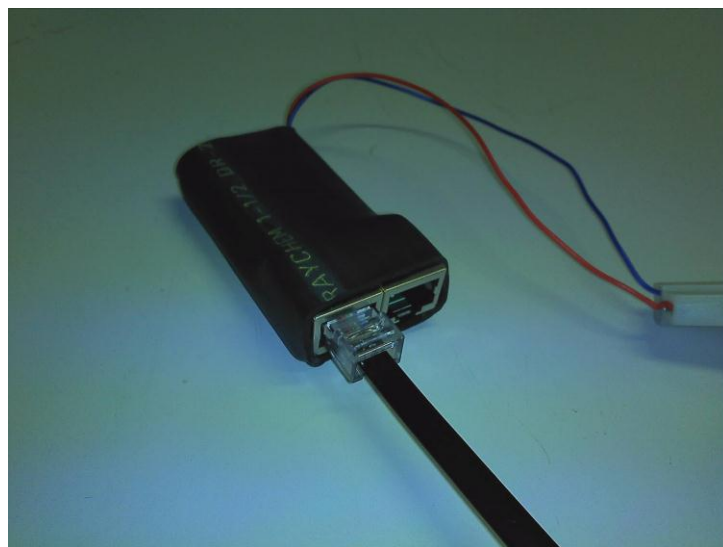
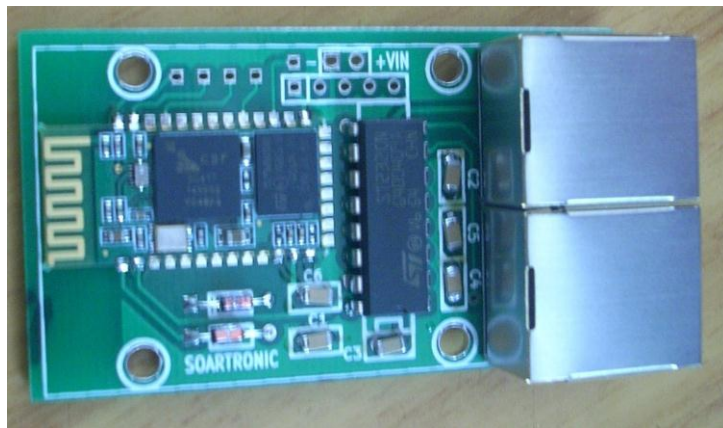


# SoarTronic Bluetooth BT1 v.1

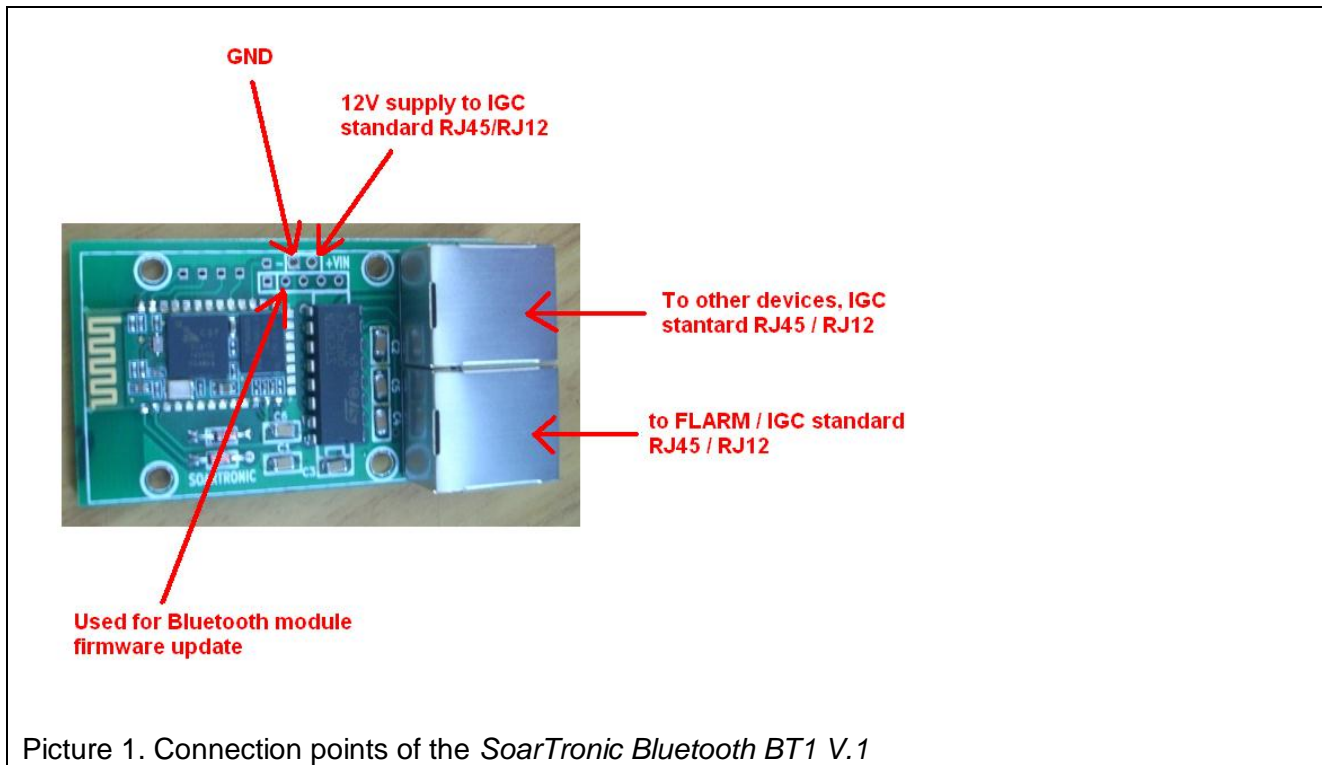
## Owners manual

This manual includes information for users of  
*SoarTronic Bluetooth BT modules*

Please note, that this device is a result of an experimental project  
and no guarantee of safety or usability can be given.  
This device is used on your own risk!



## SoarTronic - Electronics for soaring



Picture 1. Connection points of the *SoarTronic Bluetooth BT1 V.1*

### *SoarTronic Bluetooth BT1*

Device for connecting FLARM midair and obstacle collision warning system with any Bluetooth capable device over Bluetooth connection. Very simple installation - takes 3.3V operating power from FLARM unit.

This device has two IGC standard RJ45 type ports, similar as used in Ethernet networks (Picture 1). One port is designed for connection with FLARM units. Another port is designed to connect with external display, variometer, or power supply (or any other device you need to connect with your FLARM unit). Please refer to FLARM manuals for detailed description of RJ ports and cabling.

The RJ ports can be connected with 8 wire RJ45 connector (found from original Swiss FLARM, for example) or with 6 wire RJ12 connector (found from LX Navigation LX FLARM units, for example). When RJ12 connector and cabling is used, the pins 1 and 8 or the RJ45 are unused. In IGC standard RJ45 pins 1 and 2 are connected, and also pins 7 and 8 and connected together.

#### *Installation guide:*

FLARM units can supply 3.3 V operating voltage for two external display units, which each draw about 45 mA. *SoarTronic Bluetooth BT1* draws under 40mA while pairing with another device, then about 20 mA when connected. Do not connect more than 90 mA load into the FLARM 3.3 mA supply. That is one External display and one *SoarTronic Bluetooth BT1*.

If you have any other device connected with your FLARM unit's RJ45 port, disconnect that cable from the other unit and connect it into *FLARM* port of the *SoarTronic Bluetooth BT1*. Then take IGC standard RJ45 or RJ12 cable and connect that between the free RJ port of *SoarTronic Bluetooth BT* and the other device.

### *Bluetooth setup*

1. Open your PDA or other device and go to settings / Bluetooth / devices and start finding Bluetooth devices.
2. Start *SoarTronic Bluetooth BT1*, i.e. connect it with FLARM device that provides 3.3V to the Bluetooth. In original FLARM units use the 8 pin RJ45 connector – the other RJ12 (6 pin) is for external display only, operates on 4800 bauds (fixed) and does not transmit traffic information. In LX FLARM devices there is only one RJ12 (6 pin) connector. In LX RedBox FLARM please do not connect the device into SD card reader port.
3. When *SoarTronic Bluetooth BT1* powers up, you should see a new device appearing in the list of Bluetooth devices. Select it, and give the pairing PIN code when requested by your device. Default pairing PIN code is 1234.
4. Now your setup is done, and your Bluetooth communication should be selectable in your list of devices.
5. In XCSoar devices go to Config / Config / System Setup / Setup / Devices and select device A, B, C or D. When you select one, you can then select the port you want. Your Bluetooth device name should now be found from your list. In some cases you might see your Bluetooth device number (for example 11:12:01:12:00:38). Select your device, and set all other selections to off. Please note, that the GPS information used by XCSoar is selected in alphabetical order, and if you have several connected, you can here set the priority of usage.

In other devices/flight computer programs please refer to the manual for instructions.

You might need to wait up to one minute until XCSoar gets the Bluetooth device connected.

### *12V supply*

*SoarTronic Bluetooth BT1* has *Vin* input for 12V and ground (GND) (Picture 1). These connection points are directly connected with IGC standard RJ45 connectors pins 1,2 and 7,8, or if RJ12 connector is used, into pins 1 and 6. This 12V is NOT used by *SoarTronic Bluetooth*. Please make sure, that you do not have 12V supplied into the RJ cables from other devices, and that this 12V is not from other potential!

### *Connecting two RS232 lines into FLARM RX line*

Many splitter units used to connect FLARM devices with PDA and display unit has a Declare/Display switch build-in. This switch is needed, because two devices sending RS232 information cannot normally be connected parallel into one RS232 line. *SoarTronic Bluetooth BT1* has build-in electronics, that makes it possible to declare (and download logger files) from FLARM unit without disconnecting display. However, it is not possible to send data from two devices simultaneously. This does not cause problems in normal use, since operating display units is not normally needed during declaration or file download.

*Technical data:*

Power supply:	3.3 V (3.0 – 3.6 V)
Power consumption	<40mA / 3.3 V
RS232 communication speed	19200 bauds (adjustable using AT commands)
Bluetooth type	Class 2.0 / 10 meters range
Bluetooth device name	User defines OR SoarTronic_BT1 (standard units)
Bluetooth pairing PIN	User defined OR serial number (standard units)

*SoarTronic Bluetooth BT* is set up for 19200 baud communication speed. The communication speed can be changed, however it is not easy to setup the programming connection. There is also a risk of locking to module, and therefore baud-rate setting is not explained in this manual. Also the Bluetooth module firmware can be updated.

*Troubleshooting*

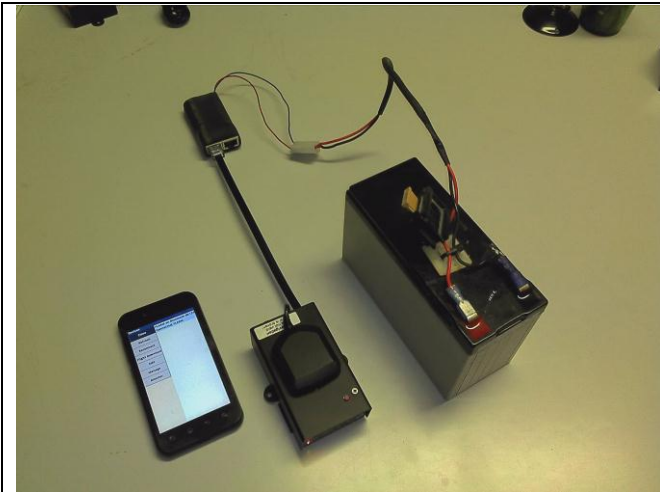
*SoarTronic Bluetooth BT1* does not have any indication if it is working or not. This is because one LED lamp consumes about 8 mA of current, and *SoarTronic Bluetooth BT* should consume same or less than External Display unit. The FLARM units are built to supply 2 external displays, which consume together 90-100 mA. *SoarTronic Bluetooth BT* can be connected with FLARM unit in parallel with one (1) external unit only.

Each *SoarTronic Bluetooth BT1* module has been manually programmed for 19200 baud-rate and BT name & PIN code. That means that their operation has been tested, and if it does not show in your device's Bluetooth set-up menu, it is likely that the *SoarTronic Bluetooth BT1* does not get the 3.3V supply from the FLARM unit. Please double-check your wiring. Please refer to FLARM manual for IGC standard RJ45 and/or RJ12 pinout.

If *SoarTronic Bluetooth BT1* is visible in the Bluetooth device setup menu of your device's operating system, but your flight computer SW does not recognise it, or you are receiving odd characters (XCSoar Config / Gonfig / Config / Devices / monitor) instead of valid NMEA sentences, please make sure that your FLARM device is set-up to send data over 19200 baud-rate.

*Trademarks:*

FLARM is trademark of Flarm Technology GmbH.  
RedBox and MiniBox are trademarks of LX Navigation.



Picture 2. 12V supplied via BT1 module using build-in 12V/GND connection points. BT1 module is powered by 3.3V supplied by the FLARM unit



Picture 3. 12V supplied via RJ45/RJ12 splitter build-in into the BT1 module. BT1 module is powered by 3.3V supplied by the FLARM unit



Picture 4. 12V is supplied to the RedBox FLARM. FLARM units supplies 3.3V to the BT1 unit and LX External Display. PT1 units is connected between the LX RedBox and the display unit. Apologies of the messy picture.

Notes: