

## ❖ CM-140 PMCL / CB-140 PMCL Progressive Scan



- *Compact series 1/2" progressive scan camera*
- *Power over Camera Link (PoCL)*
- *Monochrome and Bayer mosaic color versions*
- *1392 (h) x 1040 (v) active pixels*
- *4.65  $\mu\text{m}$  square pixels*
- *31 frames/second with full resolution in continuous operation*
- *30 frames/second with external trigger and full resolution*
- *Up to 74 frames/second with partial scan*
- *48 frames/second with vertical binning (CM-140 MCL only)*
- *Shutter speed from 30.5 $\mu\text{s}$  to 2 sec. using Pulse Width Control*
- *Programmable exposure from 61 $\mu\text{s}$  to 32 ms*
- *Pre-select and Pulse width trigger modes*
- *LVAL-synchronous/-asynchronous operation (auto-detect)*
- *Auto iris lens video output allows a wider range of light*
- *10 or 8-bit output*
- *Setup by Windows 2000/XP via serial communication*

**CAMERA  
Link**  
(Mini Camera Link)



# Specifications for CM-140 PMCL / CB-140 PMCL

Specifications	CM-140 PMCL / CB-140 PMCL
Sensor	1/2" progressive scan CCD
Pixel Clock	65 MHz
Frame rate full frame	31 frames/sec.
Active area	6.4 (h) x 4.8 (v) mm
Cell size	4.65 (h) x 4.65 (v) $\mu$ m
Active pixels	1392 (h) x 1040 (v)
Color (CB-140 PMCL)	Raw Bayer output for host-based interpolation
Read-out modes	
Full	1392 (h) x 1040 (v) 31.08 fps
2/3 partial scan	1392 (h) x 694 (v) 39.97 fps
1/2 partial scan	1392 (h) x 520 (v) 46.57 fps
1/4 partial scan	1392 (h) x 269 (v) 61.92 fps
1/8 partial scan	1392 (h) x 130 (v) 73.97 fps
Vertical binning	1392 (h) x 527 (v) 48.87 fps*
	*NOTE: CM-140PMCL only
Sensitivity (CM-140 PMCL)	0.3 Lux (On sensor, Max. gain, Shutter OFF, 50% video)
Sensitivity (CB-140 PMCL)	1.4 Lux (On sensor, Max. gain, Shutter OFF, 50% video)
S/N ratio	>50dB (0 dB gain)
Video output	8 or 10 bit in Mini-CL
Auto-iris lens video	0.7 Vp-p
Gain	Manual, -3dB to +12dB
Synchronization	Int. X-tal or ext. trigger
Inputs	Camera Link TTL Ext. trigger, LVDS (CC 1) Ext. trigger 4V $\pm$ 2V
Outputs	Camera Link TTL Clk., FVAL, LVAL, Data, EEN XEEN
Trigger modes	Pre-select, Pulse Width, Reset Continuous
Electronic shutter	
Pre-set shutter	1/31 to 1/10,000 in 9 fixed steps
Programmable exposure	2L (64 $\mu$ s) to 1052L (40ms) in 1L steps
Pulse Width Control	32 $\mu$ s to 2 sec.
Accumulation	Auto-detect LVAL-synchr. / asynchr.
Control interface	Mini-CL serial communication
Functions controlled by serial communication	Shutter, Trigger mode, Readout mode, Scanning, Trigger Polarity, Black level, Gain,
Indicators on rear panel	LED for power and trigger input
Operating Temperature	-5°C to +45°C
Humidity (operation)	20 - 90% non-condensing
Storage temp./humidity	-25°C to +60°C / 20 to 90% non-condensing
Vibration	10G (20Hz to 200Hz XYZ)
Shock	70G
Regulations	CE (EN 61000-6-2, EN-61000-6-3), FCC part 15 class B, RoHS/WEEE
Power	12V DC $\pm$ 10% 3 W (PoCL)
Lens mount	C-mount
Dimensions (H x W x L)	29 x 44 x 66 mm
Weight	115 g

## Connector pin-out

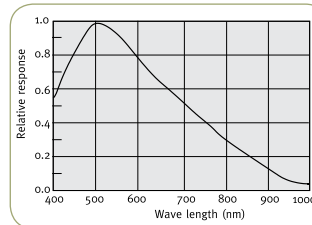
### Mini-CL interface



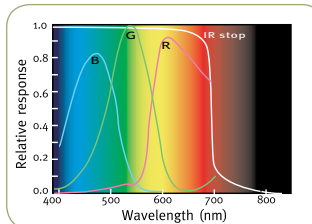
Pin	Signal	Function
1 14	+12V/GND	Power
2 15	-/+ Tx0	CL Data
3 16	-/+ Tx1	CL Data
4 17	-/+ Tx2	CL Data
5 18	-/+ Txclk	CL clk
6 19	-/+ Tx3	CL Data
7 20	+/- SerTC	Serial in
8 21	-/+ SerTFG	Serial out
9 22	CC1-/CC1+	Ext. trig*
10 23	CC2-/CC2+	Not used
11 24	CC3-/CC3+	Not used
12 25	CC4-/CC4+	Not used
13 26	GND/+12V	Power

NOTE:  
The PoCL interface requires a compatible frame grabber for proper and safe operation.

## Spectral Response CM-140 PMCL

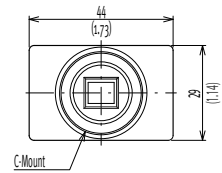


## Spectral Response CB-140 PMCL

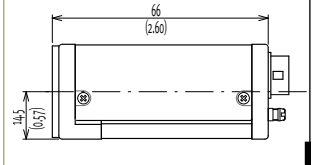


## Dimensions

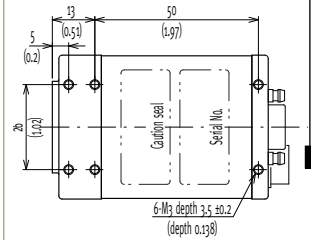
### Front view



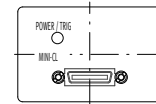
### Side view



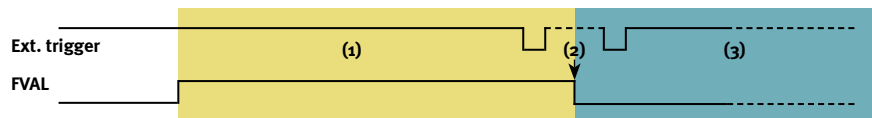
### Bottom view



### Rear view



## FVAL auto-detect trigger function (next LVAL or immediate)



- (1) Within this period camera starts accumulation at next LVAL (prevents feed-through noise)
- (2) Avoid trigger at FVAL transition, as function may randomly switch between "next LVAL" and "immediate"
- (3) Within this period camera starts accumulation immediately (no delay)

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