



**HIRSCHMANN**

Multimedia Electronics

**SHOWING THE  
DIRECTION.**



**CSE 2000 GENERATION 2 –  
UNLIMITED RECEPTION FOR  
COMMUNITY SYSTEMS**

# Outstanding concept.

## ✓ Reliable.

Decide on CSE 2000 Generation 2, the new head end from Hirschmann, and invest in a reliable and far-sighted concept that quickly pays for itself and is economical in the long term.

## ✓ Far-Reaching.

Whether digital or analogue, TV or radio channels, SAT or terrestrial signals: CSE 2000, the highly flexible head station from Hirschmann, offers unlimited reception options plus/minus 2000 participants.

## ✓ Pioneering.

Processing analogue and digital signals in full stereo quality and with integrated subtitle function. Can be reprogrammed and extended at any time.

## ✓ Unlimited.

Can be used for the digital standards DVB-S, DVB-T, DVB-C and analogue standards B/G, D/K, and I. Also suitable for feeding in external audio and video signals.

## ✓ Modular.

One basic unit with 8 freely selectable module sockets for up to 64 freely selectable channels (neighbouring channel compatible), available as twin or single module. Cascadable to extend the program variety.

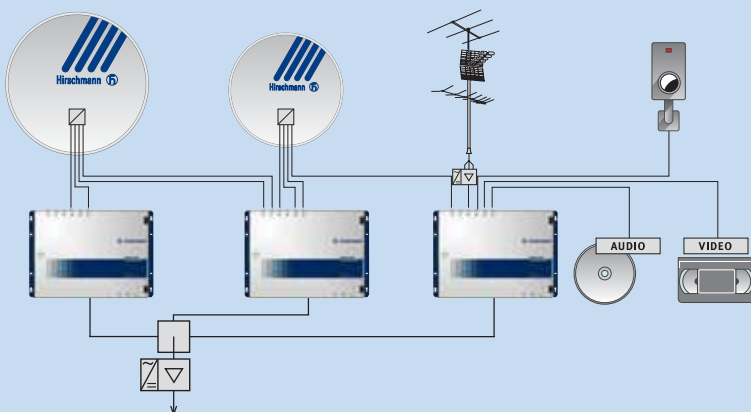
## ✓ Convenient.

Simple installation and convenient programming using new control unit with plain text display. Can be serviced remotely via modem. Programmable input distribution panel allows flexible signal assignment to modules.

### The reliable solution, flexible for many uses:

- ▶ New housing estates
- ▶ Tower blocks
- ▶ Residential estates
- ▶ Hotels
- ▶ Shopping and Leisure Centres
- ▶ Holiday Villages
- ▶ Hospitals
- ▶ Convalescence Homes
- ▶ Old People's Homes

## Example System CSE 2000



Distribution network up to 862 MHz

◀ enables the feeding of different signal sources into a shared distribution network. All plug-in modules for channel processing can be combined in any way. If necessary, several units in one system are cascadable.

# CSE 2000 GENERATION 2.

## The new generation – for growing demands.

### CSE 2000 – the modular system.

The head station has 8 freely selectable module sockets. Depending on the signal source (SAT, terrestrial, audio/video, FM) and terminal equip-

ment, the appropriate modules are combined in the quantity required. Several units can also be cascaded to increase the number of channels.



### The modules – the choice is yours.

Please refer to the table below to find out which signal sources can be processed with CSE 2000. With economical twin modules every socket can

be used for 2 channels, with digital modules for one channel (single). A separate adjustable attenuator level control on each module allows the output signals to be adjusted by -20 dB.

	Output	Twin module	Single module
<b>SAT-TV digital</b>	Stereo, Multinorm, digital (QAM)	•	
<b>SAT-TV analogue</b>	Stereo, Multinorm, OIRT, Band I	•	•
<b>TV terrestrial digital</b>	Stereo, Multinorm, digital (QAM)	•	
<b>TV terrestrial analogue</b>	Stereo, Multinorm, Band I	•	•
<b>VHF</b>	SAT analogue/digital after VHF, VHF converter, VHF amplifier	•	
<b>Audio/Video</b>	Stereo (TV/Radio), Multinorm (TV/Radio)	•	•

# The Basic Unit



## Signal Distribution

CSE 2000 has 6 adjustable SAT inputs and a distribution panel with 16 outputs. The input distribution panel is programmed simply and reliably via the central 6-key operation or externally via a PC. Terrestrial signals are directly fed to the relevant modules.

## Processing

On the output side, CSE 2000 generates an extremely low-noise signal, video S/N 54 dB. The integrated amplifier ensures a maximum output level of 104 dB $\mu$ V. This means that no extra amplifier is necessary for large networks.

## Versions

A basic unit without input distribution panel is available to simply receive audio/video signals and terrestrial signals: CSE 2000 M.

## Control Unit

The modules are programmed and the input distribution panel is controlled via the control unit. It has PC and remote interfaces as well as intuitive menu guidance with convenient plain text display.

Preconfigured versions are available for certain applications (e.g. Premiere World). Ask your dealer.

Basic Unit CSE 2000	Standard version
Order Number	940 137-001
<b>Technical Data</b>	
Channels	max. 16 (8 Twin Modules)
Dimensions W x H x D	484 x 358 x 221 mm
Operating voltage	200-250 V~, 50-60 Hz
Attenuation loop-through input	4 dB
Loop-through input	F sockets
Power consumption	max. 160 W
Serial interface	RS 232 / RJ 45 (RS 485)
Ambient temperature	0-50 °C
<b>Input distribution panel</b>	
Inputs	6
Input frequency	950-2400 MHz
Input level	60-85 dB $\mu$ V
Module connections	16 (2 per module slot)
Inputs 5-6 distributable	to modules 7,8
Inputs 1-4 distributable	to modules 1-8
Remote feeding (inputs 1, 3, 5, 6)	4 x 500 mA
Remote feeding current	max. 1 A (total)
<b>Output amplifier</b>	
Frequency range	47-862 MHz
Gain	28 dB
Attenuator	0...20 dB
Output level analogue (16 channels)	104 dB $\mu$ V
Output level digital (16 channels)	104 dB $\mu$ V
<b>Basic Unit CSE 2000 M</b>	
Order Number	940 146-001



## The Accessories

### Completely flexible structure

CSE 2000 Generation 2 is perfectly matched to the needs of community systems. The basic unit and modules can be upgraded with the relevant accessories for every individual requirement.

#### Accessories

#### Description

##### Programming software CHZ 2000 S

For connecting a CSE 2000 basic unit to a PC

Order No. 960 915-001

- Comprising software (CD)
- Operating the head end from a PC
- Windows-compatible
- Software with convenient operator interface
- Software allows configurations to be saved

##### Programming software CHZ 2000 R

For connecting up to 4 CSE 2000 basic units to a PC (cascadable for up to 16 basic units); for remote control of the head end via modem

Order No. 960 911-001

- Operating the head end from a PC
- Windows-compatible
- Software with convenient operator interface
- Software allows configurations to be saved

##### Decoder interface CHE 2000 D

For connecting a decoder or external audio/video sources to analogue SAT modules

Order No. 960 901-001

- 15-pole submin D socket for video, audio, inputs and outputs
- Can be plugged directly to the modules
- Can be controlled via switching voltage

## Fitting

### Tailor-made for installation

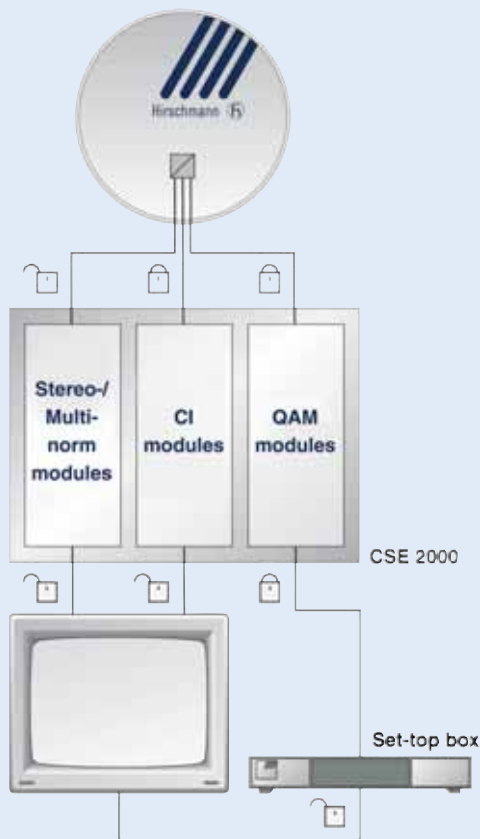
Whether in a 19" rack or directly on the wall: CSE 2000 can be installed simply and reliably even in a tight space. Thanks to the compact size of the basic unit, up to 4 head stations (max. 64 channels) can be integrated in a 19" rack - without any accessories. The sturdy, lockable housing protects connection and cables from unauthorised access. All control and adjusting elements are located on the inside.

#### Please note:

When installing in enclosed cabinets, ambient conditions and temperature conditions must be observed.



# SAT-TV digital



## The key to diversity of TV channels

Ever more channels are offered in digital, but many of them are encrypted. With CSE 2000 it is possible to feed these signals into the TV network already decoded - by modules with an integrated CI interface. If the encryption remains (e.g. with PAY TV providers), the channel is processed for the receiver or decoder via a QAM module.

SAT-TV digital		Stereo	Multinorm
<b>Twin modules without CI interface</b>		<b>CHD 2022 S</b>	
Order No.		940 141-101	
<b>Twin modules with CI interface</b>		<b>CHD 2022 SI</b>	<b>CHD 2022 MI</b>
Order No.		940 144-101	940 145-101
<b>Input</b>	Frequency range	950-2150 MHz	950-2150 MHz
	AFC	± 4 MHz	± 4 MHz
	Input level	47-70 dBµV	47-70 dBµV
	IF bandwidth, automatic	8 / 55 MHz	8 / 55 MHz
	Demodulation	QPSK	QPSK
	Symbol rate QPSK	2...35 MS/s	2...35 MS/s
<b>Output</b>	Modulation	B/G Stereo	PAL, Multinorm D/K, I, L
	Frequency range	(47) 110-862 MHz*	(45) 110-862 MHz*
	Channel spacing	7/8 MHz	8 MHz
	Output level	90 dBµV	90 dBµV
	Attenuator	0...20 dBµV	0...20 dBµV

\* with twin modules  
Band I is possible in  
single-channel mode

To process QPSK-modulated SAT-IF signals in 1 analogue PAL channel S02...K69:

- Convenient selection via screen menu
- Automatic level and quality measurement of the input signal
- Automatic error correction

# SAT-TV analogue



## Pure picture quality at all times

The input frequency of the analogue SAT modules can be set precisely in 1 MHz steps. The audio level can be adjusted by -9/+6 dB. The decoder interface CHE 2000 D can be upgraded to connect a decoder or further audio/video sources.



SAT-TV analogue		Stereo	Multinorm
<b>Single modules</b>		<b>CHS 2001 S</b>	<b>CHS 2001 M</b>
Order No.		961 106-101	961 107-101
<b>Twin modules</b>		<b>CHS 2000 S</b>	<b>CHS 2000 M</b>
Order No.		960 899-101	960 898-101
<b>Input</b>	Frequency range	950-2150 MHz	950-2150 MHz
	AFC	± 8 MHz	± 8 MHz
	Input level	47-70 dBµV	47-70 dBµV
	IF bandwidth	27 MHz	27 MHz
	Video deviation adjustable*	16 / 22.5 Mhz	16 / 22.5 Mhz
	Video polarity*	neg./pos.	neg./pos.
	Audio frequency*	5.5-9.5 MHz	5.5-9.5 MHz
<b>Output</b>	Frequency range	110-862 MHz	110-862 MHz
	TV Standard	B/G Stereo	Multinorm D/K, I, L
	Secondary emissions	60 dB	60 dB
	Output level	90 dBµV	90 dBµV
	Attenuator	0...20 dBµV	0...20 dBµV

\* via optional interface CHE 2000 D

For remodulation of 1 or 2 SAT-TV channels from the 1st SAT-IF

# TV terrestrial digital



## Programmed for new standards.

DVB-T is the new digital transmission standard for reception of television channels broadcast terrestrially.

With CSE 2000 it is possible to feed digital terrestrial signals as PAL signals into a cable network system. This means that it is also possible to receive encrypted channels.

TV terrestrial digital		Stereo	Multinorm
<b>Single modules without CI</b>		<b>CDT 2000 S</b>	<b>CDT 2000 M</b>
Order No.		940 092-001	940 093-001
<b>Twin modules without CI*</b>		<b>CHC 2022 S</b>	
Order No.		940 147-101	
<b>Single modules with CI</b>		<b>CDT 2000 SI</b>	<b>CDT 2000 MI</b>
Order No.		940 094-001	940 095-001
<b>Twin modules with CI*</b>		<b>CHC 2022 SI</b>	<b>CHC 2022 MI</b>
Order No.		940 148-101	940 149-101
<b>Input</b>	Frequency range	174-230 (VHF Ch 5-12) 470-862 (UHF Ch 21-69)	174-230 (VHF Ch 5-12) 470-862 (UHF Ch 21-69)
	Channel spacing	7 or 8 MHz	7 or 8 MHz
	Input level	30-90 dB $\mu$ V Depending on modulation parameters	30-90 dB $\mu$ V Depending on modulation parameters
<b>Output</b>	Frequency range	47-862 MHz**	47-862 MHz**
	TV Standard	B/G Stereo	Multinorm, D/K, I, L
	Channel spacing	7 bzw. 8 MHz	8 MHz
	Output level	90 dB $\mu$ V	90 dB $\mu$ V
	Attenuator	0...20 dB $\mu$ V	0...20 dB $\mu$ V

\* Delivery deployment  
4th quarter 2005

\*\* with twin modules  
Band I is possible in  
single-channel mode

- for processing COFDM modulated signals in the UHF and VHF range in 1 analogue PAL channel S02...K69
- automatic error correction
- on-screen display for radio stations

# TV terrestrial analogue



## Perfectly implemented for the best reception.

Frequency conversion of terrestrial TV channels (VHF/UHF) via the standard IF enables steep filtering with any input and output combinations.

The exact automatic amplifier control (AGC) of the modules ensures a constant output level, even with greatly varying reception signals.



TV terrestrial analogue		Stereo	Multinorm	Band I
<b>Single modules</b>		<b>CHT 2001 T</b>	<b>CHT 2001 M</b>	<b>CHT 2000 B</b>
Order No.		961 104-101	961 105-101	960 911-101
<b>Twin module</b>		<b>CHT 2000 T</b>	<b>CHT 2000 M</b>	
Order No.		960 903-101	960 973-101	
<b>Input</b>	Frequency range	45-862 MHz	45-862 MHz	45-862 MHz
	Input level	70-85 dB $\mu$ V	70-85 dB $\mu$ V	70-85 dB $\mu$ V
<b>Output</b>	Frequency range	110-862 MHz	110-862 MHz	45-470 MHz
	TV Standard	B/G Stereo	Multinorm D/K, I, L	D/K, I, L, (B/G)
	Output level	90 dB $\mu$ V	90 dB $\mu$ V	90 dB $\mu$ V
	Attenuator	0...20 dB $\mu$ V	0...20 dB $\mu$ V	0...20 dB $\mu$ V

For frequency conversion of 1 or 2 TV channels (VHF/UHF) via the standard IF

For frequency conversion of 1 or 2 TV channels (VHF/UHF) via the standard IF

For frequency conversion of 1 TV channel (VHF/UHF) via the standard IF

# SAT-TV / terrestrial digital QAM

SAT-TV digital QAM		QAM
<b>Twin modules</b>		<b>CHD 2022 QN</b>
Order No.		940 012-101
<b>Input</b>	Frequency range	950-2150 MHz
	AFC	± 4 MHz
	Input level	QPSK
	Symbol rate	2-35 MS/s
<b>Output</b>	Frequency range	110-862 MHz
	Type of modulation	16-256 QAM
	Input level	7.0 MS/s max.
	Output level	90 dBµV
	Attenuator	0..20 dBµV
		To convert QPSK-modulated SAT-IF signals in QAM modulated channels S02...K69: <ul style="list-style-type: none"> <li>• Twin modules</li> <li>• Processing the data flow (NIT) and stuffing possible</li> </ul>

TV terrestrial digital QAM		QAM
<b>Twin modules</b>		<b>CHC 2022 QN*</b>
Order No.		940 150-101
<b>Input</b>	Frequency range	164-230, 470-862 MHz
	AFC	± 4 MHz
	Input level	30-80 dBµV
	Type of modulation	COFDM 2k, 8k
	Symbol rate	2-35 MS/s
<b>Output</b>	Frequency range	110-862 Mhz
	Type of modulation	16-256 QAM
	Input level	7.0 MS/s max.
	Output level	90 dBµV
	Attenuator	0..20 dB
* Delivery deployment 4th quarter 2005		To convert COFDM-modulated terrestrial signals in QAM modulated channels S02...K69: <ul style="list-style-type: none"> <li>• Twin modules</li> <li>• Processing the data flow (NIT) and stuffing possible</li> </ul>

# VHF

## Digital radio stations via satellite

The FM modules of the CSE 2000 system open up all possibilities for receiving digital radio via satellite. But they also ensure brilliant stereo reception with analogue stations.



VHF		SAT analogue -> VHF	VHF Converter	VHF Amplifier	SAT digital -> VHF
<b>Twin modules</b>		<b>CHA 2000 A</b>	<b>CHA 2000 U</b>	<b>CHV 2000 U</b>	<b>CHD 2022 U*</b>
Order No.		960 905-101	960 906-101	960 904-101	940 161-101
<b>Input</b>	Converted channels	2 (Twin)	2 (Twin)	-	2 (Twin)
	Frequency range	950-2150 MHz	87.5-108 MHz	87.5-108 MHz	950-2150 MHz
	AFC				± 4 MHz
	Input level	47-70 dBµV	53-99 dBµV		47-70 dBµV
	Type of modulation				QPSK
	Symbol rate				2-35 MS/s
	Analogue subcarriers	6-9 MHz			
	ADR subcarriers	0,18-9 MHz			
<b>Output</b>	Gain			34 dB	
	Noise figure			3 dB	
	Attenuation per suppression filter			14 dB	
	Frequency range	87.5-108 MHz	87.5-108 MHz	87.5-108 MHz	87.5-108 MHz
	Output level	91 dBµV	91 dBµV	91 dBµV	91 dBµV
	Attenuator	0...20 dB	0...20 dB		0...20 dB

\* Delivery deployment 4th quarter 2005

Twin module SAT-analogue with VHF modulator

- Processes analogue and digital subcarriers (ADR)
- Generates RDS signal
- Feeding in external audio signals with CHE 2000 D possible

Twin module VHF converter

- Common channel operation possible
- Automatic amplification control (AGC)

Single module VHF converter

- Six adjustable suppression filters
- Two suppression filters can be adjusted to increase attenuation on the same frequency

Twin module SAT digital with VHF modulator



## Audio / Video

### External signals directly into the network

With the broadband modulators from CSE 2000 external audio/video signals, e.g. from special decoders or surveillance cameras, can be fed directly into the distribution network.

All modules support the PAL and SECAM colour standards.



Audio/Video		Stereo	Multinorm
<b>Single modules</b>		<b>CHM 2001 S</b>	<b>CHM 2001 M</b>
Order No.		961 108-101	961 109-101
<b>Twin modules</b>		<b>CHM 2000 S</b>	<b>CHM 2000 M</b>
Order No.		960 912-101	960 913-101
<b>Input</b>	Video input	1 Vss	1 Vss
	Video bandwidth	20 Hz-5 MHz	20 Hz- 5 MHz
	Audio	Mono / Stereo / 2-audio	Mono
	Audio input	500-700 mVrms / 10 kΩ	500-700 mVrms / 10 kΩ
	Audio bandwidth	40 Hz-15 kHz	40 Hz-15 kHz
<b>Output</b>	Frequency range	110-862 MHz	110-862 MHz
	TV Standard	B/G Stereo	Multinorm D/K, I, L
	Output level	90 dBμV	90 dBμV
	Attenuator	0...20 dBμV	0...20 dBμV

For modulation of audio/video signals in 1 or 2 VHF/UHF channels according to B/G standard:

- Adjacent channel compatible
- Incl. decoder interface

For modulation of audio/video signals in 1 or 2 VHF/UHF channels according to D/K, I or L standard:

- Adjacent channel compatible
- Incl. decoder interface