

## ❖ **TM-9701** Monochrome Progressive Scan CCD



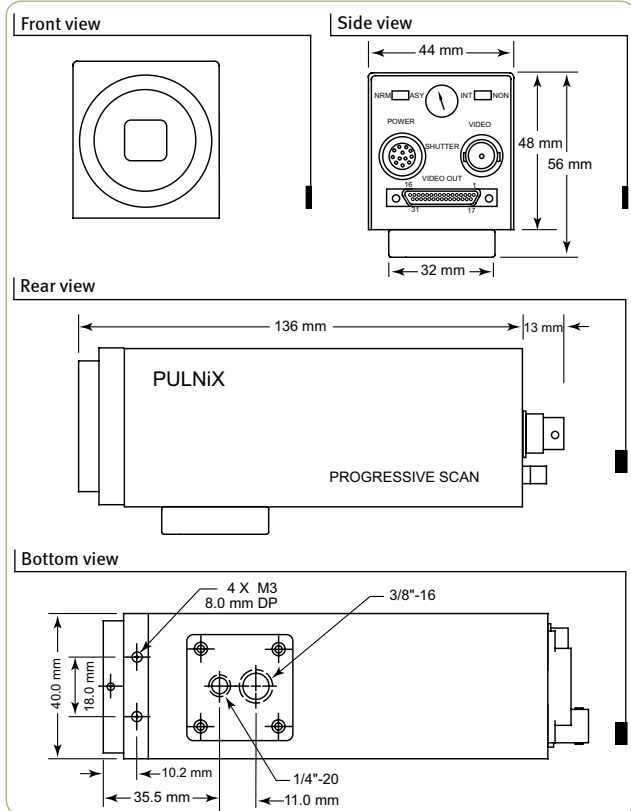
- *2/3" high resolution progressive scan CCD imager (KAI-0373)*
- *768(H) x 484(V) resolution @ 30 fps*
- *Large (11.6 x 13.6  $\mu$ m) pixels*
- *Internal A/D converter*
- *8-bit LVDS digital output (RS-422)*
- *Asynchronous reset with external shutter control*
- *Full frame shutter, 1/60 to 1/16,000 sec.*
- *Frame memory built-in for asynchronous image capturing*
- *Full frame integration with uninterrupted video*
- *Excellent S/N ratio (50 dB)*



# Specifications for TM-9701

Specifications		TM-9701
Sensor	2/3" progressive scan interline transfer CCD	
Active area	8.9mm x 6.6mm	
Active pixels	768 (H) x 484 (V)	
Cell size	11.6 μm x 13.6 μm	
Readout mode	768 (H) x 484 (V) @ 30 Hz progressive 768 (H) x 242 (V) @ 60 Hz interlace	
Synchronization	Internal/External auto switch HD/VD, 4.0 Vp-p impedance 4.7K Ω VD=30 Hz ± 5% interlace/non-interlace HD=15.734 KHz ± 5%	
Pixel clock	14.31818 MHz	
Resolution	Digital	768 (H) x 484 (V)
	Analog	570 TV lines x 484 TV lines
S/N ratio	> 50 dB (AGC off)	
Sensitivity	1.0 lux, f=1.4 (no shutter) @ 30 fps Pixel sensitivity: 10 μV/e-	
Video output	1.0 Vp-p composite video, 75 Ω and 8-bit RS-422 digital output	
AGC	On/OFF (OFF std)	
Gamma	0.45 or 1.0 (1.0 std)	
Lens mount	C-mount (use 2/3" format), back focus adj	
Power	12V DC, 500 mA	
Operating temperature	-10° C to 50° C	
Vibration	7 Grms (10 Hz to 2000 Hz) Random	
Shock	70 G, 11 ms, half-sine	
Dimensions (H x W x L)	48 mm x 44 mm x 136 mm	
Weight	323 g	

## Dimensions

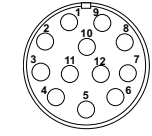


## Connector Pin-outs

### 31-Pin Connector (MP211-031-113-4300)

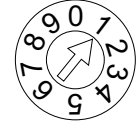
Pin #	Description	I/O	Pin #	Description	I/O
1	CLK+	Out	17	CLK-	Out
2	LDV+	Out	18	LDV-	Out
3	FDV+	Out	19	FDV-	Out
4	GND		20	VINIT	Out
5	EXT HD	In	21	EXT VD	In
6	INTEG	In	22	ENINT	In
7	LPULSE	Out	23	GND	
8	Do+	Out	24	Do-	Out
9	D1+	Out	25	D1-	Out
10	D2+	Out	26	D2-	Out
11	D3+	Out	27	D3-	Out
12	D4+	Out	28	D4-	Out
13	D5+	Out	29	D5-	Out
14	D6+	Out	30	D6-	Out
15	D7+	Out	31	D7-	Out
16	N/C				

Note: CLK: data clock, LDV: Line data valid, FDV: Frame or field data valid, ENINT: Integration enable, LPULSE: Last pulse



### 12-Pin Connector

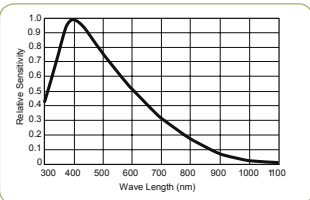
1	GND (power)	7	VD in
2	+12V	8	GND
3	GND (analog)	9	HD in
4	Video out	10	GND
5	GND (digital)	11	Integration control
6	VINIT in	12	GND



### Shutter Control Switch

	Manual	Async
0	no shutter	no shutter
1	1/60	1/16,000
2	1/125	1/8,000
3	1/250	1/4,000
4	1/500	1/2,000
5	1/1,000	1/1,000
6	1/2,000	1/500
7	1/4,000	1/250
8	1/8,000	1/125
9	1/16,000	Double pulse

## Spectral Response



## Ordering Information

### Camera

TM-9701

Optional Functions	
AGC Enable	OP1-2
Internal IR Cut Filter Added	OP3-1
Gamma Adjust to 0.45	OP4-2
Remote Head w/1-meter cable	OP10-1
Ultraviolet Imager	OP21-UV
DC-Coupled Analog output	OP72
200 Ohm Termination	OP84

**Optional Accessories (MUST BE ORDERED SEPARATELY)**

I/O	30DG-02 (2 meter digital cable)
Power Supply	PD-12UUP Series (+12V DC, 1.2 amp)
Power Cable	12P-02S (2 meter multi-conductor)

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See the possibilities