

## ❖ AT-030 MCL

3CCD Progressive Scan RGB Color

**C3** Camera Suite  
Unlimited  
Digital  
Switchability



- 3 x 1/3" CCD progressive scan RGB color camera for vision applications
- 659(h) x 494 (v) active pixels for each CCD (7.4  $\mu$ m square)
- Compact RGB prism for C-mount lenses
- Chromatic shading reduction permits wider choice of lenses
- 120.5 frames per second with full resolution
- Pre-set or variable partial scan available for faster frame rates
- Vertical binning for higher sensitivity and frame rate
- 24-bit RGB output via single port Camera Link base configuration
- 30-bit or 36-bit output via dual port Camera Link medium configuration
- Linear matrix circuit with manual control or sRGB or Adobe RGB pre-sets
- Knee function available for knee-point and knee-slope settings
- Edge pre-select, pulse width control, fast PWC, and reset continuous trigger modes
- Pre-set shutter from OFF (1/120) to 1/130,000 in 10 steps
- Individually programmable shutter/exposure for R, G, and B
- Manual, continuous, one-push auto, or pre-set white balance
- Setup by Windows XP/Vista/7 software via RS 232C

**CAMERA**  
**Link**



# Specifications for AT-030 MCL

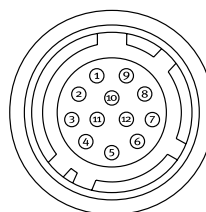
| Specifications          | AT-030 MCL                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sensor                  | 3 x 1/3" progressive scan CCD - ICX424AL                                                                                                                                                                                                                                                                                                                   |
| Pixel Clock             | 58 MHz                                                                                                                                                                                                                                                                                                                                                     |
| Frame rate full frame   | 120.49 frames/second (511 lines per frame)                                                                                                                                                                                                                                                                                                                 |
| Active area             | 4.88 (h) x 3.66 (v) mm                                                                                                                                                                                                                                                                                                                                     |
| Cell size               | 7.4 (h) x 7.4 (v) $\mu$ m                                                                                                                                                                                                                                                                                                                                  |
| Active pixels           | 659 (h) x 494 (v)                                                                                                                                                                                                                                                                                                                                          |
| Read-out modes          | Full 659 (h) x 494 (v) 120.49 fps<br>2/3 partial scan 659 (h) x 328 (v) 169.62 fps<br>1/2 partial scan 659 (h) x 246 (v) 208.72 fps<br>1/4 partial scan 659 (h) x 122 (v) 322.36 fps<br>1/8 partial scan 659 (h) x 60 (v) 422.96 fps<br>Variable partial Programmable start line (1-493) & height (2-494)<br>Vertical binning 659 (h) x 247 (v) 193.88 fps |
| Sensitivity (on sensor) | 0.34 Lux, max gain, 50% video                                                                                                                                                                                                                                                                                                                              |
| S/N ratio               | >50 dB. (Green ch., 0 dB gain)                                                                                                                                                                                                                                                                                                                             |
| Video output            | 3 x 8 bit RGB: single port Camera Link base<br>3 x 10 bit RGB: dual port Camera Link medium<br>3 x 12 bit RGB: dual port Camera Link medium                                                                                                                                                                                                                |
| Auto-iris lens video    | 0.7 V p-p, 75 $\Omega$ NUM luminance signal w/o sync                                                                                                                                                                                                                                                                                                       |
| Gain, manual            | Manual for all 3 colors<br>Master -3 to +21 dB<br>R and B -7 to +10 dB                                                                                                                                                                                                                                                                                     |
| Synchronization         | Int. X-tal                                                                                                                                                                                                                                                                                                                                                 |
| Inputs                  | Camera Link Ext. trigger, (LVDS)<br>TTL Ext. trigger 4 Vpp $\pm$ 2 V. (TTL or 75 $\Omega$ )                                                                                                                                                                                                                                                                |
| Outputs                 | Camera Link RGB 8/10/12 bit video output. Do - D9<br>Pixel clock, DVAL, LVAL, FVAL and EEN (LVDS)<br>TTL XEEN output 4 Vpp from 75 $\Omega$ source (TTL)                                                                                                                                                                                                   |
| Trigger modes           | Continuous, Edge Pre-Select, Pulse Width Control, Fast PWC, Reset Continuous                                                                                                                                                                                                                                                                               |
| Electronic shutter      | Pre-set shutter 1/120 (off) to 1/130,000 sec. in 10 steps.                                                                                                                                                                                                                                                                                                 |
| Programmable exposure   | All or R, G, B individually 1L - 511L in 1L (16.2 $\mu$ s) steps.                                                                                                                                                                                                                                                                                          |
| Pulse Width Control     | All or R, G, B individually 2L (32.4 $\mu$ s) to 122,640L (2 sec.)                                                                                                                                                                                                                                                                                         |
| White balance           | Manual/one-push, continuous, Preset(4000K, 4600K, 5600K)<br>Note: 7800K is Factory default setting                                                                                                                                                                                                                                                         |
| Tracking range          | -6 to +6 dB. (4000K to 9000K)                                                                                                                                                                                                                                                                                                                              |
| Gamma                   | 1.0 (OFF), 0.6, 0.45 or LUT (Look Up Table)                                                                                                                                                                                                                                                                                                                |
| Knee function           | Knee point and knee slope for R, G, and B channel                                                                                                                                                                                                                                                                                                          |
| Linear Matrix           | Manual for R, G and B / Preset (sRGB, Adobe RGB)                                                                                                                                                                                                                                                                                                           |
| Blemish Compensation    | ON (use factory preset data) or OFF                                                                                                                                                                                                                                                                                                                        |
| Control interface       | EIA-644 LVDS                                                                                                                                                                                                                                                                                                                                               |
| Operating Temperature   | -5° C to +45° C                                                                                                                                                                                                                                                                                                                                            |
| Humidity (operation)    | 20 - 80% non-condensing                                                                                                                                                                                                                                                                                                                                    |
| Storage temp./humidity  | -25° C to 60° C / 20% - 80% non-condensing                                                                                                                                                                                                                                                                                                                 |
| Vibration               | 3G (15 Hz to 200 Hz XYZ)                                                                                                                                                                                                                                                                                                                                   |
| Shock                   | 50 G                                                                                                                                                                                                                                                                                                                                                       |
| Regulations             | CE (EN 61000-6-2, EN 61000-6-3), FCC part 15 class A, RoHS                                                                                                                                                                                                                                                                                                 |
| Power                   | 12V to 24V DC $\pm$ 10%. 6W typical (full frame @ 12V)                                                                                                                                                                                                                                                                                                     |
| Lens mount              | C-mount (Max 4.0 mm thread)                                                                                                                                                                                                                                                                                                                                |
| Dimensions (H x W x L)  | 55 mm x 55 mm x 78.3 mm                                                                                                                                                                                                                                                                                                                                    |
| Weight                  | 290 g                                                                                                                                                                                                                                                                                                                                                      |

## Ordering Information

AT-030MCL 1/3" 3CCD Progressive Scan RGB Color Camera

## Connector pin-out

### DC In / Trigger



HIROSE HR10A-10R-12PB-01

| Pin | Signal        |
|-----|---------------|
| 1   | Ground        |
| 2   | +12V DC input |
| 3   | Ground        |
| 4   | Iris video    |
| 5   | Ground        |
| 6   | —             |
| 7   | —             |
| 8   | Ground        |
| 9   | XEEN out      |
| 10  | Trigger in    |
| 11  | —             |
| 12  | Ground        |

### Camera Link Interface

26 pin MCL connector HDR-EA26LFYPG1+

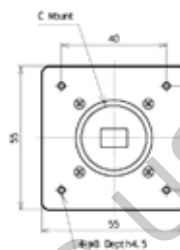


| Pin   | Signal          | Function    |
|-------|-----------------|-------------|
| 1 14  | GND             |             |
| 2 15  | Xo-/Xo+         | CL Data out |
| 3 16  | X1-/X1+         | CL Data out |
| 4 17  | X2-/X2+         | CL Data out |
| 5 18  | Xclk-/Xclk+     | CL Clk      |
| 6 19  | X3-/X3+         | CL Data out |
| 7 20  | SerTC+/SerTC-   | Serial in*  |
| 8 21  | SerTFG-/SerTFG+ | Serial out* |
| 9 22  | CC1-/CC1+       | Trigger*    |
| 10 23 | CC2-/CC2+       | Reserved    |
| 11 24 | CC3-/CC3+       | Not used    |
| 12 25 | CC4-/CC4+       | Not used    |
| 13 26 | GND             |             |

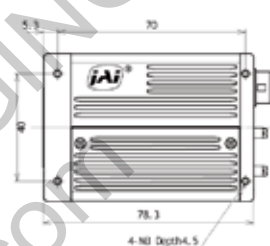
\* Via Camera Link or 12-pin Hirose  
Information shown is for Port 1. For Port 2, which is used when providing 30-bit or 36-bit output via Camera Link medium configuration, pinout is similar, except pins 7-12 and 20-25 are not used.

## Dimensions

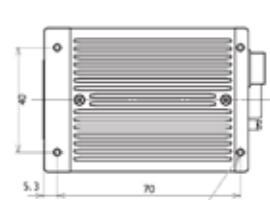
### Front view



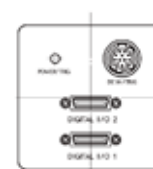
### Side view



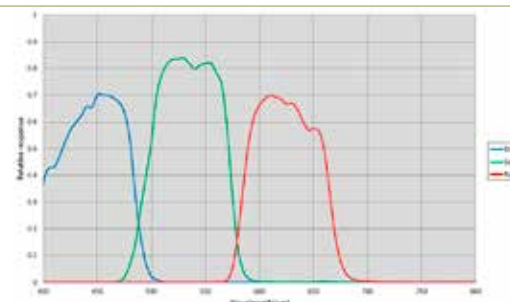
### Bottom view



### Rear view



## Spectral Response



Combined prism and CCD response