This Manual is true for the following products:

**EXPLO Transmitter TX2-70K**

**EXPLO Transmitter TX2-70M**

**EXPLO Receiver RX2-70K**
Dear Explo-Customer,

Please read through this set of instruction before operating your devices. Many of the informations held within are crucial to learning about- and handling your system.

We ask of you to follow the mentioned safety and user guidelines closely.

Note: This Manual is a pre-version. If you have any questions, or should any vagueness appear, which this manual cannot answer, please do not hesitate to contact us either by phone, or by E-Mail.

We wish you a lot of fun and success with your Explo-Ignition System!

~ The Team of Explo IGNsystems
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2 Transmitter - General/Overview of the Components

2.1 Component Overview
2.2 Display und Buttons

Display: The Display is the optical output for the Transmitter status, as well as the menu.

Reserve Buttons: The Transmitter TX2-70K, as well as the Transmitter TX2-70M are in possession of ten, freely programmable Reserve Buttons each. These Buttons are generally programmed with the channel numbers 61-70, and are meant to manually ignite these ten Channels.

Controlbuttons:
The Controlbuttons are used to navigate through the menu of the Transmitter.

Mode/OK-Button: Used within the menu and during editing of settings as a "Select/Confirm"-Button. In the Testmode of the Transmitter the Menu can be accessed by a simple push of this key.

Test/ESC-Button: Used within the Menu and during the editing of settings as a "Cancel/Escape"-Button. In the Test and Armed-Mode of the Transmitter, this button can be used to send a test-signal. By pressing and holding down this button, the bidirectional Test will be started.

Minus-Button: Used within the Menu and during the editing of settings as a Minus-Key.

Plus-Button: Used within the Menu and during the editing of settings as a Plus-Key.

Ignition-Button: Used in the Armed-Mode to ignite channel shown on the display (Manual ignition), or to start the Autoshow (Auto-Mode). The Transmitter TX-70M is built with two Ignition Buttons, which both need to be pushed at the same time to ignite a channel, or start the show.

2.3 Swan-Neck Lamp:
The Swan-Neck Lamp can be connected to the intended, XLR-socket next to the Display, and is meant to illuminate your workspace.
2.4 Key-Switch:
The Key-Switch is used to turn the Transmitter on, and off, as well as selecting between the Test-Mode and Armed-Mode. It has three possible positions:

**OFF (Normal Setting):**
Device is off!

**TEST (Test-Mode):**
The Device is on, and is in the Test-Mode. In this Mode, the Auto-Show can not be started, and ignition signals can be sent. It is possible to start the detailed Bidirectional Test.

**ARMED (Armed-Mod):**
The Device is on, and is in the Armed-Mode. The Auto-Show can be started, and channels can be ignited in this mode.

**OFF (Normal Setting):**
Device is off!
2.5 Side piece

TC-Interface: This socket is meant to be used as an interface for external Timecodes.

PC-Interface: This RS232-Socket can be used as an Interface for your PC or Notebook. The connection can be made by the delivered null modem cable and (if needed) the USB-Serial Adapter, if no other interface is available on the computer.

BNC-Antenna Socket: An Antenna with a BNC-Plug can be connected here.

Socket 1 and 2: The two 7-pole sockets are used as Charging- and Programming sockets. Both sockets have the same Pin-allocation.

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND</td>
</tr>
<tr>
<td>2</td>
<td>RX</td>
</tr>
<tr>
<td>3</td>
<td>TX</td>
</tr>
<tr>
<td>4</td>
<td>Batt.</td>
</tr>
<tr>
<td>5</td>
<td>Batt.</td>
</tr>
<tr>
<td>6</td>
<td>NC</td>
</tr>
<tr>
<td>7</td>
<td>External ignition</td>
</tr>
</tbody>
</table>
3 Transmitter - The Menu

3.1 Main Menu Items

3.1.1 Bat.Status 0-100%
This Menu Item shows the status of the internal battery in %.

3.1.2 Receivers
This Menu Item lets you view, and edit Receivers programmed to the Transmitter, or add new ones.

3.1.3 Auto Mode (ON /OFF)
This Menu Item allows you to load, edit, delete, or send an Autoshow to the Receivers. Further, the Auto-Mode can be activated or deactivated here.

3.1.4 TX-Settings
This Menu Item allows you to edit the most important settings of a Transmitter, and send them to another Transmitter (clone).

3.1.5 Receiver-Mode
This Menu Item allows you to send different orders to the Receivers programmed onto the Transmitter, like locking or turning them off.

3.1.6 Version number
This Menu Item shows you the current Software version of the Transmitter. Should a "+PC" be shown at the end of this number, the transmitter is unlocked for the PC-Mode.
3.2 Menu Item A- Receivers

3.2.1 Device Information:
The Device Information shows all Receivers programmed to the Transmitter. Next to the Receiver type, you can also view it’s ID, and (if the Receiver is switched on and reachable) it’s Battery status. Furthermore, you have the ability to change the boxnumber, or deactivate the Device for the Show.
3.2.1.1  **A-Number:**
The Number the Receiver has been assigned to in the internal device List of the Transmitter. The Devices are sorted and tested by this number.

3.2.1.2  **Device type:**
Tells you the device Type of the Receiver.

3.2.1.3  **Boxnumber:**
Shows the Boxnumber of the Receiver. The Boxnumber can be reassigned in the Device information.

3.2.1.4  **Ignition Group:**
This Feature is not yet activated, and will be implemented in a subsequent software version for the system.

3.2.1.5  **Battery status of the device:**
The Battery status of the Device is shown her in percent (%), if the device can be reached. If the Transmitter has no radio contact to the Receiver, the battery status will be shown as "xxxxx" instead.

3.2.2  **Edit Product:**
This Menu Item let's you add new products (Insert new) or delete others (DELETE). Further, you can send an automated update to your Explo Devices (AUTO UPDATE).

When adding new products, it is possible to enter the device manually (manually) by entering its's ID, or adding it automatically (automatically) with the use of the TX-Programming cable.
3.2.2.1 Manual adding:

Select the Menu item "A- Receivers"

First Receiver programmed onto the Transmitter.

Press once.

Select < Insert new > to add new Device.

Select < manual > to add device manually.

After this selection, you can scroll between numbers with +. With OK, this can be selected, and be changed with +. By pressing OK, your selection will be entered.

As soon as the correct ID has been entered, you can finish with ESC.

Is the entered ID correct? Confirmation with OK, Cancellation with ESC.

Select the Product type with + (RX70K, RX30K, RXMP3, MASTM, RX-5K, RX-1K, RX20K, RX-HV, MODUL, RXGAS, RXDMX, EXPLO or RXWAV)

In the finish screen, the entered data will be shown once more. Instead of the #-sign, the assigned A-Number of the Device will be shown.
### 3.2.2.2 Automatic adding:

<table>
<thead>
<tr>
<th>Transmitter</th>
<th>Receiver</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connect with the TX-Programming cable.</td>
<td></td>
</tr>
<tr>
<td>Switch on Transmitter</td>
<td></td>
</tr>
<tr>
<td><strong>Menu</strong></td>
<td><strong>1- Receivers</strong></td>
</tr>
<tr>
<td><strong>Mode</strong></td>
<td><strong>OK</strong></td>
</tr>
<tr>
<td><strong>01 &gt;RX70K BOX 1</strong>&lt;br&gt;ID: 1209013 B10%</td>
<td></td>
</tr>
<tr>
<td><strong>00 &gt; edit Product SETTINGS</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Mode</strong></td>
<td><strong>OK</strong></td>
</tr>
<tr>
<td><strong>&lt; Insert new &gt; Explo Product?</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Mode</strong></td>
<td><strong>OK</strong></td>
</tr>
<tr>
<td><strong>Explo Product?</strong>&lt;br&gt;<strong>&lt; Automatic &gt;</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Mode</strong></td>
<td><strong>OK</strong></td>
</tr>
<tr>
<td><strong>Connect receiver and press OK</strong></td>
<td></td>
</tr>
<tr>
<td>...</td>
<td></td>
</tr>
<tr>
<td>Switch on Receiver</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td></td>
</tr>
<tr>
<td><strong>Mode</strong></td>
<td><strong>OK</strong></td>
</tr>
<tr>
<td><strong>ID: 1209013 RX70K</strong>&lt;br&gt;<strong>Save in List?</strong></td>
<td><strong>wait for request</strong></td>
</tr>
<tr>
<td><strong>Mode</strong></td>
<td><strong>OK</strong></td>
</tr>
<tr>
<td><strong>FINISH</strong>&lt;br&gt;<strong>1 &gt;RX70K 1209013</strong></td>
<td></td>
</tr>
</tbody>
</table>
3.2.2.3 Automatic Update:
The Automatic Update is used, if you wish to automatically activate, or deactivate all Devices, dependent on whether they are switched on or off, and simultaneously assign them their Device Numbers.

This option is especially helpful, if you have a lot of Devices in your Devicelist, and wish to activate or deactivate them quickly. Receivers you wish to use, must be switched on (Test or Armed-Mode), while all others must be switched off. The automatic update, will activate all switched on devices, needed for the show (The Boxnumber will remain the same), while all devices that are switched off, will be deactivated.

Menu
- Receivers

Select the Menu item A- Receivers.

First device, programmed onto the transmitter.

Press once.

< AUTO UPDATE >
Explo Products?

Select <AUTO UPDATE >

Start Automatic Update, or leave Menu.

All Devices, known to the transmitter, will be tried. Switched on Devices will be activated and assigned their Device Number, all other devices, which have been switched off, will be deactivated (see left Picture).

After the automatic search, the updated Devicelist will be shown.
3.3 Menu Item Auto Mode

- Auto Mode ON / OFF
- Showname (# Zündlinien)
- Edit File
  - Erste Zündlinie
  - Zweite Zündlinie
  - ...
  - Create New Line?
    - OK / ESC
- Load File
- Delete File
- RX send show
- RX delete show
- CheckBox xx pcs.
- TX quality: xx%
- Settings
  - Countdown: xx sek
  - time skip: ON / OFF
  - ext. TC Stop ON / OFF
  - SMPTE ON/OFF
  - SMPTE Starttime
  - Framerate: xx
  - TIME: 00:00:00
  - SbS generate
- Automatic / Step by Step
3.3.1 Auto Mode (ON / OFF):
The Auto-Mode can be activated, or deactivated here.

3.3.2 Showname (#Ignition Lines):
The Name given to the Show will be shown here. The number of ignition lines used in the Show, is shown in the brackets.

3.3.3 Edit File:
This menu item allows you to edit existing ignition lines of the Show programmed onto the transmitter, and add new ones.

The Layout of the ignition lines is as depicted below:

3.3.3.1 Line Number:
The Number of the Ignition Line within the Auto Show. The Lines are numbered from 1 to x, where x is the Number of Ignition Lines of the Show. The layout of the single Ignition Lines is sorted by the Line Numbers. The Number of possible Lines on the Transmitter is 4000. Every Receiver is limited to 200 Lines. The Line Number is fixed, and cannot be edited.
3.3.3.2 Ignition Time of the Line:
The time shown here, indicates the Time the given line will be ignited. The readout is built as follows:

```
Minutes  A hundredth of a second
```

This time can be freely edited. However there need to be at least 100ms between single ignition lines, and the complete duration of the Show may not exceed 109 Minutes. The ignition Time of a line can not be set higher, or lower than the ignition times of the bordering ignition lines.

3.3.3.3 Boxnumber:
The Boxnumber of the ignition line. It can be freely edited from 1-99, or set to A(All Boxes are signaled).

3.3.3.4 Channelnumber:
The Number of the channel that is set to ignite at this ignition line. Can be freely edited from 1-70.

3.3.3.5 Special Field:
You can edit special settings for the channel, detailed below.

```
... Channel ignites normally.
```

```
... The ignition of the Show is paused 100ms before this channel, and can be continued by pressing the Minus-Button ( ).
```

```
... Channel will not be ignited.
```

3.3.3.6 Ignition Group:
The ignition Group is a feature, that has not yet been implemented into the current software version.

3.3.3.7 Step by Step:
You can activate the "Step by Step" function for this ignition line, or deactivate it. If activated, the letter "s" will be shown behind the Ignition Group letter. (See Space marked orange in the below picture).
3.3.3.8 Editing an ignition line:

Select Submenu Edit File

Menu: Auto Mode
Edit File

Select the line you wish to edit

1 t:000:00.00
B:50 C: 1:G:a

Mode
OK

Test
Esc

2 t:xx:xx.xx
B:xx C:xx G:x

Mode
OK

Test
Esc

... After the last ignition line of the show, you may add a new one.
More information on the following page.

Select the Parameter you wish to edit

1 t:000:00.00
B:50 C: 1:G:a

Mode
OK

Test
Esc

Save Changes?
OK / ESC

Save edited Data?
OK = Yes, ESC = No

Edit Parameter with 

1 t:000:00.00
B:50 C: 1:G:a

Mode
OK

Test
Esc

... Overall 8 Parameters:
- Hundredth of a sec.
- Boxnumber
- Channelnumber
- Special Field
- Ignition Group
- Step by Step
- Minutes
- Seconds
3.3.3.9  Adding a new ignition line:

Select the Submenu "Edit File".

First ignition Line.

Jump to the last ignition line with + (#Number of ignition lines in the Show).

Press + once more.

Do you wish to add a new line? OK = Yes, ESC = No

Set the time distance from the Previous ignition line.

Add Box and Channel of the new ignition line.

After another confirmation, the new ignition line has been added. It can be edited the same way other lines can.

3.3.4  Load File:
This Menu item allows you to load a Show from the PC to the Transmitter.

3.3.5  Delete File:
This Menu Item allows you to delete the Show saved onto the Transmitter.
3.3.6 RX send show:
This Menu Item is used to send the show from the Transmitter to the Receivers. You can choose whether you wish to program all devices, or only a certain box number.

Select Submenu "RX send show".

All Devices that are needed (or boxes used in the Show) are being looked for.

A display shows how many of the used box numbers have been found on the switched on devices. The number in the brackets can be switched from all (All Boxes) to any other Box number used in the Show. When transmitting the Show, only the selected Box number will be programmed.

Should one of the needed Boxes be unavailable, an error will be shown. It is important to find the error, since the missing devices won't have the show programmed onto them. By pressing Test/ESC, you can return to the Main Menu.

The error message can be ignored by pressing Plus and Mode/OK, and the devices will still be programmed, even though an error occurred. (This is not recommended!)

If all Boxes are available, or if the error message has been ignored, the left window will appear. You are asked whether you wish to delete all boxes before programming.

After transmitting the Show, a bidirectional Test can be started by pressing Test/ESC. (see 4.2.1 "Making a bidirectional Test in Testmode")
3.3.7 RX delete show:
This menu item is used to delete the show saved onto the receivers. If this Menu item is selected, the delete command is sent to all receivers that are switched on.

3.3.8 CheckBox:
The Checksums of every Box are listed here. With you can scroll between boxes.

3.3.9 TC quality:
Shows the quality of the external Time Code (TC) signal. The readout ranges from 0-100%.

3.3.10 Settings:

3.3.10.1 Countdown:
This Menu item shows how many seconds the countdown before the real start of the show lasts. This is meant as an added insurance to hinder an unwanted starting of the Show, and allow you to abort. This countdown can be set from 2-30 seconds in second steps, or be switched off entirely. Standard is 10 seconds.

3.3.10.2 Time skip (ON/OFF):
If Time Skip is activated (ON) you can jump to the next ignition during the show, by pressing the ignition button. Please note however, that any used MP3- or WAV-Players will not synchronize to the show, and simply continue playing normally.

3.3.10.3 Ext. TC Stop (ON/OFF):
If the external Time Code Stop is activated (ON), the show will be halted if the external signal should be broken, and will only continue, if the signal is back again. If the external Time Code Stop is deactivated (OFF) the show will be internally synchronized in case of a signal malfunction.

3.3.10.4 SMPTE (ON/OFF):
Switches the SMPTE-Mode on (ON) or off (OFF). If the SMPTE-Mode is on, no external FSK-Time Code can be read.
3.3.10.5 SMPTE Starttime:
Here you can set the Starting time of the SMPTE-signal, to synchronize the signal with the transmitter.

The Time can be set from 000:00:00 to 100:59:90 (Minutes:Seconds:Hundreth Seconds).

3.3.10.6 Framerate:
You can set the Framerate for the SMPTE-Signal from 25fps to 30fps. When starting the show, it will be automatically upgraded to 30fps if possible.

3.3.10.7 SMPTE Time:
Shows the Time of the received SMPTE-signal (Minutes:Seconds:Hundreth Seconds).

3.3.10.8 SbS generate:
Used to create SbS-ignition Groups. Detailed explanation to follow.

3.3.11 Automatic / Step by Step:
Switch from automatic Mode to Step by step Mode. In the automatic mode, all ignitions within the autoshow will be ignited automatically according to their ignition time. In Step by step mode, the single ignitions (sorted by their ignition time) must be ignited manually. In the SbS-Mode, single ignitions can be grouped together. Detailed explanation to follow.
3.4 Menu Items TX-Settings

3.4.1 Start Box:
Choose the starting box the transmitter uses for manual ignitions. Box 1 is standard.

3.4.2 Sound:
Turn button sounds on or off.

3.4.3 Show Sys:
Select whether you wish your system address to be shown when switching on the transmitter. If this is set to OFF, the system address will be shown as XXX during the startup.
3.4.4   **Clock:**
Choose whether the Timer for manual ignitions should be on or off.

3.4.5   **Box Select:**
Select at which point you wish to jump to the next box number during manual ignitions. Normally the transmitter jumps to the next box after channel 70 is ignited.

You can set this parameter for every box (1-99) individually. Below you can see how this works with different boxes or devices. Shown are the channels after which the jump to the next box happens.

<table>
<thead>
<tr>
<th>Box Select</th>
<th>Ch 70 Box 1</th>
<th>Ch 1 Box 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td><strong>FIRE-Mode</strong></td>
<td><strong>FIRE-Mode</strong></td>
</tr>
<tr>
<td>RX-70K</td>
<td><strong>FIRE-Mode</strong></td>
<td><strong>FIRE-Mode</strong></td>
</tr>
<tr>
<td>RX-30K</td>
<td><strong>FIRE-Mode</strong></td>
<td><strong>FIRE-Mode</strong></td>
</tr>
<tr>
<td>RX-20K</td>
<td><strong>FIRE-Mode</strong></td>
<td><strong>FIRE-Mode</strong></td>
</tr>
<tr>
<td>RX-5K</td>
<td><strong>FIRE-Mode</strong></td>
<td><strong>FIRE-Mode</strong></td>
</tr>
<tr>
<td>RX-1K</td>
<td><strong>FIRE-Mode</strong></td>
<td><strong>FIRE-Mode</strong></td>
</tr>
</tbody>
</table>

3.4.6   **PC (BOX/CH or TIMECODE):**
Select whether you wish to use Box and Channel (BOX/CH) or Time Code (TIMECODE) when using PC-Mode.

3.4.7   **Restore Default:**
Used to reset the Transmitter to its standard settings. The system address, as well as any saved show will be kept. After resetting, you must restart the Transmitter.
### 3.4.8 Clone Transmitter:

Allows you to quickly Copy all settings (except the systemadress, for security reasons) onto another Transmitter. Follow these steps:

<table>
<thead>
<tr>
<th>Transmitter 1 (Device to clone)</th>
<th>Transmitter 2 (Clone)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connect with Programming Cable.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Switch on devices, and select menu &quot;Clone Transmitt.&quot;</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Menu: Clone</strong></td>
<td><strong>Menu: Clone</strong></td>
</tr>
<tr>
<td><strong>Send Clone</strong></td>
<td><strong>Receive Clone</strong></td>
</tr>
<tr>
<td><strong>Mode</strong></td>
<td><strong>Mode</strong></td>
</tr>
<tr>
<td><strong>OK</strong></td>
<td><strong>OK</strong></td>
</tr>
<tr>
<td><strong>Clone System?</strong></td>
<td><strong>waiting for Data</strong></td>
</tr>
<tr>
<td><strong>Press Plus</strong></td>
<td></td>
</tr>
<tr>
<td>...</td>
<td></td>
</tr>
<tr>
<td><strong>Clone System?</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Press Minus</strong></td>
<td></td>
</tr>
<tr>
<td>...</td>
<td></td>
</tr>
<tr>
<td><strong>Clone System?</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Press OK to send</strong></td>
<td></td>
</tr>
<tr>
<td>...</td>
<td></td>
</tr>
<tr>
<td><strong>Mode</strong></td>
<td></td>
</tr>
<tr>
<td><strong>OK</strong></td>
<td></td>
</tr>
<tr>
<td><strong>P1:OK</strong></td>
<td><strong>P1:OK</strong></td>
</tr>
<tr>
<td><strong>P2:OK</strong></td>
<td><strong>P2:OK</strong></td>
</tr>
<tr>
<td><strong>P3:OK</strong></td>
<td><strong>P3:OK</strong></td>
</tr>
<tr>
<td><strong>P4:OK</strong></td>
<td><strong>P4:OK</strong></td>
</tr>
<tr>
<td>~ wait for 5 seconds</td>
<td></td>
</tr>
<tr>
<td><strong>Please restart the transmitter</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Restart</strong></td>
<td></td>
</tr>
</tbody>
</table>
### 3.4.9 Box Programming:

Allows you to program a Receiver by use of the programming cable.

The following selections can be chosen:

<table>
<thead>
<tr>
<th>Name</th>
<th>Range</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Box Nr.</td>
<td>1-99</td>
<td>Sets the Boxnumber for the Receiver. (Standard is 1)</td>
</tr>
<tr>
<td>Secure Key</td>
<td>0-255</td>
<td>Sets the Secure Key for the Receiver. (Standard is 139)</td>
</tr>
<tr>
<td>Freq / Power</td>
<td>Frequency: 1-23</td>
<td>Frequency sets the frequency of the receiver. (Standard is 6)</td>
</tr>
<tr>
<td></td>
<td>Power: 1-10</td>
<td>Power sets the radio strength of the receiver. (Standard is 10)</td>
</tr>
<tr>
<td>Konfetti</td>
<td>OFF or 0,1 – 9,9sec (0,1sec steps)</td>
<td>Switches the Confetti Mode of the Receiver on / off. (Standard is OFF)</td>
</tr>
</tbody>
</table>
3.5 Menu items Receiver-Mode

3.5.1 send Armed:
By selecting this, and confirming with Mode/OK, all switched on receivers are turned Armed.

3.5.2 send Disarmed:
By selecting this, and confirming with Mode/OK, all switched on receivers are turned into Test-Mode.

3.5.3 send Sleep:
By selecting this, and confirming with Mode/OK, all switched on receivers are turned into Sleep-Mode. This Mode is a battery saving variant of the Test-Mode. Receivers in Sleep-Mode can turned Armed directly by "send Armed" or switched to Test-Mode by "send Disarmed".

3.5.4 send OFF:
By selecting this, and confirming by the shown button combination, all switched on receivers will be switched off. These receivers must be switched back on manually.
3.5.5 send Lock:
By selecting this, and confirming with Mode/OK, all settings of the receivers are being locked, and can no longer be edited. The WAV Players whole menu will be locked. This block can be lifted by "send unlock". Alternatively, you can enter the unlocking code on a receiver, when entering the settings menu.

3.5.6 send unlock:
By selecting this, and confirming with Mode/OK, all settings of the receivers are being unlocked.

3.5.7 send ** reset:
By selecting this, and confirming with Mode/OK, all Ohm-Measuring settings on every switched on receiver will be reset.

3.5.8 send A renumber:
By selecting this, and confirming with Mode/OK, all switched on receivers will be numbered, as pre-selected in the Device menu of the transmitter.
4 Transmitter - Testsights

4.1 Simple Testsignal (unidirectional):
A simple Test signal without any feedback from the receiver to the transmitter. To use, the transmitter must be in Test-Mode. by shortly pressing Test/ESC, a signal is sent. It will be sent to all Receivers, that have the same system adress as the transmitter. Switched on devices, receive the signal, and indicate this by a flash of the side LED. Receivers in Testmode flash once, Receivers in Armed-Mode flash three times.

The simple Testsignal can be sent in Test or Armed Mode.

--- TEST-Mode ---
Select Testmode(middle position of the Key-switch)

Test
ESC

Press Test/ESC shortly.

--- TEST-Mode ---
>Test-Signal<

Testsignal is sent.

1x or
3x

Receiver flashes once (Testmode) or thrice (Armed Mode).

Should a receiver not flash when a signal is sent, there can be a few reasons:

1.) The receiver didn't get the signal, indicating a bad radio connectivity (see chapter "Usage")
2.) The receiver is not switched on.
3.) The receiver has a different Systemadress than the Transmitter.
4.) The Status-LED of the receiver is damaged.
4.2 Bidirectional Tests in Testmode:
Signals that are being answered by the Receiver, and give feedback to the transmitter. It is not necessary to have sight contact to receivers, like when using the unidirectional Testsignal.

With the bidirectional Testing, it is possible to get a multitude of information of the receivers, directly onto the transmitter. For instance the battery status, if the Ignition capacitor is loaded, which channels are selected, and how high the current Ohm-value on the channels is.

4.2.1 Making a bidirectional Test in Testmode:

[Diagram]

Select Testmode (middle position of the Key-switch)

Press Test until the display shown below appears.

Should the Ohm-measurements of the receivers be loaded, and the devices be tested? (x is the number of devices)

Confirm with Test/ESC

The Resistance measurements of the receivers are calculated.

The single receivers are tested.

Shows how many receivers got the signal, and have the correct autoshow. Should any error be shown, it is recommended to have a closer look at the settings.

Only shows if the Autoshow is used. Shows how many of the boxes used in the show are missing, or how many boxes are present, but not used in the show.

Continued in the Chapter "Evaluating the Test results".
4.2.2 Evaluating the Test results:

After the bidirectional Test, you can view the results of the individual receivers.

1/1 signals ok All Prog OK
Confirmation after the testsignal.

1=1 RX70K PRG 80% TEST C:NO
General evaluation of the first device.

Boxnumber:
The Boxnumber of the Receiver.

Device type:
The Device Type of the Receiver.

Programming:

Capacitor status:

Battery status:

Mode of the receiver:

4.2.2.1 Explanation of the display "General evaluation":

Devicenumber: Devicenumber of the Receiver (on this transmitter).

Boxnumber: The Boxnumber of the Receiver.

Devicetype: The Device Type of the Receiver.
Programming: Shows if the right (current) show has been saved. "PRG" means that the correct show has been saved. If "ERR" is shown here, that means the wrong or no show has been saved. You should immediately update the device with the correct show.

Battery status: Shows the Battery status in percent.

Mode of the receiver: Shows in which Mode the Receiver currently is. TEST = Testmode, SLEEP = Sleepmode, ARMED = Armed Mode.

Capacitor status: Shows whether the Capacitor is loaded or not. NO = not loaded, OK = loaded.

4.2.2.2 Explanation of the display "Cue Evaluation":
Should an error occur in a lone, the second line will read "LINE ERROR". The detailed error message can be read on the display of the receiver. The Cue evaluation can be updated by pressing and holding Test/ESC.

- **Devicenumber**: Devicenumber of the Receiver (on this transmitter).
- **Number of connected cues**: Shows how many cues are connected on this Receiver. (Shown above would be 2 of 70) If all are connected, OK is shown.
- **Number of connected cues (used in Show)**: Shows how many of the cues used in the show are connected.
- **Ohm Measurement (Quick Evaluation)**: Shows if any cue has went over the Limit of the maximum Ohm-value.
4.2.2.3 Testing a single Receiver:
How to test a single Device bidirectionally.

Select „General Evaluation“ of the Device to test

Press Test/ESC shortly

Receiver is tested

Updated „General Evaluation“

4.2.2.4 Ohm Measurement:
How to get a detailed Measurement of a Receiver.

Select „Cue Evaluation“ of the Device to test

Press Test/ESC shortly

Ohm Data is being received

Ohm Data of Cues 1-5 are shown. OL = Maximum value has been exceeded, ?C= No connection, Number = Ohm value at this cue, 1↓ means the Ohm value is beneath 1Ω.
If all Lines show XX, a Plusline is defective. In this case, contact the manufacturer, and do not use the device.

Ohm Data for cue 6-10 (next 5 cues)
4.2.2.5 WAV-Player Test:
When Testing the RX-WAV-Player, you can test the single commands instead of an Ohm measurement. (The same commands as the buttons of the WAV-Player have) This test gives no feedback to the transmitter.

Select „Player Test“ of the WAV Player to test.

Press Test/ESC shortly

As soon as the squared brackets appear, you can select commands. Play/Pause starts the current track. When pausing, the current time is kept.

With stop, the Track is stopped, and reset.

Next selects the next track on the player. It is played automatically, if the player was already playing a track

Back selects the previous track on the player. It is played automatically, if the player was already playing a track

4.2.2.6 Range test of a single Receiver:
Used to make a detailed range test with a device

Select „General Evaluation“ of the Device to test

Press Test/ESC about 1 second.

Range test is made. 10 signals are sent. Explanation below.

Evaluation of the test. 10/10 means all 10 signals have been received back by the transmitter.
Explanation of the symbols:
During the rangetest, 10 signals are sent with varying strength. Each of these signals is sent 2 times.

The first signal is sent with full radio power, the tenth with the least power. If one of the first 3 signals has not been received by the receiver (Symbol "x") the radio connectivity must be tested, since otherwise you are facing the danger of signal malfunctions during the show. (See chapter "Usage")

- ... Rangetest signal is being sent and evaluated
- ... The first part signal has been received by the receiver, and sent back.
- ... The Second part signal was received and sent back.
- ... The receiver got neither signal. Please check the radio connectivity. This symbol can be exchanged to one of the following symbols after a further test.
- ... The first signal has been received by the receiver, but was not sent back. Check and maybe change the antenna.
- ... The second signal has been received by the receiver, but was not sent back. Check and maybe change the antenna.

4.3 Bidirectional Test Signals in the Armed-Mode:
Used as a quick test, showing the most important details on the display.

4.3.1 How to make a bidirectional test in Armed-Mode:

- Select Armed Mode on the Transmitter (last position of the Key-Switch clock-wise)
- Press Test/ESC about 1 second.
- Devices are being tested.
- Display of the results
### 4.3.1.1 Explanation of the Results:

**Number of Devices:** The first number is the number of all devices that have a steady connection to the transmitter. The second number shows how many devices should be switched on. (Number of Devices activated in the devicelist)

**Lowest Battery:** Shows the Battery status of the lowest Device.

**Number of Armed Devices:** Shows how many devices are switched Armed. This number should always be the same as the number of all devices.

**Error Screen:** When Errors occur, it will be shown here with the number of errors. (ERR8 menas there are 8 errors on all tested devices.)

The following problems are shown as errors:

1. Line Error (Problems with one or more cues, for instance a short circuit with the Case Mass)
2. Prog Error (Wrong or no Autoshow on one or more devices)
3. System Error (Systeminternal error on one device)
4. A device is not in Armed-Mode.
5. A device deactivated on the transmitter is switched on.

**IMPORTANT:** The Cue Test (Ohm Measurement) is not updated during the bidirectional Testsignal in armed mode. The datas are form the last made measurement, and may be older. If an error is shown, you should make use of the test in Test mode, to determine wether a Line Error or Prog Error exists at a device.
5 Receiver - Overview/Description of Components

5.1 Components:

- Place for the antenna
- Ignition Clamps
- Display and Buttons
- Spare Key
- Actuator
- Spare Fuse
- Key-switch and fuse
- Side Array
5.2 Display and Buttons:

**Display:** The display gives you the optical readouts of the Receiver status, as well as the Menu.

**Ohm-Measuring / Minus – Button:** This Button is used to measure the Ohm resistance at the every channel, when in Test-Mode. In the Menu, and when editing, it is used as a "Minus"-Button.

**Test / ESC – Button:** This Button is used to send a Test-signal, in the Armed- or Test-Mode. In the menu, and when editing, it is used as a "Cancel/Abort"-Button.

**Mode / OK – Button:** When pushed and held (about 1sec) in the Test- or Armed-Mode, you can enter the menu. Inside the menu, or when editing, it is used as a "Select/Enter"-Button. After an Ohm-Measurement has been made, it can be used to repeat the Measurement.

**Light / Plus – Button:** This Button is used to switch on the background lighting of the Receivers display, when in Test-Mode, or turn the light off. Inside the menu, or during editing, it is used as a "Plus"-Button.
5.3 Ignition Clamps:

**Clamp:** The Clamp consists of two pairs of holes. The upper pair (smaller) feature no holding mechanism. They are only used for Test-LED’s, and must not be used for igniters.

The lower pair (larger) features a locking mechanism. These should be used for igniters, but not Test-LED’s.

**Release:** The Release is used to open the locking mechanisms of the clamp. If the left release button is pushed (we recommend using the Actuator), the locking of the left, larger hole, is opened. If the right one is pushed, the locking of the right hole will open.

If you wish to free ignition lines from a clamp, you must use the release Buttons, since otherwise you risk cutting lines, and blocking the clamp. Should you have stuck a Test-LED in there, you must press both releases at the same time to free it. (More information in the chapter "Usage")

**Transit-LED:** The Transit LED shows if the connected clamp has transit by an alight LED (An igniter is connected for example), or not, when the LED is dark.

**Channelnumber:** Shows the standard Channelnumber of the clamp. The channelnumbers are freely editable, and must not always accord to the lettering.
5.4 Side Array:

**ON-Button with LED:** This Button is used to activate the Device (Only if the Key-switch is on too). The small red LED near the Button lights as soon as the device is activated, and only flashes briefly if a signal is received.

**BNC-Antenna Socket:** Used to mount an antenna with BNC-Plug.

**Status-LED:** This LED shows different feedback by Flash-Patterns, once the Device is activated.

<table>
<thead>
<tr>
<th>Line</th>
<th>Pattern</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5x fast</td>
<td>Shows that Channels have been changed.</td>
</tr>
<tr>
<td>2</td>
<td>1x long</td>
<td>Shows that a Stepp-sequence has been programmed.</td>
</tr>
<tr>
<td>3</td>
<td>#x short</td>
<td>The number of flashes (#) indicates the Boxnumber of the Device.</td>
</tr>
</tbody>
</table>
In the Test- and Armed-Mode, the LED flashes if a Test or ignition signal is sent.

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>5x fast</td>
<td>Test-Signal has been received, and device is in Sleepmode.</td>
</tr>
<tr>
<td>1x short</td>
<td>When in Testmode, a Testsignal has been received. When in Armed Mode, an ignition signal has been received.</td>
</tr>
<tr>
<td>3x short</td>
<td>Test-Signal has been received, and the Device is in Armed-Mode.</td>
</tr>
</tbody>
</table>

Socket 1 and 2: Both Sockets can be used to either charge or Program. They have the same Pin-coding.

<table>
<thead>
<tr>
<th>Pin</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND</td>
</tr>
<tr>
<td>2</td>
<td>RX</td>
</tr>
<tr>
<td>3</td>
<td>TX</td>
</tr>
<tr>
<td>4</td>
<td>Batt.</td>
</tr>
<tr>
<td>5</td>
<td>Batt.</td>
</tr>
<tr>
<td>6</td>
<td>NC</td>
</tr>
<tr>
<td>7</td>
<td>NC</td>
</tr>
</tbody>
</table>

5.5 Key-Switch:

The Key-Switch is used to cut the +12V line to the electronic. In contrast to older Explo-Devices, it is no longer used to switch on the device by itself. Turn the Key 90° clockwise to connect the power.

To activate the Device, push the ON-Button on the side array.
6 Receiver – The Menu

6.1 Main Menu Items

6.1.1 ID / Box:
Shows you the non editable ID-Number and Boxnumber of the Device.

ID: 1209013
BOX: 3

6.1.2 Type / Show:
Shows you the Type of the Receiver, and the name of the shows saved onto it.

TYP: RX70K
SHOW: EXPLO
6.1.3 Check / Lines:
Shows you the Checksum of the receiver, and the number of ignition lines of the show, as used by this receiver.

```
CHECK: 301
LINES: 1/268
```

6.1.4 Cap / Limit:
Allows you to view the Maximum load of the Capacitor, and the chosen OHM-Limit.

```
CAP: 80V
LIMIT: 80Ω
```

6.1.5 Sec-Key / Freq:
Shows you the used Secure-Key, and the chosen Frequency of the radio module.

```
SEC-KEY: 139
FREQ: 6
```

6.1.6 Power / Timeout:
Shows the Strength of the Radio Module, and the time after which a show will stop with no transmittersignal.

```
POWER: 10
TIMEOUT: 6sek
```

6.1.7 Batt / Deep:
Shows the Battery Load in Percent and Volt, as well as the value at which a Deep discharge is detected. Further, also the number of deep discharges so far is recorded.

```
BATT: 86% 12.55V
DEEP 10,5V: 0
```
6.1.8  Confetti / Cues:
Tells you if the ConfettiMode is activated, and which channels are selected for it.

6.1.9  View AUTOSHOW list:
Shows all ignition lines of a show, in which the receiver takes part.

6.1.10 View STEPPER sequence:
Allows you to view and edit all channels of the receiver (Channel-and Box change), or program stepper sequences manually.

6.1.11 Edit RECEIVER settings:
Here you can change all settings for the receiver.

6.1.12 Version:
Displays the current Softwareversion of the receiver. When having trouble with a Device, please always relay the Version number.
6.2 Menu item „view AUTOSHOW list“

6.2.1 Lines / Checksum:
Shows the numbers of Ignition lines used by this receiver in the show, as well as its Checksum.

Lines: 1
Checksum: 301

6.2.2 Info of the Ignition Line:
An entry is made for every ignition line used by this receiver. The entries are sorted by time. The first line ignited on this device is therefore numbered 1)

The upper line shows the time of ignition, the lower line displays the channel used.

1) Time 00:10,74
Cue:16 G:00
6.3 Menu item „View STEPPER sequence“

Allows you to edit every single channel of the Receiver. You can change Box- and Channelnumber. Furthermore, you can insert stepp-sequences, as well as waiting times.

6.3.1 Making a Steppsequence:

Select submenu „View STEPPER sequence“.

First channel of the Receiver. Using you can select the channel, at which the sequence should start.

Select „Change: Stepper“

First you can select up to which channel the Sequence should run, using .

Now you can edit the Stepptime between two channels with (20ms steps possible)

After confirmation, the sequence has been programmed. Channels, that step to the next channel, are shown as depicted left with "Stepp:Stepptime".
6.3.2 Changing the Box- or Channelnumber:

Select the submenu „View STEPPER sequence“.

First channel of the Receiver. Using you can select the channel to edit.

Select „Change: Cue / Box“.

First you can alter the Channelnumber using .

Now you can change the Bixnumber of the channel with . MAIN is the set Boxnumber of the Receiver.

After confirming, the channel has been edited. The new channelnumber is shown in Brackets. The new boxnumber is 4, in this case. (In the standard settings, MAIN, would be shown here instead)
6.3.3 Adding a waiting time:

Select the submenu „View STEPPER sequence“.

First channel of the Receiver. Using \(-\) you can select the channel to edit.

Select „Change: Waitingtime“.

You can edit the waiting time for this channel with \(-\) (In 20ms steps)

After confirming, the waiting time has been programmed. Channels with a waiting time before them, are shown as left, with "Wait:Waitingtime".
6.4 Menu items „Edit RECEIVER settings“
6.4.1 M-Set: MODUS:
Change the receiver from Test-, Armed-, or Sleepmode.

6.4.2 M-Set: SOUND:
Turn sounds on or off. (like button sounds)

6.4.3 M-Set: BOX:
Edit the Boxnumber of the Device.

6.4.4 M-Set: SEC-KEY:
Allows you to edit the Secure-Key. (Standard 139)

6.4.5 M-Set: FREQUENCY Radio:
Change the Frequency of the Radio module. (Standard 6)

6.4.6 M-Set: POWER Radio:
Change the radio strength of the Radio module. (Standard 10)

6.4.7 M-Set: CAPACITY:
Allows you to set the maximum load of the Capacitor. (in steps of 10V, from 30V to 80V, Standard 80V)

6.4.8 M-Set: TIMEOUT:
Allows you to change how long it will take the Receiver to stop a show, after it receives no signals from the transmitter. (in steps of 1sec, from 1-99, standard 6). The Timeout should never be less than 6 seconds, since the transmitter sends a synchronisation signal only every 5 seconds.

6.4.9 M-Set: Ω LIMIT:
Allows you to change which Ohm-value is too high on the cues. (In steps of 10, from 10 to 900Ohm, Standard 800Ohm)

6.4.10 M-Set: CALIBRATE ZERO Ω MEASURE:
Allows you to make a new zero calibration at the channels. This option should only be chosen after talking to the manufacturer.

6.4.11 M-Set: FIREMODE:
Allows you to switch to Firemode. It is possible to ignite channels directly from the receiver.

6.4.12 M-Set: LOCK
Allows you to lock the Receiver menu. Furthermore, you can enter a Code to unlock the system. While the menu is locked, no stepper can be entered.

6.4.13 M-Set: Konfetti ON/OFF:
Switch Confettimode on or off. Maximum time is 3 seconds. If the confettimode is activated, it is also used in the Firemode.
6.4.14  M-Set: Konfetti Kanäle:
Allows you to edit which channels should use the Confettimode.

6.4.15  M-Set: SYS:
Here you can edit the Systemadress of the Receiver.

6.4.16  M-Set: SYSTEM check Status:
Allows you to make a system check.

6.4.17  M-Set: DELETE (restore default):
This allows you to reset the Receiver to its standard settings. (Including Confetti-Mode, saved shows, changed channels/boxes and steppsequences/waitingtimes)
7 Usage

7.1 Radio connection:
A good connectivity is an essential part of a trouble free usage of radio controlled Ignition devices. Only a handful of hints can help you to boost the connection between transmitter and receiver by far.

7.1.1 Overview of Radio wave propagation:
Radio waves are electromagnetic waves, flowing with near light speed (~300.000km/s).

Radio waves flow freely in the vacuum, or air, but can be reflected by metals, or absorbed by natural materials like water or wood.

7.1.2 Positioning your devices:
If possible, position the transmitter and receiver in a way, that no objects stand between them.

Avoid objects made of metal especially (eg.: Steelconcrete buildings, metal fences, Tanks, Ships,...) as well as mountains.

Theoretically, it is possible for a receiver to receive a signal behind such objects, since radiowaves break or reflect on objects, and thusly an indirect contact can be made, however the full range can only be used by a direct line.

Under no circumstance should Transmitter or receiver be covered by metals, since this materials could shield them from radio waves.

Ideally, all devices should be on a heightened position. (eg. Transmitter on a table)

Because of the radiance, all antennas should stand up straight (vertical). If possible we recommend using magnetic antennas.
8 Safety hints:

The system may only be used for the ignition of pyrotechnical effect, and may only be used by learned pyrotechnicians. The general rules for the usage of pyrotechnical items are always to follow.

After switching on the device (even in testmode) no persons may linger in the dangerous vicinity of the effects connected to the devices. Workings at the devices or firing ramps may only be done if the devices are switched off. During the show, the safety distance to all connected pyrotechnical effects must be kept. Working on the system during the show is not allowed.

During the setup of the System and the firing ramps, it is recommended to ensure the devices can’t be switched on (taking the key with you). Under no circumstances may a transmitter be left alone without supervision, except when it is proofed against being switched on by others.