

Software version TC2.0
JULY 2009



TANDBERG Quick Set C20/C20plus

Administrator Guide

TANDBERG
See: **green** 

www.tandberg.com

What's in this guide?

The top menu bar and the entries in the Table of Contents are all hyperlinks, just click on them to go to the topic.

We recommend you visit the TANDBERG web site regularly for updated versions of this guide. Go to: <http://www.tandberg.com/docs>



Table of Contents

Introduction

- Intellectual Property Rights 5
- Trademark..... 5
- Disclaimer 5
- Patent Information..... 5
- Copyright Notice..... 5
- Safety Instructions 6
- Environmental Issues 7

Getting started

- Assemble your system..... 9
 - Power switch..... 9
 - The LED in front of the codec 9
- The physical interface of Codec C20 10
- The physical interface, pin-out shemes 11
- Using the Remote Control..... 12
- Initial configurations 14
 - Waking up the system..... 14
 - Verify IP address settings..... 14
 - If you need to set a static IP address 14
 - Adding the system to the network 15
 - Verify your settings..... 15
 - Adjusting the date and time settings..... 15
 - Setting a menu password 16
- Monitors..... 17
 - Connecting the monitor 17
 - Dual monitors..... 17

About the menus

- The Home menu 19
- The Settings menu 19
- The Advanced menu 19

The Advanced settings

- The Advanced menus 21
- How to change a value..... 21

- Description of each setting 21
- The search functionality 22
- How to change the password 23

The Advanced settings library

- Description of the Advanced configuration settings..... 25
- The Experimental menu 36

Cameras

- The PrecisionHD 1080p 4x/12x camera 38
- Video output formats 40
 - DIP switch settings for video output formats 40
 - Line voltage frequency..... 40

Appendices

- General room guidelines 42
 - The physical conditions 42
 - The room equipment..... 42
 - Environmental considerations 42
 - The audio quality..... 43
 - Natural communication 43
 - The distance between the table and the video system 44
 - The camera..... 44
 - The microphone..... 44
 - Sharing a PC presentation 45
 - Other presentation sources 45
- TANDBERG Remote Control TRC5..... 46
- Password protection 47
 - Setting the codec administrator password 47
 - Setting the menu password 47
- The web interface 48
 - Password protection of the web interface..... 48
 - The system info page..... 48
 - The Upgrade software page 49
 - The Advanced configuration page 50
 - The Advanced configuration, search functionality 51
 - The Wallpaper page..... 52
 - The Call page..... 53
 - The SSL Certificates page 54
 - The XML files page..... 55
 - The Logs page..... 56
 - The Add release key page..... 57

Supported RFCs in SIP	58
Current RFCs and drafts supported in SIP	58
Media capabilities supported in SIP	58
CE Declaration for Codec C20	59
China RoHS table	60
Dimensions Codec C20	61
PrecisionHD 1080p camera dimensions	62
Technical specifications	63

Chapter 1

Introduction

Thank you for choosing TANDBERG!
Your TANDBERG Codec C20 has been designed to give you many years of safe, reliable operation.

How to read this document

You will find that some places information has been copied from other chapters (but adapted, when needed) to let you have all the relevant information there and then. This helps eliminating the need to read through long sections before you can even think of getting started.

Our main objective with this user guide is to address your goals and needs. Please let us know how well we succeeded!

We recommend you visit the TANDBERG web site regularly for updated versions of the manual.

Go to: ► <http://www.tandberg.com/docs>



In this chapter...

Explains the menu system:

- Intellectual property rights
- Trademark
- Disclaimer
- Patent information
- Copyright notice
- Safety instructions
- Environmental issues

Intellectual Property Rights

This Administrator Guide and the Products to which it relates contain information that is proprietary to TANDBERG and its licensors. Information regarding the Products is found on the page entitled License Agreements and Patent Information.

This Administrator Guide may be reproduced in its entirety, including all copyright and intellectual property notices, in limited quantities in connection with the use of the Products. Except for the limited exception set forth in the previous sentence, no part of this Administrator Guide may be reproduced, stored in a retrieval system, or transmitted, in any form, or by any means, electronically, mechanically, by photocopying, or otherwise, without the prior written permission of TANDBERG. Requests for such permission should be addressed to tandberg@tandberg.com.

Trademark

TANDBERG® is a registered trademark belonging to Tandberg ASA. Other trademarks used in this document are the property of their respective holders.

COPYRIGHT © 2009, TANDBERG

All rights reserved.

Philip Pedersens vei 20

1366 Lysaker, Norway

Tel: +47 67 125 125 Fax: +47 67 125 234

E-mail: tandberg@tandberg.com

Disclaimer

The specifications for the Products and the information in this document are subject to change at any time, without notice, by TANDBERG.

Every effort has been made to supply complete and accurate information in this Administrator Guide, however, TANDBERG assumes no responsibility or liability for any errors or inaccuracies that may appear in this document.

INTELLECTUAL PROPERTY RIGHTS

The Products that are covered by this Administrator Guide are protected under copyright, patent, and other intellectual property rights of various jurisdictions. Any applicable software licenses and any limited warranty are located in the License Information section in this TANDBERG Codec C20 Administrator Guide.

This Product is

COPYRIGHT © 2009, TANDBERG

All rights reserved.

Patent Information

The products described in this manual are covered by one or more of the following patents:

US6,584,077	US5,838,664	US5,600,646
US5,003,532	US5,768,263	US5,991,277
US7,034,860	US7,010,119	EP01953201
US6.731.334	GB1338127	

Other patents pending.

Please view ► www.tandberg.com/tandberg_pm.jsp for an updated list

Copyright Notice

The product that is covered by this Administrator Guide is protected under copyright, patent, and other intellectual property rights of various jurisdictions. This product is Copyright © 2009, Tandberg Telecom AS. All rights reserved. This product includes copyrighted software licensed from others.

A document describing the copyright notices and the terms and conditions of use can be found at: ► <http://www.tandberg.com/docs>

Navigate to [User manuals](#) > [TANDBERG Codec C20 Copyright and License Information](#) to download the pdf.

IMPORTANT: USE OF THIS PRODUCT IS SUBJECT IN ALL CASES TO THE COPYRIGHT RIGHTS AND THE TERMS AND CONDITIONS OF USE REFERRED TO ABOVE. USE OF THIS PRODUCT CONSTITUTES AGREEMENT TO SUCH TERMS AND CONDITIONS.

Safety Instructions

For your protection please read these safety instructions completely before you connect the equipment to the power source. Carefully observe all warnings, precautions and instructions both on the apparatus and in these operating instructions.

Retain this manual for future reference.

Water and Moisture

Do not operate the apparatus under or near water – for example near a bathtub, kitchen sink, or laundry tub, in a wet basement, near a swimming pool or in other areas with high humidity.

- Never install jacks for communication cables in wet locations unless the jack is specifically designed for wet locations.
- Do not touch the product with wet hands.

Cleaning

Unplug the apparatus from communication lines, mains power-outlet or any power source 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. 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.

Do not place the product in direct sunlight or close to a surface directly heated by the sun.

Lightning

Never use this apparatus, or connect/disconnect communication cables or power cables during lightning storms.

Dust

Do not operate the apparatus in areas with high concentration of dust.

Vibration

Do not operate the apparatus in areas with vibration or place it on an unstable surface.

Power Connection and Hazardous Voltage

The product may have hazardous voltage inside.

- Never attempt to open this product, or any peripherals connected to the product, where this action requires a tool.
- This product should always be powered from an earthed power outlet.
- Never connect attached power supply cord to other products.
- In case any parts of the product has visual damage never attempt to connect main power, or any other power source, before consulting service personnel
- The plug connecting the power cord to the product/power supply serves as the main disconnect device for this equipment. The power cord must always be easily accessible.
- Route the power cord so as to avoid it being walked on or pinched by items placed upon or against it. Pay particular attention to the plugs, receptacles and the point where the cord exits from the apparatus.
- Do not tug the power cord.
- If the provided plug does not fit into your outlet, consult an electrician.
- Never install cables, or any peripherals, without first unplugging the device from its power source.
- Always use the power supply (AC–DC adapter) provided with this product.
- Replace only with power supply (AC–DC adapter) specified by TANDBERG.
- Never connect attached power supply (AC–DC adapter) to other products.

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.
- Unplug the apparatus from its power source

and refer servicing to qualified personnel under the following conditions:

- If the power cord or plug is damaged or frayed.
- If liquid has been spilled into the apparatus.
- If 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.
- If the cabinet has been damaged.
- If the apparatus seems to be overheated.
- If the apparatus emits smoke or abnormal odor.
- If the apparatus fails to operate in accordance with the operating instructions.

Accessories

Use only accessories specified by the manufacturer, or sold with the apparatus.

Communication Lines

Do not use communication equipment to report a gas leak in the vicinity of the leak.

FCC rules 15B, acc. to Class A limits

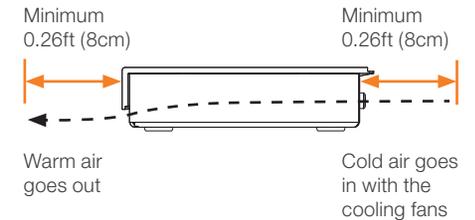
Class A digital device, pursuant to part 15 of the FCC Rules (For the US only)

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

IMPORTANT!

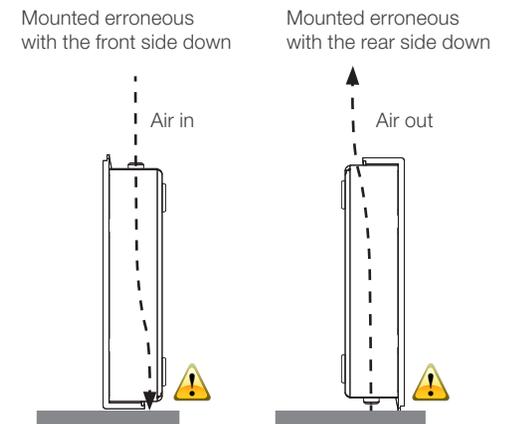
Do not cover up the openings for ventilation in the front and rear side of the codec. Cold air goes in with the cooling fans at the rear side and warm air is blown out at the front side.

There should always be a distance of minimum 0.26 ft (8 cm) free space in both the front side and the rear side of the Codec C20.



WARNING!

If the Codec C20 is mounted with the front side or rear side down, make sure there is sufficient free space to allow for ventilation.



NOTE! This will not allow for enough ventilation through the codec.

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).

TANDBERG's Environmental Policy

Environmental stewardship is important to TANDBERG's culture. As a global company with strong corporate values, TANDBERG is committed to following international environmental legislation and designing technologies that help companies, individuals and communities creatively address environmental challenges.

TANDBERG's environmental objectives are to:

- Develop products that reduce energy consumption, CO2 emissions, and traffic congestion
- Provide products and services that improve quality of life for our customers
- Produce products that can be recycled or disposed of safely at the end of product life
- Comply with all relevant environmental legislation.

Digital User Guides

TANDBERG is pleased to announce that we have replaced the printed versions of our user guides with digital versions available on the TANDBERG web site: ► <http://www.tandberg.com/docs>. The environmental benefits of this are significant. The user guides can still be printed locally, whenever needed.

European Environmental Directives

As a manufacturer of electrical and electronic equipment TANDBERG is responsible for compliance with the requirements in the European Directives 2002/96/EC (WEEE - Waste Electrical and Electronic Equipment) and 2002/95/EC (RoHS).

The primary aim of the WEEE Directive and RoHS Directive is to reduce the impact of disposal of electrical and electronic equipment at end-of-life. The WEEE Directive aims to reduce the amount of waste electrical and electronic equipment sent for disposal to landfill or incineration by requiring producers to arrange for collection and recycling. The RoHS Directive bans the use of certain heavy metals and brominated flame retardants to reduce the environmental impact of WEEE which is in landfill or incinerated.

TANDBERG has implemented necessary process changes to comply with the European WEEE Directive (2002/96/EC) and the European RoHS Directive (2002/95/EC).

Waste Handling

In order to avoid the dissemination of hazardous substances in our environment and to diminish the pressure on natural resources, we encourage you to use the appropriate recycling systems in your area. Those systems will reuse or recycle most of the materials of your end of life equipment in a sound way.



TANDBERG products put on the market after August 2005 are marked with a crossed-out wheelee bin symbol that invites you to use those take-back systems.

Please contact your local supplier, the regional waste administration or visit our web page ► <http://www.tandberg.com/recycling> if you need more information on the collection and recycling system in your area.

Information for Recyclers

As part of compliance with the European WEEE Directive, TANDBERG provides recycling information on request for all types of new equipment put on the market in Europe after August 13th 2005.

Please contact TANDBERG and provide the following details for the product for which you would like to receive recycling information:

- Model number of TANDBERG product
- Your company's name
- Contact name
- Address
- Telephone number
- E-mail.

Chapter 2

Getting started

This chapter introduces you to the codec, the remote control and the initial configurations to get you up and going.

This guide has been divided into several chapters, all of which provide different information. You can access the chapters directly by clicking on the menu bar at the top of this page.



In this chapter...

Explains the menu system:

- ▶ Assemble the system
- ▶ The physical interface
- ▶ Using the remote control
- ▶ Initial configurations
- ▶ Waking up the system
- ▶ The IP address settings
- ▶ Static IP address settings
- ▶ Add the system to the network
- ▶ Verify your settings
- ▶ Adjust the time and date settings
- ▶ Setting a menu password
- ▶ Connecting the monitor
- ▶ About monitors

Assemble your system

The illustration shows you the basic setup when connecting the monitor, PC, camera, microphone, loudspeakers (if applicable), LAN and line voltage to the TANDBERG Codec C20.

CAUTION! In order to be able to use the system for video calls, all orange colored sockets must be connected.

Power switch

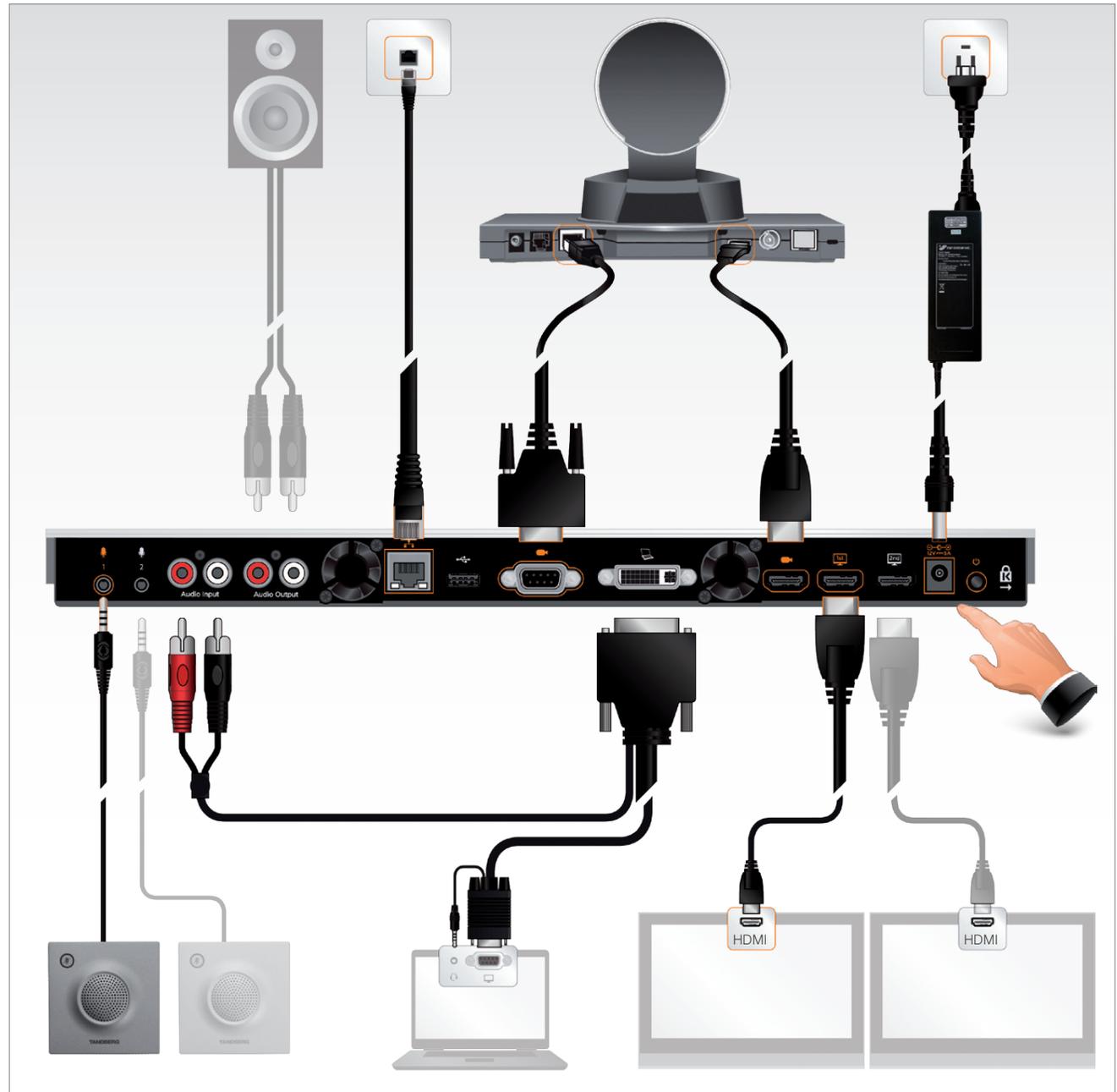
The power switch (push button) is located on the rear side.

- Push the button to boot up the codec.
- Push and **hold** the button for **1 second** to shut down the codec.
- Push and **hold** the button for **7 seconds** to force a shut down of the codec.

The LED in front of the codec

The LED in front of the codec indicates the status of the codec.

- When the LED is **OFF** the codec is Off.
- The LED **flashes green** during the boot up and shut down of the codec.
- The LED **pulses green** when the infrared (IR) port is activated. This will occur when the remote control is in use.
- The LED is **steady green** when the codec is On, in Standby mode or in Presentation mode.
- When the LED is **red** this indicates an Error has occurred.



The codec must be switched off and disconnected from the line voltage whenever connecting or disconnecting other equipment.

The physical interface of Codec C20

The TANDBERG Quick Set C20 delivers the absolute quality of 1080p video in a simple-to-deploy, easy-to-manage and easy-to-use system. The illustration below shows the rear panel of the TANDBERG Codec C20.

The main connectors are highlighted in orange.



Microphone 1–2

Mini-Jack 3.5mm, 4-pole connector. Connect the microphone to Mic 1, which is the main connector.

Audio input

RCA sockets, muxed to mono. Used when connecting to PC and external playback devices, such as VCR's or DVD players.

Audio output

RCA sockets, mono. Used when connecting to a local loudspeaker system.

Network connector

Ethernet interface, 1 x 10Mb/100Mb/1Gigabit Ethernet LAN (RJ-45 Jack) interface.

USB

USB device, for future use.

Camera Control port

Camera Control (RS-232) port for power and camera control (pan, tilt, zoom) using the VISCA™* protocol. The Pin No. 4 on the Camera Control port provides 12 V DC / 1 A to the main camera.

DVI-I input for PC

DVI-I socket, digital/analog video input for PC presentations.

- DVI-D
- DVI-A (Analog RGB / VGA)
- DVI-A Analog component/YPbPr

HDMI input for camera

HDMI socket, digital video input for camera.

HDMI output for the main monitor

HDMI socket, digital video and audio output for the main monitor.

HDMI output for the second monitor

HDMI socket, digital video output for the second monitor.

Power socket

The power socket accepts +12V / 5A (max) from the external adapter.

The external adapter accepts 100/240V 50/60Hz and the maximal load is 75W.

Power switch

Power switch to turn the power on/off. Press and hold for 1 second to shut down the system. Press and hold for 7 seconds to force a shut down of the system.

Kensington lock

The Kensington lock may be used to prevent the codec to be moved from its place or to prevent theft.

*VISCA™ is a trademark of Sony Corporation

The physical interface, pin-out schemes

This page gives an overview of the pin-out schemes.

HDMI pin-out
External view of socket

DVI-I pin-out
External view of socket

RS232 9 pin D-SUB pin-out
External view of socket

Microphone, 3.5 mm Mini-Jack, 4 pole

RCA pin-out
External view of socket

RJ-45 Connector pin-out

Wiring diagram standard cable

- 1 1
- 2 2
- 3 3
- 6 6

HDMI Pin-out			
Pin	Assignment	Pin	Assignment
1	T.M.D.S. Data 2+	11	T.M.D.S. Clock Shield
2	T.M.D.S. Data 2 Shield	12	T.M.D.S. Clock-
3	T.M.D.S. Data 2-	13	CEC
4	T.M.D.S. Data 1	14	Reserved (N.C. on device)
5	T.M.D.S. Data 1 Shield	15	SCL
6	T.M.D.S. Data 1-	16	SDA
7	T.M.D.S. Data 0	17	DDC/CEC Ground
8	T.M.D.S. Data 0 Shield	18	+5 V Power (max 50 mA)
9	T.M.D.S. Data 0-	19	Hot Plug Detect
10	T.M.D.S. Clock+		

	Audio connectors		
	Jack Mic input	RCA line input	RCA line output
Connector pin out	Tip = Hot Ring 1 = Cold Ring 2 = Mic. control Shield = GND	Pin = Signal Shield = GND	Pin = Signal Shield = GND
Signal type	Balanced	Unbalanced	Unbalanced
Connector (codec)	Mini Jack 3.5mm	Female RCA/phono	Female RCA/phono
Input impedance	1.5k Ohm/leg	18k Ohm	
Output impedance			100 Ohm
Maximum input level	-18.3dBu +/-2dB	9.0dBu +/-2dB	
Maximum output level			8.2dBu +/-2dB
Phantom power	12V +/-1V		
Phantom power resistor pin "tip"	1.7k Ohm		
Phantom power resistor pin "ring 1"	1.7k Ohm		
Frequency response	20Hz-20kHz +/-1dB	20Hz-20kHz +/-1dB	20Hz-20kHz +/-1dB
Signal to Noise Ratio	-85dB	-95dB	-95dB

Pin-out—VISCA™ camera control
RJ11, 8 pins shielded modular jack

Pin	Signal name
8	+12V (presence 2.8mA current source when connected in daisy chain)
7	GND
6	TXD (out)
5	NC (no connect)
4	NC (no connect)
3	RXD (in)
2	GND
1	+12V

Pin-out—TANDBERG camera cable

Signal name	RJ-45 pin		D-SUB pin
+12V DC	1	Twisted pair	4
GND	2		5
RX	3	Twisted pair	2
TX	6		3
NC	4	Twisted pair	1
NC	5		6
GND	7	Twisted pair	5
+12V DC	8		4

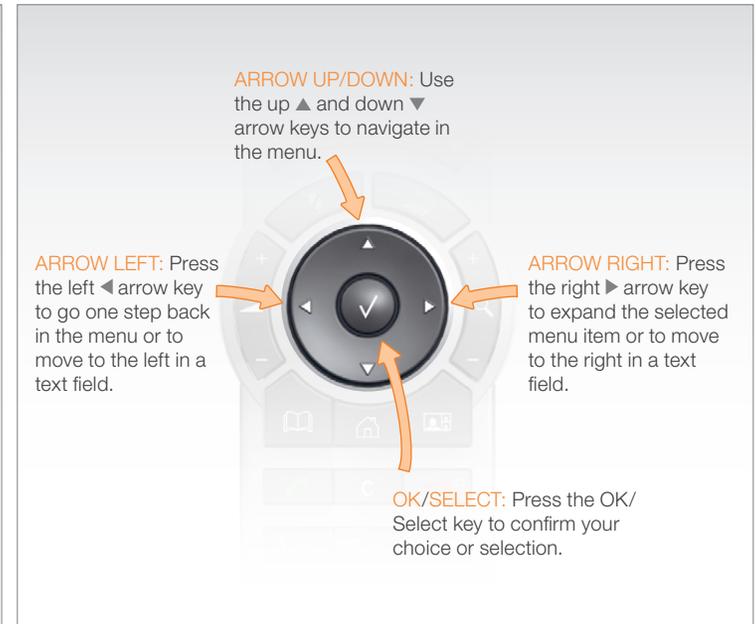
Using the Remote Control



The functions keys in the upper part of the remote control reflects the soft keys on screen.

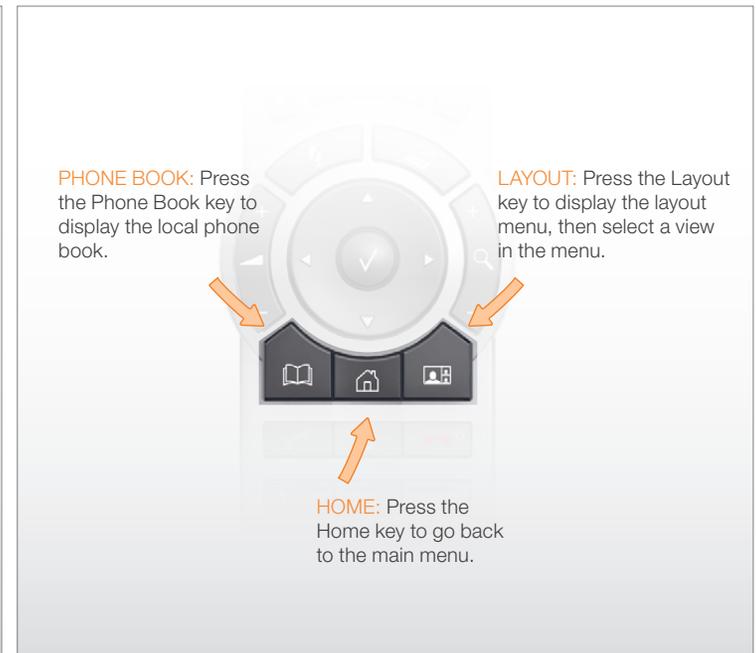
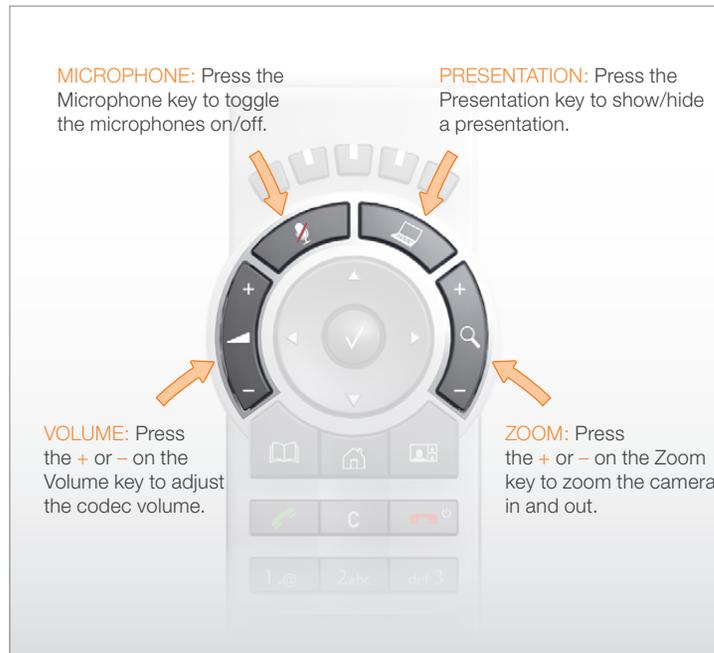
... and the middle part of the remote control is used to handle the video part of the call.

... while the lower part of the remote control resembles very much the keypad of a mobile phone



Batteries

Make sure the remote control has working batteries (4 x AAA batteries).



Using the Remote Control, *cont...*



The functions keys in the upper part of the remote control reflects the soft keys on screen.

... and the middle part of the remote control is used to handle the video part of the call.

... while the lower part of the remote control resembles very much the keypad of a mobile phone

CALL KEY

INITIATE CALL: Select a name from the Phone book or enter the name, number or URI and press the Call key to initiate the call.

SHORTCUT TO RECENT CALLS: Use the Call button as a shortcut to Recent Calls when the Call menu is not visible.



END CALL, STANDBY: Press the End Call key to end a call, or when idle, press and hold the key to go into standby mode.

CLEAR: Press the Cancel key to remove characters in a text field.

ALPHANUMERIC KEYPAD

Use the keypad in the same way as you would use a cellular phone.



0-9, a-z, period (.), @, space, *: Press a key repeatedly to toggle between the options displayed on each key.

abc/123 #: Press the # key to toggle between lower case characters and numbers.

Waking up the system

Press any key on the remote control to wake up the system.

Press the **HOME** key to show the menu on screen



Touch the rubber line sensors along the sides to wake up the system

IR sensor range (DIP switch setting)

The IR sensor has a short and long range. Open the battery cover and remove the batteries to set the DIP switch.

- Short range (1 m): Move the DIP switch down
- Long range: Move the DIP switch up.

The DIP switch



Initial configurations

Before you can start making calls with the system you will need to set the IP address, add the system to the network and check if the date and time settings needs to be adjusted. When starting up the system the first time the menu password is not set. But, when done it is recommended to set a menu password to get access to the Advanced configuration menu.

1 Waking up the system

If no menu on screen, press **Home** (🏠) on the remote control to show the menu on screen.

If the system does not show any menu on screen:

1. Make sure the monitor has been turned on
2. Make sure the remote control has the batteries installed
3. Make sure the codec has been turned on
4. If the system has just been turned on, wait a few minutes to allow the system to startup

2 Verify IP address settings

How to go to the System Information page to verify the IP address:

1. Navigate to **Settings > System Information** to open the System information page.
2. When the IP address is automatically assigned from a DHCP server, the network IP address of the codec is shown on the System Information page.
3. Press **Home** (🏠) to exit.

Password protection of the Advanced menu

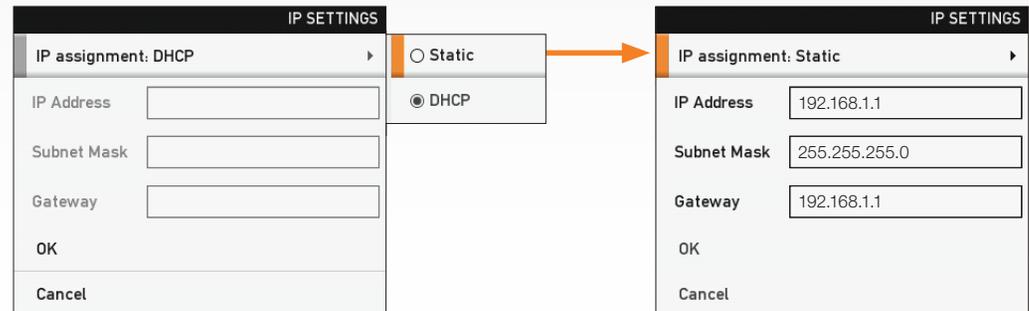
If a menu password has been set you will be asked to enter a password to get access to the Advanced menu. By default, the menu password is not set when starting up the system for the first time.

After having finished the initial configurations it is recommended to define an menu password.

3 If you need to set a static IP address

How to set the static IP address:

1. Navigate to **Settings > Advanced > IP settings**.
2. Set **IP Assignment** to **Static**. Press **OK** (✓) to save the change.
3. Enter the **IP Address**, **Subnet Mask** and **Gateway address** in the address fields. The sequence is shown below.
4. Navigate to **OK** to save the changes, or **Cancel** to leave without saving.
5. Press **Home** (🏠) to exit.



4 Adding the system to the network

Your service provider should have provided you with the information you need to get online.

- For H.323 type of communication, this will include such things as system name, H.323 alias, gatekeeper address, etc.
- For SIP type of communication, similar type of information will be supplied.
- For networks administrated through TMS (TANDBERG Management Suite), your TMS administrator will be able to assist you when configuring.

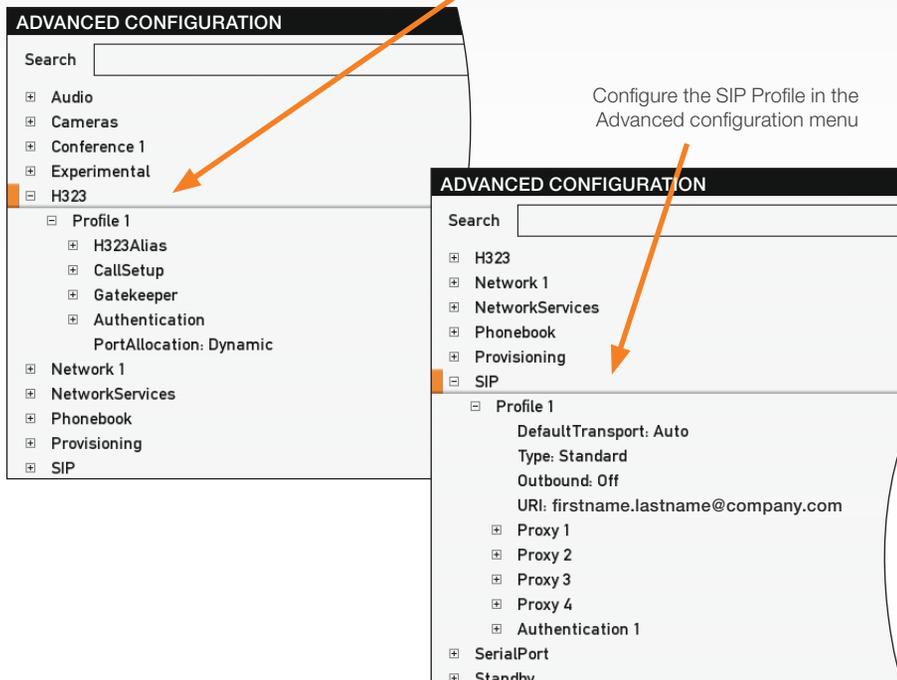
The H.323 and SIP profiles are configured from the Advanced configurations menu:

Navigate to **Settings > Advanced > Advanced configuration** and make a search for H323 or SIP, or select **H323 > Profile 1** or **SIP > Profile 1** from the menu

- Expand the items in need of modification and enter the information supplied by your service provider.

Configure the H.323 Profile in the Advanced configuration menu

Configure the SIP Profile in the Advanced configuration menu



5 Verify your settings

We strongly recommend that you verify the settings by inspecting the System Information list.

You do this by accessing the System Information in the same way as you did when you verified you IP address setting.

1. Navigate to **Settings > System Information**
2. Verify the previous configurations.
 - If you successfully registered to a Gatekeeper the **Status** will show **Registered**. If the registration failed the **Status** will show **Not registered**.
 - If you successfully registered to a SIP server the **Status** will show **Registered**. If the registration failed the **Status** will show **Not registered**.
3. Press **Home** (🏠) to exit.

6 Adjusting the date and time settings

Verify the date and time to see if the date and time settings need to be adjusted. The date and time is located in the upper right corner on screen.

How to adjust the date and time settings:

1. Navigate to **Settings > Date and time**
2. When **Set date and time** is set to **Auto** there will be an automatic update of the date and time settings. If you want to manually adjust the date and time settings, select **Manual** and enter the **Day, Month, Year** and **Time**. After having adjusted the settings manually you can set the **Set date and time** back to **Auto** for automatic update.
3. Select the appropriate **Time zone** from the list of GMT time zones.
4. Select the appropriate **Date format** from the list.
5. Select the appropriate **Time format** from the list.
6. Press **Home** (🏠) to exit.

7

Setting a menu password

It is highly recommended to define a password to access the Advanced menus. Changing these settings may affect the behavior of the system and should be done by the system administrator.

NOTE! When you define or change a password make sure you save a copy of the password in a safe place.

How to set the menu password

Navigate to **Settings > Advanced > Change password**

1. On the remote control, press the # key to toggle between lower or upper case characters and numbers: abc/ABC/123
2. Enter the password. The password you enter is hidden, as each character is replaced with a star (*).
3. Navigate to **Save** to save the changes, or **Cancel** to leave without saving.
4. Press **Home** () to exit.

Monitors

Connecting the monitor

The monitor can be connected to video output HDMI 1 (default) or HDMI 2*.

The default resolution for HDMI is 1280x720@60Hz.

Connecting to HDMI 1

When connecting the monitor to HDMI 1, which is the default video output on Codec C20, the menu, icons and other information on screen (OSD - on screen display) will be displayed on this monitor.

Connecting to HDMI 2*

When connecting the monitor to HDMI 2* output on Codec C20 the OSD is not displayed on screen. The OSD can be moved to this output.

NOTE! There is no audio on HDMI 2.

Key sequence for moving the OSD

If you have moved the monitor from one HDMI output to the other, and the menu and other information does not show on screen, you must move the OSD to the output in use.

Check which connector the monitor is connected to, and run the following key sequence on the remote control.

- Disconnect * # * # 0 x # (where x is output 2)

Example 1: Set HDMI 1 as the OSD output:

⏏ - * - # - * - # - 0 - 1 - #

Example 2: Set HDMI 2 as the OSD output:

⏏ - * - # - * - # - 0 - 2 - #

* Use of HDMI 2 requires the Dual Display option.

The video outputs at Codec C20



HDMI 1
(the default connector
for the main monitor)

HDMI 2*

Dual monitors

NOTE! Requires the Dual Display option.

When running a dual monitor setup, connect the main monitor to video output HDMI 1 and the second monitor to video output HDMI 2 on Codec C20.

Dual monitor configuration

Go to the Advanced configuration menu to set the monitor to dual:

1. Navigate to **Settings > Advanced > Advanced configuration > Video > Monitors**
2. Set the **Monitors** to **Dual**.
3. Press **Home** (🏠) to exit.

Chapter 3

About the menus

In this chapter...

Explains the menu system:

- ▶ The Home menu
- ▶ The Setting menu
- ▶ The Advanced menu



About the menus

The menu path to the Advanced configuration menu:

1. The **Home** menu
2. The **Settings** menu
3. The **Advanced** menu
4. The **Advanced configuration** menu

The user documentation structure

- The **Administrator Guide** explains all settings found in the **Advanced** and **Advanced configuration** menus.
- The **User Guide** explains how to make use of the video system, which includes making calls and explaining about the settings found in the **Home** menu, **Settings** menu and the **Programmable softbuttons** from the **Advanced** menu.

Navigating in the menus

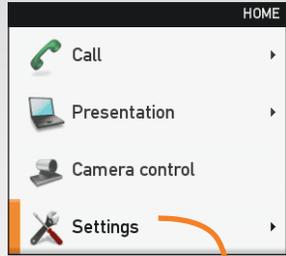
Use the remote control to navigate in the menus:

- Use the arrows down/up to select a menu item
- Use the arrow right to expand the selection
- Use the arrow left to go one step back

Changing a value

- Select a value from a drop down list and press the OK button to save, or press the left arrow to leave without saving.
- Enter a value/text in a value/text field. Press Save to save the change or Cancel to leave without saving.

Download the **TANDBERG Quick Set C20/C20plus User Guide** from the web site.
Go to: ► <http://www.tandberg.com/docs>



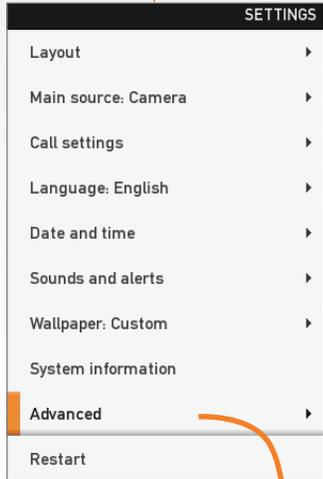
HOME

- Call
- Presentation
- Camera control
- Settings

The Home menu

The **Home** menu is explained in the **TANDBERG Quick Set C20/C20plus User Guide**.

- **Call**: Menu for making calls.
- **Presentation**: Select a presentation source.
- **Camera control**: Control the camera settings.
- **Settings**: Configure the system.



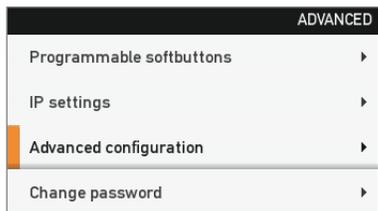
SETTINGS

- Layout
- Main source: Camera
- Call settings
- Language: English
- Date and time
- Sounds and alerts
- Wallpaper: Custom
- System information
- Advanced
- Restart

The Settings menu

The **Settings** menu is explained in the **TANDBERG Quick Set C20/C20plus User Guide**.

- **Layout**: Select screen layout, including selfview.
- **Main source**: Select the main video source.
- **Call settings**: Configure the default bit rate and auto answer settings.
- **Language**: Select the preferred menu language.
- **Date and time**: Configure date and time settings.
- **Sounds and alerts**: Select a ring tone, the ring tone volume and key tone.
- **Wallpaper**: Select the background picture on screen
- **System Information**: See an overview of the system configurations
- **Advanced**: Configure the advanced settings.
- **Restart**: Select this option to restart the system.



ADVANCED

- Programmable softbuttons
- IP settings
- Advanced configuration
- Change password

The Advanced menu

NOTE! The Advanced menu can be password protected.

- **Programmable softbuttons**: User defined soft-buttons for selecting main video source, camera presets or speed dial.
- **IP settings**: Lets you configure the IP settings.
- **Advanced configuration**: Lets you configure the system settings.
- **Change password**: Lets you change the menu password.

Chapter 4

The Advanced settings



In this chapter...

Explains the menu system:

- ▶ The Advanced menus
- ▶ Password protection of the Advanced menu
- ▶ How to change a value
- ▶ Description of each setting
- ▶ The search functionality
- ▶ How to change the password

The Advanced menus

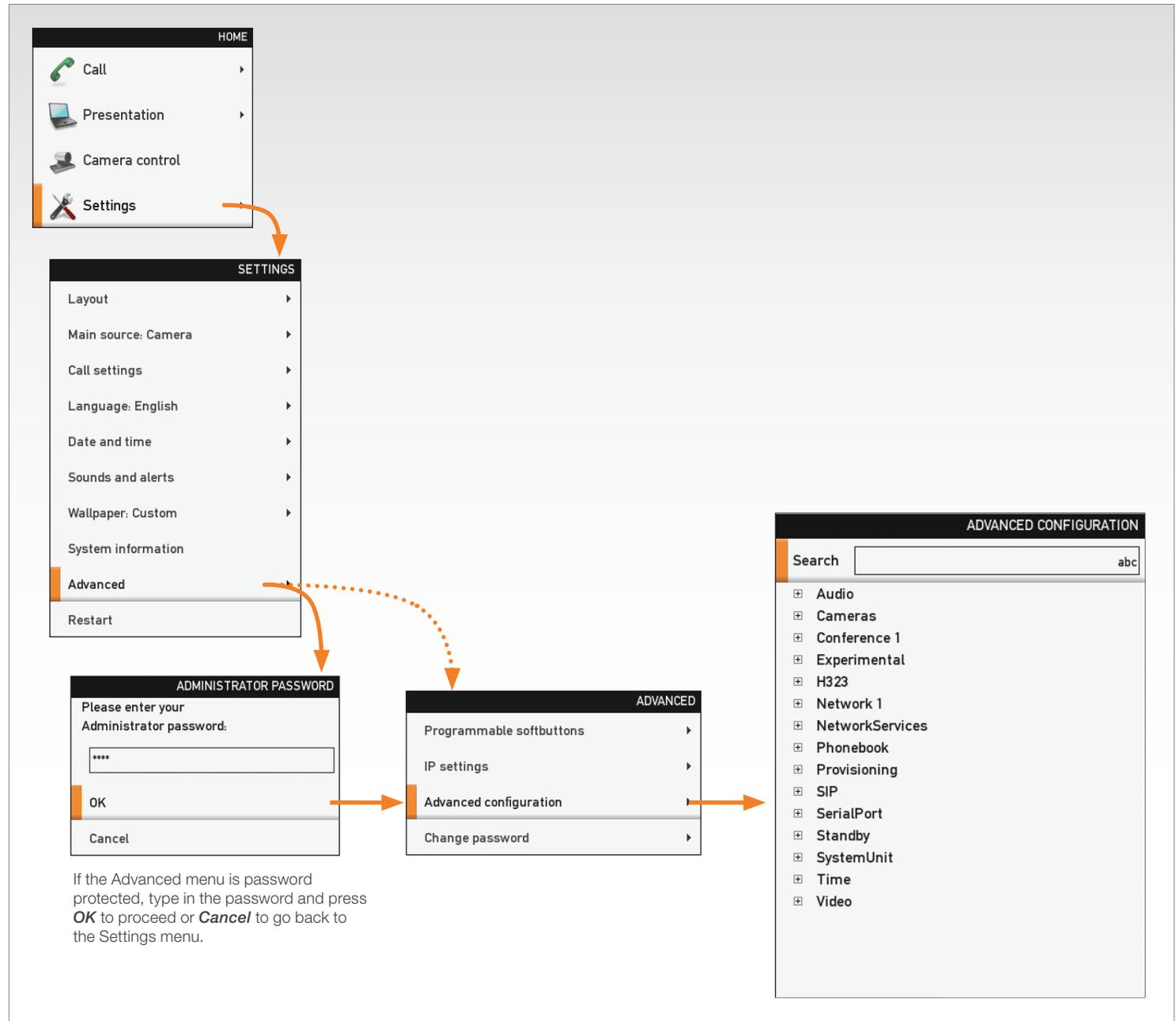
Changes in the Advanced menu settings may affect the behavior of the system and should be configured by the system administrator.

How to change a value

- Select a value from a drop down list and press the OK button to save, or press the left arrow to leave without saving.
- Enter a value/text in a value/text field. Press Save to save the change or Cancel to leave without saving.

Description of each setting

Each of the settings in the Advanced configuration menu is explained in the Settings library section. Press the **Settings library** in the menu on top of the page to go to this section.



The Advanced configuration menu

The Advanced configuration menu contains all the system settings, included the IP settings which also are available in the Advanced menu.

The search functionality

On the remote control, press the # key to toggle between lower or upper case characters and numbers: abc/ABC/123

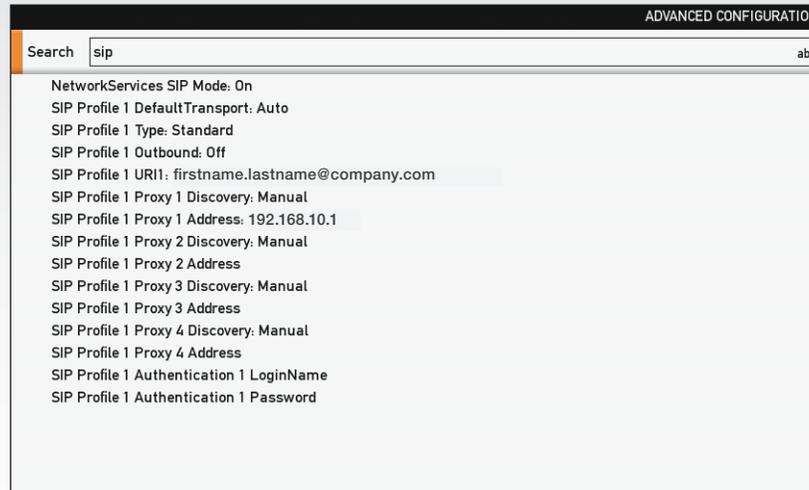
When searching for words like "H323", "SIP" or "key", all settings with these characters in the name will be listed.

- **Search:** Enter the as many characters as needed until the setting you are searching for displays in the list.
- **Refine the search:** Add or remove characters until you get the desired result.
- **Clear:** Remove all characters to return to the main view.

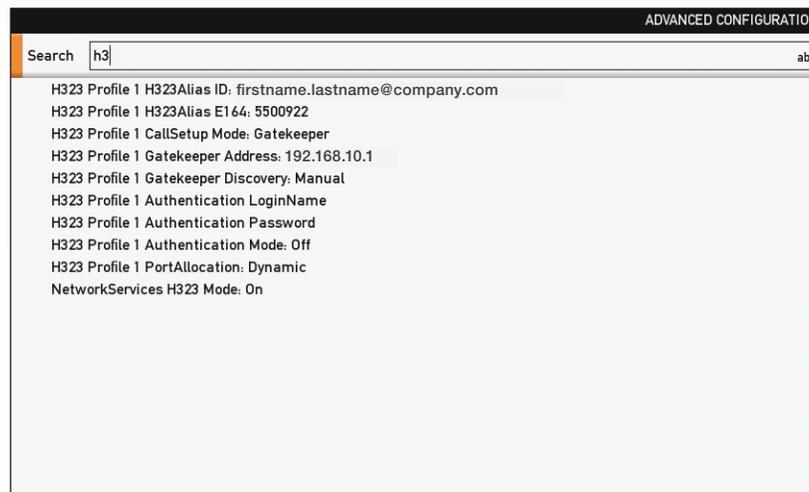
Search

Enter the as many characters as needed, until the setting you are searching for displays in the list.

Example 1: Search for "sip" to see all the SIP settings.



Example 2: Search for H323. In this case it is sufficient to enter "h3" to display all the H323 settings.



The Advanced menu

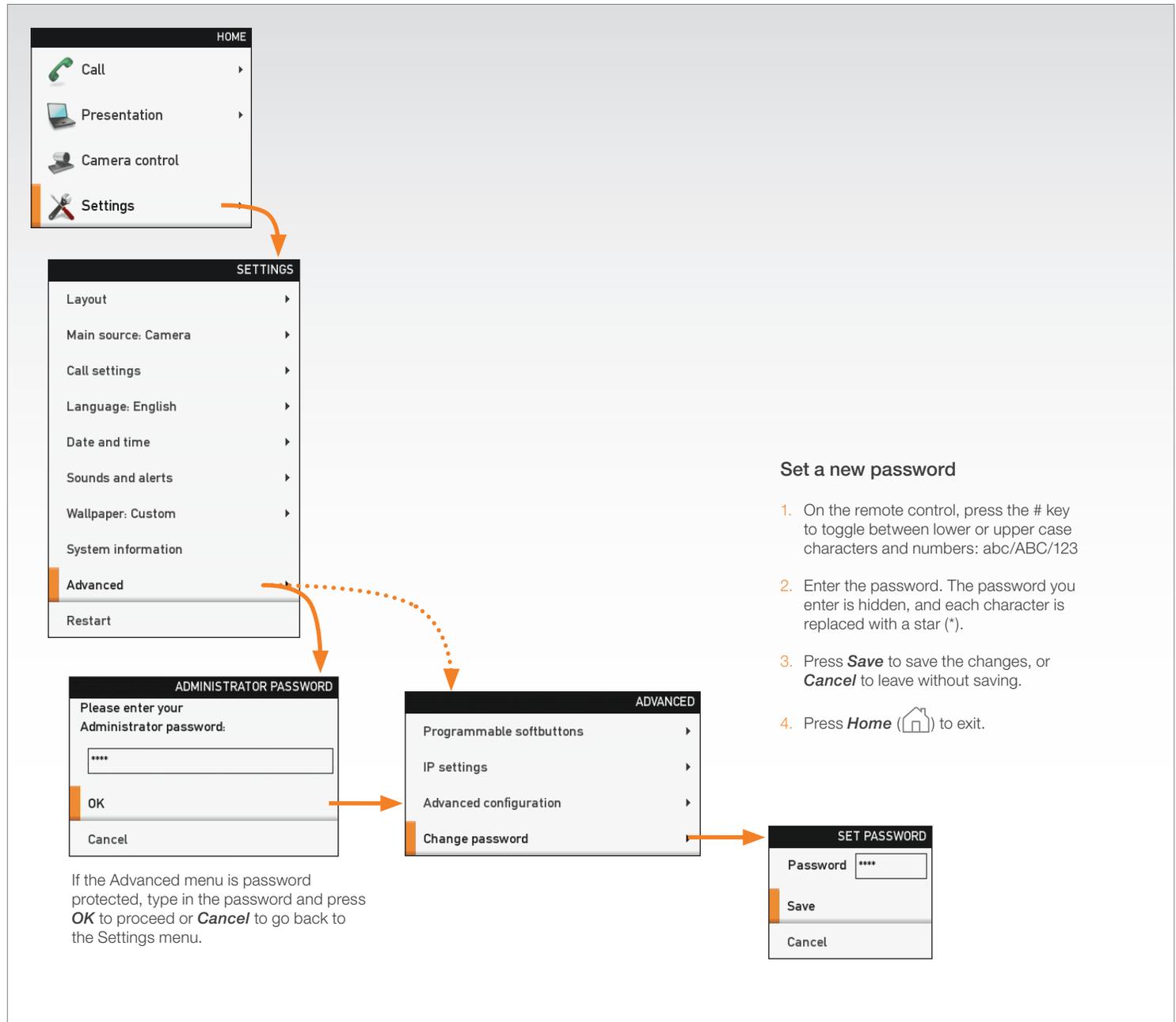
How to change the password

If a menu password has been set you will be asked to enter a password to get access to the Advanced menu.

When turning on the codec for the first time, the password is not set.



When you define or change a password make sure you save a copy of the password in a safe place.



If the Advanced menu is password protected, type in the password and press **OK** to proceed or **Cancel** to go back to the Settings menu.

Set a new password

1. On the remote control, press the # key to toggle between lower or upper case characters and numbers: abc/ABC/123
2. Enter the password. The password you enter is hidden, and each character is replaced with a star (*).
3. Press **Save** to save the changes, or **Cancel** to leave without saving.
4. Press **Home** (house icon) to exit.

Chapter 5

The Advanced settings library

This chapter gives a detailed description of each setting in the Advanced configuration menu.

The Advanced configuration defines the system settings and are structured in a hierarchy, making up a database of system settings.

Stay up to date

We recommend you visit the TANDBERG web site regularly for an updated version of this guide.

Go to: <http://www.tandberg.com/docs>



In this chapter...

- ▶ The Audio settings
- ▶ The Camera settings
- ▶ The Conference settings
- ▶ The H323 profile settings
- ▶ The Network settings
- ▶ The Network Services
- ▶ The Phonebook Server
- ▶ The Provisioning settings
- ▶ The Serial port settings
- ▶ The SIP profile settings
- ▶ The Standby settings
- ▶ The System unit settings
- ▶ The Time settings
- ▶ The Video settings
- ▶ Experimental settings

Description of the Advanced configuration settings

In the following pages you will find a list of the Advanced configuration settings, sorted in alphabetical order. The examples shows either the default value or an example of a value.

All specifications are subject to change without notice.

We recommend you visit the TANDBERG web site regularly for an updated version of this guide.

Go to: ► <http://www.tandberg.com/docs>

xConfiguration Audio SoundsAndAlerts KeyTones Mode: <On/Off>

Determines whether or not the system should produce a sound every time a key on the remote control is pressed.

On: There will be a sound indicator when pressing keys on the remote control.

Off: The remote control Key Tones is switched off.

Example: xConfiguration Audio SoundsAndAlerts KeyTones Mode: Off

xConfiguration Audio SoundsAndAlerts RingVolume: <0..100>

Sets the ring tone volume[0-100] for an incoming call in steps of 0.5dB from -34.5dB to 15dB. Volume 0 = Off.

Example: xConfiguration Audio SoundsAndAlerts RingVolume: 50

xConfiguration Audio SoundsAndAlerts RingTone: <Marbles/IceCrystals/Polaris/Alert/Discrete/Fantasy/Jazz/Nordic/Echo/Rhythmic>

Defines the ringtone for incoming calls.

Range: Select a tone from the list of ringtones.

Example: xConfiguration Audio SoundsAndAlerts RingTone: Jazz

xConfiguration Audio Volume: <0..100>

Sets the volume level [0-100] on the loudspeaker output in steps of 0.5dB from -34.5dB to 15dB. Volume 0 = Off.

Example: xConfiguration Audio Volume: 70

xConfiguration Cameras Camera [1..1] Backlight: <On/Off>

Backlight compensates for lights shining directly at the camera (usually sun from the window) to avoid a too dark image.

On: Turn backlight compensation on.

Off: Turn backlight compensation off.

Example: xConfiguration Cameras Camera 1 Backlight: Off

xConfiguration Cameras Camera [1..1] Brightness Mode: <Auto/Manual>

The camera can adjust the brightness of image automatically, or it can be set manually using the Brightness Level configuration.

Auto: The camera automatically adjusts brightness level.

Manual: Set brightness level manually with the Brightness Level configuration.

Example: xConfiguration Cameras Camera 1 Brightness Mode: Auto

xConfiguration Cameras Camera [1..1] Brightness Level: <1..31>

Set a Brightness Level for the camera. Requires the Brightness Mode to be set to manual.

Range: 1-31

Example: xConfiguration Cameras Camera 1 Brightness Level: 1

xConfiguration Cameras Camera [1..1] Flip: <On/Off/Auto>

Controls vertical orientation of the camera image.

On: When set to On the video on screen is flipped.

Off: Set to Off to display the video on screen the normal way.

Auto: Automatically flips the image if the camera is mounted upside down.

Example: xConfiguration Cameras Camera 1 Flip: Off

xConfiguration Cameras Camera [1..1] Focus Mode: <Auto/Manual>

The camera can adjust focus automatically, or it can be set manually.

Auto: When moving the camera, autofocus is triggered for the new camera position. After a few seconds it is turned off to prevent continuous focus adjustments.

Manual: Manual adjustment of focus.

Example: xConfiguration Cameras Camera 1 Focus Mode: Auto

xConfiguration Cameras Camera [1..1] Gamma Mode: <Auto/Manual>

Gamma correction mode control. Gamma describes the nonlinear relationship between image pixels and monitor brightness.

Auto: The camera decides which gamma table to use.

Manual: Can be used in severe light conditions. Select gamma table by setting the Gamma Level configuration.

Example: xConfiguration Cameras Camera 1 Gamma Mode: Auto

xConfiguration Cameras Camera [1..1] Gamma Level: <0..7>

Select gamma correction table. Useful in difficult lighting conditions where the brightness configuration does not provide satisfactory results. Requires the Gamma Mode to be set to Manual.

Range: 0-7

Example: xConfiguration Cameras Camera 1 Gamma Level: 0

xConfiguration Cameras Camera [1..1] IrSensor: <On/Off>

Controls the IR sensor on the front of the camera.

On: Enable the IR sensor on the camera.

Off: Disable the IR sensor on the camera.

Example: xConfiguration Cameras Camera 1 IrSensor: On

xConfiguration Cameras Camera [1..1] Mirror: <On/Off/Auto>

Controls horizontal orientation of the camera image.

On: Mirror the image from the camera. Selfview will now be like looking in the mirror.

Off: Normal mode.

Auto: Mirror the image if the camera is mounted upside down.

Example: xConfiguration Cameras Camera 1 Mirror: Off

xConfiguration Cameras Camera [1..1] Whitebalance Mode: <Auto/Manual>

The camera can adjust whitebalance automatically, or it can be set manually using the Whitebalance Level configuration.

Auto: The camera continuously adjusts the whitebalance.

Manual: Use the Whitebalance Level configuration to control the whitebalance in the camera.

Example: xConfiguration Cameras Camera 1 Whitebalance Mode: Auto

xConfiguration Cameras Camera [1..1] Whitebalance Level: <1..16>

Set a Whitebalance Level for the camera. Requires the Whitebalance Mode to be set to manual.

Range: 1-16

Example: xConfiguration Cameras Camera 1 Whitebalance Level: 1

xConfiguration Conference [1..1] AutoAnswer Delay: <0..50>

Defines how long (in seconds) an incoming call has to wait before it is answered automatically by the system. Requires the Autoanswer Mode to be enabled.

Range: 0-50 seconds

Example: xConfiguration Conference 1 AutoAnswer Delay: 0

xConfiguration Conference [1..1] AutoAnswer Mode: <On/Off>

The Autoanswer setting determines whether an incoming call is put through automatically or manually.

On: The system will automatically answer all incoming calls.

Off: All incoming call must be answered manually by pressing the OK key or the green Call key on the remote control.

Example: xConfiguration Conference 1 AutoAnswer Mode: Off

xConfiguration Conference [1..1] AutoAnswer Mute: <On/Off>

The Autoanswer Mute setting determines whether the microphone is muted when an incoming call is automatically answered.

On: The incoming call will be muted when automatically answered.

Off: The incoming call will not be muted.

Example: xConfiguration Conference 1 AutoAnswer Mute: Off

xConfiguration Conference [1..1] DefaultCall Protocol: <H323/SIP>

Specify the default call protocol to be used when placing calls from the system. The call protocol can also be defined directly for each call when setting up a call.

H.323: Select H.323 to ensure that calls are set up as a H.323 calls.

SIP: Select SIP to ensure that calls are set up as a SIP calls.

Example: xConfiguration Conference 1 DefaultCall Protocol: H323

xConfiguration Conference [1..1] DefaultCall Rate: <64..6000>

Specify the default call rate to be used when placing calls from the system. The call rate can also be defined directly for each call when setting up a call.

Range: 64-6000 kbps

Example: xConfiguration Conference 1 DefaultCall Rate: 768

xConfiguration Conference [1..1] DoNotDisturb Mode: <On/Off>

The Do Not Disturb setting determines whether or not there should be an alert on incoming calls.

On: Set to On when you do not want any alert to incoming calls. The calling side will receive a busy signal when trying to call the codec.

Off: Set to Off when you want incoming calls to be alerted. This is the default setting.

Example: xConfiguration Conference 1 DoNotDisturb Mode: Off

xConfiguration Conference [1..1] Encryption Mode: <Off/BestEffort>

BestEffort: The system will use encryption whenever possible. If the far end system supports encryption (AES-128), the call will be encrypted. If not, the call will proceed without encryption. A padlock with the text "Encryption On" displays on screen, for a few seconds, when the conference starts.

Off: The system will not use encryption.

Example: xConfiguration Conference 1 Encryption Mode: BestEffort

xConfiguration Conference [1..1] FarEndControl Mode: <On/Off>

Lets you control if the remote side (far end) should be allowed to select your video sources and control your local camera (pan, tilt, zoom).

On: Set to On when you want the the far end to be able to select your video sources and control your local camera (pan, tilt, zoom). You will still be able to control your camera and select your video sources as normal.

Off: When set to Off the far end can not access any of the features above on your system.

Example: xConfiguration Conference 1 FarEndControl Mode: On

xConfiguration H323 Profile [1..1] Authentication LoginName: <S: 0, 50>

The system sends the Authentication Login Name and the Authentication Password to a H.323 Gatekeeper for authentication. The authentication is a one way authentication from the codec to the H.323 Gatekeeper, i.e. the system is authenticated to the gatekeeper. If the H.323 Gatekeeper indicates that no authentication is required, the system will still try to register. Requires the H.323 Gatekeeper Authentication Mode to be enabled.

Format: String with a maximum of 50 characters.

Example: xConfiguration H323 Profile 1 Authentication Loginname: ""

xConfiguration H323 Profile [1..1] Authentication Mode: <On/Off>

On: If the H.323 Gatekeeper Authentication Mode is set to On and a H.323 Gatekeeper indicates that it requires authentication, the system will try to authenticate itself to the gatekeeper. Requires the Authentication ID and Authentication Password to be defined on both the codec and the Gatekeeper.

Off: If the H.323 Gatekeeper Authentication Mode is set to Off the system will not try to authenticate itself to a H.323 Gatekeeper, but will still try a normal registration.

Example: xConfiguration H323 Profile 1 Authentication Mode: Off

xConfiguration H323 Profile [1..1] Authentication Password: <S: 0, 50>

The system sends the Authentication Login Name and the Authentication Password to a H.323 Gatekeeper for authentication. The authentication is a one way authentication from the codec to the H.323 Gatekeeper, i.e. the system is authenticated to the gatekeeper. If the H.323 Gatekeeper indicates that no authentication is required, the system will still try to register. Requires the H.323 Gatekeeper Authentication Mode to be enabled.

Format: String with a maximum of 50 characters.

Example: xConfiguration H323 Profile 1 Authentication Password:

xConfiguration H323 Profile [1..1] CallSetup Mode: <Direct/Gatekeeper>

The H.323 Call Setup Mode defines whether to use a Gatekeeper or Direct calling when establishing H323 calls.

Direct: An IP-address must be used when dialling in order to make the H323 call.

Gatekeeper: The system will use a Gatekeeper to make a H.323 call. When selecting this option the H323 Profile Gatekeeper Address and H323 Profile Gatekeeper Discovery settings must also be configured.

NOTE! Direct H.323 calls can be made even though the H.323 Call Setup Mode is set to Gatekeeper.

Example: xConfiguration H323 Profile 1 CallSetup Mode: Gatekeeper

xConfiguration H323 Profile [1..1] Gatekeeper Address: <S: 0, 64>

Specifies the IP address of the Gatekeeper. Requires the H.323 Call Setup Mode to be set to Gatekeeper and the Gatekeeper Discovery to be set to Manual.

Format: String with a maximum of 64 characters.

Example: xConfiguration H323 Profile 1 Gatekeeper Address: "10.47.1.58"

xConfiguration H323 Profile [1..1] Gatekeeper Discovery: <Manual/Auto>

Determines how the system shall register to a H.323 Gatekeeper.

Manual: The system will use a specific Gatekeeper identified by the Gatekeeper's IP-address.

Auto: The system will automatically try to register to any available Gatekeeper. If a Gatekeeper responds to the request sent from the codec within 30 seconds this specific Gatekeeper will be used. This requires that the Gatekeeper is in auto discovery mode as well. 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.

Example: xConfiguration H323 Profile 1 Gatekeeper Discovery: Manual

xConfiguration H323 Profile [1..1] H323Alias E164: <S: 0, 30>

The H.323 Alias E.164 defines the address of the system, according to the numbering plan implemented in the H.323 Gatekeeper. The E.164 alias is equivalent to a telephone number, sometimes combined with access codes. Example: "9047615901", "550092"

Format: Compact string with a maximum of 30 characters. Valid characters are 0–9, * and #.

Example: xConfiguration H323 Profile 1 H323Alias E164: ""

xConfiguration H323 Profile [1..1] H323Alias ID: <S: 0, 49>

Lets you specify the H.323 Alias ID which is used to address the system on a H.323 Gatekeeper and will be displayed in the call lists. Example: "name.surname@company.com", "My H.323 Alias ID"

Format: String with a maximum of 49 characters

Example: xConfiguration H323 Profile 1 H323Alias ID: ""

xConfiguration H323 Profile [1..1] PortAllocation: <Dynamic/Static>

The H.323 Port Allocation setting affects the H.245 port numbers used for H.323 call signalling.

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 firewalls consider this as a sign of attack. When Dynamic is selected, the H.323 ports used are from 11000 to 20999. Once 20999 is reached they restart again at 11000. For RTP and RTCP media data, the system is using UDP ports in the range 2326 to 2487. Each media channel is using two adjacent ports, ie 2330 and 2331 for RTP and RTCP respectively. The ports are automatically selected by the system within the given range. Firewall administrators should not try to deduce which ports are used when, as the allocation schema within the mentioned range may change without any further notice.

Static: When set to Static the ports are given within a static predefined range [5555–6555].

Example: xConfiguration H323 Profile 1 PortAllocation: Dynamic

xConfiguration Network [1..1] Assignment: <Static/DHCP>

Defines whether to use DHCP or Static IP assignment.

Static: The IP Address, Subnet Mask and Default Gateway for the system must be specified in the respective address fields.

DHCP: The system addresses are automatically assigned by the DHCP server.

Changes to this setting requires a restart of the codec.

Example: xConfiguration Network 1 Assignment: DHCP

xConfiguration Network [1..1] DNS Domain Name: <S: 0, 64>

DNS Domain Name is the default domain name suffix which is added to unqualified names.

Example: If the DNS Domain Name is "company.com" and the name to lookup is "MyVideoSystem", this will result in the DNS lookup "MyVideoSystem.company.com".

Format: String with a maximum of 64 characters.

Example: xConfiguration Network 1 DNS Domain Name: "company.com"

xConfiguration Network [1..1] DNS Server [1..5] Address: <S: 0, 64>

Defines the network addresses for DNS servers. Up to 5 addresses may be specified. If the network addresses are unknown, please contact your administrator or Internet Service Provider.

Format: String with a maximum of 64 characters.

Example: xConfiguration Network 1 DNS Server [1..5] Address: ""

xConfiguration Network [1..1] IEEE8021X AnonymousIdentity: <S: 0, 64>

The 802.1X Anonymous ID string is to be used as unencrypted identity with EAP types that support different tunneled identity, like EAP-PEAP and EAP-TTLS. If set, the anonymous ID will be used for the initial (unencrypted) EAP Identity Request.

Format: String with a maximum of 64 characters.

Example: xConfiguration Network 1 IEEE8021X AnonymousIdentity: ""

xConfiguration Network [1..1] IEEE8021X Eap Md5: <On/Off>

Message-Digest algorithm 5. Is a Challenge Handshake Authentication Protocol that relies on a shared secret. MD5 is a Weak security. EAP - Extensible Authentication Protocol. MD5 - Message Digest Algorithm 5.

On: The EAP-MD5 protocol is enabled. Default mode is On.

Off: The EAP-MD5 protocol is disabled.

Example: xConfiguration Network 1 IEEE8021X Eap Md5: On

xConfiguration Network [1..1] IEEE8021X Eap Peap: <On/Off>

Protected Transport Layer Security. Developed by Microsoft, Cisco and RSA Security. Authenticates LAN clients without the need for client certificates. EAP - Extensible Authentication Protocol. PEAP - Protected Extensible Authentication Protocol.

On: The EAP-PEAP protocol is enabled. Default mode is On.

Off: The EAP-PEAP protocol is disabled.

Example: xConfiguration Network 1 IEEE8021X Eap Peap: On

xConfiguration Network [1..1] IEEE8021X Eap Ttls: <On/Off>

Tunneled Transport Layer Security. Developed by Funk Software and Certicom. Usually supported by Agere Systems, Proxim and Avaya. Authenticates LAN clients without the need for client certificates. EAP - Extensible Authentication Protocol. TTLS - Tunneled Transport Layer Security.

On: The EAP-TTLS protocol is enabled. Default mode is On.

Off: The EAP-TTLS protocol is disabled.

Example: xConfiguration Network 1 IEEE8021X Eap Ttls: On

xConfiguration Network [1..1] IEEE8021X Identity: <S: 0, 64>

The 802.1X Identity is the user name needed for 802.1X authentication.

Format: String with a maximum of 64 characters.

Example: xConfiguration Network 1 IEEE8021X Identity: ""

xConfiguration Network [1..1] IEEE8021X Mode: <On/Off>

The system may be connected to an IEEE 802.1X LAN network with a port-based network access control that is used to provide authenticated network access for Ethernet networks.

On: The 802.1X authentication is enabled.

Off: The 802.1X authentication is disabled. Default mode is Off.

Example: xConfiguration Network 1 IEEE8021X Mode: Off

xConfiguration Network [1..1] IEEE8021X Password: <S: 0, 32>

The 802.1X Password is the password needed for 802.1X authentication.

Format: String with a maximum of 32 characters.

Example: xConfiguration Network 1 IEEE8021X Password: "****"

xConfiguration Network [1..1] IPv4 Address: <S: 0, 64>

Defines the Static IP address for the system. Only applicable if Static IP assignment is chosen.

Format: Compact string with a maximum of 64 characters.

Example: xConfiguration Network 1 IPv4 Address: "10.47.5.100"

xConfiguration Network [1..1] IPv4 Gateway: <S: 0, 64>

Defines the IP default gateway. Only applicable if Static IP assignment is chosen.

Format: Compact string with a maximum of 64 characters.

Example: xConfiguration Network 1 IPv4 Gateway: "10.47.5.100"

xConfiguration Network [1..1] IPv4 SubnetMask: <S: 0, 64>

Defines the IP subnet mask. Only applicable if Static IP assignment is chosen.

Format: Compact string with a maximum of 64 characters.

Example: xConfiguration Network 1 IPv4 SubnetMask: "255.255.255.0"

xConfiguration Network [1..1] IPv4 QoS Mode: <Off/Diffserv>

Defines whether IP Diffserv QoS should be used. The QoS (Quality of Service) is a method which handles the priority of audio, video and data in the network. The QoS settings must be supported by the infrastructure. Diffserv (Differentiated Services) is a computer networking architecture that specifies a simple, scalable and coarse-grained mechanism for classifying, managing network traffic and providing QoS priorities on modern IP networks.

Off: When set to Off no QoS method is used.

Diffserv: Select Diffserv and then go to the Diffserv sub-menus (Audio, Data, Signalling and Video) to configure these settings.

Example: xConfiguration Network 1 IPv4 QoS Mode: diffserv

xConfiguration Network [1..1] IPv4 QoS Diffserv Audio: <0..63>

The Diffserv Audio setting is used to define which priority Audio packets should have in an IP network. Enter a priority, which ranges from 0 to 63 for the packets. The higher the number, the higher the priority. These priorities might be overridden when packets are leaving the network controlled by the local network administrator.

Audio: A recommended value is DiffServ Code Point (DSCP) is AF41, which equals the value 34. If in doubt, contact your network administrator.

Example: xConfiguration Network 1 IPv4 QoS Diffserv Audio: 0

xConfiguration Network [1..1] IPv4 QoS Diffserv Data: <0..63>

The Diffserv Data setting is used to define which priority Data packets should have in an IP network. Enter a priority, which ranges from 0 to 63 for the packets. The higher the number, the higher the priority. These priorities might be overridden when packets are leaving the network controlled by the local network administrator.

Data: A recommended value is DiffServ Code Point (DSCP) AF23, which equals the value 22. If in doubt, contact your network administrator.

Example: xConfiguration Network 1 IPv4 QoS Diffserv Data: 0

xConfiguration Network [1..1] IPv4 QoS Diffserv Signalling: <0..63>

The Diffserv Signalling setting is used to define which priority Signalling packets should have in an IP network. Enter a priority, which ranges from 0 to 63 for the packets. The higher the number, the higher the priority. These priorities might be overridden when packets are leaving the network controlled by the local network administrator.

Signalling: A recommended value is DiffServ Code Point (DSCP) AF31 which equals the value 26. If in doubt, contact your network administrator.

Example: xConfiguration Network 1 IPv4 QoS Diffserv Signalling: 0

xConfiguration Network [1..1] IPv4 QoS Diffserv Video: <0..63>

The Diffserv Video setting is used to define which priority Video packets should have in an IP network. Enter a priority, which ranges from 0 to 63 for the packets. The higher the number, the higher the priority. These priorities might be overridden when packets are leaving the network controlled by the local network administrator.

Video: A recommended value is DiffServ Code Point (DSCP) AF41, which equals the value 34. If in doubt, contact your network administrator.

Example: xConfiguration Network 1 IPv4 QoS Diffserv Video: 0

xConfiguration Network [1..1] MTU: <400..1500>

Set the ethernet MTU (Maximum Transmission Unit).

Range: 400-1500

Example: xConfiguration Network 1 MTU: 1500

xConfiguration Network [1..1] Speed: <Auto/10half/10full/100half/100full/1000full>

Set the ethernet link speed.

Auto: Autonegotiate link speed.

10half: Force link to 10Mbps half-duplex.

10full: Force link to 10Mbps full-duplex.

100half: Force link to 100Mbps half-duplex.

100full: Force link to 100Mbps full-duplex.

1000full: Force link to 1Gbps full-duplex.

Example: xConfiguration Network 1 Speed: Auto

xConfiguration Network [1..1] TrafficControl Mode: <On/Off>

Configure how video packets transmission speed shall be controlled.

On: Transmit video packets at maximum 20Mbps.

Off: Transmit video packets at link speed.

Example: xConfiguration Network 1 TrafficControl: On

xConfiguration NetworkServices H323 Mode: <On/Off>

Determines whether the system should be able to place and receive H.323 calls.

On: Set to On to enable the possibility to place and receive H.323 calls. This is the default setting.

Off: Set to Off to disable the possibility to place and receive H.323 calls.

NOTE! Changes in this setting requires the codec to be restarted.

Example: xConfiguration NetworkServices H323 Mode: On

xConfiguration NetworkServices HTTP Mode: <On/Off>

HTTP is a protocol for transferring web-pages for system management, diagnostics and software uploads.

On: The HTTP protocol is enabled.

Off: The HTTP protocol is disabled.

Example: `xConfiguration NetworkServices HTTP Mode: On`

xConfiguration NetworkServices HTTPS Mode: <On/Off>

HTTPS is a Web protocol that encrypts and decrypts user page requests as well as the pages that are returned by the Web server.

On: The HTTPS protocol is enabled.

Off: The HTTPS protocol is disabled.

Example: `xConfiguration NetworkServices HTTPS Mode: On`

xConfiguration NetworkServices NTP Address: <S: 0, 64>

Enter the NTP Address to define the network time protocol server address. This address will be used if NTP Mode is set to Manual, or if set to Auto and no address is supplied by a DHCP server.

Format: String with a maximum of 64 characters.

Example: `xConfiguration NetworkServices NTP Address: "1.tandberg.pool.ntp.org"`

xConfiguration NetworkServices NTP Mode: <Auto/Manual>

The Network Time Protocol (NTP) is used to synchronize the time of the system to a reference time server. The time server will subsequently be queried every 24th hour for time updates. The time will be displayed on the top of the screen. The system will use the time to timestamp messages transmitted to Gatekeepers or Border Controllers requiring H.235 authentication. The system will use the time to timestamp messages transmitted to Gatekeepers or Border Controllers that requires H.235 authentication. It is also used for timestamping Placed Calls, Missed Calls and Received Calls.

Auto: The system will use the NTP server, by which address is supplied from the DHCP server in the network. If no DHCP server is used, or the DHCP server does not provide the system with a NTP server address, the system will use the static defined NTP server address specified by the user.

Manual: The system will always use the static defined NTP server address specified by the user.

Example: `xConfiguration NetworkServices NTP Mode: Manual`

xConfiguration NetworkServices SIP Mode: <On/Off>

Determines whether the system should be able to place and receive SIP calls.

On: Set to On to enable the possibility to place and receive SIP calls. This is the default setting.

Off: Set to Off to disable the possibility to place and receive SIP calls.

NOTE! Changes in this setting requires the codec to be restarted.

Example: `xConfiguration NetworkServices SIP Mode: On`

xConfiguration NetworkServices SNMP CommunityName: <S: 0, 50>

Enter the name of the Network Services SNMP Community. SNMP Community names are used to authenticate SNMP requests. SNMP requests must have a 'password' (case sensitive) in order to receive a response from the SNMP Agent in the codec. The default password is "public". If you have the TANDBERG Management Suite (TMS) you must make sure the same SNMP Community is configured there too. Note! The SNMP Community password is case sensitive.

Format: String with a maximum of 50 characters.

Example: `xConfiguration NetworkServices SNMP CommunityName: "public"`

xConfiguration NetworkServices SNMP Host [1..3] Address: <S: 0, 64>

Enter the IP address of up to three SNMP Managers. All traps will then be sent to the hosts listed.

The system's SNMP Agent (in the codec) responds to requests from SNMP Managers (a PC program etc.). SNMP Traps are generated by the SNMP Agent to inform the SNMP Manager about important events. Can be used to send event created messages to the SNMP agent about different events like: system reboot, system dialing, system disconnecting, MCU call, packet loss etc. Traps can be sent to multiple SNMP Trap Hosts.

Format: String with a maximum of 64 characters.

Example: `xConfiguration NetworkServices SNMP Host 1 Address: ""`

xConfiguration NetworkServices SNMP Mode: <Off/ReadOnly/ReadWrite>

SNMP (Simple Network Management Protocol) is used in network management systems to monitor network-attached devices (routers, servers, switches, projectors, etc) for conditions that warrant administrative attention. SNMP exposes management data in the form of variables on the managed systems, which describe the system configuration. These variables can then be queried (set to ReadOnly) and sometimes set (set to ReadWrite) by managing applications.

Off: Set to Off when you want to disable the SNMP network service.

ReadOnly: Set to ReadOnly when you want to enable the SNMP network service for queries only.

ReadWrite: Set to ReadOnly when you want to enable the SNMP network service for both queries and commands.

Example: `xConfiguration NetworkServices SNMP Mode: ReadWrite`

xConfiguration NetworkServices SNMP SystemContact: <S: 0, 50>

Enter the name of the Network Services SNMP System Contact.

Format: String with a maximum of 50 characters.

Example: `xConfiguration NetworkServices SNMP SystemContact: ""`

xConfiguration NetworkServices SNMP SystemLocation: <S: 0, 50>

Enter the name of the Network Services SNMP System Location.

Format: String with a maximum of 50 characters.

Example: `xConfiguration NetworkServices SNMP SystemLocation: ""`

xConfiguration NetworkServices Telnet Mode: <On/Off>

Telnet is a network protocol used on the Internet or local area network (LAN) connections.

On: The Telnet protocol is enabled.

Off: The Telnet protocol is disabled. This is the default factory setting.

Example: `xConfiguration NetworkServices Telnet Mode: Off`

xConfiguration Phonebook Server [1..1] ID: <S: 0, 64>

Enter a name for the external phonebook. Addresses the specific phonebook.

Format: String with a maximum of 64 characters.

Example: `xConfiguration Phonebook Server 1 ID: "default"`

xConfiguration Phonebook Server [1..1] URL: <S: 0, 255>

Enter the address (URL) to the external phonebook server. Addresses the specific phonebook server.

Format: String with a maximum of 255 characters.

Example: `xConfiguration Phonebook Server 1 URL: "http://tms.company.com/tms/public/external/phonebook/phonebook.asmx"`

xConfiguration Provisioning ExternalManager Address: <S: 0, 64>

If an External Manager address and a path is configured, the system will post an HTTP message to this address when starting up. When receiving this HTTP posting the External Manager (typically a management system) can return configurations/commands to the unit as a result. If the DHCP Option 242 is returned in the DHCP response from the DHCP server the system will interpret this as the External Manager address to use.

Format: String with a maximum of 64 characters.

Example: `xConfiguration Provisioning ExternalManager Address: ""`

xConfiguration Provisioning ExternalManager Path: <S: 0, 255>

If an External Manager address and a path is configured, the system will post an HTTP message to this address when starting up. When receiving this HTTP posting the External Manager (typically a management system) can return configurations/commands to the unit as a result. If the DHCP Option 242 is returned in the DHCP response from the DHCP server the system will interpret this as the External Manager address to use. The example shows how a path to an External Manager/Management system may look like.

Format: String with a maximum of 255 characters.

Example: `xConfiguration Provisioning ExternalManager Path: "tms/public/external/management/SystemManagementService.asmx"`

xConfiguration Provisioning ExternalManager Protocol: <HTTP/HTTPS>

Determines whether or not to use secure management.

HTTP: Set to HTTP to disable secure management. Requires HTTP to be enabled in the Network Services HTTP Mode setting.

HTTPS: Set to HTTPS to enable secure management. Requires HTTPS to be enabled in the Network Services HTTPS Mode setting.

Example: `xConfiguration Provisioning ExternalManager Protocol: http`

xConfiguration Provisioning Mode: <Off/TMS>

Provides the possibility of managing the codec (endpoint) by using an external manager/management system.

Off: The system will not try to register to any management system.

TMS: If set to TMS the system will try to register with a TMS server as described in Provisioning ExternalManager settings. TMS is short for TANDBERG Management System. Please contact your TANDBERG representative for more information.

Example: `xConfiguration Provisioning Mode: TMS`

xConfiguration SerialPort BaudRate: <9600/19200/38400/115200>

Specify the baud rate (bps) on the COM port (data port). The default value is 38400.

Other default parameters for the COM port are: Parity: None Databits: 8 Stopbits: 1 Flow control: None.

Valid inputs for baud rate: 9600, 19200, 38400, 115200

Example: `xConfiguration SerialPort BaudRate: 38400`

xConfiguration SerialPort LoginRequired: <On/Off>

The Serial Login setting determines whether or not there should be a login when connecting to the COM port (data port).

On: Login is required when connecting to the COM port (data port).

Off: The user can access the COM port (data port) without any login.

Example: `xConfiguration SerialPort LoginRequired: Off`

xConfiguration SIP Profile [1..1] Authentication [1..1] LoginName: <S: 0, 50>

This is the user name part of the credentials used to authenticate towards the SIP proxy.

Format: String with a maximum of 50 characters.

Example: `xConfiguration SIP Profile 1 Authentication 1 LoginName: ""`

xConfiguration SIP Profile [1..1] Authentication [1..1] Password: <S: 0, 50>

This is the password part of the credentials used to authenticate towards the SIP proxy.

Format: String with a maximum of 50 characters.

Example: `xConfiguration SIP Profile 1 Authentication 1 Password:`

xConfiguration SIP Profile [1..1] DefaultTransport: <UDP/TCP/TLS/Auto>

Select the transport protocol to be used over the LAN.

UDP: The system will always use UDP as the default transport method.

TCP: The system will always use TCP as the default transport method.

TLS: The system will always use TLS as the default transport method. For TLS connections a SIP CA-list can be uploaded using the web interface. If no such CA-list is available on the system then anonymous Diffie Hellman will be used.

Auto: The system will try to connect using transport protocols in the following order: TLS, TCP, UDP.

Example: `xConfiguration SIP Profile 1 DefaultTransport: Auto`

xConfiguration SIP Profile [1..1] Outbound: <On/Off>

The client initiated connections mechanism for firewall traversal, connection reuse and redundancy. The

current version supports <http://tools.ietf.org/html/draft-ietf-sip-outbound-20>.

On: Set up multiple outbound connections to servers in the Proxy Address list.

Off: Connect to the single proxy configured first in Proxy Address list.

Example: `xConfiguration SIP Profile 1 Outbound: Off`

xConfiguration SIP Profile [1..1] Proxy [1..4] Address: <S: 0, 255>

The Proxy Address is the manually configured address for the outbound proxy. It is possible to use a fully qualified domain name, or an IP address. The default port is 5060 for TCP and UDP but another one can be provided. If Outbound is enabled, multiple proxies can be addressed.

Format: Compact string with a maximum of 255 characters.

Example: `xConfiguration SIP Profile 1 Proxy 1 Address: ""`

xConfiguration SIP Profile [1..1] Proxy [1..4] Discovery: <Auto/Manual>

Manual: When Manual is selected, the manually configured SIP Proxy address will be used

Auto: When Auto is selected, the SIP Proxy address is obtained using Dynamic Host Configuration Protocol (DHCP).

Example: `xConfiguration SIP Profile 1 Proxy 1 Discovery: Manual`

xConfiguration SIP Profile [1..1] Type: <Standard/Alcatel/Avaya/Cisco/Microsoft/Nortel/Experimental/Siemens>

Enables SIP extensions and special behaviour for a vendor or provider

Standard: Should be used when registering to standard SIP proxy like OpenSer.

Alcatel: Must be used when registering to a Alcatel-Lucent OmniPCX Enterprise R7 or later.

Avaya: Must be used when registered to a Avaya Communication Manager.

Cisco: Must be used when registering to a Cisco CallManager version 5 or later.

Microsoft: Must be used when registering to a Microsoft LCS or OCS server.

Nortel: Must be used when registering to a Nortel MCS 5100 or MCS 5200 PBX.

Experimental: Can be used if auto is not working Note! This mode is for testing purposes only.

Example: `xConfiguration SIP Profile 1 Type: Standard`

xConfiguration SIP Profile [1..1] URI: <S: 0, 255>

The SIP URI or number is used to address the system. This is the URI that is registered and used by the SIP services to route inbound calls to the system. A Uniform Resource Identifier (URI) is a compact string of characters used to identify or name a resource.

Format: Compact string with a maximum of 255 characters.

Example: `xConfiguration SIP Profile 1 URI: "sip:name@example.com"`

xConfiguration Standby BootAction: <None/Preset1/Preset2/Preset3/Preset4/Preset5/Preset6/Preset7/Preset8/Preset9/Preset10/Preset11/Preset12/Preset13/Preset14/Preset15/RestoreCameraPosition/DefaultCameraPosition>

Decide what the system is going to do on boot.

None: No action.

Preset 1..15: Activate the selected preset.

RestoreCameraPosition: Set the camera to the position it had before the last boot.

DefaultCameraPosition: Set the camera to the factory default position.

Example: `xConfiguration Standby BootAction: DefaultCameraPosition`

xConfiguration Standby Control: <On/Off>

Determine whether the system should go into standby mode or not.

On: Enter standby mode when the Standby Delay has timed out. Requires the Standby Delay to be set to an appropriate value.

Off: Not entering standby mode.

Example: `xConfiguration Standby Control: On`

xConfiguration Standby Delay: <1..480>

Define how long (in minutes) the system shall be in idle mode before it goes into standby mode. Requires the Standby Control to be enabled.

Range: 1-480 seconds

Example: `xConfiguration Standby Delay: 10`

xConfiguration Standby WakeupAction: <None/Preset1/Preset2/Preset3/Preset4/Preset5/Preset6/Preset7/Preset8/Preset9/Preset10/Preset11/Preset12/Preset13/Preset14/Preset15/RestoreCameraPosition/DefaultCameraPosition>

Decide what the system is going to do when leaving standby mode.

None: No action.

Preset 1..15: Activate the selected preset.

RestoreCameraPosition: Set the camera to the position it had before entering standby.

DefaultCameraPosition: Set the camera to the factory default position.

Example: `xConfiguration Standby WakeupAction: RestoreCameraPosition`

xConfiguration SystemUnit CallLogging Mode: {##On/Off}

Enables/disables logging of calls received or placed by the system. The call logs may then be viewed via the GUI or using the xHistory command.

On: Enable logging.

Off: Disable logging.

Example: `xConfiguration SystemUnit CallLogging Mode: On`

xConfiguration SystemUnit IrSensor Mode: <On/Off/Auto>

The System Unit IR Sensor setting determines whether the infrared receiver on the codec should be enabled or not. The IR sensor LED is located in the front of the codec and flickers when an ir signal is received from the remote control.

On: Set to On to enable the IR sensor on the codec.

Off: Set to Off to disable the IR sensor on the codec.

Auto: The system will automatically disable the IR sensor on the codec if the IR sensor at camera is enabled. Otherwise the IR sensor on the codec will be enabled.

Example: `xConfiguration SystemUnit IrSensor Mode: On`

xConfiguration SystemUnit MenuLanguage: <Chinese/English/French/German/Italian/Japanese/Korean/Norwegian/Portugese/Russian/Spanish/Swedish>

The setting is used to select the language for the GUI.

Example: `xConfiguration SystemUnit MenuLanguage: English`

xConfiguration SystemUnit Name: <S: 0, 50>

Enter a System Name to define a name of the system unit. If the H.323 Alias ID is configured on the system then this ID will be used instead of the system name. The system name will be displayed:

* When the codec is acting as an SNMP Agent

* Towards a DHCP server

Format: String with a maximum of 50 characters.

Example: `xConfiguration SystemUnit Name: "Meeting Room Name"`

xConfiguration Time DateFormat: <DD_MM_YY/MM_DD_YY/YY_MM_DD>

Specifies the date format.

DD_MM_YY: The date January 30th 2009 will be displayed: 30.01.09

MM_DD_YY: The date January 30th 2009 will be displayed: 01.30.09

YY_MM_DD: The date January 30th 2009 will be displayed: 09.01.30

Example: `xConfiguration Time DateFormat: DD_MM_YY`

xConfiguration Time TimeFormat: <24H/12H>

Specifies the time format.

24H: Set the time format to 24 hours.

12H: Set the time format to 12 hours (AM/PM).

Example: `xConfiguration Time TimeFormat: 24H`

xConfiguration Time Zone: <GMT-12:00 (International Date Line West)/GMT-11:00 (Midway Island, Samoa)/GMT-10:00 (Hawaii)/GMT-09:00 (Alaska)/GMT-08:00 (Pacific Time (US & Canada) Tijuana)/GMT-07:00 (Arizona)/GMT-07:00 (Mountain Time (US & Canada))/GMT-07:00 (Chihuahua, La Paz, Mazatlan)/GMT-06:00 (Central America)/GMT-06:00 (Saskatchewan)/GMT-06:00 (Guadalajara, Mexico City, Monterrey)/GMT-06:00 (Central Time (US & Canada))/GMT-05:00 (Indiana (East))/GMT-05:00 (Bogota, Lima, Quito)/GMT-05:00 (Eastern Time (US & Canada))/GMT-04:30 (Caracas)/GMT-04:00 (La Paz)/GMT-04:00 (Santiago)/GMT-04:00 (Atlantic Time (Canada))/GMT-03:30 (Newfoundland)/GMT-03:00 (Buenos Aires, Georgetown)/GMT-03:00 (Greenland)/GMT-03:00 (Brasilia)/GMT-02:00 (Mid-Atlantic)/GMT-

01:00 (Cape Verde Is.)/GMT-01:00 (Azores)/GMT (Casablanca, Monrovia)/GMT (Greenwich Mean Time : Dublin, Edinburgh, Lisbon, London)/GMT+01:00 (West Central Africa)/GMT+01:00 (Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna)/GMT+01:00 (Brussels, Copenhagen, Madrid, Paris)/GMT+01:00 (Sarajevo, Skopje, Warsaw, Zagreb)/GMT+01:00 (Belgrade, Bratislava, Budapest, Ljubljana, Prague)/GMT+02:00 (Harare, Pretoria)/GMT+02:00 (Jerusalem)/GMT+02:00 (Athens, Istanbul, Minsk)/GMT+02:00 (Helsinki, Kyiv, Riga, Sofia, Tallinn, Vilnius)/GMT+02:00 (Cairo)/GMT+02:00 (Bucharest)/GMT+03:00 (Nairobi)/GMT+03:00 (Kuwait, Riyadh)/GMT+03:00 (Moscow, St. Petersburg, Volgograd)/GMT+03:00 (Baghdad)/GMT+03:30 (Tehran)/GMT+04:00 (Abu Dhabi, Muscat)/GMT+04:00 (Baku, Tbilisi, Yerevan)/GMT+04:30 (Kabul)/GMT+05:00 (Islamabad, Karachi, Tashkent)/GMT+05:00 (Ekaterinburg)/GMT+05:30 (Chennai, Kolkata, Mumbai, New Delhi)/GMT+05:45 (Kathmandu)/GMT+06:00 (Sri Jayawardenepura)/GMT+06:00 (Astana, Dhaka)/GMT+06:00 (Almaty, Novosibirsk)/GMT+06:30 (Rangoon)/GMT+07:00 (Bangkok, Hanoi, Jakarta)/GMT+07:00 (Krasnoyarsk)/GMT+08:00 (Perth)/GMT+08:00 (Taipei)/GMT+08:00 (Kuala Lumpur, Singapore)/GMT+08:00 (Beijing, Chongqing, Hong Kong, Urumqi)/GMT+08:00 (Irkutsk, Ulaan Bataar)/GMT+09:00 (Osaka, Sapporo, Tokyo)/GMT+09:00 (Seoul)/GMT+09:00 (Yakutsk)/GMT+09:30 (Darwin)/GMT+09:30 (Adelaide)/GMT+10:00 (Guam, Port Moresby)/GMT+10:00 (Brisbane)/GMT+10:00 (Vladivostok)/GMT+10:00 (Hobart)/GMT+10:00 (Canberra, Melbourne, Sydney)/GMT+11:00 (Magadan, Solomon Is., New Caledonia)/GMT+12:00 (Fiji, Kamchatka, Marshall Is.)/GMT+12:00 (Auckland, Wellington)/GMT+13:00 (Nuku alofa)>

Specifies the time zone where the system is located, using Windows time zone description format.

Example: `xConfiguration Time Zone: "GMT (Greenwich Mean Time : Dublin, Edinburgh, Lisbon, London)"`

xConfiguration Video DefaultPresentationSource: <1..2>

Define which video input source shall be used as the default presentation source (e.g. when you press the Presentation key on the remote control).

Example: `xConfiguration Video DefaultPresentationSource: 2`

xConfiguration Video Encoder Threshold60fps: <0..6000>

If the bandwidth used for transmitting video is above or equal to this threshold, the system will select the highest video resolution possible while maintaining 60 fps. If below this threshold, the system will select the highest video resolution possible while maintaining 30fps.

NOTE: This setting will only apply when the video input source to be transmitted is a 60fps source, and the selected video input is configured for motion.

Range: 0-6000 kbps

Example: `xConfiguration Video Encoder Threshold60fps: 2000`

xConfiguration Video Input DVI [2] Type: <AutoDetect/Digital/AnalogRGB>

The official DVI standard supports both digital and analog signals. In most cases the default AutoDetect setting can detect whether the signal is analog RGB or digital. However, in some rare cases when DVI-I cables are used (these cables can carry both the analog and digital signals) this detection might fail. This setting makes it possible to override the AutoDetect and select the correct DVI video input.

This setting should also be used if the video input on the DVI connector is an analog component (YPbPr) type signal. This is used by some cameras (Sony EVI-HD1) and DVD/Blu-ray players. Since it is not possible to auto detect the difference between AnalogRGB and AnalogYPbPr, the AnalogYPbPr setting has to be

selected if this is to be used.

AutoDetect: Set to AutoDetect to automatically detect if the signal is analog RGB or digital.

Digital: Set to Digital to force the DVI video input to Digital when using DVI-I cables with both analog and digital pins and AutoDetect fails.

AnalogRGB: Set to AnalogRGB to force the DVI video input to AnalogRGB when using DVI-I cables with both analog and digital pins and AutoDetect fails.

Example: `xConfiguration Video Input DVI 2 Type: AutoDetect`

xConfiguration Video Input Source [1..2] CameraControl Mode: <On/Off>

Determines whether or not the camera control (pan/tilt/zoom) should be enabled for the specific video input source.

On: Set to On to enable camera control for the camera.

Off: Set to Off to disable camera control for the camera.

Example: `xConfiguration Video Input Source 1 CameraControl Mode: On`

xConfiguration Video Input Source [1..2] CameraControl CameraId: <1..1>

Select the ID of the camera (Not configurable on Codec C20).

Example: `xConfiguration Video Input Source 1 CameraControl CameraId: 1`

xConfiguration Video Input Source [1] Connector: <HDMI>

Select which video input connector to be active on video input source 1.

HDMI: Select HDMI when you want to use the HDMI connector as input (Not configurable on Codec C20)

Example: `xConfiguration Video Input Source 1 Connector: HDMI`

xConfiguration Video Input Source [2] Connector: <DVI>

Select which video input connector to be active on video input source 2.

DVI: Select DVI when you want to use the DVI connector as input (Not configurable on Codec C20)

Example: `xConfiguration Video Input Source 2 Connector: DVI`

xConfiguration Video Input Source [1] Name: <S: 0, 50>

Enter the name of the video input source 1, which for Codec C20 generally will be the main camera.

Format: String with a maximum of 50 characters.

Example: `xConfiguration Video Input Source 1 Name: "Camera"`

xConfiguration Video Input Source [2] Name: <S: 0, 50>

Enter the name of the video input source 2, which for Codec C20 generally will be a PC.

Format: String with a maximum of 50 characters.

Example: `xConfiguration Video Input Source 2 Name: "PC"`

xConfiguration Video Input Source [1..2] Quality: <Motion/Sharpness>

When encoding and transmitting video at a specific bandwidth there will be a tradeoff between high resolution and high framerate. For some video sources it is more important to transmit high framerate than high resolution and vice versa. The Quality setting specifies whether to give priority to high frame rate or to high resolution for a given source. Addresses the selected video input connector.

Motion: Prioritizes framerate over resolution (30fps or 60fps depending on the Threshold60fps configuration. Used 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. Most camera inputs will be configured to motion.

Sharpness: Gives the highest possible resolution. Used when you want the highest quality of detailed images and graphics, typically from PC's or other presentation sources.

Example: `xConfiguration Video Input Source 1 HDMI 1 Quality: Motion`

xConfiguration Video Layout ScaleToFrame: <Manual/MaintainAspectRatio/StretchToFit>

Defines what to do if the aspect ratio of a video input source doesn't match the aspect ratio of the corresponding image frame in a composition. For example if you have a 4:3 input source (like XGA) to be displayed on a 16:9 output (like HD720).

Manual: If the difference in aspect ratio between the video input source and the target image frame is less than the ScaleToFrameThreshold configuration (in percent), the image is stretched to fit. Unless the system will maintain the original aspect ratio.

MaintainAspectRatio: Will maintain the aspect ratio of the input source, and fill in black in the rest of the frame (letter boxing or pillar boxing).

StretchToFit: Will stretch (horizontally or vertically) the input source to fit into the image frame.

Example: `xConfiguration Video Layout ScaleToFrame: MaintainAspectRatio`

xConfiguration Video Layout ScaleToFrameThreshold: <0..100>

Only applicable if the ScaleToFrame configuration is set to manual. If the difference in aspect ratio between the video input source and the target image frame is less than the ScaleToFrameThreshold configuration (in percent), the image is stretched to fit. Unless the system will maintain the original aspect ratio.

Example: `xConfiguration Video Layout ScaleToFrameThreshold: 5`

xConfiguration Video Layout Scaling: <On/Off>

Defines whether the system should automatically adjust aspect ratio for images or frames when it differs between the image and the frame it is to be placed in.

On: Let the system automatically adjust aspect ratio.

Off: Do not do any aspect ratio changes automatically.

Example: `xConfiguration Video Layout Scaling: On`

xConfiguration Video MainVideoSource: <Camera/PC>

Define which video input source shall be used as the main video source, i.e. the source to be transmitted when in a call.

Camera: Select the camera input (HDMI) to be used as the main video source.

PC: Select the PC input (DVI) to be used as the main video source.

Example: `xConfiguration Video MainVideoSource: Camera`

xConfiguration Video Monitors: <Single/Dual>

The codec can be used with more than one monitor and this setting lets you set the codec's monitor layout mode to Single or Dual.

Single: The same layout is shown on all monitors.

Dual: The layout is distributed on two monitors.

Example: `xConfiguration Video Monitors: Single`

xConfiguration Video OSD Mode: <On/Off>

The Video OSD (On Screen Display) Mode lets you define whether or not graphical information and icons on screen should be displayed.

On: Set to On to display the on screen menus, icons and indicators (microphone on/off, encryption on/off).

Off: Set to Off to hide the on screen menus, icons and indicators (microphone on/off, encryption on/off).

Example: `xConfiguration Video OSD Mode: On`

xConfiguration Video OSD Output: <1..2>

The Video OSD (On Screen Display) Output lets you define which monitor should display the on screen menus, information and icons. By default the OSD output is displayed on the first monitor.

If you have a single monitor and you cannot see any OSD on the monitor: If the OSD output has been set to the second monitor and the second monitor is not connected, then you cannot see any menus, information or icons on the screen. To move the OSD output to the first monitor press the following shortcut sequence on the remote control. Press the Disconnect key followed by: * # * # 0 x # (where x is output 1 or 2).

Example: `xConfiguration Video OSD Output: 1`

xConfiguration Video Output HDMI [1..2] MonitorRole: <First/Second>

The monitor role describes what video stream will be shown on the monitor connected to the output connector. Applicable only if the monitor configuration is set to dual.

First: Show main video stream.

Second: Show presentation video stream.

Example: `xConfiguration Video Output HDMI 1 MonitorRole: First`

xConfiguration Video Output HDMI [1..2] Resolution: <Auto/640_480_60/800_600_60/1024_768_60/1280_1024_60/1280_720_60/1920_1080_60/1280_768_60/1360_768_60/1366_768_60/1600_1200_60/1920_1200_60>

Select the preferred resolution for the monitor connected to HDMI video output. This will force the selected resolution on the monitor.

Auto: The system will automatically try to set the optimal resolution based on negotiation with the connected monitor.

Range: 640x480@60p, 800x600@60p, 1024x768@60p, 1280x1024@60p, 1280x720@60p, 1920x1080@60p, 1280x768@60p, 1360x768@60p, 1366x768@60p, 1600x1200@60p, 1920x1200@60p

Example: `xConfiguration Video Output HDMI 1 Resolution: 1920_1080_60`

xConfiguration Video Output SecondMonitor PresentationOnly: <On/Off>

Determine if the system shall show presentation only on the second monitor in a dual-monitor setup.

On: Forces the second monitor to be used for presentation only in a dual-monitor setup.

Off: The system will automatically select what to show on the second monitor.

Example: `xConfiguration Video Output SecondMonitor PresentationOnly: Off`

xConfiguration Video Selfview: <On/Off>

The Video Selfview setting determines whether or not the main video source (selfview) should be displayed on screen.

On: Set to On when you want selfview to be displayed on screen.

Off: Set to Off when you do not want selfview to be displayed on screen.

Example: `xConfiguration Video Selfview: On`

xConfiguration Video Wallpaper: <None/Growing/Summersky/Custom>

The Video Wallpaper setting determines whether or not a background picture should be displayed on screen when idle.

None: Set to None if you do not want a wallpaper to be displayed on screen.

Summersky, Growing: Select the wallpaper to be displayed on screen.

Custom: The custom wallpaper is uploaded from the web interface. Open a web browser and enter the IP address of the codec. Select "Wallpaper" from the menu on top of the screen. Browse for the file and press the "Upload" button. Toggle once between "None" and "Custom" wallpaper to make the change take effect. See the Appendices section for further details about the web interface.

Example: `xConfiguration Video Wallpaper: Summersky`

The Experimental menu

The Advanced configuration menu has an option called Experimental. The settings within this menu can be used 'as is' and will not be documented.

NOTE! The Experimental menu WILL change.

We recommend you visit the TANDBERG web site regularly for updated versions of the manual.

Go to: ► <http://www.tandberg.com/docs>

Chapter 8

Cameras

Your TANDBERG camera has been designed to give you many years of safe, reliable operation.

The TANDBERG Quick Set is available in two versions:

- TANDBERG Quick Set C20 comes with PrecisionHD 1080p 4x zoom
- TANDBERG Quick Set C20plus comes with PrecisionHD 1080p 12x zoom



In this chapter...

Explains the menu system:

- ▶ The PrecisionHD 1080p 4x/12x camera
- ▶ Video output formats
- ▶ DIP switch settings for video output formats
- ▶ Line voltage frequency

The PrecisionHD 1080p 4x/12x camera

The TANDBERG Quick Set is available in two versions:

- The TANDBERG Quick Set C20 is delivered with a PrecisionHD 1080p 4x zoom with 1080p30 maximum resolution.
- The TANDBERG Quick Set C20plus is delivered with a PrecisionHD 1080p 12x zoom with 1080p60 maximum resolution.

Video out. For video signals, connect from the video out on the camera to the video in on the codec.

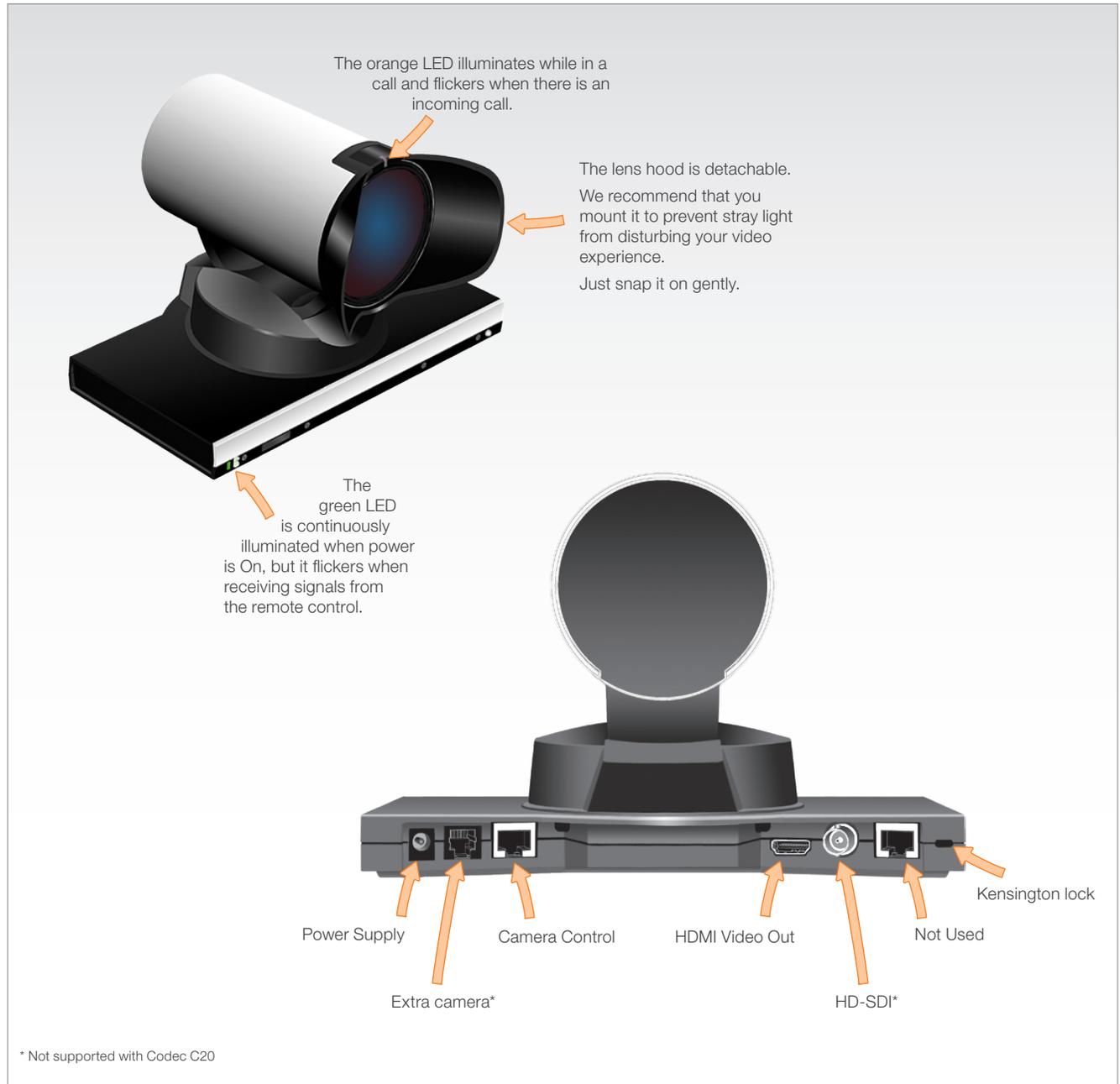
Power and camera control. For power in and camera control, connect from the camera control & power on the camera to the Camera port on the codec. When the camera is used with TANDBERG codecs, power will be supplied through the Camera Control cable. When used with non-TANDBERG Codecs, you may have to connect power separately.

HDMI and HD-SDI

- HDMI is the main video source when connected to Codec C20. Maximum resolution is 1080p60 with PrecisionHD 1080p 12x and 1080p30 with PrecisionHD 1080p 4x.
- HD-SDI is a secondary video source. The maximum resolution is 1080p30.

Kensington lock

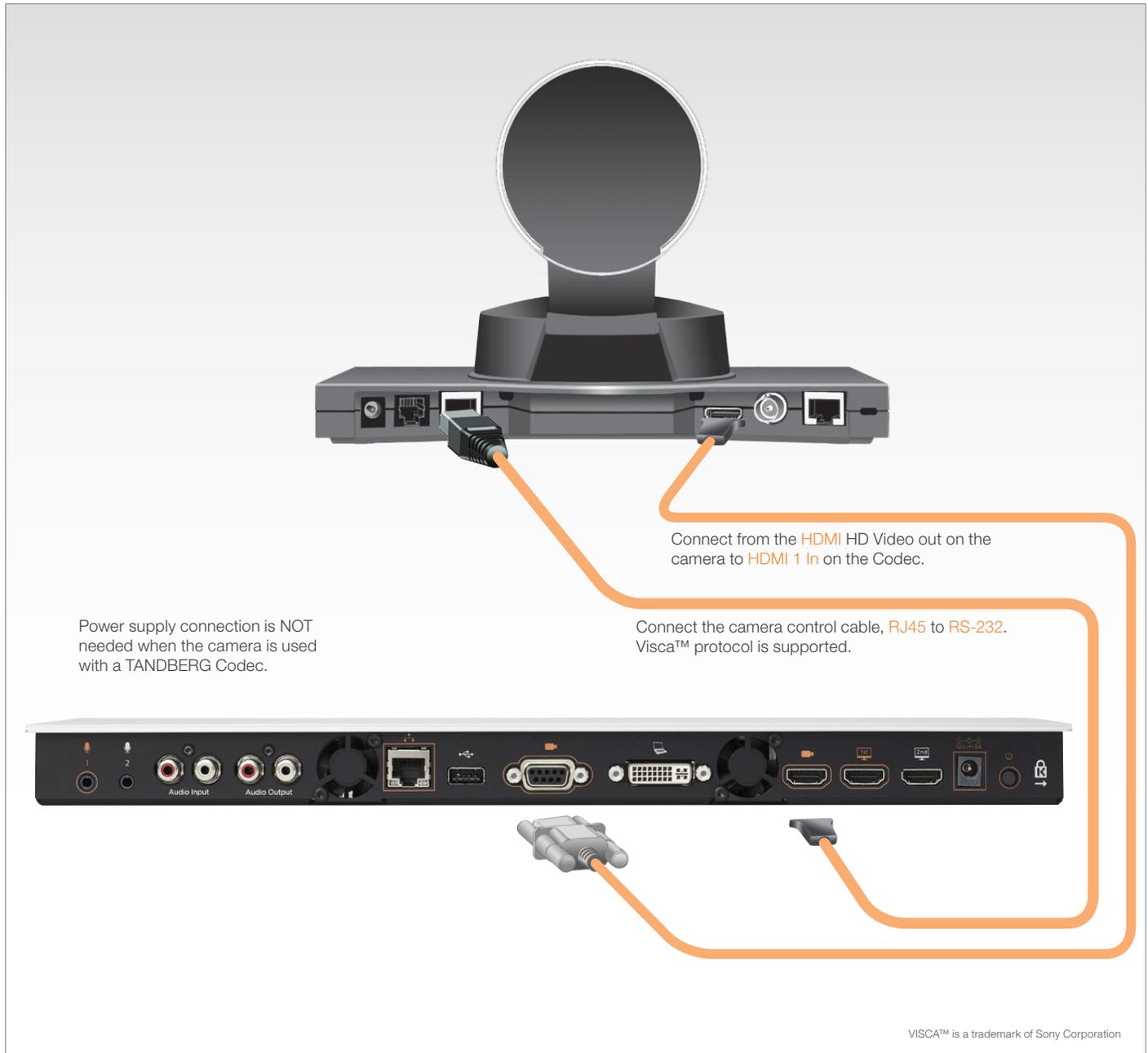
The Kensington lock may be used to prevent the camera to be moved from its place or to prevent theft.



The PrecisionHD 1080p 4x/12x camera, *cont...*

The HDMI cable

The HDMI cable delivered with the camera is 5 meters. Maximum length is 15 meter with a category 2 certified good quality HDMI cable.



The PrecisionHD 1080p 4x/12x camera, cont...

Video output formats

The TANDBERG Quick Set is available in two versions:

- The TANDBERG Quick Set C20 is delivered with a PrecisionHD 1080p 4x zoom with 1080p30 maximum resolution.
- The TANDBERG Quick Set C20plus is delivered with a PrecisionHD 1080p 12x zoom with 1080p60 maximum resolution.

This section describes how to set the DIP switches 1–5 to configure the TANDBERG PrecisionHD 1080p camera for different video output formats.

DIP switch settings for video output formats

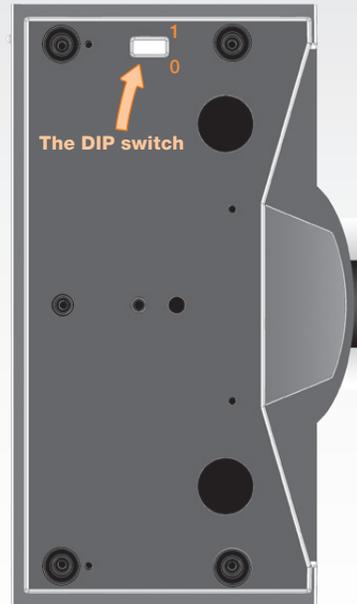
The video output format for the camera is set by DIP switches. The DIP switches are found on the bottom side of the camera.

The default setting is Auto. When using HDMI, the video output format is automatically detected. See the table to the right.

- Maximum resolution for HDMI is 1080p60 for PrecisionHD 1080p 12x and 1080p30 for PrecisionHD 1080p 4x
- Maximum resolution for HD-SDI is 1080p30.

Line voltage frequency

The camera will automatically detect the line voltage frequency when it is 50 or 60Hz. You may set the video output format to a specific value (use the DIP switches) to override the auto frequency detection, if a different line voltage frequency is an issue.



Bottom side of the TANDBERG PrecisionHD 1080p camera

DIP Switch table for video formats						
1	2	3	4	5	HDMI	HD-SDI
0	0	0	0	0	Auto	
0	0	0	0	1	1920x1080p25	1920x1080p25
0	0	0	1	0	1920x1080p30	1920x1080p30
0	0	0	1	1	1920x1080p50 *	1280x720p50 *
0	0	1	0	0	1920x1080p60 *	1280x720p60 *
0	0	1	0	1	1280x720p25	1280x720p25
0	0	1	1	0	1280x720p30	1280x720p30
0	0	1	1	1	1280x720p50 *	1280x720p50 *
0	1	0	0	0	1280x720p60 *	1280x720p60 *
0	1	0	0	1	Software control	

The table shows the different settings available for the HDMI and the HD-SDI outputs.

Auto: Camera negotiates format over HDMI. HD-SDI tracks HDMI and defaults to 1080p30 in absence of HDMI sync.

Software: For more on the **Software control** setting, read about video mode selections in the TANDBERG PrecisionHD 1080p User Guide.

* Do not apply to the PrecisionHD 1080p 4x camera

Chapter 7

Appendices



In this chapter...

Explains the menu system:

- ▶ General room guidelines
- ▶ The remote control
- ▶ The codec password
- ▶ The menu password
- ▶ The web interface
- ▶ The supported RFCs in SIP
- ▶ The CE declaration
- ▶ The RoHS table
- ▶ The codec dimensions
- ▶ The camera dimensions
- ▶ The technical specification

General room guidelines

The physical conditions

When building a video meeting room, or using an existing room for video meetings there are a few guidelines to consider.

Lighting

- The illumination should be distributed evenly in the room to obtain low contrast
- The ideal light intensity is a little higher than in an ordinary meeting room. Typically, the luminous intensity should be 800–1400Lux, measured at the table with an incident light meter

Seating area and table

- The seating area and table should be non-shiny and non-patterned
- The seating area should allow all participants to see the monitor

Walls

- The color of the wall should be in good contrast to skin tonality. Light blue is a complementary color to skin tonality, it gives a good contrast and is commonly used
- Acoustically reflective surfaces (such as glass or concrete) should be covered with curtains or sound treatment

Audio

- The Noise Floor (the sum of all the noise sources) should be less than max 35dBA
- The reverberation time should be 0,3 to 0,5 seconds

Ventilation

- The requirements for ventilation is as in an ordinary meeting room. Do not cover up the openings for ventilation in the front and rear side of the codec. Consult the specifications for the monitor for data about the energy consumption. The **TANDBERG Codec C20** together with the **TANDBERG PrecisionHD 1080p** camera has the following specifications:
 - Max rating – 45 Watts
 - Normal operation – 39 Watts
- Keep in mind the Noise Floor (see Audio)
- Velocity creates noise, therefore keep velocity of air low

The room equipment

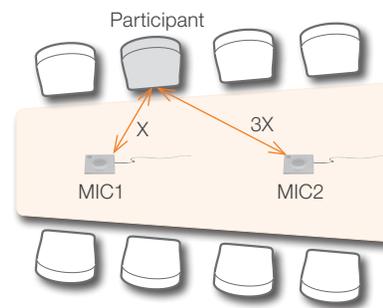
When placing and using the room equipment there are a few recommendations and guidelines to consider.

The microphone

- Place the microphone so that all participants have eye contact with the microphone when using the system. The microphone must not be hidden behind obstacles like laptop, projector or other equipment placed on the table.
- Place the microphone away from noisy equipment like computer and projector fans, power outlets or similar arrangements on the table. The microphone will pick up noise from these arrangements quite strongly. Avoid noise from paper rustling and tapping with fingers on the table.

Guidelines when using two microphones

Normally a single microphone should suffice to serve all the participants. However, if this is not the case you will need to use two microphones. You must then make sure they are spaced sufficiently apart to avoid that the sound of the first microphone suffers from interference from the second microphone. As a rule of thumb, the second microphone should be placed three times or longer away from a participant compared to the microphone closest to that participant. This is the case for all participants. If you cannot fulfill this requirement you will probably not need the second microphone in the first place. Instead inspect the site to ensure that all participants have eye contact with the microphone when using the system.



The camera

- The camera should be able to “see” all participants in the room. Use the pan, tilt and zoom features to adjust the picture.

The PC

- Make sure that any PC's placed on the table do not cover the microphones as this will reduce the audio quality at the far end

Position of the system

- Position the video system in such a way that all participants attending the meeting are visible to the far end.
- If appropriate, the far end should be able to see people entering or leaving the room

Other peripherals

- Arrange all the peripherals so that the chair person can reach each of them to point, change the display, DVD, and still be fully visible on screen while carry out the task

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 both 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
- Avoid placing the seatings in front of a window with natural daylight, as this will make the faces of people very dark
- 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

The audio quality

To keep the high quality audio, make sure there is free sight to the speaker module

- There should be free sight between the ears of the participants and the system speaker module
- Participant sitting too far away from the video system may not have the same audio quality as the others.

The best audio quality to all participants

All participants will experience the same audio quality when they have free sight from the ears to the speakers.

The picture (TANDBERG Profile) serves as an illustration to exemplify the content.

Natural communication

Making eye contact with the far end participants will improve the natural communication between the people

- Adjust the camera view (using zoom in/out) to allow the participants to be shown in full size on screen, and to keep eye contact with each other at the same eye level
- If the participants are sitting too close to the monitor the camera will “look down” at the participants. This may not give a good presentation of the participants at the far end.

Making eye contact

The far end participants

The picture (TANDBERG Profile) serves as an illustration to exemplify the content.

The distance between the table and the video system

- Consult the user documentation for the monitor to find the distance to the table to allow all participants to see a clear picture on screen.

The camera

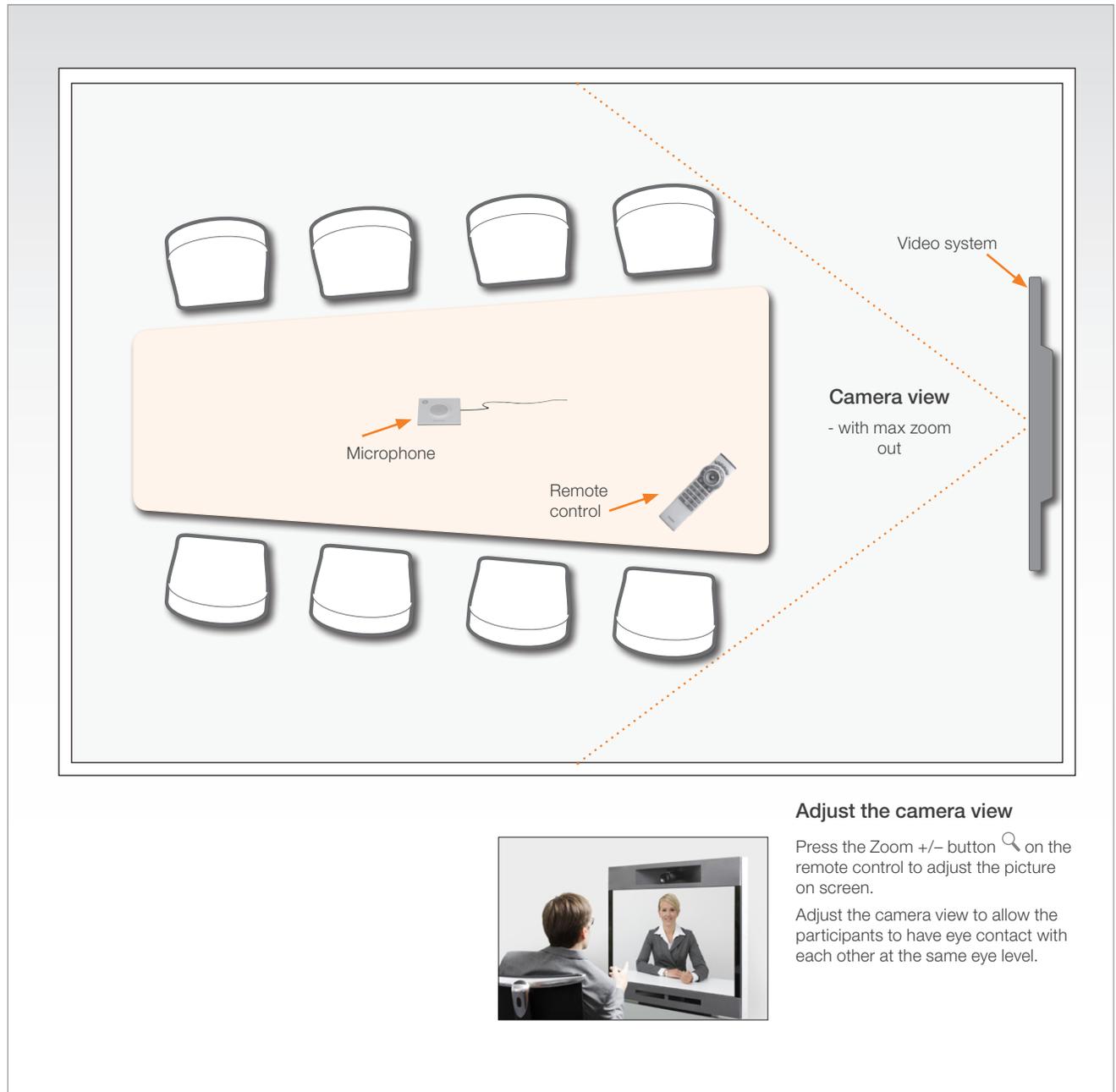
The Quick Set C20 is shipped with TANDBERG PrecisionHD 1080p 4x zoom or TANDBERG PrecisionHD 1080p 12x zoom.

- Make sure all participants are covered within the camera angle. The maximum zoom out for TANDBERG PrecisionHD 1080p camera is 72°.
- Adjust the camera view (using zoom in/out) to allow the participants to be shown in full size on screen, and to keep eye contact with each other at the same eye level
- The camera should capture all participants in the room
- If the participants are sitting too close to the monitor the camera will "look down" at the participants. This may not give a good presentation of the participants at the far end.

The microphone

The Quick Set C20 is shipped with one microphone. Optional, you can connect two microphones. See the General room guidelines section for how to position the microphones.

- Place the microphone nearby the meeting participants.
- The microphone must not be hidden behind obstacles like laptop, projector or other equipment placed on the table.
- Place the microphone away from noisy equipment like computer and projector fans, power outlets or similar arrangements on the table. The microphone will pick up noise from these arrangements quite strongly.
- Avoid unnecessary noise like paper rustling and tapping with fingers on the table.



Adjust the camera view

Press the Zoom +/- button  on the remote control to adjust the picture on screen.

Adjust the camera view to allow the participants to have eye contact with each other at the same eye level.



Sharing a PC presentation

General recommendations for the team collaboration rooms, team meeting rooms and showroom floor are described on the previous page.

Dual video stream

With dual video stream you can view two different live video streams simultaneously, the main video and one additional source. This could for example be both a PC presentation and the person who gives the presentation.

If one of the video systems does not support Dual Video Stream, no second video stream will be established and the PC presentation will be shown as the main video.

Sharing the presentation

1. Make sure the PC do not cover any of the microphones as this will reduce the audio quality at the far end
2. Locate the DVI cable and connect the PC to the video system
3. When pressing the Presentation button on the remote control the default presentation source is activated.

The DVI/VGA input is compliant with VESA Extended Display Identification Data (EDID) and will be able to notify the PC of the supported output formats.

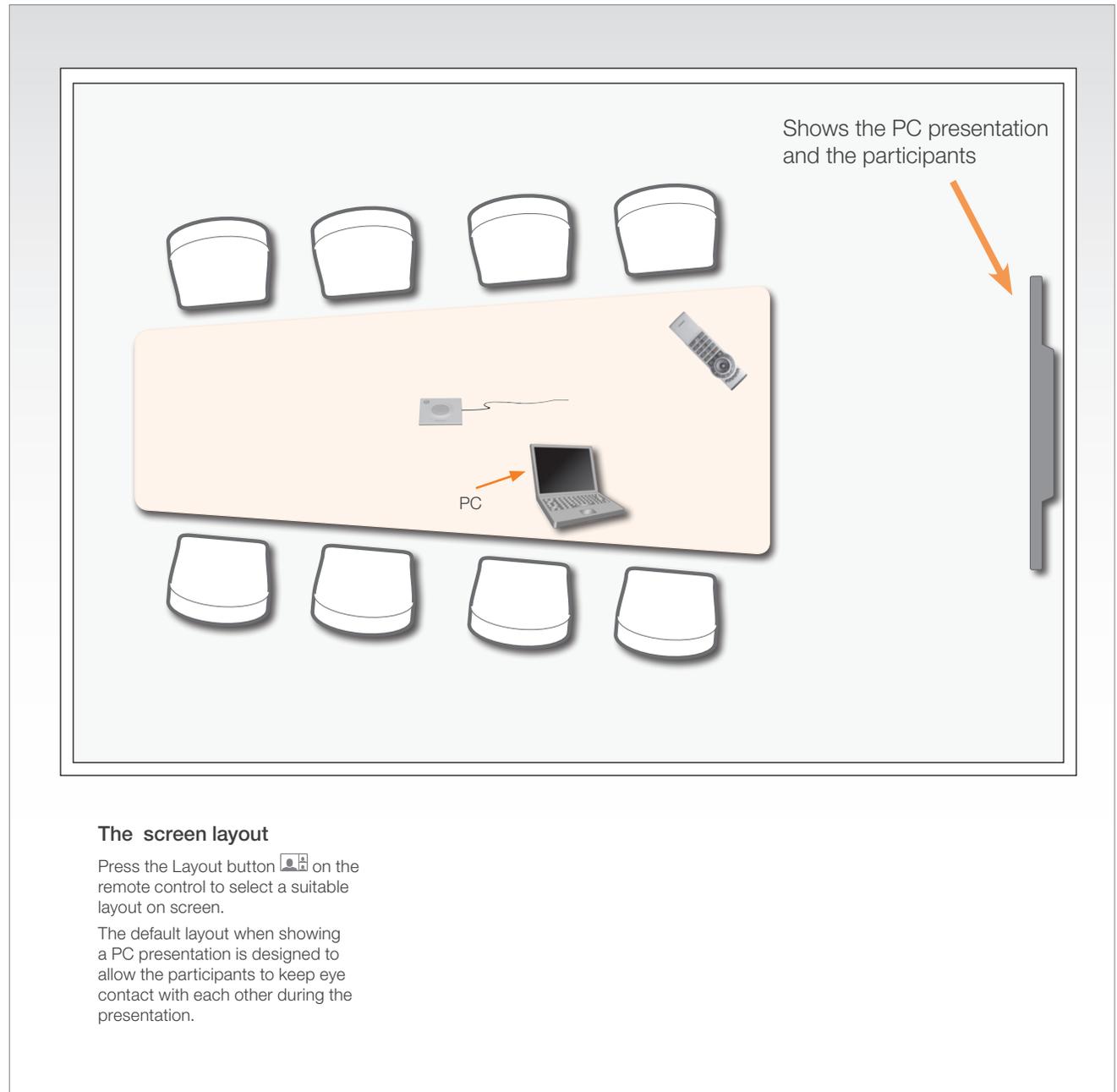
Troubleshooting if the presentation does not show

- On most PC's you must press a special key combination to switch the PC image from the PC screen to the video screen
- Make sure the connector used for PC presentation is configured as the default presentation source.
Go to: **Home > Settings > Advanced > Advanced configuration > Video > DefaultPresentationSource** (for Codec C20 the default value is 2, which refers to the DVI connector)
- Make sure your PC is set to activate your VGA output

Other presentation sources

You can also connect other presentation sources like:

- DVD
- Document camera



The screen layout

Press the Layout button  on the remote control to select a suitable layout on screen.

The default layout when showing a PC presentation is designed to allow the participants to keep eye contact with each other during the presentation.

TANDBERG Remote Control TRC5

Function keys: Represents shortcuts and advanced functions. Each key reflects a soft key on screen.

Microphone: Press the  key to toggle the microphones on/off.

Volume: Press the + or - on the  key to adjust the codec volume.

Mute: Press the - on the  key to mute the volume during an incoming call.

OK/Select: Press the  key to confirm your choice or selection.

Phone book: Press the  key to display the local Phone book.

Home: Press the  key to key to show the menu on screen.

Call: Using the  key:
 INITIATE A CALL: Select a name from the Phone book or enter the name, number or URI and press the Call key to initiate the call.
 SHORTCUT TO RECENT CALLS: Use the Call key as a shortcut to Recent Calls when the Call menu is not visible.

Clear: Press the  key to remove characters in a text field.

Waking up the system
 Grab the remote control and make sure your hand touches the rubber line sensors going along both sides of the remote control.
 or: Touch any key on the remote control.



Presentation: Press the  key to show/hide a presentation.

Zoom: Press the + or - on the  key to zoom the camera in and out.

Arrows:

- **Up/Down:** Use the ▲ and ▼ arrow keys to navigate in the menu.
- **Arrow Right:** Press the ► arrow key to expand the selected menu item or to move to the right in a text field.
- **Arrow Left:** Press the ◀ arrow key to go one step back in the menu or to move to the left in a text field.

Layout: Press the  key to display the Layout menu, then select a view in the menu.

End call/Standby: Press the  key to end a call, or when idle, press and hold the key to go into standby mode.

Alphanumeric keypad: Use the keypad in the same way as you would use a cellular phone.

- 0-9, a-z, period (.), @, space, *: Press a key repeatedly to toggle between the options displayed on each key.
- abc/123 #: Press the # key to toggle between touch tones mode (long press), lower case characters and numbers.

IR transmitter range (DIP switch setting)

The IR transmitter has a short and long range. Open the battery cover and remove the batteries to set the DIP switch.

- Short range (1 m): Move the DIP switch down.
- Longer range: Move the DIP switch up.

Password protection

The system can be password protected in two ways:

- The codec can be password protected with an administrator password. If the codec is password protected a user name and password is required to logon to the codec.
- The Advanced menus can be password protected with a menu password.

NOTE! When a new password has been defined make sure you save a copy of the password in a safe place.

Contact your TANDBERG representative if you have forgotten the password.

Setting the codec administrator password

Do the following to define the administrator password on the codec:

1. Connect to the codec through the network, using a command line interface (ssh, telnet or scp)
2. Login to the codec with user name (admin) and no password.
3. Run the following API command and enter a password:

```
xCommand SystemUnit AdminPassword Set
Password: "*****"
```
4. The password format is a string with 0–255 characters.
5. Reboot the codec.

Login to the codec

- You can login to the codec with the user name and password, either from a web interface or from a command line interface. You will need to enter both the user name and password.
- The user name is **admin**, and cannot be changed.

How to deactivate the administrator password

1. Connect to the codec through the network, using a command line interface (ssh, telnet or scp).
2. Login to the codec with the required user name (admin) and password.
3. Run the following API command with a blank password:

```
xCommand SystemUnit AdminPassword Set
Password: ""
```
4. Reboot the codec.

Setting the menu password

Do the following to define a password for the Advanced menus:

1. Open the menu on screen and go to: **Home > Settings > Advanced > Change password.**
2. The password is a string with 0–255 characters.
3. Enter the password and press **Save**.

Login to the Advanced menu

When a password is set, the password is required to get access to the Advanced menu on screen.

How to change the menu password

1. To change the password, go to: **Home > Settings > Advanced > Change password** in the menu.
2. Enter the new password in the **Set password** menu.
3. Press **Save** to save the new password.

How to deactivate the menu password

1. To change the password, go to: **Home > Settings > Advanced > Change password** in the menu.
2. Leave the text field empty in the **Set password** menu.
3. Press **Save** to save the blank password. This will deactivate the menu password.

The web interface

The web interface allows for remote administration of the system.

Open a web browser and enter the IP address of the codec. From this page you have the following menu options:

- **System info**
- Upgrade software
- Advanced configuration
- Wallpaper
- Call
- Upload certificates
- XML files
- Logs
- Add release key

Password protection of the web interface

If the codec is password protected with an administrator password a user name and password will be required to get access to the codec from the web interface. Read more about password protection of the codec in the previous page.

The system info page

TANDBERG C20

System info

- Upgrade software
- Advanced configuration
- Wallpaper
- Call
- Upload certificates
- XML files
- Logs
- Add release key

System Info ^

TANDBERG Codec C20

System name: TANDBERG Codec C20 Software version: TC2.0 IP address: 10.47.6.254 Product: TANDBERG Codec C20

Interactive menu
Click on the menu items to access the pages. Each web page is described in the following pages.

Static information
Gives information about system name, software version, IP address and product type.

The web interface, *cont...*

The web interface allows for remote administration of the system.

Open a web browser and enter the IP address of the codec. From this page you have the following menu options:

- System info
- **Upgrade software**
- Advanced configuration
- Wallpaper
- Call
- Upload certificates
- XML files
- Logs
- Add release key

The Upgrade software page

The screenshot shows the TANDBERG C20 web interface. On the left is a navigation menu with the following items: System info, Upgrade software (highlighted in orange), Advanced configuration, Wallpaper, Call, Upload certificates, XML files, Logs, and Add release key. The main content area is titled 'Upgrade software' and contains a file input field with a 'Browse...' button and an 'Upgrade' button below it.

How to upgrade the software on the codec:

1. Contact your TANDBERG representative to obtain the software upgrade file.
2. Click **Browse...** and locate the upgrade file (.PKG)
3. Click the **Upgrade** button to start the installation.
4. Leave the system to allow the installation process to complete. You can follow the progress on this page. When the upgrade is successfully completed a message will appear. The upgrade process takes a few minutes.

The web interface, cont...

The web interface allows for remote administration of the system.

Open a web browser and enter the IP address of the codec. From this page you have the following menu options:

- System info
- Upgrade software
- **Advanced configuration**
- Wallpaper
- Call
- Upload certificates
- XML files
- Logs
- Add release key

The Advanced configuration page

The Advanced configuration defines the system settings and are structured in a hierarchy, making up a database of system settings.

Stay up to date

The Advanced configuration are subject to change without notice. To stay up to date check our web page for the last version of the document.

Go to: <http://www.tandberg.com/docs>

Expanded view

Edit a value: To change a value, click on the value to see the expanded view as shown above.

Save: Click the **OK** button to save the new value.

Cancel: When you want to leave without saving, click **Cancel**.

The web interface, cont...

The web interface allows for remote administration of the system.

Open a web browser and enter the IP address of the codec. From this page you have the following menu options:

- System info
- Upgrade software
- **Advanced configuration**
- Wallpaper
- Call
- Upload certificates
- XML files
- Logs
- Add release key

The Advanced configuration, search functionality

The search functionality

When searching for words like **H323** or **SIP**, all settings beginning with these words, included all settings below in the hierarchy, will show in the list.

Search: Enter as many characters as needed to get the desired result and click the **Search** button to initiate the search.

Clear: Click the **Clear** button to return to the main view.

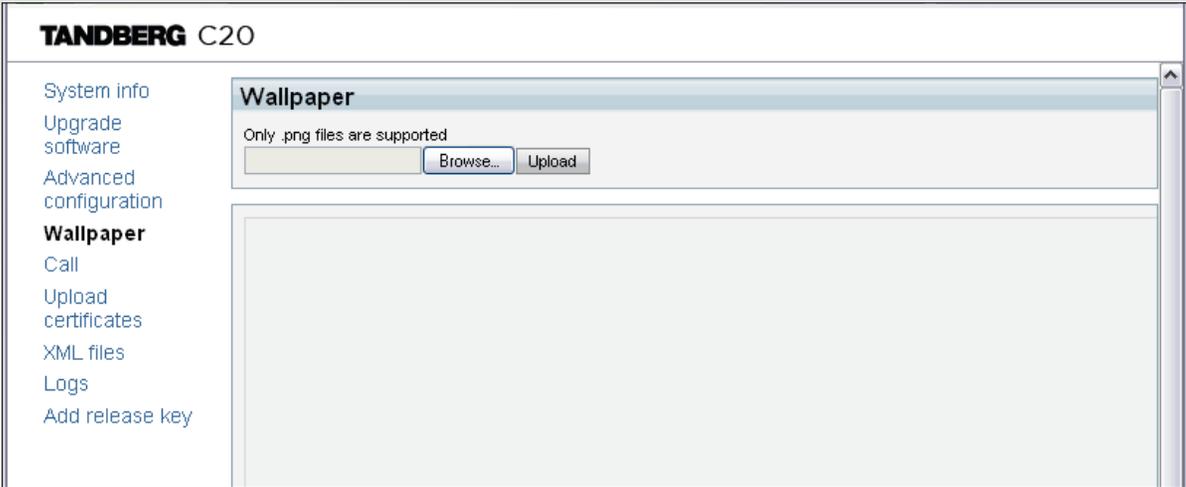
The web interface, cont...

The web interface allows for remote administration of the system.

Open a web browser and enter the IP address of the codec. From this page you have the following menu options:

- System info
- Upgrade software
- Advanced configuration
- **Wallpaper**
- Call
- Upload certificates
- XML files
- Logs
- Add release key

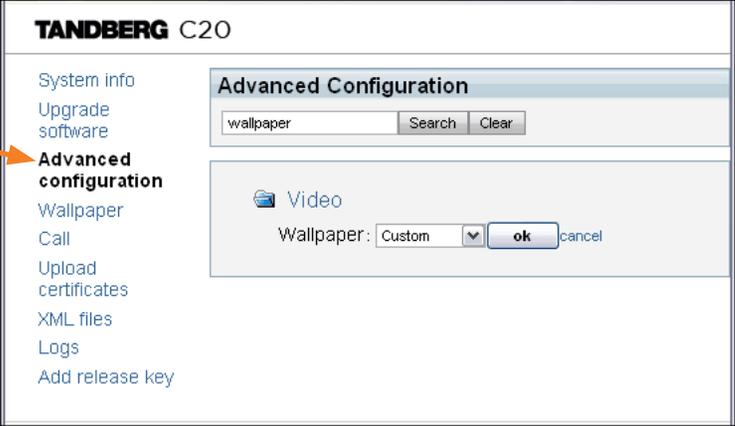
The Wallpaper page



How to upload a custom wallpaper to the codec and configure the codec to make use of it:

1. Click the **Browse...** button to locate the wallpaper file (.PNG)
2. Click the **Upload** button to upload the file to the codec and refresh the web page to see the wallpaper you just uploaded.
3. Go to: **Advanced configuration** page and search for **Wallpaper**. From the drop down list, select **Custom**. The new wallpaper should now show on the monitor which is connected to the codec.

If the new wallpaper does not show on the monitor connected to the codec, you may have to toggle once between Wallpaper: **None** and **Custom** to make the change take effect.



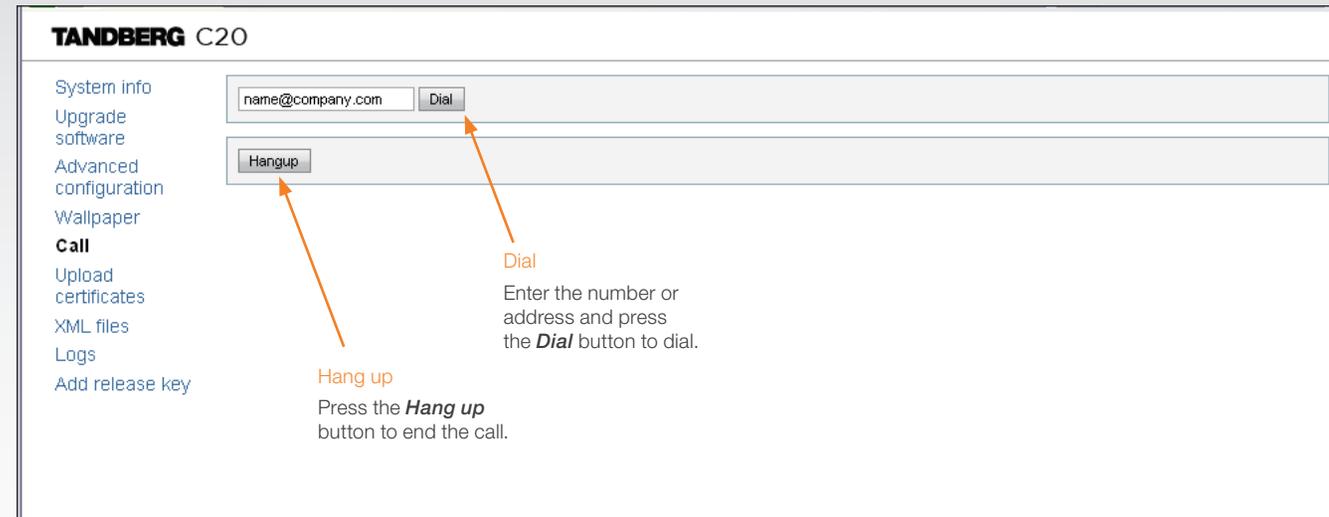
The web interface, cont...

The web interface allows for remote administration of the system.

Open a web browser and enter the IP address of the codec. From this page you have the following menu options:

- System info
- Upgrade software
- Advanced configuration
- Wallpaper
- **Call**
- Upload certificates
- XML files
- Logs
- Add release key

The Call page



TANDBERG C20

System info
Upgrade software
Advanced configuration
Wallpaper
Call
Upload certificates
XML files
Logs
Add release key

name@company.com Dial

Hangup

Hang up
Press the *Hang up* button to end the call.

Dial
Enter the number or address and press the *Dial* button to dial.

NOTE! No status information is shown on the page during the call.

The web interface, *cont...*

The web interface allows for remote administration of the system.

Open a web browser and enter the IP address of the codec. From this page you have the following menu options:

- System info
- Upgrade software
- Advanced configuration
- Wallpaper
- Call
- **Upload certificates**
- XML files
- Logs
- Add release key

The SSL Certificates page

TANDBERG C20

System info
 Upgrade software
 Advanced configuration
 Wallpaper
 Call
Upload certificates
 XML files
 Logs
 Add release key

SSL Certificate

HTTPS certificate (PEM format):

Private key (PEM format):

Passphrase:

About certificates

To install a certificate, you will need:

- HTTPS certificate (.PEM format)
- ROOT certificate (.PEM format)
- Private key (.PEM format)
- Passphrase (optional)

How to upload the certificate

1. Contact your system administrator to obtain the required files (.PEM format).
2. Click **Browse...** and locate the certificate files (.PEM)
3. Enter the **Passphrase** (optional).
4. Click the **Upload** button to install the certificates to the codec.

The web interface, *cont...*

The web interface allows for remote administration of the system.

Open a web browser and enter the IP address of the codec. From this page you have the following menu options:

- System info
- Upgrade software
- Advanced configuration
- Wallpaper
- Call
- Upload certificates
- **XML files**
- Logs
- Add release key

The XML files page

The screenshot shows the TANDBERG C20 web interface. On the left is a navigation menu with the following items: System info, Upgrade software, Advanced configuration, Wallpaper, Call, Upload certificates, XML files (highlighted in orange), Logs, and Add release key. The main content area is titled 'XML Files' and contains a list of links: Configuration, Status, Command, Directory, Valuespace, and Documentation.

Configuration

The Configuration file gives an overview of the system settings, which are controlled from the Advanced configuration menu or from the API. The configuration commands are structured in a hierarchy, making up a database of system settings.

Status

The status information is structured in a hierarchy, making up a database constantly being updated by the system to reflect system and process changes.

Command

The Command file gives an overview of the commands available to instruct the system to perform an action and are issued from the API. A Command type command is usually followed by a set of parameters to specify how the given action is to be executed.

Directory

The Directory file will be described later.

Valuespace

The Valuespace gives an overview of all the available value spaces.

Documentation

The Documentation file will be described later.

The web interface, cont...

The web interface allows for remote administration of the system.

Open a web browser and enter the IP address of the codec. From this page you have the following menu options:

- System info
- Upgrade software
- Advanced configuration
- Wallpaper
- Call
- Upload certificates
- XML files
- **Logs**
- Add release key

The Logs page

TANDBERG C20

System info

Upgrade software

Advanced configuration

Wallpaper

Call

Upload certificates

XML files

Logs

Add release key

Logs

Current log files

Historical log files

Historical log files

Time stamped historical log files. Click on a file and follow the instructions in the dialog box to save the application file.

Index of /log/

Name	Last Modified	Size	Type
Parent Directory/	-	-	Directory
log.tar.gz	2009-Jun-16 07:41:41	51.6K	application/x-gzip
log.tar.gz.0	2009-May-28 09:08:36	21.0K	application/x-gzip
log.tar.gz.1	2009-May-28 12:17:25	203.3K	application/x-gzip
log.tar.gz.2	2009-Jun-12 12:26:04	56.5K	application/x-gzip
log.tar.gz.3	2009-Jun-16 07:41:41	51.6K	application/x-gzip
log.tar.gz.4	2009-May-08 10:58:37	42.5K	application/x-gzip
log.tar.gz.5	2009-May-12 17:36:37	33.9K	application/x-gzip
log.tar.gz.6	2009-May-14 12:40:14	152.6K	application/x-gzip
log.tar.gz.7	2009-May-14 17:13:02	132.6K	application/x-gzip
log.tar.gz.8	2009-May-21 11:35:21	22.8K	application/x-gzip
log.tar.gz.9	2009-May-28 07:08:58	197.5K	application/x-gzip

lighttpd/1.4.20

Current log files

Time stamped event log files. Click on a text file to view the file or follow the instructions in the dialog box to save an application file.

Index of /eventlog/

Name	Last Modified	Size	Type
Parent Directory/	-	-	Directory
application.log	2009-Jun-23 08:06:35	208.2K	text/plain
audio0.log	2009-Jun-23 07:59:08	1.9K	text/plain
main.log	2009-Jun-23 07:59:37	27.2K	text/plain
osdl.log	2009-Jun-23 07:42:37	4.6K	text/plain
scriptbuffer.xml	2009-Jun-23 07:59:37	8.7K	application/xml
statedump.xml	2009-Jun-23 07:59:37	9.8K	application/xml
video0.log	2009-Jun-23 07:59:08	1.2K	text/plain
video1.log	2009-Jun-23 07:42:18	1.1K	text/plain
video2.log	2009-Jun-23 07:59:35	3.0K	text/plain
videocontroller.log	2009-Jun-23 07:59:37	6.3K	text/plain
videogw0.log	2009-Jun-23 07:59:37	3.9K	text/plain
videogw1.log	2009-Jun-23 07:42:17	2.2K	text/plain
videogw2.log	2009-Jun-23 07:59:36	2.8K	text/plain
vpe0.log	2009-Jun-23 07:59:37	5.4K	text/plain
vpe1.log	2009-Jun-23 07:59:37	6.3K	text/plain

lighttpd/1.4.20

The log files

The log files are TANDBERG specific debug files which may be required by TANDBERG in the need of technical support.

D14489.01—JULY 2009

56

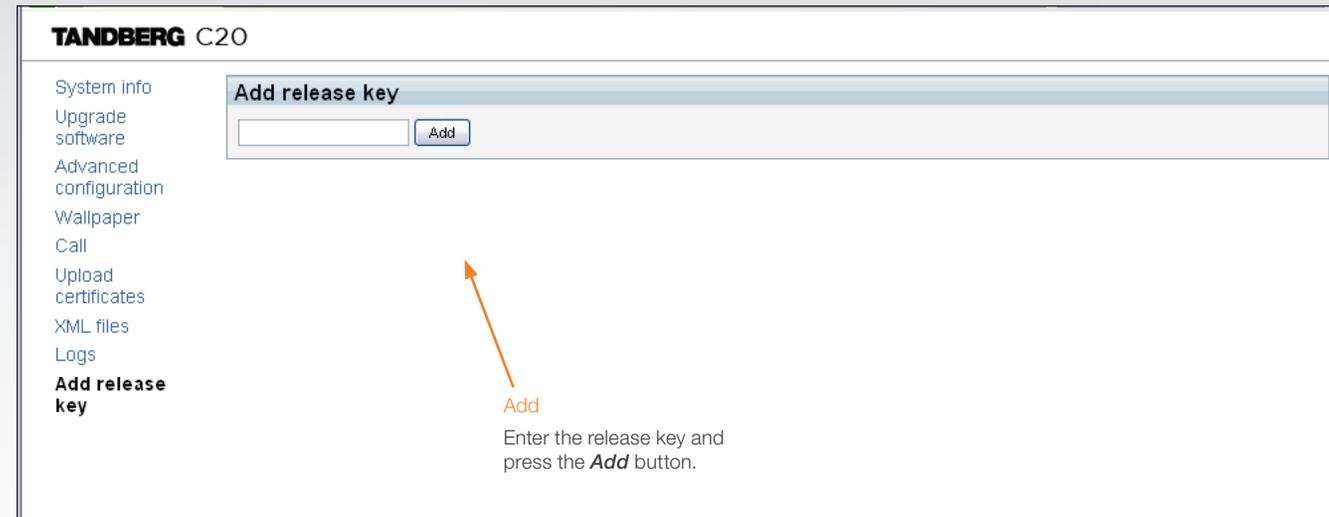
The web interface, *cont...*

The web interface allows for remote administration of the system.

Open a web browser and enter the IP address of the codec. From this page you have the following menu options:

- System info
- Upgrade software
- Advanced configuration
- Wallpaper
- Call
- Upload certificates
- XML files
- Logs
- **Add release key**

The Add release key page



TANDBERG C20

System info
Upgrade software
Advanced configuration
Wallpaper
Call
Upload certificates
XML files
Logs
Add release key

Add release key

Add

Add
Enter the release key and press the **Add** button.

The release key

Contact your TANDBERG representative to obtain the release key.

Supported RFCs in SIP

The RFC (Request for Comments) series contains technical and organizational documents about the Internet, including the technical specifications and policy documents produced by the Internet Engineering Task Force (IETF).

Current RFCs and drafts supported in SIP

- RFC 1889 RTP: A Transport Protocol for Real-time Applications
- RFC 2190 RTP Payload Format for H.263 Video Streams
- RFC 2327 SDP: Session Description Protocol
- RFC 2396 Uniform Resource Identifiers (URI): Generic Syntax
- RFC 2429 RTP Payload Format for the 1998 Version of ITU-T Rec. H.263 Video (H.263+)
- RFC 2617 Digest Authentication
- RFC 2782 DNS RR for specifying the location of services (DNS SRV)
- RFC 2833 RTP Payload for DTMF Digits, Telephony Tones and Telephony Signals
- RFC 2976 The SIP INFO Method
- RFC 3016 RTP Payload Format for MPEG-4 Audio/Visual Streams
- RFC 3047 RTP Payload Format for ITU-T Recommendation G.722.1
- RFC 3261 SIP: Session Initiation Protocol
- RFC 3262 Reliability of Provisional Responses in SIP
- RFC 3263 Locating SIP Servers
- RFC 3264 An Offer/Answer Model with SDP
- RFC 3311 UPDATE method
- RFC 3361 DHCP Option for SIP Servers
- RFC 3420 Internet Media Type message/sipfrag
- RFC 3515 Refer method
- RFC 3550 RTP: A Transport Protocol for Real-Time Applications
- RFC 3581 Symmetric Response Routing
- RFC 3605 RTCP attribute in SDP
- RFC 3711 The Secure Real-time Transport Protocol (SRTP)
- RFC 3840 Indicating User Agent Capabilities in SIP
- RFC 3890 A Transport Independent Bandwidth Modifier for SDP
- RFC 3891 The SIP "Replaces" Header
- RFC 3892 Referred-By Mechanism
- RFC 3960 Early Media
- RFC 3984 RTP Payload Format for H.264 Video
- RFC 4028 Session Timers in SIP
- RFC 4145 TCP-Based Media Transport in the SDP
- RFC 4568 SDP: Security Descriptions for Media Streams
- RFC 4574 The Session Description Protocol (SDP) Label Attribute
- RFC 4582 The Binary Floor Control Protocol
- RFC 4585 Extended RTP Profile for RTCP-Based Feedback
- RFC 4587 RTP Payload Format for H.261 Video Streams
- RFC 4629 RTP Payload Format for ITU-T Rec. H.263 Video
- RFC 5168 XML Schema for Media Control
- RFC 4796 The SDP Content Attribute
- RFC 4583 SDP Format for BFCP Streams
- RFC 5589: SIP Call Control Transfer
- draft-ietf-avt-rtp-h264-rcdo-02
- draft-ietf-avt-rtp-rfc3984bis-06
- draft-ietf-sip-outbound-20: Managing Client Initiated Connections

Media capabilities supported in SIP

The audio and video media capabilities supported in SIP are the same as for H.323.

CE Declaration for Codec C20

For an official, signed version of this document, or details regarding documentation from the technical construction file, please contact TANDBERG.

EC Declaration of conformity	
MANUFACTURER:	TANDBERG Telecom AS
PRODUCT NAME:	TANDBERG Codec C20
TYPE NUMBER:	TTC7-18
DESCRIPTION:	Video Conferencing Equipment
DIRECTIVES:	LVD 2006/95/EC
This equipment complies with.	EMC 2004/108/EC
HARMONIZED STANDARDS:	EN 60950-1:2006
Applied in order to verify compliance with directives.	EN 55022 (2006)
	EN 55024 (1998) + A1 (2001) + A2 (2003)
	EN 61000-3-2 (2006)
	EN 61000-3-3 (1995) + A1 (2001) + A2 (2005)
TEST REPORTS and CERTIFICATES ISSUED BY:	Reports/Certificates No.:
	LVD (Nemko AS) 121905
	EMC (Nemko AS) E09659.00
TECHNICAL CONSTRUCTION FILE NO.:	14508
YEAR WHICH THE CE-MARK WAS AFFIXED:	2009

China RoHS table

This product complies with the Chinese RoHS.

产品中有毒有害物质表

部件名称	有毒有害物质或元素					
	铅	汞	镉	六价铬	多溴联苯	多溴二苯醚
金属部件	X	O	O	O	O	O
印刷电路板及组件	X	O	O	O	O	O
线缆和线缆组装	X	O	O	O	O	O
显示器（包括照明灯）	X	X	O	O	O	O

说明:

O: 表示该有毒有害物质在此部件所有均质材料中的含量均在中国标准《电子信息产品中有毒有害物质的限量要求》(SJ/T 11363-2006) 所规定的限量要求以下。

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出中国标准《电子信息产品中有毒有害物质的限量要求》(SJ/T 11363-2006) 所规定的限量要求。

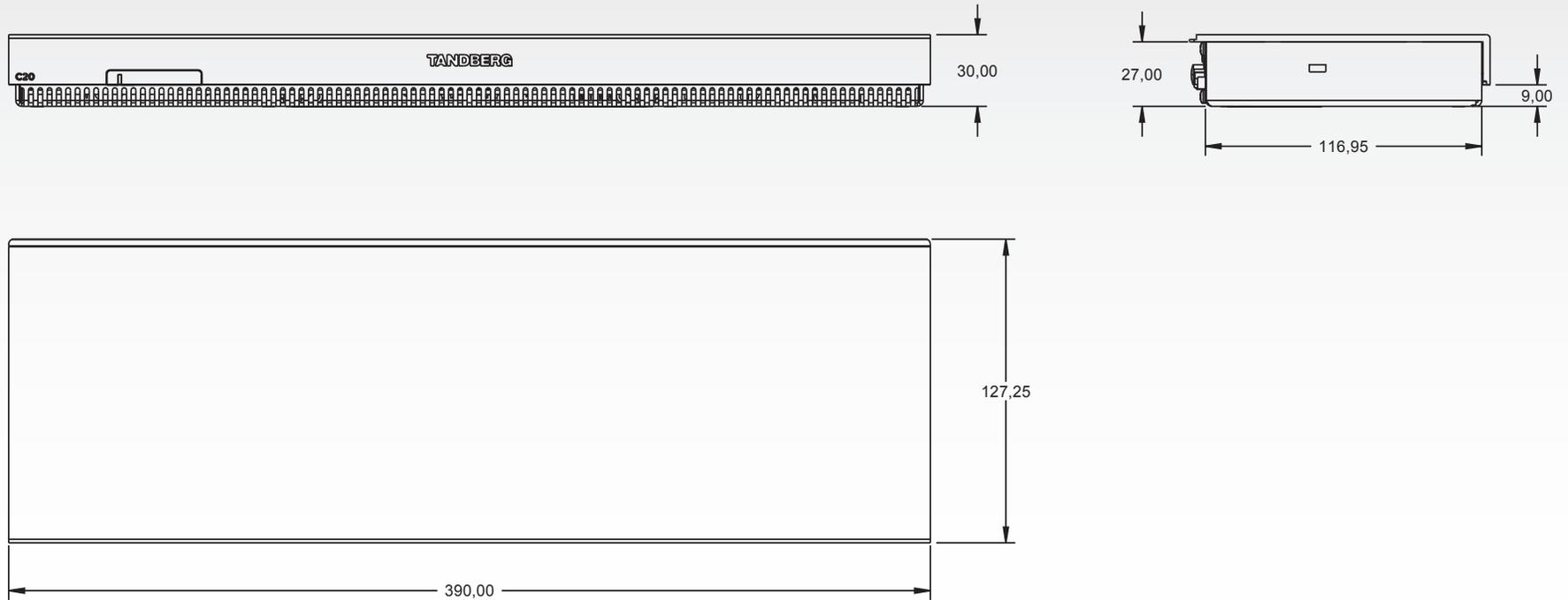
注意：在所售产品中未必包含所有上述所列部件。

除非在产品上有另外特别的标注，以下标志为针对所涉及产品的环保使用期限标志。环保使用期限只适用于产品在产品手册中所规定的使用条件。



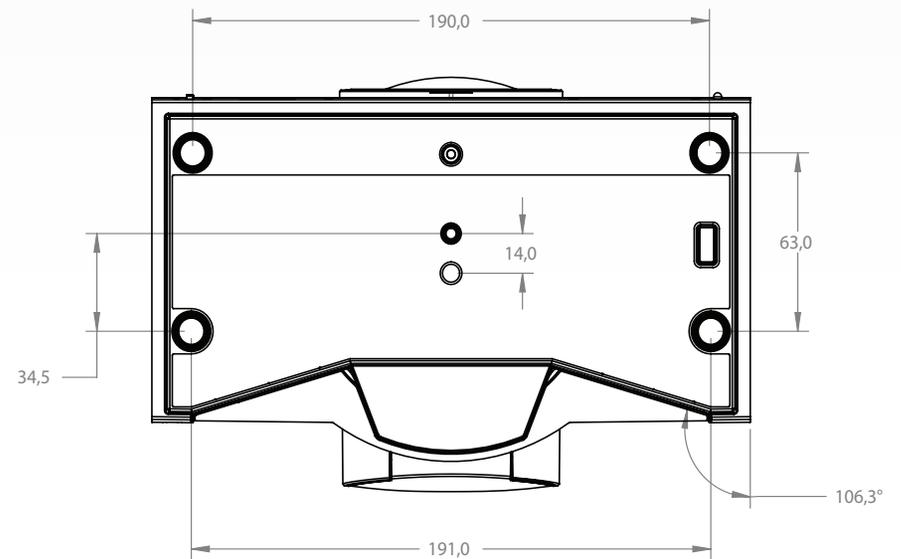
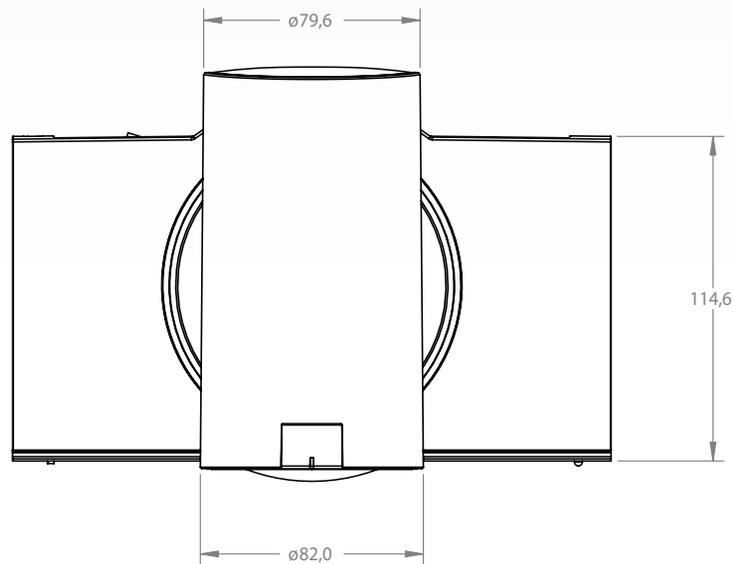
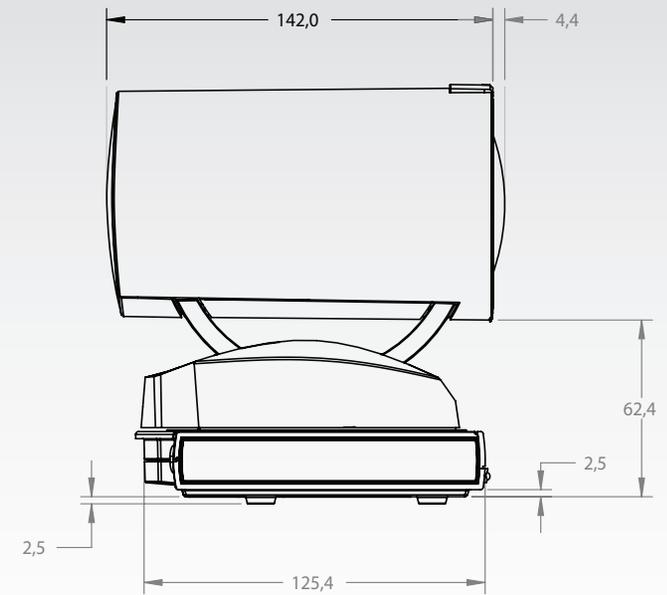
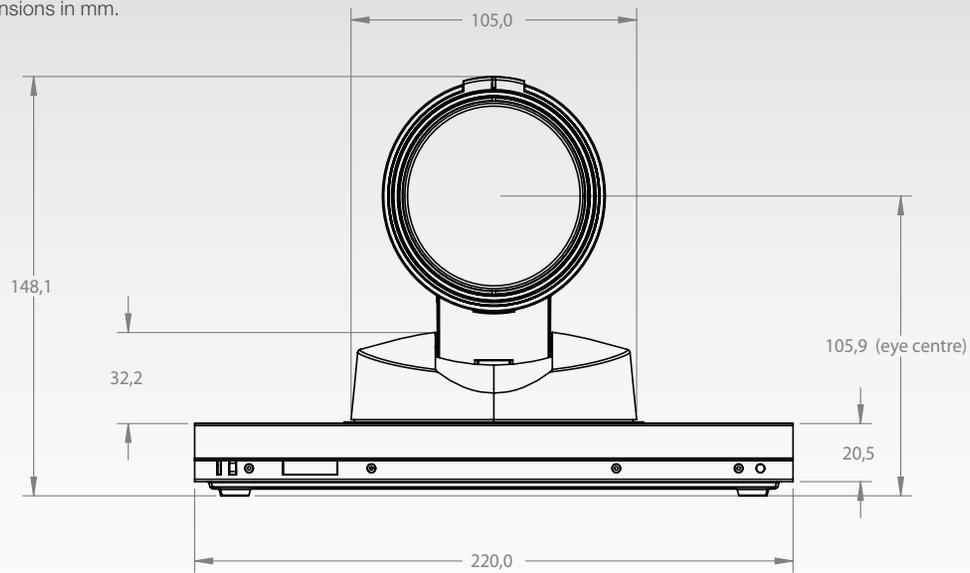
Dimensions Codec C20

Dimensions in mm.



PrecisionHD 1080p camera dimensions

Dimensions in mm.



Technical specifications

SET DELIVERED COMPLETE WITH:

Codec C20, PrecisionHD 1080p 4x or 12x camera, Performance Mic 20, remote control, cables and power supply

BANDWIDTH

- H.323/SIP up to 6 Mbps point-to-point

FIREWALL TRAVERSAL

- TANDBERG Expressway™ Technology
- H.460.18, H.460.19 Firewall Traversal

VIDEO STANDARDS

- H.261, H.263, H.263+, H.264

VIDEO FEATURES

- Native 16:9 Widescreen
- Advanced Screen Layouts
- Intelligent Video Management
- Local Auto Layout

VIDEO INPUTS (2 INPUTS)

1 X HDMI INPUT, SUPPORTED FORMATS:

- 1920 x 1080@60, 59.94 Hz (1080p60)
- 1920 x 1080@50 Hz (1080p50)
- 1920 x 1080@30, 29.97 Hz (1080p30)
- 1920 x 1080@25 Hz (1080p25)
- 1920 x 1080@24, 23.97 Hz (1080p24)
- 1280 x 720@60, 59.94 Hz (720p60)
- 1280 x 720@50 Hz (720p50)
- 720 x 480@60, 59.94 Hz (480p60)
- 640 x 480@60 Hz (480p60)
- 1600 x 1200@50, 60 Hz (UXGA)
- 1280 x 1024@60, 75 Hz (SXGA)
- 1024 x 768@60, 70, 75, 85 Hz (XGA)
- 800 x 600@56, 60, 72, 75, 85 Hz (SVGA)
- 1920 x 1200@50, 60 Hz (WUXGA)
- 1680 x 1050@60 Hz (WSXGA+)
- 1440 X 900@60 Hz (WXGA+)
- 1280 x 768@60 Hz (WXGA)

1 X DVI-I INPUT, SUPPORTED FORMATS:

Analog (VGA):
 1920 x 1080@60 Hz (1080p)
 1280 x 720@60 Hz (720p)
 1600 x 1200@60 Hz (UXGA)
 1280 x 1024@60, 75 Hz (SXGA)
 1280 x 960@60 Hz
 1024 x 768@60, 70, 75, 85 Hz (XGA)
 1920 x 1200@50 Hz (WUXGA)
 1680 x 1050@60 Hz (WSXGA+)
 1440 x 900@60 Hz (WXGA+)
 1280 x 800@60 Hz (WXGA)
 1280 x 768@60 Hz (WXGA)
 Digital (DVI-D):
 Same as HDMI, ref. above.
 Extended Display Identification Data (EDID)

VIDEO OUTPUTS (2 OUTPUTS)

2 X HDMI OUTPUT, SUPPORTED FORMATS:

- 1920 x 1080@60 Hz (1080p60)
- 1280 x 720@60 Hz (720p60)
- 1600 x 1200@60 Hz (UXGA)
- 1280 x 1024@60 Hz (SXGA)
- 1024 x 768@60 Hz (XGA)
- 800 x 600@60 Hz (SVGA)
- 640 x 480@60 Hz (VGA)
- 1920 x 1200@60Hz (WUXGA)
- 1360 x 768@60 Hz
- 1366 x 768@60 Hz
- 1280 x 768@60 Hz (WXGA)
- VESA Monitor Power Management

LIVE VIDEO RESOLUTIONS (ENCODE/DECODE)

- 176 x 144@30 fps (QCIF)
- 352 x 288@30 fps (CIF)
- 512 x 288@30 fps (w288p)
- 576 x 448@30 fps (448p)
- 768 x 448@30 fps (w448p)
- 704 x 576@30 fps (4CIF)
- 1024 x 576@30 fps (w576p)
- 640 x 480@30 fps (VGA)

- 800 x 600@30 fps (SVGA)
- 1024 x 768@30 fps (XGA)
- 1280 x 1024@30 fps (SXGA)
- 1280 x 720@30 fps (720p30)
- 1920 x 1080@30 fps (1080p30)*
- 1280 x 768@30 fps (WXGA)
- 1440 x 900@30 fps (WXGA+)
- 1680 x 1050@30 fps (WSXGA+)
- 1600 x 1200@30 fps (UXGA)
- 512 x 288@60 fps (w288p60)**
- 768 x 448@60 fps (w448p60)**
- 1024 x 576@60 fps (w576p60)**
- 1280 x 720@60 fps (720p60)**

AUDIO STANDARDS

- G.711, G.722, G.722.1, 64 bit & 128 bit MPEG4 AAC-LD

AUDIO FEATURES

- CD-Quality 20KHz Mono
- 1 x Acoustic Echo Canceller
- Automatic Gain Control (AGC)
- Automatic Noise Reduction
- Active Lip Synchronization

AUDIO INPUTS (4 INPUTS)

- 2 x Microphone, 4 pin MiniJack
- 2 x RCA/Phono (mixed to mono)

AUDIO OUTPUTS (3 OUTPUTS)

- 2 x RCA/Phono (dual mono)
- 1 x HDMI, digital, main audio

DUAL STREAM

- H.239 (H.323) dual stream
- BFCP (SIP) dual stream
- Support resolutions up to WXGA (1280 x 768)

PROTOCOLS

- H.323
- SIP

EMBEDDED ENCRYPTION

- H.323/SIP point-to-point
- Standards-based: H.235 v2 & v3 and AES
- Automatic key generation and exchange
- Supported in Dual Stream

IP NETWORK FEATURES

- DNS lookup for service configuration
- Differentiated Services (QoS)
- IP adaptive bandwidth management (including flow control)
- Auto gatekeeper discovery
- Dynamic playout and lip-sync buffering
- H.245 DTMF tones in H.323
- Date and Time support via NTP
- Packet Loss based Downspeeding
- URI Dialing
- TCP/IP
- DHCP
- 802.1x network authentication

SECURITY FEATURES

- Management via HTTPS and SSH
- IP Administration Password
- Menu Administration Password
- Disable IP services
- Network Settings protection

NETWORK INTERFACES

- 1 x LAN/Ethernet (RJ-45) 10/100/1000 Mbit

OTHER INTERFACES

- USB host for future usage

PRECISIONHD 1080P 12X CAMERA

- 1/3" CMOS
- 12 x zoom
- +15°/-25° tilt, +/- 90° pan
- 43.5° vertical field of view
- 72° horizontal field of view
- Focus distance 0.3m–infinity
- 1920 x 1080 pixels progressive @ 60fps

- Other formats supported (configurable through Dip-switch):
 - 1920x1080@60fps (HDMI only)
 - 1920x1080@50fps (HDMI only)
 - 1920x1080@30fps
 - 1920x1080@25fps
 - 1280x720@60fps
 - 1280x720@50fps
 - 1280x720@30fps
 - 1280x720@25fps
- Automatic or manual focus/brightness/white balance
- Far-end camera control
- Dual HDMI and HD-SDI output
- Upside-down mounting with automatic flipping of picture

PRECISIONHD 1080P 4X CAMERA

- 1/3" CMOS
- 4 x zoom
- +15°/-25° tilt, +/- 90° pan
- 43.5° vertical field of view
- 72° horizontal field of view
- Focus distance 0.3m–infinity
- 1920 x 1080 pixels progressive @ 30fps
- Other formats supported (configurable through Dip-switch):
 - 1920x1080@30fps
 - 1920x1080@25fps
 - 1280x720@30fps
 - 1280x720@25fps
- Automatic or manual focus/brightness/white balance
- Far-end camera control
- Dual HDMI and HD-SDI output
- Upside-down mounting with automatic flipping of picture

SYSTEM MANAGEMENT

- Support for the TANDBERG Management Suite
- Total management via embedded SNMP, Telnet, SSH, XML, SOAP
- Remote software upload: via web server, SCP,

HTTP, HTTPS

- Remote control and on-screen menu system

DIRECTORY SERVICES

- Support for Local directories (My Contacts)
- Corporate Directory
- Unlimited entries using Server directory supporting LDAP and H.350
- Unlimited number for Corporate directory (through TMS)
- 200 number local directory
- Received Calls
- Placed Calls
- Missed Calls with Date and Time

POWER

- Auto-sensing power supply
- 100–240 VAC, 50/60 Hz
- 45 watts max. for codec and main camera

OPERATING TEMPERATURE AND HUMIDITY

- 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)

* requires Premium Resolution option

** requires Premium Resolution option and Quick Set C20plus

APPROVALS

- Directive 2006/95/EC (Low-Voltage Directive) — Standard EN 60950-1
- Directive 2004/108/EC (EMC Directive) — Standard EN 55022, Class B — Standard EN 55024 — Standard EN 61000-3-2/-3-3
- Approved according to UL 60950-1 and **CAN/CSA-C22.2 No. 60950-1-07**
- Complies with FCC15B **Class A**

DIMENSIONS OF CODEC C20

- Length: 15.35"/39.0cm
- Height: 1.18"/3.0cm
- Depth: 5.0"/12.7cm
- Weight: 4.0lbs/1.8kg

All specifications subject to change without notice, system specifics may vary.

All images in these materials are for representational purposes only, actual products may differ.

TANDBERG and Expressway are registered trademarks or trademarks of TANDBERG in the U.S. and other countries.

All other trademarks are property of their respective owners.

MTBF PRODUCT RELIABILITY/MTBF

The predicted reliability is expressed in the expected random Mean Time Between Failures (MTBF) for the electronic components based on the Power On Hours:

Power On Hours (POH) > 69 000 hours

Useful Life Cycle > 6 years

ISO 9001 certificate is available upon request

July 2009

TANDBERG

U.S. HEADQUARTERS
TANDBERG
1212 Avenue of the Americas
24th Floor
New York, NY 10036
Telephone: +1 212 692 6500
Fax: +1 212 692 6501
Video: +1 212 692 6535
E-mail: tandberg@tandberg.com

EUROPEAN HEADQUARTERS
TANDBERG
Philip Pedersens vei 20
1366 Lysaker
Norway
Telephone: +47 67 125 125
Fax: +47 67 125 234
Video: +47 67 126 126
E-mail: tandberg@tandberg.com

TANDBERG
See: **green** 