TechniSat

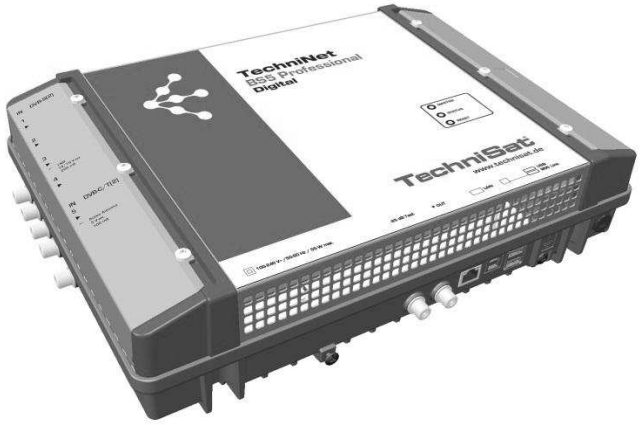
TechniNet BS5 Professional **0000/5990** Mounting instruction

Digital Multi-standard 8-way Head-end - DVB-S(2)/-T(2)/-C – DVB-C (J.83A)

EN

Features

- Stand-alone head-end with 8-way multi-standard frontend DVB-S(2)/-T(2)/-C, 6-way decoding (CI) and 8 output channels conforming to DVB-C (flexibly configurable)
- Outstanding output values due to direct implementation as FPGA solution
- High level of energy efficiency
- 4 Sat-IF inputs with DiSEqCTM1.0 functionality for sat multi-switches and 1 terr./cable input, flexibly distributable across 8 multi-standard frontends
- Power supply for LNB and active antennas
- All transmission parameters can be set using the TMS-BS5 configuration software.
- Remote maintenance and configuration
- Comprehensive baseband signal processing with channel filter functionality such as NIT, LCN
- Cascade capability for two head-ends
- No fan, therefore no noise and no maintenance



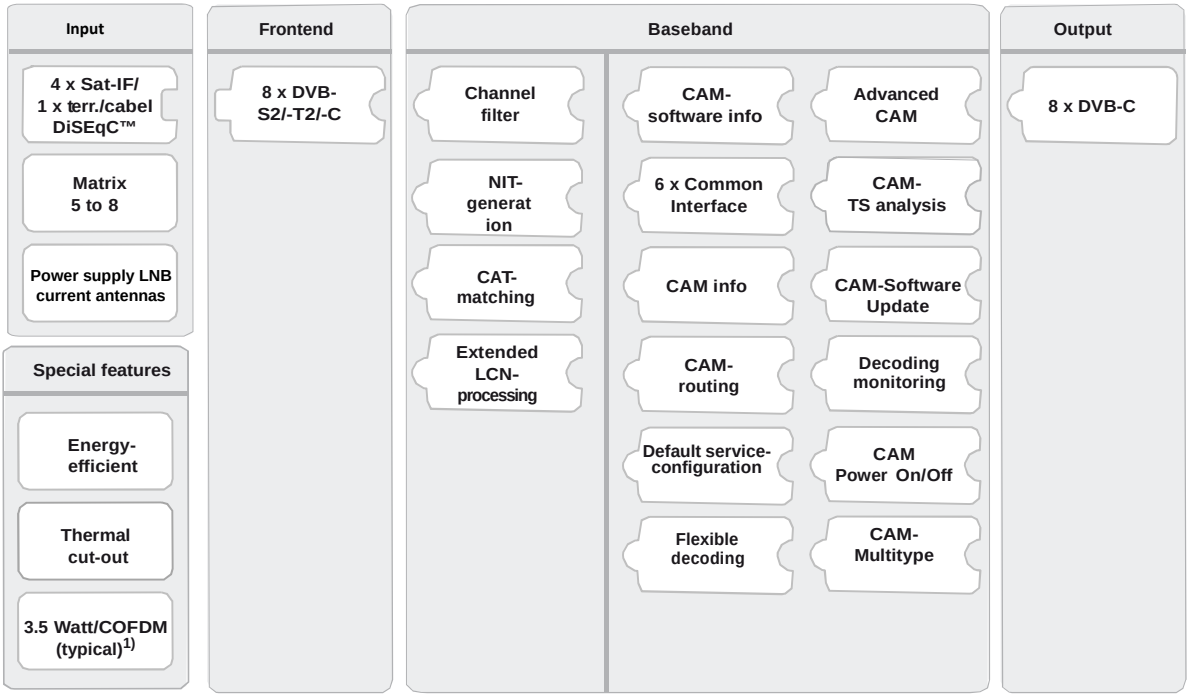
Scope of supply

- TechniNet BS5 Professional
- Wall mounting plate
- User instructions

Note

The current version of this document can be found on www.technisat.com.

Function blocks



1) Typical for the following input: 4 x DVB-S, 2 x DVB-S2, 2 x DVB-T2, no LNB/antenna supply, without CAM

General safety instructions

- This document is part of the product.
- Do not install or use this device until you have read and understood this document.
- Always perform the actions described in this document in the order listed.
- Keep this document for reference throughout the life of the device. Pass this document on to the next owner and user of the device.
- The device is intended exclusively for installation in satellite or antenna reception systems. It is used in any other way or if the provisions of this document are disregarded, the guarantee and warranty will become void.
- The device can be connected to the power supply and disconnected from it only by means of the power plug.
- If the casing is damaged, do not connect the device to the power supply.
- If the device and/or the cables connected to it are damaged, immediately disconnect the system from the power supply. Do not switch the system on again until
  – the device has been repaired by the dealer or manufacturer,
  – and the cables connected have been repaired by a competent person.
- Do not open the casing and do not modify the device. Otherwise the guarantee and warranty will become void. Exception: Cover of the CI slots (⑭ in Fig. 1, S. 3)
- Never cover the cooling ribs or the air circulation openings.
- Do not modify, remove or disfigure the notices and markings applied by the manufacturer.
- Refer to the manufacturer's documentation before connecting external components other than those described in this document (such as computers, network components). Incorrectly connected components can damage the device.
- Refer to the current issue of the safety requirements EN 60728-11 and EN 60065.
- Disconnect the device from the power supply before performing mechanical work on the system.

Warning

Risk of burns from hot surfaces. In the event of a defect the heat sink of the unit may exceed 70 °C. Do not touch the heat sink when the device is in operation or has recently been in operation.

Note

In the event of overheating, the device will shut down automaticallyand after it has cooled down will switch on again automatically.

Arrangement and function

Device elements

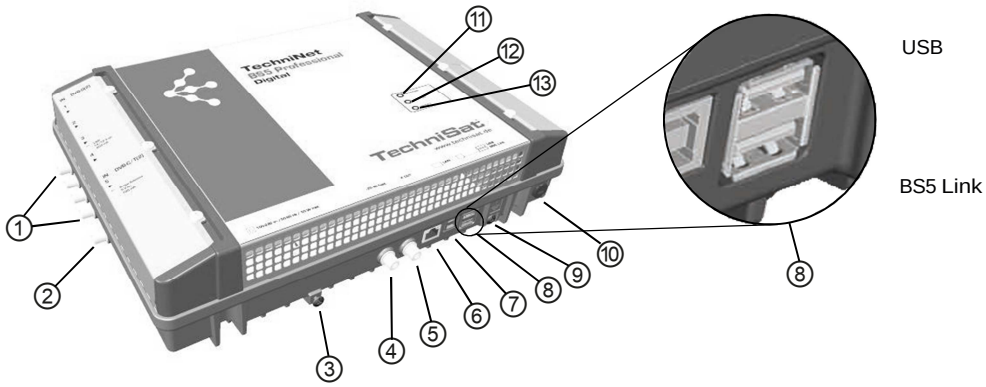


Fig. 1: Device elements

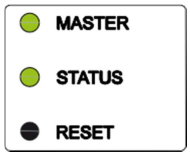
① 4 x Sat-IF Input, F socket	⑨ Earthing srew
② 1 x terrestrial/cabel Input, F-socket	⑩ Power supply[1)]
③ Screw for fixing on the wall mounting plate	⑪ Master-LED; see below for more info.
④ Tes output, signal level –25 dB, F-socket	⑫ Status-LED; see below for more info.
⑤ DVB-C output, F socket	⑬ Reset-Taste; see below for more info.
⑥ Network port, RJ45	⑭ Cover of the CI slots
⑦ USB port, type B, communication interface *BS5 Link* for connecting to the BS5 Professional *master*[2)]	
⑧ 2 x USB port, Typ A: *USB*: Software update by USB stick *BS5 Link*: Communication interface *BS5 Link* for connecting to the BS5 Professional *slave*[3)]	

1) The power supply cable is integral on the device and is not shown here.

2) If the head-end is the slave; see below for more info *Cabling*, P. 5.

3) If the head-end is the master; see below for more info *Cabling*, P. 5.

LEDs and reset button



Master LED

green	the head-end is the master
off	the head-end is a slave

Status-LED

green	OK
green, flashing	software update in progress
red	error
orange	head-end starting
orange, flashing	head-end is being identified by the TMS-BS5 configuration software

Reset button

Press < 5 s[1)]	the head-end ***will reboot.***
Press > 5 s[1)]	the head-end will reset to the ***factory settings*** and will reboot. *Do not release the reset button until the status LED lights up orange.*
Press > 5 s[1)]	the head-end will look for an update on the connected USB stick, perform the update and reboot.[2)]

1) To prevent accidental activation, the reset button is recessed. To activate the reset button, use a tool such as a ball-point pen.

2) Pre-requirement: There is a valid update file on the USB stick. See the TMS-BS5 configuration software for more info.

Cascading of head-ends (master/slave)

If a system consists of 2 head-ends as a cascade, the following points apply:

- The master LED identifies which is the master and which the slave.
- The configuration and software updates for the system are performed via the master. For this purpose the computer on which the TMS-BS5 configuration software is running must be connected to the master.[1)]
- For a software update of the *system* via a USB stick, the stick must be plugged into the *master*.

[1)] see below for more info *Cabling*, P. 5.

Installation and commissioning

Installation

Caution

The head-end is approved exclusively for indoor installation, using the wall mounting plate supplied. The installation location must satisfy the following conditions:

- The installation surface must be not readily flammable and must be sufficiently stable.
- To allow free circulation of air around the device, the clearances shown in Fig. 2 must be ensured.
- The permissible environmental conditions must be satisfied; see Technical data, P. 6ff.
- The device must not be exposed to dripping or splashing water.
- The power plug must be easily accessible and be easy to insert / withdraw.

The head-end is mounted as follows:

1. Mount the wall mounting plate horizontally on the mounting surface; see Ⓑin Fig. 3. Points to note:
   – To attach the plate use 3 flat-head screws with a diameter of 4.5 to 5 mm and appropriate wall-plugs if necessary
   – When inserting the center bottom screw, use the washer supplied.
2. Insert the head-end Ⓐ into the wall mounting plate Ⓑ see Fig. 3.
3. Tighten the screw Ⓒ.

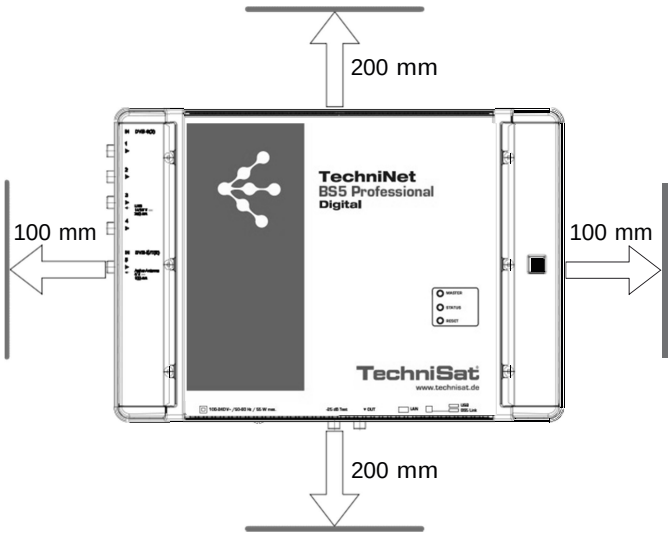
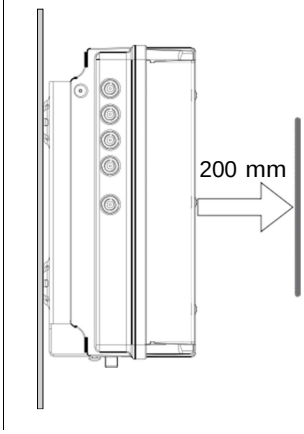


Abb. 2 Allow the necessary clearance for air circulation



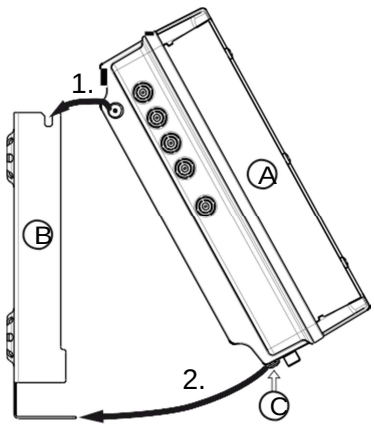


Abb. 3: Insert the head-end

Cabling

1. Connect a potential equalization wire (Cu, ≥ 4 mm²) to the earthing screw; see ⑨ in Fig. 1, P. 3.
2. Connect an Ethernet cable[1)] to the RJ45 socket on the computer, if required connect this to a network; see Fig. 4, P. The head-end will now function as the *master*.
3. If a second head-end is present: Connect the second head-end to the first head-end using a USB 2.0 cable (Fig. 4). In this case:
   – The second head-end functions as a slave which is controlled by the master via the USB cable.
   – The plugs on the USB cable must be type A and type B.
   – The plugs must be inserted into the master and slave at the appropriate BS5 Link interface ports (⑧ in Fig. 1).
   – The cascading of two head-ends permits simultaneous access to both devices via a single IP connection, and also allows system functions that apply to both devices, such as common NIT generation incl. LCN.
   – Only head-ends of the same type can be connected by USB.
4. Connect the RF signal cables for the antenna, cable network and output to the head-ends; see ①, ② und ⑤ in Fig. 1, P. 3.
   Make sure the input and output cables are correctly assigned to the master and the slave.[2)]
5. It is recommended that each unused RF input and output is terminated with a75-Ω resistor such as the 0002/3077 from TechniSat.
6. Check that the supply voltage matches the particulars on the rating plate, then connect the head-ends to the power supply.
   ⇨ The head-ends will start up and the status LED will show the operating status[3)].

1) CAT5 or higher is recommended, crossed over or not crossed over.

2) Connect the RF signal cables for the antenna and/or cable network to the master which regulates the signals which are output from the master. The same applies to the slave, where present. Compilation of the signals is performed by the TMS-BS5.

3) see also *LEDs and reset button*, P. 3.

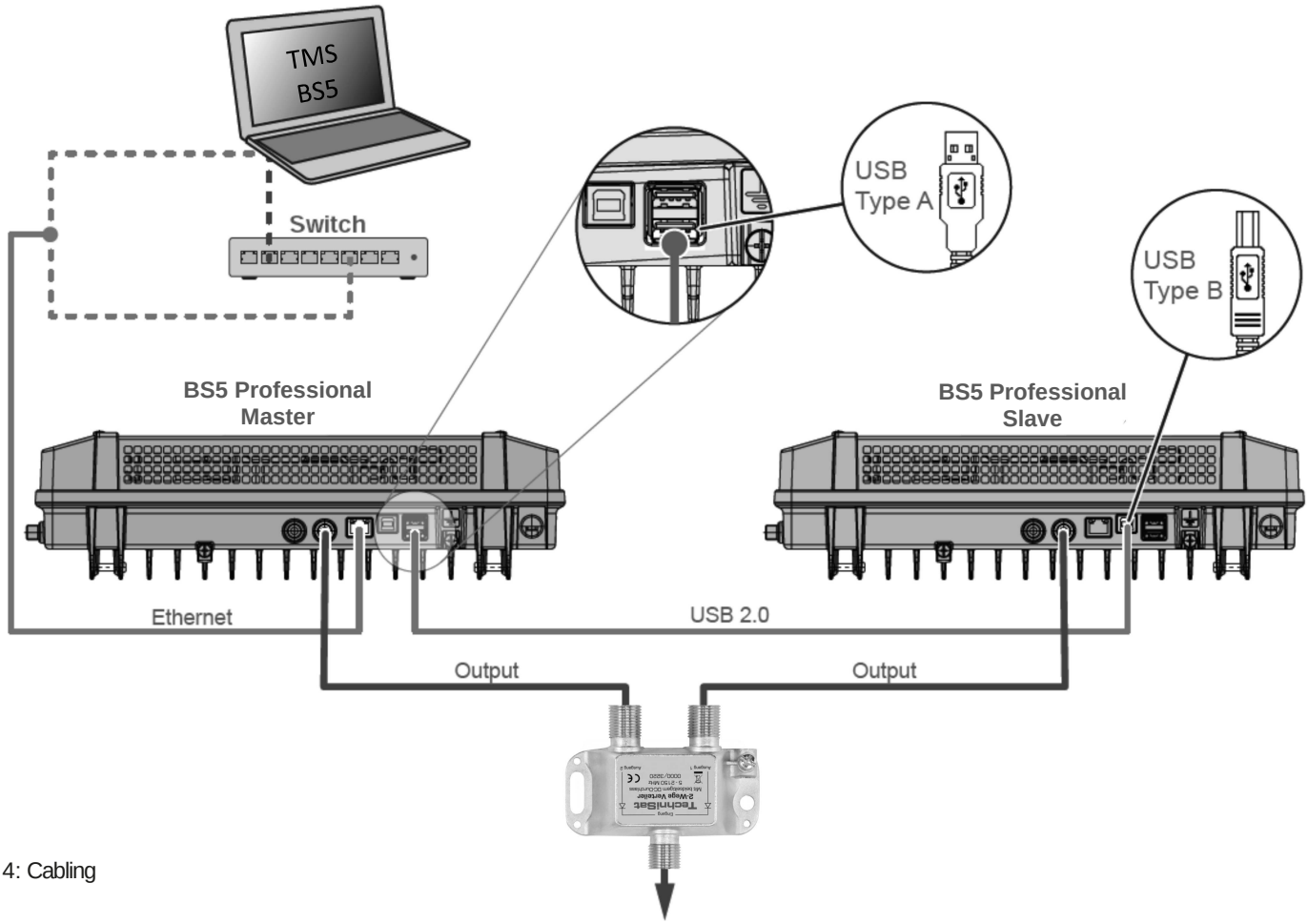


Fig. 4: Cabling

Inserting the CA modules

Important

Risk of damage to the CI slots. Insert the CA module (CAM) into the slots ②/④/⑥ with the **front space** uppermost; and into the slotse ①/③/⑤ with the **back face** uppermost (Fig. 5). See also the instructions for use supplied with the CAM.

1. Using a Torx T20 screwdriver, undo the securing screws for the CI slot Cover
2. Insert the CA modules as shown in the example in Fig. 5..
3. Secure the CI slot cover.

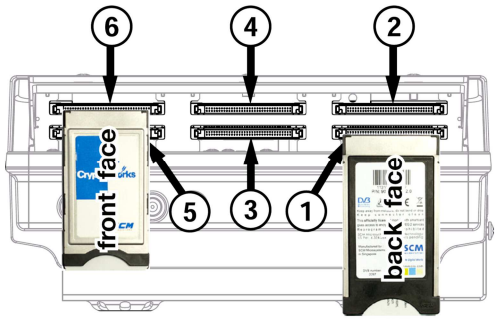


Fig. 5: Inserting the CA modules into the CI slots

Configuring

1. Install and start the TMS-BS5 configuration software on the computer.
2. Configure all the head-end parameters as required. In this case:
   – The TMS-BS5 will communicate with the master and detect the slave automatically.
   – The current version of theTMS-BS5 and the user guide are available free of charge at www.technisat.com.

Technical data

Inputs		
Sat IF input		4 x F-Connector, 75 Ω
Terrestrial/cabel input		1 x F-Connector, 75 Ω
Decoupling	dB	> 25
Return loss	dB	Typ. 8
Permissible level difference	dB	max. 12 (at inputs 1, 2, 3, 4)
DiSEqC™1.0		Vert./horiz., low/high; sat. pos. (A/B/C/D)
Switching levels	V/kHz	14/18, 0/22
Remote feed current for LNB	mA	Max. 250 (at F socket no. 3), max. 60 (at f socket no. 1, 2, 4)
Remote feed current for active Antenna (5 V)	mA	100 (at F socket no. 5)
Frontend		
DVB-S/-S(2)/-T/-T(2)/-C		8 x
Frequency grid	MHz	1
Input level range	dBµV	60 ... 100
Permissible level difference	dB	20
Demodulation DVB-S		
Standard		EN 300 421
Frequency range	MHz	950 ... 2150
Input symbol rate QPSK	MS/s	1 ... 45
Code-Rate (Viterbi)		1/2, 2/3, 3/4, 5/6, 7/8

Roll off	%	20/25/35
AFC-regulation range	MHz	± 5
Demodulation DVB-S(2)		
Standard		EN 302 307, TR 102-376
Input symbol rate QPSK	MS/s	1 ... 45
Code-Rate (LDPC)		1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
Input symbol rate 8PSK	MS/s	1 ... 45
Code-Rate (LDPC)		3/5, 2/3, 3/4, 5/6, 8/9, 9/10
Roll off	%	20/25/35
Demodulation DVB-T (COFDM)		
Standard		EN 300744, NorDig Unified 2.2.1, D-Book 7.0, Supports all C.R, G.I, LP and HP streams
Frequency range	MHz	50.5 – 858
Guard-Intervall		1/4, 1/8, 1/16, 1/32
FEC		1/2, 2/3, 3/4, 5/6, 7/8
FFT-Mode		2k, 8k
Bandwidth	MHz	6, 7, 8
Constellation		QPSK, 16 QAM, 64 QAM
Demodulation DVB-T(2) (COFDM)		
Standard		EN 302755-V1.31, DVB-T2 Lite compliant, Single and multiple PLP-Support, NorDig Unified 2.2.1, D-Book 7.0
Guard-Intervall		1/128, 1/32, 1/16, 19/256, 1/8, 19/128, 1/4
FEC		1/2, 3/5, 2/3, 3/4, 4/5, 5/6
FFT-Mode		1k, 2k, 4k, 8k, 16k, 32k
Bandwidth	MHz	1.7/5/6/7/8
Constellation		QPSK, 16 QAM, 64 QAM, 256 QAM
Demodulation DVB-C		
Standard		EN 300429/ITU J.83 Annex A/C
Frequency range	MHz	48 – 858
Input symbol rate	MS/s	1 – 7.2
Constellation	QAM	4/16/32/64/128/256
MPEG-TS processor		
Channel filter		
PSI-/SI processing		Cable-NIT, LCN, PCR-correction, CAT
Stuffing		Automatic
Decoding		
6 CAM insert positions		PCMCIA interface
TS routing CAM		Individual and serial decoding

Modulator		
Output channels		8x DVB-C (J.83A)
Constellation		16/32/64/128/256 QAM
Symbol rate	MS/s	2.25 ... 7.25
Roll off	%	15
HF output		
Output		1x F connector, 75 Ω
Frequency range	MHz	47 ... 1006 (fine-tuning in 125 kHz steps)
Frequency range (Channel list)	MHz	47 ... 86/110 ... 862 (setting via channel list)
Return loss	dB	14 (47 MHz) –1.5 dB/oct.
Output level	dBµV	104 (@ 862 MHz)
Output level setting range	dB	–20 (in 0.5 dB steps)
Level stability	dB	± 0.8
Frequency stability	ppm	35
MER	dB	Typ. 45
Shoulder attenuation	dB	≥ 60 (at normal level)
Spurious emissions	dB	≥ 60
Test output		
Test socket		1 x F connector, 75 Ω
Level relative to the output	dB	25
System data		
Power consumption	W	28 ... 32
Permissible ambient temperature	°C	0 ... +45[1)]
Protective shut-down	°C	> 70
Dimensions (H x B x T)	mm	97 (118) x 350 x 244 (incl. Wall support)
Weight	kg	Approx. 4

[1)] Note that the maximum temperature applicable to the CA modules may be different.

Disposal/Recycling instructions

Electronic equipment must not be disposed of in domestic waste. According to directive 2002/96/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL of 27 January 2003 on waste electrical and electronic equipment, it must be disposed of professionally. At the end of its service life, take this device for disposal at a designated public collection point.

CE

Your device is CE approved and meets all necessary EU standards.
Subject to changes and printing errors. Status 10/15

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