We Bring Light into the Dark.

Reliable Differentiation also of Dark Colors.

Color Control and Color Measurement

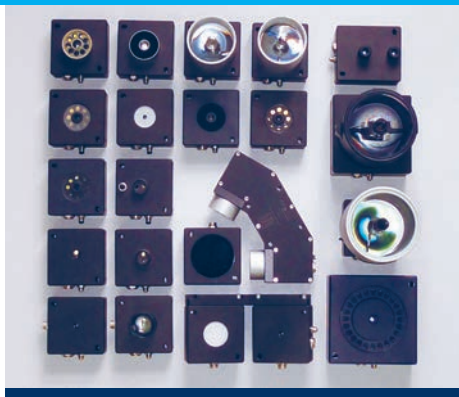
SPECTRO-3-CL / -JR / -ANA Series

True Color Sensors

Sensor Instruments

Let's make sensors more individual

SPECTRO-3-CL Series / SPECTRO-3-JR Series / SPECTRO-3-ANA Series
Color Sensors "True Color" Compact Line / Junior / Analog



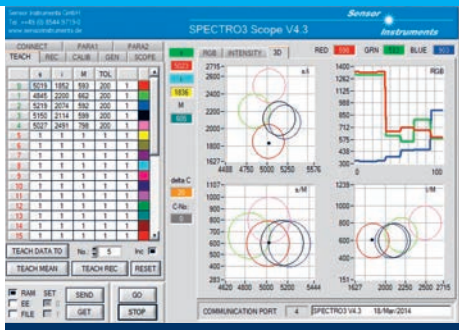
SPECTRO-3-CL Series
The color sensors of the SPECTRO-3-CL series are a family of color sensors that have been specifically designed for "true-color" detection ("human color perception") and high switching frequency. The sensors can be operated both in AC and in DC mode with integrated or external light source.

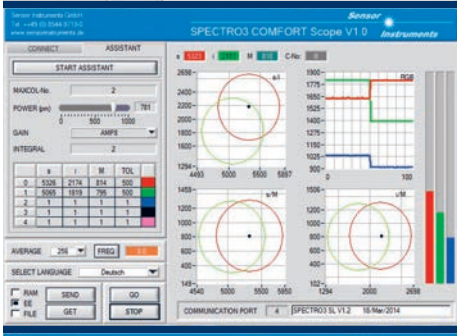
Up to 31 colors can be provided through the five digital outputs, the maximum scan frequency is 35 kHz. Apart from a super bright white light source a high-performance UV light source also is available and allows color and brightness differentiation of fluorescent colors without any problems. Different optical frontends make it possible to implement operating distances of almost 0 mm up to 500 mm, with detection areas of Ø 0.5 mm to approx. Ø 100 mm. The SPECTRO-3-FIO-CL fiber optics version allows applications in Ex areas. External teaching can be performed through input IN0 or by means of the integrated button. Five yellow LEDs visualise the sensor status

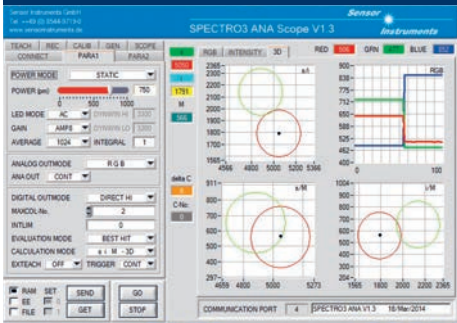
SPECTRO-3-JR Series
Like the SPECTRO-3-CL series the SPECTRO-3-JR series also features five digital outputs, but it does not have the integrated button and the five yellow LEDs.
This series has the same housing types as the SPECTRO-3-ANA series.

SPECTRO-3-ANA Series
The SPECTRO-3-ANA color sensor is extremely fast in DC mode (scan frequency max. 90 kHz). An OFF function switches off the integrated light source at the sensor and changes to DC mode, which allows the sensor to detect "self-luminous objects". The SPECTRO-3-ANA color sensor can be "taught" up to three colors. In addition to the two digital outputs three analog outputs also are available for sending color values to the PLC.

Windows® PC Software
SPECTRO3-Scope, SPECTRO3-COMFORT-Scope and SPECTRO3-ANA-Scope







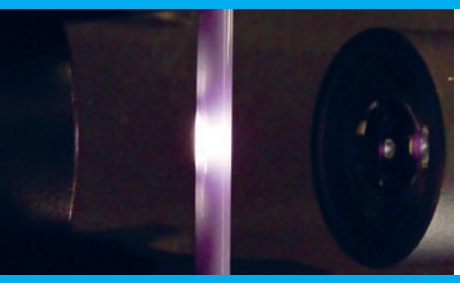
SPECTRO3-Scope Software
The SPECTRO3-Scope evaluation software ("human color assessment") has been especially developed for the parameterisation and data monitoring of color sensors of the SPECTRO-3 series (among others SPECTRO-3-CL and SPECTRO-3-JR color sensors). The software allows the selection of different light modes, and in all four modes the gain of the color detector can be set in eight steps.
It provides various evaluation methods: "X Y INT - 2D" / "X Y INT - 3D" / "s i M - 2D" / "s i M - 3D".

SPECTRO3-COMFORT-Scope Software
The SPECTRO3-COMFORT-Scope software makes it much easier to parameterise the color sensor because the operator is step by step guided through the teach process, using an evaluation mode that according to experience is excellently suited for most applications.

SPECTRO3-ANA-Scope Software
With the SPECTRO3-ANA-Scope software different color spaces can be output as analog signals. The software also allows various analog functions such as "freezing" of the analog color values synchronously to an external trigger signal. Within a specified time window the maximum and minimum RGB value can be defined as +10V or 0V value, and a 50% threshold can be set for RGB.

Application example:

Checking the color values of a plastic tube in transmission



A color sensor of type SPECTRO-3-FIO-ANA is used to determine the color value in a through-beam process. For this application through-beam fiber optics of type R-S-R2.1-(6x1)-1200-67° and two optical frontends of type KL-8-R2.1, each arranged at 11 mm distance from the object, are used.

Application example:

Color checking of a textile tape edge

The color of a textile tape edge should be monitored. For this purpose a color sensor of type SPECTRO-3-FIO-CL is used in combination with reflective fiber optics of type R-S-R2.1-(6x1)-1200-67° and an optical frontend of type KL-8-R2.1. The distance between optical frontend and textile surface is approx. 15 mm, and at this distance the spot has a size of 6 mm x 1 mm.

Application example:

Width monitoring of a notch

The width of a notch should be monitored. With a SPECTRO-3-FIO-ANA color sensor in combination with reflective fiber optics of type R-S-R1.1-(3x0.5)-1200-67° and an optical frontend of type KL-5-R1.1 the width can be output as an analog value. In addition the two digital outputs provide information about the quality of the notch in three stages (different tolerance stages). The distance between frontend and notch position is approx. 15 mm, and at this distance the spot size is 3 mm x 0.5 mm.

Application example:

Color checking of turned metal parts

The coating of a turned metal part is checked with a SPECTRO-3-FIO-CL in combination with reflective fiber optics R-S-R2.1-(6x1)-1200-67° and an optical frontend of type KL-8-R2.1. The distance from the object is 15 mm, and at this distance the light spot has a size of 6 mm x 1 mm.

Application example:

Color differentiation of interior components

A color sensor of type SPECTRO-3-85-FCL-30°/30° is used for the differentiation of various interior components. The distance from the object surface is approx. 85 mm, and at this distance the detection area has a diameter of approx. 20 mm.

Application example:

Color checking of cable insulations

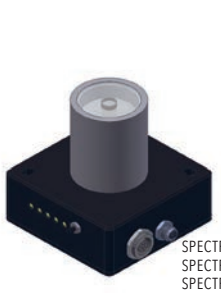
The insulation of cables should be checked for color deviations. A color sensor of type SPECTRO-3-5-DIF-JR is used for this purpose. The distance from the cable surface is approx. 8 mm, and at this distance the detection area has a diameter of approx. 4 mm.

SPECTRO-3-…-CL

Color sensors of SPECTRO-3-CL Series (Compact Line)

TYPE	OBJECT DISTANCE/ MEASURING RANGE (TYP.)	SIZE OF LIGHT SPOT/ DETECTION RANGE (AT DISTANCE, TYP.)	DIMENSIONS (LxWxH IN MM, WITHOUT CONNECTOR)	LIGHT SOURCE (TRANSMITTER)	RECEIVER	SCAN FREQUENCY	COLOR MEMORY	TEACH BUTTON	INPUTS/ OUTPUTS	SWITCHING STATE INDICATION	SWITCHING CURRENT	SOFTWARE/ INTERFACE
SPECTRO-3-50-COF-d3.5-CL	30 … 70 mm	Ø3.5 mm (50 mm)	65 x 65 x 65	White light LED, super bright	RGB detector: True Color detector, „human color re-ception". Color filter curves acc. to CIE1931	AC-operation: max. 20 kHz DC-operation: max. 35 kHz PULSE-operation: max. 5 kHz OFF-operation: max. 35 kHz	Non-volatile EEPROM with parameter sets for max. 31 colors	For external teaching of max. 31 colors	1x digital input: IN0 (0V/+24V) 5x digital output: OUT0 … OUT4 (0/+24V), npn-/pnp-able	5 yellow LEDs visualize the physical state of the outputs OUT0 … OUT4	Max. 100 mA, short circuit proof	SPECTRO3-Scope or SPECTRO3-COMFORT-Scope, RS232 (USB- and Ethernet adaptor available)
SPECTRO-3-50-COF-d5.5-CL	30 … 70 mm	Ø5.5 mm (50 mm)	65 x 65 x 65									
SPECTRO-3-50-COF-d8.0-CL	30 … 70 mm	Ø8 mm (50 mm)	65 x 65 x 65									
SPECTRO-3-50-COF-13x3-CL	30 … 70 mm	13x3 mm (50 mm)	65 x 65 x 65									
SPECTRO-3-100-COF-d3.0-CL	60 … 240 mm	Ø3 mm (100 mm)	65 x 65 x 88									
SPECTRO-3-100-COF-d6.0-CL	60 … 240 mm	Ø6 mm (100 mm)	65 x 65 x 88									
SPECTRO-3-100-COF-d12.0-CL	60 … 240 mm	Ø12 mm (100 mm)	65 x 65 x 88									
SPECTRO-3-200-COF-d6.0-CL	50 … 800 mm	Ø6 mm (200 mm)	65 x 65 x 82									
SPECTRO-3-200-COF-d12.0-CL	50 … 800 mm	Ø12 mm (200 mm)	65 x 65 x 82									
SPECTRO-3-200-COF-d25.0-CL	50 … 800 mm	Ø26 mm (200 mm)	65 x 65 x 82									
SPECTRO-3-300-COF-d8.0-CL	180 … 840 mm	Ø7 mm (300 mm)	☐65/Ø90 x 124									
SPECTRO-3-500-COF-d12.0-CL	100 … 1000 mm	Ø12 mm (500 mm)	☐65/Ø90 x 124									
SPECTRO-3-500-COF-d25.0-CL	100 … 1000 mm	Ø25 mm (500 mm)	☐65/Ø90 x 124									
SPECTRO-3-500-COF-d50.0-CL	100 … 1000 mm	Ø58 mm (500 mm)	☐65/Ø90 x 124									
SPECTRO-3-30-DIL-CL	15 … 80 mm	10 mm (15 mm) … 32 mm (80 mm)	65 x 65 x 42	9x white light LED, super bright, diffuse								
SPECTRO-3-30-DIL-d5-CL	15 … 80 mm	5 mm (15 mm) … 16 mm (80 mm)	65 x 65 x 42									
SPECTRO-3-50-DIL-CL	10 … 100 mm	10 mm (10 mm) … 40 mm (100 mm)	65 x 65 x 42									
SPECTRO-3-50-DIL-d5-CL	10 … 100 mm	5 mm (10 mm) … 20 mm (100 mm)	65 x 65 x 42									
SPECTRO-3-30-FCL-CL	15 … 100 mm	12 mm (15 mm) … 35 mm (100 mm)	65 x 65 x 42	9x white light LED, super bright, focused								
SPECTRO-3-30-FCL-d5-CL	15 … 100 mm	6 mm (15 mm) … 17.5 mm (100 mm)	65 x 65 x 42									
SPECTRO-3-50-FCL-CL	10 … 150 mm	12 mm (10 mm) … 29 mm (150 mm)	65 x 65 x 42									
SPECTRO-3-50-FCL-d5-CL	10 … 150 mm	6 mm (10 mm) … 14.5 mm (150 mm)	65 x 65 x 42									
SPECTRO-3-30-POL-CL	15 … 80 mm	11 mm (15 mm) … 27 mm (80 mm)	65 x 65 x 42	9x white light LED, super bright, polarization filter								
SPECTRO-3-30-POL-d5-CL	15 … 80 mm	5.5 mm (15 mm) … 13,5 mm (80 mm)	65 x 65 x 42									
SPECTRO-3-50-POL-CL	10 … 100 mm	15 mm (50 mm) … 27 mm (100 mm)	65 x 65 x 42									
SPECTRO-3-50-POL-d5-CL	10 … 100 mm	7.5 mm (50 mm) … 13.5 mm (100 mm	65 x 65 x 42									
SPECTRO-3-30-UV-CL	15 … 80 mm	15.5 mm (30 mm)	65 x 65 x 42	9x UV-LED, 375 nm								
SPECTRO-3-30-UV-10x1-CL	15 … 80 mm	10x1 mm (30 mm)	65 x 65 x 42									
SPECTRO-3-28-45°/0°-CL	28±1 mm	Ø10 mm	100 x 100 x 40	24x white light LED, super bright, focused								
SPECTRO-3-FIO-CL	1 … 500 mm (depends on optical fiber and frontend)	Ø0.2 mm … Ø20 mm or 3 mm x 0.5 mm … 48 mm x 0.15 mm (depends on optical fiber)	65 x 65 x 36	White light LED, super bright								
SPECTRO-3-85-FCL-30°/30°	85±5 mm	Ø20 mm (85 mm)	170 x 85 x 34	2 optics with each 9x white light LED, super bright, focused								
SPECTRO-3-85-FCL-45°/45°	85±5 mm	Ø20 mm (85 mm)	205 x 108 x 34									
GENERAL TECHNICAL DATA	**Voltage supply:** +24VDC (± 10%). **Current consumption:** <160 mA … <500 mA. **Transmitter control:** LED mode can be switched via PC software (AC-, DC-, PULSE- or OFF-operation). **Enclosure rating:** IP67 (optics) / IP64 (electronics). **Switching frequency:** typ. 40 kHz. **Type of connector:** 1x 8-pole fem. connector Binder Series 712, 1x 4-pole fem. connector Binder Series 707. **Housing material:** Aluminum, anodized in black. **Operating temperature range:** -20°C…+55°C. **EMC test acc. to:** DIN EN 60947-2.											

Illustrations



SPECTRO-3-50-COF-d3.5-CL
SPECTRO-3-50-COF-d5.5-CL
SPECTRO-3-50-COF-d8.0-CL
SPECTRO-3-50-COF-13x3-CL

SPECTRO-3-100-COF-d3.0-CL
SPECTRO-3-100-COF-d6.0-CL
SPECTRO-3-100-COF-d12.0-CL

SPECTRO-3-200-COF-d6.0-CL
SPECTRO-3-200-COF-d12.0-CL
SPECTRO-3-200-COF-d25.0-CL

SPECTRO-3-300-COF-d8.0-CL
SPECTRO-3-500-COF-d12.0-CL
SPECTRO-3-500-COF-d25.0-CL
SPECTRO-3-500-COF-d50.0-CL

SPECTRO-3-30-DIL-CL
SPECTRO-3-30-DIL-d5-CL
SPECTRO-3-50-DIL-CL
SPECTRO-3-50-DIL-d5-CL

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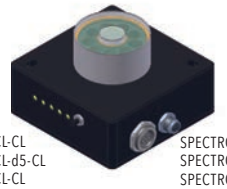
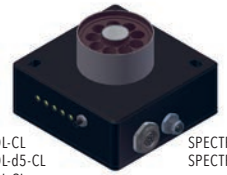
SPECTRO-3-50-FCL-d5-CL

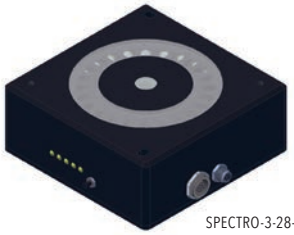


SPECTRO-3-30-POL-CL
SPECTRO-3-30-POL-d5-CL
SPECTRO-3-50-POL-CL
SPECTRO-3-50-POL-d5-CL

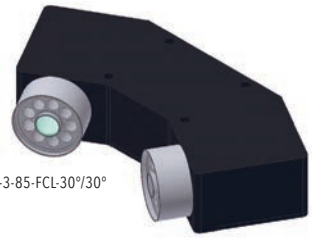


SPECTRO-3-30-UV-CL
SPECTRO-3-30-UV-10x1-CL

SPECTRO-3-FIO-CL



SPECTRO-3-28-45°/0°-CL



SPECTRO-3-85-FCL-30°/30°

SPECTRO-3-85-FCL-45°/45°

SPECTRO-3-…-JR

Color sensors of SPECTRO-3-JR Series (Junior)

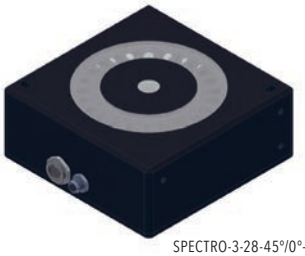
TYPE	OBJECT DISTANCE/ MEASURING RANGE (TYP.)	SIZE OF LIGHT SPOT/ DETECTION RANGE (AT DISTANCE, TYP.)	DIMENSIONS (LxWxH IN MM, WITHOUT CONNECTOR)	LIGHT SOURCE (TRANSMITTER)	RECEIVER	SCAN FREQUENCY	COLOR MEMORY	INPUTS/ OUTPUTS	SWITCHING CURRENT	SOFTWARE/ INTERFACE
SPECTRO-3-80-COF-d20.0-JR	20 … 150 mm	Ø18 mm (80 mm)	65 x 65 x 26	White light LED, super bright	RGB detector: True Color detector, „human color reception". Color filter curves acc. to CIE1931	AC-operation: max. 20 kHz DC-operation: max. 35 kHz PULSE-operation: max. 5 kHz OFF-operation: max. 35 kHz	Non-volatile EEPROM with parameter sets for max. 31 colors	1x digital input: IN0 (0V/+24V) 5x digital output: OUT0 … OUT4 (0/+24V), npn-/pnp-able	Max. 100 mA, short circuit proof	SPECTRO3-Scope or SPECTRO3-COMFORT-Scope, RS232 (USB- and Ethernet adaptor available)
SPECTRO-3-5-DIF-JR	3 … 30 mm	4 mm (3 mm) … 9 mm (30 mm)	65 x 65 x 26	8x white light LED, super bright, diffuse						
SPECTRO-3-30-DIL-JR	15 … 80 mm	10 mm (15 mm) … 32 mm (80 mm)	65 x 65 x 26	8x white light LED, super bright, diffuse						
SPECTRO-3-50-DIL-JR	10 … 100 mm	10 mm (10 mm) … 40 mm (100 mm)	65 x 65 x 26							
SPECTRO-3-30-FCL-JR	15 … 100 mm	12 mm (15 mm) … 35 mm (100 mm)	65 x 65 x 26	8x white light LED, super bright, focused						
SPECTRO-3-50-FCL-JR	10 … 150 mm	12 mm (10 mm) … 29 mm (150 mm)	65 x 65 x 26							
SPECTRO-3-30-POL-JR	15 … 80 mm	11 mm (15 mm) … 27 mm (80 mm)	65 x 65 x 26	8x white light LED, super bright, focused, polarization filter						
SPECTRO-3-50-POL-JR	10 … 100 mm	15 mm (50 mm) … 27 mm (100 mm)	65 x 65 x 26							
SPECTRO-3-30-UV-JR	15 … 40 mm	10 mm (15 mm) … 20 mm (40 mm)	65 x 65 x 26	8x UV-LED, 375 nm						
SPECTRO-3-50-UV-JR	20 … 80 mm	11 mm (20 mm) … 36 mm (80 mm)	65 x 65 x 26							
SPECTRO-3-28-45°/0°-JR	28±3 mm	Ø10 mm	100 x 100 x 40	24x white light LED, super bright, focused						
SPECTRO-3-FIO-JR	1 … 500 mm (depends on optical fiber and frontend)	Ø0.2 mm … Ø20 mm or 3 mm x 0.5 mm … 48 mm x 0.15 mm (depends on optical fiber)	65 x 65 x 36	White light LED, super bright						
SPECTRO-3-FIO-JR-XL	10 … 100 mm (depends on optical fiber and frontend)	Ø2.5 mm … Ø7.8 mm (depends on optical fiber)	65 x 75 x 44.7							
SPECTRO-3-FIO-UV-JR	1 … 500 mm (depends on optical fiber and frontend)	Ø1.5 mm … Ø3 mm or 3 mm x 0.5 mm … 6 mm x 1 mm (depends on optical fiber)	65 x 65 x 36	UV-LED, 375 nm						
SPECTRO-3-SLU-BA-JR + SI-SLU-16	Reflected light operation: 100 … 1000 mm Transmitted light operation: 100 … 5000 mm	Depends on the position of the side light unit to the measuring object	65 x 65 x 45 + 65 x 65 x 26	Side light unit, 16x white light LED						
SPECTRO-3-SLU-SA-JR + SI-SLU-16	Reflected light operation: up to max. 100 mm Transmitted light operation: up to max. 500 mm		65 x 65 x 26 + 65 x 65 x 26							
SPECTRO-3-SLU-SA-JR + SI-SLU-DIF-16			65 x 65 x 26 + 65 x 65 x 26	Side light unit, 16x warm white LED, diffuse						
SPECTRO-3-SLU-UV-SA-JR + SI-SLU-UV-16			65 x 65 x 26 + 65 x 65 x 26	Side light unit, 16x UV-LED, 375 nm						
GENERAL TECHNICAL DATA	**Voltage supply:** +24VDC (± 10%). **Current consumption:** <160 mA … <300 mA. **Transmitter control:** LED mode can be switched via PC software (AC-, DC-, PULSE- or OFF-operation). **Enclosure rating:** IP67 (optics) / IP64 (electronics). **Switching frequency:** typ. 60 kHz. **Type of connector:** 1x 8-pole fem. connector Binder Series 712, 1x 4-pole fem. connector Binder Series 707, only in case of type SLU: each 1x 4-pole fem. connector Binder Series 768. **Housing material:** Aluminum, anodized in black. **Operating temperature range:** -20°C…+55°C. **EMC test acc. to:** DIN EN 60947-2.									

Illustrations

SPECTRO-3-80-COF-d20.0-JR

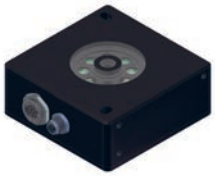
SPECTRO-3-5-DIF-JR

SPECTRO-3-FIO-JR-XL

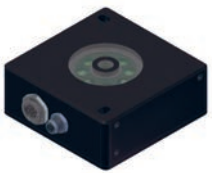


SPECTRO-3-28-45°/0°-JR

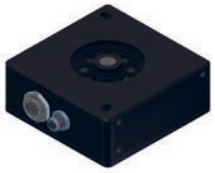
SPECTRO-3-30-DIL-JR
SPECTRO-3-50-DIL-JR



SPECTRO-3-30-FCL-JR
SPECTRO-3-50-FCL-JR



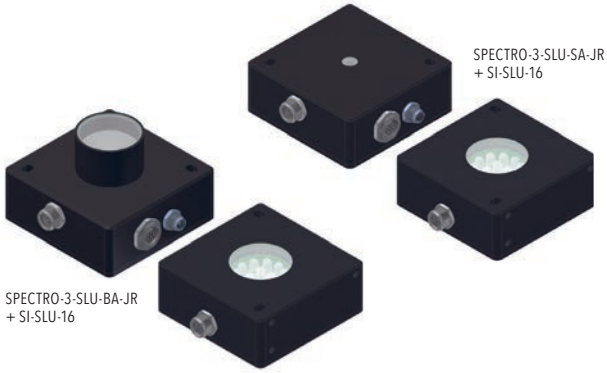
SPECTRO-3-30-POL-JR
SPECTRO-3-50-POL-JR



SPECTRO-3-30-UV-JR
SPECTRO-3-50-UV-JR

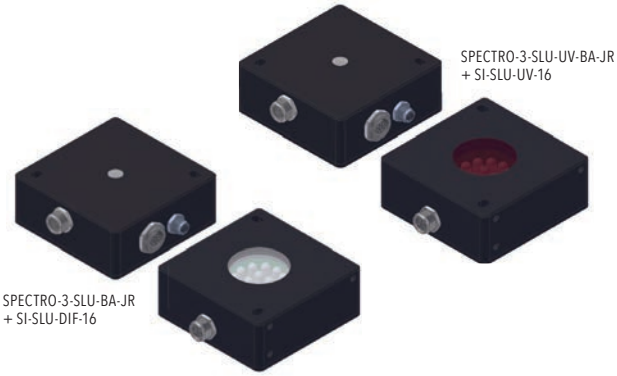
SPECTRO-3-FIO-JR

SPECTRO-3-FIO-UV-JR



SPECTRO-3-SLU-SA-JR
+ SI-SLU-16

SPECTRO-3-SLU-BA-JR
+ SI-SLU-16



SPECTRO-3-SLU-UV-BA-JR
+ SI-SLU-UV-16

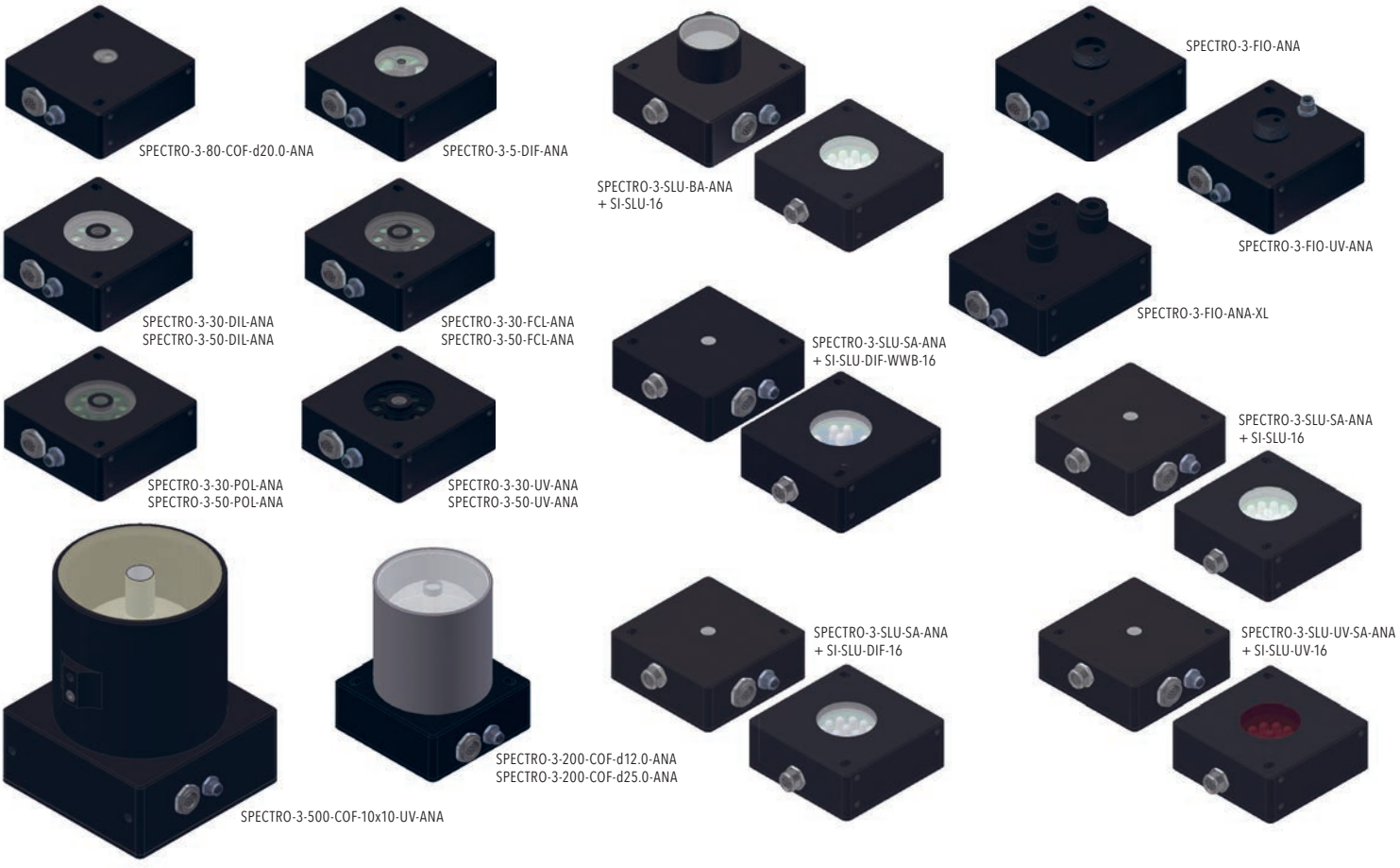
SPECTRO-3-SLU-BA-JR
+ SI-SLU-DIF-16

SPECTRO-3-…-ANA

Color sensors of SPECTRO-3-ANA Series (Analog)

TYPE	OBJECT DISTANCE/ MEASURING RANGE (TYP.)	SIZE OF LIGHT SPOT/ DETECTION RANGE (AT DISTANCE, TYP.)	DIMENSIONS (LxWxH IN MM, WITHOUT CONNECTOR)	LIGHT SOURCE (TRANSMITTER)	RECEIVER	SCAN FREQUENCY	COLOR MEMORY	INPUTS/ OUTPUTS	SWITCHING CURRENT	SOFTWARE/ INTERFACE
SPECTRO-3-80-COF-d20.0-ANA	20 … 150 mm	Ø18 mm (80 mm)	65 x 65 x 26	White light LED, super bright	RGB detector: True Color detector, „human color reception". Color filter curves acc. to CIE1931	AC-operation: max. 25 kHz DC-operation: max. 90 kHz OFF-operation: max. 90 kHz	Non-volatile EEPROM with parameter sets for max. 3 colors (or max. 31 colors in group mode)	1x digital input: IN0 (0V/+24V) 2x digital output: OUT0, OUT1 (0/+24V), npn-/pnp-able 3x analog output: ANA OUT red ANA OUT green ANA OUT blue, the three outputs either provide the red, green, blue components or the calculated color coordinates (X, Y, INT or s, i, M) from 0…+10V or 4…20mA	Max. 100 mA, short circuit proof	SPECTRO3-ANA-Scope, RS232 (USB- and Ethernet adaptor available)
SPECTRO-3-200-COF-d12.0-ANA	50 … 500 mm	Ø12 mm (200 mm)	65 x 65 x 82							
SPECTRO-3-200-COF-d25.0-ANA	50 … 500 mm	Ø26 mm (200 mm)	65 x 65 x 82							
SPECTRO-3-500-COF-10x10-UV-ANA	100 … 2000 mm	10x10 mm (500 mm)	90 x 90 x 116	UV-LED, 375 nm						
SPECTRO-3-5-DIF-ANA	3 … 30 mm	4 mm (3 mm) … 9 mm (30 mm)	65 x 65 x 26	8x white light LED, super bright, diffuse						
SPECTRO-3-30-DIL-ANA	15 … 80 mm	10 mm (15 mm) … 32 mm (80 mm)	65 x 65 x 26	8x white light LED, super bright, diffuse						
SPECTRO-3-50-DIL-ANA	10 … 100 mm	10 mm (10 mm) … 40 mm (100 mm)	65 x 65 x 26							
SPECTRO-3-30-FCL-ANA	15 … 100 mm	12 mm (15 mm) … 35 mm (100 mm)	65 x 65 x 26	8x white light LED, super bright, focused						
SPECTRO-3-50-FCL-ANA	10 … 150 mm	12 mm (10 mm) … 29 mm (150 mm)	65 x 65 x 26							
SPECTRO-3-30-POL-ANA	15 … 80 mm	11 mm (15 mm) … 27 mm (80 mm)	65 x 65 x 26	8x white light LED, super bright, focused, polarization filter						
SPECTRO-3-50-POL-ANA	10 … 100 mm	15 mm (50 mm) … 27 mm (100 mm)	65 x 65 x 26							
SPECTRO-3-30-UV-ANA	15 … 40 mm	10 mm (15 mm) … 20 mm (40 mm)	65 x 65 x 26	8x UV-LED, 375 nm						
SPECTRO-3-50-UV-ANA	20 … 80 mm	11 mm (20 mm) … 36 mm (80 mm)	65 x 65 x 26							
SPECTRO-3-FIO-ANA	1 … 500 mm (depends on optical fiber and frontend)	Ø0.2 mm … Ø20 mm or 3 mm x 0.5 mm … 48 mm x 0.15 mm (depends on optical fiber)	65 x 65 x 36	White light LED, super bright						
SPECTRO-3-FIO-ANA-XL	10 … 100 mm (depends on optical fiber and frontend)	Ø2.5 mm … Ø7.8 mm (depends on optical fiber)	65 x 75 x 44.7							
SPECTRO-3-FIO-UV-ANA	1 … 500 mm (depends on optical fiber and frontend)	Ø1.5 mm … Ø3 mm or 3 mm x 0.5 mm … 6 mm x 1 mm (depends on optical fiber)	65 x 65 x 36	UV-LED, 375 nm						
SPECTRO-3-SLU-BA-ANA + SI-SLU-16	Reflected light operation: 100 … 1000 mm Transmitted light operation: 100 … 5000 mm	position of the side light unit to the measuring object	65 x 65 x 45 + 65 x 65 x 26	Side light unit, 16x white light LED						
SPECTRO-3-SLU-SA-ANA + SI-SLU-16	Reflected light operation: up to max. 100 mm Transmitted light operation: up to max. 500 mm		65 x 65 x 26 + 65 x 65 x 26							
SPECTRO-3-SLU-SA-ANA + SI-SLU-DIF-16			65 x 65 x 26 + 65 x 65 x 26	Side light unit, 16x warm white LED, diffuse						
SPECTRO-3-SLU-SA-ANA + SI-SLU-DIF-WWB-16			65 x 65 x 26 + 65 x 65 x 26	Side light unit, 10x warm white LED, 6x blue LED, diffuse						
SPECTRO-3-SLU-UV-SA-ANA + SI-SLU-UV-16			65 x 65 x 26 + 65 x 65 x 26	Side light unit, 16x UV-LED, 375 nm						
GENERAL TECHNICAL DATA	**Voltage supply:** +24VDC (± 10%). **Current consumption:** <160 mA … <300 mA. **Transmitter control:** LED mode can be switched via PC software (AC-, DC- or OFF-operation). **Enclosure rating:** IP67 (optics) / IP64 (electronics). **Switching frequency:** typ. 60 kHz. **Type of connector:** 1x 8-pole fem. connector Binder Series 712, 1x 4-pole fem. connector Binder Series 707, only in case of type SLU: each 1x 4-pole fem. connector Binder Series 768. **Housing material:** Aluminum, anodized in black. **Operating temperature range:** -20°C…+55°C. **EMC test acc. to:** DIN EN 60947-2.									

Illustrations



FIO Series

Glass fiber optics (reflected light or transmitted light) and optical frontends

Only a few types are shown here. Find the **COMPLETE ASSORTMENT** and **ALL SPECIFICATIONS** on our Website or in the catalog for FIO Series.

OPTICAL FIBER HEAD TYPES, E.G.

Reflected light fiber optics: R-S-A1.1-(1.5)-... R-S-A2.0-(2.5)-... R-S-A3.0-(3.0)-... **Transmitted light fiber optics:** D-S-A1.1-(1.5)-... D-S-A2.0-(2.5)-... D-S-A3.0-(3.0)-... 	**Reflected light fiber optics:** T-S-M5.0-(5.0)-... T-S-M6.0-(6.0)-... T-S-M8.0-(8.0)-... 	**Reflected light fiber optics:** R-S-R1.1-(3x0.5)-... R-S-R2.1-(6x1)-... 

OPTICAL FRONTENDS, E.G.

KL-1-A2.0 	**KL-2-A2.0** 	**KL-3-A2.0** **KL-4-A1.1** **KL-5-R1.1** **KL-8-R2.1** **KL-9-A3.0** 
KL-3/90°-A2.0 **KL-8/90°-R2.1** 	**KL-90-A2-0** 	**KL-M8-A1.1** 
KL-M12-A1.1 **KL-M12-A2.0** **KL-M12-A3.0** **KL-M12-R1.1** 	**KL-M12-XL-A1.1** **KL-M12-XL-A2.0** **KL-M12-XL-R1.1** 	**KL-M12/90°-XL-A2.0** 
KL-M18-A1.1 **KL-M18-A2.0** **KL-M18-A3.0** **KL-M18-M5.0** **KL-M18-M6.0** **KL-M18-M8.0** **KL-M18-R1.1** **KL-M18-R2.1** 	**KL-M18-XL-A1.1** **KL-M18-XL-A2.0** **KL-M18-XL-A3.0** **KL-M18-XL-M5.0** **KL-M18-XL-M6.0** **KL-M18-XL-M8.0** **KL-M18-XL-R1.1** **KL-M18-XL-R2.1** 	**KL-M18-XL-0°/(17°-60°)-30-M5.0** 
KL-M34-A1.1 **KL-M34-A2.0** **KL-M34-A3.0** **KL-M34-M5.0** **KL-M34-M6.0** **KL-M34-M8.0** **KL-M34-R1.1** **KL-M34-R2.1** 	**KL-M34-XL-A1.1** **KL-M34-XL-A2.0** **KL-M34-XL-A3.0** **KL-M34-XL-M5.0** **KL-M34-XL-M6.0** **KL-M34-XL-M8.0** **KL-M34-XL-R1.1** **KL-M34-XL-R2.1** 	**KL-M34/62-A1.1** **KL-M34/62-A2.0** **KL-M34/62-A3.0** **KL-M34/62-R1.1** **KL-M34/62-R2.1** 
KL-D-0°/2.5°-300-A2.0 	**KL-D-0°/45°-30-A2.0** **KL-D-0°/45°-30-A3.0** 	**KL-D-6°-200-A2.0** 
KL-D-10°-45-POL-A3.0 	**KL-D-14°-84-A2.0** 	**KL-D-17°-49-A2.0** 
KL-D-20°-31-A2.0 	**KL-D-28°-26-A2.0** 	**KL-D-30°-23-A2.0** 
KL-D-40°-13-A2.0 	**KL-D-M12-0°/30°-9-A2.0** **KL-D-M12-0°/30°-9-A3.0** 	**KL-D-M12-XL-0°/30°-30-A2.0** 

Accessories

Mounting devices

MOUNTING DEVICES FOR COLOR SENSORS SPECTRO-3-SLU-... (RECEIVER) WITH SIDE LIGHT UNIT SI-SLU-... (TRANSMITTER) IN REFLECTED LIGHT OPERATION:
MOUNT-SLU-10°/10°-210, MOUNT-SLU-20°/20°-100, MOUNT-SLU-45°/45°-55, MOUNT-SLU-60°/60°-55.
MOUNTING DEVICES FOR COLOR SENSORS SPECTRO-3-SLU-... (RECEIVER) WITH SIDE LIGHT UNIT SI-SLU-... (TRANSMITTER) IN TRANSMITTED LIGHT OPERATION: **MOUNT-SLU-80/200, MOUNT-SLU-80/500.**

e.g.
SPECTRO-3-SLU-SA-ANA
+ SI-SLU-DIF-WWB-16

+ MOUNT-SLU-10°/10°-210

e.g.
SPECTRO-3-SLU-SA-ANA
+ SI-SLU-DIF-WWB-16

+ MOUNT-SLU-20°/20°-100

e.g.
SPECTRO-3-SLU-SA-ANA
+ SI-SLU-DIF-WWB-16

+ MOUNT-SLU-45°/45°-55

e.g.
SPECTRO-3-SLU-SA-ANA
+ SI-SLU-DIF-WWB-16

+ MOUNT-SLU-60°/60°-55

e.g.
SPECTRO-3-SLU-SA-ANA
+ SI-SLU-DIF-WWB-16

+ MOUNT-SLU-80/200

e.g.
SPECTRO-3-SLU-SA-ANA
+ SI-SLU-DIF-WWB-16

+ MOUNT-SLU-80/500

Sensor Instruments

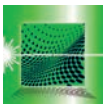
Let's make sensors more individual

Manufacturer

Sensor Instruments Entwicklungs- und Vertriebs GmbH

Further product lines

Distance measurement and positioning



Surface inspection and counting

Product marking and product tracking

Fiber optics and accessories

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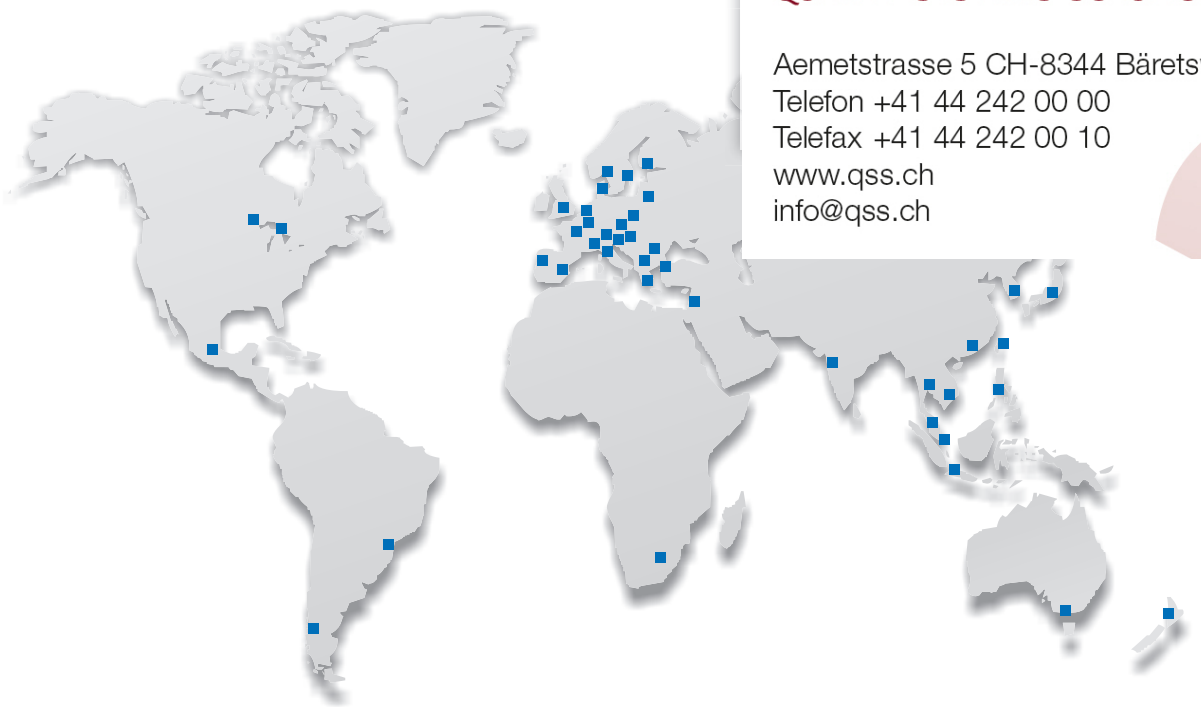

11/2014