1.   Introduction

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.
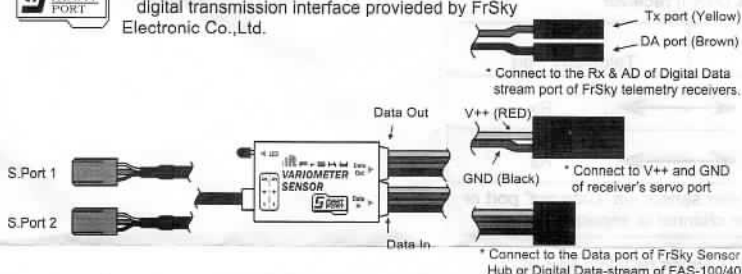
Thanks for purchase FrSky's Variometer sensor. This sensor, used in conjunction with a telemetry transmitter/receiver, is used to indicate the altitude and altitude rate of the item to which it is attached. To maximize your enjoyment, and to ensure proper sensing, please read through this manual thoroughly. We also encourage you to retain the manual for future reference should the need arise.

Warning: The Variometer sensor is designed for use with FrSky telemetry systems.

2.   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.

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

S.Port 1
S.Port 2

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

Pins Definition		
		V++
Data Out	Tx	
		DA
		GND
		V++
Data In	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 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.
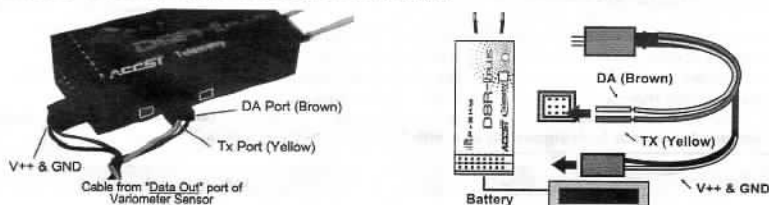
Warning: FrSky V8 series and D series receivers DO NOT support Smart Port.

4.   Installation

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

4.1 Connect Variometer sensor to Receiver:

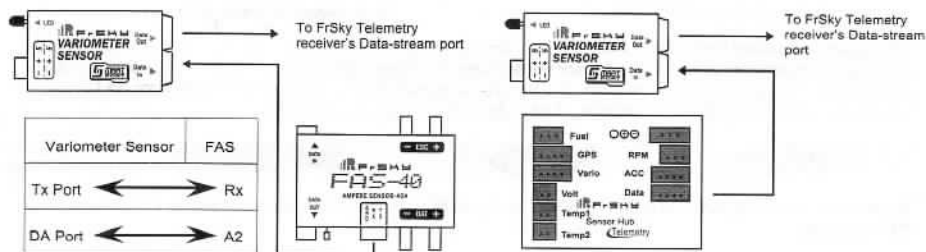1) Variometer sensor & D8R-II Plus /D8R-XP etc. receiver

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

- DA (Brown)
- TX (Yellow)
- V++ & GND
- Battery

2) Variometer sensor & 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.

3) Variometer sensor & X-series receiver(X8R etc.)
   It is simply connect Variometer senor "S.Port" to X8R receiver "S.Port" will done.

4.2 Connect Variometer sensor to FrSky 1st generation telemetry sensor system:

To FrSky Telemetry receiver's Data-stream port

Variometer Sensor	FAS
Tx Port ⟷	Rx
DA Port ⟷	A2

To FrSky Telemetry receiver's Data-stream port

Fuel · GPS · Vario · Volt · Temp1 · Temp2 · RPM · ACC · Data · Sensor Hub Telemetry

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

Warning: Failure to follow these safety precautions may result in severe injury to yourself and others.

1. 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).
2. Ensure that the unit is connected properly to the receiver. Failure to do so could result in damage to the sensor.
3. Ensure that the unit is mounted in an area that will eliminate exposure to fuel, water and vibration.
4. To ensure that the Variometer sensor is functioning as desired, please test accordingly.
5. Do not fly until inspection is complete.