TRIAX

HIRSCHMANN

Digital headend system
CDH 1900

TRIAX - your ultimate connection

The CDH 1900 headend system adds flexibility and reduces costs

The Hirschmann digital headend is a flexible solution for modern headend systems.

Solutions for modifications in distribution networks, new digital services or encoding systems are developed continuously and can be integrated without any problems. Novelty: QAM MUX module with 5 input channels.

- Modular concept for all requirements and needs
- Flexible and quick installation
- User-friendly
- Up to 30 channels in one system, expandable
- Remote control for easy programming
- State-of-the-art technology, problem-free upgrading

Modules designed to facilitate installation

Inserting modules is extremely easy. Slots are easily accessible and the plug-in operation involves no risk of damaging components. A stable and safe EMC connection is ensured automatically. Easy remote-controlled programming and modem control ensures quick, inexpensive installation and maintenance-friendliness.

Up to 30 channels in one basic unit

A CDH unit holds up to 6 modules according to actual requirements, and up to 4 additional units can be added. All 30 channels are controlled by a processor.

Other features

- High output level
- S/N ratio the module of >54 dB

Easy operation

Locally

- By means of remote control and On-Screen-Display
- Or programming by means of a PC

Remote access

- IP – Internet via NPORT
- Or via GSM-modem
- Or via analogue modem
- Free software download at www.triax-gmbh.de

Easy access and control from the distance

With the CDH 1900 headend system, the operator can monitor and change the system through remote access from anywhere where a PC and a standard or GSM modem is at hand. The user-friendly software minimises the time spent on adjustments and changes of the parametres.

1 transponder, 6 programmes

One of the unique and cost-saving features of CDH 1900 headend system is that it allows you to receive one Free-To-Air multiplex and distribute it as different programmes with one module configured as master and the other modules as slaves. Up to six programmes can be distributed from one multiplex, and the master/slave set-up simplifies the whole installation. It saves time in initial installation, but also in later changes of configuration.

Digital headend system – CDH 1900

The CDH 1900 is a modern, compact digital headend system. Each basic unit holds up to 6 modules each carrying a satellite, cable or terrestrial channel. Up to five units (1 main unit and 4 sub units) can be coupled in cascade for up to 30 channels, and with the advantage that they all share the same system control.

Communication between modules and basic unit takes place via a highspeed databus, and due to this modern communication structure important functions such as operation of the systems, software updates and remote access are now extremely simple.

Section 1

Section 2

LINK

LINK

LINK

LINK

RF - out
for distribution net
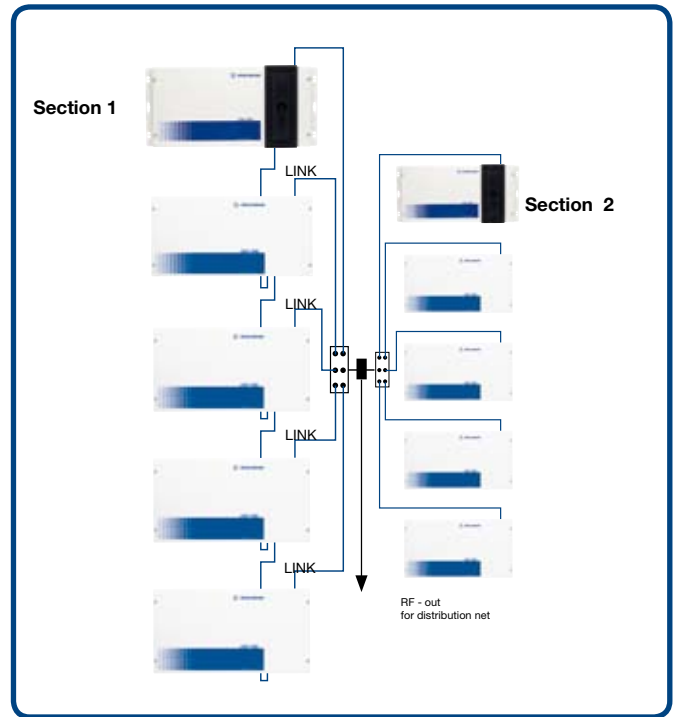
CDH 1900 units - technical data

| Type		CDH 1900 Main unit	CDH 1901 Sub unit
Art. No.		490792	490793
Number of channels	Pcs	6	6
Output frequency range	MHz	47 - 862	47 - 862
Max. output level - 6 combined channels max. @ 60 dB IMD	dBµV	105	105
Adjustment	dB	10	10
Test point	dB	- 30	- 30
Return loss output Tv in - tv out - module RF in	dB	≥ 10	≥ 10
Impedance	Ohm	75	75
Remote control		Yes	
PC-interface functions		Yes	
Software download	9 pin	RS 232 female	
Modem connector	9 pin	RS 232 male	
Main/sub unit connector		USB A/B cable	USB A/B cable
Wall/rack bracket		Yes	Yes
Operation voltage	V/AC	190 - 260	190 - 260
Power consumption	W	120 max.	110 max.
Connector in - out		F-female	F-female
Operation temperature range	°C	-10...+50	-10...+50
Weight	kg	5.8	5.8
Dimensions (H x D x W)	mm	223 x 160 x 440	223 x 160 x 440
Remarks			

Digital terrestrial modules
COFDM-PAL

DVB-T module (VSB) VHF/UHF

DVB-T modules convert a digtal terrestrial coded or uncoded signal to a modulated signal for distribution in a community cable system.

- Full-band high-quality modulator
- Conditional access via common interface (CI) or Free-To-Air (FTA)

- Advanced watchdog function
- Fully DVB T compatible
- Multi language menu
- MPEG transport stream available for slave modules
- Mono sound / A2 stereo / Nicam available

CDH 1900 modules - technical data
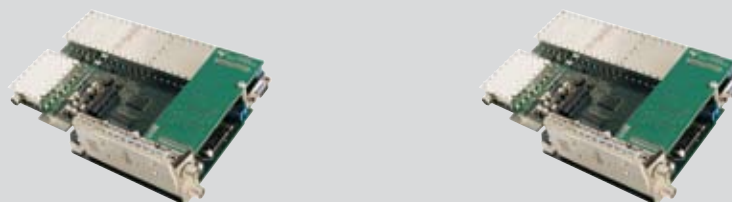
TYPE		DVB-T master with CI	DVB-T master with CI		DVB-T master Free-To-Air	DVB-T master Free-To-Air	
Norm		Mono	A2 stereo	Nicam	Mono	A2 stereo	Nicam
Art. No.	B/G	490762	490763	590763	490764	490765	590765
	D/K	490712	490713		490714	490715	
	Norm L	490712			490714		590715
	Pal I	490712		591613	490714		591615
Input frequency range	MHz	177.5 - 858.0	177.5 - 858.0		177.5 - 858.0	177.5 - 858.0	
Input level *	dBµV	44 - 84	44 - 84		44 - 84	44 - 84	
Output frequency range	Ch. MHz	2 - 69 47 - 862	2 - 69 47 - 862		2 - 69 47 - 862	2 - 69 47 - 862	
Output level	dBµV	103	103		103	103	
Output level attenuator	dB	10	10		10	10	
Video S/N ratio	dB	> 54	> 54		> 54	> 54	
Differential phase	deg.	< 8	< 8		< 8	< 8	
Picture carrier stability	kHz	< +/- 70	< +/- 70		< +/- 70	< +/- 70	
Spurious signals ref pict. carrier C/N	dB	> - 60	> - 60		> - 60	> - 60	
Sound mode		**Mono**	**A2 stereo**	**Nicam**	**Mono**	**A2 stereo**	**Nicam**
Audio distortion @ 1 kHz	%	< 1	< 1		< 1	< 1	
Audio S/N ratio	dB	> 50	> 50		> 50	> 50	
Sound sub carrier stability	kHz	< +/- 5	< +/- 5		< +/- 5	< +/- 5	
LNB control 13/18 volt - 0/22 kHz	mA	200	200		200	200	
Conditional access	EN	50221	50221		FTA	FTA	
Teletext type		Reinserted in VBI	Reinserted in VBI		Reinserted in VBI	Reinserted in VBI	
Demultiplexer data rate	Mbps	< 65	< 65		< 65	< 65	
Video data rate	Mbps	< 15	< 15		< 15	< 15	
Viterbi rates	Mpps	1-30 (SCPC/MCPC)	1-30 (SCPC/MCPC)		1-30 (SCPC/MCPC)	1-30 (SCPC/MCPC)	
FFT mode	Mpps	2K/8K	2K/8K		2K/8K	2K/8K	
Constellations		QPSK, 16QAM, 64QAM			QPSK, 16QAM, 64QAM		
Guard interval		1/4, 1/8, 1/16, 1/32			1/4, 1/8, 1/16, 1/32		
Viterbi decoder		1/2, 2/3, 3/4, 5/6, 7/8			1/2, 2/3, 3/4, 5/6, 7/8		
Reed Solomon decoder		204,188, t=8.			204,188, t=8.		
Impedance	Ohm	75	75		75	75	
Operation temperature range	ºC	-10...+50	-10...+50		-10...+50	-10...+50	
Weight - standard module	kg	0.45	0.45		0.45	0.45	
Dimensions (H x D x W)	mm	150 x 230 x 50	150 x 230 x 50		150 x 230 x 50	150 x 230 x 50	
Remarks		* Digital measuring - DCP					

DVB-S master module (VSB) VHF/UHF

TDH DVB-S modules convert a coded or uncoded digital signal from a satellite to a modulated PAL/SECAM signal for distribution in a community cable system.

- Full-band high-quality modulator
- Conditional access via CI or Free-To-Air (FTA)
- Advanced watchdog function

- Fully DVB S compatible
- Multi language menu
- MPEG transport stream available for slave modules
- Mono sound / A2 stereo / Nicam available

CDH 1900 modules
- technical data

TYPE		DVB-S master with CI	DVB-S master with CI		DVB-S master Free-To-Air	DVB-S master Free-To-Air	
	Norm	**Mono**	**A2 stereo**	**Nicam**	**Mono**	**A2 stereo**	**Nicam**
Art. No.	B/G	490742	490743	590743	490746	490747	590747
	D/K	490702	490703	590703	490722	490723	
	Norm L	490702		590703	490722		590723
	Pal I	490702	590743	591603	490722		591623
Modulator type		VSB	VSB		VSB	VSB	
Input frequency range	MHz	920 - 2150	920 - 2150		920 - 2150	920 - 2150	
Input level *	dBμV	44 - 84	44 - 84		44 - 84	44 - 84	
IF bandwidth	MHz	36	36		36	36	
Output channel frequency range	MHz	2 - 69 47 - 862	2 - 69 47 - 862		2 - 69 47 - 862	2 - 69 47 - 862	
Output level	dBμV	103	103		103	103	
Output level attenuator	dB	10	10		10	10	
Video S/N ratio	dB	> 54	> 54		> 54	> 54	
Differential phase	deg.	< 8	< 8		< 8	< 8	
Picture carrier stability	kHz	< +/- 70	< +/- 70		< +/- 70	< +/- 70	
Spurious signals ref pict. carrier C/N	dB	> - 60	> - 60		> - 60	> - 60	
Sound mode		**Mono**	**A2 stereo**	**Nicam**	**Mono**	**A2 stereo**	**Nicam**
Audio distortion @ 1 kHz	%	< 1	< 1		< 1	< 1	
Audio S/N ratio	dB	> 50	> 50		> 50	> 50	
Sound sub carrier stability	kHz	< +/- 5	< +/- 5		< +/- 5	< +/- 5	
LNB control 13/18 volt - 0/22 kHz	mA	200	200		200	200	
Conditional access	EN	50221	50221		FTA	FTA	
Teletext type		Reinserted in VBI	Reinserted in VBI		Reinserted in VBI	Reinserted in VBI	
Demultiplexer data rate	Mbps	< 65	< 65		< 65	< 65	
Video data rate	Mbps	< 15	< 15		< 15	< 15	
Viterbi rates	Mpps	1-30 (SCPC/MCPC)	1-30 (SCPC/MCPC)		1-30 (SCPC/MCPC)	1-30 (SCPC/MCPC)	
Impedance	Ohm	75	75		75	75	
Operation temperature range	°C	-10...+50	-10...+50		-10...+50	-10...+50	
Power supply - stand alone module	VAC	190 - 260	190 - 260		190 - 260	190 - 260	
Weight - standard module	kg	0.45	0.45		0.45	0.45	
Dimensions (H x D x W)	mm	150 x 230 x 50	150 x 230 x 50		150 x 230 x 50	150 x 230 x 50	
Remarks		* Digital measuring - DCP					

Digital slave modules
# Sat/Ter

DVB-S/T modules (VSB) VHF/UHF

Slave modules for DVB-S or DVB-T master modules

- Full-band high-quality modulator
- Mono sound / A2 stereo / Nicam available

CDH 1900 modules
- technical data

| TYPE		TDH slave DVB-S/T	TDH slave DVB-S/T	
Norm		**Mono**	**A2 stereo**	**Nicam**
Art. No.	B/G	490744	490745	590745
	D/K	490704	490705	
	Norm L	490704		
	Pal I	490704		
Modulator type		VSB	VSB	
Output frequency range	Ch. MHz	2 - 69 47 - 862	2 - 69 47 - 862	
Output level attenuator	dB	10	10	
Video S/N ratio	dB	> 54	> 54	
Differential phase	deg.	< 8	< 8	
Picture carrier stability	kHz	< +/- 70	< +/- 70	
Spurious signals ref pict. carrier C/N	dB	> - 60	> - 60	
Sound mode		**Mono**	**A2 stereo**	**Nicam**
Audio distortion @ 1 kHz	%	< 1	< 1	
Audio S/N ratio	dB	> 50	> 50	
Sound sub carrier stability	kHz	< +/- 5	< +/- 5	
Teletext type		Reinserted in VBI	Reinserted in VBI	
Demultiplexer data rate	Mbps	< 65	< 65	
Video data rate	Mbps	< 15	< 15	
Viterbi rates	Mpps	1-30 (SCPC/MCPC)	1-30 (SCPC/MCPC)	
Impedance	Ohm	75	75	
Operation temperature range	°C	-10...+50	-10...+50	
Weight - standard module	kg	0.30	0.30	
Dimensions (H x D x W)	mm	150 x 230 x 50	150 x 230 x 50	
Remarks				

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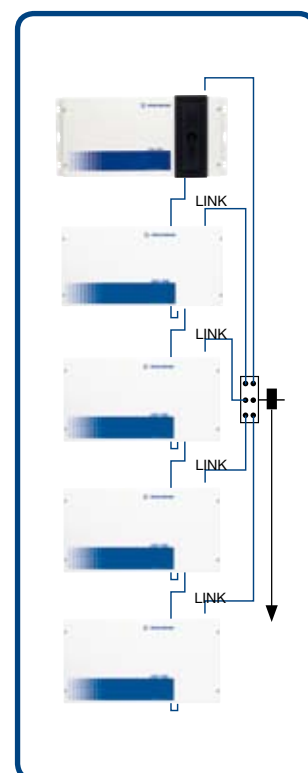
QPSK/QAM-modules

TDH QPSK to QAM module receives a QPSK channel (TV-program package) located in the sat-IF band, and remodulates it in QAM format on a 5-9 MHz channel located within the RF frequency band.

- Output frequency ranges: 120-306 or 306-858 MHz
- Input frequency range: 950-2150 MHz

- Programmable LNB control on each module
- Modulation: 16, 32, 64, 128, 256 QAM
- Adjustable symbol rate (TDH 732 & TDH 733)
- Multi language menu

CDH 1900 modules
- technical data
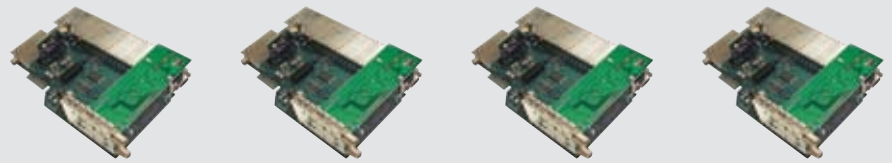
TYPE	Norm	DVB-C master TDH 730C TDT	DVB-C master TDH 731C TDT	DVB-C master TDH 732C -adj. symbol rate	DVB-C master TDH 733C -adj. symbol rate
Art. No.		490730	490731	490732	490733
Modulator type		QAM	QAM	QAM	QAM
Input frequency range	MHz	920 - 2150	920 - 2150	920 - 2150	920 - 2150
Input level *	dBµV	45 - 84	45 - 84	45 - 84	45 - 84
Return loss	dB	>10	>10	>10	>10
Aerial input	SAT	F	F	F	F
Aerial loop-through	SAT	Yes/F	Yes/F	Yes/F	Yes/F
Demolator					
Type		QPSK	QPSK	QPSK	QPSK
Symbol rate	Mbps	2-40 (SCPC/MCPC)	2-40 (SCPC/MCPC)	**Adjustable**	**Adjustable**
Viterbi decoder		1/2, 2/3, 3/4, 5/6, 7/8	1/2, 2/3, 3/4, 5/6, 7/8	1/2, 2/3, 3/4, 5/6, 7/8	1/2, 2/3, 3/4, 5/6, 7/8
Reed Solomon decoder		204, 188, t=8	204, 188, t=8	204, 188, t=8	204, 188, t=8
Modulator					
Output mode		QAM 16, 32, 64, 128, 256	QAM 16, 32, 64, 128, 256	QAM 16, 32, 64, 128, 256	QAM 16, 32, 64, 128, 256
Output control		Normal, inverted, random	Normal, inverted, random	Normal, inverted, random	Normal, inverted, random
Output frequency range	MHz	**306 - 858**	**120 - 306**	**306 - 858**	**120 - 306**
Output level	dBµV	97	97	97	97
LNB control 13/18 volt - 0/22 kHz	mA	200	200	200	200
Symbol rate	Mbaud	< 7.0	< 7.0	< 7.0	< 7.0
Roll-off factor	%	15	15	15	15
FEC block code		RS (204, 188)	RS (204, 188)	RS (204, 188)	RS (204, 188)
Scrambling		DVB ETS 300429	DVB ETS 300429	DVB ETS 300429	DVB ETS 300429
Interleaving		DVB ETS 300429	DVB ETS 300429	DVB ETS 300429	DVB ETS 300429
Carrier suppression	dB	>40	>40	>40	>40
C/N	dB	>38	>38	>38	>38
MER	dB	>35	>35	>35	>35
IQ imbalance	Dgr	<1	<1	<1	<1
Output impedance	Ohm	75	75	75	75
Return loss (MOD OUT)	dB	>10	>10	>10	>10
Temperature, operation	°C	-10..+50	-10..+50	-10..+50	-10..+50
Weight - standard module	kg	0.45	0.45	0.45	0.45
Dimensions (H x D x W)	mm	150 x 230 x 50	150 x 230 x 50	150 x 230 x 50	150 x 230 x 50
Remarks		* Digital measuring - DCP		With stuffing	With stuffing

QAM MUX module
for CDH 1900 digital headend

5 channel QAM-MUX-module

The CDH 1900 headend can be upgraded with a new QAM muxing module. The QAM muxing module will enable the CDH 1900 to send out up to 5 input channels in the QAM format along with the analogue (PAL) format simultaneously. The customer will then experience broadcasted TV in the original high digital quality on his flat screen.

- Add-in slave module to CDH 1900 (as the 6th module).
- Replicate up to 5 channels in digital QAM format.

- Accepts input channels from the DVB-T/-S modules.
- Accepts Free-To-Air (FTA) or encrypted channels (decrypted by CI-module on the input modules).
- Easy installation into existing or new headend.
- QAM output channel setup via the manager PC utility.
- QAM channel overflow control (using channel priority).
- Upgrade your existing CDH 1900 headend system with the cost efficient QAM MUX module solution.

CDH 1900 modules - technical data

| Type		TDH 780 QAM MUX
Art. No.		490780
Number of transport streams (channel) inputs		5
TS input interface		Internally, parallel LVDS signals
QAM output channels		1
QAM output symbol rate	MBaud	3.125 - 7.2 MBaud (Max. 57.6 Mbit/s)
QAM modes		16, 32, 64, 128, 256
Output channels (VHF module)	MHz	S1 - S20 107.5 - 296.5
Output channels (UHF module)	MHz	S21 - S69 306 - 858
Temperature range, operating	°C	-10...+50
Humidity, operating	RH	20 - 80 %
Temperature range, storage	°C	-20...+70
Humidity, storage	RH	10 - 90 %

QPSK/FM-module

QPSK-FM module includes a receiver, demodulator, high quality FM stereo modulator, and the built-in amplifier secures the right level for directly supplying the SMATV network with high-quality FM programs.

- QPSK to FM stereo
- Available for Free-To-Air (FTA) reception or with CI option
- Built-in LNB supply

- Master/slave system option for easy installation
- Parameter setting via TDH controller or remote
- High output level
- Can be mixed with other modules in the TDH range

CDH 1900 modules - technical data
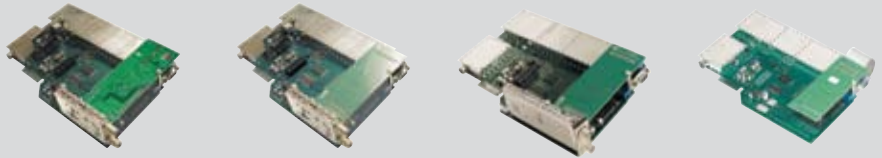
TYPE		TDH 737 FM DVB-S/FM master Free-To-Air	TDH 738 FM DVB-S/FM master with CI	TDH 736 FM modulator	TDH 739 FM DVB slave
Art. No.		490737	490738	490736	490739
Modulator type		QPSK - FM stereo	QPSK - FM stereo	FM stereo	FM stereo
Band		FM	FM	FM	FM
Input frequency range	kHz			20 - 20.000	
	MHz	920 - 2150	920 - 2150		
Input level	dBµV	45 - 84	45 - 84		
Modulation		FM	FM		FM
Output level max	dBµV	92	92	92	92
Output level attennuator	dB			10	
Input	Sat	F-female	F-female		
Loopthrough	Sat	Yes/F-female	Yes/F-female		-
Output frequency range	MHz	87.5 - 108.0	87.5 - 108.0	87.5 - 108.0	87.5 - 108.0
Spurious signals ref pict. carrier C/N	dB	> -60	> -60		> -60
Audio S/N ratio	dB	60	60		60
Audio distortion, 1 kHz	%	<1	<1		<1
Audio input level	V/RMS			0.5 V/RMS	
Audio input/output				15 pol SUB-D	
Return loss (MOD OUT)	dB	>10	>10		>10
Output impedance	Ohm	75	75		75
Temperature, operation	°C	-10...+50	-10...+50	-10...+50	-10...+50
Weight - standard module	kg	0.45	0.45	0.45	0.45
Dimensions (H x D x W)	mm	150 x 230 x 50	150 x 230 x 50	150 x 230 x 50	150 x 230 x 50
Remarks Video/audio cable [Phone - Sub-D]	15 cm 150 cm	Art. No. 300748 Art. No. 300745		Art. No. 300748 Art. No. 300745	

Digital/analogue TV converters
FM amplifier and AV modules

CDH 1900
TV converter modules

Converts any TV channel in the VHF and UHF band to another frequency.
For optimized function and performance in handling analogue or digital signals, two different versions are available.

- Wide-range automatic gain control (AGC) secures right level into the distribution net
- High modulation error rate (MER) valued by means of SAW filter technology, secures best possible signal quality
- Full-range conversion
- DC supply for preamplifier

CDH 1900
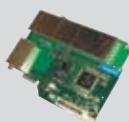## FM amplifier modules

Plug-in amplifier module
The TDH 772 is e.g. an FM amplifier module for the TDH headend.
With this module it is possible to obtain the right professional insertion and amplification of the terrestrial FM signal in the distribution network.

CDH 1900
AV-modulator modules

Modulator modules convert an audio/video signal to a TV channel in the VHF/UHF band for distribution in a community cable system.

- Full-band high-quality modulator
- Adjacent channel operation
- Multi standard
- Mono sound / A2 stereo / Nicam available
- Multi language menu

CDH 1900 modules -technical data

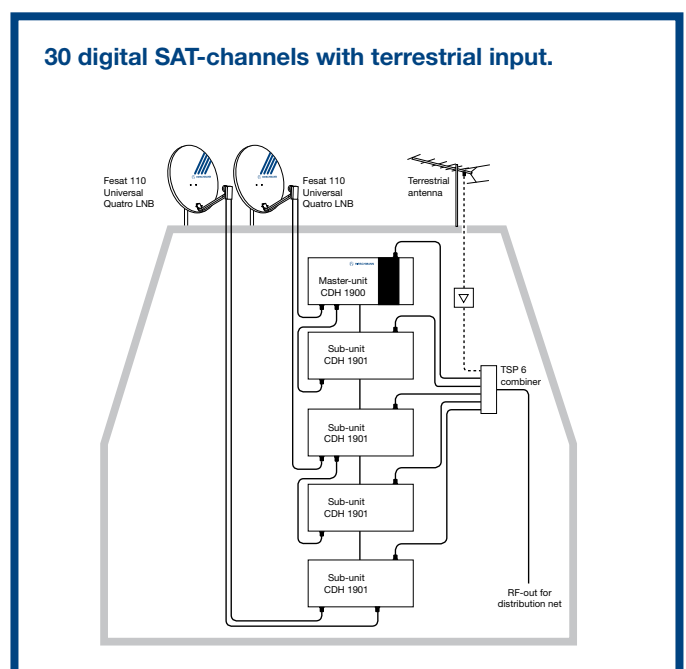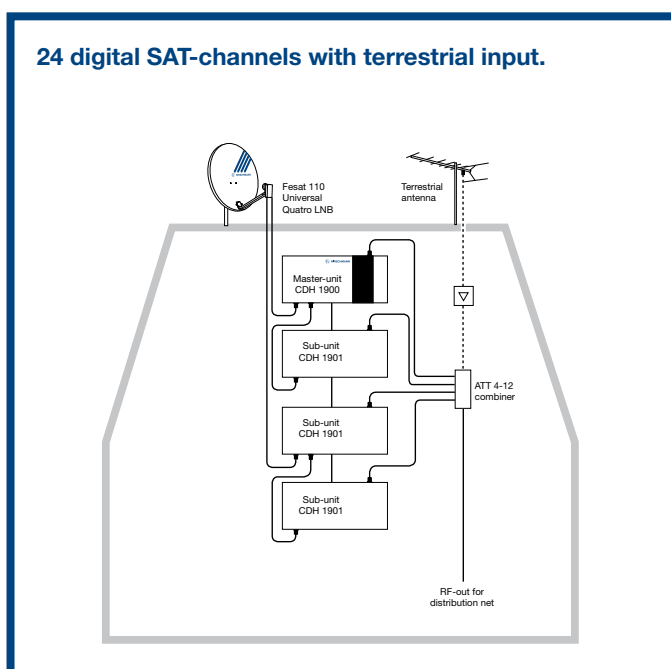| Type		TDH 775 TV-converter analogue	TDH 778 TV-converter digital	TDH 772 FM-amplifier	TDH 725 AV master VSB-modul mono	TDH 726 AV master VSB-modul A2-Stereo
Art. No.		490775	490778	490772	490725	490726
Modulator type		B/G	-	FM stereo	VSB	VSB
Input frequency range	MHz	45 - 862	50.5 - 858	87.5 - 108. 0		
Input level	dBµV	60…90	45…90		-15…-25	-15…-25
Gain	dB			9…44		
Optimum input level	dBµV	55… 80	55…80			
Output frequency range	MHz	K 2 - 69	K 2 - 69	87.5 - 108.0		
Output level max	dBµV	105	95	> 100	105	105
Output level attenuator	dB	0…10	0…10	10	10	10
Attenuation switchable in section	dB			10		
Audio mode					mono	A2-Stereo
Output channel frequency range	MHz				K 2 - 69 47-862	K 2 - 69 47-862
Notches adjustable (X 6)	dB			-10		
Noise figur	dB			< 6		
Linearity	dB			+/- 1		
Return loss (MOF in output)	dB	> 10	> 10	> 10		
MER @ MER input signal > 36 dB	dB		> 30			
TV carrier wave stability	kHz	< ±25	< ±25			
Spurious signals ref pict. carrier C/N	dB	> -60	> -60		> -60	> -60
Video input CVBS niveau	Vpp				0.7 - 1.3	0.7 - 1.3
Audio input level	V/RMS				0.5 V/RMS	0.5 V/RMS
Video S/N ratio	dB				> 54	> 54
Audio input/output					15 pol SUB-D	15 pol SUB-D
Antenna input		IEC female	IEC female			
Antenna output		IEC male	IEC male			
Temperature, operation	°C	-10...+50	-10...+50	-10...+50	-10...+50	-10...+50
Weight - standard module	kg	0.45	0.45	0.45	0.45	0.45
Dimensions (H x D x W)	mm	150 x 230 x 50	150 x 230 x 50	150 x 230 x 50	150 x 230 x 50	150 x 230 x 50
Remarks Video-/Audio-cable [Phone - Sub-D]	15 cm 150 cm			6 individual filters	Art. No. 300748 Art. No. 300745	Art. No. 300748 Art. No. 300745

Controlling accessories for CDH 1900 headend

5 ways to control your CDH 1900 headend and free software

for controlling available on www.triax.com

- Unique, simple operation via On Screen Display [OSD]
- Programming via PC
- Controll and install software via Internet by using NBOX and TDH manager

- Controll and install software via GSM modem and TDH manager
- Controll and install software via telephone modem and TDH manager
  - please see the user manual to make the correct connection of the units and you can also read more on our website about the different solutions

Type	N-port - for Internet	GSM modem - for mobile phone	Telephone modem - for access
Part No.	300766	300765	300764
Packing QTY pcs	1	1	1
What you can do	**Get access via Internet** • Install software for NBOX and TDH manager • Type in the IP address • Select one of the virtual ports • Start controlling the TDH	**Get access via GSM** • Install software for TDH manager • Dial up via built-in modem or external standard telephone modem • Insert SIM data card in the GSM modem • Connect the GSM modem to TDH 700 modem port	**Get access via phone modem** • Install software for TDH manager • Type in the telephone number • Dial up via built-in modem or external standard telephone modem • Connect the standard telephone modem to TDH 700 modem port
Remarks	Power supply included	Power supply **not** included	Power supply included

24 digital SAT-channels with terrestrial input.

30 digital SAT-channels with terrestrial input.

Channel filters

Channel filter option

For all TDH modules with a modulator it is possible to improve the C/N in networks with high number of TV channels. This is done by adding a channel filter on each module.

Channel filter

Channel filter - VHF/S-channels	
Art. No.	Type
301371	S 1 - 2 TDH channel filter
301372	S 2 - 3 TDH channel filter
301373	S 4 - 5 TDH channel filter
301374	S 6 - 7 TDH channel filter
301375	S 8 - 9 TDH channel filter
301376	S 10 - Ch. 5 TDH channel filter
301377	Ch. 6 - 7 TDH channel filter
301378	Ch. 8 - 9 TDH channel filter
301379	Ch. 10 - 11 TDH channel filter
301380	Ch. 12 - S 11 TDH channel filter
301381	S 12 - 13 TDH channel filter
301382	S 14 - 15 TDH channel filter
301383	S 16 - 17 TDH channel filter
301384	S 18 - 19 TDH channel filter
301385	S 20 - 21 TDH channel filter
301386	S 22 - 23 TDH channel filter
301387	S 24 - 25 TDH channel filter
301388	S 26 - 27 TDH channel filter
301389	S 28 - 29 TDH channel filter
301390	S 30 - 31 TDH channel filter
301391	S 32 - 33 TDH channel filter
301392	S 34 - 35 TDH channel filter
301393	S 36 - 37 TDH channel filter
301394	S 38 - 39 TDH channel filter
301395	S 40 - 41 TDH channel filter

Channel filter - UHF-channels	
Art. No.	Type
301321	Ch. 21 - 22 TDH channel filter
301323	Ch. 23 - 24 TDH channel filter
301325	Ch. 25 - 26 TDH channel filter
301327	Ch. 27 - 28 TDH channel filter
301329	Ch. 29 - 30 TDH channel filter
301331	Ch. 31 - 32 TDH channel filter
301333	Ch. 33 - 34 TDH channel filter
301335	Ch. 35 - 36 TDH channel filter
301337	Ch. 37 - 38 TDH channel filter
301339	Ch. 39 - 40 TDH channel filter
301341	Ch. 41 - 42 TDH channel filter
301343	Ch. 43 - 44 TDH channel filter
301345	Ch. 45 - 46 TDH channel filter
301347	Ch. 47 - 48 TDH channel filter
301349	Ch. 49 - 50 TDH channel filter
301351	Ch. 51 - 52 TDH channel filter
301353	Ch. 53 - 54 TDH channel filter
301355	Ch. 55 - 56 TDH channel filter
301357	Ch. 57 - 58 TDH channel filter
301359	Ch. 59 - 60 TDH channel filter
301361	Ch. 61 - 62 TDH channel filter
301363	Ch. 63 - 64 TDH channel filter
301365	Ch. 65 - 66 TDH channel filter
301367	Ch. 67 - 68 TDH channel filter

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