Operating instructions
V 514 / X-QAM quad

DVB-S2 / QAM Quad
Transmodulator with Service-Filter

Pictograms and safety instructions

Pictograms are visual symbols with specific meanings. You will encounter the following pictograms in this installation and operating manual:

Warning about life-endangering situations due to dangerous electrical voltage or non-adherence to this manual.

Warning about various dangers to health, the environment or material.

Recycling: all of our packaging material (cardboard boxes, accompanying papers, plastic film and bags) is completely recyclable.

Used batteries must be disposed of at approved recycling points. Batteries must be completely discharged before being disposed of.

Electronic devices must not be disposed of with household waste, but rather – according to directive 2002/96/EG OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL from January 27, 2003, on waste electrical and electronic equipment – must be properly disposed of. When they are no longer of use, please bring these devices for disposal to one of the public collection points for this purpose.

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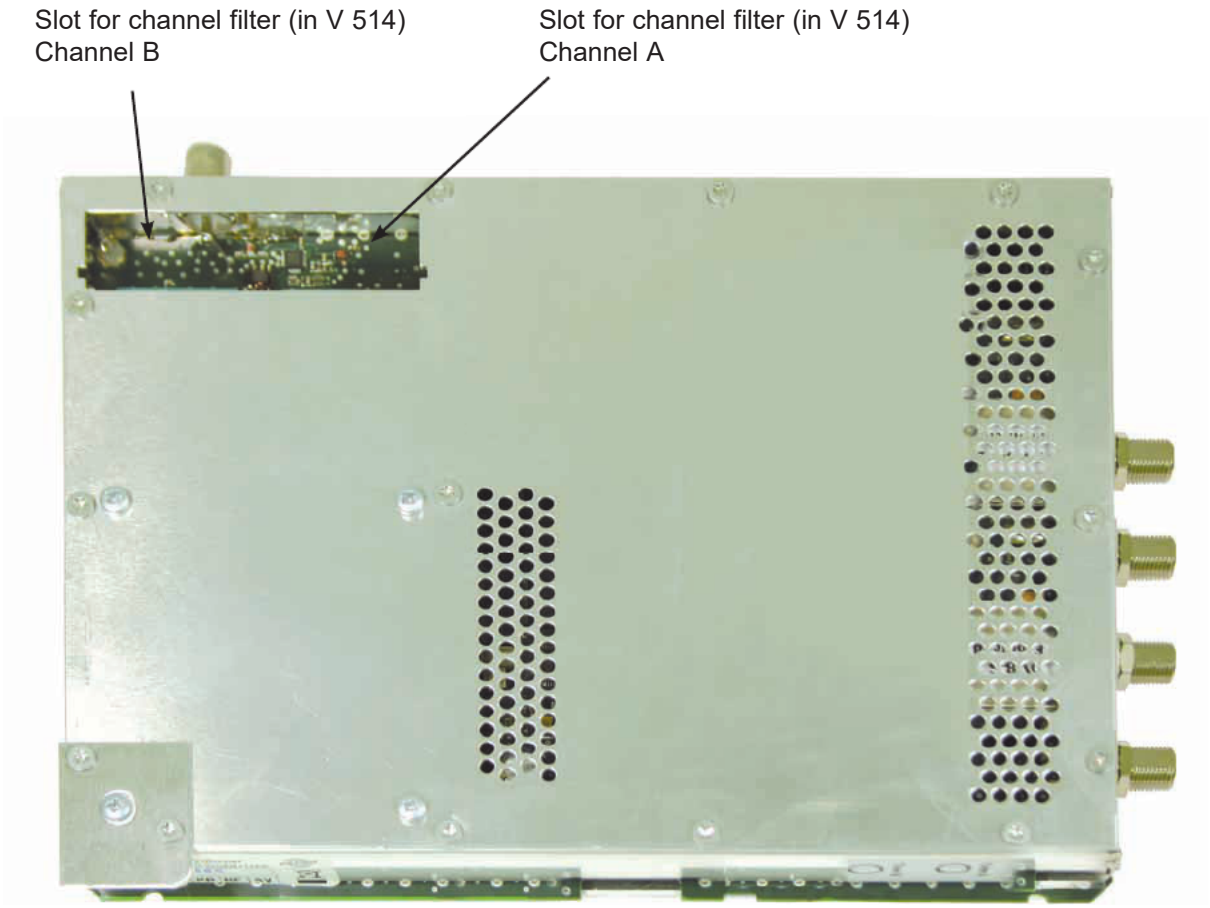
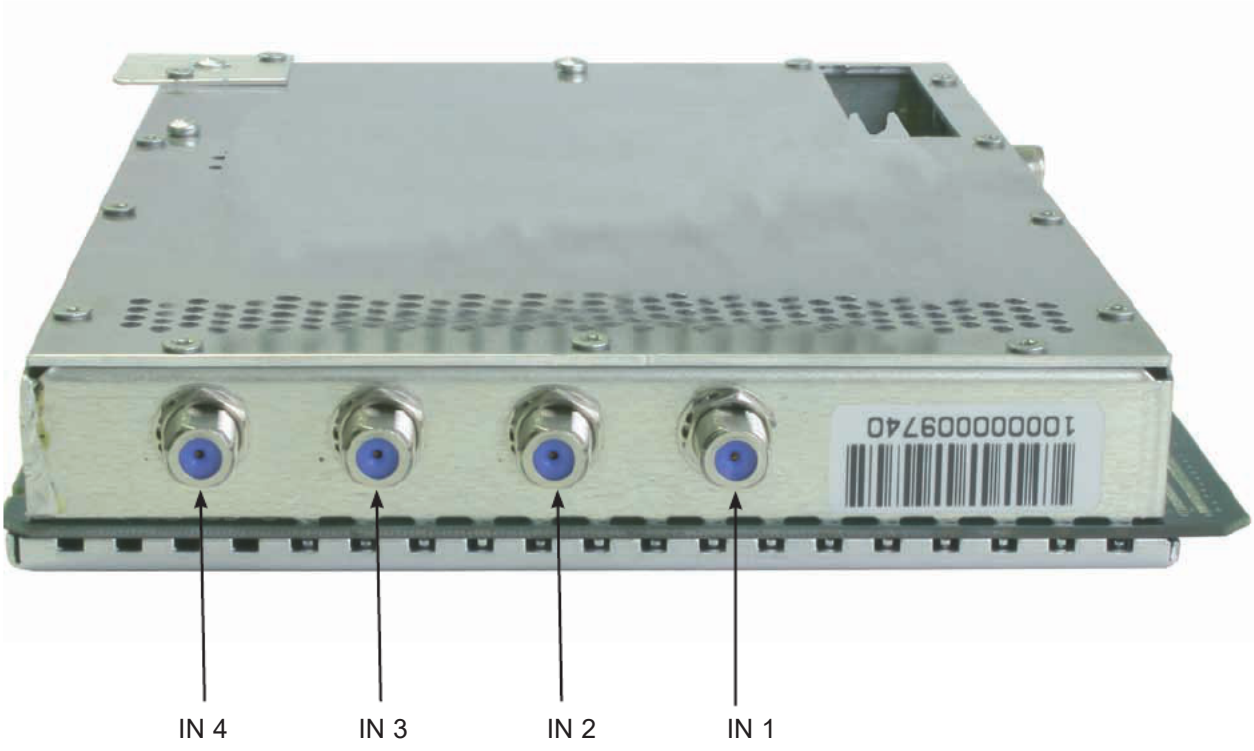
Illustrations:





1 Description

The V 514 / X-QAM quad plug-in board is used to convert four independent DVB-S(2) into 2 x two independent & DVB-conformant QAM-output channels. It can process both HDTV-signals as well as SDTV-signals.

Important: The V 514 / X-QAM quad pug-in card features an integrated progr-ammable signal distributor which offers free routing of all input channels indepen-dently via the HE programming software. Thus multiple use of an input signal can be achieved and cabling effort can be reduced.

The plug-in board is capable of eliminating services from the transport stream of the useful channel in a standard-compliant way (by editing the DVB-tables).
The V 514 additionally has two channel output filters available for improving the performance of the output signal.

When starting the device care should be taken to ensure that all channels have the same output level and where appropriate, are matched to existing equip-ment.

The delivery package contains 4 cables for connecting the SAT-tuners.

Note:

The V 514 is only to be used in the V16 base device!

Please note:

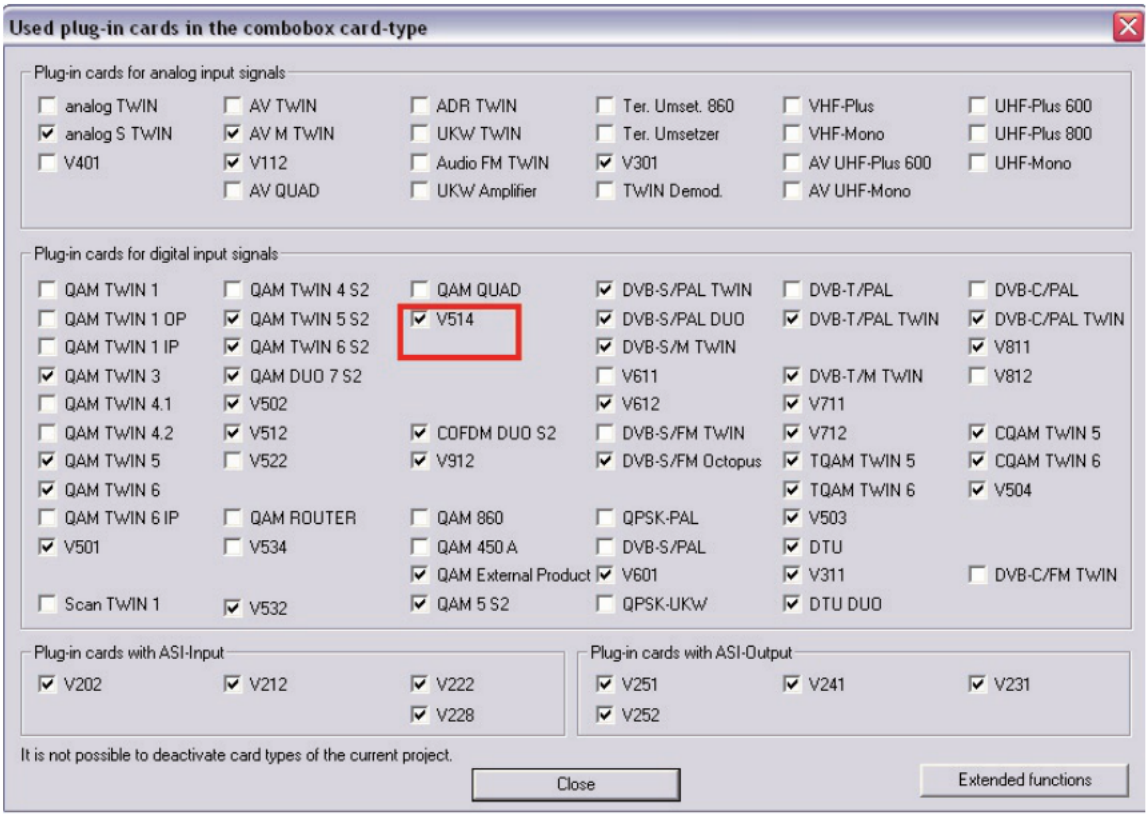
Replacement or exchange of the module can only be carried out by qualified personnel (accredited operator) certified and authorised by IHK. The danger and safety instructions contained in the operating instructions of the V16 basic device and also the relevant safety regulations according to DIN Guideline VDE 0701, Part 1 and 200 must be adhered to.

2 Preferred board types

After assembly in the base unit the V 514 / X-QAM quad board can be programmed with the HE-programming software. If it is not possible to select the board in the HE programming software, select the menu item "Options - preferred board types" and check the settings here. The board must be activated with a tick, so that it becomes visible in the selection list in the planning screen of the basic unit. After selecting the basic unit, the V 514 board appears in the planning screen of the basic unit at the card slot being used.

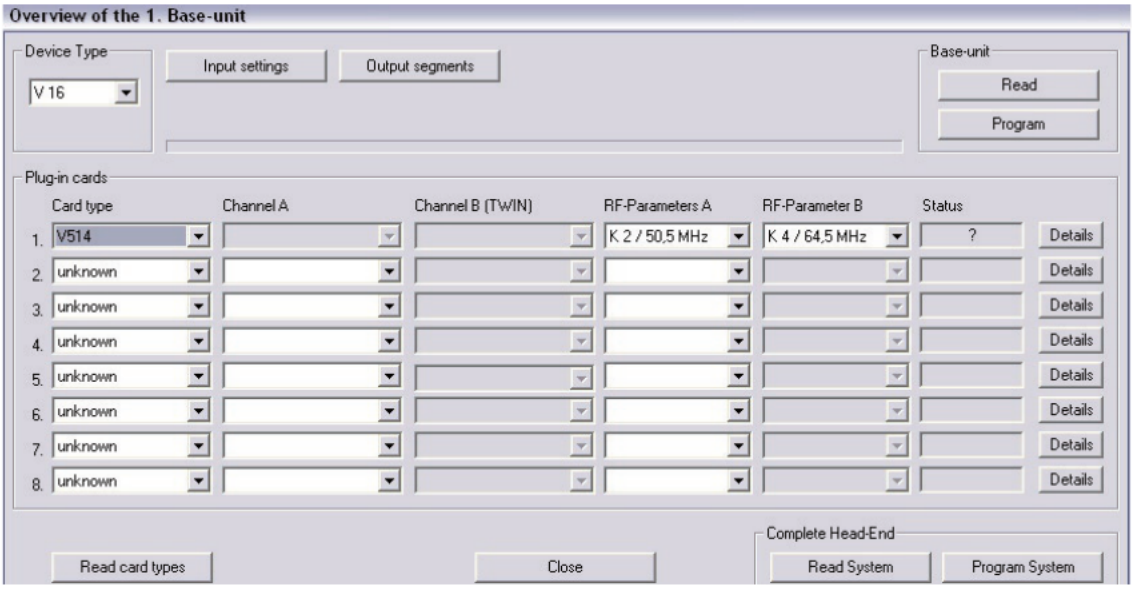
Please note: recommended software level:

V16:	xx.30
X-8:	xx.30
Programming software:	5.70



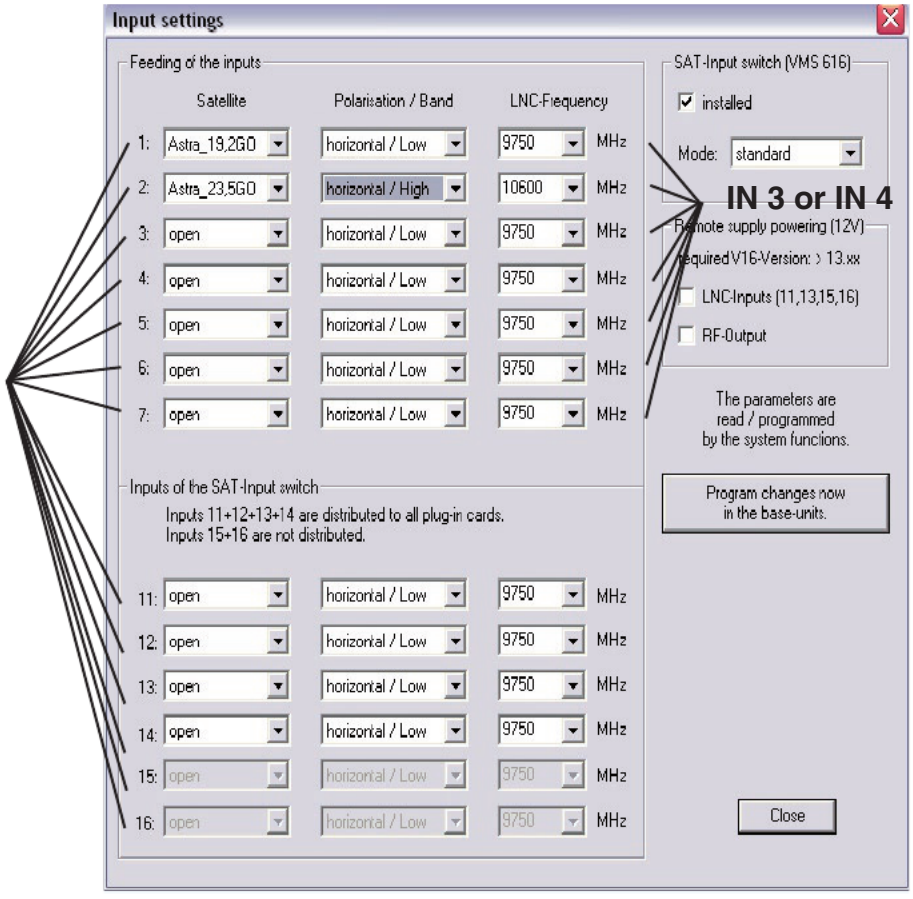
3 Planning screen of the basic unit

After selecting the basic unit the V 514 / X-QAM quad is displayed on the planning screen of the basic unit.

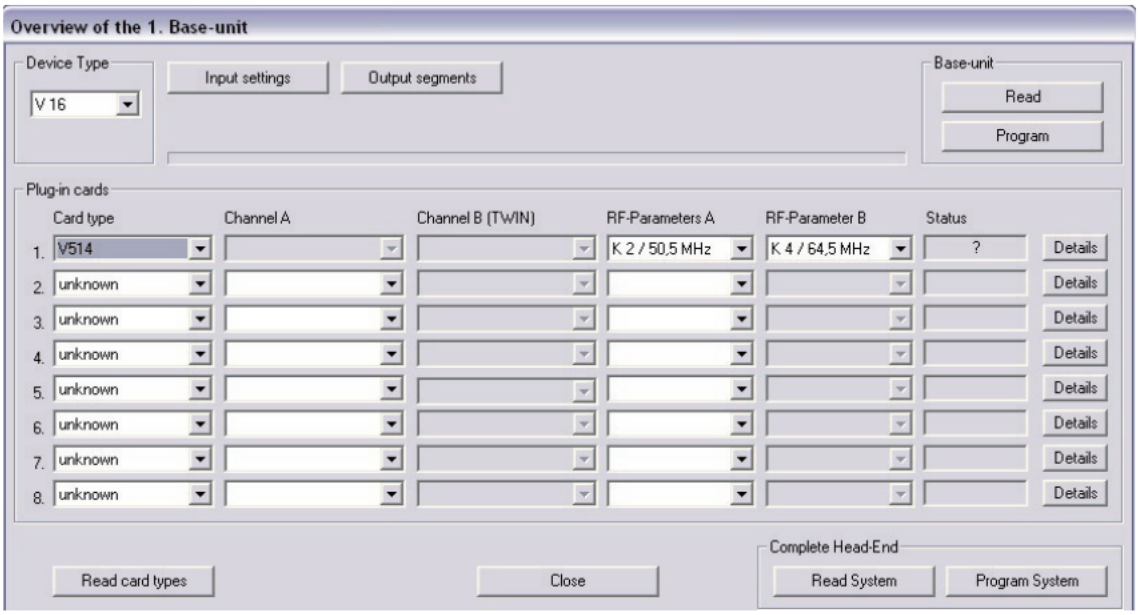


To select the transponders to be received from, you must first define in the basic unit which Satellite-levels are connected. This is done under “Occupy inputs”. The illustration below shows which signals are available at each of the respective inputs.

IN 1 or IN 2



Click on the "Details" button to open the "Detailed settings" screen and select the "Input parameters" tab. On this screen, under "Channel A1", "Channel A2", "Channel B1" and "Channel B2" you can set the transponders that are to be received by the board.

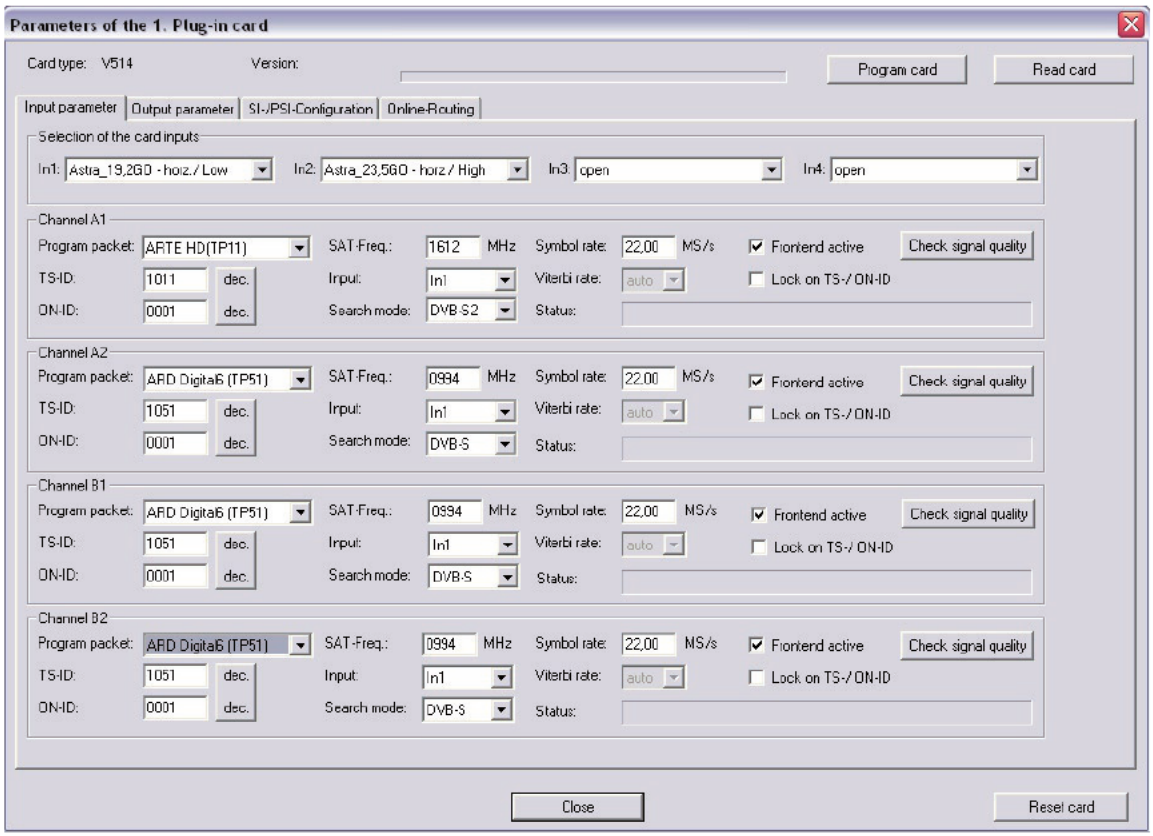


Under "HF parameter A" and "HF parameter B“ in the planning screen of the basic unit, the output channels of the V 514 / X-QAM quad board are selected, that is, the channels in which the QAM channels assembled from the DVB-S(2) are to be fed into the cable.

If the user now clicks the "Details" button, this opens the screen with the board details. Here all relevant settings for operation of the device are made.

4 Input parameters / signal quality testing

If the satellite transponder to be processed is selected in the planning window of the basic unit, then all relevant input parameters such as SAT-ZF, symbol rate, TS-ID and ON-ID are transferred from the SAT database.



4.1 Manual transponder selection

When manually selecting the transponder the SAT-ZF, the symbol rate, the TS-ID and the ON-ID must be input manually. Please take care to use the correct input, as otherwise the signal cannot be processed.

4.2 (De-)activating the front end

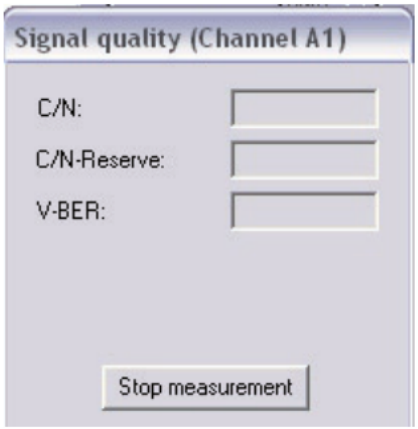
By clicking on the selection box "Front-end active" the front end of the respective input can be either activated or deactivated.

4.3 Lock on TS-/ON-ID

In order to prevent the tuner logging in to an undesired transponder, the function "Lock on TS-/ ON-ID“ can be activated. On activating this check-box the tuner is only logged into the transponder IDs entered, accidentally or wrongly applied input signals are not processed.

4.4 Signal quality testing

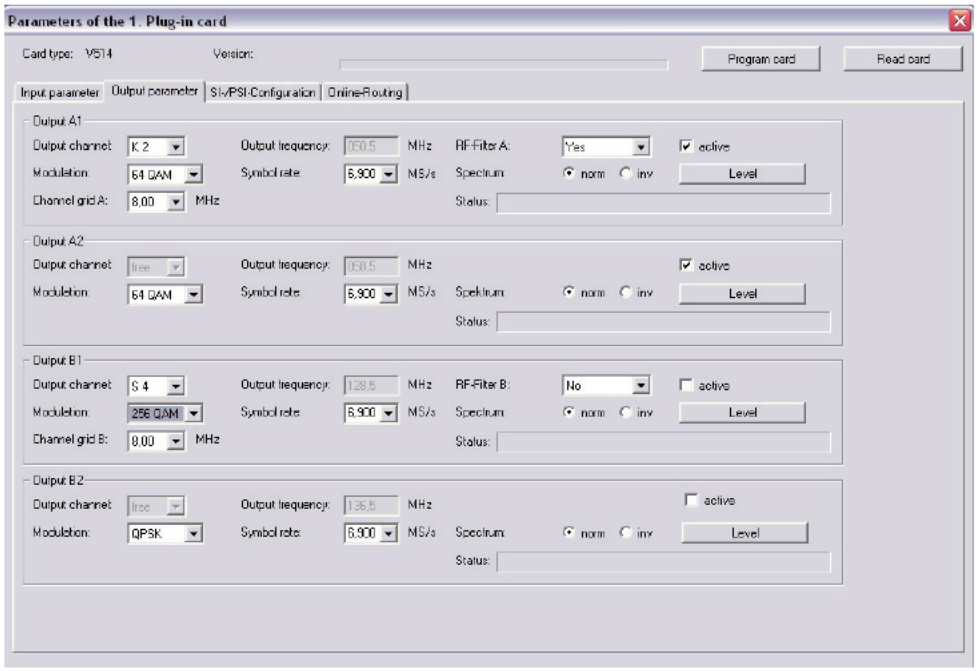
The button "Test signal quality" opens the window with the signal parameters currently measured. The values displayed will differ depending on the input signal:



5 Output parameters / Level adjustment

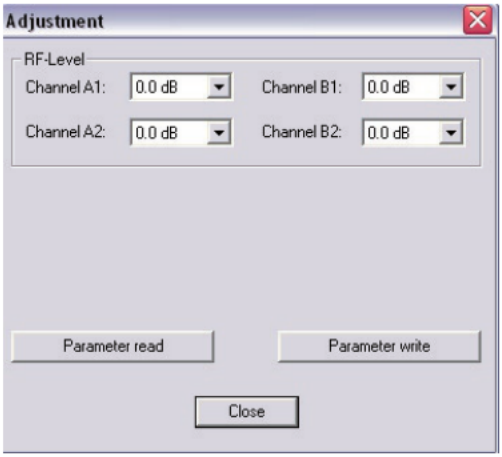
5.1 Output parameters

In the output parameters field all relevant parameters for the output signal are configured. Here, the output channel is specified, activated or deactivated, the spectrum inverted, the symbol rate adjusted and the modulation type specified.
In the field for output A and output B the respective output channel filter is activated or deactivated. A channel filter that is unplugged but activated in the software results in an error message.



5.2 Level adjustment

The output level for the individual output channels is matched electronically by means of the HE programming software. Clicking on the "Level adjustment" button opens the following screen:

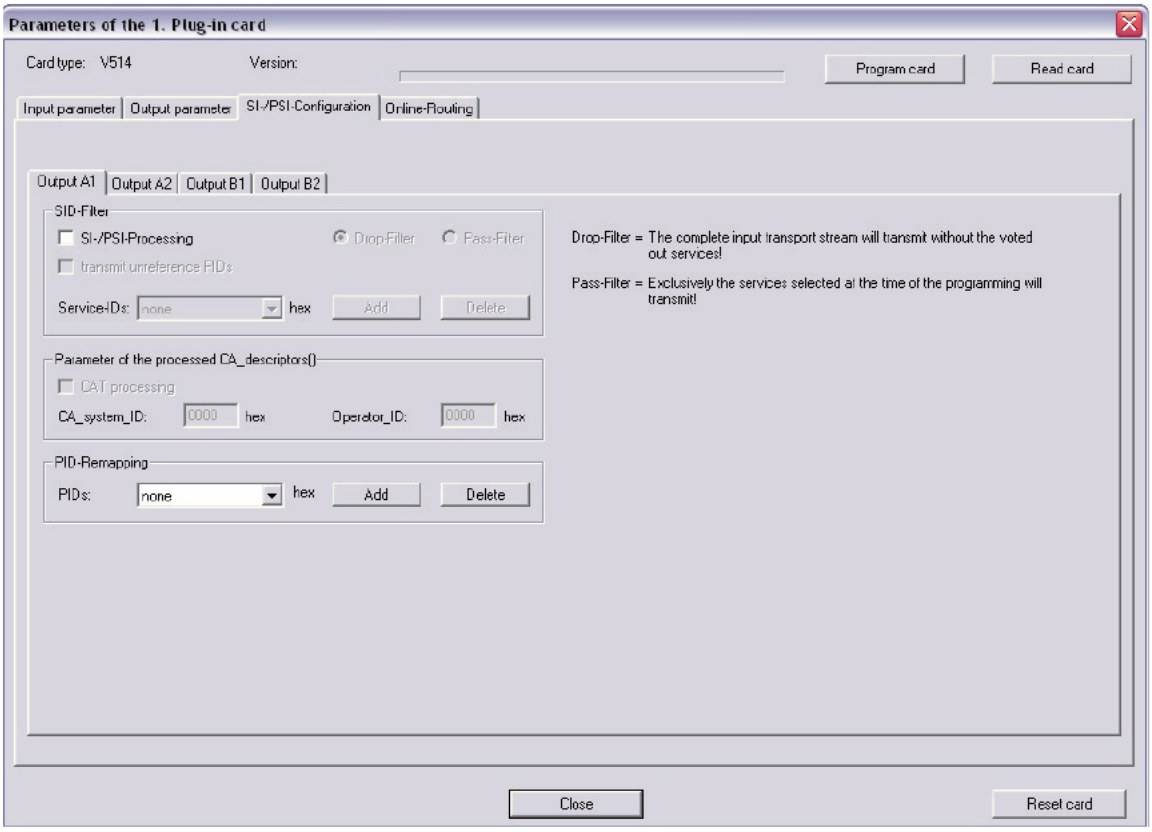


Using the "Read parameters" button the currently stored values are first read from the board. Modifications that are made are not written to the board and activated until "Write parameters" is pressed.

6 SI-/PSI configuration

The Service-Filter Configuration field is the same for both outputs A and B. This configuration is therefore explained using only output A:

In order to activate the option to eliminate individual services from the data stream, the function "SI-/PSI-Processing" must be activated. Without this setting the board behaves as a standard transmodulator, which allows all services present in the input data stream through unfiltered.



6.1 Drop-filter or pass-filter

The V514 / X-QAM quad supports two different modes of service-filters:

Drop-Filter:
The input data stream in this case is transferred completely, only the selected Service-IDs are actively removed. This means all services, including any that are additionally transferred at a later time, are allowed through and can be found in the output data stream.

Pass-Filter:
In this case only the services selected at the time of programming are transferred, or where appropriate, services that are added later.

6.2 Transfer unreferenced PIDs

The V514 / X-QAM quad uses this function to decide whether unreferenced PIDs, i.e. those not belonging to a service, are transferred or blocked. Since these PIDs could be used to control any special functions present, e.g. of set-top boxes, blocking of these can in some cases have adverse effects.

6.3 CAT editing

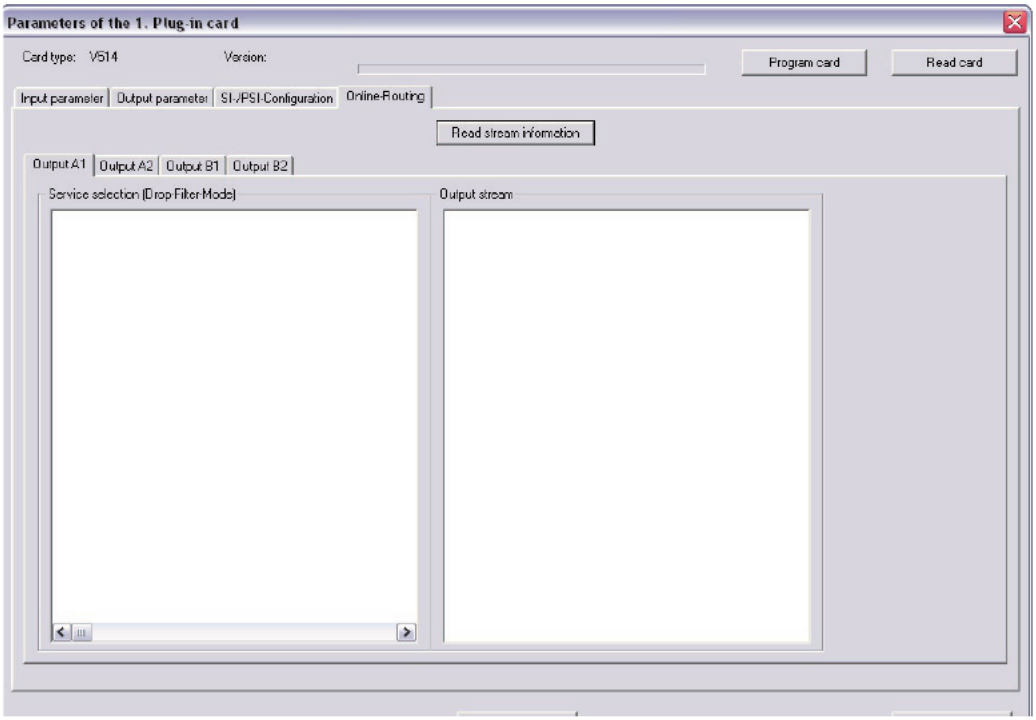
Use this function for the case when an Operator ID needs to be manipulated.

6.4 PID remapping

At this point up to four PID-Remap-filters can be set.

7 Online Service-Filter

By selecting the desired services (green) from the input data stream (left-hand side), the services present in the output data stream (right-hand side) can be chosen.
The 'Program board' button is used to transfer all settings to the memory of the V 514 / X-QAM quad.



8 Technical data

Type		X-QAM quad	V 514
Order number		380 325	380 514
DVB-S(2) demodulator			
Input frequency range	[MHz]	920 - 2150	
Input level	[dBµV]	50 - 80	
SAT-ZF input	[Ω]	F-socket, 75	
Input symbol rate	[MS/s]	maximum 30.0	
DVB-S Viterbi		1/2, 2/3, 3/4, 5/6, 6/7; 7/8	
DVB-S2 LDPC		1/4; 1/3; 2/5; 1/2; 3/5; 2/3; 3/4; 4/5; 5/6; 8/9; 9/10	
DVB-S2 Rdl-off-factors		0,20-; 0,25, 0,35	
DVB-S2 Modulation		QPSK, 8PSK	
QAM-Modulator			
Modulation		16-, 32-, 64-, 128-, 256-QAM	
Signal processing		as per DVB standard	
Spectral shaping cos-rdl-off	[%]	15	
FEC		Reed-Solomon (204,188)-code	
Data rate matching (plug unit)		☑	
PCR correction, NID handling		☑	
PID filtering		Pass or Drop Service filter	
Output symbol rate	[Msym]	Input data rates variable, 3.45 - 6.9	
Bandwidth	[MHz]	Input data rate variable 4 - 8	
Gross data rate	[MBit/s]	maximum 55.2	
HF output			
Connections	[Ω]	IEC-socket, 75	
Frequency range	[MHz]	47 - 862 (K2 - K69) adjustable in 1-MHz steps	
Output level	[dBµV]	80…96, adjustable	
MER (Equalizer, 64 QAM)	[dB]	typ. 45	
Secondary wave separation 40 - 862 MHz > 950 MHz	[dB]	> 60 discrete interference sources / > 57 noise-like interference sources > 20 related to 100 dBµV system level and 90 dBµV operating level	
General data			
Power consumption	[W]	15,8	
Permitted ambient temperature	[°C]	0…+50	

Technical improvement, changes to design and errors reserved.

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