

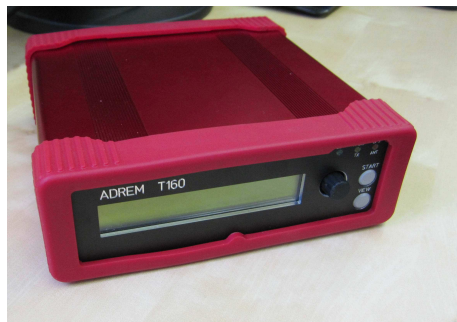
# ADREM

TIME CODE GPS WIRELESS SOLUTIONS  
HIGH SPEED OPTICAL NETWORKING

[www.adrem-solutions.com](http://www.adrem-solutions.com)

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# T 160S



## User Guide

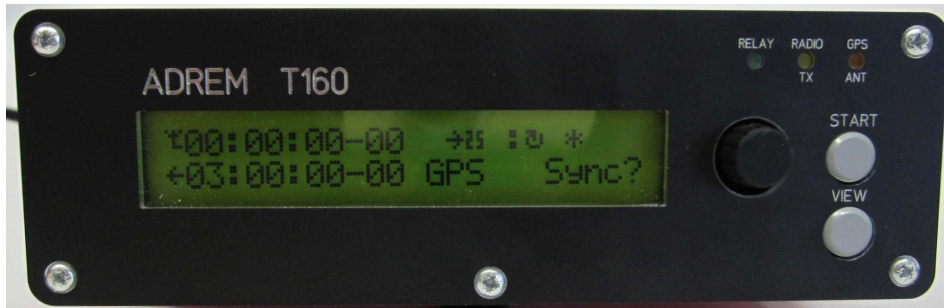
### **TIME CODE SATELLITE GPS**

TIME CODE READER / GENERATOR

SMPTE to MTC / MTC to SMPTE

MMC /WIRELESS TC

Adrem TC 160S Time Code Unit.  
Version 1.57



433 MHz antenna



GPS antenna

ADREM presents a new state of the art concept in timecode with limitless flexibility and reliability using a wireless and GPS satellite system.

Ability to control multiple, diverse show locations worldwide, shows synchronised, triggered and controlled using the satellite timecode generator.

Complete flexibility in timecode offsets and frame rates means total control over both inputting and outputting timecode.  
Any 24/25/30/DF input can be changed to any desired 24/25/30/DF frame output.

A totally jam safe system when run in GPS mode.

Stability and reliability can be assured with a cleaned signal for clear, stable output and a freewheel possibility.

Atomic clock precision worldwide in both SMPTE and MIDI time code formats

**Unit Applications**

- Show synchronisation over long distances (country or continent size synchronisation)
- Show synchronisation in extreme conditions where other forms of communication would not be possible
- Jam free - complete jamming prevention when system is in GPS mode
- Multi-media show start synchronisation (fireworks, lighting, sound, video, lasers etc)
- Studio converter offset regenerator
- Lighting desk time code converter and master show time code
- Video camera synchronisation and reporting

## Table of Contents

1	Introduction.....	4
2	Installation/Setup.....	5
3	Screen Configuration GPS mode.....	6
3.1	Buttons	
3.2	Menu navigation.....	7
5	Menus.....	8
6	Offset Time.....	9
7	Relay.....	10
8	Relay puls.....	11
9	Time code output mode.....	11
10	Default setting.....	12
11	Time source.....	12
12	LTC out stop mode.....	12
13	Time code startup mode.....	13
14	Radio.....	13
15	Special feature.....	14
16	Accessories & other products.....	14
17	Contact / Support.....	15

## 1. Introduction

### Units Functions

#### Timecode reader, generator and converter :

Input LTC output MTC

Input MTC output LTC

MMC (MIDI Machines Command ) standard output LTC and MTC  
range -10dB to +5dB LTC OUTPUT 0dB

#### Time code wireless transmitter / receiver:

Bandwidth 433 MHz 10mW power

Omni-directional antenna provided with kit

BNC 50 ohms connector input

Range of 100-300 meters dependant on site conditions

Possibility to extend range by adding a precise directional antenna such as a Yagi antenna, or an amplifier dependant on local regulations

Time code signal transmitted using an algorithmic digital coding signal to reduce jamming

Automatic timecode freewheel feature for low or broken time code reception situations

Unit can be set as a transmitter or receiver

Four different bandwidth settings

- Europe scans automatically on the 8 Europe bandwidth frequencies

- USA scans automatically on the 8 USA bandwidth authorized frequencies

- MICHF scans automatically on 8 wireless microphone band frequencies

- Manually adjustable frequency with 99 channel range

(433.2 to 472.8MHz, step 0.4 MHz)

#### Relay output:

Dry relay: on connector 5A 240VAC max

Programmable start time and duration features

Mechanical external override start time code switch possible by sub-d connector on rear of unit

#### Time code generator from satellite time:

SMA connector input for the GPS antenna (provided with 5 meters cable)

Atomic clock precision worldwide in SMPTE and MIDI TC

Automatic satellite time synch with GMT (Greenwich Meridian time)

Option to add offset and change time code format 24/25/30/DF (Gear Box)

#### Time code Gear BOX converter:

Ability to convert any 24/25/30/DF input to any desired 24/25/30/DF frame output.

### Technical Specs

160mm X 160mm X 60mm

Power supply 100/240VAC 50-60Hz

Continuous linked multi-machine time code generator.

Player MTC LTC 24 25 30 DF

RCA inputs and outputs, unbalanced signal.

MTC MMC inputs outputs, DIN 5 points

Supports MTC full message and ¼ frames.

MMC: play, stop, locate, standard MIDI protocol

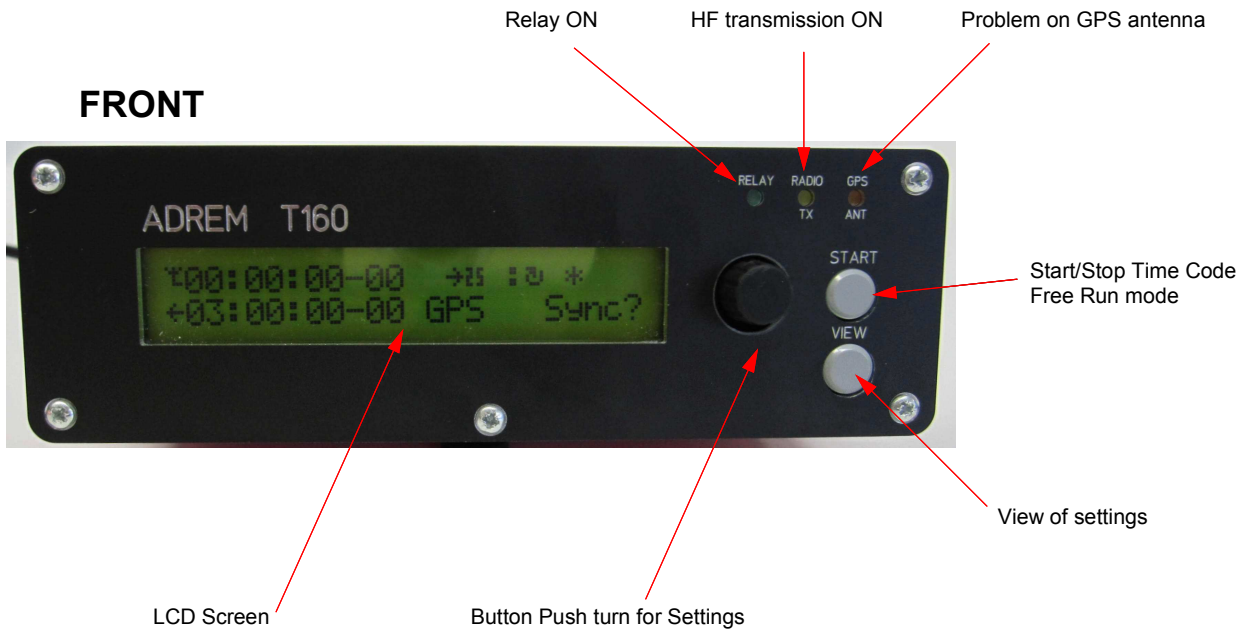
· Antenna GPS Provide

· Antenna HF 433Mhz

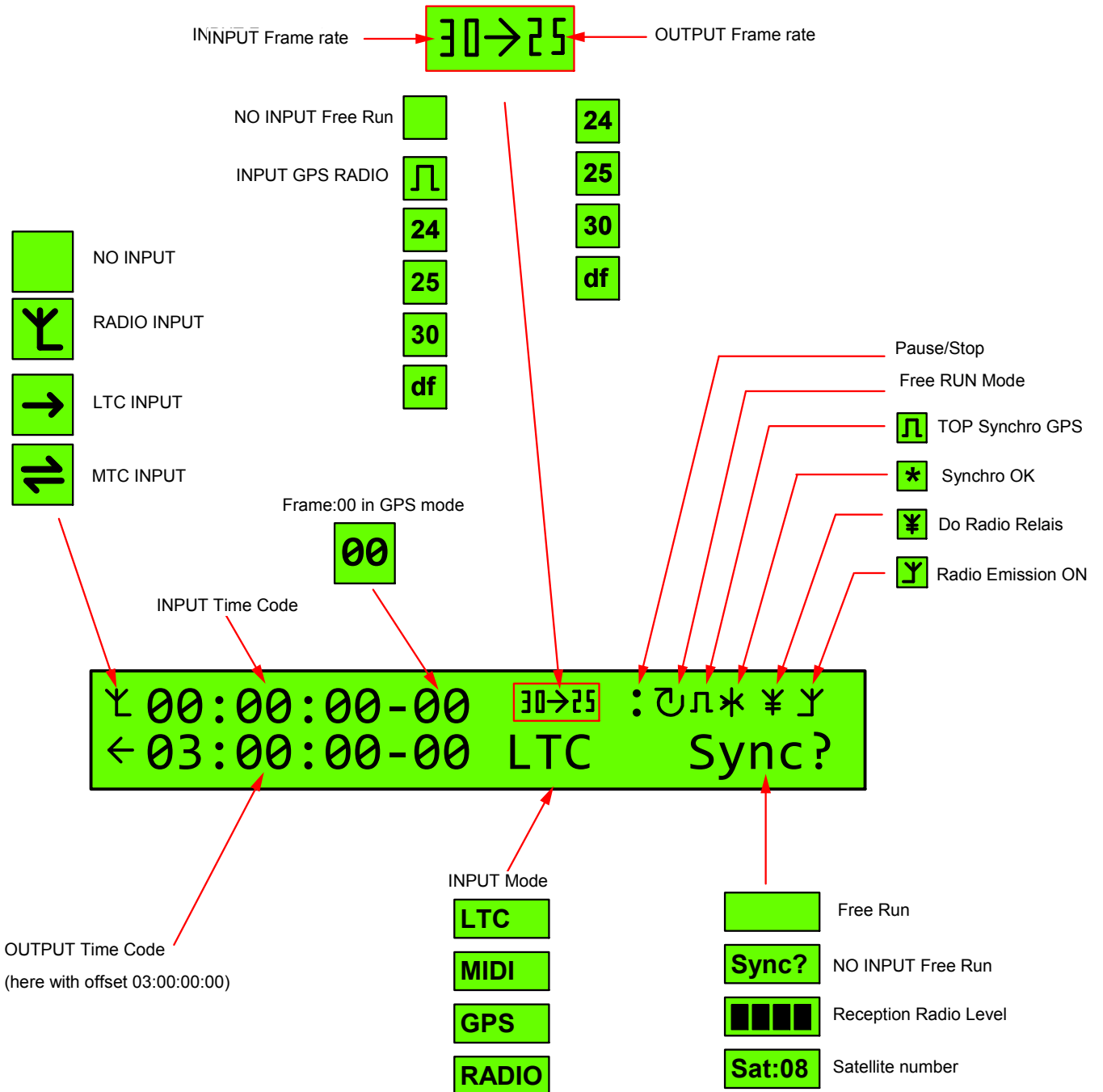
· Red anodized aluminum box 160mm X 165mm X 60mm

· Weight unpacked 0.7Kg

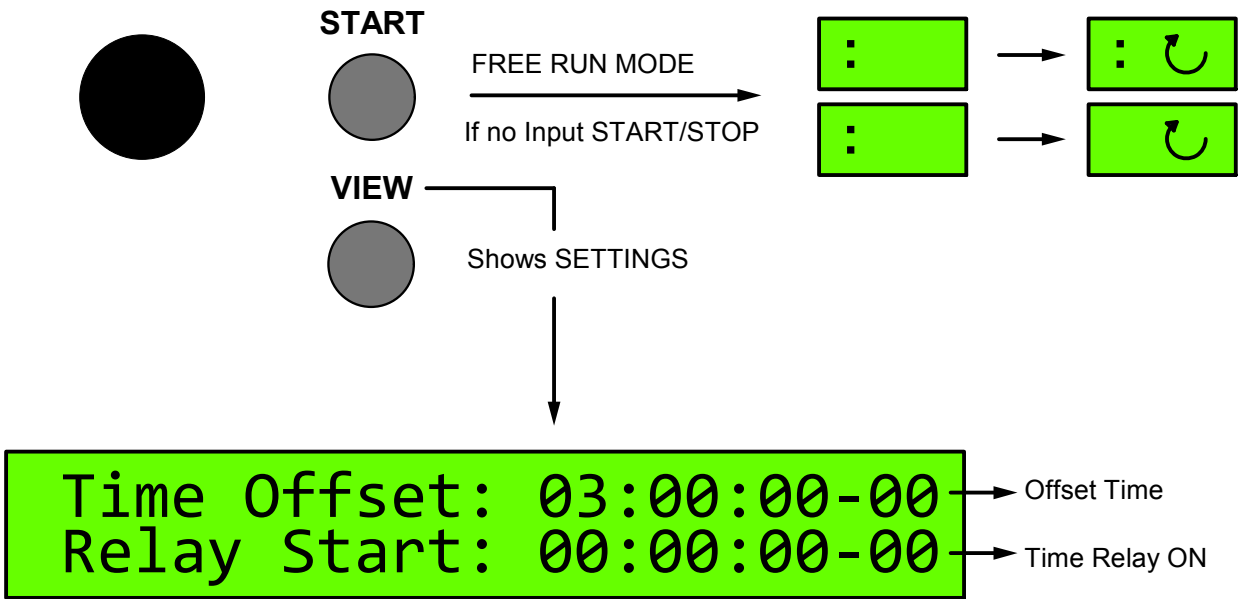
2. Installation / Setup



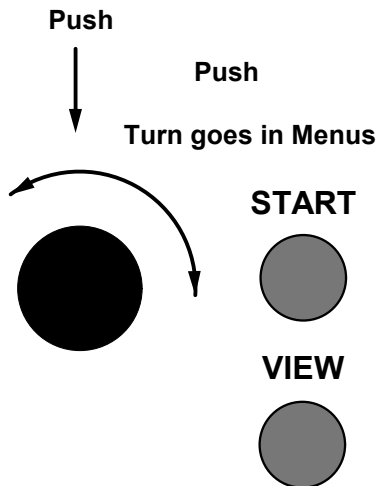
3. Screen Configuration



### 3.1 Buttons

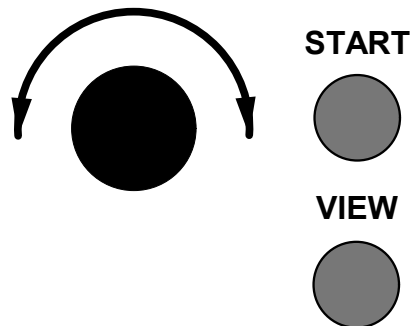


### 3.2 Menu Navigation






























### 3.3 Vari Speed

In LTC Mode it's possible to encrease or slow LTC speed +/- 10%  
To return at normal speed The star will be ON → \* Synchro OK



4. Menus

<p>[ Time Offset - hours ] (03):00:02-00</p>		<p>TIME OFFSET</p>
<p>Hours  Minutes  Secondes  Frames </p>		<p>To change ↓  [04]:00:02-00 </p>
<p>[ Relay Start - minutes ] 00(01)02-00</p>		<p>RELAY START</p>
<p>Hours  Minutes  Secondes  Frames </p>		
<p>[ Relay Delay- seconds ] 00:00:(02)00</p>		<p>RELAIS DELAY</p>
<p>Hours  Minutes  Secondes  Frames </p>		
<p>[ Relay Pluse Duration ] (Off)1 2 3 4 5 seconds</p>		<p>RELAY PULSE DURATION</p>
<p>Relay Pluse Period [01] Minutes</p>		<p>RELAY PULSE PERIOD</p>
<p>[ Timecode Output Mode ] Auto 24(25)30DF 30</p>		<p>TIME CODE OUTPUT MODE</p>
<p>[Default Freewheel Mode] (On)Off</p>		<p>DEFAULT FREEWHEEL MODE</p>
<p>[ Time Source ] Auto LTC MTC(GPS)Radio</p>		<p>TIME SOURCE</p>
<p>[ LTC Out Stop Mode ] Stopped LTC(No Signal)</p>		<p>LTC OUT STOP MODE</p>
<p>[ Timecode StartUp Mode ] 24(25)30DF 30</p>		<p>TIME CODE STARTUP MODE</p>



5. Menus

[ Radio Transmit Mode ]  
(Off)On/Relay



RADIO TRANSMIT MODE

[ Radio Band Selection ]  
(Fixed)Europe USA MicHF



RADIO BAND SELECTION

[ Radio Fixed Frequency ]  
Channel:(03) 433.2Mhz



RADIO FIXED FRAQUENCY

[ DB9 RS232 Speed ]  
19200(9600) b/s



DB9 RS232 SPEED

[DB9 RS232 Pin#2 Signal]  
(Proprietary)Midi-Like



DB9 RS 232 PIN#2 SIGNAL

6 Offset Time

Apply Offset to input time in HH:MM:SS:FF to LTC MTC RADIO GPS mode

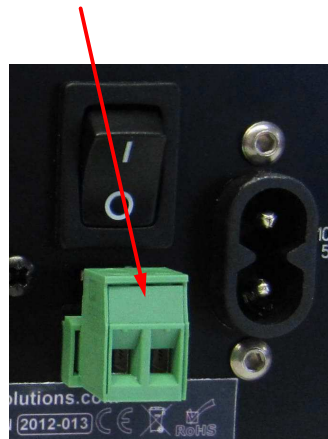
[ Time Offset - hours ]  
(03):00:02-00



7.1 Relay Start

[ Relay Start - minutes ]  
00(01)02-00

Time to set for ON the relay HH:MM:SS:FF to output time LTC MTC RADIO GPS mode the dry relay is at the rear of the T160 on scew connector Max 5A 240VAC



7.2 Relay delay

Time to set how long the relay will stay ON in HH:MM:SS:FF

[ Relay Delay - seconds ]  
00:00(02)-00

Hours ● Hours ● change Hours time ● ● minute ● change Minute time

**8.1 Relay puls Duration**

It's an other Mode for the relay, Time of the pluse duration  
 To sychronize two T160 or more from GPS time  
 This mode cancel the Relay Time Mode

[ Relay Pluse Duration ]  
 (Off)1 2 3 4 5 seconds

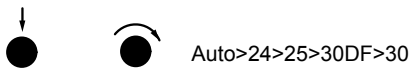
**8.2 Relay Puls period**

Each minute ( 1 to 60 minutes) start hours start the relay will pulse

Relay Pluse Period  
 [01] Minutes

**9 Time Code Output Mode**

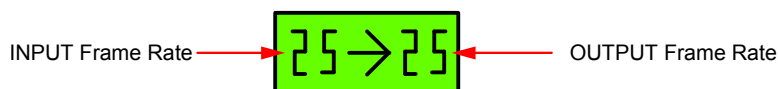
[ Timecode Output Mode ]  
 Auto 24(25)30DF 30



Force the output Frame rate to 24/25/30/DF  
 If Time Input Frame rate is 30 the output frame rate will be transform in 25 "Gearbox mode"

**Auto mode**

Auto mode the frame rate Input is the same of the Outup frame rate



When FreeWheel is ON if When you loose the Input time the Time Code continu to be generate  
 Except if the T160 Recieve a MMC Message Stop ( see in MMC section 15.1 )

10 Default Freewheel Mode

[Default Freewheel Mode]  
(On)Off



This mode is automaticly ON in RADIO and GPS mode

11 Time Source

[ Time Source ]  
Auto LTC MTC(GPS)Radio



LTC

LTC mode Input from RCA (Output LTC MTC at same time)

MIDI

MTC mode Input from DIN (Output LTC MTC at same time)

GPS Time from GPS  
(Output LTC MTC at same time)

Sync? Looking for GPS synchro

Sat:08 Satellite of number of Satellite connected works with 1 normal betwin 6 to 9

RADIO Wireless RADIO  
(Output LTC MTC at same time)

Sync? Looking for Radio synchro

Reception Radio Level mini 1 max 3

12 LTC OUT Stop Mode

[ LTC Out Stop Mode ]  
Stopped LTC(No Signal)



T160 always send LTC and MTC even when the time code is Stopped  
When is stopped T160 repeat the time stopped.

Some device don't like this mode, you can cancel it.

**13 TIME CODE Startup Mode**

[ Timecode StartUp Mode ]  
24(25)30DF 30



Set default Frame Rate at startup

**14.1 RADIO Transmit Mode**

[ Radio Transmit Mode ]  
(Off)On/Relay



Set Transmit RADIO OFF/ON Relay

ON Relay T160 retransmit to the next T160 for long distance

**14.2 RADIO Band Selection**

[ Radio Band Selection ]  
(Fixed)Europe USA MicHF



EUROPE change and scan 8 frequencies automaticly to avoid jamming on bandwidth allowed in Europe "Europe": bande 433,05 - 434,79 Mhz (bande ISM)

USA change and scan 8 frequencies automaticly to avoid jamming on bandwidth allowed in USA "USA": bande 456-460MHz

MicHF change and scan 8 frequencies automaticly to avoid jamming on bandwidth allowed on wireless microphone band frequencies "MIC-" qui est la bande 470-471Mhz

FIXED choose one frequency set in next menu

**14.3 RADIO Fixed Frequency**

[ Radio Fixed Frequency ]  
Channel:(03) 433.2Mhz



FIXED manually frequency set  
99 channel from 433.2 to 472.8 Mhz, step04 Mhz

**15 Special feature**

[ **DB9 RS232 Speed**  
**19200(9600) b/s** ]



DB9 RS232 speed  
Protocol on request

[ **DB9 RS232 Pin#2 Signal**  
**(Proprietary)Midi-Like** ]



Set on DB9 RS 232 pin 2 protocol or MIDI at RS 232 level  
pin 1 RX  
pin 2 TX  
pin 5 ground

**15.1 MIDI MMC Messages** TC160S accepts several MMC (Midi Machine Control)

Command Description

F0 7F 7F 06 01 F7 MMC "stop" stops the generator

F0 7F 7F 06 02 F7 MMC "play" starts the time code generator

F0 7F 7F 06 44 06 01 hrmn sc fr ff F7 MMC "locate"

MTC

Quater frame (IN and OUT)

Full MTC Message (IN and OUT Full message when Time code is stopped)

**16 Accessories & other products**

**T160S rack-mount kit**

This rack mount plate is 19" and 2U in height.  
Perfect for mounting the TC1 unit inside  
a rack in the standard way.



**T160S rubber shoes (protection)**

Rubber shoes that fix on to the ends of the TC160  
unit giving added protection and grip.



**Declaration of Conformity**

Adrem  
64 rue Bourdignon  
94100 SAINT MAUR

confirm that the product:  
Type: Time code GPS Reader Generator  
Model: TC160S

meets the requirements of the council of the European communities  
relating to electromagnetic compatibility (Council Directive 89/336/EEC)

Technical Data: CENELEC EN 50 081-1 1/1992  
CENELEC EN 50 082-1 1/1992

The CE symbol is awarded to high-quality appliances which comply  
with the European Directive 89/336/EEC or the EMVG (law relating  
to electromagnetic compatibility of appliances) and which offer the  
following significant benefits:

- \*Simultaneous and interference-free operation of adjoining  
appliances
- \*No unpermitted interference signals
- \*High resistance to electro-smog

**17 Contact / Support**

[info@adrem-solutions.com](mailto:info@adrem-solutions.com)

<http://www.adrem-solutions.com/en/>