Introduction

Thank you for purchasing the FrSky Horus X12S-ISRM digital telemetry radio system. In order to make the best use of your system and to fly safely, please read this manual carefully. If you have any difficulties while using your system, please consult the manual, your hobby dealer, or FrSky technical support.

Due to unforeseen changes in production, the information contained in this manual is subject to change without notice.

Meanings of Special Markings

Pay special attention to safety where indicated by the following marks:

**DANGER** - Procedures which may lead to a dangerous condition or cause death or serious injury if not carried out properly.

**WARNING** - Procedures which may lead to a dangerous condition or cause death or serious injury to the user if not carried out properly or procedures where the probability of superficial injury or physical damage is high.

**CAUTION** - Procedures where the possibility of serious injury to the user is small, but there is a danger of injury, or physical damage, if not carried out properly.

Notes and Warnings for Battery & Charger

- Be sure to turn off the Horus X12S-ISRM before charging the battery.
- The Power Indicator LED will be on during charging, and be off after the charging is finished.
- Do not remove the battery from the Horus X12S-ISRM transmitter while the voltage warning is blinking as this could cause internal settings and memories to be destroyed.
- Do not pull the battery wires as this could produce short-circuits and cause the battery to explode.
- The eight-cell NiMH battery is for use only in your Horus X12S-ISRM.
- Do not pull the antenna forcefully. The antenna wire could break and prevent transmission.
- Do not touch the antenna during operation. Doing so could interfere with transmission, causing a crash.
- Do not touch the horizon and transmitting antenna. The antenna wire could break and prevent transmission.
- Do not pull the antenna forcefully. The antenna wire could break and prevent transmission.

Features

- **Audio Speech Outputs** (volumes, alerts, settings, etc.)
- Full telemetry and real-time data logging
- Antenna detection and SWR warning
- Integrated GPS module and 6-axis sensor (3-axis gyro and 3-axis accelerometer)
- Avionics 6 DOF loadbearing gimbal with accuracy hall sensor and extendable by stick or radio
- Safe power switch with integrated strap base
- Two types trainer ports
- Short/Long Lever
- Encoder for easier flight modes switch
- LED for FSK/ITX operation system
- *SD card is not supplied with X12S-ISRM Horus, please purchase separately.

Overview

**Switch Default Settings**

- **SA**: 3 positions, Short Lever
- **SB**: 3 positions, Momentary, Long Lever
- **SC**: 3 positions, Long Lever
- **SE**: 3 positions, Short Lever
- **SF**: 2 positions, Momentary, Long Lever
- **SG**: 3 positions, Short Lever
- **SH**: 2 positions, Momentary, Long Lever

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Step 1: Create the model

- First go to System Settings, then click Model Select to select the model type.

Step 2: Configure the model channel and create the model name.

- Choose the INT MODULE, then turn ON INTERNAL RF, select the OUTSIDE or INSIDE ANTENNA (Dual internal antennas and external antennas work simultaneously while selecting the OUTSIDE ANTENNA.)

- Set the Mode for TANDEM X20 internal RF corresponding to your receiver (ACCESS, ACST D16).

Step 3: Set the Receiver Number

- The system will assign you the receiver a number automatically when you create a new model, and this can be easily changed. The range of the Model ID is 00-63, with the default number being 01. Once the receiver is set to the desired number and is bound to the TANDEM X20, the bind procedure will not need to be repeated unless the number is changed. At this point, set the receiver number to your preferred number and repeat the binding operation.

Step 4: Registration

- In ACCESS model, select the STATE (Register) into registration status on radio side. Then Press the [F5] button and power on your receiver, and select the “ID Name XX” and [REGISTER] to complete the Registration process then power down the receiver.

Step 5: Automatic binding (Smart Match)

- Move the cursor to RX1[BIND] and select it, power your receiver, select the RX, and complete the process. The system will confirm “Bind success” (Pressing the “F5” button is not required in ACCESS to bind. Please see the receivers manual for details).
Step 6: Set Failsafe mode
There are 3 failsafe modes when enabled: No Pulse, Hold, Custom.

- **No Pulse**: on loss of signal the receiver produces no pulses on any channel. To use this type, select it in the menu and wait 9 seconds for the failsafe to take effect.
- **Hold**: the receiver continues to output the last position before signal was lost. To use this type, select it in the menu and wait 9 seconds for the failsafe to take effect.
- **Custom**: preset to required positions on lost signal. Move the encoder to the failsafe mode of channel and press Encoder, then choose the Custom mode. Move the cursor to the channel you want to set failsafe on, and press Encoder.

Then rotate the Encoder to set your failsafe for each channel and short press Encoder to finish the setting. Wait 9 seconds before the failsafe takes effect.

Notice:
- When failsafe is disabled on TANDEM X20 side, the failsafe set on receiver side will be used.
- SBUS port does not support the No Pulse failsafe mode and always outputs. Set “Hold” or “Custom” for SBUS port.

Step 7: Range
Range refers to TANDEM X20 range check mode. A pre-flight range check should be done before each flying session. Move the cursor to “SETATE,” until the Encoder to select “RANGE” mode and press Encoder. In range check mode, the effective distance will be decreased to 1/10. Press the Encoder again, turn to normal state.

### FLYING SAFETY

- **Warning:**
  - To ensure the safety of yourself and others, please observe the following precautions.
  - Do have regular maintenance performed. Although your Horus X12S-ISRM protects the model memories with non-volatile EEPROM memory (which does not require periodic replacement) and of a battery, it should have regular check-ups for wear and tear. We recommend sending your system to your FrSky Service Center annually during your non-flying season for a complete check-up and service.

#### Battery

- **Charge the batteries:** Using the standard Horus battery and charger, always recharge the transmitter and receiver batteries for at least 8 hours before each flying session. A low battery soon will die, causing loss of control and a crash. When you begin your flying session, reset your transmitter's built-in timer, and during the session pay attention to the duration of usage. Also, if your model uses a separate receiver battery, make sure it is fully charged before each flying session.

#### Nickel-metal hydride Battery Safety and Handling instructions

- **IMPORTANT PRECAUTIONS**
  - Do not leave a NiMH battery unattended at any time while being charged or discharged.
  - Do not attempt to charge NiMH batteries with a charger that is NOT designed for NiMH batteries, as permanent damage to the battery and charger could result.
  - Always charge NiMH batteries in a fireproof location. Do not charge or discharge NiMH batteries on carpet, a cluttered workbench, near paper, plastic, vinyl, leather or wood or inside an R/C model or full-sized automobile! Monitor the charge area with a smoke or fire alarm.
  - Do not charge NiMH batteries at currents greater than the “TC” rating of the battery (“C” equals the rated capacity of the battery).
  - Do not allow NiMH cells to overheat at any time! Cells which reach greater than 140 degrees Fahrenheit (60°C) should be placed in a fireproof location.
  - NiMH cells will not charge fully when too cold or show full charge.
  - It is normal for the batteries to become warm during charging, but if the charger or battery becomes excessively hot disconnect the battery from the charger immediately! Always inspect for potential for damage any battery which has previously overheated for potential damage, and do not re-use if you suspect it has been damaged in any way.
  - Do not use a NiMH battery if you suspect physical damage has occurred to the pack. Carefully inspect the battery for even the smallest of dents, cracks, splits, punctures or damage to the wires and connectors.
  - Do NOT allow the battery's internal electrolyte to get into eyes or on skin—wash affected areas immediately if they come in contact with the electrolyte.

#### Updates

FrSky is continuously adding features and improvements to our radio systems. Updating (via the pre-installed MicroSD card in Horus X12S-ISR SF Card Slot) is easy and free. To get the most from your new transmitter, please visit the following section of the FrSky website www.frsky-tech.com for the latest update firmware and how-to-guide.

**Horus X12S-ISRM** installed the FrSky F/FX operation system. Do not hesitate to contact FrSky if you have ideas and suggestions for current and future radio systems, or if you are willing to join the FrSky developing union to be part of the projects.

- The currently pre-installed firmware of Horus X12S-ISRM is FrSky F/FX firmware, developed and well tested by FrSky. The transmitter also support the open source software.

### Model Setup for TANDEM X20 External RF Module

The external RF module can be powered on or off by software. The setup process is the same as that for the internal RF. External modules should be closed when not in use.