



Flight System Flight Recorder

Model FSFR-90, for use with the FS8 Co-Pilot™ receiver

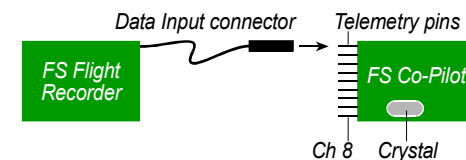
Features

- Records all receiver, servo position, failsafe status and aircraft orientation data (as available) generated by FMA Flight System receivers and compatible sensors.
- Additional inputs for user-supplied sensors, such as altimeter, engine RPM or airspeed indicator.
- FS Viewer Software downloads and plays data for detailed analysis of exactly what happened during flights.
- Stores 1.5 hours of data in 0.10 second increments. Recording re-circulates through memory, automatically overwriting oldest data.
- Retains data even with no power.

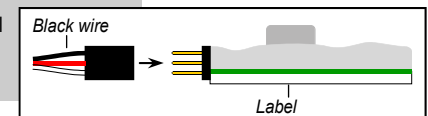
Installing the Flight Recorder

Connect the Flight Recorder to FS8 Co-Pilot's Telemetry pins (between the channel 1 pins and the edge of the circuit board) as shown below.

Connect servos and battery to FS8 Co-Pilot™ as you normally would. The Flight Recorder is powered by the receiver.



CAUTION: Black wires on FS Flight Recorder, servo and battery connectors go away from label side of receiver. (Do not use "old style," pre-"Z-type" Airtronics servo connectors.)



FMA limited warranty

FMA, Inc. warrants this product to be free of manufacturing defects for the term of one year from the date of purchase. Should any defects covered by this warranty occur, the product shall be repaired or replaced with a unit of equal performance by FMA or an authorized FMA service station.

Limits and exclusions

This warranty may be enforced only by the original purchaser, who uses this product in its original condition as purchased, in strict accordance with the product's instructions. Units returned for warranty service to an FMA service center will be accepted for service when shipped postpaid, with a copy of the original sales receipt or warranty registration form, to the service station designated by FMA.

This warranty does not apply to:

- Consequential or incidental losses resulting from the use of this product.
- Damage resulting from accident, misuse, abuse, neglect, electrical surges, reversed polarity on connectors, lightning or other acts of God.
- Damage from failure to follow instructions supplied with the product.
- Damage occurring during shipment of the product either to the customer or from the customer for service (claims must be presented to the carrier).
- Damage resulting from repair, adjustment, or any alteration of the product by anyone other than an authorized FMA technician.
- Installation or removal charges, or damage caused by improper installation or removal.

Call (301) 668-7614 for more information about service and warranty repairs.

For software version 1.08
8/02/04

FMA, Inc. • 5716A Industry Lane • Frederick, MD 21704
Sales: (800) 343-2934 • Technical: (301) 668-7614 • www.fmadirect.com

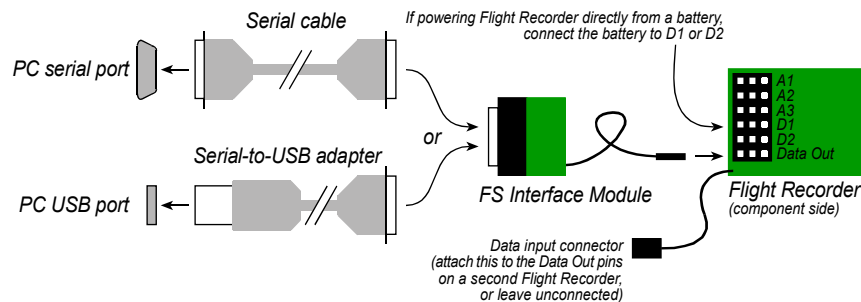
FMA
Direct

Connecting the Flight Recorder to a PC

You will need to supply:

- FS Viewer Software (provided with FS8 Co-Pilot).
- FMA FS Interface Module with 9-pin serial cable (part number FSM1).
- Windows 98 or later PC.
- USB to 9-pin serial adapter (if connecting via a USB port).

Connect the PC cable, FS Interface Module, Flight Recorder as shown below.

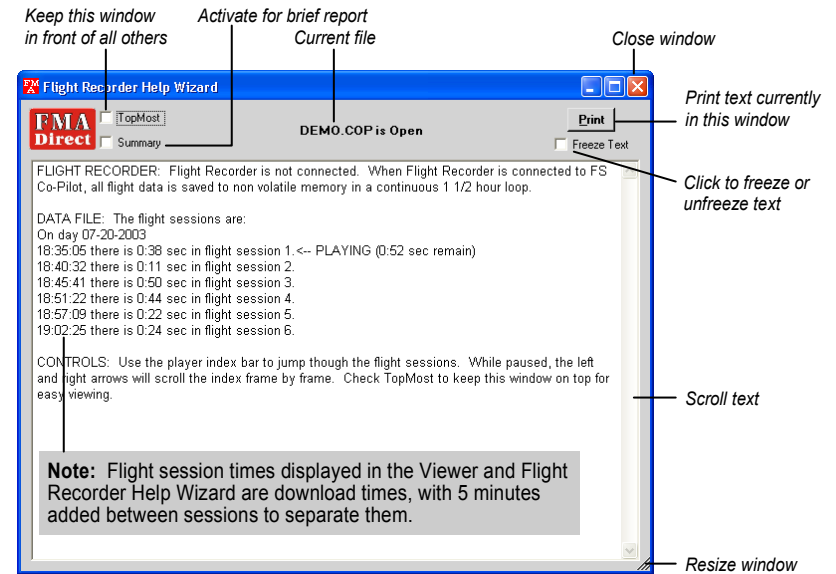


Downloading and viewing Flight Recorder data

1. Start the download:

- Method A: Flight Recorder out of aircraft.
 - a. Remove the Flight Recorder from the aircraft.
 - b. Launch the FS Viewer program (see the FS Viewer Software manual for details).
 - c. In FS Viewer, **File > Download Flight Recorder**.
 - d. Connect the FS Interface Module to the Flight Recorder's Data Out pins.
 - e. Connect a receiver battery to the Flight Recorder's D1 or D2 pins.
 - Method B: Flight Recorder in aircraft.
 - a. Launch the FS Viewer program (see the FS Viewer Software manual for details).
 - b. In FS Viewer, **File > Download Flight Recorder**.
 - c. Using a servo extension, connect the FS Interface Module to the Flight Recorder's Data Out pins.
 - d. If you are working with an electric-powered aircraft, disconnect the motor for safety.
 - e. With the **TRANSMITTER OFF**, turn on FS8 Co-Pilot™ in Setup Mode: Press and hold the REceiver button, turn on the receiver, then release the button.
2. Watch the download progress in the Flight Recorder Help Wizard. (The Flight Recorder's entire memory is downloaded in reverse order. This enables you to download the most recent flight data, then stop the download so you don't have to wait for all 1.5 hours of data.)
3. When you have downloaded the flights of interest, disconnect the Flight Recorder from power.
4. When prompted, enter a name for the data file, then click **Save**. The Viewer saves and reverses the file.
5. The Viewer begins playing the file, starting with the oldest session (as shown on the next page). All receiver and flight stabilization activities appear in the Viewer. Use the player controls to move between sessions, pause, stop or repeat playback.

Using the Flight Recorder Help Wizard



Tip: Open the Viewer's Receiver Help Wizard and/or Co-Pilot Help Wizard for running commentary on flight data.

Troubleshooting

Problem	Solution
Viewer doesn't receive telemetry data.	<ol style="list-style-type: none"> 1. Make sure the Flight Recorder is outputting data: <ol style="list-style-type: none"> a. Connect a small servo to the Data Out pins. b. If the servo moves to one extreme and stays there, the Flight Recorder is sending data. c. Disconnect the servo. 2. If the Flight Recorder is sending data, terminate other PC software using the PC's serial port. 3. If the Flight Recorder is not sending data, make sure the battery powering the system is fully charged.