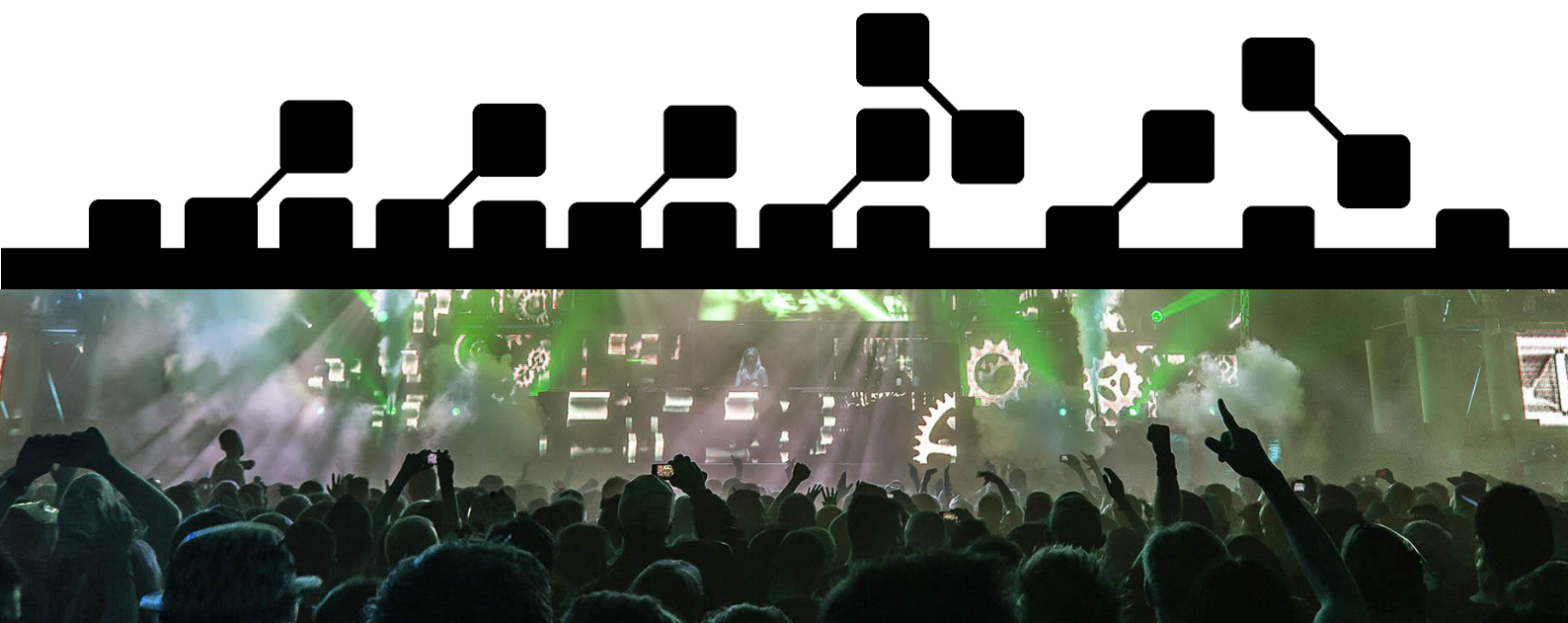




Explo TC Modem

Manual 2.0

As of January 2021



PREAMBLE

Dear Explo-Customer,

Please read through this document before usage of the devices. It contains many informations which will help you with using the system.

We ask you to adhere to the safety and usage guidelines we have listed.

Should you have any questions or should any unclarities arise during the usage of the devices, that can't be answered by this manual, please do not hesitate to contact us either by mail or by phone.

We wish you a lot of fun with your new ignition device.

Your Explo Team



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1 ABOUT THE SMPTE TC MODEM

1.1 READING SMPTE / MIDI

The Explo Time Code Modem synchronizes the automatically running show on an Explo transmitter of the types TX2-Stage or TX2-70K with an external Time Code (MIDI or SMPTE).

For that, the transmitter and the TC Modem are connected via the provided data cable (TX2-programming cable), and the Modem to the external TC source.

1.2 WRITING MIDI

Alternatively the TC modem can be used to send a MIDI-TC (MTC), allowing you to synchronize devices of third party providers, with the internal time code used by Explo devices.



2 COMPONENTS OF THE MODEM

2.1 FRONTAL VIEW



Components of the SMPTE TC Modem

1	Usage buttons
2	Status LED
3	Display



2.2 BACK VIEW



Components of the SMPTE TC Modem	
1	ON- / OFF switch
2	Activation button
3	Charging- / Programming socket
4	SMPTE TC Input (SMPTE IN)
5	MIDI TC Input (MIDI IN)
6	MIDI TC Output (MIDI OUT)



2.3 DESCRIPTION OF COMPONENTS

2.3.1 USAGE BUTTONS

The usage buttons allow you to set the mode of the device. The following modes can be used:

Usage buttons (from left to right)	
MIDI OUT	The TCM sends a MIDI TC, that will be synchronized with the automatic show on an Explo transmitter.
MIDI IN	The TCM can read a MIDI TC from an external source, and will synchronize an automatic show on an Explo transmitter with it.
SMPTE IN	The TCM can read an external SMPTE TC, and will synchronize the automatic show on an Explo transmitter with it.
FireOne FSK IN	The TCM kann read a FireOne FSK TC from an external source, and will synchronize an automatic show on an Explo transmitter with it.

2.3.2 DISPLAY

The display show the current status of the TCM.

2.3.3 STATUS LED

The red LED on the front is permanently lit, as long as the device is switched on, and will flash when the internal troubleshooting has finished.

2.3.4 DATA AND CHARGING SOCKET

The 7pole socket can be used to program or charge the device. It allows you to connect a charger, or the data cable, used to connect the Modem with the transmitter (TX2-70K or TX2-Stage).

Pins of the charging socket SMPTE TCM	
Pin 1	GND
Pin 2	RX
Pin 3	TX
Pin 4	Battery 1
Pin 5	Battery 2
Pin 6	Not connected
Pin 7	Not connected

2.3.5 SMPTE TC INPUT (SMPTE IN)

You can connect an external TC source to the 3pole XLR socket, if the SMPTE reading function (SMPTE IN) is used.



2.3.6 MIDI TC INPUT (MIDI IN)

You can connect an external TC source to the socket marked MIDI IN, if the MIDI reading function is used (MIDI IN).

2.3.7 MIDI TC OUTPUT (MIDI OUT)

You can use the socket marked MIDI OUT, to take the TC, and synchronize external systems with the Explo show. For this, you need to select MIDI writing (MIDI OUT).

2.3.8 ON- / OFF SWITCH

This Wip switch can disconnect the power supply of the SMPTE TCM. It must be activated (Position "I") for the modem to work once the activation button is pressed. To switch it off, the Wip switch too must be set to off (Position "O").

2.3.9 ACTIVATION BUTTON

After switching the Wip switch to ON, this button can be pressed to activate the device.

2.3.10 CONNECTION CABLE

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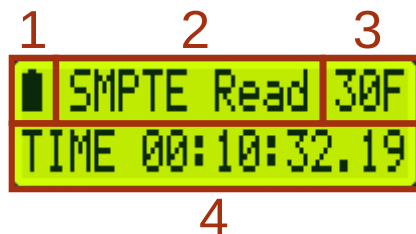
To connect the TCM with an Explo transmitter, you will need to use the provided TX2 programming cable. It features connectors for the 7pole sockets of the TX2-70K, as well as the 5pole socket of the TX2-Stage.



3 ABOUT TIME CODES

3.1 DISPLAY ON THE MODEM

On the modem, you will also see the battery status, the set mode and the framerate, next to the current Time Code.



Display of the TC on the Modem	
1	Battery status
2	Mode
3	Framerate
4	Timecode

3.1.1 BATTERY STATUS

Shows the status of the internal battery in picture form.

3.1.2 MODE

Shows the currently set Time Code Mode (MIDI read, SMPTE read, MIDI send).

3.1.3 FRAMERATE

Shows the Framerate of the Time Code signal. It will be found automatically during a reading. When writing MIDI, the Framerate is automatically set to 25fps.

3.1.4 TIMECODE

Shows the Time Code in **Hours:Minutes:Seconds.Frames**.

00	:	00	:	00	.	00
Hours		Minutes		Seconds		Frames

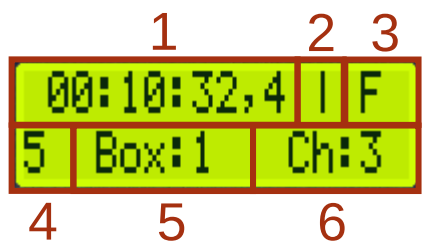
The TCM can use Time Codes of up to 24hours. After 23:59:59, an overflow to 00:00:00 will occur. The display of the frames is in accordance to the used **Frames per second (FPS)**. The TCM checks the incoming TC permanently and changes the framerate if needed automatically.

The TCM also checks incoming TCs for any errors. Single frames will be deleted if needed, if they would mean unrealistic time skips. Deleted times are displayed with **XX**. If times are deleted, the Explo system will continue to synchronize the automatic show with the internal Explo Time Code.



3.2 DISPLAY ON THE TRANSMITTER

When using the TCM, you can see the TC (if the transmitter is set to Test or Armed), as well as informations about the next ignition.



Display of the TC on the TX	
1	Show-Time AutoShow
2	Receiving Time Codes
3	Mode of the transmitter
4	Countdown
5	Boxnumber
6	Channelnumber

3.2.1 SHOW-TIME AUTOSHOW

Shows the current time of the AutoShow in **Hours:Minutes:Seconds,Milliseconds**.



3.2.2 RECEIVING TIME CODES

The shown line will turn, as long as a TC is received. Should the signal stop, so too will the line.

3.2.3 MODE OF THE TRANSMITTER

Shows to which mode the transmitter is currently set to (T=Test, F= Fire/Armed).



The transmitter will send ignition signals only in Fire-Mode (Armed-Mode).

3.2.4 COUNTDOWN

Shows the seconds until the next ignition.

3.2.5 BOXNUMBER

Shows the Boxnumber of the next ignition.

3.2.6 CHANNEL NUMBER

Shows the channel number of the next ignition.



4 USING THE TC MODEM

4.1 SWITCHING THE DEVICE ON

To switch the device on, you will first need to switch on the wip switch (Position „I“). Next, you can activate it by pressing the activation button for a moment.

4.2 SETTING THE USAGE MODE

Using the usage buttons, you can set the mode of the TCM. Simply press the corresponding button for about 3 seconds. You can let go of the button once **Change MODE** can be read in the second row of the display.

Press button for about 3 sec.	Display after selection
MIDI OUT	
MIDI IN	
SMPTE IN	
FireOne FSK IN	

Each mode uses an individual build of the main screen. The following modes can be selected:

4.3 SETTING THE TC MODE ON THE TRANSMITTER

In order for the Explo transmitter and the TCM to communicate, and read or write TC signals, the correct function must be set in the transmitter menu.

Open the transmitter menu and navigate to **EXPLO TC**.



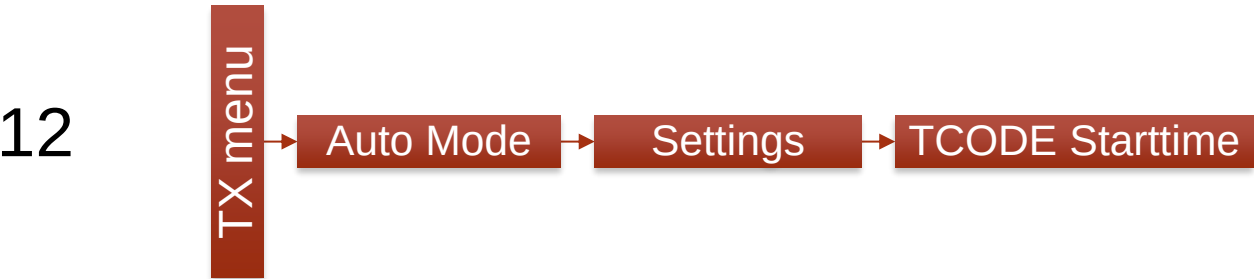
This menu item is set to off by default (**OFF**). When using the TCM, it must be set either to **READ** or **SEND**.

Settings in the transmitter menu item EXPLO TC	
OFF	Explo TCM is not used. This option must be selected if you want to use FSK or another SMPTE TC Modem.
READ	This option is used if you want to use the Explo TCM to read either SMPTE, MIDI or FireOne FSK Time codes.
SEND	This option is used if you want the Explo TCM to send a MIDI TC.

4.4 SETTING A DELAY ON THE TRANSMITTER

Should the Explo transmitter use the external TC signal with a delay, or in teh case of MIDI OUT, send with a delay, you can select what length of delay you wish to use. At the reading functions (MIDI / SMPTE / FSK IN) you can select at what time of the external TC the show should start. At the writing function (MIDI OUT) you can set with what delay the TC signal should be sent to external systems.

Simply open the transmitter menu and navigate to the menu **TCODE Starttime**.



The delay is shown as follows:

Step	Transmitter	Information
1		Select TCODE Starttime.
2		Note: Each further second, moves the show another second back.
3		Allows you to set the starting time with Plus and Minus and Menu / OK . (0 to 24 hours)
4	Press Test / ESC.	
5		Save any changes with Mode / OK, or dismiss them with Test / ESC.



4.4.1 EXAMPLE OF A POSITIVE DELAY WHEN READING A TIME CODE

Generally the time will be taken as is, when reading a TC. This means that the time **00:00:00.00** of the external TC, will also be taken as **00:00:00.00** for the show. Since most shows feature a delay for the TC, and the show should start at a certain point in the TC, you can set the preferred delay for the internal TC of the explo transmitter at **Starttime**.

Let's take a show whos single systems (Light, Sound, Pyrotechnics, Flames) is synchronized with an external TC. The show should start at **00:30:00.00** (after 30 minutes). A delay has not been programmed in this example. In order for the explo system to not start immediately at **00:00:00.00**, a delay of 30 minutes must be set. Simply set the following at **TCODE Starttime**:



Using this setting, the explo show won't start at **00:00:00.00**, but with a delay of **+00:30:00.00**. Mathematically, this example would look as follows:

	00:00:00.00	Starttime of the external TC
+	00:30:00.00	Delay TCODE Starttime
+	00:00:00.00	Delay of empty parts in the show file
=	00:30:00.00	Start of the explo show

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Alternatively, a delay can be programmed directly into the explo show file, and the music file, by inserting an empty line of 30 minutes into both.

4.4.2 EXAMPLE OF A NEGATIVE DELAY WHEN READING A TIME CODE

If a delay has been inserted directly into the show and music file, it might be necessary for it to be corrected afterwards. For this, you can set the **Starttime** with a negative prefix.

For example, let's take show whos single systems should be synchronized with an external TC. The show is supposed to start at **00:30:00.00** (30 minutes). In this example, we'll use an explo show file, that features an empty part of **01:00:00.00**. This means, that the show would start after one hour on the transmitter. In order for the start of the show to be moved an hour to the front, the following must be set at **TCODE Starttime** (note the negative prefix):



Using this setting, the explo show won't start at **00:01:00.00**, but with a delay of **-00:30:00.00**, meaning 30 minutes earlier. Mathematically, this would look thusly:

	00:00:00.00	Startzime of the external TC
-	00:30:00.00	Delay TCODE Starttime
+	01:00:00.00	Delay of empty parts in the show file
=	00:30:00.00	Start of the explo show

4.4.3 EXAMPLE OF A DELAY WHEN WRITING A MIDI TIME CODE

When using the MIDI OUT (Writing a MIDI TC) function of the TCM, the internal TC of the explo transmitter will be taken directly. Meaning: The time 00:00:00.00, of the explo showfile will be output by the TCM as time 00:00:00.00 in the form of a MIDI Time Code. Should you need to set a delay for controlling third party systems, you can set it at Starttime.

Let's take a show for example, in which a sound system needs to be synchronized with the internal explo TC. This uses the MIDI output (MIDI OUT) of the TCM. The show in our example has a delay in the form of an empty space of **00:10:00.00**. So the show will start after 10 minutes. The sound system however, will start the show internally at **00:30:00.00**, so twenty minutes later. This time difference can be set straight, using the settings at **TCODE Starttime**:

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This setting will add a delay to the output MIDI TC of +00:20:00.00, so 20 minutes. Mathematically, this looks as follows:

	00:00:00.00	Starttime of the Explo Time Code
+	00:20:00.00	Delay TCODE Starttime
+	00:10:00.00	Delay of empty parts in the show file
=	00:30:00.00	Output MIDI time at show start



4.5 SETTING TIME CODE STOPS

You can set if the transmitter should stop the show in case of a failure of the external TC.

Open the transmitter menu and navigate to the menu **ext TC Stop**.



The TC Stop can be set to off, or to 2 to 40 seconds timeout. If the TC Stop has been activated, the transmitter will automatically stop the automated show, if there has been no signal received for the duration of the set timeout, by the TCM.



Since the automated show can be paused at any point via radio control, we recommend not using the TC stop function. Errors of the TC signal or a failure of the modem could lead to an unwanted stop of the show.

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4.6 CONNECTING THE TCM AND THE TRANSMITTER

In every case of usage, the TCM must be connected to a transmitter using the TX2 programming cable. You can use either the TX2-Stage or TX2-70K of the X2 series. Transmitters of the V1 series cannot be used.

Simply connect the TX2 programming cable to the 7pole socket of the TCM.



The other end of the cable needs to be connected to the data socket of the transmitter. For the TX2-Stage, that is the 5pole socket, for the TX2-70K, its one of the 7pole sockets.



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4.7 MODE: WRITING MIDI TC (MIDI OUT)

In this mode, a MIDI time code, synchronized with the explo transmitter will be output at the socket labeled MIDI OUT. With this TC, third party systems can be synchronized with the automated show of the explo system. The explo transmitter is the TC giver in this mode. The framerate of the Code is set to 25fps.

When using this mode, the following steps need to be taken:

Step	Action taken	Information
1	Select mode (Modem)	Set correct mode. Press MIDI OUT For 3 seconds.
2	Select mode (Transmitter)	Set correct mode. In the menu EXPLO TC set to SEND .
3	Setting the delay	If needed, set a delay to the MIDI time at TCODE Starttime .
4	Connect TX and TCM	Connect the TX and TCM using the provided cable.
5	Test output of TC	Test the MIDI TC output by starting the Auto show in Test-mode.
6	Connect third party system	After a successful test, connect the third party system to the modem.
7	Test build	Test everything as well as possible in a dry run (Transmitter in Test-Mode).
8	Start show	Start show in Armed-mode of the transmitter. The TC will send the synchronized MIDI TC.
9	Dismantling after show	Switch off the transmitter and TCM after show, and remove third party systems from the TCM.

4.8 MODE: READ MIDI TC (MIDI IN)

In this mode, the automated show on the explo transmitter will be synchronized with the external MIDI TC. This TC is being input via the socket labeled MIDI IN.

When using this mode, the following steps need to be taken:

Step	Action taken	Information
1	Select mode (Modem)	Set correct mode. Press MIDI IN For 3 seconds.
2	Select mode (Transmitter)	Set correct mode. In the menu EXPLO TC auf READ stellen.
3	Setting the delay	If needed, set a delay to the MIDI time at TCODE Starttime .
4	Connect TC-give and TCM	Connect the external MIDI TC source with the TCM (MIDI IN socket).
5	Connect TX and TCM	Connect the TX and TCM using the provided cable.
6	Check incoming TC	Check the incoming signal by starting the external TC source.



7	Connect TX and TCM	After a successful test, connect the transmitter to the modem.
8	Test build	Test everything as well as possible in a dry run (Transmitter in Test-Mode).
9	Start show	Switch transmitter armed, and start external TC. The modem will synchronize the transmitter automatically.
10	Dismantling after show	Switch off the transmitter and TCM after show, and remove MIDI TC source from the TCM

4.9 MODE: READ SMPTE TC (SMPTE IN)

In this mode, the automated show on the explo transmitter will be synchronized with the external SMPTE TC. This TC is being input via the socket labeled SMPTE IN.

Bei Verwendung dieses Modus sind die folgenden Stepe durchzuführen:

Step	Action taken	Information
1	Select mode (Modem)	Set correct mode. Press SMPTE IN For 3 seconds.
2	Select mode (Transmitter)	Set correct mode. In the menu EXPLO TC auf READ stellen.
3	Setting the delay	If needed, set a delay to the time at TCODE Starttime .
4	Connect TC-give and TCM	Connect the external MIDI TC source with the TCM (SMPTE IN socket).
5	Connect TX and TCM	Connect the TX and TCM using the provided cable.
6	Check incoming TC	Check the incoming signal by starting the external TC source.
7	Connect TX and TCM	After a successful test, connect the transmitter to the modem.
8	Test build	Test everything as well as possible in a dry run (Transmitter in Test-Mode).
9	Start show	Switch transmitter armed, and start external TC. The modem will synchronize the transmitter automatically.
10	Dismantling after show	Switch off the transmitter and TCM after show, and remove SMPTE TC source from the TCM

4.10 MODE: READ FIREONE FSK (FIREONE FSK IN)

In this mode, the automated show on the explo transmitter will be synchronized with the external FireOne FSK Time Code. This TC is being input via the socket labeled SMPTE IN. For further informations about using this special mode, please contact us via phone or E-Mail.



5 TECHNICAL DATA

Below you can find the technical data of the SMPTE TCM:

SMPTE TC Modem	
Measurements	220 x 155 x 65mm
Weight	1,8kg
Case	Aluminium case
Stand-By	7 hours
Power supply	2x NiMH battery 12VDC
Supported Time Codes	SMPTE (read)
	MIDI (read, write)
	FireOne FSK (read)

6 DISPOSAL



According to the european WEEE-norms, this product may not be disposed of in your household trash. Please dispose of this device in a fitting collection point for electrical devices.

Alternatively, you can send us your old device and we will dispose of them free of charge.

Should you have any further questions about the correct disposal, please do not hesitate to contact us.

