

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



- *Compact series 1/2" progressive scan camera*
- *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)*
- *Power over CL (PoCL) version available*
- *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)



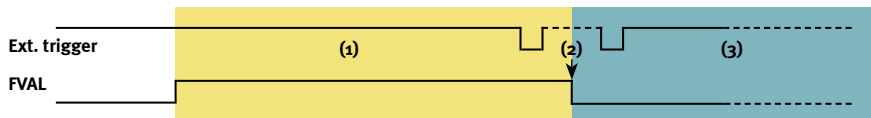
# Specifications for CM-140 MCL / CB-140 MCL

Specifications	CM-140 MCL / CB-140 MCL
Sensor	1/2" progressive scan CCD
Pixel Clock	65 MHz
Frame rate full frame	31.08 frames/second
Active area	6.4 (h) x 4.8 (v) mm
Cell size	4.65 x 4.65 μm
Active pixels	1392 (h) x 1040 (v)
Color (CB-140 MCL)	Raw Bayer output, 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-140 MCL only
Sensitivity (CM-140 MCL)	0.3 Lux (On sensor, Max. gain, shutter off, 50% video)
Sensitivity (CB-140 MCL)	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 ±2V
Outputs	Camera Link TTL Clk., FVAL, LVAL, Data, EEN XEEN
Trigger modes	Pre-select, Pulse Width, Reset Continuous
Electronic shutter	Pre-set shutter 1/60 to 1/10,000 in 9 fixed steps Programmable exposure 2L (61μs) to 1052L (32ms) in 1L steps Pulse Width Control 30.5μs 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 200 Hz XYZ)
Shock	70G
Regulations	CE (EN 61000-6-2, EN-61000-6-3), FCC part 15 class B, RoHS/WEEE
Power	12V DC ±10% 3 W
Lens mount	C-mount
Dimensions (H x W x L)	29 x 44 x 66 mm
Weight	115 g

## Ordering Information

CM-140 MCL 1/2" Monochrome Progressive Scan Camera  
 CB-140 MCL 1/2" Bayer Mosaic Color Progressive Scan Camera

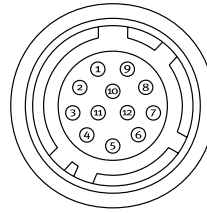
## FVAL auto-detect trigger function (next LVAL or immediate)



- (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)

## Connector pin-out

### DC In / Trigger



HIROSE HR10A-10R-12PB-01

- | Pin | Signal                      |
|-----|-----------------------------|
| 1   | Ground                      |
| 2   | +12V DC                     |
| 3   | Ground                      |
| 4   | Auto Iris lens video output |
| 5   | Ground                      |
| 6   | N/C                         |
| 7   | N/C                         |
| 8   | Ground                      |
| 9   | XEEN out                    |
| 10  | Trigger in*                 |
| 11  | +12V DC                     |
| 12  | Ground                      |

### Mini-CL interface

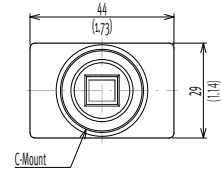


- | Pin | Signal | Function   |            |
|-----|--------|------------|------------|
| 1   | 14     | GND        | -          |
| 2   | 15     | -/+ Tx0    | CL Data    |
| 3   | 16     | -/+ Tx1    | CL Data    |
| 4   | 17     | -/+ Tx2    | CL Data    |
| 5   | 18     | -/+ Txclk  | CL clk     |
| 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        | -          |

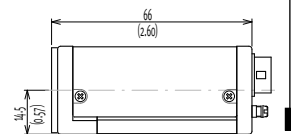
\*) in Mini-CL or 12-pin Hirose

## Dimensions

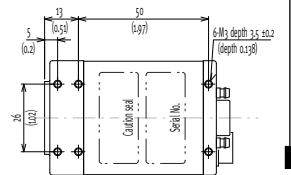
### Front view



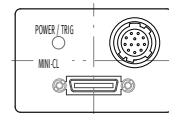
### Side view



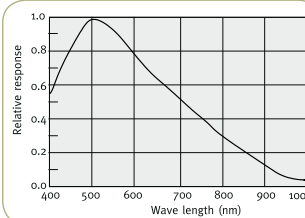
### Bottom view



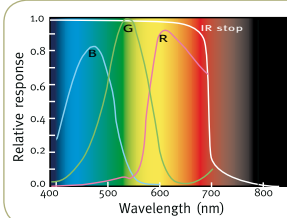
### Rear view



## Spectral Response CM-140 MCL



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