OPTICODEC 7600

Operating Manual

orban

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Software V5.06.85/2010

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The "ISO-MPEG Audio Layer 2 and Layer 3" compression procedures developed by the Fraunhofer Institute and the Institut für Rundfunktechnik allow audio signals (even large amounts of data) to be reduced in real time and transferred without any subjective loss of quality. The digitised signals received in this form are compressed (encoded) to save on transmission bandwidth, time and cost.

CODEC is a word coined from the verbs "enCOde" and "DECode" and stands for a new data transfer technology via ISDN, Internet, Ethernet or satellite.

The principle of codec technology for audio data reduction is based on the frequency-dependent sensitivity of the human ear. According to its objective auditory properties and subjective hearing habits, the ear ignores certain sounds and concentrates on the most essential ones: the message. This contrasts with purely electronic techniques which hear everything, even the non-essential noise.

The codec technology takes advantage of the differences between the human ear and electronic measuring devices when transferring data. By masking all meaningless noise, even the minutest, a reduction ratio is achieved which is necessary to transport large amounts of data in real time via ISDN, for example. The data is instantly decompressed and subjected to A/B comparison and then the ear at the other end of the line hears only what it is intended to hear –
no more and no less.

Some typical examples of data reduction rates achieved with ISO-MPEG1 can be seen in the following table:

Algorithm	**Bitrate (kbps)**	**Audio Mode**	**Reductions ratio**
in Layer I	384	Stereo	1:4
in Layer 2	192...256	Stereo	1:6...1:8
in Layer 3	112...128	Stereo	1:10...1:12

The OPTICODEC 7600 complies with the following directives, regulations and standards:

VDE

EN 60950/VDE 0805/IEC 950: Protection Class 1.
VBG4, §5 Para. 4: Accident Prevention Regulations for "Electrical Systems and Materials".

CE

EC directives: EMV 89/336/EWG and "Low Voltage Directive" 73/23/EWG.

EMV

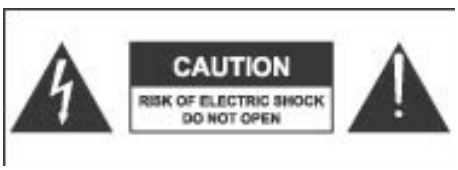
EMC Directives: Standards
DIN EN 55103-1 (June 97)- interference radiation, environment E1,
DIN EN 55103-2 (June 97)- noise immunity, environment E5, severity level 4 (according to ITU/R recommendation 500-4).

Note on EMC Measures

According to the requirements of the EMC Act, the regulations governing electromagnetic compatibility, it is necessary to observe the following measures when using/manufacturing connection cables:

- For all connections, shielded cables must be used (with respect to audio cables, the well-known EMT 211 cable has proven its worth).
- The shields should be soldered to the GND connections and additionally to the connector shell directly.
- For 3-pole audio connectors/jacks (type XLR), the corresponding mating connectors/jacks manufactured by NEUTRIK must be used.
- The connections of pin 4 (housing) must be connected to pin 1 (ground).

Marking of Electrical and Electronic Equipment according to Directive 2002/96/EC (WEEE) or the German Electrical and Electronic Equipment Act (ElektroG).
To recycling an OPTICODEC, please contact your OPTICODEC distributor.



Warning about dangerous voltages.
To prevent the risk of electric shock, never remove the cover of the housing.

Description

The OPTICODEC 7600 is a full duplex audio codec with ISDN and USB interfaces as standard. The OPTICODEC 7600 is also equipped with an Ethernet connection (100Base-TX) for remote control and to provide the option of distributing audio via networks such as Intranet, ATM, etc. as well as TCP for point-to-point connections and UDP for SIP/RTP connections.

Installation

The OPTICODEC is designed for installation in 19“ racks. Installation with additional mounting rails is recommended because of the depth of the device. The OPTICODEC has no internal fan and does not require compulsory ventilation when installed. A minimum distance does not have to be observed between installed devices.

Ethernet/ISDN Cabling

Correct operation of the OPTICODEC is only guaranteed when the supplied RJ45 type CAT5 cable is used.

ISDN Connection

Correct operation of the OPTICODEC is only guaranteed when the device is connected to a German Telekom S_0 connection. When operating the unit on PBXs, several adjustments are necessary (refer to the chapter 'System Setup'). It is not possible to adapt the unit to work with certain types of PBXs.

GPL Software

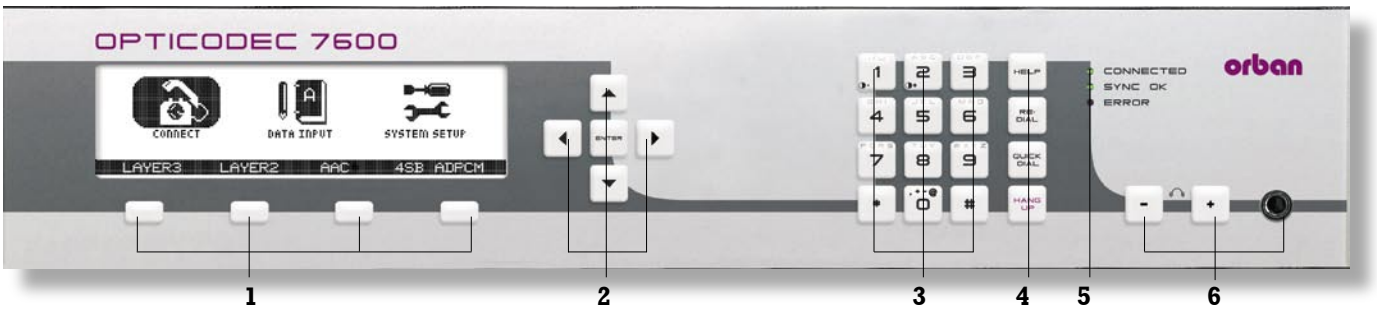
The Software included in the Opticodec 7600 contains copyrighted software that is licensed under the GPL and LGPL. A copy of these licences is included in this manual on pages 60 and 65. A copy of this software can be found on the CD which is included with the unit in the directory 'GPL-Software'.

Note

The Adobe PDF form of this manual contains numerous hyperlinks and bookmarks. Each bookmark referring to a numbered step or a page number is a live hyperlink, click on it to go immediately to that reference. If the bookmarks are not visible, click the bookmarks tab on the upper left side of the Acrobat Reader window. This manual has a table of contents and index. Alternatively use the Adobe Acrobat Reader text search function to search for a specific word or phrase.

The information, illustrations and processes contained in this manual have been compiled to the best of our knowledge and have been tested with due care. ORBAN Europe GmbH and the authors of this manual shall not be made liable in any which way whatsoever for technical or editorial errors or omissions contained herein and will assume no responsibility whatsoever for incidental or consequential damages in connection with the furnishing, performance or use of this material. This manual is for information purposes and is intended for the use of OPTICODEC owners and their authorised personnel only. This manual and its content may not be passed on to third parties in whole or in part, reproduced, translated or duplicated in any form whatsoever. Hereby the right to register utility models or patent applications is expressly reserved.

In the case of violation or non-compliance resulting in consequential losses, ORBAN Europe GmbH may be entitled to claim damages according to the German BGB, HGB as well as the Competition Law and Patents Act.



Graphic Display Module 240 x 64 pixels.

Keypad (1) Four multifunction keys or programmable direct dial keys (via 'System Setup').

(2) Four arrow keys. Movement of the cursor
ENTER confirms the selected menu item.

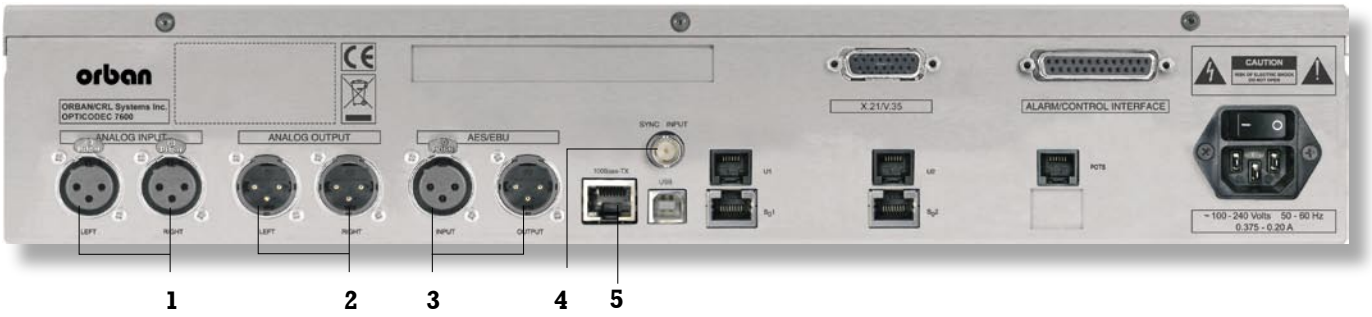
(3) Numeric keypad, entry of numbers/characters.
◑– ◑+ Display contrast setting (only in standby mode).

Key	Character				
1	1	. (point)	/	␣ (space)	
2	2	A	B	C	
3	3	D	E	F	
4	4	G	H	I	
5	5	J	K	L	
6	6	M	N	O (as 'OSLO')	
7	7	P	Q	R	**S**
8	8	T	U	V	
9	9	W	X	Y	**Z**
0	0	, (comma)	+ (plus)	- (minus)	@
*****	*	. (point)			
#	#	: (colon)			

(4)
HELP Activate online help menu (only in submenus).
REDIAL Call previously dialed number.
QUICK DIAL Establish connection using the speed dial directory.
HANG UP Ends an action performed.

(5) Control LEDs Signalise a correct or refused connection.

(6) Headset volume control keys and 6.3 mm stereo standardised jack.



(1) Audio input, symmetrical

Level: -4 dBu to +21 dBu adjustable via 'System Setup' (+12 dBu preset)
Input Imped.: ≧10 kOhm (switchable via to 600 Ohm, jumper JP 800/801
Connector: XLR jack (female)

Pin	1	2	3
Assignment	GND	IN (+)	IN (-)

(2) Audio output, symmetrical

Level: -4 dBu to +21 dBu adjustable via 'System Setup' (+12 dBu preset)
Output Imped.: ‹ 50 Ohm
Connector: XLR jack (male)

Pin	1	2	3
Assignment	GND	OUT (+)	OUT (-)

(3) Digital input/output (AES/EBU standard)

Level: according to IEC 958, prof. format
Connector: XLR jack (female/male)

Pin	1	2	3
Assignment	GND	IN/OUT (a)	IN/OUT (b)

(4) External synchronisation

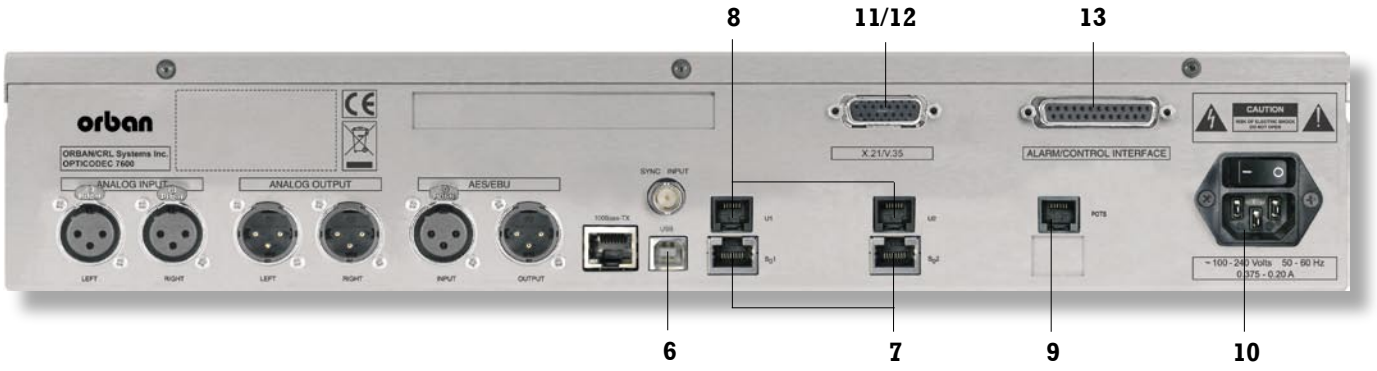
adjustable via 'System Setup'
Connector: BNC jack (male/male)
Signal level: TTL

Pin	Spitze	Ring
Assignment	IN	GND

(5) Standardised plug connection to Ethernet

Transfer rate: 10/100 Mbit/s
Connector: RJ45

Pin	1	2	3	6
Assignment	TD+	TD-	RD+	RD-



(6) Standardised USB interface

USB 2.0 compatible.
Connector: USB B

Pin	1	2	3	6
Assignment	VBUS	D-	D+	GND
Function	+5 VDC	Data -	Data -	Ground

(7-8) Standardised plug connection to ISDN network

Transfer rate: 2 x B + D-channel per S_0 slot
Connector: up to 3 RJ45 jacks for S_0 connections

Pin	1	2	3	4	5	6	7	8
Assignment			T+	R+	R-	T-		

up to 3 RJ11 jacks for U connections
(for US and Canadian networks only)

Pin	1	2	3	4	5	6
Assignment			U	U		

Note The ISDN connections must be used in ascending order only .

(9) Standardised POTS plug connection to analog telephone network

Transfer rate: 1 x B-channel
Connector: RJ11 for POTS connections

Pin	1	2	3	4	5	6
Assignment			P	P		

(10) Power supply

100 - 240 V AC, 50 - 60 Hz, 0.375 - 0.20 A, max. 25 VA

The OPTICODEC is equipped with a primary pulse-controlled power supply unit. Mains voltage conversion for the above indicated range is not required.

Connection

Power supply fuse: 3.15 A in the power supply unit (type: Schurter MXT 315).
3-pin coupler plug.

(11) Serial synchronous connection (X.21)

(Optional) for the transfer of encoded audio data to an external data transfer terminal device, e.g. terminal adapter or satellite MODEM.

Transfer rate: 8 to 384 kbps
Connector: 5-pin Sub-D jack

Pin	1	2	3	4	5	6	7	8
Assignmt.	NC	Tx (a)	CTR (a)	Rx (a)	IND (a)	CLK (a)	NC	GND
Function*		**O**	**O**	**I**	**I**	**I**		

Pin	9	10	11	12	13	14	15
Assignmt.	Tx (b)	CTR (b)	Rx (b)	IND (b)	CLK (b)	NC	NC
Function*	**O**	**O**	**I**	**I**	**I**		

* related to OPTICODEC **O**=output **I**=input

(12) Serial synchronous connection (V.35)

(Optional) serves for the automatic establishment of a connection between two MODEMs communicating over public telephone networks.

Transfer rate: 8 to 384 kbps
Connector: 34-pin jack

Pin	B	F**	L**	R	V	Z, DD, JJ	NN**
Assignmt.	SGND	DCD	LL	RD (a)	SCR (a)		TM
Function*	Ground	Control	Control	Data	Timing	***	Control
		I	**O**	**I**	**I**		**I**

D	J**	N**	T	X	BB, FF, LL	A	E	K	P
CTS	CI	RL	RD (b)	SCR (b)		SHD	DSR		TD (a)
Control	Control	Control	Data	Timing	***	Ground	Control	***	Data
I	**I**	**O**	**I**	**I**			**I**		**O**

U	Y	CC, HH, MM, M	C	H	S	AA	W, EE, KK
	SCT (a)		RTS	DTR	TD (b)	SCT (b)	
***	Timing	***	Control	Control	Data	Timing	***
	I		**O**	**O**	**O**	**O**	

* related to OPTICODEC **O**=output **I**=input
** assigned, but unused
*** not assigned.

(13) Alarm/Control and RS232 Interface

(Optional) For use as 'remote control interface' or for 'ancillary data', adjustable via 'System Setup'.

The switching commands of the OPTICODEC inputs are transmitted and made available as open collector signals at the remote end. The inputs and outputs (like the GND connections 13, 25) are electrically isolated from one other via an optoelectronic coupler.

Format:
9600 Baud ('Remote Control')
0 .... 9600 Baud ('Ancillary Data')
8 data bits
1 stop bit
no parity
no handshake.

Table of implemented ancillary data:

Data rate: (kbps)	8	16	24	32	48	56	≥64	≥128
Layer 2: (Baud)	0	1200	1200	2400	2400	2400	4800	4800
Layer 3: (Baud)	0	1200	1200	2400	2400	4800	4800	9600

Note

If the software version of one or both of the OPTICODECs is < V4.10, then a Baud of 1200 is always utilised.
If the software version of both units ≥ V4.10, the OPTICODECs are automatically set to the lowest default ancillary data rate.

Assignment

Connector: 25-pin Sub-D jack

Pin	1	2	3	4	5	6	7
RS232	NC	Rx	Tx		GND		
Alarm/Control	NC			IN8	GND	IN7	IN6
Function*				Red-Light IN		Reset	Index

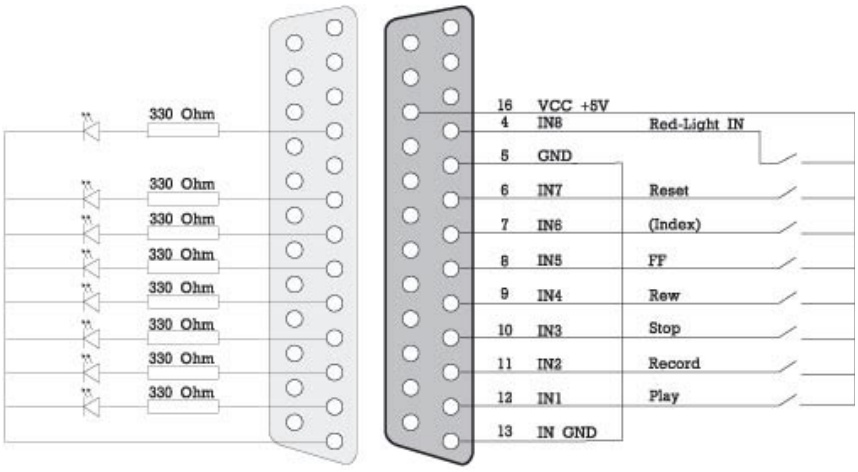
Pin	8	9	10	11	12	13
Alarm/Control	IN5	IN4	IN3	IN2	IN1	IN GND
Function*	FF	Rew	Stop	Record	Play	**

Pin	14	15	16	17	18	19
Alarm/Control	NC	NC	VCC	OUT8	OUT7	OUT6
Function*			+5V	Red-Light	Reset	Index
System Setup ***					DIS	CON

Pin	20	21	22	23	24	25
Alarm/Control	OUT5	OUT4	OUT3	OUT2	OUT1	GND
Function*	FF	Rew	Stop	Record	Play	****

* related to the OPTICODEC
** common earth for all inputs
*** see also 'Alarm Signals' (page #44)
**** common earth for all outputs

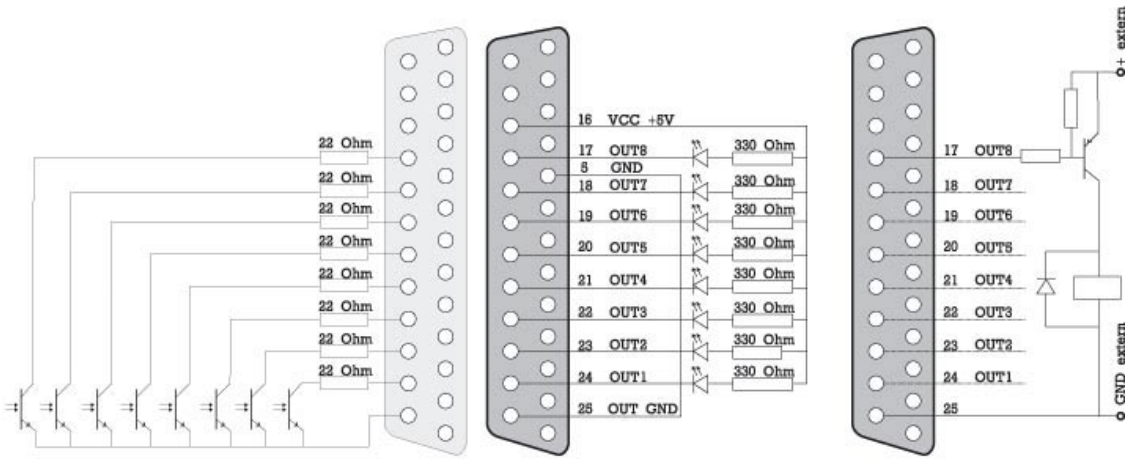
Input wiring Imax.: 10 mA



internal external

Output wiring Imax.: 10 mA
Umax.: 25 V

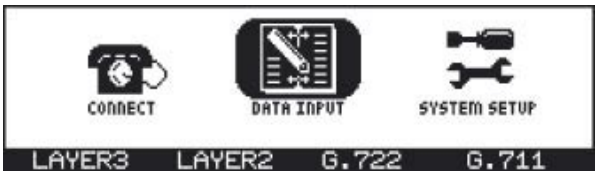
or



internal external external

Important The recommended functions of the inputs and outputs correspond to the way these are assigned by the OPTICODEC user. These assignments should be taken over to avoid problems in the remote control of externally connected devices during transmissions between different OPTICODEC units.

After switching on the device and running through the initialisation sequence, the configuration menu of the OPTICODEC appears (see also 'Status Messages', page 55).

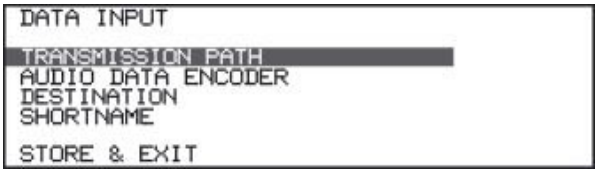


After selecting the menu 'Data Input' and confirming with the 'Enter' key, the directory of IP addresses, ISDN numbers, names and audio configurations appears, in which a maximum of 96 entries can be stored.

Creating a New Recipient

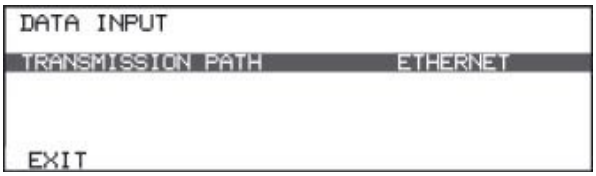
Select a free position to create a new connection partner or select an already existing entry for a possible correction.
Confirm with the 'Enter' key.

Transmission Path



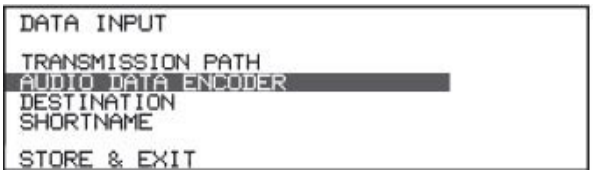
First set the desired connection mode in the network. By pressing the 'Enter' key, you can set an ISDN, X.21 (or V.35), Ethernet or 'Codec loop' connection.

Ethernet Connection



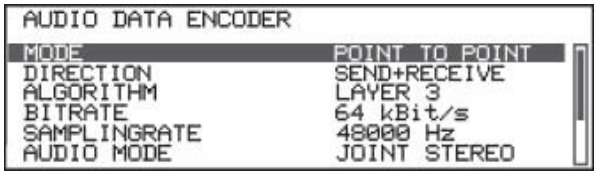
If an Ethernet connection is desired, then 'ETHERNET' must be set on the transmission path line.

Audio Data Encoder



In this menu item, all audio parameters of an intended connection are set.

Mode



To transfer audio signals in real time over IP networks (VoIP = Voice over IP), four protocols are used:

Point-to-Point A bi-directional connection between two units. TCP is utilised as the protocol, possible transmission errors are corrected to a certain degree by this protocol.

These entries are marked with an 'x' in the Sync column of the directory.

SIP/RTP The SIP (Session Initiation Protocol) signalling protocol is responsible for the establishment, termination and control of connections and RTP (Real-time Transport Protocol). The actual voice connection is created using data units (streams) by means of RTP.

These entries are marked with an 'n' in the Sync column of the directory.

RTP RTP is a special protocol for the transmission of realtime data (here for audio signals) and uses UDP (User Data Protocol) as the transport protocol.

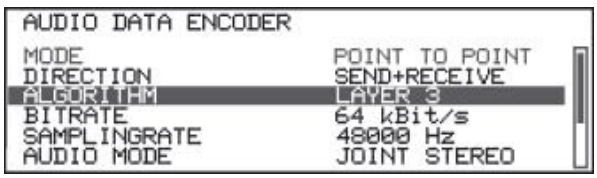
These entries are marked with an 'r' in the Sync column of the directory.

RTSP The Realtime Streaming Protocol is a network protocol to control the continuous transmission of audiovisual data (streams) over IP based networks.

Direction This function controls the direction of communication.

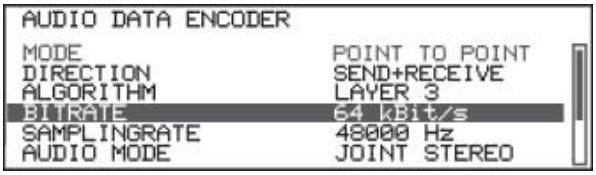
Point-to-Point	Send+Receive
SIP/RTP	Send+Receive
RTP	Send+Receive
RTSP	Send only
	Receive only.

Algorithm The 'Algorithm' menu item is used to preset the desired data reduction procedure on outgoing calls.



By pressing the 'Enter' key, you can select between
Layer 3, Layer 2, G.722 (H.221 and SRT), G.711, Linear 8-bit, Linear 12-bit, Linear 16-bit, Linear 20-bit and Linear 24-bit.

Bitrate



According to the algorithm setting and the number of outgoing B-channels, the transfer rate is set here:

Layer 2 and Layer 3:	8, 16, 24, 32, 40, 48, 56, 64, 80, 96, 112, 128, 144, 160, 192, 244, 256, 320, (384 kbps only Layer 2)
G.711 and G.722:	64 kbps
Linear 8-bit:	256, 384, 512 and 768 kbps
Linear 12-bit:	384, 576, 768 and 1152 kbps
Linear 16-bit:	512, 768, 1024 and 1536 kbps
Linear 20-bit:	640, 960, 1280 and 1920 kbps.
Linear 24-bit:	768, 1152, 1536 and 2304 kbps.

Samplingrate

The 'Samplingrate' menu item is used to set the desired sampling frequency on outgoing calls.
You can choose between:
8, 16, 22.05, 24, 32, 44.1 and 48 kHz.

Audio Mode

The 'Audio Mode' menu item is used to set the desired audio behaviour on outgoing calls.

Mono	Mono signal. The left input is used.
Dual Mono	Two different signals which do not jam each other, e.g. left channel - original soundtrack; right channel - translation.
Stereo	As for Dual Mono, each channel is encoded separately, but with the difference that a channel is allocated excess bits if less or no audio is transmitted on the other channel (i.e. bit distribution as needed).
Joint Stereo	Comparable with MS stereophony (middle/side signal). Encodes the sum of left and right and the difference between left and right; these are encoded and transmitted separately (subjectively better quality at low data rates).

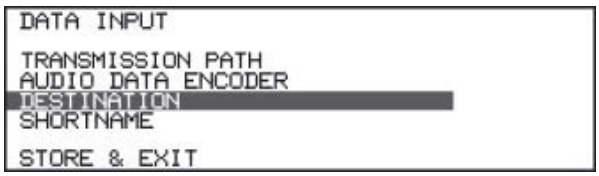
Audio Input

The 'Audio Input' menu item is used to set the desired audio input on outgoing calls.
You can choose between: Analog and AES/EBU.

Userdata

The menu item 'Userdata' can be reached by moving the cursor downwards. It is used to set the desired ancillary data on outgoing calls.
You can choose between:
OFF (no ancillary data is transferred)
1200, 2400, 4800 baud with Layer 2 and
1200, 2400, 4800, 9600 baud with Layer 3.

Destination When selecting an Ethernet connection, the target address entry is automatically activated on the third line.



You may enter both IP address and host names*.
* Only if a name server also exists.

Here the IP address or the unit name for the desired connection is entered.

F4 By pressing the F4 key, switch between a numeric, upper-case or lower-case entry. The entry is made using the numeric keypad.

F2 By pressing the F2 key, delete an entered number.

F1 By pressing the F1 key, exit the entry screen.

Shortname For the easier identification of devices, the short name of the partner audio codec is entered here with a max. length of 7 characters.

Store & Exit With this function, the entries are stored in the ISDN/IP directory and the 'Data Input' menu is exited.
To complete, press the 'Enter' key or the F1 key.

Point-to-Multipoint Connection Transmitter Settings:

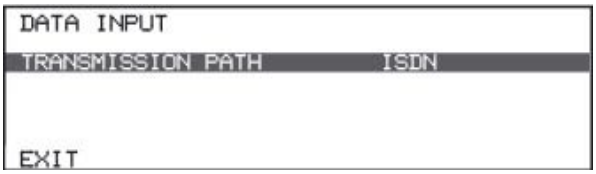
Transmission Path:	Ethernet
Audio Data Encoder	Point-to-Point
	desired configuration
Destination	127.0.0.1

Once a connection has been established ('Connect') for this entry, the level meter of the transmission is displayed. A counter indicating the number of receivers currently connected to the transmitter also appears on the display.

The receiver settings are the same as for a regular 'Point-to-Point' connection. The receiver automatically recognizes that the partner unit is only transmitting and will accordingly show just the level meter of the received audio signal.

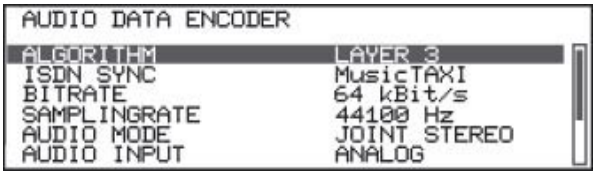
ISDN Connection

If an ISDN connection is desired, then 'ISDN' must be set on the transmission path line.



Audio Data Encoder

As the description for Ethernet connections, the audio parameters of a the planned connection are set here. The menu guides you through algorithm, ISDN sync, bitrate, samplingrate and finally userdata.



Algorithm

The 'Algorithm' menu item is used to preset the desired data reduction procedure on outgoing calls.

By pressing the 'Enter' key, select between G.711, G.722, Layer 2, Layer 3 and 4SB ADPCM (optional).

ISDN Sync

The 'ISDN Sync' menu item is used to set the desired synchronisation procedure of the partner codec.
The available sync modes for Layer 3 are:
AUTO – automatic codec detection
MusicTAXI (MusicTAXI sync for 1 to 6 B-channels)
NO SYNC for the use of 1 x B-channel
NO SYNC (INV) for the use of 1 x B-channel
ZEPHYR (Telos sync for 2 B-channels)

For Layer 2:
AUTO – automatic codec detection.
MusicTAXI (MusicTAXI sync for 1 to 6 B-channels)
NO SYNC for the use of 1 x B-channel
NO SYNC (INV) for the use of 1 x B-channel
PRIMA (CCS sync for 2 B-channels)

AETA (for 4SB ADPCM; optional).

The activation of the AETA sync and 4SB ADPCM algorithm (not included in the standard delivery) is performed via 'System Setup' ›› 'Base Configuration' ›› 'Enter Key Code' and depends on the device type and its serial number. Each device receives a unique key code.

Bitrate

According to the algorithm setting and the number of outgoing B-channels, the transfer rate is set at: 64, 128, 192, 256, 320 or 384 kbps for layer 2 and 64, 128, 192, 256 and 320 kbps for Layer 3.

Samplingrate The 'Samplingrate' menu item is used to set the desired sampling frequency on outgoing calls.
You can choose between: 16, 22.05, 24, 32, 44.1, 48 kHz,
AUTO (the sampling frequency of the addressing device is used)

Audio Mode The 'Audio Mode' menu item is used to set the desired audio behaviour on outgoing calls.
You can choose between: Mono, Dual Mono, Stereo and Joint Stereo (pls. see page 18).

Audio Input The 'Audio Input' menu item is used to set the desired audio input on outgoing calls.
You can choose between: Analog and AES/EBU.

Userdata The menu item 'Userdata' is accessed by moving the cursor downwards. It is used fto set the desired ancillary data on outgoing calls.
You can choose between:
OFF (no ancillary data is transferred)
1200, 2400, 4800 baud with Layer 2 and
1200, 2400, 4800, 9600 baud with Layer 3.

Note If the ancillary data is switched off (OFF), no alarm control signals are not transmitted either.

Between OPTICODECs, the smallest preset baud rate of the ancillary data is used in the context of the device handshake.

ISDN Numbers

Here an entry is made using the numeric keypad. A maximum of 22 digits are available.

After entering the ISDN number, press the 'Enter' key to move between the ISDN entry fields. Use the 'Copy' key to copy a number and to paste it into to the next entry field. With the 'Delete' key, activate the correction and deletion processes.

Shortname As soon as the ISDN number and audio parameters have been entered, allocate a neme to the recipient of up to 7 characters. The entry is made using the numeric keypad.
With the 'Delete' key, activate the correction and deletion processes.

Store & Exit By pressing the 'Enter' key or the F1 key, the activated entries are stored in the ISDN/IP directory and the 'Data Input' menu is exited.

G.711 Connection

If the creation of a G.711 participant is desired, enter 'G.711' as the algorithm in the configuration menu.

```
AUDIO DATA ENCODER

ALGORITHM              G.711
ISDN SYNC              ---
BITRATE                64 kBit/s
SAMPLINGRATE           8000 Hz
AUDIO MODE             MONO
AUDIO INPUT            ANALOG
```

These entries are marked with an telephone handset symbol in the Algorithm column of the directory.

G.722 Connection with H.221 or SRT Sync

A G.722 participant is created in the same way. In the configuration menu, enter 'G.722' as the algorithm and 'H.211' or 'SRT" as the ISDN Sync.

These entries are marked with 'G7' in the Algorithm column and 'H' (for H.221) or 'S' (for SRT) in the Sync column of the directory.

4SB ADPCM Connection

These entries are marked with a '4S' in the Algorithm column of the directory.

X.21 / V.35 Connection

The OPTICODEC can be equipped with an optional X.21 interface. To activate this interface, select 'X.21' under 'Transmission Path'.
The OPTICODEC can also be equipped with an optional V.35 interface. To activate this interface, select 'V.35' under 'Transmission Path'.

Codec Loop

To create a 'Codec Loop' connection, select 'Codec Loop' under 'Transmission Path'. This is used as a test for the encoded/decoded audio signal (without an ISDN connection).

ISDN/IP Directory

Here is an example of an internal OPTICODEC telephone directory.

```
DIRECTORY

  1 OC76/01 00497141226622  48 J  256 L3 M
  2 OC76/02 192.168.206.251 48 J   64 L3 x
  3 TELOS/Z 00497141226696  48 S  128 L3 z
  4 PRIMA   07141226625     48 D   64 L2 P
  5 SCOOPY  07141414141     32 M  128 4S
  6 AETA H4 192.168.206.51  32 M  128 4S x
  7 SWR3    00497111123123  16 M   64 G7 H
  8 BR      00498994747     16 M   64 G7 S
  9 HR3     0180225588       8 M   64
 10 T X.21  X.21/V.35       48 M   64 L3
 11 T LOOP  CODECLOOP       48 J   64 L3
 12 OC76/44 192.165.206.44  48 M   64 L3 x
 13 OC76/55 192.165.206.55  48 M   64 L3 s
 14 OC76/66 192.165.206.66  48 M   64 L3 r
 15 MULTI P 127.0.0.1       48 M  128 L3 x
 16 CENTAUR 192.165.206.77  48 S  128 L3 s
 17                         48 M   64 L3
 18                         48 M   64 L3
```

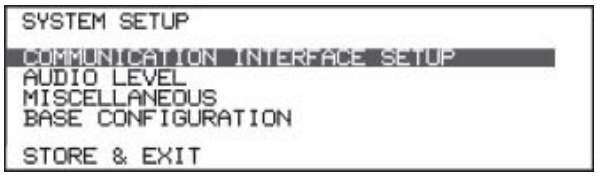
Only 6 lines are displayed at a time on the OPTICODEC screen.

Deleting a Recipient

From the ISDN/IP Directory, select an entry to be deleted. Under 'Data Input' ›› 'ISDN Numbers', press the 'Delete' key.
The 'Shortname' is deleted in the same way.
The deletion process is carried out with the 'Store&Exit' function.

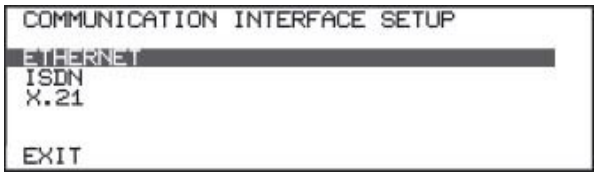
The menu item 'System Setup' is used to configure individual OPTICODEC units.

Communication Interface Setup



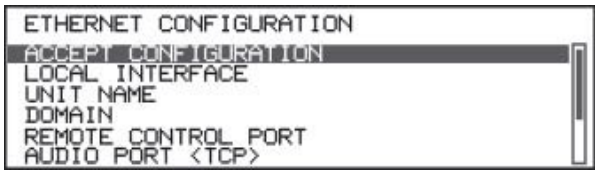
The OPTICODEC 7600 can be configured either for ISDN, Ethernet, X.21 or V.35 connections. To do so, select the appropriate submenu.

Ethernet Configuration



Accept Configuration

In this menu item the base configuration of the OPTICODEC for Ethernet operation is set.

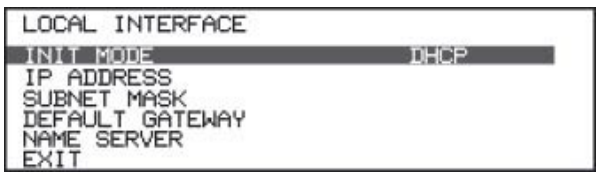


Audio Data Encoder

The encoder configuration entered here is applied when the OPTICODEC is addressed over IP by another OPTICODEC The pre-settings are 'AUTO'. Changes can be made to 'Bitrate', 'Audio Input' and 'Userdata' only.

This is used for Point-to-Point and RTP connections.

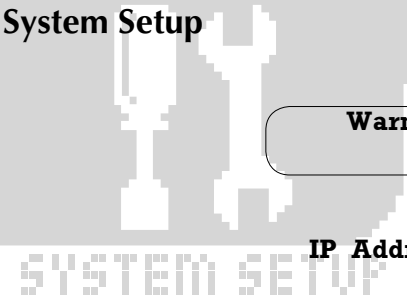
Local Interface



Init Mode

With this menu item the initialization mode of the OPTICODEC is set. You can choose between:

Manual	Manual setup of your IP address
DHCP	Dynamic Host Configuration Protocol (DHCP) permits, with the aid of a corresponding server, the dynamic allocation of an IP address and additional configuration parameters in a TCP/IP network (e.g. Internet or LAN)
Disabled	Network interface deactivated.



Warning If the functions 'DHCP' or 'Disabled' are activated, all additional sub-menus are disabled.

IP Address In the data entry mask, enter the IP address of your OPTICODEC. Important is that every connection to the network must possess its own unique IP address.

Subnet Mask The Subnet Mask is used to subdivide a network into smaller subnets, in order to reduce the data traffic on the subnets and/or permit better administration of the data traffic.

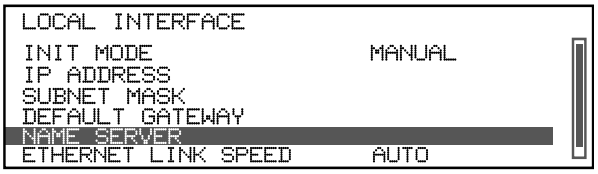
Default Gateway The exchange of data between diverse networks nodes is not visible for the user. However, the IP software detects when a data packet is intended for a different subnet and sends it to the corresponding gateway.

If necessary, you can enter the IP address of a router here. Otherwise, 0.0.0.0 must be entered.

Warning Only applicable to the use of NETControl software:
If the IP ADDRESS and/or SUBNET MASK are modified so that the device and the workstation with the NETControl program are located on different networks, then access to the device is no longer possible from that workstation.

The IP address, subnet mask and default gateway are communicated to you by your network administrator.

Name Server



Domain Name Servers (DNS), also called name servers in short, are responsible for the conversion of Internet hostnames into Internet addresses, since the actual communication in TCP/IP networks is based on IP addresses.
Enter the IP address of your DNS here.

If DHCP is activated, this menu item is disabled or the settings are taken from the DHCP server.

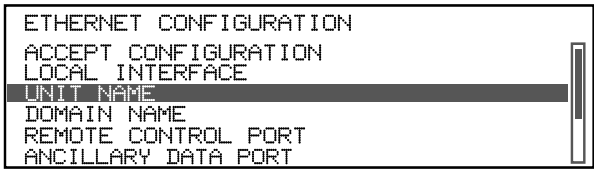
Ethernet Link Speed This controls the ethernet link speed

AUTO	automatic configuration
10 MBIT/S HDX	10 Mbit/s half duplex
10 MBIT/S FDX	10 Mbit/s full duplex
100 MBIT/S HDX	100 Mbit/s half duplex
100 MBIT/S FDX	100 Mbit/s full duplex.

The current configuration of the ethernet link can be shown in the main menu by pressing 5x the key 7.

Exit By selecting the function 'Exit' and confirming with 'Enter', you leave this menu item.

Unit Name



For the easier identification of devices on the network, the name of your OPTICODEC must be entered here without a restriction in name length. This name is transmitted to the remote control program and displayed on the device list.

If a change is necessary, position the cursor in the desired place and press the 'Delete' key. Confirm your entries by pressing the 'Enter' key.

Domain Name

Enter the name of your domain here.
If DHCP is activated, this menu item is disabled or the settings are taken from the DHCP server and the OPTICODEC can be addressed via 'Unitname.Domainname'.

Remote Control Port

The menu item 'Remote Control Port' contains the settings for the remote control of the device via the network. For the OPTICODEC, the value 6137 should always be entered. Port number 0 disables remote control via the network.

Ancillary Data Port

This port is used for transfer of ancillary data via the network instead of the serial interface. Data is transmitted via TCP without an additional protocol. It is not allowed to transfer ancillary data via the serial interface and the network interface at the same time. The default port is 6138. Port number 0 disables this function.

Audio Port (TCP)

This menu contains the setting for audio transfer over the network with TCP protocol. The setting is point-to-point. For the OPTICODEC, the value 6136 should always be entered.

Audio Port (RTP)

Here you enter the port number for the audio transfer over RTP. The settings are for SIP/RTP and RTP.

For the OPTICODEC, the value 5004 should always be entered. In the basic settings, this value is used by default. For the audio transfer, two port numbers are used - the one entered here and the port number immediately above it.

Note

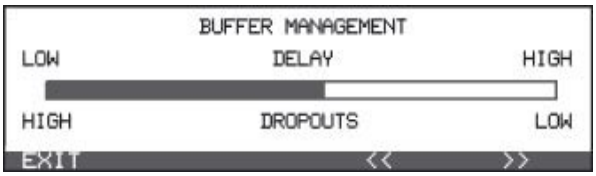
When using other port numbers, please be aware that the lower of the two numbers must be entered and must be an even number.

A comparison between TCP/IP and ISDN:

TCP/IP	**ISDN**
IP addresse	ISDN number
Port	Service detection (e.g. telephone/data transfer)

Buffer Management

This buffer is used to bridge short interruptions in data transfer. The size of the buffer (which temporarily stores data from the network) can be influenced here.



To ensure the most secure transfer possible, the maximum value (bar all the way to the right) should be set. However, this results in a longer delay.

If a shorter delay is more important, then the bar can be moved to the left. However, this has a negative impact on the transmission security.

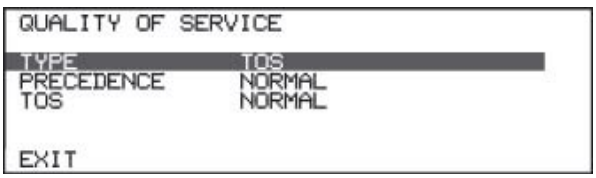
To allow the best possible transmission security with a short delay, you should ensure that no additional devices/workstations apart from the OPTICODEC are transmitting data over the network.

Quality of Service

Not all applications for the transfer of data are equally important and not all of these require the same high standards for data transmission. To minimise or prevent the risk of bottlenecks in data networks, the IP header displays the so-called 'Quality of Service (QoS)' in addition to information such as time to live, protocol and header checksum.

If the router is configured accordingly, QoS actively regulates the status on the network load and uses the available bandwidth intelligently and effectively on the basis of data prioritisation or bandwidth reservation.

Type



ToS

ToS (Type of Service) or DiffServ (Differentiated Service Architecture) are key mechanisms of QoS and are responsible for determining the packet priority.

The ToS bits contain information on how a data packet should be handled by a router. For example, an overloaded router can determine, by means of the ToS field, which packets are less important (and can therefore be dropped) and which packets must definitely be transmitted.

Precedence Values

Precedence	Significance	Precedence	Significance
000	Normal	011	Flash
001	Priority	100	Flash Override
010	Immediate	101	Critical

ToS Values

ToS	Significance	ToS	Significance
0000	Normal	0010	max. Reliability
1000	min. Delay	0001	min. Monetary Cost
0100	max. Throughtput		

DiffServ

DiffServ uses a new definition of the IPv4 TOS header field and IPv6 traffic class header field.
The goal of DiffServ is to subdivide the data traffic into service classes with different priorities, without using intensive signalling on each router. Each packet can be marked and is handled and transmitted accorded to this marking.

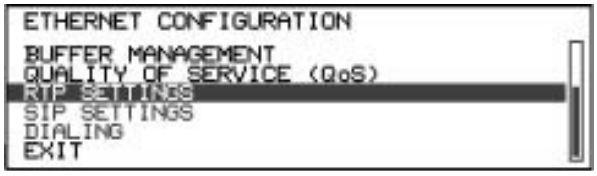
DiffServ Codepoints (DSCP)

Each per-hop-behaviour (PHB) flow is determined by a DSCP.
You can choose between:
Standard (Default, 'Best Effort'),
Class Selector 1-7,
Assured Forwarding 11-13, 21-23, 31-33, 41-43,
and Expedited Forwarding.

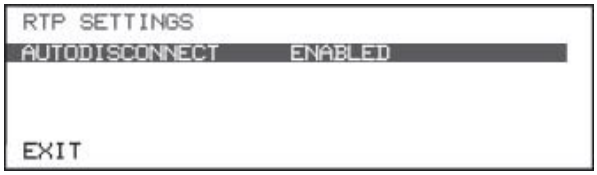
Note

Details and additional specifications can be found on the 'Request for Comments' lists (RFC1349 TOS; RFC2474 DiffServ), commonly avilable on the Internet
(www.rfc-editor.org).

RTP Settings

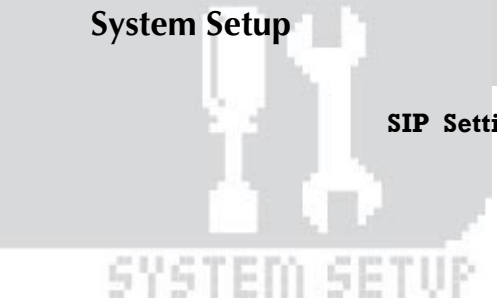


RTP (Realtime Transport Protocol) is for the transmission of for e.g. audio signals over IP networks. RTP is a connectionless application protocol so that the establishment of a connection, disconnection or the exchange of data between the transmitter and receiver is not acknowledged. The RTCP (RTP Control Protocol) compensates this disadvantage.

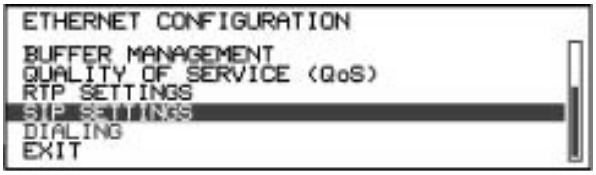


This feature is required should a transmission be interrupted (for e.g. interruption of the line). For the release of previously reserved network resources should the exchange of data not be taking place, select 'Enabled' or 'Disabled'.

The connection will be terminated within 30 seconds of data no longer being received.



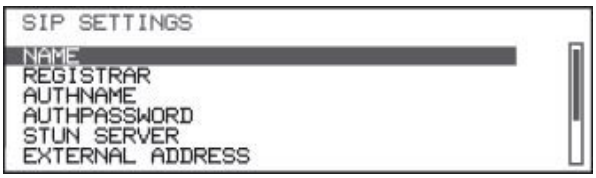
SIP Settings



The Session Initiation Protocol (SIP) is used to establish, operate and end a RTP session. SIP and SDP (Session Description Protocol) stipulate or negotiate the communication modalities of a call. Further data transmission follows by means of RTP.

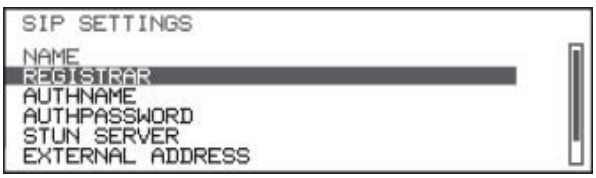
With SIP, IETF (RFC 3261) specifies a protocol to allow for the signalization of calls within multimedia-based IP networks. SIP is based on the request/response principle also used for HTTP or ISDN (also D channel protocol). A well known port number for SIP is 5060.

Name



This name is comparable with the speed dial names of participants in a telephone system. For the easier identification of a unit within the SIP server (Registrar), enter a short name of up to 25 characters.

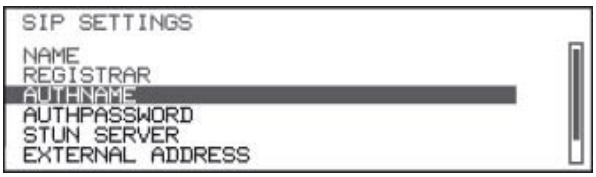
Registrar



The SIP server (Registrar) communicates a connection between participants. The server would be comparable with an ISDN exchange if located on a VoIP provider. If on a local network, the server could be seen as a telephone system.

The entry here could be an IP address or host name.

Authname



An 'Authentication Name' is assigned to verify the identity of a participant and to allow or deny the access of a participant to the SIP server. This name does not have to be identical with the short name of the audio codec.

Authpassword

A password is communicated by the network administrator as an additional proof of identity.

STUN Server

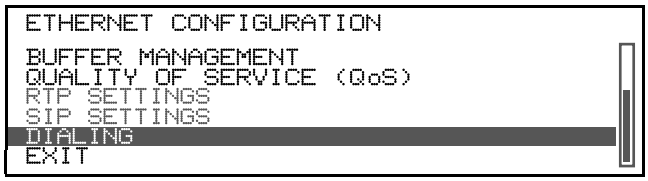
A STUN server (Simple Traversal of UDP over Network Address Translators [NATs]) allows NAT clients (the computers behind firewalls and NAT routers) to communicate with a domain outside of the local network. The STUN protocol is defined in RFC 3489.

Using the STUN server, the public IP address of the connection and the NAT router behind the unit can be identified and released. This is required for the partner unit to correctly address your call data.

External Address

For a connection without a STUN server, the public IP address of your NAT router is entered here.

Dialing



Dialing Attempts Here the number of dialing attempts are set to between 1 and infinite.

Dialing Delay Here the time between dialing attempts is selected: 10 ... 360 seconds.

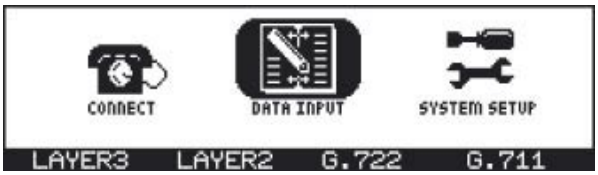
Redialing Attempts If an existing connection is interrupted, not by the addressing OPTICODEC but by possible network problems, then the number of redialing attempts can be set to between 0 and infinite.

Exit Exit this menu item by pressing the 'Exit' key several times and return to 'System Setup'.

Store & Exit

With this feature all entries are saved and the menu item 'System Setup' is exited. Press 'Enter' or the F1 key.

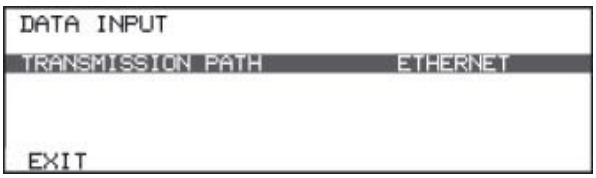
After selecting the 'Data Input' menu and confirming with the 'Enter' key, the directory of IP addresses, ISDN numbers, names and audio configurations in which up to 96 entries can be stored appears.



Creating a SIP-URI Participant

Select a free position for the entry of a new SIP participant and confirm with the 'Enter' key.

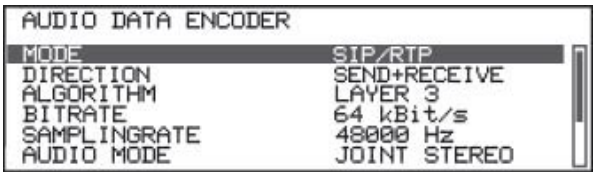
Transmission Path



First set 'ETHERNET' as the network connection mode. Return to the 'Data Input' menu using 'Exit'.

Audio Data Encoder

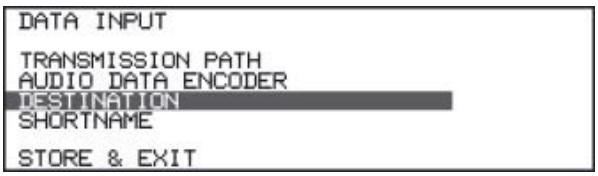
In this menu item all audio parameters for an intended connection are defined.



Here the connection mode is set to 'SIP/RTP'.

Destination

Here the target address for the desired connection is entered.



A SIP-URI serves to address the participants of an SIP based call. This is the SIP telephone number of a participant, using the notation known from email addresses.

SIP-URI = Myname@Host
'Myname' stands for the user name and 'Host' for the domain or IP address.

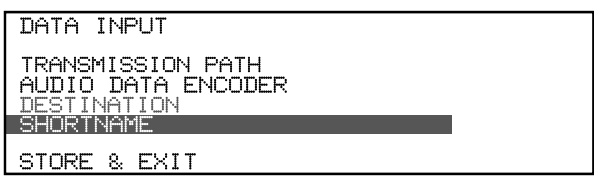
Example: Gustav.Schmidt@192.168.206.14
support@orban-europe.com
2020@orban-europe.com

The part @Host could be normally omitted.

The SIP-URI is defined in RFC 3261.

Should a registrar not be available, the partner unit can be dialed directly using the IP address or the host name.

Shortname To more easily identify a unit, enter the shortname of the partner audio codec with up to 7 characters.



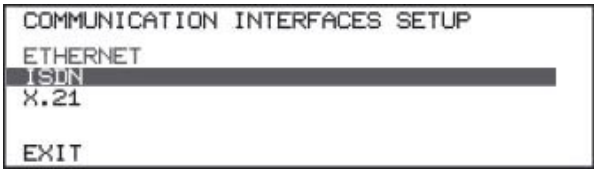
Store & Exit With this feature the entries in the ISDN/IP directory are stored and the menu item 'Data Input' is exited. Press the 'Enter' or F1 key.

Verifying the SIP-URI. Open the ISDN/IP telephone directory via the 'Data Input' menu.

Any desired changes in names, SIP-URI, the audio parameters or even the complete deletion of an entry are carried out here.

This menu item is otherwise exited using the 'Hang Up' feature.

ISDN Configuration

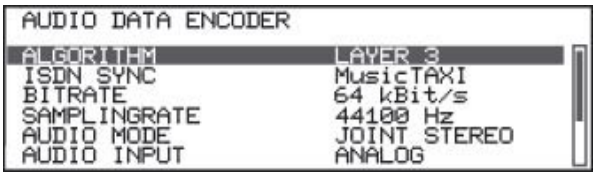


From the 'System Setup' menu, select the menu item 'Communication Interfaces Setup' and press the 'Enter' key. Then select 'ISDN' and confirm again with 'Enter' to access the next submenu.

Accept Configuration
Audio Data Encoder

This menu item determines the call accept mode of the OPTICODEC. You can first of all set the accept mode 'Audio Data Encoder' for the device and transfer specifically and to a large extent. The OPTICODEC then only accepts calls in the corresponding configuration. Alternatively, select the operating mode AUTO (Automatic Codec Detection), so that the OPTICODEC reacts as a 'slave' and adopts the parameters of the addressing device.

Algorithm



The 'Algorithm menu' item is used to preset the desired data reduction procedure on incoming calls. You can choose between:
Layer 2, Layer 3, 4SB ADPCM (optional) and
AUTO (*G.711*/*G.722* calls are also accepted).

ISDN Sync

The available 'ISDN Sync' modes are:
MusicTAXI (MusicTAXI sync for 1 to 6 B-channels)
NO SYNC for the use of 1 x B-channel
NO SYNC (INV) for the use of 1 x B-channel
PRIMA (CCS sync for 2 B-channels)
ZEPHYR (Telos sync for 2 B-channels)
AETA (for 4SB ADPCM; optional)
AUTO – automatic codec detection.

The activation of the AETA sync and 4SB ADPCM algorithm (not included in the standard delivery) is performed via 'System Setup' ›› 'Base Configuration' ›› 'Enter Key Code' and depends on the device type and its serial number. Each device receives a unique key code.

Note If a sync other than 'MusicTAXI' or 'AUTO' is preset for call accept, then *G.722* calls cannot be accepted.

Bitrate This menu item is not configurable. Depending on the number of incoming B-channels, the transfer rate is determined and set accordingly. ('AUTO' is always set.)

Samplingrate The 'Samplingrate' menu item is used to set the desired sampling frequency on outgoing calls.
You can choose between: 16, 22.05, 24, 32, 44.1, 48 kHz,
AUTO (the sampling frequency of the selecting device is used).

Audio Mode The 'Audio Mode' menu item is used to set the desired audio behaviour on incoming calls.

You can choose between: Mono, Dual Mono, Stereo, Joint Stereo and AUTO (see also page 18).

Audio Input The 'Audio Input' menu item is used to set the desired audio input on incoming calls. You can choose between Analog and AES/EBU.

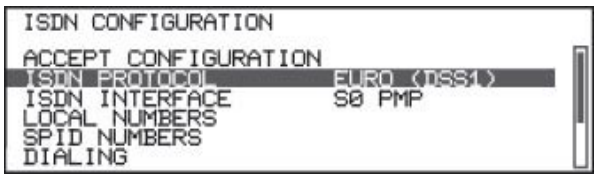
Userdata The 'Userdata' menu item is used to set the desired ancillary data in incoming calls.
You can choose between:
OFF (no ancillary data is transferred)
1200, 2400, 4800 baud with Layer 2
1200, 2400, 4800, 9600 baud with Layer 3.

Note If the ancillary data is switched off (OFF), alarm control signals are not transmitted either.

Between OPTICODECs, the smallest preset baud rate of the ancillary data is used in the context of the device handshake.

Descriptions of individual functions can be found by pressing the 'Help' key.

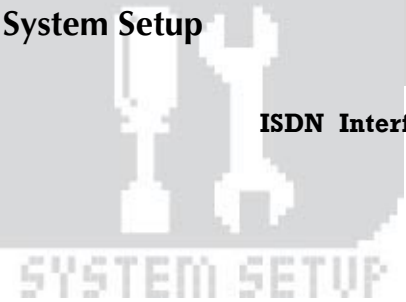
ISDN Protocol



The OPTICODEC is equipped as standard with a 'Stollmann' type ISDN module and the following ISDN D-channel protocols:
EURO (DSS1), NATIONAL 1/2 (North America), JATE (Japan), AT&T (USA), VNx (France) and AUSTEL (Australia).

For use in the USA, the OPTICODEC 7600 can be equipped with 'IMD4' type ISDN modules. This is necessary if additional U-interfaces are required for North America. When 'IMD4' modules are used, the device possesses two ISDN D-channel protocols: EURO (DSS1) and NATIONAL 1 (North America).

Warning Decisive is the ISDN protocol of your connection, not that of the partner unit! You can alter the settings by pressing the 'Enter' key.

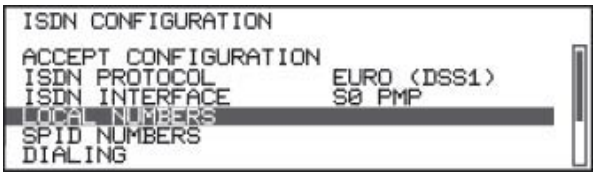


ISDN Interface

Via this menu item, the S_0 and U interfaces used for the transfer are selected:

S_0 PMP (Point-to-Multipoint)	For multiple device connections. (This is the usual connection type.)
S_0 PP (Point-to-Point)	For a PBX connection
U PMP (Point-to-Multipoint)	For North America only (using a ISDN module type 'IMD4').

Local Numbers



The ISDN numbers entered here are sent when a connection has been established. Under certain conditions (e.g. private branch exchange (PBX)* type), the unique ISDN number must be entered.

	S_0 without PBX*	S_0 on PBX*
1 x unit only	can remain vacant or ISDN number without area code	can remain vacant or only the No. of your extension
n x units	ISDN number without area code and MSN Check activated	only the No. of your extension and MSN Check activated (Test Called Number)

Notes If a local number is required, then all of the entry windows must always be confirmed.

SPID Numbers

The identification numbers entered here are sent when a connection has been established. These are only necessary when operating the OPTICODEC on US and Canadian networks.

The identification numbers are entered and allocated as described above in 'Local Numbers'.

Descriptions of individual functions can be found by pressing the 'Help' key.

Dialing

Dialing Attempts Here the number of dialing attempts are set to between 1 and 5.

Dialing Delay Here the time between dialing attempts is selected: 10 ... 60 seconds.

Redialing Attempts If an existing connection is interrupted, not by the addressing OPTICODEC but by possible ISDN problems, then the number of redialing attempts can be set to between 0 and 5.

Accept G.711 Calls This menu item defines the behaviour of the OPTICODEC when operated on an S0 connection together with other devices. You can choose between:
YES every TEL call is accepted by the OC,
NO every TEL call is ignored by the OC.

Accept Codec Calls The menu item 'Accept Codec Calls' determines the behaviour for incoming MPEG/G.722 calls.

The setting options are as described above.

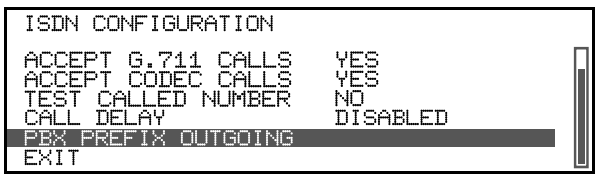
Test Called Number The menu item 'Test Called Number' activates the MSN query for incoming calls. For this, the correct MSNs of the individual connection must be entered in the menu item 'Local Numbers'. The call is only accepted if both numbers are identical.

On EURO-ISDN, the MSN is usually the ISDN number of the connection without the dialing code, but for PBXs it is usually the extension number only.

The 'YES' option should only be activated if, in addition to the OPTICODEC, other devices (e.g. a telephone, fax machine, PC card) are also to be operated on the same ISDN connection.

Call Delay This increases the waiting time between the calls of multiple b-channels. This may be necessary if the connection establishment of the first b-channels needs more time than the following channels.

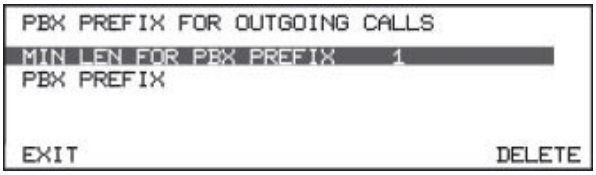
PBX Prefix for Outgoing Calls



Under certain conditions (e.g. private branch exchange PBX), a number that prefixes the ISDN number for dial-up via ISDN can be entered here. To make an outside call from a telephone system, for instance, enter 0.

A preselection number can also be entered here. The number may not exceed 5 digits.

Min. length for PBX Prefix



Using the 'Min. length for PBX Prefix' menu option, define the minimum number of digits an ISDN number must have so as to allow this prefix to be set before the number.

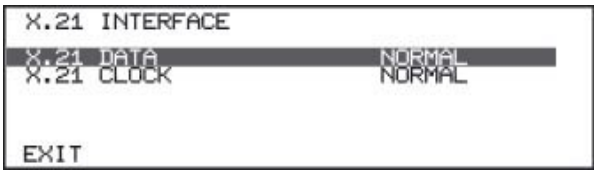
If, for example, internal extension numbers have three digits, a 4 should be entered here.

To continue to enable internal calls, PBX dialling codes for ISDN numbers with less than four digits are ignored.

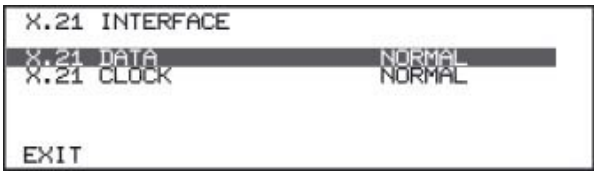
Exit

By selecting the function 'Exit' and confirming with 'Enter', you leave this menu item.

X.21 Configuration



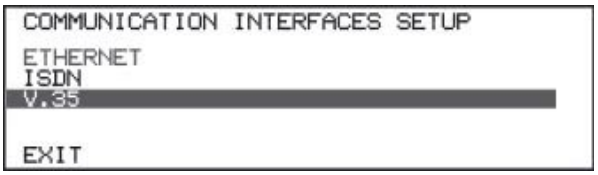
Should your OPTICODEC 7600 be equipped with an X.21 interface, the menu item for 'X.21 configuration' will appear.



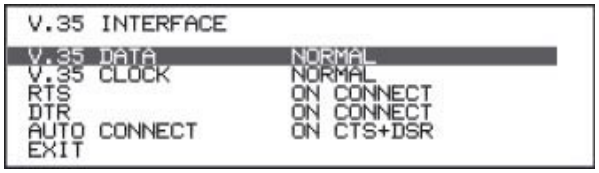
This menu item serves to configure the transmission of data over the X.21 interface or to invert the data or clock lines should the A or B cables be swiched. Rx and Tx are always collectively converted for the data lines.

V.35 Configuration

If a V.35 interface is installed, the configuration options for V.35 are indicated here.



This menu item serves to configure the transmission of data over the V.35 interface or to invert the data or clock lines should the A or B cables be switched. Rx and Tx are always collectively converted for the data lines.



RTS and DTR Possible settings for RTS (Request to Send) and DTR (Data Terminal Ready) are:

ON CONNECT	This signal is activated once there is a V.35 connection
ALWAYS ON	The signal is always activated
ALWAYS OFF	The signal is always deactivated

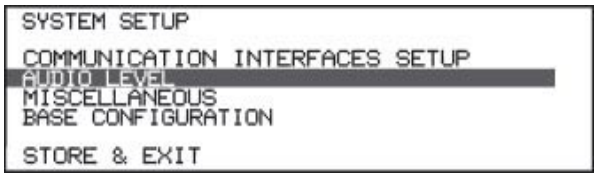
Auto Connect Possible settings for 'Auto Connect' are:

NEVER	The CTS (Clear to Send) and DSR (Data Set Ready) signals are ignored.
ON CTS	Once this signal has been activated, the unit will establish a V.35 connection (the DSR signal is ignored)
ON DSR	Once this signal has been activated the unit will establish a V.35 connection (the CTS signal is ignored)
ON CTS+DSR	Once either of these signals have been activated the unit will establish a V.35 connection.

Important For this the entry, position #96 of the ISDN directory has to be configured for a V.35 connection.

When using the X.21 backup 'Auto Connect' must be set to NEVER.

Audio Level



Level Range In this menu item the display range of the level display is swiched to between 50 and 80 dB.

Headroom Here you set the desired headroom is set to between 0 and 20 dB. The factory default is 0 dB.
The scale display in the online menu moves accordingly.

Warning The clipping boundary is 0 dB + the set headroom!

Adjust I/O Level In this menu item, the analog input and output levels for the left and right channels are set. The factory default setting is +12 dBu, and the headroom is set to 0 dB.

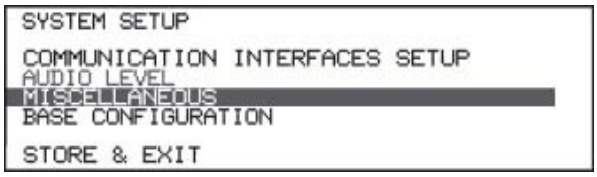
This means that:
input level = output level = 12 dBu.

By pressing the 'Up/Down' arrow keys, you can select the channels and by pressing the 'Left/Right' arrow keys, you can change the corresponding level values in 0.5 dB increments.

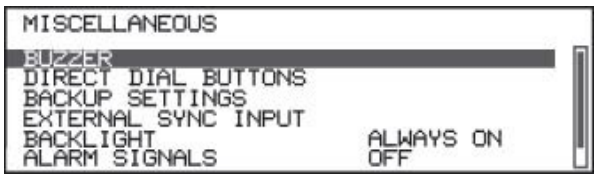
Confirm your setting by pressing the 'Enter' key.

Exit By selecting the function 'Exit' and confirming with 'Enter', you leave this menu item.

Miscellaneous

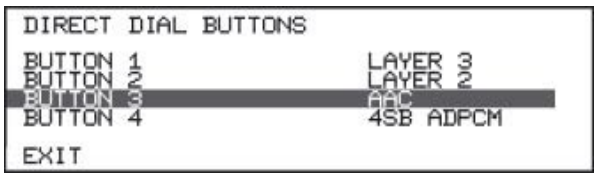


Buzzer



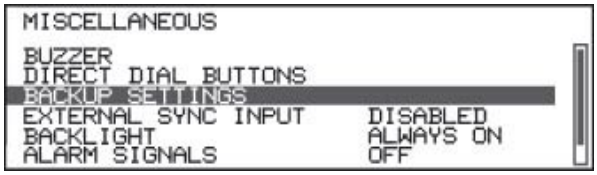
If the OPTICODEC is called, an audible signal will be heard if the buzzer in 'On'. In the menu item 'Buzzer', select between 4 ringtones and a 4-level volume or OFF (Buzzer switched off).

Direct Dial Buttons



Here your desired dialing procedures are allocate to the 4 direct dial buttons to the selected dialing procedure. You can choose between: Layer 2, Layer 2, G.722, G.711, AAC* and 4 SB ADPCM*.
(* optional).

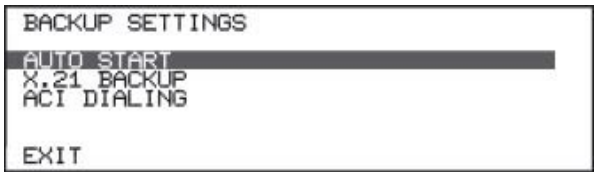
Backup Settings



In the Backup Settings mode you can allocate an entry of the ISDN/IP directory to each input port of the alarm/control interface.

Press the 'Enter' key to open this menu item.

Auto Start



Press the 'Enter' key to open the submenu.

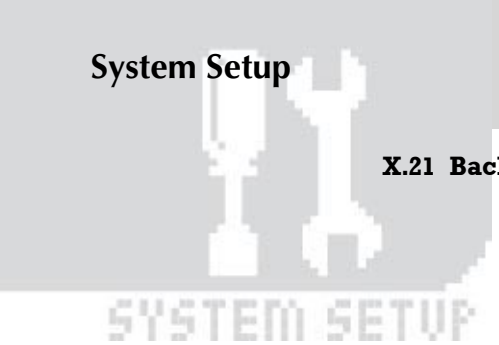
By pressing the F2 key ('Choose Entry'), you open the ISDN/IP Directory. Select an entry from here and confirm by pressing the 'Enter' key. Your selection is applied and displayed in the 'Auto Start' window.

After the OPTICODEC has been restarted, this number is always dialled. Here it does not matter whether it is an ISDN, Ethernet, X.21 or 'Codec Loop' entry.

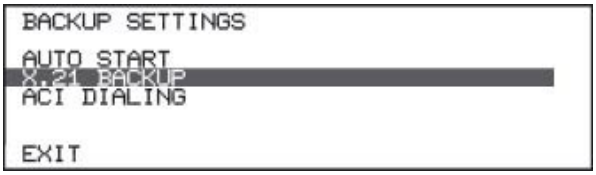
Note If an empty entry is selected, the OPTICODEC will start in the 'Codec Loop' mode.

By pressing the F4 key ('Disable'), this function is deactivated.

By pressing the 'Exit' or 'Enter' keys return to the 'Backup Settings' menu.



X.21 Backup



If your OPTICODEC is equipped with an X.21 or V.35 interface, the menu item 'X.21 Backup' appears on the display.
Press the 'Enter' key to open the submenu.

Here you can configure an X.21 transmission. To do so, first select an X.21 connection partner from the 'Auto Start' menu item.

Mode

The X.21 connection is a bidirectional connection between two devices. You can choose between:
SLAVE Transmitter*,
MASTER Receiver*
and OFF (function switched off).
* monitored is the direction from SLAVE to MASTER.

The master device receives the signals from the slave device and constantly checks the connection. If the X.21 connection is turned off, the master device establishes an ISDN connection.

Time Ton Here you set the time interval for which the sync must be absent before an ISDN connection is established. Select a time period between 10 and 60 seconds.

Time Toff During a backup connection, the X.21 line is constantly checked. If no transfer errors occur during the time period set with Toff, then it switches back to an X.21 connection.

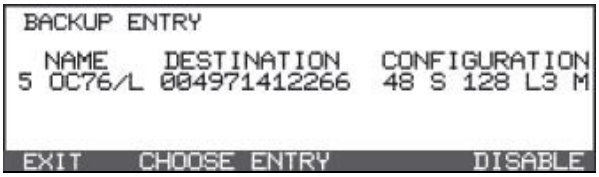
To establish a connection, select a time period between 10 and 60 seconds or OFF (no backup/X.21 switching).

Time Thold Here the minimum duration of a backup connection before the unit returns to X.21/V.35 is set.

Select a minimum duration of between 0 and 60 minutes.

Backup Entry

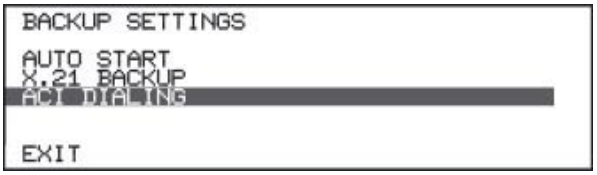
Select the ISDN number of your connection partner here. For the master device, this is the entry selected in the backup case.



The slave devices checks whether incoming calls are coming from this number and accepts only these calls. If no entry is allocated, then the slave device accepts all incoming calls.

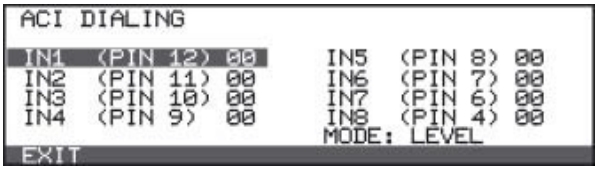
By pressing the 'Exit' or 'Enter' keys, return to the 'Backup Settings' menu.

ACI Dialing



If your OPTICODEC is equipped with an Alarm/Control interface, the menu item 'ACI Dialing' appears on the display. Press the 'Enter' key to open the submenu.

In the 'ACI Dialing' menu item, an entry from the ISDN/IP Directory can be allocated to each entry in the Alarm/Control Interface.

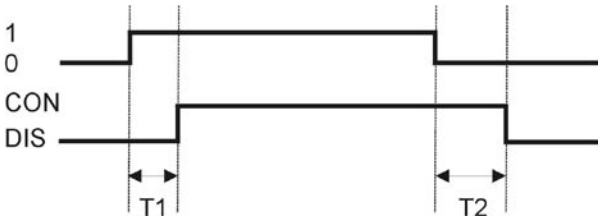


To do so, select the corresponding entry with the cursor and press the 'Enter' key. The cursor then starts flashing and a number can be entered using the numeric keypad.

This number corresponds with all parameters to the respective entry in the ISDN/IP Directory. After entering the number, press the 'Enter' key to confirm again so that the number is applied. If a one-digit number only is entered, a 0 is automatically added in front of it.

If '00' is entered, then the associated Alarm/Control interface connection is not used to establish the connection, but is instead transmitted to the remote end as a normal switching signal.

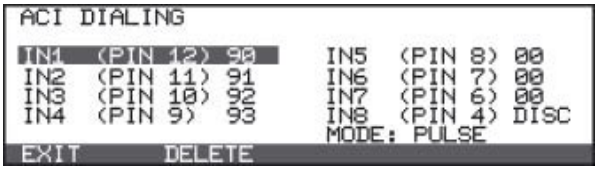
Timing Diagram:



T1=300 ms T2=500 ms

In the following example, the entries IN1 to IN4 are allocated to entries 90 to 93 in the ISDN/IP Directory.

The entries IN5 to IN8 are not allocated to any entries and are transmitted transparently to the remote end.



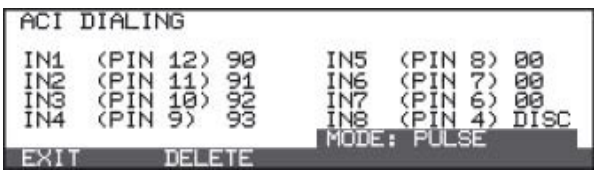
The entries must be confirmed with the 'Exit' key. With the F2 key (Delete), activate the deletion processes.

An acknowledgment of whether the connection was established is sent via the corresponding outputs of the Alarm/Control interface. For example, if a connection is established with IN2, then the output OUT2 (PIN 23) is activated as soon as the connection is established and the decoder synchronised.

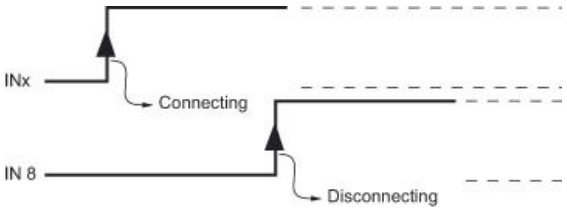
Mode: Level

As soon as a switching signal is applied to the corresponding input INx, the connection is established and continues until the switching signal is disconnected.

Mode: Pulse



In this mode, the connection is established and disconnected via two separate switching signals.



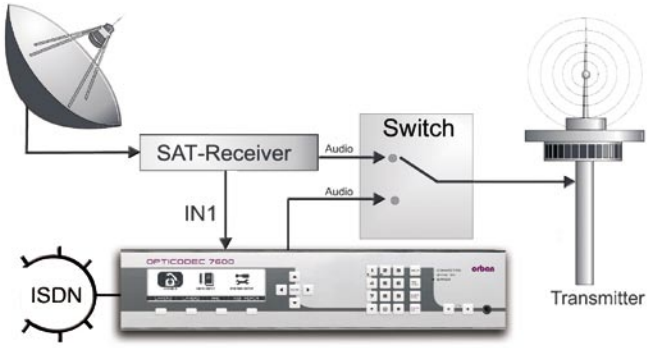
As soon as a switching signal is applied to INx, the establishment of the connection begins. The level on INx is then no longer significant for the connection.

If a switching signal is applied to IN8, the connection is disconnected. If a signal was already being applied during the establishment of the connection, then this signal is ignored and must first be disconnected again.

Only the rising edge of a switching signal is reacted to here.

Application examples: SAT/ISDN Redundancy

If a signal is emitted by a satellite receiver in the event of an error, then this can be sent to the Alarm/Control interface of the OPTICODEC.

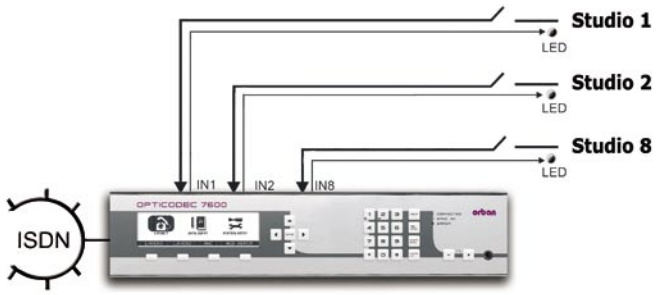


If the error signal is applied, the OPTICODEC establishes an ISDN connection to the entered target location.

If the error signal is switched off, the ISDN connection is also terminated.

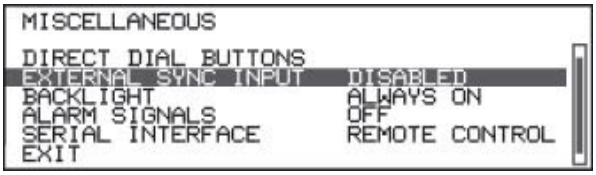
'Panic Dial'

Up to 8 preprogrammed connection partners can be called or addressed via simple switches. The connection partners correspond to the respective entries in the ISDN Directory. As soon as the ISDN connection has been established and the decoder is synchronised, the connections are confirmed via the LEDs.



If the switch is reopened, then the connection is terminated and the LED turns off.

External Sync Input



The OPTICODEC possesses a sample rate converter on the audio input.

For the external synchronisation of the digital output, select between:

DISABLED Word Clock is generated from the ISDN transmission clock pulse.

AES/EBU Word Clock is generated from the AES/EBU input signal.

SYNC IN Word Clock is taken from the 'SYNC IN' input.

Backlight

This function is used to set the display backlighting:

ALWAYS ON Backlight continuously switched on

ON CONNECT Turns on when a connection is active or the 'System Setup' or 'Data Input' menus are started. Shortly after returning to the main menu, the display illumination is switched off.

Alarm Signals

If the signals are switched to 'OFF", then the switching information detected on the inputs of the OPTICODEC is transmitted to the remote device and made available as open collector signals.
Otherwise, you can choose between:

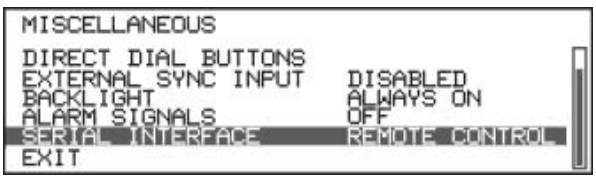
CON The signal is set to pin 19 if the decoder is synchronised – i.e. on connection 'OK'.

DIS The signal is set to pin 18 if the connection is terminated by the remote end or due to an ISDN error.

CON+DIS Both signals are set.

The above pins can then no longer be allocated for ACI Dialing.

Serial Interface



If your OPTICODEC is equipped with an Alarm/Control interface, then this menu item, which is used to convert the RS232 signals in the 'Remote Control' or 'Ancillary Data' mode is available.

Exit

By selecting the function 'Exit', leave this menu item.

Base Configuration

This menu item offers the following configurations and settings:

Software Update

Via 'Software Update', the software components of your OPTICODEC can be update. The update options are described from page 50 onwards.

Enter Key Code

This menu item is used to activate additional functions like 4SB ADPCM, for example. If you have purchased this licence, enter the activation code into the entry mask. The activation depends on the device type and its serial number.

Every OPTICODEC unit has its own unique key code.

Descriptions of the individual functions can be found by pressing the 'Help' key.

Detect Communication Interfaces

This function allows you to detect the installed ISDN modules (Stollmann or IMD4-ISDN, POTs).

The installed modules are redetected via the 'Autodetect' key. This menu must be activated every time ISDN/POTS modules are subsequently installed.

Press the 'Store & Exit' key to save the new settings and exit this menu item. After a brief initialisation sequence, the OPTICODEC returns to the 'Base Configuration' menu.

Reset Configuration

Here you can restore all of the factory default settings.

Warning Resetting the configuration cannot be undone! To secure your settings, store onto your PC using the NetControl software.

After the safety query, confirm with the 'Reset' key if the reset procedure should be performed, or with 'Cancel' or 'Hang Up' if you want to abort the reset.

Delete Database

Here all of the recipients entered in the ISDN/IP Directory can be delete.

Warning Resetting the configuration cannot be undone!

After the safety query, confirm with the 'Delete' key if the reset procedure should be performed, or with 'Cancel' or 'Hang Up' if you want to abort the reset.

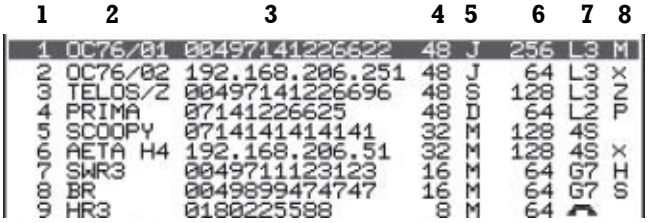
Store & Exit

With this function, the entries are stored and the 'System Setup' menu is exited. To do this, press the 'Enter' key or the F1 key.

To establish the connection, you can choose between dialing from the Directory, a Quick Dial entry or manual entry with the numeric keypad.

Select the menu item 'Connect' and press the 'Enter' key. The ISDN/IP-Directory for 96 entries appears.

Explanation of the Display Labelling



1 Position number in the Directory;
2 Short name;
3 ISDN number or IP address;
4 Set sampling rate;
5 Audio mode: M=Mono, D=Dual Mono, S=Stereo, J=Joint Stereo;
6 Set bit rate;
7 Algorithm: L3=Layer 3, L2=Layer 2, 4S=4SB ADPCM, G7=G.722, Telephone handset symbol=G.711;
8 ISDN Sync: M=MusicTAXI, P=Prima, Z=Zephyr, H=H.221, S=SRT, A=Auto.
or IP mode x: Point-to-Point, s: SIP, r: RTP.

Establishing a Connection with ISDN/IP Directory

Allocated to every entry is the short name of your connection partner, the IP address or ISDN number, the audio parameters and the operating mode of the Ethernet connection or the 'ISDN Sync' procedure.

From the main menu, select 'Connect' and confirm by pressing the 'Enter' key. Select a connection partner from the ISDN Directory and confirm by pressing the 'Enter' key.

The OPTICODEC keeps you constantly informed about the current processes.

After a successful synchronisation, the OPTICODEC reports 'ISDN OK' and enters the online menu. If the connection request is refused, the OPTICODEC reports 'ISDN ERR' and describes the reason for the failure on the display. Check the error messages using the error list in the Appendix, from page 55.

Establishing a Connection with 'Quick Dial'

The 96 entries can be selected by means of Quick Dial targets. To do so, press the 'QUICK DIAL' key.

```
SELECT DESTINATION _
```

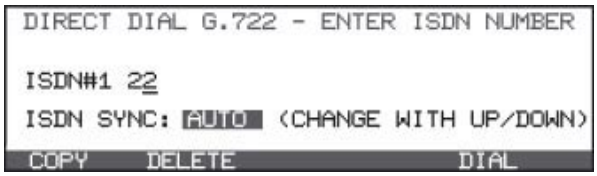
The menu then asks you for the entry number of your partner (from 01 to 96). The dialing occurs automatically with the parameters you have preset.

Establishing a Connection with 'Redial'

With the 'Redial' key, you can repeat the last dialed connection. The set parameters are shown on the display. Press the F4 key (Dial) to establish the connection.

Establishing a Connection with Direct Dial Buttons

This type of connection is established via the four preprogrammed multifunction keys (F1-F4) located under the display. The transmission quality must first be determined. By pressing a key, you select between G.711 (3.1 kHz, telephone), G.722 (H.221 or SRT), AAC, 4SB ADPCM, Layer 2 or Layer 3.



The entry menu then requests the ISDN number, which is entered with the numeric keypad as usual.

With 'Dial', the connection establishment is started.

Press the arrow keys (Up/Down) to modify the ISDN Sync.

Press the F1 key (Copy) to add the last dialled number.

Press the F2 key (Delete) to delete the number.

Note

The connection parameters for Layer 2 and Layer 3 are determined as follows: Only entry of the first ISDN number. 64 kbps, 48 kHz, Mono, User Data 1200 baud.
For the entry of two ISDN numbers: 128 kbps, 48 kHz, Joint Stereo, User Data 1200 baud.

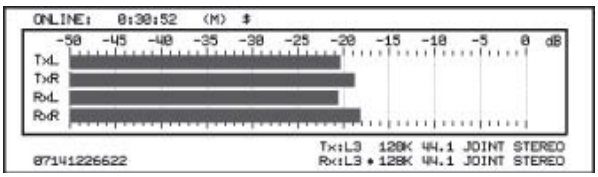
The audio input used is taken from the Accept Configuration. The ISDN Sync used is always AUTO.
With G.722, it is possible to choose between AUTO, H.211 and SRT.

Automatic Connection Start

If the decoder of the connection partner receives the correct data, then this is confirmed by the Sync icon in the Rx path. The Sync icon is only available between OPTICODECs during POINT-to-POINT or ISDN connections in Layer 2 and Layer 3.

Connection Monitoring

If the 'Enter' key is pressed during a connection, then the 'Connect Menu' appears without interrupting the line. The 'Connect Menu' offers the following options:



It shows information about the send and receive levels, connection duration and the set headroom and synchronisation. In addition, together with the send (Tx) and receive configuration (Rx), the IP address / ISDN number (according to the connection type) of your codec partner are shown on the display.

Currency Icon

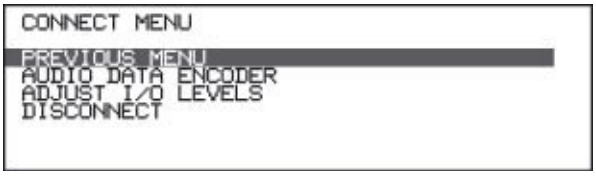
After the establishment of an ISDN connection, in addition to the connection duration, the currency icon ($) is also activated. The actually incurred connection costs can only be displayed on an S_0 from Deutsche Telekom after activation.

Sync Icon

If the decoder of the connection partner receives the correct data, then this is confirmed by the Sync icon in the Rx path. The Sync icon is only available between OPTICODECs during POINT-to-POINT or ISDN connections in Layer 2 and Layer 3.

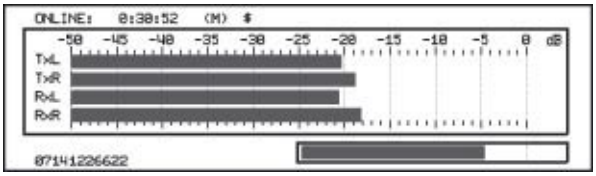
Connect Menu

If the 'Enter' key is pressed during a connection, then the 'Connect Menu' appears without interrupting the line. The 'Connect Menu' offers the following options:



PREVIOUS MENU	Return to the last display
AUDIO DATA ENCODER	Modify the audio parameters and audio inputs
ADJUST I/O LEVEL	Modify the INPUT/OUTPUT level adjuster
DISCONNECT	Terminate the connection

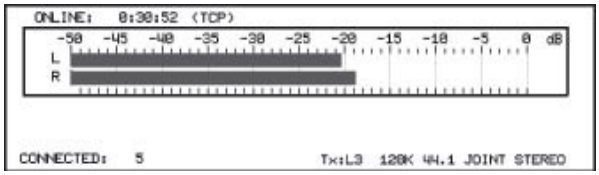
Headset Volume Adjustment



If either of the keys '-/+' are pressed during a connection, then the headset volume level display appears without interrupting the line. Press the '-' or '+' keys to reduce or increase the level until you have reached the optimal volume. If no key is pressed, then the Send (Tx) and Receive (Rx) configurations reappear on the display after a few seconds.

Establishing a Connection in Point-to-Multipoint Mode

Select an entry with 127.0.0.1 as the IP address from the telephone directory and set the P2P mode and desired encoder parameters.



Once a connection has been established ('Connect') for this entry, only the level meter of the transmission is shown. A counter with the number of receivers connected to the transmitter also appears on the display.

Establishing a Connection with X.21/V.35

From the Directory, select an entry with 'X.21/V.35' as the digit of the ISDN number.

Establishing a Connection with Codec Loop

From the Directory, select an entry without an ISDN number. The connection is established via the Directory, 'Quick Dial' or 'Direct Dial Buttons'.

Call Acceptance with ISDN Sync AUTO

The function 'AUTO' (Automatic Detection of the calling Unit) is entered in the 'System Setup / Accept Configuration'. The function 'ISDN Sync AUTO' has priority over all other entries. This means if 'AUTO' is set and the OPTICODEC is called by any competitor codec, the OPTICODEC sets itself to the audio parameters incl. sync modes of the calling unit automatically. This might last up to 30 seconds.

The set parameters of the 'System Setup / Accept Configuration' are taken over if the OPTICODEC is called by an OPTICODEC.

Establishing a Connection with ISDN Sync AUTO

When a connection partner is entered into the telephone directory, ISDN Sync and audio parameters can be preset in the configuration. However, an entered 'ISDN Sync AUTO' has priority over all other settings.

This means that if a connection has been established to a competitor unit, the OPTICODEC automatically adapts itself to the audio parameters incl. sync modes of the remote unit. This might last up to 30 sec.

Terminating the Connection

An existing ISDN or Point-to-Point connection is terminated by pressing the 'Hang Up' key twice. Your connection partner sees the message 'REMOTE DISCONNECT".

After the connection has been terminated, the device goes into standby mode and waits for further connection requests or calls.

If the OPTICODEC is called, it is automatically set to the audio configuration of the addressing audio codec. Here it does not matter whether the call comes from a mobile phone, a call box or the studio: The OPTICODEC reacts completely automatically and ensures the audio transfer.

Hang Up

By pressing the 'Hang Up' key you return to the main menu.

Software Update via OC PC Remote

The 'OPTICODEC PC Remote' program and any new software updates can be downloaded free of charge at any time from the ORBAN Europe Internet server (www.orban-europe.eu) or from the supplied data media.

If necessary, please store the device-specific *.BIN file on your local hard drive under Program Files/Orban/OpticodecRemote/Updates.

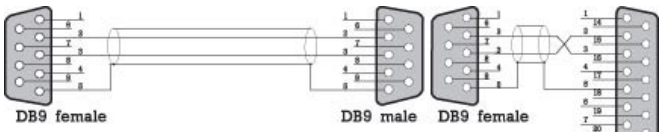
Description

The OC PC Remote software is a 32-bit version for Microsoft Windows 98/2k/ME/XP for the remote control of the OPTICODEC over the RS232 interface using a PC. It covers the same adjustment parameters as the OPTICODEC itself.

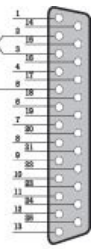
Connection to PC

The connection between the PC and your OPTICODEC occurs via a serial 9-pole cable (KB003 male/female).

Connected to PC Connected to OPTICODEC

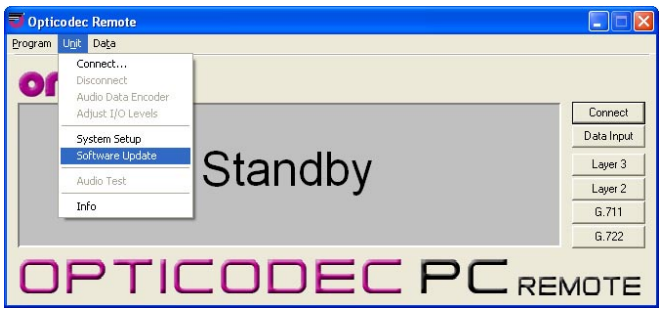


In addition, a 9/25-pin adapter (OC7600 adapter) is required.

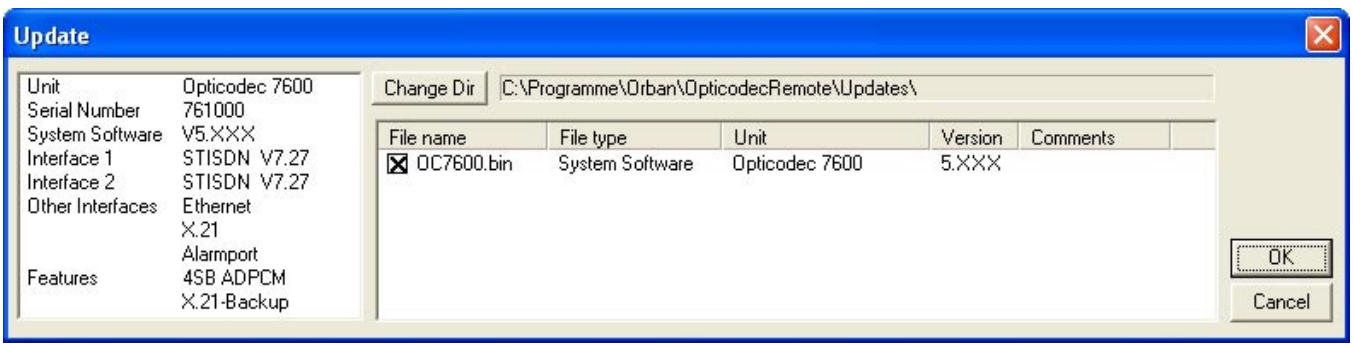


Update

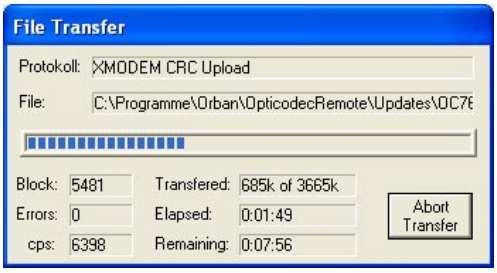
This function is found over the 'Unit / Software Update' pulldown menu.



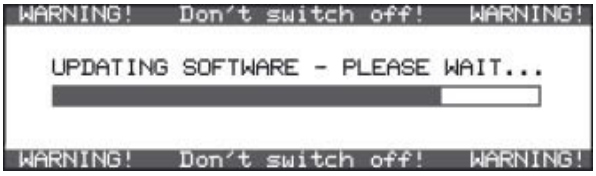
The software automatically recognizes the connected OPTICODEC and which software parts are to be updated.



A dialogbox accompanies you throughout the update and informs you about the current process.



The OPTICODEC 7600 shows the update process in the display.



Warning Do not switch off your PC or OPTICODEC during the update process. An error message will be displayed in case of an unsuccessful update:

After a failed update, you may repeat the update process.

Software Update via NETControl

The 'NETControl' program may also be downloaded free of charge at any time from the ORBAN Europe Internet server (www.orban-europe.eu) or from the supplied data media.

Description

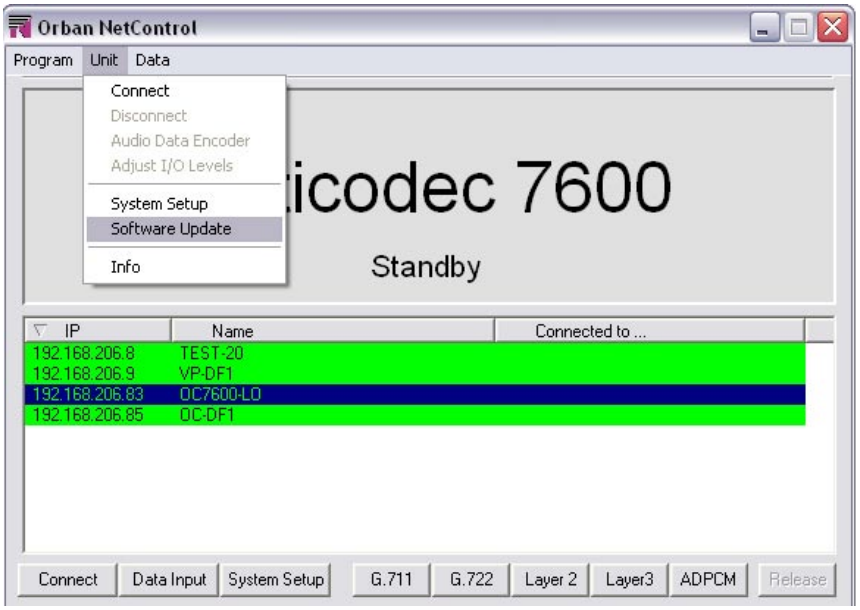
The NETControl software is a 32bit version for MS WINDOWS 2k/XP intended for the remote control of nearly any number of OPTICODEC units using a PC. The parameter settings are the same as for the OPTICODEC.

Connection to PC

The connection between the PC and your OPTICODEC occurs via a RJ45 type CAT5 network cabel.

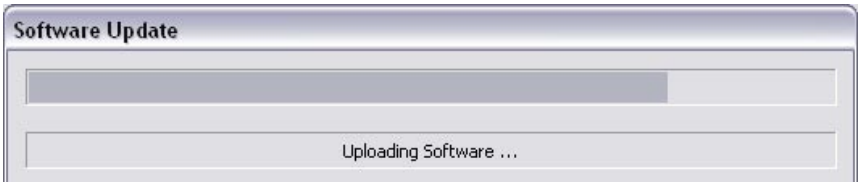
Update

This function is found over the 'Unit / Software Update' pulldown menu.



Locate the device-specific OC7600.BIN file on your local hard drive and press the 'Upload' key.

A dialogbox accompanies you throughout the update and informs you about the current process.



Warning Do not switch off your PC or OPTICODEC during the update process.

After a successful update, the OPTICODEC restarts automatically.

Software Update via FTP Program

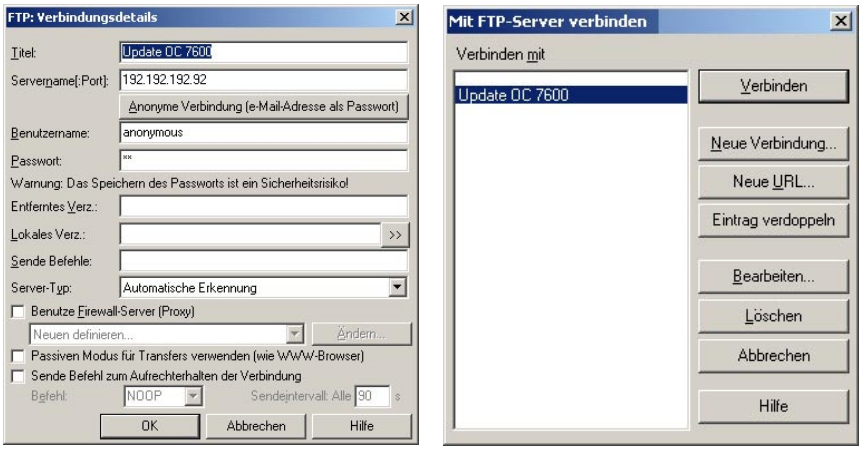
You can also activate an update process via an FTP program.

Connection to PC

The connection between the PC and your OPTICODEC occurs via a RJ45 type CAT5 network cabel.

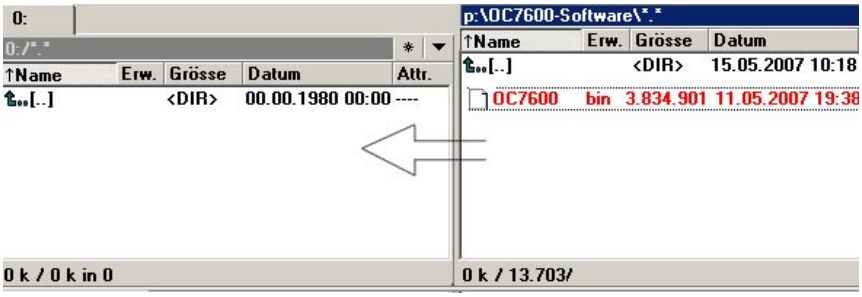
Update

First establish a new connection by entering all the connection parameters and confirm this by pressing the OK key. The username is anonymous, the password can be anything you like, but the entry field must not remain empty



Now connect the device to the PC and locate the device-specific *.BIN file on your data media..

Warning The data name is OC7600.bin (case-sensitive!)



Copy the file to the adjacent window.

The actual update process now takes place on the device. Open 'System Setup' ›› 'Base Configuration' ›› 'Software Update' and press the 'Enter' key.

Warning Do not switch off your PC or OPTICODEC during the update process.

Software Update via Web Browser

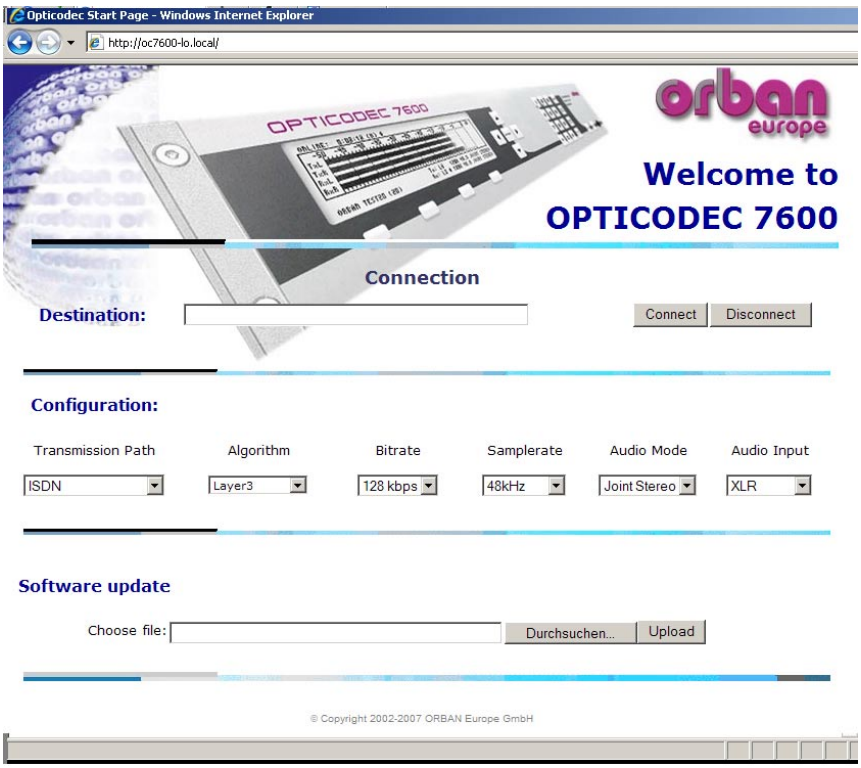
Another way to update the OPTICODEC 7600 is via a web browser.

Connection to PC

The connection between the PC and your OPTICODEC occurs via a RJ45 type CAT5 network cabel.

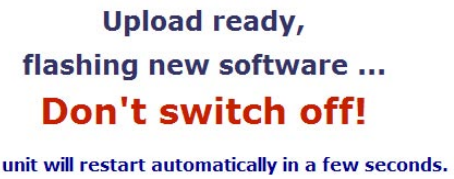
Update

To do this, enter http://IP address or http://Unitname.Domainname* on the navigation toolbar of the browser and confirm by pressing 'Enter'. (*Only if a name server exists.) The internal HTML page appears.



Choose File

Locate the device-specific *.BIN file on your local hard drive and press the 'Upload' key.



After a successful update, the OPTICODEC restarts automatically.

Brief Lexicon

Standardised Audio Compression Procedures (Algorithms)	
· G.711	Standardised audio compression procedure for speech transmission over ISDN. This algorithm requires 64 kbps data rate and supplies audio bandwidth of up to 3.1 kHz ("telephone").
· G.722	This algorithm requires a data rate of 64 kbps and supplies audio bandwidth of up to 7 kHz („radio quality"). With G.722, two synchronisation modes are available: SRT and H.221.
· 4SB ADPCM	Requires a data rate of 128 to 256 kbps (128 kbps per audio channel) and supplies audio bandwidth of up to 15 kHz. Low delay over ISDN: ‹ 6 ms.
· Linear 8 ... 24 bit	Uncompressed audio transmission with 8 ... 24 bits per sample. Sampling rate could be 32 kHz or 48 kHz. Could only be used via network.
· MPEG Layer 2	Data rate 32 - 384 kbps, sampling rate of up to 48 kHz* and supplies up to 20 kHz audio bandwidth.
· MPEG Layer 3	Data rate 8 - 320 kbps, sampling rate of up to 48 kHz* and supplies up to 20 kHz audio bandwidth.

Status Messages

In the online menu of the OPTICODEC 7600 the following messages may be displayed:

Error message	Possible causes
· NO X.21 CLOCK	X.21 clock not detected.
· ILLEGAL X.21 CLK	The measured X.21 clock does not correspond with an ISO data rate.
· NO INPUT SIGNAL	The AES input has been set and there is no signal on the selected input.
· DSP TIMEOUT	On accessing the DSPs, no acknowledgment is received.
· WRONG X.21 CLOCK	The measured X.21 clock pulse does not match the encoder settings.

Ethernet Error Messages

Error message	Possible causes
· NETWORK IS DOWN	Device not connected to the network.
· NETWORK IS UNREACHABLE	Routing problem. The network of the desired IP address cannot be reached.
· HOST IS UNREACHABLE	The desired IP address cannot be reached.
· NETWORK RESET	Error on the network.
· CONNECTION RESET BY PEER	The remote device has terminated the connection.
· CONNECTION TIMED OUT	The remote device is not reachable.
· CONNECTION REFUSED	The connection was refused.
· HOST IS DOWN	The desired IP address cannot be reached at the current time.

Error message	Possible causes	Checkpoint/ workaround
· ISDN NOT RESPONDING	The OPTICODEC could not establish a communication to the ISDN connection: · ISDN cable not connected. · Faulty ISDN cable. · ISDN connection not in operation. · Both B-channels are already being used by other devices on this connection.	· Check the ISDN connection and the cable, and try again.
· CHANNEL UNACCEPTABLE · CALL IN AN ESTABLISHED CHANNEL · USER BUSY · NON-SELECTED USER CLEARING · RESPONSE TO STATUS INQUIRY	The OPTICODEC could not establish a connection to the entered number: · The remote device already has a connection („busy“). · The ISDN number is incorrect.	· Check the entered ISDN number and/or retry later.
· UNALLOCATED NUMBER · NO ROUTE TO SPECIFIED NETWORK · NO ROUTE TO DESTINATION · NUMBER CHANGED · DESTINATION OUT OF ORDER · INVALID NUMBER FORMAT · FACILITY REJECTED	The OPTICODEC could not establish a connection to the entered ISDN number: · The ISDN number is incorrect or does not exist.	· Check the entered ISDN number and try again.
· NORMAL CALL CLEARING · NO USER RESPONDING · NO ANSWER FROM USER · CALL REJECTED · NORMAL, UNSPECIFIED	The OPTICODEC could not establish a connection to the entered ISDN number: · The ISDN number is incorrect or does not exist. · The addressed remote device is not switched on or is not connected.	· Check the ISDN number and try again. · Check the status of the remote device and correct if necessary.
· NO CHANNEL AVAILABLE · NETWORK OUT OF ORDER · TEMPORARY FAILURE · SWITCHING EQUIPMENT CONGESTION · ACCESS INFORMATION DISCARDED · CHANNEL NOT AVAILABLE · RESOURCES UNAVAILABLE	The cause is attributable to the ISDN, i.e. it is not possible for the ISDN network to establish the desired connection at the present time. · No B-channels are currently free, since they are being used at the moment by other devices on this connection. · The ISDN network is overloaded.	· Try again later.
· INTER. NETWORKING, UNSPECIFIED	This error message appears when switching between ISDN networks of different providers, e.g. from a private provider to Deutsche Telekom or on foreign connections.	· Try again later.
· INTERNAL TIMEOUT	A timeout occurred in the device while establishing the connection.	· Check the ISDN connection, cable, numbers and protocol.

Error message	Possible causes	Checkpoint/workaround
QUALITY OF SERVICE UNAVAILABLE · REQUESTED FACILITY NOT SUBSCRIBED · BEARER CAPABILITY NOT AUTHORIZED · BEARER CAPABILITY NOT AVAILABLE · SERVICE OR OPTION NOT AVAILABLE · BEARER CAPABILITY NOT IMPLEMENTED · CHANNEL TYPE NOT IMPLEMENTED · REQUESTED FACILITY NOT IMPLEMENTED · ONLY RESTICTED DIG. INFO AVAILABLE · SERVICE OR OPTION NOT IMPLEMENTED	These error messages mean that a function required by the OPTICODEC is not supported by the ISDN network. Additional redial attempts will result in the same error. · The set ISDN protocol is incorrect.	· Check the ISDN protocol. If it is set correctly, then you should establish a test connection in telephone mode to check the activated services. If a connection can now be established, then the service „Data Transfer“ is not activated on the ISDN connection of the dialing OPTICODEC. The service must be activated by your provider.
· INVALID CALL REFERENCE VALUE · IDENTIFIED CHANNEL DOES NOT EXIST · CALL IDENTITY IN USE · INCOMPATIBLE DESTINATION · DEST. ADDRESS MISSING INCOMPLETE · INVALID TRANSIT NETWORK SELECTION · INVALID MESSAGE, UNSPECIFIED · MANDATORY ELEMENT MISSING · MESSAGE TYPE NOT IMPLEMENTED · ILLEGAL MESSAGE · INFORM. ELEMENT NOT IMPLEMENTED · INVALID INFORMATION ELEMENT · MESSAGE INCOMPATIBLE TO CALL STATE · RECOVERY ON TIMER EXPIRY · PROTOCOL ERROR, UNSPECIFIED	These error messages are generally caused by an incorrectly set ISDN protocol.	· Check the set ISDN protocol and try again.
“ --- “ ONLY FOR US PROTOCOLS	The ISDN network did not report any error. The OC may possibly have terminated the corresponding B-channel itself or it was terminated by the remote device.	· Check the set ISDN protocol and try again.
· SPID REQUEST PENDING	The querying of the SPID for ISDN has not yet been answered.	· Check the SPID number and connection.
· SPID FAILED	The SPID was rejected by the ISDN.	· Check the SPID number and connection.
· ILLEGAL SPID	The SPID number entered is too short.	
· SPID MISSING	A US protocol was set, but no SPID number was entered.	· Enter the SPID and try again.

Dimensions	19", 2 U, depth: 310 mm.
Operating temperature	-10 ° C ... +45 ° C, no fan required.
Atmospheric humidity	30 ... 90 %.
Voltage	100 - 240 V AC, 50 - 60 Hz, 0.375 - 0.20 A, max. 25 VA.
Weight	approx. 6 kg
Algorithms	MPEG1 (ISO/MPEG 11172-3 for Layer 2 & 3) MPEG2 (ISO/MPEG 13818-3 for Layer 2 & 3) 4SB ADPCM (optional; in mono or stereo) Linear 8, 12, 16, 20 and 24bit (in mono and stereo) G.711 (only over ISDN) and G.711 and G.722 with H.221 and SRT.
Audio Modes	Mono, Dual Mono, Stereo, Joint Stereo.
Transmission Rates	Ethernet: 8 ... 2304 kbps. ISDN: n x 64 kbps (n=1 to 6). X.21: 8, 16, 24, 32, 40, 48, 56, 64, 80, 96, 112, 128, 144, 160, 192, 224, 256, 320 or 384 kbps.
Sampling Frequencies	16, 22.05, 24, 32, 44.1 and 48 kHz.
Ancillary Data	0, 1200, 2400, 4800, 9600 Baud.
Audio Interfaces	Analog Input: 18 bit, adjustable level range from –4 to 21 dBu, impedance ≧ 10 kOhm / 600 Ohm (XLR-type female). Output: 20 bit, adjustable level range from –4 to 21 dBu, impedance ≦50 Ohm (XLR-type male). Digital: AES/EBU input and output according to IEC 958 prof. format.
Alarm/Control Interface	8 bit optocoupled bidirectional alarm port and RS232 for Remote Control or Ancillary Data.
ISDN Interfaces	RJ45 for S_0 connections and RJ11 for U connections.
ISDN Extension	'Plug IN' module for master board. Extendible up to 3 x S_0 and 3 x U.
ISDN D-Channel Protocols	Selectable via menu (with ISDN module type 'Stollmann'): EURO (DSS1), NATIONAL 1/2 (North America), JATE (Japan), AT&T (USA), VNx (France) and AUSTEL (Australia).
POTS Interface	For analog telephone lines.
X.21 or V.35 Interface	(optional) Serial transmission interface (8 .. 384 kbps)
PC Remote Control	With RS232 or USB Full speed. NETControl software for the remote control of one or more OPTICODEC units over the 10/100Base-Tx interface using a PC.
ISDN Synchronization	Selectable via menu: · Bonding for MusicTAXI · Sync for CDQPRIMA, CDQ2000 and Telos Zephyr in Stereo (Layer 2), 64 & 128 kbps · Sync for Telos Zephyr in Stereo (Layer 3), 64 & 128kbps · AETA Sync for 4SB ADPCM (optionally) · No Sync / No Sync Inverse · G.722/H.221 · G.722/SRT · AUTO

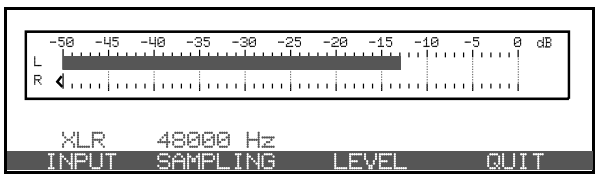
ISDN Setting	Selectable via menu: · Own number for operation at a private exchange (sent during connection establishment) · SPID number for operation on US networks (sent during establishment of a connection) · Accept incoming calls (telephone and MPEG): ALWAYS/NEVER/ASK · Accept incoming calls: own number (MSN) check yes/no.
Frequency Response	20 Hz .. 20 kHz, 0.5/-1 dB.
Signal to Noise Ratio	weighted: ≥ 80 dB.
Signal to Noise Ratio	unweighted: ≥ 85 dB.
Distortion (THD+N)	(With a 20 kHz filter, to f=5 kHz) at maximum level ‹0.06%.
Crosstalk Attenuation	(ratio) at 1 kHz › 100 dB.
Phase Error	≤1,5 degree.
Headroom Adjustment	Via menu from 0...20 dB.
External Sync	Selectable via menu: · DISABLED (Word clock is generated from the ISDN transm. clock) · DIGITAL IN (Word clock is generated from the AES/SPDIF input signal) · SYNC IN (Word Clock is taken over from the SYNC IN)
Connection Establishment	Selectable via menu: · 'Directory' using built-in telephone book with 96 entries · 'Quick Dial' using entry number · 'Redial' the last called number · 'Direct Dial Buttons' · 'Manually' using numeric keypad.
All technical information may be subject to change without notice.	

Number Codes

If the OPTICODEC is in standby mode, then the following functions are available by entering number codes in the main menu:

Audio Test (8+8+8+8+8)

An audio loop without a codec is available.



With the F1 key (input), the audio input can be switched to AES/EBU or XLR.
With the F2 key, you can modify the sampling frequency.
With the F3 key, you open the 'Adjust I/O Levels' menu.
With the F4 key, you exit the Audio Test menu.

Querying of the Versions (9+9+9+9+9)

Querying of the OC 7600 software and hardware versions, as well as hardware equipment, serial no. and operating temperature.

Querying of the Configuration of the Netzwork Interfaces (7+7+7+7+7)

Querying of the Local IP addresse, Subnet Mask, Default Gateway, Name Server addresse, Unit-Name, Domain-Name, Mac addresse, Ethernet link speed, status of the SIP Registrar and STUN Server.

Reset (3+6+9)

By pressing 3+6+9 simultaneously, reset will be started.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

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Delivery Scope

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OC7600/E/NET128	(standard device) with 1 x S_0- and 1 x 100Base-Tx interfaces Network cable length: 2 m ISDN cable RJ45 type CAT5 of length 2 m CD-ROM: OC PC Remote software, eBook.

Accessory Options	**Model description**
OC7600-ISDN	ISDN extention for the 2nd/3rd S_0 interfaces
OC7600-ACI	Alarm/Control Interface
OC7600-Adapter[1]	Adapter for Alarm/Control Interface[1]
OC7600-X.21	X.21 Interface
OC7600-V.35	V.35 Interface
OC7600-POTS[2]	POTs Interface[2]

[1] For using standard RS232 cable required.
[2] Only with aacPlus algorithm.

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Algorithms Options	
OC7600-4SBMono	4SB ADPCM mono algorithm licence
OC7600-4SBStereo[3]	4SB ADPCM stereo algorithm licence[3]
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OC7600-AACLD	AAC Low-Delay algorithm licence
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Phone: +49 (0) 7141 22 66 - 0
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