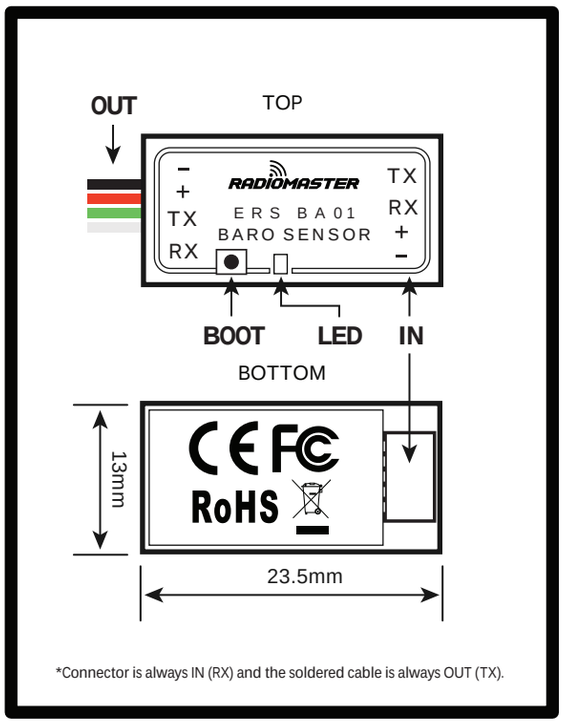
ERS-BA01 User Manual



*Connector is always IN (RX) and the soldered cable is always OUT (TX).

INTRODUCTION

The ERS-BA01 Barometer Sensor provides accurate, real-time altitude data for compatible ExpressLRS PWM receivers. By capturing barometric pressure and converting it into precise relative altitude information, the ERS-BA01 delivers reliable telemetry back to your radio. This sensor delivers clear, responsive altitude monitoring for any project or application. It also includes a pass-through port, enabling easy expansion with additional ERS-series telemetry modules.

FEATURES

- Real-Time Altitude Telemetry: Converts barometric pressure measurements into accurate relative altitude data for instant feedback on your radio.
- Expansion-Ready Pass-Through: Includes an in-and-out port for daisy-chaining additional ERS sensors without rewiring your setup.
- Seamless ELRS Compatibility: Integrates easily with supported ExpressLRS PWM receivers via CRSF for fast and dependable data transmission.

SPECIFICATIONS

• Size:	23.5*13*7mm
• Weight:	4.2g
• Power Supply:	DC 5.0~8.4V
• Current:	9mA
• Altitude Accuracy:	±0.5 m

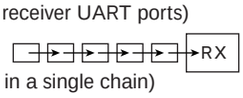
INCLUDES

1x ERS SENSOR (ERS-BA01 Barometric Altitude Sensor)
3x Heatshrink

DEVICE CONNECTION

All sensors can be connected in series to form a single serial chain. If your receiver has two or more serial ports, do not connect sensors to separate ports - this may cause data anomalies and Lua script interaction errors.

❌ **Problematic connection method:**
(Sensors connected to separate receiver UART ports)

✅ **Correct connection method:** 

(Sensors connected head-to-tail in a single chain)

Once connected, plug the chain into the receiver's UART input. Sensor data will then appear on any remote controller that supports the CRSF protocol. For example, in EdgeTX, navigate to "TELEMETRY," then click "DISCOVER NEW"
to search for new sensors. If the display is abnormal, select "DELETE ALL" to clear the list and Discover New.

SCRIPTS WIDGET

The RM Sensor Configurator Lua Script, developed by RadioMaster, allows configuration and monitoring of RadioMaster telemetry sensors. It enables users to view sensor information and adjust supported settings. The RM Sensor Configurator Lua Script file can be downloaded from the official RadioMaster website.
ERS-BA01 Sensor Configuration:
On radios with a full-color display, it appears as “RM Sensor Configurator”; on monochrome displays, it appears as “RM Sensor Config.”
Available options:
LED ON/OFF – Enable or disable the sensor status LED
SENSOR POWER ON/OFF – Power the sensor on or off
REBOOT – Restart the sensor remotely
CALIBRATE – Calibrate the barometer for accurate altitude readings
RESET CONFIG – Restore factory settings.
Installation:
- CONNECT the radio to the PC and SELECT USB Storage / U-Disk mode.
- LOCATE the RM Sensor Configurator Lua Script directory.
- COPY all .lua files from this directory to: “SCRIPTS” —> “TOOLS”
- Safely DISCONNECT the radio.

Usage:
- On the radio, OPEN the Tools page (PRESS “SYS” BUTTON to enter the “TOOLS” tab).
- Select RM Sensor Configurator Lua Script.
- The interface will automatically detect connected RadioMaster sensors.
- The screen displays sensor information, including:
  - Device type
  - Device name
  - Sensor ID
  - Status and parameters

⚠️ Select a sensor to access its configuration menu.
Available options vary depending on the sensor type. For example:
- RPM (BLD) Sensor – allows Moto_poles adjustment to ensure correct RPM calculation.
- All supported sensors allow remote ReBoot via RM Sensor Configurator for quick resets (e.g., resetting barometer altitude).
- The current sensor needs the capacity to be set in the RM Sensor Configurator.

SET CAPACITY: Set battery capacity (default: 7000 mAh). Press Enter, scroll the encoder to modify, then Enter to save. This enables real-time telemetry of the remaining percentage.

FIRMWARE UPDATE

⚠️ IMPORTANT POWER WARNING
Always power the sensor only from the RadioMaster UART Tool using the 5V output. DO NOT use a BEC or any external power source - voltage differences can cause immediate damage
to the sensor. All sensor updates must be performed via USB-serial using the RadioMaster UART Tool. Connect
the sensor through the IN port on the UART Tool before starting the update.

- HOLD the BOOT button while powering on the sensor via the UART Tool to enter bootloader mode (double-flash LED).

Open the web app and follow:
- SELECT “FIRMWARE UPDATE”, connect to the serial device on your PC or Mac, choose the sensor from the dropdown, and click “START.”
- SELECT the firmware file and begin the update.

The sensor will auto-restart when the update is complete, and the double-flash will stop.

Required Software Versions:
- EdgeTX 2.11.0 or later
- ExpressLRS 3.6.2 or later

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