



# PRODUCT DATA SHEET

## BLACKINDUSTRY SWIR 1.7 SWIR 1.7 MAX



HAIP Solutions BlackIndustry SWIR Spectral Imaging System is a smart line scanning (push-broom) near-infrared hyperspectral imaging camera that allows the acquisition of real-time spectral data with very high spatial resolution.

The outstanding sensitivity in the NIR range from 900 nm to 1730 nm is perfect for the use in industrial in-line applications. With a frame rate of 450 Hz at full frame and up to 1300 Hz with ROI, BlackIndustry SWIR is a high performance spectral imaging system designed for applications that require high light throughput, fast data acquisition and good imaging performance.

### Features

- Smart Hyperspectral Line-Scanner
- Designed for industrial in-line applications
- SWIR (900-1730 nm)
- Up to 420 spectral bands (selectable)
- Spatial resolution: 640 px / 1280 px(Max)
- Framerate: 450/1300 Hz (Full Frame/ROI)
- Internal GPU for pre-processing

# BlackIndustry SWIR 1.7 (Max)

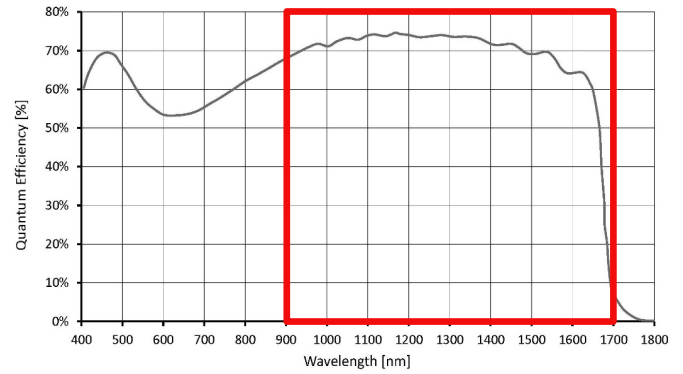
## Hyperspectral Machine Vision Camera

| Optics                         |                                  |
|--------------------------------|----------------------------------|
| Spectral range                 | 900-1730 nm                      |
| Spatial resolution             | 640 px / 1280 px(Max)            |
| Dispersion                     | 320 nm/mm / 283 nm/mm(Max)       |
| Pixel resolution               | 1.6 nm/pixel / 1.4 nm/pixel(Max) |
| FWHM (spectral res.)           | < 9 nm (25 µm slit)              |
| Image size(spectral x spatial) | 2.6x3.2mm / 5.16x6.48mm(Max)     |
| Smile                          | < 5 µm; software corrected       |
| Keystone                       | < 5 µm; software corrected       |
| Aperture                       | F/1.4                            |
| Slit width (default)           | 25 µm (others on request)        |
| Electronics                    |                                  |
| Sensor type                    | InGaAs (Max - SenSWIR)           |
| Pixels in full frame (H x V)   | 640 x 512 / 1280 x 1024(Max)     |
| Pixel size                     | 5 x 5 µm                         |
| Radiometric resolution         | 10 bit                           |
| Framerate Full Frame/ROI       | 450/1300 Hz                      |
| Internal data processing       | NVIDIA Jetson Nano, 16 GB        |
| Connection                     | GigE/GigE Vision compatible      |
| Sensor cooling                 | passive                          |
| Power input                    | 24 V DC                          |
| Power consumption              | < 15 W                           |
| Mechanics                      |                                  |
| Lens mount                     | Standard C-Mount                 |
| Housing                        | Anodised aluminum                |
| Temperature (Operation)        | -10 - +50°C                      |
| Temperature (Storage)          | -15 - +60°C                      |
| Size                           | 60 * 80 * 145 mm                 |
| Weight                         | 2 kg                             |

BlackIndustry SWIR 1.7 is also available in a lower spatial resolution version of 640 px.

BlackIndustry SWIR 1.7 Max is also available in a high spatial resolution version of 1280 px.

If your application requires dedicated optics, wavelength ranges or software tools, customization - our very true strength - can be done without large NRE costs.



BlackIndustry SWIR 1.7(Max) - Spectral response

### Ideal for food industry & recycling

The sensor is suitable for high conveyor belt speeds or chute systems, ideal for sorting applications in Food Industry or Recycling.

Additional data pre-processing on camera is possible, as the camera has an integrated GPU (Nvidia Jetson). BlackIndustry is controllable and readable via a GUI or API.

Combining superior optical design with advanced holographic transmission grating technology, highend electronics and a sensitive InGaAs detector, BlackIndustry SWIR 1.7 (Max) camera is an ideal tool for demanding environments.

The hyperspectral sensor provides a spatial resolution of 640 pixels (1280 pixels - Max) with up to 420 spectral channels to be read in, within the wavelength range from 900 nm to 1730 nm.

