

# Eltek TU1006 - WSR (Wireless Sensor Receiver) Instructions

## Product range

Model	Outputs
WSR8V	8 x 0-5V
WSR16V	16 x 0-5V
WSR16VS*	16 x 0-5V
WSR8C	8 x 4-20mA
WSR16C	16 x 4-20mA
WSR8C10mA	8 x 0-10mA
WSR16C10mA	16 x 0-10mA



## Introduction

Information from sensors is relayed to the WSR via GenII transmitter units over distances of up to 1000 metres (line of sight), with complex sites covered using the RP250GD repeater. The WSR converts the over air incoming data into voltage or current outputs which can then be fed directly to your data acquisition or process control system.

The WSR is a self-contained mains-powered receiver and output unit with built-in rechargeable batteries. An LCD is incorporated for real time metering of sensor values. The WSR is suitable for connection to systems that accept 0-5VDC, 4-20mA or 0-10mA analogue inputs with slowly changing variables. Seven models are available with 8 or 16 inputs/outputs.

Model WSR16VS is uniquely for use with transmitter types GC/GD10D and GC/GD13E, where the 0-5V output corresponds to 0-50 degree C or 0-5V output corresponds to 0-100% RH.

Most GenII transmitters types can be used with the WSR. Transmitters and WSR are configured using RxConfig software included with each WSR order. Lead type LCTX3 is supplied, this permits programming of either GenII transmitter or WSR from the PC serial port. If the PC connection is USB only an adaptor can be supplied. Contact Eltek or your supplier.

## RxConfig

Note: Ensure the PC connected to the WSR is installed with the software supplied with the WSR.

The WSR configuration program, RxConfig, allows the user to:

- Read transmitter settings
- Set the transmitter interval (minimum 1 sec, maximum 4 hours)
- Use the transmitter settings to assign a transmitter channel to a preferred WSR channel.
- Meter configured WSR channels
- Save/Restore existing configurations to the WSR

Note: The latest version of RxConfig is also available to download from <http://www.eltekdataloggers.co.uk/download.html> (see section "Additional Tools".)

## Power Requirements

The WSR requires a permanent AC mains connection. Use only the AC power supply provided.

The unit will be despatched in the OFF condition and connecting power will power up the WSR. Using the RxConfig software, the WSR can be forced to be OFF. To do this, open the software and click **Tools > Turn Receiver Off**.

When powered, the Green LED on the top of the unit will be on.

Built-in Ni-Mh batteries (7.2V nominal) provide the following backup functionality in the event of power failure (provided the batteries are fully charged):

For 'V' models: 24 hours of fully functional operation

For 'C' and 'C10mA' models: 24 hours of operation but with no output

A fully discharged battery is normally charged in 48 hours. Once the batteries become low, the WSR will switch itself into a low power mode and turn off the receiver. The display will then show OFF. Connecting power again will power up the WSR.

## Product specification

AC supply:	100 to 250V AC (Use only Eltek power supply type MP12U)
DC input:	12.5VDC nominal
	Max current: 40mA (no loads connected) (WSR-8V and WSR-16V) Max current: 200mA (WSR-8C) / 360mA (WSR-16C) Max current: 200mA (WSR-8C10mA) / 360mA (WSR-16C10mA)
Battery endurance:	For WSR-8V and WSR-16V – up to 24 hours operation. No output for WSR-8C and WSR-16C.
Freq. UHF (Europe):	Default is 434.225Mhz (other frequencies available – refer to Eltek)
Freq. US:	Default is 914.5Mhz (other frequencies available – refer to Eltek)
Rx sensitivity:	-117dbm
Ant connection:	SMA socket
Antenna – standard:	¼ wave whip (shipped with product)
Antenna – alternative:	Indoor/outdoor dipole, lead length 5M standard, accessory from Eltek Ltd type LW-ANT/SMA. The maximum recommended lead length is 10M.
Temperature Range:	-10 to +55°C
Humidity:	95% non condensing
Environment:	Indoor use only IP40. A secondary enclosure must be used for outdoor use

## LED signals

### LED (Green)

#### WSR Only

On	WSR powered from external supply
Short Flash	WSR powered from battery
Off	WSR asleep.

### LED (Red)

Long Flash	Indicates the WSR has detected a valid data packet but not necessarily one that will be used. (e.g. from other transmitters on the same frequency within radio range)
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## Display/Keypad

The display, in conjunction with the Keypad, can display the following parameters:

- Battery Voltage
- External Voltage
- Channel value
- Engineering value of channel data (e.g. in degrees C)
- Asterisk \* flashes when a valid packet has been received.
- 

Press the **function** button to scroll through as follows:



Press the **select** button when in Value C1 to scroll through the channels.

To show a channel's reading, press and hold **select** whilst the channel's VALUE C[n] text is displayed.

If the channel is not configured, the display will show OPEN for these parameters.

The **set** button is not used on the WSR.

## Principle of operation

The WSR works by first receiving a data 'packet' from a transmitter, verifying it, then setting a voltage (or current) output if configured to do so. It is verified by means of a checksum contained in the message.

The voltage (or current) output is refreshed on receipt of a valid data packet from the transmitter. It is held at that value for a configurable WSR **interval**.

If the WSR does not receive a message for a particular Channel within the configured interval, the output will be set to a configurable **No Data** value.

## Setting No Data value and interval

The WSR **interval** defaults to 6 times the transmitter interval. This can be overwritten if required.

A **No Data** value is the value that the output is set to if no valid transmissions are received within the interval.

## Channel Setup Procedure

- Start up the RxConfig program. Set the PC serial port using **File > Properties** if required.
- Connect the PC to the WSR comms using LC-TX3 lead provided.
- Get the current receiver configuration using the **Get RX** button. (There are four information boxes: **Batt voltage** (approx 8.5VDC), **Ext Voltage** (approx 12vDC), **RX Type** (as on product type plate) and **Version** issue).
- RxConfig will default to the number of channels to display for the WSR type connected.
- Connect each transmitter, in turn, to the PC. You will need to transfer the LCTX3 from the WSR to the transmitter. The comms socket is located inside a transmitter; to gain access, remove the two bottom cover retaining screws and withdraw the battery cassette but do not disconnect it. The comms socket is now accessible.
- Get the **Transmitter Details** using the **Get TX** button
- Set the TX interval – use the formula: WSR refresh rate / 6. Click **Set Interval** to enter it.
- Click on a Tx chan to highlight it and click **select range** to access the appropriate drop down options. Click **OK**. Note: TX channels are referred to as A, B, C etc in the WSR configuration table.
- Select the destination WSR channel by clicking on it to highlight it.
- Select the required Transmitter channel by clicking on it to highlight it.
- Copy the channel details to the Receiver configuration using the **>>** button. (Note: this will be greyed out unless both the TX source Channel and Receiver destination channel are selected.)
- Repeat the above procedure for all TX channels required.
- Now transfer the LC-TX3 lead to the WSR comms and click **Set RX**.
- Edit the configuration for each WSR Channel. Note: only the highlighted boxes can be edited.
- Copy the configuration to the Receiver using the **Set RX** Button and remove the LC-TX3 lead.

## Calibration

### Calibration Procedure for the WSR-8V / WSR-16V

- Connect the PC to the WSR using LC-TX3 lead.
- Connect a good quality DVM to the channel to be calibrated.
- Select the WSR channel and click the **Set Max Cal** button.
- Enter the reading on the DVM into the dialog.
- Close the Calibration dialog and select the next channel to calibrate.

### Calibration Procedure for the WSR-8C / WSR-16C / WSR-8C10mA / WSR-16C10mA

**Important:** The external AC/DC supply type MP12U provided must be connected when calibrating.

- Connect the PC to the WSR using the LC-TX3 lead.
- Terminate the channel to be calibrated with a precision 10ohm 0.1% tolerance resistor.
- Connect a good quality DVM (voltage mode) across the resistance.
- Select the WSR channel and click the **Set Min Cal** button.
- Enter the reading on the DVM x 100 into the dialog.
- Click the **Set Max Cal** button
- Enter the reading on the DVM x 100 into the dialog.
- Close the Calibration dialog and select the next channel to calibrate.

## Menus

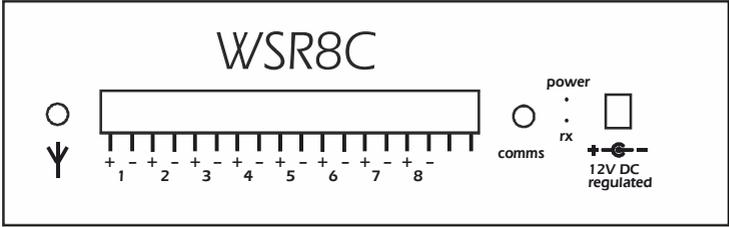
File	Load RX	Upload an existing WSR configuration
	Save RX	Save current WSR configuration
	Properties	Select PC serial port for communication with WSR
Get Tx		Gets the current configuration from Transmitter
Enable Chan		Enable a single channel in Transmitter
Disable Chan		Disable a single Channel in Transmitter
Get RX		Gets the Current configuration from the WSR to the PC
Set RX		Sets the Configuration in the WSR from the PC
Start/(Stop) Meter		Meters Values from WSR
Edit Chan		Edit the selected WSR channel details in PC
Clear Chan		Clear the selected WSR Channel details
Cal. Chan		Calibrate the Selected channel

## Packed Items

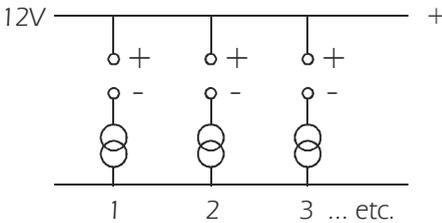
- WSR
- RxConfig software CD
- LCTX3 lead
- Antenna
- MP12U 110/250AC power supply with regional adaptor
- WSR User Instructions (TU1006)

# Connections

**Current output** 4-20mA (WSR-8C / WSR-16C)  
 0-10mA (WSR-8C10mA / WSR-16C10mA)

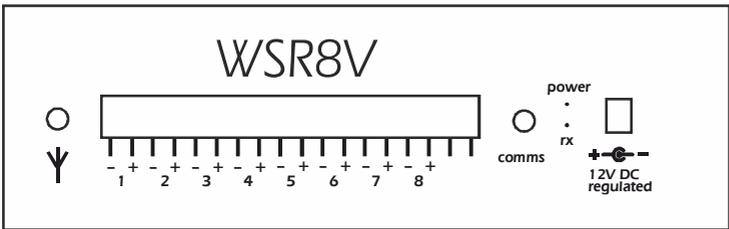


Common +ve:

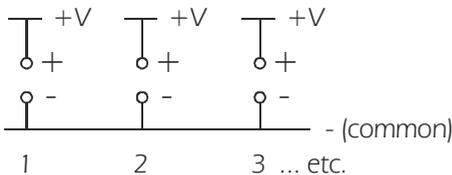


**Warning:** The current source is in the return to negative connection. The WSR8C/16C common is the +(12VDC) rail. If connecting multiple signals (e.g. process control system) they may need to be galvanically isolated.

**Voltage output** (WSR-8V / WSR-16V)



Common -ve:



## Eltek

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