RADIO MASTER

TOP

RADIOMASTER
ERS CV01
CELL VOLT

- + RX TX
- + TX RX

Reset

8 7 6 5 4 3 2 1

OUT   LED   BOOT   LED

BOTTOM

CE FC
RoHS

25mm

IN

43.5mm

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

INTRODUCTION

The **ERS-CV01** Cell Voltage Sensor is a compact, plug-and-play telemetry module for use with compatible ExpressLRS PWM receivers. Just connect the sensor to your battery's balance port, and it will monitor the real-time voltage of each cell, transmit the data via the ELRS receiver, and display it directly on your radio. With instant per-cell monitoring, you can fly, drive, or sail with confidence while maintaining your battery's health. Like other ERS-series sensors, the ERS-CV01 also supports pass-through expansion for easy daisy-chaining with additional telemetry modules.

FEATURES

- Real-Time Per-Cell Voltage Monitoring: Instantly view individual cell voltages through your radio for improved battery safety and performance.
- Plug-and-Play Balance Port Connection: Easily connects to the battery's balance port for accurate cell-level voltage readings.
- Future-Ready Pass-Through: Includes an in-and-out port to daisy-chain additional ERS telemetry sensors as your setup grows.
- Seamless ExpressLRS Integration: Designed to work effortlessly with compatible ER series ExpressLRS PWM receiver.

SPECIFICATIONS

- Size: 43.5*25*7mm
- Weight: 7.8g
- Power Supply (serial port):   DC 5.0~8.4V
- Operating current (serial):   8 mA
- Balance port current (8S):   2 mA
- Supported cells: 2–8S
- Battery types: LiPo, LiHV, LiFe, LiIon
- Voltage accuracy: ±0.01 V
- Temperature range: −10 ℃ to +85 ℃

INCLUDES

1x RadioMaster ERS-CV01 Cell Voltage 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:** ▭→▭→▭→▭→▭→RX
(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 CellsValue widget is an EdgeTX-developed Lua widget that displays individual cell voltages when used with the ERS-CV01 Cell Voltage Sensor.
The widget must be downloaded and installed on the radio to view CV01 telemetry data on the screen.
ERS-CV01 Sensor Configuration:
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
SET CELL_ID (RUN) – Automatically assign an ID when multiple CV01 sensors are connected
SET CELL_COMBINE ON/OFF – Enable or disable combined cell voltage reporting
CALIBRATE – Calibrate voltage readings
UNIT CHANGE ON/OFF – Reserved for future use (not currently active)
RESET CONFIG – Restore factory settings

Installation:
- **CONNECT** the radio to your PC via USB and **SELECT** USB Storage / U-Disk mode.
- **LOCATE** the CELL_LUA folder provided with the product.
- **COPY** the entire CELL_LUA folder into the radio's SD card directory: **"WIDGETS"**
- Safely **DISCONNECT** the radio.

Usage:
- From the radio home screen, **LONG-PRESS** the page button to access Screen Settings.
- **CLICK** the **"SETUP WIDGET"** button
- **SELECT** the Cell labeled **"CELLS"** Value from the widget list.
- When the ERS-CV01 sensor is connected, the widget will display:
    - Individual cell voltages
    - Pack voltage
    - Remaining capacity (when supported)

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