Machine
VISION DIRECT

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SW-8000Q-10GE
Technical Datasheet

Custom

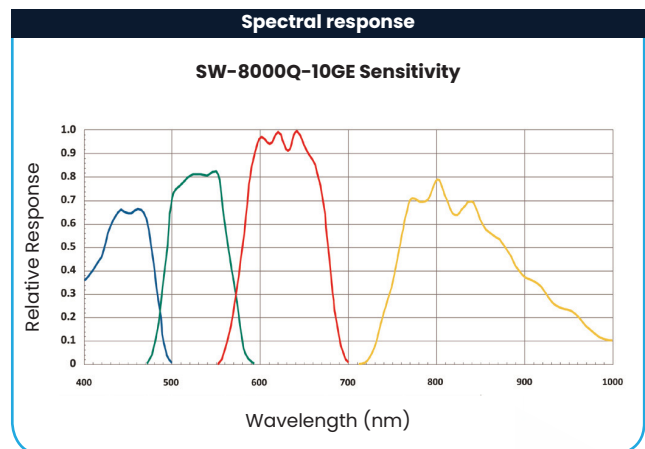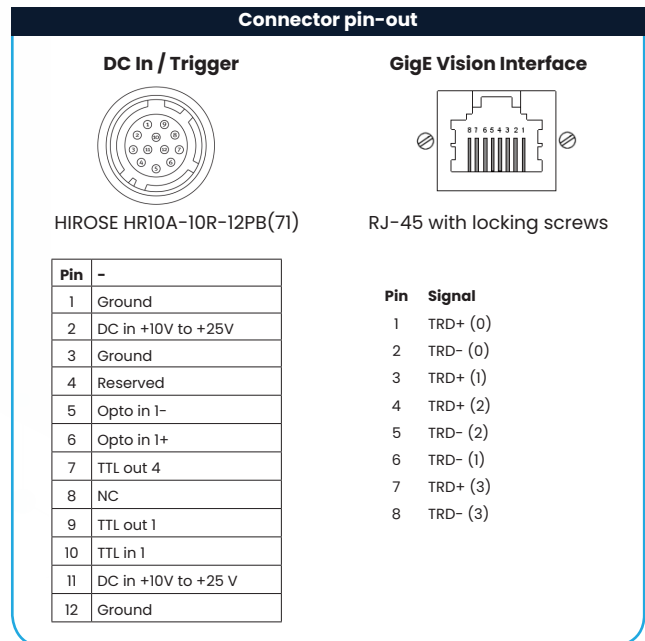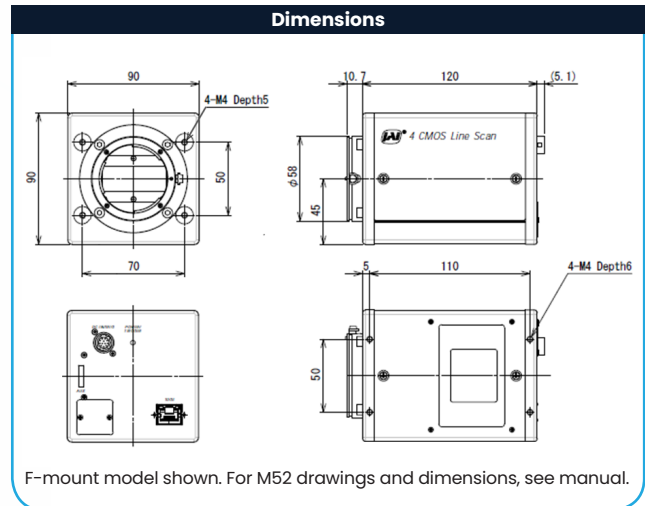**jAi** ®
See the possibilities

Apex Series

The Sweep+ Series comprises 3-sensor R-G-B and 4-sensor R-G-B-NIR or R-G-B-SWIR line scan cameras for industrial machine vision applications.

They features state-off-the-art prism technology providing the best possible performance, precision, and versatility for line scan imaging in continuous production flows.

GigE VISION ®

Specification Highlights

SENSOR:	Custom		**SHUTTER:**	Global Shutter
FORMAT:	30.72 mm		**FRAME RATE:**	36 kHz
PIXEL SIZE:	3.75 x 5.78 µm		**INTERFACE:**	10 Gbps GigE Vision
LENS MOUNT:	F-Mount		**RESOLUTION MP:**	N/A MP
SPECTRUM:	Multispectral (4-Bands R-G-B + NIR)		**RESOLUTION WxH:**	8192 x 1 px

Specifications	SW-8000Q-10GE
Scanning system	4 high-speed CMOS line sensors, prism-mounted
Active pixels	4 x 8192 pixels (R, G, B, NIR)
Line rate (full width)	Up to 36 kHz (variable) for 8-bit RGB + NIR 37 kHz possible with YUV compression
Sensor width	30.72 mm
Pixel size	3.75 μm x 5.78 μm
Ethernet speeds	10GBASE-T, 5GBASE-T, 2.5GBASE-T, 1000BASE-T Full backwards compatibility
Video output	Single stream: RGBa8 Two streams: RGB8, RGB10V1Packed, RGB10p32, YUV422_8_UVYV, YUV422_8 (visible) Mono8, Mono10Packed (NIR)
Object illuminance (min.)	214.5 lx @ 7800 K (Gain 30 dB, 525 μs exp., 50% video, f/2.8)
Responsivity	RGB: 41 DN/nJ/cm^2 @ 550 nm (G channel) NIR: 24 DN/nJ/cm^2 @ 800 nm (10-bit, 0 dB gain)
S/N ratio	>53 dB on green, 10-bit with 0 dB gain >55 dB on NIR, 10-bit with 0 dB gain
Inputs (Trigger)	1 Opto In + 1 TTL via 12-pin, 2 TTL via 10-pin, Pulse Generator (4), NAND Out (2), Action (4), User Out (4)
Outputs	2 TTL via 12-pin, 2 TTL via 10-pin
Gain	Digital Master: 0 to +30 dB, R/B/NIR: -4 to +12 dB Digital Individual: 0 to +36 dB
White balance	Manual/one-push auto by gain or exposure (4000K - 9000K) 3 Presets (5000K, 6500K, 7500K)
Gamma	0.45 to 1.0 (9 steps) or 257-point LUT
Image processing	PRNU/DSNU, black level, flat shading and color shading correction, chromatic aberration adjustment, horizontal mirroring, noise filtering
Color space conversion	RGB or RGBa8 to HSI, XYZ (CIE), sRGB, Adobe RGB, or User Custom RGB
Exposure modes	No shutter, timed, and trigger width control
Electronic shutter	3 μs to 27778 μs in 1 μs increments at 36 kHz. Exposure time can be longer at slower line rates.
Pulse width control	1.8 μs to ~1 sec
Time synchronization	Support for Precision Time Protocol (IEEE 1588)
Lens mount	Nikon F-mount or M52 mount (46.5 mm flange back for both mounts)
Operating temp. (ambient)	-5ºC to +45ºC (20 to 80% non-condensing)
Storage temp. (ambient)	-25ºC to +60ºC (20 to 80% non condensing)
Vibration	3G (20 Hz to 200 Hz, XYZ directions)
Shock	50G
Regulations	CE (EN61000-6-2, EN61000-6-3) FCC Part 15 Class B, RoHS/WEEE
Power — 12-pin	+10V to +25V DC. 19.3 W typical @ 12V
Power — PoE	Not supported.
Dimensions (H x W x L)	(without connector and lens mount protrusions) 90 mm x 90 mm x 120 mm
Weight	980 g

Ordering Information	
SW-8000Q-10GE-F SW-8000Q-10GE-M52	4-CMOS prism line scan camera with F-mount 4-CMOS prism line scan camera with M52 mount

Dimensions

F-mount model shown. For M52 drawings and dimensions, see manual.

Connector pin-out

DC In / Trigger

HIROSE HR10A-10R-12PB(71)

Pin	-
1	Ground
2	DC in +10V to +25V
3	Ground
4	Reserved
5	Opto in 1-
6	Opto in 1+
7	TTL out 4
8	NC
9	TTL out 1
10	TTL in 1
11	DC in +10V to +25 V
12	Ground

GigE Vision Interface

RJ-45 with locking screws

Pin	Signal
1	TRD+ (0)
2	TRD- (0)
3	TRD+ (1)
4	TRD+ (2)
5	TRD- (2)
6	TRD- (1)
7	TRD+ (3)
8	TRD- (3)

Spectral response

SW-8000Q-10GE Sensitivity

Product Highlights

- 4 x 8192 pixel prism-based 10GBASE-T line scan camera
- Max. line rate of 36 kHz for RGB8 + NIR dual-stream output
- Prism technology for superior color quality and alignment of visible + NIR channels
- Backwards compatible to NBASE-T (5GBASE-T/2.5GBASE-T) and standard GigE (1000BASE-T)
- New "State of the art" CMOS sensors with 3.75 x 5.78 μm pixels
- Supports vertical dual-line binning, 2x horizontal binning, or both
- ROI capability can increase line rate by reducing number of pixels per line
- Flat field correction and color shading correction
- HSI and XYZ color space conversion
- Supports direct connection to rotary encoders plus large variety of trigger options
- GigE Vision 2.0 interface with choice of single-stream (RGBa8) or dual-stream output
- Color output can be 24/30/32-bit RGB or 8-bit YUV format
- Excellent shock and vibration resistance

Additional Product Images