Panasonic
ideas for life

WIDE RANGE OF HD AND SD CAMERAS

HD and SD Micro Cameras
GP-US932A | GP-US742 | GP-KS822

- High Definition in 1080p
- Progressive Scan
- Brilliant Colour Reproduction
- Compact Design
- Digital Signal Processing
- OEM

Micro cameras are now capable of achieving what was previously only possible in complex specialised solutions: extremely high resolution, the purest colour reproduction, impressive accuracyand extremely small camera head dimensions. Panasonic micro cameras provide maximum performance for many different applications - also available as OEM components.

Dynamically digital

The digital signal processing facility of Panasonic's micro cameras features broadband and low-noise signal processing. The latest generation of signal processors opens up a wide variety of digital signal processing options such as fast, uniform brightness adjustment, even in rapidly changing light conditions.

Our micro cameras boast many additional practical, specialist functions:

- Freeze-frame and image rotation (MIRROR, FLIP, ROTATE)
- Electronic zoom
- 2D edge enhancement with different frequency bands (low-frequency booster)
- 2D low-pass filter to prevent disruptive moiré effects
- Two or more user settings
- Adaptation of individual colours, e.g. for red enhancement

Small size - big on performance

In order to reduce the size of our camera systems as much as possible, the camera head is separate from the signal processing unit. This allows the camera to be used in small spaces without affecting control unit performance.

Progressive Scan: The quality booster

Linear, conventional image scanning (interlace) is suitable for capturing static images or for shots with increased light sensitivity. On the other hand, progressive scanning captures the entire image, ideal for capturing moving subjects. With image flicker significantly reduced and adapted to the latest LCD & Plasma technology, sharper results are achieved in comparison to interlace scanning.

Image captured with progressive scan

Image captured without progressive scan (interlace)

1CCD and 3CCD camera systems

The light signals are converted into electrical signals using CCD image sensors. Panasonic micro cameras provide both 1CCD and 3CCD solutions. With the 1CCD system, a colour filter separates the light into complementary colours, which are all captured by just one CCD. In cameras with 3CCD technology, the light is split up into the three primary colours of red, green and blue by a prism. The individual colour information is sent to separate CCDs. This increases the brilliance of the colours, the accuracy of the detail and the depth of focus.

SD and HD solutions

Depending on the model, the micro cameras support SD - Standard Definition (576i and 576p) and state-of-the-art HD - High Definition (720p, 1080i and 1080p).

Well connected

Depending on the model, the control units of the Panasonic micro cameras are equipped with HDMI, HD-SDI, analogue RGB/component, S-Video and FBAS video outputs for flexible connectivity.

Powerful individual unit - perfect integrated solution

The camera system components are perfectly coordinated with each other, but can also be combined with other products.

- Lenses: Panasonic special lenses or high-grade C-mount TV lenses made by third-party manufacturers
- Head: 1CCD, 3CCD and 3CCD-HD versions with or without casing as OEM modules.
- Cables: Different lengths and raw materials for OEM solutions
- Control unit: varying functional scope for 1CCD or 3CCD, casing or circuit board version

Ease of operation

We have developed a user-friendly on-screen menu system so that our micro cameras can be used efficiently and easily. This means that parameters an be changed quickly and clearly during operation. It is also extremely easy to save your own settings as presets for different users. The on-screen menu of OEM components can be adapted to customer requirements. The camera systems can also be remotely controlled via RS232.

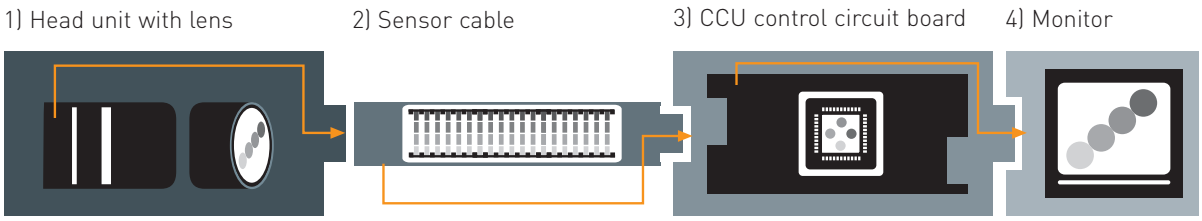
Colours
The 6 or 12 axis colour matrix of Panasonic micro cameras allows individual colour ranges to separately adjusted.

Zoom
Get close in with the 2.5x continuous electronic zoom.

Natural brilliant colours

Optimised, true colour reproduction is a must as far as we are concerned - and when it is a case of adjusting individual colour ranges separately, these can be changed using the 6 or 12 axis colour matrix of our micro cameras. For example, the individual red enhancement that is often needed in medical applications or biological research can be provided.

Components

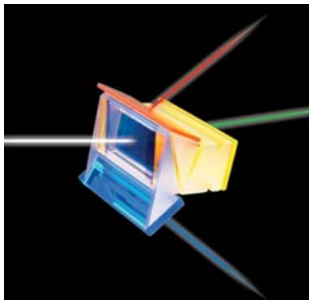


High Definition

It couldn't be sharper

Panasonic has met the demands of countless users with 1080p - genuine 16:9 high definition for micro cameras. For outstanding sharpness, impressively true colours and flicker-free images.

Impressive performance



Panasonic's 3CCD HD micro camera systems feature three 1/3" 16:9 progressive scan sensors. With a full 50 images per second, you can work with a horizontal resolution of 1080 lines with full image scanning.

Quality starts with the head

With Panasonic's HD micro cameras, the video signal is digitised in the camera head with a bandwidth of 14 bits per channel. After digital transmission via the camera cable, further processing takes place in the controller virtually loss-free with a bandwidth of 3 x 19 bits.

Multi Format

As well as 1080p FULL HD mode, the HD micro camera also supports 1080i, 1080/25psF, 720p, 576p and 576i. The video formats can be changed during operation and the signal is also always present at the S-Video and FBAS outputs simultaneously. This makes it easier to integrate the camera into existing video solutions.

Digital interfaces

In order to prevent high-resolution images from loss of data and therefore quality when they leave control unit output, our systems are equipped with digital HD-SDI and/or HDMI interfaces. The SDI output allows a stream of video information to be transmitted over long distances, among other things.

Colour adaptation with 12-axis colour matrix

Colour adaptation without 12-axis colour matrix

Greater clarity, more brightness in the dark

You simply see more with HD technology. The sharpening of low-frequency parts of an image provides detailed image reproduction over the entire frequency range. And the extraordinary light sensitivity of an HD camera provides clearer images in both light and dark areas. These are properties that can be decisive in endoscopic or microscopic applications.

Colours on demand

Panasonic's 3CCD-HD micro cameras feature separate individual colour range adjustment using a 12-axis colour matrix. The colour enhancement that this permits without influencing other colours provides particularly brilliant colour reproduction in scientific applications or industrial solutions.

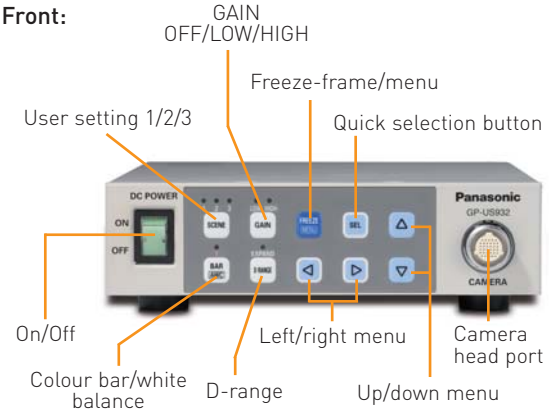
Full HD in 1080p, also for miniaturised camera systems. The removable camera head can also be used in confined spaces.

Features

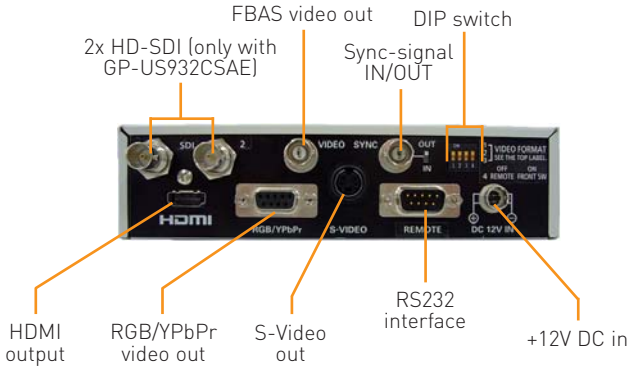
- FULL-HD with 1080p at HDMI output
- Multi-format camera
  - HD: 1080p, 1080/25psF, 1080i and 720p
  - SD: 576p and 576i
- **NEW:** CCU with HD-SDI & HDMI output
- Simultaneous HD and SD video output
- A/D conversion in head for loss-free data transmission
- Signal cable up to 20m in length
- Natural colour setting (12-axis colour matrix)
- Special DSP functions: Image rotation, zoom and freeze, dynamic range enhancement and low frequency booster

Overview of controls and connections

Front:



Rear:



System components

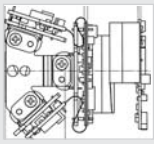
GP-US932CSAE control unit
- Supports GP-US932HAE
- Analogue: RGB/YPbPr, S-Video and FBAS
- Digital: HDMI@1080p and 2x HD-SDI
- Synchronisation: internal or external

GP-US932CAE control unit
- Supports GP-US932HAE
- Analogue: RGB/YPbPr, S-Video and FBAS
- Digital: HDMI with 1080p
- Synchronisation: internal or external

GP-US932HAE 1/3" 3CCD-HD camera head
- 3x (16:9) Progressive scan CCDs
- Digital signal output
- C-Mount lens connection
- Dimensions without socket: 37 x 47 x 54 mm

GP-CA932 Signal cable
- Industrial version in different lengths
- GP-CA932/4E 4m long
- GP-CA932/6E 6m long
- GP-CA932/10E 10m long
- GP-CA932A20E 20m long

GP-US932CBSA control circuit board
- Circuit board version
- Supports GP-US932HUA
- Analogue: RGB/YPbPr, S-Video and FBAS
- Digital: HDMI@1080p and 2x HD-SDI
- **NEW:** 50/59.94Hz changeover



GP-US932HUA 1/3" 3CCD-HD head module
- Prism block and control electronics
- 3x (16:9) Progressive scan CCDs
- Digital signal output
- Dimension (W x H x D): approx. 28 x 41 x 40 mm

GP-CA932/ME Basic cable
- Non-assembled basic cable in black
- External diameter 7.0mm
- Suitable for medical applications
- External sheath made from special PVC

GP-NT13 External mains adapter
- Primary: 100 to 230V, 50/60Hz
- Secondary: 12 V DC

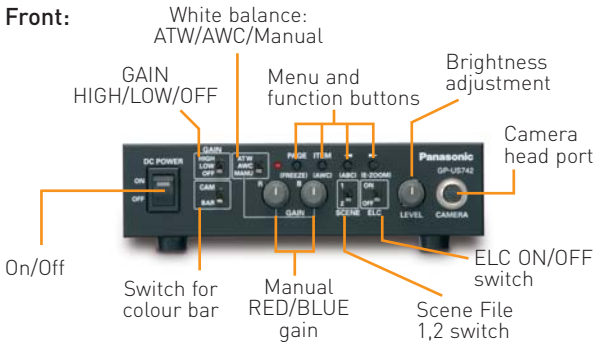
This 3CCD camera system provides extremely high resolution, colour brilliance and superb light sensitivity in industrial applications and research, or for special tasks in professional video technology.

Features

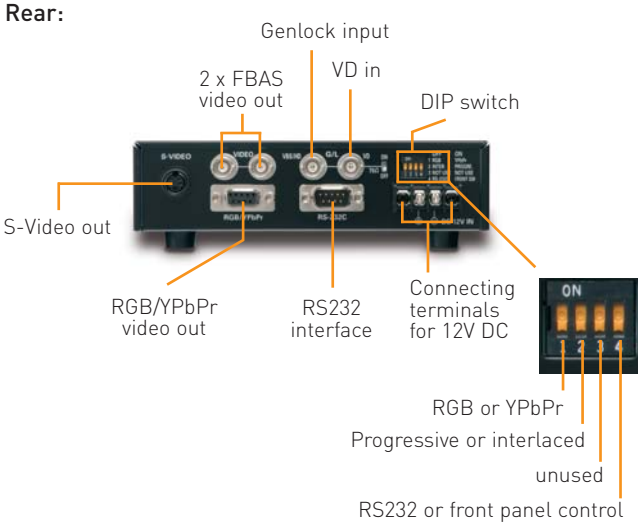
- Electronic image rotation (FLIP, MIRROR and ROTATE) *
- Electronic ZOOM and freeze-frame images
- 2D edge enhancement for different frequency bands
- 2D low-pass filter to prevent disruptive moiré effects
- Two parameter settings for quick camera configuration changes
- 5 digital special filters for features such as red enhancement
- Gamma functions for improving contrast
- 1/2" head: 800 line resolution with high light sensitivity
- 6-axis colour correction matrix

Overview of controls and connections

Front:



Rear:



System components

GP-US522HBE 1/2" 3CCD camera head
- Version with casing
- Interlace scan IT sensor
- Resolution: 800 TV lines
- Special C-mount lens connection
- Dimensions (W x H x D): 34 x 44 x 52 mm

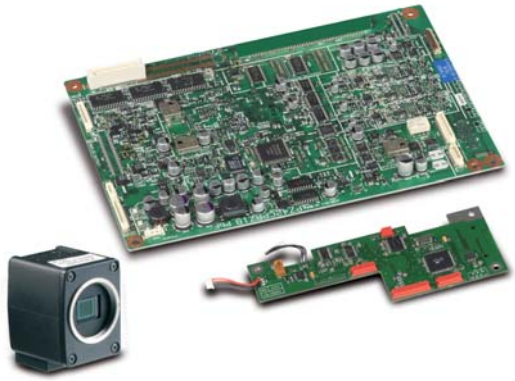
GP-CA522/4 Signal cable
- Industrial version, 4m long

GP-NT13 External mains adapter
- Primary 100 V to 240 V AC, 50/60 Hz
- Secondary 12 V DC 1.5 A
- incl. cover cap for connecting terminals

GP-US742CUE Control unit
- Supports the 1/2" 3CCD head
- Outputs: 2 x FBAS, 1 x Y/C, 1 x RGB/YPbPr
- Synchronisation: Internal or external (Genlock)
- Remote control via RS232
- Dimensions (W x H x D): 170 x 44 x 229 mm

*only available in circuit board version

The brilliance and versatility of the 3CCD standard definition technology is available to you in the form of Panasonic components. The cost-effective way to embrace a new dimension of high-quality true colour and picture quality.



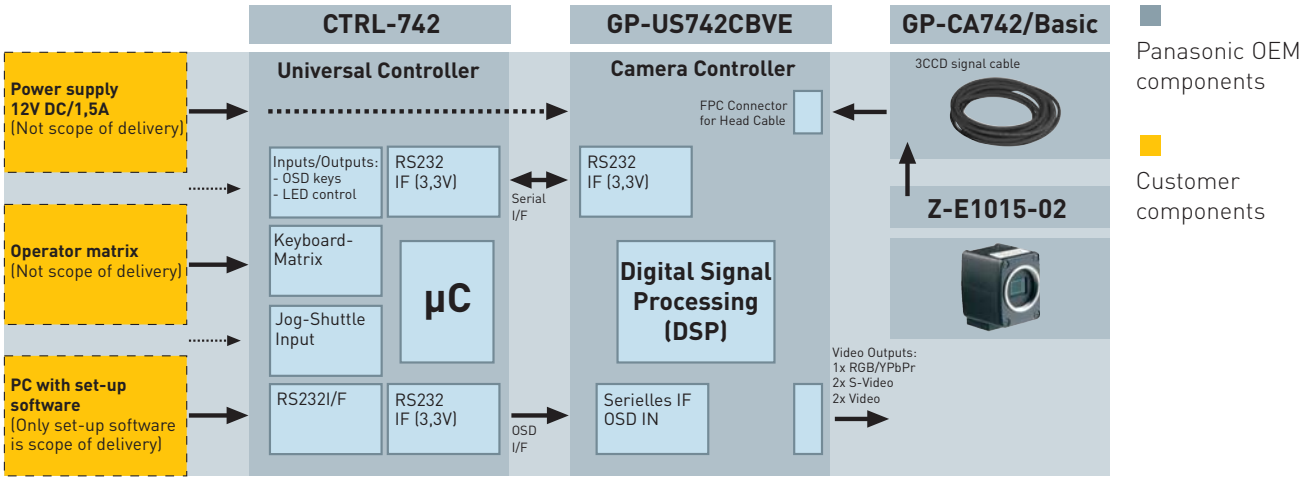
Features

- Optimum price-performance ratio
- Technical data comparable with GP-US742
- Compact 1/3" 3CCD camera head, interlaced scan
- PAL or NTSC version
- Comprehensive support for OEM customers

Flexible universal control unit:

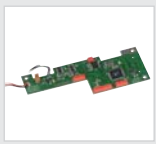
- Compact, in the form of a plug-in circuit board
- Custom on-screen menu and 3-button control can be implemented
- Programmable outputs for actuating LED's or external devices
- Programmable 3 x 8 keyboard matrix

Block diagram of an OEM camera



System components

GP-US742CBVE CCU circuit board
- Circuit board version
- Controllable via RS-232C (3,3V) interface
- Supports 1/3" and 1/2" 3CCD camera head
- Dimensions (H x W x D): 140 x 20 x 200 mm



CTRL-742 OSD control unit
- Daughterboard for the GP-US742CBVE CCU
- Keypad matrix with 3x8 inputs
- 4 digital outputs (e.g. LED control)
- Custom OSD possible
- RS-232C interface

Z-E1015-02 1/3" 3CCD camera head
- Interlace scan sensor
- Resolution: 750 TV lines
- C-Mount lens connection
- Dimensions (H x W x D): 34 x 44 x 52 mm

GP-CA742/BASIC 3CCD signal cable
- Non-assembled basic cable in black
- External diameter 6.1mm
- Suitable for medical applications
- External sheath made from special PUR

The compact components of this camera system include a comprehensive range of features for many different applications. Panasonic provides you with impressive precision in an extremely small space with the GP-KS822CU controller unit and the removable GP-KS822H camera head.

Mini format - max performance

Capture images that would otherwise remain hidden. The removable camera head of this system, which weighs in at a mere 14g with a diameter of 17 mm, allows you to take precise shots, even in places that are difficult to access. The technical heart of the system, the control unit, is also a flyweight: the various functions are reliably controlled in the compact unit, which weighs just 530 g.

Accurate colours in any light

The function for storing two fixed white values (AWC1 /AWC2) means that the user can switch between two different light sources (e.g. xenon or halogen in microscopy) without having to repeat white balancing. The camera system breaks your images down into 480 lines. Be it artificial light or natural light the white balancing ensures that the lighting without affecting colour reproduction. Can be done manually or at the push of a button.

Flexible light intensity measurement

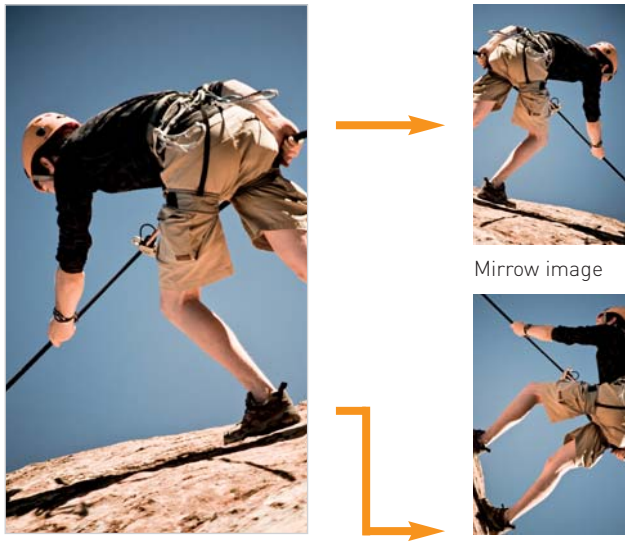
You can choose between different image areas for photometry for adapting to varying light conditions. The CCD's exposure to light is continually monitored to ensure that the video signal is as constant as possible.

Features at a glance

- High resolution: latest 1/2" CCD chip with 752 x 582 pixels in PAL
- Powerful: minimum illumination just 6 Lux with aperture of F1.4
- Operating temperature of -10° C to +45° C with relative humidity of 30 % to 85 %
- Two cable lengths: 2 m and 3.8 m
- S-Video and two FBAS outputs on control unit
- Remote control via serial interface

Turn and rotate to your heart's content

The camera has a mirror and rotation function which allows you to examine and analyse your pictures better than ever. For example, you can display images captured with the camera head mirrored or rotated to make them easier to view on the connected monitor. Freeze-frame can also be activated at the push of a button so that you can examine the finer details at your leisure.



The images can be rotated to the desired position.

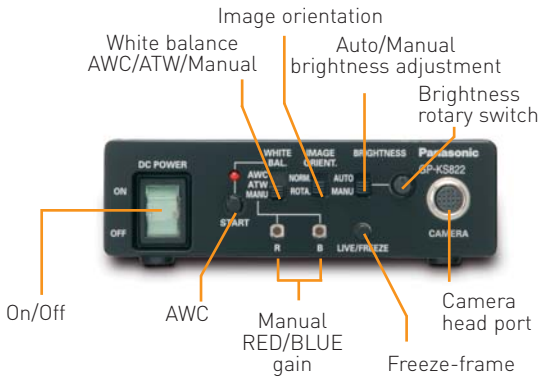
The circuit board and model versions of the Panasonic 1CCD series also include performance features such as the practical mirror and rotation function.

Features

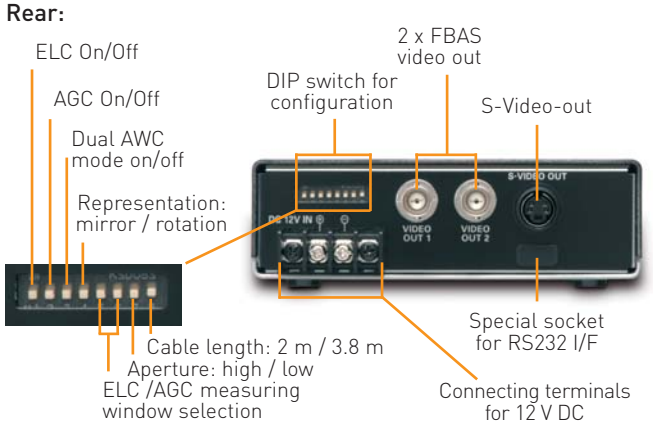
- Optimum integration options due to compact and lightweight design
- Easy control via the buttons on the front panel or RS232
- Additional functions such as electronic image rotation and two storage locations for white balancing (AWC1 and AWC2)

Overview of controls and connections

Front:



Rear:



System components

GP-KS822CUE control unit
- Supports 1/2" 1CCD camera head
- RS232 (3.3V) interface
- Analogue outputs: 2 x FBAS, 1 x Y/C
- Supports 2 m and 3.8 m camera cable
- Dimensions (W x H x D): 120 x 36 x 157 mm

GP-KS822HE 1/2" 1CCD camera head
- Version with casing
- Interlace scan sensor
- Resolution: 480 TV lines
- Special lens connection (C-mount via adapter)
- 17 (Ø) x 35.5 (L) mm

GP-CA162/2 2 m signal cable
GP-CA162/38 3.8 m signal cable

Optional lenses:
GP-LM3TAP 3 mm super wide-angle lens
GP-LM7TAP 7 mm wide-angle lens
GP-LM15TAP 15 mm zoom lens
GP-LM24TAP 24 mm zoom lens

GP-AD22TAP C-mount adapter

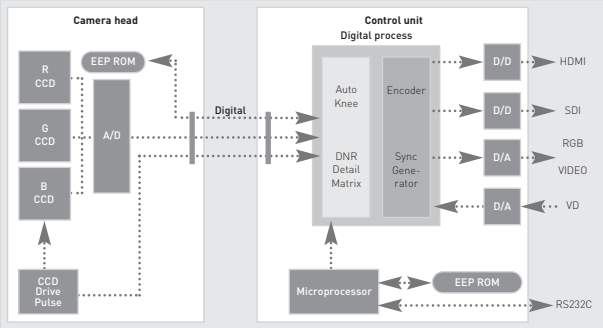
GP-KS822CBZE control circuit board
- RS-232C (3.3V) interface
- Supports 1/2" and 1/4" 1CCD camera heads
- Supports 2.5 m and 3.2 m cable lengths
- Analogue outputs: 2 x FBAS, 1 x Y/C
- Dimensions (W x H x D): 75 x 20 x 139 mm

GP-KS842HZE 1/4" 1CCD camera module
- Version without casing
- Interlace scan IT sensor
- Resolution: 480 TV lines
- 9 (Ø) x 37 (L) mm

GP-KS822HZJE 1/2" 1CCD camera head
- Version with casing but without IRcut and LP filter
- Interlace scan sensor
- Resolution: 480 TV lines
- Special lens connection (C-mount via adapter)
- 17 (Ø) x 35.5 (L) mm

GP-NT12 External mains adapter (see GP-US742)

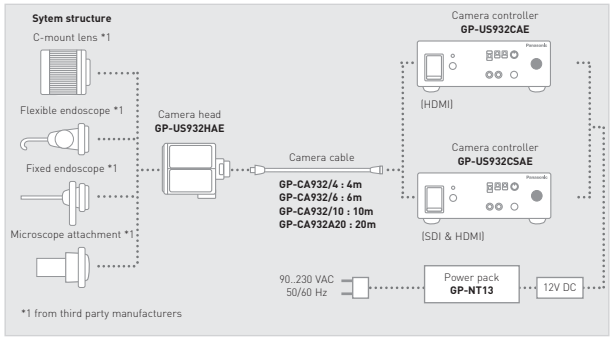
GP-US932 A micro camera block diagram



Main feature:

· Multi-formats including 1080p
· Multi-outputs, analogue and digital simultaneously
· Digitisation in 3CCD head
· Head can be used up to 20m away

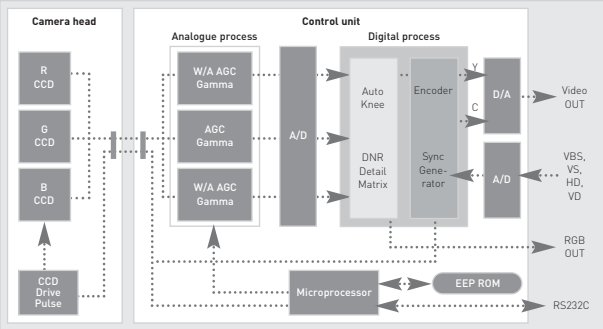
System structure



Usage areas:

· Microscope camera
· Crane-mounted camera for recording sporting events

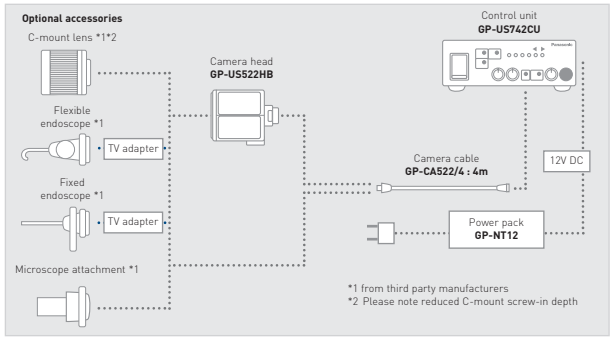
GP-US742 micro camera block diagram



Main features:

· 3CCD head with high light sensitivity
· SD resolution with 800 TV lines
· Brilliant colour reproduction

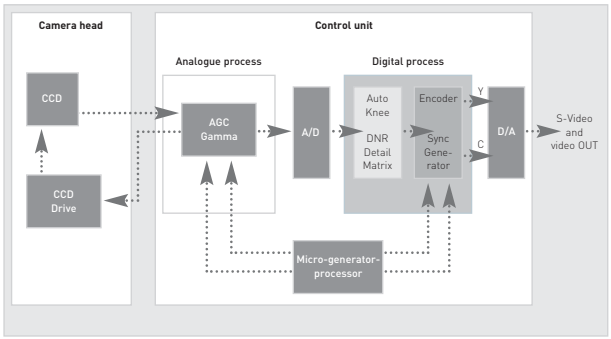
System structure



Usage areas:

· Video microscopy and endoscopy
· Colour monitoring in industrial quality control

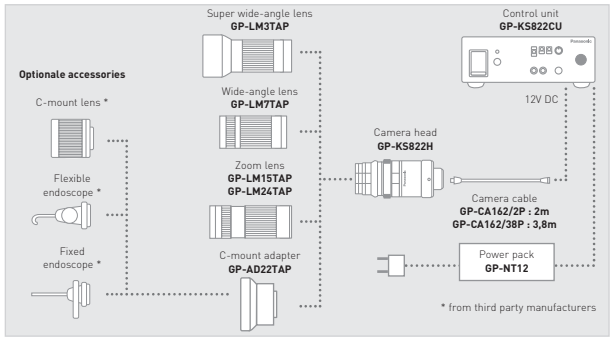
GP-KS822 micro camera block diagram



Main features:

· Extremely compact and lightweight camera head
· S-Video and video outputs
· Freeze-frame, mirror image, inverted image

System structure



Usage areas:

· Concealed monitoring
· Video-assisted visual checking in industry

Specifications

TV standard		16:9 HDTV, 50 Hz		4:3 PAL			
Model name	Control unit	GP-US932CAE box	GP-US932CSAE box	GP-US742CUE box / GP-US742CBxE circuit board		GP-KS822CUE box / GP-KS822CBZE [1] circuit board	
	Camera head	GP-US932HAE		GP-US522HBE	Z-E1015-02	GP-KS822HE / GP-KS822HZJE [3]	GP-KS842HZE module
Capture system		1/3" IT 3CCD with progressive scan		1/2" IT 3CCD	1/3" IT 3CCD	1/2" IT 1CCD	1/4" IT 1CCD
Pixels		---		752 x 582 pixels			
Synchronisation		Internal or external with manual changeover		Internal or external via Genlock with automatic changeover, -External Genlock input: VBS, VS, HD/VD -SC phase for Genlock (VBS): adjustable -H phase for Genlock (VBS, VS): adjustable		Internal	
Video out	Video	1x Coax-socket for FBAS with 1Vss / 75 Ω		2x Coax-sockets for FBAS with 1Vss / 75 Ω			
	S-Video (Y/C)	1x S-Video socket with 0,714 Vss luminance level (Y)/75 Ω; C: 0,286 Vss burst level(C)/75 Ω					
	RGB / YPbPr	DSUB9 socket with: R,G,B each with 0,7 V / 75 Ω Y with 0,7 Vss luminance level / 75 Ω PbPr with 0,525 Vss / 75 Ω SYNC with 0,6 Vss (HD) or 0,3 Vss (SD) / 75 Ω FBAS with 1Vss / 75 Ω		DSUB9 socket with: R,G,B each with 0,7 V / 75 Ω Y with 0,7 Vss luminance level / 75 Ω PbPr with 0,525 Vss / 75 Ω SYNC with 0,3 Vss sync level / 75 Ω FBAS with 1Vss / 75 Ω		---	
	HDMI	1x HDMI socket	1x HDMI socket	---			
	SDI	---	2x Coax sockets for HD/SD-SDI	---			
Required illumination		2000 Lux with F8 / 3200K		2000 Lux with F16 / 3200K	2000 Lux with F8 / 3200K	---	---
Minimum illumination		12 Lux with F2,2 with max. gain and without sense-up, 30 IRE level		5 Lux with F2,8 with 12dB gain and without sense-up, 30 IRE level	9 Lux with F2,2 with 12dB gain and without sense-up, 30 IRE level	6 Lux with F1,4	3 Lux with F1,4
Signal-to-noise ratio		54 dB (with 1080i format)		62 dB (typical)		50 dB (typical, AGC=AUS)	
Horizontal resolution/ pixel format		1080/50p (1920x1080 px): HDMI only 1080/25psF (1920x1080 px): SDI, HDMI and RGB/YPbPr 1080/50i (1920x1080 px): SDI, HDMI and RGB/YPbPr 720/50p (1280 x 720 px): SDI, HDMI and RGB/YPbPr 576/50p (720 x 576 px): HDMI, RGB/YPbPr 576/50i (720 x 576 px): all outputs		800 TV lines in centre of image (Y signal)	750 TV lines in centre of image (Y signal)	480 TV lines in centre of image (Y signal)	
White balance		ATW (Auto Tracing Balance), AWC (Automatic White Balance Control) and manual balance					
Black balance		Automatic with manual offset		Automatic (ABC) or manual balance		---	
Colour bar		SMPTE colour bar with 0% setting				---	
Electronic shutter		ELC = ON (AUTO): 1/50 to 1/10.000 sec. ELC = OFF (STEP): Selectable between 1/50, 1/120, 1/250, 1/500, 1/1.000, 1/2.000. 1/4.000, 1/10.000				ELC = ON/OFF	
Signal gain		Selectable between automatic (AGC) and fixed (Low/High Gain) gain				AGC = ON/OFF	
Camera functions		OSD (configuration and camera title), 3 scene files, white balance (manual/AWC/ATW), black balance, SYNC, ELC, AGC, manual gain, electronic contrast enhancement, extended dynamic range, electronic zoom, freeze-frame, varying image (normal, flip, mirror)		OSD (configuration and camera title), 2 scene files, white balance (manual/AWC/ATW), black balance, SYNC and GEN lock, ELC, AGC, manual gain, electronic contrast enhancement, electronic zoom, freeze-zoom		Rotary potentiometer for red/blue gain and brightness, button for AWC and freeze frame, switch for white balance, image orientation and manual/automatic. Light regulation	
CCU box computer interface		RS232C with D-SUB9 socket				RS232 (3,3V) with special socket	
Lens mount		C-mount		Special C-mount	C-mount	C-mount (with optional adapter) or special lenses	---
Power supply		12V DC via HR10A-7P-4S(73) socket		12V DC (connecting terminals)			
Power consumption		less than approx. 16,8 W (incl. camera head) at 12V DC		12 W		less than 450 mA (12 V DC)	
Permissible operating temperature		0°C to + 40°C		0 °C to + 45 °C		-10°C to + 45°C	
Permissible humidity		30 % to 90 %		30% to 90%		30% to 85%	
Dimensions (width x height x depth)	Camera head	37mm x 47mm x 54mm (without installation mount)		34mm x 44mm x 52mm (without installation mount)		ø x length: 17mm x 35,5 mm (without installation mount)	ø x length : 9 mm x 37 mm
	Control unit	170mm x 44mm x 229mm (without stands and connectors)		Box: 170mm x 44mm x 227mm (without stands and connectors) Circuit board: 140mm x 20mm x 200mm		Box: 12 mm x 157mm x 3 mm (without stands and connectors) Circuit: 75mm x 139mm x 19mm	
Weight	Camera head (without lens)	140 g		approx. 110 g		approx. 14 g	approx. 1 g
	Control unit	1,40 kg	1,45 kg	GP-US742CUE: approx. 1,2 kg		GP-KS822CUE: approx. 530 g GP-KS822CBZE: approx. 50 g	

Notes:

1) GP-KS822CBZE without ATW function

2) NTSC models on request

3) GP-KS822HZJE head without IR blocking filter

Want to know more?

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