

Panasonic®

GP-MF602

Industrial B/W CCD Camera

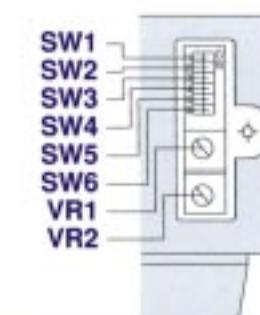


Key features

- 1/2" interline transfer CCD with 768(H) × 494(V) pixels
- 570-line horizontal resolution
- 56dB signal-to-noise ratio
- Variable electronic shutter speed: 1/125, 1/250, 1/500, 1/1,000, 1/2,000, 1/4,000, 1/10,000-sec.
- Selectable field/frame integration
- Electronic shutter trigger mode
- Frame reset mode
- Sensor gate control
- Internal/external synchronization
- 2:1 interlace/non-interlace scanning
- Manual gain control
- Pedestal control
- Gamma 1.0 or 0.6 switchable
- 0.05fc (0.5 lux) minimum scene illumination at F1.4
- Compact and lightweight

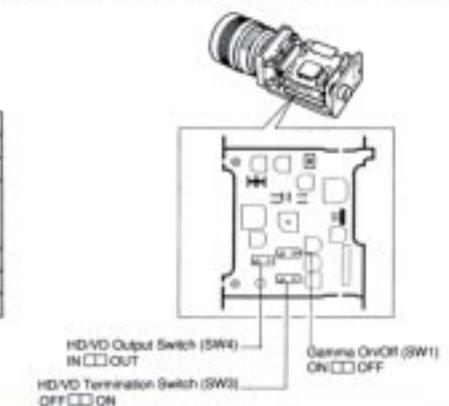
High-Precision Image Sensing Capability For High-Speed Motion

Internal Switches on the PCB



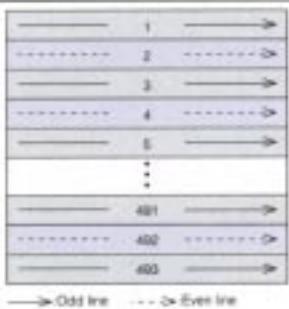
Dip Switches

SW No.	Descriptions	Off	On
1	Field/Frame Integration	Frame	Field
2	Shutter Trigger Mode	Normal Shutter	Shutter Trigger
3	Data 1		
4	Data 2		
5	Data 3		
6	Gain Up Level Manual Control	Off	On
VR1	Manual Gain Up Control (0-6dB)		
VR2	Pedestal Control (+15mV-80mV)		



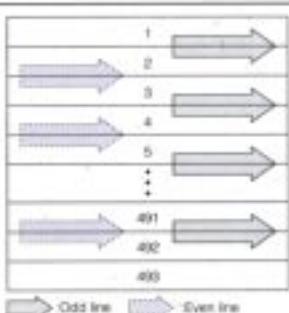
Frame Integration

- Odd and even lines are scanned separately.
- The integration period of the photodiodes is 1/30-sec. per frame.
- The vertical resolution in this mode is 485TV lines.
- This mode is used for frame(2 field) acquisition with a strobe light.



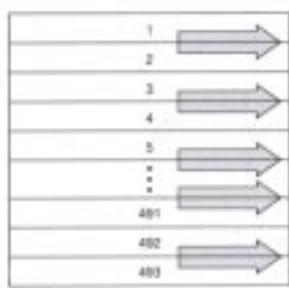
Field Integration

- A pair of lines consisting of an odd and even line are scanned together.
- The integration period of the photodiodes is 1/60-sec. per field.
- The vertical resolution in this mode is 380TV lines.
- This mode is used for field (1 field) acquisition with a strobe light.
- Vertical resolution with a strobe light is 262TV lines.



Non-interlace

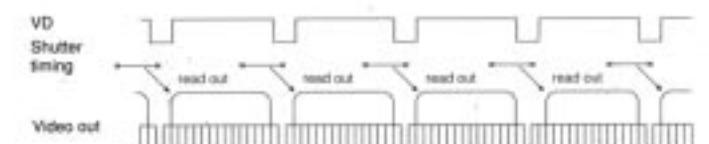
- Non-interlace scanning is available in the field integration mode, if a non-interlace external VD signal is supplied.
- The required external VD range is 256, 262 horizontal lines.



Electronic Shutter

Dip Switch on rear panel	SW3	Off	On	Off	On	Off	On	Off	On
SW4	Off	Off	On	On	Off	Off	On	On	On
SW5	Off	Off	Off	Off	Off	On	On	On	On
Shutter Speed (Seconds)	Normal	1/125	1/250	1/500	1/1000	1/2000	1/4000	1/10000	

- The shutter timing is synchronized with VD.

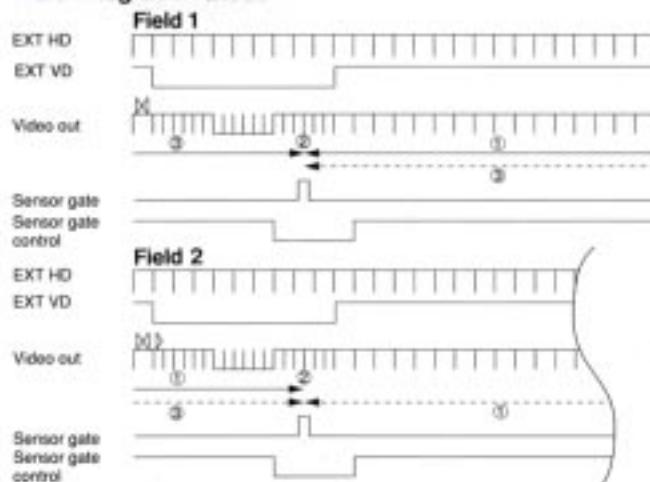


Sensor Gate Control

<Sensor Gate(SG)>

- The charges on the photodiodes are transferred to the V-CCD by the sensor gate pulse.

Field integration mode



(1) The charges on the V-CCD are read out. (2) The charges are transferred to the V-CCD. (3) The charges are integrated on the photodiode of the sensor.

<Sensor Gate Control>

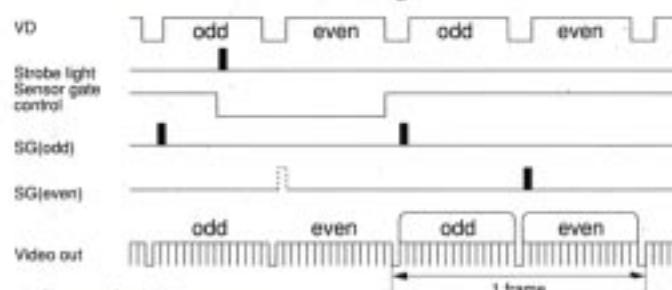
- The status of SG is externally controllable.

Off or High	Low	High: 5V Low: GND Off: No input
SG enable	SG inhibited	

- As long as the SG is inhibited, the charge on the photodiodes are kept on the photodiode.

<Application>

- Asynchronous Strobe Light Application
 - Since it is prohibited to fire the strobe light at the timing of the SG, the sensor gate control enables the use of an asynchronous strobe light.
 - The video output timing generated by the strobe light is controlled with the sensor gate control.



<Extended Exposure>

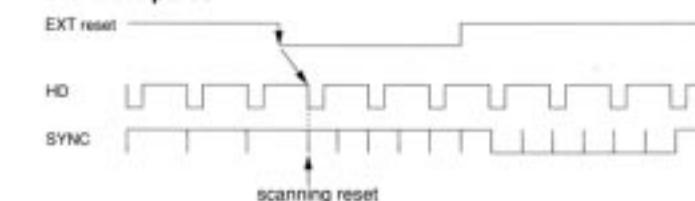
- A shutter speed longer than 1/30-sec. can be acquired by using the sensor gate control. This is useful to increase sensitivity.

Frame Reset Mode

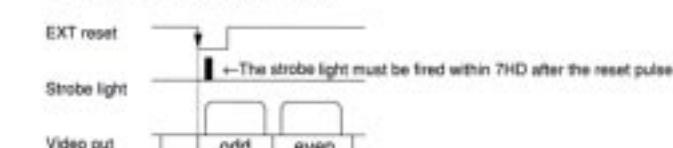
- The scanning is reset to the top of the first line in the odd field.
- This mode is to be used with an external strobe light.

HD Latch On

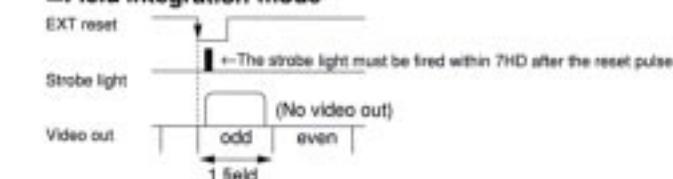
Scanning is reset at the next falling edge of the HD after the reset pulse.



■Frame integration mode



■Field integration mode

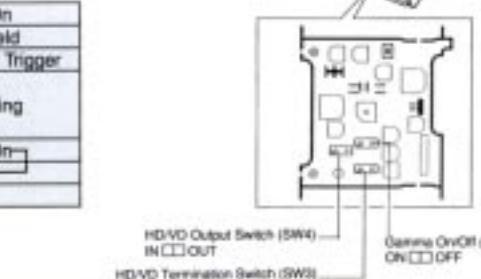


12-pin Configuration

For connection of the optional Camera Cable GP-CA33, GP-CA34, GP-CA59 or GP-CA60.

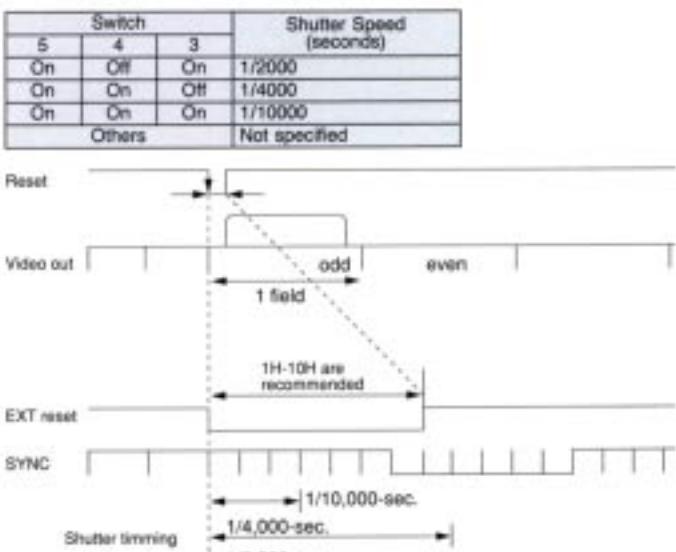


Pin No.	Description
1	Ground
2	+12V IN*
3	Ground for Video Out
4	Video Out
5	Ground for HD
6	HD In/Out
7	VD In/Out or frame reset in
8	Ground
9	No connection
10	Ground for sensor gate control
11	Sensor gate control
12	Ground for VD



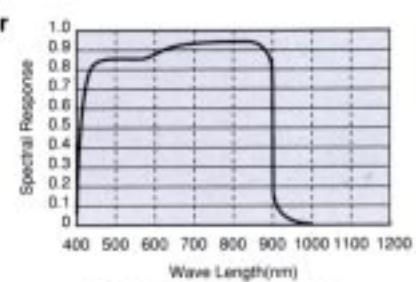
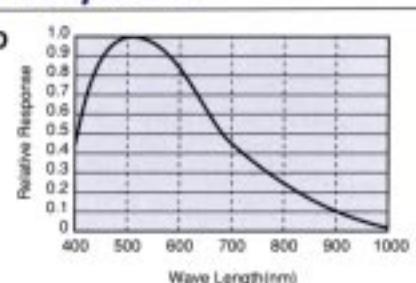
Shutter Trigger Mode

- The shutter trigger mode is an asynchronous strobe effect shutter using frame reset.
- This mode is used only for field integration.



- In frame integration mode, shutter speed is fixed at 1/2000 seconds.

Spectral Response



IR Cut Filter is removable.

Specifications

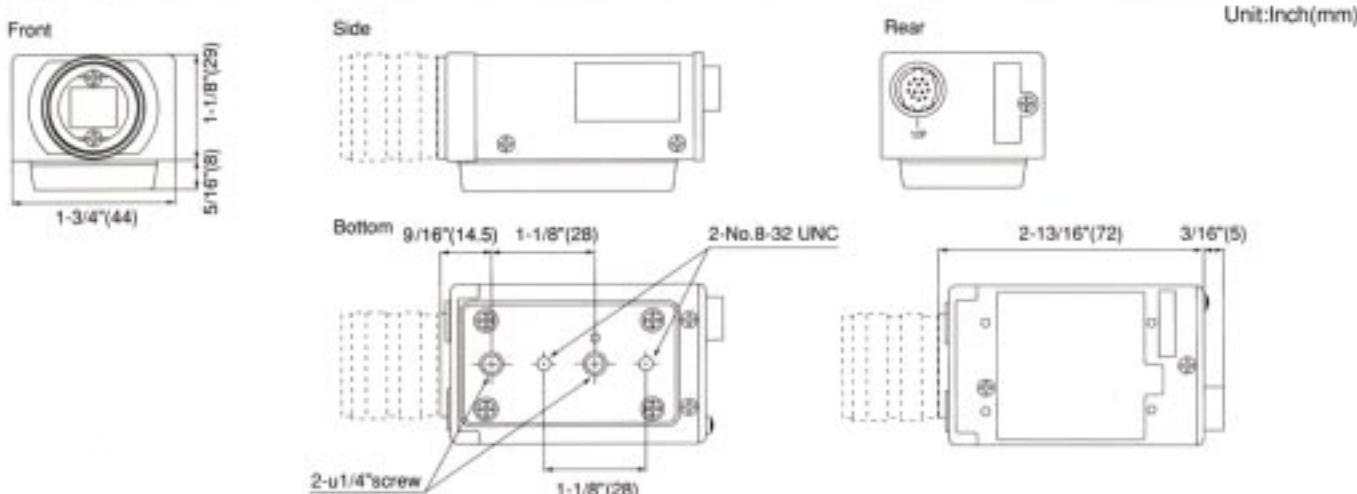
Model No.	GP-MF602
Pick-up Device	Inter Line Transfer type CCD with 768(H) x 494(V) pixels
Image Size	1/2" (7.95(H) x 6.45(V)mm)
Scanning	2:1 interlace 1-line interlace (Frame integration) 2:1 interlace 2-line interlace (Field integration) 2-line sequential (at non-interlaced external sync)
Synchronization	Internal or External (Selectable Automatically) Internal: Built-in sync generator External: 4.0 Vp-p/75 ohms Horizontal drive and Vertical drive pulses for 2:1 interlace or sequential scanning
External Reset	External signal (4.0 Vp-p/75 ohms, negative) supplied to EXT VD IN connector can be used as reset signal
Horizontal Resolution	570 lines at center
Minimum Illumination	0.05 footcandles (0.5 lx), (F1.4, Manual Gain Max.)
Signal-to-noise Ratio	56dB typical, (0dB, 2:1 interlace, without shutter off)
Gamma	1.0 or 0.6 selectable internally
Gain Selection	Fixed (0dB)/Manual (0dB ~ 6dB)
Electronic Shutter	7-step (1/125 to 1/10,000-sec.) at normal 3-step (1/2,000 to 1/10,000-sec.) at Shutter Trigger (Field Integration) 1/2000-sec. Fixed (Frame Integration)
Lens Mount	C-mount
Vibration Resistance	8G (10Hz ~ 150Hz) (2 hours each for three axes)
Shock Resistance	80G (IEC 68)*IEC = International Electrotechnical Commission
Power Source	+12V DC 190mA
Ambient Temperature	14°F ~ 122°F (-10°C ~ +50°C)
Dimensions	1-3/4" (W) x 1-1/8" (H) x 2-13/16" (D) mm (44(W) x 29(H) x 72(D) mm)
Weight	0.34 lbs (155g) (Camera Head Only)

Weights and dimensions shown are approximate.

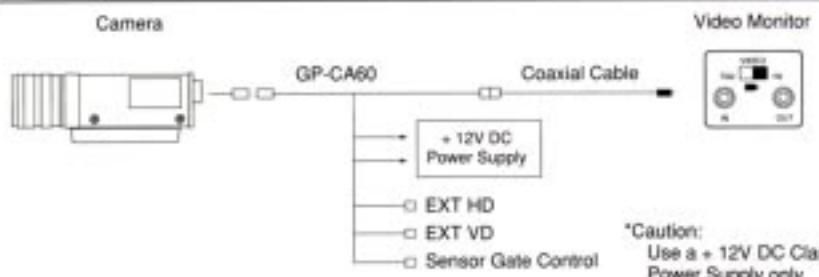
Specifications are subject to change without notice.

These products may be subject to export control regulations.

Appearance



Example of Connection



Optional Extension Cable



Panasonic

Broadcast & Television Systems Company

Division of Matsushita Electric Corporation of America

Imaging Systems Division

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Please Call: (201) 382-6874

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