HYPERSPECTRAL LIGHTS
SWIR-LED Broadband technology

The hyperspectral SWIR LED line lights MTD-LED HSL/HSL2 offer a powerful and durable illumination solution for spectral imaging. In chip-on-board technology up to 14 different SWIR wavelengths are combined into a homogeneous broadband spectrum. The output power of each wavelength can be programmed separately. The irradiance levels are comparable to halogen lamps.

BASE MODEL

Hyperspectral
MTD-LED HSL

48

Hyperspectral II
MTD-LED HSL2

51

SPECIAL SPECTRA

SWIR-Spectra
MTD-LED HSL/HSL2

54

HYPERSPECTRAL
MTD-LED HSL SWIR

MTD-LED HSL is a compact and flexible hyperspectral illumination unit, which is available with different spectral variants in the range of 1000 – 1900 nm.


MTD-LED HSL- AC2

The light is available in lengths of 300 and 600 mm as standard.
Working distance options include 150, 300 and 400 mm focus. Air-cooled and liquid-cooled versions are available.

SPECIAL FEATURES

- Broadband LED spectra in the range of 1000-1900 nm
- Extremely high intensity (800 W/m² at a distance of 400 mm)
- No significant heat emission
- Spectral independent focussing using reflector optics
- Air and liquid cooling with integrated temperature control
- Programmable spectral characteristics
- Red pilot LED to assist positioning
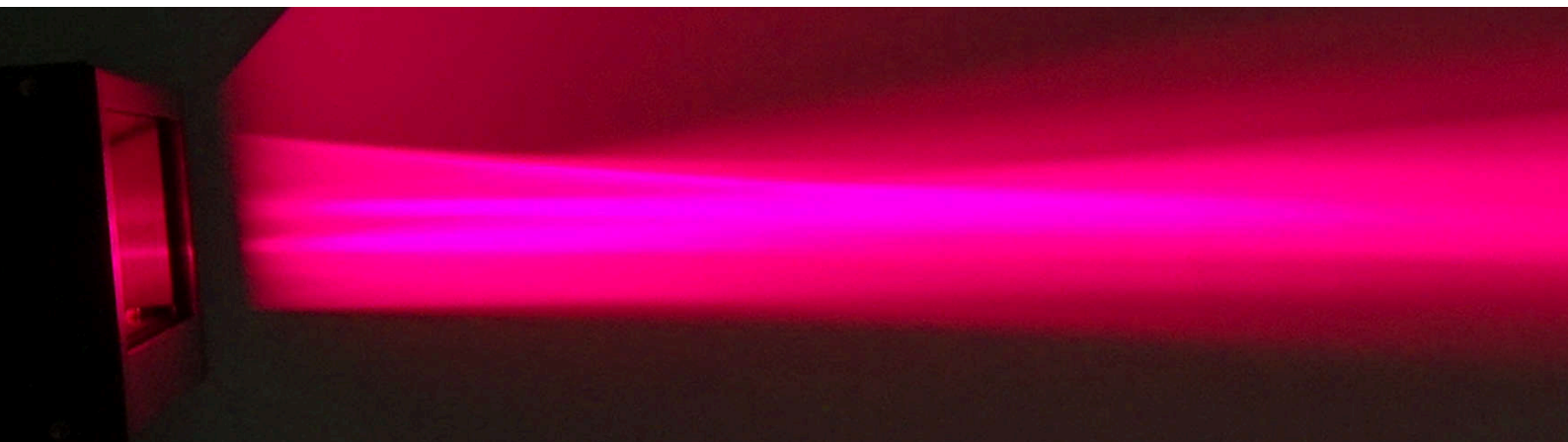
BEAM CHARACTERISTIC

FOCUSSING

	RF 150	RF 300	RF 400
Working distance [mm]	130-160	260-320	300-400
Line width FWHM [mm]	7	12	16
Relative Irradiance	200%	100%	75%
Application	Flat material	Objects of 2-4 cm	Objects of approx. 8 cm

Within the listed working distance ranges, the respective irradiance is almost constant.
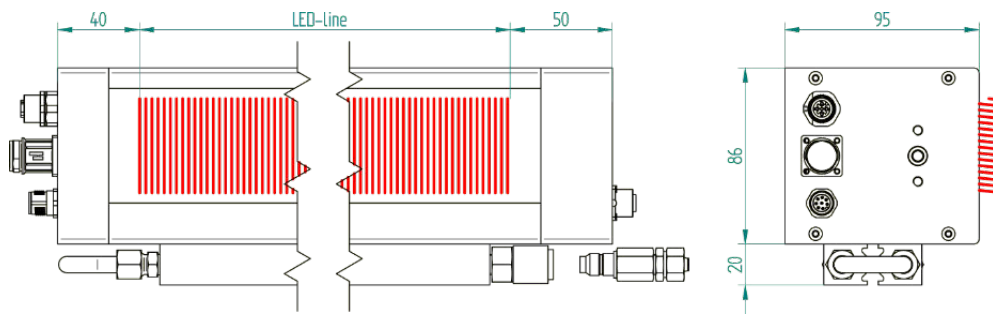
ELECTRICAL DATA

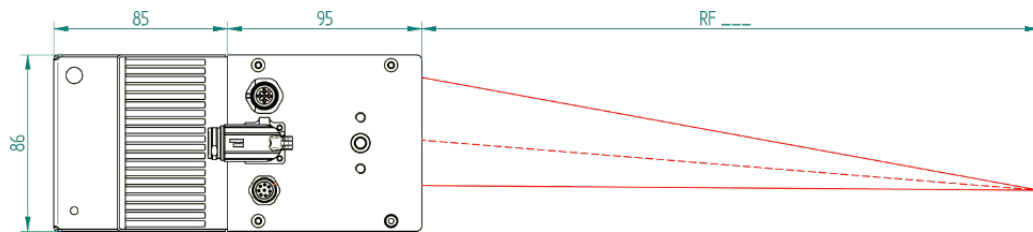|	
Supply:	48VDC, up to 190 W per 300 mm
	depending on programming and spectral version
Connectors:	M16/ M23 power connector, M12 Dig I/O connector, M12 Ethernet socket

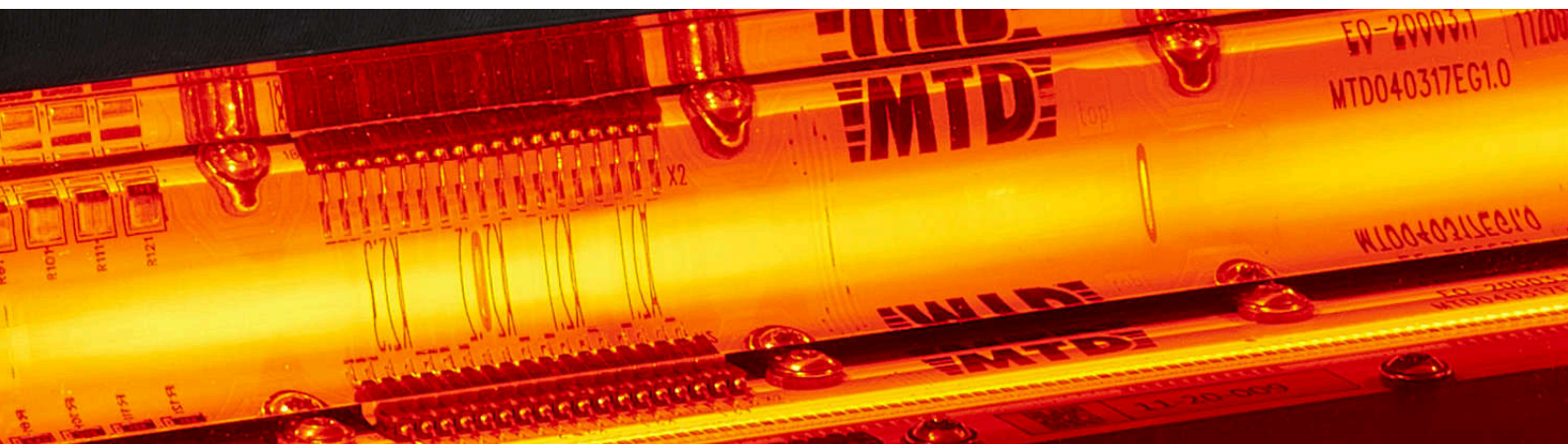# COOLING | SPECTRA | TYPE CODE

DESIGNS HSL

MTD-LED HSL-LCC

MTD-LED HSL-AC

LENGTH OVERVIEW

Typ	LED line length [mm]	Total length[1] [mm]
HSL 300	300	390
HSL 600	600	690
Other lengths on request		

[1] without connector

HYPERSPECTRAL II
MTD-LED HSL2-SWIR

The MTD-LED HSL2 line light has been developed especially for applications that require a long illumination length. The main area of application is currently optical sorting in the SWIR spectral range. Different spectral versions are available from 1000 – 1900 nm. An optimised reflector geometry with an enlarged aperture has increased the efficiency of the focusing optics by 25% with a line width of 14 mm.
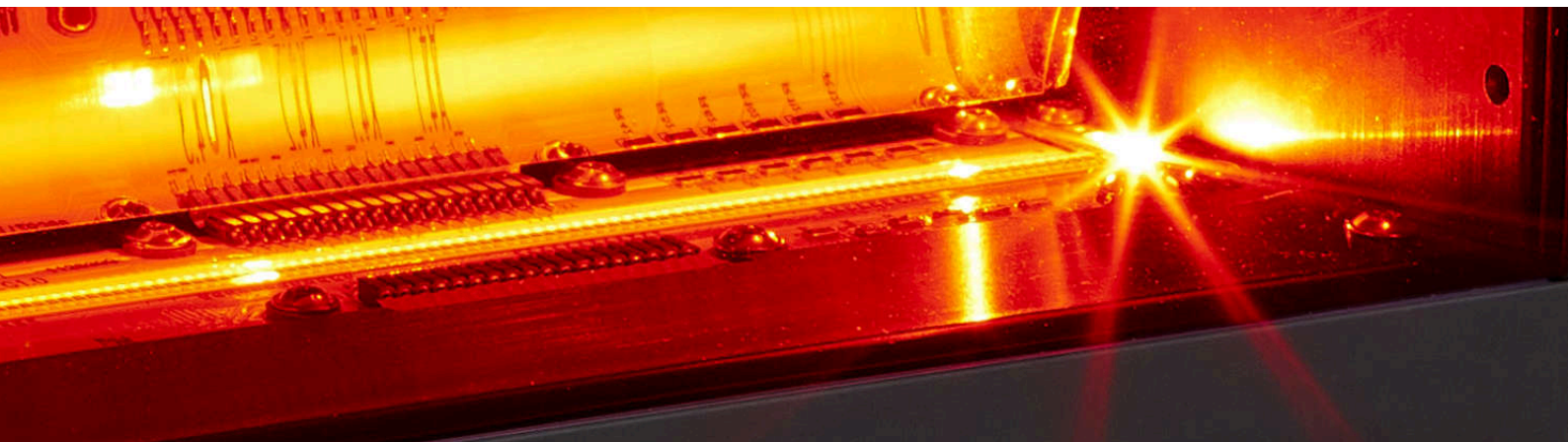

MTD-LED HSL2

The light is available in lengths of up to 3 metres. The weight of the light source is only 10 kg/m and provides a working distance of 350 – 400 mm. The lights are temperature-controlled via liquid cooling.

SPECIAL FEATURES

- Broadband LED spectra in the range of 1000-1900 nm
- Length up to 3m | Weight approx. 10 kg/m
- Optimised reflector optics with 25% increased efficiency

- No significant heat emission
- liquid cooling with integrated temperature control
- Programmable spectral characteristics
- Red pilot LED for light positioning
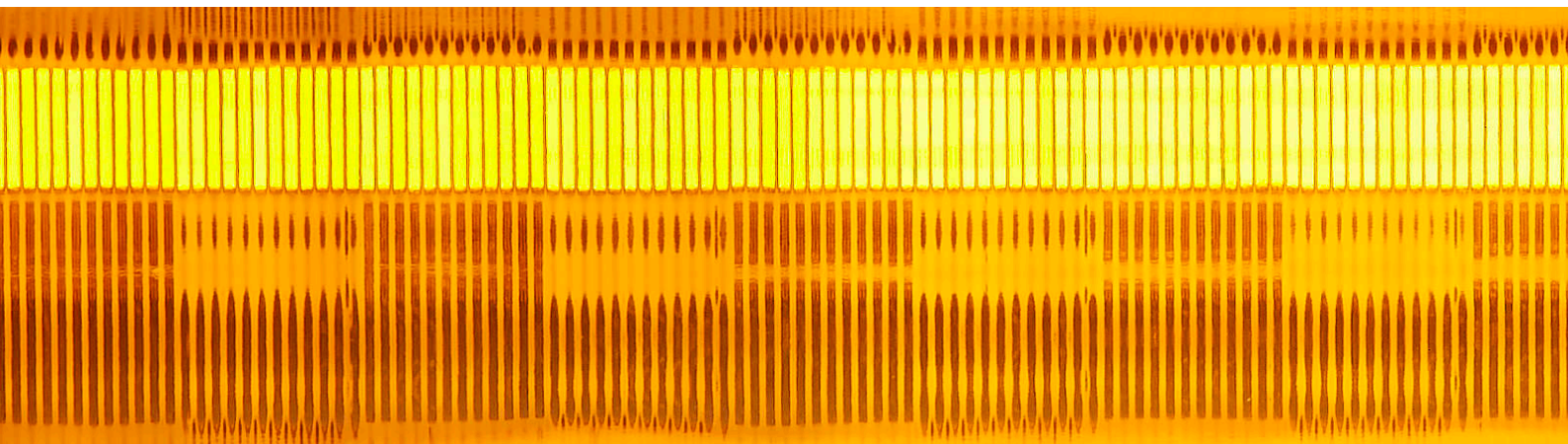
COOLING | SPECTRA | TYPE CODE

DESIGNS HSL2
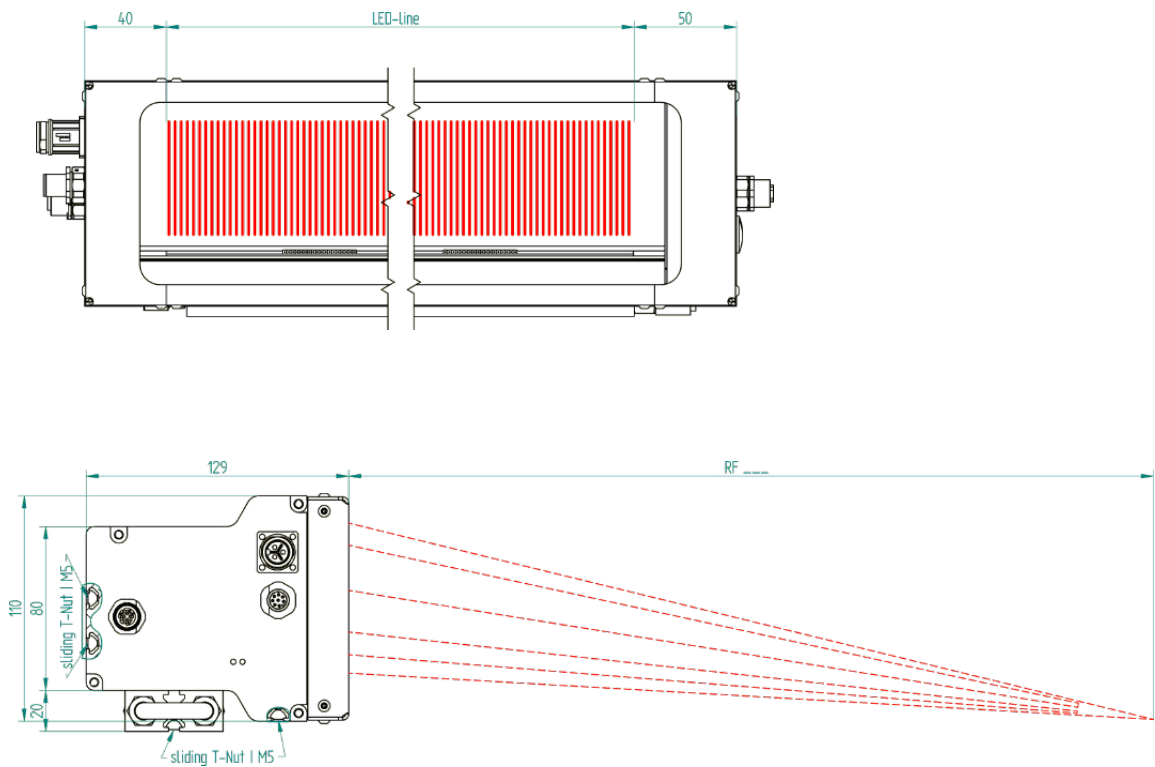
MTD-LED HSL2-LCC

LENGTH OVERVIEW

Type	LED line length [mm]	Total length[1] [mm]
HSL2 300	300	390
HSL2 600	600	690
HSL2 900	900	990
HSL2 1200	1200	1290
HSL2 1500	1500	1590

Type	LED line length [mm]	Total length[1] [mm]
HSL2 1800	1800	1890
HSL2 2100	2100	2190
HSL2 2400	2400	2490
HSL2 2700	2700	2790
HSL2 3000	3000	3090

[1] without connector

COOLING / TEMPERATURE CONTROL

MTD-LED HSL/HSL2

Hyperspectral lights must be operated with temperature control to stabilise the spectrum. For this purpose, a temperature sensor is integrated in the MTD-LED HSL/HSL2. The cooling rate can be adjusted continuously using the built-in PID controller. In the air-cooled version, the speed of the integrated fans is actively readjusted for this purpose.
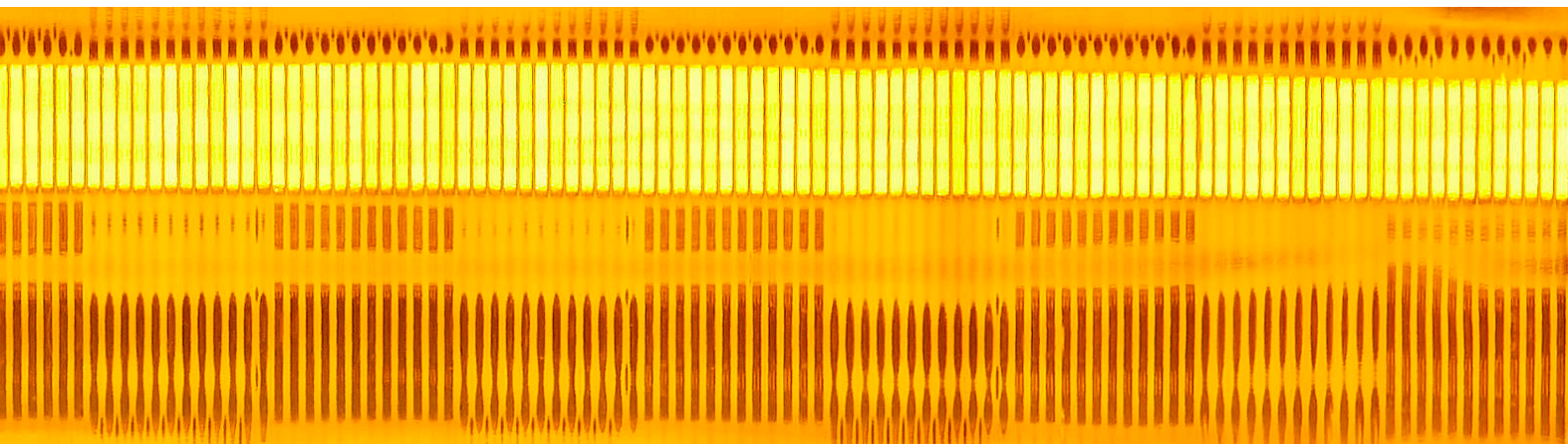

MTD-LED HSL-AC2

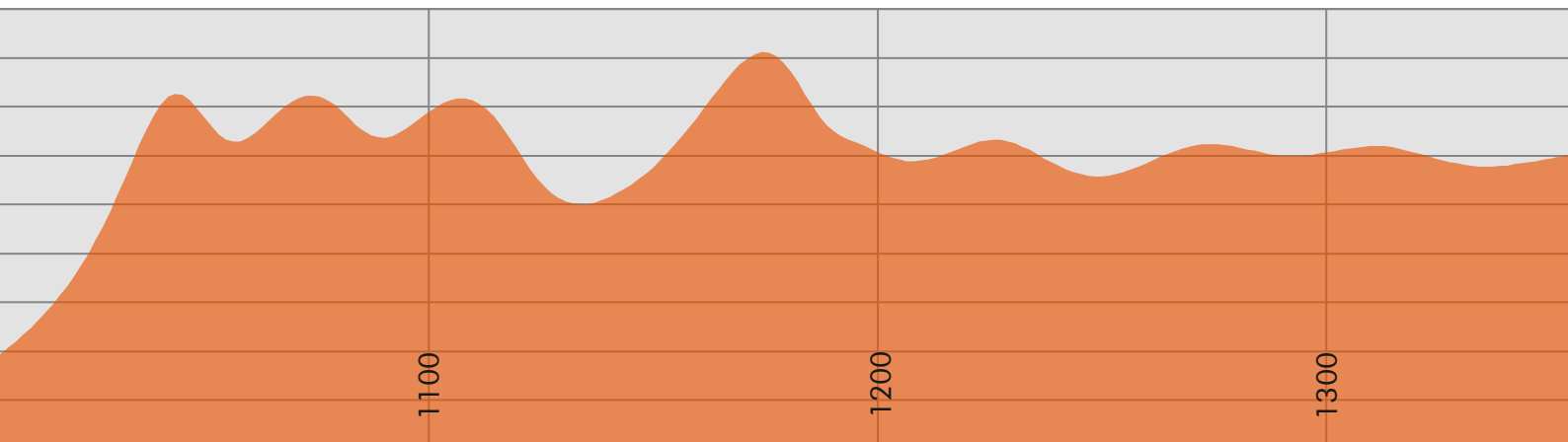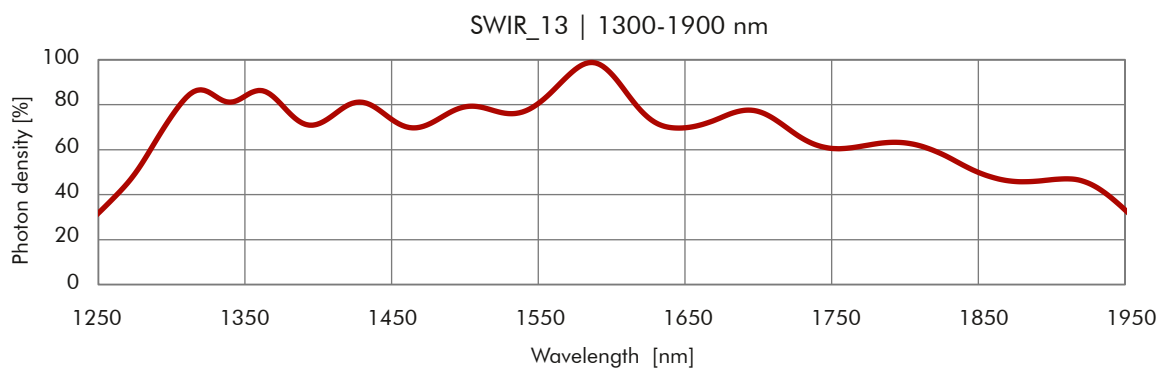In the liquid-cooled version, the temperature is adjusted by means of a flow regulator.

MTD-LED HSL2-LC

SPECTRA

MTD-LED HSL / HSL2

For the MTD-LED HSL/HSL2 line light, MTD offers the following spectra. In addition, customer-specific assembly variants with up to 14 different wavelengths are possible. Wavelength-specific power programming allows the spectrum to be adapted to different sensor characteristics.

SWIR_2a | 1100-1650 nm

Photon density [%] vs Wavelength [nm]

SWIR_9c | 1060-1550 nm

Photon density [%] vs Wavelength [nm]

SWIR_13 | 1300-1900 nm

Photon density [%] vs Wavelength [nm]
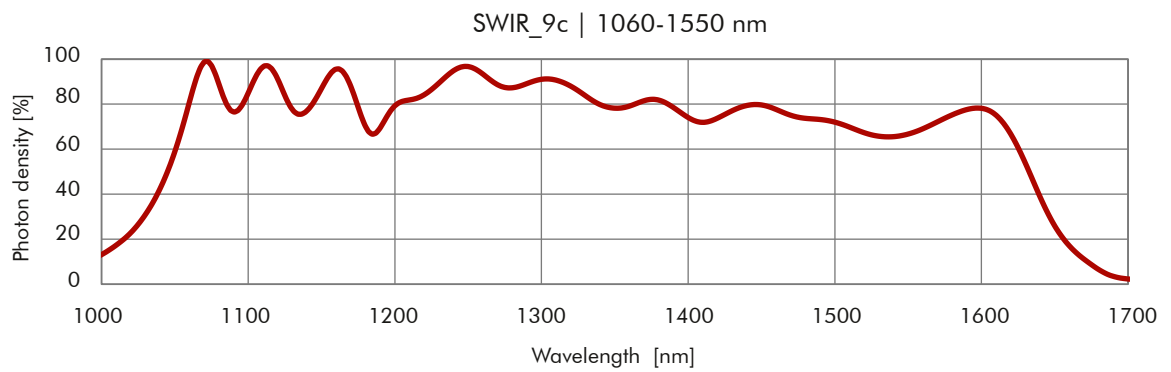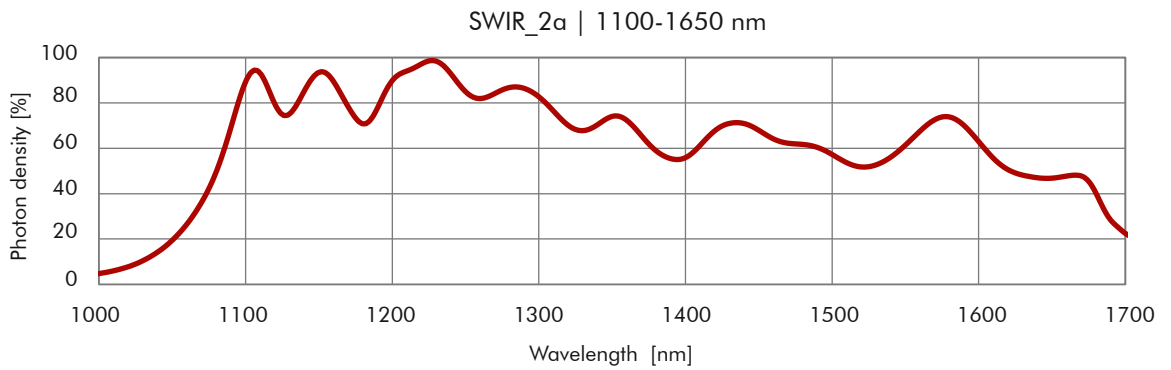
TYPE CODE

MTD-LED HSL / HSL2

	Type		HSL/HSL2	Hyperspectral line light with COB technology
■	Length	HSL	…	Light field length: 300, 600 mm, Raster: 300 mm
		HSL2	…	Light field length: 300 - 3000 mm, Raster: 300 mm
■	Luminous colour		SWIR_2a SWIR_9c SWIR_13	1100 – 1650 nm 1060 – 1550 nm 1300 – 1900 nm
			SWIR_x	Other wavelength combinations in the 980–1900 nm range available on request
■	Optics	HSL	RF …	Reflector optics with focus at
			… 150 … 300	150 mm distance 300 mm distance
		HSL, HSL2	… 400	400 mm distance
■	Casing options for corrosive environments		V4A	Power connectors and screws in stainless steel V4A
■	Protective glass		SG SG_AR1 SG_PC	Borofloat® 33 protective glass (standard) Protective glass with anti-reflex-coating (only up to 900 mm length) Polycarbonate protective glass
■	Communication		E Ta Ts	Ethernet interface (standard) Optimised trigger, asynchronous, low active Optimised trigger, synchronous, high active
■	Temperature regulation		TC	Integrated temperature controller for controlling an actuator that regulates cooling (Standard)
■	Alignment aid		PLED	Pilot LED to assist alignment (can be switched on and off)
■	Power connector		M16s M16r	M16 straight M23s M23 straight M16 right-angled, rotatable M23r M23 right-angled, rotatable
■	Cooling		AC2	Active air cooling via integrated long-life fans and dynamic speed control
			LCC …	Slim liquid cooling plate with stainless steel channels, screw-on groove, 48 mm wide
			… sv …	Rotated cooling plate, mounted below the LED strip
			… G1/8 … K … K6/8s	G1/8 connecting thread (for R1/8 fitting) Straight self-sealing couplings Straight self-sealing couplings and straight push-on fittings for 6/8 hose

ORDER CODE

MTD-LED HSL2 300-SWIR_9c-RF400-SG-E-TC-PLED-M16r-LCCsvG1/8

Only the required options are listed in the order code.