product family	FKDM 22	FKDM 22	FKDM 22
	LOGIPAL	*LOGIPAL*	*LOGIPAL*
sensing distance Tw	40 mm	40 mm	25 mm
sensor channels	4 (teachable)	2 (teachable)	4 (teachable)
size of measuring spot	3 mm x 5 mm	3 mm x 5 mm	0,7 mm x 1,3 mm
response time / release time	< 0,34 ms	< 0,34 ms	< 0,34 ms
light source	LED red / green / blue	LED red / green / blue	LED red / green / blue
output circuit	NPN PNP	NPN PNP	PNP
device plug	connector M12, 8 pin, rotatable	connector M12, 8 pin, rotatable	connector M12, 8 pin, rotatable
page	420	421	422

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Color sensors *LOGIPAL*

|	
General information	With the ***LOGIPAL*** color detection sensor, you can now use the color as a solution for sorting, quality monitoring and automation in your processes.
Applications	- Objects can be monitored and sorted by colored marks. - The correct color of objects can be inspected or the objects can be sorted by their color.

Characteristics and advantages	- Simple operation:
	  Four different colors can be programmed with just three buttons.
	- Finest color graduation:
	  One of five tolerance stages can be chosen for each color.
	- Short response time:
	  With a response time of only 0,34 ms, high detection rates can be achieved.
	- Synchronzation input:
	  Allows controlled measurement of the color.
	- External Teach-in input:
	  Allows complete remote control of all Teach-in functions by serial data transfer. An RS 232 interface transducer with galvanic isolation is available as an accessory.

Technology and operation	The sensor operates by the three-stage principle, meaning that it emits the three colors red, green and blue and then measures the color proportions of the three colors reflected by the object. The color of an object is programmed in the Teach-in procedure. If the sensor recognizes this color again during operation, it activates the corresponding output. Optional tolerances permit it to detect large or small differences in color.
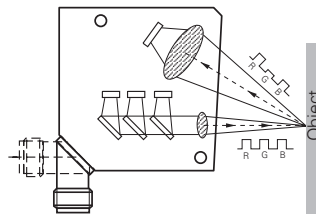
Mounting and adjustment	The use of the color sensor is as simple as for a diffuse sensor. Only the points below must be observed. - For glossy objects, tilt the sensor to the side by approve. 15 °. - If you wish to detect very fine differences in color, the sensing distance of 40 mm ha to be adhered.

Tw = 40 mm

- up to 4 colors can be distinguished properly
- spot size 3 x 5 mm
- rugged metal housing

general data

sensing distance Tw	40 mm
sensor channels	4 (teachable)
tolerance ranges	5-step teachable (LEDs)
size of measuring spot	3 mm x 5 mm
light source	LED red / green / blue
signal display (Teach)	LED orange
channel status display	LED yellow per channel
power on indication	LED green

electrical data

response time / release time	< 0,34 ms
voltage supply range +Vs	10 ... 30 VDC
power consumption	< 2 W
output function	light operate
voltage drop Vd	< 1,8 VDC
output current (per channel)	< 100 mA
remote Teach-In input	protocol with return signal through channel 1-output
level (sync., teach)	high: 2/3 Vs...Vs low: 0 V...1/3 Vs
short circuit protection	yes
reverse polarity protection	yes

mechanical data

width / diameter	22,9 mm
type	rectangular
housing material	die-cast zinc
front (optics)	glass
device plug	connector M12, 8 pin, rotatable

ambient conditions

operating temperature	-10 ... +55 °C
protection class	IP 67

connectors and mating connectors

ESG 34FH0200G	Connector M12, 8 pin, straight, 2 m, shielded
ESW 33FH1000G	Connector M12, 8 pin, angular, 10 m, shielded

additional cable connectors and field wireable connectors: see accessories

Accessories

10126220	Mounting bracket series 22 L design

for details: see accessories section

remarks

Complete remote control of the sensor is possible using the "Ext. Teach" input. The converter RS 232 is neccessary.

dimension drawing

* emitter axis

connection diagrams

* only in the 4-channel version

* only in the 4-channel version

order reference	output circuit	sync. input
FKDM 22N1901/S14F	NPN	high active
FKDM 22P1901/S14F	PNP	low active
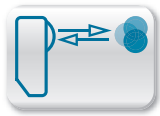
Tw = 40 mm

- up to 2 colors can be distinguished properly
- spot size 3 x 5 mm
- rugged metal housing

general data

sensing distance Tw	40 mm
sensor channels	2 (teachable)
tolerance ranges	5-step teachable (LEDs)
size of measuring spot	3 mm x 5 mm
light source	LED red / green / blue
signal display (Teach)	LED orange
channel status display	LED yellow per channel
power on indication	LED green

electrical data

response time / release time	< 0,34 ms
voltage supply range +Vs	10 ... 30 VDC
power consumption	< 2 W
voltage drop Vd	< 1,8 VDC
output current (per channel)	< 100 mA
remote Teach-In input	protocol with return signal through channel 1-output
level (sync., teach)	high: 2/3 Vs...Vs low: 0 V...1/3 Vs
short circuit protection	yes
reverse polarity protection	yes

mechanical data

width / diameter	22,9 mm
type	rectangular
housing material	die-cast zinc
front (optics)	glass
device plug	connector M12, 8 pin, rotatable

ambient conditions

operating temperature	-10 ... +55 °C
protection class	IP 67

connectors and mating connectors

ESG 34FH0200G	Connector M12, 8 pin, straight, 2 m, shielded
ESW 33FH1000G	Connector M12, 8 pin, angular, 10 m, shielded

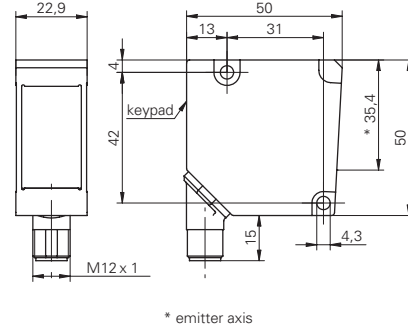additional cable connectors and field wireable connectors: see accessories

Accessories

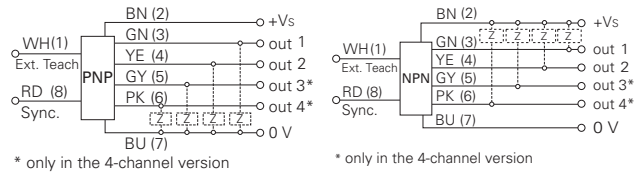|	
10126220	Mounting bracket series 22 L design

for details: see accessories section

remarks

Complete remote control of the sensor is possible using the "Ext. Teach" input. The converter RS 232 is neccessary.

dimension drawing

22,9   50   13   31   4   keypad   42   * 35,4   50   15   4,3   M12 x 1

* emitter axis

connection diagrams

WH(1) Ext. Teach   RD (8) Sync.   BN (2)   GN (3)   YE (4)   GY (5)   PK (6)   BU (7)   PNP   +Vs   out 1   out 2   out 3*   out 4*   0 V

* only in the 4-channel version

WH(1) Ext. Teach   RD (8) Sync.   BN (2)   GN (3)   YE (4)   GY (5)   PK (6)   BU (7)   NPN   +Vs   out 1   out 2   out 3*   out 4*   0 V

* only in the 4-channel version

order reference	output circuit	output function	sync. input
FKDM 22N1902/S14F	NPN	light operate	high active
FKDM 22P1902/S14F	PNP	light operate	low active
FKDM 22P3902/S14F	PNP	dark operate	low active

Tw = 25 mm

- up to 4 colors can be distinguished properly
- spot size 0,7 x 1,3 mm
- rugged metal housing

general data

sensing distance Tw	25 mm
sensor channels	4 (teachable)
tolerance ranges	5-step teachable (LEDs)
size of measuring spot	0,7 mm x 1,3 mm
light source	LED red / green / blue
signal display (Teach)	LED orange
channel status display	LED yellow per channel
power on indication	LED green

electrical data

response time / release time	< 0,34 ms
voltage supply range +Vs	10 ... 30 VDC
power consumption	< 2 W
output circuit	PNP
output function	light operate
voltage drop Vd	< 1,8 VDC
output current (per channel)	< 100 mA
remote Teach-In input	protocol with return signal through channel 1-output
sync. input	low active
level (sync., teach)	high: 2/3 Vs...Vs low: 0 V...1/3 Vs
short circuit protection	yes
reverse polarity protection	yes

mechanical data

width / diameter	22,9 mm
type	rectangular
housing material	aluminum anodized
front (optics)	glass
device plug	connector M12, 8 pin, rotatable

ambient conditions

operating temperature	-10 ... +55 °C
protection class	IP 67

connectors and mating connectors

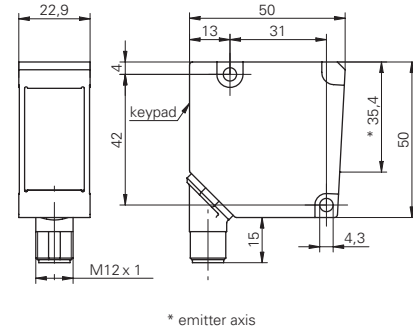|	
ESG 34FH0200G	Connector M12, 8 pin, straight, 2 m, shielded
ESW 33FH1000G	Connector M12, 8 pin, angular, 10 m, shielded
additional cable connectors and field wireable connectors: see accessories	

Accessories

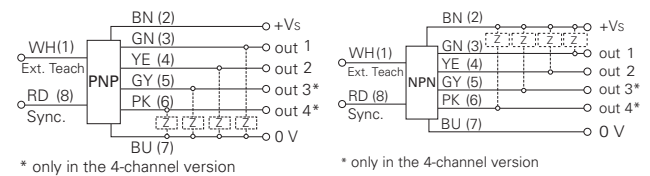|	
10126220	Mounting bracket series 22 L design
for details: see accessories section	

remarks

Complete remote control of the sensor is possible using the "Ext. Teach" input. The converter RS 232 is neccessary.

order reference

FKDM 22P1911/S14F

dimension drawing

* emitter axis

connection diagrams

WH(1) Ext. Teach	BN (2) +Vs
RD (8) Sync.	GN (3) out 1
	YE (4) out 2
PNP	GY (5) out 3*
	PK (6) out 4*
	BU (7) 0 V

* only in the 4-channel version

WH(1) Ext. Teach	BN (2) +Vs
RD (8) Sync.	GN (3) out 1
	YE (4) out 2
NPN	GY (5) out 3*
	PK (6) out 4*
	BU (7) 0 V

* only in the 4-channel version