SONY

VIDEO COMMUNICATION SYSTEM-TECHNICAL DOCUMENTATION

High Quality HD Image of the PCS-HG90/PCSA-CHG90

IPELA

PCS-HG90 Ver. 1.0

PCSA-CHG90 Ver. 1.0

Introduction

The communication bandwidth used in conventional visual communication (typically, videoconferencing) is 1 to 2 Mbps at most. As a result, picture resolution is low and picture quality is only equivalent to that of video CDs.
As a leading company in this industry, Sony has realized a high resolution comparable to terrestrial analog TV broadcasting at a communication band of up to about 4 Mbps with the PCS-G50/G70 series.
To provide more realistic visual communication, the PCS-HG90 realizes two-way communication with unprecedented HD (High Definition) picture quality.
An optional HD 3CCD video camera, PCSA-CHG90, has system architecture functions for use with the PCS-HG90 and is sold separately. The system is equipped with HD-SDI video input/output terminals that allow digital signal transmission in every process, from shooting to input and output.
This document provides technical information on the PCSA-CHG90 and the codec used in the PCS-HG90.

PCSA-CHG90 HD 3CCD Video Camera

The PCSA-CHG90 is a compact all-in-one HD 3CCD video camera with built-in pan/tilt/zoom functions. The camera features a camera block consisting of three HD CCDs and is outfitted with a 12x optical zoom lens.

High Image Quality And High-resolution Remote Shooting With HDTV-compatible HD 3CCD camera

Sony's HD 3CCD system with three 1/3-type HD CCDs containing a total of 1,120,000 picture elements can capture outstanding HDTV-quality images with high sensitivity and low smear level.

The camera provides a realistic sensational widescreen picture with 16:9 aspect ratio in the 1080i (effective interlaced scanning: 1080 lines)*1 high-definition broadcast format.

*1: Actual communication with the counterpart site is performed in the 720P (effective progressive scanning: 720 lines) format.

Excellent Optical Performance Allowing Superior Quality Shooting

The adoption of the Carl Zeiss Vario-Sonnar T* lens with a large 72-mm aperture reduces chromatic aberration and achieves high resolution at all corners of the image. A multi-layer coating minimizes unnecessary light reflection inside the lens and significantly reduces flare and ghosting to receive light properly, enabling a realistic image with high contrast and superior color reproduction.

The lens has a focal length of 32.5mm to 390mm (equivalent to a 35-mm camera). The wider zooming range enables remote shooting of high-definition images with an aspect ratio of 16:9.

The 12x optical zoom lens enables zooming without deterioration of picture quality, allowing for realistic high-definition images. With a lens system consisting of 16 lens elements in 11 groups, including three aspherical lenses, clear images with minimum aberration can be obtained even when shooting subjects at maximum magnification.

Codec Used In The PCS-HG90

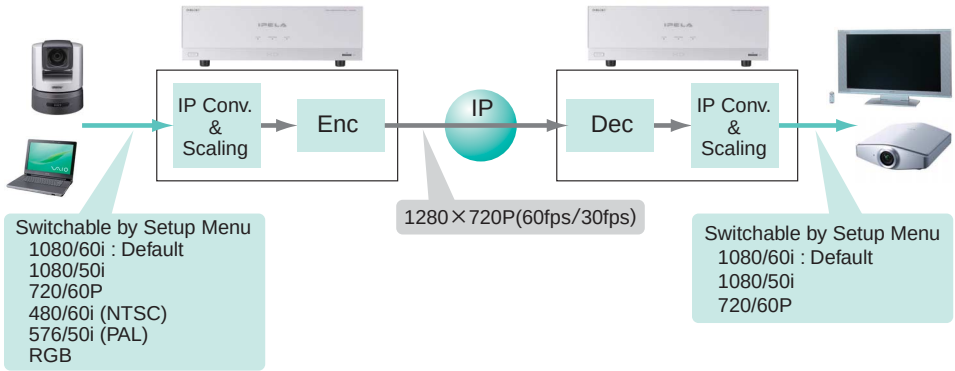
Compliance With H.264/AVC

The PCS-HG90 uses a video codec compliant with ITU-T (International Telecommunication Union Telecommunication Standardization Sector) Recommendation H.264 to transmit high-quality pictures. H.264 is a new video digital encoding technology that has been established and standardized by JVT (Joint Video Team), a joint standardization organization of the ITU-T and MPEG (Moving Picture Experts Group) of ISO (International Organization for Standardization). The standard is usually called H.264/AVC because it is ISO/IEC 14496-10 MPEG-4 Part10 Advanced Video Coding as an ISO MPEG standard. H.264 provides 2 to 3 times the compression efficiency of conventional MPEG-2 and 1.5 to 2 times that of MPEG-4 and ITU-T H.263. This standard is adopted for Blu-ray Disc and HD DVD, known as next-generation DVD standards.
H.264 includes tools and functions for various kinds of video coding. Several profiles are defined by combining some of these tools and functions for specific purposes and applications. The PCS-HG90 supports Baseline Profile used for applications requiring real-time performance, such as videoconferencing systems and TV phones. Levels for specifying decoder processing performance and bit stream complexity are also defined. Level 3.2 is applicable for the PCS-HG90.

Picture Quality

The PCS-HG90 can send/receive 60 or 30 frames per second in high-definition resolution of 1280 x 720 pixels. This amount of pixel data is about 5 times that used for terrestrial analog broadcasting *2, resulting in a picture with greater detail than that of conventional visual communication systems for videoconferencing and smooth rendering of high-speed motion.

*2: Comparison between 720/60P (1280 x 720: 60 fps) and NTSC.



Since the PCS-HG90 uses digital signals in all high-quality image processes (shooting, sending, receiving, and displaying), it can also be used for broadcasting and content creation applications, as well as for conventional videoconferencing applications.
Two-way communication of high-quality video content between distant locations can be realized through an IP network without relay stations.
The video coding bitrate ranging from 512 kbps to 8 Mbps is available for this product.

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