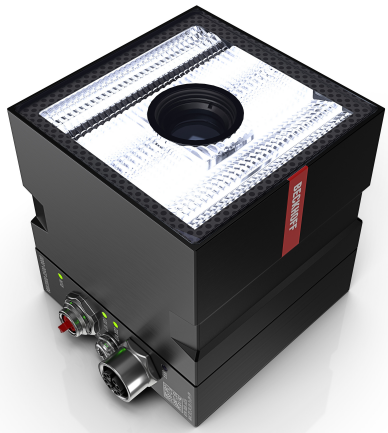
datasheet | VUI2000 series

Unit comprising camera, illumination, and focusable optics with liquid lens technology



NOTE! The technical specifications are subject to tolerances and may vary slightly in individual cases. Minor deviations should not be considered errors.

Tab. 1: General technical data

General technical data	Value
Category/Version	area scan camera
Power supply	EtherCAT P; GigE Vision® mode: 2 x 24 V DC (-15 %...+20 %)
Synchronization	EtherCAT mode: DC timestamp and trigger bit; GigE Vision® mode: software trigger
Image output	GigE Vision® 2.2 supported via Ethernet
Transmission rate	1 Gbit/s, 2.5 Gbit/s
Exposure time	14 µs...4.19 s (depending on the model)
Ramp-up time to start	12–20 s (depending on the model)
Ethernet	1000/2500BASE-T
Connection technology	M8, socket, 4-pin, P-coded; M12, socket, 8-pin, X-coded
Shutter type	global shutter
Sensor type	area sensor

General technical data	Value
Light color and spectral centroid	blue: 452 nm, green: 545 nm, orange: 612 nm, infrared: 853 nm, white: OGB (orange, green, blue)
Color temperature	6560 K
Color rendering index	RA > 80
Maximum power consumption	14 W
Peak power	230 W (VIS LEDs, max. 500 µs)
Beam angle	40°
Aperture	4.5
Light distribution	narrow beam
Working distance lower range	40 mm
Working distance upper range	infinite
Dimensions (W x H x D)	72 mm x 72 mm x 77 mm
Weight	570 g
Material	anodized aluminum
Front glass	double-sided anti-reflective coating
Protection rating	IP65/67, with connector
Operating temperature range	0…55°C
Storage temperature	-20…+80°C
Approvals/markings	CE, UKCA, UL (in preparation), Risk group 1 according to EN 62471:2008 (Photobiological safety of lamps and lamp systems)

Tab. 2: Product-specific technical data for VUI2000, spectral sensitivity monochrome (2.3 MP – 5.0 MP)

Product-specific technical data	VUI2000-0208	VUI2000-0212	VUI2000-0216	VUI2000-0308	VUI2000-0312	VUI2000-0316	VUI2000-0512	VUI2000-0516
Number of pixels	2.3 MP	2.3 MP	2.3 MP	3.1 MP	3.1 MP	3.1 MP	5.0 MP	5.0 MP
Sensor Format	1/2.3" (7.8 mm)	1/2.3" (7.8 mm)	1/2.3" (7.8 mm)	1/1.8" (8.8 mm)	1/1.8" (8.8 mm)	1/1.8" (8.8 mm)	2/3" (11 mm)	2/3" (11 mm)
Pixel size	3.45 µm	3.45 µm	3.45 µm	3.45 µm	3.45 µm	3.45 µm	3.45 µm	3.45 µm
Pixel format	Mono8, Mono10, Mono12, Mono12p							
Bit depth	8-bit, 10-bit, 12-bit	8-bit, 10-bit, 12-bit	8-bit, 10-bit, 12-bit	12-bit	12-bit	12-bit	12-bit	12-bit
Max. frame rate	127 fps	127 fps	127 fps	55 fps	55 fps	55 fps	35 fps	35 fps
Resolution	1920 x 1200	1920 x 1200	1920 x 1200	2048 x 1536	2048 x 1536	2048 x 1536	2464 x 2048	2464 x 2048
Focal length	8 mm	12 mm	16 mm	8 mm	12 mm	16 mm	12 mm	16 mm
Image sensor	Sony IMX392	Sony IMX392	Sony IMX392	Sony IMX265	Sony IMX265	Sony IMX265	Sony IMX264	Sony IMX264
Decimation	yes							
Binning	yes	yes	yes	no	no	no	no	no
ROI regions	1							

Tab. 3: Product-specific technical data for VUI2001, spectral sensitivity color (2.3 MP – 5.0 MP)

Product-specific technical data	VUI2001-0208	VUI2001-0212	VUI2001-0216	VUI2001-0308	VUI2001-0312	VUI2001-0316	VUI2001-0512	VUI2001-0516
Number of pixels	2.3 MP	2.3 MP	2.3 MP	3.1 MP	3.1 MP	3.1 MP	5.0 MP	5.0 MP
Sensor Format	1/2.3" (7.8 mm)	1/2.3" (7.8 mm)	1/2.3" (7.8 mm)	1/1.8" (8.8 mm)	1/1.8" (8.8 mm)	1/1.8" (8.8 mm)	2/3" (11 mm)	2/3" (11 mm)
Pixel size	3.45 µm	3.45 µm	3.45 µm	3.45 µm	3.45 µm	3.45 µm	3.45 µm	3.45 µm
Pixel format	BayerRG8, BayerRG10, BayerRG12, BayerRG12p							
Bit depth	8-bit, 10-bit, 12-bit	8-bit, 10-bit, 12-bit	8-bit, 10-bit, 12-bit	12-bit	12-bit	12-bit	12-bit	12-bit
Max. frame rate	127 fps	127 fps	127 fps	55 fps	55 fps	55 fps	35 fps	35 fps
Resolution	1920 x 1200	1920 x 1200	1920 x 1200	2048 x 1536	2048 x 1536	2048 x 1536	2464 x 2048	2464 x 2048
Focal length	8 mm	12 mm	16 mm	8 mm	12 mm	16 mm	12 mm	16 mm
Image sensor	Sony IMX392	Sony IMX392	Sony IMX392	Sony IMX265	Sony IMX265	Sony IMX265	Sony IMX264	Sony IMX264
Decimation	yes							
Binning	no							
ROI regions	1							

Tab. 4: Product-specific technical data for VUI2020 and VUI2030, spectral sensitivity monochrome (5.1 MP – 12.4 MP)

Product-specific technical data	VUI2020-0808	VUI2020-0812	VUI2020-0816	VUI2020-1212	VUI2020-1216	VUI2030-0508	VUI2030-0512	VUI2030-0516
Number of pixels	8.1 MP	8.1 MP	8.1 MP	12.4 MP	12.4 MP	5.1 MP	5.1 MP	5.1 MP
Sensor Format	2/3" (11 mm)	2/3" (11 mm)	2/3" (11 mm)	1/1.1" (14 mm)	1/1.1" (14 mm)	1/1.8" (8.8 mm)	1/1.8" (8.8 mm)	1/1.8" (8.8 mm)
Pixel size	2.74 µm	2.74 µm	2.74 µm	2.74 µm	2.74 µm	2.74 µm	2.74 µm	2.74 µm
Pixel format	Mono8, Mono10, Mono12, Mono12p							
Bit depth	8-bit, 12-bit	8-bit, 12-bit	8-bit, 12-bit	8-bit, 12-bit	8-bit, 12-bit	8-bit, 12-bit	8-bit, 12-bit	8-bit, 12-bit
Max. frame rate	32 fps	32 fps	32 fps	21 fps	21 fps	59 fps	59 fps	59 fps
Resolution	2856 x 2848	2856 x 2848	2856 x 2848	4128 x 3008	4128 x 3008	2472 x 2064	2472 x 2064	2472 x 2064
Focal length	8 mm	12 mm	16 mm	12 mm	16 mm	8 mm	12 mm	16 mm
Image sensor	Sony IMX566	Sony IMX566	Sony IMX566	Sony IMX565	Sony IMX565	Sony IMX547	Sony IMX547	Sony IMX547
Decimation	yes							
Binning	yes							
ROI regions	1							

Tab. 5: Product-specific technical data for VUI2021 and VUI2031, spectral sensitivity color (5.1 MP – 12.4 MP)

Product-specific technical data	VUI2021-0808	VUI2021-0812	VUI2021-0816	VUI2021-1212	VUI2021-1216	VUI2031-0508	VUI2031-0512	VUI2031-0516
Number of pixels	8.1 MP	8.1 MP	8.1 MP	12.4 MP	12.4 MP	5.1 MP	5.1 MP	5.1 MP
Sensor size	2/3" (11 mm)	2/3" (11 mm)	2/3" (11 mm)	1/1.1" (14 mm)	1/1.1" (14 mm)	1/1.8" (8.8 mm)	1/1.8" (8.8 mm)	1/1.8" (8.8 mm)
Pixel size	2.74 µm	2.74 µm	2.74 µm	2.74 µm	2.74 µm	2.74 µm	2.74 µm	2.74 µm
Pixel format	BayerRG8, BayerRG10, BayerRG12, BayerRG12p							
Bit depth	8-bit, 12-bit	8-bit, 12-bit	8-bit, 12-bit	8-bit, 12-bit	8-bit, 12-bit	8-bit, 12-bit	8-bit, 12-bit	8-bit, 12-bit
Max. frame rate	32 fps	32 fps	32 fps	21 fps	21 fps	59 fps	59 fps	59 fps
Resolution	2856 x 2848	2856 x 2848	2856 x 2848	4128 x 3008	4128 x 3008	2472 x 2064	2472 x 2064	2472 x 2064
Focal length	8 mm	12 mm	16 mm	12 mm	16 mm	8 mm	12 mm	16 mm
Image sensor	Sony IMX566	Sony IMX566	Sony IMX566	Sony IMX566	Sony IMX566	Sony IMX547	Sony IMX547	Sony IMX547
Decimation	yes							
Binning	no							
ROI regions	1							

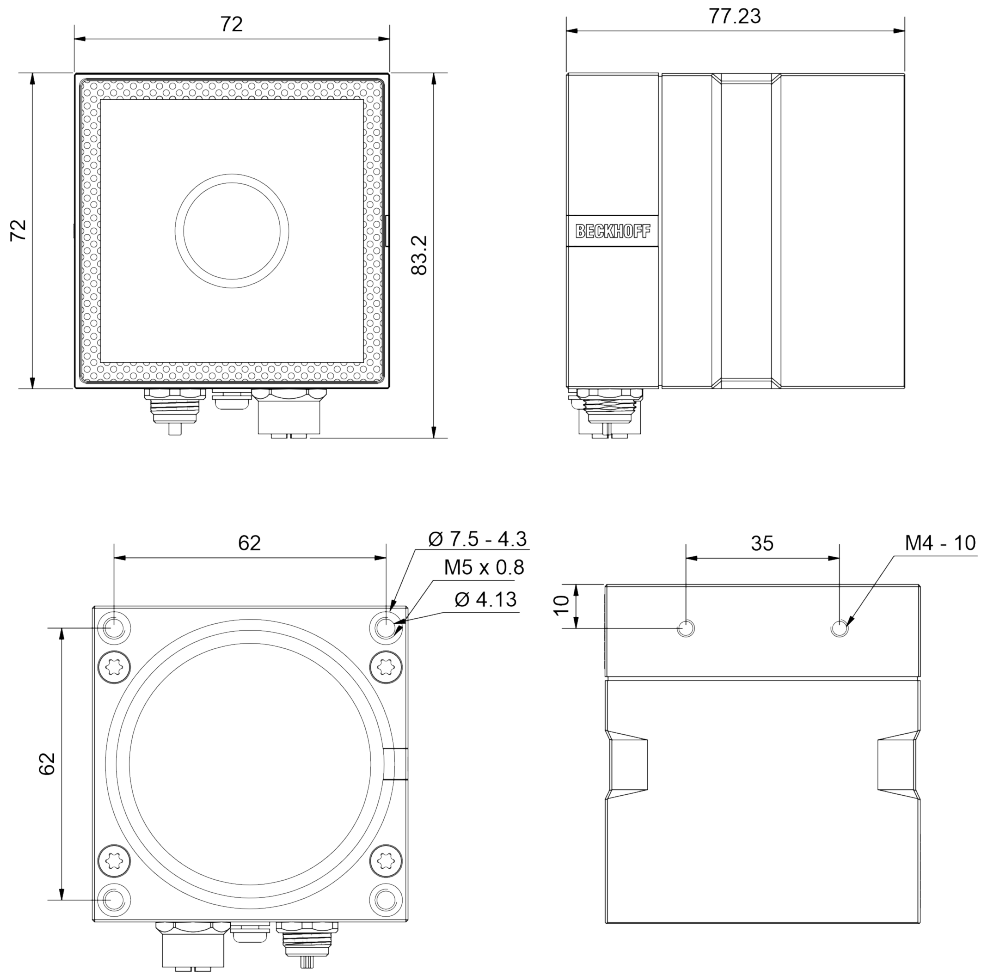


Fig. 1: Dimensions of the VUI2000 series (in mm)

M8 socket pin assignment

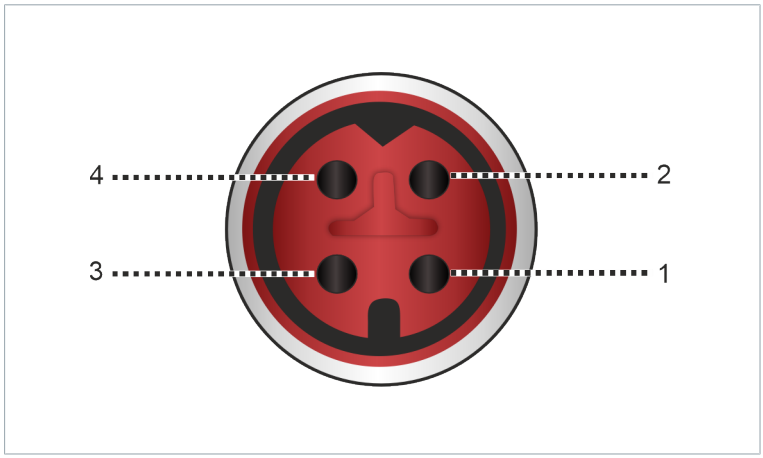


Fig. 2: Pin layout and contact arrangement of the P-coded M8 socket (top view)

Tab. 6: Electrical pin assignment for the P-coded M8 socket and core colors

Number/contact	Signal	Voltage	Wire color[1]
1	Tx +	GND_S	yellow
2	Rx +	GND_P	white
3	Rx -	U_P: peripheral voltage, +24 V DC	blue
4	Tx -	U_S: System and sensor supply, +24 V DC	orange

The device housing serves as EMC shielding.
The VUI2000 series cameras do not support the use of a line trigger. Triggering is performed via the EtherCAT fieldbus or the GigE Vision® protocol.
You can use the "ZK7000-0101-0xxx" cable (EtherCAT P cable, AWG22, PUR, drag-chain suitable) to connect to the M8 socket.
You can find compatible cables on the ▶Beckhoff web page.

M12 socket pin assignment

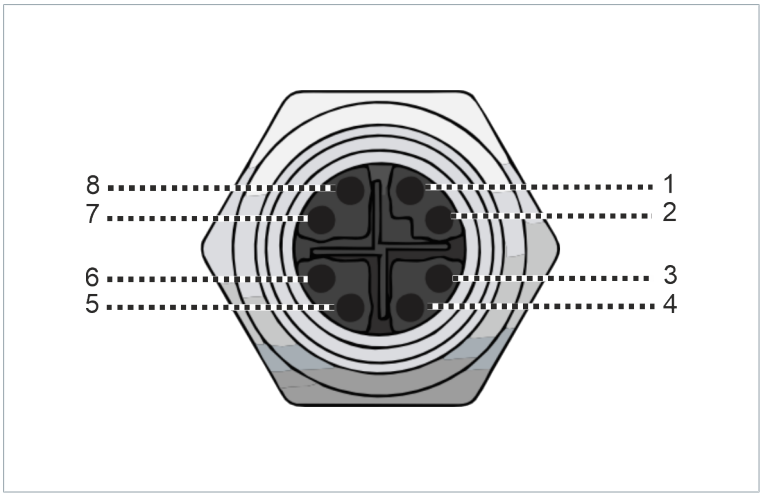


Fig. 3: Pin layout and contact arrangement of the X-coded M12 socket (top view)

Tab. 7: Pin assignment for the X-coded M12 socket and wire colors

Number/contact	1000BASE-T Signal ID	Wire color
1	DA+	white-orange
2	DA–	orange
3	DB+	white-green
4	DB–	brown
5	DD+	white-blue
6	DD–	blue
7	DC–	white-brown
8	DC+	green

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