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Find the *JAI / Pulnix TM-7EX* at our website: *Click HERE*

PULNiX
TM-7/TM-6 Series

1/2" B/W CCD Cameras



General Description

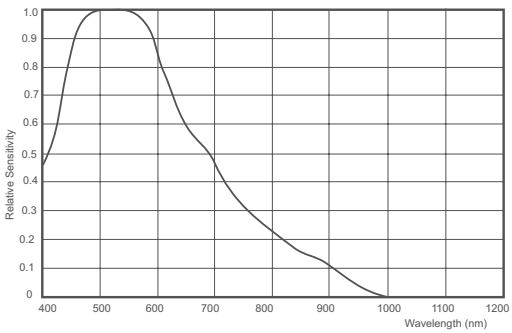
The TM-7/TM-6 series offers a high resolution interline transfer 1/2" CCD imager in a tiny, very rugged package. The miniature size of the TM-7/TM-6 series cameras eliminates the need for a remoted imager camera in all but the most confined spaces.

Designed to meet a variety of application requirements, the three models in the series have many standard features including high speed shutter capability and asynchronous reset.The most commonly needed adjustments, such as gain, gamma, AGC, and field/frame selection, are easily accessible on the rear camera panel. C-mount is also standard. Each model is available in both EIA format (the TM-7 series) and CCIR format (the TM-6 series).

The "CN" and "EX" versions allow for the external selection of eight different shutter speeds (1/60 sec. to 1/10,000 sec.) by attaching the SC-745 Shutter Controller to the 6-pin connector located on the rear of the camera. Pixel clock output is a standard feature on the "CN" version. Asynchronous shuttering is the key feature of the "AS", which also offers a rotary select switch to control shutter settings. The "AS" and "EX" versions accept external sync. The "CN" and "EX" models include auto iris outputs and accept simple reset that is asynchronous but without a shutter.

Applications

- Machine vision
- Automated inspection
- Miniature inspection devices
- Remotely piloted vehicles
- Surveillance
- Microscopes
- Medical and scientific equipment



TM-7 Series Spectral Response

TM-7AS/TM-6AS Shutter Switch Settings:

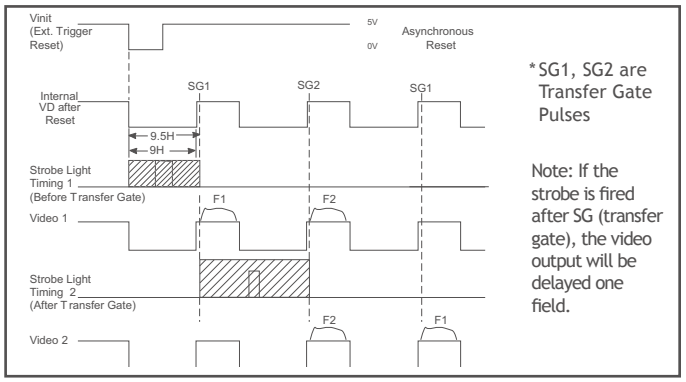
Manual Mode		Async Reset Mode		
TM-7AS		TM-7AS		TM-6AS
0	1/60	Normal 1/60		Normal 1/50
1	1/125	0.5H	1/31,000	1/31,000
2	1/250	1.5H	1/10,000	1/10,000
3	1/500	3.5H	1/4,500	1/4,500
4	1/1,000	6.5H	1/2,400	1/2,400
5	1,2,000	16.5H	1/950	1/950
6	1/4,000	32.5H	1/480	1/480
7	1/10,000	64.5H	1/245	1/245
8	N/C	128.5H	1/120	1/120
9	N/C	Shutter determined by double pulse		

Product Features

- 3 models: TM-7CN/6CN, TM-7AS/6AS, TM-7EX/6EX
- Advanced micro lens 1/2" interline transfer CCD
- High-resolution interlace scan
  - 768 H x 494 V (EIA)
  - 752 H x 582 V (CCIR)
- Super miniature size
- Shutter from 1/60 to 1/10,000
- Asynchronous reset (TM-7AS/TM-6AS)
  Simple reset (TM-7EX/6EX and TM-7CN/6CN)
- Externally adjustable manual gain, AGC, gamma, and field/frame select
- Ext. sync (TM-7EX and TM-7AS), clock and sync out

Reset and Shuttering

Asynchronous Reset Timing with Strobe Light or LED Flash



Strobe Light Timing 1: Strobe light fires before transfer gate pulse SG1. Both fields of the CCD array are exposed. SG1 transfers out first field F1 (may contain unfinished image from previous field before reset), and SG2 transfers out second field F2.

Strobe Light Timing 2: Strobe light fires after transfer gate pulse SG1. Both fields of the CCD array are exposed. SG2 transfers out field F2 and SG1 transfers out field F1 after F2.

TM-7CN/6CN and TM-7EX/6EX Shuttering: Controlled by the SC-745 Shutter Controller attached to the 6-pin connector.

Setting	0	1	2	3	4	5	6	7
(sec)	1/60	1/25	1/250	1/500	1/1,000	1/2,000	1/4,000	1/10,000
D0	L	H	L	H	L	H	L	H
D1	L	L	H	H	L	L	H	H
D2	L	L	L	L	H	H	H	H

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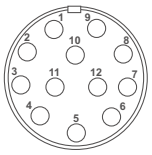
Specifications

Model	TM-7EX (EIA)	TM-7CN	TM-7AS (EIA)
Imager	1/2" Interline transfer CCD, HAD type		
Pixel	768 (H) x 494 (V)		
Cell Size	8.4 µm x 9.8 µm		
Scanning	525 lines EIA		
Sync	Int./ext. auto switch	Internal crystal fH= 15.734 KHz ± 5% fV= 59.94 Hz ± 5%	Int./ext. auto switch
TV Resolution	570 (H) x 350 (V)		
S/N Ratio	50 dB min. AGC off		
Min. Illumination	o.5 lux (F=1.4)		
Video Output	1.0 Vp-p composite video, 75Ω		
AGC	ON/OFF back panel switch (16dB std., 32 db max.)		ON/OFF (Off Std.)
Gamma	1 or 0.45 back panel switch		Internal
Lens Mount	C-mount		
Power Req.	9-12 V DC, 220 mA (TM-7AS is 250 mA)		
Operating Temp.	-10°C to +50°C		
Vibration & Shock	Vibration - 7G (200 Hz to 2000 Hz); Shoc - 70G ("AS" 11 Hz to 200 Hz)		
Size (W x H x L)	45.8 x 39.4 x 66.3 mm 1.81" x 1.54" x 2.60"	45.8 x 39.4 x 61.3 mm 1.81" x 1.54" x 2.40"	45.8 x 39.4 x 66.3 mm 1.81" x 1.54" x 2.60"
Weight	177g (6.2 oz)	171g (5.9 oz)	190g (6.6 oz)
Power Cable	12P-02S		
Power Supply	K25-12V, DC-12N, PD-12 or PD-12P ("CN" model)		
Auto Iris Connector	PC-6P		None
Functional Options	3-1, 3-2, 7-1, 7-2, 21, 25	3-1, 3-2, 4-1, 21, 25	3-1, 4-2
Accessories	See current price list		

Model	TM-6EX (CCIR)	TM-6CN (CCIR)	TM-6AS (CCIR)
Imager	1/2" Interline transfer CCD		
Pixel	752 (H) x 582 (V)		
Cell Size	8.6 µm x 8.3 µm		
TV Resolution	560 (H) x 420 (V)		
Power Supply	P-15-12		
	All other specifications same as EIA models.		

Connectors & Cables

12-Pin Connector



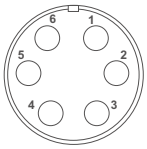
Pin#	"EX"	"CN"	"AS"
1	GND	GND	GND
2	+12VDC	+12VDC	+12VDC
3	GND	GND	GND
4	Video	Video	Video
5	N/C	N/C	N/C
6	Vinit in	Sync out	Vinit
7	VD in	Clock out*	VD in
8	GND	GND	GND
9	HD in	Vinit in	HD in
10	N/C	N/C	N/C
11	Int. control	N/C	Int. control
12	N/C	N/C	N/C

* 14.3182 MHz external clock output

6-Pin Connector

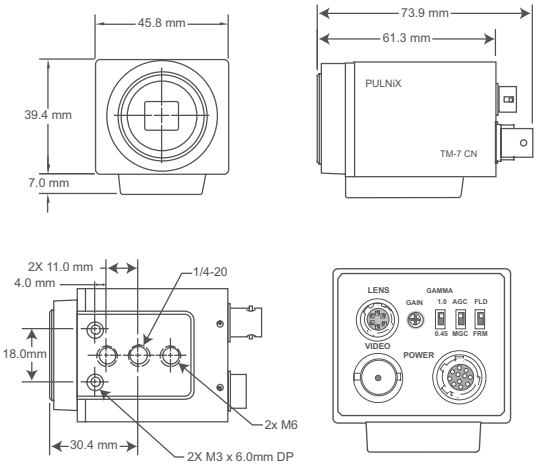
TM-7EX/TM-6EX
TM-7CN/TM-6-CN

Pin#	Function
1	D2
2	GND
3	Video
4	+12V (or 5V)
5	D0
6	D1

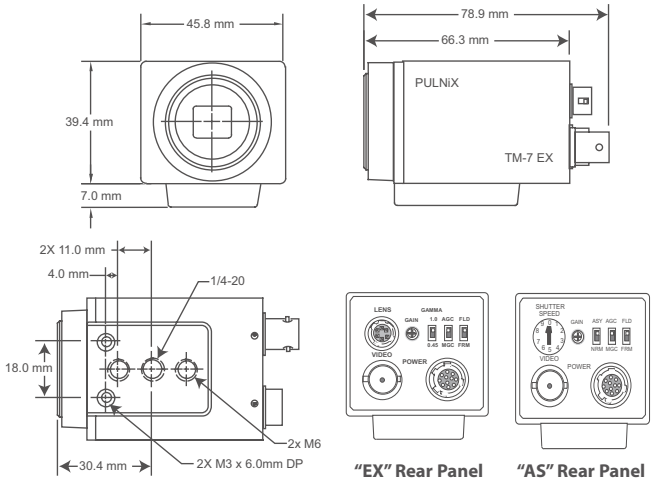


Dimensions (mm)

TM-7CN/TM-6CN



TM-7EX/TM-6EX, TM-7AS/TM-6AS



"EX" Rear Panel "AS" Rear Panel

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