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TechniNet BS5 Light   0000/5991   Mounting instruction

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

Features

- Converts eight QPSK/8PSK-modulated DVB-S(2) signals into eight adjacent QAM-modulated DVB-C output signals
- TV channels preprogrammed
- Outstanding data through direct implementation as FPGA solution
- High energy efficiency, power consumption: Typ. 25 W
- Two SAT IF inputs A/B, adjustable independently of each other via the central controller
- All the transmission parameters can be set with the TMS-BS5 management program
- MPEG-transport stream prozessor:
  - ➢ to set a constant output data rate (stuffing) with PCR correction
  - ➢ with channel fi lter to blank out TV and radio channels
- Fanless design for wall mounting (no noise)
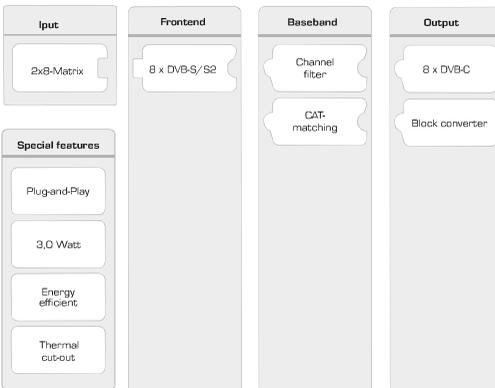
Output
F Connector socket

Socket to connect the controller (mini-DIN)

Sat IF input B
(F connector-socket)
Sat IF-input A
(F connector-socket)

Potential equalisation

Function blocks

Iput	Frontend	Baseband	Output
2x8-Matrix	8 x DVB-S/S2	Channel filter	8 x DVB-C
		CAT-matching	Block converter

Special features

Plug-and-Play

3,0 Watt

Energy efficient

Thermal cut-out

Connection for Power supply

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Eingang		
Sat IF input		2 x F connector, 75 Ω
Frequency range	MHz	950 ... 2150
Decoupling	dB	Min. 25
Return loss	dB	Typ. 6
Frontend		
DVB-S2		8 x
Frequency grid		1 (950 ... 2150 MHz)
AFC regulation range	MHz	±3 (symbol rate < 10 Ms/s) ±5 (symbol rate > 10 Ms/s) (950 ... 2150 MHz)
Input level range	dBµV	60 ... 110
Permissible level difference	dB	12
Demodulation DVB-S		
Standard		EN 300 421 (1)
Input symbol rate QPSK	MS/s	2 ... 45
Code-Rate (Viterbi)		1/2, 2/3, 3/4, 5/6, 7/8
Roll off	%	35
Demodulation DVB-S2		
Standard		EN 302 307 (2)
Input symbol rate QPSK	MS/s	1 ... 34
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 ... 31,5
Code-Rate (LDPC)		3/5, 2/3, 3/4, 5/6, 8/9, 9/10
Roll off	%	20/25/35
MPEG-TS processor		
Channel filter		✔
PID filter		✔
PSI-/SI processing		PCR correction
Stuffing		Automatic
QAM modulator		
Output channels		8 x DVB-C (J.83A) as adjacent channels
QAM constellation	QAM	16, 32, 64, 128, 256
Symbol rate	MS/s	1,5 ... 7,15
Roll off	%	15
HF output		
DVB-C output		1 x F connector, 75 Ω
Frequncy range	MHz	110 ... 862 (fine-tuning in 250-kHz steps)
Frequency range (channel list)	MHz	110 ... 862 (setting via channel list)
Return loss	dB	14 (47 MHz) −1.5 dB/okt.
Output level	dBµV	91
Output level setting range	dB	−20 (in 0,5-dB-Stufen)
Level stability	dB	Typ. ±0,5
Frequency stability	ppm	Typ. 35
MER	dB	Typ. ≥ 45
Shoulder attenuation	dB	≥ 60 (at normal level)
Spurious emissions	dB	≥ 60
System data		
Power consumptions	W	Typ. 25
Temperature range	°C	0 ... 40
Dimension (H x B x T)	mm	282.5 x 249.5 x 61.0
Weight	kg	2,5

Setting up

Mounting

1. Only use the device indoors, to protect it from lightning, rain and solar radiation. The device should only be installed in rooms where the permitted ambient temperature range can be maintained even when the climatic conditions change (excluding radiated heat and other sources of heat).

2. Choose the mounting location with regard to the minimum clearances to avoid a build-up of heat; see Fig. 1.

3. Mount the screws with d_{max} = 4 mm and do not do them up tightly; see Fig. 2 and the attached drilling template.
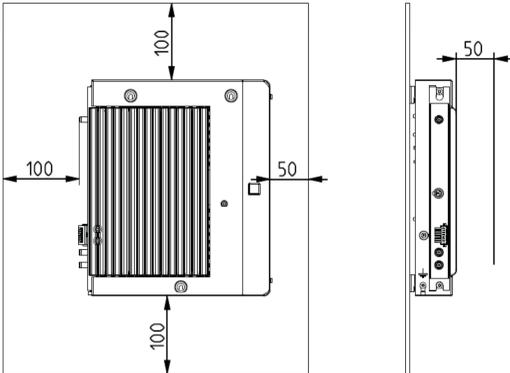
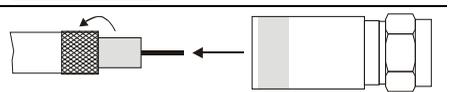Fig. 1: Clearances to containing surfaces
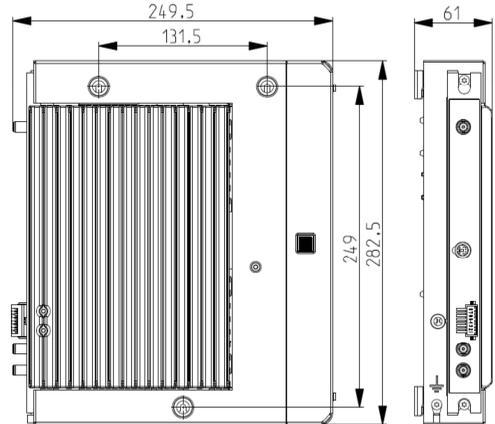
Fig. 2: Dimensions and installation dimensions

4. Install the equipotential bonding in accordance with the regulations (cable shoe).

5. Suspend the BS5 Light and do the screws up tightly.

6. Assembly the coax cable [1] with the F compression connector as following:

Strip coax cabel.	
Bend the outer braiding to the cable jacket and the foil must be positioned smoothly to the dielectric.	
Insert cable to the connector (Art. no. 0001/3337) and compress with the compression tool (Art. no. 0000/3339).	

7. Connect the HF connecting cables in accordance with the system planning.

8. Close 3 drill holes in the cover plate by means of the enclosed caps

[1] If the cable inner conductor diameter is greater than 1.2 mm, or in the case of burrs, the device sockets may be damaged beyond repair.

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WARNING
Danger of burns from hot surfaces. Caution when touching the heat sink (①in the figure on the right).
If there is a defect the heat sink of the unit can exceed 70 °C. In such a case the unit normally switches itself off. Take the corresponding care when working with the unit under such conditions.

Operation

The operation of the unit is done via the graphic user interface of the TMS-BS5 control program.

Note
The current version of TMS-BS5 and its operating instructions can be downloaded free from the TechniSat homepage www.technisat.com.

Licences

This product contains among other things software components that are subject to Open Source licenses. The license texts and the source code of the programs can be found under www.technisat.com

Setup instructions

The Plug-and-Play delivery status allows the operation of the BS5 Light head-unit without any further configuration.
After mounting and connection 78 TV and 9 radio channels are available at once (via Astra 19.2° east, transponder allocation as of Q3/2014; see Tab. 1).
Any changes to the default configuration are made using theTMS-BS5 control program. For programming the head-unit must be connected with the programming cable BS5 Light (Art. no. 0000/5992 (no supplied with the unit)) and a PC with a USB connection.

Channel Unit	Input	Transponder/ channel	SD/ HD	Band	Polariza- tion	Transp.- Frequency	Sat-ZF/ MHz	SR	Stan- dard	CR	Output channel	Symbol rate	Output level	QAM
1	A	Das Erste, BR, HR, SWR, WDR	SD	High	Horizontal	11836	1236	27500	DVB-S	3/4	S21	6,9	−2	64
2	A	ZDF, 3sat, KIKA, ZDF-info, ZDFkultur, ZDF neo	SD	High	Horizontal	11954	1354	27500	DVB-S	3/4	S22	6,9	−2	64
3	A	MDR, NDR, RBB, SWR	SD	High	Horizontal	12110	1510	27500	DVB-S	3/4	S23	6,9	−2	64
4	A	RTL, N-TV, RTL2, RTL Living, RTLnitro, Vox	SD	High	Horizontal	12188	1588	27500	DVB-S	3/4	S24	6,9	−2	64
5	A	Pro Sieben, Sat1, Kabel eins, N24	SD	High	Horizontal	12545	1945	22000	DVB-S	5/6	S25	6,9	−2	64
6	A	Anixe, Das Vierte, 1-2-3 TV, TLC Germany, Sixx Deutschland	SD	High	Horizontal	12460	1860	27500	DVB-S	3/4	S26	6,9	−2	64
7	B	VIVA, Nickelodeon	SD	High	Vertikal	11973	1373	27500	DVB-S	3/4	S27	6,9	−2	64
8	B	Sport1, DMAX, HSE24, SonnenklarTV, Astro TV	SD	High	Vertikal	12480	1880	27500	DVB-S	3/4	S28	6,9	−2	64

Tab. 1: Delivery status BS5 Light, transponder Astra 19.2° east and output channel assignment

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Notes

- The setting and numeric values given in the following are only examples and may not necessarily match the delivery status.

- When operating two BS5 Light units ensure that the relevant output blocks do not overlap. The output signals of the two head-units can then be combined with distributors of the 0000/3200; see the example in Fig. 4.!

- The power supply of the LNB (remote feeding) must be done with external components (The LNB supply can be done e.g. by Zwischenverstärker 5Z2/NT with external power supply.)!

- Pay attention to the input level of the BS5 Light and, if necessary, verify it using a meter!
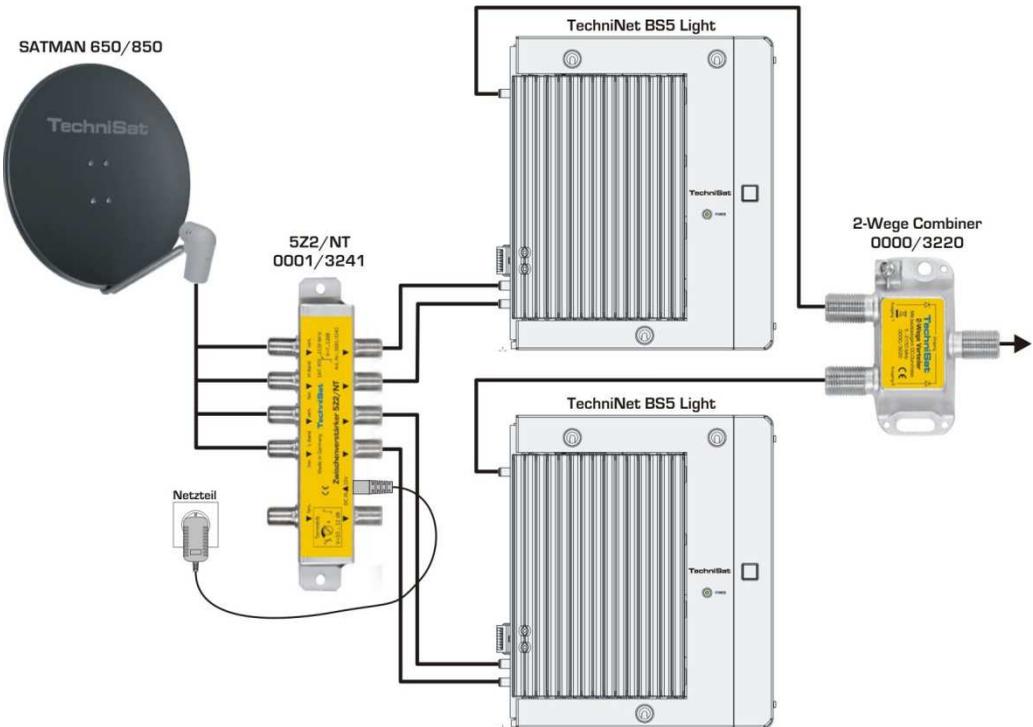
Abb. 4: Examplary montage of two BS5 Light

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1   Reading the system

By the menu item (*System | Read out system*) or by clicking on the respective symbol in the symbol bar you can build up a connection to BS5 Light. The following dialog appears to establish a connection:

The used computer COM port will display.
After successful connection the configuration window appears.

2   Basic settings

Double click on the BS5 Light units in the Navigation tree opens the Basic Settings window.

All the configurable parameters of a module, such as the input and output frequencies, can be set using the *Basic Settings* window.
Non-configurable parameters (such as SNR, BER, code rate), which represent continually varying status information regarding the head-end, are read at intervals of about 3 seconds and updated in the dialogue window
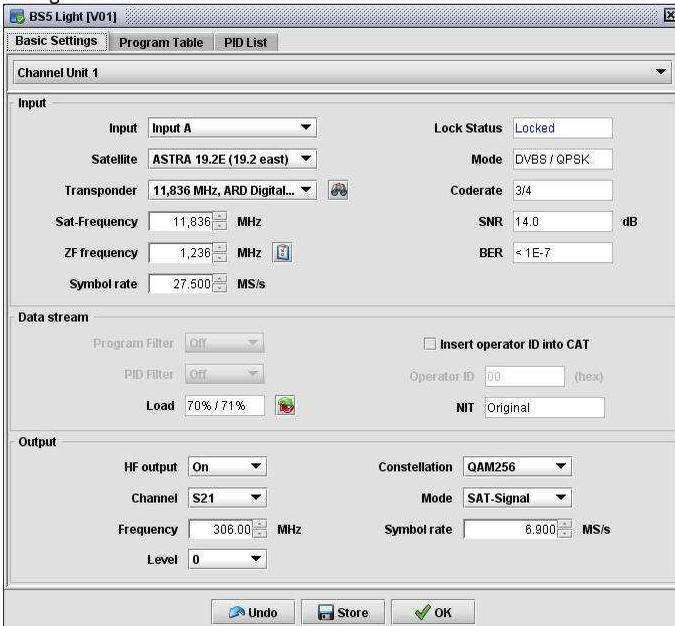
The display always refers to one of the eight channels in the head-end. First select the channel 1 to 8 for which you wish to change the settings.

2.1 Input configuration

Input   The socket A or B to be used for the input can be selected in the selection box Input for the selected channel unit.

Satellite   In the Satellite selection box a known satellite can be selected from the TMS-BS5 satellite list.

Transponder   The Transponder selection box contains a list of transponders that are available at the connected selection plane of the selected input. The precondition for this is that the transponders are given in the satellite list.
    The selection of a transponder automatically sets the values for the Sat-Frequency, ZF frequency and Symbol rate.
    In addition, the following search dialogue for channels and transponders can be activated by the button to the right next to the selection box:

Using Store for a set of selected search results, transponders and the associated frequencies and the symbol rates are filled in accordingly. Alternatively, the Sat-Frequency/ZF frequency and Symbol rate can also be input manually, e.g. if a particular transponder is not included in the list of satellites.
If a valid DVB-S/S2 transport stream is received on the set frequency, then the Lock Status is set to Locked. The text *boxes Mode, Code rate, C/N Reserve, SNR* and *BER* show in this case information on the properties and quality of the received satellite signal.

Note
The satellite frequency and IF frequency depend directly on one another and are converted automatically.

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2.2 Data stream configuration

In the **Basic Settings | Data stream** area the basic settings for the processing of the transport stream of a channel unit can be configured. The channel filter and PID filter function can be switched on and off at the corresponding selection boxes.

NIT	The **NIT** text box shows that the NIT (Network Information Table) has been taken over unchanged (NIT Original).
CAT	There is the option to replace the CAT. The CAT (Conditional Access Table) is generally taken from the satellite transport stream. In special cases, such as for provider KabelKiosk, it can be necessary to replace the CAT Operator ID in the transport stream (mark the checkbox **Insert Operator ID in CAT**). The new value for the CAT Operator ID can be changed manually (field **Operator ID**) and is then inserted into the transport stream in place of the original ID.
Load	In the **Load** text box the current and peak loads of the output are shown in %. The measured value for peak loading can be reset with the button to the right. If the loading reaches values of over 90 % the text color changes to red. This indicates that any further loading through additional channels would exceed the capacity of the output channels

2.3 DVB-C-QAM output-configuration

In the **Basic Settings | Output** area the QAM output of the head-unit can be configured.

HF-output	Using the **HF Output** selection box the HF output of the channel unit can be switched on and off.
Channel	The **Channel** selection box describes a normal cable standard channel grid of K21-K69 and S21-S41 in steps of 8 MHz.
Frequency	A fine setting of the frequency can be done manually in the text box in steps of 0.25 MHz.
Symbol rate	The fi ne setting of the symbol rates can be done manually in the corresponding text box in steps of 1 KS/s.
Level	Using the **Level** selection box the signal strength of the output signal can be set in 40 steps from maximum (0) to minimum (-40).
Constellation	The selection box **Constellation** specifies the QAM constellation (QAM16, QAM32,...QAM256).
Mode	The selection box **Mode** allows the HF output to be modulated with various output signals, for example, for measuring and analysis purposes: 1. In the normal operating mode the transmodulated satellite signal is output. 2. **PRBS**: Test mode. The QAM signal is modulated with the PRBS-23 sequence. Normal mode is unavailable in this setting. 3. **CW**: Test mode. Sine-wave signal for levelling using simple signal meters. Normal mode is unavailable in this setting..

2.4 Program table/filter configuration
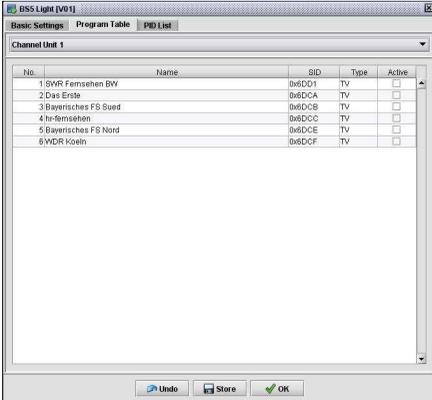
The Program Table includes all the channels (services) of a channel unit. The table contains the service IDs and channel types in addition to the names of the channels. The entry in the *Active* column for each channel specifies whether it should be included in the output transport stream.

2.5 PID list
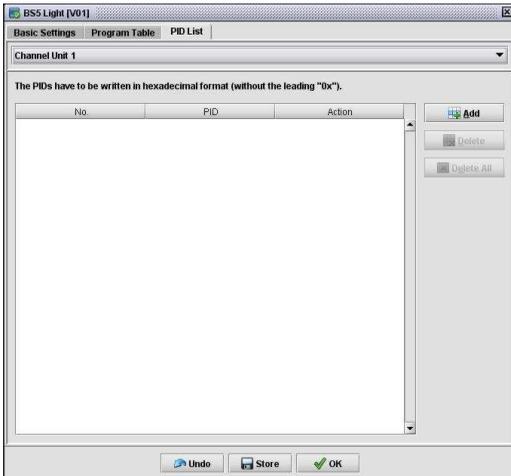
In the PID list the package IDs (package IDs/PIDs) which are always allowed through by the filtering can be specified in addition to the channel table. The PID list is required only in exceptional cases. Please note that the maximum length of the PID list is limited (e.g. to 100 entries). The maximum length can vary depending on the firmware version.

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2.6 Software configuration

General settings can be made in the menu *Settings | Basic Settings*. Within the individual tabs a variety of settings can be performed. They can also be called up by the Settings button to the right of the ZF frequency row.
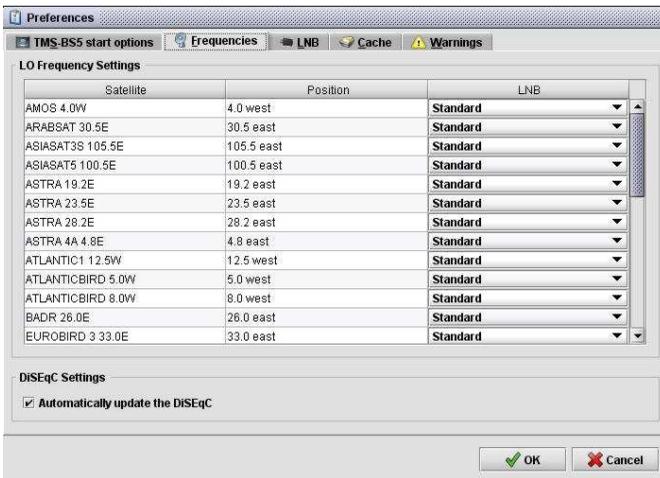
2.6.1 Start options

Choose what type of plant will be opened with the TMS-BS5.
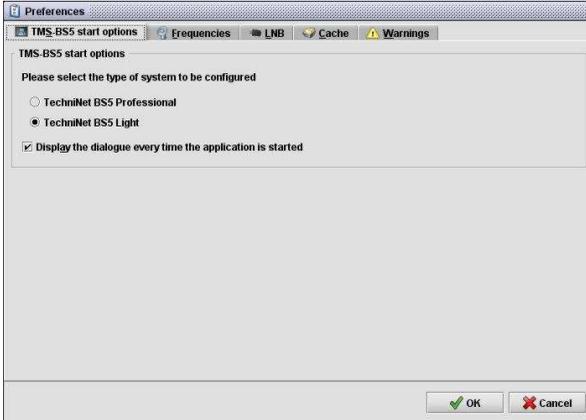
2.6.2 Frequency settings

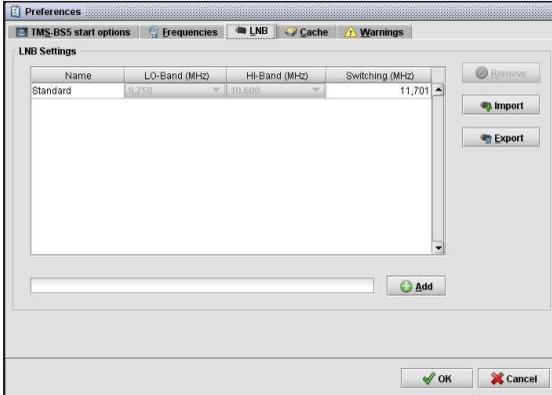In tab *Frequencies* you can assign an LNB type each satellite.

The LNB type can be configured separately for each satellite
Im Normalfall reicht der Standardtyp mit den LO-Frequenzen von 9,75/10,6 GHz. (Anlegen eines neuen LNBs siehe Punkt 2.6.3)

The *Automatically update the DiSEqC* option is not used in the BS5 Light.

2.6.3 LNB

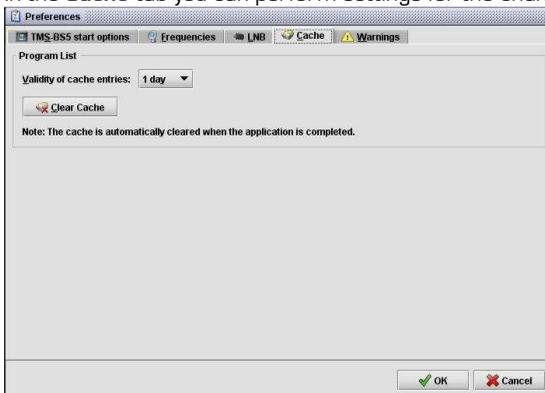In tab *LNB* you can manage LNB types.

Normally, the default type is sufficient with the LO frequencies of 9.57/10.6 GHz.

For the case that you use a LNB with other LO frequencies, you can create this click on the *Add* button.

2.6.4 Cache

In the *Cache* tab you can perform settings for the channel unit's cache.

When the channel list for a transponder is being read in by a channel unit, this channel list can be saved in the background. If this or another channel unit should read in the channel list for the same transponder then the saved channel list is used instead. When using the same transponder successively, this can significantly reduce the waiting times.

Validity of cache entries

Since the channel list of a transponder can change, it makes sense to rewrite the information saved in the background from time to time. This interval can be configured by setting the *Validity of cache entries*.

Clear cache

There is also the option to clear the cache immediately. This is particularly useful if you know that the channel list for a transponder has changed. If you are unsure whether a channel list is still current, clear the transcoder cache and read in the transponder afresh.

On quitting the application, the cache for the channel units is cleared automatically.

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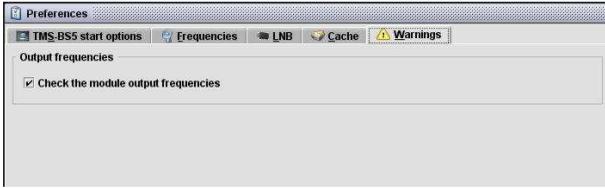
The Warnings tab is not relevant for operation of the BS5 Light. It is not possible to accidentally make a multiple assignment of the output frequencies due to the block implementation.

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.

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