

HITACHI
Inspire the Next

VK-S454N_(NTSC)/VK-S454EN_(PAL)

Wide-Dynamic-Range High-Sensitivity Color Zoom Camera

- **8-bit Digital Output**
- **Frame Noise Reduction**
- **Minimum Sensitivity: 1.0 lx**
- **Horizontal Resolution of 540TVL**
- **Progressive Scan CCD**
- **Wide Dynamic Range**
- **23x Optical + 12x Digital Zoom**
- **Digital Slow Shutter**
- **Privacy Zone Masking**
- **Motion Detection**
- **Digital Image Flip**
- **Internal/External Sync
(AC-Line Pulse Signal)**
- **RoHS-compliant**



Made in Japan

Equipped with a newly developed DSP, the Hitachi VK-S454N/EN surveillance camera is engineered for high sensitivity, high resolution and low noise.

The Hitachi VK-S454N/EN is a RoHS-compliant compact chassis-type camera equipped with a newly developed digital signal processor engineered to capture high-quality images under a wide range of conditions, including high-contrast scenes or low light situations. In addition to conventional analog output, the VK-S454N/EN also features digital output for lossless capture of high-quality images. Compatible with the latest IP protocols, the VK-S454N/EN ensures efficient, high-quality imaging in the rapidly evolving surveillance field.

Frame Noise Reduction

The VK-S454N/EN features a highly sensitive progressive scan 1/4" CCD* and a newly developed DSP that produces horizontal resolution of 540TVL in illumination as low as 1.0 lx. Faithful color reproduction combines with a Frame Noise Reduction (FNR) function to ensure accurate, clear images with minimum random noise, even in challenging low light conditions.

*Total pixels: 410k (NTSC)/470k (PAL); effective pixels: 380k (NTSC)/440k (PAL).



Wide Dynamic Range (WDR)

When a surveillance area includes bright and dark areas, alternate images are captured at optimum exposure for both levels of illumination, with the resulting two fields combined into a single frame. This makes it possible to capture clear, glare-free images in a variety of scenarios, such as building entrances with varying levels of indoor/outdoor illumination and situations where backlighting can make it difficult to identify facial features. The newly developed DSP also offers enhanced ability to capture details in dark areas.

Operation of Hitachi Dynamic Range Technology

High-speed Shutter Image (Progressive)

Normal Exposure Image (Progressive)

Composite Image from Wide Dynamic Range Technology

Built-In Optical Power Zoom Lens

A reliable built-in 23x optical zoom lens combines with a 12x digital zoom to deliver a maximum zoom factor of 276x.

Digital Slow Shutter(DSS)

Digital Slow Shutter processing permits an increase in sensitivity of up to 32x, based on the brightness of the subject. Compared to conventional minimum subject brightness of 1.0 lx, this unit can capture subjects in illumination as low as 0.1 lx. The progressive scan CCD maintains full vertical resolution, delivering high-resolution images even when DSS is activated.

DSP for Intelligent Control

A.I. auto iris compensates for variations in illumination to maintain constant video output, while A.I. auto white balance produces natural color reproduction under a wide range of ambient lighting.

Removable IR Cut Filter

In daylight conditions, the IR cut filter ensures clear, high-quality color images. At night or in other very low light situations, the IR cut filter in the VK-S454N/EN is automatically removed to allow capture of bright, high-contrast black and white images.

VK-S454N/ VK-S454EN

Bright Scene

Dark Scene

Images are captured in full color.

IR Cut Filter off.

Conventional Color Camera

Bright Scene

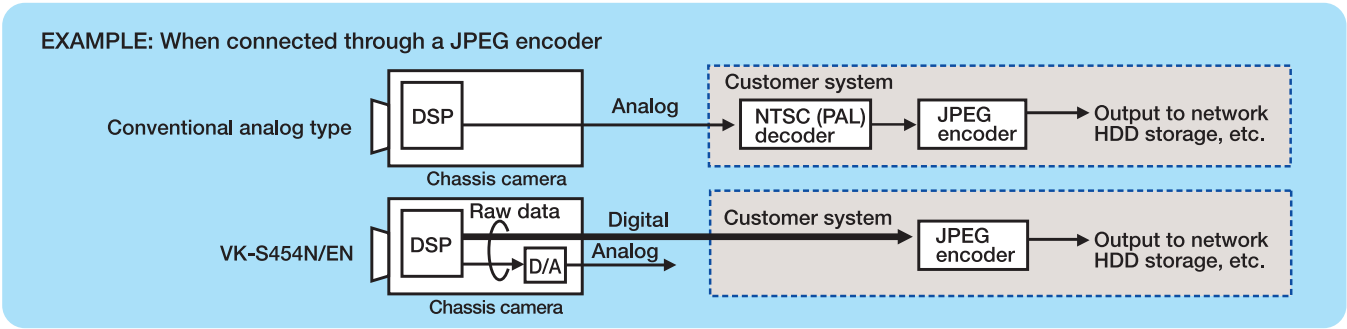
Dark Scene

Captured images look dark.

The degree of the removable IR cut filter's effectiveness varies with the type and intensity of the light source.

Digital Output

In addition to conventional analog output, the VK-S454N/EN also offers digital output of image signals. With conventional analog units, the analog signal from the chassis camera must be decoded for downloading to the customer's system. With digital output, raw data can be transferred directly from the DSP, ensuring lossless, low-noise image data. This also minimizes the cost of the initial system by eliminating the need for an NTSC (or PAL) decoder.



Digital output is a REC656 data stream (YUV422, embedded 8-bit synchronized signal/interlaced output), compatible with a large number of ICs.

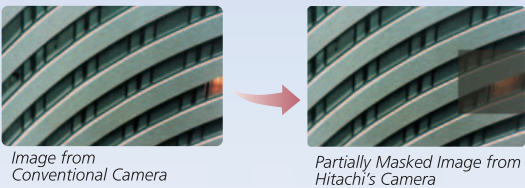
NOTE 1: High-resolution CCD sensor (total pixels: 410k NTSC/470k PAL) produces signal frequency and output resolution that differ from REC656 specs.

Digital output signal frequency / Output resolution (NOTE 1)

	VK-S454N(NTSC)	VK-S454EN(PAL)
Signal frequency	28.6MHz	28.5MHz
Output resolution	752(H) X 480(V)	736(H) X 576(V)

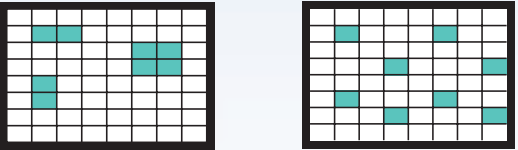
Privacy Zone Masking Function

This function makes it possible to mask the camera's view of windows, entrances and other areas subject to privacy concerns. The position and size of the mask is maintained even when the camera pans, tilts, or zooms, making the VK-S454N/EN particularly suitable for surveillance of public areas.



Motion Detect Function

This function triggers an alarm when motion is detected in designated areas of the surveillance frame. Motion detection can be activated in as many as eight frame blocks out of a total of 64.



Internal/External Sync

The camera may be operated by its own internal sync or controlled by an external source such as a sync generator. This internal/external sync capability expands the range of viable applications.

Digital Image Flip

Images can be flipped vertically or horizontally, making it possible to track a subject moving underneath the camera in a single continuous shot.

Movement of Monitored Subject

Monitored Images from Hitachi's Camera with Digital Flip

Monitored Images from Conventional Camera

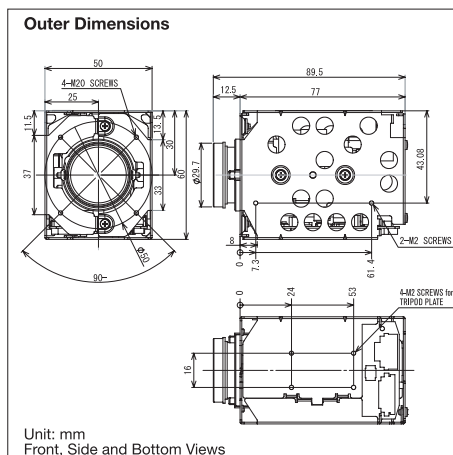
Environmentally Friendly

The RoHS-compliant VK-S454N/EN meets guidelines for permissible levels of lead, mercury, cadmium, hexavalent chrome, PPBs and PBDE, making it an eco-friendly way to implement surveillance.

*All images are for illustration only.

Specifications

	VK-S454N (NTSC)	VK-S454EN (PAL)
CCD Image Sensor		
Image Size	4.5mm Dia. (1/4-inch)	
Total Pixels	410k (811 x 508)	470k (795 x 596)
Effective Pixels	380k (768 x 494)	440k (752 x 582)
Progressive Scan	Yes	
Lens: Optical		
Zoom Magnification	23x (f=3.6 - 82.8mm)	
Practical f-value	f=3.6 - 82.8mm	
Practical Horiz. Angle	54°(w) - 2.5°(t)	
F-value	F1.6(w)* - F3.7(t)	
Zoom Speed (Manual)	4.2s*/5.8s (soft)	
(In Preset : Trace / No-)	2.9s/1.5s (soft)	
Focus		
Auto	VAF	
Manual (Far/Near)	Provided (soft)	
Focal Range	infinity - 1m(t) - 0.01m(w)* (soft)	
IR Removable		
Auto	Pro. AER+* (OFF - ON - 1/4* - 1/4k)	Pro. AER+* (OFF - ON - 1/3* - 1/4k)
Manual (ON/OFF)	Provided (soft)	
Durability		
Zoom/Focus/Iris	500k cycles	
IR Removable	50k cycles	
DSP-Serial Interface-Functions	DSP-8	
Method : Speed	RS-232C : 57.6k / 38.4k / 19.2k / 9.6k / 4.8k* bps	
Digital Slow Shutter	Yes (SDRAM I/F) w/o WDR	
Frame Output	OFF* / ON (soft)	
Wide Dynamic Range	OFF* / ON (Auto* [offset] / Manual) (soft)	
Image Reverse	OFF* / ON (soft)	
Mirror	OFF* / ON (soft)	
Image Freeze	OFF* / ON (soft)	
Vertical Invert	OFF* / ON (soft)	
B&W	OFF* / ON (soft)	
Privacy Masking	OFF / ON * [2 zone 2-D / 8 zone 3-D (4/1 screen)] (soft)	
Motion Detect	OFF* / ON (soft)	
FNR (Frame Noise Reduction)	OFF* / ON (soft)	
Various Customizable Settings	Yes [Preset store (max.111), WB tuning]	
Dynamic Spot Cancel	Auto	
Digital Zoom		
Zoom Mag.	OFF* / ON (12x* [soft: max.12x])	
Electrical Shutter		
Auto	Pro. AE (1/60 - 1/4ks)	Pro. AE (1/50 - 1/4ks)
Auto (+DS Shutter)	Pro.AE+ (1/2 - 1/4* - 1/4ks : Seamless)	Pro.AE+ (1/1.5 - 1/3* - 1/4ks : Seamless)
Manual	Shutter priority 1/2 - 1/30ks: soft	
	Exposure priority F1.6 - F34: soft	
	AGC priority 0 - 30dB: soft	
Manual (Sensitivity)	32x, 16x, 8x, 4x, 2x (soft)	
Iris	Auto*/(offset: soft) w/o WDR	
White Balance	Auto*/(manu: soft)	
Resolution		
Horizontal / (Vertical)		
Normal	Typ.540 Min. 520 / (400) TVL (1/60s)	Typ.540 Min. 520 / (400) TVL (1/50s)
Luminance S/N Ratio	50 dB or more	
Min. Sensitivity		
IR-cut ON	1.0 lx (1/60s)	1.0 lx (1/50s)
	0.1 lx (1/4s)	0.1 lx (1/3s)
	0.05 lx (1/2s)	0.05 lx (1/1.5s)
IR-cut OFF	Approx: 0.01 lx (B/W) (1/4s)	Approx: 0.01 lx (B/W) (1/3s)
Condition	(F1.6(w), 50IRE)	
Sync System	Internal / Line-Lock (60Hz)	Internal / Line-Lock (50Hz)
Power		
Supplied Voltage	9-12V DC	
Supplied Current	220mA w/ WDR	
Max.	470mA w/ WDR	
Consumption	2.0 W (4.3W) w/ WDR	
Video Output(NTSC/PAL)	VBS:1.0Vp-p	
Video Output(digital output)	YUV422 8bit output (REC656 type)	
Dimension (W x H x D)	50 x 60 x 89.5mm (w/ M-case)	
Weight	225g (w/ M-case)	
No. of Connectors	2 (9 pin, 24pin)	
Operating Temp. (Recommended) : [°C]	0 - 60°C (0 - 40°C)	
Others	Color is not same as VK-S454R/ER due to difference of sensor and DSP.	



Design and specifications are subject to change without notice.
WDR=Wide Dynamic Range.
* Default mode.
When Image Freeze function is ON, the camera status is not changed.
Combined performance of both Image Freeze function and Mirror function is not possible.
Combined performance of Privacy Masking function and Motion Detect function is not possible.
Combined use of FNR and WDR results in 50% reduction in frame rate in digital output mode.
Combined use of FNR, WDR and Image-Flip results in 50% reduction in frame rate in analog output mode.

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