

TP2000 Transmitter



Installation Manual

18020074, Rev. A 11/2003



Distributor:

**BASA
Bulgarian
Alarm Systems
Association**

This manual is intended for authorized personnel installing TP2000 transmitters on perimeters. It does not refer to the end user of the unit.

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Introduction

Thank you for purchasing TP 2000 v. 6.X transmitter. This new version features the following additions and improvements:

- it allows for an **independent distribution of events between two transmission frequencies** and a specification of a high-priority channel
- **fully programmable without jumpers**, programmed by means of a Windows[®] based application with intuitive user-friendly interface
- supports a choice of **three protocols** at the same time — Electronics Line, LARS and LARS1
- superbly reliable performance within a **temperature range of - 40° C to + 60° C**
- compact design.

General Description of TP2000 v.6.X Transmitter

TP2000 v.6.X transmitter consists of a printed circuit board placed in a metal box. It comprises two modules — a digital one, located in the lower part of the printed circuit board, and a high-frequency module in its upper portion. The unit is to be found in 3 frequency ranges — 150 MHz, 300 MHz and 450 MHz. Consecutive frequency channels are 12.5 KHz apart.

Input signals are encoded in the digital module of the unit and are emitted by the radio-transmitter. The signal which is sent out is received by a receiver tuned in the same frequency and are decoded by the central station of the IGP8000, CDS1000, LRS2000 or LRR8000 type.

The unit has 12 inputs. Two of them are power supply inputs and the others are information inputs. Their terminals can be connected to a 1.5 sq. mm. conductor.

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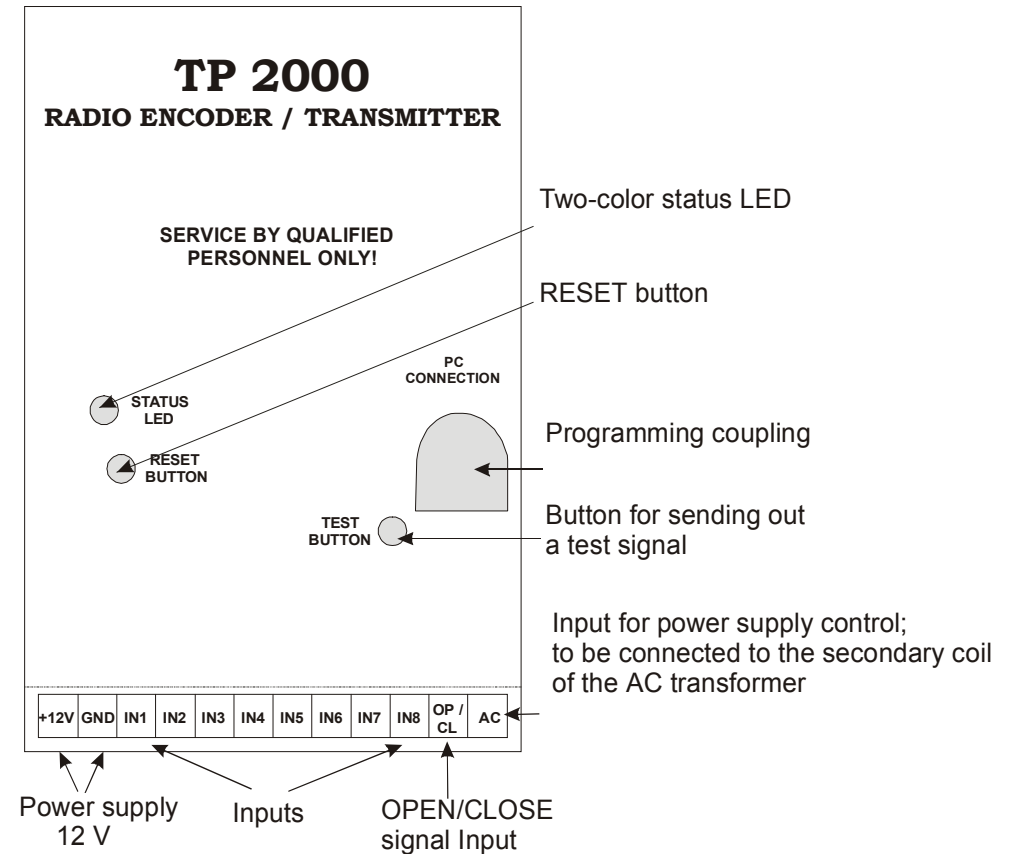
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The two-colour LED indication is to be understood as having the following meaning arranged by priority:

- LED has **gone out** — trouble;
- LED glows in **red** — transmission in progress;
- LED blinks, alternating between **red** and **green** — technical fault (power failure or low battery charge);

- LED flashes in **green**—the unit is working properly;
- LED glows in **green** and flashes in **yellow**—the unit is in test mode.

Calculating the Length of the TP2000 Transmitter Antenna According to Transmission Frequency

Calculations are made by using the following formula:

For **VHF (146 to 174 MHz)**: $L \text{ (m)} = 87.5 / F \text{ (MHz)}$

For **UHF (300 to 320 MHz)**: $L \text{ (m)} = 67.5 / F \text{ (MHz)}$

Example

For $F = 148.750 \text{ MHz}$ the antenna's length is calculated as follows:

$$L = 87.5 / 148.750 = 0.588 \text{ m, or } 58.8 \text{ cm}$$

For $F = 308.650 \text{ MHz}$ the antenna's length is calculated as follows:

$$L = 67.5 / 308.650 = 0.219 \text{ m, or } 21.9 \text{ cm}$$

After calculating the exact length required the antenna is to be cut. The length of the antenna is to be measured from its base, where it emerges from the coupling.

Installing TP2000 Transmitter

The installation of the transmitters starts with its mounting in an appropriate position on the site. It is preferable to remove the cover first and take into consideration whether it will be possible to attach the fixing screws after installation has been completed. The unit should be mounted where it will have good conditions for transmitting, e.g. far from metal screens. Provide for at least 50 cm above the unit for the antenna that you can connect as soon as

Status Bar

The **Status Bar** of the **Programming Kit for TP2000v.6.X Transmitters** window will display the inventory and serial number of the transmitter that has been selected to be programmed. Both number are set at the time of manufacture and are read from the transmitter when the **Read from Transmitter** command is executed.

Inv. Nr.: 34	Ser. Nr.: 0
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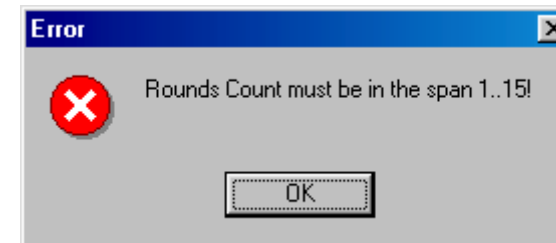
Value Verification

After placing the mouse cursor on a field the program will give you a prompt of the range of values that it is allowed to hold.

For example in the **RoundCount on Freq 2** field in the **RadioControl** group of the **Radio** tab the number of round repetitions on **Frequency 2** only values in the range of 1 to 15 are allowed.

Round Count on Freq 1	<input type="text"/>
Round Count on Freq 2	<input type="text" value="1..15"/>

When you type a value that is not within the permitted range an error message will be displayed. It will inform you which of the fields has been set incorrectly.

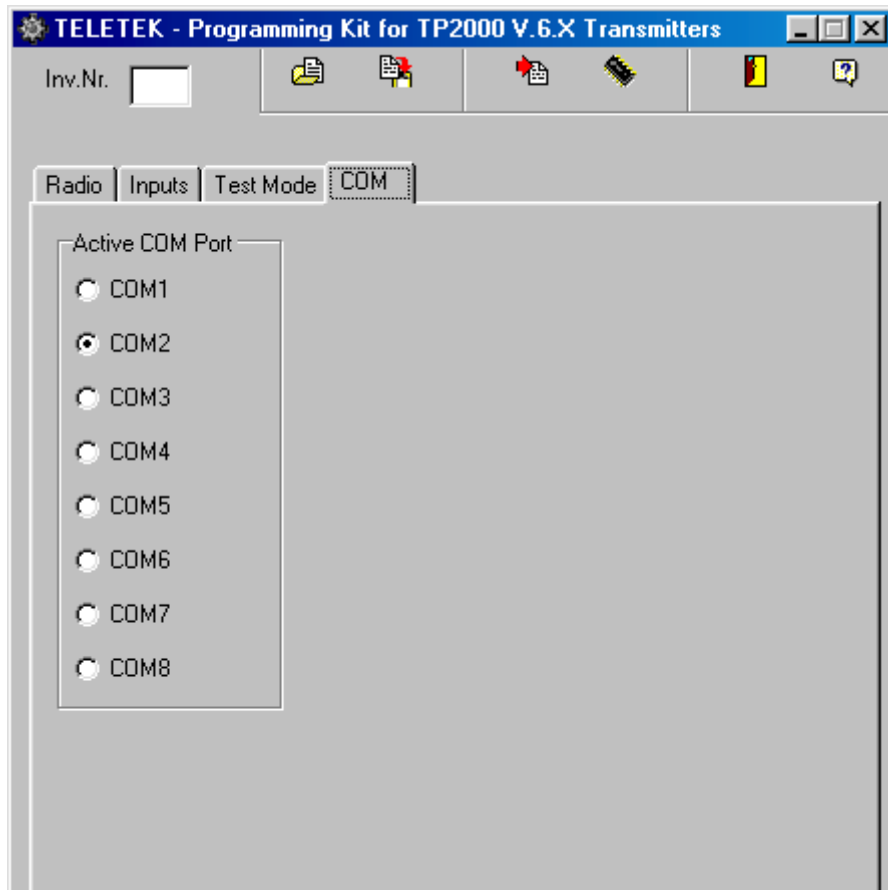


COM Tab

Select **COM Tab** to specify the COM port to which your transmitter is connected.



In **Active COM Port** group select the radio button corresponding to the port to which you have connected your transmitter by means of the PS2-to-RS 232 cable you have been provided with.



the case has been fixed in place.

Each transmitter comes with settings programmed by the manufacturer. Programming it involves changing their configuration and saving new parameters. Thus the unit is customized for a particular site.

To program the unit with a PC you will need:

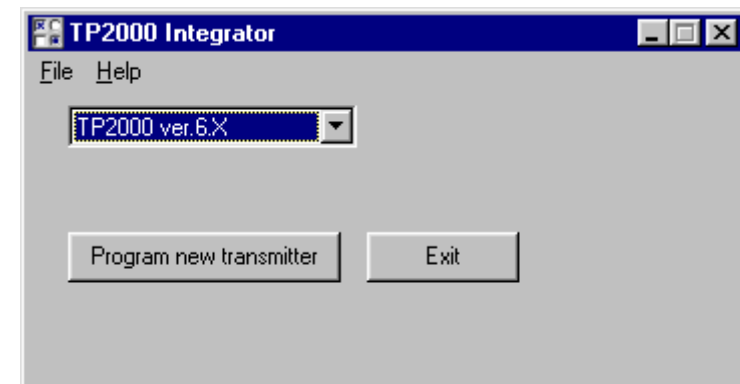
- IBM compatible PC, WINDOWS NT/95/98/2000/XP;
- **TP2000 Integrator** program;
- a PS2-to-RS 232 cable.

You need to have installed the **TP2000 Integrator** program on your computer. To do this you have to run the **SETUP** command from the floppy disc you have been provided with by the vendor. On the successful completion of installation the icon of **TP2000 Integrator** will appear in your Program Folder.

Introduction to TP2000 Integrator

TP2000 Integrator is an ancillary program that is part of the transmitter programming suite for the TP2000, TP2001 and TP2000 V.6.X transmitters.

Start the program by double-clicking the left button of the mouse on its icon.




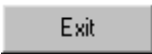

The menu of the program holds a **File** and **Help** options.

The drop-down **File** accesses the following commands:

- **New** — create a new file;
- **Open Default** — open an existing file with transmitter settings;
- **Exit** — closes the application.

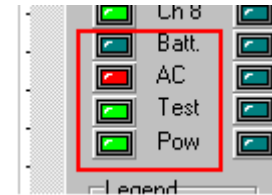
The **Help** opens a file with help topics.

Transmitter Programming Procedures

1. In the combo-box press  and select one of the options available – TP 2000, TP 2001 or TP 2000 v.6.X.
2. To interrupt transmitter programming procedures and close the application window press .
3. To confirm your selection and proceed to program the transmitter press .

To program a transmitter with settings specified in an existing file, select the **Open Default** command from the **Bar Menu**. Open the required file and press the **Program XXX** button.

This will invoke the **Programming Kit for TP2000 V.6.X Transmitters** program which will enable you to store the required settings in the transmitter.



The colour indication of the last four indicators is to be understood as follows:

- **Test** lights up in light green on sending a test message;
- **Batt** glows in red when the battery is flat and in green when the charge has been restored;
- **AC** glows in light green when power has been fed from the mains and in red when power failure has been established.

Note: If within 30 seconds no input signal has been received the unit will automatically quit test mode.

If two sites share one transmitter two columns with indicators will be displayed with the number of the corresponding site designated above the indicators that refer to it.

The first indicator in the column stands for the OP/CL input.

Following it come the eight inputs defined as logical channels Ch1 - Ch8.

Below them are to be found the indicators:

- **Test** – stands for a test signal;
- **Batt** – battery status;
- **AC** – power supply;
- **Pow** – power on. This indicator will only light up if there is a check in the **PowOnStatus** box of the **Radio** tab.



For each of the 8 inputs indicators:

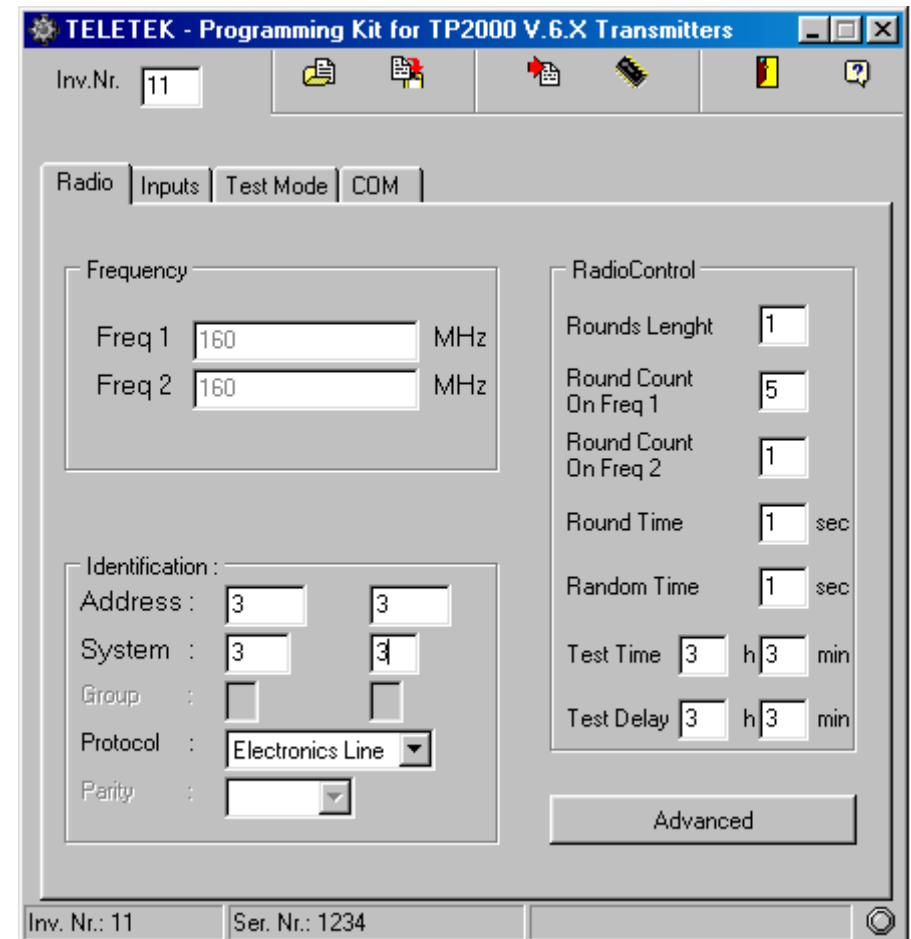
- **red** stands for activation;
- **light green** means normal status is restored;
- **yellow** stands for a technical fault;

At first all indicators will glow in dark green. This means that the inputs is inactive, i.e. no signal has been sent out.

Main Screen of Programming Kit for TP2000 V.6.X Transmitters

In the main screen of **Programming Kit for TP2000v.6.X Transmitters** program are to be found:

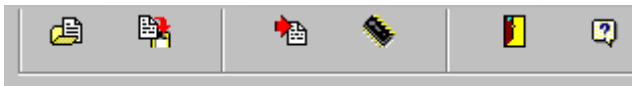
- **Bar Menu** with commands for uploading data from a transmitter or a file, storing settings in a transmitter or in a file, accessing a file with instructions on using the program and exiting the application;



- **Radio** tab that controls the radio control parameters and specifies the unit's identity in the perimeter;
- **Inputs** tab for setting up the unit inputs;
- **Test Mode** tab for testing the new transmitter settings;
- **COM** tab for specifying the COM port via which the transmitter is connected to the personal computer;
- **Status Bar**.

Bar Menu

The **Bar Menu** is the row of buttons below the title bar in the window of **Programming Kit for TP2000v.6.X Transmitters**.



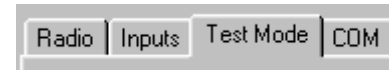
The **Bar Menu** of **Programming Kit for TP2000v.6.X Transmitters** accesses the following commands:

Open Default Button

Press this button to open an existing file with parameters for setting up a transmitter. Thus you will dispense with the necessity of having to type manually the setting of each field. This makes programming much easier for you when you have to set up transmitters on similar perimeters.

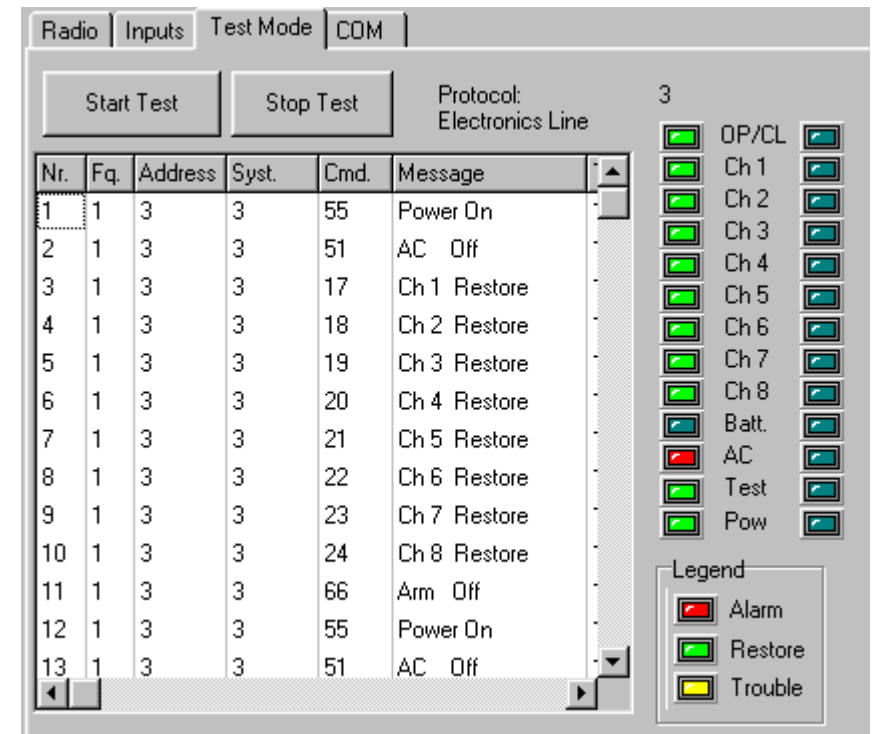
Test Mode Tab

Third in the main screen comes the **Test Mode** tab. As desired you can select **Test Mode** after the programming process of the transmitter has been completed.



To run the program in this mode the transmitter has to be correctly powered. A personal computer will play the part of a central station that receives the signals.

A table will be displayed on the screen with details on the status of each of the inputs of the transmitter.



Nr.	Fq.	Address	Syst.	Cmd.	Message
1	1	3	3	55	Power On
2	1	3	3	51	AC Off
3	1	3	3	17	Ch 1 Restore
4	1	3	3	18	Ch 2 Restore
5	1	3	3	19	Ch 3 Restore
6	1	3	3	20	Ch 4 Restore
7	1	3	3	21	Ch 5 Restore
8	1	3	3	22	Ch 6 Restore
9	1	3	3	23	Ch 7 Restore
10	1	3	3	24	Ch 8 Restore
11	1	3	3	66	Arm Off
12	1	3	3	55	Power On
13	1	3	3	51	AC Off

Protocol: Electronics Line 3

OP/CL:

Ch 1:

Ch 2:

Ch 3:

Ch 4:

Ch 5:

Ch 6:

Ch 7:

Ch 8:

Batt.:

AC:

Test:

Pow:

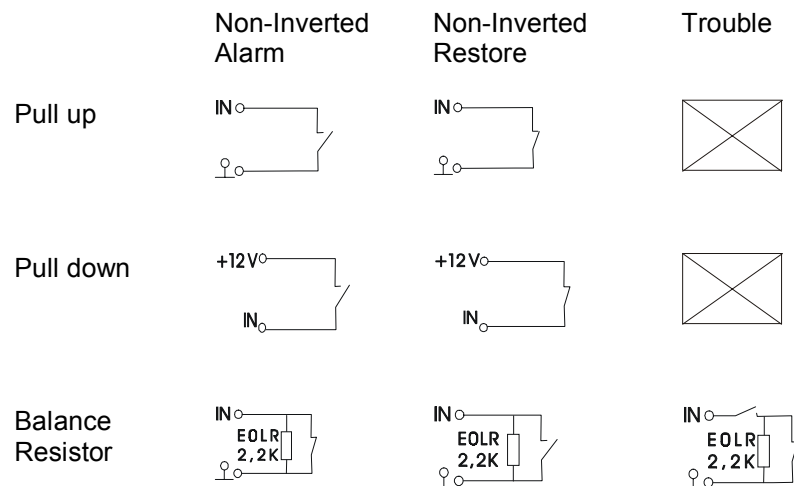
Legend

- Alarm
- Restore
- Trouble

If you wish to use one transmitter for two sites you can specify their addresses in the **Addr 1** and **Addr 2** fields and set up a link with the corresponding logical channels for each of them.

Let us assume that four of the transmitter inputs correspond to the first site and the other 4 — to the second one. Define one of the inputs on the second site as **Arm**, i.e. **OP/CL** and the other three as **Channel1**, **Channel2**, **Channel3**.

Governing Circuit Scheme



Write Default Button

After specifying all settings press this button to create a new file with parameters for programming a transmitter. This button also allows you to save the changes you have made to an existing file in a file of a different name.



Read from Transmitter Button

Pressing this button will cause the program to upload the setting of a transmitter. In order to accomplish this successfully you first have to do the following:

- connect the unit to your PC using the PS2-to-RS cable you have been provided with;
- in the **COM** tab specify the port of your PC to which the unit is connected;
- power the unit.



Write to Transmitter Button

Stores the settings in the transmitter. In order to do this the transmitter has to be connected to the PC and supplied with power.



Exit Button

Before pressing this button make sure you have stored the modifications you have made by selecting the **Write to Transmitter** command.



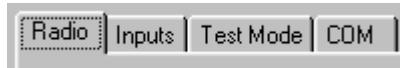
Opens a file with **instructions about using the program**.

The **Inventory Number** field is situated in the upper left corner of the main screen. Inventory numbers are set up at the time of manufacture and is uploaded from the unit on selecting the **Read from Transmitter** command.

Radio Tab

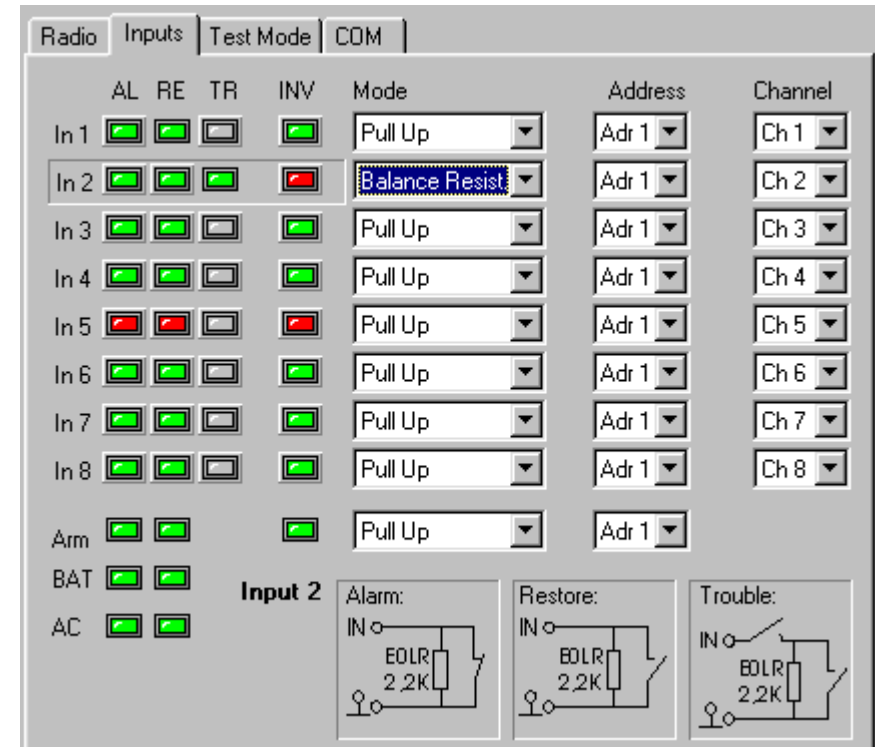
Below the **Bar Menu** are to be found four tabs that control the basic settings of the unit.

The first tab you can select from the main screen is **Radio**.



There are three field groups in this tab:

- **Frequency;**
- **Identification;**
- **RadioControl;**
- as well as a button that calls up an additional settings **Advanced** screen.



The soft button can be fixed on a particular input by left-clicking the mouse on it. Thus you will be allowed to set up the status on the other inputs, while the scheme of connection of the selected input is visualized throughout the process.

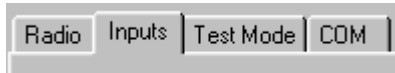
In the **Address** and **Channel** fields you can set up the connection between the physical channel and the logical channels for signal transmission.

The **Address** field specifies the address to which the corresponding input is linked.

The **Channel** field holds the logical input to be sent.

Inputs Tab

Next to the **Radio** tab you will find the **Inputs** tab that controls the values on the transmitter's inputs.



In the **Inputs** field define the parameters on the transmitter inputs — from **In1** to **In8**, the **Arm (OP/CL)** and **AC** (power on) inputs.

The events for which you can require activation, i.e. a signal to be send out, are:

- **AL** – the transmitter will send out a signal for an alarm event as soon as a signal is received on the corresponding input
- **RE** – the transmitter will send out a restore signal on receiving a signal on the corresponding input
- **TR** – the transmitter will send out a signal if a fault is registered at the corresponding input
- **INV** – the transmitter will invert alarm and restore signals

Colour indication:

- **red** — inactive;
- **green** — active;
- **grey** — status impossible.

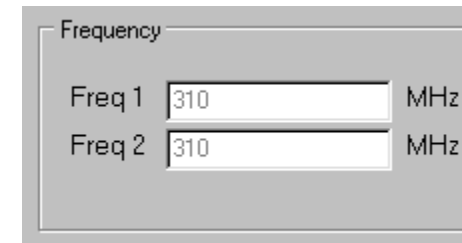
To change an event status left-click an indicator.

Placing the cursor of the mouse on the soft button of an input allows visualization of its connection scheme in the lower left corner of the window. Next to the scheme the number of the corresponding input will be displayed.

Frequency Group

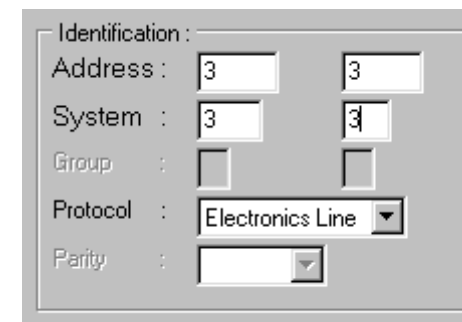
The **Frequency** group contains two fields with the transmitter's transmission frequencies that have been set at the time of manufacture. No corrections are allowed in these fields.

In this group of the **Radio** screen you can check what are the frequency settings of your transmitter.



Identification Group

In the **Identification** group you set up the identity of the transmitter within the perimeter.



The **Address**, **System** and **Group** fields set up the parameters by which the transmitter is to be identified. The range of the possible values of each field will vary in accordance with the protocol that you have selected.

Note: Two values can be set up on each of the abovementioned fields. This can be useful when one transmitter is shared by two separate sites.

TP2000 v.6.X transmitter supports three protocols: Electronics Line, LARS and LARS1. In the **Protocol** field press and highlight the name of the protocol your system requires.

In the **Parity** field press and highlight one of the options available in accordance with the central station:

- NONE;
- ODD;
- EVEN.

Some of the fields will only be available when using a particular protocol. Thus the **Group** and **Parity** fields will not be active if you have selected the Electronics Line protocol. If a field is inactive you will not be allowed to type a value in it.

When you modify a setting make sure the new value is within the permitted range. Otherwise an error message will be displayed.

RadioControl Group

In this group you can set up the radio control parameters.

In the **Rounds Length** field type the number of required repetition of events in a round. Type a value from 1 to 15.

Radio Parameters Control

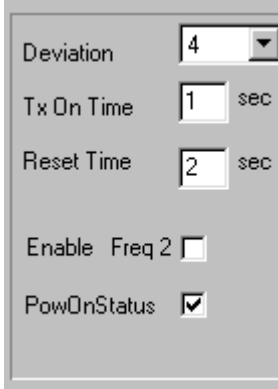
The **Deviation** field has to correspond to the central station settings. Press and select one of the options available in the combo-box — 0, 1, 2, 3, 4, 5, 6 or 7. Each step corresponds to 500 Hz.

The **Tx On Time** field specifies a time interval for establishing a stable carrier frequency before starting transmission.

The **Reset Time** field specifies a time interval for resetting the transmitter after power has been supplied after which transmission will begin.

A check in the **PowerOnStatus** box indicates that on powering the transmitter will feed back information on the status of each of its inputs.

After modifying the values on the fields press for the changes to be updated, or to discard them and keep the old settings.



The screenshot shows a dialog box with the following settings:

Deviation	4
Tx On Time	1 sec
Reset Time	2 sec
Enable Freq 2	<input type="checkbox"/>
PowOnStatus	<input checked="" type="checkbox"/>

When you modify a setting make sure the new value is within the permitted range. Otherwise an error message will be displayed.

The events you can direct to one of the two frequencies as desired are ordered as follows:

Events Streaming		
	Freq 1	Freq 2
Alarm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Restore	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Trouble	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Batt. Low	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Batt. High	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Disarm	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Arm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
AC Loss	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
AC Restore	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Power On	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Test	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Note: In order to be able to choose between the two frequencies you first have to check in the box of the **Enable Freq 2** in the radio control settings group. Otherwise the fields in the column of **Freq 2** will not be available.

Enable Freq 2

In the **Round Count on Freq 1** field specify the number of repetition of a round on frequency 1. Type a value from 1 to 15.

The **Round Count on Freq 2** field specifies the number of repetition of a round on frequency 2. Type a value from 1 to 15.

In the **Round Time** field set up the interval between the rounds. It can vary from 0 to 127 seconds.

In the **Random Time** field type a random time component in the range from 0 to 127 seconds. This value will be added to that of the **Round Time** field, and the sum total will determine the interval between two consecutive rounds.

In the **Test Time** field specify a time interval for test messages.

In the **Test Delay** field type a value for the random time component for test messages.

When you modify a setting make sure the new value is within the permitted range. Otherwise an error message will be displayed.

RadioControl		
Rounds Length	<input type="text" value="1"/>	
Round Count on Freq 1	<input type="text" value="5"/>	
Round Count on Freq 2	<input type="text" value="1"/>	
Round Time	<input type="text" value="1"/>	sec
Random Time	<input type="text" value="1"/>	sec
Test Time	<input type="text" value="3"/>	h <input type="text" value="3"/> min
Test Delay	<input type="text" value="3"/>	h <input type="text" value="3"/> min

Advanced Screen

Press **Advanced** in the **Radio** tab to access the additional fine settings **Advanced Properties** screen.

Sensitivity	
In	Sec.
In 1	0,1
In 2	0,1
In 3	0,1
In 4	0,1
In 5	0,1
In 6	0,1
In 7	0,1
In 8	0,1
Arm	0,1
AC	0,1

Events Streaming		
	Freq 1	Freq 2
Alarm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Restore	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Trouble	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Batt. Low	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Batt. High	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Disarm	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Arm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
AC Loss	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
AC Restore	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Power On	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Test	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Radio control settings	
Deviation	4
Tx On Time	1 sec
Reset Time	2 sec
Enable Freq 2	<input checked="" type="checkbox"/>
PowOnStatus	<input checked="" type="checkbox"/>

The **Advanced Properties** screen is divided into three groups of fields:

- **Sensitivity;**
- **Events Streaming;**
- **Radio control settings.**

In the **Sensitivity** group specify the sensitivity of each input of the transmitter. Press **▼** and highlight one of the options available— 0,1; 0,2; 0,5; 1; 2; 5; 10 or 20 seconds.

Sensitivity determines the time of stimulation before an event signal is sent out.

Sensitivity	
In	Sec.
In 1	0,1
In 2	0,1
In 3	0,1
In 4	0,1
In 5	0,1
In 6	0,1
In 7	0,1
In 8	0,1
Arm	0,1
AC	0,1

The **Events Streaming** group allows for a distribution of events between the two transmission frequencies.

Check one or both boxes next to each event depending on whether you want the signal for this event to be transmitted on Frequency 1, Frequency 2 or on both frequencies at the same time.