PULNiX

TM-6300

NEW PRODUCT SUMMARY

- **High speed 1/3" progressive scanning interline transfer CCD imager 659(H) x 494(V)**
- **Single channel output VGA progressive scan (60 fps and 30 fps with single channel output)**
- **Full frame shutter ...1/120 to 1/20,000 sec. at 60 fps**
- **Asynchronous reset**
- **Async shutter with pulse width control**
- **Full frame integration**
- **Small, lightweight, rugged design**
- **Replaces strobe lights with electronic shutter**

GENERAL DESCRIPTION

The PULNiX TM-6300 is a monochrome full-frame shutter camera which offers twice the frame speed of conventional "TV format" cameras. Since the single channel analog output is double speed (60 frame / sec), the image can be displayed on a standard VGA monitor. This camera also offers normal frame rate scanning of 30 frame / sec. PULNiX PVM multi-sync monitors display all TM-6300 functions.

This high resolution square pixel camera has a VGA format interline transfer CCD imager. The signal output is single channel double speed analog progressive scanning (525 lines) at 30 Hz or 60 Hz. Asynchronous reset, asynchronous shutter control with pulse width control are standard features.

This camera is excellent in applications such as bar code reading, high speed on-line inspection, gauging, character reading, high definition graphics, and motion analysis.
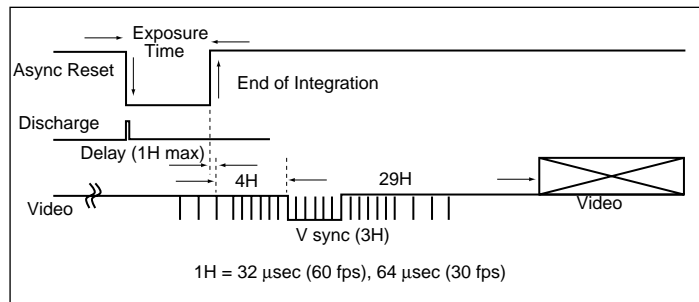
Single Channel VGA Output

While there are a number of CCD cameras called "VGA," they are, in general only referring to the CCD pixel format and the output speed is not 60 frame / sec. The TM-6300 is true VGA format for both input device (CCD) and output frame rate with single channel output.In addition, it has 30 frame / sec. normal speed scan mode as well.

Asynchronous Reset

The TM-6300's asynchronous reset is flexible and takes external horizontal drive (HD) for phase locking. When VINIT pulse is applied, it resets the camera's scanning and purges the CCD. There are two modes to control the asynchronous reset and shutter speed:
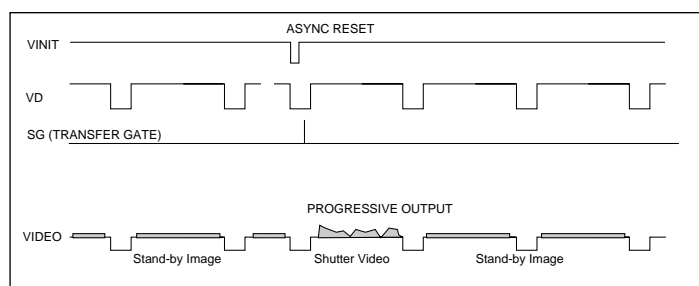
1. External VINIT with pulse width control

The duration between pulse edges controls the shutter speed Integration time). When external trigger (VINIT) is applied to pin 11, it discharges the photodiode charges and immediately starts accumulating (integrating) charges for the duration of active low. When the pulse goes to high, it transfers the charges to the vertical shift register. The video output commences immediately after the rising edge.

Async Reset · Exposure Time · End of Integration · Discharge · Delay (1H max) · 4H · 29H · Video · Video · V sync (3H)

1H = 32 µsec (60 fps), 64 µsec (30 fps)

The variable shutter speed is from 50 µsec (100 µsec for 30 fps) to 8.3 msec (16.7 msec for 30 fps). The maximum async trigger repetition is 18 msec (60 fps) and 36 msec (30 fps).

2. Asynchronous reset at 0 shutter.

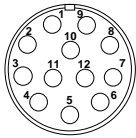This resets the camera without shutter function. This is useful for conventional strobe applications.

VINIT · ASYNC RESET · VD · SG (TRANSFER GATE) · PROGRESSIVE OUTPUT · VIDEO · Stand-by Image · Shutter Video · Stand-by Image

TM-6300

SPECIFICATIONS

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Imager	1/3" progressive scanning interline transfer CCD	**Electronic Shutter**	Asynchronous electronic shutter (60 fps or 30 fps) Mode A: 1/20,000 or 1/10,000 Max (manual speed) Mode B: Async pulse width control (500/100 μsec to 8.3/16.7 μsec) Full frame resolution per shutter
Pixel	659 (H) x 494 (V)		
Cell size	7.4 μm x 7.4 μm square pixels		
Scanning	30 or 60 frames/sec with single channel output (VGA output)		
		Lens mount	C-mount
Sync	Internal/external auto switch HD=31.468KHz (15.734KHz) ±5% Vertical async reset or VD=60 or 30 Hz (non-interlace)	**Power req.**	12V DC 210 mA
		Operating temp	-10°C to 50°C
		Vibration	7 Grms 10-2000 Hz
Asynchronous Reset	Ext Vinit (Trigger) for async reset	**Shock**	70G
		Size (W x H x L)	31.0mm x 29.0mm x 73.0mm (1.22" x 1.14" x 2.87")
Pixel clock	25.5454 or 12.2727 MHz		
Resolution	500 (H) x 494 (V)	**Weight**	85 grams
S/N ratio	56dB min (at 30 fps)	**Auto Iris Connector**	None
Min. illumination	1 lux at 30 fps, 2 lux at 60 fps F=1.4	**Functional options**	
		I/O accessories	
Video output	1.0 Vp-p composite video, 75Ω non-interlace	**Power cable**	12P-02S
AGC	Manual/Factory preset/AGC switchable	**Power supply**	K25-12S or PD-12UUP
Gamma	0.45 or 1.0 (standard)		

Pin Configuration — 12-pin connector

Pin No.	Internal Sync Mode	External Sync Mode HD/VD	External Sync Mode HD/VINIT	Pin No.	Internal Sync Mode	External Sync Mode HD/VD	External Sync Mode HD/VINIT
1	GND	GND	GND	7	VD out	VD in	NC
2	+12V	+12V	+12V	8	N/C	N/C	GND
3	GND	GND	GND	9	N/C	N/C	N/C
4	Video out	Video out	Video out	10	GND	GND	GND
5	GND	GND	GND	11	N/C	N/C	VINIT
6	HD out	HD in	HD in	12	GND	GND	GND

TM-6300

71-0052 Rev. A

DIMENSIONS
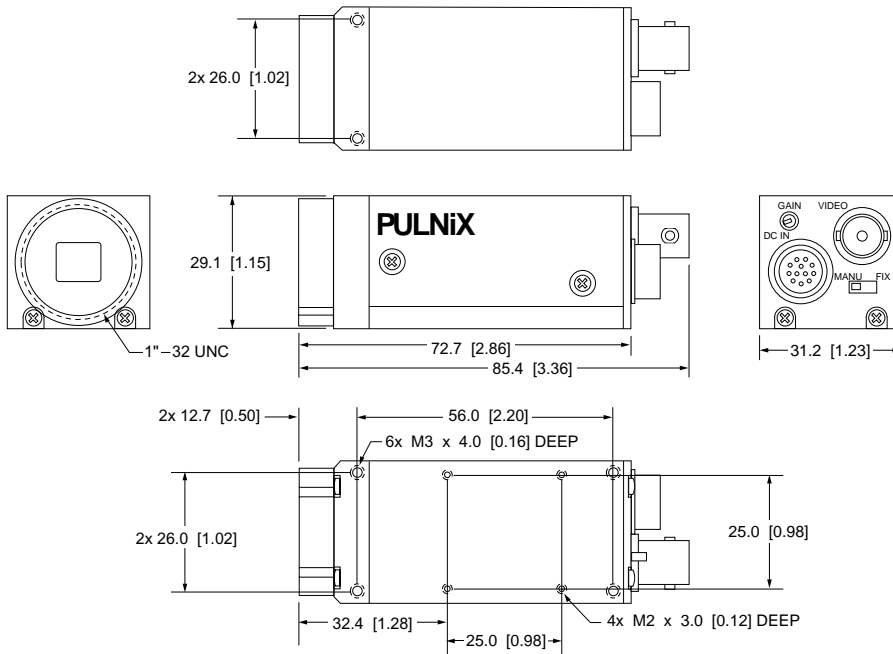
Mode Selection

DIP switch		Mode
1	On	Progressive
	Off	Interlace
2	On	Normal reset (HD.VD)
	Off	Async reset
3	On	30 fps
	Off	60 fps
4	On	Manual / Factory set
	Off	AGC
10	Off	Pulse width control

Manual Shutter Control

5	6	7	8	9	60 fps	30 fps
Off	Off	-	-	-	no shutter	
On	Off	Off	Off	Off	1/120,	1/60
On	Off	On	Off	Off	1/250,	1/125
On	Off	Off	On	Off	1/500,	1/250
On	Off	On	On	Off	1/1,000,	1/500
On	Off	Off	Off	On	1/2,000,	1/1,000
On	Off	On	Off	On	1/4,000,	1/2,000
On	Off	Off	On	On	1/8,000,	1/4,000
On	Off	On	On	On	1/20,000,	1/10,000