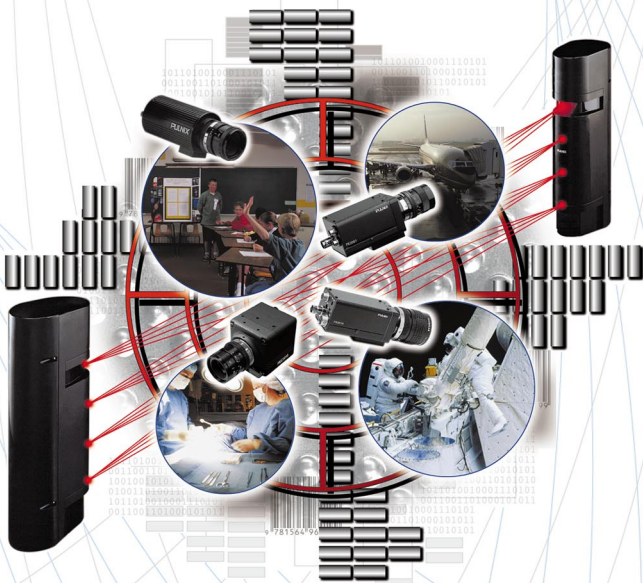
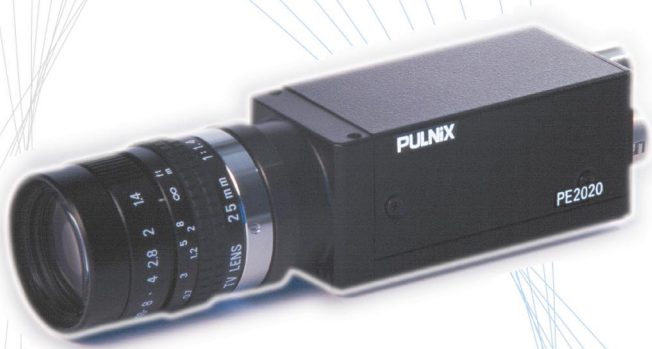


# PE2013 and PE2020

## High Resolution CCD Miniature Cameras



The PE2013 / PE2020 camera offers a high resolution operation with all the facilities associated with a ruggedised industrial camera in a miniature package. The choice of standards and numerous options make this a very user friendly camera.

The PE2020 has a 1/2" Interline Transfer Imager while the PE2013 has a 1/3" Imager. The camera has the facility to accept external syncs as well as outputting the internally generated syncs. The Gamma, AGC, MGC, frame and field modes are easily set for industrial applications by switches. Video output can be used by either the 12 pin connector or the BNC connector. The 75 $\Omega$  impedance can be switched out to prevent loading of the video signal.

### Features

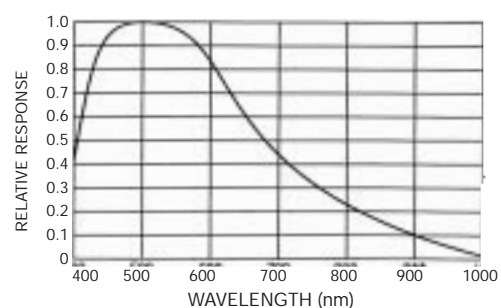
- Super miniature size
- High resolution  
470 TVL (H) PE2013  
560 TVL (H) PE2020
- Shutter speed 1/50 sec to 1/10,000 sec
- Right-angled lens mount  
L version available
- External sync
- Sync and Clock out
- Gamma, Manual gain switch
- Excellent Signal to Noise Ratio

### Spectral Response

The PE2013 / PE2020 has an excellent low light sensitivity of 0.3 lux at f1.4. The good spectral response of the camera imager allows the camera to operate well into the high end infrared region. The signal to noise ratio of 56dB gives extremely good video images with no noise. This is useful for machine vision systems.

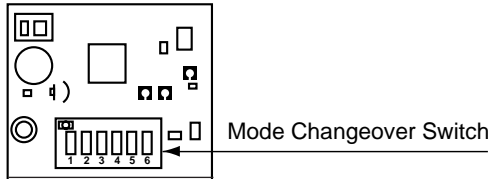
#### Spectral Sensitivity Characteristics

(Excluding light source characteristics, including lens characteristics)



## Shutter Operation

The PE2013 / PE2020 has eight selectable shutter speeds ranging from 1/50 sec. up to 1/10,000 sec. The speeds are set using the mode switch located in the camera.

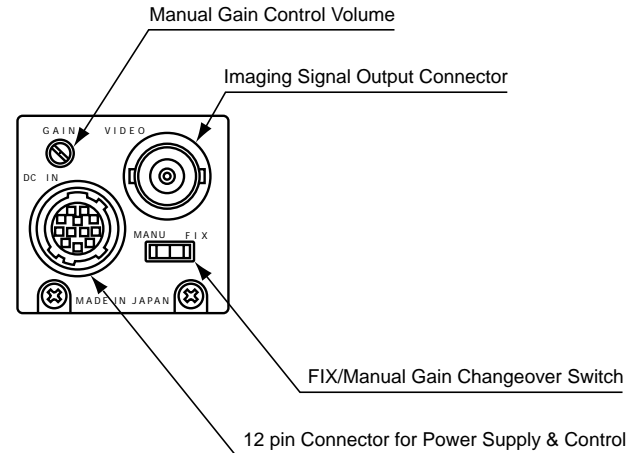


Switches 1 - 3

CCIR	SW1	SW2	SW3	Mode Switch
1/50	OFF	OFF	OFF	
1/120	ON	OFF	OFF	
1/250	OFF	ON	OFF	
1/500	ON	ON	OFF	
1/1000	OFF	OFF	ON	
1/2000	ON	OFF	ON	
1/4000	OFF	ON	ON	
1/10000	ON	ON	ON	

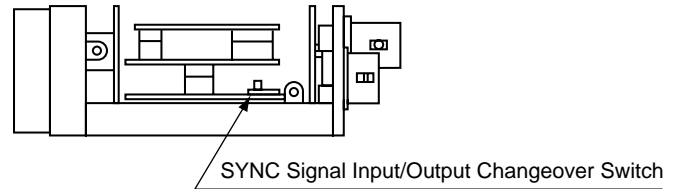
## Gain Control

The camera has a fixed internal gain but it can be used with a manual control if required.



## Sync. Input / Output

The Sync. can be accepted into the camera or output by operating the changeover switch. Switch to Connector Side (Right Side) for external SYNC.

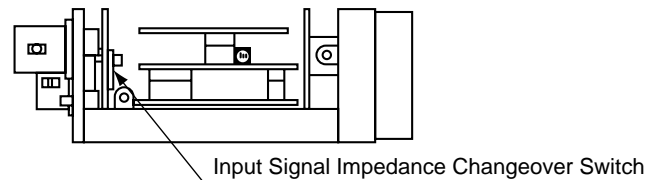


## Electronic Shutter Setting

Switch 4

Elect Shutter ON	ON	
Elect Shutter OFF	OFF	

## Impedance Switch



## Field / Frame Mode

The camera can be configured to give either the field output or frame output for higher resolution.

Switch 5

Frame	ON	
Field	OFF	

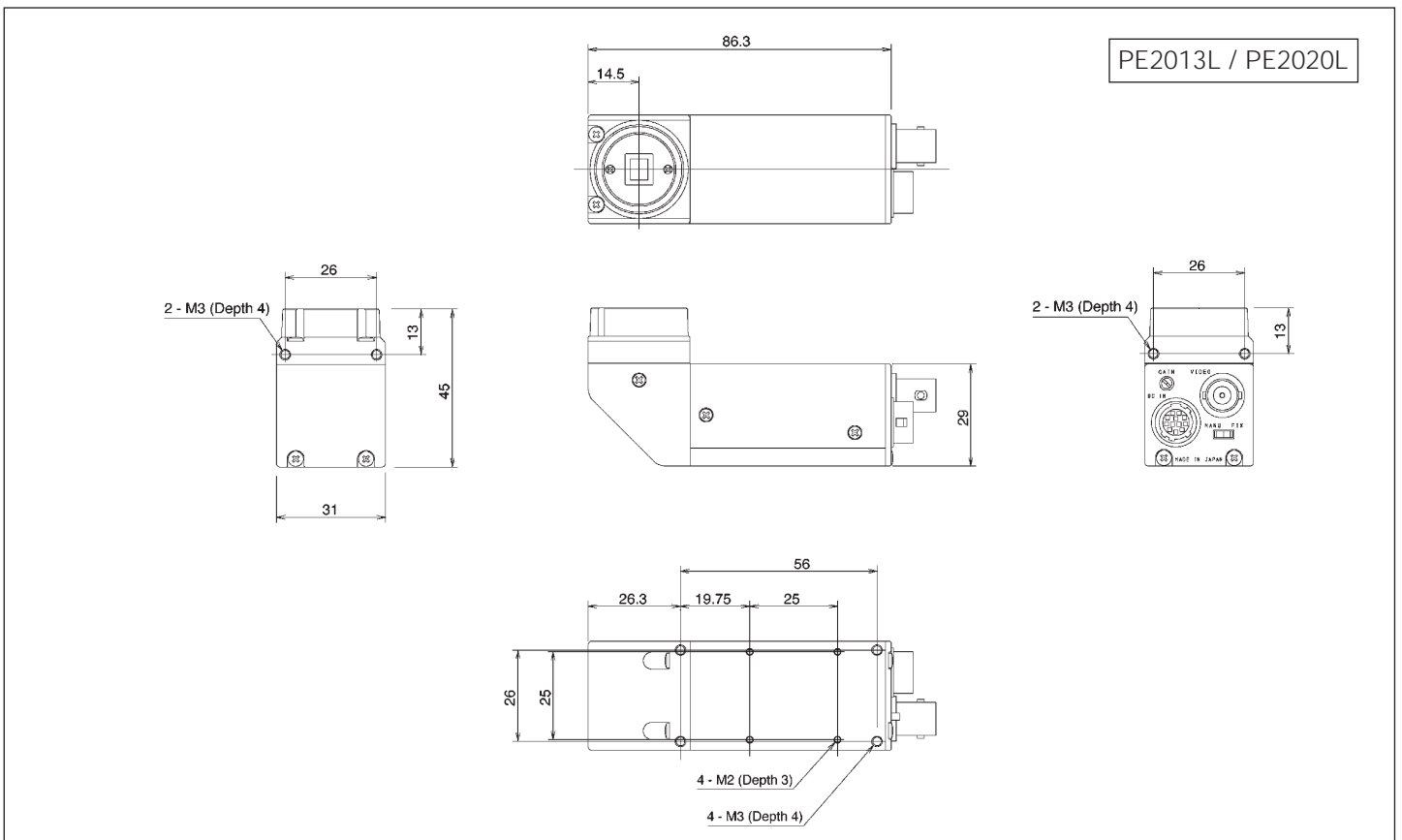
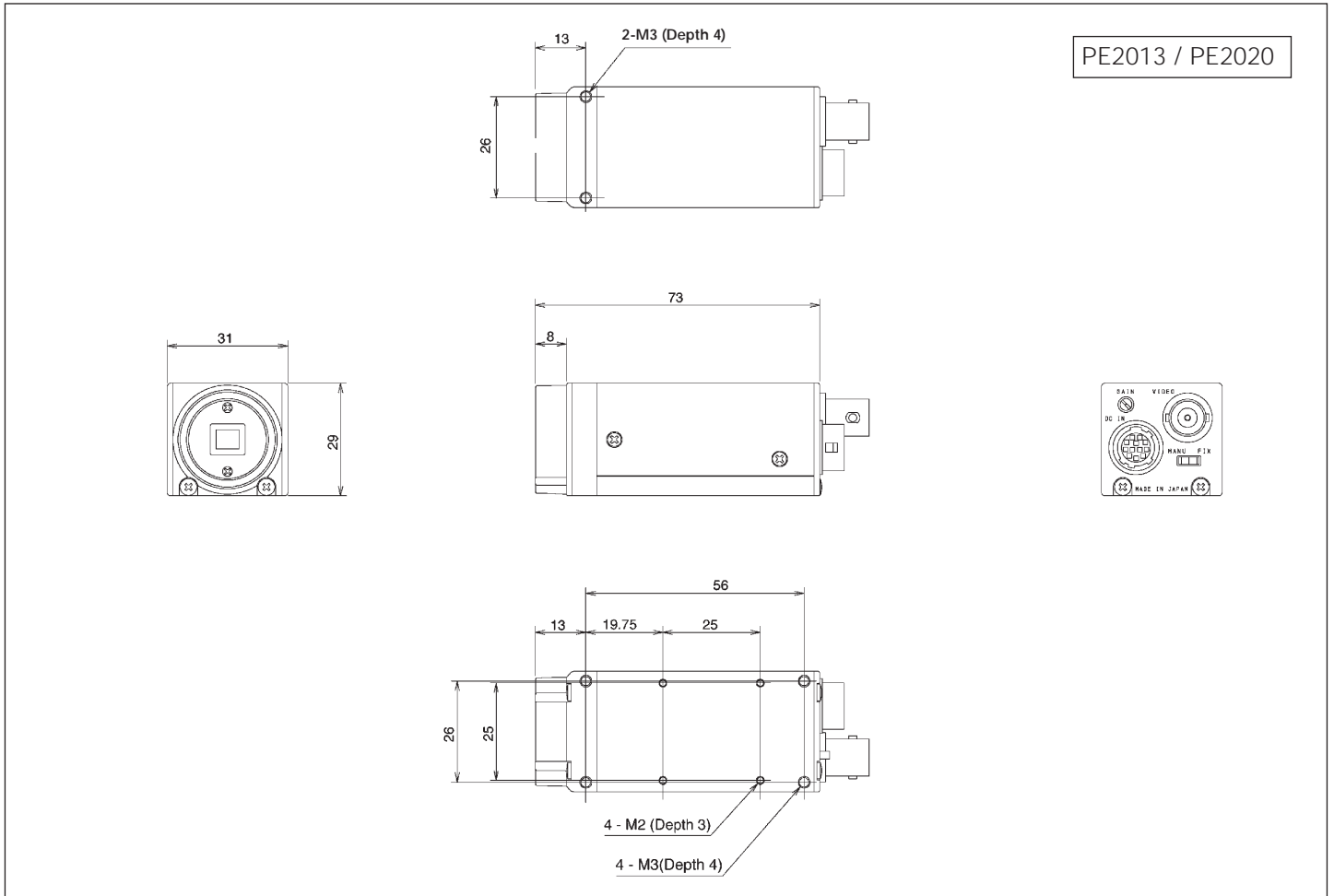
## Gamma Selection

The PE2013 / PE2020 will operate in either Gamma 1.0 or 0.45 to suit all video applications.

Switch 6

$\gamma = 1.00$ ON		
$\gamma = 0.45$ OFF		

# Physical Dimensions (mm/inch)

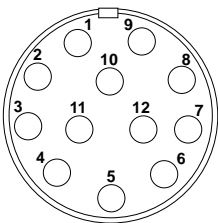


## Specifications

<b>Model</b>	<b>High Resolution CCD Miniature Camera</b>	
Model Number	PE2013 / PE2013L	PE2020 / PE2020L
Imaging Format	CCIR	
Imager	1/3" interline system CCD	1/2" interline system CCD
Pixel	752 (H) x 582 (V)	
Chip Size	6.00mm (H) x 4.96mm (V)	7.95mm (H) x 6.45mm (V)
Cell Size	6.50µm (H) x 6.25µm (V)	8.60µm (H) x 8.30µm (V)
Resolution	470 TVL (H)	560 TVL (H)
Scanning	625 lines, 2:1 Interlace/Non-interlace (External Changeover Switch)	
Vertical Freq	50Hz	
Horizontal Freq	15.625kHz ±1%	
Sync	Internal/external (HD/VD) Auto Switch	
S / N Ratio	56dB (Gain 0dB)	
Min. Illum.	0.3 lux at f=1.4	
Output	1.0 Vp-p composite video at 75Ω	
AGC	None	
	Gain: Fixed / Manual (from 0 to 25dB) switchable on rear panel	
	0.45 or 1.0 switchable (0.45 std.)	
Gamma	C Mount	
Lens Mount	1/50 1/120 1/250 1/500 1/1,000 1/2,000 1/4,000 1/10,000 sec	
Shutter	Flicker-less Shutter	
Storage Mode	Frame/Field (INT Changeover Switch)	
Clock Output	14.1875MHz	
Power Req	DC10V~12V, 180mA	
Operating Temp.	-10°C to 40°C	
Size (W x H x L)	31mm x 29mm x 73mm (L: 31mm x 45mm x 87mm)	
Weight	85g (L: 100g)	

Due to ongoing product improvements, specifications may change without notice.

## Pin Configuration



Signal Pin	S-VERSION	
	INT. SYNC.	EXT. SYNC
1	GND	GND
2	+12V	+12V
3	Video GND	Video GND
4	Video Output	Video Output
5	HD GND	HD GND
6	HD Output	HD Input
7	VD Output	VD Input
8	Clock GND	Clock GND
9	Clock Output	Clock Output
10	GND	GND
11	+12V	+12V
12	VD GND	VD GND

Signal Pin	P-VERSION	
	INT. SYNC.	EXT. SYNC
1	GND	GND
2	+12V	+12V
3	Video GND	Video GND
4	Video Output	Video Output
5	HD GND	VD GND
6	HD Output	N/C
7	VD Output	VD Input
8	Clock GND	HD GND
9	Clock Output	HD Input
10	GND	GND
11	+12V	+12V
12	VD GND	VD GND



PULNiX's Certificate No.: 5123

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PE2013 / PE2020 DS-09 00