TANDBERG
Maestro MXP

User Manual

Software version F2
D13358.03

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Environmental Issues

Thank you for buying a product, which contributes to a reduction in pollution, and thereby helps save the environment. Our products reduce the need for travel and transport and thereby reduce pollution. Our products have either none or few consumable parts (chemicals, toner, gas, paper). Our products are low energy consuming products.

Battery handling

Batteries for the Remote Control are Long Life and Alkaline batteries saving the environment; please follow guidelines on the packing material for handling and disposal of the batteries.

Waste handling

No need to send material back to TANDBERG as there are no consumables to take care of. Please contact your local dealer for information on recycling the product by sending the main parts of the product for disassembly at local electronic waste stations, marking recyclable parts so the waste station can disassemble and re-use these parts.

Production of products

Our factories employ the most efficient environmental methods for reducing waste and pollution and ensuring the products are recyclable.

Digital User Manuals

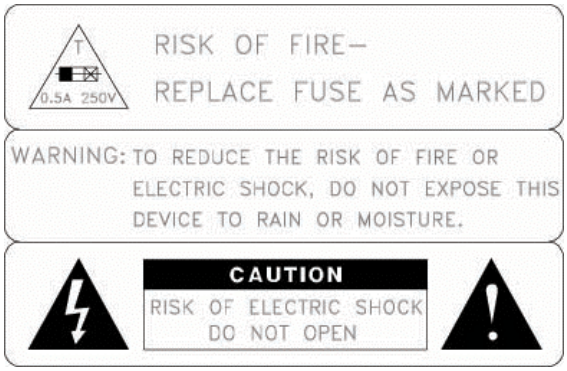
TANDBERG is pleased to announce that it has replaced the printed versions of its User Manuals with a digital CD version. Instead of a range of different user manuals, there is now one CD which can be used with all TANDBERG products, in a variety of languages. The environmental benefits of this are significant. The CDs are recyclable and the savings on paper are huge. A simple web-based search feature helps users directly access the information they need. In addition, the TANDBERG video systems now have an intuitive on-screen help function, which provides a range of useful features and tips. The content of the CD can still be printed locally if the need arises.

Operator Safety Summary

For your protection, please read these safety instructions completely before operating the equipment and keep this manual for future reference. The information in this summary is intended for operators. Carefully observe all warnings, precautions and instructions both on the apparatus and in the operating instructions.

Equipment Markings

The lightning flash symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated “dangerous voltages” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electrical shock.
The exclamation mark within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions within literature accompanying the equipment.



Warnings

- Water and moisture - Do not operate the equipment under or near water - for example near a bathtub, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool or in areas with high humidity.
- Cleaning - Unplug the apparatus from the wall outlet before cleaning or polishing. Do not use liquid cleaners or aerosol cleaners. Use a lint-free cloth lightly moistened with water for cleaning the exterior of the apparatus.
- Ventilation - Do not block any of the ventilation openings of the apparatus. Install in accordance with the installation instructions. Never cover the slots and openings with a cloth or other material. Never install the apparatus near heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Grounding or Polarization - Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician.
- Power-Cord Protection - Route the power cord so as to avoid it being walked on or pinched by items placed upon or against it, paying particular attention to the plugs, receptacles, and the point where the cord exits from the apparatus.
- Attachments - Only use attachments as recommended by the manufacturer.
- Accessories - Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- Lightning - Unplug this apparatus during lightning storms or when unused for long periods of time.

- ISDN cables - CAUTION - To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord.
- Servicing - Do not attempt to service the apparatus yourself as opening or removing covers may expose you to dangerous voltages or other hazards, and will void the warranty. Refer all servicing to qualified service personnel.
- Damaged Equipment - Unplug the apparatus from the outlet and refer servicing to qualified personnel under the following conditions:
    - When the power cord or plug is damaged or frayed
    - If liquid has been spilled or objects have fallen into the apparatus
    - If the apparatus has been exposed to rain or moisture
    - If the apparatus has been subjected to excessive shock by being dropped, or the cabinet has been damaged
    - If the apparatus fails to operate in accordance with the operating instructions

Table of Contents

1 Introduction

The TANDBERG Maestro MXP provides high-end performance features, large monitors and precision audio. This creates a collaborative meeting environment for medium to large-sized meeting rooms.

Audio Quality
High-performance audio provides a richer, more complete visual communication experience. The MPEG4 AAC-LD standard is used to provide true standards-based CD-quality audio.

The Digital Natural Audio Module™ (DNAM), specifically designed for videoconferencing, provides higher fidelity sound for a natural sound image, featuring 250W of power.

Users can record and send stereo audio from presentation and playback sources using PCs, DVDs and VCRs.

Video Quality
Features which ensure high quality video includes:

- Natural Video™ which provides 60 fields per second true interlaced picture.
- Support for H.264 in MultiSite, DuoVideo/H.239 and encryption.
- SXGA input and 2 x XGA output through DVI-I (analog or digital).
- WAVE II (Wide Angle View) Camera that delivers the widest angle of view in the industry.

NEW H.264 video compression up to 2Mbps.

NEW Support native 16:9 Wide XGA monitors by increasing the resolution to 1280x768 (WXGA).

NEW Automatic use of WXGA format when ”VGA Monitor Format” is set to Wide.

Network
The system supports videoconferencing via both IP and ISDN networks. The bandwidth capabilities are:

- up to 4Mbps* on IP
- up to 2Mbps* on ISDN
- up to 6Mbps* IP in MultiSite.

If channels are dropped during a videoconferencing session Downspeeding™ automatically maintains connections without interruption.

NEW SIP support, both for point-to-point and MultiSite*.

Security
Secure Conference™ provides embedded encryption for both Point-to-Point and MultiSite call and ensures both privacy and security.

NEW Integrated Expressway™ firewall traversal technology. When used together with a TANDBERG Border Controller it enables:

- Secure and seamless traversal of ANY firewall.
- No missing features when traversing the firewall – works with H.264,

MPEG4 audio, encryption.
- Outside systems, such as home offices, to be part of the enterprise dial plan.
- Dialing to systems by URI, e.g. user@company.com.

MultiSite*
The embedded MultiSite[TF] functionality can cater for up to 6 video sites and 5 audio sites and supports screen layouts such as VoiceSwitched, AutoSplit, 4 Split and 5+1 Split. [TF]The MultiSite functionality supports any combination of ISDN and IP participants in a conference.

A superior quality and reliability is ensured by:
- Supporting DuoVideo/H.239, encryption and H.264.
- Rate matching[TF] and Transcoding[TF] which supports different call rates for all sites in a MultiSite.

The TANDBERG videoconferencing system can also be used purely as an audio-bridge (with an ISDN connection).

Presentations
The Natural Presenter Package* (NPP) makes it possible to run presentations and comprises:
- Digital Clarity[TF] which provides presentations of exceptionally high quality resolution video.
- Duo Video[TF]/H.239 which allows participants at the far end to simultaneously watch a presenter on one screen and a live presentation on the adjoining screen.
- PC Presenter[TF] which is an easily accessible PC connection over a wired VGA cable that supports up to SXGA resolution.
- PC SoftPresenter[TF] which shows PC images via the LAN connection supporting XGA resolution.

Users can display video and presentations in the best layout based on the situation. Supported screen layouts are:
- Picture in Picture
- Picture outside Picture
- Side by Side

NEW PC zoom:
- The PC image is transferred in native resolution and may be controlled as a camera with zoom and pan/tilt to get SXGA resolution.

User interfaces
A web-interface is provided to handle:
- Text chat/closed captioning
- System management, diagnostics and software uploads
- Streaming – which allows broadcasting of audio/video via an IP network

The On-Screen Menu:
- Easy interface for first-time users with symbols and descriptions
- Builds upon the familiar current interface

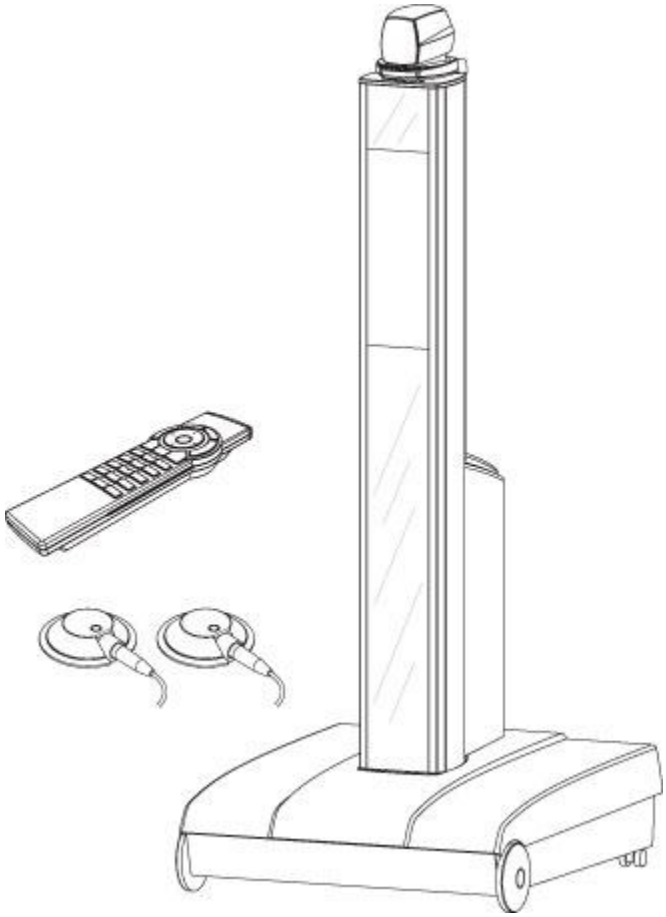
NEW True Localization with enhanced language support and international customization:
- Enabling Asian and non-Latin character text input on Web and API for local language in Phone Book and System Names

The remote control has a simplified look and feel, auto system wake-up and large, easy-to-read keys.

Interoperability
The TANDBERG Maestro MXP is worldwide compatible with other standards-based videoconferencing systems.

** - optional feature. To check which options are installed, select Control Panel - System Information in the menu.*
™ - TANDBERG First

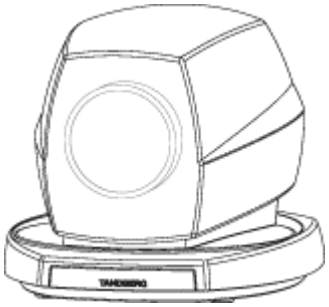
1.1 At a Glance



WAVE II Camera

The Main Camera is mounted on top of the product. The Main Camera includes a high quality color camera with a fast pan/tilt/zoom action. The Main Camera is controlled by the system's infrared remote control and operates pan/tilt, focus and zoom. You can pre-store up to fifteen camera positions using Camera Presets.

A locking mechanism fixates the camera on top of the product. To release the locking mechanism and remove the camera push the grey button on the rear end of the camera stand



Internal LCD Display

The system has a built-in 5inch LCD designed to optimize system configuration and give the user access to menus and test video signals without attaching or powering an external display device. The LCD gives full control of all system settings and staus. Below the LCD there are three system indicators, one red light indicating that the system is powered, one yellow light indicate that a call is active, and one green light indicate that the table microphones are muted.

External display

The TANDBERG Maestro is designed to give unlimited flexibility on the choice of display technologies and solutions to display video, and is an ideal solution for large meeting rooms which already are equipped with e.g. front projector and screen. For transferring video signal to one or more external display devices the Codec has the following video outputs:
- DVI-I analog or digital interface
- XGA
- MiniDin, S-video
- RCA / Phono, Composite video

The usage of S-video gives the best quality for showing video of a far end, and use of DVI-I and XGA gives the best quality at PC presentation. Read user manual on the display device for configuration of settings at external display to meet setting at the Codec.

Codec

The Codec is the heart of the system. The main task for the Codec is the compression of outgoing video, audio and data, the transmission of this information to the far end and the decompression of the incoming information - the name Codec comes from a combination of the two words compression and decompression.

The system is easily movable with four wheels and one handle. The Codec is located inside the pedestal and behind the Codec cover, which is easy removable.
The pedestal stands on a solid base with an access hatch on the rear. On the inside of the hatch there are pockets for storing remote control and microphones. Pull the hatch to open. Inside the base there is room for additional equipment, e.g. a VCR/DVD, and for storage of cables. The Digital Natural Audio Module is built into the pedestal.

Remote Control

The remote control is used to control all functions of the system. If the screen saver is activated (black monitor), touching the remote control will automatically wake up the system. The remote control uses 4 AAA batteries. The system will tell you when batteries are running low. Change the batteries at the back of the remote control.

The reach of the remote control signal is 20 meters. For users sitting in an open plan office, this can cause problems. Use the little, white switch placed under the batteries to change the reach of the signal from 20 meters to 2 meters. This will prevent you from unintentionally controlling your neighbor's video system, when you control your own system.

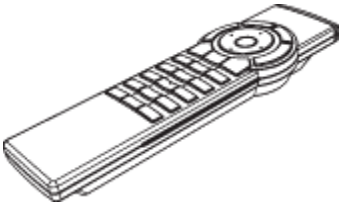


Table microphone

The high quality table microphone is designed to use on a table during a videoconference. You can connect up to three microphones. The ideal location for the microphone is on a flat surface at least 2m (6.5 ft) from the front of the system. The microphone cable should always point towards the system. The system will automatically equalize sound levels. Loud and soft voices are picked up and transmitted to the far end at approximately the same level.

Digital Natural Audio Module

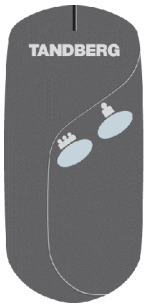
The Digital Natural Audio Module (DNAM) is designed to enhance audio quality during a videoconference. The DNAM provides natural sounding audio - as if the person, or another sound source, in conference is present in the same room as you.

The DNAM is a frequency-compensated sound system optimized for voice and other sounds that appears in modern videoconferencing. It is designed and dedicated specifically for videoconferencing requirements. Use of the highest quality speaker elements as well as proper amplifier- and software techniques minimizes signal distortion.

The system will automatically detect the DNAM and optimize the audio output. Once detected the audio output will be in digital format (S/PDIF). The DNAM supports both analog and digital input.

The DNAM amplifier and speaker cabinet are integrated directly into the Maestro pedestal.

TANDBERG Tracker



The Tracker is a small infrared remote control device made to steer the camera to any desired location within the room. Typically, several trackers would be used with each system.

Each Tracker has two buttons:

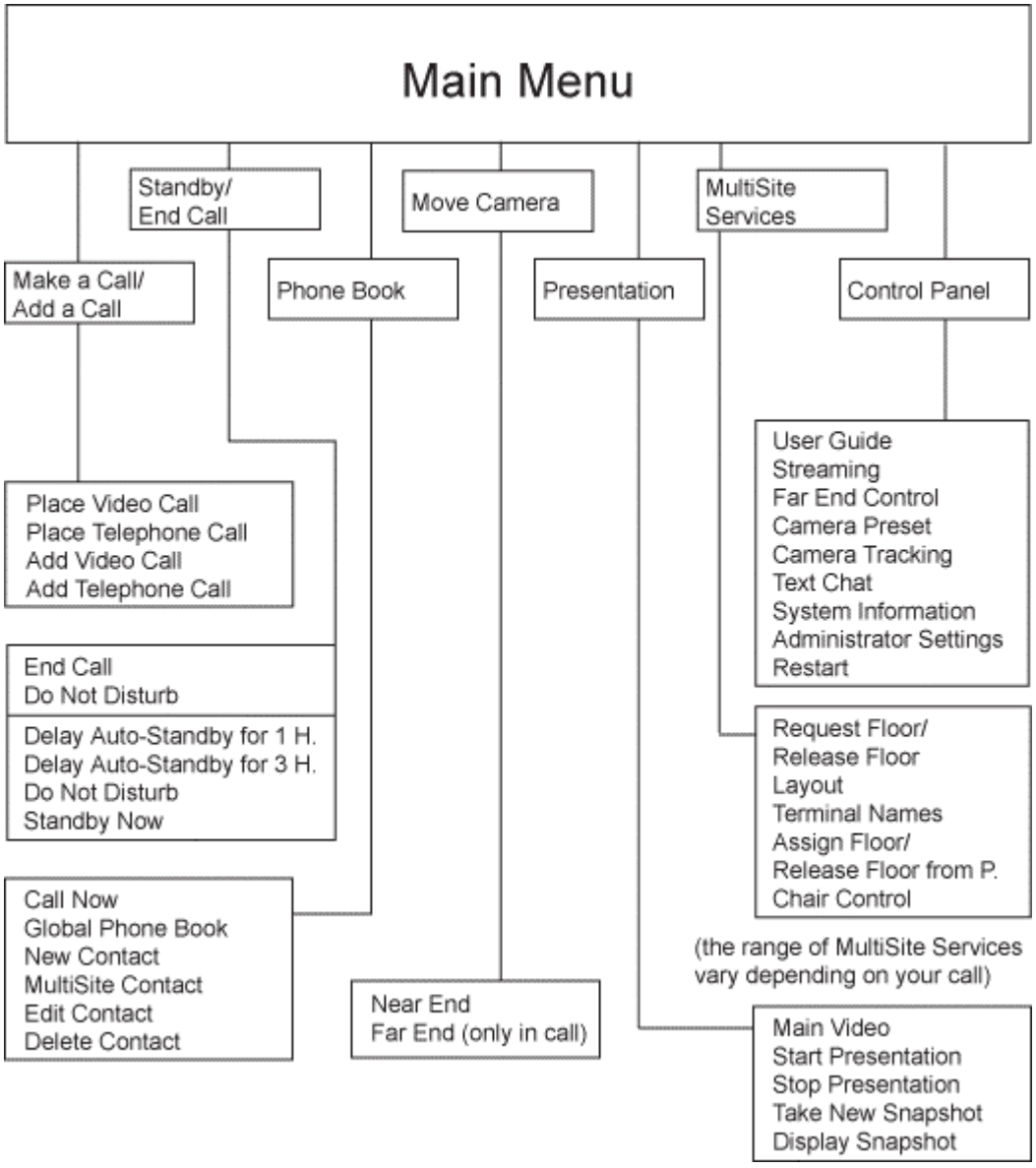
- One Single person button to point the camera at a specific person/location.
- One Group button to point the camera at all participants.

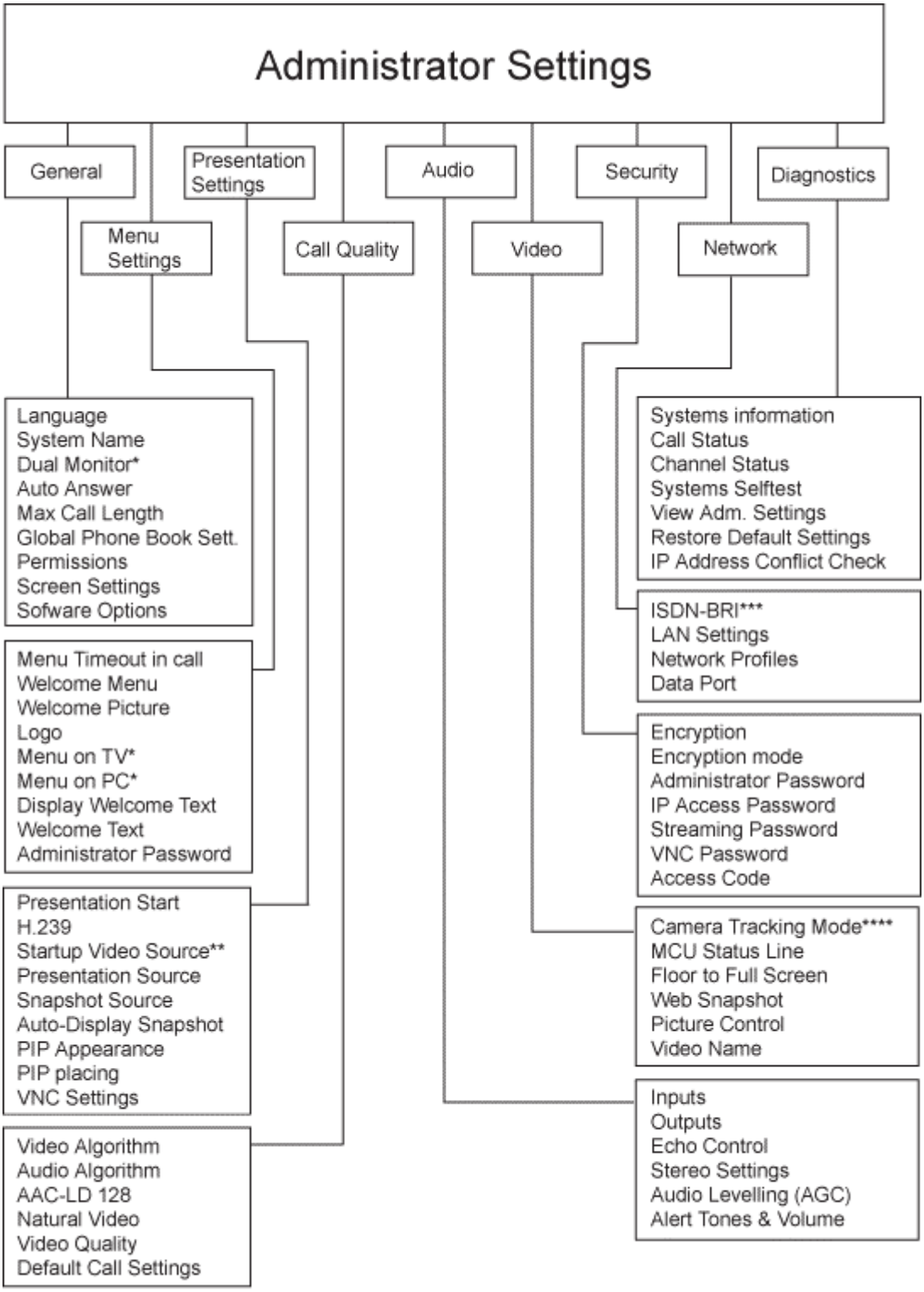
Beneath the battery in the Tracker, there is a switch, which can be set to 16 different positions between 0 and F. For camera preset 10 to 15, the numbers A to F should be selected.

For more information, contact your local TANDBERG representative.

1.2 Menu Structure

The menu structure is divided in two. The Main Menu is available for all users and contains all functionality of the system. The Administrator Menu contains all the settings of the system. Enter Administrator Settings from Main Menu - Control Panel. Making changes to the Administrator Settings will change the behavior of the system. The menu structure for Main Menu and Administrator Settings is shown below.





* *Not for TANDBERG 1500 MXP and 2000 MXP.*
** *For TANDBERG 1500 MXP and 2000 MXP, Startup Video Source is replaced with Call Video Source.*
*** *TANDBERG 6000 MXP, 7000 MXP, 8000 MXP and TANDBERG Maestro use ISDN/External/Leased E1/T1*
**** *Not for TANDBERG 1500 MXP*

2 Installation

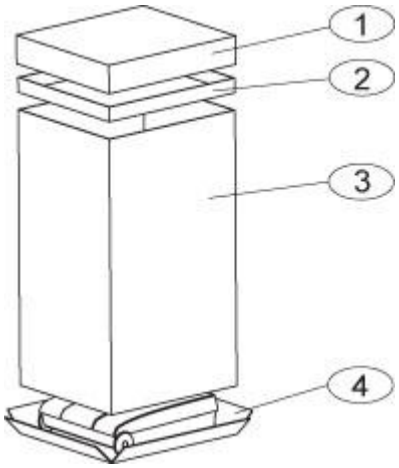
Precautions:

- Never install communication wiring during a lightning storm.
- Never install jacks for communication cables in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninstalled communication wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying communication lines.
- Avoid using communication equipment (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning.
- Do not use the communication equipment to report a gas leak in the vicinity of the leak.
- Always connect the product to an earthed socket outlet.
- The socket outlet shall be installed near to the equipment and shall be easily accessible.
- Never install cables without first switching the power OFF.
- 1TR6 network type is not approved for connection directly to the telecommunications network. This network type is only to be used behind a PABX.
- X.21 network type is not approved for connection directly to the telecommunications network. This network type is only to be used together with already approved equipment, and is not meant for direct connections to the telecommunication networks.
- V.35/RS-449/RS-366 network type is not approved for connection directly to the telecommunications network. This network type is only to be used together with already approved equipment, and is not intended for direct connection to the telecommunication networks.
- This product complies with directives: LVD 73/23/EC, EMC 89/366/EEC, R&TTE 99/5/EEC

2.1 Unpacking and Mounting

1 Unpacking

The TANDBERG Maestro is delivered in one transport case with all components inside. Remove the case in the order shown on Figure 1.



The accessories box contains:

- Wave II camera
- 2x Table Microphones
- Remote Control and Tracker with batteries
- Documentation
- Cables for external displays

Figure 1

2 Mounting of the camera

Mount the camera as shown in figure 2.

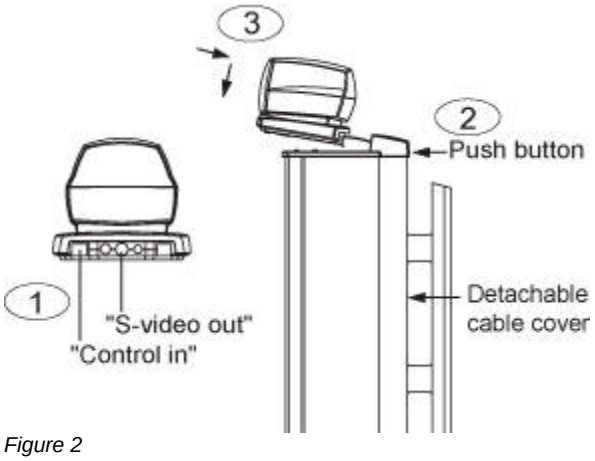


Figure 2

3 Open the back of the system

For access to the cables, microphones and remote control, remove the back cover as shown in Figure 3. The codec cover and the back cover are both held in place by magnets.

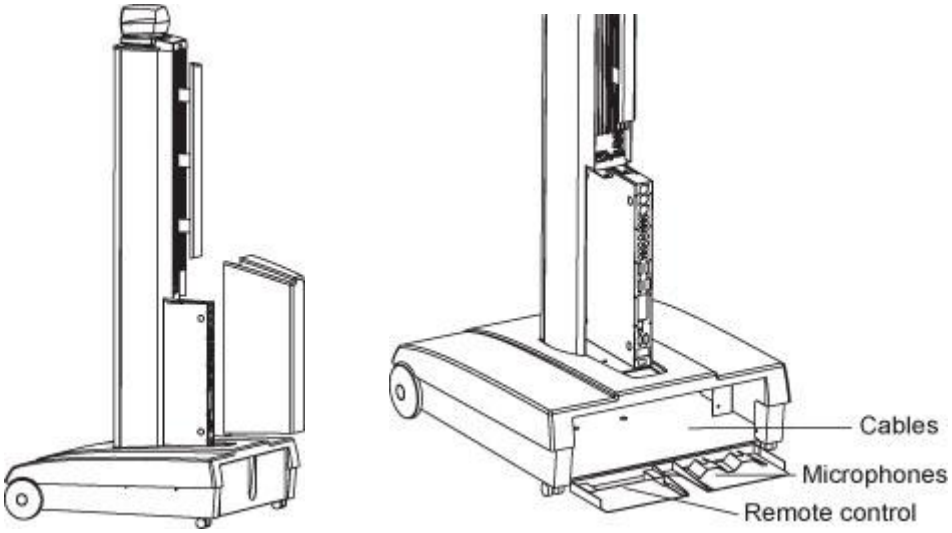
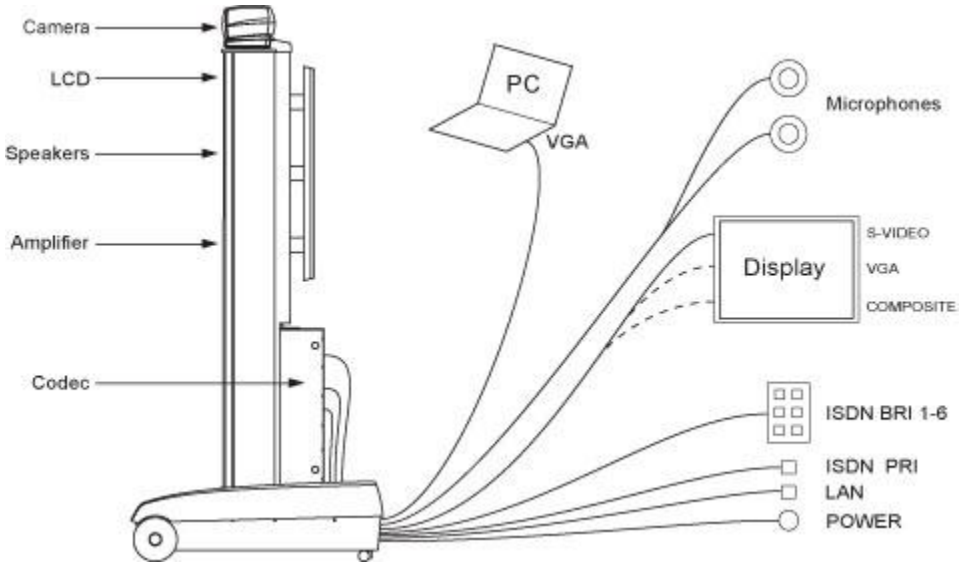


Figure 3

2.2 Connecting Cables



1. Power cable
Find the right power cable that works for your country in the accessories box, and connect to power cable from base, and to an electrical distribution socket.

2. Microphone cable
Connect the microphone cable to the microphone.

3. a) ISDN BRI
Connect the ISDN cables to the ISDN sockets (S/T interface) provided by your Network Provider. Your main ISDN number will be that number associated with the socket to which ISDN cable number 1 has been connected.

3. b) ISDN PRI
If you are using the PRI interface, the E1/T1 cable should be connected to a CSU (Channel Service Unit). It is recommended that a CSU is used between your system and the PRI line from your network provider, see Appendix 7.

4. LAN cable
To connect your system to a Local Area Network (LAN), connect the cable labeled "LAN Ethernet" to a suitable Ethernet port on your LAN.

5. External Display device

a. S-video – connect cable from Codec Video Out 1 to External display
b. DVI-I / VGA – find cable in accessories box and connect cable from DVI-I out single on the Codec to external display
c. Composite – find cable in accessories box and connect cable from Video out 4 on the Codec to external display

6. PC
Connect cable from DVI-I in PC from the Codec to PC.

2.3 Monitor Configuration

Configuration of external display (projector)

- Select 16:9 or 4:3 format on you projector.
- Make sure that your main projector is connected to the DVI-I Single output on the codec.

Please refer to your projector user manual for further information.

2.4 System Configuration

The system must be configured for each installation. Configuration settings can be made via the system menu. If an external IMUX or non-standard network is being used it may be necessary to configure any associated external equipment.

Navigate through the menu system using the arrow keys and OK. Remember to press the Save button on the bottom of each menu to save your changes. Press Cancel (x) to return to the previous Menu. See next section for more information about how to use the menus and the remote control.

General configuration:

1. **Open the General Settings menu**
   Press OK to open the Main Menu (if it is not already open).
   Select Control Panel and then select Administrator Settings. Select General to open the General Settings menu.

2. **Language**
   Press OK in the Language field and select the language you want to use from the list.

3. **System Name**
   Enter a name in the System Name field using the number keys on the remote control, as you would do with a mobile or cellular phone.

4. **Dual Monitor**
   If you are using two monitors, set Dual Monitor to "On". If you are using one monitor, set Dual Monitor to "Off".

5. **Auto Answer, Max Call Length, Global Phone Book Settings and Permissions**
   Leave Auto Answer, Max Call Length, Access code and Permissions unchanged if no special needs are required. See chapter 4.1 General Settings for more information.

6. **Screen Settings**
   When using wide screen (16:9) monitors, set TV Monitor Format to Wide (16:9). TANDBERG also recommends setting Picture Layout to Picture outside Picture when using 16:9 monitors. Picture outside Picture provides a display layout optimized for wide screen monitors. The display layout may be changed at any time using the Layout button on the remote control.

7. **Software Options**
   To activate all options for the system, you must enter a new option key in the Software Options menu (see paperwork accompanying your system). The MultiSite and/or Presenter option key should be entered under “New Option Key”. Any bandwidth option key should be entered under “New Bandwidth Key”. For more information on these options, contact your TANDBERG representative.

8. **Save changes**
   Remember to save any changes you make in a menu by selecting the Save button on the Menu line and pressing OK.

Network configuration:

1. **Open the Network menu**
   Open the Administrator Settings menu and choose Network.

2. **ISDN configuration**
   Set Current Network to the network you want to use. Specify the settings for the selected network in the relevant menu. For details, follow the instructions in chapter 4.8.1 ISDN /External/Leased E1/T1. See also Appendix 9: Connecting the system to ISDN using NT1 network adapters or Appendix 8: Connecting the system to the Switched 56 network.

3. **LAN configuration**
   In the Administrator Settings menu, choose Network and LAN Settings. Specify the necessary LAN settings according to the instructions from your LAN administrator. For details, follow the instructions in chapter 4.8.6 LAN Settings. If there is an H.323 Gatekeeper present on your LAN, see also chapter 4.8.6.2 H.323 Settings.

4. **Save changes**

Remember to save any changes you make in a menu by selecting the Save button on the Menu line and pressing OK.

3 General Use

Wake up the system

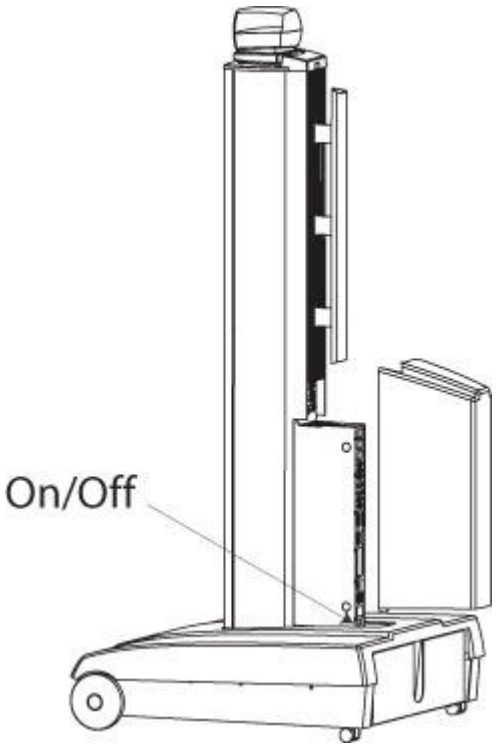
When the system is not in use, it is in standby mode and the screens are black. Wake up the system by picking up the remote control. An incoming call or pressing any key on the remote will also wake up the system.

If the system does not respond:

- Make sure that the system is switched on. The red light indicator below the internal LCD should be turned on to indicate power on the system. If the system is not switched on, you need to remove the codec cover on the rear of the pedestal in order to access the power switch. Pull and lift the cover. The power switch is at the bottom of the Codec.

If the picture does not appear on your external display, but on the 5'' internal LCD:

- Check that the external display is turned on.
- Check that video cable from Cesar is connected to external display
- Make sure that the video settings on the external display are correct, read the user manual for the external display.



3.1 The Welcome Screen

When the system is switched on, you will see the welcome screen. The welcome screen presents the Main Menu and displays your Main Camera image in the background (Main Camera is system default). Your dial in numbers and system name are displayed in the upper right corner. Your ISDN Number and IP Number are the numbers that your contacts need to place a video call to you.

The welcome screen also provides you with the most important system information:

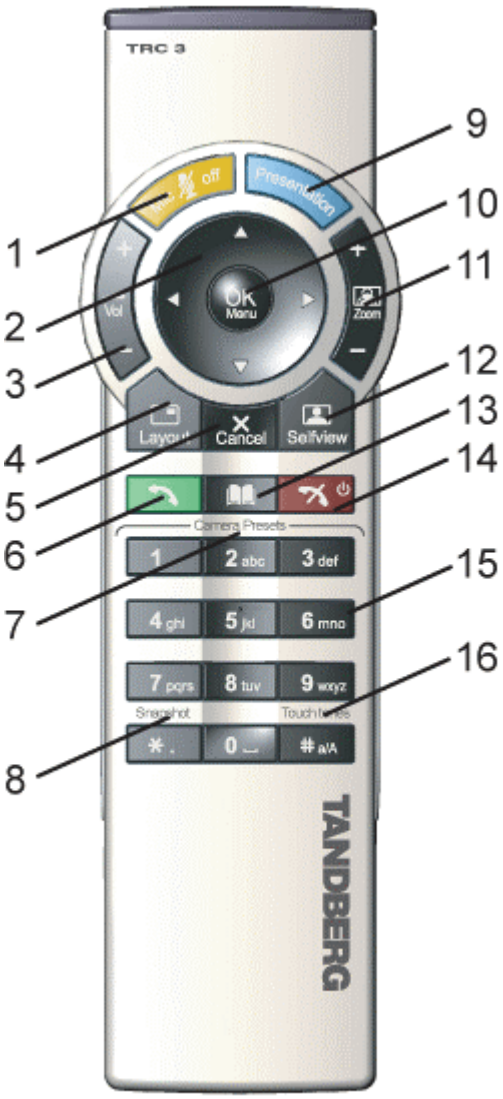
- System Name
- Your ISDN Number
- Your IP Address or IP Number

It is possible to customize the text on the welcome screen. See 4.2 Menu Settings for how to edit welcome text.

3.2 Using the Remote Control

The system is controlled with a remote control. Think of the remote control as a mobile phone with number keys and call keys. Use the arrow keys and OK to navigate the menu. The system's most commonly used functions are also accessible directly from the remote control.

The Infra Red (IR) sensor for the remote control is located in front of the WAVE II Camera. There is also a second IR-sensor located in the front of the Codec itself, which will be automatically enabled if the WAVE II Camera is not connected.



1. Mic Off turns your microphone on and off. (See 3.2.4 Mic off)
2. Arrow keys are used for navigation in the menu and for moving the camera when the menu is hidden. (See 3.2.1 Navigation)
3. Volume + and – adjusts the Codec volume only and not the monitor's volume. (See 3.2.5 Volume + and -)
4. The Layout key toggles between full screen and different display layouts. (See 3.2.3 Layout)
5. Cancel takes you back one step in the menu system. Use Cancel to delete characters in an input field. (See 3.2.1 Navigation)
6. Press the Call key to place a call. (See 3.5 Make a Call)
7. Camera presets define specific camera positions. Move the camera to the desired position and press and hold a number key for 1 second to save the current camera position to that number key. To activate a preset whilst in a call, simply press and release that number key. (See 3.10.4 Camera Presets)
8. Snapshot takes a snapshot of your video. (Only while you are in a call) (See 3.11.6 Take New Snapshot)
9. The Presentation key switches to a predefined presentation source. If the Presentation key is held down for 1 second then the Presentation video sources menu will appear. (See 3.11.1Presentation Key)
10. Press OK/Menu to show the menu and to select menu items. (See 3.2.1 Navigation)
11. Use Zoom + and – to zoom the camera

in and out. (See Zoom)

12. Selfview displays your outgoing video. Press Selfview again to turn selfview off. (See 3.2.2 Selfview)
13. Store and recall your video contacts via the system Phone Book for easy placement of calls. (See 3.9 Phone Book)
14. Use the red End Call key to end the current call. Pressing this key when not in a call will place the system in Standby mode. (See 3.7 End Call and 3.8 Standby)
15. Number/Letter keys function in the same manner as with a mobile or cellular phone. (See 3.2.6 Number and Letter keys)
16. Press Touch tones when you are in a call and need to dial extension numbers etc. (instead of presets). Press the OK/Menu button to exit Touch Tones. (See 3.2.7 Touch tones)

3.2.1 Navigation

Arrow keys and OK
Navigate in the menu with arrow keys. The orange selector on screen shows the selected item. Press OK to select.

Cancel key
In the main menu, pressing Cancel (X) will hide the menu. If the menu is hidden, bring it back with OK. In other menus, pressing Cancel (X) takes you one step back. In an input field, pressing Cancel (X) will delete characters/numbers to the left.

Back/Cancel button
The X button in the menu corresponds with the X key on the remote.

3.2.2 Selfview

Selfview shows the outgoing image. Normally this is the image from the main camera, e.g. showing the user of the system.

Selfview is useful for single monitor systems to be able to see the outgoing video. On dual monitor systems you already have selfview on the dual monitor.

How to use Selfview:

1. In a call, press the Selfview button once to switch from far end video to near end video on the main monitor to see a full screen picture of the outgoing video. Press Selfview again to turn selfview off and go back to normal.
2. Outside a call, pressing the Selfview button will switch between the near end video and a black screen on the main monitor.

The above behaviour is similar for both single monitor systems and dual monitor systems.

3.2.3 Layout

The layout of the screen can either be shown as Picture in Picture (PIP) or Picture outside Picture (POP) when displaying more than one video image. The behaviour of the Layout button is dependent on the Picture Layout setting in Administrator Settings - General - Screen Settings, see 4.1.8 Screen Settings.

3.2.3.1 Picture in Picture

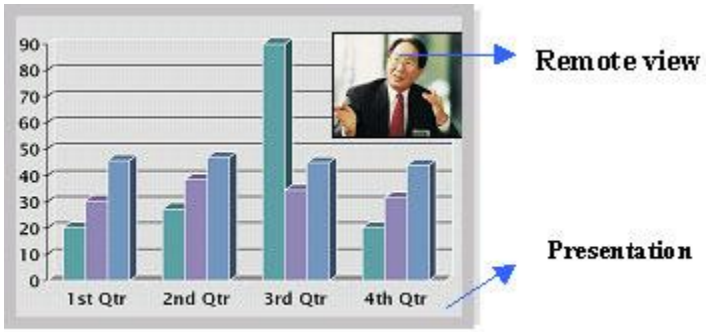
With set to PIP, the Layout button makes it possible to see a second image in a smaller view in one of the corners of the screen. The second image will be placed on top of the main image. The user can decide in which corner the second image is to be displayed.

PIP will always appear on the main monitor.

Automatic PIP is the system's default setting. That implies that PIP will automatically be shown when suitable, see 4.3 Presentation Settings for more details.

How to use Layout with Picture in Picture:

1. Press Layout once to bring up a PIP.
2. Press Layout again to move it around in the corners of the screen and finally hide it.
3. Pressing and holding Layout for 1 second will hide the small picture directly from any position.



Example of PIP

3.2.3.2 Picture outside Picture

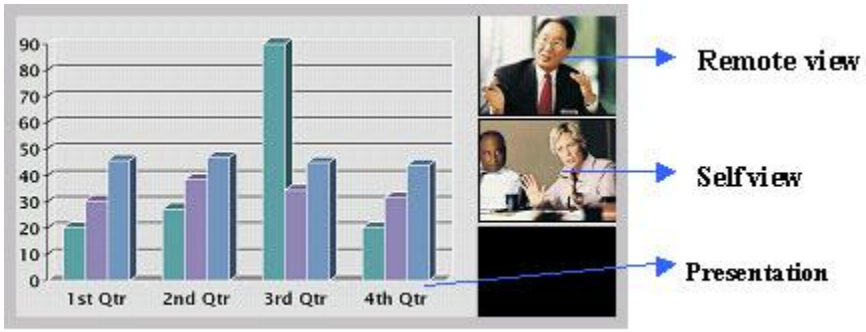
When set to POP, the Layout button makes it possible to see up to three images in a composition optimized for wide screens. The second image can be displayed either as a small image next to the main image, or side-by-side the main image.

Press once to get an extra picture in a smaller view. Press twice to get side-by-side view. Press again to go back to full screen view. You can also go back to full screen directly by pressing and holding Layout for 1 second. It is recommended to use Picture outside Picture for wide screen monitor systems.

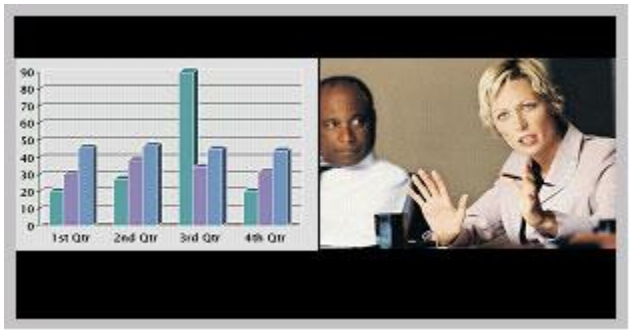
How to use Layout button with POP:

1. Press the Layout button to get the 1+3 layout. The far end image will be displayed as the main video, with the near end, usually the user of the system, as a smaller image in the upper right corner. If Duo Video / H.239 is used, the Duo Video image is displayed as the main image and the far end and near end as smaller images to the right, see figure below for an example.
2. Press the Layout button again to see the images side-by-side, e.g. 1+1 layout, where the far end and near end are displayed as images of equal size, see figure below.
3. The third time the Layout button is pressed, the normal full screen view of the far end is displayed..
4. Pressing and holding Layout for 1 second will always bring you back to full screen.

Note that if both TV monitor format and VGA format is set to Normal, the system will skip the 1+3 layout, which is not beneficial for 4:3 monitors.



Example of POP



Example of Side by Side

3.2.4 Mic Off

To mute your microphone during a call, press Mic off. An on-screen indicator appears when the microphone is off. In a call, if audio is detected, the on-screen symbol will start to flash. Pressing Mic off one more time will activate the microphone again.

A green LED below the internal LCD at the system will be turned on when the microphone is off.

Mic off will mute microphone inputs and audio 4 input.

When an incoming call is answered, the microphone may be in the off state because the Auto Answer setting is On+Mic off (see 4.1.4 Auto Answer). The icon will start to flash when you start speaking. Remember to turn the microphone on before a meeting.

3.2.5 Volume + and -

Press the Volume key to adjust the volume level. An on-screen indicator will show the current level.

3.2.6 Number and Letter keys

Pressing a number key when you are outside a call will take you to the call menu. When you are in a call, the number keys are used for Camera Presets. Press a number and you go to the corresponding Camera Preset (see 3.10.4 Camera Presets). However, when you are in an input field where numbers are required, the system automatically goes to number mode and you can dial numbers with the number keys as usual.

When you are in an input field where letters are required, the system automatically goes to letter mode. Writing letters works like on a mobile phone. Press the key that corresponds to your desired letter. Press the key as many times as you need to get the right letter. Change to lower or back to upper case letters with the a/A key, and space with the 0 _ key.

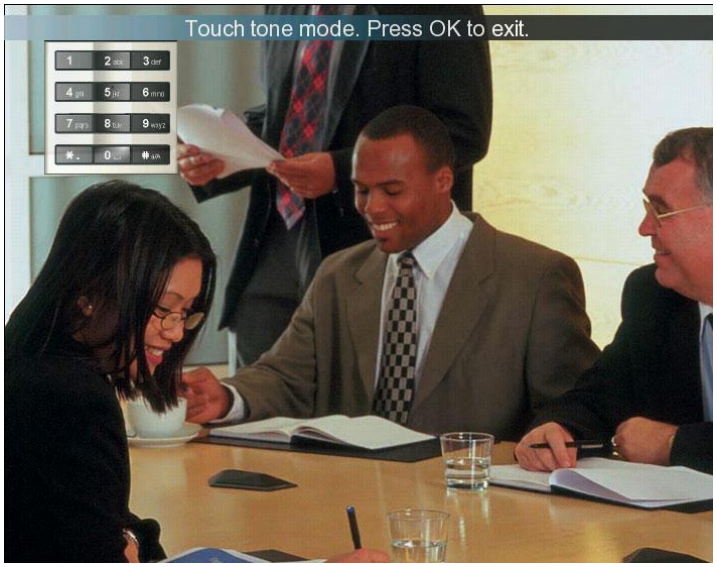
To write numbers in a text input field, press the button through all the letters. Press once more and the number will appear.

Example: How do I write "System 123" in the System Name input field (in General in Administrator Settings)?

Press the 7-key four times to get an "S".
Press the #-key once to switch between upper case and lower case letters.
Press the 9-key three times to get a "y".
Press the 7-key four times to get an "s".
Press the 8-key once to get a "t".
Press the 3-key twice to get an "e".
Press the 6-key once to get an "m".
Press the 0-key once to get space.
Press the 1-key three times to get a "1".
Press the 2-key four times to get a "2".
Press the 3-key four times to get a "3".

3.2.7 Touch Tones

Sometimes you need to dial extension numbers with the number keys when you are in a call. Pressing numbers will result in a camera preset. In these cases, press # to enable Touch tones. An indicator will tell that Touch tones are enabled. Now you can enter your extension number with the number keys. Finish with OK to exit Touch tone mode.



3.3 On-screen Indicators

The system has a number of icons signaling different settings:

Microphone Off
This indicator is shown when the microphone is turned off. Press the Mic off button again to turn the microphone back on.

Volume Off
This indicator is shown when the volume is turned off. Press Volume + to turn the volume back on.

Secure Conference, AES
This double padlock indicator is shown when AES encryption (Secure Conference) is active.

Secure Conference, DES
This padlock indicator is shown when DES encryption (Secure Conference) is active.

Not Secure Conference
This open padlock indicator is shown during the initialization phase for encryption. During this period the call is not secure.

Floor
This indicator is shown when you are displayed in full screen in a multipoint conference.

3.4 Using the Menu

Main menu outside a call and in a call.

Press the Menu button on the remote control to display the menu. The menu contains all functions needed in order to control the system.

The menu contains the following items:

- Make a Call/Add Another Call
- Standby/End Call
- Phone Book
- Move Camera
- Presentation
- MultiSite Services
- Control Panel

See 1.2 Menu Structure for a full overview of the menu.

The functions of the menu are displayed as icons. The currently selected icon is marked by an orange square, and the name of the corresponding function is displayed on the line above, see the figure above.

Press the OK button to activate the current selected function.

The menu automatically times out after 15 seconds if not used, see 4.2.1 Menu timeout. Press the Menu button to bring it back. It is also possible to hide the menu manually by pressing the Cancel button on the remote control.

3.5 Make a Call

Display the call menu by either:

1. Select Make a Call from the menu, or
2. Press the green Call button on the remote control

The TANDBERG system can make both video calls and telephone calls. See 3.5.1 Place Video Calls and 3.5.2 Place Telephone Calls for details.

Default Call Settings specifies the quality of the call, see 3.5.4 Call Settings for more details. It is possible to alter the default call settings for the current call if required. The Default Call Settings are defined in Control Panel - Administrator Settings - Call Quality - Default Call Settings, see 4.4.6 Default Call Settings for more details.

For setting up a MultiSite conference, see 3.5.3 Add Call for more details.

3.5.1 Place Video Call

In the Make a Call menu enter the Dial Number either:

1. Manually, or
2. Select the book symbol in order to display the Phone Book and select a conference participant, see 3.9 Phone Book for details.

When dialing manually, toggle between ABC/abc by pressing the # button on the remote control and between abc/123 by holding the # button for one second. Use a star as separator in IP addresses. If a system is registered on a gatekeeper or border controller with DNS support, there are several ways to call into the system:

- <IP address>
- <E.164>
- <H.323 ID>
- <H.323 ID>@<domain>
- <E.164>@<domain>

See 4.8.6.2 H.323 Settings for details.

Place the call by either:

1. Press OK on the remote control so that the Place Video Call icon is selected, and press OK once again, or
2. Use the arrow button on the remote control to select the Place Video Call icon and press OK, or
3. Press the green call button on the remote control.

Note that the call will be set up as a telephone call if the Call Type in Call Settings is set to Telephone Call. See 4.4.6 Default Call Settings for more details.

3.5.2 Place Telephone Call

In the Make a Call menu enter the Dial Number either:

1. Manually, or
2. Select the book symbol in order to display the Phone Book and select a conference participant, see 3.9 Phone Book for details.

When entering a Dial Number manually, toggle between abc/123 by pressing the # button on the remote control for one second. Use a star as separator in IP addresses.

Place the call by either:

1. Press OK on the remote control, select the Place Telephone Call icon and press OK once again, or
2. Use the arrow button on the remote control to select the Place Telephone Call icon and press OK.

When dialing a telephone number and pressing the green Call button on the remote control, the system will in most cases automatically interpret the number as a telephone number and not a video number. The interpretation can sometimes take a little while and it is faster to use the Place Telephone Call button in the menu.

Note that the call will be set up as a telephone call even if the dial number entered is a video number, and the Call Type in Default Call Settings is set to Video Call (i.e. selecting the Place Telephone Call icon will override these settings). See 4.4.6 Default Call Settings for more details.

3.5.3 Add Call

(optional feature)

Conference systems with built-in MultiSite can handle up to 6 video calls and 5 telephone calls simultaneously.

It is possible to both set up a conference with many participants and also add participants during a conference.

Set up a conference with two or more participants

In the Make a Call menu enter the Dial Number either:

1. Manually, or
2. Select the book symbol in order to display the Phone Book and select a conference participant, see 3.9 Phone Book for details. It is also possible to select a predefined MultiSite entry, see 3.9.4 New MultiSite Contact.
3. Press OK on the remote control.

Add another participant to the conference by either:

1. Select the Add Video Call icon if the next participant is using a video system, and press OK, or
2. Select the Add Telephone Call icon if the next participant is using a telephone system, and press OK.

A new entry is now displayed in the call list. Enter the number as described above.

It is also possible to set up a list of all the wanted conference participants by selecting the Add Video Calls and Add Telephone Calls the wanted number of times, and enter their numbers afterwards.

Place a MultiSite call:

1. If the call is a mixed conference with both video and telephone participants, select the Place Video Call icon, or
2. If the call is a conference with telephone participants only, select the Place Telephone Call icon.

Add participant(s) during a conference

Display the call menu during a call by either:

1. Select Make a Call from the menu, or
2. Press the green Call button on the remote control

Enter the new participants in the same way as described above.


Make a Call
Dial Number:
12345678
Default Call Settings
Default Call Settings
Add Video Call
TANDBERG MXP

3.5.4 Call Settings

The Call Settings specifies the quality of the call. Each call will be set up with the Default Call Settings if the settings are not altered. In this case the field is named Default Call Settings. If the settings for some reason are altered for the current participant in the current call, the name of the field will be changed to reflect this.

Usually it is not necessary for the user to alter the settings.

The Default Call Settings are defined in Control Panel - Administrator Settings - Call Quality - Default Call Settings, see 4.4.6 Default Call Settings for more details.

When setting up a call in the Make a Call menu:

1. Select the Default Call Settings field for the participant and press the OK button on the remote control.
2. Make desired changes to Call Type, Network, Bandwidth and Restrict (56k), see 4.4.6 Default Call Settings for more details. If this is to be the new default call settings, select Set as Default in the menu.
3. Select the OK icon and press the OK button on the remote control. The name of the Call Settings field will reflect the changes made.

It is possible to make the changes made to the Call Settings default by selecting Set as Default and OK. These settings will now be the default settings for all future manually dialed calls.

These settings are also available in the menu Control Panel - Administrator Settings - Call Quality - Default Call Settings.

3.6 Answer an Incoming Call

How to answer an incoming call:

- To accept an incoming call, press the OK button or the green Call button on the remote control.

How to reject an incoming call:

- To reject an incoming call, select the Reject icon and press the OK button, or press the End Call button on the remote control.

Incoming calls will connect automatically if Auto Answer is set to On, see 4.1.4 Auto Answer for details.

When idle, the system will accept all incoming calls as long as Incoming MCU Calls and Incoming Telephone Calls are set to On, see 4.1.7 Permissions for details. Also, Do Not Disturb must not be activated, see 3.8.3 Do Not Disturb for more details.

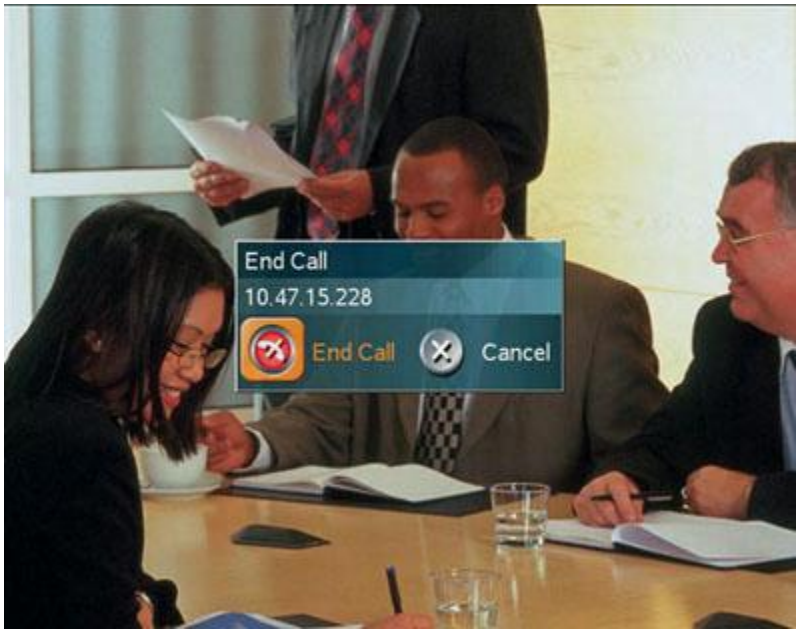
3.7 End Call

How to end a call:

- Press the red End Call button on the remote control, or
- Press the Menu button on the remote control to display the menu and select End Call.

When the End Call dialog box is displayed either:

- Press the red End Call button on the remote control again, or
- Press the OK button to confirm that the call is to be ended.



How to end a MultiSite call:

- Press the red End Call button on the remote control, or
- Press the Menu button on the remote control to display the menu and select End Call.

In the list of participants:

- Select a participant and press the OK button or the red End Call button.
- Select End All Calls to end the whole conference.

Note that switching off the monitor(s) will not end a call.

3.8 Standby

The system will automatically go to Standby mode when it is not in use. In standby mode, the screen(s) are black. It is however still possible to receive incoming calls.

How to turn on the standby mode manually:

- Select Standby from the menu and select Standby Now, or
- Press the End Call button on the remote control twice.

How to turn off the standby mode:

- When the system is in standby, pick up the remote control, or press any of its keys to activate the system again.

The standby mode of the system should be used if the system is to be left idle.

Note! Standby is not activated by switching off the monitors. External displays like projectors should be turned off when not in use.

It is possible to postpone the system from entering standby mode for 1 hour or 3 hours, see 3.8.1 Delay Standby for 1 hour and 3.8.2 Delay Standby for 3 hours.

3.8.1 Delay Standby for 1 hour

Delay Standby for 1 hour postpones the system from entering standby mode for 1 hour.

This function is useful when using the monitors for a local presentation to prevent the system from automatically blanking the monitors.

It is also possible to postpone the system from entering standby mode for 3 hours, see 3.8.2 Delay Standby for 3 hours.

3.8.2 Delay Standby for 3 hours

Delay Standby for 3 hours postpones the automatic standby mode for 3 hours.

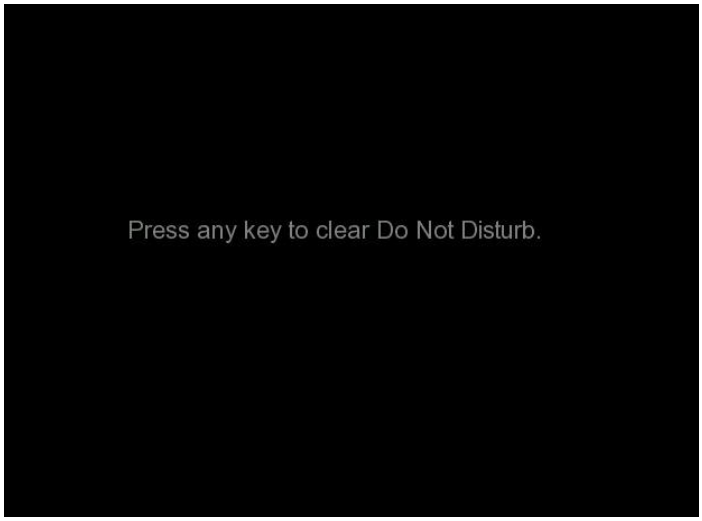
This function is useful when using the monitors for a local presentation to prevent the system from automatically blanking the monitors.

It is also possible to postpone the system from entering standby mode for 1 hour, see 3.8.1 Delay Standby for 1 hour.

3.8.3 Do Not Disturb

To prevent the system from accepting any incoming calls, the function Do Not Disturb has to be activated. The caller will hear a busy tone when calling the system. The monitor will be black when Do Not Disturb is active, see figure below.

End Do Not Disturb by pressing any key on the remote control.



3.9 Phone Book

The Phone Book is available via the Phone Book button on the remote control, directly from the menu, or when Make a Call is selected.

Using the Phone Book is time saving and prevents the user from inadvertently calling the wrong number. The contacts are sorted alphabetically.

Navigate up and down in the Phone Book with the arrow keys on the remote control. Use the letter keys to search through the contacts beginning with the typed letter.

The functions in the Phone Book are available when pressing the left arrow key on the remote control, and then the up and down arrow keys. Note that the last selected contact will be marked.

The Phone Book is divided in Local Phone Book and Global Phone Book. The Global Phone Book is available if the system is connected to an external management system like the TANDBERG Management Suite (TMS).

It is possible for the user to edit the contents of the Local Phone Book but not of the Global Phone Book. Also, the Local Phone Book contains lists of the Last Numbers Dialed, Missed Calls and Call History.

See 3.9.1 Local Phone Book and 3.9.2 Global Phone Book for details.

3.9.1 Local Phone Book

The Local Phone Book stores up to 200 contacts.

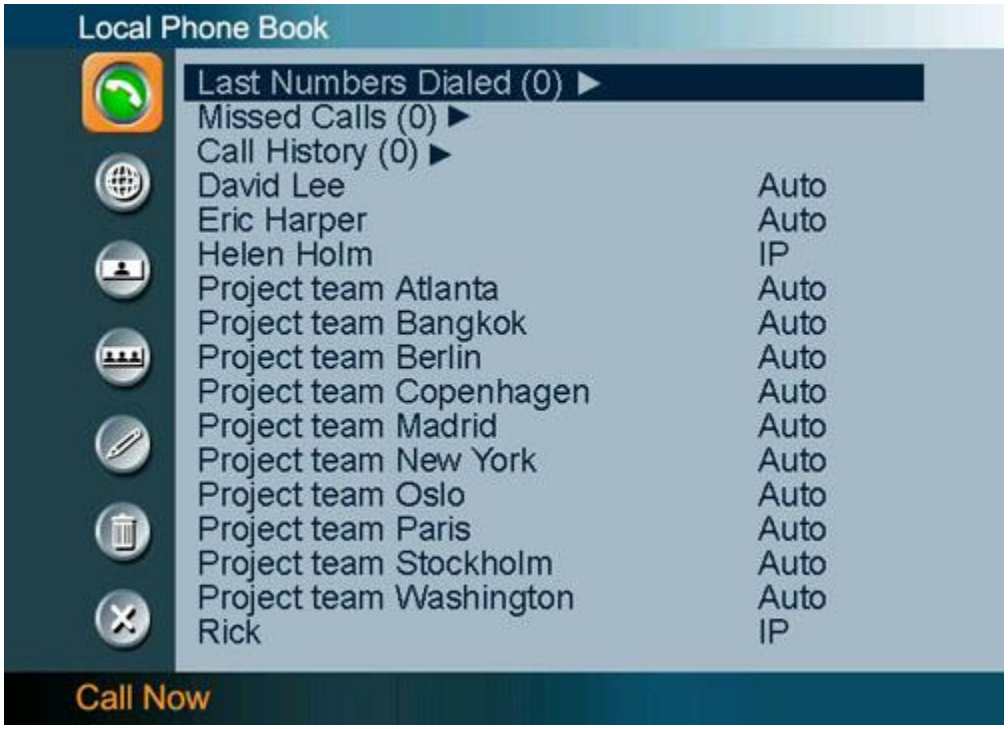
The first entries in the Local Phone Book are:

- Last Numbers Dialed which lists the latest calls made from this system
- Missed Calls which is unanswered calls
- Call History which shows all incoming (blue arrow), outgoing (green arrow) and missed calls (red arrow)

Press the OK button on the remote control or the right arrow key to see the contents of the lists.

How to make a call using the Local Phone Book:

1. Find the desired contact using the arrow keys or searching on the first letter with the letter keys.
2. Press the green Call button on the remote control, or press the left arrow key to select the Call Now icon, followed by OK. The call will be set up as a video call or a telephone call depending on the settings made when storing the contact. Alternatively, press the OK button when the contact is selected. The Make a Call menu will then be displayed with the name of the contact in the Dial Number field, and the Call Settings field will reflect the call settings for this contact. It is possible to alter the call settings before placing the call. The call will be set up as a video call or a telephone call as described in 3.5 Make a Call.
3. Wait for the call to connect.



Note that the telephone or video number of the selected contact is displayed at the bottom line.

See 3.9 Phone Book on how to navigate the Phone Book.

From the Local Phone Book the following functions are available:

- Call Now
- Global Phone Book
- New Contact
- New MultiSite Contact
- Back

When a contact is selected the following functions are made available:

- Edit Contact
- Delete Contact

3.9.2 Global Phone Book

The Global Phone Book is available if the system is connected to an external management system like the TANDBERG Management Suite (TMS).

These contacts can not be changed locally by the system, only from the management system. If there is a need to modify the number or any settings of a contact before making a call, select the contact and press OK on the remote control. The Make a Call menu is displayed and the settings can be altered before placing the call. The changes are not saved.

Note that the telephone or video number of the selected contact is displayed at the bottom line.

See 3.9 Phone Book on how to navigate the Phone Book.

From the Global Phone Book the following functions are available:

- Call Now
- Local Phone Book
- Copy Contact to Local Phone Book
- Search Global Phone Book

- Clear Search
- Back

3.9.3 New Contact

The New Contact function is available from the Local Phone Book, see 3.9.1 Local Phone Book for details.

When the New Contact icon is selected, the New Contact dialogue box is displayed. Add a new contact to the Local Phone Book by:

- Enter Name by using the letter keys on the remote control. Input will automatically be interpreted as letters. Toggle between capital letters and small letters by pressing the # button on the remote control. For numbers, press the # button for one second.
- Enter Number by using the number keys on the remote control. Input will automatically be interpreted as numbers. Use a star as separator in IP addresses. For letters, press the # button for one second. Toggle between capital letters and small letters by pressing the # button on the remote control.
- Alter the default setting of Call Type if necessary.
- Alter the default setting of Network if necessary.
- Alter the default setting of Bandwidth if necessary. For bandwidth 2x64 kbps or 2x56 kbps, two numbers are required, see Deafult Call Settings for more details.
- Alter the default setting of Restrict (56k) if necessary.
- Press OK to save.

3.9.4 New MultiSite Contact

(Optional feature)

The New MultiSite Contact function is available from the Local Phone Book, see 3.9.1 Local Phone Book for details.

It is possible to pre-define the participants of a conference meeting as a MultiSite Contact. All participants in the MultiSite Contact will then be connected automatically instead of having to call the participants one by one.

The Local Phone Book can hold up to 50 MultiSites Contacts. The MultiSite Contacts consist of participants that are already stored in the Local Phone Book.

It is possible to have up to totally 6 video participants and 5 telephone participants in a meeting.

How to define a New MultiSite Contact:

1. Open the Phone Book in the menu or via the Phone Book button on the remote control.
2. Select the New MultiSite Contact icon. The New MultiSite Contact dialogue box is displayed.
3. Enter a name of the MultiSite Contact, and press OK on the remote control.
4. Select Add Participant. The contents of the Local Phone Book is displayed. Find the desired contact and press the OK button on the remote control. Repeat until all the desired participants are selected.
5. Press OK to save the MultiSite Contact.

Bandwidth for a MultiSite Contact call

When calling a MultiSite Contact, the system will try to call the participants with their specified bandwidths. If the total bandwidth exceeds the systems maximum bandwidth, the system will downspeed and distribute the available bandwidth equally for all the participants.

Example: In a MultiSite Contact there is one participant with bandwidth 256kbps and one participant with bandwidth 384kbps. 512kbps is the maximum bandwidth of the system.

The two participants' bandwidth exceeds the maximum bandwidth. The system will then downspeed so that each participant connects with equal bandwidth, i.e. 512kbps/2 = 256kbps.

3.9.5 Edit Contact

The Edit Contact function is available from the Local Phone Book, see 3.9.1 Local Phone Book for details.

How to edit a contact in the Local Phone Book:

1. Select the contact that is to be edited.
2. Press the left arrow on the remote control, followed by the down arrow until the Edit Contact icon is selected.
3. The current settings for this contact is displayed in a dialogue box. Alter the wanted settings.
4. Press OK to save.

If the altered contact is part of a MultiSite Contact, the contact will be updated in the MultiSite Contact automatically.

3.9.6 Delete Contact

The Delete Contact function is available from the Local Phone Book, see 3.9.1 Local Phone Book for details.

How to delete a contact:

1. Select the contact that is to be deleted.
2. Press the left arrow on the remote control, followed by the down arrow until the Delete Contact icon is selected. The Delete Contact dialogue box is displayed.
3. Confirm by pressing the OK button again.

3.9.7 Copy Contact to Local Phone Book

The Copy Contact to Local Phone Book function is available from the Global Phone Book, see 3.9.2 Global Phone Book for details.

It may be wise to copy contacts that are often used from the Global Phone Book to the Local Phone Book. If the Global Phone Book is large this makes them easier to find. However, note that the local copy will not be updated if the Global Phone Book contact is changed.

How to copy a contact from the Global Phone Book to the Local Phone Book:

1. Select the contact in the Global Phone Book that is to be copied to the Local Phone Book. See 3.9.8 Search Global Phone Book on how to search the Global Phone Book.
2. Press the left arrow on the remote control, followed by the down arrow until the Copy Contact to Local Phone Book icon is selected.
3. A message box telling that the operation was successful will be displayed.

3.9.8 Search Global Phone Book

The Search Global Phone Book function is available from the Global Phone Book, see 3.9.2 Global Phone Book for details.

The Global Phone Book can contain an unlimited amount of contacts. Using search makes it easier to find the wanted contact.

How to search in the Global Phone Book:

1. Select the Search Global Phone Book icon.
2. Enter search text in the dialogue box that appears and press the OK button on the remote control. The system will list all entries that contain the entered letter combination.
3. Select the Clear Search icon to get back to the alphabetical Global Phone Book list, see 3.9.9 Clear Search. It is also possible to search on first letter in the Phone Book with the letter keys on the remote control.

3.9.9 Clear Search

The Clear Search function is available from the Global Phone Book, see 3.9.2 Global Phone Book for details.

When a search in the Global Phone Book is made by using the Search Global Phone Book, only contacts matching the search text are displayed. To return back to the alphabetical Global Phone Book list, select the Clear Search icon.

3.10 Camera Control

How to move the camera:

Use the arrow keys to move the camera from side to side and up and down, see 3.10.1 Arrow Keys.
Use the zoom button to zoom the camera image in and out, see 3.10.2 Zoom.

There are several ways to control the camera:

Use the Move Camera function in the menu to control the near end and far end camera, see Move Camera for details.
Use Camera Presets, see 3.10.4 Camera Presets for details.
Use Automatic Camera Tracking, see 3.13.5 Camera Tracking for details.
Use the TANDBERG Tracker, see separate instructions included with the TANDBERG Tracker.

3.10.1 Arrow Keys

When the menu is hidden, the arrow keys will work on the camera. If the menu is displayed, press the Cancel button on the remote control to hide it.

Use the left and right arrow keys to pan the camera, and the up and down arrow keys to tilt the camera.

3.10.2 Zoom

The zoom button on the remote control will zoom the picture in (+) and out (-).

3.10.3 Move Camera

It is possible to move the near end camera by using the remote control or via the menu.

If the far end supports H.281, Far End Camera Control, it is also possible to move the far end camera. Far End Camera Control is useful if e.g. it is not possible to see what a participant at the far end is writing on their whiteboard.

How to use Near End Camera Control outside a call:

1. Select the Move Camera icon from the menu when outside a call.
2. Use the arrow keys on the remote control to pan and tilt the camera.
3. Press OK when finished.

How to use Near End Camera Control in a call:

1. Select the Move Camera icon from the menu when in a call.
2. Select Near End in the dialogue box that is displayed.
3. Use the arrow keys on the remote control to pan and tilt the camera. Zoom the image if wanted, see Zoom for details.
4. Press OK when finished.

How to use Far End Camera Control in a call:

1. Select the Move Camera icon from the menu when in a call.
2. Select Far End in the dialogue box that is displayed.
3. Use the arrow keys on the remote control to pan and tilt the far end camera. Zoom the image if wanted, see Zoom for details.
4. Press OK when finished.

Note that this function is only available if the far end side supports H.281, Far End Camera Control.

For more details on how to control the far end, see 3.13.3 Far End Control.


Move Camera
Near End
Far End
Cancel

3.10.4 Camera Presets

Use Camera Presets to easily vary between predefined near end camera positions. This is useful when pictures from many different camera positions have to be sent to the far end. E.g. in a meeting there is a white board, a PC and a small meeting table. Use Camera Presets to move between these camera positions in order to present the correct information to the participants at the far end without having to move the camera manually every time.

The Camera Presets are available from the number keys on the remote control when in a call or via the menu.

Each Camera Preset is able to store:

- Camera position
- Video source
- Audio source selection, see Audio for further details

How to save a new Preset directly from the remote control:

1. Move the camera to the desired position. If storing a video source as a Camera Preset, press Presentation on the remote control.
2. It is possible to store one Camera Preset on each of the number keys, 0-9, when storing Camera Presets from the remote control. Press a number on the remote control for 1 second to save the preset.
3. The new Camera Preset will overwrite any existing Camera Preset on that number.

How to save a new Preset via the menu:

1. Move the camera to the desired position.
2. Select Control Panel - Camera Presets in the menu.
3. Select Save New Camera Preset.
4. It is possible to store 15 Camera Presets on the numbers 0-14, when storing Camera Presets from the menu. Enter a number between 0 and 14 and press OK. Confirm Save by pressing OK once more.
5. The new Camera Preset will overwrite any existing Camera Preset on that number.

How to use Camera Presets directly from the remote control in a call:

1. Press a number on the remote control. The camera will move to the corresponding position, or video source, stored on that number.
2. Camera Presets are deactivated when the camera is moved manually with the arrow keys or when an input field is displayed on the screen.

Note that Camera Presets are only available directly from the remote control when in a call.

How to use Camera Presets via the menu:

1. Select Control Panel - Camera Presets in the menu.

2. Select Display Camera Presets and select the wanted preset with the arrow keys on the remote control.
3. Press OK to select a Camera Preset.

The Camera Presets are available from the menu both in and outside a call.

3.10.5 TANDBERG Tracker

How to save presets for the TANDBERG Tracker:

1. Select which Camera Preset to be used on the TANDBERG Tracker.
2. Move the camera to the desired position to store on the tracker.
3. Select Control Panel - Camera Presets in the menu.
4. Select Save New Camera Preset. The camera presets between 10 and 14 are accessible from the TANDBERG Tracker. Select a number between 10 and 14 and press OK. Confirm Save by pressing OK once more.

For more information, see separate instructions included with the TANDBERG Tracker.

3.11 Presentation

The Presentation Functionality in the system enables you to show other available video sources as in addition to your Main Camera. This is perfect for meetings where you would like to show a PowerPoint presentation for instance. You can even use arrow keys up and down on the remote control to activate Page Up/Down on the PC (this only applies when using VNC).

Use Presentation outside a call to make a local presentation for the people in your own meeting room. Use Presentation when you are in a call to make a presentation for the far end as well.

The quickest way to show a presentation is to use the presentation key on the remote control, see 3.11.1 Presentation Key. The presentation key shows a predefined video source, PC is the default. It is possible to change the presentation source in 4.3 Presentation Settings in the Administrator Settings menu.

Choose Presentation from the main menu if you want to select a video source manually. The Presentation menu offers you all the available video sources supported by your system. See 3.11.2 Presentation Menu to see all your available video sources.

3.11.1 Presentation Key

The quickest way to show a presentation is to use the presentation key on the remote control. The presentation key is used to start (and stop) a presentation using the default presentation video source. When holding the presentation key for 1 second, the presentation menu will be displayed. It is possible to change default presentation source in Presentation Settings, see 4.3 Presentation Settings for more information.

How to show and end a Presentation using the Presentation key:

1. Press the Presentation key. The video source that is set as default presentation source is displayed in full screen.
2. Press the Presentation key again to end the presentation and go back to main camera.

3.11.2 Presentation Menu

The Presentation menu offers you all available video sources; Main Camera, PC, Document Camera, VCR, AUX and VNC. All these sources can be used as Main Video or Presentation (Duo Video / H.239). Press the Main Video button to change Main Video, press the Presentation button to choose Presentation Video.

How to change your main video source:

1. Choose Main Video from the Presentation menu.
2. In the Main Video dialog box, choose your desired video source and press OK.

How to show a PC presentation in addition to your main video (Duo Video):

1. Remember to connect your PC to the codec (see 3.11.3 PC Presenter for details).
2. Choose Start Presentation from the presentation menu.
3. In the Presentation dialog box, choose a presentation source and press OK.

Note that Start Presentation is only available when you are in a call and the video systems support Duo Video or H.329.

How to stop a Presentation (Duo Video):

1. Choose Stop Presentation from the Presentation menu.
2. Press OK to stop the presentation.

3.11.3 PC Presenter (DVI/XGA Input)

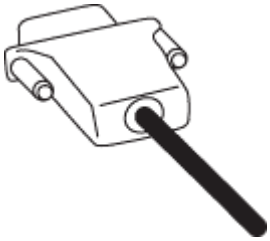
(Optional feature)

Users often have their presentations on a laptop that is brought into the meeting room. Remember to connect your PC to the codec before you press the Presentation button. Note that the image will appear smoother on the system if your presentation is already displaying in full screen on your PC prior to connecting your PC to the video system.

Plugging a PC into the system is made extremely simple through the PC Presenter, avoiding the need for any additional hardware such as a projector, PC/Video converter or extra cables.

How to connect PC to the codec with the DVI/VGA cable:

1. Connect the VGA-DVI cable to the PC Presenter (PC DVI-I in) connector on the codec.
2. Connect the VGA-DVI cable to your PC (VGA Output).
3. When the PC is connected to the codec, hit the Presentation key to display the PC image on the system.



If no PC image is displayed on your monitor, make sure that your PC is set to activate your VGA output. On most laptop PCs you must press a special key combination to switch the PC image from the PC screen to the video screen.

Note that the DVI/VGA input is compliant with VESA Extended Display Identification Data (EDID) and will be able to reconfigure the PC's screen settings if it is currently configured to a VGA format that the system doesn't support (see 5.12 EDID for more information).

VGA-formats supported on 'DVI-I in'. (VESA compliant)

SVGA	800x600	60,72,75,85 Hz
XGA	1024x768	60,70,75 Hz
SXGA	1280x1024	60Hz

3.11.4 PC Soft Presenter and VNC

(Optional feature)

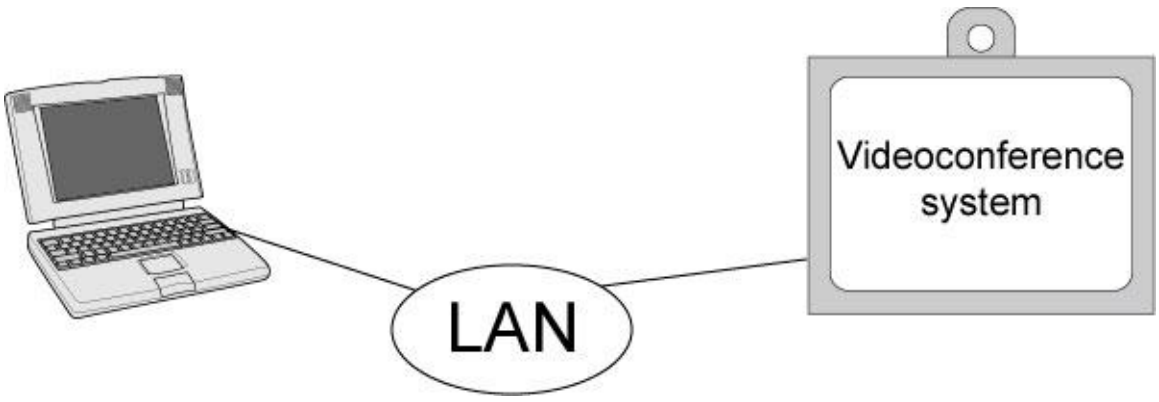
PC SoftPresenter is used to display PC images on your system without using a VGA cable (PC Presenter). The system and your PC must be connected to the same LAN. In addition, VNC (Virtual Network Computing) server software must be installed on the PC. Free software can be downloaded from http://www.realvnc.com. Install the software by running the downloaded file.

How to configure the VNC Server software:

1. Select the following to setup VNC; Windows-Start\All Programs\Highlight RealVNC\Hightlight VNC Server\Show User Properties
2. Select Accept Socket Connections.
3. Select Auto for Display Number. Display Number in the system must then have the value 0.
4. Enter a password in the Password-field. This must correspond with the VNC Settings on your system.

How to show PC using the PC Soft Presenter and VNC:

1. Start the VNC software on your PC.
2. To use VNC, you must configure VNC Settings. Open VNC Settings in the Presentation Settings menu in Administrator Settings.
3. Fill in the IP address of your PC, Display Number and Password. See 4.3.9 VNC Settings for more information.
4. Press Save.
5. When you now choose VNC as video source in the Presentation menu, you will see your PC using VNC. If a PowerPoint presentation is being displayed then you can scroll through the presentation by pressing the up and down arrows on the remote control. VNC settings will go back to default when the system goes to standby.



3.11.5 Dual Stream (DuoVideoTF/H.239)

(Optional feature)

With Dual Stream you have the opportunity to show two different live video streams simultaneously, main video and one additional source. This is handy when showing a presentation. You see the live presentation and the live video of the presenter simultaneously. When you start a presentation, Dual Stream starts automatically if both local and remote system supports DuoVideo/H.239. If one of the systems does not support DuoVideo/H.239, no second video stream will be established and your presentation will be shown as your main video.

DuoVideo/H.239 is available on all systems with Natural Presenter Package installed. H.239 is the new ITU standard defining how to send two video sources simultaneously.

Example:

Start a meeting with main camera as video source. Press the presentation key on the remote control to start a PC presentation.

PC will appear as DuoVideo in addition to main camera. End the DuoVideo presentation by pressing presentation key again.

In Presentation Settings (see 4.3 Presentation Settings), you can put DuoVideo to Manual. That means that DuoVideo will not start automatically.

Example:

Start a meeting with main camera as video source. Press the presentation key on the remote control to start a PC presentation.

A dialog box appears where you can choose to show PC as DuoVideo or not. This is handy if you not always want to use DuoVideo.

DuoVideo/H.239 and Bandwidth

Using DuoVideo/H.239, the quality will automatically downspeed to the optimal bandwidth. This means that you need higher quality to allocate enough bandwidth for the two video streams. DuoVideo/H.239 borrows bandwidth from main video. When DuoVideo is closed, the bandwidth is returned to the main video.

Controlling camera, changing video source and camera presets in a DuoVideo call.

When selecting the Document Camera or PC, the system will automatically request floor when connected to a MCU conference as MultiSite host or connected to an external MCU.

3.11.6 Take New Snapshot

The system can take a snapshot of your live video. Snapshot is handy when you are in a call with a system that does not support Dual Stream. Use Snapshot to show a snapshot of your presentation and continue the meeting with main camera.

How to use snapshot:

- You find Take New Snapshot in the Presentation menu. Press OK to take a snapshot.
- Snapshot is found on the Star key on the remote control. Press Star and you take a snapshot of the current video source (current video is default snapshot source). You can change snapshot source in Control Panel - Administrator Settings - Presentation Settings, see 4.3 Presentation Settings. Note that snapshot does not work when you are in an input field in the menu (the star key is then used to write the star sign).

Note that Take New Snapshot is only available when you are in a call.

Note that the Snapshot feature uses H.261 Annex D and hence will not work when using H.264 videocompression

3.11.7 Display Snapshot

The system stores the last sent or received Snapshot. The snapshot is deleted automatically after the call.

How to display snapshot:

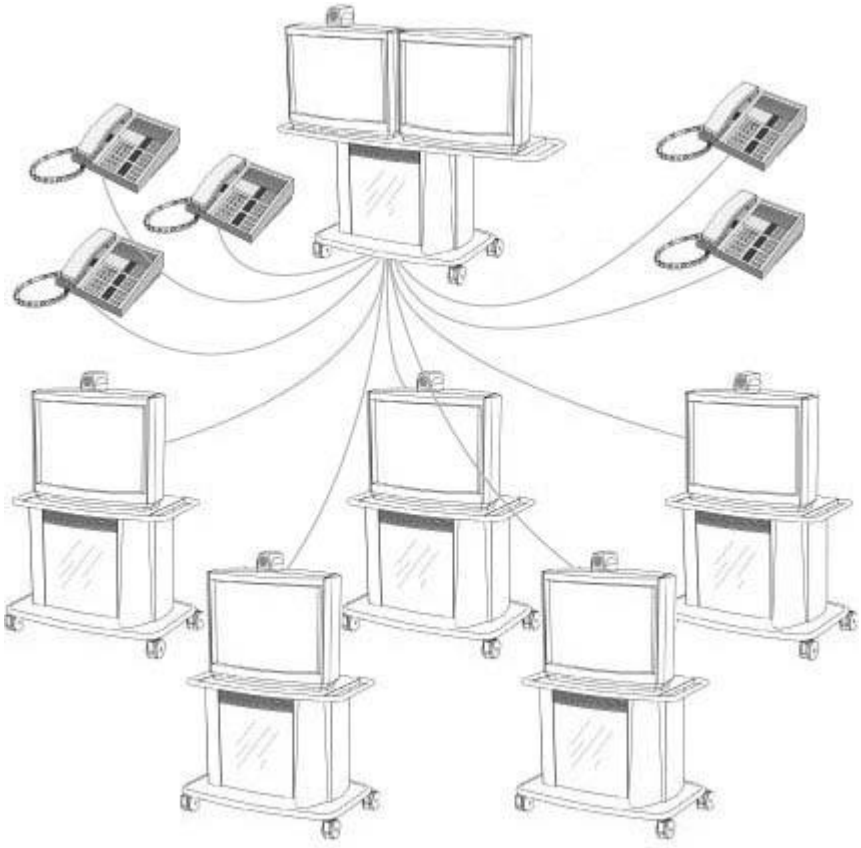
- To view a stored snapshot, choose Display Snapshot in the Presentation menu. Press the Display Snapshot button again to deselect it. When disconnecting the call, the stored snapshot will be erased.
- When receiving a snapshot, the snapshot is displayed in full screen. Press OK to escape from the snapshot. The last sent or received snapshot will be stored in the graphics memory and erased once the call is disconnected.

Note that Display Snapshot is only available when you have a stored snapshot.

3.12 MultiSite Services

A Multipoint Control Unit (MCU) enables several sites to participate in the same conference. During a multipoint or MCU conference, the status line will provide information about the conference.

You can make a multipoint conference in different ways. The MultiSite Services vary depending on how you make the call, see 3.5.3 Add call for details.



Using the system's internal MCU, MultiSite[TF]

The system has an optional built-in MCU, which is called MultiSite. It supports up to 6 video calls and 5 telephone calls including yourself. The MultiSite supports both Split Screen and Voice Switched mode.

With MultiSite, you have the following services:

- Request/Release Floor
- Assign Floor To Participant/Release Floor From Participant
- Terminal Names
- Layout (Auto/4 Split/35+1 Split/Voice Switched)

Using an external MCU that supports Chair Control (H.243)

With an external MCU that supports H.243, you have the following services:

- Request/Release Floor
- View Participant/End View
- Chair Control

If you take Chair control, you get the following services:

- Release Chair
- Assign Floor To Participant/Release Floor From Participant
- Disconnect Participant
- Terminate Meeting

Using an external MCU that does not support Chair Control

With an external MCU that does not support H.243, you have the following services:

- Request/Release Floor
- Terminal Names

3.12.1 Request Floor and Release Floor

When requesting floor, your video will be broadcasted in full screen to all other participants in the conference. Request Floor is useful when you want to speak or display something in front of all participants.

Release Floor when you are done and make the floor available for other participants in the conference. An indicator appears when you have floor and disappears when you release floor, see floor indicator in 3.3 On-screen Indicators.

How to use Request and Release Floor:

1. Open the Main Menu by pressing OK.
2. Choose MultiSite Services and press OK.
3. Choose Request Floor and press OK. A Floor indicator will appear when you have floor.
4. When done, press the same button again, which now means Release Floor. The Floor indicator disappears.

3.12.2 MultiSite Layout

(Only supported by TANDBERG MultiSite)

With a TANDBERG MultiSite you can choose between the layouts: Auto Split, 4 Split, 5+1 Split and Voice Switched view. Auto Split displays all participants on the screen simultaneously. 4 Split displays the 4 last speaking Participants. 5+1 Split displays the speaking participant in a big picture and the other participants in small pictures. Voice Switched mode displays the participant that is speaking in full screen. Switch between these picture modes using the MultiSite Layout menu.

Continuous Presence layout 4 split

*Advanced continuous Presence Layout (5+1). In this mode the Intelligent Call Management will use 4*CIF resolution for better clarity and H.263 video compression.*

Voice Switched mode

3.12.3 Terminal Names

Choose Terminal Names to see a list of the participants of the MultiSite conference. Press Cancel to go back.

3.12.4 Chair Control

(Not supported by TANDBERG MCU or MultiSite)

As chairman, you have access to more MultiSite Services. Select Chair Control to assume the role of chairman of the conference. Select Release Chair to end the role as chairman. A Chair indicator appears when you have Chair and disappears when chair is released.

3.12.5 Assign Floor and Release Floor from Participant

Assign Floor allows the chairman to select which of the conference participants that is to be broadcasted to all other participants.

3.12.6 View Site and End View

(Not supported by TANDBERG MCU or MultiSite)

View Site allows you to view any participant in the conference regardless of whom having floor and chair. Choose End View to go back to normal.

3.12.7 Disconnect Participant

Disconnect Participant allows the chairman to disconnect any participant in the conference. In a multipoint call, this is equivalent to disconnecting a participant from the end call menu.

3.12.8 Terminate Meeting

Terminate Meeting allows the chairman to terminate the conference altogether. In a MultiSite call, this is equivalent to pressing End All Calls from the end call menu.

3.12.9 More about MultiSite (embedded MCU)

(Optional Feature)

Calling in to a MultiSite

Any system can be part of a MultiSite conference by calling in to a MultiSite. The dial-in numbers to the MultiSite depends of the network that is used.

To dial in to the MultiSite on IP:

- Dial the IP Number or the IP Address of the system. All sites can dial the same number.

To dial in to the MultiSite on ISDN-PRI:

- Dial the ISDN number of the system. All sites can dial the same number.

To dial in to the MultiSite on ISDN-BRI:

- The MultiSite has specific numbers for each call that participates in the conference. To find the dial-in numbers for the MultiSite, choose Information from the main menu and open System Information from the bottom menu line.
- Site 2 must dial MultiSite Number 2.
- Site 3 must dial MultiSite Number 3.
- Site 4 must dial MultiSite Number 4.
- And so forth

Receiving calls to a MultiSite

When the MultiSite receives incoming calls you can accept or reject it. Pressing the green key is equivalent to pressing Accept. Pressing the red key is equivalent to pressing Reject.

End a MultiSite Call

Ending a MultiSite Call is not very different from ending a normal point-to-point call. Use the red key on the remote control or End Call from the main menu. The end call menu lists all the calls that participate in the conference. To end a single call, select the call, press OK or the red key on the remote control. To end all calls, press the End All Calls button in the menu.

Duo Video in MultiSite calls

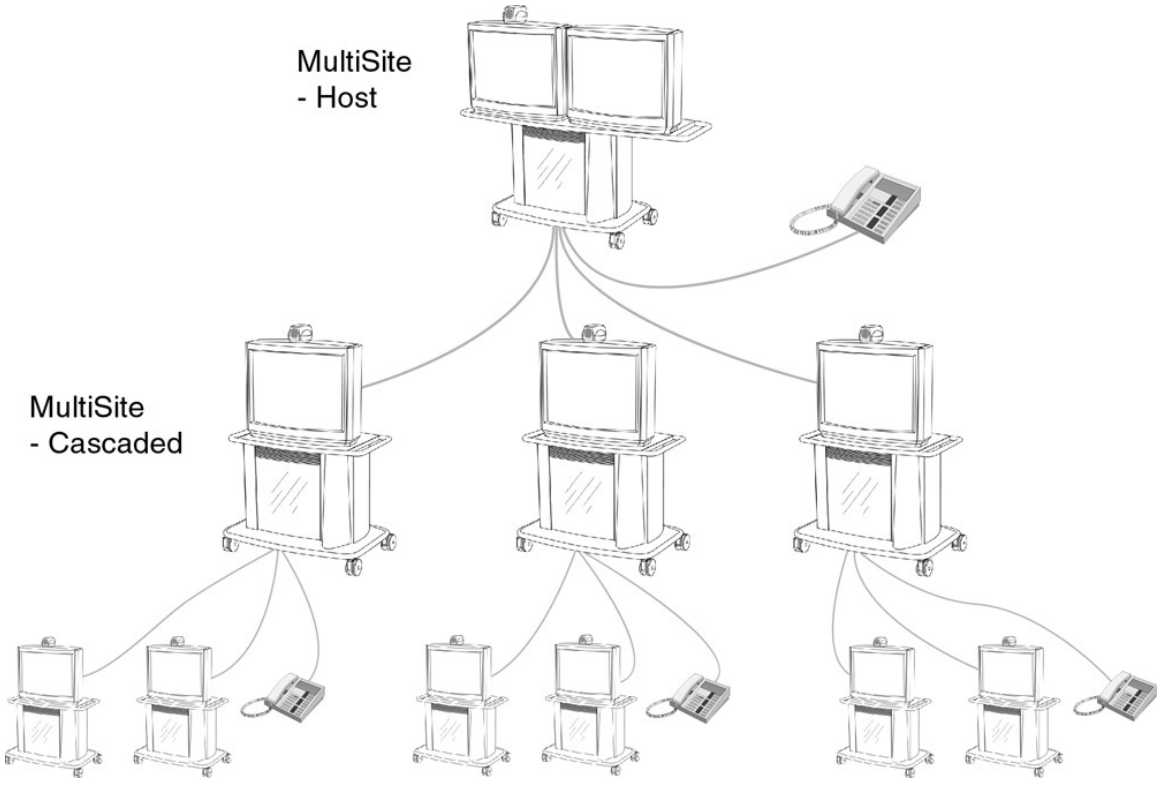
In a MultiSite call, the MultiSite can transmit the Duo Video and/or H.329 to the other participants that support Duo Video and/or H.329. This means that any participant can send Dual Stream and the MultiSite will transmit it to the other participants. The participants that do not support Duo Video or H.329 will only receive Main Video or only the dual stream dependent on which software options installed.

Mix ISDN/LAN

A conference can consist of any combination of ISDN/IP sites.

MultiSite cascading

By connecting MultiSite systems together, it is possible to connect even more sites in a cascaded MultiSite (see example below). All connections can use any combination of ISDN/IP. The host can connect up to 5 other video systems with MultiSite functionality. The cascaded systems can connect to 4 other video sites. These systems will automatically run Voice Switched mode and transmit a full screen image to the host. In this case you get 26 participants in the cascaded MultiSite conference.



3.13 Control Panel

The Control Panel contains the features:

- User Guide
- Streaming
- Far End Control
- Camera Preset
- Camera Tracking
- Text Chat
- System Information
- Administrator Settings
- Restart

3.13.1 User Guide

The on screen user guide takes you through a quick step-by-step introduction to videoconferencing. It gives the user basic skills in how to use the system.

Note: The Audio demo will only appear in the User Guide if a DNAM is connected to the codec.

3.13.2 Streaming

Streaming lets you broadcast your meeting to participants on web. The web participants can listen to the meeting, see snapshots, but not participate themselves. Snapshots of current stream (if MultiSite), selfview, far end and DuoVideo streams are accessible via http. See Appendix 6 for descriptions of the possible snapshot files.

How to use Streaming:

1. Choose Streaming from the Control Panel to open the Streaming menu.
2. Press Start Streaming from the menu line.
3. Press Stop Streaming to end streaming. Streaming will also end when you disconnect the call.
4. Press Streaming Settings if you want to change streaming settings (see Streaming Settings below)

How to view streaming from a PC:

1. After streaming is started, an easy way to view the streamed audio/video is to start your Web browser and enter the IP-address of the streaming system.
2. After the Web page of the system is shown, click on Streaming. Alternatively, enter http://<codec ip-address>/stream.sdp

Streaming Settings

Address	Address is defined as the IP-address of a streaming client, streaming server or a multicast address. Giving an address in the range 224.0.0.1-239.255.255.255 will broadcast the stream to any host that has joined the specified multicast group. Specifying normal broadcast address 255.255.255.255 will broadcast to any members on the LAN.
Address Port	If several codec's are streaming to the same IP-address, different ports have to be used in order for the client to know which stream to receive. If the first codec streams on port 2240 and the second codec on port 2250, the client has to specify which port to listen to. Video is transmitted on the specified port; audio is transmitted on the port number 4 above the specified video port, in this case 2244 and 2254.
TTL/Router Hops	This is used for streaming data to limit how many routers the data should pass before it is rejected. If TTL is set to 2, data will not traverse more than 2 router hops.

Streaming Source	▪ **Auto:** Enables streaming of both local and far end video. Selection of which site to be streamed is done using voice switching (the site that speaks is streamed). ▪ **Local:** Only the local video will be streamed. ▪ **Remote:** Only the far end video will be streamed. Local and far end audio is always streamed.
Allow Remote Start	▪ **On:** Streaming can be started from external user interfaces like the Web-browser or Telnet session. ▪ **Off:** Streaming can only be started from the Video Conferencing System User Interface using the remote control, or by using the Data port. This will prevent activation of streaming using Web browser or Telnet sessions. See also Password section below
Announcements	▪ **On:** The codec will announce to the network that it is streaming. This enables a streaming client (e.g. a PC) to connect to the codec's streaming session. Used by Cisco IP/TV. ▪ **Off:** No announcement packets will be transmitted.
Video Rate	Defines the Video streaming rate from the system. Range is 16 kbps - 320 kbps. In addition, audio (G.711) streaming rate is 64 kbps, providing a maximum streaming rate of 384 kbps.
Streaming Password	Set password so that only participants entering correct password will be able to view the streaming session. Entering a password will prevent unauthorized people from accessing the streaming session.

3.13.3 Far End Control

It is possible to get some control of the far end system. This means that you can control your conference partner's camera, video sources and presets. You can also request a snapshot from the far end side. Enabling Far End Control in the Control Panel will put the system in Far End mode and camera control, camera preset, presentation, and snapshot will work on the far end camera.

Far End Control only works when you are in call and if the far end side supports H.281 (Far End Camera Control). You can prevent others from controlling your system by setting Allow Far End Camera Control to Off in Control Panel - Administrator Setting - General - Permissions (see 4.1.7 Permissions for details).

How to use Far End control:

There are two ways of enabling the far end camera control when in a call and if supported by the far end:

1. Open the Control Panel. Enable Far End Control by selecting the Far End button in the Control Panel. A green circle indicates that the Far End button is activated. Now you are in Far End mode and can use camera control, camera preset, presentation and snapshot for the far end. To turn Far End control off, go to the control panel again and press Far End again. The green circle disappears.
2. Select the "Move Camera" in the menu and you will have a selection for near and far end camera control. If far end camera control is selected this will give you control of the far end camera. Press OK on the remote to exit far end camera control.

Far End Camera Presets

Far End Camera Presets works just like your own camera presets. When Far End is on, use the number keys to activate far end camera presets. You are however not allowed to save far end camera presets.

Far End Presentation

Pressing the Presentation key or choosing a presentation from the presentation menu while Far End is on, will result in opening a far end presentation. Be aware of that the far end video sources may not correspond with the buttons in the presentation menu. If you press Document Camera, the far end side might have another video source on this input.

Request snapshot from the Far End

You can request a snapshot from the far end side. Put the system in Far End mode and press Snapshot on the remote control to take a snapshot of the current far end video (current is default snapshot source).

3.13.4 Camera Preset

In the Display menu you find Display Presets and Save Preset

Display Presets displays camera presets 0-9 in a menu. The disabled buttons represent camera presets that are not saved yet. Use arrow keys to select a camera preset.

Save Preset will take you to the save presets menu. Enter a number and you will save the current camera position. Note that you can save camera presets by pressing a number for 1 second. Use the Save Preset menu if you need to save presets 10-14 (see 3.10.4 Camera Presets).

3.13.5 Camera Tracking

Through Camera Tracking and the use of two or three microphones, the camera can automatically position itself on the current speaker. Before using camera tracking, the camera positions used must be stored at Preset 7 (Mic1), Preset 8 (Mic2) and/or Preset 9 (Mic3).

How to use Camera Tracking:

1. Open the Control Panel.
2. Enable Camera Tracking by choosing Camera Tracking in the Control Panel. An indicator will appear as you enable Camera Tracking.
3. End Camera tracking by deselecting the button. Camera Tracking will also end if you activate a Camera Preset or move the camera manually with the arrow keys.

Example: You have placed Microphone 1 on the table. Where should you position the camera for Preset 7?

The camera position stored at Preset 7 must be related to Microphone 1. Therefore all participants who are located closest to Mic1 should be included in the Preset 7 camera position etc. When camera tracking is activated and a person close to Mic1 speaks, Preset 7 will be automatically selected.

When activating another video source (for instance document camera), camera tracking will be temporarily disabled until you re-select Main Camera or a Main Camera Preset.

The camera tracking speeds may be altered in the Video Settings menu in Administrator Settings, see 4.6.1 Camera Tracking Mode for further details.

A Voice Detector makes the system more tolerant of noise and ensures the camera not to be moved by noise such as paper shuffling, etc.

Note that pressing Mic Off will temporarily disable camera tracking until you turn on the microphone again.

3.13.6 Text Chat

While in an ISDN or IP call to another system supporting Text Chat (T.140), select Text Chat from the Control Panel. Enter text in the displayed window.

How to use Text Chat:

1. Choose Text Chat from the Control Panel to open the Text Chat window.
2. Enter text with the number keys like on a mobile phone. The text is sent to the far end continuously letter by letter.
3. Press OK to end Text Chat and escape from the text chat window.

3.13.7 System Information

In System Information you find all information about the system.

The most useful information for users is listed first:

- System Name
- My ISDN Number
- My IP Number
- My IP Address
- MultiSite Number(s)
- Software Version
- Option Installed
- Serial No
- MAC address
- Ethernet Speed
- Network

In system information you also find:

- Call Status
- Channel Status
- View Administrator Settings

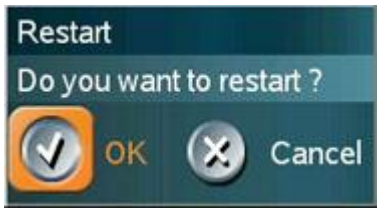
For more information, see 4.9 Diagnostics.

3.13.8 Administrator Settings

Administrator Settings contains the configuration of the whole system. It is recommended to password protect Administrator Settings to prevent occasional users to make changes to the system. See 4 Administrator Settings for further details.

3.13.9 Restart

Restart the system by pressing the Restart button. You are prompted with a dialog box saying: Do you want to restart the system? Press OK to restart, press Cancel (X) to abort.



4 Administrator Settings

Administrator Settings contain all the settings of the system. Making changes to Administrator Settings will change the behaviour of the system. It is recommended to password protect the access to Administrator Settings to prevent occasional users from making crucial changes to the system, see 4.2.10 Administrator Password.

Administrator Settings contain:

- General
- Menu Settings
- Presentation Settings
- Call Quality
- Audio
- Video
- Security
- Network
- Diagnostics

4.1 General Settings

When installing the system, go through the General Settings menu to ensure that you have the right settings for your system, see System Configuration.

General Settings contain:

- Language
- System Name
- Dual Monitor
- Autoanswer
- Max Call Length
- Global Phone Book Settings
- Permissions
- Screen Settings
- Software Options

4.1.1 Language

The system supports 13 different languages for its on-screen menus; English, German, French, Norwegian, Swedish, Italian, Spanish, Portuguese, Chinese Simplified, Chinese Traditional, Japanese, Russian and Korean. Select the preferred language and press OK to save.

4.1.2 System Name

System Name identifies the system:

- On the welcome page.
- During an MCU conference call.
- When using the Web-interface.
- When the codec is acting as an SNMP Agent.
- Towards a DHCP server.
- H323 ID. Other systems can call in using this name instead of IP-number/IP-address.

System Name is blank by default. System name can be alphanumeric and up to 50 characters long. Follow the installation procedure to enter a System Name.

4.1.3 Dual Monitor

TANDBERG systems can be used with both one and two monitors. If you use two monitors, make sure that Dual Monitor is set to "On".

On	Selfview, snapshots and Dual Stream will be displayed on the second monitor.
Off	The second monitor shows selfview only.

4.1.4 Auto Answer

The auto answer setting decides whether an incoming call is put through automatically or manually.

On	The system will automatically answer all incoming calls.
On+Mic Off	The system will automatically answer all incoming calls and switch the microphone off when the call is connected. Press Mic Off to switch the microphone on.
Off	You must manually answer all incoming calls by pressing OK or the Call key.

4.1.5 Max Call Length

This feature will automatically end both incoming and outgoing calls when the call time exceeds the specified Max Call Length. Max Call Length can have the following values: 0-999 (minutes), where 0 means off.

4.1.6 Global Phone Book Settings

Global

On	Global Phone Book is available in the menu.
Off	Global Phone Book is hidden from the menu and is unavailable for users.

IP address

Enter the IP address of the management system that provides the Phone Book.

Path

The Path indicates the function of the management system.

4.1.7 Permissions

Permissions contains settings for incoming MCU Calls, incoming telephone Calls, Far End Control and Fallback to Telephony.

Access Code

An access code will help you control the use of the system. All users must enter a code to identify themselves and the call will be charged on their account. Access Codes are handy for group systems where there are more users or divisions that share the costs of using the system. Access Code can be set to "On" and "Off". Please refer to section Appendix 5 for more information on Access codes.

On	When making a call, an Access Code dialog box will be shown. The user must enter the correct password in order to put the call through.
Off	No password is necessary to make a call.

Incoming MCU Calls

On	When you are in a call, the system will provide visual and audible indications of an incoming call and ask you to accept/reject the call.
Off	The system will not accept incoming calls when you are in a call.

Incoming Telephone Calls

On	The system will accept incoming telephone calls.
Off	The system will not accept incoming telephone calls. This is useful to prevent incoming calls from systems other than videoconferencing systems.

Far End Control

On	The far end will be able to: • Control your camera • Select your video sources • Activate your camera presets • Request snapshots
Off	The far end can access none of the four features above on the local system. You will however still be able to control the camera on the far end.

Fallback to Telephony

When dialing a number and the system fails to place a video call to the number dialed, the system will attempt to place a telephone call if Fallback to Telephony is enabled.

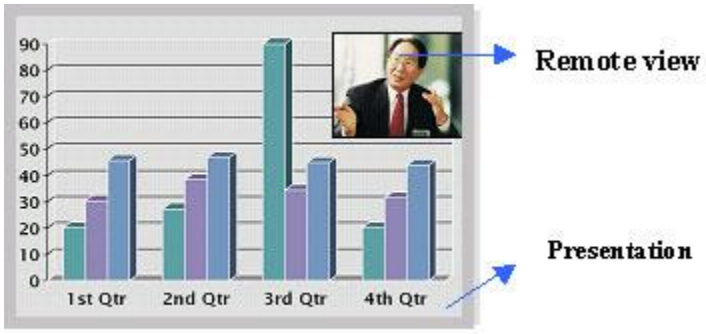
On	Enables fallback from video calls to telephone calls.
Off	Disables fallback.

4.1.8 Screen Settings

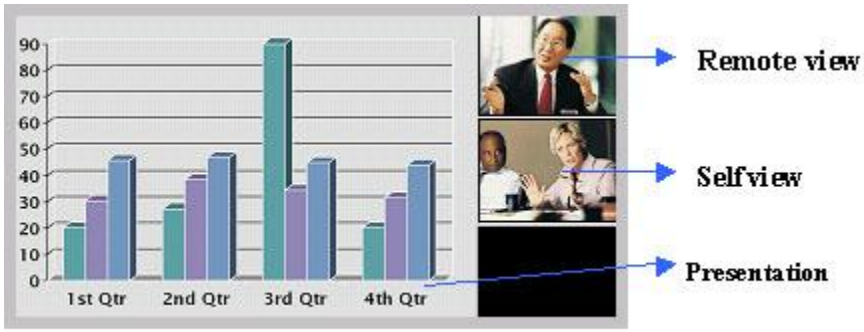
Picture Layout

The Advanced Picture Layout is related to the Layout button on the remote control and it can be used at any time to change the screen layout. For wide screen systems POP mode is recommended. You will get optimized picture layouts for wide screen by pressing the Layout button on the remote.

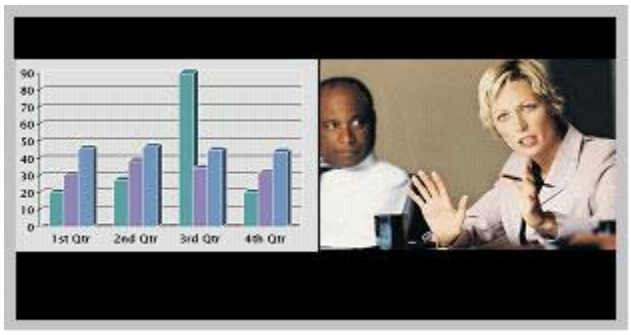
Picture in Picture (PIP)	Pressing the Layout button on the remote will result in an extra picture in smaller view (Picture in Picture). Press the Layout button to move it and finally hide it.
Picture outside Picture (POP)	Pressing the Layout button on the remote will result in a smaller view placed outside the big picture. Press Layout once more to get side-by-side dual monitor view. Press Layout again to go back to normal full screen view. Pressing the Layout button on the remote will result in one large image and one or two smaller pictures placed outside the big picture. Press Layout once more to get a side by side view. Press Layout again to go back to normal full screen view.



Example of Picture in Picture.



Example of Picture outside Picture (wide screen).



Example of Side-by-Side view (wide screen).

TV Monitor Format

To fully leverage your wide screen display, activate the Native 16:9 format by setting the TV Monitor Format to Wide. Note that you should only change this setting if your TV monitor is a wide screen (16:9) monitor or projector. All composite- and s-video output formats will then be optimized for Wide Screen TV monitors.

Normal	Output format is optimized for Normal TV monitors (4:3)
Wide	Output format is optimized for Wide TV monitors (16:9)

VGA Monitor Format

To fully leverage your wide screen display, activate the Native 16:9 format by setting the VGA Monitor Format to Wide. Note that you should only change this setting if your VGA monitor is a wide screen (16:9) monitor or projector. The VGA and DVI output will then be optimized for Wide Screen VGA display.

Normal	Output format is optimized for Normal VGA monitors (4:3)
Wide	Output format is optimized for Wide VGA monitors (16:9)

Wide screen VGA or TV monitor in Normal (stretched) mode.

Wide screen VGA or TV monitor In Wide (native) mode.

VGA Out Quality
The supported range of VGA formats will be optimized for the VGA display monitor based on the source image.

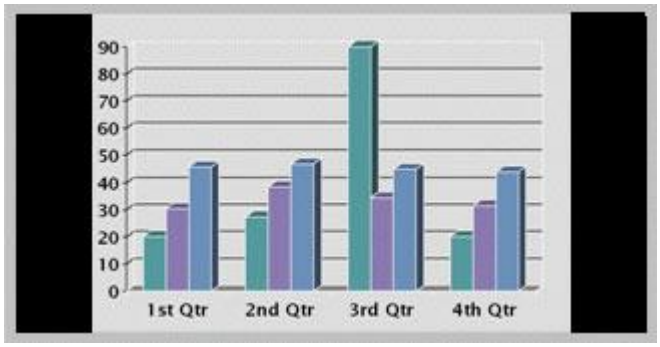
VGA Out Quality enables the user to change the preferred format for the DVI/VGA output. It is recommended to keep this setting in Auto unless your screen doesn't support some of the XGA or SVGA formats the system is using. Note that the VGA Out port support VESA Power Management.

Auto	VGA output format will be optimized dependant of the video source format, refresh and of the EDID information available. Supported formats are: SVGA (800x600) 75Hz XGA (1024x768) 60Hz WXGA (1280x768) 60Hz
SVGA 800x600 75Hz	VGA output format is forced to SVGA format (800x600) 75Hz
XGA 1024x768 60Hz	VGA output format is forced to XGA format (1024x768) 60Hz

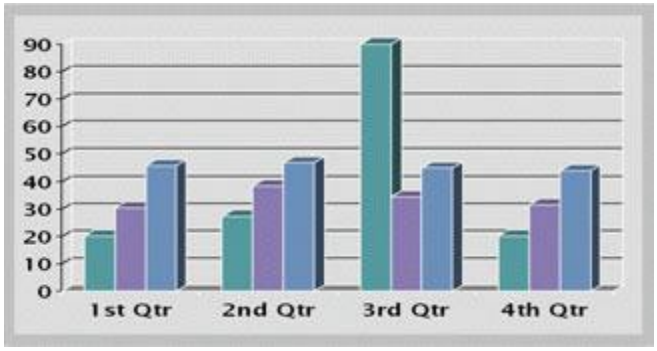
PC Picture Format

PC Picture Format setting only takes effect when TV or VGA Monitor Format is set to Wide. Use this setting to determine if you want your PC presentations to be shown stretched in full screen, or with correct aspect ratio using part of the widescreen display. With the VGA Out Quality set to Auto the presentation will be of the best possible quality supported by the monitor.

Normal	VGA output will have 4:3 aspect ratio on wide screen monitor.
Wide	VGA output will utilize the wide screen monitor at full.



PC presentation shown in Normal (correct ratio) mode.



PC Presentation shown in Wide (stretched) mode.

4.1.9 Software Options

The system requires a valid option key to activate MultiSite and/or Presenter functionality. In order to activate additional bandwidth, you need to enter a bandwidth key. A restart of the system is required after entering a new option and/or bandwidth keys. If the key is invalid, the original key will be used.

The following options are available:

1. No option
2. Presenter
3. MultiSite + Presenter
4. Bandwidth options

4.2 Menu Settings

Menu Settings contain the settings:

- Menu Timeout In Call
- Welcome Menu
- Welcome Picture
- Logo
- Menu on TV
- Menu on PC
- Balloon Help
- Display Welcome Text
- Welcome Text
- Administrator Password

4.2.1 Menu Timeout In Call

Main menu appears on the bottom line of the screen. Set Menu Timeout In Call to On if you want the menu to time out automatically when you are in a call.

On	The menu will time out automatically after 15 seconds if there is no activity on the remote control. Menu timeout does only apply when you are in a call. Outside a call, the menu will not time out.
Off	The menu will not time out automatically. Press Cancel (X) to hide the main menu manually.

4.2.2 Welcome Menu

The Welcome Menu contains the Main Menu, System Status, your System Name and dial in numbers.

On	The Welcome Menu is shown when the system wakes up from standby mode.
Off	The Welcome Menu is not shown when the system wakes up from standby mode. Press the OK button to open the welcome menu.

4.2.3 Welcome Picture

The Welcome Picture is what you see in the background of the welcome menu.

Selfview	Selfview is shown in the background of the welcome menu. In most cases this means that main camera is displayed and you can see the video image of yourself.
Off	No picture is shown in the background of the welcome menu.

4.2.4 Logo

It is possible to upload a company logo to the system. For more information about how to upload a Logo, see Appendix 6. Set the Logo settings to On to display the logo.

On	Choose On if you want the company logo to appear in the background of the welcome menu.
Off	The logo is not displayed.

Note: The TANDBERG Logo will be displayed if no other company log is load and logo is enabled.

4.2.5 Menu on TV

The Menu on TV setting decides if the menu shall be displayed on the TV screen or not. For optimal layout of the menu, Menu on TV should be Off if Menu on PC is On and vice versa.

On	The menu is available on the TV screen.
Off	The menu is not available on the TV screen.

4.2.6 Menu on PC

The Menu on PC setting decides if the menu shall be displayed on the PC (VGA screen) screen or not. For optimal layout of the menu, Menu on TV should be Off if Menu on PC is On and vice versa.

On	The menu is available on the PC screen.
Off	The menu is not available on the PC screen.

4.2.7 Balloon Help

It is possible to enable / disable the balloon help window.

On	Choose On if you want help text windows to appear.
Off	There will be no help text window.

4.2.8 Display Welcome Text

The welcome text displays your system name and dial in numbers by default. It is possible to hide this information by choosing Display Welcome Text Off.

On	Welcome text is displayed on the welcome menu.
Off	Welcome text is not displayed on the welcome menu.

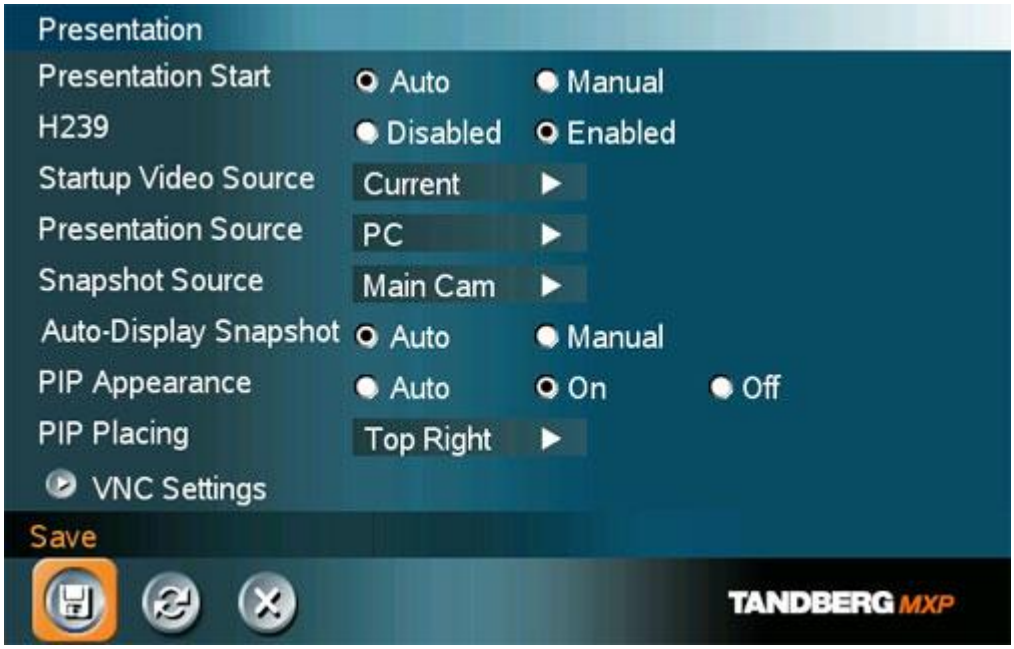
4.2.9 Welcome Text

You can change the welcome text to any text you like, instead of the default text. Remember that Display Welcome Text must be On to be able to edit the welcome text.

4.2.10 Administrator Password

It is recommended to put an Administrator Password on the system. The Administrator Password can be maximum 5 digits long. The Administrator Password dialog box will pop up when you choose Administrator Settings from the Control Panel. This will prevent occasional users from going in to administrator settings. With an administrator password, you can ensure that your system will behave in the same way every time and that only dedicated people are allowed to make changes to the system.

4.3 Presentation Settings



Presentation Settings contain:

- Presentation Start
- H.239
- Startup Video Source
- Presentation Source
- Snapshot Source
- Auto-Display Snapshot
- PIP Appearance
- PIP Placing
- VNC Settings

4.3.1 Presentation Start

If your system has Dual Stream capabilities, you can show two video streams at the same time (see also 3.11.5 Dual Stream). Presentation Start is Auto by default. This means that you will start Dual Stream (a second video stream) automatically when starting a presentation. Dual Stream requires the Presenter Option and H.263 video. To check which options are installed, see the System Information menu in Control Panel.

Manual means that you manually choose if you want to start Duo Video or not every time you start a presentation.

Auto	Dual Stream starts automatically when you start a presentation (in other words, when you choose a second video source). If your system or the far end system is not capable of Duo Video/H.239, you will not use Dual Stream, but rather send the presentation source as your Main Video
Manual	When starting a presentation, select Presentation in the call menu and select Start Presentation. Choose a video source from the list displayed on the screen.

4.3.2 H.239

H.239 supports transmission of two video streams. It combines elements of Duo Video and People+Content. If H.239 is disabled you will still be able to start TANDBERG Duo Video.

Enabled	Enables H.239
Disabled	Disables H.239

4.3.3 Startup Video Source

The Startup Video Source is the video source on display when the system wakes up from standby mode. If you use Main Camera as start up source, the system will start with Main Camera every time the system wakes up from standby, regardless of what the previous user was using.

You can change Startup Video Source to Main Camera, PC, Document Camera, VCR, AUX, VNC or Current depending on what video sources you have available for your system. Choosing Current will result in the last used video source before the system went to standby.

4.3.4 Presentation Source

The Presentation Source is connected to the Presentation button on the remote. Pressing the Presentation button will put the Presentation Source on display. Presentation Source is PC by default. You can change the Presentation Source to any video source and none. Choosing none results in opening the Presentation menu when pressing the Presentation key.

4.3.5 Snapshot Source

When you take a Snapshot, you get a snapshot of the Snapshot Source. Current is the default Snapshot Source. This means that you take a snapshot of the video source that is currently active.

You can change the Snapshot Source to any video source. In this way you can program the snapshot key to apply only for PC for instance. Press Snapshot and you will take a PC snapshot regardless of what video source that is currently active.

4.3.6 Auto-Display Snapshot

Select Auto to automatically display a received snapshot. Turn Auto-Display Snapshot Manual if you wish not to have them displayed on the screen when they are sent or received. The snapshots will be sent and received, but not displayed. With Auto-Display Snapshot set for Manual, you must enter the Presentation menu to display a snapshot.

Auto	A sent or received snapshot will automatically be displayed on the screen.
Manual	A sent or received snapshot will not be displayed on the screen. To see the snapshot, choose Display Snapshot in the Presentation menu.

4.3.7 PIP Appearance

A Picture in Picture (PIP) is a smaller picture placed in one of the corners of the screen. The PIP enables you to see an extra picture in your video conference.

Auto	PIP Auto means that Picture In Picture will appear automatically when it is suitable. A picture in picture is nice when you use Duo Video and you need an extra window to see all the pictures. You can of course show or hide the PIP with the Layout button on the remote anytime.
On	PIP On means that a Picture in Picture will always be displayed.
Off	PIP Off means that PIP is not displayed automatically.

4.3.8 PIP Placing

PIP Placing lets you decide where the PIP shall appear. You can of course move the PIP with the Layout button on the remote anytime.

Top Right	PIP is placed in the Top Right corner.
Bottom Right	PIP is placed in the Bottom Right corner.
Bottom Left	PIP is placed in the Bottom Left corner.
Top Left	PIP is placed in the Top Left corner.

4.3.9 VNC Settings

VNC Settings is necessary when using a VNC presentation. See chapter PC Soft Presenter and VNC for more information on how to use VNC.

Address	The IP-address of the PC with the VNC software installed. To find the IP-address of the PC, place the mouse pointer on the VNC program icon in the lower right corner of the Windows taskbar. You can also select Command Prompt from the Startup-menu\Run and type cmd then enter. This will open a command window and from here. Type “ipconfig” and press enter.
Display Number	The display number for VNC is 0 and upwards. If you are using WinVNC, double-click on the icon on the taskbar to view WinVNC properties. This number should correspond with Display Number in this menu.
Password	Enter the same password as specified in WinVNC properties. The password will be shown as asterisk signs (*) the next time you enter the menu.

4.4 Call Quality

Call Quality contains the settings:

- Video Algorithm
- Audio Algorithm
- AAC-LD 128kbps
- Natural Video
- Video Quality
- Default Call Settings

4.4.1 Video Algorithm

The system will automatically select the best video algorithm based on the video source and the capabilities of the remote system. Use this menu to disable video algorithms in case you have interoperability issues calling other systems.

H.264	Bandwidth efficient video compression and decompression.
H.263	Normal video compression and decompression.
H.261	Legacy video compression and decompression. The system will always have H.261 enabled. Therefore it is impossible to uncheck H.261.

4.4.2 Audio Algorithm

The system will automatically select the best audio algorithm based on the call rate and the capabilities of the remote system. Use this menu to disable audio algorithms in case you want to remove “low quality” audio, or if you have interoperability issues calling other systems.

G.722	High quality audio (7 kHz at 48kbps, 56kbps or 64kbps)
G.728	Compressed normal quality audio (telephone quality, 3.1 kHz at 16kbps)
G.711	Normal quality audio (telephone quality 3.1kHz at 64kbps). This audio algorithm is mandatory for video conferencing equipment and is impossible to uncheck.
G.722.1	Compressed high quality audio (7 kHz at 24kbps and 32kbps).
AAC-LD	CD-quality audio, MPEG-4 Advanced Audio Coding Low Delay (20 kHz, stereo at 128kbps, mono at 64kbps).

Call Rate vs Audio algorithms selected
Modify/remove algorithms used by uncheck the different audio algorithms

Automatically preferred audio algorithms on call rates up to and including 192kbps

1. G.722.1 (24kbps or 32kbps)
2. G.728 (16kbps)
3. AAC-LD (56kbps or 64kbps)
4. G.722 (48kbps, 56kbps or 64kbps)
5. G.711 (48kbps, 56kbps or 64kbps)*
6. AAC-LD (48kbps or 128kbps)

Automatically preferred audio algorithms on call rates above 192kbps

1. AAC-LD (128kbps)**
2. AAC-LD (64kbps or 56kbps)
3. G.722 (64kbps, 56kbps or 48kbps)
4. G.722.1 (32kbps or 24kbps)
5. G.728 (16kbps)
6. G.711 (64kbps, 56kbps, 48kbps)*
7. AAC-LD (48kbps)

* G722 and G711 at 64kbps are used for audio in H323 (IP) calls only
** Dependent that the call rate is above the AAC-LD 128 threshold.

4.4.3 AAC-LD 128kbps (stereo audio)

Specify a call rate for 128kbps AAC-LD. From this call rate and above, "128kbps AAC-LD" is available. On lower call rates "64kbps AAC-LD" is available.

Stereo audio requires twice the bandwidth as mono CD-quality audio. Therefore we recommend to enable stereo audio on high call rates only. To enable stereo CD-quality audio you need to specify a call rate for when stereo automatically should be enabled. On lower call rates, mono CD-quality audio "64kbps AAC-LD" will be enabled.

4.4.4 Natural Video

Choosing Natural Video will enable 60 fields* per second true interlaced picture for high motion video. The use of Natural Video requires the H.263+ and H.263++ video protocols. Natural video will be disabled in H.323 MultiSite calls and in H.320 Continous Presence MultiSite calls.

Auto	Natural Video Auto will enable transmission of Natural Video from 768 kbps and above. Reception of Natural Video is in this case always enabled.
Off	Natural Video Off will disable both transmission and reception of Natural Video.
Custom	384 kbps and above to 1920 kbps and above.

** 50 fields per second on PAL systems.*

4.4.5 Video Quality

The different video sources need different Video Quality Settings. Main Camera, VCR, AUX and Split Screen have Motion as default. PC, Document Camera and VNC have Sharpness as default.

Motion	Optimized for smooth motion video (CIF/SIF for low bandwidths, iCIF/iSIF for high bandwidths).
Sharpness	Optimized for sharp video (4CIF/4SIF, SVGA, XGA).
Auto	The system chooses the best of Motion or Sharpness depending on picture layout and bandwidth.

4.4.5.1 Intelligent Video Management (IVM)

It is possible to configure the picture sent from the system depending upon specific requirements and applications adding an additional level of flexibility and adaptability.

Generally, the IVM will always try to transmit the format closest to the video input format. Each video input can be configured to either motion or sharpness:

Motion: When there is a need for higher frame rates, typically when a large number of participants are present or when there is a lot of motion in the picture.

At low bit rate:

- CIF will be used from a PAL video input
- SIF from NTSC
- VGA/SVGA/XGA from PC, Digital Clarity

At high bit rate:

- iCIF will be used from a PAL video input, Natural Video
- iSIF from NTSC, Natural Video
- VGA/SVGA/XGA from PC, Digital Clarity

Sharpness: Improved quality of detailed images and graphics, lower frame rate, ideal for enhancing quality at lower bandwidths.

- 4xCIF will be used from a PAL video input, Digital Clarity
- 4xSIF from NTSC, Digital Clarity
- VGA/SVGA/XGA from PC, Digital Clarity

IVM Resolution

The following table shows relationship between Transmission modes selected by the system when Motion or Sharpness is set in the Call Quality menu. IVM will use this table to optimize the Video quality, according to the capabilities of the remote system(s):

Basic Video Quality	Video Input	Transmission mode selection rules

MOTION	PAL	iCIF@50 -> CIF -> QCIF
MOTION	NTSC	iSIF@60 -> iCIF@60 -> SIF@60 -> CIF -> QCIF
MOTION	VGA	CIF -> QCIF
MOTION	SVGA	CIF -> QCIF
MOTION	XGA	CIF -> QCIF
SHARPNESS	PAL	4xCIF -> VGA -> CIF -> QCIF
SHARPNESS	NTSC	4xSIF -> 4xCIF -> VGA -> SIF -> CIF -> QCIF
SHARPNESS	VGA	VGA -> 4xCIF -> CIF -> QCIF
SHARPNESS	SVGA	SVGA -> 4xCIF -> VGA -> CIF -> QCIF
SHARPNESS	XGA	XGA -> SVGA -> 4xCIF -> VGA -> CIF -> QCIF

Transmission mode with Motion or Sharpness selections.

4.4.5.2 Native Resolutions

The following live video resolutions are supported on the system:

Native NTSC:
- 4xSIF (704 x 480 pixels), *Digital Clarity*
- Interlaced SIF (352 x 480 pixels), *Natural Video*
- SIF (352 x 240 pixels)

Native PAL:
- 4xCIF (704 x 576 pixels), *Digital Clarity*
- Interlaced CIF (352 x 576 pixels), *Natural Video*
- CIF (352 x 288 pixels)
- QCIF (176 x 144 pixels)
- SQCIF (128 x 96 pixels)

Native PC Resolutions:
- XGA (1024 x 768 pixels), *Digital Clarity*
- SVGA (800 x 600 pixels), *Digital Clarity*
- VGA (640 x 480 pixels), *Digital Clarity*

4.4.6 Default Call Settings

Default Call Settings are connected with Call Settings in the call menu. If you leave Call Settings unchanged when making a call, the system will use the Default Call Settings in the call. See 3.5.4 Call Settings for more information.

In addition to the Call Settings Call Type, Net, Bandwidth and Restrict (56k), you also find settings for H.320 Auto bandwidth and H.323 Auto bandwidth in Default Call Settings.

Call Type	Call Type can be set to: ▪ Video Call ▪ Telephone Call If either the Call Type is set to Telephone Call or the Place Telephone Call icon is selected when making a call, the call will be set up as a telephone call. In all other cases the call will be set up as a video call. Some network configurations may cause the setup of a video call to fail. The call will then be set up as a telephone call instead if Fallback to Telephony is enabled. For MultiSite calls, Call Type enables you to specify both telephone calls and video calls in the same conference.
Network	The Network alternatives are: ▪ Auto ▪ ISDN ▪ H.323 ▪ SIP If Auto is selected, the system will select the right network depending on the entered number: ▪ If an IP-address (e.g. 10.12.34.56) is entered, H.323 is selected. ▪ If the first digits in the number match those set in H.323 Prefix, H.323 is selected. ▪ In other cases, ISDN (H.320) is selected. ISDN indicates: ▪ ISDN-BRI ▪ ISDN-PRI ▪ Leased E1/T1 ▪ External Networks If a gatekeeper is present, it is possible to place IP-calls using “telephone-style” numbers, e.g. an E.164 alias, according to the numbering plan

	implemented in the gatekeeper. The gatekeeper will then translate the dialed number into an IP-address, see 4.8.6.2 H.323 Settings for more information about gatekeepers. Select ISDN to ensure that the call is set up as an ISDN call. Select H.323 to ensure that the call is set up as an H.323 call. Select SIP to ensure that the call is set up as an H.323 call.
Bandwidth	Bandwidth decides the quality of the video picture. When set to Auto the system will establish a connection using a proper bandwidth for the call, typically 384kbps for ISDN calls and 768kbps for IP calls. When set to Max the system will set up the call with maximum bandwidth depending on the selected network. **Overview*** Auto: 384 kbps on ISDN/768 kbps on LAN Max: 768 kbps on ISDN-BRI 1472/1920 kbps (23/30Ch) on ISDN-PRI (T1/E1) 4Mbps(4096 kbps, IP only) 4096 kbps = 4 Mbps, IP only 3072 kbps = 3 Mbps, IP only 2560 kbps = 2,5 Mbps, IP only 1920 kbps = 2 Mbps, 30B 1472 kbps = 23B 1152 kbps = 18B 768 kbps = 12B 512 kbps = 8B 384 kbps = 6B 320 kbps = 5B 256 kbps = 4B 192 kbps = 3B 128 kbps = 2B, Bonding/H.221 64 kbps = 1B, H.221 H0 = 1xH0, 384 kbps, PRI only * Note that some software versions and networks do not support all channel selections.
Restrict (56k)	A restricted call uses 56kbps channels rather then the default unrestricted 64kbps channels. Some older networks (primarily in the USA) do not support 64kbps channels and require the use of restricted 56kbps calls. By default the system will dial an unrestricted call and downspeed to 56kbps if necessary. To force a restricted call, choose Restrict (56k) On.

H.221 or 2x64 (2x56) Calling

Some older or low end video systems do not have the ability to make bonded ISDN calls. In these cases it is necessary to dial both ISDN numbers separately to call those systems.

These types of calls are often referred to as

- H.221 calls
- 2x64 calls
- 2x56 calls

- as making 2 x 64 kbps or 2 x 56 kbps calls to the same system.

Place this type of call by:

- Set Network to ISDN
- Set Bandwidth to 128 kbps
- A field for the 2nd number pops up in Call Settings.
- Enter the second number in the Call Settings field. For 128 kbps calls that use bonding, ignore the second number field and just enter one number to be dialed.

Using sub-address / extension address / MCU password
Sub-address is used to address different systems on the same ISDN line and is primarily used in European Countries. LAN equivalent extension address or TCS-4 is used to address different systems on a LAN, when dialing via a gateway.

To specify an ISDN sub-address or its LAN equivalent extension address (TCS-4), add a star (*) after the number and then enter the sub-address/extension address.

Example:
12345678*10 (<number>*<Sub-address/extension address/MCU password>)

When calling to external MCU's requiring a password (TSC-1), this password can be added after the star (*). If no password is specified, the user will be asked to enter the password (after connecting to the MCU).

4.5 Audio

Audio contains the settings:

- Inputs
- Outputs
- Echo Control
- Stereo Settings
- Audio Levelling (AGC)
- Alert Tones and Volume

4.5.1 Inputs

Mic 1- 3 and Audio input 4-6

By default, all inputs are enabled. Just plug in an audio source and it is active. Audio inputs that are On will automatically be mixed. Unconnected inputs will automatically be muted. Select Off to prevent audio/noise from connected but unused inputs. The activated audio sources are stored on camera presets.

Mic 1, 2 and 3 are intended for electret type microphones. The microphone inputs are balanced with 24V phantom power.

Audio input 4 is intended for connection to an external microphone amplifier or an external fixed mixer. It is crucial that the external mixer is a fixed mixer. Automatic, smart and other types of adaptive mixers might cause the echo canceller to malfunction.

Audio input 5 is intended for connection to external playback devices or to telephone add-on hybrids. As there is no acoustic echo canceller on this input it should not be connected to any microphones. The audio source connected to this input will be heard from the local speaker as well.

Audio input 6 is intended for connection to a VCR or DVD player. It can also be connected to other external playback devices. As there is no acoustic echo canceller on this input it should not be connected to any microphones. The audio entering this input will be heard from the local speaker as well. If Auto is selected, the audio from the VCR will only be heard when VCR is selected as video source.

Mix Mode

Auto	The adjustment of each microphone signal is done automatically to obtain the best possible audio and minimize the background noise.
Fixed	Fixed will maintain a constant weighting of all microphones.

VCR Ducking

If VCR Ducking is activated, the VCR audio level will be attenuated if someone talks into the microphone or at the far end.

The VCR ducking is only valid for audio input 6. If input 5 and 6 is configured to one stereo input pair, see 4.5.4 Stereo Settings, then the VCR ducking will apply to both input 5 and 6.

Level Settings

It is possible to adjust the audio input levels according to which external audio equipment is connected. The on-screen audio level indicator will make it easier to set the correct input level

settings. The input level should be adjusted so that the average level reaches the preferred level marker. The audio inputs are adjustable in steps of 1.5 dB from 0 dB to 22.5 dB.

The default levels for Mic 1,2 and 3 are set for use with an Audio Technica AT871R or AT841R microphone in an average videoconferencing room. The gain can be adjusted correctly for a wide range of microphones.

A few examples of microphone levels are:

Audio Technica AT871R	+3dB (default)
Audio Technica AT851R	+7dB
TANDBERG Audio Science	+19.5dB

Audio inputs 4, 5 and 6 are set to a default level which is adhered to by most manufacturers of audio-visual equipment and is a level at which most audio-visual equipment (CD-players, VCRs or DVDs) will work.

Please see 5.1 Interfaces for details on the audio connectors.

4.5.2 Outputs

Audio out 1 - 3

Audio out 1 is intended for connection to TANDBERG Digital Natural Audio Module, televisions or audio amplifiers.
Audio out 2 is intended for connection to audio recording equipment or to a telephone add-on hybrid. The signal is a mix of audio from both the far end and local end (not from Audio in 5).
Audio out 3 is intended for connection to a VCR or other recording equipment. The signal is a mix of audio from far end and local end (not from Audio in 6).

Note that audio out 2 or audio out 3 never should be connected to a loudspeaker placed in the same room as the microphones connected to the system. This will cause “howling” and possible damage to the speaker system. If an output is Off, no audio will be sent to that output.

Out 1 Mode

If Out 1 Mode is set to Auto, the system will select analog or digital (SPDIF) mode dependent on the detected Audio Module. If a TANDBERG Digital NAM is detected, SPDIF mode will be selected, otherwise analog mode will be selected.
Setting the Out 1 Mode to either Analog or SPDIF will override the auto-detected mode.

Audio Module

Select Audio Module according to the type of Audio Module installed if this is not automatically detected. The Audio Module setting is only available if the audio module of the system is unidentified.

Level Settings

Adjust the audio output levels according to the parameters of the external audio equipment connected. These levels should only be adjusted when installing new audio equipment. The default settings are correct for the TANDBERG Digital Natural Audio module and for most consumer electronics devices (televisions, VCRs, etc.). The volume keys on the remote control adjust the level of output 1 (the speaker output). The volume control has no effect on other outputs.

Please see 5.1 Interfaces for details on the audio connectors.

4.5.3 Echo Control

Mic 1-3 and Audio 4

Each of the 3 microphone inputs and Audio input 4 has a separate acoustic echo canceller. One echo canceller per input provides more sophisticated control than having one common canceller for all microphones.
In addition to echo cancellation, the system has built-in noise reduction (NR). NR reduces constant background noise (e.g. noise from air-conditioning systems, cooling fans etc.). In addition, a high pass filter (Humfilter) reduces very low frequency noise.

On:	Echo control is normally set to On to prevent the far end from hearing their own audio. Once selected, echo cancellation is active at all times. The echo canceller continuously adjusts itself to the audio characteristics of the room and compensates for any changes it detects in the audio environment. If the changes in the audio conditions are very significant the echo canceller may take a second or two to re-adjust.
Off:	You can choose to switch off the echo canceller for the available audio sources. Echo Control should be switched Off if external echo cancellation or playback equipment is used.
On+NR:	Activates both Echo Control and Noise Reduction.

Note that it is your echo canceller that improves the audio quality experienced by the other site. When you hear an echo of your own audio it is most likely the far end's echo canceller that is malfunctioning.

Tips for improving the echo canceller performance:

- Place all microphones as far as possible from the loudspeakers. Minimum loudspeaker-microphone distance should be 2 meters (6.5 ft).
- It is recommended to place the microphones between 1 and 2 meters away from the persons speaking. By using several microphones, the ratio distance loudspeaker-to-mic/mic-to-speaker can be increased. Increasing this ratio improves the echo canceller performance.
- Place the microphones as far as possible from noise sources.
- Reduce the volume setting. Ensure that the loudspeakers do not distort the audio.
- The echo canceller tries to estimate the echo path from the speaker system to the microphones. Moving objects change this path; therefore try to avoid moving objects. Be especially aware of large objects and objects placed close to either the microphone or the speaker system as these objects will cause severe changes to the echo path.
- Avoid putting paper sheets etc. on the microphone.

- Avoid moving the microphone or loudspeaker.
- In the presence of low frequency noise, enable the noise reduction (NR).

4.5.4 Stereo Settings

Stereo I/O mode

If stereo I/O mode is activated, audio input 5 and 6 and audio output 2 and 3 will behave as a stereo input/output pair, left and right. The VCR Ducking and AGC setting for audio input 6 will in this case apply to both audio input 5 and 6.

If stereo I/O mode is off, Audio out 2 will be a mix of audio input 6, microphones and the far end. Audio out 3 will be a mix of audio input 5, microphones and the far end. If stereo I/O mode is on, Audio out 2 (left stereo channel) will be a mix of the microphones and the far end left channel. Audio out 3 (right stereo channel) will be a mix of the microphones and the far end right channel.

Note that you are able to receive stereo through Audio out 1 (S/PDIF) independent of this setting.

Stereo Speakers

To be able to get stereo sound, the Stereo Speakers has to be connected to the Digital NAM and stereo speakers has to be enabled in the main audio menu (Stereo Speakers = On). Stereo sound will be present if you either receive stereo sound from far end or you have connected a stereo sound source to the audio 5 and 6 input pair and enabled stereo I/O mode.

Note that if Stereo Speakers are enabled in the menu without having any stereo speakers connected to the Digital NAM, it may cause the acoustic echo-canceller to malfunction.

4.5.5 Audio Levelling (AGC)

On	Select On to allow automatic adjustments (Automatic Gain Control) of audio levels. When On, the AGC maintains the audio signal level at a fixed value by attenuating strong signals and amplifying weak signals. Very weak signals, i.e. noise alone, will not be amplified.
Off	Audio levelling is not activated.

Note that to ensure correct behaviour of the AGC, it is crucial that the levels on the input connectors are adjusted correctly using the audio input level settings. The AGC will not compensate for severe maladjustment of input levels.
When applying a weak signal in the presence of strong background noise, the AGC might amplify the background noise as well as the signal. Therefore, in noisy environments, it is advisable to turn the AGC off.

Example:

In most conferences, the participants will speak at different levels, and be at different distances from the microphones. As a result, some of the participants would be harder to hear than others. The AGC corrects this problem by automatically increasing the microphone levels when “quiet” or “distant” people speak, and by decreasing the microphone levels when “louder” people speak.

4.5.6 Alert Tones and Volume

Video Call Alert Tone and Telephone Alert Tone

To help distinguish between incoming video calls and ordinary telephone calls, it is recommended to use different ringing tones for video calls and telephone calls.

Alert Volume

You may change the volume level for the selected ringing tone.

Alert Speaker

The system also has an internal, call-alerting speaker.

On	The internal speaker will warn you of an incoming call even though the monitor may not be switched on.
Off	The internal speaker is switched off.

Key Tones

On	There will be a sound indicator when pressing keys on the remote control.
Off	There will be no sound when pressing keys on the remote control.

4.6 Video

Video contains the settings:

- Camera Tracking Mode
- MCU Status Line
- Floor to Full Screen
- Web Snapshots
- MultiSite Picture Mode
- Picture Control
- Video Name

4.6.1 Camera Tracking Mode

Slow:	The system waits a while before zooming in on a single person speaking. Suitable when wide-angle images are preferred over close-up images.
Normal:	Should be used in regular meetings.
Fast:	The system quickly zooms in on a single person speaking. Suitable when close-ups are preferred over wide-angle images.

Note that the Camera Tracking Mode entry will not be available if not using the TANDBERG WAVE II Camera.

4.6.2 MCU Status Line

On	The MultiSite / MCU / DuoVideo indicators will be displayed and provide information about the conference.
Off	The MultiSite / MCU / DuoVideo indicators will not be displayed.
Auto	The MultiSite / MCU / DuoVideo indicators will be displayed for a few seconds and then timed out. When grabbing the remote control, the indicators will be shown again.

4.6.3 Floor to Full Screen

When "Floor to Full Screen" is enabled, someone who request floor will be seen by all participants as full screen. When "Floor to Full Screen" is "Off", someone who request floor in a MultiSite conference using the 5+1 layout will be seen in the large square, rather than full screen.

On	The participant that has floor is displayed in full screen regardless of what MultiSite layout that is used.
Off	The participant that has floor is displayed in the MultiSite layout that is used.

4.6.4 Web Snapshots

The system is able to generate JPEG snapshots and provide them to the world outside by request (as ‘http get’ or via ftp). See Appendix 6 for descriptions of the possible snapshot files.

On	Snapshots generation is enabled.
Off	Snapshots generation is disabled.

Note that web snapshots are not generated if the conference is encrypted.

4.6.5 MultiSite Picture Mode

MultiSite Picture Mode decides the default layout of a MultiSite call. Choose between the layouts: Auto Split, 4 Split, 5+1 Split, and Voice Switched. You can change the layout during a call using the layout option in MultiSite Services.

Auto Split	Auto Split displays all participants on the screen simultaneously. A MultiSite call with 3 and 4 video participants is displayed with 4 Split. A MultiSite call with 5 or 6 video participants is displayed with 5+1 Split.
Voice Switched	Voice Switched mode displays the participant that is speaking in full screen.
4 Split	4 Split displays the 4 last speaking Participants.
5+1 Split	5+1 Split displays the speaking participant in a big picture and the other participants in small pictures.

Continuous Presence layout 4 split

*Advanced Continuous Presence Layout (5+1) - In this mode the Intelligent Call Management will use 4*CIF resolution for better clarity and H.263 video compression*

Voice Switched mode

4.6.6 Picture Control

Focus, Brightness and White balance are set for auto focus, auto brightness and auto white balance by default. If you need to set focus, brightness and white balance manually, go to Picture Control in Video Settings.

Focus

Auto	In Auto mode the focus is continuously updated. When moving the camera, the system will use auto focus for 5 seconds to set the right focus of the new camera position. After 5 seconds auto focus is turned off to prevent continuous focus adjustments of the camera.
Manual	Use the arrow keys to manually adjust the focus.

Brightness

Auto	In Auto mode the brightness is continuously updated.
Manual	Use the arrow keys to manually adjust the brightness.

White balance

Auto	In Auto mode the white balance is continuously updated.
Manual:	To update the white balance manually, select Manual and press OK. A white object should be held in front of the camera a few seconds before and after selecting Manual white balance.

4.6.7 Video Name

As a default, the video inputs are given the names Main Cam, PC, Doc Cam, VCR, AUX or VNC, dependent on what video sources are available on your system. The video names cannot exceed eight characters. The names correspond to the video names in the Presentation Menu (Choose Presentation from the main menu and open the Main Video or Presentation Video pop up menu). If video names are changed, you will see the changed name appear in the Main Video and Presentation Video menus.

4.7 Security

Security contains the settings:

- Encryption
- Encryption Mode
- Passwords

4.7.1 Encryption

(Country specific)

Auto	The system will try to set up calls using encryption. Point to point calls: If the far end system supports encryption (AES or DES), the call will be encrypted. If not, the call will proceed without encryption. MultiSite calls: In order to have encrypted MultiSite calls, all sites must support encryption. The padlock symbol will indicate encryption mode (AES or DES). If there is a mix of AES and DES encryption, only the symbol for DES encryption (single padlock) will be displayed. The 'closed padlock' will only be displayed on each site when all links in the MultiSite conference are encrypted. If the far end supports encryption, the systems will initiate encryption after the call is connected (an ‘open padlock’ symbol will be displayed). When encryption has been established, a ‘closed padlock’ symbol will be displayed.
On	The system will only send and receive encrypted data. The call will not be established if not all participants support encryption.
Off	The system will not send or receive encrypted data.

Technical encryption information like encryption algorithm and encryption check code can be found in the Call Status menu.

4.7.2 Encryption Mode

Auto	The system will try to use the most secure encryption - AES, dependent on the capabilities of the other sites. For sites that do not support AES encryption, DES encryption will be tried.
AES	The system will try to use AES with 128 bits encryption when setting up calls. If AES is not supported by the other site(s), no other type of encryption will be initiated.
DES	The system will always try to set up the call using DES with 56 bits encryption on ISDN and IP. If all other sites do not support DES, no other type of encryption will be initiated.

Both AES and DES Encryption are supported for mixed ISDN/IP calls. In addition AES -and DES Encrypted sites can be connected at the same time.

4.7.3 Passwords

Administrator Password, IP Access Password, Streaming Password, VNC Password and Access Code are duplicated from their respective menus. Using the Security menu gives you a quick way to change all passwords of the system.

4.8 Network

The network menu contain:

- ISDN/External/Leased E1/T1
- LAN Settings
- Network Profiles
- Data Port

4.8.1 ISDN/External/Leased E1/T1

Network Type	Before using the system it is necessary to specify which network to use and define its settings.
ISDN-BRI	If you want to use your system via ISDN-BRI, you should select Network Type: ISDN-BRI and enter the ISDN BRI Settings menu to set the BRI parameters.
ISDN-PRI*	If you want to use your system via ISDN-PRI, you should select Network Type: ISDN-PRI and enter the ISDN PRI Settings menu to set the PRI parameters.
Leased E1/T1*	If you want to use your system via Leased E1/T1, you should select Network Type: Leased E1/T1 and enter the Leased E1/T1 Settings (see 4.8.4 Leased E1/T1 Settings) menu to set the Leased E1/T1 parameters.
External	If you want to use special networks and connect using RS449, V.35, X.21 or connect to ISDN via an external IMUX, you should select Network Type: External and enter the External Network Settings (see 4.8.5 External Network Settings menu to set the External Network parameters.

***Note that both Leased E1/T1 and ISDN-PRI uses the same interface on the codec marked E1/T1.

4.8.2 ISDN-BRI Settings

To make sure your system will work properly using ISDN-BRI, make the following settings:

1. Set ISDN switch type
2. Enter ISDN line numbers (+ SPIDs if required)
3. Disable unused lines

Some software versions do not support 6 ISDN lines, therefore some of the Line Setup entries may be grayed out.

4.8.2.1 ISDN BRI switch type

Select the type of ISDN network connected to your unit. Note that 1TR6 should only be used if you are operating the system behind a PABX.

4.8.2.2 Line setup

This menu allows you to program the numbers associated with your ISDN line. If you want to use this ISDN line, you need to set Enabled On and enter the numbers of your ISDN line. If some of the ISDN lines are not to be used, set Enabled Off. Line 1 should always be enabled. National ISDN and AT&T Custom ISDN might require SPID numbers associated with your ISDN numbers. If you have received two different SPID (Service Profile IDentifier) numbers for each ISDN line from your network provider, you must program both.

Example:		
	Numbers	**SPIDS**
ISDN BRI 1:	67838498 67838498	016783849800 016783849810
ISDN BRI 2:	23478060 23478070	012347806000 012347807000
ISDN BRI 3:	23478420 23478430	012347842000 012347843000
ISDN BRI 4:	23478520 23478530	012347852000 012347853000
ISDN BRI 5:	23478540 23478550	012347854000 012347855000
ISDN BRI 6:	23478560 23478570	012347856000 012347857000

4.8.2.3 Advanced ISDN Settings

Sub address

Using a sub address enables you to connect up to eight ISDN terminals to the same ISDN telephone number and line. The terminals are addressed by using different sub addresses. To call a terminal with a sub address, separate the ISDN telephone number and the sub address with a ‘*’. Note that this service has limited access on some ISDN networks.

Example: 12345678*2 (up to four digit sub addresses are possible).

Validate Numbers / MSN (Multiple Subscriber Number)

The use of MSN (Multiple Subscriber Number) enables you to attach different ISDN terminals, with different numbers, to the same physical ISDN telephone line. If Validate Numbers is set to "On" only calls to those numbers specified in the Line Setup menus will be answered. This service can be ordered from your telephone company.

Parallel dial

On	Channels will be dialed and connected in parallel when setting up a BONDING call.
Off	Channels will be dialed one by one, which may increase the dialing time.

Send Own Numbers

On	The system will send its own numbers to the far end.
Off	The system will not send its own numbers to the far end, but please note that the network may still send your numbers to the far end.

Sending Complete

On	The system will send the ISDN message information element Sending Complete.
Off	The system will not send Sending Complete. Default is “Off”

4.8.3 ISDN-PRI Settings

To make sure your system will work properly using ISDN-PRI, configure the following settings:

1. Set PRI switch type
2. Enter PRI line number

Note that the T1 format is predefined to ESF and the line code is B8ZS. This is not configurable.

4.8.3.1 Number Range

Enter the range of numbers for your PRI line. If this number is programmed and MSN: On (see Validate numbers in Advanced ISDN Settings) only calls to this number will be answered.

4.8.3.2 ISDN PRI Switch Type

Select the type of PRI switch to which your system is connected.
Below is a list of common ISDN-PRI/T1 switches.

Type	Manufacturer	PRI Switch Type setting
ATT 4 ESS	AT&T	AT&T ISDN
ATT 5 ESS	AT&T/Lucent	AT&T ISDN or National ISDN*
DMS 100	Northern Telecom	National ISDN
DMS 250	Telecom Northern	National ISDN

* Settings will depend on configuration of the switch. PRI Switch Type is not changed when Restoring Defaults.

4.8.3.3 Channel Hunting

Max Channels	Maximum number of channels the system may use at any given time.
Low Channel	The lowest numbered B-channel that may be used by the system when selecting channels for outgoing calls.
High Channel	The highest numbered B-channel that may be used by the system when selecting channels for outgoing calls.
Search	Specifies where the system will start searching for available B-channels for outgoing calls.

Example:

Max Channels may be used for PRIs that are provisioned for a lower number of channels.

High Channel, Low Channel and Search may be used for PRIs provisioned with specific requirements for B-channel usage.

In the example above, the system will start searching for available B-channels at channel 20, since Search is set to High and High Channel is set to 20. The system will not search for channels below 10, since Low Channel is set to 10. Furthermore if the user tries to make an 8 channel call, the call will be established with 6 channels, since Max Channels is set to 6.

4.8.3.4 Line Settings

T1 Cable Length 1	T1 Cable Length 1 specifies the distance to the CSU connected to the E1/T1 port 1 on codec 1.
E1-CRC-4	E1-CRC-4 is used for most E1-PRI configurations. You can turn it off if not supported by your E1 network equipment. For further information see Appendix 7: Connecting the system to PRI/T1.

4.8.3.5 Advanced ISDN-PRI Settings

NSF is a non standard facility. Your network provider may require a service selection in your ISDN configuration. Enter the Service code here. Valid NSF service codes are from 1 to 31. Enter 0 to disable NSF service codes.

Example:

AT&T offers several digital switched services. These include SDN with service code 1 and ACCUNET with service code 6. Below is a list of common service profiles. As these profiles may change, contact your service provider to get the correct profile.

Service profiles for AT&T:	**Service porfiles for Sprint:**
NSF Service Disable: 0 SDN (including	NSF Service Reserved: 0 Private: 1

GSDN): 1 Megacom 800: 2 Megacom: 3 Accunet: 6 Long Distance: 7 International 800: 8 MultiQuest: 16 Call Redirection Service: 23	Inwatts: 2 Outwatts:3 FX: 4 TieTrunk: 5 **Service profiles for MCI:** NSF Service VNET/Vision: 1 800: 2 PRISM1, PRISMII, WATS: 3 900: 4 DAL: 5

4.8.4 Leased E1/T1 Settings

Network Interface

Indicates if the network is of type E1 (30 channels) or T1 (24 channels). E1 will be default for PAL versions, T1 default for NTSC versions.

Max Channels

Indicates the maximum number of channels the codec is allowed to use on the E1/T1 interface. When E1 is selected, maximum is 30 channels. When T1 is selected, maximum is 24 channels.

Start Channel

Indicates the first E1/T1 channel the codec is allowed to use. This setting might be used if the E1/T1 line is shared with other equipment.

T1 Line Coding

Indicates how the signals on the line should be coded. If parts of the line between the systems use restricted coding, this should be selected.

Note that all settings must be identical on both sides of the Leased E1/T1 connection.

Line Settings

This is the same menu as for ISDN-PRI. Please refer to 4.8.3 ISDN-PRI Settings.

4.8.5 External Network Settings

Before using the system together with external network equipment, you must specify the network parameters on this page. The system has support for up to 2 Mbps (depending on the Bandwidth key loaded) using the External Network (RS449/V.35/X.21) interface. Note that the physical interface on External Networks is one non-standard 26 pin connector. Special cables are required, see 5.1 Interfaces for cable pinouts.

Call Control

RS366 Dialing	RS366 Dialing is the only dialing protocol supported and would normally be used together with network clocking RS449/V.35 Compatible when the external equipment uses RS366 ports.
RS366 Adtran ISU 512	RS366 Adtran ISU 512 offers extra usability when dialing RS366 via an ADTRAN ISU 512 IMUX. This dialing scheme will map the call type and bandwidth selection to ADTRAN ISU 512 specific suffixes to the dialed number. Should only be used when connected to an ADTRAN ISU 512. The Adtran ISU512 uses the following suffixes <Number>#C#R #C = Call Type #2 = audio #3 = 56kbps #4 = 64kbps #R = Channel Rate #0 = 2xh221 (2x56\64kbps) #1 to 8 = the Call Rate.
Leased Line	Leased Line is a non-dialing protocol and should be used when two codecs are connected in a point-to-point connection. Use Leased Line when the handshaking signals DTR and CD are available. DTR and CD correspond to the X.21 network's C and I signals.
Manual	Manual should be used when no handshake signals are available and the external equipment requires a constantly connected line.

Network clocking

The network clock setting specifies the number of physical external clock signals.

RS449/V35 Compatible	Use RS449/V35 Compatible when the external equipment provides two clock signals, one for transmit and one for receive. The difference between RS449 and V35 is only the cable.
X21	Use X21 Compatible when the external equipment provides a common

Compatible	clock signal for both transmit and receive.

4.8.6 LAN Settings

LAN Settings contain:

- IP Settings
- H.323 Settings
- SIP Settings
- SNMP Settings

4.8.6.1 IP Settings

Remember to restart the system after making changes to IP Settings. This can be done by selecting the “Save and Restart” at the bottom of the IP setting menu. Changes in IP Settings menu will not have any effect before the system is restarted.

IP-assignment

DHCP (Dynamic Host Configuration Protocol) can be selected when a DHCP server is present.

DHCP	IP-address, IP-subnet mask and Gateway are not used because the DHCP server assigns these parameters.
Static	The system’s IP-address, IP-subnet mask and Gateway must be specified in the IP-address field.

IP-address

IP-address defines the network address of the codec. This address is only used in static mode. In DHCP-mode, the assigned IP-address can be found on the Welcome Menu.

IP-subnet mask

IP-subnet mask defines the type of network. This address is only used in static mode. Your LAN-administrator will provide the correct value for this field.

Gateway

When using DHCP, the default gateway will be set automatically. If the LAN utilizes static IP addresses, IP address, subnet mask, and default gateway must be specified by the LAN administrator.

Ethernet Speed

Auto	The codec will auto-detect the speed/duplex on the LAN.
10/Half	The codec will connect to the LAN using 10Mbps speed/Half Duplex.
10/Full	10 Mbps speed/Full Duplex.
100/Half	100 Mbps speed/Half Duplex.
100/Full	100 Mbps speed/Full Duplex.

IP Access Password

By setting an IP Access Password on the system, all access to the system using IP (Telnet, FTP and WEB) requires a password. The default IP Access Password is “TANDBERG”.

4.8.6.2 H.323 Settings

E.164 alias

This is the E.164 address of the system. The E.164 address is equivalent to a telephone number, sometimes combined with access codes. Valid characters are 0-9,* and #. When using a gatekeeper, the system will send a message to the gatekeeper containing both the E.164 address and the H.323 ID of the system.

H.323 ID

The H.323 ID of the system may be specified here. The System name is used if no H.323 ID is entered.

H.323 Call Setup

Direct	An IP-address must be used in order to make a H.323 call. The system will not use a gatekeeper or CallManager
Gatekeeper	The system will use a gatekeeper to make a H.323 call.
Call Manager	The system will use a CallManager to make a H.323 call.

Gatekeeper Discovery

Auto	The system will automatically try to register on any available gatekeeper. If a gatekeeper responds to the request sent from the codec within 30 seconds this specific gatekeeper will be used. If no gatekeeper responds, the system will not use a gatekeeper for making H.323 calls and hence an IP-address must be specified manually.
Manual	The system will use a specific gatekeeper identified by Gatekeeper IP-address.

Gatekeeper IP

This is the gatekeeper IP-address that is used if you specify H.323 Call Setup: Gatekeeper and Gatekeeper Discovery: Manual.

Note that if your system is part of a TANDBERG Expressway™ firewall traversal solution and is placed outside the firewall, you should register the IP address of your Border Controller as the Gatekeeper IP address and set H.323 Call Setup to Gatekeeper.

CallManager IP

This is the CallManager IP-address that is used if you specify H.323 Call Setup: Call Manager.

H.323 Prefix

When dialing a number prefixed with digits specified by H.323 Prefix, and with Net: Auto, an H.323 call will be placed.

Example:

H.323 Prefix is "555". Dialing "55582" with "Net:Auto" will select LAN.

Advanced H.323 Settings

The Advanced H.323 Settings only have an effect if they are supported by your IP infrastructure.

NAT

NAT, Network Address Translation, is used when a PC and a videoconferencing system are connected to a router with NAT support. NAT support in the videoconferencing system enables proper exchange of audio/video data when connected to an external videoconferencing system (when the IP traffic goes through an NAT router). When NAT is On, the NAT Server Address will be shown in the startup-menu: "My IP Address: 10.0.2.1".

NAT Address

This must be the external/global IP-address to the router with NAT support. Packets sent to the router will then be routed to the codec. In the router, the following ports must be routed to the codec's IP-address:

Port 1720
Port 5555-5560
Port 2326-2365

Please contact your TANDBERG representative for further information.

RSVP

Auto	Resource Reservation Protocol enables the systems to request the optimal amount of bandwidth for the duration of an IP videoconference.
Off	Resource Reservation Protocol is switched off.

QoS Type

Off	No QoS is used.
Diffserv	Diffserv QoS method is used. Please see below for details.
IP Precedence	IP Precedence QoS method is used. Please see below for details.

H.323 Ports

Static	When selecting static H.323 ports for TCP connections the ports 5555 or 5556 will be used for Q.931 and H.245 respectively.
Dynamic	The system will allocate which ports to use when opening a TCP connection. The reason for doing this is to avoid using the same ports for subsequent calls as some firewall consider this as a sign of attack.

IP Precedence Video

Used to define which priority audio, video, data and signaling should have in the network. The higher the number, the higher the priority. The priority ranges from 0(off) - 7 for each type of packets.

Auto will provide the following priority:

Audio	4
Video	4
Data	3
Signaling	6

IP Type of Service (TOS) helps a router select a routing path when multiple paths are available.

Delay	Tells the router to minimize the delay.

Throughput	Tells the router to maximize the throughput.
Reliability	Tells the router to maximize the reliability.
Cost	Tells the router to minimize the cost.

IP Precedence Telephony

Used to define which priority audio should have in the network for telephone calls. The higher the number, the higher the priority. The priority ranges from 0(off) - 7 for each type of packets.

Auto will provide the following priority:

Audio	4

Diffserv Video

Used to define which priority Audio, Video, Data and Signaling packets should have in an IP network. The priority ranges from 0 to 63 for each type of packets.

Diffserv Telephony

Used to define which priority Audio packets should have in an IP network for telephone calls. The priority ranges from 0 to 63 for each type of packets.

4.8.6.3 SIP Settings

Proxy Settings

To be able to make a call with an E.164 alias or user name, Proxy must be set to On and an Outbound Proxy IP-address must be specified. Outbound Proxy uses alias to look up the far end IP-address.

Use Proxy

On	The system will use Outbound Proxy for outgoing calls
Off	Outbound Proxy is not used

Proxy Address

The Proxy Address defines the Outbound Proxy IP-address.

Port

Set the desired Proxy port when not using the standard port 5060.

Registrar Settings

To call into the system with E.164 alias or user name the server on which the system alias should be registered must be specified. Normally registrar is set to Same as Proxy, but if registered on another server Use Registrar must be set to On and the address must be specified in Registrar Address.

Use Registrar

On	Register URL / E.164 number for incoming calls
Off	Registrar is not used
Same as Proxy	Use the same IP-address and Port as Proxy

Registrar Address

This is the Registrar IP-address.

Port

Set the desired Registrar port when not using the standard port 5060.

Full Name

This is the name that will be displayed in your URL. Example: "Eric Harper" eric.harper@example.com

Username

This is your username or your E.164 number in your URL. Example: "Eric Harper" eric.harper@example.com

Domain

The domain of your URL. Example: "Eric Harper" eric.harper@example.com

Expires

This is the default time your URL registration is valid. It controls how often you register with your registrar. The registrar may override this value when registering.

4.8.6.4 SNMP Settings

SNMP Settings

SNMP Trap Host identifies the IP-address of the SNMP manager. SNMP (Simple Network Management Protocol, SNMP Ver 1) is used for monitoring and configuring of different entities in a network. The system's SNMP Agent responds to requests from SNMP Managers (a PC program etc.). SNMP traps are generated by the agent to inform the manager about important events.

Traps can be sent to multiple SNMP Trap Hosts. Enter the IP address of up to three SNMP managers. All traps will then be sent to the hosts listed.
SNMP Community names are used to authenticate SNMP requests. SNMP requests must have a ‘password’ in order to receive a response from the SNMP agent in the codec. Note that the SNMP Community name is case sensitive. The default password is "public".

4.8.7 H.331 Settings

On	Used when broadcasting a videoconference from one site to many others, e.g. via satellite, where there is no possibility to negotiate quality between the receivers and the originator due to one-way communication.
Off	Standard two-way communication with quality negotiation between both sides.

4.8.8 Network Profiles

This menu consists of 6 network profiles; a prefix can be added for each profile. If you add a prefix to a profile, this prefix will automatically be added in front of the number being dialed.

Example:

0 is added as a Call Prefix to the 2nd profile, ISDN. If you enter 12345678 in the dial menu and select ISDN, the number dialed will be 012345678.

Using the three last profiles you can enter the name of a profile, prefix and network selection. This is useful if you have a fixed prefix for your service provider.

4.8.9 Data Port

The system provides two standard RS232 serial ports to allow a computer to be connected for data transfer and control purposes. Note that when connecting to a PC the connecting cable must be a straight through RS232 cable.

Baud Rate, Parity, Databits and Stopbits

If you wish to connect a PC to Data port 1, you must ensure that the PC and the system are identically configured. The available settings are:

Baud Rate	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Parity	None, Odd, Even
Databits	7, 8
Stopbits	1, 2

The control interface provided by the data port supports a subset of the Hayes command set as well as a comprehensive set of system specific commands. It maintains communication with the data port's command interpreter at all times. All features available from the hand-held remote control can be accessed through the data port.

Data Port 2

Data port 2 is dedicated to the main camera and will not be available in standard configuration. The Data Port 2 menu contains the same items as the Data Port 1 menu; Baud rate, Parity, Databits, Stopbits except for the Mode, which has VISCA and Auto selections.Mode.

The system will automatically detect WAVE cameras. If you are using a camera supporting the VISCA protocol, select Mode: VISCA.
If Mode is Auto and no camera is connected to the Data port 2, the Baudrate, Parity, Databits and Stopbits settings will be enabled.

4.9 Diagnostics

Diagnostics allows testing of individual system components and displays the current system settings.

Diagnostics contain:

- System Information
- Call Status
- Channel Status
- System Selftest
- View Administrator Settings
- Restore Default Settings
- IP Address Conflict Check

4.9.1 System Information

Select System Information to view system numbers, line status, software version and other useful information. Press arrow key up and down to scroll in the System Information list.

System Information contains:

System Name My ISDN Number My IP Number My IP Address MultiSite number 2 MultiSite number 3	**Software Version** Internal Test Software Options installed	**Network** Lines active Lines not active	**Hardware Serial Number** MAC address Ethernet Speed

4.9.2 Call Status

Comprehensive information about the call is available through the Call Status window. The menu has two columns, one for transmitted and one for received audio/video/data information. If Duo Video or MultiSite is used, pressing the UP/DOWN keys will show one page per connected site. Some of the information fields will vary dependent on if H.320 (ISDN calls) or H.323 (IP calls) are made.

4.9.3 Channel Status

Comprehensive information about the call progress is available through the Channel Status window. This window indicates the various stages each B-channel goes through whilst establishing a connection.

Status - BRI	Comments
Idle	the channel is idle
Calling	when calling — the network has acknowledged the call
Connected	when connection is established
Sync	when the channels are synchronized
Active	when all available channels are connected
Releasing	waiting for the network to confirm a release of the call
Released	when disconnected - the network has acknowledged the disconnection

Cause codes

The most common cause codes (for ISDN) are:

1	Unallocated (unassigned) number
2	No route to specified transit network (WAN)
16	Normal clearing
17	User busy
18	No user responding
21	Call rejected
28	Invalid number format (incomplete number)
29	Facility rejected
31	Normal, unspecified
34	No circuit/channel available
41	Temporary failure
58	Bearer capability not presently available
65	Bearer service not implemented
69	Requested facility not implemented
81	Invalid call reference value
88	Incompatible destination
100	Invalid information element contents
102	Recovery on timer expiry
127	Internetworking, unspecified
255	TANDBERG specific. undefined cause code

PRI Red Alarm

Red alarm or Loss of signal (LOS) means that there is no signal and thus no framing info received (this has same effect as pulling out the PRI cable).

PRI Yellow Alarm

Yellow alarm or Remote Alarm Indicator (RAI) means that the system is receiving framing info, but in this framing info the other side tells the system that it is not reading the system's transmitted framing info. Typically, this may be a broken connector in the TX part of the system PRI cable. This could also indicate weak or noisy signal in the TX part of the system PRI cable.

PRI Blue Alarm

Blue alarm means that network on the far side of the CSU is unavailable.

Example:

The system is connected via a CSU (i.e. a Channel Services Unit') as follows: System–cableA–CSU–cableB–Network

If a CSU loses framing/sync from the network (example: a bad cable B), it shall no longer send valid framing out on cable A towards the system. Instead it transmits "Blue Alarm". Seen from a system receiving blue alarm, this means that the network on the far side of the CSU is unavailable.

4.9.4 System Selftest

The system performs a check to determine internal hardware integrity. System Selftest is useful when you want to check if your network connection is active.

4.9.5 View Administrator Settings

This window displays all the system settings. Use the arrow key on the remote control to scroll through the list.

View Administrator Settings may contain:

General Settings	System Name Language Dual Monitor Auto answer Max Call Length Access Code Incoming MCU calls Incoming Telephone calls Far End Control Fallback to Telephony
Screen Settings	TV Monitor Format Picture Layout VGA Monitor Format VGA Out Quality PC Picture Format Allow VGA 50Hz
Software Options	Options Installed Serial Number Current Option Key
Menu Settings	Menu Timeout in Call Welcome Menu Welcome Picture Logo Display Welcome Text Welcome Text Administrator Password
Presentation Settings	Duo Video Mode Start up Video Source Presentation Source Snapshot Source Auto Display Snapshot PIP Appearance PIP Placing
VNC Settings	Address Display Number Call Quality Video Algorithm Audio Algorithm Interlaced
Video Quality	Main Camera PC

	Document Camera VCR AUX VNC Split Screen
Default Call Settings	Call Type Network Bandwidth Restrict (56k) Auto H320 Bandwidth Auto H323 Bandwidth
Audio Settings **Inputs**	Mic1 Mic2 Mic3 Audio4 Audio5 Audio6 Mix Mode
Outputs	Out1 Out2 (AUX) Out3 (VCR) Audio Module
Echo Control	Mic1 Mic2 Mic3 Audio4
Audio Levelling (AGC)	Mic1-3, Audio4 Audio5 (AUX) Audio6 (VCR) Received Audio
Alert Tones & Volume	Video Call Alert Tone Telephone Alert Tone Alert Speaker Key Tones
Video Settings	Camera Tracking Mode MCU Status Line Web Snapshot MultiSite Picture Mode
Picture Control	Focus White balance Brightness
Video Name	Main Cam AUX Doc Cam VCR PC VGA VNC
Network Type	ISDN-BRI\PRI\Leased E1\T1\Enternal H331 ISDN Switch Type ETSI (Euro ISDN),… Line1 Setup On

	Number1 Number2 SPID1 SPID2 Line2 Setup On Number1 Number2 SPID1 SPID2 Line3 Setup On Number1 Number2 SPID1 SPID2
Advanced ISDN Settings	Subaddress Validate Numbers (MSN) Parallel Dial Send Own Numbers Sending Complete
ISDN-PRI Settings	Number Range ISDN-PRI Switch Type
Channel Hunting	Max Channels Low Channel High Channel Search High, Low Line Settings: T1 Cable Length 1 T2 Cable Length 2 E1 CRC-4
Advanced ISDN PRI Settings	NSF Code Video NSF Code Telephone Call
Leased E1/T1 Settings	Call Control Network Interface Max Channels Start Channels T1 Line Coding Line Settings
External network configuration	Call Control RS66 RS449/V.35 Compatible
IP Settings	IP assignment IP address IP subnet mask Gateway Ethernet Speed
H.323 Settings	E.164 Alias Use Gatekeeper Gatekeeper IP H.323 Prefix
Advanced H.323 Settings	RSVP NAT NAT Address QoS

IP Precedence	Audio Video Data Signaling IP Type of Service (TOS)
Diffserv	Audio Video Data Signaling
SNMP Settings	SNMP Trap Host1 SNMP Trap Host2 SNMP Trap Host3 SNMP Community
Streaming Settings	Address Address Port TTL/Router Hops Streaming Source Allow Remote Start Announcements Video rate (kbps)
Network Profiles	Auto 2H.320 H.323 Network Profile 4 Network Profile 5 Network Profile 6
Security	Encryption Encryption mode
Data Port 1	Baud rate Parity Databits Stopbits Mode
Data Port 2	Baud rate Parity Databits Stopbits Mode

4.9.6 Restore Default Settings

Restore Default Settings will restore all administrator settings. Note that this will not affect your Call Directory information, Network Type, Line Setup numbers or your SPID numbers.

4.9.7 IP Address Conflict Check

The system will give a warning if there is an IP conflict. The user may initiate this check by selecting IP Address Conflict Check.

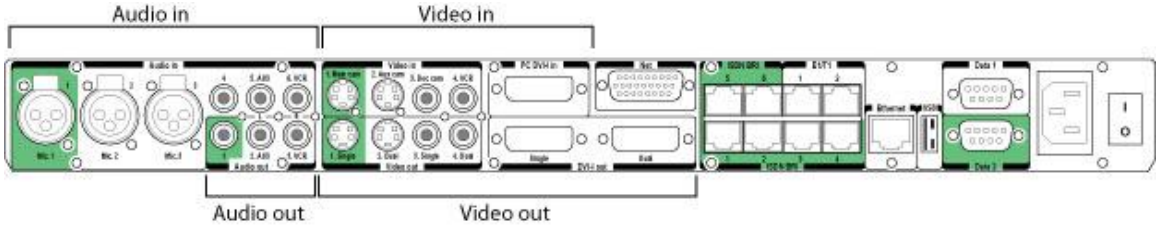
5 Peripheral Equipment

Using the optional peripheral devices outlined in this chapter and the many others available, you will be able to build your own applications for use with the system, thereby better integrating the system into your business environment. This chapter will explain how to connect peripheral equipment to your system. First of all however, we recommend you examine 5.1 Interfaces, with details on the available connectors on the back of the system Codec.

Peripheral Equipment contains:

- Interfaces
- Document Camera
- Video Cassette Recorder (VCR)
- Additional Cameras
- Additional Microphones
- Stereo Speaker Kit
- Telephone Add-On
- Web Interface
- Dual Monitor
- XGA Monitors and Projectors
- VESA Display Power Management
- Extended Display Identification

5.1 Interfaces



5.1.1 Video

5 Video Inputs:

- 2 video inputs supporting S-Video through Mini-DIN connectors.
- 2 video inputs supporting composite signals through RCA connectors.
- 1 VGA/DVI-I (DVI = Digital Video Interface, I = Integrated Digital & Analog) input supporting resolutions SVGA (800x600), XGA (1024x768) and SXGA (1280x1024), analog or digital.
- (use VNC as a 6th video input).

The standard camera uses one of the S-Video inputs.

Levels:

- Composite: 1 Vpp, 75 ohm
- S-Video (Y/C):
  - Y: 1 Vpp, 75 ohm
  - C (PAL): 0.3 Vpp, 75 ohm
  - C (NTSC): 0.28 Vpp, 75 ohm

The system will automatically adapt to a PAL or NTSC input.

VGA formats supported on 'DVI-I in':
SVGA (800x600) 60Hz, 72Hz, 75Hz, 85Hz
XGA (1024x768) 60 Hz, 70Hz, 75Hz
SXGA (1280x1024) 60Hz
WXGA (1280x768) 60Hz

6 Video Outputs:

- 2 S-Video outputs, Mini-DIN connectors.
- 2 composite video outputs, RCA connectors.
- 2 VGA/DVI-I (DVI = Digital Video Interface, I = Integrated Digital & Analog) output supporting resolutions SVGA (800x600) and XGA (1024x768) analog or digital.

The first Mini-DIN connector and the first RCA connector provide main video (incoming/outgoing video and menus). The two other connectors provide selfview/snapshot/Duo Video. The S-Video

outputs are used by default by the monitors. The outputs are always active. The format of the output will be either PAL or NTSC depending on your country's standard video format.

Levels:

- Composite: 1 Vpp, 75 ohm
- S-Video (Y/C):
  - Y: 1 Vpp, 75 ohm
  - C (PAL): 0.3 Vpp, 75 ohm
  - C (NTSC): 0.28 Vpp, 75 ohm

VGA formats supported on 'DVI-I out':
SVGA (800x600) 75Hz
XGA (1024x768) 60Hz

DVI and specifications:

DVI stands for Digital Video Interface, and is a form of video interface technology made to maximize the quality of flat panel LCD monitors and high-end video graphics cards.

The TANDBERG codec contains a DVI-I plug that can transmit either digital DVI signals or standard analog VGA signals, depending on what type of monitor is connected.

DVI Specifications
TANDBERG DVI-I follows the VESA Monitor Timing Standard v1.08, also knows as Display Monitor Timing (DMT).

Analog	**Horizontal Frequency**	**Vertical frequency**	**Pixel Clock**
800x600 @ 75Hz	46.875kHz	75.00Hz	49.50MHz
1024x768 @ 60Hz	48.363kHz	60.004Hz	65.00MHz
Digital			
800x600 @ 75Hz	46.875kHz	75.00Hz	49.50MHz
1024x768 @ 60Hz	48.363kHz	60.004Hz	65.00MHz

DVI-I Video resolution supported in F1 and above

The resolution used when showing a PAL image like the WAVE II is:

- 800x600 @ 75Hz.

The resolution used when showing a NTSC image like the WAVE II is:

- 1024x768 @ 60Hz.

Supported DVI cables:
TANDBERG supports DVI-D Single-Link, DVI-A and DVI-I Single-Link format cables.

DVI-D cables transmit digital T.M.D.S. signals, DVI-A cables transmit analog VGA signals and DVI-I cables can transmit either digital or analog signals.

It is possible to extend existing DVI cables by the use of extension cables. The maximum cable length however, is 5 meters. Going beyond that may result in quality loss.

DVI-I - Combined Analog and Digital Connector Pin Assignments:

Pin	Signal Assignment	Pin	Signal Assignment	Pin	Signal Assignment
1	T.M.D.S. Data2-	9	T.M.D.S. Data1-	17	T.M.D.S. Data0-
2	T.M.D.S. Data2+	10	T.M.D.S. Data1+	18	T.M.D.S. Data0+
3	T.M.D.S. Data2/4 Shield	11	T.M.D.S. Data1/3 Shield	19	T.M.D.S. Data0/5 Shield
4	T.M.D.S. Data4-	12	T.M.D.S. Data3-	20	T.M.D.S. Data5-
5	T.M.D.S. Data4+	13	T.M.D.S. Data3+	21	T.M.D.S. Data5+
6	DDC Clock	14	+5V Power	22	T.M.D.S. Clock Shield
7	DDC Data	15	Ground (return for +5V, HSync and VSync)	23	T.M.D.S. Clock+
8	Analog Vertical Sync	16	Hot Plug Detect	24	T.M.D.S. Clock-
C1	Analog Red	C2	Analog Green	C3	Analog Blue
C4	Analog Horizontal Sync	C5	Analog Ground (analog, R, G & B return)		

5.1.2 Audio

6 Audio Inputs:

- 3 microphone inputs (balanced, 24V phantom powered) via XLR connectors.
- 3 audio inputs (line level) via RCA connectors.

All audio inputs are active by default. For further information, refer to chapter 4.5 Audio.

Audio input connector specification:

Connector label	Microphone(s)	Audio input(s)
Signal type	Balanced	Unbalanced
Connector (codec)	XLR-F, pin 1-gnd, pin 2 hot, pin 3-cold/neutral	Female RCA/phono, sleeve-ground, centre-signal
Input impedance	2400 ohms (pin 2 - 3)	10K ohms
Maximum input level	83 mVpp	15.5 Vpp
Minimum input level	6.2 mVpp	1.17 Vpp

Range, menu adjustable input gain	22.5 dB (16 steps of 1.5 dB)	22.5 dB (16 steps of 1.5 dB)
Phantom power voltage	24 V +/- 5%	-
Phantom power resistor, pin 2	1200 ohms	-
Phantom power resistor, pin 3	1200 ohms	-
Max phantom power current pr mic	12 mA	-

3 Audio Outputs:

- 1 output (line level) via RCA connector providing audio from far end, in addition to dial tones. This output also supports S/PDIF. S/PDIF (Sony/Philips Digital Interface) is used by the Digital Natural Audio module.
- 1 AUX output (line level) via RCA connector providing a mixed signal between audio from the local side (except from the AUX input) and audio from the far end. This output is intended for connection to a telephone add-on system. When system is configured as stereo, this output will provide the left stereo information.
- 1 VCR output (line level) via RCA connector providing a mixed signal between audio from the local side (except from the VCR input) and audio from the far end. This output is intended for connection to a VCR. When system is configured as stereo, this output will provide the right stereo information.

Audio output connector specification:

Connector label	**Audio outputs**
Signal type	Unbalanced
Connector (codec)	Female RCA/phono, sleeve-ground, centre-signal
Output impedance	680 ohms
Maximum output level	15.3 Vpp
Minimum output level	1.15 Vpp
Range, menu adjustable output gain	22.5 dB (16 steps of 1.5 dB)
Volume control attenuation (audio out 1)	0 to 21 dB + mute (steps of 1.5 dB)

5.1.3 Network

Ethernet:
1 x Ethernet (RJ-45 Jack) LAN interface (10/100 Mb) up to 3 Mbps

To connect the system to a LAN, use the Ethernet cable provided by TANDBERG (or a standard Ethernet cable).

The cable specification is:

1 ---------- 1

2 ---------- 2
3 ---------- 3
6 ---------- 6

If no LAN is available and the codec is connected directly to a computer, use a crossover cable.

The crossover cable specification is:

If such a connection is needed, the system and the PC must use 'static' TCP/IP settings because no DHCP server is controlling the small "LAN", which has been created between the computer and the system. When configuring a back-to-back connection between the PC and the system, make sure both static IP addresses exist on the same subnet.

ISDN BRI Interface:
ISDN I.420 (RJ-45 Jack) Basic Rate Interface S/T (2B+D), 128 kbps per ISDN I/F

To connect the system to BRI, use the ISDN cable provided by TANDBERG (or a standard BRI cable).

The pinout of the S/T interface is:

BRI	Pinout
Pin-3	TX+
Pin-4	RX+
Pin-5	RX-
Pin-6	TX-

ISDN PRI Interface:
1 x PRI (RJ-45 Jack) Primary Rate & Leased Line E1/T1 (G.703) Interface up to 2 Mbps
1 x PRI (RJ-45 Jack) Primary Rate (for cascading)

To connect the system to PRI, use the ISDN cable provided by TANDBERG (or a standard PRI cable).

The pinout of the E1/T1 interface is:

PRI	Pinout	Crossover PRI cable
Pin-1	RX+	4
Pin-2	RX-	5
Pin-4	TX-	1
Pin-5	TX+	2

Note! TANDBERG recommends always using category 5 cabling.

NET Interface:
1 x X.21 / V.35 / RS449 with 1 x RS366 Call Control up to 2 Mbps

V35:

DTE → DCE			
Pin	Signal Name	Direction	Description
1	FGND	←→	Frame ground on equipment
11	SD(A)	→	Send data/Transmit
12	SD(B)	→	Send data/Transmit
13	RD(A)	←	Receive Data
14	RD(B)	←	Receive Data
15	SCR(A)	←	Signal Clock Receive
16	SCR(B)	←	Signal Clock Receive
17	SCT(A)	←	Signal Clock Transmit
18	SCT(B)	←	Signal Clock Transmit
19	GND *	←→	Signal ground
22	RLSD(CD)	←	Received Line Signal Detector / Carrier Detect
23	RLSD/GND*	←	Signal ground
24	RI	←	Ring Indicator
25	LOS	→	Loss Of Signal (KG194)
26	DTR	→	Data Terminal Ready

(*= This pin is connected to ground for correct operations)

V.10 (RS423).
For balanced signals a "0"=low voltage is defined as terminal A positive with respect to terminal B.
For unbalanced signals a "0"= low voltage is defined as terminal positive with respect to GND.

Cable length max: Leased Line Control = 20 Meter

RS449:

DTE → DCE

Pin	Signal Name	Direction	Description
1	FGND	←→	Frame ground
11	SD(A)	→	Send data
12	SD(B)	→	Send data
13	RD(A)	←	Receive Data
14	RD(B)	←	Receive Data
15	RT(A)	←	Receive Timing
16	RT(B)	←	Receive Timing
17	ST(A)	←	Send Timing
18	ST(B)	←	Send Timing
19	GND *	←→	Ground
20	TR(A)	→	Terminal Ready
21	TR(B)	→	Terminal Ready
22	RR(A)	←	Carrier Detect / Receiver Ready
23	RR(B)	←	Carrier Detect / Receiver Ready
24	IC	←	Incoming Call
25	LOS	→	Loss Of Signal (KG194)

NOTE: Frame ground is connected to pin 1 on DTE
(*= This pin is connected to ground for correct operations)

RS366:

All balanced inputs and outputs (A and B) use balanced line signals according to V.11 (RS422) and single ended signals in accordance with V.10 (RS423).
For balanced signals a "0"=low voltage is defined as terminal A positive with respect to terminal B.
For unbalanced signals a "0"= low voltage is defined as terminal positive with respect to GND.

Cable length max: Leased Line Control = 20 Meter

DTE → DCE

Pin	Signal Name	Direction	Description
1	FGND	←→	Frame ground
2	DPR	→	Digit Present
3	ACR	←	Abandon Call & Retry
4	CRQ	→	Call Request
5	PND	←	Present Next Digit
6	DLO	←	Data Line Occupied
7	NB1	→	Digit Bit 1
8	NB2	→	Digit Bit 2
9	NB4	→	Digit Bit 4
10	NB8	→	Digit Bit 8

Note: Frame ground is connected to pin 1 on DTE

All signals are electrically according to RS232.

Cable length max: 5 meter

X21:

DTE → DCE

Pin	Signal Name	Direction	Description
1	FGND	←→	Frame ground
11	T(A)	→	Send data/Transmit
12	T(B)	→	Send data/Transmit
13	R(A)	←	Received Data/ Receive
14	R(B)	←	Received Data/ Receive
15	S(A)	←	Signal Element Timing
16	S(B)	←	Signal Element Timing
20	C(A)	→	Terminal Ready/Control
21	C(B)	→	Terminal Ready/Control
22	I(A)	←	Carrier detect
23	I(B)	←	Carrier detect

Note: 1. Frame ground is connected to pin 1 on DTE
2. Byte Element Timing is not implemented.

All balanced inputs and outputs (A and B) use balanced line signals according to V.11 (RS422) and single ended signals in accordance with V.10 (RS423).
For balanced signals a "0"=low voltage is defined as terminal A positive with respect to terminal B.
For unbalanced signals a "0"= low voltage is defined as terminal positive with respect to GND.

Cable length max: 50 meter

5.1.4 Data port

The data port(s) are implemented as Digital Circuit Terminating Equipment (DCE). The connector used are female 9-pin D-subs.

The TANDBERG main camera is normally connected to data port 2 and pin number 4 provides 12V DC / 1 Amps to the main camera. Otherwise the pin-outs for both data ports are the same.

Signal name	Direction	Pin number
Carrier detect, CD	From DCE	1
Receive data, RXD	From DCE	2
Transmit data, TXD	To DCE	3
Data terminal ready, DTR	From DCE	4
Signal ground, GND		5
Data set ready, DSR	From DCE	6
Ready to send, RTS	To DCE	7
Clear to send, CTS	From DCE	8
Ring indicator, RI	From DCE	9

5.2 Document Camera

A document camera can be used for showing text, diagrams and a variety of graphical material as well as small three-dimensional objects.

How to use a document camera with your system:

1. Connect the document camera to the Doc Cam input, if available, on the system.
2. Open the Presentation menu from Main menu and choose Doc Cam.
3. You can also program the Presentation key on the remote to activate document camera. See chapter 3.11.1 Presentation Key for more information.

If you want to use S-Video from the document camera, you can connect the document camera to the AUX input on the system.

5.3 Video Cassette Recorder (VCR)

VCR/DVD - Playback

Mono

For playback, connect a cable between Video Out on the VCR and Video In (VCR) on the system. Connect a cable between Audio Out on the VCR and the Audio In (VCR) on the system. Choose VCR from the Presentation menu to activate the VCR input.

Make sure that Audio In (VCR) is On (see chapter 4.5 Audio). If audio from VCR is too low, this level can be adjusted in Audio Settings, Inputs, Level Settings. The audio from the VCR will be audible in the local speaker system.

The audio from the VCR and your microphone(s) will be mixed and sent to the far end. When a person talks on either local or far end, the VCR audio level will be reduced to make it easier to comment on a video recording when Audio Settings, Mix Mode: Auto.

Stereo

When recording a conference in stereo, the VCR will record the video as it appears on the main monitor, the local audio and the remote audio. It will record the conference in stereo if stereo audio is used in the conference.
When recording a videoconference, connect a cable between Video Out 2 on the system and Video In on the VCR. Connect a cable between Audio Out 2 on the system and Audio In on the VCR.

For stereo recording, connect:

- Video cable between Video Out 2 on the system to Video In on the VCR
- Audio cable between Audio Out 2 (VCR L) to VCR/DVD Audio In (L)
- Audio cable between Audio Out 3 (VCR R) to VCR/DVD Audio In (R)

Make sure that:

- That Stereo I/O Mode is set to On
- 128 AAC-LD is enabled
- That AAC-LD is enabled
- To enable VCR/DVD ducking (reduce volume when speaking), check that Mix Mode under Audio Settings is set to Auto.

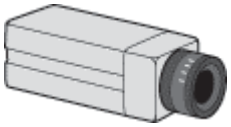
VCR - Recording

When recording, the VCR will record the video as it appears on the main monitor, the local audio and the audio from the far end.
When recording a videoconference, connect a cable between Video Out 3 on the system and Video In on the VCR. Connect a cable between Audio Out 3 on the system and Audio In on the VCR.

5.4 Additional Cameras

Extra fixed Cameras

You can connect extra fixed cameras to your system, for example, a whiteboard camera. Connect the video output of the additional camera to one of the available Video inputs on the system.



Multiple controllable Cameras

Attaching multiple cameras to one system expands visibility and is useful in large group applications.

The system is able to control up to 4 WAVE II -cameras. Optional WAVE II cameras are supplied with the necessary cabling. In addition, an external power supply for the camera is included.

WAVE II -camera number two must be connected to video input 2. Camera number three must be connected to video input 3, and so forth.

The maximum length of the camera cable for multiple cameras supported by TANDBERG is 20 m (65 ft).

5.5 Additional Microphones

If your environment is such that you require more than one microphone for your room, e.g. you have a whiteboard at a distance from your table microphone; it is possible to connect additional microphones to your system. See Appendix 4 for more information.

You can connect up to three additional microphones to your system for a total of 4 microphones. The connectors are marked Mic1, Mic2, Mic3 (Mic 1-3 XLR) and 4 (RCA Input). The connected microphones will by default be mixed.

When more than one microphone is connected, you have the option to use the Voice Activate Camera Tracking feature.

Audio Science Microphone

TANDBERG's award-winning Audio Science microphone is a ceiling-mounted, wide coverage, boundary microphone, which can eliminate the need for table microphones. It is designed to pick up the audio from all conference participants seated within in its pick-up area, defined by a quarter-sphere of approximately 14-foot (4.25m) radius extended in front of, and to the sides of the microphone.

Please contact your TANDBERG representative for further information.


TANDBERG Audioscience

5.6 Telephone Add-On

The system has a built in audio bridge* that can bring in Voice over IP (VoIP) telephony or normal telephone sites using ISDN. It can bridge up to 5 telephony sites in any mix.

In addition to using ISDN and IP for your telephone sites, it is possible to connect a telephone using normal POTS line** by

- Connect the audio out from the conference telephone to audio input 5 (AUX)
- Connect the audio input from the conference telephone to audio output 2 (AUX), which provides a mixed signal between local and far end.

*optional MultiSite package available
** require a conference phone with external audio input and output

5.7 Stereo Speaker Kit

The Stereo Speaker Kit provides an pair of floor-standing loudspeakers in addition to the built-in DNAM . Using these speakers will enable stereo functionality in your system and thereby enhance the sound experience.

To experience stereo sound, the stereo speakers have to be connected to the Digital Natural Audio Module (DNAM) as well as confirming this under Stereo Settings in the main audio menu. The stereo sound source may either be located at the far end, or locally as a sound source (CD, DVD) connected to the codec audio 5 & 6 input pair. If using a local stereo sound source, you also have to enable Stereo I/O mode (On) in the same audio menu, to be able to receive stereo sound on your system, and to send stereo signals to the far end. See chapter 4.5.4 for more information.

Check also that the full-range frequency audio coding AAC-LD is enabled (In Call Quality menu, AAC-LD is checked, and AAC-LD 128 threshold is the same or lower than the call rate you are planning to use). See chapter 4.4.2 Audio Algorithm and 4.4.3 AAC-LD 128kbps for more information.

An installation sheet is enclosed in the Stereo Loudspeaker Kit, which also describes recommended physical speaker placement.

Note that if stereo speakers are enabled in the menu without having any stereo speakers connected to the Digital NAM, or having other speakers than the TANDBERG stereo speakers, it may cause the acoustic echo-canceller to malfunction.

5.8 Web Interface

It is possible to access and maintain the system remotely via a local area network (LAN) using a standard Web-browser. Connect your system to a LAN with a Network cable.

How to configure your system for web interface:

1. Open Administrator Settings and choose Network\LAN Settings
2. Specify IP-assignment DHCP or Static. If DHCP is selected, no other settings are needed. If Static is selected, IP-address, IP-subnet mask and Gateway must be specified.
3. Start your Web-browser. In the address field type the IP-address of the system. Enter the password and the Web-page of the system will be shown. The default password is TANDBERG.
4. Restart the system. Choose Restart from the Control Panel.

Example:

IP-assignment: Static
IP-address: 196.9.200.129
IP-subnet mask: 255.255.255.0
Gateway: 196.9.200.21

See chapter 4.8.6 LAN Settings for further information.

5.9 Dual Monitor

The Dual Monitor option consists of an additional monitor, bigger cabinet top-plate and associated cabling. The Dual Monitor can be used to show full screen selfview, snapshots and Duo Video.

To use the system in the Dual Monitor configuration:

1. Connect Video Out 2 (preferably) otherwise Video Out 4 on the system to a video input on the dual monitor.
2. Set Dual Monitor to On in the General Settings menu.

5.10 XGA Monitors and Projectors

(Optional)

The system can be delivered with optional single or dual TV/XGA monitors. It can also be connected to any DVI/VGA/PAL or NTSC display.

5.11 VESA Display Power Management

Because of the tremendous amount of energy consumed by monitors when operating, the system will reduce power consumption and extend monitor lifecycle by suspend (switch off) monitors and projectors when the system goes into sleep/standby.

This apply for all VESA Display Power Management compliant displays that are connected to the VGA/DVI output of the system*.
Note that the display device need to comply with VESA display Power Management system (DPMS).

The VESA DPMS standard consists of four modes, Normal, Standby, Suspend and Off, and applies to all Sync formats (e.g. VGA).

DPMS standard:

	Normal	Standby	Suspend	Off
H-sync	On	Off	On	Off
V-sync	On	On	Off	Off
Power savings	None	Minimal	Substantial	Maximum
Recovery time	None	2-3 seconds	2-3 seconds	8-10 seconds

In Off mode some power may still be drawn in order to power indicator lights etc. EDID contains the information on which mode a specific monitor supports.

TANDBERG supports all four modes. However, in F1 and above, all monitors not listed below are automatically set to Off.

Monitor	DPMS mode
Dell	Off
T8000 - Pioneer	Suspend
T6000 - SAMPO	Suspend
Maestro - Projection Design	Off
T7000 - Sharp	Off

*This requires a system supplied with a VGA/DVI output.

5.12 Extended Display Identification Data (EDID)

Extended Display Identification Data (EDID) is a VESA standard data format that will allow the system to communicate its capabilities, including vendor information like the supported VGA-formats and frequency range limits to a PC connected to the XGA/DVI input*.

This means that the PC always** will be able to output a valid VGA/DVI signal to the system with no manual reconfiguration of the PC screen settings.

TANDBERG supports EDID structure v1.3, which adheres to the MS Plug & Play definition.

This standard contains information on product ID, basic display parameters, timing identifications and detailed timing descriptions.

In F1 and above, TANDBERG will use the EDID information to decide which resolution to use, 800x600 @ 75Hz or 1024x768 @ 60Hz.

Example (1024x768@60Hz) **Detailed timing description:**	
PixelClockDiv10000:	6500
Horizontal Active:	1024
Horizontal Blanking:	320
Vertical Active:	768
Vertical Blanking:	38
Horizontal Sync Offset:	24
Horizontal Sync Pulse Width:	136
Vertical Sync Offset:	3
Vertical Sync Pulse Width:	6
Horizontal Image Size:	Not available
Vertical Image Size:	Not available
Horizontal Border:	0
Vertical Border:	0

Tested and verified monitors, EDID & Timing

Listed below are some of the monitors TANDBERG have tested and verified against:

ADI A715
Dell W1700
EIZO L367
EIZO F730
ErgoScan 400S
Hitachi CM640ET
Hitachi CM769ET
IBM 9494-HBO
IBM G97
IBM E74
IBM 6743-60N
JVC LT-23X475
Löewe TAA112747
MAG D700
MAG DJ707
Panasonic SL75
Pioneer PDP-502MXE
Pioneer PDP-50MXE1
Samsung 191T

*This requires a system supplied with a XGA/DVI input.
**Need to comply with the VESA EDID standard.

6 Appendices

Appendices:

- Appendix 1: Technical Specification
- Appendix 2: Bandwidth Information
- Appendix 3: Environmental considerations
- Appendix 4: Guidelines for setting up videoconferencing rooms
- Appendix 5: Security
- Appendix 6: Using the file system
- Appendix 7: Connecting the system to PRI/T1
- Appendix 8: Connecting the system to the Switched 56 network
- Appendix 9: Connecting the system to ISDN using NT1 network adapters
- **A**ppendix 10: Wave II Camera Pinouts and Connectors
- Appendix 11: Remote control
- Appendix 12: CallManager registration
- Appendix 13: Diagnostic Tools for IP
- Appendix 14: Declaration of Conformity

Appendix 1

Technical Specification

SYSTEM COMPONENTS
Integrated 5" LCD display, WAVE II camera, microphone, Digital
Natural Audio Module (DNAM), integrated cabling, cart

BANDWIDTH
H.320 up to 2 Mbps
H.323 up to 4 Mbps point-to-point
Up to 6Mbps total MultiSite bandwidth

VIDEO STANDARDS
H.261, H.263, H.263+, H.263++ (Natural Video), H.264

VIDEO FEATURES
Native 16:9 Widescreen
Advanced Screen Layouts
Picture in Picture (PIP)
Picture outside Picture (POP)
Intelligent Video Management

VIDEO INPUTS (5 INPUTS)
1 x MiniDin, S-video: main camera
1 x MiniDin, S-video: auxiliary / document camera
1 x RCA / Phono, composite: document camera / aux
1 x RCA / Phono, composite: VCR
1 x DVI/SXGA: PC

VIDEO OUTPUTS (6 OUTPUTS)
1 x MiniDin, S-video: main monitor
1 x MiniDin, S-video: dual monitor
1 x RCA / Phono, composite: main monitor or VCR
1 x RCA / Phono, composite: dual monitor or VCR
2 x DVI/XGA: main and dual monitor

SXGA INPUT / XGA OUTPUT
Input: 640 x 480 – 1280 x 1024
Output: 640 x 480 – 1024 x 768
Extended Display Identification Data (EDID)
VESA Monitor Power Management

VIDEO FORMAT
NTSC, PAL, VGA, SVGA, XGA or SXGA

LIVE VIDEO RESOLUTIONS
NATIVE NTSC:
4SIF (704 x 480 pixels), Digital Clarity
Interlaced SIF (352 x 480 pixels), Natural Video
SIF (352 x 240 pixels)
NATIVE PAL:
4CIF (704 x 576 pixels), Digital Clarity
Interlaced CIF (352 x 576 pixels), Natural Video
CIF (352 x 288 pixels)
QCIF (176 x 144 pixels)
SQCIF (128 x 96 pixels) decode only
NATIVE PC RESOLUTIONS:

EMBEDDED ENCRYPTION
H.320 and H.323 point-to-point and multipoint calls
Standards-based: H.233, H.234, H.235 v2&v3,
DES and AES
NIST-validated AES
NIST-validated DES
Automatic key generation and exchange
Suppor ted in DuoVideo,H.239 and Multisite

H.323 NETWORK FEATURES
Dif ferentiated Services (DiffSer v)
Resource Reservation Protocol (RSVP)
IP precedence
IP type of service (ToS)
IP adaptive bandwidth management (including flow control)
Auto gatekeeper discovery
Dynamic playout and lip-sync buffering
Intelligent Packet Loss Recovery (IPLR)
Automatic support for private and public IP addresses using NAT
H.245 DTMF tones

SECURITY FEATURES
Managmenet via HTTPS
IP Administration Password
Menu Administration Password
Dialing Access code
Streaming password
H243 MCU Password
VNC password
SNMP security alerts
Disable IP services

NETWORK INTERFACES
6 x ISDN BRI (RJ-45), S-inter face
1 x E1 / T1 G.703 (RJ-45) for ISDN PRI or Leased E1 / T1
1 x E1 / T1 G.703 (RJ-45) for future usage
1 x LAN / Ethernet (RJ-45) 10/100 Mbit (LAN / DSL / cable modem)
1 x X.21 / V.35 / RS-449 with RS-366 dialing or Leased Line
1 x USB (for future use)

ETHERNET / INTERNET / INTRANET CONNECTIVITY
TCP / IP, DHCP, ARP, FTP, Telnet, HTTP, HTTPS, SOAP and XML
SNMP Enterprise Management
Internal web ser ver
Internal streaming ser ver

OTHER MAJOR ITU STANDARDS SUPPORTED
H.231, H.233, H.234, H.235, H.235 v2&v3, H.239, H.241,

XGA (1024 x 768)
SVGA (800 x 600 pixels)
VGA (640 x 480 pixels)

STILL IMAGE TRANSFER
CIF, SIF, 4CIF (H.261 Annex D), 4SIF, VGA, SVGA, XGA

AUDIO STANDARDS
G.711, G.722, G.722.1, G.728 , MPEG4 AAC-LD

AUDIO FEATURES
CD-Quality 20KHz Mono and Stereo
Telephone add-on via MultiSite
Four separate acoustic echo cancellers
Audio mixer
Automatic Gain Control (AGC)
Automatic Noise Reduction
Audio level meters
VCR ducking

AUDIO INPUTS (6 INPUTS)
3 x microphone, 24V phantom powered, XLR connector (Mic input 3: Switchable mic or line level)
1 x RCA / Phono, Line Level: audio mixer
1 x RCA / Phono, Line Level: auxiliary (or VCR/DVD Stereo L)
1 x RCA / Phono, Line Level: VCR/DVD (Stereo R)

AUDIO OUTPUTS (3 OUTPUTS)
1 x RCA / Phono, S/PDIF (mono/stereo) or Analogue Line Level: main audio
1 x RCA / Phono, Line Level: auxiliar y (or VCR Stereo L)
1 x RCA / Phono, Line Level: VCR (Stereo R)

FRAME RATES – POINT-TO-POINT & MULTISITE
30 frames per second @ 168 kbps and above
60 fields per second @ 336 kbps and above (Point-to-point)

MULTISITE FEATURES
Audio and Video Transcoding
Video rate matching from 56 kbps – 2 Mbps
Continuos Presence CP5+1, CP4 and Voice Switched Best Impression
H.264, Encryption, Digital Clarity
DuoVideo and H.239 mixed and from any site
Telephony
ISDN & IP Downspeeding and IPLR
MUTLISITE (H.243) CASCADING ON ISDN AND IP
Dial in / Dial out
Chair control for host system
Snapshot of ongoing conference (JPEG)
Snapshot of ongoing DuoVideo/H.239 presentation (JPEG)
Separate welcome page for encrypted conferences
IP AND PRI/BRI/SERIAL INTERFACE (V.35)
Conference rates up to 6 Mbps
Up to 6 video and 5 audio sites
4 sites @ 2 Mbps, 6 sites @ 768 (+telephone calls)
Mix IP with ISDN-PRI, ISDN-BRI or Serial Inter face up to
maximum conference rate

DUOVIDEO / H.239
Available on all networks

NETWORK FEATURES
H.243, H.281, BONDING (ISO 13871), H.320, H.323, H.331, MPEG4 AAC-LD (20KHz audio)

W.A.V.E. (WIDE ANGLE VIEW) II CAMERA
10 x zoom 1/4" CCD +15° / -20° tilt
+ / -95°pan
61° ver tical field of view
96° total vertical field of view
77° horizontal field of view
267° total horizontal field of view
460 (PAL) / 470 (NTSC) TV lines
Min. illumination 2 Lux (F1.8)
Auto or manual focus / brightness / white balance
Far-end camera control
15 near and far-end camera pre-sets
Voice-activated camera positioning
Daisy chain support for up to 4 cameras VISCA camera support

PRESENTATIONS AND COLLABORATION
Natural Presenter Package including:
PC Presenter
PC SoftPresenter
Digital Clarity
DuoVideo and H.239
Advanced Video Layouts
T.120 Microsoft® NetMeeting® suppor t via RS-232 (9-pin D-sub)
Streaming compatible with Cisco IP/TV,
Apple QuickTime®, RealPlayer® v8 etc.
CLOSED CAPTIONING/TEXT CHAT
T.140 standards-based

SYSTEM MANAGEMENT
Support for the TANDBERG Management Suite
Total management via embedded web server, SNMP, Telnet and FTP
Remote software upload: via webserver or via FTP server
2 x RS-232 for local software upgrades, local control and diagnostics
Onscreen Menu on TV and/or VGA monitors

DIRECTORY SERVICES
Support for Local, Global and Dynamic Server Directories
Unlimited entries using Ser ver directory* supporting LDAP and H.350
400 number global directory
200 number local directory
50 dedicated MultiSite entries

13 SELECTABLE MENU LANGUAGES
English, German, French, Norwegian, Swedish, Italian, Spanish,
Portuguese, Simplified Chinese, Traditional Chinese, Japanese,
Russian and Korean

CUSTOMIZED WELCOME SCREEN AND COMPANY LOGO
POWER
Auto-sensing power supply
100 - 250 VAC, 50 - 60 Hz
65 watts max for codec and camera
250 watts for DNAM
50 watts integrated LCD display

OPERATING TEMPERATURE AND HUMIDITY

Auto H.320 / H.323 dialing
Downspeeding
Programmable network profiles
Intelligent Call Management
HO on ISDN-PRI Facility
Maximum call length timer
Automatic SPID and line number configuration (National ISDN, GR-2941-CORE)
Soft Mux
NATO standard KG194 / KIV-7 encr yptor support
H.331 Broadcast Mode
IP Address Conflict Warning

0° C to 35° C (32° F to 95° F) ambient temperature.
10% to 90 % Relative Humidity (RH)

STORAGE AND TRANSPORT TEMPERATURE
-20° C to 60° C (-4° F to 140° F) at RH 10-90 % (non-condensing)

DIMENSIONS
Width : 649 mm
Depth : 707 mm
Height : 1460 mm
Weight : 31 kg

* Requires TANDBERG Management Suite 9.0 or newer

Appendix 2

Bandwidth Information for TANDBERG endpoints

Model	8000MXP, 7000MXP	6000MXP, Maestro
Bandwidth Point to point ISDN / IP	Standard: 1920 / 4096	Standard: 768 / 3072 Option: 1920 / 4096
MultiSite	Total: 6144kbps 6x1152 video + 5 audio 5x1536 video + no audio 4x1920 video + 5 audio 3x3072 video + no audio	Total: 3072kbps 4x768 video + 4 audio 3x1536 video + no audio Total: 6144kbps 6x1152 video + 5 audio 5x1536 video + no audio 4x1920 video + 5 audio 3x3072 video + no audio
Rate Matching	Yes	Yes
Dual Stream (DuoVideo / H.239)	Yes	Yes
Secure Conference	All bandwidths	All bandwidths
H.264	Up to 2Mbps	Up to 2Mbps
Picture Mode MultiSite	VS, CP4, CP5+1	VS, CP4, CP5+1

Model	3000MXP / 3000NET MXP	2000MXP, 1500MXP
Bandwidth Point to point ISDN / IP	Standard: 384 / 1536 Option: 512 / 1920 3000NET: 384 / 1920	Standard: 1920 (IP only) Options: 512 / 1920
MultiSite	Total: 1536kbps 4x512 video + no audio 4x384 video + 3 audio Total: 2304kbps 4x768 video + no audio	Total: 2304kbps 4x768 video + no audio 4x512 video + 3 audio

	4x512 video + 3 audio	
Rate Matching	Yes	Yes
Dual Stream (DuoVideo / H.239)	Yes	Yes
Secure Conference	All bandwidths	All bandwidths
H.264	Up to 2Mbps	Up to 2Mbps
Picture Mode MultiSite	VS, CP4, CP5+1	VS, CP4, CP5+1

Model	**990MXP / 990NET MXP**	**880MXP / 880NET MXP**
Bandwidth Point to point ISDN / IP	Standard: 1920 (IP only) Options: 512 / 1920 990NET: 768 / 1920	Standard: 1152 (IP only) Option: 384 / 1152
MultiSite	Total: 2304kbps 4x768 video + no audio 4x512 video + 3 audio	Total: 1152kbps 4x384 video + no audio 4x320 video + 3 audio
Rate Matching	Yes	Yes
Dual Stream (DuoVideo / H.239)	Yes	Yes
Secure Conference	All bandwidths	All bandwidths
H.264	Up to 2Mbps	Up to 768
Picture Mode MultiSite	VS, CP4, CP5+1	VS, CP4, CP5+1

Model	**770MXP**	**550MXP**
Bandwidth Point to point ISDN / IP	Standard: 768 (IP only) Option: 128 / 768	Standard: 768 (IP only) Options: 128 / 768, 384 / 768
MultiSite	Not Available	Not Available
Rate Matching	Not Available	Not Available
Dual Stream	Yes	Not Available

(DuoVideo / H.239)		
Secure Conference	All bandwidths	All bandwidths
H.264	Up to 768	Up to 768
Picture Mode MultiSite	Not Available	Not Available

Appendix 3

Environmental considerations

This section explains how to carry out basic adjustments and simple tests to ensure that you send and receive the best possible image and audio quality when using your system.

Iris control and lighting
By default the system camera will use an automatic iris to compensate for changes in lighting. In addition to this feature, you may further assist the system to maintain the best possible image quality by paying special attention to environmental lighting and background colors as described below. Remember the system will send live images of yourself *and* your immediate surroundings.

- Avoid direct sunlight on the subject matter i.e. yourself, the background or onto the camera lens as this will create harsh contrasts.
- If light levels are too low you may need to consider using artificial lighting. As described above, direct illumination of the subject matter and camera lens should be avoided.
- When using artificial lighting, daylight type lamps will produce the most effective results. Avoid colored lighting.
- Indirect light from shaded sources or reflected light from pale walls often produces excellent results.
- Avoid harsh side lighting or strong light from above. Strong sunlight from a window or skylight may put part or all of the subject matter in shadow or cause silhouetting.
- If you still have problems with the iris and lighting, manual adjustment of the camera parameters might help – see Video Settings menu.
- Dim scenes can also be improved by manually adjusting the camera brightness setting.

Background
The appearance of the picture background is very important but easily overlooked. It is important to remember that the camera also shows what is behind you when in a videoconference. To ensure a suitable background we recommend you consider the following:

- Use a neutrally colored background with a medium contrast and a soft texture, e.g. a plain curtain with no heavy patterns or strong colors that may adversely tint the whole scene.
- Avoid moving backgrounds such as curtains blowing in a draught, moving objects, or people walking behind as this may both reduce image quality and distract the attention of the calling party.
- Do not place the camera facing a doorway.

Loudspeaker volume
The audio system will use the Digital Natural Audio Module (DNAM). The volume of the audio system is controlled by the Volume Control keys on the system remote control.

Appendix 4

Guidelines for setting up videoconferencing rooms

The following are a set of guidelines to consider when either building a videoconferencing room, or using an existing room for videoconferencing.

Lighting:

- Low Contrast desired for light intensity. No dark spots.
- Intensity @ table 800 - 1400 Lux as measured with an Incident light meter.
- Block sunlight from entering room.

Seating Area (Table):

- Should allow all participants to see Monitors.
- Should allow camera to “see” all participants.
- Non-shiny non-patterned preferably light grey surface (if table used).

Walls:

- Color: Generally high contrast color desired. Light blue is commonly used.
- Acoustically reflective surfaces (such as glass or concrete) should be covered with curtains or sound treatment.

Audio:

- Noise Floor preferred less than 44dBC.
- Reverb Time 0,3 to 0,5 sec.

Ventilation:

- Keep in mind Noise Floor.
- Velocity = Noise. Therefore keep velocity of air low.

Room:

- Should be located away from noise.
- Should not have windows.
- Doors should be located off camera.

When a front projector is used to display video images, it is important to place the camera outside the projected light area, position the camera close to one side of the projector screen. To avoid disturbance from the projectors light, ceiling mounting of projector gives the best solution.

Warning ! Direct light from the projector into the camera can damage the camera.

Appendix 5

Security

The system has several features both to protect from unauthorized use and system access:

Access Code:

When Access Code is enabled, the user will be asked to enter an access code before he/she is able to make a call. The system will verify if the entered access code is valid by checking the code with the allowed codes listed in the access.txt file on the ftp-server in the system. If no access.txt file is uploaded to the system, registration of the code will be done without validation. E.g. you can enter whatever code you want and have access to the system.

The access.txt file is a plain text file with one line per access code as shown below:

```
1234
1250
A1
B2
ABC
```

To upload this file to the system, follow these steps:

- Open a DOS-window and go to the folder where the ‘access.txt’ file is located.
- Type ftp <IP-address of your local system).
- User: press Enter or enter IP-password.
- Type “bin” and press Enter.
- Go to the user folder, type “cd user”.
- Upload the ‘access.txt’ file, type ‘put access.txt’.
- Exit from ftp, type "bye".

Administrator Password

Access to the administrator menu on the system unit can be controlled using password protection. You can set the Administrator Password in Menu Settings, in Security or from the dataport:

menupassword set <pin-code>. The pin-code should be maximum 5 - five digits. To erase the password, enter an empty pin-code.

Streaming password

By setting a streaming password in the streaming menu on the system, a password has to be entered on the streaming client to be able to see the videostream from the system.

IP Password

By setting an IP Access Password on the system, all access to the system using IP (Telnet, FTP and WEB) requires a password. This password can be enabled from telnet or dataport using the command: ippassword <ip-password>. The default IP password is "TANDBERG".
To remove this password, use the command: "ippassword ". From telnet, this is only possible by first entering the correct password.

IP Services

The different IP services on the system - FTP, Telnet, Telnet Challenge, HTTP, HTTPS, SNMP and H.323 can be disabled to prevent access to the system. By using the commands below, the services can be independently enabled/disabled:

xconfiguration Telnet/TelnetChallenge/FTP/HTTP/HTTPS/H323 Mode: <On/Off>
xconfiguration TelnetChallenge Mode: <On/Off> [port]
xconfiguration SNMP Mode: <On/Off/ReadOnly/TrapsOnly>

SNMP Security alert

This function will notify any Management Application (such as TMS - TANDBERG Management Suite) if anyone tries to perform Remote Management on the system using an illegal password. The Security alert that is sent to the Management Application will contain information about the IP address and the service (WEB, Telnet, FTP) being used for the attempt. If TMS is used, email notifications or alarms about the attempt can be sent to specified persons.

Encryption

All TANDBERG systems support both AES and DES encryption. By default this feature is enabled such that when connecting with any other video system or MCU, a TANDBERG system will attempt to establish a secure conference using AES or DES encryption. The TANDBERG system will attempt this for both IP and ISDN connections. Where a remote system or MCU supports encryption, the highest common encryption algorithm will be selected on a port-by-port basis.

The type and status of the encryption negotiated is indicated by padlock symbols and on-screen messages. Encryption on the TANDBERG systems is fully automatic, and provides clear security status indicators;

- An open padlock indicates that encryption is being initialized, but the conference is not yet encrypted.
- Single padlock indicates DES encryption.
- Double padlock indicates AES encryption.

In addition to on-screen indicators the Call Status menu provides two information fields regarding call encryption. The first field is the Encryption Code, which will identify either AES or DES. The second field is the Encryption Check Code and is comprised of an alphanumeric string. This string will be the same for systems on either side of an encrypted conference. If the Check Codes do not match, this would indicate that the call has been exposed to a Man In The Middle attack.

When a system with MultiSite functionality hosts a conference, the highest possible encryption algorithm will be negotiated on a site-by-site basis. MultiSite conferences can therefore support a mix of AES and DES encrypted endpoints in the same conference. A conference will only be as secure as its weakest link.

All systems supporting DES encryption can upgrade to AES encryption. Please contact your TANDBERG representative for more information. The standards supporting the encryption mechanisms employed by TANDBERG are: AES, DES, H.233, H234 and H.235 (H235v3 & v2 for

backwards compatibility) with extended Diffie Hellman key distribution via H.320, H.323 and Leased Line connections.

The TANDBERG AES implementation is validated as conforming to the Advanced Encryption Standard (AES) Algorithm, as specified in Federal Information Processing Standard Publication 197, *Advanced Encryption Standard,* by The National Institute of Standards and Technology (NIST).

Appendix 6

Using the file system

It is possible to access a file system within the TANDBERG system by using ftp:

DOS-window:	ftp <IP-address of system>, or
Web-browser:	ftp:// <IP-address of system>

Description of the different files:

all.prm	all settings in the system (including directory)
dir.prm	directory entries (up to 200 entries)
event.log	logs fault situations etc.
sw.pkg	the system software
globdir.prm	file containing up to 400 entries. These entries can not be edited from the system, but can be edited as a text-file.

Files accessible only by 'ftp get /tmp/snapshots/xxx.jpg' or 'http://<IP-address of system>/tmp/snapshots/xxx.jpg':

main.jpg	Snapshot of current stream if MultiSite.
local.jpg	Snapshot of selfview.
farend.jpg	Snapshot of decoded stream if point-to-point.
duovideo.jpg	Snapshot of the encoded stream if transmitting DuoVideo, the decoded stream if receiving DuoVideo.

Custom logos

- Go to the folder where your logo is located.
- Type "ftp <IP-address of your local system>".
- Go to the user folder, type "cd user".
- Upload the logo, type "put <logo.jpg>".

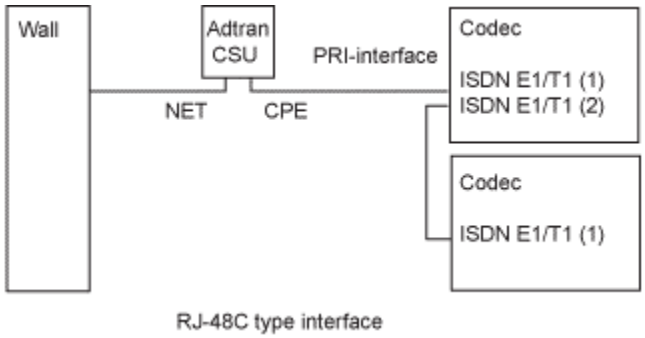
The new logo will be displayed the next time you restart your system. Recommended maximum size is: 704x480, file-format: jpg. If the file is too large, no logo will be displayed.

Appendix 7

Connecting the system to PRI/T1

Using CSU adapter

Connecting the system to the ISDN network via the E1/T1-interface using an Adtran T1 ESF CSU ACE or equivalent CSU, will allow up to 1.54 Mbps connection. The E1/T1-interface must be connected to a CSU approved according to IEC 60950, UL 1950 or equivalent standard. The PRI-line will run the AT&T 4ESS, 5ESS and National ISDN protocols in addition to Euro ISDN (E1).



Connecting to Adtran T1 ESF CSU ACE

Connect the PRI cable from the system to the input marked CPE (Customer Provided Equipment) on the Adtran CSU (straight through category 5 cable is recommended). Connect to the network via the NET connector on the Adtran CSU.

Configuration of the system

Open the Administrator Settings Menu from the Control Panel and select Network.
Choose Network Type: PRI and specify your PRI number, max. Channels, cable length (between system and CSU) and switch type.

Configuration of Adtran T1 ESF CSU ACE

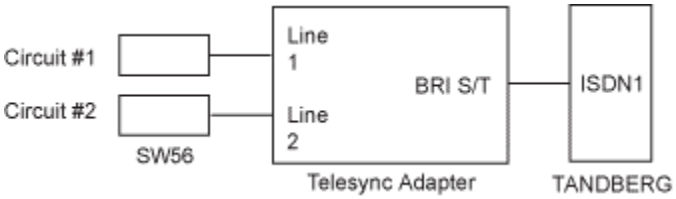
- Enter 2)CONFIG menu using SCROLL and ENTER buttons.
- Enter 3)TERMINAL menu. Check 1)FORMAT:ESF, 2)CODE: B8ZS , 3)SET LBO: 0-133 (corresponding to Cable Length setting on the system).
- Go to main menu and enter 1)NETWORK menu. 7)SET LBO: 0.0 (according to information from Telco).
- Also, other network parameters should be set according to information from your Telco.

Appendix 8

Connecting the system to the Switched 56 network

Using Telesync TS-256 SW56/ISDN adapter
Connecting the system to the SW56 network using a Telesync Adapter is described below. There are different Telesync Adapters for different configurations of SW56 networks. The network types tested with the system are SW56 2Wire and 4Wire.

Connecting
Connect the system ISDN1 cable to the BRI S/T interface on the Telesync Adapter. Connect the two SW56 cables from the Telesync adapter Line 1 and Line 2 to the SW56 network.



Configuration of the system
Select network type to National ISDN.

LINE 1 SETUP

NUMBER1:	program with number from the first SW56 line
NUMBER2:	program with number from the second SW56 line
SPID1:	program with number from the first SW56 line
SPID2:	Leave blank

How to call
It is important to use Restrict (56k). Select Restrict (56k) in Call Settings in the Call menu (select the field next to the phone book button in the call menu). A second number field will appear when ISDN is selected for Net within Call Settings and you choose bandwidth 128 kbps. Enter the second number in the call settings menu.

Appendix 9

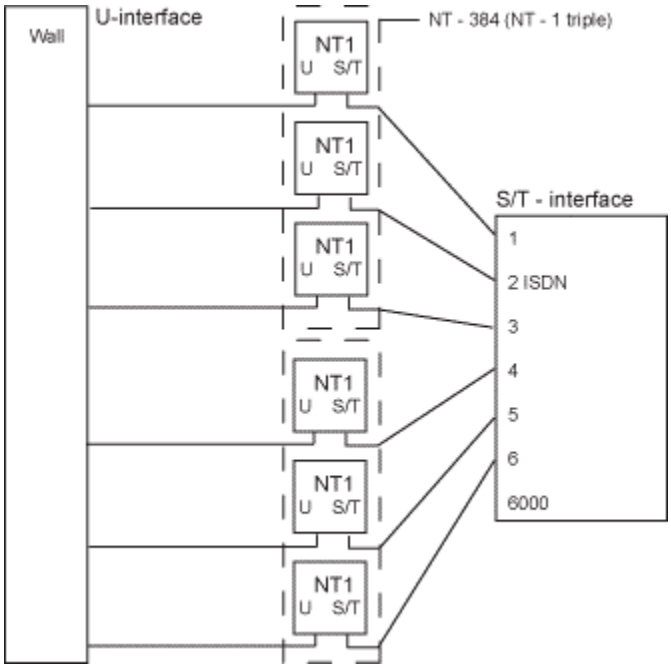
Connecting the system to ISDN using NT1 network adapters

Connecting
Connect the first ISDN cable from ISDN 1 on the system to the S-interface on your first NT1 network adapter. Connect the other ISDN cables to the appropriate NT1 network adapters. Connect the U-interface of your NT1 adapter to the line provided from your network provider.

For convenience the NT1 adapters could be placed inside the cabinet. If needed, use the shorter ISDN cable (RJ45 connectors) delivered with the NT1 between the codec and the NT1 and the longer ISDN cable between the NT1 and the connector (RJ45) at the wall socket.

Configuring
The configuration of the system is performed in the same manner as described in ISDN BRI Settings.

The NT1 should be powered up and you should check that the network is active. Please check your NT1 User Manual.



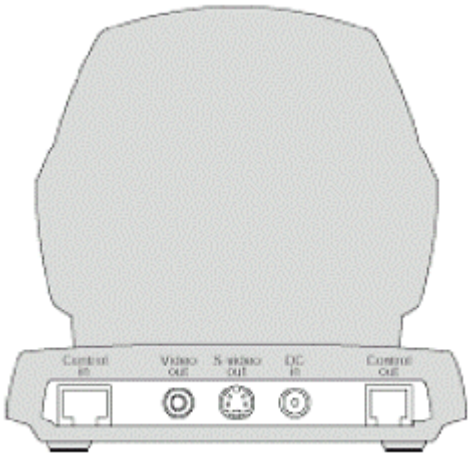
Appendix 10

(Not for set top systems)

Wave II Camera

Pinouts and Connectors

8-PIN RJ (shielded modular jack):
This connector is used for the power and control signals to the main camera.



Pin-8	+12V (presence when connected in daisy chain)
Pin-7	GND
Pin-6	GND
Pin-5	RXD (in)
Pin-4	TXD (out)
Pin-3	+12V
Pin-2	GND
Pin-1	+ 12V

Standard Phono:
Used for composite video signal

Power:
2.0 mm DC power jack (+12V, 1A required)

Standard Mini Din:
Used for S-Video signal

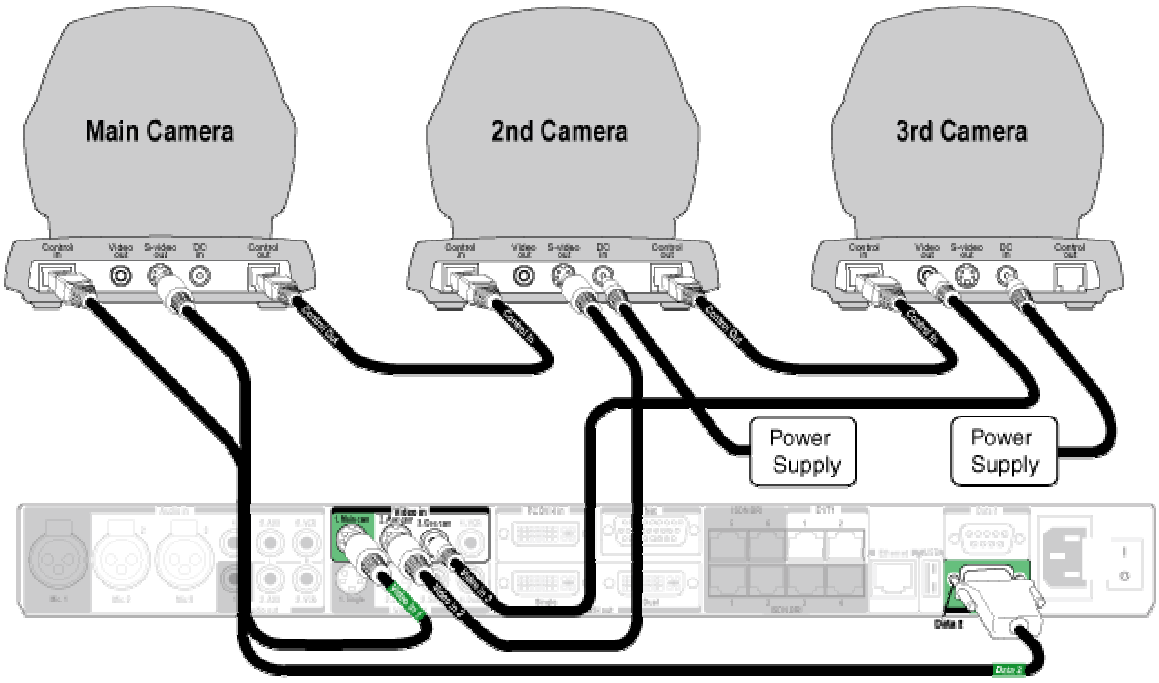
6-PIN RJ (modular jack):

This connector is used when cascading cameras: Control (out) signal and external camera detection. Note: It does not provide power for cascaded camera.

PRI	Pinout
Pin-6	GND
Pin-5	GND
Pin-4	RXD (in)
Pin-3	TXD (out)
Pin-2	Presence (+12V in daisy chain)
Pin-1	GND

Multiple Camera support:

The figure below is an example of how multiple cameras should be connected:



Appendix 11

Remote Control

The TANDBERG remote control transmits IR-signals using the following parameters:

Protocol	Siemens SDA2208
Reference frequency	485kHz
Address	4 & 7
IR wavelenght	940nm
IR carrier ferquency	30kHz

Remote Control keycode map:

Button codes		Remote control		Button codes		Remote Control	
Decimal	**Hex**	**Address**	**Button name**	**Decimal**	**Hex**	**Address**	**Button name**
0	00			33	21	0	OK
1	01	0	NUMBER 1	34	22	0	CALL
2	02	0	NUMBER 2	35	23	0	END CALL
3	03	0	NUMBER 3	36	24	0	PHONE BOOK
4	04	0	NUMBER 4	37	25	0	MENU
5	05	0	NUMBER 5	38	26	0	CANCEL
6	06	0	NUMBER 6	39	27	0	
7	07	0	NUMBER 7	40	28	0	PRESETS
8	08	0	NUMBER 8	41	29		
9	09	0	NUMBER 9	42	2A		
10	0A	0	NUMBER 0	43	2B		
11	0B	0	*	44	2C		
12	0C	0	#	45	2D		
13	0D			46	2E		
14	0E			47	2F		
15	0F			48	30		
16	10			49	31		

17	11		PRESENTER	50	32		
18	12	0		51	33		
19	13			52	34		
20	14			53	35		
21	15			54	36		
22	16	0	ZOOM OUT	55	37		
23	17	0	ZOOM IN	56	38		
24	18			57	39		
25	19	0	VOLUME DOWN	58	3A		
26	1A	0	VOLUME UP	59	3B		
27	1B	0	MIC OFF	60	3C		
28	1C			61	3D		
29	1D	0	UP	62	3E		
30	1E	0	DOWN	63	3F	0	WAKE UP
31	1F	0	LEFT	25	19	3	LOW BATT
32	20	0	RIGHT	XX		3	PROG VER

Appendix 12

Cisco CallManager registration

Configuring an H.323 client on the CallManager 4.0

The registration of a H.323 client in CallManager is supported on the CallManager (CCM) 4.0 software and forward.

1. To configure the CallManager with an H.323 client, log on to the administration web interface and go to the phone configuration page.
2. The Phone configuration page is located on: device (top menu) -> Add a New device -> Phone -> H.323 Client.
3. In the phone configuration page type the IP address of the TANDBERG system in the Device name field, select device pool and push the insert button.
4. A pop-up box will now appear on the screen and ask you if you would like to configure the directory number. Push the ok button.
5. You should now see the Directory Number Configuration WEB page. Enter the E.164/phone number of your TANDBERG system in the Directory number field, and in the “Forward and Pickup Settings” enter the time of “No Answer Ring Duration”. The time selected has to have a value from 1 to 300 seconds.
6. Push the Add button to update the CallManager with the directory number settings.

You have now configured the CallManager with a H.323 client and should be able to register the TANDBERG system to it.When the TANDBERG system is registered to a CallManager, it will be possible to place and receive calls from this system to any other video and voice systems that are registered on the same CallManager.

Appendix 13

Diagnostic Tools for IP

To use these tools, will require using a PC and setting up a telnet session towards the system.

Q.931

To show Q.931 trace during a call you need to issue the command ‘syslog on’.One can get traces for RAS, Q.931 and H.245 with this command. It is a complex trace and requires an extensive knowledge in H.323 signalling to be understood.

Ping

Ping is used to see if the system is able to reach a specific IP-address, using a mechanism in IP called ICMP. If the system is unable to register to its gatekeeper, or if it is unable to dial a specific endpoint, one can use ping to see if there is at least an IP-route to the gatekeeper or to the endpoint. In case you have problems, one would first ping the default gateway, then the gatekeeper, and then the other endpoint.

Traceroute

Traceroute does exactly that; it traces the route an IP-packet takes to reach its destination and displays all router hops. Traceroute is very useful for seeing exactly where there is a routing-problem in the IP-network, and for checking where transport-delay is introduced.

Layer 4 Ports used in H.323 calls

The layer 4 ports used by the system in a H.323 call can be defined as follows:

- Dynamic: The ports are allocated at random from 2048 to 65535.
- Static: Will use the predefinded layer 4 ports listed in the tables below.

Point-to-point + Duo Video

Function	Port	Type
Gatekeeper Discovery (RAS)	1719	UDP
Q.931 Call Setup	1720	TCP
H.245	Range 5555—5556	TCP
Video	Range 2326—2341	UDP
Audio	Range 2326—2341	UDP
Data/FECC	Range 2326—2341	UDP

MultiSite + Duo Video

Function	Port	Type
Gatekeeper Discovery (RAS)	1719	UDP
Q.931 Call Setup	1720	TCP
H.245*	Range 5555—5560	TCP
Video	Range 2326—2406	UDP
Audio	Range 2326—2406	UDP
Data/FECC	Range 2326—2406	UDP

(*) Note: While using MultiSite, if a site is disconnected and reconnected without terminating the entire conference, the next site to be connected will have a H.245 port outside of the specified range. If this functionality is required through a firewall, the range of TCP ports can be extended past 5564. However, if a site is disconnected and reconnected, without ending the conference enough times one can quickly end up outside of this range again.

Appendix 14

Declaration of Conformity

TANDBERG

EC DECLARATION OF CONFORMITY

MANUFACTURER:	TANDBERG Telecom AS
TYPE NUMBER:	TTC60-06
DESCRIPTION:	Video Conferencing Equipment
DIRECTIVES: **This equipment** **complies with.**	LVD 73/23/EEC EMC 89/336/EEC R&TTE 99/5/EEC
HARMONISED STANDARDS: **Applied in order to verify** **compliance with directives.**	EN 60950 (1999) EN 55022 : 1994, A1/A2 EN 55024 : 1998, A1/A2 EN 61000-3-2 : 2000 EN 61000-3-3 : 1995, A1 TBR3 Layer 1, 2 and 3 TBR4 Layer 1, 2 and 3

TEST REPORTS/ CERTIFICATES ISSUED BY:	Report/Certificates No.:
LVD (UL International Demko AS)	E175048-A6-CB-1
EMC (Nemko AS)	19021
R&TTE (Comlab)	03/559/3 03/559/4 03/560/3 03/560/4

TECHNICAL CONSTRUCTION FILE NO.: D13628

YEAR WHICH THE CE-MARK WAS AFFIXED: 2004

AUTHORISED REPRESENTATIVE

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7 Index

8 Glossary

#

199 AV1: External input for the TANDBERG/LOEWE monitor.

2nd monitor: The second monitor of your videoconferencing system. The second monitor is normally placed on the right side of the first monitor.

4CIF: 4 times CIF, 704x576 pixels

4SIF: 4 times SIF, 704x480 pixels

A

AACLD: Advanced Audio Coding Low Delay

Access code: Use Access code to password protect outgoing calls.

Accessories box: The cabinet contains the following: W.A.V.E. camera, table microphone, remote control and tracker and documentation.

Accessories drawer: See Accessories box

AES: Strong encryption. (Advanced Encryption Standard)

AGC: Automatic Gain Control. Maintains the audio signal level at a fixed value by attenuating strong signals and amplifying weak signals. Very weak signals, i.e. noise alone, will not be amplified.

Alert speaker: The internal speaker will warn you of an incoming call even though the monitor may not be switched on.

Audio call: Audio call equals a telephone call. You can make a call with the video system with audio only.

Audio input 4: Intended for connection to an external microphone amplifier or an external fixed mixer.

Audio input 5: Intended for connection to external playback devices (or to telephone add-on hybrids).

Audio input 6: Intended for connection to a VCR or DVD player or other external playback devices.

Audio out 1: Intended for connection to TANDBERG Natural Audio, televisions or audio amplifiers.

Audio out 2: Intended for connection to audio recording equipment (or to a telephone add-on hybrid).

Audio out 3: Intended for connection to a VCR or other recording equipment.

Auto-display snapshot: Sent and received snapshot will automatically appear on full screen display.

Auto answer: The system will automatically answer all incoming calls.

Automatic Duo Video: Duo Video Mode is put to Auto. When starting a presentation, Duo Video will start automatically (if possible).

B

Bandwidth: Decides the quality of the video call. High bandwidth gives high quality.

C

Call control Leased Line: Is a non-dialing protocol and should be used when two systems are connected in a point-to-point connection. Use Leased Line when the handshaking signals DTR and CD are available.

Call control Manual: Should be used when no handshake signals are available, and the external equipment requires a constantly connected line.

Call control RS366 Dialing: The only dialing protocol and would normally be used together with network clocking RS449/V35 Compatible when the external system uses RS2366 ports.

Call status: Comprehensive information about the call listing transmitted and received audio/video/data information.

Camera tracking: Voice Activated Camera Positioning - the camera will automatically view the current speaker.

Camera tracking mode: Voice Activated Camera Positioning - the camera will automatically view the current speaker.

Chair control: Enables one participant to control the meeting by selecting which of the conference participants that is to be broadcasted to the other participants.

Channel status: Comprehensive information about the call progress listing the numbers called, and if an error occurs a cause code is displayed.

CIF: Common Intermediate Format, 352x288 pixels

Closed Captioning: Text chat.

Codec: The Codec is the heart of the system. The main task for the Codec is the compression of outgoing video, audio and data, the transmission of this information to the far end, and the decompression of the incoming information.

Continuous Presence: See Split Screen

Control Panel: The Control Panel is found in the main menu.

CSU: Channel Service Unit

D

Daisy-chaining: Use of several cameras in a video conference.

Data mode: (Dataport) Provides a transparent data channel. The channel can be used for many different purposes, such as file transfer, application sharing and more. This mode requires a TANDBERG system at the far end.

Dataport: The system provides two standard RS 232 data ports to allow a computer to be connected for data transfer and control purposes.

Dataport 1: Supports 3 different modes: Data mode, Control mode and Modem mode.

Dataport 2: Dedicated to the main camera and will not be available in standard configuration.

DES: Encryption. (Data Encryption Standard)

DHCP: Dynamic Host Configuration Protocol.

Diagnostics: Allows testing of individual system components and displays the current system settings.

Digital ClarityTF: Participants enjoy presentations of exceptionally high quality resolution video.

Disconnect site: As a Chairman, you get the option Disconnect site. Disconnect site allows you to disconnect any participant in the conference.

Do Not Disturb: When Do Not Disturb is active the system will not accept any incoming calls. The caller will hear a busy tone when calling the unit.

Document Camera: A document camera is an additional camera that is used for showing text, diagrams as well as physical objects.

DownspeedingTF: If channels are dropped during a videoconferencing session, the connection is automatically maintained without interruption.

dual monitor: The second monitor

Dual monitor system: A videoconference system with two monitors.

Duo VideoTF: Allows participants at the far end to simultaneously watch a presenter on one screen and a live presentation on the adjoining screen.

E

E.164 Alias: The E.164 address of the system. Equivalent to a telephone number, sometimes combined with access codes. The system will not register with the gatekeeper if the E164 alias is not set.

E1: Network type, 30 channels. Default for PAL versions.

Echo canceller: Continuously adjusts itself to the audio characteristics of the room and compensates for any changes it detects in the audio environment.

Echo control: When set to On the far end is prevented to hear their own audio.

Encryption: Use encryption to make a secure call. The system will try to make point-to-point calls using encryption. If the far end system supports encryption, the call will be encrypted. If not, the call will proceed without encryption. (Auto encryption). Set encryption to On if you don't want an unencrypted call to be established at all. Set encryption to Off if you don't want to use encryption.

End view: Stop viewing the site previously chosen with View Site, and return the view to the site that is currently On Air. Can be used by all conference participants.

Ethernet Speed: The speed (Mbps) on the connection from the system to the LAN.

F

Fallback to telephony: Enables fallback from video calls to telephony/speech calls.

Far End: In a video conference, Far End means the remote side of the conference. Far End Camera is your conference partner's camera. Opposite to Near End

FECC: Far End Camera Control. When activated it is possible to control the far end's camera, select video sources, activate presets and request still images.

Floor: In a multipoint call, use Request Floor to broadcast your picture to all other participants. This is handy when you are having presentations, for teachers etc.

G

G.711: Audio algorithm for normal quality audio (telephone quality, 3.1 kHz) The system will always have G.711 enabled.

G.722: Audio algorithm for high quality audio (7 kHz).

G.722.1: Audio algorithm for compressed high quality audio (7 kHz)

G.728: Audio algorithm for compressed normal quality audio (telephone quality, 3.1 kHz)

Gateway: The gateway enables sites on IP and sites on ISDN to participate in meetings with each other.

Global Phone Book: A phone book provided by TMS.

H

H.261: Video algorithm for legacy video compression and decompression. The system will always transmit H.261

H.263: Video algorithm for normal video compression and decompression

H.264: Video algorithm for bandwidth-efficient video compression and decompression

Humfilter: A highpass filter which reduces very low frequency noise.

I

iCIF: Interlaced CIF, 352x288 pixels, 50 fields per second

Incoming call: Someone calls in to your system

Incoming MCU Calls: If occupied in a call, the system will provide a visual/audio indication of an incoming call and ask to accept or reject the call.

IP address: Defines the network address of the system. This address is only used in static mode.

IP assignment: IP-address, IP-subnet mask and Gateway are assigned by the DHCP server.

IP assignment Static: The system's IP-address and IP-subnet mask must be specified in the IP-address field.

IP Precedence: Used to define which priority the system should have in the network. Higher numbers indicate higher priority.

IP subnet mask: Defines the type of network. This address is only used in static mode.

IP TOS: IP Type Of Service. Helps a router select a router path when multiple paths are available.

iSIF: Interlaced SIF, 352x240 pixels, 60 fields per second

L

Layout: Use the Layout key to change picture layout on the screen.

M

Main Camera: Your camera. Video input 1

Max call length: This feature will automatically end both incoming and outgoing calls when the call time exceeds the length specified.

Max channels: Indicates the maximum number of channels the system is allowed to use on the E1/T1 interface.

MCU: Multipoint Conference Unit.

MCU status line: Shows indicators for MultiSite, MCU and DuoVideo

MicOff: Microphone is switched off.

Mix mode: How to adjust the weighting of each microphone to obtain the best possible audio and minimize the background noise.

Modem mode: (Dataport) Supports external control of the system via a PC as in Control Mode. Once a call is established, Dataport 1 will automatically switch to Data mode. When the call disconnects, Dataport 1 switches back to Control Mode.

MSN: Multiple Subscriber Number. Possible to attach different ISDN terminals, with different numbers, to the same physical ISDN telephone line. The service can be ordered from the telephone company.

multipoint call: A call with more than two participants including yourself

MultiSite: The TANDBERG systems internal MCU. Built-in system which makes it possible to establish meetings with up to 5 video calls and 5 telephone calls.

MultiSite cascading: By connecting up to 4 MultiSite systems together to achieve a higher number of participants in a multipoint call.

N

NAT: Network Address Translation. NAT support in the videoconferencing system enables proper exchange of audio/video data when connected to an external videoconferencing system when the IP traffic goes through a NAT router. Used in small LANs, often home offices, when a PC and a videoconferencing system is connected to a router with NAT support.

NAT Address: The external/global IP-address to the router with NAT support. Packets sent to the router will then be routed to the system's IP address.

Natural Audio ModuleTM: Designed to improve audio quality during a videoconference. It is mounted in the cabinet above the Codec and consists of an audio system optimized for speech.

Natural Presenter Package: Consists of Duo Video, Digital Clarity and PC Presenter.

Natural VideoTF: 60 fields per second true interlaced picture.

Near End: In a video conference, Near End means your own side of the conference. Near Camera is your own camera. Opposite to Far End

Network clocking: Specifies the number of physical external clock signals.

Network Interface: Indicates if the network is of type E1 or T1.

Network profiles: It is possible to define up to 6 network profiles, each consisting of name and call prefix, and 3 of them also include network selection.

Non Standard Facility: The network provider may require service selection in your ISDN configuration. Valid NSF codes are from 1 to 31. 0 will disable NSF service codes.

NR: Noise Reduction. Reduces constant background noise (e.g. noise from air-conditioning systems, cooling fans, etc.).

NSF: Non Standard Facility.

NTSC: National Television System Committee. Video standard corresponding to 4SIF. Primary used in USA, Japan and other countries.

O

Option Key: Required by the system to activate optional features such as MultiSite and Presenter.

P

PAL: Phase Alternation by Line. Video standard corresponding to 4CIF. Primary used in Europe, Middle East and Asia

Parallel dial: Channels will be dialed and connected in parallel when setting up a bonding call.

PC PresenterTF: An easily accessible PC connection plug. When connected the PC image is displayed on the monitor.

PC SoftPresenterTF: Shows PC images via the LAN connection.

PIP: Picture-In-Picture

point-to-point call: A call with two participants including your self

POP: Picture Outside Picture. POP is a picture layout mode that is optimized for wide screens: Full screen, 1+3 layout and emulated dual monitor layout.

Presentation: Presentation means to show another video source. Use the Presentation Key for a predefined presentation source. Use the presentation menu to choose among all available video sources.

Presentation source: The video source that is on display when you press the Presentation Key on the remote control

Presets: Predefined camera positions (and video sources)

Q

QCIF: Quarter CIF, 176x144 pixels

QSIF: Quarter SIF, 176x120 pixels

R

Release Floor: To end the request floor function.

release floor to site: Allows the chairman to release the floor.

Remote: Short for Remote Control

Request Floor: The MCU will broadcast the video in full screen to all other participants in the conference. If the MCU conference has a chairman, a request will be sent to the the chairman.

Restart: Restarts the system.

Restore defaults: Restores system settings to the factory defaults.

Restricted call: A call to a 56 kbps network. By default the system will dial an unrestricted call (a call to a 64 kbps network) and downspeed to 56 kbps if necessary.

S

S-VHS: S-video

S-video: The standard camera uses one of the S-video inputs in the codec.

Selfview: Outgoing video. In most cases, the image of your self.

Side-by-Side: Side-by-side view means that two pictures are displayed side by side each other on the screen. You will se two equally sized pictures.

SIF: Standard Input Format, 352x240 pixels

SNMP: Simple Network Management Protocol.

SNMP Community: SNMP Community names are used to authenticate SNMP requests. SNMP requests must have a password in order to receive a response from the SNMP agent in the system. The SNMP Community name is case sensitive.

SNMP Trap Host: Identifies the IP-address of the SNMP manager.

SNMP traps: Generated by the agent to inform the manager about important events.

SoftMux: Ensures high reliability and includes the unique Downspeeding feature. It also makes it possible to dial to another videoconferencing equipment, phones and mobile phones in a uniform way, and provides an on-screen, real-time feedback on the progress of a call.

Split Screen: All the participants in a MultiSite conference are displayed on the screen. (Former Continuous Presence)

Start Channel: Indicates the firstE1/T1 channel the system is allowed to use. The setting might be used when if the E1/T1 line is shared with other equipment.

Start up video source: The video source that is on display when the system wakes up from standby mode.

Status Format: Provides call quality feedback on the status line.

Streaming: Allows broadcasting of audio/video via an IP network.

Streaming Address: Defined as the IP-address of a streaming client, streaming server or a multicast address.

Streaming Address Port: If several codecs are streaming to the same IP-address, different ports have to be used in order for the client to know which stream to receive.

Streaming Allow remote Start: Streaming can be started from the Videoconferencing system using the remote control, by using the Dataport, or from external user interfaces like the Web-browser or Telnet session.

Streaming Announcements: The system will announce to the network that it is streaming. This enables a streaming client (e.g. a PC) to connect to the system's streaming session. Used by Cisco IP/TV.

Streaming Password: Prevents unauthorized access to the streaming functionality.

Streaming Source: Select between local video and/or far end video to be streamed. Local and far end audio is always streamed.

Streaming TTL/Router Hops: Used for streaming data to limit how many routers the data should pass before it is rejected.

Streaming Video Rate: Defines the Video streaming rate from the system.

SVGA: Super VGA. (800x600)

SXGA: Super extendted Graphics Array (1280x1024)

System information: Lists system numbers, line status, software version and other useful information.

System name: Identifies a videoconferencing system

T

T1: Network type, 24 channels. Default for NTSC versions.

T1 Line Coding: Indicates how the signals on the line should be coded. If parts of the systems use restricted coding, this should be selected.

Take chair: Request chairmanship of the conference. If no one else is chairman, the request is granted.

TCS-4: Used to address different systems on a LAN when dialing in via a gateway.

Terminal Names: Lists the site numbers or name (if supported) of other sites connected in the conference.

Terminate meeting: The chairman can terminate the conference, i.e. all participants are disconnected.

TMS: TANDBERG Management Suite

Touch Tones: To dial extension numbers ect. during a call, use touch tones in order to get tones instead of preset on the number keys.

Tracker: The tracker is a small infrared remote control device made to steer the camera to any desired location within the room.

TSC-1: TCS-1 is used for H243 password on H320 MCU's

V

VCR: Video Cassette Recorder

VGA: Video Graphics Array. (640 x 480)

VGA Out Quality: Changes the resolution of the VGA signal available in the VGA Out connector at the rear of the codec.

View administrator settings: Displays all the system settings in a read only format.

View site: View any participant in the conference other than the participant currently On Air. Can be used by all conference participants.

VNC: Virtual Network Computing.

Voice Switched: The active site will be displayed in full screen during a MultiSite conference.

W

WAVE Camera: Wide Angle View Camera - delivers the widest angle of view in the industry.

Welcome menu: The welcome menu displays the main menu when you are outside a call.

X

XGA: extendted Graphics Array (1024 x 768)