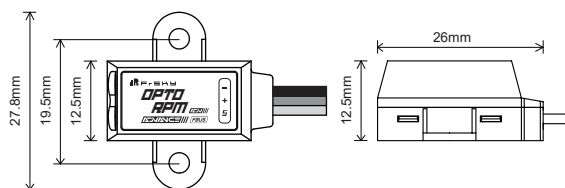


## Introduction

FrSky ADVANCE (ADV) series has comprehensive sensor types and enhanced the performance and capability of the original sensor line, all ADV sensors fully support FBUS protocol and they are also S.Port compatible. With the FBUS protocol, the ADV sensors can be seamlessly paired with the FBUS-capable receiver and further simplifying the builds setup.

The OPTO RPM ADV sensor can be used to measure rotational speed. When connected directly to a receiver with the S.Port/FBUS port, telemetry data can be transmitted and read by compatible radios. Alternatively, when the sensor is switched to PWM mode, it can pass the rotation data through to a device port that supports RPM calculation, achieving the same purpose of RPM data collection.

## Overview

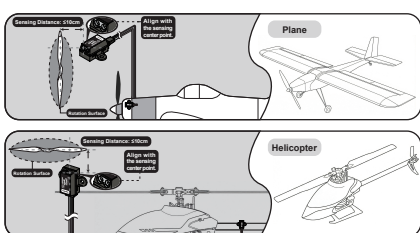


### Specifications:

- Dimension: 27.8×26×12.5mm (L×W×H)
- Weight: 4g
- Voltage Range: 3.7V-8.4V
- RPM Range: 600-600,000RPM

## How to Use

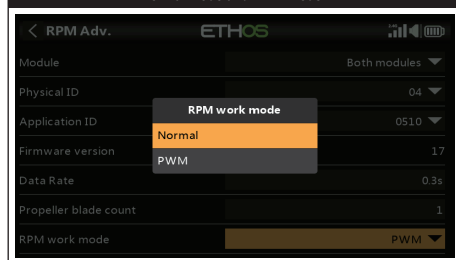
### Step 1 Installation



### Step 1 Install the sensor according to the diagram.

Depending on the different model types and corresponding mounting solutions, ensure they remain within the appropriate distance from the sensor.

**Note: The sensor supports 2 working modes:  
Normal Mode and PWM Mode.**



### Note

1. First, bind the receiver and set the channel intended for the sensor to FBUS mode.
2. Then connect the sensor to the FBUS port of the bound receiver.
3. On the transmitter side, in the ETHOS system, go to: [System] > [Device Config] > [Sensors] > [RPM adv] (ETHOS v1.6.4 or later version is required.), and set the sensor to the desired working mode.

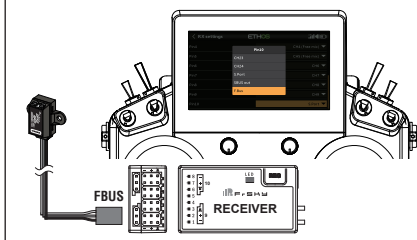
Within 5 seconds of each powering on, the sensor automatically detects the signal type (S.Port/FBUS) through the connected port. If the signal type cannot be identified:

- ❶ It defaults to FBUS mode when the sensor is set to Normal Mode.
- ❷ It works in the preset PWM mode if configured accordingly.

## Working Mode

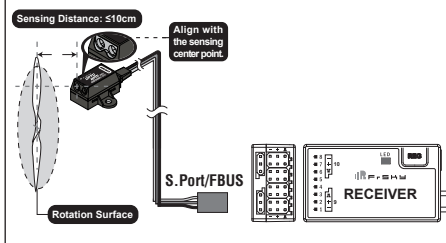
<b>Normal Mode</b> (S.Port/FBUS Mode)	In this mode, the RPM sensor is connected to the S.Port/FBUS port, the RPM value can be read directly from the Telemetry tool on the radio.
<b>PWM Mode</b> (Pulse Count Mode)	In this mode, the RPM sensor is connected to a device with an RPM port (e.g. AES series products, etc.), transmitting data based on one pulse signal per revolution to obtain the RPM value.

## Step 2 Receiver Connection and Mode Setup



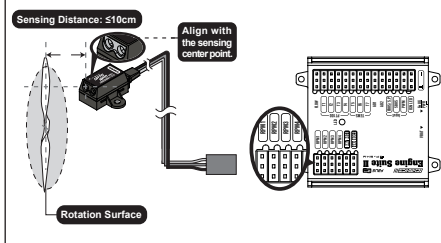
**Step 2** Connect the sensor to the receiver via the FBUS/S.Port signal port (please refer to the receiver manual to configure the signal type), and make sure that the sensor has entered Normal Mode according to the Note above (or select the corresponding operating mode in the RPM Adv. tool).

## Step 3.1 Normal Mode (S.Port/FBUS Mode) setup



**Step 3.1** When the sensor is set to Normal Mode, it can be connected to the **FBUS/S.Port** signal port of the receiver.

## Step 3.2 PWM Mode (Pulse Count Mode) setup

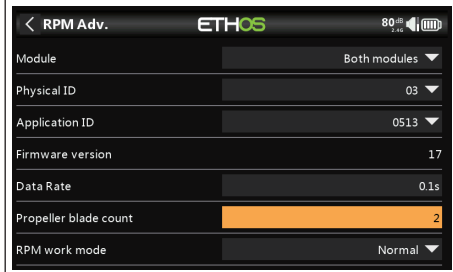


**Step 3.2** When the sensor is set to PWM Mode, it can be connected to the device (e.g. AES II, etc.) with the RPM signal port.

## ⚠ WARNING

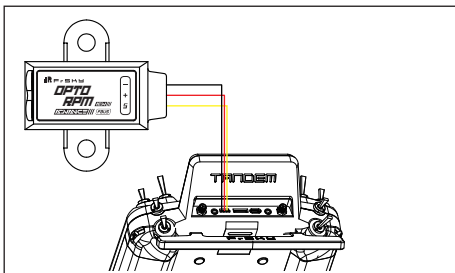
Please refer to the installation diagram to install the sensor. Before each flight, ensure the installation to prevent the components from coming loose due to vibrations during use.

## Step 4 Propeller Blade Count Setting (in FBUS Mode)

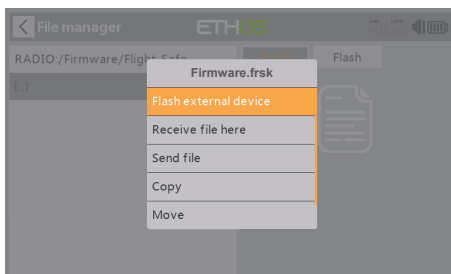


**Step 4** The default blade count is set to 1 (when using a two-blade propeller, set it to 2). Please configure this setting according to the actual number of blades used on the model.

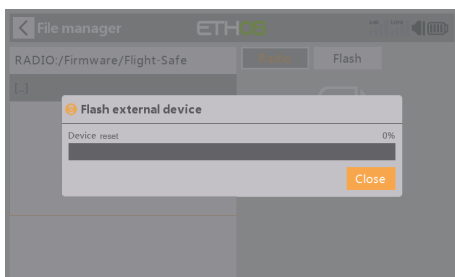
## How to Update the Firmware



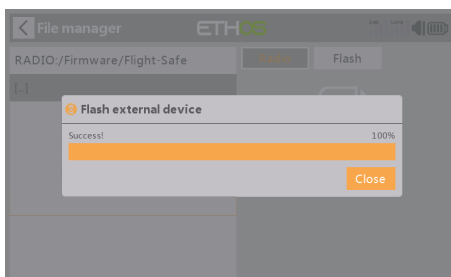
1. Connect the sensor to the S.Port connector on the transmitter. Signal wire towards the notch.



2. Copy the firmware file to the ETHOS radio. Use the File Manager tool to locate it, then select the file and choose "Flash external device."



3. When a progress bar window appears with the message "Device reset," the firmware flashing process will begin automatically.



4. When the message changes to 'Flashing', wait for the progress bar to complete, this indicates that the firmware update is finished.

## Telemetry Data & Parameter settings

[System] > [Device Config] > [Sensors] > [RPM adv]

RPM (unit: r/m)	Revolutions Per Minute
Physical ID	When multiple device are used simultaneously, each device must be assigned a unique ID.
Application ID	When using the same type of sensors from different devices simultaneously, each device must be assigned a unique application ID to avoid conflicts.
Data Rate	Data Transmission Interval.
Propeller Blade Count	The default blade count is set to 1 (when using a two-blade propeller, set it to 2). Please configure this setting according to the actual number of blades used on the model.
Working mode	Normal Mode (stand alone sensor) & PWM Mode (for use with an AES II or other device with an RPM port.)