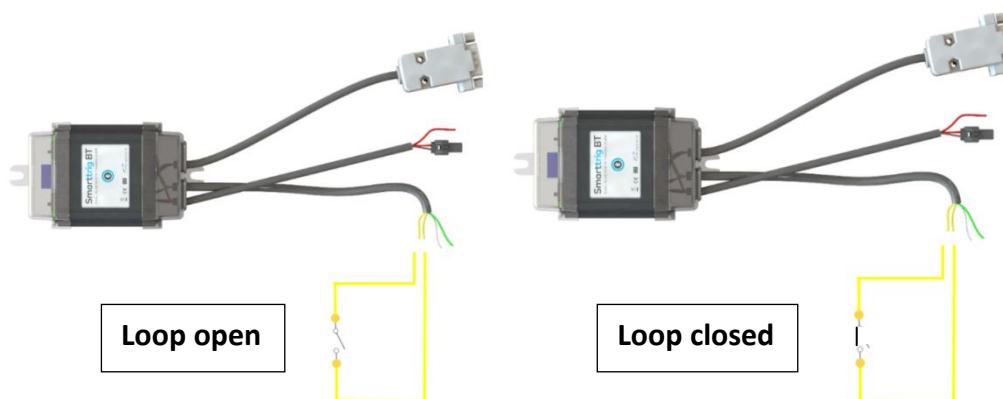


Figure 9 Illustration of how trigger 6 is activated.

Sent strings and directions

When activated the Bluetooth module will send the following strings as default. This string can be customized.

Plain text ASCII encoded to Bluetooth master.

Loop open: EmgMsg

Loop close: EmgMsg

10 Troubleshooting

10.1 Check that you have an active connection

If you have trouble communicating with or through the Smarttrig BT, the first step to take when troubleshooting is to make sure that you have an active connection. Check the status light of the module, which is visible through the front cover, see Figure 2.2. When the Smarttrig BT has an active connection over Bluetooth the LED will fast flashing (approximately 120 blinks per minute).

If you don't have an active connection, first check that you are paired with the device and then restart your mobile application.

11 Maintenance

11.1 Safety Warning

Only qualified technicians may carry out maintenance, modification or repair work on the equipment. Unqualified personnel attempting to work on the Smarttrig BT risk injury to themselves and others. Warning - Do not modify this equipment without authorization from Pointguard.

Ensure that the Smarttrig BT is not exposed to:

1. Excessive heat sources, e.g., fires, heaters, radiators, etc.
2. Water and moisture

11.2 Servicing

The Smarttrig BT itself needs no maintenance as long as it is kept dry. It is still good practice to regularly check that there are no visual signs of moisture or oxidation on the Smartlight. Also check that there are no visual signs of cables fraying or breaking.

12 Technical Data

Table 12-1 Smarttrig BT Technical Data

Part number:	EP-BTM-ITOP-6
Serial Number:	As per label on top of the unit
Electrical Supply:	5-24V DC
Power Consumption:	<0.5Watts
Protection Against Shock:	/
Operating temperature:	-40 to + 85°C
Dimensions (WxDxH):	91x55x18 mm
Range:	Up to 50 m in open space
Supported Bluetooth types:	BR, EDR, LE
Supported Bluetooth profiles:	BR, EDR-SPP, LE-GATT
Supported Baud rates:	9 600, 14 400, 19 200, 38 400, 56 000, 57 600, 115 200, 230 400, 460 800, 921 600
RF output power(Conducted):	Up to -1.0 dBm
RX Sensitivity:	-85 dBm typical

13 Technical Reference

13.1 Physical size

The physical footprint of the Smarttrig BT is:
 -Width: 91 mm, Depth: 55 mm, Height 18 mm
 as shown in Figure 10.

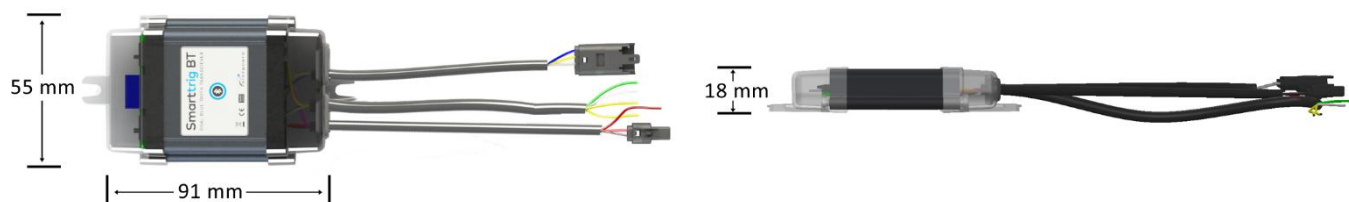


Figure 10 Physical size of the Smarttrig BT.

13.2 Power Supply

Power input: 5-24V DC

Power input Protection: Reverse polarity, ESD, TVS

13.3 Serial Communication Default Values

Baud rate: 230 400 bps

Data bit: 8

Parity: None

Stop bit : 1

Flow control: none

Device name: itopxxxxxx (xxxxxx is last 6 charchters in MAC id)

Pin: 1234 (for part number EP-BTM-C-STD-XX for other part numbers see more info in section)

13.4 General Specifications

Supported baud rates: 9600, 14400, 19200, 38400, 56000, 57600, 115200, 230400, 460800, 921600

14 Optimum Conditions

14.1 Environment Conditions for Use

Transport: -25°C - +70°C

Storage: -25°C - +70°C

Usage: -25°C - +70°C

Humidity: 10 - 93%

Atmospheric Pressure: 700hPa - 1060hPa

Operational Altitude: <5000m

14.2 Exposure

Exposure to direct sunlight, dust, lint and general debris is not considered to be an issue with this device.

15 Symbols Guide



16 Warnings and Contraindications for use

The Smarttrig BT should not be used for other purposes than the ones stated in this user manual.

16.1 General Information (Caution) (Warning)

- The product should only be installed by technicians with previous experience from installing electronic equipment in vehicles.
- The technician is responsible for applying his/her best judgement when performing the installation.
- The technician is responsible for making sure that the placement of the Smarttrig BT in the vehicle gives sufficient signal strength for the desired application.
- There are no special skills required to use/operate the product once it is installed
- The product must not be connected to other power sources than specified in this manual
- The product is not to be used in the presence of xxx.
- Do not store in damp conditions
- Not suitable for use in an Outdoor Environment
- Intended for use in vehicles
- All connected cables must be free of twists, kinks and breaks
- Do not clean the Smarttrig BT with water. If cleaning is necessary, use a dry cloth to wipe it clean
- All the above warnings and cautions together with safety considerations should be observed at ALL times during its installation and use
- This device does not emit radiation

17 Detachable/Removable Pars

1. End caps, Part No: E-SL-PH-S (right side) and E-SL-PV-S (left side)
2. Cable sets, different depending on version, see Section 3 for more details.

Caution

Use of detachable parts not listed is not recommended by Pointguard.

18 Disposal

Please refer to Pointguard's website for recommendations and responsibilities for disposal.

19 FCC STATEMENT

§ 15.19 Labeling requirements.

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.

§ 15.21 Information to user.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

§ 15.105 Information to the user.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

RF Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with minimum distance 20cm between the radiator& your body.