





product family	ZADM 034	ZADM 034
		
	<i>ParCon</i>	<i>ParCon</i>
type	measuring mode: edges, width	switchable
measuring field size	24 mm	24 mm
measuring range towards object	0 ... 40 mm	0 ... 40 mm
measuring frequency	> 1000 Hz	> 4000 Hz
output signal	4 ... 20 mA	
PNP		■
analog	■	
connector	■	■
Page	530	532

product family	ZADM 023	ZADM 023
		
	<i>PosCon</i>	<i>PosCon</i>
type	measuring mode: edges, center, width	measuring mode: edges, center, width
measuring field size	30 mm 150 mm 350 mm	
measuring field size (dep. on measuring dist.)		400 ... 875 mm
measuring distance (to object)	50 mm 200 mm 500 mm	
measuring range towards object		640 ... 1400 mm
measuring frequency	> 500 Hz	> 500 Hz
analog and RS 485	■	■
output signal	4 ... 20 mA	4 ... 20 mA
connector	■	■
Page	534	536



General information

Line sensors are used to detect object widths and object positions. The position / width is issued as an analog value with high accuracy proportional to the overall measuring area. Although smaller than a deck of playing cards, the sensors contain not only the complete signal conditioning, but also a long-life illumination unit.

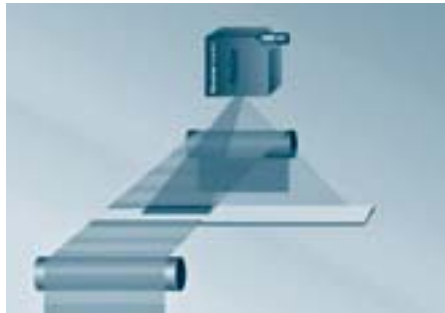
The simple switching version of the *ParCon* also permits the detection of small objects within the measuring area.

Applications



Edge recognition (*PosCon*, *ParCon*)

- Control of textile, plastic or paper edges
- Positioning of objects by the edge
- Level measurement



Width measurement (*PosCon*, *ParCon*)

- Width inspection during the production of fabric and rubber bands



Center position (*PosCon*)

- Position measurement by the object center, by which bands or objects of different width can be aligned centrally to each other



Counting and detecting objects (*ParCon*), switching output

- Detection and counting of small objects falling through the measurement area
- Wire and belt break monitoring



Characteristics and advantages

ParCon line sensor

- The two measuring modes (edge, center) can be set at the push of a button.
- Due to the parallel light beams, the vertical movement of fabric webs does not affect the measurement signal.
- The high measuring frequency of 1000 Hz in the analog sensor also permits rapid movements to be detected.
- Due to the high switching frequency of 4 kHz, even small, rapidly moving parts are reliably detected.

PosCon line sensor

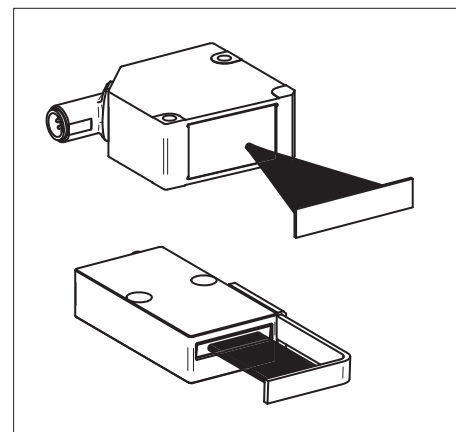
- The measuring area can be restricted by a simple Teach-in process to suppress interfering objects and areas.
- The three different measuring modes (width, edge, center) can be set simply at the push of a button.
- Two threshold values can be programmed with the Teach-in button and serve as tolerance limits for the switching output.
- All functions available with the buttons can also be operated via an RS 485 interface.
- The position and other information can be read via the interface.
- Measurement is possible on transparent objects and films.

Technology and operation

With the line sensors, the light of the integrated illumination is reflected by a reflective film (special film) installed opposite the sensor and is received by the diode line. The length of the diode line and the optics determine the measuring area. Due to the narrow diode line, the measuring area is also only a narrow band. If an object obstructs a part of the light, no light falls on the corresponding part of the diode line. The integrated microcontroller processes the shaded areas and the transitions from dark to light and calculates the corresponding analog value according to the measuring mode.

The optics of the *PosCon* and the *ParCon* are constructed differently. The *PosCon* has a diverging measuring field. This makes large measuring areas of up to 800 mm possible. The specified measuring area is achieved at the nominal distance. It becomes larger or smaller proportionally with the distance. This causes an object to appear larger or smaller according to the distance.

The *ParCon* has a parallel measuring field, making an object appear equal in size in the entire measuring area.

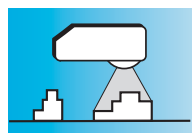


Mounting and adjustment

The reflective tape specified in the documentation must be used for the *PosCon* and *ParCon*.

If the reflective tape is protected against abrasion by a Plexiglas or glass sheet, this must be tilted 7° to the sensor to ensure that the direct reflection does not reflect to the receiver. The reflective tape for the ParCon is covered by a protective film.

If highly reflective objects are measured, it is conceivable that a direct reflection will occur just as strong as the light from the reflective film. In this case, measuring errors can occur. This can be prevented by tilting the object away from the sensor.



measuring range = 0 ... 40 mm

- measuring of edge position and object width
- parallel, uniform light beam
- high measuring frequency

general data

type	measuring mode: edges, width
measuring field size	24 mm
measuring range towards object	0 ... 40 mm
measuring frequency	> 1000 Hz
resolution	< 0,05 mm
smallest object recognizable	1 mm
linearity error	± 0,4 mm (S = 0...40 mm) ± 0,2 mm (S = 20...40 mm)
repeatability	< 0,05 mm
power on indication	LED green
output indicator	LED yellow
light source	pulsed infrared diode
wave length	880 nm

electrical data

response time	< 1 ms
voltage supply range +Vs	12 ... 28 VDC
current consumption max.	120 mA
output circuit	analog
output signal	4 ... 20 mA
reverse polarity protection	yes, Vs to GND
short circuit protection	yes

mechanical data

housing material	aluminum
front (optics)	glass
connection types	connector M8, 4 pin

ambient conditions

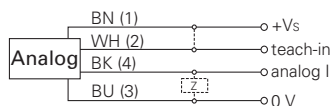
operating temperature	0 ... +55 °C
protection class	IP 67

remarks

reflector bracket can be replaced with a reflective tape.

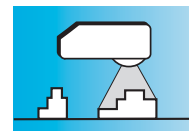
order reference**type**

ZADM 034I240.0001	rectangular, side view
ZADM 034I240.0021	rectangular, front view

**connection diagram****connectors**

ESG 32AP0200G	4 pin	2 m straight (shielded)
ESG 32AP0500G	4 pin	5 m straight (shielded)
ESW 31AP0500G	4 pin	5 m angular (shielded)

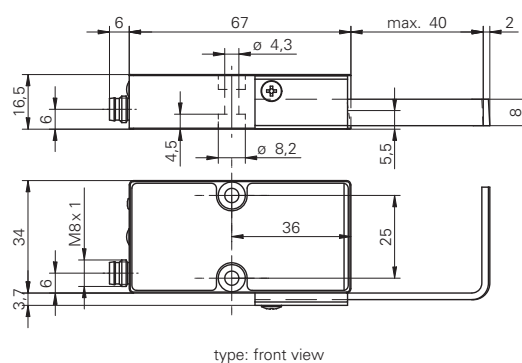
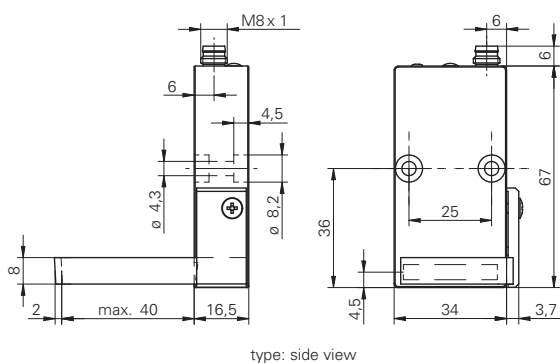
additional cable connectors and field wireable connectors, see accessories

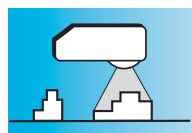


reflectors

FTDF 012M050	tape 12 x 50 mm
FTDR 008M030/01	bracket for ZADM 034x240.xx01
FTDR 008M030/21	bracket for ZADM 034x240.xx21
included in delivery	
optional	
FTDF 050M234	tape 50 x 234 mm

dimension drawings





measuring range = 0 ... 40 mm

- detection of small objects
- measuring area 24 x 40 mm
- high measuring frequency

general data

type	switchable
measuring field size	24 mm
measuring range towards object	0 ... 40 mm
measuring frequency	> 4000 Hz
resolution	< 0,1 mm
smallest object recognizable	0,5 mm
hysteresis	0,4 mm
power on indication	LED green
light source	pulsed infrared diode
wave length	880 nm
adjustment	Teach-in

electrical data

response time	< 0,25 ms
output pulse length	10 ms
voltage supply range +Vs	12 ... 28 VDC
current consumption max.	120 mA
output circuit	PNP
output function	light / dark operate
output current	< 100 mA
voltage drop Vd	< 2,2 VDC
reverse polarity protection	yes, Vs to GND
short circuit protection	yes

mechanical data

housing material	aluminum
front (optics)	glass
connection types	connector M8, 4 pin

ambient conditions

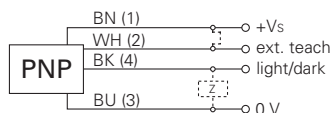
operating temperature	0 ... +55 °C
protection class	IP 67

remarks

reflector bracket can be replaced with a reflective tape.

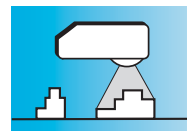
order reference

order reference	type
ZADM 034P240.6901	rectangular, side view
ZADM 034P240.6921	rectangular, front view

**connection diagram****connectors**

ESG 32AP0200G	4 pin	2 m straight (shielded)
ESG 32AP0500G	4 pin	5 m straight (shielded)
ESW 31AP0500G	4 pin	5 m angular (shielded)

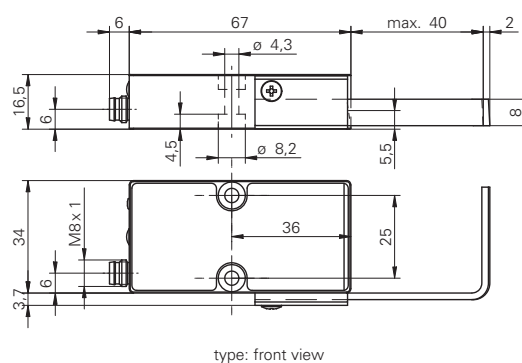
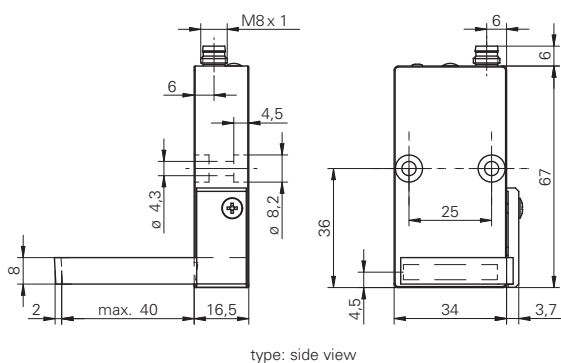
additional cable connectors and field wireable connectors, see accessories

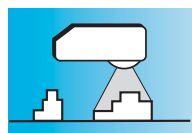


reflectors

FTDF 012M050	tape 12 x 50 mm
FTDR 008M030/01	bracket for ZADM 034x240.xx01
FTDR 008M030/21	bracket for ZADM 034x240.xx21
included in delivery	
optional	
FTDF 050M234	tape 50 x 234 mm

dimension drawings





measuring field size = 350 mm

- Teach-in measuring range
- measuring mode: edges, center, width
- RS 485 interface



general data	
type	measuring mode: edges, center, width
version	with filter for transparent objects
measuring frequency	> 500 Hz
linearity error relative	< 0,3 %
light source	pulsed infrared diode
wave length	880 nm
adjustment	Teach-in

measuring field size = 30 mm	
measuring distance (to object)	50 mm
resolution	< 0,03 mm
smallest object recognizable	0,3 mm

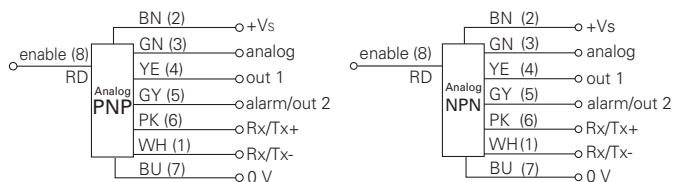
measuring field size = 150 mm	
measuring distance (to object)	200 mm
resolution	< 0,15 mm
smallest object recognizable	1,2 mm

measuring field size = 350 mm	
measuring distance (to object)	500 mm
resolution	< 0,35 mm
smallest object recognizable	4 mm

electrical data	
response time	< 2 ms
voltage supply range +Vs	15 ... 28 VDC
current consumption max.	150 mA
output signal	4 ... 20 mA
output current	< 100 mA
interface	analog and RS 485
reverse polarity protection	yes, Vs to GND
short circuit protection	yes

mechanical data	
type	rectangular
housing material	die-cast zinc
front (optics)	glass
connection types	connector M12, 8 pin, rotatable

connection diagrams



connectors

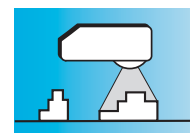
ESG 34FP0200B	8 pin	2 m straight (shielded)
ESG 34FP0500B	8 pin	5 m straight (shielded)

additional cable connectors and field wireable connectors, see accessories

ambient conditions

operating temperature	0 ... +55 °C
protection class	IP 67

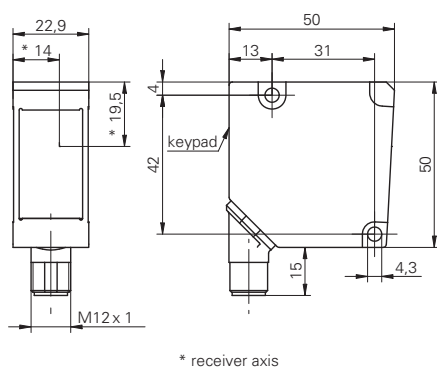
order reference	measuring field size	output function	switching output
ZADM 023H151.0001	150 mm	Out 1 / Alarm	PNP
ZADM 023H151.0002	150 mm	Out 1 / Alarm	NPN
ZADM 023H151.0011	150 mm	Out 1 / Out 2	PNP
ZADM 023H151.0012	150 mm	Out 1 / Out 2	NPN
ZADM 023H300.0001	30 mm	Out 1 / Alarm	PNP
ZADM 023H300.0002	30 mm	Out 1 / Alarm	NPN
ZADM 023H300.0011	30 mm	Out 1 / Out 2	PNP
ZADM 023H300.0012	30 mm	Out 1 / Out 2	NPN
ZADM 023H351.0001	350 mm	Out 1 / Alarm	PNP
ZADM 023H351.0002	350 mm	Out 1 / Alarm	NPN
ZADM 023H351.0011	350 mm	Out 1 / Out 2	PNP
ZADM 023H351.0012	350 mm	Out 1 / Out 2	NPN

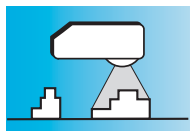


reflectors

		reflector	reflector tape on reel		reflective tape	
measuring range	30 mm	FTDR 005I040	FTDL 005I000/... m	width 5 mm	FTDF 005I040	5 x 40 mm
measuring range	150 mm	FTDR 020I175	FTDL 020I000/... m	width 20 mm	FTDF 020I175	20 x 175 mm
measuring range	350 mm	FTDR 035I395	FTDL 035I000/... m	width 35 mm	FTDF 035I395	35 x 395 mm
			FTDL 610I000/... m	width 610 mm		

dimension drawing





measuring field size = 875 mm

- Teach-in measuring range
- measuring mode: edges, center, width
- RS 485 interface



general data

type	measuring mode: edges, center, width
version	without filter for transparent objects
measuring field size (dep. on measuring dist.)	400 ... 875 mm
measuring range towards object	640 ... 1400 mm
measuring frequency	> 500 Hz
resolution	0,5 ... 1 mm
smallest object recognizable	8,5 ... 18 mm
linearity error relative	< 0,3 %
light source	pulsed infrared diode
wave length	880 nm
adjustment	Teach-in

electrical data

response time	< 2 ms
voltage supply range +Vs	15 ... 28 VDC
current consumption max.	150 mA
output signal	4 ... 20 mA
output current	< 100 mA
interface	analog and RS 485
reverse polarity protection	yes, Vs to GND
short circuit protection	yes

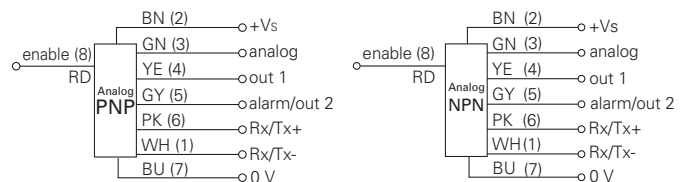
mechanical data

type	rectangular
housing material	die-cast zinc
reflector width	50 mm
front (optics)	glass
connection types	connector M12, 8 pin, rotatable

ambient conditions

operating temperature	0 ... +55 °C
protection class	IP 67

connection diagrams



connectors

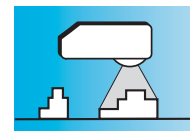
ESG 34FP0200B	8 pin	2 m straight (shielded)
ESG 34FP0500B	8 pin	5 m straight (shielded)

additional cable connectors and field wireable connectors, see accessories

order reference	output function	switching output
ZADM 023H871.0001	Out 1 / Alarm	PNP
ZADM 023H871.0002	Out 1 / Alarm	NPN
ZADM 023H871.0011	Out 1 / Out 2	PNP
ZADM 023H871.0012	Out 1 / Out 2	NPN

ZADM 023 measuring field size = 875 mm

Line sensors PosCon



reflectors

FTDL 050I000/... m	on reel, width 35 mm
FTDL 610I000/... m	on reel, width 610 mm

conversion factors

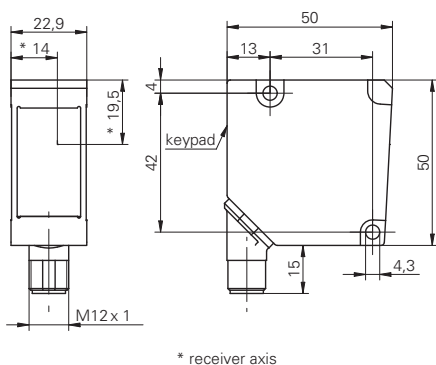
measuring distance (mm)	measuring range (mm)
640	400
1400	875
meas. distance : meas. range	= 1,6

measuring distance (mm)	smallest object (mm)
640	8,5
1400	18
meas. distance : smallest object	= 75

measuring distance (mm)	resolution (mm)
640	0,5
1400	1
meas. distance : resolution	= 1300

example	desired measuring range	= 650 mm
meas. distance	650 mm x 1,6	= 1040 mm
resolution	1040 mm : 1300	= 0,8 mm
smallest object	1040 mm : 75	= 13,9 mm

dimension drawing



ZADM 023 measuring field size = 875 mm

Line sensors PosCon