User Manual

TMB 1700 – Programmable Amplifier

Article		Article no.
TMB 1700	Programmable Amplifier	360242 360243
Version	V1.0	**Date** 2023/12	**EN**

triax.com

Table of content

1   Introduction

1.1   Product description

The TRIAX TMB 1700 is an easy to use programmable filter amplifier and convertor for terrestrial signals. The module optimizes terrestrial FM/VHF/UHF signals from multiple inputs. The state-of-the-art programmable filter amplifier has no equivalent on the market due to its revolutionary technology:

- Smart & Automatic CHANNEL SCAN
- Can process and convert more than 50 channels (consisting out of 32 filters, each up to 6 MUXes wide)
- Can process S-Band output channels
- 5G LTE Protection (694MHz)
- Sharpest filters on the market (50 dB on adjacent channels)
- Real-time AGC on all individual multiplexes
- Complete flexibility in assigning filters from any input. Each channel can be frequency shifted to any other channel in the VHF or UHF band (Flex Matrix)
- To avoid unauthorized persons changing the settings, the TMB 1700 can be locked with a security code
- Made in Europe, for worldwide application
- 1 FM/VHF/UHF & 2 VHF/UHF inputs / 32 filters / AGC / 12-24 V remote power
- 3 VHF/UHF inputs / 32 filters / AGC / 12-24 V remote power
- Powered via output F-connector
- Product dimensions (H X W X D): 165mm x 190mm x 59mm
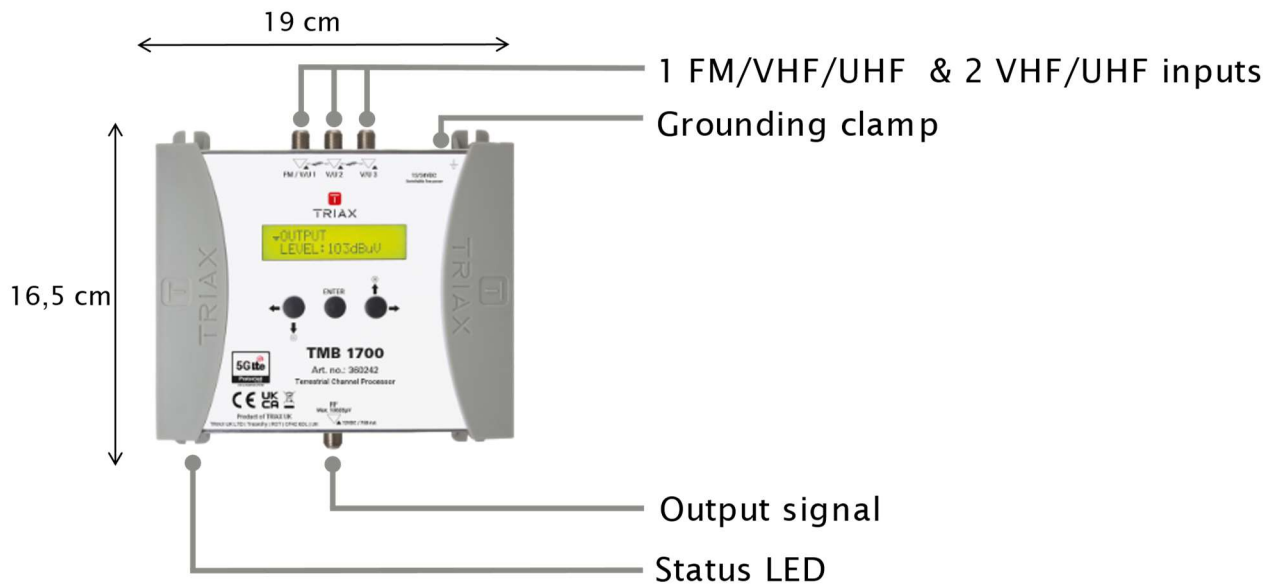
1.2   Typical installation

The TMB 1700 can be used to provide high quality TV signals in a wide range of projects, both in the hospitality as in the residential market. Typical buildings or infrastructures where the TMB 1700 can be used include, but are not limited to:

- Large and small hotels, hostels, bed and breakfasts, holiday parks
- Hospitals, rest homes, prisons, settlements
- Large and small multi-dwelling units

1.3   Package contents

- 1 TMB 1700, 1 power supply/injector, 1 F cable:
    - Art. No. 360242 = UK plug PSU
    - Art. No. 360243 = EU plug PSU

1.4 Hardware installation

1 FM/VHF/UHF & 2 VHF/UHF inputs

Grounding clamp

Output signal

Status LED

1.5 Mounting the TMB 1700

- Important: Mount the module vertically to a wall in a well-ventilated room and leave a minimum space of 15 cm around the product to guarantee a maximum ventilation of the product
- Connect an earth wire to the grounding clamp
- Connect the inputs to the TMB 1700
- Connect a coaxial cable to the output connector for distribution of the signal
- Power the device via the output (use the TRIAX Power Supply)
- Configure the device using the arrows & ENTER buttons

ALWAYS USE CABLE DRIP LOOP!

POWER SUPPLY

TO TV
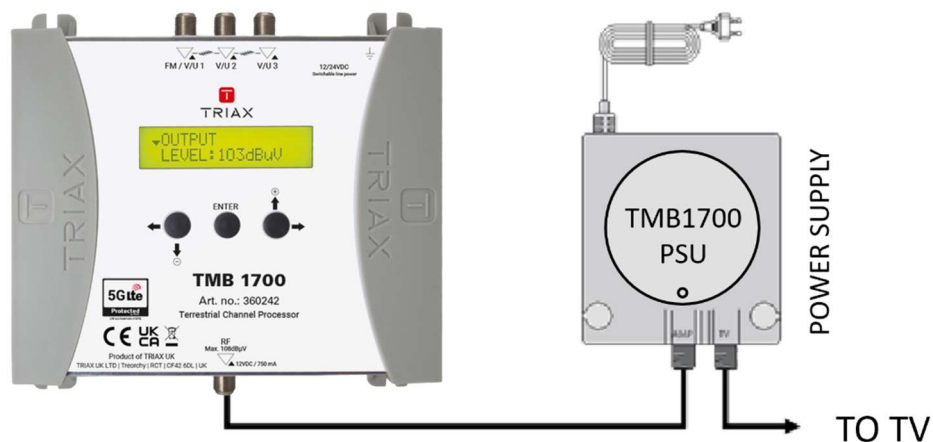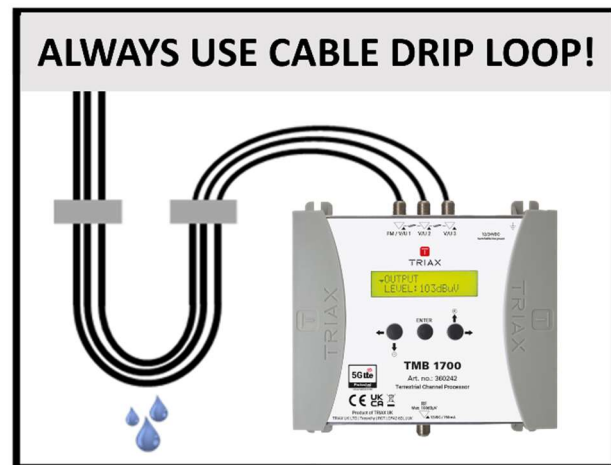
2 Configuring the TMB 1700

2.1 Navigating through the menu

Use the arrows to navigate through the menu. This is very straightforward and simple. The table below shows how the arrows should be used:

- Scroll through the menu with ← / → cursor buttons
- Press ENTER to select a menu
- Scroll with the + / - buttons within the menu through the sub-menus or settings
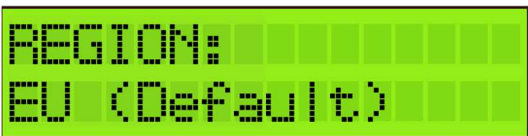- Press ENTER to select the sub-menu of set the value

2.2 Menu overview

◀▶	CHANNEL SCAN	INPUT FM/V/U1	OUTPUT	ADVANCED	EXIT	◀▶
	START	PRE-AMPLIFIER	LEVEL	LANGUAGE	LOCK	
▲▼	DUPLICATCH	DC	VHF ATTN	REGION	NO LOCK	▲▼
	REPOWER	ADD CHANNEL		DC VOLTAGE		
				BANDWIDTH		
				S-BAND		
				FW VERSION		
				SERIAL NUMBER		

2.3 REGION/COUNTRY settings

IMPORTANT : Before starting the configuration, it is advised to set the correct region or country. Unpower the unit, push ENTER and keep pushing ENTER button while you repower the unit.
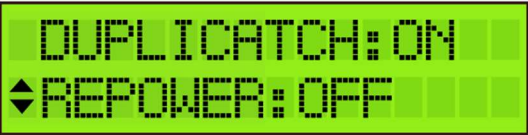
Release the button when the display shows "RESET FINISHED". Now the product is reset and will ask you to enter country or region. This will among others, determine the channel plan for VHF and UHF and the DC voltage for the inputs (12 or 24V).

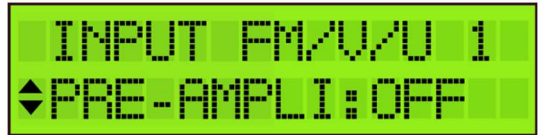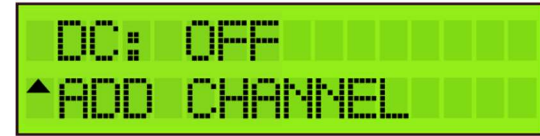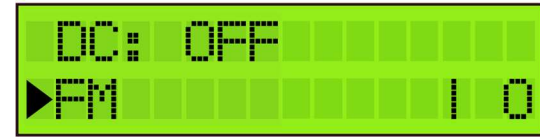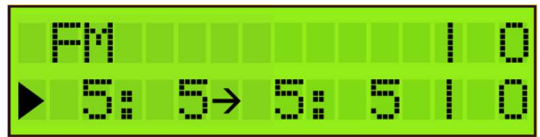| DISPLAY READOUT	EXPLANATION
REGION: EU (Default)	To activate the correct channel frequency plan, select the **country** or **region** where the TMB 1700 is situated. Use the arrows to select and confirm by pressing ENTER. The default setting is Europe. The TMB 1700 is also operational in the following countries/regions: Australia, Brazil, China, Hongkong, Italia, New-Zealand, Russia, South Africa, UK and USA.

All the following menu items can be accessed without the reset procedure.

Push the ENTER button for 2 seconds to access the menu
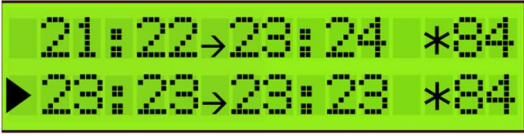
2.4 CHANNEL scan

DISPLAY READOUT	EXPLANATION
◄CHANNEL SCAN ►	Use the arrows and validate with ENTER to enter the channel scan menu
	Scroll down to START and press ENTER to start scanning
CHANNEL SCAN ►START	Note: If you use an active antenna or mast amplifier, activate the DC before doing the Channel Scan (see next page: DC)
SCANNING...	Scanning can take up to 1 minute
17 CHANNELS DETECTED	When scanning is finished, the number of detected channels will be displayed. Manual changes can still be done afterwards via the Input settings (next section)
	Tap the ENTER button to proceed in the menu
	Sometimes, there can be transponders on the same frequency coming from different antennas (e.g. CH40 is detected on input 1 and input 2). These are called duplicate channels.
	DUPLICATCH = When duplicate channels is ON, the weakest of a pair of duplicate channels will be transferred to the LTE band. The strongest of the pair keep its frequency at the output.
DUPLICATCH:ON ♦REPOWER:OFF	When duplicate channels is OFF, the weakest of a pair of duplicate channels will be rejected.
	When REPOWER is ON, the device will do a rescan after a power interruption of 6 seconds or less. If a power interruption takes longer than 6 seconds, channel settings will not change.
	When REPOWER is OFF, the device will never automatically rescan.

2.5   INPUT settings

DISPLAY READOUT	EXPLANATION

◀ **INPUT FM/V/U1** ▶

Tap INPUT FM/V/U1 to enter the menu to configure input 1.

▼ **INPUT FM/V/U 1**
PRE-AMPLI:ON

Use the arrows to navigate down in the submenu.

INPUT FM/V/U 1
⬍ **PRE-AMPLI:OFF**

PRE-AMPLI: The internal amplifier is by default ON, only in case of very strong incoming signals (if the strongest channel on that input is higher than 80dBµV), it can be advised to switch this OFF.
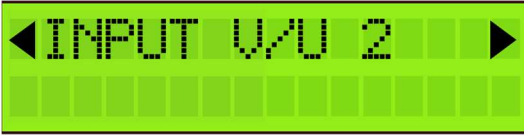
DC: OFF
▲ **ADD CHANNEL**

DC: Decide whether the input should provide power to an external amplifier. Choose between OFF or 12 V.
Remark: If the external amplifier needs 24 V, you can change this in advanced settings (see further).

DC: OFF
▶ **FM | 0**

Tap Add Channel to add channel.

FM | 0
▲ **ADD CHANNEL**

First add the FM channel if applicable

Up to 6 channels can be added at once.

First select the starting channel (e.g. CH5) and tap ENTER to confirm. Then select the stop channel (e.g. CH7, this means that you will add 3 channels). Tap ENTER to confirm. Then you can convert them using the arrows button (e.g. CH5 to CH7 converts to CH8 to CH10) and tap ENTER to confirm.

FM | 0
▶ **5: 5→ 5: 5 | 0**

5: 7→ 8:10 |85
▲ **ADD CHANNEL**

Some other examples:
To add CH5 and convert to CH6,
select as follows: 5: 5 → 6: 6

To add CH21-22-23 and convert to CH31-32-33, select as follows: 21:23   → 31:33

Remark 1: The value 85dBµV (in the bottom right corner) indicates the incoming level of the channel.
Remark 2: For EU, Italy and New-Zealand region, Channel 13 (230-240MHz) can be used. CH13 cannot be converted.
Remark 3: A star (✳) will appear when converting to a different channel bandwidth: e.g. from a 7MHz channel to an 8 MHz channel
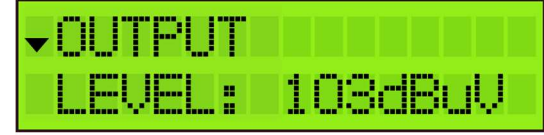
5: 5→21:21 ✳85
▲ **ADD CHANNEL**

For optimal performance we recommend to only add single channels, unless you need to process a lot of channels.

DISPLAY READOUT	EXPLANATION
`21:22→23:24 *84` `▶23:23→23:23 *84`	To add another (group of) channel(s), scroll down to ADD CHANNEL and tap ENTER to confirm. To prevent bad quality or scrambled images, make sure that only one input channel is assigned to one output channel. If 2 channels are assigned to the same output channel, a star (✱) will appear.
`21:22→23:24 |84` `▶25:25→25:25 |73`	The same applies for adding multiple channels. Make sure that each output channel is selected only once.

To delete a (pair of) channel(s), position the arrow on the channel and press the ENTER button 3 seconds.

DISPLAY READOUT	EXPLANATION
`CHANNEL DELETED`	To delete a (pair of) channel(s), position the arrow on the channel and press the ENTER button 3 seconds.
`◀INPUT V/U 2 ▶`	When you have added all the channels to INPUT V/U 1, and you want to add channels to the other inputs, scroll up to the top of the menu (to INPUT V/U 1), tap the button ENTER and scroll to the next input. Repeat the previous steps for all input channels.

2.6   OUTPUT settings

DISPLAY READOUT	EXPLANATION
`▼OUTPUT` `  LEVEL: 108dBuV`	Define the OUTPUT LEVEL of the output signal. Range between 88 dBµV and 108 dBµV (default output level is 98 dBµV). Note: The more channels you select, the less input power you should give (e.g. 99 dBµV for 10 channels).
`LEVEL: 105dBuV` `▶VHF ATTN: 0dB`	VHF ATTN: To compensate for cable losses, an attenuator of up to 15 dB can be configured to decrease the VHF (up to 300MHz) output level (compared to the UHF output level (above 300MHz).

Note: In the OUTPUT menu, you define the output level in dBµV of the MUX's. The TMB 1700 has enough gain to guarantee this output level under all input conditions.

2.7 ADVANCED settings

DISPLAY READOUT	EXPLANATION
▼ADVANCED LANG:ENGLISH	The language of the TMB 1700 can be set to English, Italian, Spanish or French.
LANG:ENGLISH ◆REGION	Tap REGION to check to which region/country the TMB 1700 is set. To change the region/country, a hard reset is required (see instructions above (cfr. REGION/COUNTRY SETTINGS).
DC VOLTAGE:24V ◆BW: -750kHz	Define DC VOLTAGE for the inputs, choose between 12V or 24V. This is a global setting for all inputs, each input can then be switched between OFF or this value. (cfr. STEP 2). All countries are set by default on 24V, except UK which is set by default on 12V. The filter bandwidth can be changed from -2000 kHz to 0 kHZ in steps of 250 kHz. This allows you to optimize the bandwidth of your filter. For instance, a European 8 MHz channel can be changed from 6 to 8 MHz. The default setting is -750 kHz, which is an optimal setting in 95% of the cases.
BW: -750kHz ▶S-BAND:ON	S-Band channels can be activated in Advanced Mode. By default, they are not activated. See NOTE below for more explanation.
FW VERSION ◆SERIAL NUMBER	Tap FW VERSION to check the firmware version of the device. Tap SERIAL NUMBER to check the serial number of the device.

Note: You can convert any single input Channel, to any output Channel position (including output S-channels). But you can only convert a group of input channels to a group of output channels with the same channel spacing.

Some examples:
21:23	→ 31:33	Can be converted because groups of channels have same channel spacing
07:07	→ S15:15	Can be converted because single channel conversion
07:07	→ S35:35	Can be converted because single channel conversion

(Even though channel spacing and bandwidth is different)
| 07:08 | → S35:36 | Can't be converted because groups of channels have different channel spacing |

2.8 EXIT settings

DISPLAY READOUT	EXPLANATION
▼EXIT LOCK	To avoid unauthorized people changing the settings, the TMB 1700 can be locked with a security code.
SET LOCK CODE 11	Select LOCK and SET LOCK CODE. When the lock code is set, the device will shut down.
ENTER LOCK CODE 0	When you restart the device, you will now have to enter the correct lock code. Remark: If you forgot the lock code, you can always use the value 50. This master code is fixed and cannot be changed. If you do not want to work with a lock code, go to EXIT and tap NO LOCK.

3 Technical Specifications

TRIAX TMB 1700		
Inputs	-	1 FM/VHF/UHF & 2 VHF/UHF
Outputs	-	1 main (FM-VHF-S-UHF)
Input frequency range (EU*)	MHz MHz MHz	FM: 88 - 108 VHF:174 - 240 UHF: 470 - 694
Output frequency range (EU*)	MHz	88 - 862
LTE protection	MHz	694 (5G)
Input level	dBμV dBμV dBμV	FM: 47 - 109 VHF: 37** - 109 UHF: 37** - 109
VHF/UHF Output power (60dB/IM3) VHF/UHF Output power (36dB/IM3) VHF/UHF Output power with 1 MUX VHF/UHF Output power with 6 MUX VHF/UHF Output power with 15 MUX VHF/UHF Output power with 32 MUX	dBμV dBμV dBμV dBμV dBμV dBμV	114 125 108 108 105 102
Add channels	-	Per 1, 2, 3, 4, 5 or 6 MUXes
Number of channels	-	More than 50 (32 filters)
Conversion	-	Yes (from any VHF-UHF channel to any VHF-S-UHF channel)

Gain	dB dB dB	FM: >65 VHF: >65 UHF: >65
Gain adjustment	dB	Channel AGC
General attenuator	dB	20
FM/VHF attenuator	dB	15
Noise figure	dB	7
Selectivity	dB/1MHz	50
Return Loss	dB	10
Output MER	dB dB	VHF: 35 UHF: 35
ESD protection	-	All inputs
Remote voltage for preamp Remote current	V mA	12 or 24 50 (total for the 3 inputs)
Operating temperature	°C	-5 to +50
Power Supply	VDC	12V
Power consumption	W	9
Dimensions	mm	190 x 165 x 59
Weight	kg	0,65

* frequency range can vary slightly according to local channel plan (check REGION settings)

** For 64QAM with code rate ¾

4   Block diagram
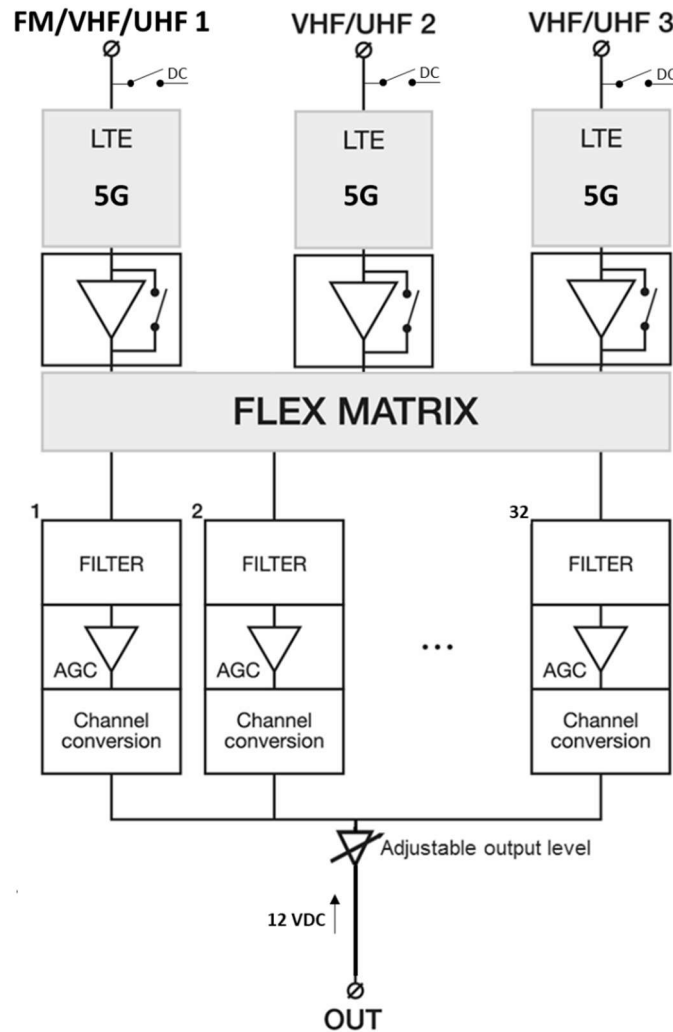
5   Safety Instructions

Read these instructions carefully before connecting the unit

ATTENTION

- Failure to comply with the specified precautionary measures may cause serious injury to persons or damage to property.
- The assembly, installation, additional electrical wiring, servicing installation and commissioning may only be performed by suitably qualified persons, technicians or installers in compliance with safety regulations.
- Damage due to improper installation and commissioning, defective connectors on cables or any other incorrect handling will void the warranty.

<p style="text-align:center">**CAUTION**</p>

- The devices meet the EU directives **2011/65/EU, 2014/30/EU and 2014/35/EU**.
- The safety requirements are according to the standards EN/DIN EN 50083 resp. IEC/EN/DIN EN 60728 and must be observed, especially concerning equipotential bonding and earthing.
- Observe the relevant country-specific standards, regulations and guidelines on the installation and operation of antenna systems.
- Before starting installation or service work disconnect the receiving system from mains.
- Installation or service work should NEVER be undertaken during electrical / thunderstorms.
- Avoid short circuits!
- To ensure electromagnetic compatibility, make sure all connections are tight and that the covers are screwed on securely.
- Take action to prevent static discharge when working on the device!
- Due to the risk of fires caused by lightning strikes, we recommend that all mechanical parts (e.g. distributor, equipotential bonding rail, etc.) be mounted on a non-combustible base. Wood panelling, wooden beams, plastic covered panels and plastic panels are all examples of combustible bases.

<p style="text-align:center">⚠ **To prevent fire, short circuit or shock hazard:**</p>

- Do not expose the unit to rain or moisture.
- Install the unit in a dry location without infiltration or condensation of water.
- Do not expose it to dripping or splashing.
- Do not place objects filled with liquids, such as vases, on the apparatus.
- If any liquid should accidentally fall into the cabinet, disconnect the power plug.

<p style="text-align:center">⚠ **To avoid any risk of overheating:**</p>

- Install the unit in a well aired location and keep a minimum distance of 15 cm around the apparatus for sufficient ventilation
- Do not place any items such as newspapers, tablecloths, curtains, on the unit that might cover the ventilation holes.
- Do not place any naked flame sources, such as lighted candles, on the apparatus
- Do not install the product in a dusty place
- Use the apparatus only in moderate climates (not in tropical climates)
- Respect the minimum and maximum temperature specifications

<p style="text-align:center">⚠ **To avoid any risk of electrical shocks:**</p>

- Connect apparatus only to socket with protective earth connection.
- The mains plug shall remain readily operable
- Pull out power plug to make the different connections of cables
- To avoid electrical shock, do not open the housing of adapter.

⚒ **Maintenance**

⚠ Only use a dry soft cloth to clean the cabinet.

⚠ Do not use solvent

⚠️ For repairing and servicing refer to qualified personnel

🚫	**Dispose according your local authority's recycling processes**

Electronic devices should never be disposed of in the household rubbish. In accordance with directive 2002/96/EC of the European Parliament and the European Council from January 27, 2003 which addresses old electronic and electrical devices, such devices must be disposed of at a designated collection facility. At the end of its service life, please take your device to one of these public collection facilities for proper disposal.

6   Conditions of warranty

TRIAX UK warrants the product as being free from defects in material and workmanship for a period of 24 months starting from the date of production indicated on it. See note below.

If during this period of warranty the product proves defective, under normal use, due to defective materials or workmanship, TRIAX UK, at its sole option, will repair or replace the product. Return the product to your local dealer for reparation.

THE WARRANTY IS APPLIED ONLY FOR DEFECTS IN MATERIAL AND WORKMANSHIP AND DOES NOT COVER DAMAGE RESULTING FROM:
- Misuse or use of the product out of its specifications,
- Installation or use in a manner inconsistent with the technical or safety standards in force in the country where the product is used,
- Use of non-suitable accessories (power supply, adapters...),
- Installation in a defect system,
- External cause beyond the control of TRIAX UK. such as drop, accidents, lightning, water, fire, improper ventilation…

THE WARRANTY IS NOT APPLIED IF
- Production date or serial number on the product is illegible, altered, deleted or removed.
- The product has been opened or repaired by a non-authorized person.

NOTE

Date of production can be found in the product's serial number code. The format will either be "YEAR W WEEK" (e.g., 2017W32 = year 2017 week 32) or "YYWW" (e.g., 1732 = year 2017 week 32).

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