OPTICODEC PC REMOTE

Manual

orban

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Software V1.24/2007

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Table of Contents

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 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 difference between the ear and electronic measuring device 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:

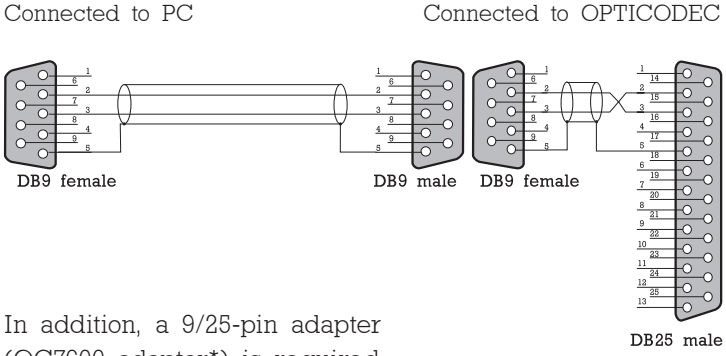
Algorithm	Bitrate (kbps)	Audio mode	Reductions ratio
in Layer 1	384	Stereo	1:4
in Layer 2	192...256	Stereo	1:6...1:8
in Layer 3	112...128	Stereo	1:10...1:12

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.

Note To avoid any misunderstanding, the 'OPTICODEC PC Remote' is referred to on the following pages as 'OC Remote' or 'OC Remote software'.

Information The licensee may not copy the software or the included original documentation or own any such copies. Furthermore, the licensee may not change, adapt, translate, duplicate, loan, lease or in any other form supply the availability of the software or service instructions as a whole or any part thereof. It is strictly forbidden to reengineer or disassemble the software, or in any other way and means attempt to trace the source code. Due to the further development for product improvement of the present series units and alterations of certain industrial parts, it cannot be avoided that some parts might not be fully compatible. Different component modifications can lead to different configuration options. Deviating program sections in the software are therefore possible.
All technical information may be subject to change without notice.

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



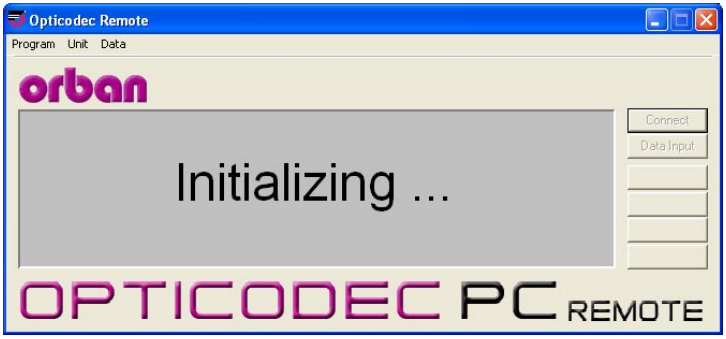
In addition, a 9/25-pin adapter (OC7600 adapter*) is required.

*only for OPTICODEC 7600, not for other models.

Download of the OC Remote Software

Start the setup program of the current application from the Internet or from the delivered data medium with a double-click on the setup icon. Follow the installation instructions on the PC screen.

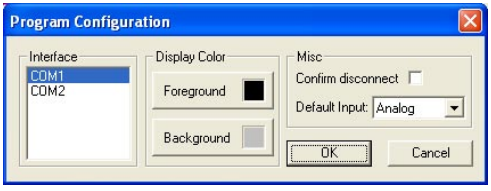
With double click on the icon you start the application. After a short initializing sequence the basic configuration menu of the connected OPTICODEC appears.



Program Configuration

A mouse click on the 'Program' menu opens a pulldown menu.

This configuration is only necessary if 'TIMEOUT!' is displayed and not 'STANDBY'. With the menu item 'Program Configuration' you can adapt the PC serial interface and adjust the display colors.



A safety query to appear before a connection is disconnected can be set up by activating the 'Confirm disconnect' check box.

Via 'Default Input' you can select the audio input by using of the Direct Dial Buttons. You can choose between: Analog, AES/EBU and S/PDIF.

Confirm yor settings with 'OK'.

Release of Additional Features

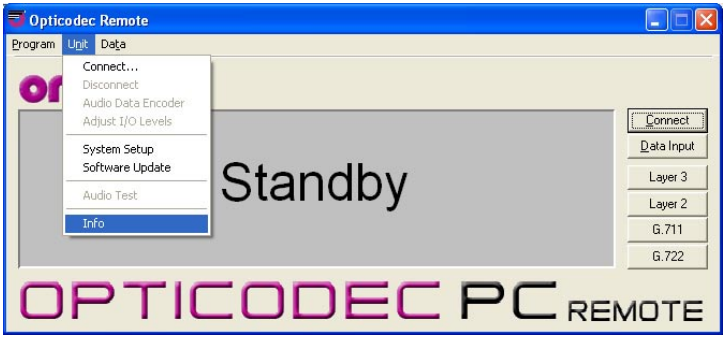
The menu item 'Enter key codes' is used for release of additional features (e.g. the 4SB ADPCM algorithm). The release is dependent on the unit model and its serial number. Each unit receives a unique key code. This function is only active in the standby mode.

About OC Remote

A window is displayed over the next menu item called "About OC Remote" where you will find information on the version number, creation date and manufacturer of the OC Remote software.

Info

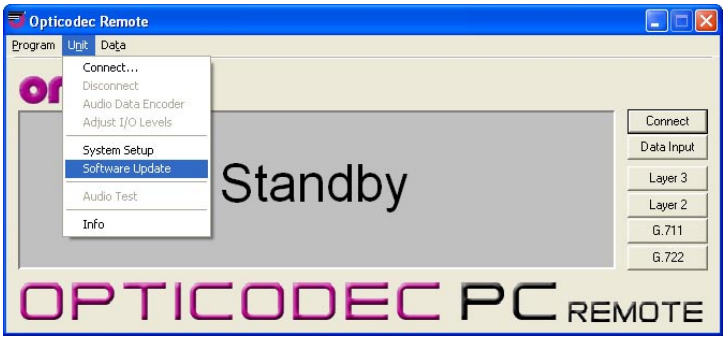
This function is found on the 'Unit/Info' pulldown menu and serves to display the latest software versions of the connected OPTICODEC unit.



All software parts with their corresponding versions are displayed. You can also interrogate the serial number of your OPTICODEC.

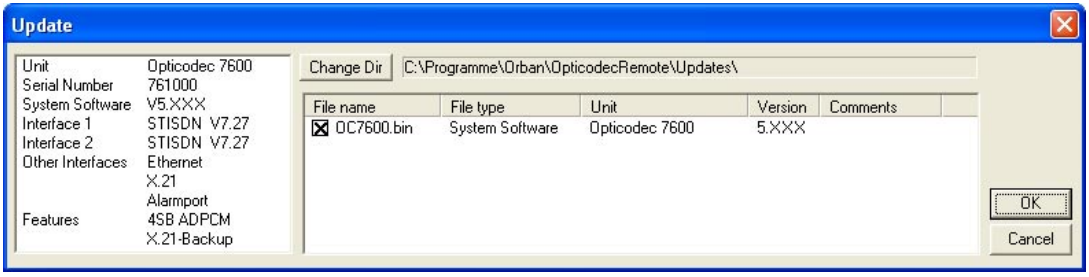
Software Update

This function is found on the 'Unit/Software Update' pull-down menu.

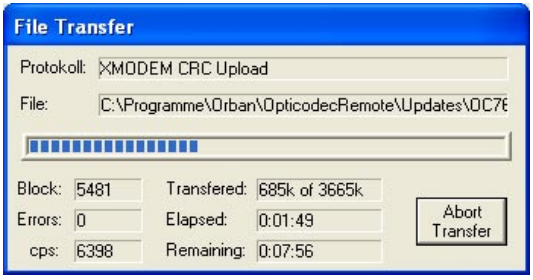


Any new software updates can be downloaded free of charge at any time from the ORBAN Europe Internet server (www.orban-europe.eu) or from the supplied data media.

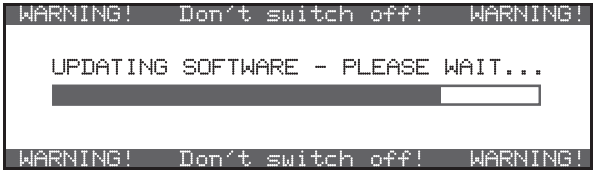
If necessary, please store the device-specific *.BIN file on your local hard drive under Program Files/Orban/OpticodecRemote/Updates. The program automatically recognizes the connected OPTICODEC and which software parts are to be updated.



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.

Damaged or incompletely loaded software always causes an error message.

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

Turn the unit off and then back on again.

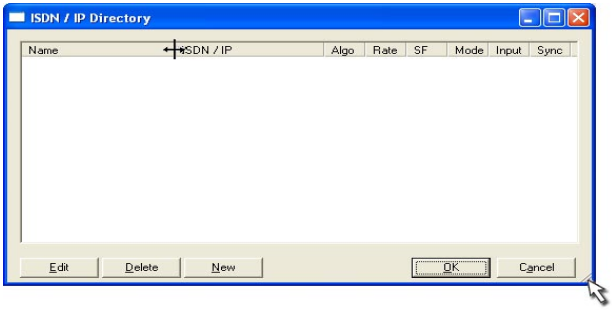
If a software update is cancelled during the programming operation, the unit may not start and/or may display only the company logo.

If this happens, the unit can be 'revived' only by its manufacturer, ORBAN Europe GmbH in Ludwigsburg.

Data Input

In standby mode select 'Data Input' from the main menu or alternatively the 'Data/Edit local directory' pulldown menu..

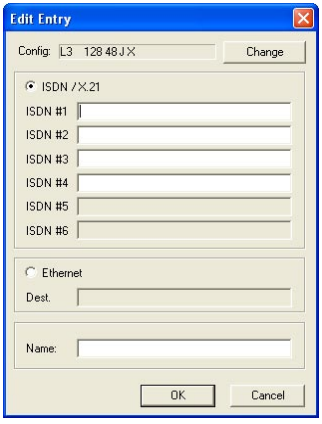
The telephone directory appears (ISDN/IP Directory).

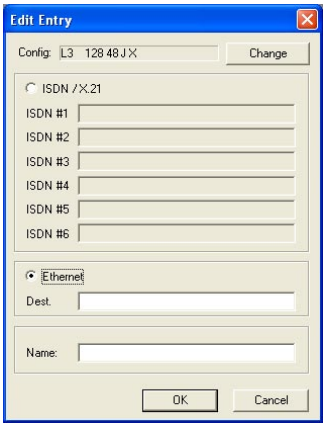


The window and columns widths are variable and can be modified with the mouse.

Creating a New Recipient

Open the input mask by clicking onto the function 'New'. Here you have the choice between ISDN or Ethernet.



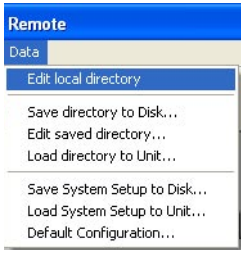


ISDN Connection

Depending on the number of installed ISDN modules, the writeable input fields are represented white. Two B-channels are available for each ISDN module. Activate an input using the mouse. The positioning marker of the cursor blinks when the number can be entered. Move between ISDN input fields using the tab key.

Once the ISDN numbers have been entered, you can assign a name to the recipient (max. 49 characters).

Edit Recipient

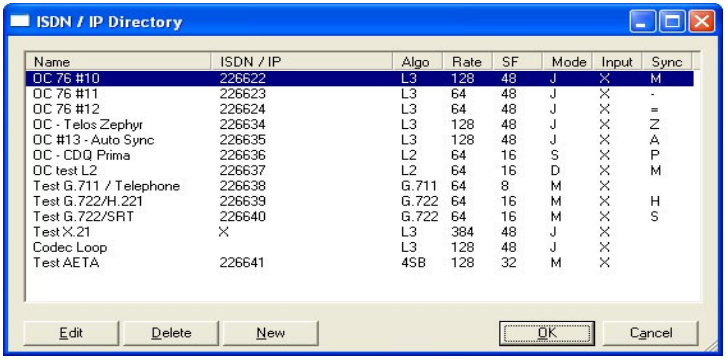


The ISDN/IP address directories of the connected ORBAN OPTICODEC 7600, OC 7400, CTAXI or PAN-PRO can easily be imported and exported via the 'Data' menu to your PC for more efficient management.

Select the entry you want to process from the ISDN/IP directory using the 'Edit' key or with a mouse double-click.

To delete a recipient click with the left mouse button onto the entry in the ISDN/IP directory you would like to delete and press the 'Delete' key..

Deletion takes place after confirming with the 'OK' key.

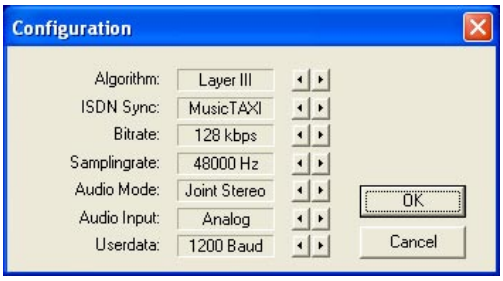


Alterations of the default audio configuration can be made by clicking onto the 'Change' key.

The configuration menu of the audio parameters which are assigned to the current entry appears. By activating the arrows (left-right) you can change the pre-settings.

Algorithm

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



By pressing the arrow keys, you can select between Layer 2, Layer 3, G.722, G.711 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 for AETA sync and 4SB ADPCM algorithm (not included in the standard delivery) is performed as described on the page #9.

Bitrate

According to the setting of the algorithm and the number of outgoing B-channels, the transfer rate is set here: 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 for setting 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 for setting 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 between 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 for setting the desired audio input on outgoing calls. You can choose between: Analog and AES/EBU and S/PDIF.

Userdata The menu item 'Userdata' is used for setting 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 3.

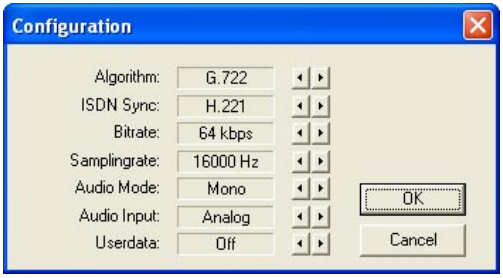
Note If the ancillary data is switched off (OFF), no remote effect signals are transmitted either.

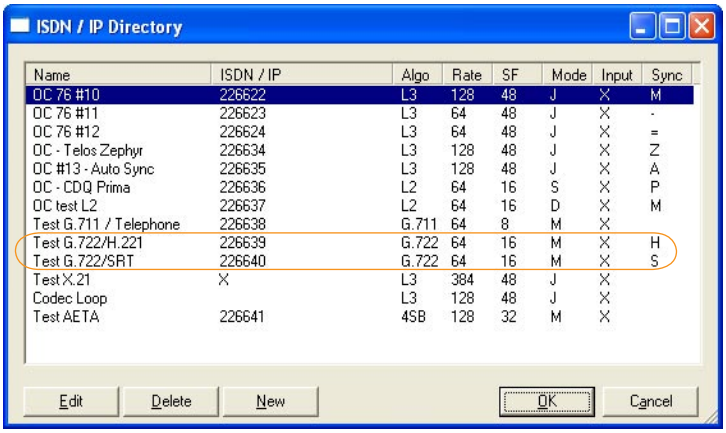
Between OPTICODECs, the smallest preset baud rate of the ancillary data is used in the context of the device handshake.

G.722 Connection with H.221 or SRT Sync

If you enter a G.722 partner in the 'Data Input' menu, please observe the following order:

1. Enter the ISDN number.
2. Enter G.722 in 'Algorithm'
3. Determine the Sync modes in 'ISDN Sync'.





Now H=H.221 or S=SRT is displayed in the directory for the selected SYNChronisation procedure.

X.21 Connection

To activate the X.21 interface, enter an 'X' in the ISDN field (e. g. position #11 in directory).

Codec Loop

If the input fields are empty, the OPTICODEC starts the 'codec loop' mode. This serves as a test for the coded audio signal (without ISDN). (E. g. position #12.)

Ethernet Connection

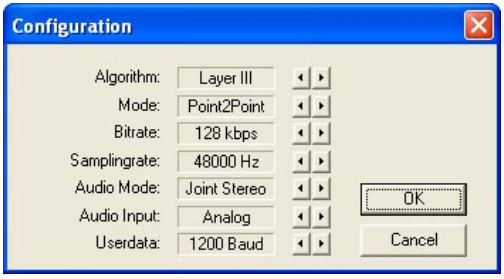
Should an Ethernet connection be desired, please activate the radio button for Ethernet. Enter the target address and, for easier identification, also enter the name of your connection partner.

You may enter both IP address and plain-text names*.
(* Only if a name server also exists.)

Audio Configuration

In the same way as the description of ISDN connections, you can set the audio parameters for the planned connection here. The menu guides you through algorithm (Layer 2 and Layer 3), mode, bitrate, and finally userdata.

Mode



To transfer audio signals in real time over IP networks (VoIP = Voice over IP), three 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 (e. g. pos. #11, on page #18).

SIP/RTP

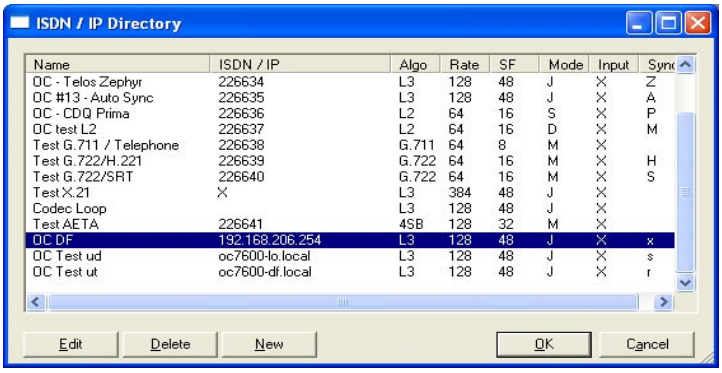
SIP (Session Initiation Protocol) Signalling protocol responsible for the establishment, termination and control of connections and RTP (Real-time Transport Protocol). The actual voice connection is created using data units (streams) by means of RTP.

These entries are marked with an 'n' in the Sync column of the directory (e. g. pos. #12, page #18).

RTP

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

These entries are marked with an 'r' in the Sync column of the directory (e. g. pos. #12, page #18).

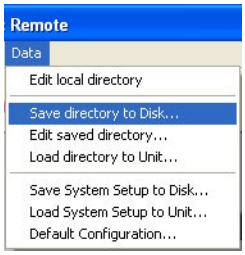


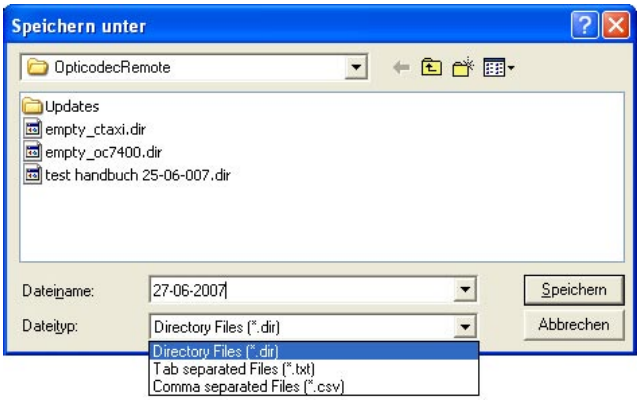
Tip

The local ISDN/IP directory is saved in the ‚OpticodecRemote' program directory as a ‚num.dat' file. This directory can be easily exported to any number of PCs, hence saving time by copying the same address book directory to all of them.

Saving the Unit ISDN/IP Directory to your PC Harddisk

Use the feature 'Save directory to disk' to store the ISDN/IP directory of your unit on PC.



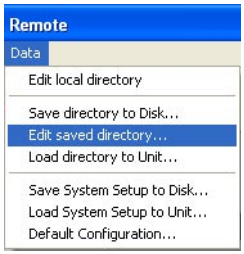


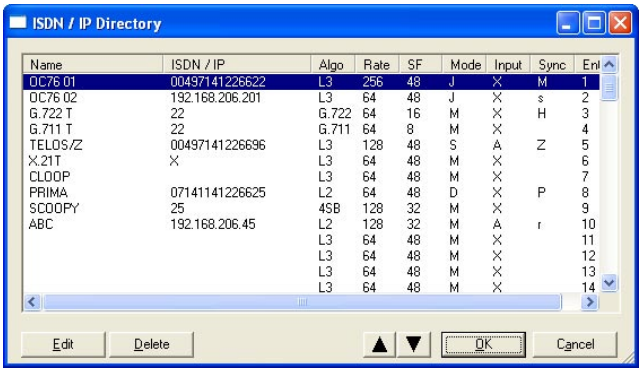
Do this by selecting the file format you require, either Directory File (*.DIR), Text separated Files (*.TXT) or Comma separated Files (*.CSV) and importing the address book into MS Word or Excel, for example. These file formats can also be exported to the unit.

However, the program's own editor can run only *.DIR file formats.

Edit saved directory

The entries can be edited, newly entered, deleted and sorted by means of the 'Edit saved directory' function. Double-click a vacant field of entry in the directory to enter a new codec partner

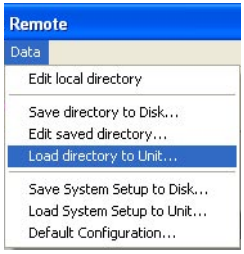




Loading ISDN/IP Directory to a Unit

Click onto 'Load directory to unit', locate the desired *.DIR file and finally activate the 'Open' key.

All 96 entries (connection partners) with their names, ISDN numbers/IP addresses and set audio parameters are now loaded to the unit.

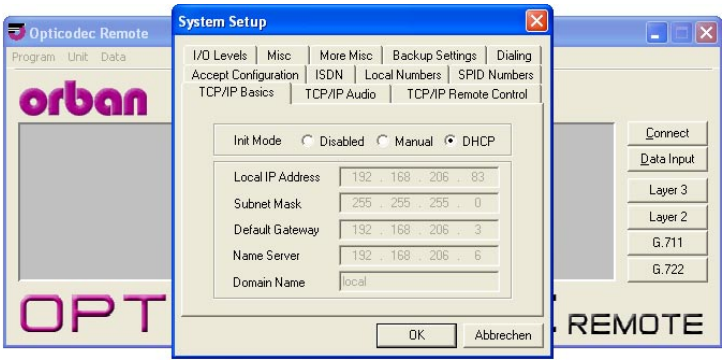


It is irrelevant whether all or only some of the entries have been occupied or whether they are all or partly vacant; or whether the connected unit is an OPTICODEC 7600, OC 7400, CTAXI or PAN-PRO.

Exporting the directory can easily be repeated should it fail because of for e.g. a power down or power failure.

Configuration of the connected OPTICODEC in System Setup

Select 'System Setup' from the 'Unit' pulldown menu. The basic configuration menu of the connected OPTICODEC differs in appearance depending on the unit type and its equipment.



TCP/IP Basics

In this menu item the basic settings of the unit within the network are entered.

Init Mode

With this menu item, you set the initialization mode of the OPTICODEC. 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 submenus are disabled.

Local IP Address

In the data entry mask, enter the IP address of your OPTICODEC. Be aware 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 to the subnets and/or permit better administration of the data traffic.

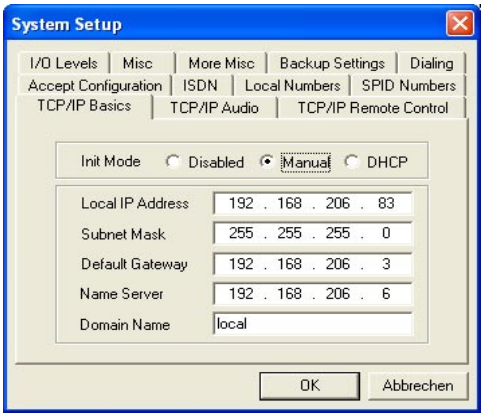
Default Gateway

The data exchange occurs between the various nodes in the network with complete transparency to 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.

Note You will be informed of the IP address, Subnet Mask and Default Gateway by your network administrator.

Name Server



Domain Name Servers (DNS), also called name servers for 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.

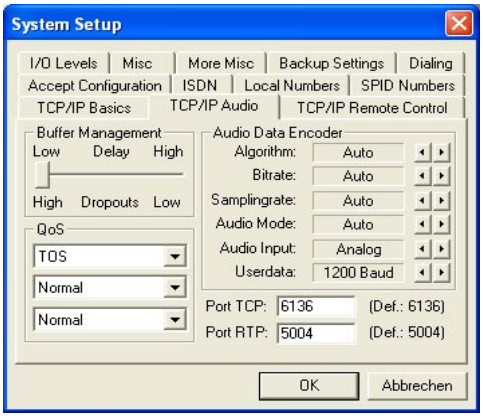
If DHCP is activated, this menu item is disabled or the settings are taken from the DHCP server.

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'.

TCP/IP Audio

The settings for audio transmission over the network are found in this menu.



Buffer Management

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

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 more value is placed on having a shorter delay, then the bar can be moved to the left; however, this has a negative impact on the transmission security.

To permit 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 have equal status for data transfers, and not all applications require the same high standards for data transfers. To minimise or prevent the risk of bottlenecks in data networks, the IP header implements the so-called 'Quality of Service (QoS)' in addition to the identifier fields such as time to live, protocol and header checksum.

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

Type

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

TOS

The TOS bits contain information about 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 absolutely be transmitted.

Precedence Values

Precedence	Significance	Precedence	Significance
000	Normal	011	Flash
010	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 the intensive signalling on each router.

Each packet can be marked and is handled and transmitted accorded to this marking.

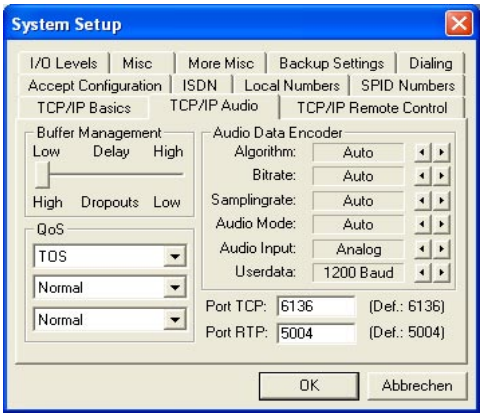
DiffServ Codepoints (DSCP)

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 in the generally available 'Request for Comments' lists (RFC1349 TOS; RFC2474 DiffServ) on the Internet (www.rfc-editor.org).

Audio Data Encoder



This encoder configuration is taken over when the OPTICODEC is called by another OPTICODEC over IP. The pre-settings are AUTO.

Descriptions of the individual functions can be found on pages 14-15.

Audio Port (TCP) This menu contains the setting for audio transfer over the network with TCP protocol. The setting is for point-to-point.

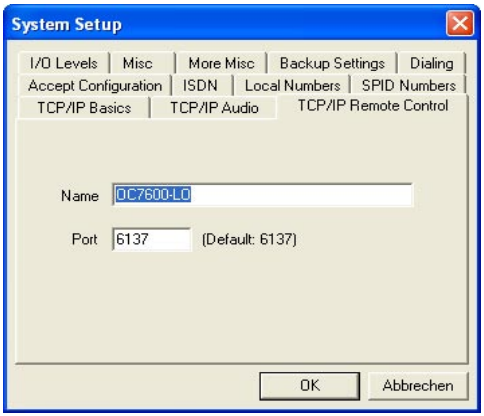
For the OPTICODEC, the value 6136 should always be entered.

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.

TCP/IP Remote Control



Unit Name

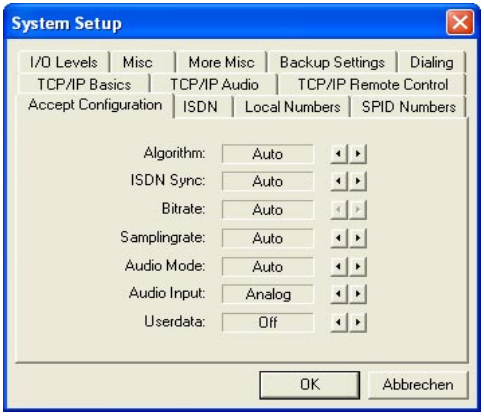
For easier identification of devices on the network, the name of your OPTICODEC must be entered here without name length restrictions. This name is transmitted to the 'NETControl' program and shown in the device list.

Port

Here you enter the port number for remote control over the network. For the OPTICODEC, the value 6137 should always be entered.

Accept Configuration

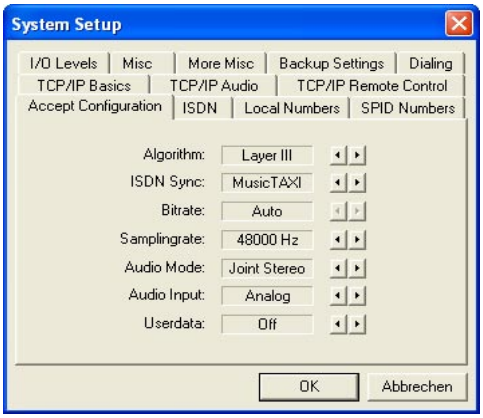
This point determines the call accept mode of the OPTICODEC. You can set the accept mode more or less specific for the unit and transmission permanently.



Then the OPTICODEC only accepts calls in the respective configuration. Or you can select the operation mode AUTO(matic Codec Detection). The OPTICODEC serves as a 'SLAVE' and takes over the parameters of the calling unit automatically. The 'AUTO' mode is not available for 'Audio Input' and 'Userdata'.

Algorithm

The 'Algorithm' menu item serves for setting the desired data reduction procedure on incoming ISDN calls.



You can select between: Layer 2 Layer 3, 4SB ADPCM (optional), AUTO (G.711/G.722 calls are also accepted).
Please see also 'Brief Lexicon', page #47.

ISDN Sync

The 'ISDN Sync' menu serves for setting the desired synchronization procedure. You can select between:

MusicTAXI (MusicTAXI Sync for 1 to 6 B-channels)
PRIMA (CCS Sync for 2 B-channels)
ZEPHYR (Telos Sync for 2 B-channels)
AETA (for the 4SB ADPCM algorithm; optional)
NO SYNC when using 1 B-channel
NO SYNC (INV) when using 1 B-channel
AUTO - Automatic Audio Codec Detection

Note

If a sync other than 'MusicTAXI' or 'AUTO' is preset, G.722 calls can not be received.

Bitrate

The menu item 'Bitrate' cannot be adjusted. The transmission rate is determined and set according to the number of incoming B-channels (always 'AUTO').

Samplingrate

The Samplingrate menu item serves for setting the desired sampling frequency when calls are coming in.
You can select between:
16, 22.05, 24, 32, 44.1, 48 kHz
AUTO (the sampling frequency of the calling unit is taken over).

Audio Mode The 'Audio Mode' menu item is used for setting 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 between left and right and the difference between left and right; these are encoded and transmitted separately (subjectively better quality at low data rates).
and AUTO	the audio mode of the calling unit is taken over.

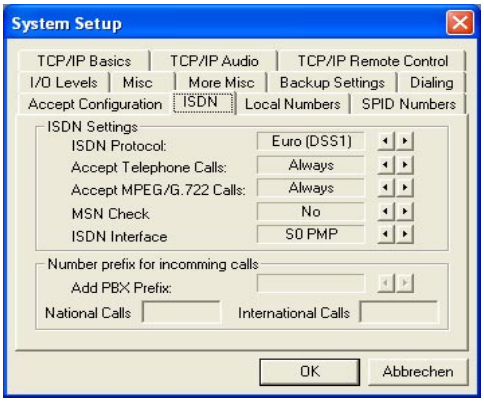
Audio Input The menu item 'Audio Input' serves for setting the desired audio input, when calls are coming in. You can select between: Analog, AES/EBU and S/PDIF.

Userdata The menu item 'Userdata' serves for setting the desired ancillary data, when calls are coming in.
You can select between:
OFF (no ancillary data is transmitted)
1200, 2400, 4800 baud in Layer 2
1200, 2400, 4800, 9600 baud in Layer 3.

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

From OPTICODEC to OPTICODEC, the lowest preset baud rate of the ancillary data is agreed within the unit handshake.
Press 'OK' (left mouse click) to take over the presetting of the call acceptance. Press 'Cancel' and the presetting is not taken over
.

ISDN Configuration



ISDN Protocol

The OPTICODEC 7600 is equipped by default 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).

Achtung

Decisive is the ISDN protocol of your connection, not the one of the partner unit! You can alter the settings by pressing the arrow keys.

Accept Telephone Calls

This menu item serves to define the OPTICODEC behavior when operated at a S_0 connection together with other units. You can select between:

ALWAYS every telephone call is accepted
NEVER every telephone call is rejected.

Accept MPEG/G.722 Calls

In this menu item the call acceptance for MPEG and G.722 calls is defined. The settings are the same as the menu item (Accept Telephone Calls).

MSN Check

In case of a passive call, the interrogation of the MSN number can be activated or switched off. If YES is entered for MSN check, the called number is compared to the one which has been entered in Local Numbers. The call is only accepted, if both numbers are identical.

In case of EURO ISDN, the MSN is usually the ISDN number of your connection without the area code, in case of private exchanges only the number of your extension.

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

Warning The incorrect configuration of only one unit might result in the rejection of all calls

ISDN Interface

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

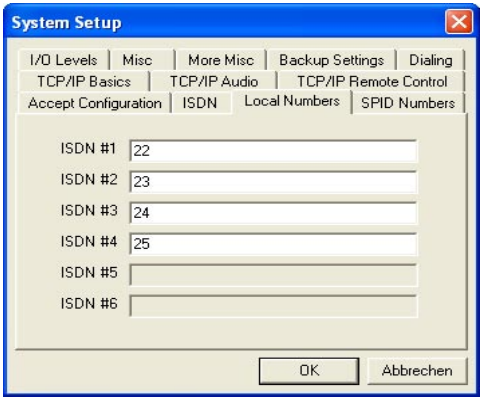
S_0 PMP (Point-to-Multipoint)	for multiple device connection. (This is the usual connection type.)
S_0 PP (Point-to-Point)	for equipment connection
U PMP (Point-to-Multipoint)	for North America only (using a ISDN module type 'IMD4').

Number Prefix for Incoming Calls

These functions are used under certain conditions (e.g. PBXs) only for OPTICODEC 7200 and 7400.

Local Numbers

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

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

SPID Numbers

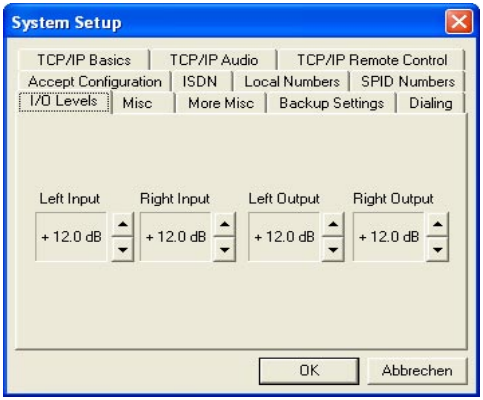
The identification numbers entered here are sent when the connection has been established. They are only necessary when operating the OPTICODEC on US and Canadian networks.

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

You will be informed of the SPID number by your ISDN provider. These input fields otherwise remain empty.

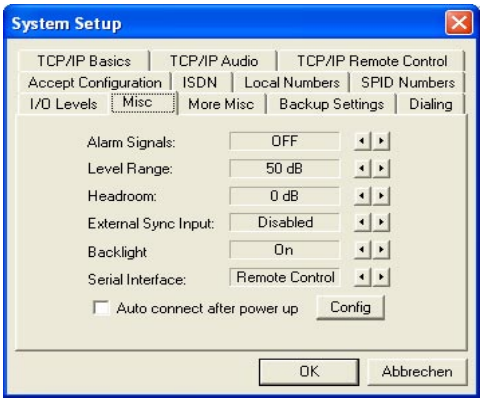
I/O Levels

This menu item serves for setting the analog Input and Output levels for the left and right channels.



Ex-factory the setting is +12 dBu, the headroom is 0 dB. This means: input level = output level = 12 dBu. With a mouse click on the 'up' and 'down' arrow keys the level value can be altered.

Misc



Alarm Signals

If these signals are switched OFF, the relevant switching information of the OPTICODEC inputs is transferred to the partner unit. Otherwise you can select between:

CON	The signal is set to pin 19 once the decoder has been synchronized i.e. when the connection is 'OK'.
DIS	The signal is set to pin 18 if the line has been disconnected from the partner unit or because of an ISDN error.
CON+DIS	Both signals are set.

Level Range

This menu item allows the adjustment at the level range: 50 or 80 dB.

Headroom

This menu item serves for setting the desired headroom. You can select between 0 and 20 dB in 1 dB steps. Ex-factory the setting is 0 dB.
The scale display in the online menu is moved.

Warning Clipping limit at 0 dB + selected headroom!

External Sync Input

The OPTICODEC has a sample rate converter at the audio input and output. For the external synchronization of the digital output you can select between:

DISABLED Word clock is generated from the ISDN transmission clock

DIGITAL IN Word clock is generated from the AES or S/PDIF input signal

SYNC IN Word clock is taken over from SYNC IN.

Backlight

This function serves to set the display background lighting of the connected unit:

ALWAYS ON background lighting is always on

ON CONNECT the background lighting switches on once a connection has been established or when the 'System Setup' or 'Data Input' menus have been called up. The lighting switches off shortly after returning to the main menu.

Serial Interface

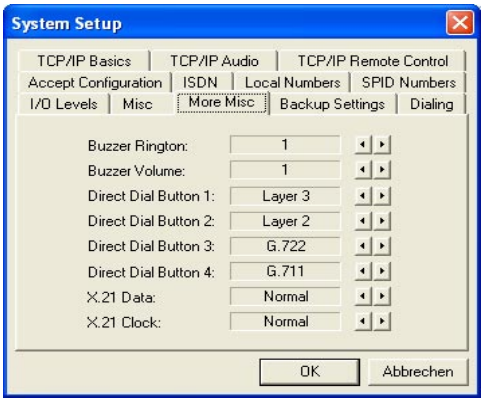
This menu item is used to convert the RS232 signals in the 'Remote Control' or 'Ancillary Data' mode.

If the ‚Ancillary Data' setting is selected, the OPTICODEC can no longer be remotely controlled via OC Remote. The 'Remote Control' mode can only be reselected via the unit under 'System Setup' ›› 'Miscellaneous' ›› 'Serial Interface'.

Automatic Connection Start

When 'Auto connect after power up' check box is activated, the unit automatically begins establishing a connection once it has been switched on. The configuration used here is set up using the 'Config' key.

More Misc



Buzzer Rington
Buzzer Volume

If the OPTICODEC is called, then an audible signal can be heard. In these menu items, select between 4 ringtones and a 4-level volume or OFF (Buzzer switched off).

Direct Dial Buttons

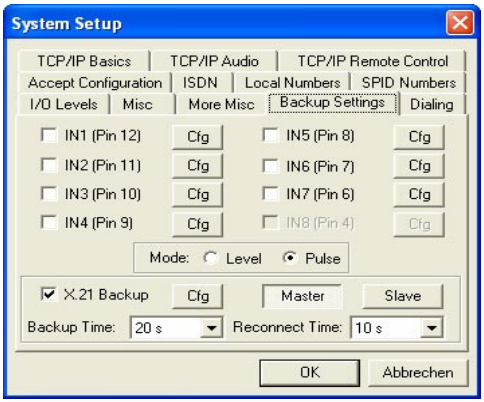
Here you can allocate the 4 direct-dial buttons to the selected dialing procedure. You can choose between: Layer 2, Layer 2, G.722, G.711, AAC* and 4 SB ADPCM*
(* optional).

X.21 Configuration

This menu item is used to configure the data transfer via the X.21 interface or the inversion of the data and/or clock circuits in the event that, in the corresponding circuits, the A- or B-wires are confused with each other. In the data cables, Rx and Tx are always jointly inverted.

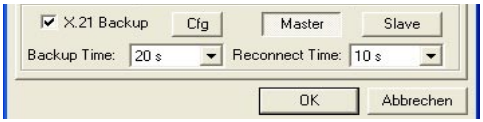
Backup Settings

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



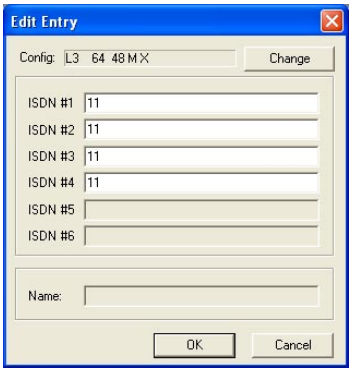
X.21 Backup

If your OPTICODEC is equipped with an X.21 interface, the menu item 'X.21 Backup' appears on the display.



To do this, you must activate the check box. Press the 'Cfg' key to allocate an ISDN number to this input port.

Press the 'Change' key if you wish to operate changes of the audio parameters. This ISDN number complies in all parameters to the respective entry in the ISDN directory of the OPTICODEC 7600.



Mode

The X.21 connection is a bidirectional connection between two devices. You can choose between:
SLAVE Sender*,
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.

Backup Time (T_{on})

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.

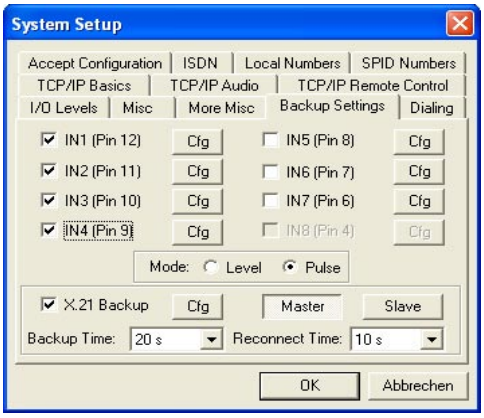
Reconnect Time (T_{off})

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

ACI Dialing

In the following example, the entries IN1 to IN4 are allocated to entries 87 to 90 in the ISDN/IP Directory.



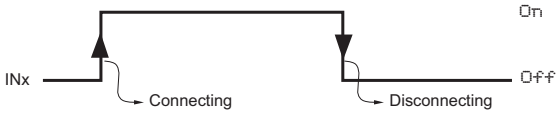
Press the 'Change' key if you wish to operate changes of the audio parameters. This ISDN number complies in all parameters to the respective entry in the ISDN directory.

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

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 was established and the decoder was synchronised.

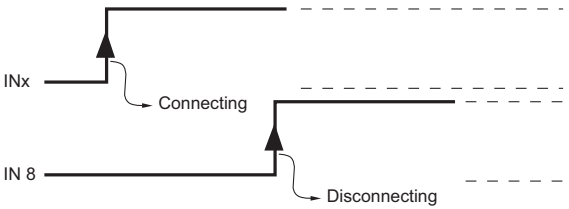
Mode: Level

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.

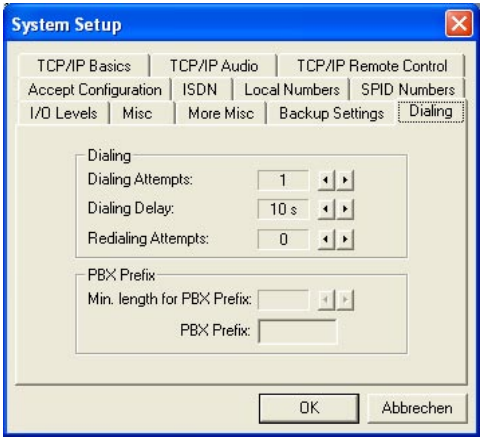


As soon as a switching signal is applied to INx, the establishment of the connection begins. The level on INx is then no longer significant for the connection.

If a switching signal is applied to IN8, then the connection is disconnected. If a signal is 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.

Dialing



Dialing Attempts

This menu item serves for setting the desired dialing attempts. You can select between 1 and 5.

Dialing Delay

This menu item serves for setting the desired time between dialing attempts (between 10 and 60 seconds).

Redialing Attempts

This menu item serves for setting the desired redialing attempts, if a connection had not been disconnected by the calling OPTICODEC. You can select between 0 and 5.

PBX Prefix

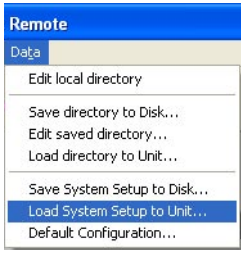
These functions are used under certain conditions (e.g. PBXs) only for OPTICODEC 7200 and 7400.

Saving the Units System Setup to Your Harddisk

Similarly to that of the ISDN/IP directory (pls see page 30), there is alternatively the possibility to save the system configuration of the OPTICODEC onto your PC harddisk for archive purposes, for example.

Use the 'Save System Setup to Disk' feature to store the unit specific *.CFG data file in a folder of your choice.

Loading System Setup to a Unit

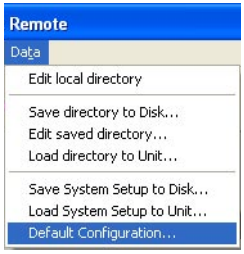


By using the 'Load System Setup to Unit' feature, the system configuration already stored on your PC can be loaded onto the OPTICODEC units.

Locate the *.CFG data to be loaded and press the 'Open' key.

Any number of OPTICODEC units can easily be configured with identical 'System Setup' settings using this procedure.

Default Configuration



With this menu item all previous configurations are reset to those ex-factory.

After the safety query, confirm with the 'OK' button should the default procedure be carried out or use 'Cancel' should you wish to cancel the command to default.

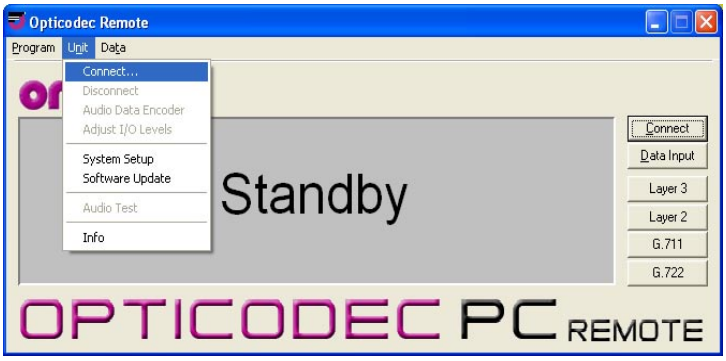
Warning This process can not be reversed after confirmation!

Connect

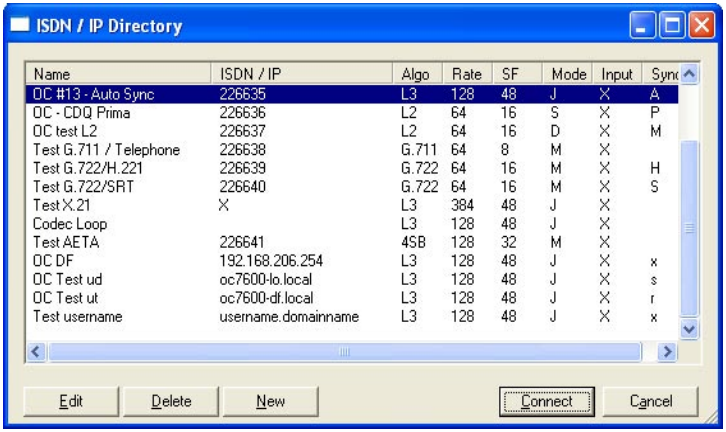
The respective connection can be established quickly and easily.
A pre-requisite for the connection establishment is the correct initializing of the OC Remote software with the connected OPTICODEC. This is confirmed with the 'Stand-by' status message in the program screen.

Establishing a Connection Using the ISDN/IP Directory

Select the 'Connect' key from the main menu or choose alternative the 'Unit/Connect'. pulldown menu.



The present ISDN/IP directory appears.



Assigned to each entry you will find the name of your connection partner, the ISDN number, IP address or target address, the selected audio parameters as well as the sync mode of your partner unit.

Establishing Connection

Select your ISDN connection partner from the list using the mouse. The selected connection partner is marked and displayed inverted. Press 'Connect' to confirm. The connection is now being established.

After successful synchronization, your OC Remote program displays the message 'Connected' and goes to the online menu. If the connection is rejected, the OPTICODEC displays 'Rejected' and the reason for the rejection. Analyse the error message using the error codes listed in the appendix (pls. see page 44).

Establishing a Connection Using the Direct-Dial Buttons

This type of connection is established via the four preprogrammed keys, located right from the display.

The assignment, sequence and function of the keys correspond to keys F1 ... F4 of OPTICODEC 7600 and can be configured via 'System Setup', as described on page 33.

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.

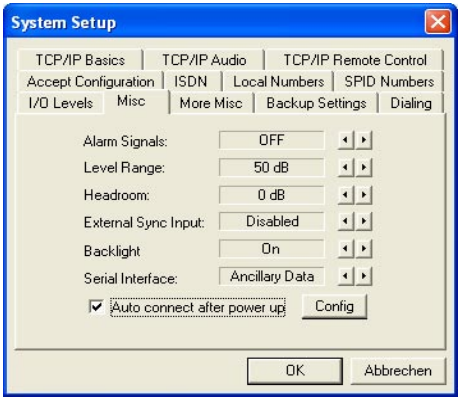
The entry menu then requests the ISDN number, which is entered with the numeric keypad as usual.

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.

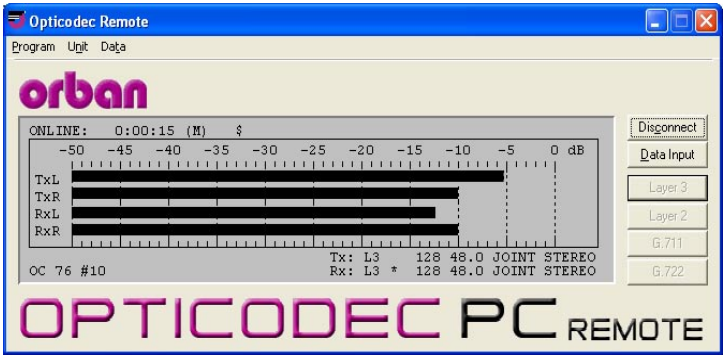
Automatic Connection Start

On switch-on or e.g. after a power outage, the OPTICODEC automatically establishes a connection provided that the 'Auto connect after power up' check box is activated and a target number or address has been allocated.



Connection Monitoring

After the establishment of the connection and the exchange of the transmission parameters, the online transmission menu appears on the display.



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.

Adjust Audio Parameters

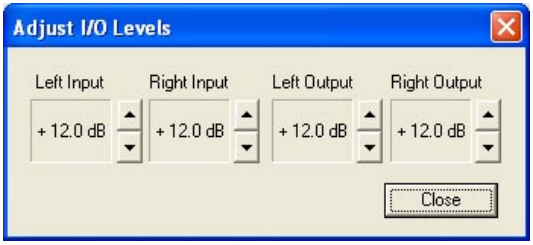
During a live connection, you can place a query without interrupting the line and change the audio parameter settings.

This function is available from the ‚Unit/Audio Data Encoder' pulldown menu.

If a connection is made in ‚Layer 2' or ‚Layer 3' mode, you can toggle between these algorithms. The parameters between G.711, G.722 and 4SB ADPCM cannot be changed.

Adjust Audio Levels

This menu item serves for setting the analog Input and Output levels for the left and right channels without interrupting the line.



Ex-factory the setting is +12 dBu, the headroom is 0 dB. This means: input level = output level = 12 dBu. With a mouse click on the 'up' and 'down' buttons the level value can be altered.

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.

Status Messages

In the online menus of the OC PC Remote and OPTICODEC units, the following messages can be output:

Status Messages	Possible causes
NO X.21 CLOCK	No X.21 clock pulse was detected.
ILLEGAL X.21 CLK	The measured X.21 clock pulse does not correspond to 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.

TCP/IP Quick Configuration

Pre-requisite: only OPTICODECs within the network

LOCAL IP ADDRESS 192.168.200.100 for OPTICODEC #1
192.168.200.101 for OPTICODEC #2
....

SUBNET MASK 255.255.255.0
DEFAULT GATEWAY 0.0.0.0
REMOTE CONTROL
NAME (z.B.) OC72#1 for OPTICODEC #1
OC72#2 for OPTICODEC #2
.....
PORT 6137
AUDIO TRANSMISSION
BUFFER MANAGEMENT Bar to the left
PORT 6136
ACCEPT CONFIGURATION L3, 128 kbps, 44.1 kHz, J.Stereo.

Should additional PCs also be connected to the network to remote control the OPTICODECs, these are configured as follows:

Own IP Address: 192.168.200.1 for the first PC
192.168.200.2 for the second PC
...
Subnet Mask: 255.255.255.0

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.

Error message	Possible causes	Checkpoint/ workaround
· 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.
· 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.

Error message	Possible causes	Checkpoint/ workaround
· 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 numbers 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.

Error message	Possible causes
· NETWORK IS DOWN	Device not connected to the network.
· NETWORK IS UNREACHABLE	Local IP address has duplicate allocation.
· 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.

Standardised Audio Compression Procedures (Algorithms)	
· G.711	Standardised audio compression procedure for speech transmissions over ISDN. This algorithm requires 64 kbps bandwidth and supplies audio quality of up to 3.1 kHz ("telephone").
· G.722	This algorithm requires a data rate of 64 kbps and supplies audio quality 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.
· MPEG Layer 2	Data rate 32 - 384 kbps, sampling rate up to 48 kHz* and supplies up to 20 kHz audio bandwidth.
· MPEG Layer 3	Data rate 8 - 320 kbps, sampling rate up to 48 kHz* and supplies up to 20 kHz audio bandwidth.
*Delay and audio bandwidth are strongly dependent on the sampling rate and data rate.	

OPTICODEC 7600 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.

Algorithms Options

OC7600-4SBMono	4SB ADPCM mono algorithm licence
OC7600-4SBStereo[3]	4SB ADPCM stereo algorithm licence[3]
OC7600-AAC	AAC algorithm licence
OC7600-AACLD	AAC Low-Delay algorithm licence
OC7600-AACPL	aacPlus algorithm licence.

[3] For ISDN two modules required.

OPTICODEC Test Number

Dial the ISDN test number which ORBAN Europe GmbH has set up for you: +49 7141 22 66 22.

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