FrSky Electronic Co., Ltd
Variometer Sensor

Instruction Manual

NOTICE: All instructions, warranties and other collateral documents are subject to change at the sole discretion of FrSky Electronic Co., Ltd. For further information please visit https://www.FrSky-rc.com and click on the support tab for this product.
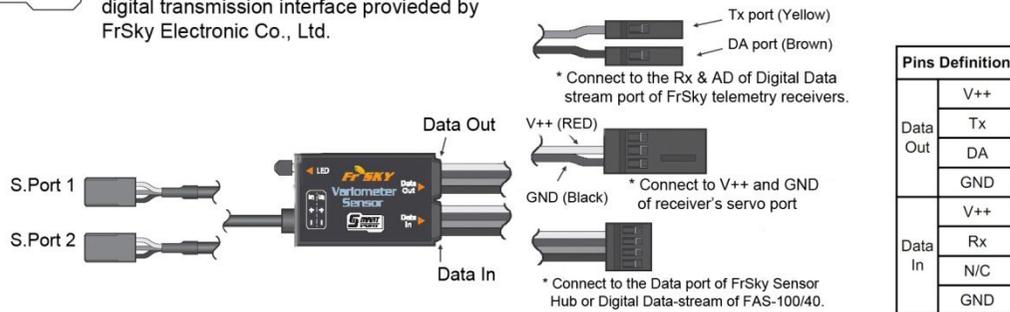
Thanks for purchase FrSky's Variometer sensor. This sensor, used in conjunction with a telemetry transmitter/receiver, is used to indicate the altitude and altitude rate of the item to which it is attached. To maximize your enjoyment, and to ensure proper sensing, please read through this manual thoroughly. We also encourage you to retain the manual for future reference should the need arise.

- **The Variometer sensor is designed for use with FrSky telemetry systems**.

Specifications

* The S.Port (Smart Port) is a signal wire full duplex digital transmission interface provieded by FrSky Electronic Co., Ltd.

Tx port (Yellow)
DA port (Brown)
* Connect to the Rx & AD of Digital Data stream port of FrSky telemetry receivers.

V++ (RED)
GND (Black)
* Connect to V++ and GND of receiver's servo port

* Connect to the Data port of FrSky Sensor Hub or Digital Data-stream of FAS-100/40.

Pins Definition	
Data Out	V++
	Tx
	DA
	GND
Data In	V++
	Rx
	N/C
	GND

Type: Variometer sensor
Measures: -700 ~ 10000m with 0.1m (high precision version)
1m (normal version) resolution
Operational Voltage: DC 4 -10 V
Operational Current: 30 mA
Dimensions: 31.1 x 18.3 x6 mm (L x W x H)
Weight: 3.1g
Units: Metric or British units

The **Variometer sensor** calculates the altitude from atmospheric pressure. Atmospheric pressure will get lower as you go up in altitude, using this the sensor will estimate the altitude. An exact display cannot be performed if atmospheric pressure changes in weather. The **Variometer sensor** also can output the **Altitude Rate** via **DA** port.
Altitude Rate formula: (Output DA Voltage – 1.65)/1.65=Altitude Rate speed/10.24.

What's NEW!

The new **Variometer sensor** can act as "BRIDGE" between **NON-S.Port FrSky telemetry sensor system** and **S.Port system.**

The **S.Port (Smart Port)** is designed for the 2nd generation of FrSky system, which is a signal wire full duplex digital transmission interface provided by FrSky Electronic Co., Ltd. **S.Port** makes RC components/device setup much easier than conventional multi-wire looms. Any **S.Port** enabled devices (sensors, sound module, display module, user data interface that in line with FrSky S.Port protocol etc.) can be plugged in optionally directly.

When **Data In** port of this sensor connected to **FAS** (FrSky Ampere Sensor) sensor or **Sensor Hub**; this sensor can convert the data from FrSky Sensor Hub or FAS-100/40 to the **S.Port system**.

S.Port offers the superior ability with new high precision hub-less sensor and other dataset: smaller, easier, and faster (6 times more than conventional "hub system").
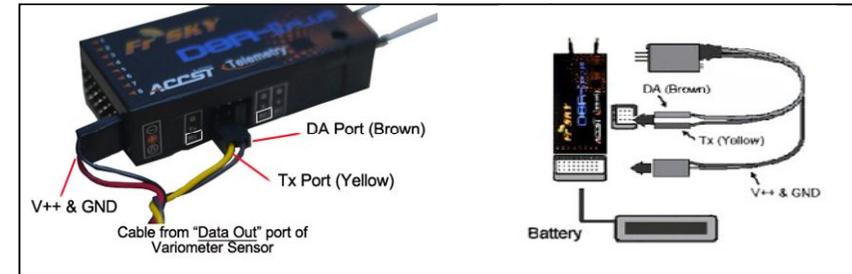
FrSky V8 series and D series receivers DO NOT support **Smart Port**.

Installation

The **Variometer sensor** is only used with FrSky Two-Way (telemetry) receivers that offer **digital data-stream port (Rx)** and/or **Smart Port**.

Use provided cables to connect the **Variometer sensor** and other equipment(s).

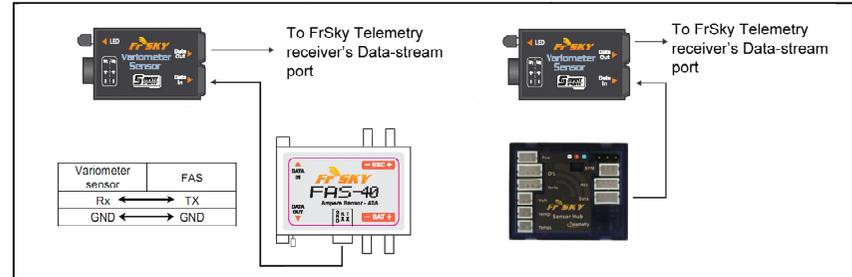1. **Connect Variometer sensor to receiver D8R-Ⅱ Plus/D8R-XP etc.:**

DA Port (Brown)
Tx Port (Yellow)
V++ & GND
Cable from "Data Out" port of Variometer Sensor

DA (Brown)
Tx (Yellow)
V++ & GND
Battery

*Attention: it is similar method to connect Variometer sensor to **D4R-II** receiver:*

Variometer sensor (Data Out)	D4R-II Telemetry Port
Tx Port ⟷	Rx
DA port ⟷	A2

Power supply Variometer sensor via "**Data out**" port or "**S.Port**" from Receiver channel or separate battery.

2. **Connect Variometer sensor to FrSky sensor hub (FSH-01) and Current sensor (FAS-100/FAS-40):**

To FrSky Telemetry receiver's Data-stream port

To FrSky Telemetry receiver's Data-stream port

Variometer sensor	FAS
Rx ⟷	TX
GND ⟷	GND

the Variometer sensor packing is not including all the cables which may be used in connections.

Absolute altitude & Relative altitude

The Variometer output both **absolute altitude** and **relative altitude;** please refer to the display equipment's instruction manual to switch between the two.
The relative altitude will start at 0m and it displays the altitude which changed from there.

Even if the altitude of your airfield is high, it will start at 0m and the altitude difference from the airfield is displayed.

WARNING：
Failure to follow these safety precautions may result in severe injury to yourself and others.
- To utilize the **Variometer sensor**, connect it to the digital data-stream port of FrSky Two-Way (telemetry) receivers or with **S.Port** of other receiver(s).
- Ensure that the unit is connected properly to the receiver. Failure to do so could result in damage to the sensor.
- Ensure that the unit is mounted in an area that will eliminate exposure to fuel, water and vibration.
- To ensure that the **Variometer sensor** is functioning as desired, please test accordingly.
- Do not fly until inspection is complete.