

## ➤ 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 32 $\mu\text{s}$  to 2 sec. using Pulse Width Control*
- *Programmable exposure from 64 $\mu\text{s}$  to 40 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 NT/2000/XP via serial communication*



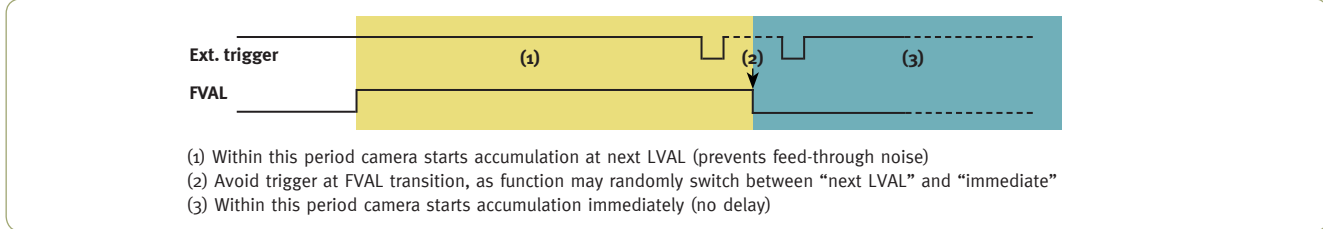
# Specifications for CM-140 MCL / CB-140 MCL

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 (1052 lines per frame)												
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	<table border="0"> <tr> <td>Full</td> <td>1392 (h) x 1040 (v) 31.08 fps</td> </tr> <tr> <td>1/2 partial scan</td> <td>1392 (h) x 520(v) 46.57 fps</td> </tr> <tr> <td>1/4 partial scan</td> <td>1392 (h) x 269 (v) 61.92 fps</td> </tr> <tr> <td>1/8 partial scan</td> <td>1392 (h) x 130 (v) 73.97 fps</td> </tr> <tr> <td>2/3 partial scan</td> <td>1392 (h) x 694 (v) 39.97 fps</td> </tr> <tr> <td>Vertical binning</td> <td>1392 (h) x 527 (v) 48.86 fps*</td> </tr> </table> <p>*NOTE: CM-140 MCL only</p>	Full	1392 (h) x 1040 (v) 31.08 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	2/3 partial scan	1392 (h) x 694 (v) 39.97 fps	Vertical binning	1392 (h) x 527 (v) 48.86 fps*
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Sensitivity (CM-140 MCL)	0.3 Lux (On sensor, Max. gain, shutter off, 50% video)												
Sensitivity (CB-140 MCL)	1.6 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												
Electronic shutter	<table border="0"> <tr> <td>Pre-set shutter</td> <td>1/31 to 1/10,000 in 10 steps</td> </tr> <tr> <td>Programmable exposure</td> <td>2L (64μs) to 1052L (40ms) in 1L steps</td> </tr> <tr> <td>Pulse Width Control</td> <td>32μs to 2 sec.</td> </tr> </table>	Pre-set shutter	1/31 to 1/10,000 in 10 steps	Programmable exposure	2L (64μs) to 1052L (40ms) in 1L steps	Pulse Width Control	32μs to 2 sec.						
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Accumulation	Auto-detect LVAL-synch. / asynch.												
Control interface	Mini-CL serial communication												
Functions controlled by serial communication	Shutter, Trigger mode, Readout mode, 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%												
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)



## Connector pin-out

### DC In / Trigger

HIROSE HR10A-10R-12PB-01

Pin 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+/SerTC-	Serial in
8 21	SerTFG+/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	-

For PoCL version pins 1 and 26 are used for +12V  
 \*) in Mini-CL or 12-pin Hirose

## Dimensions

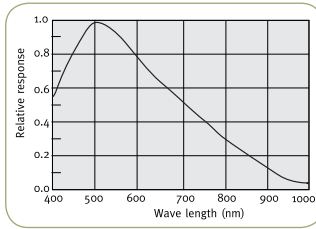
### Front view

### Side view

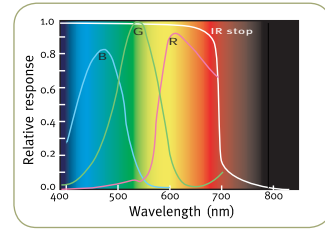
### Bottom view

### Rear view

## Spectral Response CM-140 MCL



## Spectral Response CB-140 MCL



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