Flight Recorder

Installation Manual
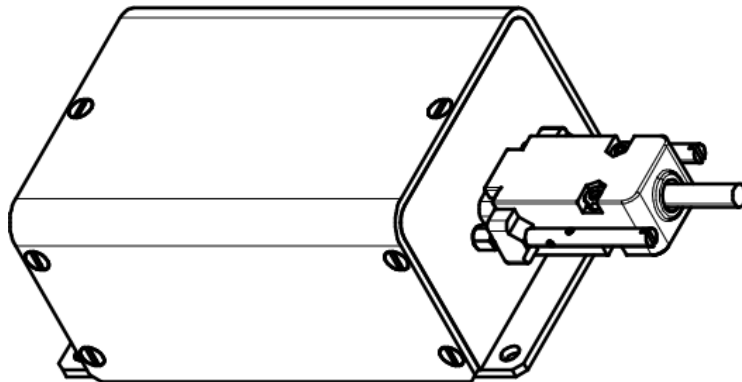
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Please, send your e-mail address to customer@tl-elektronic.com to receive the latest information about software upgrade.

Send your ideas to innovation@tl-elektronic.com
We will evaluate your suggestion and provide an update.

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1 Revision Table

Rev	Revision Date	Description	ECO#	Insertion date	By
PrA	25.02.2014	Initial version			VH

2 General description

2.1 General Information

The Flight Recorder securely records all measured parameters by Integra Glass Cockpits, for example engine and flight data including position of moving control levers, fuel level quantity, GPS position and others.

2.2 Limited Warranty

This manual contains important information that may affect the safety of the pilot, passengers, aircraft and operation of the system or time to install the system. You MUST read the manual prior to installing this system. Any deviation from these installation instructions is the sole responsibility of the installer and should be done in accordance with AC 43.13. Read the Warranty/Agreement. There is information in the Warranty/Agreement that may alter your decision to install this product. If you do not accept the terms of the Warranty/Agreement, do not install this product. This product may be returned for a refund. Contact TL elektronic for details.

⚡ **WARNING:** If the installer does not have the skills, knowledge, tools, equipment or facility, to perform and determine whether the installation of this product is safe, reliable and accurate and to determine whether this product is operating properly after installation, DO NOT INSTALL THIS PRODUCT. If the owner/pilot and/ or installer are unwilling to take the responsibility for the installation and operation of this product, DO NOT INSTALL THIS PRODUCT. This product may be returned for a refund. Contact TL elektronic for details.

(i) **NOTE:** By installing this product, the aircraft owner/pilot and installer agrees to hold TL-elektronic in no way responsible for monetary compensation, including punitive damages for any incident, harm and/or damage associated with this product. If you do not agree to the above, DO NOT INSTALL THIS PRODUCT. This product may be returned for a refund. Contact TL elektronic for details.

(i) **NOTE:** TL-elektronic is not liable or responsible for a pilot's action or any situation that results in personal injury, property damage, missed commitments, lack of use of an aircraft or any expenses incurred due to: product failure, inaccuracy in data provided, format issues, software bugs or problems, upgrade or customization issues, misinterpretation of data, calibration problems, installation issues (leaks, incorrect wiring, obstructions, damage to aircraft or components, incorrect installation of any parts, wrong parts, parts that don't fit, etc.) or any other issues related to the installation or operation of this product. All of the above are solely the pilot's and/or installer's responsibility. The pilot must understand the operation of this product before flying the aircraft. The pilot will not allow anyone to operate the aircraft that does not know the operation of this product.

⚡ **WARNING:** Do not install a non-certified Flight Recorder in a certified aircraft.

3 Technical Specifications

Physical characteristic

Width (without brackets)	100 mm	3,937"
Height	48 mm	1,890"
Depth	68 mm	2,677"
Weight	780 g	1,72 lb

General Specifications

Operating Temperature Range	- 40°C to +70°C
Humidity	95% non-condensing
Altitude Range	9750 meters max (32000 feet max)
Power Range	10 to 32 Volts
Power Consumption	0,03 Ampere @ 14 VDC
Vibration	5 to 500 Hz
Fire Intensity	800°C flame for 10 minutes
Impact Shock	1000 Gs for 6.5 ms
Water Immersion	Immersion in sea water for 15 days

Memory and Communication

CAN BUS (iFamily® BUS)	250 kbps
Memory Recording Duration	approx. 25 flight hours (depends on amount of data stream)

4 Install Recommendation

4.1 Introduction

The performance and reliability of the Flight Recorder is determined by careful planning and consideration in its installation. Please follow the suggested guidelines.

4.2 Location Consideration

Choose location with no significant electromagnetic interference which could affect reliability of iFamily® bus communication. Moreover considering purpose of the Flight Recorder it is recommended to install it in the tail of aircraft, where in case of plane crash the possibility of damage of the Flight Recorder and eventual damage of stored data is the lowest compared to other possible install locations.

4.3 Installation

The diagram below shows the outer dimensions of the Flight Recorder.

4.4 Recommended Wiring Practices

For all electrical connections, use correct wiring techniques, taking care to properly insulate any exposed wire or cables. A short circuit between any of the wires may cause damage to the Flight Recorder and/or your aircraft. Make all connections to your harness before connecting it to any of the components of the electrical system. Do not make connections while the Flight Recorder is turned on or power is applied to any point in the electrical system. We recommend that all wire you use also meets 22 AWG Mil Standard MIL-W-22759/16. When using any pre-manufactured harness, verify that each pin has continuity with the expected wire on the wiring diagram. This test can be easily done with a multi-meter. When verifying harnesses, use the wiring charts and diagrams in this guide. Use appropriate strain relief at all junctions between wires and connectors. We recommend that you secure all wires at regular intervals along wiring runs to accommodate vibration effects.

4.5 Harness Mating

Section 6.1 describes the connector on the Flight Recorder. The connector is used for power supply and communication with the other equipment.

4.6 Power Requirements

22 AWG wire is normally sufficient for the power supply and grounding, but we recommend that you consult a wire sizing chart and determine the size required for the wire routing in your particular aircraft. Ensure that the power supply include a circuit breaker

4.7 Wiring Overview

The Flight Recorder power requirement is as low as 0,03 amps in a 12/24 volt system. And therefore you can use a 1-amp circuit breaker. See the technical specification chart for details.
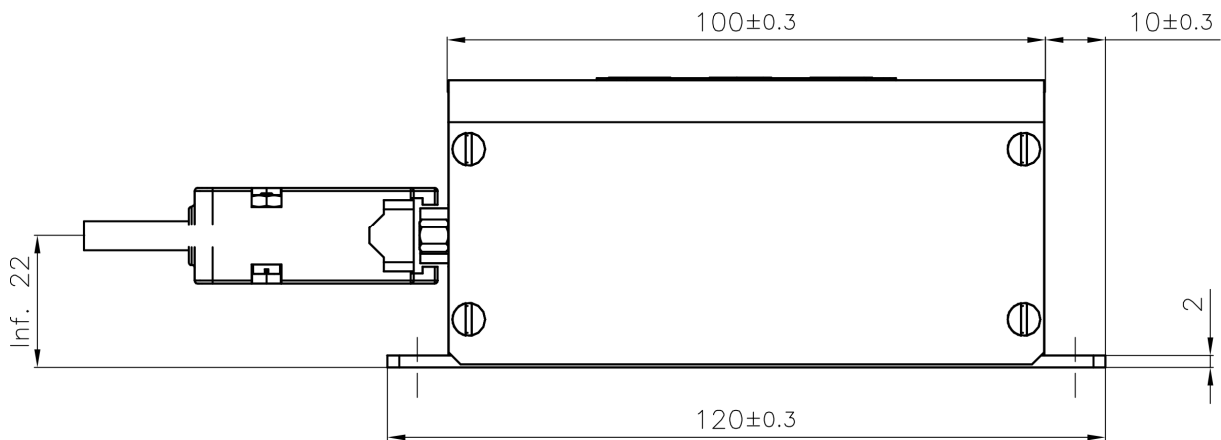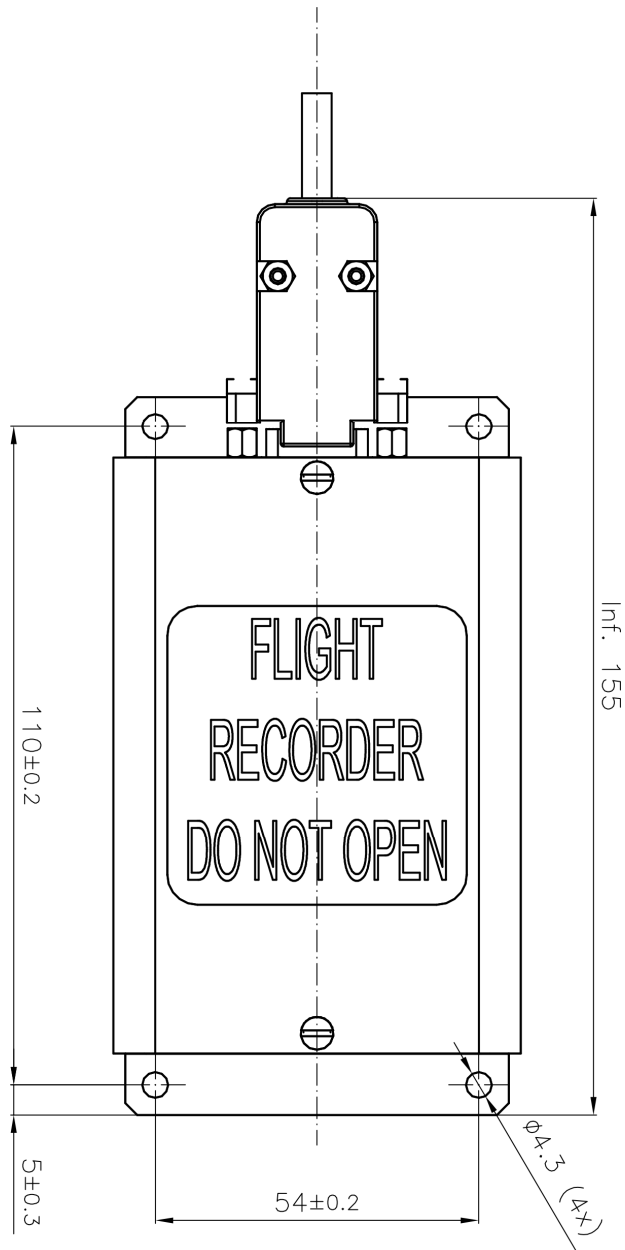
5   Mechanical Drawing

5.1   Front View
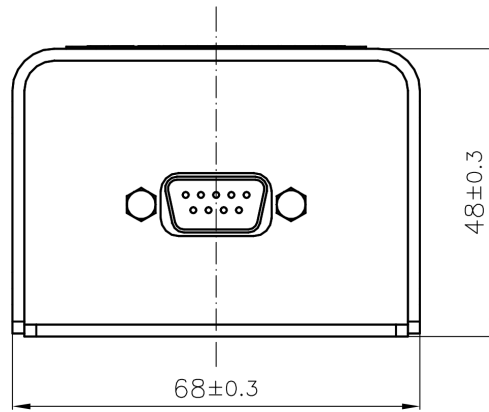
ⓘ **NOTE:**   All measurements are in millimeters.

5.2   Side View

ⓘ **NOTE:**   All measurements are in millimeters. The view shows the Flight Recorder with plugged connector.
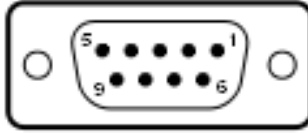
5.3 Top View

ⓘ **NOTE:** All measurements are in millimeters. The view shows the Flight Recorder with plugged connector.

6 Electrical Drawing
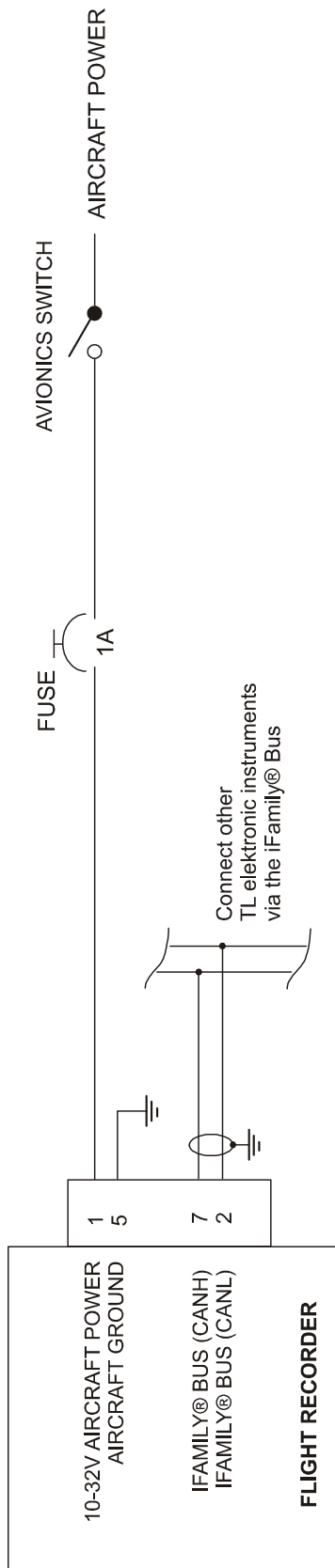
6.1 PIN FUNCTION list

Complementary accessory – type: D-SUB9 – Female (connector to the Flight Recorder)

Main Connector – type: D-SUB9 – Male (connector on the Flight Recorder)

Pin	Pin Name	I/O
1	Aircraft Power (10 to 32V)	In
2	iFamily® Bus (CANL)	In/Out
3	N/A	- -
4	N/A	- -
5	Aircraft Ground	- -
6	N/A	- -
7	iFamily® Bus (CANH)	In/Out
8	N/A	- -
9	N/A	- -

6.1.1   Main Interconnection

AVIONICS SWITCH

AIRCRAFT POWER

FUSE

1A

Connect other
TL elektronic instruments
via the iFamily® Bus

1
5

7
2

10-32V AIRCRAFT POWER
AIRCRAFT GROUND

IFAMILY® BUS (CANH)
IFAMILY® BUS (CANL)

FLIGHT RECORDER

6.1.2 iFamily® Interconnection
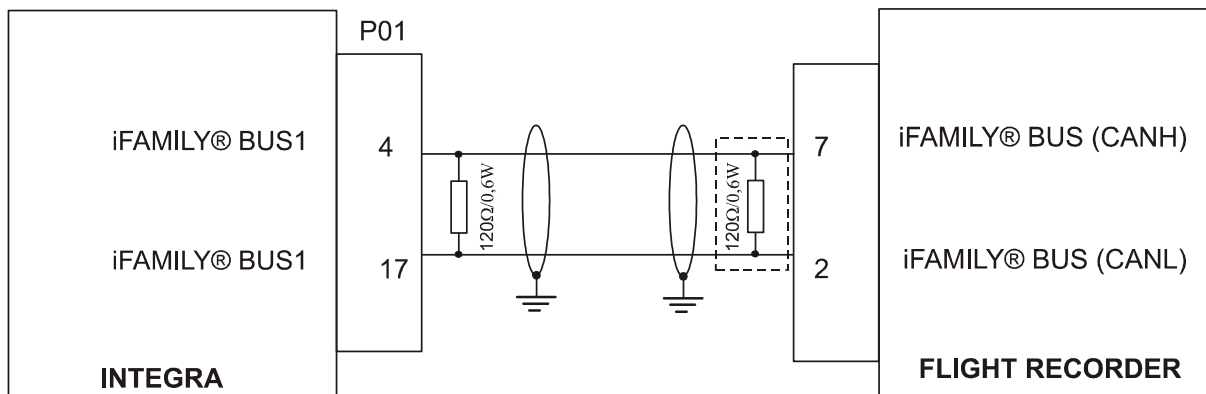
NOTE: It is necessary to terminate the bus at both ends with 120 ohm resistors. The resistors are there to prevent reflections of communication on the bus. On one bus there is possible to have only two resistors!

7 Conclusion

INSTRUCTIONS FOR RETURN

If none of the above sections have helped resolve an ongoing issue with your Flight Recorder, please call TL elektronic at +420 495 48 23 93 to discuss the issue with Technical Support.

In case the issue cannot be resolved, we will provide you with an RMA number to use when shipping the Flight Recorder to us. If your unit is still under warranty, the repairs will be performed and the Flight Recorder will be returned promptly. If your warranty has expired, the TL elektronic representative will make arrangements with you and make you fully aware of the costs before proceeding with the repair.

While TL elektronic makes every effort to save and restore your unit's settings and calibrations, we cannot guarantee that this will happen.