



General Description

The PULNiX TM-745E and TM-745i series are high resolution monochrome shutter cameras with uniform MTF (Modulation Transfer Function) characteristics. The "E" version offers built in edge enhancement, while the "i" version features automatic electronic exposure controls. Asynchronous reset capability and full frame integration are standard features of these cameras. Excellent low light sensitivity of 0.5 lux at F1.4 provides added versatility. Optional features include AGC enable, blemish free imagers, internal IR cut filter, gamma = 0.45, and the popular remoted imagers (standard is 48", with other lengths available by special order).

The TM-745E and TM-745i series cameras are very compact, creating low inertia when mounted within moving objects. The mount provided for C-mount lenses is rigidly affixed to the camera to assure a secure fitting. Circuitry is field proven, and features primarily surface mount technology for resistance to high shock and vibration. The automatic exposure control using electronic shuttering ("i" version) eliminates all dependence on mechanical apertures, reducing vulnerability to down time due to high vibration or shock, or from temperature variations.

The TM-745E series cameras are perfect for applications such as bar code reading, gauging, character reading, automated inspection, intensified CCD cameras, and detailed surveillance. The TM-745i series cameras are particularly well suited for airborne surveillance, vehicles and remote piloted vehicles, ATMs, welding inspection, and any application requiring auto iris function by electronic shuttering.

Integration

The CCD imager may be exposed for longer than normal TV timing (16.7 msec.), providing high sensitivity for dark environment applications. Integration is achieved by controlling the #11 pin of the 12-pin connector to Low (TTL). Because PULNiX uses an interline transfer chip, a full frame of resolution is obtainable.

Note: A full frame is not available in the shutter mode. Use the PULNiX TM-9701 if full frame shuttering is required.

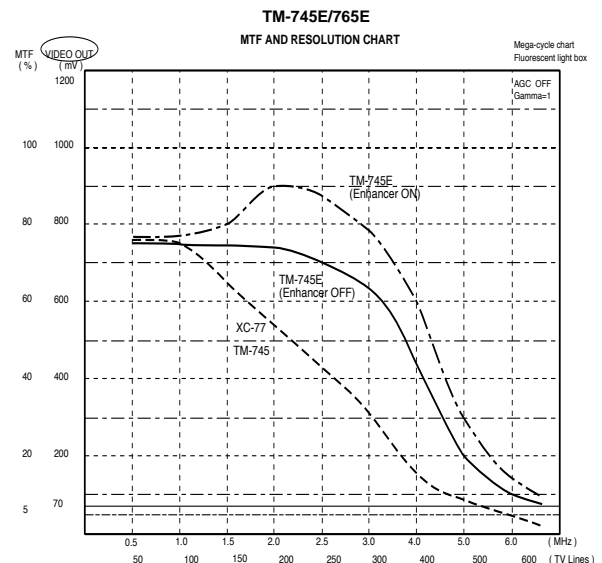
Product Features

- Very high resolution
768(H) x 493(V) ... TM-745E/TM-745i (EIA)
756(H) x 581(V) ... TM-765E/TM-765i (CCIR)
- Built-in edge enhancement ("E" version)
- Fully automatic exposure control ("i" version)
- Low light sensitivity (0.5 lux)
- Smearless shutter 1/60 to 1/10,000 (1/31,000 optional)
- Full frame integration and asynchronous reset
- External sync, interlace, non-interlace auto select
- Excellent S/N (50 dB)
- AGC on/off, gamma 1 or 0.45

Electronic Shutter

The TM-745E and TM-745i series cameras have a substrate drain type shutter mechanism which provides a superb picture at various speeds without smearing. The substrate drain moves the charges vertically. When excess potential is applied to the substrate underneath each cell, a potential barrier is pulled down to release the charge into the drain from all of the cells simultaneously. In comparison, conventional CCD shuttering is done with a horizontal charge shift to the drain by interline transferring or reverse transferring of the frame transfer chip.

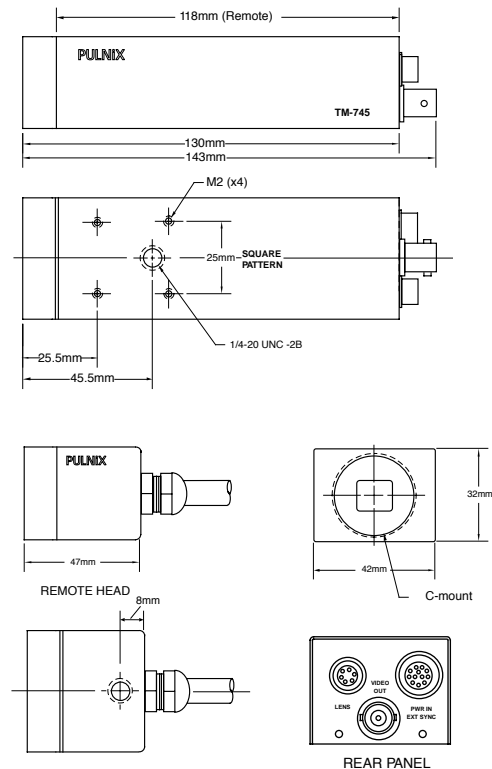
Shutter speeds range from 1/60, 1/125, 1/250, 1/500, 1/1,000, 1/2,000, 1/4,000, to 1/10,000 sec., with a special option available for variable shutter speeds up to 1/31,000. External selection of the electronic shutter rate is a standard feature of these cameras. Shuttering eliminates the need for costly and distracting strobe lights on a high speed assembly or inspection line.



Specifications

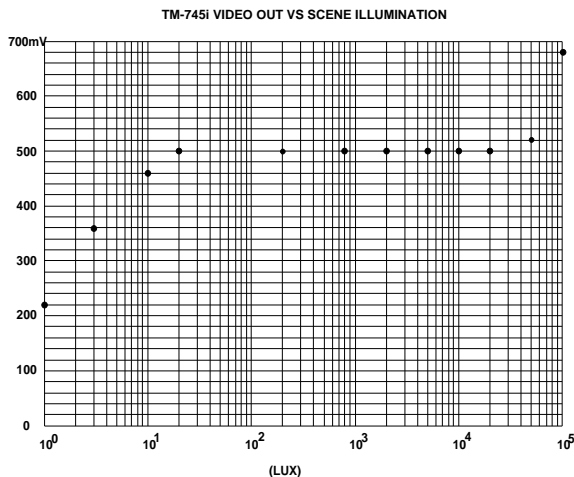
Model	TM-745E/TM-745i (EIA)	TM-765E/TM-765i (CCIR)
Imager	2/3" interline transfer CCD, HAD type	
Pixel	768 (H) x 493 (V)	756 (H) x 581 (V)
Cell size	11 μm x 13 μm	11 μm x 11 μm
Scanning	525 lines 60Hz, 625 lines 50Hz	
Sync	2:1 interface	
TV resolution	Internal/external auto switch	
	HD/VD: 4.0 Vp-p, 4.7k Ω	
	VD=interlace/non-interlace	
	HD=15.734KH \pm 5%	HD=15.625KH \pm 5%
S/N ratio	570 (H) x 350 (V) 560 (H) x 420 (V)	
Min. illumination	50dB min.	
Video output	0.5 lux f=1.4 without IR cut filter	
AGC	1.0 Vp-p composite video, 75 Ω	
Gamma	ON/OFF (default)	
Lens mount	0.45/1.0 (default)	
Power req.	C-mount standard, mini-bayonet optional	
Operating temp.	12V DC, 350mA	
Vibration & shock	-10°C to 50°C	
Size (W x H x L)	Vibration: 7G, Shock: 70G	
Weight	42mm x 32mm x 143mm	
Power cable	1.65" x 1.25" x 5.62"	
Power supply	200 grams (7 oz.)	
Auto iris connector	12P-02	
Functional options	K25-12V or PD-12	
	PC-6P	
	See current price list for available options.	

Dimensions

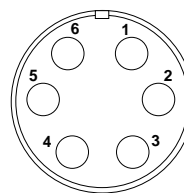


Automatic Shutter (TM-745i)

Automatic shuttering ("i" version) is controlled by a special CPU in the camera which adjusts for optimal picture level based on the video signal. This eliminates the need for costly and bulky auto iris lenses. All shuttering is activated electronically with no moving parts involved. The full shutter range from 1/60 sec. to 1/31,000 sec. is utilized for the "i" version.



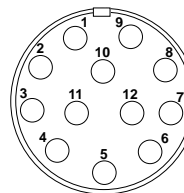
Pin Configuration



6-Pin Connector

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

D0, D1, D2 Shutter control



12-Pin Connector

- 1 GND
- 2 +12V
- 3 GND
- 4 Video
- 5 GND
- 6 Vinit
- 7 VD in
- 8 GND
- 9 HD in
- 10 N/C
- 11 Int.cont.
- 12 GND

TM-745E/TM-745i

TM-745E/TM-745i/1197



ISO-9001
Cert. #A3942 RVC



Industrial Products Division

PULNiX America Inc. Tel: 408-747-0300
1330 Orleans Drive Tel: 800-445-5444
Sunnyvale, CA 94089 Fax: 408-747-0660
Email: imaging@pulnix.com
www.pulnix.com