



# 418 + 433 MHz TIME CODE UNITS

## INSTRUCTIONS FOR USE

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### Miniature Time Code Transmitter, 418 MHz

#### Description

This system is designed to transmit time code from a camera to a recorder using a reliable and robust UHF link, operating at 418 MHz.

- The Transmitter is DTI approved to MPT 1340 and does not require a licence.
- A very small and light Transmitter, little bigger than the aerial, which plugs directly into the camera BNC socket
- Transmitter is powered from the camera via a 4 pin Hirose, or by a PP3 battery
- Good range up to 100 metres
- UHF 418 MHz operation, no licence required
- Replaceable efficient UHF aerial on a BNC connector
- Accommodates a wide range of time code input levels
- Regulated voltage input, works from 7-14 Volts with no performance change
- Data input on standard BNC
- Use with either of the two Black Box Video Time Code Receivers or the Black Box Video integrated Radio Time Code Reader/Receiver.
- Can be used with other manufacturers' Receivers if they operate on 418 MHz

#### Instructions for Use

Connect an aerial to the Transmitter's BNC socket on top of the aluminium tube. Mount the Transmitter on the camera's BNC time code out socket and plug the power lead into the camera Hirose power socket.

#### Transmitter Battery Life

For applications where the Transmitter cannot be powered by the 4 pin Hirose plug an adapter is provided so that the Transmitter can be powered from a PP3 battery. A much more robust alternative to the clip adaptor is our new PP3 Battery Box - does the same thing but is compact and sturdy. Current consumption of the Transmitter is less than 10mA so expect about 60 hours life from an MN1604 or around 200 hours from a lithium Ultralife when powering from the PP3 clip adaptor (or PP3 Battery Box). The Transmitter battery volts can be from 14V - 7V with no loss of performance since it is internally regulated inside the Transmitter.

### Miniature Time Code Transmitter, X-tra Range, 433 MHz

#### Description

This system is designed to transmit time code from a camera to a recorder using a reliable and robust UHF link, operating at 433 MHz.

- The Transmitter is DTI approved to MPT 1340 and does not require a licence.
- A very small and light Transmitter, little bigger than the aerial, plugs directly into the camera BNC socket
- Transmitter is powered from the camera via a 4 pin Hirose, or by a PP3 battery
- Good range up to 300 metres
- UHF 433 MHz operation, no licence required
- Accommodates wide range of time code input levels
- Regulated voltage input, works from 7-14 Volts with no performance change
- Battery voltage LED
- Data input on standard BNC
- Use with either of the two Black Box Video Time Code Receivers or the Black Box Video integrated Radio Time Code Reader/Receiver.
- Can be used with other manufacturers' Receivers if they operate on 433 MHz

#### Instructions for Use

Connect an aerial to the Transmitter's BNC socket on top of the aluminium tube. Mount the Transmitter on the camera's BNC time code out socket and plug the power lead into the camera Hirose power socket.

#### Transmitter Battery Life

For applications where the Transmitter cannot be powered by the 4 pin Hirose plug an adapter is provided so that the Transmitter can be powered from a PP3 battery. A much more robust alternative to the clip adaptor is our new PP3 Battery Box - does the same thing but is compact and sturdy.

Current consumption of the Transmitter is about 10mA so expect about 60 hours life from an MN1604 or around 200 hours from a lithium Ultralife when powering from the PP3 clip adaptor (or PP3 Battery Box). The Transmitter battery volts can be from 14V - 7V with no loss of performance since it is internally regulated inside the Transmitter.

## Self Powered Time Code Transmitter, 418 MHz

### Description

This Transmitter is designed to transmit time code from its BNC input socket to any of the Black Box Video Receivers, or to the integrated Time Code Reader/Receiver using a reliable and robust UHF link. (Other manufacturer's Receivers can be used if they operate on 418 MHz.

- The Transmitter is DTI approved to MPT 1340 and does not require a licence.
- Small and light
- Good range up to 100 metres
- Replaceable efficient UHF aerial on a BNC connector
- Crystal controlled
- Powered from a single PP3 type battery
- UHF 418 MHz operation, no licence required
- Accommodates a wide range of time code input levels
- Data input on standard BNC

### Instructions for Use

Insert an MN 1604 battery into the battery case, being careful to observe correct polarity.

Connect an aerial to the Transmitter's BNC socket on top of the case.

Plug time code into the BNC socket on the side of the unit. Switch on with the locking (pull to release) toggle switch and the yellow battery OK LED should light.

### Transmitter Battery Life

Current consumption of the Transmitter averages about 25 mA so expect about 20 hours life from an MN 1604, or around 60 hours from a lithium UltraLife. When the green LED starts to dim the battery is nearly exhausted and should be replaced by the time the LED has just gone out.

### Input Level

The input level to the Transmitter is adjustable inside the case using the black preset mounted at the bottom right of the circuit board. **Do not under any circumstances** adjust the small white preset on the little green circuit board as this adjusts the frequency and is very critical.

For most applications the level preset will not normally need adjustment. It is factory set for a level of 2 Volts which will suit most equipment, such as the HHB PortaDAT. If reliable lock cannot be obtained, make a note of the original setting, then try adjusting the level until lock is obtained. The level adjustment is usually not critical, just set it midway between the two points at which lock is lost. Some sources such as Aarton and Digi-Beta are fussier than others.

## Self Powered Time Code Transmitter, X-tra Range, 433 MHz

### Description

This Transmitter is designed to transmit time code from its BNC input socket to any of the Black Box Video Receivers, or to the integrated Time Code Reader/Receiver using a reliable and robust UHF link. (Other manufacturer's Receivers can be used if they operate on 433 MHz.

- The Transmitter is DTI approved to MPT 1340 and does not require a licence.
- Small and light
- Good range up to 300 metres
- Replaceable efficient UHF aerial on a BNC connector
- Crystal controlled
- Powered from a single PP3 type battery
- UHF 433 MHz operation, no licence required
- Accommodates a wide range of time code input levels
- Data input on standard BNC

### Instructions for Use

Insert an MN 1604 battery into the battery case, being careful to observe correct polarity.

Connect an aerial to the Transmitter's BNC socket on top of the case.

Plug time code into the BNC socket on the side of the unit. Switch on with the locking (pull to release) toggle switch and the yellow battery OK LED should light.

### Transmitter Battery Life

Current consumption of the Transmitter averages about 12 mA so expect about 40 hours life from an MN 1604, or around 120 hours from a lithium UltraLife. When the green LED starts to dim the battery is nearly exhausted and should be replaced by the time the LED has just gone out.

### Input Level

The input level to the Transmitter is adjustable inside the case using the black preset mounted at the bottom right of the circuit board.

For most applications the level preset will not normally need adjustment. It is factory set for a level of 2 Volts which will suit most equipment, such as the HHB PortaDAT. If reliable lock cannot be obtained, make a note of the original setting, then try adjusting the level until lock is obtained. The level adjustment is usually not critical, just set it midway between the two points at which lock is lost. Some sources such as Aarton and Digi-Beta are fussier than others.

## Miniature Time Code Receiver, 418 MHz or 433 MHz

The Miniature UHF Time Code Receiver is specially designed to be used on cameras where light weight and small size are important. It is powered from the 12 Volt socket on the camera via a 4 pin Hirose connector.

The Receiver is built into a small diecast box and is powered from the camera via the 4 pin Hirose socket. A standard time code data out is provided on a BNC socket on the bottom of the unit. Connect an aerial to the top BNC socket on the Receiver module and connect the time code output to the BNC socket on the bottom of the Receiver. Connect power to the Receiver using the 4 pin Hirose lead. The orange LED should light showing the unit is on.

Power up the Transmitter on 418 MHz or 433 MHz. The red carrier detect LED on the Receiver should now be lit showing that the Transmitter's carrier is being detected and that the Receiver is in range.

### Time Code Output Level

The time code output level from the Receiver is set at 2V peak to peak which will suit most applications, but this is adjustable internally from 0V to 4.5V by the vertically mounted black pre-set 2.2k trimmer. Do not adjust the small white trimmer on the RX board as this sets the received frequency.

## Miniature Time Code Receiver, X-tra Range, 433 MHz

The *X-tra Range* Miniature UHF Time Code Receiver is also specially designed to be used on cameras where light weight and small size are important, on 433 MHz.

This version is more sensitive than the standard, with superbright LEDs, lower power consumption, and a range of up to 300 metres with *X-tra Range* TX units.

The Receiver is built into a small diecast box and is powered from the camera via the 4 pin Hirose socket. A standard time code data out is provided on a BNC socket on the bottom of the unit. Connect an aerial to the top BNC socket on the Receiver module and connect the time code output to the BNC socket on the bottom of the Receiver. Connect power to the Receiver using the 4 pin Hirose lead. The green LED should light showing the unit is on.

Power up the Transmitter on 433 MHz. The red carrier detect LED on the Receiver should now be lit showing that the Transmitter's carrier is being detected and that the Receiver is in range.

### Time Code Output Level

The time code output level from the Receiver is set at 2V peak to peak which will suit most applications, but this is adjustable internally from 0V to 4.5V by the vertically mounted black pre-set 2.2k trimmer. Do not adjust the small white trimmer on the RX board as this sets the received frequency.

## (Standard) Time Code Receiver, 418 MHz

Connect an aerial to the top BNC socket on the Receiver module and connect the time code output to the BNC socket on the side of the Receiver.

Switch on the Receiver with the top mounted locking toggle switch and the **green** LED should light showing the unit is on and the battery is OK. The LED should light bright **green** - if it is dim or out, replace the MN1604 battery by sliding it out from the battery box.

Connect an aerial to the Transmitter's BNC socket on the top of the unit. Power up the Transmitter and the red carrier detect LED on the Receiver should now be lit showing that the Transmitter's carrier is being detected and that the Receiver is in range.

### Battery Life

The Receiver battery is usable down to 6.5 Volts at which point the green battery test LED will have gone out. As a rough guide, the LED is bright at 9V, medium at 8V, dim at 7V and out at 6.5V.

Current consumption is about 20 mA so expect around 15 hours from an MN1604 or 100 from an UltraLife.

### Time Code Output Level

The time code output level from the Receiver is set at 2 Volts peak to peak, which will suit most applications, but this adjustable internally from 0V to 4.5V by the vertically mounted black pre-set 2.2k trimmer near the battery compartment.

## (Standard) Time Code Receiver, X-tra Range, 418 MHz

Connect an aerial to the top BNC socket on the Receiver module and connect the time code output to the BNC socket on the side of the Receiver.

Switch on the Receiver with the top mounted locking toggle switch and the **green** LED should light showing the unit is on and the battery is OK. The LED should light bright **orange** - if it is dim or out, replace the MN1604 battery by sliding it out from the battery box.

Connect an aerial to the Transmitter's BNC socket on the top of the unit. Power up the Transmitter and the red carrier detect LED on the Receiver should now be lit showing that the Transmitter's carrier is being detected and that the Receiver is in range.

### Battery Life

The Receiver battery is usable down to 6.5 Volts at which point the green battery test LED will have gone out. As a rough guide, the LED is bright at 9V, medium at 8V, dim at 7V and out at 6.5V.

Current consumption is about 20 mA so expect around 15 hours from an MN1604 or 100 from an UltraLife.

### Time Code Output Level

The time code output level from the Receiver is set at 2 Volts peak to peak, which will suit most applications, but this adjustable internally from 0V to 4.5V by the vertically mounted black pre-set 2.2k trimmer near the battery compartment.

## (Standard) Time Code Receiver, X-tra Range, 433 MHz

Connect an aerial to the top BNC socket on the Receiver module and connect the time code output to the BNC socket on the side of the Receiver.

Switch on the Receiver with the top mounted locking toggle switch and the **yellow** LED should light showing the unit is on and the battery is OK. The LED should light bright **yellow** - if it is dim or out, replace the MN1604 battery by sliding it out from the battery box.

Connect an aerial to the Transmitter's BNC socket on the top of the unit. Power up the Transmitter and the red carrier detect LED on the Receiver should now be lit showing that the Transmitter's carrier is being detected and that the Receiver is in range.

### Battery Life

The Receiver battery is usable down to 6.5 Volts at which point the green battery test LED will have gone out. As a rough guide, the LED is bright at 9V, medium at 8V, dim at 7V and out at 6.5V.

Current consumption is about 20 mA so expect around 15 hours from an MN1604 or 100 from an UltraLife.

### Time Code Output Level

The time code output level from the Receiver is set at 2 Volts peak to peak, which will suit most applications, but this adjustable internally from 0V to 4.5V by the vertically mounted black pre-set 2.2k trimmer near the battery compartment.

## Radio Time Code Reader, 418 or 433 MHz

### Description

The Radio Time Code Reader is designed to display time code as Hours, Minutes and Seconds and Frames. The unit has a built in radio receiver tuned to 418 MHz or 433 MHz so is able to receive time code from our Black Box Vide Time Code Transmitters or from other manufacturers' transmitters operating on the same frequency.

The unit is robust and splashproof and designed to be very simple to operate. It runs on a single PP3 type battery.

### Instructions for Use

Fit a 9 Volt battery in the battery compartment on the right side of the unit. Alkaline MN1604 or Lithium types are recommended. Be careful to observe correct polarity.

Fit the UHF aerial to the BNC socket on the top of the unit.

### Operation

Switch the unit on by pressing the green push button. The display should briefly read " **Black Box Video TC Reader V1.2** " .

The red LED should light up and the display should now show " **00:00:00:00 25** " if no time code is being received. **25** indicates the default frames per second.

If time code is being transmitted the display will indicate the current code and the word " **JAM** " to the right of the time code. " **JAM** " indicates the reader is jam synched to the Transmitter.

To freeze the display press the yellow button and the word " **LOG** " will replace the word " **JAM** " and the display will be static so you can log the code.

To return to the current code press the yellow button again. The display will run jammed to the Transmitter and the word " **JAM** " will appear in the display again.

### Frame Rate

The unit will select its own frame rate automatically according to the code it receives from 25 or 29 drop frame. If required 24 frames per second can be manually selected by holding down the yellow push button whilst powering up the unit.

### Backlight

The display has an automatic backlight which only comes on when dark to save battery life. The light sensor is on the left hand side of the case. When dark each time the yellow button is pressed the backlight comes on for 6 seconds.

### Battery Indicator

The red LED indicates how much power is left in the battery. The indicator will gradually get dimmer as the battery runs down, when it is out the battery should be replaced as the unit will stop working shortly.

Battery life should be about 12 hours with a Duracell MN1604, or 36 hours with an Ultralife lithium or Zinc Air battery. This will be slightly less at night when the backlight comes on. Current consumption is about 35 mA. Minimum usable battery voltage is 7 Volts.

### Time Code Out Socket

Time code out is available on the BNC socket on the right hand side of the unit by the battery compartment. The level is one Volt p to p. If no time code is being received by radio then time code can be plugged into this socket and be read on the unit. In this case the time code level should be between 1 and 3 Volts.

### Mounting Clips

Two mounting clips are provided on the back of the unit so it can be easily clipped to a clipboard.

Alternatively, the unit can be strung on some cord and worn around the neck. The back can be unscrewed and mounted the other way up if required so that the unit is the right way up when lifted up to read the display.