

IM5047 – HD-TM PLUS

User Guide

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1 Introduction

The HD-TM Plus offers an easy to use, fast, accurate and affordable solution for ease of alignment and Terrestrial signal identification. As needed with this type of system for the installation engineer, the meter is fast on start-up and recognition of signal information in both Full scan and Short scan modes, with an easy to read screen, Logging Report and Slope comparison.

Fully compliant for DVB-T applications as well as offering multi-lingual support, this meter is sufficient for the majority of global Terrestrial users.

The HD-TM USB Plus comes as a complete kit with mains charger, car charger and USB cable for data transfer, holding over 200 transmitter signatures and 500 data logging entries.

The HD-TM Plus' maintained up-to-date transmitter settings can also be easily downloaded from the Horizon Global Electronics website www.horizonhge.com Horizon Global Electronics is now part of the IMC Group www.the-imcgroup.com

1.1 Pre-requisites

You need the following to update your **HD-TM PLUS** terrestrial meter:

- Y524 USB lead (supplied).
- A personal computer running the Windows operating system (Windows XP and above).
- Access to the internet to facilitate downloads

1.2 Contact the IMC Group

UK Customers

The IMC Group Limited
Pendle House
Jubilee Road
Letchworth
Hertfordshire
SG6 1SP

Tel: +44(0)1462 688 070
Email: sales@the-imcgroup.com
Web: www.the-imc-group.com

For Technical Support

Tel: +44(0)1462 688 078
Email: support@the-imcgroup.com

EU and Overseas Customers

Please contact your local IMC distributor.

A list of distributors is available at: www.the-imcgroup.com/global-distributors

2 Safety



This symbol is intended to alert users to a possible hazard or risk in operating the HD-TM PLUS.

- Do NOT expose this meter to rain or moisture!
- Clean only with a soft dry cloth.
- Always use the protective case and cover provided.
- Care should be exercised when using the carry strap as it can present a choking hazard: only use when slipping or falling is not a possibility.
- Read the instructions fully before operating your unit for the first time.
- Do not disassemble your unit or interfere with the internal components. This will void your warranty and there is a possibility of electric shock. "If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired".
- Only use the provided mains lead as using other types may cause damage to your unit, which will void your warranty and may cause electric shock.

Replacement accessories are available directly from The IMC Group. Should repair or service be required contact The IMC Group by calling us on +44(0)1462 688 078 or via our website **www.horizonhge.com** or **www.the-imcgroup.com**

You can change the pre-loaded Terrestrial transmitters which are currently in the memory of the HD-TM PLUS by going to the **www.horizonhge.com** downloads page.

3 Accessories

Your HD-TM USB Plus is supplied with this Instruction Manual and these items below. Check that you have all the following parts. If any items are missing please contact your distributor.

 Only manufacturer replacement parts should be used, otherwise the safety of the HD-TM PLUS meter may be impaired.

 DC Car Charger Lead (fitted with 2 Amp fuse)



USB Lead



 AC charging lead



 Battery pack Ni-MH 7.2V 3300 mAh



F to UHF adaptor



F – F Barrel (fitted)



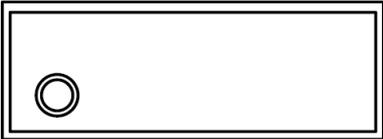
2x 10dB attenuator



Carry case



Splash guard (fitted)



Quick start guide (inserted in carry case)

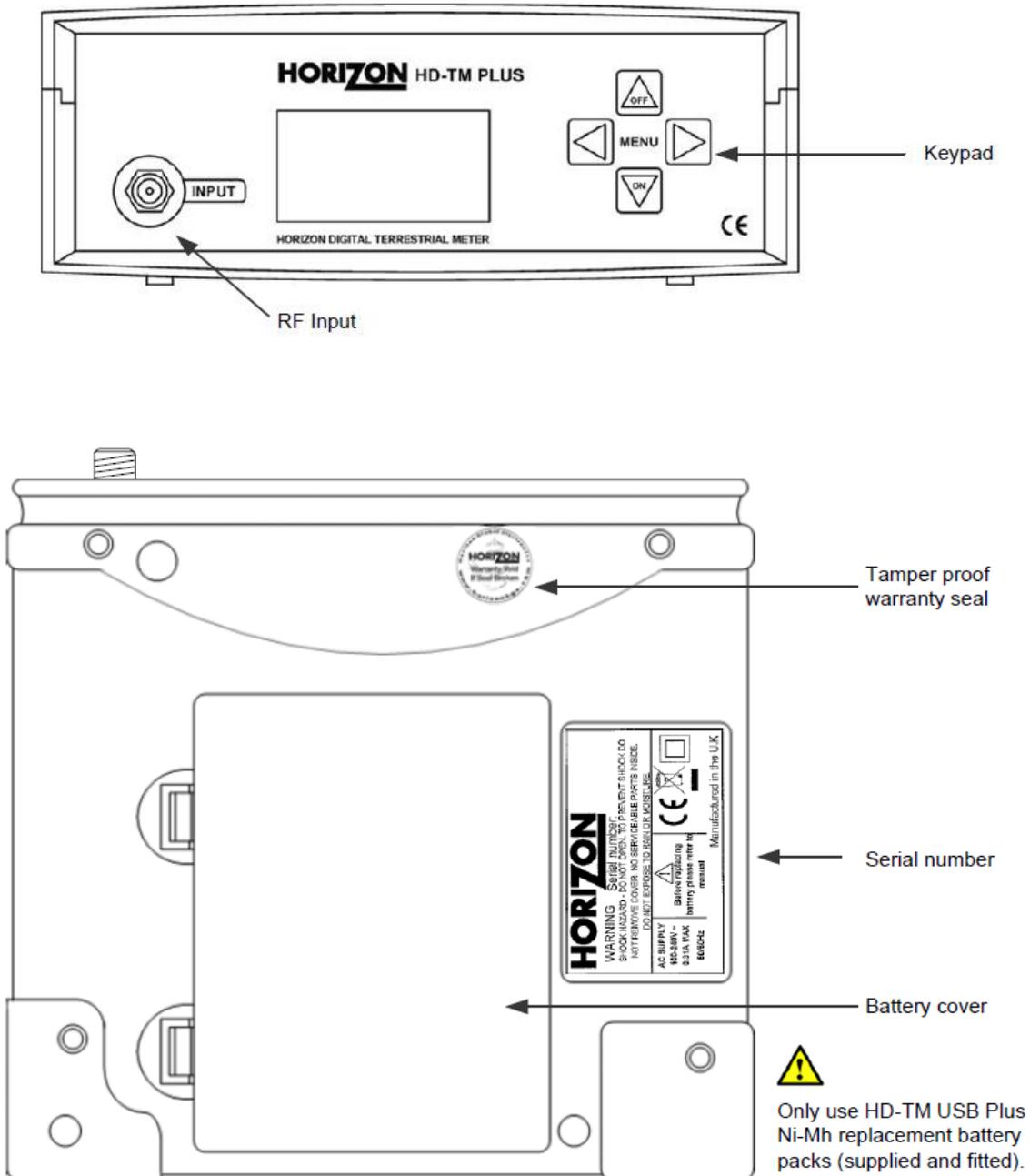


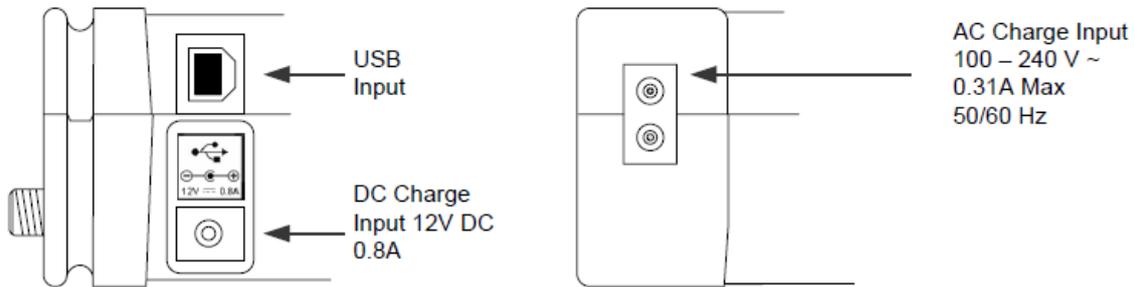
The AC mains lead should match your region. If your mains charger lead is not correct for your region one can be obtained from The IMC Group or a local distributor. **Note:** The items shown above are subject to change without notice.

4 The HD-TM PLUS Unit

4.1 Schematic

Below is a schematic of a HD-TM PLUS:





4.2 Battery

The HD-TM Plus is powered by a 7.2V 6 Cell NiMH battery pack rated at 3300 mAH (supplied and fitted).

4.3 Battery Charging

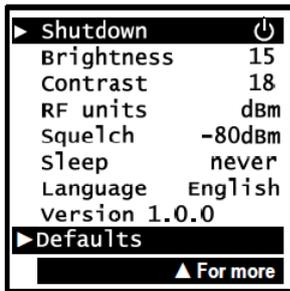
The meter will **not** be fully charged when you receive it. We recommend you charge it for an initial 8 hours before use. If your meter is not being used for a long period of time, we recommend disconnecting the battery. You can also top up your battery from your vehicle with the in-car DC Adapter supplied. You should top up the charge every 2 weeks. The battery pack is replaceable, and additional battery packs are available from The IMC Group or your local distributor. From a full overnight charge you can expect your meter to operate continuously for in excess of 6 hours. **Note:** The HD-TM PLUS meter will not operate while the unit is being charged.

Charging with the AC lead: Open the flap at the back of the HD-TM PLUS fabric case to access the AC mains inlet. Plug the mains lead into the AC mains inlet and the other end to your local AC supply socket. The on-board AC charger will operate on AC voltages from 100 to 240V AC.

Charging from a vehicle: The 12V DC charging socket is located on the right side of the unit. Plug the car charger accessory into the 12V socket and the other end to the vehicle's "aux" socket. Please note that on certain vehicles the aux socket is switched off unless the vehicle is running. Do not charge from a vehicle with a supply voltage greater than 12V DC or positive ground! For in-vehicle charging only use the lead supplied. The use of another lead may damage the meter and will void the warranty.

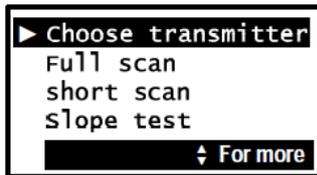
5 Setup and Usage

5.1 Setup Menu

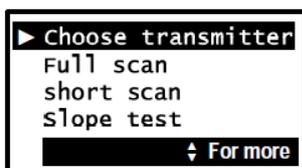


To access the setup menu on your HD-TM USB Plus while your meter is off press the **OFF** button once. Use the up and down keys to scroll through the available options and the left or right keys to change the value highlighted. Here we can adjust the **LCD Brightness** from 0 (Minimum) to 16 (Maximum), or **LCD Contrast** from 0 (almost transparent) to 63 (totally dark). By pressing the down key we can scroll down for more options. The **RF units** option will enable you to select **dBm, dBuV or dBmV** as a preferred method of measurement. The **Squelch** function is for setting a level under which signals are ignored during scanning. This is to prevent accidental identification of unwanted terrestrial services. You can set a **Sleep** time for the meter (in minutes) for the meter to automatically shut down. This can be set to **Never** if you do not wish to have an auto shutdown (to a maximum of 30 minutes). The current default Language is **English**. French, German, Italian and Spanish are also available.

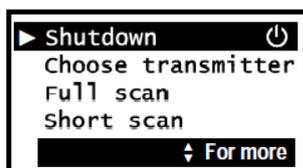
5.2 Using your HD-TM PLUS



Switch on your meter by pressing the On button and (after the start up logo and copyright screens) you will be presented with the main menu; from here you can Choose transmitter, before starting a Full scan (all channels) or Short scan (a number of pre-determined channels) and a Slope test. There are also options to select a Manual Scan, to Log either a single MUX or an entire transmitter's MUXes, and to set the Masthead Antenna amp supply (which enables the 5V or 12V power supplied to a Masthead amplifier if it is required for your installation).

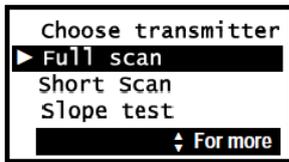


Switch on your meter by pressing the **On** button and (after the start up logo and copyright screens) you will be presented with the main menu; from here you can **Choose transmitter**, before starting a **Full scan** (all channels) or **Short scan** (a number of pre-determined channels) and a **Slope test**. There are also options to select a **Manual Scan**, to **Log** either a single MUX or an entire transmitter's MUXes, and to set the Masthead **Antenna amp** supply (which enables the 5V or 12V power supplied to a Masthead amplifier if it is required for your installation).

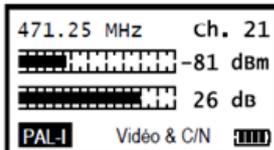


Pressing the **Off** button will bring up the main menu (Choose transmitter, Full scan, etc.) in "Full Scan" and "Short Scan" modes. In "Choose Transmitter" mode it will instead scroll upward to highlight a selectable Main Menu option at the top of the list; in "Manual Scan" it returns from a "locked signal" information display to the channel range. Pressing the **Off** button once again scrolls the menu up and highlights the Shutdown selection. The meter may also be shut down by pressing and holding the **Off** button for a few seconds

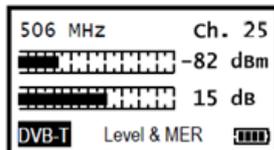
HD-TM PLUS



On Selecting **Full Scan** the full channel range will be scanned. Once a service has been found the scan will stop and the carrier type and measurement information will be presented.

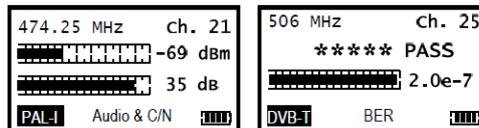


Pressing the Left or Right arrow key will tune up or down the range of frequencies until it next locates a valid signal. This can be done at any time within the Full Scan mode (including the spectrum and parameter screens). Note: If the input signal exceeds -20dBm then > -20dBm will be shown; use the supplied attenuators for the measurement of high signal levels.

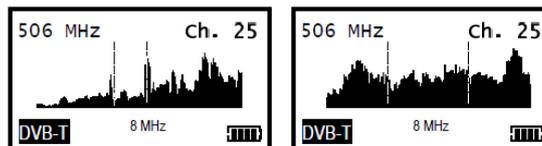


If analogue services have been identified the **Video Level** will initially be displayed (in this example as dBm) as well as the **Carrier to Noise** value in dB, and the carrier type (e.g.: PAL-I) will be indicated. If digital services have been identified then the **Video Level**, **MER** and carrier type (DVB-T) are displayed.

Pressing the **On** button will show the Audio Carrier Level if the signal is analogue, or the Quality of a digital carrier (including a BER-derived **PASS/FAIL** 5-star indicator).



Pressing the **On** button once more brings up a spectrum display indicating the RF levels in this frequency range. The following screen displays the central portion of this range – the band that contains the channel itself (6, 7 or 8MHz).

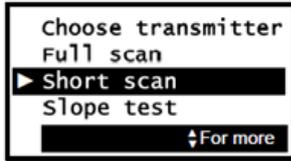


Pressing the **On** key once more will acquire the carrier parameters if the signal is digital. Once the acquisition process is complete, additional information is available. QAM constellation type displays along with Frequency Offset in MHz, Guard Level and FEC code rate.

There are two methods of selecting a transmitter, from the complete list of UK and Ireland transmitters or more easily via the region sub list.



HD-TM PLUS



The **Short scan** feature gives the same information as a full scan, but only scans those digital channels known to be used by a particular transmitter. This makes for a faster scan, but requires that you have chosen a transmitter before this mode can be used. **Left** and **Right** change the channel to the next locked MUX, and the **On** key cycles through the signal, spectrum and parameter screens.

There is also the option to select a transmitter by choosing your region and then select a transmitter from that region list. Region lists are much shorter making it easier to find the transmitter you need quickly.

5.3 Slope Test

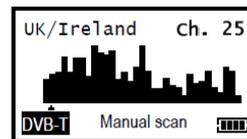
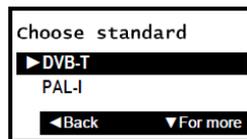
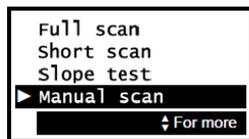


The Slope test function enables you to compare RF levels of up to 6 predetermined MUX frequencies for the transmitter that you have selected. These levels are shown in a histogram format. On pressing the down key the slope calculation will take place. The selected spot frequency (in this example m2) has a level of -58 dBm and is now referred to as a 0 dB level; the other measurements shown (m1, mB, mD, mA and mC) are relative to that zero reference level.

By using the up and down keys to select m2, m1, mB, mD, mA or mC, the highlighted selection then becomes the 0dB reference level.

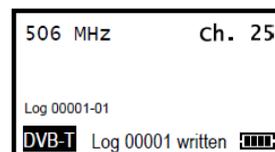
5.4 Manual Scan

The **Manual Scan** mode allows you to step through each channel manually to find the desired channel. First you select a standard (DVB-T/PAL-I) and press the **Right** arrow button to continue. A spectrum is then displayed, indicating the RF level at each channel. An arrow beneath this spectrum points to the currently selected channel, and this may be moved using the **Left/Right** buttons until the desired channel(s) are found. The meter will indicate a valid channel by emitting an audible tone and the carrier type indicator changing, and pressing the **On** button will display the channel, spectrum and parameter information as in the other scan types.



5.5 Logging

A log function is also available so that you can store sequential measurements within your meter for download to your PC and insertion into your installation documentation at a later time. The logging application is available for download via the www.horizonhge.com web site.



6 USB Drivers

6.1 Automatic USB Driver Installation

1. Ensure your PC has access to the internet before you proceed.
2. Connect the HD-TM PLUS via USB to your computer. The **Found New Hardware** Wizard will appear.
3. Select **Yes, this time only**, then click **Next**.
4. Select **Install the software automatically**, then click **Next**.

Once the first stage of the driver installation is complete your computer will now proceed to download the additional driver required.

5. Click the **Finish** button.
6. To complete the installation of the new additional driver for the USB Serial Port, click the **Next** button.

The HD-TM USB Plus driver installation is now complete. You can visit the www.horizonhge.com website for downloads.

7 Transmitter Updates

7.1 Transferring Data

Now that your USB drivers are installed, you can download selections from the www.horizonhge.com website for updates. Follow the steps below to upload new selections to your meter.

1. Connect your HD-TM PLUS via USB to your computer, wait for the HD-TM USB Plus to display **USB Mode** on its LCD.

2. Click **Transfer** in the loading program.

After a few seconds a progress bar will appear.

3. When complete you will see a popup window that says **Transfer Complete!** Click **OK** and close the program.

4. Disconnect the meter from your computer, power it up and it will be ready for use.

7.1.1 Troubleshooting File Transfer Problems

If you get the error message **USB Port Error**, check that the USB interface connection is correctly made and that the USB cable is undamaged. Alternatively try another USB port on your computer.

7.1.2 Troubleshooting USB Driver Problems

In the unlikely event of the driver download not automatically taking place the manual driver installation package is available for download from the www.horizonhge.com web site. When installing the driver ensure that your HD-TM PLUS is not connected to your computer, connect after the installation is complete.

8 Specifications and Features

- 128x64 pixel backlit monochrome screen.
- Field-replaceable input connectors.
- Variable bandwidth to 8MHz.
- Frequency range 49MHz (VHF band) to 861MHz (UHF band), analogue and digital channels.
- Rapid scan over full band.
- Selectable active transmitter channels via Short scan for easier installations.
- Signal squelch adjustable from -85dBm to -45dBm.
- Input levels from -92dBm to -20dBm.
- Clear indication of digital and analogue channels.
- Digital RF level indication by bar graph and in dBm, dBuV or dBmV.
- MER value by bar graph and in dB.
- 5-Star digital signal quality indicator with PASS/FAIL notification.
- Display of QAM value and symbol rate for digital carriers.
- Support for QAM rates up to 256.
- Automatic 2k/8k Constellation type detection.
- Analogue Video level by bar graph and in dBm, dBuV or dBmV.
- Analogue Video signal C/N ratio by bar graph and in dB.
- Analogue Audio level by bar graph and in dBm, dBuV or dBmV.
- Selectable Slope channels for equalization (up to 6 MUXes).
- Input Impedance 75 Ohms.
- High capacity Ni-MH 3300mAh battery for 7 hours of operation from a single charge.
- Results logging for quality verification (500 entries, up loadable to PC).
- USB-2 B-type socket for PC connection.
- Masthead Amplifier 5 or 12V 100mA (max) supply.

LIMITED WARRANTY

Horizon will, at our discretion, repair or replace any HORIZON HD-TM Plus found to be defective in manufacture within the warranty period (1 year). The warranty period is determined by the date of HD-TM USB Plus purchase. Keep your receipt as proof of purchase. Otherwise the warranty is determined by date of manufacture. This warranty does not apply to damage caused by accident, misuse, or tampering with the unit or seals. This does not affect your statutory rights.

DECLARATION OF CONFORMITY

Manufacturer: The IMC Group Ltd **Address:** Pendle House, Jubilee Road, Letchworth, Hertfordshire, SC6 1SP Declares that the Horizon HD-TM PLUS complies with the following directives and standards. All Horizon products are ROHS compliant. Technical Department The IMC Group August 2014

Safety: EN610 10-1:2001 EMC 61326:1997

All IMC Group / Horizon products are ROHS compliant.

Technical Department The IMC Group August 2014

Producer ID for the purpose of WEEE regulations: **No. WEE/CG2698TX**

