# GiG**三**

### Link US3 GiG**=**



# **ECO-Series**

VGA TO 5 MEGAPIXEL



# **ECO GigE Vision Cameras**

Unsurpassed flexibility with great performance and affordability. This characterizes the SVCam-ECO series best. You will find all popular CCD-Sensors from Sony in the ECO series. SVCam-ECO cameras are available in more than 100 different versions with resolutions from VGA up to 5 megapixel. ECO series cameras are designed to achieve high frame rates while maintaining excellent signal-to-noise ratios and at the same time providing a small footprint. Supporting the standards of GigE Vision™ and GenICam™ the SVCam-ECO series opens up new dimensions for integration into your application SW-Environment.

# Special Features of the ECO Series:

- > Progressive Scan CCD sensors
- > Area of Interest modes (AOI) > 8/12 Bit video data stream (14 Bit ADC)
- > 64 MB memory inside
- > White balance for color versions (one push or manual)
- > Wide range Power conditions: 10 25 V DC
- Sequence-Shutter and enhanced Strobe-Functionality
- > Up to 4 x direct drive and control of LED lighting
- > GigE Vision and GenICam compliance > Dimensions [mm]: 38 x 38 x 33

|        |      |                    |        |             |            |              |       | GigE                  | BlackLine |
|--------|------|--------------------|--------|-------------|------------|--------------|-------|-----------------------|-----------|
| Model  | [MP] | Resolution [Pixel] | Format | Sensor      | Pixel [µm] | Architecture | Mount | max. Frame Rate [fps] | IP 67     |
| eco618 | 0.3  | 656 x 492          | 1/4"   | Sony ICX618 | 5.6        | CCD          | C/CS  | 155                   | $\odot$   |
| eco424 | 0.3  | 656 x 492          | 1/3"   | Sony ICX424 | 7.4        | CCD          | C/CS  | 124                   | $\odot$   |
| eco414 | 0.3  | 656 x 492          | 1/2"   | Sony ICX414 | 9.9        | CCD          | C/CS  | 125                   | $\odot$   |
| eco415 | 0.4  | 780 x 580          | 1/2"   | Sony ICX415 | 8.3        | CCD          | C/CS  | 86                    | $\odot$   |
| eco204 | 0.8  | 1,024 x 776        | 1/3"   | Sony ICX204 | 4.65       | CCD          | C/CS  | 47                    | $\odot$   |
| eco445 | 1.3  | 1,296 x 964        | 1/3"   | Sony ICX445 | 3.75       | CCD          | C/CS  | 30                    | $\odot$   |
| eco267 | 1.4  | 1,392 x 1,040      | 1/2"   | Sony ICX267 | 4.65       | CCD          | C/CS  | 25                    | $\odot$   |
| eco285 | 1.4  | 1,392 x 1,040      | 2/3"   | Sony IC285  | 6.45       | CCD          | C     | 34                    | $\odot$   |
| eco274 | 2.1  | 1,600 x 1,236      | 1/1.8" | Sony ICX274 | 4.4        | CCD          | C/CS  | 26.5                  | $\odot$   |
| eco655 | 5    | 2,448 x 2,050      | 2/3"   | Sony ICX655 | 3.45       | CCD          | C/CS  | 10                    | $\odot$   |
| eco625 | 5    | 2,448 x 2,050      | 2/3"   | Sony ICX625 | 3.45       | CCD          | C/CS  | 20                    | $\odot$   |
| D C    |      |                    |        |             |            |              |       |                       | -         |

PoE versions on request



# **ECO<sup>2</sup> GigE Vision Cameras**

The SVCam-ECO<sup>2</sup> significantly extends the range of our "standard camera ECO". In the Progressive Scan Sensors same form factor as the renowned ECO series with sensors from ON Semi and Sony up to > 2 x direct drive and control of LED lighting 12 megapixel are supported with reasonable pixel sizes. The possible bandwidth of the GigE Vision interface is hereby fully exploited. The special and robust BlackLine version with M12 plug-in system, suitable for the automation world is a powerful option for the ECO<sup>2</sup>. The feature set, as well as the pin assignments, is a coherent piece of engineering and particularly user-friendly. The ECO<sup>2</sup> series is the perfect extension of the ECO series and ensures long-term and reliable technology.

- Special Features of the ECO<sup>2</sup> Series:
- > GigE Vision and GenICam compliance
- > 64 MB memory inside
- Industrial 10 interface for easy integration > Dimensions [mm]: 38 x 38 x 45

|         |      |                    |        |                   |            |              |       | GigE                  | BlackLine |
|---------|------|--------------------|--------|-------------------|------------|--------------|-------|-----------------------|-----------|
| Model   | [MP] | Resolution [Pixel] | Format | Sensor            | Pixel [µm] | Architecture | Mount | max. Frame Rate [fps] | IP 67     |
| eco1050 | 1    | 1,024 x 1,024      | 1/2"   | ON-Semi KAI-01050 | 5.5        | CCD          | C     | 56.1                  | $\odot$   |
| eco2050 | 2    | 1,600 x 1,200      | 2/3"   | ON-Semi KAI-02050 | 5.5        | CCD          | C     | 33.2                  | $\odot$   |
| eco2150 | 2    | 1,920 x 1,080      | 2/3"   | ON-Semi KAI-02150 | 5.5        | CCD          | C     | 31.7                  | $\odot$   |
| eco674  | 2.8  | 1,920 x 1,460      | 1/2"   | Sony ICX674       | 4.54       | CCD          | C     | 19.9                  |           |
| eco4050 | 4    | 2,336 x 1,752      | 1"     | ON-Semi KAI-04050 | 5.5        | CCD          | C     | 16.8                  | $\odot$   |
| eco695  | 6    | 2,752 x 2,204      | 1"     | Sony ICX695       | 4.54       | CCD          | C     | 10.1                  |           |
| eco815  | 9    | 3,360 x 2,712      | 1"     | Sony ICX815       | 3.69       | CCD          | C     | 7                     |           |
| eco834  | 12   | 4,224 x 2,838      | 1"     | Sony ICX834       | 3.1        | CCD          | C     | 5.5                   |           |



# **EXO-Series**

VGA TO 12 MEGAPIXEL



> Sensors from Sony, ON Semi and CMOSIS

> 4 x direct drive and control of LED lightning

> Dimensions [mm]: 50 x 50 x 43 or 50

> GigE Vision, Camera Link and USB3 supported

> Global Shutter CCD and CMOS

> 0.3 to 12 megapixel

> logical trigger functions

(depending on sensor)

> GenICam compliant

# The EXO Concept

The EXO series is the perfect choice for system integrators with ever changing tasks. Simple and scalable integration with maximum functionality was our objective. The aluminum housing is precisely manufactured from one solid piece and creates the platform for a complete offering of sensors and interfaces. The latest CMOS and CCD sensors from SONY, On Semiconductor and CMOSIS makes it easy to select the right camera for virtually any application. On the interface side the choices are free between GigE Vision, Camera Link Base or USB3.0.

All SVCam models incorporate the same full set of features - a highlight is the ability to control and power independent 4 LED lights - all 4 lights individually controlled by the camera.

# **EXO Camera Link Cameras**

SVCam-EXO Camera Link models let you maintain the existing and proven infrastructure for years to come, while making use of the newest range of image sensors. The serialized interface has gained wide popularity and acceptance thanks to its high bandwidth. The EXO series was the first Camera Link model to include features such as 4 1/0 strobe controller and look up table.

> ConvCam Software control > 256 MB memory inside



# **EXO GigE Vision Cameras**

SVCam-EXO series cameras with GigE Vision interface gives your applications an extreme scalability. Quick and easy hardware interchangeability results in shorter design cycles and reduced development costs. Further value is added to your application by a virtually limitless feature set. As an example, the 4 I/O LED driver with standardized software control.

# > Cost effective

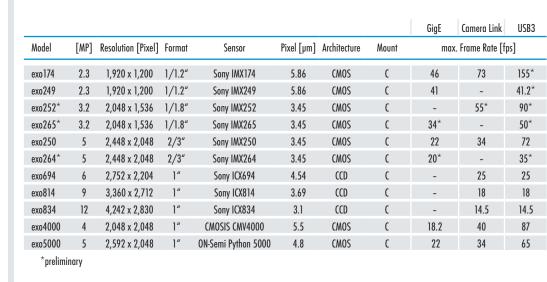
- > Wide range of "off the shelf" industrial-standard plugs and cables > Data transfer rate up to 120 MB/sec
- > Up to 100 m range without additional switch
- > Wide range of applications in image processing
- > Remote service capability
- > 256 MB memory inside

## **EXO USB3 Vision Cameras**

The SVCam-EXO is one of the most flexible and scalable cameras for the industrial market segment. The USB3 Vision interface is easy to integrate in your system, with a data rate up to effective 350 MB/sec. The time to market for applications is shortened, reducing costs even further. Power the camera via the interface and reduce cable complexity. EXO provides Plug-and-play capability for the whole range of 0.3 to 12 MP resolution.

- > Up to 350 MB/sec effective transfer rate
- > Leverages existing infrastructure for cables and connectors
- Power camera with up to 4.5 W
- > Cost effective/Easy implementation and interfacing

> 256 MB memory inside





# Model

evo1050 TR evo2050 TR evo2150 TR evo4050 TR evo4070 TR evo8051 TR



# GiG**=** CAMERA



# **EVO GigE Vision Cameras**

With their cutting-edge electronics design and the use of quad-tap CCD- or CMOS sensors the EVO cameras offer very high frame rates at extremely low noise levels. Sophisticated processing of the critical analog CCD video signal by Correlated Double Sampling (CDS) leads to significant noise reduction. Straight forward conversion into digital signals results in an excellent signal-to-noise ratio. Additionally, the integration of intelligent processing offers various modes for exposure time and trigger control settings. The compact housing allows installation even in limited space conditions.

# **EVO Camera Link Cameras**

SVCam-EVO.

Model

evo1050

evo2050 evo2150 evo4050 evo4070 evo8051

evo12040

High performance thanks to mature sensor knowledge. Precisely this allows in the Camera Link versions of the EVO, the extra frame rate – often critical to your advantage. There is a suitable model for each task. Identical and easy integration into your system and maximum camera technology in the smallest package. This was our goal in the development of the

Special Features of the EVO GigE Series:

**EVO-Series** 

1 TO 12 MEGAPIXEL

- > Dual GigE Vision Data-Interface > Cable lengths up to 100 meters are possible
- > Any desired AOI (Area Of Interest) possible
- > SDK for Windows (32/64 bit) and Linux available
- > 2 x direct drive and control of LED lighting
- > 128 MB memory inside
- > Dimensions [mm]: 50 x 50 x 47
- Special Features of the EVO Camera Link Series:
- > 1, 2, 4, 8 and 12 megapixel, progressive scan sensors
- > Camera Link Medium configuration (2 connectors)
- > C-mount and M42 lens mount options
- > Highest frame rate
- > 128 MB memory inside
- > Dimensions [mm]: 50 x 50 x 47

|      |                    |          |                   |            |              |       | GigE       | Camera Link |
|------|--------------------|----------|-------------------|------------|--------------|-------|------------|-------------|
| [MP] | Resolution [Pixel] | Format   | Sensor            | Pixel [µm] | Architecture | Mount | max. Frame | Rate [fps]  |
| 1    | 1,024 x 1,024      | 1/2"     | ON-Semi KAI-01050 | 5.5        | CCD          | C     | 147        | 180         |
| 2    | 1,600 x 1,200      | 2/3"     | ON-Semi KAI-02050 | 5.5        | CCD          | C     | 81.8       | 106         |
| 2    | 1,920 x 1,080      | 2/3"     | ON-Semi KAI-02150 | 5.5        | CCD          | C     | 78         | 100         |
| 4    | 2,336 x 1,752      | 1"       | ON-Semi KAI-04050 | 5.5        | CCD          | C     | 41.6       | 52          |
| 4    | 2,048 x 2,048      | 21.43 mm | ON-Semi KAI-04070 | 7.4        | CCD          | M42   | 39.3       | 44          |
| 8    | 3,296 x 2,472      | 4/3"     | ON-Semi KAI-08050 | 5.5        | CCD          | M42   | 21.8       | 26.8        |
| 12   | 4,000 x 3,000      | 4/3"     | ON-Semi KAC-12040 | 4.7        | CMOS         | M42   | 15         | -           |

# **HR GigE Vision Cameras**

The GigE cameras of the HR series impress with their housing concept, the wide-range lenses and the unique picture quality. Thanks to the dual GigE connection with the 4-Tap Version it is possible to achieve a maximum data rate of up to 240 MByte/s. A further advantage is the reliable, cost-effective transmission of the image data over a distance of 100 m with standard network technology. The GigE Vision and GenICam standards ensure rapid integration into the application software.

## **HR Camera Link Cameras**

Our sophisticated sensor knowledge enables the Camera Link versions of the HR series the fast and direct connection to the sensor - often critical to your advantage. Available resolutions are 11 to 29 megapixel with the best of the CCD and new CMOS technology from ON Semi. 2-tap or 4-tap and newest high speed CMOS sensors are optimally supported with Camera Link base, medium or full standard.

# **HR CoaXPress Cameras**

With CoaXPress 25 GBit/s can be transferred over distances up to 68 m. This makes CXP the > 256 MB memory inside (HR25 CXP: 512 MB, CL: 256 MB) alternative to GigE Vision including frame rates comparable to Camera Link. Referring to the new generation of high speed CMOS sensors from ON Semi with up to 85 frames per second at 25 megapixel CoaXPress is supported by the SVCam hr25000 and the hr12040. The high dynamic range with a further improved signal to noise ratio makes these sensors two of the fastest high class CMOS sensors available for our customers

|         |      |                    |          |                    |            |              |       | GigE | Camera Link     | CoaXPress |
|---------|------|--------------------|----------|--------------------|------------|--------------|-------|------|-----------------|-----------|
| model   | [MP] | resolution [pixel] | format   | sensor             | pixel [µm] | architecture | mount | ma   | x. frame rate [ | [fps]     |
| hr11002 | 11   | 4,008 x 2,672      | 43.3 mm  | ON-Semi KAI-11002  | 9          | CCD          | M58/F | 6.1  | 10              | -         |
| hr16000 | 16   | 4,872 x 3,248      | 43.3 mm  | ON-Semi KAI-16000  | 7.4        | CCD          | M58/F | 4    | 4.6             | -         |
| hr16050 | 16   | 4,896 x 3,264      | 32.36 mm | ON-Semi KAI-16050  | 5.5        | CCD          | M58/F | 10.8 | 10              | -         |
| hr16070 | 16   | 4,864 x 3,232      | 43.2 mm  | ON-Semi KAI-16070  | 7.4        | CCD          | M58/F | 11   | 10.2            | -         |
| hr25000 | 25   | 5,120 x 5,120      | 32.5 mm  | ON-Semi Python 25K | 4.5        | CMOS         | M58/F | -    | 30              | 80        |
| hr29050 | 29   | 6,576 x 4,384      | 43.47 mm | ON-Semi KAI-29050  | 5.5        | CCD          | M58/F | 6.2  | 5.9             | -         |



# EVO-Tracer

# I TO 8 MEGAPIXEL WITH MFT BAYONET



New

# **EVO Tracer GigE Vision Cameras**

The SVCam-EVO "Tracer" combines the outstanding features of the EVO series with the advantages of the Micro-Four-Thirds lens standard. By allowing full user control of zoom, focus and aperture, the lens becomes an integrated part of the camera. The Micro-Four-Thirds lens system was pioneered by increasing demands in digital still photography. This standard, based on a bayonet mount, is widely used for compact cameras and is 100% optimized for digital image capture. There is a wide selection of suitable lenses, and more are on the way, making new and previously unthinkable solutions reality.

## Special Features of the EVO Tracer Series: > Micro-Four-Thirds bayonet mount

- > Fast user control of zoom, aperture and focus
- > Lens settings controlled by Ethernet interface
- > Dual GigE Vision data interface
- > Two parallel Ethernet connections enabling increased data rates
- > User selectable AOI (Area Of Interest)
- > SDK for Windows (32/64bit) and Linux available > 128 MB memory inside
- > Dimensions [mm]: 58 x 58 x 59

GigE

| [MP] | Resolution [Pixel] | Format | Sensor            | Pixel [µm] | Architecture | Mount | max. Frame Rate [fps] |
|------|--------------------|--------|-------------------|------------|--------------|-------|-----------------------|
| 1    | 1,024 x 1,024      | 1/2"   | ON-Semi KAI-01050 | 5.5        | CCD          | MFT   | 147                   |
| 2    | 1,600 x 1,200      | 2/3"   | ON-Semi KAI-02050 | 5.5        | CCD          | MFT   | 81.8                  |
| 2    | 1,920 x 1,080      | 2/3"   | ON-Semi KAI-02150 | 5.5        | CCD          | MFT   | 78                    |
| 4    | 2,336 x 1,752      | 1"     | ON-Semi KAI-04050 | 5.5        | CCD          | MFT   | 41.6                  |
| 4    | 2,048 x 2,048      | 4/3"   | ON-Semi KAI-04070 | 7.4        | CCD          | MFT   | 39.3                  |
| 8    | 3,296 x 2,472      | 4/3"   | ON-Semi KAI-08050 | 5.5        | CCD          | MFT   | 21.8                  |

# **SHR Camera Link Cameras**

Enhance existing Camera Link architectures seamlessly, the SHR significantly boost bandwidth capability with the Camera Link 80-bit Full upgrade. Employing as many as 16 taps, the sensor delivers its 47 megapixel in the finest CCD quality. The unique tap balancing, devised by SVS-VISTEK, is renowned for being among the best - worldwide. It ensures effortless integration of the camera in your application.

# SHR CoaXPress Cameras

At Seven full frames of 47 megapixel per second, the SHR with CXP broadens the horizon for quality control. CoaXPress is among the fastest interface standards commonly used in industrial machine vision and therefore ideal for multi-tap sensors. The well-established I/O Concept, found in all SVS-VISTEK camera series, warrants seamless integration of the SHR CXP in existing system architectures.

# Special Features of the Camera Link SHR Series:

- > Pixel Clock Setting
- > Power over Camera Link (PoCL)
- > 256 MB memory inside

# Special Features of the CoaXPress SHR Series:

- > Quad CoaXPress (up to 4 x 6.25 Gbit/s)
- > High framerate
- > Cable length up to 200 meters
- > 256 MB memory inside

|              |      |                    |         |                   |            |              |       | Camera Link           | CoaXPress |  |
|--------------|------|--------------------|---------|-------------------|------------|--------------|-------|-----------------------|-----------|--|
| Model        | [MP] | Resolution [Pixel] | Format  | Sensor            | Pixel [µm] | Architecture | Mount | max. Frame Rate [fps] |           |  |
| shr47051*    | 47   | 8,556 x 5,280      | 56.7 mm | ON-Semi KAI-47051 | 5.5        | CCD          | M72   | 3.5                   | 7         |  |
| *preliminary |      |                    |         |                   |            |              |       |                       |           |  |



Link CoaxPress



GiG=



**Link** CoaxPress

- > Dual GigE Vision data interface
- > GigE Vision and GenIcam standard compliant
- > Two parallel ethernet connections enable increased data rates > Cable lengths up to 100 meters are possible
- > Any AOI possible (Area of Interest)
- > SDK for Windows (32/64 bit) and Linux available
- > 128 MB memory inside
- > Dimensions [mm]: 70 x 71 x 55

# Special Features of the HR Camera Link and CXP Series:

- > GenICam compliant
- > Particle Image Velocimetry (PIV-Mode)
- > (optional) Power over Camera Link (PoCL)
- > Cable length up to 68 meters with CXP
- Dimensions [mm]: 70 x 71 x 55

Tap Bal



|                              |  |   | Co   | ame   | era               | Fir                 | mv  | var                  | e F  | eat   | ure                                | S  |                                    |                              |                                     | C                            | am  | erc                  | H   | ard                           | wa                        | re                              | ea                       | tur                    | es  |
|------------------------------|--|---|--|---|-------------------|---------------------|---|----------------------|--|---|------------------------------------|--|------------------------------------|------------------------------|-------------------------------------|------------------------------|---|----------------------|---|-------------------------------|---------------------------|---------------------------------|--------------------------|------------------------|---|
| in to 1 v open drain autnute | integrated temperature sensor – SDK accessible | internal, software or external trigger response | look up table (LUT) - custom pixel mapping | PIV – particle image velocimetry (CCD sensors only) | adjustable offset | manual or auto gain | manual, auto or external expo   | manual white balance | manual or delayed read out c                                   | area of interest (AOI – also "region" or "field" of interest) |                                    |  | horizontal and vertical image flip | 2 x 2 binning                |                                     |                              | optional "BlackLine" – IP Class up to IP 67 | 38 x 38 x 33 mm      | dynamic control of focus, zoom and aperture |                               | C or CS Mount             |                                 | 8 or 12 bit pixel format | 64 MB internal memory  | GigE Vision up to 120 MB/s                        |
|                              | r - SDK accessible                             | trigger response                                | pixel mapping                              | try (CCD sensors only)                              |                   |                     | manual, auto or external exposure time control - custom brightness target |                      | manual or delayed read out control - custom acquisition timing | egion" or "field" of interest)                                |                                    | custom defect pixel correction                               | flip                               |                              |                                     | manual or auto tap balancing | s up to IP67                                | 38 x 38 x 45 mm      | n and aperture                              |                               | C Mount                   |                                 |                          |                        |   |
| 4 v open drain outputs       |  |   |  |   |                   |                     | htness target   |                      | g  |   |                                    | custom defect pixel correction – custom defect pixel mapping |                                    |                              |                                     |                              | precision machined housing                  | 50 x 50 x (43-47) mm |   |                               | C Mount                   | optional Power over Camera Link |                          | 256 MB internal memory | GigE Vision, Camera Link<br>or USB3 Vision        |
| in to 9 y onen drain autnute |  |   |  |   |                   |                     |   |                      |  |   | shading correction for GigE Vision |  |                                    | 2 x 2 binning (4 x 4 for CL) | pixel clock setting for Camera Link |                              |   | 50 x 50 x 46 mm      |   | Lens Mount Adapters available | C, M42 (FFD 11.48) or MFT | ink                             |                          | 128 MB internal memory | Dual GigE Vision<br>or Camera Link Medium         |
|                              |  |   |  |   |                   |                     |   |                      |  |   | sion                               |  |                                    |                              | Link                                |                              |   | 70 x 71 x 55 mm      |   | œ                             | M58 Mount (FFD 11.48)     |                                 |                          | 128 MB internal memory | Dual GigE Vision, Camera<br>Link or 4 x CoaXPress |
|                              |  |   |  |   |                   |                     |   |                      |  |   |                                    |  |                                    |                              |                                     |                              |   | 80 x 80 x 60 mm      |   |                               | M72 Mount (FFD 19.55)     |                                 |                          | 512 MB internal memory | Camera Link (HS 80 bit) or<br>2 x CoaXPress       |

| ırds               | I/O Features  |  |
|--------------------|---|--|
| GentCam compatible | up to 4 x open drain outputs   4 x open drain outputs     strobe controller - in-camera LED light driver/controller, up to 3 A - easy synchronization     sequencer - up 16 programmable intervals with individual exposure & light     4 x pulseloop module - generate strobes, exposure timing and/or additional trigger signals     PWM - high frequency pulse width modulation     signal safe through high-low filter, debouncer and prescaler for trigger input     versatile I/O concept: 24V signal levels - RS232 - optional RS422 differential signal | integrated temperature sensor – SDK accessible |
|                    | 4 x open drain outputs<br>to 3 A – easy synchronization<br>exposure & light<br>and/or additional trigger signals<br>for trigger input<br>RS422 differential signal  |  |
|                    | up to 2 x open drain outputs  |  |
|                    |   |  |
|                    |   |  |

**E**SN

Link

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# SVCam Camera Concept

Design and Production > Flexible & Scalable n OEM Designs

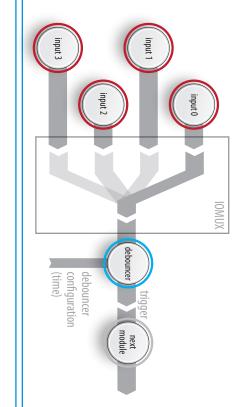
 > Optical Precision
> Durable rugged A
> Advanced Temper
> Industrial Protect Optical Preci Mechanical Design rature Management tion Class up to IP67

Unique Features Configurable Frame Rates for Speed o Power Driver for LED-Light Programmable Sequencer for Shutter Precise I/O-Control and Timing Same SDK Software Common Feature Set Support for Micro-Four-Thirds Lenses Industrial Connectivity (Hirose and Mi M12 EÐ

**Unique Features** 

Software: Compliant with Standards like: USB3, CoaXPress, GigE Vision, GenlCam, Camera Link or PoCL and PoE Homogeneous for all SVCam Products Versatile I//O-Concept: Configurable I/O-Matrix up to 4 x Trigger Input, 0 - 24 V put to 4 x Power Output (open drain), 0 - 24 V Differential RS-422 and Serial RS-232 In- and Output Homogeneous Interfacing Concept: same Pin-Out same Signal Levels same Connectivity

Interfacing





Software







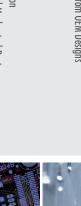
GEN**<i>**CAM

















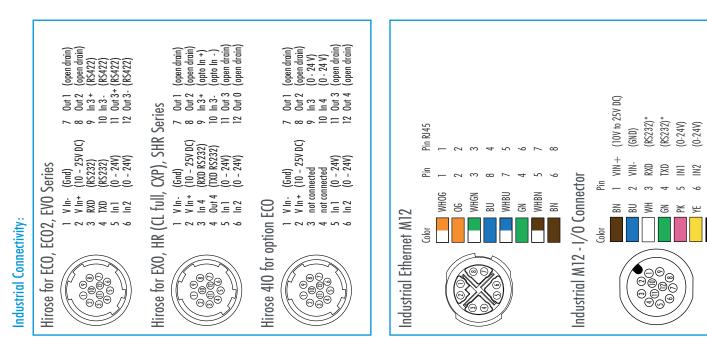














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GYPK RDBL

SVCam-Product Line made by SVS-VISTEK

