Panasonic®

Digital Signal Processing
Color 3-CCD Micro-Camera Series

1/2” Color 3CCD Camera
GP-US522*1

1/3” Color 3CCD Camera
GP-US532*2

1/4” Color 3CCD Camera
GP-US542*3

*1 Camera Head & Camera Control Unit
sold separately as
GP-US522H & GP-US522CU

*2 Camera Head & Camera Control Unit
sold separately as
GP-US532H & GP-US522CU

*3 Camera Head & Camera Control Unit
sold separately as
GP-US542H & GP-US522CU

Depending on applications....

Three types of Color 3CCD Micro Cameras with great performance expand your possibilities.

This is our newly developed ultra-small, digital processing,

full-color 3CCD Micro Camera Series.

For those who demand the finest in high image quality Three types of outstanding 3CCD micro camera heads ideal which is for a broad spectrum of needs.

Equipped with image processing 10-bit DSP and Panasonic proprietary digital noise reduction circuit, these cameras deliver true-like color. With its 800 lines of horizontal resolution, the GP-US522 is definitely the leader in its class.

digital processing

High image quality and high sensitivity

High Sensitivity and High Signal-to-Noise Ratio

Doubled Sensitivity*-Clear Photography of Dark Areas *Compared with our conventional models (GP-US522H only)

The GP-US522H, the GP-US532H and the GP-US542H have high sensitivity level. The sensitivity of GP-US522 at F11*(2000 lx) is twice as high as that of our conventional models. And, its high sensitivity has reduced the minimum scene illumination to 5 lx. These new cameras produce a clear image of areas that are typically lost in the darkness, particularly during endoscopic surgery. *When the camera head GP-US522H is used.

Conventional Camera **GP-US522**

S/N Ratio of over 62 dB-Better Picture Quality

The GP-US522H, the GP-US532H and the GP-US542H have a high signal-to-noise ratio (6 dB higher than conventional models).

*GP-US522H, GP-US532H...62dB/GP-US542H...60dB

Life like Color Reproduction

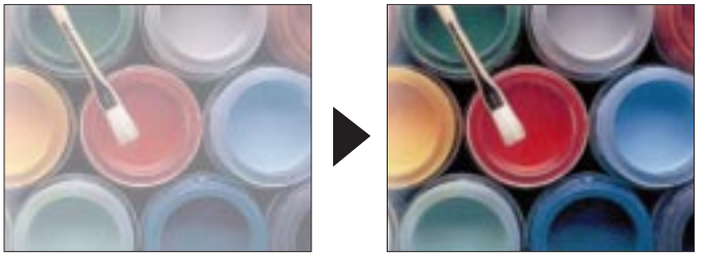
Gamma Correction-Improves Dynamic Range

The set-up menu includes the gamma correction function. You can select optimum contrast settings in both bright and dark areas. This function prevents blurring and thus provides a clearer picture even in bright or dark areas.

6-Axis Color Matrix Control Function-Reproduction of Life Like Colors

Each color can be adjusted separately without changing the white balance of the whole image. For the red color, very fine adjustment is available, which is particularly useful for medical applications. With this function, you can make optimum color adjustments for various systems and applications.

Conventional Camera **GP-US522/GP-US532/GP-US542**



High Resolution

Over 800-Line Horizontal Resolution

GP-US522H: A 1/2" CCD with 410,000 pixels provides the best picture quality. Horizontal resolution is more than 800 lines. The GP-US532H using a 1/3" CCD has a horizontal resolution of 750 lines. The GP-US542 using a 1/4" CCD has a horizontal resolution of 700 lines.

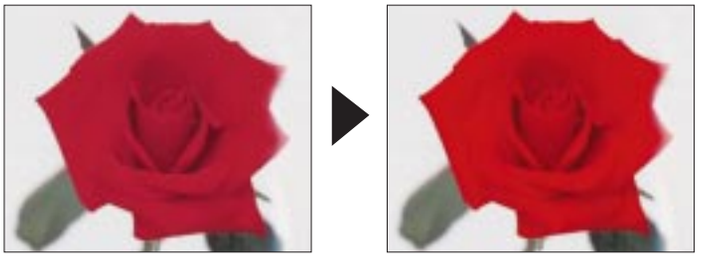
Upgraded Contour Correction

The high-band aperture function increases the resolution by amplifying the high frequency. You can make horizontal and vertical contour adjustments separately, thus ensuring good image clarity.

Red Enhancement

By switching ON the RED DTL in the set-up menu, you can enhance only the red color while adjusting other details as usual. The red color is reproduced with high resolution. This function is particularly designed for medical applications.

Conventional camera **GP-US522/GP-US532/GP-US542**



Frame Integration-Higher Vertical Resolution

In addition to field integration, frame integration is available to provide a picture with high vertical resolution, which is ideal for Microscopy.

Full-featured, easy-to-use Camera Control Unit (for all three cameras)

System Expandability

RS-232C Connector for External Control

The camera control unit has an RS-232C connector. Connect a computer to this connector. Interfacing with a PC through this connector, allows access to camera's set-up menu parameters. You can set each parameter for every shot or select one of the setting information files stored in the memory.

A single CCU and Three Types of Camera Heads For Different Quality, Cost or Size Requirements.

The camera head is available in three types, 1/2" GP-US522H, 1/3" GP-US532H and 1/4" GP-US542H. A single CCU allows complete head interchargeability. The GP-US522H has a horizontal resolution of over 800 lines, a minimum scene illumination of 5 lx, and a standard sensitivity of F11 (2000 lx); it uses the special C-Mount. The GP-US532H has a horizontal resolution of over 750 lines, a minimum scene illumination of 9 lx, and a standard sensitivity of F8 (2000 lx); it uses a C-Mount. Both models offer a S/N ratio of 62 dB. The GP-US542HP has a horizontal resolution of over 700 lines, a minimum scene illumination of 15 lx, and a standard sensitivity of F7 (2000 lx).

Flexible Camera Adjustment - Optimum Setting

On-Screen Menu to Simplify the Setting of Highly Advanced Functions

The on-screen menu makes adjustment operations simple and efficient. You can make these adjustments while looking at the object image. A list of the functions of each camera are shown on the monitor screen. Simply select the appropriate presets and press buttons in order to complete the setting of the Color Matrix Control, the Red Enhancement, the Gamma Correction and many other highly advanced functions.

A Scene File Function to Store and Recall Setting Information

You can store in the memory up to two different scene files containing the settings you have made in the on-screen menu. For example, when using an endoscopic camera, you can store the settings for internal organ photography in SCENE 1 and that for joint photography in SCENE 2.

Sensing Area Selection to Ensure Correct Exposures

You can select a sensing area from five presets--ALL, CENTER, CIRCLE (Small), CIRCLE (Medium) and CIRCLE (Large)-- when AGC or ELC is selected, or set a sensing area manually.
This function is effective for Microscopy or whenever you cannot illuminate the subject area uniformly.

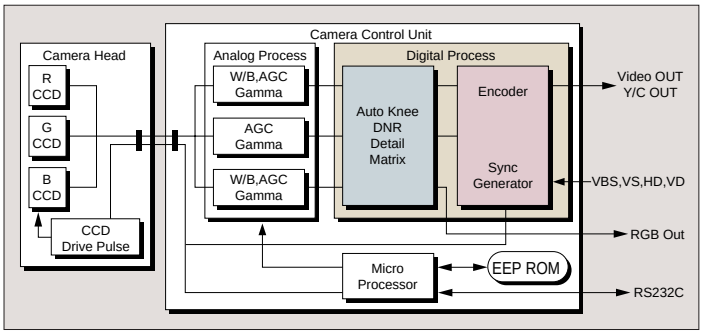
2-Dimensional Low-Pass Filter to Control Moire

The set-up menu includes the 2D Low-Pass Filter. You can turn ON or OFF this function from the menu. The 2D Low-Pass Filter prevents moire and improves image clarity.

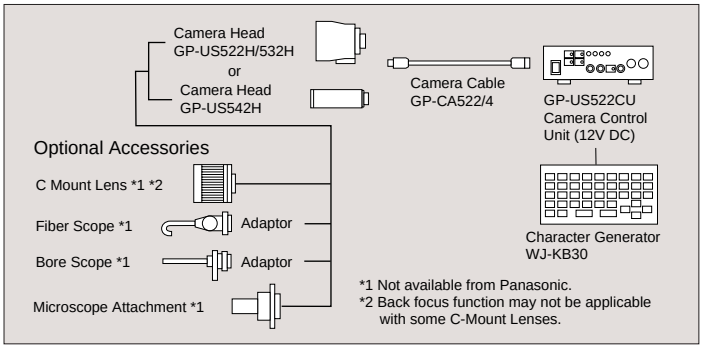
Other Functions

Syncro-Scan adjusts the shutter timing for synchronization with a computer display. Electronic Shutter (7 steps between 1/100 sec and 1/10,000 sec) ELC (Electric Light Control) Function.

Digital Signal Processing Diagram



System Block Diagram



New Line-Up Now Includes Three Types High-Sensitivity 3CCD Cameras

1/2" Color 3CCD Camera

GP-US522

Upmost Image Quality

Key Features

- ●High-performance micro prism optical system with three 1/2" IT CCDs
- ●800lines of horizontal resolution
- ●Signal to noise ratio of 62dB
- ●Minimum scene illumination with +18dB gain of 5lux at F2.8
- ●Auto Tracing White Balance (ATW), Auto White Balance Control (AWC) or Manual White Balance Control are selectable
- ●Automatic Setting of Black Balance (ABC) or Manual Setting
- ●Gen-Lock capability
- ●EBU color bar generator
- ●Automatic Gain Control (AGC) and Electronic Light Control (ELC) are available
- ●Automatic (AUTO), Step (STEP) and Manual (MANU) setting of electronic shutter modes are selectable
- ●Character Generator Input
- ●2SCENE files are selectable

1/3" Color 3CCD Camera

GP-US532

High Cost Performance

Key Features

- ●High-performance micro prism optical system with three 1/3" IT CCDs
- ●750lines of horizontal resolution
- ●Signal to noise ratio of 62dB
- ●Minimum scene illumination with +18dB gain of 9lux at F2.2
- ●Auto Tracing White Balance (ATW), Auto White Balance Control (AWC) or Manual White Balance Control are selectable
- ●Automatic Setting of Black Balance (ABC) or Manual Setting
- ●Gen-Lock capability
- ●EBU color bar generator
- ●Automatic Gain Control (AGC) and Electronic Light Control (ELC) are available
- ●Automatic (AUTO), Step (STEP) and Manual (MANU) setting of electronic shutter modes are selectable
- ●Character Generator Input
- ●2SCENE files are selectable

1/4" Color 3CCD Camera

GP-US542

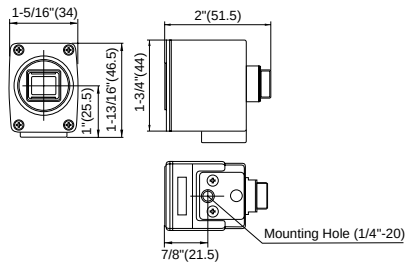
Ultra Small

Key Features

- ●High-performance micro prism optical system with three 1/4" IT CCDs
- ●700lines of horizontal resolution
- ●Signal to noise ratio of 60dB
- ●Minimum scene illumination with +18dB gain of15lux at F2.8
- ●Auto Tracing White Balance (ATW), Auto White Balance Control (AWC) or Manual White Balance Control are selectable
- ●Automatic Setting of Black Balance (ABC) or Manual Setting
- ●Gen-Lock capability
- ●EBU color bar generator
- ●Automatic Gain Control (AGC) and Electronic Light Control (ELC) are available
- ●Automatic (AUTO), Step (STEP) and Manual (MANU) setting of electronic shutter modes are selectable
- ●Character Generator Input
- ●2SCENE files are selectable

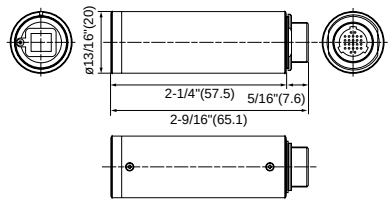
Dimensions

●GP-US522H/532H



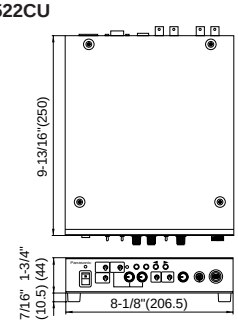
Unit: inches (mm)

●GP-US542H



Unit: inches (mm)

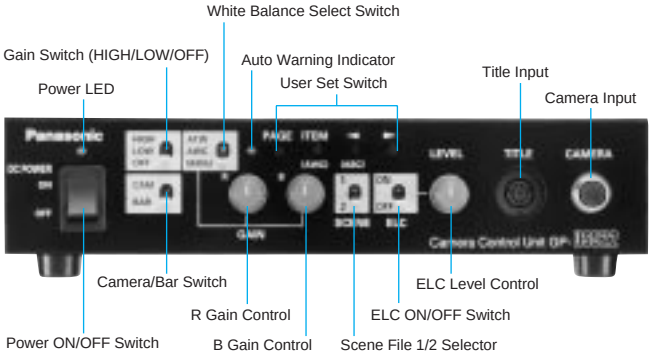
●GP-US522CU



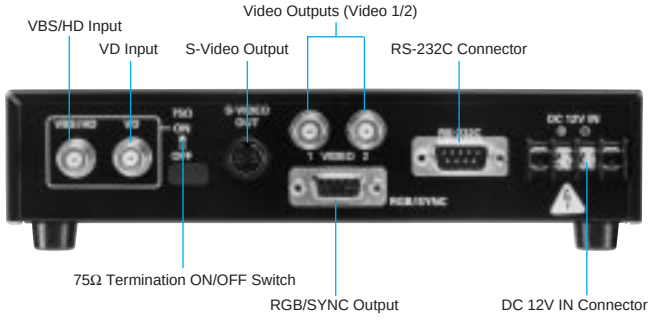
Unit: inches (mm)

Major Operating Control & Switches

Front View

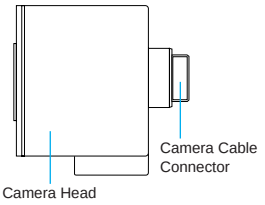


Rear View

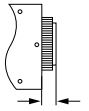


Camera Head

●GP-US522/532

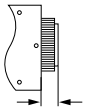


Special C-Mount (GP-US522H)



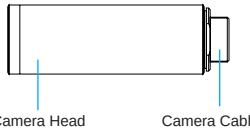
The protrusion at the rear of the lens can be measured at the point shown above: less than 3.5 mm.

C-Mount (GP-US532H)

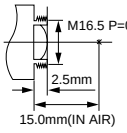


The protrusion at the rear of the lens can be measured at the point shown above: less than 4.0 mm.

●GP-US542



Special Mount (GP-US542H)



The protrusion at the rear of the lens can be measured at the point shown above: less than 2.5 mm.

Specifications

Model No.	GP-US522H	GP-US532H	GP-US542H
Pick-up System	Micro prism system		
Pick-up Device	768 (H) x 494 (V) Three 1/2" interline transfer (IT) super high sensitivity CCDs	768 (H) x 494 (V) Three 1/3" interline transfer (IT) super high sensitivity CCDs	768 (H) x 494 (V) Three 1/4" interline transfer (IT) super high sensitivity CCDs
Scanning System	2:1 Interlace 525 lines, 60 fields, 30 frames Horizontal: 15.734 kHz, Vertical: 59.94 Hz		
Synchronizing System	Internal or External (Gen-Lock)		
Internal	NTSC standard		
External (Gen-Lock) Input	VBS, VS, HD/VD SC Phase for Gen-Lock (VBS): Free adjustable over 360 H Phase for Gen-Lock (VS): Adjustable		
Video Outputs			
Video 1,2	1.0 V[p-p] / 75Ω NTSC composite video signal, BNC Connector x 2		
S-VIDEO (Y/C) Out	(Y) 0.714 V[p-p] / 75Ω (C) 0.286 V[p-p] / 75Ω, S-VIDEO Connector x 1		
RGB/SYNC	(R/G/B) 0.7 V [p-p] each / 75Ω (SYNC) 4 V[p-p] / 75Ω or 0.3 V[p-p] / 75Ω selectable, D-SUB 9-pin Connector x 1		
Required Illumination	2000 lx at F11.0 3200K	2000 lx at F8.0 3200K	2000 lx at F7.0 3200K
Minimum Illumination	5 lx (0.5 foot candle) at F2.8 with +18 dB gain, 30 IRE level	9 lx (0.9 foot candle) at F2.2 with +18 dB gain, 30 IRE level	15 lx (0.9 foot candle) at F2.8 with +18 dB gain, 30 IRE level
Signal-to-Noise Ratio	62 dB (Typical, Luminance) without aperture and gamma		60 dB (Typical, Luminance) without aperture and gamma
Horizontal Resolution	800 lines at center (Y signal)	750 lines at center (Y signal)	700 lines at center (Y signal)
White Balance	ATW (Automatic Tracing White Balance Control), AWC (Automatic White Balance Control) and Manual		
Black Balance	ABC (Automatic Black Balance Control) and Manual		
Color Bar	SMPTE color bar with 7.5% set-up		
Electronic Shutter	ELC (Electrical Light Control) and Manual STEP: Selectable 1/60 (OFF), 1/100, 1/250, 1/500, 1/1000, 1/2000,1/4000, and 1/10,000sec SYNCHRO SCAN: Selectable from 1/525 to 254/525 line		
Gain Selection	AGC, Manual Gain (0, +9, +18dB Selectable)		
Switches	Power On/Off (POWER), Camera/Color Bar Selection (CAM/BAR), Gain UP Selection (OFF/LOW/HIGH (0/+9/+18dB), White Balance Selection(ATW/AWC/MANU), ELC (Electronic Light Control) On/Off, PAGE, ITEM (AWC) ◀ (ABC) and ▶ Scene 1/2		
Controls	R Gain, B Gain and ELC LEVEL		
Computer Interface	RS-232C Control, D-SUB 9-pin Connector x 1		
Lens Mount	Special C Mount	C Mount	Special Mount
Power Source	12V DC		
Power Consumption	8.4W		
Ambient Operating Temperature	32˚F - 113˚F (0˚C - 45˚C)		
Ambient Operating Humidity	30% - 90%		
Dimensions			
Camera Head **(Excluding Mounting Adapter)**	34 (W) x 44 (H) x 52 (D) mm [1-5/16" (W) x 1-11/16" (H) x 2" (D)]		ø20 x 65 (D) mm [Ø13/16"x 2-9/16" (D)]
CCU **(Excluding Rubber Foot and Connector)**	206.5 (W) x 44 (H) x 250 (D) mm [8-1/8" (W) x 1-11/16" (H) x 9-1/2" (D)]		
Weights			
Camera Head	110g (0.24 lbs.)		30g (0.06 lbs.)
CCU	1.7kg (3.74 lbs)		

Optional Accessories

Character Generator	Cables
WJ-KB30 **WJ-KB50** 	Camera Cables **GP-CA522/4** **GP-CA522/10** **GP-CA522/30** RGB Cables **WV-CA9T5** **WV-CA9T9** 
Color Video Printer	**Medical VCR**
AG-EP50 	**AG-MD830** 

●All TV pictures are simulated.
●Weights and dimensions are approximate
●Specifications are subject to change without notice.
●These products may be subject to export control regulations.

Panasonic

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From high sensitivity type to ultra small sized type, there's one which is suitable for your application.

Our ultra-small, digital processing 3CCD camera line-ups are renowned for its high sensitivity and life-like color reproduction. Newly developed GP-US542 is the smallest and most light-weighted 3CCD camera head in the world. These three types (GP-US522/US532/US542) are all controlled by the same CCU (Camera control unit), enabling to swap camera heads depending on your applications.

Renowned for its high sensitivity level

This extraordinary 1/2"3CCD camera delivers 800-line horizontal resolution with S/N ratio as much as 62dB. Ideal for top-rank applications which needs upmost picture quality.

1/2" Color 3CCD Camera
GP-US522

For Superb Cost Performance

This remarkable 1/3" 3CCD camera delivers 750-line horizontal resolution with S/N ratio as much as 62dB. Ideal for cost-sensitive applications.

1/3" Color 3CCD Camera
GP-US532

The smallest and light-weighted

Actual Size

Only 20mm in diameter,65mm in length and 30g in its weight, GP-US542 is the smallest and most light-weighted 3CCD camera head. It delivers 700 lines of horizontal resolution with S/N ratio of 60dB. Ideal for size sensitive applications.

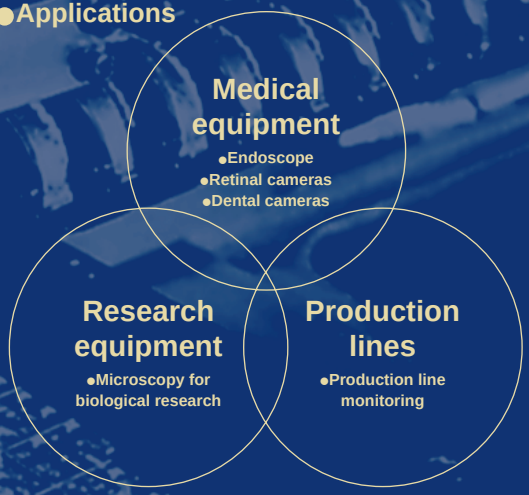
1/4" Color 3CCD Camera
GP-US542

The world's smallest and most light weighing 3CCD camera head, Panasonic precise attachment technology is behind this high performance.

Clear image
Avoid blurring image by least CCD spherical aberration

Smaller than ever
High-precision bare chip CCD mouting technology, enabling to reduce the total number of electric components.

●Applications



●Comparison of Features

	GP-US522	GP-US532	GP-US542
Pick-up Device	1/2" IT: 768 (H) x 494 (V)	1/3" IT: 768 (H) x 494 (V)	1/4" IT: 768 (H) x 494 (V)
Horizontal Resolution	800 lines	750 lines	700 lines
Signal-to-Noise Ratio	62 dB	62 dB	60 dB
Weights Camera Head	110g (0.24 lbs.)	110g (0.24 lbs.)	30g (0.06 lbs.)