

Trs Systems

Wireless Sensors & Controls



Trs2432

Programmer User's Manual

**RM2432, EX2432 & RM2402 Spread Spectrum
Receivers
Setup & Configuration**

Revision 2.00**Software License Agreement****IMPORTANT**

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1. Introduction



Spread Spectrum Receiver With Analog And Digital Outputs

The RM2432/Ex2432 & RM2402 wireless receivers utilize reliable Spread Spectrum Mesh Network Radio technology. Together with other Trs wireless sensors and controls, the system can be used to transmit remote sensor readings, status/alarm indications and control signals wirelessly. It is compatible with any control systems or DDC panels that accept 0-10 VDC or 0-5 VDC inputs.

2. Features

- For wireless sensor and wireless control applications
- Receives wireless sensor/relay information and outputs a corresponding signal to any DDC controller/panel
- Models:
 - **RM2432D** - Up to 4 analog outputs (0-10 VDC or 0-5 VDC *field selectable*) and 4 digital outputs (relay contacts)
 - **RM2432/EX2432** – Up to two I/O Expansion Modules (EX2432) can be used with the RM2432 Receiver. This will enable up to 12 analog outputs (0-10VDC or 0-5VDC) and up to 12 digital outputs (relay contacts)
 - **RM2402** – Up to 2 digital outputs (relay contacts)
- Receives signals from up to 24 remote wireless sensor or control modules
- Real time sensor status indication – See Figure 1
- Individual sensor low battery and lost sensor alarm indication – See Figure 1
- Common alarm relay output for external indication.
- Adjustable digital signal capture time (up to 4 hours) for applications such as temporary occupancy
- Reliable Spread Spectrum Wireless Mesh Network technology

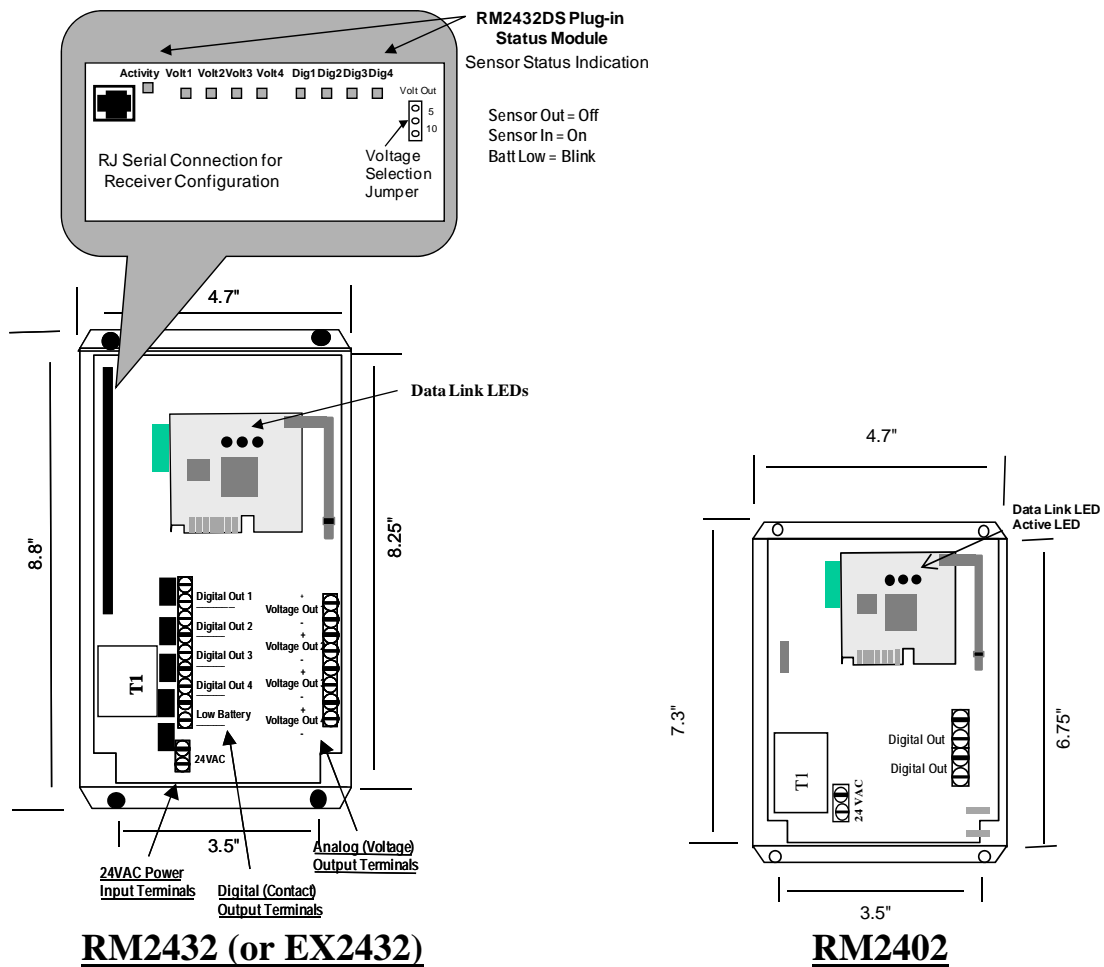


Figure 1

3. Configuration Software System Requirements

- PC (Notebook or desktop) with Windows 95, 98, XP, Vista or Windows 7
- Minimum one 9-pin serial port (or USB/Serial) that is not shared by another device.
- Minimum of 10 megabytes of hard drive memory is available.

4. Configuration Software Installation

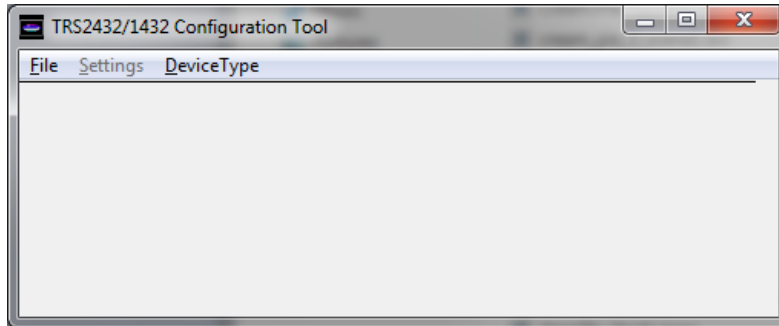
- The Trs2432 Programmer Configuration Software can be downloaded from the Trs Systems website or it may be shipped with the RM2432D Receiver.
- If a software CD is available, insert the disks or CD ROM into the appropriate disk drive and follow the instructions to complete the installation.
- If the software is downloaded from the www.trssys.com website, unzip the files to a temporary folder. Open the temporary folder and run the setup.exe file. Follow the instructions to complete the installation.
- **A folder named "trs", located at the root directory "c:\", of the computer, is required for the software to operate properly. If the folder "trs" does not exist, create the folder at the "c:\\" level before proceeding to section 5 below.**

5. Connecting the RM2432 or RM2402 receiver to a PC

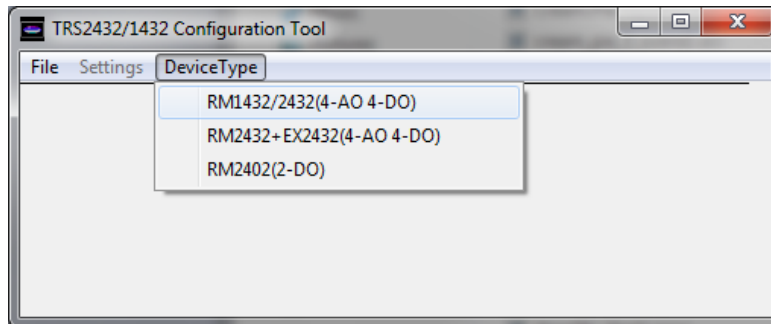
- A programming cable (PN: CK2432D) is required to connect from the PC serial port to the RM2432/RM2402 Receiver. The TRS2432 Programming Cable is a 4-ft cable with a 9-pin female connector on one end and a RJ11 type connector on the other end.
- Connect the 9-pin female connector of the programming cable (PN: CK2432D) to the COM (Serial) port of the PC. Ensure the 9-pin female connector is securely attached to the COM (serial) port of the PC by tightening the connection screws
- Connect the other end of the programming cable (RJ11 connector) to the RM2432 Circuit Board Connector (female RJ connector). See Figure 1 above for location.
- Connect 24VAC to the RM2432A Receiver power input terminals

6. Creating a RM2432 Configuration File

- To create a new RM2432 configuration file open the Trs2432 Programmer by clicking on Start > Programs > Trs2432 Programmer.



- Select RM1432/RM2432 from “DeviceType” tab.



- To open a new configuration table Click on File > New . A blank configuration table will open.

	TRANSMITTER ID	TRANS CHAN	DATA FORMAT	RANGE START	RANGE END
ANALOG					
ANALOG					
ANALOG					
ANALOG					
DIGITAL					
DIGITAL					
DIGITAL					
DIGITAL					

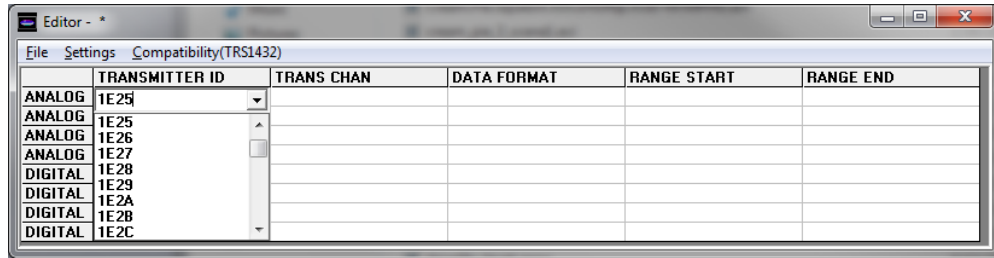
- There are eight rows displayed as shown above (4 ANALOG & 4 DIGITAL). These rows represent the eight outputs of the RM2432 Receiver. Each of these outputs can be assigned to a sensor/transmitter. Up to 8 sensor/transmitters can be assigned to the receiver if needed. The first “Analog” row will represent analog output #1 on the RM2432. The 2nd “Analog” row will represent the output #2 on the RM2432 and so on.
- Each row of the configuration table is a unique data register having five special attributes.

TRANSMITTER ID	--	Assigns a wireless sensor/transmitter address to the RM2432 output. Each wireless sensor is factory configured with a unique hexadecimal address (TXID).
TRANS CHAN	--	Assigns a wireless sensor/transmitter data channel to the data register. A wireless sensor/transmitter may have up to four (4) analog channels and (4) digital status/alarm channels.
DATA FORMAT	--	Assigns the data type to the register – temperature (Thermistor 20K), humidity, analog or digital.
RANGE START	--	For Analog Output Only – Assign the low end of the analog range (0 volt output)
RANGE END	--	For Analog Output Only – Assign the high end of the analog range (5 or 10 volt output)

7. Transmitter ID

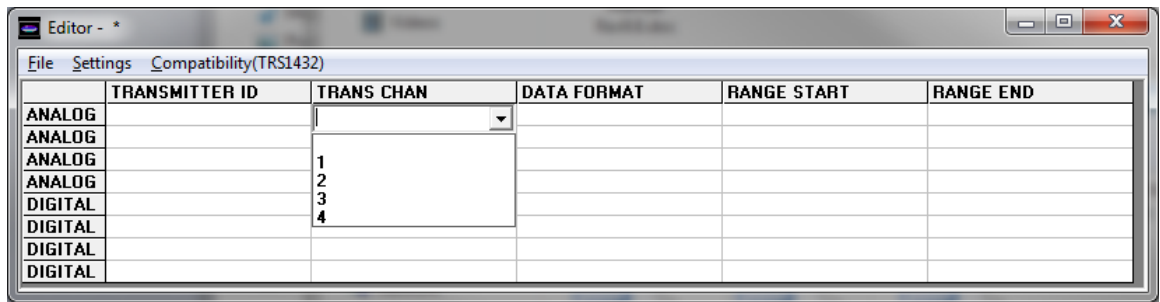
- Assign a sensor/transmitter to the data register by clicking in the TRANSMITTER ID cell to open a drop down menu. Use the scroll bar to scroll to the correct address or automatically scroll to the address by typing the hexadecimal address in the cell. To select the address click on the appropriate ID in the drop down menu or press the down arrow key. Each Trs Systems transmitter is factory configured with a unique ID – refer to the sensor product data sheet for the location of the transmitter ID (TXID).

Note: The TXIDs are entered as numerical value. For sensor ID “03BE”, it should be entered as “3BE”



8. Transmitter Channel

- Assign the appropriate sensor transmission channel to the analog or digital output register by clicking in the cell to open a drop down menu. Click on the appropriate transmission channel (01 to 04) to select.



- Refer to Table 1 below for TRAN CHAN number for all the applicable Trs Sensors:

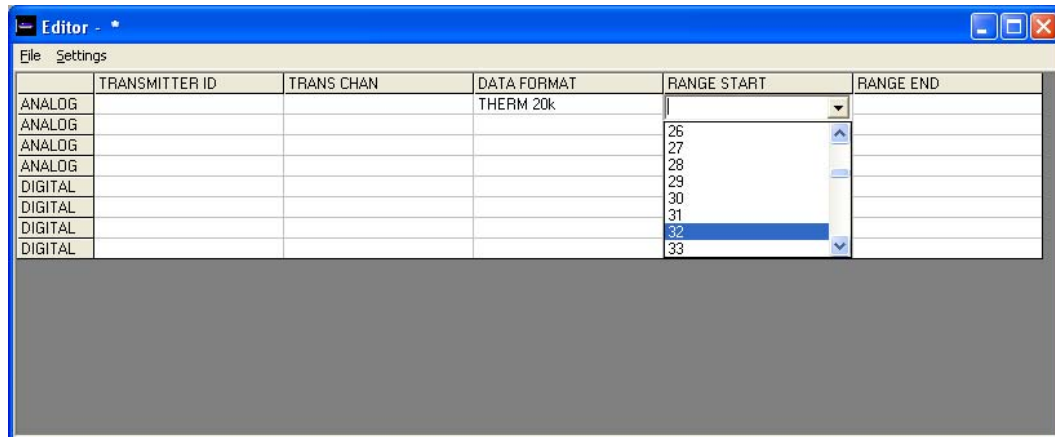
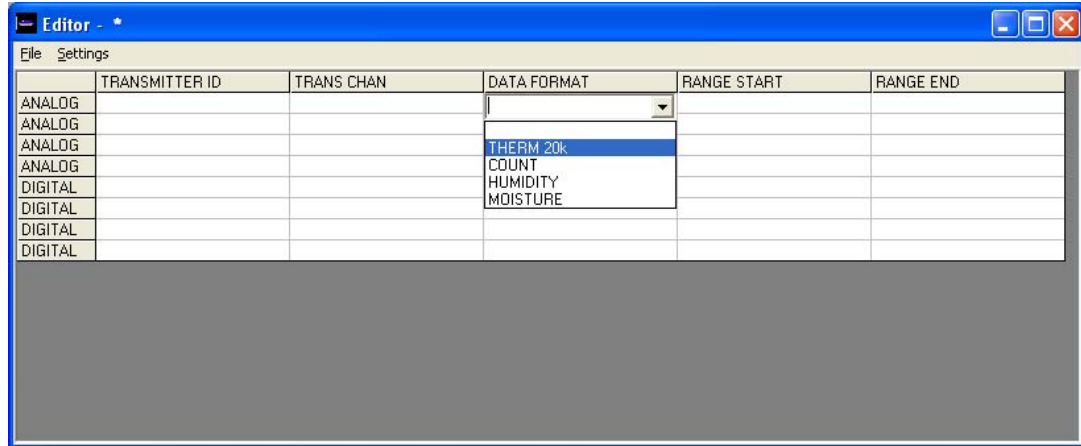
Device	Description & Data Type	Output type	Trans Chan	Data Format	Range Start	Range End
WT2630A	Wall Sensor Temp	Analog	1	Therm 20K	32	104
WT2630B	Wall Sensor Temp	Analog	1	Therm 20K	32	104
	Wall Sensor Setpoint Adjustment	Analog	2	COUNT	0	4095
	Wall Sensor Push Button	Digital	1	Digital	NA	NA
WT2630C	Wall Sensor Temp	Analog	1	Therm 20K	32	104
	Wall Sensor Push Button	Digital	1	Digital	NA	NA
WH2630A & C	Wall Humidity Sensor	Analog	1	Humidity	0	100
WH2630B & D	Wall Sensor Temp	Analog	1	Therm 20K	32	104

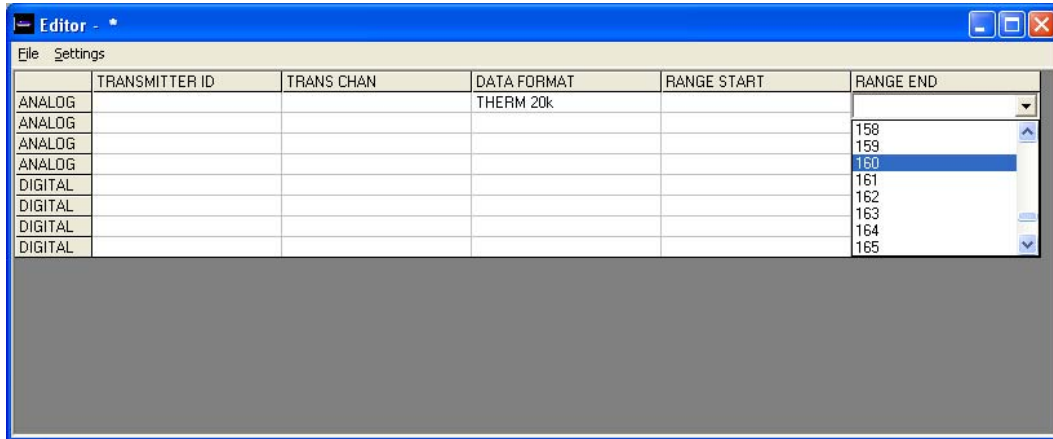
	Wall Humidity Sensor	Analog	2	Humidity	0	100
OA2630A	Outdoor Temp	Analog	1	Therm 20K	-40	160
	Outdoor Humidity	Analog	2	Humidity	0	100
OT2630A	Outdoor Temp	Analog	1	Therm 20K	-40	160
OH2630A	Outdoor Humidity	Analog	1	Humidity	0	100
OST2630A	Outdoor Temp	Analog	1	Therm 20K	-40	160
DT2630A	Duct Temp	Analog	1	Therm 20K	25	125
DT2630B	Duct Temp	Analog	1	Therm 20K	-40	160
DT2650A	Average Duct Temp	Analog	1	Therm 20K	0	150
DH2630A,D	Duct Humidity	Analog	1	Humidity	0	100
DH2630B,E	Duct Temp	Analog	1	Therm 20K	25	125
	Duct Humidity	Analog	2	Humidity	0	100
DH2630C,F	Duct Temp	Analog	1	Therm 20K	25	125
	Duct Humidity	Analog	2	Humidity	0	100
FT2630A	Immersion Temp	Analog	1	Therm 20K	25	125
FT2630B	Immersion Temp	Analog	1	Therm 20K	0	200
RT2630B	Analog Inputs 0-10 VDC	Analog	1 to 4	Count	0	4095
	Digital Inputs	Digital	1 to 4	Digital	NA	NA
RT2602D	Digital Input Module	Digital	1 to 2	Digital	NA	NA
RT2620A,B	Digital Input Module	Digital	1 to 4	Digital	NA	NA
SST2630A	Remote/Strap-on Temp	Analog	1	Therm 20K	25	125
SST2630B	Remote/Strap-on Temp	Analog	1	Therm 20K	0	200
SST2630C	Remote/Strap-on Temp	Analog	1	Therm 20K	-40	160

Table 1

9. Data Format, Range Start & Range End

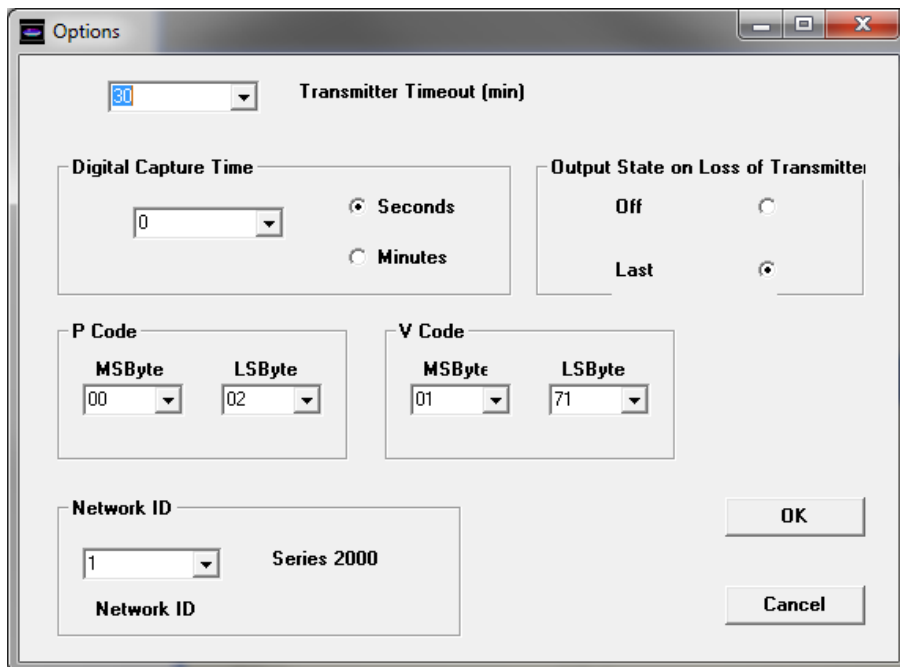
- Select the appropriate DATA FORMAT, RANG START & RANGE END values by clicking in the appropriate cells to open a drop down menu.





- Refer to table-1 above for information to assign the appropriate DATA FORMAT, RANGE START and RANGE END with different applicable Trs Systems sensor.

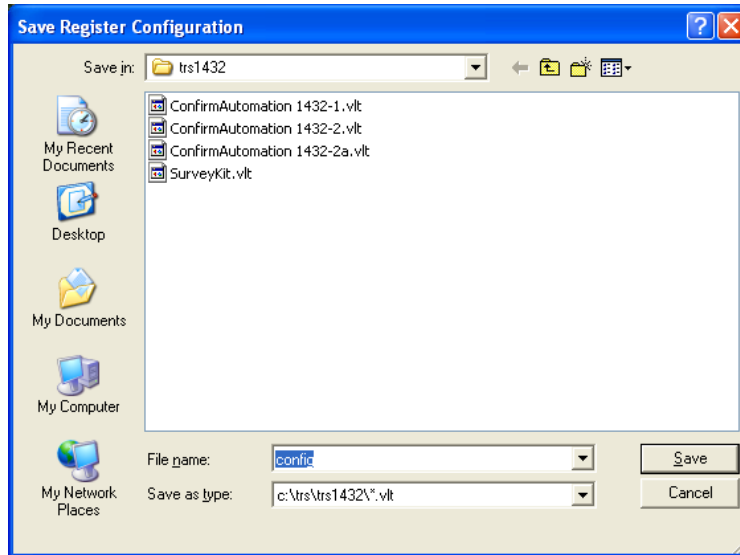
10. Miscellaneous Settings



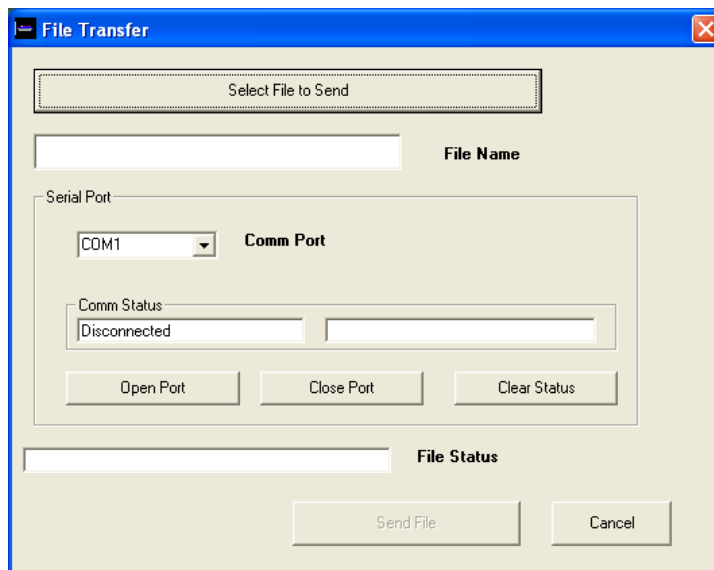
- Set the **transmitter transmission timeout interval** (suggestion 30 min.) by clicking in the Transmitter Timeout cell to open a drop down menu. Use the scroll bar to scroll down to the appropriate value (1 to 60 min.) or type the value in the cell to automatically scroll to the appropriate value. This will be used to generate an error message if the transmitter fails to transmit in the specified time interval.
- The **Digital Input Capture Time** can be set to hold a momentary contact closure such as the override button on the WT2630B/C for a period of time (**Default is 0 min. for RM2432D**).
- **The Digital Capture Time can be set up to 240 minutes (4 hours) in applications where an extended period of time is needed such as “unoccupied period by-pass”.**
- Set the Digital Capture Time interval (seconds or minutes) by clicking on “Seconds” or “Minutes”. Click in the Digital Capture Time cell to open a drop down menu. Use the scroll bar to scroll down to the appropriate value (0 to 240) or type the value in the cell to automatically scroll to the appropriate value. To select the timeout interval click on the appropriate value in the drop down menu.
- **Transmitter Codes are used for RM1432 Receiver Only** – The P-Code of the sensor/transmitter can be found on the sensor itself (example: PC 0002). The default (and most common) values are 00 (MSByte) and 02 LSByte). **The V-Code of the sensor will always be 01 (MSByte) and 71 (LSByte).**
- **Output State on Loss of Transmitter** – This option will enable the user to select the default outputs of the receiver when the associated sensor/transmitter lost communication with the RM2432D receiver (after the Transmitter Timeout period)
 - ‘Off’ - Analog output (associated with the lost sensor) = 0 VDC
Digital output (associated with the lost sensor) = contact open
 - ‘Last’ -Analog output (associated with the lost sensor) = last value before communication lost.
Digital output (associated with the lost sensor) = Last state before communication lost
- **Network ID – The Network ID applies to the new Series 2000 devices (RM2432/RM2402) only and is not applicable to the older RM1432D product.** Assign the mesh network ID of the receiver. This network ID should be the same as any Repeater/Routers that are assigned to this Receiver (Network Coordinator).

11. Saving and downloading the configuration file

- To Save the configuration file click on File > Save. It is recommended that the .vlt file be saved in the Trs folder already setup. i.e. C:\trs\trs2432



- Always save the configuration file before sending it to the RM2432 Receiver.*
- To send the new configuration file to the RM2432 Receiver click on File > File Transfer and a dialog box will appear.

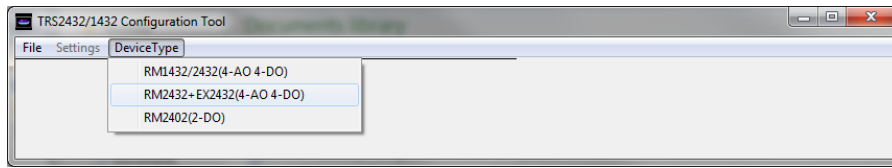


- Click on "Select File" and a window will open. Move to the Trs directory and select the appropriate file (last saved) from the list.

- Select the associated COM port (the com port to which the CK2432 programming cable is attached) on the drop-down manual and click open port. The Comm Status window will displayed whether the COM port is ready for file transfer. When the COM port is ready click on “Send File” to the send the configuration file to the Receiver.

12. Creating a RM2432/EX2432 Configuration File

- When the RM2432 is used with its I/O extension module, select the “RM2432/Ex2432” “DeviceType”.



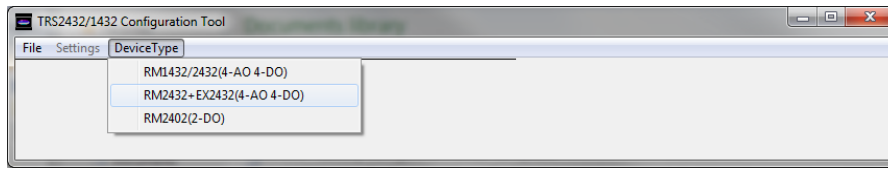
- To open a new configuration table Click on File > New . A blank configuration table will open.

	TRANSMITTER ID	TRANS CHAN	DATA FORMAT	RANGE START	RANGE END
ANALOG MAIN					
ANALOG MAIN					
ANALOG MAIN					
ANALOG MAIN					
DIGITAL MAIN					
DIGITAL MAIN					
DIGITAL MAIN					
DIGITAL MAIN					
ANALOG EXT1					
ANALOG EXT1					
ANALOG EXT1					
ANALOG EXT1					
DIGITAL EXT1					
DIGITAL EXT1					
DIGITAL EXT1					
DIGITAL EXT1					
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DIGITAL EXT2					

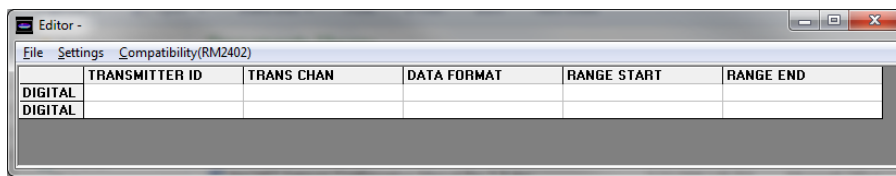
- There are 24 rows displayed as shown above (12 ANALOG & 12 DIGITAL). These rows represent the 24 outputs of the RM2432 Receiver and the EX2432 I/O Extension Modules. Each of these outputs can be assigned to a sensor/transmitter. Up to 24 sensor/transmitters can be assigned to the receiver if needed. The first “Analog” row will represent analog output #1 on the RM2432. The 2nd “Analog” row will represent the Output #2 on the RM2432 and so on.
- Enter all the analog and digital output register information where applicable. Refer to the previous sections for information and procedures.
- If only one EX2432 module is used, leave the “EXT2” or extension module #2 inputs empty.

13. Creating a RM2402 Configuration File

- When the RM2432 is used with its I/O extension module, select the “RM2402” “DeviceType”.



- To open a new configuration table Click on File > New . A blank configuration table will open.



- There are 2 rows displayed as shown above (2 DIGITAL). These rows represent the 2 outputs of the RM2402 Receiver. Each of these outputs can be assigned to a sensor/transmitter. Up to 2 sensor/transmitters can be assigned to this receiver if needed. The first “Digital” row will represent digital output #1 on the RM2402. The 2nd “Digital” row will represent the Output #2 on the RM2402.
- Enter all the digital output register information where applicable. Refer to the previous sections for information and procedures

14. Activating The Configuration File

Once the configuration file has been sent to the Receiver it will become active immediately. After the RM2432/RM2402 receives all the sensor transmissions, the appropriate LEDs at the top of the receiver will be lit. Note: The time for the LEDs to come on depends on the transmit time setting of the sensor – typically 1 to 2 min.

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For more information, please contact:

Trs Systems, Inc.
601 Carlson Parkway
Suite 1050
Minnetonka, Minnesota 55305
Telephone: 1-952-745-4510
Fax: 1-952-828-6093