

## ❖ CM-040 MCL / CB-040 MCL Progressive Scan

**C3** Camera Suite  
Unlimited  
Digital  
Switchability



- *Compact series 1/2" progressive scan camera*
- *Monochrome and Bayer mosaic color versions*
- *776 (h) x 582 (v) active pixels*
- *8.3  $\mu$ m square pixels*
- *61.15 frames/second with full resolution in continuous operation*
- *60 frames/second with external trigger and full resolution*
- *Up to 280 frames/second with partial scan*
- *111 frames/second with vertical binning (CM-040 MCL only)*
- *Shutter speed from 27.437 $\mu$ s to 2 sec. using Pulse Width Control*
- *Programmable exposure from 54.874 $\mu$ s to 16.553 ms*
- *Pre-select and Pulse width trigger modes*
- *LVAL-synchronous/-asynchronous operation (auto-detect)*
- *Auto iris lens video output to support dynamic lighting conditions*
- *10 or 8-bit output*
- *Setup by Windows NT/2000/XP via serial communication*
- *Right angle adapter (optional)*

**CAMERA**  
**Link**  
(Mini Camera Link)



# Specifications for CM-040 MCL / CB-040 MCL

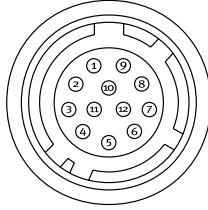
Specifications	CM-040 MCL / CB-040 MCL
Sensor	1/2" progressive scan CCD
Pixel Clock	33.75 MHz
Frame rate full frame	61.15 frames/second (596 lines per frame)
Active area	6.49 (h) x 4.83 (v) mm
Cell size	8.3 x 8.3 μm
Active pixels	776 (h) x 582 (v)
Color (CB-040 MCL)	Raw Bayer output, host-based interpolation
Read-out modes	Full 776 (h) x 582 (v) 61 fps 2/3 partial scan 776 (h) x 390(v) 87 fps 1/2 partial scan 776 (h) x 294 (v) 110 fps 1/4 partial scan 776 (h) x 146 (v) 186 fps 1/8 partial scan 776 (h) x 74 (v) 280 fps Vertical binning 776 (h) x 291 (v) 111 fps* *NOTE: CM-040 MCL only
Sensitivity (CM-040 MCL)	0.2 Lux (On sensor, Max. gain, shutter off, 50% video)
Sensitivity (CB-040 MCL)	1.3 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 +24dB
Synchronization	Int. X-tal or ext. trigger
Inputs	Camera Link Ext. trigger, LVDS (CC 1) TTL Ext. trigger 4V ±2V
Outputs	Camera Link Clk., FVAL, LVAL, Data, EEN TTL XEEN
Trigger modes	Pre-select, Pulse Width
Electronic shutter	
Pre-set shutter	1/60 to 1/10,000 in 10 steps
Programmable exposure	2L (54.87μs) to 596L (16.353ms) in 1L steps
Pulse Width Control	27.437μs 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, 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 (CM/CB-040 MCL) 29 x 44 x 93.5 mm (CM/CB-040 MCL-RA)
Weight	115 g (CM/CB-040 MCL) 155 g (CM/CB-040 MCL-RA)

## Ordering Information

CM-040 MCL	1/2" Monochrome Progressive Scan Camera
CB-040 MCL	1/2" Bayer Mosaic Color Progressive Scan Camera
CM-040 MCL-RA	1/2" Monochrome Progressive Scan Camera with Right angle adapter
CB-040 MCL-RA	1/2" Bayer Mosaic Color Progressive Scan Camera with Right angle adapter

## Connector pin-out

### DC In / Trigger




HIROSE HR10A-10R-12PB-01

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

### Mini-CL interface

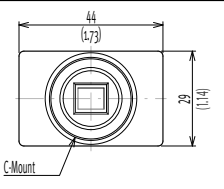


Pin	Signal	Function
1	14	GND
2	15	+/-Tx0
3	16	+/-Tx1
4	17	+/-Tx2
5	18	+/-Txclk
6	19	+/-Tx3
7	20	SerTC+/SerTC-
8	21	SerTFG+/SerTFG-
9	22	CC1-/CC1+
10	23	CC2+/CC2-
11	24	CC3-/CC3+
12	25	CC4+/CC4-
13	26	GND

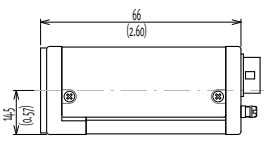
\*) in Mini-CL or 12-pin Hirose

## Dimensions

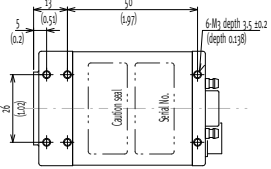
### Front view



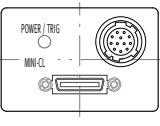
### Side view



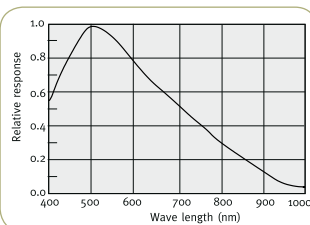
### Bottom view



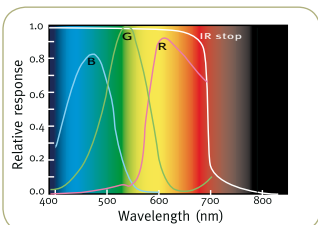
### Rear view



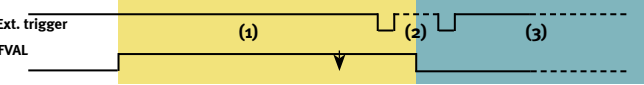
## Spectral Response CM-040 MCL



## Spectral Response CB-040 MCL



## 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)

<b>Europe, Middle East &amp; Africa</b> Phone +45 4457 8888 Fax +45 4491 3252	<b>Asia Pacific</b> Phone +81 45 440 0154 Fax +81 45 440 0166	<b>Americas</b> Phone (Toll-Free) 1 800 445 5444 Phone +1 408 383 0300
---	---	--

Visit our web site on [www.jai.com](http://www.jai.com)

**jai**<sup>®</sup>  
See the possibilities

Company and product names mentioned in this datasheet are trademarks or registered trademarks of their respective owners. JAI AS cannot be held responsible for any technical or typographical errors and reserves the right to make changes to products and documentation without prior notification.