

PULNiX TMC-73M/TMC-63M

Miniature CCD Color Camera

General Description

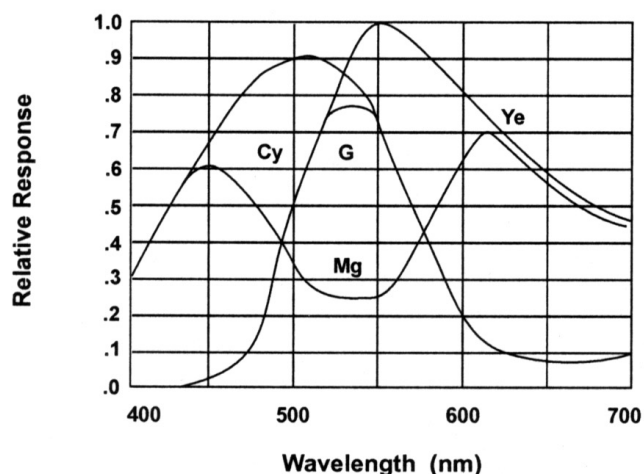
The TMC-73M is a super-miniature CCD color camera with outstanding color fidelity and high resolution for the most demanding color applications. Tiny and very robust, this camera is excellent for applications such as pipe inspection, machine vision, aircraft cameras, color recognition, surveillance, multimedia, and teleconferencing.

The TMC-73M offers many features including VBS, Y/C or S-VHS output, automatic electronic exposure to eliminate auto-iris lenses, and AGC on/off selection. External gain and hue controls via serial data communication is optional. The high-speed automatic or manual shutter selects from 1/60 sec. to 1/10,000 sec. White balance selection is between 3200°K and 5500°K. Low light sensitivity is 5 lux or less at F1.4.

The state-of-the-art flex-rigid circuit board technology, in which four small boards are fully interconnected with flex-rigid links for ease of assembly and flexibility, offers shock and vibration resistance. Despite the TMC-73M's super mini size, many input/output pads are provided for OEM applications. The internal boardset (TMC-73MB) is available separately for quantity OEM requirements.

The lens mount is CS-mount (or C-mount with added 5mm adapter). Miniature CS and C-mount lenses are available from JAI PULNiX.

Spectral Response



Electronic Shutter

The TMC-73M has a built-in automatic shutter control (electronic iris) to adjust the sensitivity to a wide dynamic range. The electronic shutter rate can be selected externally from 1/60 to 1/10,000 sec.

The TMC-73M has a substrate drain type shutter mechanism which provides a superb picture at various speeds without smearing. The substrate drain vertically



Product Features

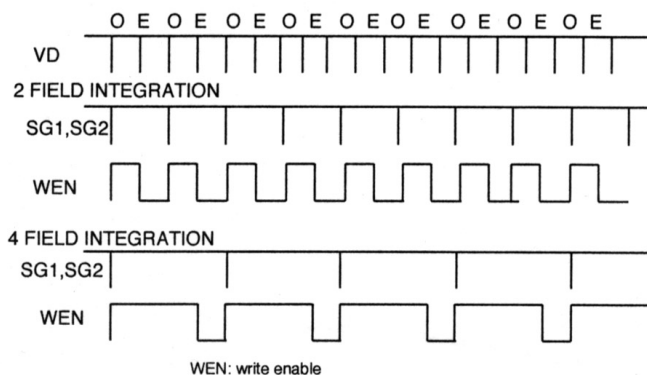
- High resolution (460 horizontal TV lines)
- High sensitivity complementary color filter
- Super mini size (40mm dia. x 85mm)
- NTSC/PAL versions and Y/C output
- Hi-rel flex-rigid circuit board assembly
- Wide dynamic range and excellent S/N ratio
- Selectable white balance, auto-shutter and AGC
- External digital control for Gain, Hue, Chroma, etc.
- OEM boardsets available (38mm dia x 48mm)

moves the charges. 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 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.

Shuttering eliminates the need for an auto-iris or costly and distracting strobe lights on a high speed assembly or inspection line. For applications requiring and auto-iris lens, the TMC-73M has a built-in lens driver for typical galvanometric auto-iris lenses. The level is externally controllable by digital communication.

Integration Control

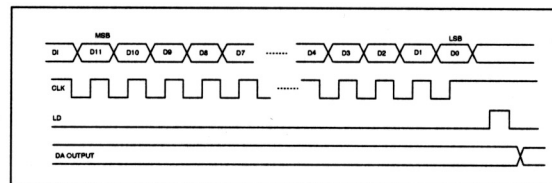
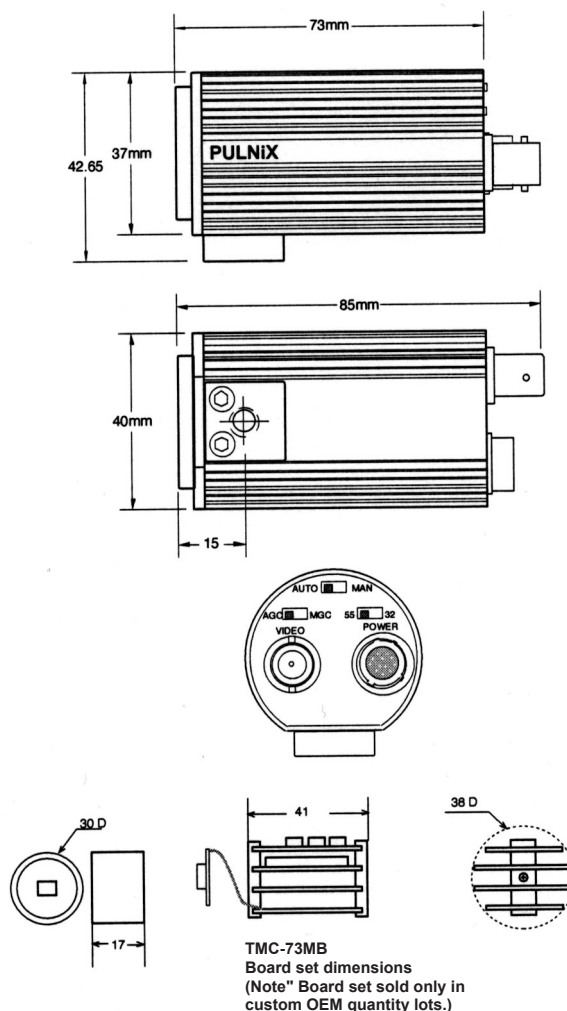
The TMC-73M has a optional function which provides up to 16 fields of integration in order to increase image exposure time. This option can be externally controlled. A write-enable output is provided for the integration period and video out field signal. Consult JAI PULNiX for this option.



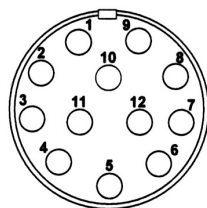
Specifications

MODEL	TMC-73M (NTSC)	TMC-63M (PAL)
Imager	1/3" interline transfer CCD (4.8mm x 3.6mm)	
Pixel	768 (H) x 494 (V)	752 (H) x 582 (V)
Cell Size	6.35µm x 7.4µm	7.35µm x 7.4µm
Color Filter	Cy, YE, MG, G complementary color filter	
Scanning	2.1 interlace, field mode scanning	
	525 lines, 59.94 Hz	625 lines, 50 Hz
Sync	Internal Sync Only	
	fH=15.734 KHz fV=59.95 Hz	fH=15.625 KHz fV=50.00 Hz
TV Resolution	460 (H) x 400 (V) TVL	450 (H) x 450 (V) TVL
S/N Ratio	50 dB (AGC OFF)	
Min. Illumination	5 lux F=1.4 (AGC ON)	
Video Output	VBS = q.0 Vp-p at 75Ω (NTSC & PAL) Y = 1.0 Vp-p with sync, C = 285 mV at 75Ω	
Color Balance	Manual white balance (selectable)	
AGC	Max. 32 dB AGC, on-off switchable, manual gain control	
Gamma	0.45	
Lens Mount	CS-mount	
Power Req.	12 V DC, 190 mA	
Operating Temp.	-10°C to +50°C (-30°C to +65°C extended temp optional)	
Vibration & Shock	Vibration: 7 Grms Shock: 70 G	
Size (dia. x length)	40mm x 85mm (1.57" x 3.35")	
Weight	120 grams (4.2 oz)	
Power Cable	12P-02 for NTSC/PAL and Y/C KC-10 for NTSC/PAL only	
Power Supply	12VDC, 300mA	
Auto Iris Connector	Internal wiring only, galvanometric iris driver and iris video output	
Functional Opts	Up to 16 fields integration output, Ext. control of gain, hue, iris via serial interface	
Accessories	CD and C-mount mini lenses	

Dimensions



Pin Configuration



12-Pin Connector

1	GND	7	Chroma out (Data in)
2	+12V in	8	N/C (Load in)
3	GND	9	Y out (CLK in)
4	Video out (VBS)	10	D0
5	N/C (Ext. Cont)	11	D1
6	Auto/Man	12	D2

Switches

Auto/MAN ... Auto-shutter on/off switch. Manual control by D0, D1, D2
AGC/MGC ... AGC on/off switch. Manual control by serial input
55/32 White balance at 5500°K/3200°K

External control mode (optional)

12 bit serial D/A is built-in. It controls 8 bits of data and 4 bits of address for 1. Manual Gain, 2. Iris level control for galvanometric lens, 3. Chroma level, 4. R-Y hue control, 5. B-Y hue control, 6. Spare. for Ext. control mode, Set EXT cont (#%) to Low and apply serial data, Clock and Load to #7, 8 and 9 pins. Consult JAI PULNiX for the details.

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