VFBT-1

BlueTooth RS232 adaptor with switching power supply 5V/2A

User manual

Introduction

Thank you for your purchase of the VFBT-1 module. We put a lot of care into its manufacture and we believe that it will serve you flawlessly for a long time.

The VFBT-1 module was developed to allow connection of flight recorders to the newest types of pocket computers PDA/MDA/PNA, which do not contain the RS-232 serial port. It provides a simple-to-use invisible connection, allowing for maximum freedom of movement.

With the help of this module, you can create a connection between your flight recorder and another Bluetooth serial adaptor, notebook, pocket computer, navigation device or mobile phone.

The module also helps to solve the problem of power supply for your pocket computer during the flight. It contains a high-quality built-in switching power supply (or SMPS for short) equiped with a standard type A USB plug, so you can power you pocket PC directly from the module.

Basic technical data

Measurements without brackets	: 43x48x23 mm
Measurements including brackets	: 43x64x23 mm
Weight without power cable	: 45g
Power cable length	: 1,2 m
Supply voltage	: 7 - 16 V
Power consumption (see below)	: min 18 mA, max < 60 mA (depends on mode)
5V SMPS efficiency	: 79 ÷ 82 % (depending on load)
Maximum SMPS output current	: 2,3 A
Support for detection of a designated recharge source through a connected mobile device	: Yes
BlueTooth standard	: Class 2
Working frequency	: 2,402 – 2,480 GHz
Antaenna	: internal, 2 dBm
BlueTooth range	: max 10m

Additional properties

- Reverse polarity protection
- Protection from a short-circuit on the 5V SMPS output
- Thermal fuse for protection from overload of the SMPS
- Support for dedicated power supply mode on the USB socket
- BlueTooth serial Port Profile support
- Simple installation and usage – Plug-And-Play

RS-232 interface parameters

Interface	: RJ-12
Default serial port parameters	: 4800 Bd, parity NONE, 8 data bits, 1 stop bit, NO FLOW CONTROL
Supported transfer speeds	: 4800, 9600, 19200, 38400, 57600, 115200 kBd
Connected signals	: TX, RX, GND

Parameters of RS-232 interface can be changed by module reprogramming. Reprogramming of the module can be carried out exclusively via a serial cable connected to the RJ-12 **"A"** socket. Cable connection is depicted in section dedicated to changes in the BT module settings.

Mechanical layout

The module is built into a compact plastic box with brackets and an appropriately long power cord, which allows permanent installation into the plane.

The three LED lights fitted into the module are used for signaling different operating states:

Color/State	Off	Blinking	Continuously lit
Green	Module is not powed	Malfunction	Module power is switched on.
Yellow	No serial data is coming from the flight recorder	Module is accepting serial data from the flight recorder	Large amounts of data are being transmitted of the serial link (for example downloading of a logged flight), but can also signalize a malfunction
Blue	BT module is not ready, or is malfunctioning	BT module is not connected to a paired device. It is in mode „Visible" and it is broadcasting its ID	BT module is connected to a paired device.

On the front side of the module is a one USB socket type A and two RJ-12 sockets for connecting of the flight recorder, and potentially other devices.

USB socket

The USB socket serves as a 5V power supply for PDA/MDA/PNA pocket PC's. You can use a standard USB cable, which is supplied together with the device, if it allows device recharging. The socket connected in such a way that the connected device can detect connection to a USB socket dedicated for recharging. This is a useful functionality for many PDA's and other mobile devices, because they, unless plugged into a dedicated recharge socket, it draws only very limited current from it (up to 500mA). This subsequently leads to a slow or insufficient recharge speed, to reduce of its display backlight level, and in some cases can cause underclocking of its CPU.

THE USB SOCKET DOES NOT ALLOW DATA TRANSFERS !!!

RJ-12 "A" socket

This socket is used for connecting the source of serial data, ie. flight recorder. The order and connection of outputs is identical to the LX7 cable (IGC Cable), which is used by Colibri or LX-20-2000 flight recorders produced by LX navigation company.

RJ-12 "A" socket outlet order

1	GND
2	TX - data to FR
3	RX - NMEA data from FR
4	Connected to pin 4 of socket "B"
5	Connected to pin 5 of socket "B"
6	+12 V

RJ-12 "B" socket

This socket is used for connecting another device to the flight recorder. NMEA data can be obtained through this socket for other devices, but it cannot be used to send data to the logger. As on the "A" socket, outlets for GND and +12V are available. Outlets 4 and 5 are connected in parallel to socket "A" and can be used to transfer other signals from or to the flight recorder. (Event-Marker button, LED GPS-Status, etc.)
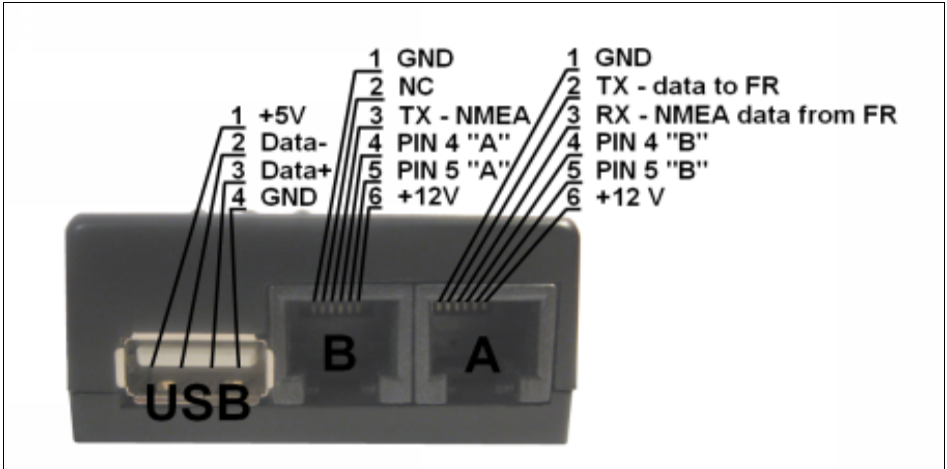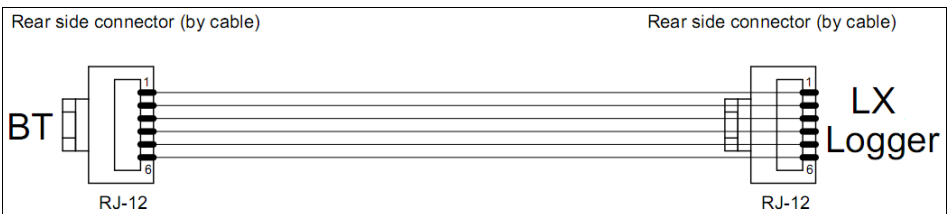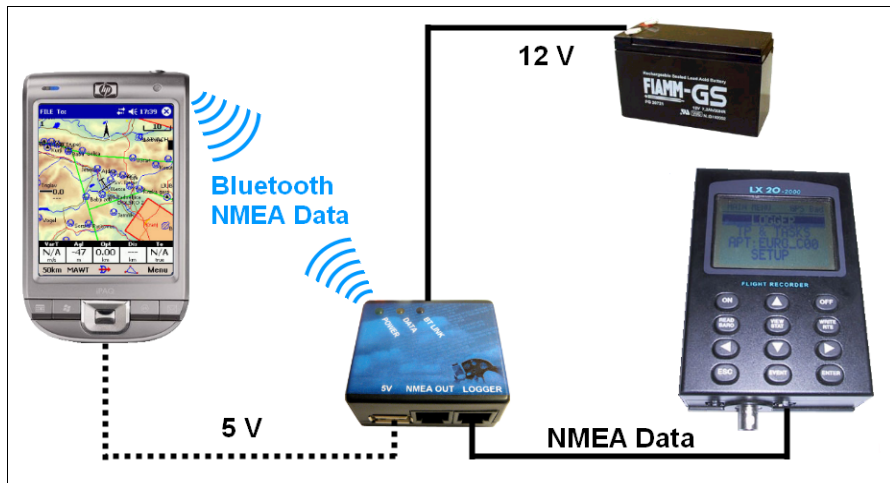

Wiring of the LX7 (IGC Cable) for example for LX 5000
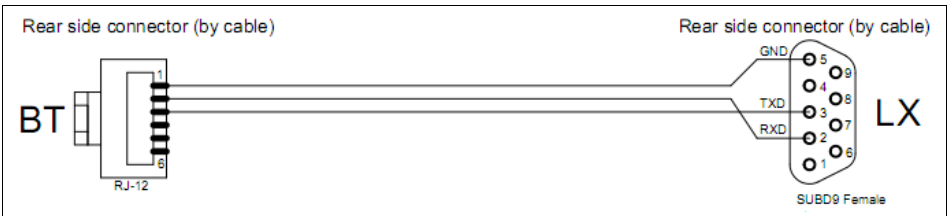
Outlets seen from the rear side, facing away from the cable

Wiring for Colibri logger, LX 20-2000

Outlets seen from the rear side, facing away from the cable

Connecting the BT module inside a plane

Simply connect the module to 12V battery and connecting to the flight recorder via RJ-12 "A" socket is sufficient for the proper functioning of the module. Optionally, you can connect a pocket PC to the USB recharging socket.

Change of BT module parameters

The default BT module parameters preset during manufacture can be reprogrammed. The device's name, PIN code used for pairing and parameters of the serial port can be changed by reprogramming. We recommend to let the manufacturer of the device perform reprogramming.

CAUTION !

IF YOU SET INCORRECT PARAMETERS, THE MODULE MIGHT STOP RESPONDING !!!
NEVER TRY TO REPROGRAM THE MODULE, IF YOU ARE NOT SKILLED AT USING "AT" COMMANDS AND IF YOU ARE NOT SURE WHAT YOU ARE DOING. YOU RISK PUTTING THE MODULE INTO A STATE WHEN ONLY A PAID SERVICE OPERATION CAN HELP!

For reprogramming of module parameters you will need:
- A serial cable to connect it to a computer, plugged into RJ-12 "A" socket.
  Attention! Wiring of this cable is not identical to the one used by loggers LX20 or Colibri for download data to a computer! Data wires are crossed inside this cable!
- A terminal application for communication over a seral port, like a HyperTerminal in OS Windows

Wiring of the cable used for BT module programming
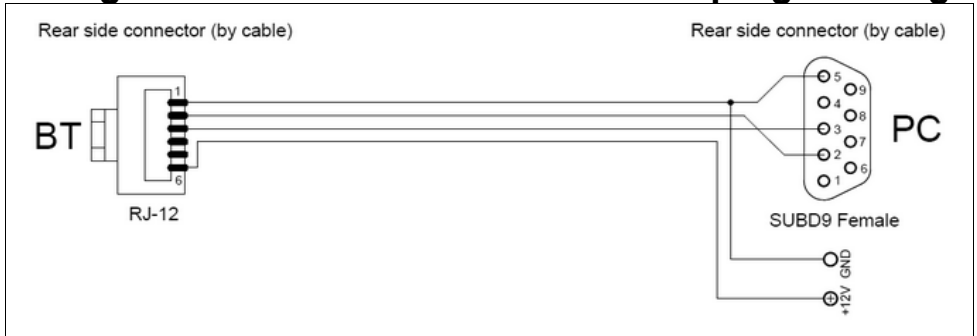
Outlets seen from the rear side, facing away from the cable

The BT module can be reprogrammed using AT commands listed in the following table:

I	**Displaying firmware information and current settings**	
	I0	Displays firmware version
	I1	Displays all current settings of the BT module
L	**Serial port connection speed settings**	
	L0	4800 Bd (default)
	L1	9600 Bd
	L2	19200 Bd
	L3	38400 Bd
	L4	57600 Bd
	L5	115200 Bd
M	**Parity bit settings**	
	M0	No parity (default)
	M1	Odd parity bit
	M2	Even parity bit
K	**Number of stop-bits**	
	K0	One stop-bit (default)
	K1	Two stop-bits
N	Device name setting For device name, you can use small and capital letters (no diacritics), numbers, space, dash and comma. The device name cannot start and/or end with a space, comma or dash.	
	N=xxx	"xxx" is a string of max. 16 characters including spaces
P	**PIN code settings**	
	P=xxxx	"xxxx" is a string of 4-8 numbers
	P0	Turns off PIN code authentization

Contact to the manufacturer

Postal address:	**GliderTools**
	Gorkeho 26
	602 00 Brno
	Czech Republic, EU
email:	sales@glidertools.com
www:	www.glidertools.com

Service and Technical Support

The requirements for any guarantee or warranty service or programming module, please contact us at below email address. In the report describe your request and most as possible technical details about the current state of the module, so that we can best assess your case and propose further steps.

email:	support@glidertools.com

Postal address:	**GliderTools**
	Gorkého 26
	602 00 Brno
	Czech Republic, EU

Procedure to set up PDA to connect BT module

Following image guide should help you set your PDA pocket PC to properly work with BlueTooth module VFBT

  The example uses Windows Mobile 6.1 (CE OS 5.2) in the English version. For other versions of the operating system can be set-up process differ. The principle of the settings remains the same and consists of the following steps:
1) device registering (BlueTooth serial port)
2) device pairing (BT module and PDA)
3) Settings of communication parameters in the used navigation program..

Descriptions:
– BT module is delivered with follows setting of the communication port:
   baud rate **4800**
   8 data bits
   1 stop bit
   parity **None**

– Flight recorder must be set to the same communication parameters as the BT module.
– BT module can be ordered with different parameters, or parameters can be reprogrammed later..
– PIN code to pair the BT module with a PDA in default setting is identical by production number of BT module and is indicated on the label on the back side of the module.
– The production number of the BT module is also indicated on the label stuck on the front page of this manual.
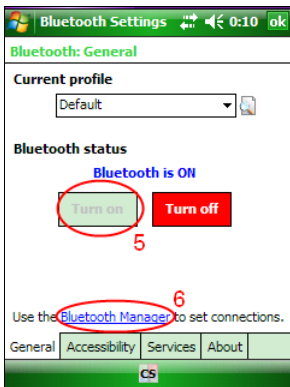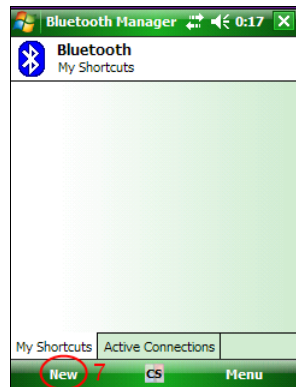– **PIN code may additionally be reprogrammed.**
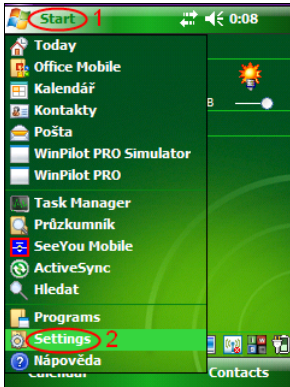
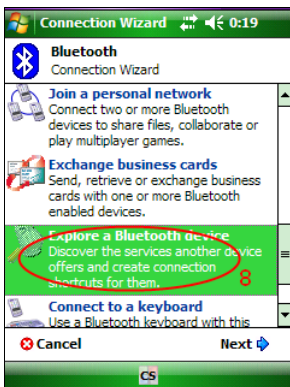In the **Start** menu(1) select **Settings** (2)
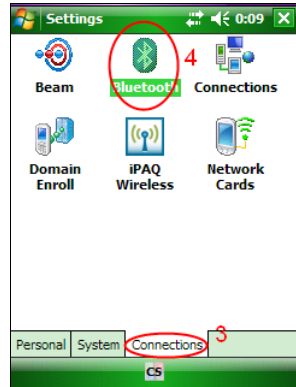
Tap on tab **Connections** (3) and then tap to icon **BlueTooth** (4)
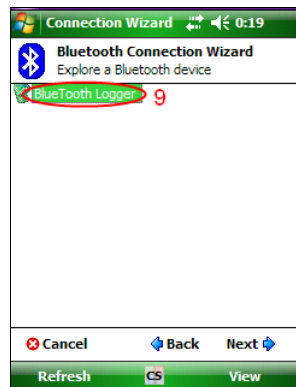

Turn on the **Bluetooth** (5) and run the **Bluetooth Manager** (6)

Bottom left select **New** from the menu (7)

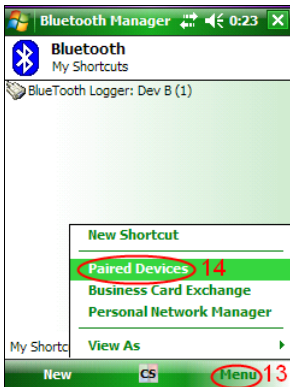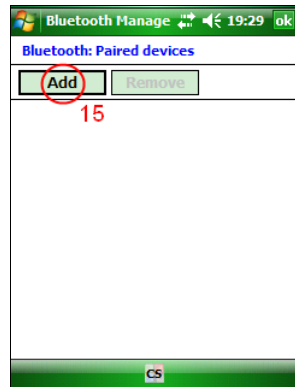From the list select **Explore a Bluetooth Device** (8)

Select **BT Logger** (9)

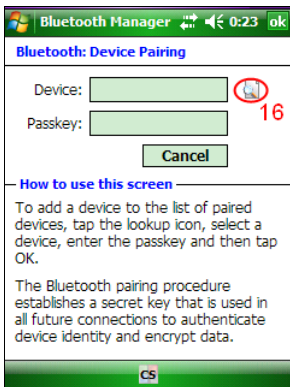Select the found serial port (10) and tap to **Next** (11)
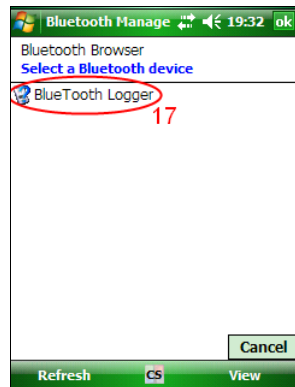
Tap **Finish** (12) to quit Connection wizard

Tap to right bottom **Menu** (13) and select **Paired Device** (14)
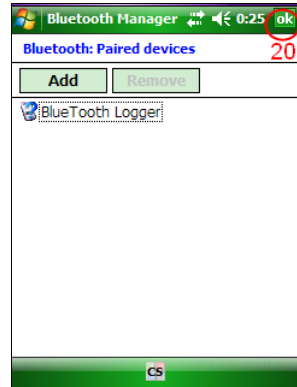
Tap to the button **Add** (15)
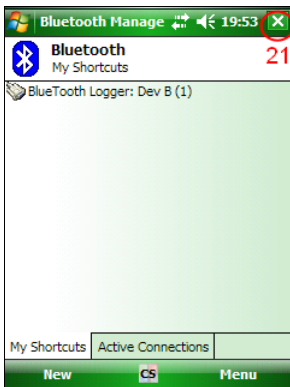
Tap to the magnifier icon (16)
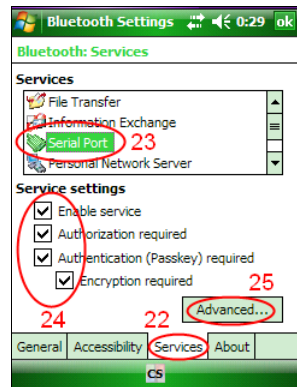
Select **BT Logger** (17)

Enter **numeric password** (18) for connection with the logger and tap to **Enter** (19)
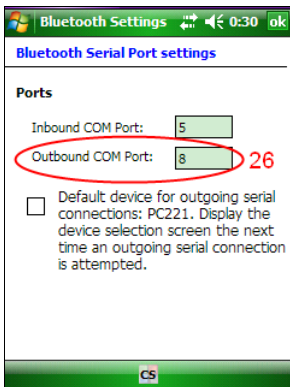
For confirm pairing devices tap to top right button **OK** (20)

tap to the '**X**' on top right to close the Bluetooth manager (21)

Below, select **Services** tab (22), from the menu select **Serial Port** (23), sure to all options is **checked** (24) and tap to button **Advanced** (25)

Remember the number of the **Outbound port** (26). This is a port from where coming data from the flight recorder (yes, outbound port, it is not a typo)
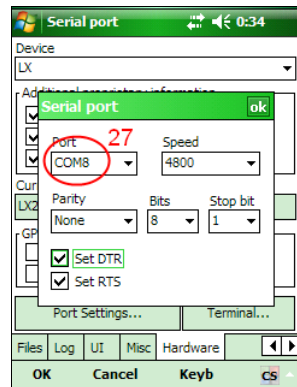
Set the same port in your navigation program settings (27). Other parameters set accordance with your flight recorder and BT module.

Important notice!

The VFBT-1 module is primarily intended for transmission of GPS data from the flight recorder. It isn't intended for purposes of management of data files that are stored into the logger's memory.

Considering that the transmission of data between PDA and flight recorder takes place without presence of RTS/CTS control signals, the own synchronization of transmission is secured only by accurate compliance of the baud rate frequency by both devices. It isn't in technical capabilities of the used technology to securely ensure the error-free transmission of huge amount of data in direction from the PDA to the flight recorder.

IN NO CASE THE MANUFACTURER DOESN'T RECOMMEND TO USE THIS BT MODULE FOR TRANSMISSION OF HUGE AMOUNT OF DATA (e.g. .CUP FILES CONTAINING LISTS OF TRACK POINTS AND TASKS, etc.) IN DIRECTION TO THE FLIGHT RECORDER.

In the moment, when the synchronization is lost, damaged binary data are transmitted into the logger. In the last resort it can prove to be a violation of data integrity in the logger's memory and cause displaying of error message about the violation of electronic fuse. This error message can be removed only by a paid service operation of manufacturer or authorized service for the specific flight recorder.

The VFBT-1 module can completely reliably fullfill its function aboard of glider on the fly. It enables you to make a flight declaration before start of the flight and to download the made flights without any problems. However, this module can't be use for management of data files that are stored into the logger's memory.

The manufacturer refuse responsibility for any damages caused by nonobservance of this recommendation.