PRODUCT DATA SHEET

BLACKINDUSTRY SWIR 1.7

950 - 1750 nm

Pushbroom Linescan

640 px
Spatial Resolution

Multi ROI

Smile & Keystone Correction

Up to 1330 Hz
Fast

GPU
Integrated

Included Software Tools

GenICam compatible



HAIP Solutions BlackIndustry SWIR 1.7 is a smart line-scanning (pushbroom) near-infrared hyperspectral imaging camera that allows the acquisition of real-time spectral data with a spatial resolution of 640 px. The camera is a high-performance spectral imaging system designed for applications that require high light throughput, fast data acquisition and good imaging performance.

REVISION 260903

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The BlackIndustry SWIR 1.7 delivers outstanding sensitivity across the SWIR spectrum from 950 to 1750 nm, enabling reliable material differentiation even at high conveyor speeds. With frame rates of 450 Hz at full spectrum and up to 1330 Hz using spectral regions of interest, the camera supports high-throughput industrial inspection without compromising spectral precision.
Combining advanced optical design with transmission grating technology, high-end electronics, and next-generation Sony SenSWIR™ InGaAs technology, the camera provides excellent signal quality while maintaining seamless integration. The integrated GPU allows for on-camera data pre-processing and classification, reducing system latency and enabling real-time workflows directly at the camera. Designed with robustness, configurability, and performance in mind, the BlackIndustry SWIR 1.7 is a powerful solution for advanced hyperspectral imaging in industrial applications.



BlackIndustry SWIR 1.7 rear view

FEATURES

Smart hyperspectral line scanner
High spatial resolution: 640 px
SWIR: 950 - 1750 nm
Up to 399 spectral bands
Frame rate: 450/1330 Hz
GenICam-compatible interface
Integrated GPU

APPLICATIONS

SENSOR-BASED SORTING & INSPECTION

Recycling
Food industry
Mining
Research
Pharmaceutical industry
Industrial inspection

SPECTRAL RESPONSE

The sensitivity in the SWIR range from 950 nm to 1750 nm makes the BlackIndustry SWIR 1.7 perfect for industrial inline applications.
Together with the BlackBright Fast Medium Wave IR illumination, the camera enables high-quality hyper-spectral imaging.



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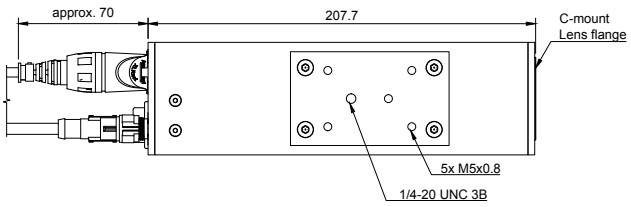
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OPTICS	
SPECTRAL RANGE	950 - 1750 nm
SPATIAL RESOLUTION	640 px
DISPERSION	320 nm/mm
SPECTRAL SAMPLING	1.6 nm/pixel
FWHM (SPECTRAL RES.)	< 9 nm (15 µm slit)
SENSOR SIZE	2.6 (spectral) x 3.28 (spatial) mm
SMILE	< 5 µm; software-corrected
KEYSTONE	< 5 µm; software-corrected
APERTURE	F/1.4 (with default lens)
SLIT WIDTH (DEFAULT)	15 µm (5/25 µm on request)

ELECTRONICS	
SENSOR TYPE	InGaAs (SenSWIR)
PIXELS IN FULL FRAME	640 (H) x 512 (V)
PIXEL SIZE	5 x 5 µm
RADIOMETRIC RESOLUTION	10 bit
FRAME RATE (FULL FRAME/ROI)	450/1330 Hz
INTERNAL DATA PROCESSING	NVIDIA Jetson Nano, 4 GB
CONNECTION	GigE (GenICam compatible)
TEMPERATURE STABILISATION	active
POWER INPUT	24 V
MAX POWER CONSUMPTION	40 W

MECHANICS	
LENS MOUNT	Standard C-mount
HOUSING	Anodised aluminium
TEMPERATURE (OPERATION)	-10 to +50 °C
TEMPERATURE (STORAGE)	-15 to +60 °C
SIZE	216 (L) x 60 (W) x 87 (H) mm
WEIGHT	2 kg



READOUT MODES

READOUT MODES OF BLACKINDUSTRY SWIR 1.7				
MODE	SPECTRAL RANGE	SPATIAL x SPECTRAL BANDS	FRAME RATE	SPECTRAL OUTPUT
MODE 0	952 - 1748 nm	640 x 200	450 FPS	200 bands at 4 nm sampling
MODE 1	952 - 1748 nm	640 x 399	210 FPS	399 bands at 2 nm sampling
MODE 2	Max. 952 - 1748 nm	640 x Sensor ROI	Up to 1330 FPS	Multi-ROI at 2.8 nm sampling
MODE 3	Max. 952 - 1748 nm	640 x Sensor ROI	Up to 1330 FPS	Calibrated Multi-ROI at 2 nm sampling

BLACKINDUSTRY SWIR 1.7 MAX / PRO MAX

The BlackIndustry SWIR 1.7 hyperspectral camera is also available at higher spatial resolutions of 1280 px and 2592 px.

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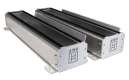
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BLACKINDUSTRY SWIR 1.7

HAIP PRODUCTS INCLUDED

	NAME	DESCRIPTION	LINK
	BLACKSTUDIO SOFTWARE	The powerful free-of-charge software enables live analysis, visualisation, data management, and training of on-camera classification models through flexible tools tailored to industrial sorting and inspection workflows.	BLACKSTUDIO SOFTWARE

HAIP PRODUCTS COMBINED

	NAME	DESCRIPTION	LINK
	BLACKINDUSTRY RGB	A smart multi-line-scan colour camera optimised for seamless integration with the BlackIndustry SWIR 1.7 series. Together, both sensors enable the simultaneous acquisition of 4K RGB line-scan data and SWIR hyperspectral information.	BLACKINDUSTRY RGB
	BLACKBRIGHT FAST MEDIUM WAVE IR	The illumination unit is designed for industrial integration and specifically developed for the BlackIndustry SWIR 1.7 series. The increased focus results in higher signal strength and enables very precise hyperspectral imaging up to 1750 nm.	BLACKBRIGHT FMWIR
	BLACKBRIGHT RGB LED BAR	The illumination is specifically developed for industrial integration in combination with BlackIndustry RGB. Designed for industrial integration, the unit incorporates RGBWW COB LEDs for high colour saturation.	BLACKBRIGHT RGB LED BAR
	BLACKINDUSTRY STATION	This setup is a ready-to-use solution that allows users to generate hyperspectral data quickly and under controlled conditions. The station combines a camera mount for our BlackIndustry cameras with two integrated FMWIR illumination units and optional BlackBright RGB LED units. This system also supports the combined use of one of the BlackIndustry SWIR 1.7 cameras and the BlackIndustry RGB camera.	BLACKINDUSTRY STATION

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BLACKINDUSTRY SWIR 1.7

ORDER INFORMATION

Use the following guideline to order a BlackIndustry SWIR 1.7 with your individual preferences. For example, you will get a BlackIndustry SWIR 1.7 in default configuration with a 15 µm slit width, 950 nm filter and an 8 mm lens by using this code:

3020-15-0950-080

	NAME	DESCRIPTION	OPTION	CODE
	PRODUCT NUMBER	BlackIndustry SWIR 1.7		3020
	SLIT WIDTH*	Choose your required slit width option here.	5 µm	05
			15 µm	15
			25 µm	25
	FILTER*	Choose your required filter option here.	890 nm	0890
			950 nm	0950
			1100 nm	1100
			1600 nm	1600
	LENS (FOCAL LENGTH)	Choose your required lens option here. All lenses feature a C-mount interface.	3.5 mm	035
			6 mm	060
			8 mm	080
			12 mm	120
			16 mm	160
			25 mm	250
	POWER SUPPLY	An optional power supply is available by adding the required option number.	no	00
			24 V, M12 straight connector	01
	OPEN-WIRE CABLE	An optional open-wire cable is available by adding the required option number.	no	00
			M12 straight connector + 5 m	01
			UL-M12 straight connector + 10 m	02

* Please note: The selected slit size and filter are part of the final camera configuration and cannot be changed once the camera has been assembled.

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