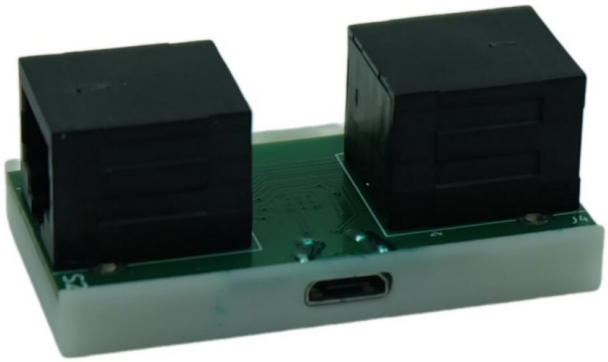
Serial-BLE-Dongle

Serie 2025



Handbook Rev 1.01

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Inhaltsverzeichnis

1. Description

Serial to Bluetooth Low Engergy (BLE) Dongle for

2. Features

- Two similar RS232 ports
- Second port to forward power and data to a second device
- Standard IGC RJ45 Pinout
- Lightweight and compact design
- Low current consumption of approximately 18 mA at 12V (0,2 W)

2.1.1. RS232 Interfaces

Two similar serial RJ45 interfaces with IGC standard pinout supporting baudrates 4800, 9600, 19200, 38400, 57600, 115200 by Autobaud, means baudrate is automatically detected. The device operates in passive (RX) or slave mode, meaning the BLEDongle will not send any data by itself (read-only). Therefore, it can be connected in parallel with other devices, such as Flarm displays.

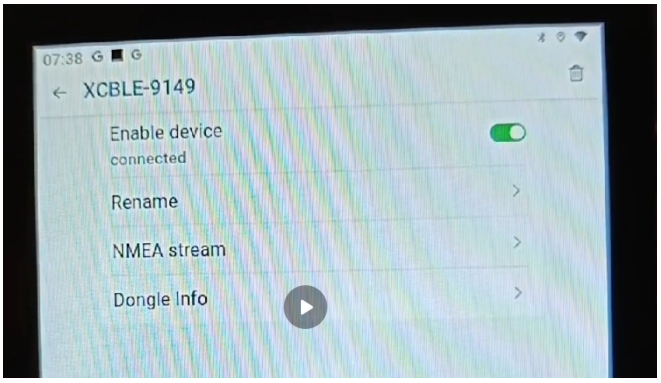
2.1.2. Bluetooth Connection

First, the bridge needs to be paired with the Android device as a Bluetooth device. To do this, perform a device scan in the Bluetooth settings of the Android device. Once powered up, the BLEDongle should appear as something like **XCBLE-1234**, and it must be paired in the pairing dialog. The four-digit number represents the serial number of the device, so 1234 is just an example and will be uniquely assigned to each specific device.

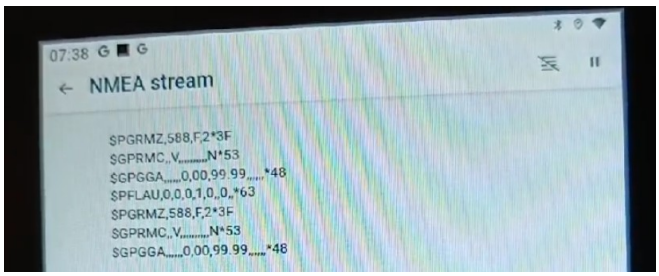
After pairing, you should see the device in the "Devices" section of the Navi app. At this point, only **SeeYou Navigator** app supports BLE connectivity.

-> Enable there the device by toggling the horizontal slider (1) to connect and start receiving GPS or Flarm data streamed to your Navigator app. If everything is working correctly and your Flarm is providing GPS and Flarm data, the BLEDongle will show 'connected' and the **NMEA stream** will appear as shown in picture (2).

1) Enable device by toggling the horizontal slider:



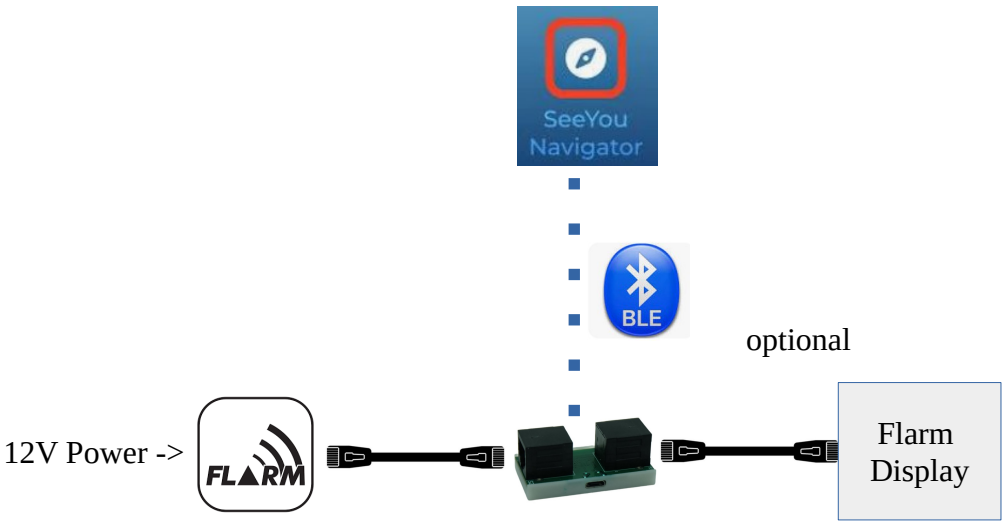
2) NMEA Stream



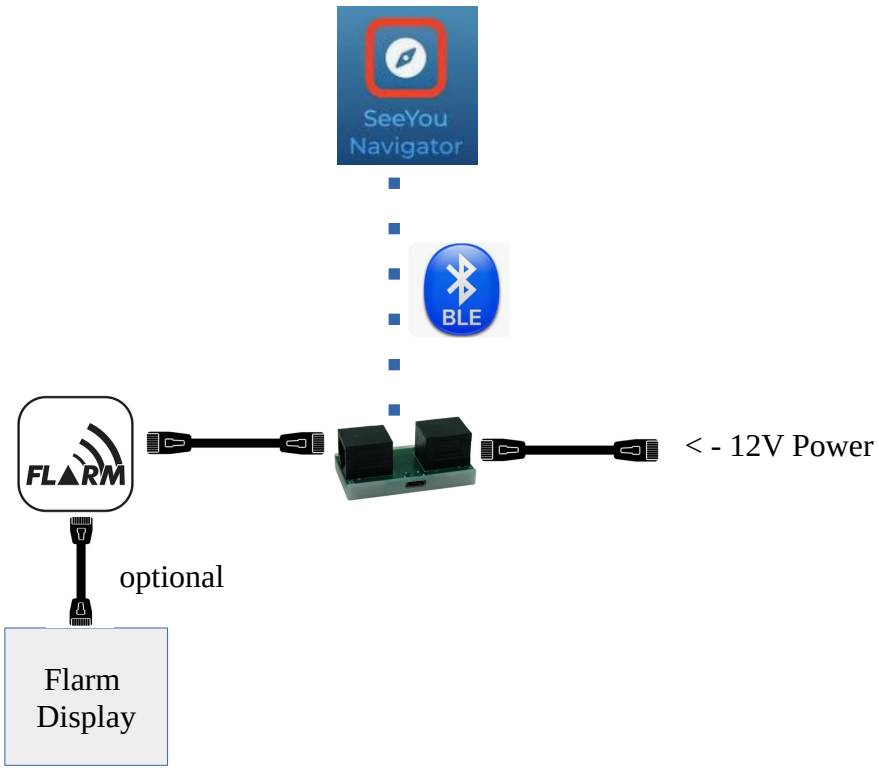
3. Installation

The Serial Bridge has been designed to be simple in terms of installation and configuration. Integrating it into the cockpit is therefore very easy, and typically achievable using a 1:1 RJ45 patch cable (do not use a crossover cable). The recommended cables are RJ45 standard cables 8p8c, meaning 8-pin with 8 connections, wired 1:1, as commonly used in networking. One standard length is provided with the device.
The **standard configuration** for a self-powered Flarm is depicted below (1). If your Flarm does not have an additional power input and requires power through the RJ45 interface, power must be supplied via the second port, as shown in picture (2).

1. Standard Configuration e.g. Power Flarm



2. Standard Configuration Classic Flarm



3.1. Micro USB

The device is initially programmed at the factory via the micro USB connector on the sensor board, which is also accessible from the side. The Serial Bridge can be connected to a PC for diagnostics through the micro USB port and will also be powered via this connection. Software updates can be performed via the micro USB connector at the manufacturer.

This connection is not required for normal operation.

3.2. Electrical Connectiors

3.2.1. RJ45 Connector S1 and S2

The S1 and S2 ports are electrically **equivalent** and are connected in **parallel**. Therefore, the designation "S1" will be used synonymously throughout the document for both connectors.
Custom RJ45 connectors can be assembled with appropriate cables, or a standard LAN patch cable can be used. Do **not** use a **crossover** cable. One standard length cable is provided with the BLEDongle.
The interface is designed to be compatible with IGC standard for Flarms/Loggers. The Pins 5 and 6 are unused. The pinout follows the FCC standard and is viewed from the front of the interface.
The levels transmitted by the device (TX) are 3.3V TTL levels, which are compatible with Flarms and other common avionic devices. The receive voltage is conditioned to 3.3V, allowing for input levels ranging from -15V to +15V.

Interface S1

Pin RJ45	Name	Direction	Purpose
1	GND		Battery GND
2	GND		Battery Masse
3	RS232 TTL TX		Serial RX
4	RS232 TTL RX		Serial TX
5	NC		-
6	NC		-
7	+8..20 V		Battery + 12V DC
8	+8..20 V		Battery +12V DC

3.2.2. Power Supply

The power supply is provided via the RJ45 connector, which carries 12V DC in accordance with the IGC standard.
The device can handle voltages in the range of 8-20V, with 12V DC being the ideal supply.
The device is reverse-polarity protected and is internally shielded against transient voltage spikes, such as ESD discharges and induction spikes during engine startup.
As a general rule, **avionics should be switched off during engine startup**. If this cannot be avoided, e.g., during engine startup in flight, the overvoltage protection must be relied upon.

The power is transmitted from the S1 to the S2 port and is protected by a polyfuse capable of handling up to **1 ampere.**

4. Technical Data

Power Supply	8-20V DC
Recommended Power Supply	10-16V DC
Power consumption at 12,5V (typical)	18 mA = 0.2 W
Bluetooth Standard	BLE 5.0 Bluetooth Low Energy Standard
Dimensions (Lx W x H)	49x25x18 mm
Electrical Connectors	2x RJ45 Main Buchse 8 polig
RJ45 / RS232 Interface IGC Standard	RX/TX lines TTL level 3.3V
Weight	12 g

5. Warranty

The BLEDongle is covered by a two-year warranty from the date of purchase, which includes the cost of labor and materials for repairs. During this period, components that fail under normal operating conditions will be repaired or replaced free of charge, provided the device is returned to the manufacturer at no cost to them.
The warranty does not cover damages caused by improper use, incorrect connections, abuse, accidents, unauthorized modifications, overvoltage, or failure to maintain the device. Additionally, the software is provided "as is," and updates or modifications to the software are not covered by the warranty.
Returns can be made in accordance with the German Civil Code (BGB) within 14 days of the purchase date. In this case, the device and its accessories must be returned by the buyer to the address from which it was shipped. The cost of return shipping is to be borne by the buyer.

6. Liability

By purchasing the device, the customer agrees that the manufacturer shall not be held liable for any direct or indirect damages, claims for compensation, or consequential damages of any kind or for any reason arising from the use of the device.

7. CE-Conformity Declaration

DECLARATION OF CONFORMITY

The manufacturer, Dipl. Ing (FH) Eckhard Völlm, Panoramastr. 86/1, D-71665 Vaihingen/Enz, hereby declares that, in its standard configuration, the BTDongle hardware complies with the requirements of CE conformity. For reference, please also see the certificate for the ESP32 C3 module.

The EMC compatibility meets EN 301 489-3:2002-08 for a Class 3 SRD Device (equipment type I).