



# EXO USB3

## exo428CU3

### General

|                |           |
|----------------|-----------|
| Model          | exo428CU3 |
| Product code   | F001930   |
| Product series | EXO USB3  |
| Status         | Available |

### Sensor

|                                |                                             |
|--------------------------------|---------------------------------------------|
| Sensor type                    | Area scan                                   |
| Chroma                         | Color                                       |
| Spectrum                       | Visible                                     |
| Spectral range                 | 400 nm to 1000 nm                           |
| Resolution                     | 3,208 × 2,200 (7.10 MP)                     |
| Sensor model                   | Sony IMX428                                 |
| Sensor architecture (material) | cmos                                        |
| Shutter type(s)                | Global shutter (GS)                         |
| Sensor size                    | 14.44 × 9.9 mm (17.5 mm, 17.6mm (Type 1.1)) |
| Pixel size                     | 4.50 µm × 4.50 µm                           |

### Pixel formats

|                   |                       |
|-------------------|-----------------------|
| Sensor bit depth  | 8-bit, 12-bit         |
| RGB pixel formats | bayer8, bayer12packed |

### Timing and gain

|                 |                   |
|-----------------|-------------------|
| Max. frame rate | 51.3 fps          |
| Exposure time   | 14 µs to 60 s     |
| Gain            | 0.0 dB to 48.0 dB |

## I/Os and power

|                             |                                                                                                       |
|-----------------------------|-------------------------------------------------------------------------------------------------------|
| Non-isolated lines          | 0 x LVDS input, 0 x LVDS output, 0 x TTL input, 0 x TTL output, 2 x 24V input, 4 x Open drain output, |
| Specific non-isolated lines | 1 x RS232 input, 1 x RS232 output, 0 x RS422 input, 0 x RS422 output,                                 |
| Opto-isolated lines         | 1 x Optical isolated input, 0 x Optical isolated input,                                               |
| Power supply                | 10 to 25VDC                                                                                           |
| Power consumption           | External: 4.5 W (typical)                                                                             |

## Operating conditions

|                                 |                 |
|---------------------------------|-----------------|
| Operating temperature (housing) | -10 °C to 60 °C |
|---------------------------------|-----------------|

## Mechanical properties

|                                   |                |
|-----------------------------------|----------------|
| Body dimensions (L x W x H in mm) | 43 × 50 × 50   |
| Filter/protection glass           | IR-Cut - 680nm |
| IP class                          | IP40           |
| Lens mount(s)                     | C-Mount        |
| Weight                            | 140 g          |

## On-board memory and FPGA

|                             |           |
|-----------------------------|-----------|
| Image buffer (RAM)          | 192 MByte |
| Non-volatile memory (Flash) | 32 MByte  |

## Interfaces

|                     |           |
|---------------------|-----------|
| Digital interface   | usb3.0    |
| Interface connector | (Micro-B) |

## FW features - image control

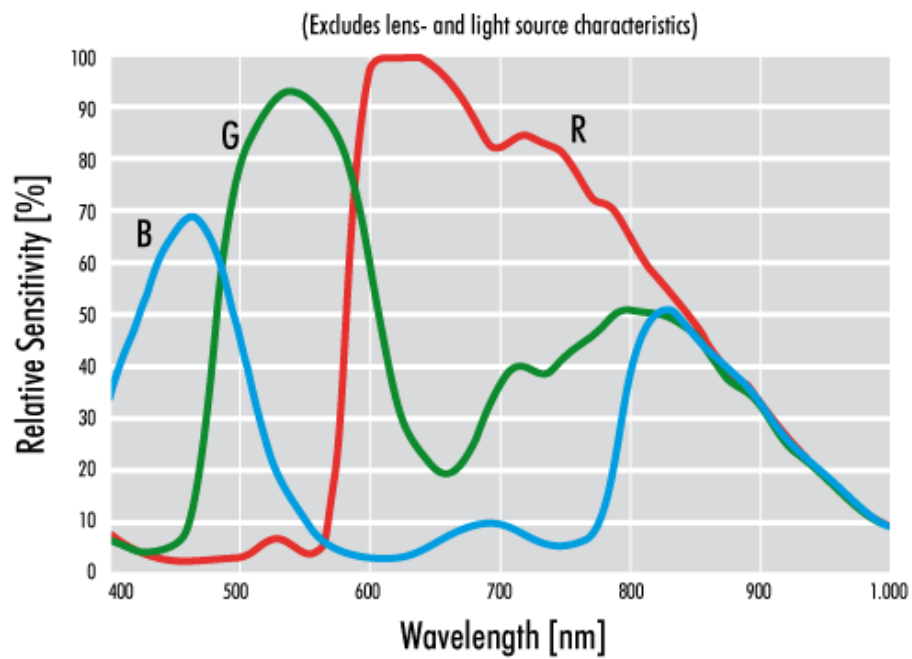
|                        |                                                 |
|------------------------|-------------------------------------------------|
| Exposure modes         | manual, auto, external                          |
| Gain modes             | auto, manual                                    |
| White balance modes    | auto, manual                                    |
| Image control features | roi, lut, mirror-image, dpc, shading-correction |

## FW features - camera control

|                         |                               |
|-------------------------|-------------------------------|
| Trigger modes/sync      | internal, software, external  |
| Camera control features | User Sets, PWM(4), Sequencer, |

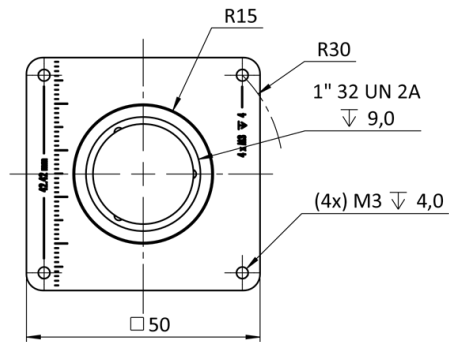


## Quantum Efficiency

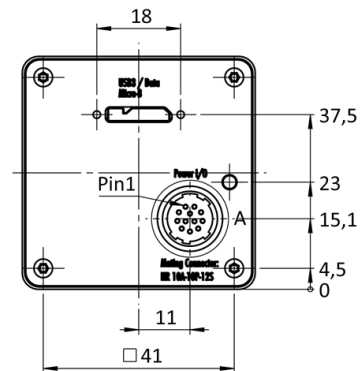


## Technical Drawing

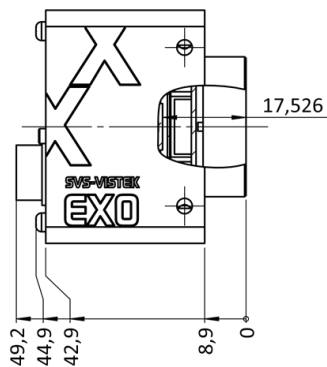
front



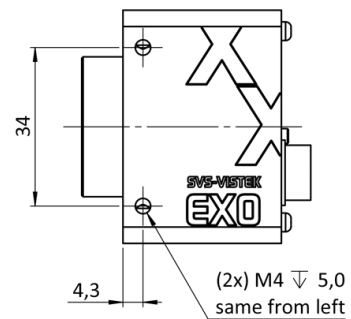
back



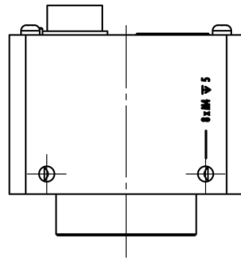
cross section



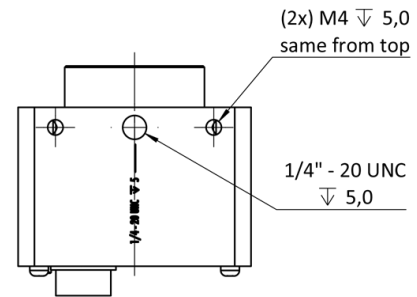
right side



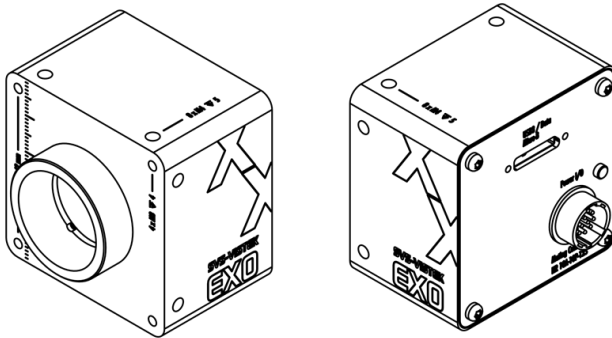
top



bottom



3D



## I/O pin assignment

|                                                                                                          |   |       |                   |    |        |              |
|----------------------------------------------------------------------------------------------------------|---|-------|-------------------|----|--------|--------------|
| <p>Hirose 12 Pin</p>  | 1 | VIN - | (GND)             | 7  | OUT 1  | (open drain) |
|                                                                                                          | 2 | VIN + | (10 V to 25 V DC) | 8  | OUT 2  | (open drain) |
|                                                                                                          | 3 | IN 4  | (RXD RS232)       | 9  | IN 3 + | (opto In +)  |
|                                                                                                          | 4 | OUT 4 | (TXD RS232)       | 10 | IN 3 - | (opto In -)  |
|                                                                                                          | 5 | IN 1  | (0-24V)           | 11 | OUT 3  | (open drain) |
|                                                                                                          | 6 | IN 2  | (0-24V)           | 12 | OUT 0  | (open drain) |