TESTEM Gesellschaft für Mess- und Datentechnik mbH
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WE SOLVE MEASUREMENT PROBLEMS

FTS FTU

Flight Termination System
Field Test Unit

Technical Manual Version 1.1

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Overview:

The TESTEM FTS FTU is a mobile field test unit to check the functionality of the on board systems FTRD (flight termination receiver/decoder), which are part of the FTS flight termination system. Its mounted into a yellow portable and lockable plastic case (water and dust proof) with handle.

The field test unit (FTU) contains:

- a flight termination encoder, programmed to produce the IRIG tones 1, 2, 4, and 5 according to RCC tones specified in table 4.1 “Standard Decoder Tones” of document RCC 319-92.
- an RF transmitter adjusted to center frequency 395 MHz and with an output power of 3 W
- a LiPo Accupack 3,6 A / 14,8 V
- a LiPo Accu loader with integrated balancer
- a power supply unit able to adapt 115 to 230 V AC 50/60 Hz mains power
- an adapter for connection of car battery voltage 11,5 to 18 V DC
- a programmed micro controller unit
- a control panel
- connections for powering
- output connections for high power amplöifier and RF output for antenna
- included in delivery is also:
    - one ground plane antenna (counter balance links may be screwed off for transportation), adapted to 395 MHz
    - one N angle connector for antenna cable
    - one N connection cable for the antenna (3 m)
    - one N connection cable for the high power amplifier (3 m).
    - one Ac connection cable for mains power
    - one DC connection cable for car battery connection
    - three keys EAO 311 for key switch

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Control Panel:

The control panel shows:

- a key switch for System On (key in in horizontal position). The system can be switched off totally only using this key switch and turning it in vertical position.

- One blue illuminated push button for the commands Activate / Reset HPTX

- Four horizontally lined illuminated push buttons for the commands:
  - NONE (green)
  - SAFE (green)
  - ARM (yellow)
  - TERM. = TERMINATE (red, cover protected)

- Four vertically lined yellow push buttons for the IRIG tones 1, 2, 4, 5

- One backlighted LC display showing status of accu loader

- Four vertically lined LEDs for:
  - System on
  - System ok
  - RF TX on (lightened when a tone or tone combination is sent)
  - Accu low

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Connections:

- HPTX control (8 pole rank connection jack) for connection of high power amplifier
- RF Out (N connection jack), output of the 3 W RF transmitter
- DC In (lockable car battery connection jack, male) for 3 pole Pin connector to load the LiPo accu from car battery 11,5 to 18 VDC
- IEC socket for connection of AC line power 115 to 230 VAC, 50/60 Hz

Activation and operation:

If not loaded first connect AC- or DC power to the FTS FTU.

To activate the FTS FTU the key in the key switch has to be turned into horizontal direction. “Sys On” LED is lightened and the display shows the basic information of the accu loader.

Now the blue illuminated push button “Activate / Reset HPTX” has to be pressed shortly. This first activation runs a short light test lightening all push buttons and LEDs except the “Accu Low LED”.

Now the Activate button has to be pressed again for about 2 seconds till the then the accu loader is activated and the display shows the loader check information. When the display for the accu loader asks for confirmation please press again for a short time the Activate button to start loading procedure. The display now shows information on loading status and time. When the internal LiPo Accu is fully loaded the loader gives an acoustic signal. An acoustic signal is also given when the system is switched off via the key switch and the display shows “load interrupt”. This acoustic signal may only be stopped by disconnecting power from the FTU till the accu loader has stopped.

Pressing the blue illuminated push button also has reset the external high power amplifier HPTX, if connected.

Now the field test unit is ready for operation and the operator may use the four IRIG tone push buttons single or in any combination or the four push buttons for the IRIG commands NONE, SAFE, ARM and TERMINATE. The cover protected TERMINATE button may only be activated if before the ARM button was pressed and activates the toggling transmission mode between ARM and TERMINATE command.

When the Accu low LED is lightened the system will stay working for another 5 minutes and then shut down automatically to avoid to deep unload of the LiPo Accu.

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Technical data:

Included flight termination encoder TESTEM FTE:

GENERAL	
Description	Flight Termination Encoder
Device Type	FTE
ENCODER SECTION	
Encoder Type	digital tone encoder for up to 4 simultaneous tones
tone-on delay	400us
tone-off delay	200us
ANALOG OUTPUT SECTION	
Isolation	isolated against all other signals
Analog Output Voltage	2Vpp (programmable)
DIGITAL I/O SECTION	
TONE-OFF Input Level Voltage	-2 Vdc ... +0.9 Vdc
TONE-ON Input Level Voltage	+3.5 Vdc ... +7 Vdc
Status Output	H=O.K. / L=warning/error
SYSTEM CHARACTERISTICS	
Isolation	isolated power supply input (digital GND & signal return connected to case)
ESD PROTECTION	
Peak Voltage (IEC 1000-4-2)	±8kV (contact discharge)
Peak Voltage (MIL 833-3015.7)	±15kV
Peak Current (Supply Voltage)	100A (8/20µs)
Peak Current (all other I/O pins)	20A (8/20µs)

System Power:	AC 115 to 230 VAC, 50/60 Hz DC Car voltage 11,5 to 18 VDC
Accu:	LiPo Accu 3,6 A / 14,8 V
RF Output power:	3 W or 5 W RF / 50 Ohm output
RF center frequency:	on user request between 390 and 460 MHz