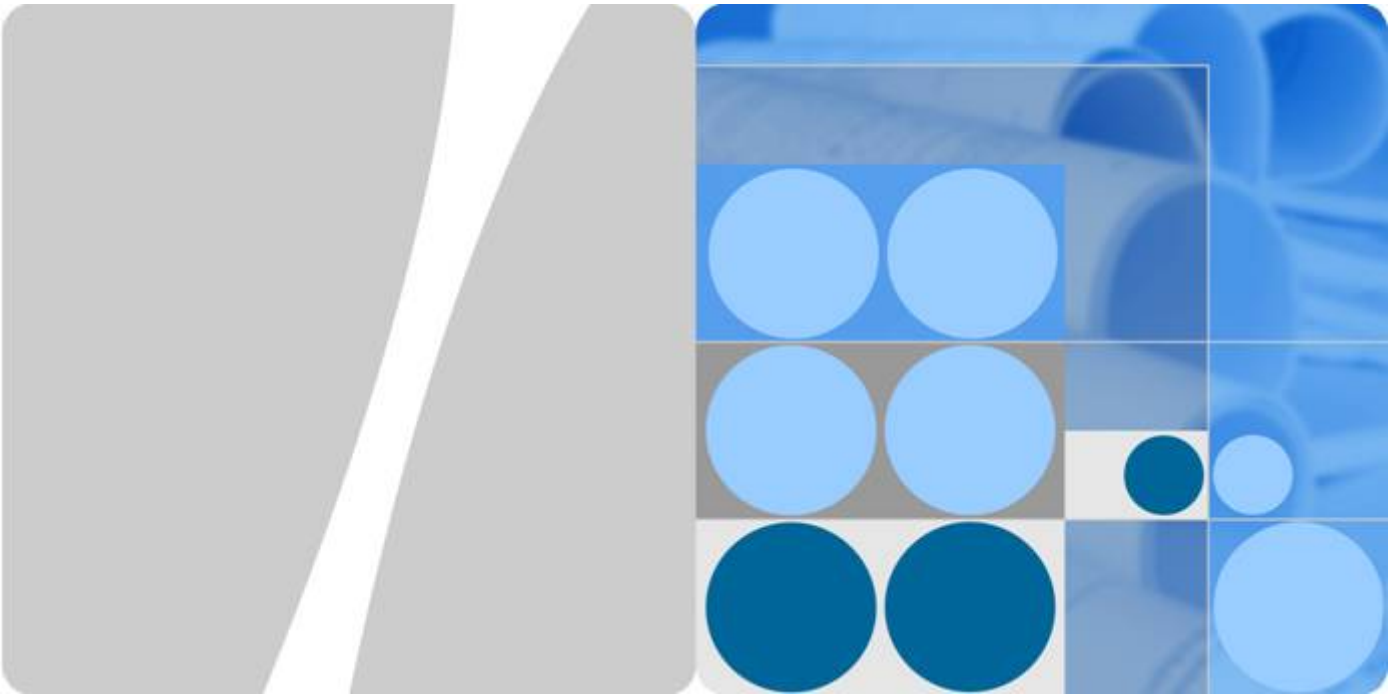

HUAWEI VPC800 HD Video Camera

V500R002C10

Product Overview

Issue 05

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About This Document

Purpose

This document describes the positioning, features, application scenarios, and technical specifications of the VPC800, a HD video camera developed by Huawei.

Intended Audience

This document is intended for:

- End users
- Huawei agents

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol Conventions

Symbol	Description
 DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
 WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
 NOTICE	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.

Symbol	Description
NOTE	Calls attention to important information, best practices and tips. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

Change History

Issue	Date	Description
05	2017-11-15	This issue is the fifth official release, and includes the following changes: ● Update **1.2.5 Professional, Easy-to-Maintain, and Easy-to-Configure GUIs**. ● Update **2.2 Application Scenario**.
04	2017-07-18	This issue is the fourth official release, and includes the following changes: **1.2.9 Transmission of Infrared Signals and VISCA Remote Control Protocol** Modify the description of the control distance.
03	2017-06-05	This issue is the third official release, and includes the following changes: **3.1 Technical Specifications of the VPC800** Added RF features descriptions.
02	2015-11-12	This issue is the second official release.
01	2015-11-02	This issue is the first official release.

Contents

1 Product Positioning and Features

1.1 Product Positioning

This document is for Huawei videoconferening HD video camera VPC800, the VPC 800 for short.

With the rapid development of Internet Protocol (IP), telecommunications technologies and gradual improvement of bearer network quality, videoconferencing systems are developing quickly. These systems are now better specified to provide high-definition (HD) video and high-fidelity (hi-fi) audio, which give users a greatly enhanced conferencing experience. Currently, 4K2K has become the new development trend, and the end-to-end industry chain for 4K2K products is also increasingly mature.

Driven by customer demand, Huawei has developed a new series of HD cameras to be incorporated with the existing videoconferencing products to provide a complete HD videoconferencing solution.

The VPC800 is the industry's first 4K2Kp 60 fps HD camera. It provides the following features:

Video at 1080p 60 fps (the highest video resolution and frame rate in the industry)

Compatibility with 1080i and 720p

Industry-leading video processing technology

Automatic white balance (AWB)

Automatic exposure (AE)

Auto focus (AF)

As a high-quality, next-generation videoconferencing product, the HD video camera can work with other videoconferencing endpoint products developed by Huawei, providing diversified and integrated HD videoconferencing solutions and implementing full-service videoconferencing applications.

The VPC800 features a built-in lens and a black-coated, solid-aluminium framework and integral sleeve that effectively protect the lens from collision and dust. The contemporary looks and uncluttered exterior provide an image of professionalism and reliability.

Figure 1-1, and **Figure 1-2** shows the front view of the VPC800.

Figure 1-1 Front view of the VPC800

The VPC800 works with Huawei TEX0 or TX series videoconferencing endpoints and supports HD video in the 4K2Kp 50/60 fps, 4K x 2Kp 25/30 fps, 1080p 60/50 fps, 1080i 60/50 fps, 1080p 30/25 fps, and 720p 60/50 fps formats.

Figure 1-2 Rear view of the VPC800

- The HD camera provides an HD-VI port, which integrates a digital visual interface (DVI), YPbPr, power, and serial port, for Huawei videoconferencing endpoints. This HD-VI port can be converted to a standard digital visual interface (DVI) using an adapter cable.
- The HD camera provides a serial digital interface (SDI) and high definition multimedia interface (HDMI) to output HD video images.
- The HD camera provides a network port to enable upgrade and commissioning for the camera through the port.

- The HD camera needs only one cable to work with a Huawei TX series or TEX0 series videoconferencing endpoint.

1.2 Product Features

1.2.1 Industry's First 4K2Kp 60fps HD Camera

The VPC800 is the industry's first 4K2Kp 60fps HD camera. It uses a 1/1.7-inch SONY IMX226 image sensor with the highest resolution up to 4K2K (3840 pixel x 2160 pixel) and an effective resolution of 12.4 megapixels, ensuring the delivery of superior image quality.

The VPC800 has two models: 4K and 1080p, which is differentiated by license.

The VPC800 4K supports the following video formats:

- 4K2Kp 50 fps/59.94 fps/60 fps
- 4K2Kp 25 fps/29.97 fps/30 fps
- 1080p 50 fps/59.94 fps/60 fps
- 1080i 50 fps/59.94 fps/60 fps
- 1080p 25 fps/29.97 fps/30 fps
- 720p 50 fps/59.94 fps/60 fps

The VPC800 1080p supports the following video formats:

- 1080p 50 fps/59.94 fps/60 fps
- 1080i 50 fps/59.94 fps/60 fps
- 1080p 25 fps/29.97 fps/30 fps
- 720p 50 fps/59.94 fps/60 fps

1.2.2 Broadcast-Level 1080p 60fps Images

The VPC800 supports 1080p 60fps video output and provides the broadcast-level high resolution image quality. It supports diversified video formats (1080p 50 fps/59.94 fps/60 fps, 1080i 50 fps/59.94 fps/60 fps, 1080p 25 fps/29.97 fps/30 fps, and 720p 50 fps/59.94 fps/60 fps) to meet videoconferencing requirements in different scenarios. It is an optimal choice for an HD videoconferencing conference.

- VPC800 uses the industry-leading circuit design and Huawei's latest video enhancement algorithm to guarantee HD quality and fluency, making images with the same resolution as other cameras more explicit. Therefore, the camera provides an unprecedented visual experience.
- VPC800 uses a highly effective video denoising algorithm and 3D dynamic video filtering solution developed by Huawei, which reduce noise generated by the sensor. The HD video camera can remove noise even in low light conditions, preserving the clarity of images. Compared with similar HD cameras in the industry, the HD video camera provides better adaptability to varying light levels.

1.2.3 Panoramic Shooting with Ultra-wide Angel of 80 Degrees

The vertical angle of view and horizontal angle of view of the VPC800 are 80° and 50°, respectively. No other wide-angle lens is required even to ensure panoramic shooting and detailed display of large conference rooms and large screens.

1.2.4 12x/4x Optical Zoom and Dynamic Exposure Control

With a high-performance, fast, and stable AF lens that provides impressive 12x or 4x zoom, the camera can focus on distant scenes or objects and provide high-quality video and images.

The unique dynamic exposure extender (DEE) control algorithm, which is based on the human visual system (HVS), guarantees correct exposures and sense of depth

The sensor supports a wide dynamic range (WDR) and captures images vividly especially when a prominent contrast exists between shaded areas of the scene and brighter-lit areas.

1.2.5 Professional, Easy-to-Maintain, and Easy-to-Configure GUIs

Innovatively using buttons and a dedicated organic light emitting diode (OLED) screen, the HD video camera supports fast switching of displayed information and real-time configuration of various video formats: 4K2Kp 60 fps, 1080p 60 fps, 1080p 30 fps, or 720p 60 fps. Compared with traditional cameras that use dual in-line package (DIP) switches, the camera is qualitatively improved because it can be controlled and operated easily anytime, anywhere, without any additional tools, delivering better ease of use and reliability.

Built-in OSD configuration interface, easy to maintain and configure.

1.2.6 Perfect Control Function

The user-friendly architecture of the HD video camera attaches great importance to intelligent image processing using its AWB, AE, and AF functions. Without being manually adjusted, these features allow the camera to produce striking images with optimal exposure, focus and realistic colors.

With support for electric pan-tilt-zoom (PTZ), the HD video camera features quick and quiet movements, high-precision positioning, and a wide-angle field of view.

The camera's powerful PTZ mechanism supports a maximum panning speed of 100° per second, a maximum panning angle of 200° (±100°), a maximum tilting speed of 25° per second, and a maximum tilting angle of 60° (±30°). That is, the camera can complete a 200° horizontal movement within 2.4 seconds and a 60° vertical movement within 2.3 seconds.

1.2.7 Loss-free HD Output Ports

The VPC800 provides HD-VI, SDI, and HDMI ports.

The three HD ports of the VPC800 can output video signals simultaneously. This means that one camera can be connected to at least three devices to meet videoconferencing and local monitoring requirements.

The HD-VI port works with HD videoconferencing endpoints and integrates a DVI, YPbPr, IR, serial port, and power socket. The camera can work with Huawei's HD videoconferencing endpoints as is, or the HD-VI port can be converted to a standard DVI with a conversion cable. In this way, the camera can be connected to conference endpoints or display devices with a variety of ports.

The SDI port needs only one coaxial cable to transmit images without any loss of image quality over a 60-meter distance and can still be connected in this manner when the lens is far from an endpoint. Therefore, the SDI port avoids the attenuation caused by the red, green, blue (RGB) analog output and chromatic aberration, guarantees loss-free image quality, and reduces the cost associated with cable routing when compared with products that require multiple cables to transmit images over the same distance.

The HDMI port output HDMI2.0 signals and supports a resolution of up to 4K x 2Kp 60 fps.

1.2.8 Support for Inverted Installation

The VPC800 supports the inverted installation mode, which is activated/inactivated by means of a button. Consequently, the camera can be inverted and sited on a ceiling to output images with the correct orientation. The inverted installation mode promotes convenient installation and usability.

1.2.9 Transmission of Infrared Signals and VISCA Remote Control Protocol

The VPC800 can transparently transmit infrared signals from the remote control (RC) of an endpoint. When a videoconferencing endpoint t is placed behind a television or inside a cabinet, infrared signals may be blocked to a greater or lesser extent. Users of the HD video camera, however, can align the RC to the camera's lens and perform operations such as menu setting on the videoconferencing endpoint for convenient use and maintenance of the videoconferencing endpoint.

The VPC800 also provides a VISCA port, which can remotely control the PTZ, camera presets, exposure index, video output format, denoising parameters, and other advanced parameters using a videoconferencing endpoint. In this way, the HD camera and the videoconferencing endpoint are a perfect combination.

The RJ45 port on the VPC800 is connected to the videoconferencing endpoint through a VISCA cable. The VISCA cable can be extended using another cable for the connection between the VPC800 and the endpoint if they are not placed together, but it is recommended that the distance between them not exceed 30m.

1.2.10 Flexible Power Supply Options

When the VPC800 is connected to Huawei TEX0 or TX series videoconferencing endpoints, the videoconferencing endpoints alone can supply power to the camera through the power port.

Alternatively, the VPC800 can be externally supplied with power, which allows it to work with Huawei VP9000 series videoconferencing endpoints or third-party products requiring a video camera.

2 Product of Overview and Application Scenarios

2.1 Overview

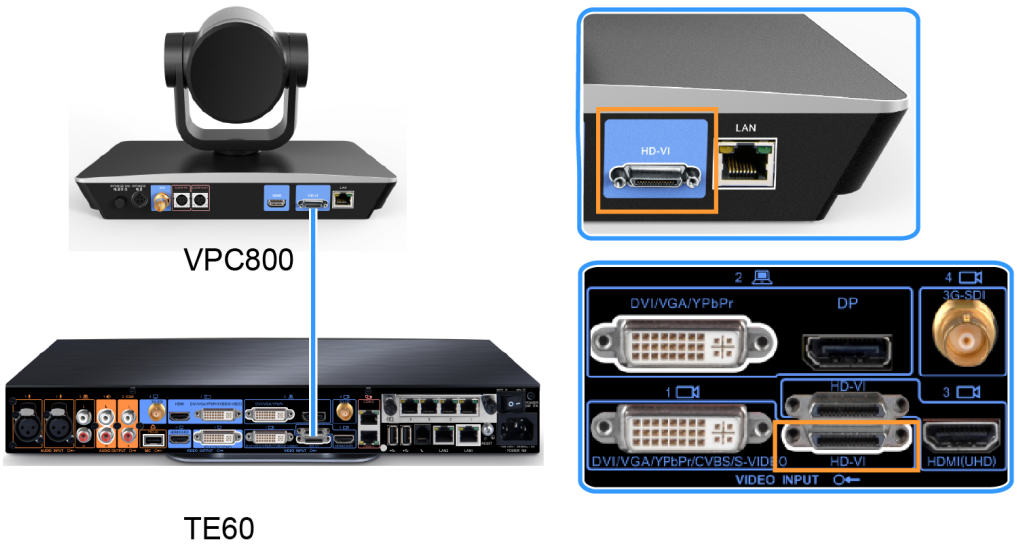
Typically, the HD video camera will be used in conjunction with Huawei TEX0 and TX series videoconferencing endpoints and together these devices provide superior 4K2Kp, 720p or 1080p HD videoconferencing solutions.

2.2 Application Scenario

The VPC800 is connected to Huawei TEX0 or TX series endpoints in the same way. Take TE60 for example.

The video input port 1 of the TE60 videoconferencing endpoint is connected to the HD-VI port of the camera.

Figure 2-1 Rear ports



The HD video camera has the following features:

- When networked with Huawei TE60 series videoconferencing endpoints, the HD video camera delivers 1080p or 720p dynamic HD full-frame video.
- With support for 1080p60 resolution, the HD video camera can work with Huawei TE60 series videoconferencing endpoints to produce a super HD conference experience.
- The VPC800 provide an HD-VI port that supports DVI and YPbPr. The VPC800 also provides a SDI port that transmits video without any loss over a 60-m distance.
- With support for 12x or 4x optical zoom, the HD video camera provides clear and high-quality images and video of distant scenes or objects.
- With buttons and an OLED screen for video format configuration, the HD video camera provides superior maintenance and ease of use.
- With support for transparent transmission of infrared signals from the RC of an endpoint, the HD video camera can remotely control a videoconferencing endpoint that is placed behind a television or inside a cabinet.
- The HD video camera supports inverted installation for placement on ceilings.
- Using state-of-the-art image algorithms, the HD video camera provides HD images with less noise and unprecedented quality.

3 Technical Specifications

3.1 Technical Specifications of the VPC800

Table 3-1 Technical specifications of the VPC800

Category	Item	Specifications
Lens	Imaging component	12.4-megapixel and 1/1.7-inch SONY IMX226 image sensor
	zoom	Specification 1: 12x optical zoom and 12x digital zoom Specification 2: 4x optical zoom and 2.5x digital zoom
	Focal length and aperture	f = 4.2 mm to 50.4 mm (F1.8 to F2.8±5%)
Video	Output video formats	● 4K: 4K2Kp 50 fps, 4K 2Kp 60 fps, 4K2Kp 25 fps, 4K2Kp 30 fps, 1080p 50 fps, 1080p 60 fps, 1080i 50 fps, 1080i 60 fps, 1080p 25 fps, 1080i 30 fps, 720p 50 fps, 720p 60 fps ● 1080p: 1080p 50 fps, 1080p 60 fps, 1080i 50 fps, 1080i 60 fps, 1080p 25 fps, 1080i 30 fps, 720p 50 fps, 720p 60 fps
	Maximum horizontal field of view	80°
	Maximum Vertical field of view	50º

Category	Item	Specifications
	Lowest operating luminance	0.1 lux (F1.8, 50 IRE) IRE = Institute of Radio Engineers
	Shutter speed	1/25 seconds to 1/10000 seconds
	Local camera presets	30 (Using serial port command, set and select the preset which is saved in the camera)
PTZ capability	Horizontal	Range: ±100° Speed: 2°/s to 100°/s Relocation precision: ±0.1°
	Vertical	Range: ±30° Speed: 2°/s to 25°/s Relocation precision: ±0.1°
Automatic adjustment	Automatic white balance (AWB)	Automatic, manual, and one-push
	Automatic exposure (AE)	Automatic, manual, Iris priority, and shutter priority
	Automatic focus (AF)	Automatic and manual
RF remote control	RF signal reception	Control distance: 25 m (straight-line) Control distance: 10 m with barriers Control angle: 360°, 8 m without barriers
	RF features	Working frequency band: 2400 – 2483.5 MHz Maximum transmit power: 4 dBm
Infrared remote control	Infrared signal reception	Comply with the following standards: Control distance: 6 m Vertical angle: ±15° Horizontal angle: ±30°
Power and power supply	Input voltage	100 – 240 V AC, 50 Hz or 60 Hz
	Output voltage	12 V DC

Category	Item	Specifications
	Power	Operating ≤ 30 W Hibernation ≤ 2 W
Physical specifications	Control port rate	9600 baud
	Operating temperature	0°C to 40°C
	Operating humidity	10% to 90% (non-condensing)
	Operating height	≤ 5000 m (16.4 ft)
	Dimensions (H x W x D)	178 mm x 287 mm x 197 mm (7.00 in. x 11.30 in. x 7.76 in.)
	Weight (unpacked)	2.95 kg

3.2 Hardware Port Specifications

Table 3-2 Hardware port specifications

Port Type	Description and Quantity	Standards Compliance
Video output	One SDI port	SMPTE296M/ SMPTE274M/ SMPTE292M
	One HDMI OUT port	-
	One HD-VI port connected to TEX0 or TX series endpoints	DVI revision 1.0 Society of Motion Picture and Television Engineers (SMPTE) standard
Communication control input	One VISCA IN port	VISCA
Communication control output	One VISCA OUT port	VISCA
Power port	One	16 x 14.2 x 17.5 female socket

A Acronyms and Abbreviations

A	
AE	automatic exposure
AF	automatic focus
AWB	automatic white balance
C	
CMOS	complementary metal-oxide-semiconductor
D	
DEE	dynamic exposure extender
DIP	dual in-line package
DVI	digital visual interface
H	
HD	high-definition
HVS	human visual system
I	
IP	Internet Protocol
T	
TE	Telepresence Endpoint
O	
OLED	Organic Light Emitting Diode
OSD	on-screen display

P	
PTZ	pan-tilt-zoom
R	
RC	remote control
RGB	red, green, blue
V	
VPC	ViewPoint Camera
S	
SDI	Serial Digital Interface
W	
WDR	wide dynamic range