air avionics

AIR Connect

Manual

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Important!

> Please read this manual carefully!

> Please pay attention to the restrictions on use!

Document-ID / Revision Status

This manual refers to the following product types:
P/N B104 “AIR Connect”

Changes

Rev.	*Datum*	*Status*	*Autor*	*Änderungen*	*Genehmigt*
2.0	2014/09/05	Release	M. Förderer	New release	–

Contents

1.1 System description

AIR Connect is a compact, lightweight and rugged device wirelessly connecting Smartphones such as Apple iOS-devices or Android-devices to aircraft systems.
AIR Connect creates an IEEE 802.11 b/g wireless network (WiFi soft Accesspoint) and transmits RS232 data via the TCP/IP protocol. Many Smartphone-Apps are capable of displaying and using such data. Examples for data are current GPS-position, pressure altitude, traffic or engine data.
It features one central Power/Data connector (D-SUB 9) and a standard SMA antenna connector including a small quarter-wave antenna. AIR Connect is supplied by a DC source in the range of 4.8V to 32V and typically consumes less than 100mA. It can be easily mounted in many places inside the aircraft, remote antenna options with cables are available.

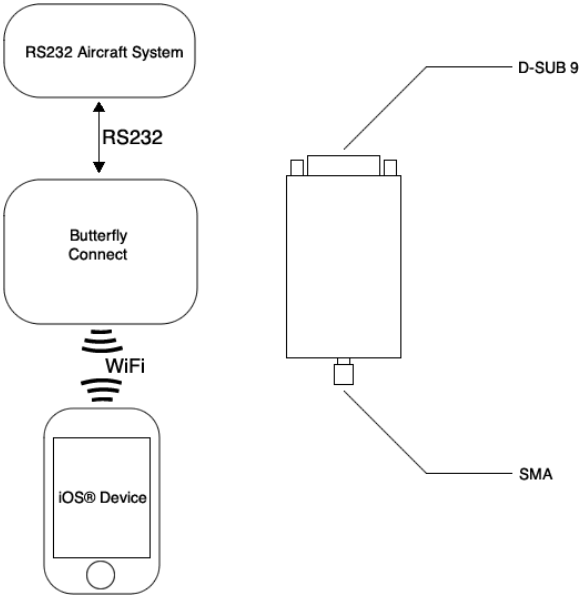

Figure 1.1: System Diagram

1.2 Safety instructions and restrictions on use

Installation and operation must be on the basis of non-interference with and no hazard to the existing suite of other equipment necessary for safe flying operation, or installed to comply with official requirements. Installation and operation must comply with official regulations and requirements.

> Never make safety critical decisions based on transferred information.

> AIR Connect does not have a ETSO or FAA-TSO airworthiness certification.

1.2.1 Support

Please contact us via support@air-avionics.com or +49 (0) 6224 82 83 87 0

1.2.2 Included with delivery

Item	Partnumber	Description
AIR Connect	B104	AIR Connect Main Unit
RJ45 Kabel	-	Cable D-SUB 9 to RJ45 in IGC standard
Short 90° Antenna	-	90° WiFi Antenna
Documentation	-	Printed manual

1.2.3 Zubehör

Folgende Zubehörteile könne direkt von AIR oder von autorisierten Händlern bestellt werden.

Item	Partnumber	Description
Wire	various	MIL27500/22759 Spec Tefzel Kabel
Datenkabel Connect CAI302	B140	Cable Connect to Cambridge CAI302
Datenkabel Connect LX	B149	Cable Connect to LXNAV/LXNavigation Devices

> For procurement, please visit www.air-store.eu

2.1 Dimensions

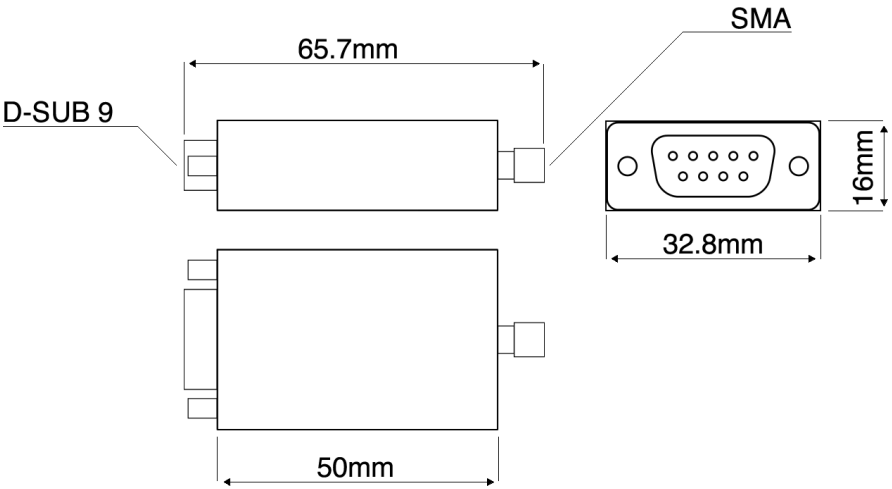

Figure 2.1: Mechanische Abmessungen

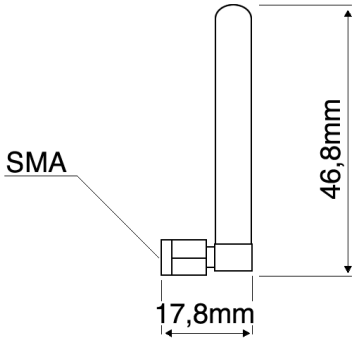

Figure 2.2: Mechanische Abmessungen der Antenne

2.2 Connectors and Wiring

2.2.1 Main Power and Data Connector

AIR Connect features one central D-SUB 9 connector for power and data.

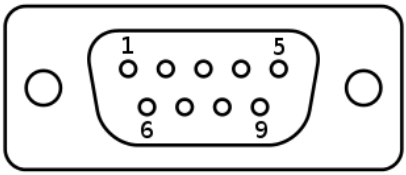

Figure 2.3: Main D-Sub 9 Power/Data connector

Pin Number D-SUB 9	Signal/Purpose
1	Do not connect!
2	RS232 RX - connect receives data
3	RS232 TX - connect sends data
4	Do not connect!
5	GND - main ground (minus)
6	Do not connect!
7	DC In - main power supply (plus)
8	Do not connect!
9	Do not connect!

2.2.2 RJ45 Cable

Included in delivery is a D-SUB 9 to RJ45 cable in IGC-Standard codeout. The cable allows for easy connection to many common aircraft systems such as FLARM-compatible collision avoidance devices or many IGC-approved GPS Loggers.

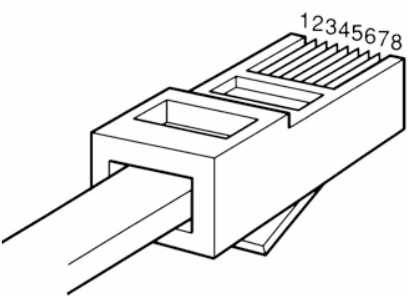

Figure 2.4: RJ45 Connector

Pin Number RJ45	Signal/Purpose
1	GND
2	Do not connect!
3	RS232 TX - connect sends data
4	RS232 RX - connect receives data
5	Do not connect!
6	Do not connect!
7	Do not connect!
8	DC IN - main power supply (plus)

Aditional Adapter Cables, Y-Splitters are available at AIR Store: www.air-store.eu

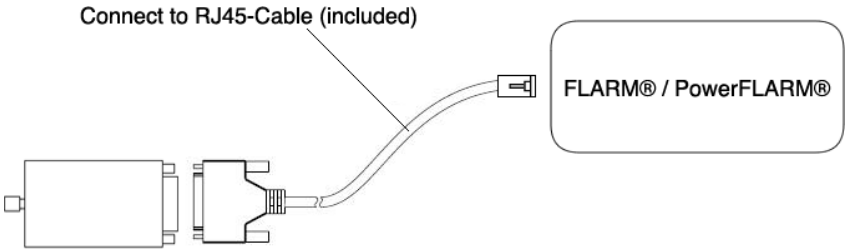

Figure 2.5: Connect-RJ45 Kabel und Verbindung zu FLARM oder PowerFLARM Geräten

AIR Connect has to be supplied with power to work. If using a PowerFLARM PORTABLE, please ensure that you supply AIR Connect with power.

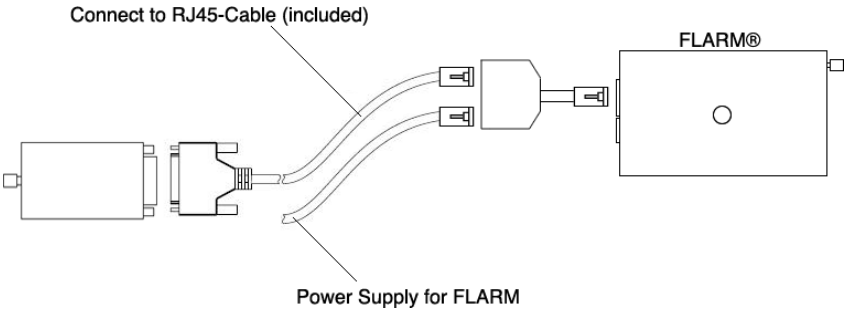

Figure 2.6: Empfohlene Verkabelung an FLARM Geräten

2.2.3 Power Consumption and Requirements

Item	Value
Input Voltage Range	4.8V to 32V DC
Recommended Fusing	1.0A CB
Typical current	80mA at 12V DC
Peak current	350mA at 12V DC
Power Requirements	<1.5W at 12V DC

Take care that the power supplied has the correct polarity, otherwise damage to the device may occur.

3.1 RS232 Interface

AIR Connect is compatible to any aircraft system that delivers data via the TIA-232-F ("RS232") standard. AIR Connect features bidirectional communication. Data received via RS232 is sent wirelessly to Smartphone-devices and data from Smartphone-devices is sent to RS232 aircraft systems.

4 WiFi Interface

4.1 Network Mode and Protocol

AIR Connect connects to other devices through a WiFi connection. It then delivers received RS-232 data using the TCP/IP protocol on a fixed IP-Address and Port.

Item	Value
Network Type	Accespoint
Network Security	Passcode
IP-Adress	192.168.1.1
Port	2000
SSID	AIR Connect

> The SSID of the network always consists of *AIR Connect* and an additional identifier.

4.1.1 Connection and data transfer

AIR Connect delivers received RS-232 data using the TCP/IP protocol. On older versions of AIR Connect, a four-digit pin-code is required and requested after connection to the module has been established.

4.1.2 Joining the Network with iOS- or Android Devices

In order to establish a connection to a mobile device the following process is recommended.

- Power up AIR Connect
- Enter main Settings App.
- go to *Wi-Fi* and make sure Wi-Fi is activated
- in the *Choose a Network* list the SSID of your AIR Connect device should appear.
- tap on the Network to create a connection
- Newer version of AIR Connect feature network security, in such cases the network key printed onto the device has to be entered by the user.

> Make sure your device remains connected, in some cases open WiFi-Networks are joined automatically which causes AIR Connect to loose connection. Activate *Ask to Join Networks* in iOS to avoid this.

5.1 Available AIR Connect Versions

There are multiple versions available in the field. The following table shows the main differences. Please note that any AIR Connect unit in the field can have any software version.

> The most critical difference between the different versions is the IP address. It is recommended to either make the IP-Address user configurable or to implement automatic detection (i.e. to try all different possibilities in software).

	2012 Version	2013-2014 Version	2014-2018 Version	Current Version
Module SSID	WIFLY-GSX	WIFLY-EZX	AIR Connect	AIR Connect
IP-Address	169.254.1.1	1.2.3.4	192.168.1.1	192.168.1.1
Network Mode	Ad-Hoc	Soft AccessPoint	AccessPoint	AccessPoint
PIN Code	Required	Required	Required	-
Network Security	-	-	-	Printed on enclosure
Serial Number	from B104-1001	From B104-1101	From B104-1584	from 3D672F (HEX)

> The four-digit PIN-CODE used in all versipn up to 2018 is always calculated by adding the number *3642* to the devices serial number. Therefore individual device serial numbers may be calculated from the pin-code entered by the user.