



CONVINCING SOLUTIONS – SENSORS FOR PACKAGING TECHNOLOGY



CONVINCING PACKAGING SOLUTIONS – PEPPERL+FUCHS OFFERS INFINITE POSSIBILITIES

The following product overview shows suitable sensors for your application in packaging technology:

- See our large selection of photoelectric standard sensors for fast feed systems, filling, metering, sealing, packaging, grouping and cartoning.
- For detecting arbitrary objects - independent of their brightness, composition, structure and colour - see our selection of reflex light beam switches with background suppression.
- Improve efficiency with our light barriers for shrink film packaging and glass detection.
- Our colour and printing mark scanners are suitable for the detection of printing, colour and pattern marks.
- Our large selection of light guides offer solutions for space-restricted applications.
- Rotary encoders and inductive sensors for the positioning of machine components.
- Need to check the contents and level control? No problem with our capacitive or ultrasonic sensors.
- Our vision sensors are used for demanding tasks in quality assurance.
- For the identification of objects, it is recommended that you use the reader and monitoring units for barcodes and Data Matrix codes.
- AS-Interface for the intelligent cabling of the sensor technology.
- To meet safety at work and personal security standards, we offer a series of photoelectric safety sensors and the corresponding monitoring units in the safety categories 2 and 4.
- Looking for the matching accessories? Take a look at this brochure.

If you feel something is missing ... tell us about it!

Pepperl+Fuchs – specialists in Sensor Technology for over half a century with worldwide presence – is already working on the solutions to your requirements of tomorrow!

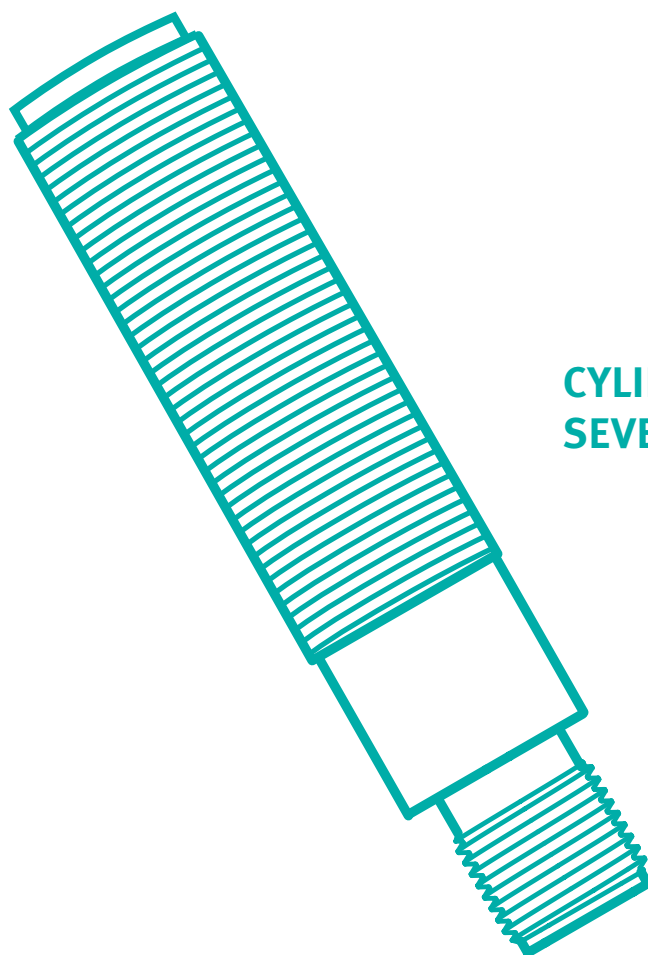
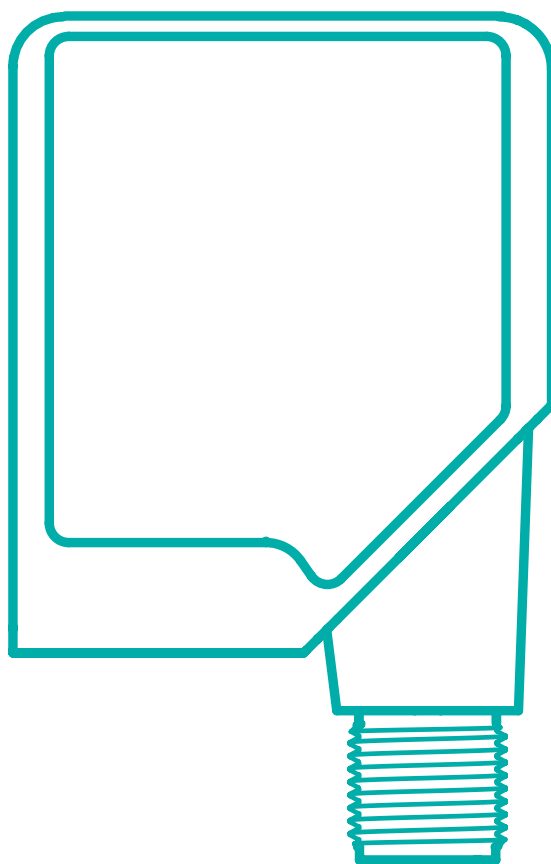




**TWO HOUSING TYPES
WITH DIFFERENT PRINCIPLES
OF OPERATION MEET UP TO
YOUR REQUIREMENTS ...**

SQUARE-SHAPED SENSORS OF SERIES 12 – FIVE PRINCIPLES OF OPERATION

- SINGLE PATH LIGHT BEAM SWITCH – SERIES M12/MV12
- REFLEX LIGHT BEAM SWITCH – SERIES MLV12-54
- PRINTING MARK SCANNER – SERIES DK12
- REFLEX LIGHT BEAM SWITCH WITH BACKGROUND SUPPRESSION – SERIES MLV12-8-H
- ULTRASONIC SENSOR – SERIES F12



CYLINDRICAL SENSORS OF SERIES 18 – SEVEN PRINCIPLES OF OPERATION

- SINGLE PATH LIGHT BEAM SWITCH –
SERIES VS18/VSE18
- REFLEX LIGHT BEAM SWITCH – SERIES VL18-54
- REFLEX LIGHT BEAM SWITCH WITH BACKGROUND
SUPPRESSION – SERIES VT18-8-H
- LIGHT GUIDE DEVICE – SERIES VL18-LL
- ULTRASONIC SENSOR – SERIES 18GM
- CAPACITIVE SENSOR – SERIES 18GM
- INDUCTIVE SENSOR – SERIES 18GM

MINIATURE TYPE



M4.1/MV4.1



M7/MV7



M71/MV71



M12/MV12

Highlights	<div><div></div> Miniature type</div> <div><div></div> Push-pull output</div> <div><div></div> Sensitivity adjuster</div> <div><div></div> Test input</div>	<div><div></div> Miniature type</div> <div><div></div> Bright, high-visibility LED indicators</div> <div><div></div> HF insensitive to extraneous light and protected against mutual interference</div> <div><div></div> TEACH-IN in accordance with proposed standard IEC60947-5-2</div> <div><div></div> Side light outlet</div> <div><div></div> Front light outlet</div>				<div><div></div> Bright, high-visibility LED indicators to front and rear of device</div> <div><div></div> HF insensitive to extraneous light and protected against mutual interference</div> <div><div></div> Additional alignment aid behind the receiver optical system</div> <div><div></div> TEACH-IN switch for adjustment of the contrast detection steps</div>			
	Range	5 m	4.5 m				25 m		
Light emitter	Red LED	Red LED				Red LED			
Light spot diameter	approx. 260 mm at 2500 mm	approx. 240 mm at 3.5 m				approx. 400 mm at 16 m			
Operating voltage	10 V DC ... 30 V DC	10 V DC ... 30 V DC				10 V DC ... 30 V DC			
Switching type	Light ON/Dark ON	Dark ON				Light ON/Dark ON, switchable			
Signal output	Push-pull output	1 PNP transistor	1 NPN transistor	1 PNP transistor	1 NPN transistor	1 push-pull output	2 PNP transistors	1 push-pull output	
Switching voltage/current	max. 30 V DC/max. 0.2 A	max. 30 V DC/max. 100 mA				max. 30 V DC/max. 0.2 A			
Switching frequency	500 Hz	1000 Hz				1000 Hz			
Stability control output		1 PNP stability control output (Alarm)	1 NPN stability control output (Alarm)	1 PNP stability control output (Alarm)	1 NPN stability control output (Alarm)	1 PNP stability control output (Alarm)			
Test input	Emitter switch-off with +UB	Emitter switch-off with +UB				Emitter switch-off with 0 V			
Function displays	Switching status/Stabling control	Power-on/short circuit/switching status/stability control/TEACH-IN				Power-on/short circuit/switching status/stability control/TEACH-IN/alignment aid			
Operating temperature	-20 °C ... +60 °C	-20 °C ... +60 °C				-40 °C ... +60 °C			
Dimensions WxHxD	18 mm x 31.4 mm x 13.9 mm	23 mm x 31 mm x 11 mm				41.5 mm x 49 mm x 15 mm			
Connection	M8 metal plug connector, 4-pin	M8 plastic plug connector, 4-pin				M12 metal plug connector, 4-pin, rotatable 90°	M12 metal plug connector, 4-pin, rotatable 90°	Fixed cable 2.5 m	
Order code	M4.1/MV4.1/40b/95/110	M7/MV7/59/76a/82b/103/143	M7/MV7/59/76a/102/126b/143	M71/MV71/59/76a/82b/103/143	M71/MV71/59/76a/102/126b/143	M12/MV12-F1/76b/82b/124/128	M12/MV12-F1/47/76b/82b/124	M12/MV12-F1/76b/82b/115/128	

Other options available on request



M40/MV40

- Very good optical performance data
- Robust aluminium housing
- Scratch-resistant/solvent resistant glass optical cover



MINIATURE TYPE

KS/KSE10

- Miniature type in M4 high-grade steel housing
- Fixing nuts with over-tightening protection
- An SU10 or SU11 signal converter is required for operation



G12/GV12

- Light ON/Dark ON, connection programmable
- M12 threaded housing, nickel plated brass

<div><div></div>Very good optical performance data</div> <div><div></div>Robust aluminium housing</div> <div><div></div>Scratch-resistant/solvent resistant glass optical cover</div>				<div><div></div>Miniature type in M4 high-grade steel housing</div> <div><div></div>Fixing nuts with over-tightening protection</div> <div><div></div>An SU10 or SU11 signal converter is required for operation</div>				<div><div></div>Light ON/Dark ON, connection programmable</div> <div><div></div>M12 threaded housing, nickel plated brass</div>			
10 m				1500 mm				5 m			
Infrared LED				Infrared LED				Red LED			
approx. 150 mm at 5 m				approx. 100 mm at 500 mm							
10 V DC ... 30 V DC				10 V DC ... 30 V DC				10 V DC ... 30 V DC			
Light ON/Dark ON								Light ON: +UB/Dark ON: 0 V			
<div><div>2 PNP transistors</div><div>2 NPN transistors</div><div>2 PNP transistors</div><div>2 NPN transistors</div></div>				See signal converter – page 6				<div><div>1 NPN transistor</div><div>1 PNP transistor</div><div>1 NPN transistor</div><div>1 PNP transistor</div></div>			
max. 30 V DC/max. 0.2 A								max. 30 V DC/max. 300 mA			
250 Hz								500 Hz			
Switching status/stability control								Switching status			
-20 °C ... +60 °C				-20 °C ... +60 °C				-25 °C ... +55 °C			
31 mm x 62.4 mm x 13.6 mm				M4 x 25 mm				ø 12 mm x L 65 mm		ø 12 mm x L 55 mm	
<div><div>M12 metal plug connection, 4-pin</div><div>M12 metal plug connection, 4-pin</div><div>Fixed cable, 2 m</div><div>Fixed cable, 2 m</div></div>				Fixed cable 2 m				M12 metal plug connection 4-pin		Fixed cable 2 m	
<div><div>M40/MV40-1365/47/92</div><div>M40/MV40-1365/48/92</div><div>M40/MV40-1365/47/115</div><div>M40/MV40-1365/48/115</div></div>				<div><div>KS/KSE10</div></div>				<div><div>G12/GV12/36/40b/92</div><div>G12/GV12/37/40b/92</div></div>		<div><div>G12/GV12/36/40b/115</div><div>G12/GV12/37/40b/115</div></div>	

for series KT10, KT10-8-H and KS/KSE10



VS18/VSE18-LAS

- Threaded light beam switch in metal housing, M18 x 65 mm
- Visible red laser light, protection class 2
- Push-pull output stage, 200 mA
- Mechanical Light ON/Dark ON switchover and sensitivity adjuster
- Focusable optical system
- Detection of small objects in the near zone

60 m

Red laser diode

adjustable

10 V DC ... 30 V DC

Light ON/Dark ON switching, adjustable

1 push-pull output

max. 30 V DC/max. 0.2 A

5000 Hz

Emitter switch-off with +UB

Power-on/short circuit/switching status/stability control

-25 °C ... +60 °C

M18 x 65 mm

M12 Vario-Quick connector, 4-pin

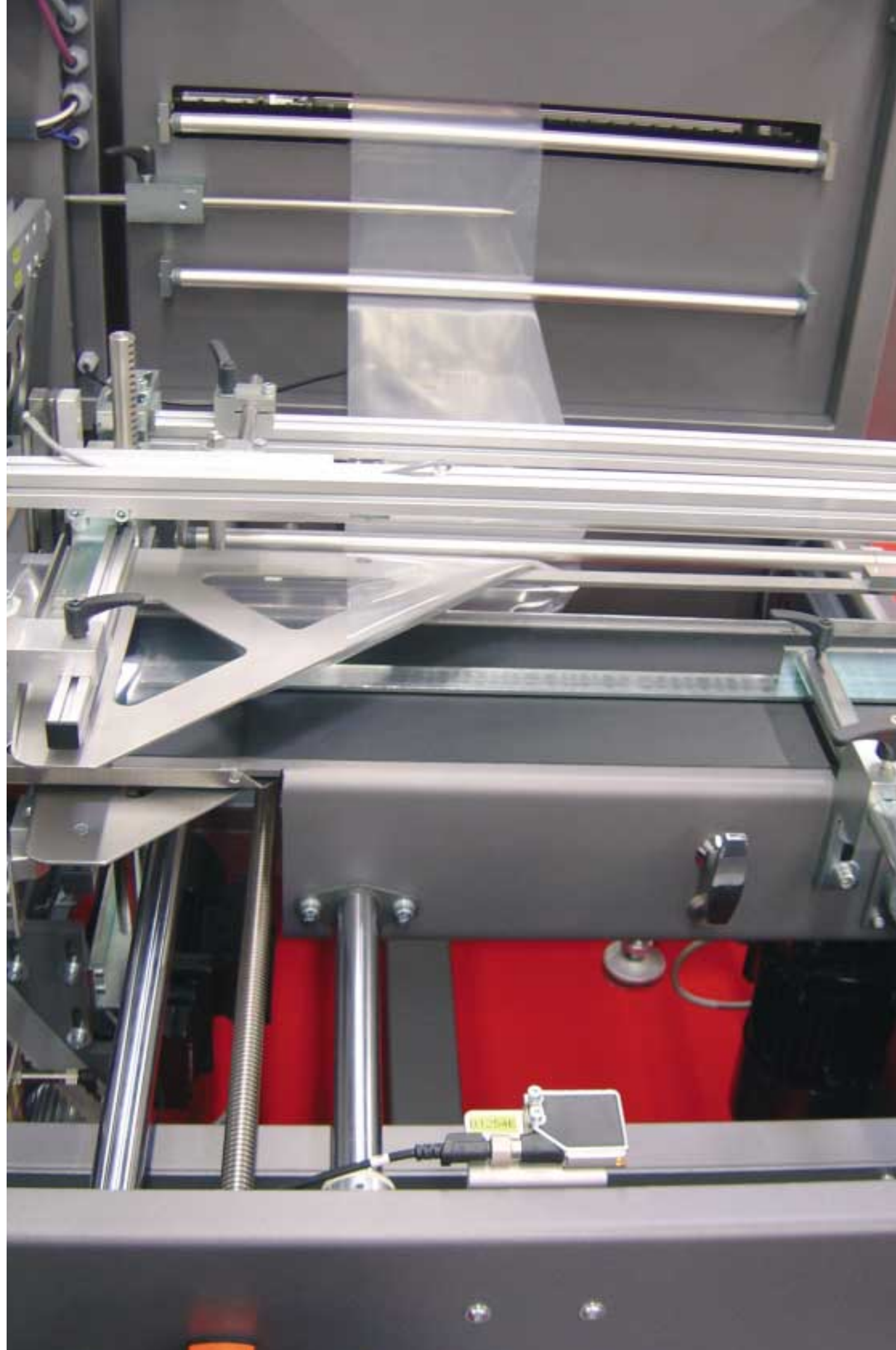
VS18/VSE18-LAS/40a/76a/118/128



Signal converter	SU10
Operating voltage	10 V DC ... 30 V DC
Circuit function type	Light ON/Dark ON
Signal output	1 PNP and 1 NPN transistor
Switching voltage/current	
Switching frequency	70 Hz
Function displays	Switching status/stability control
Operating temperature	-20 °C ... +60 °C
Dimensions WxHxD	58 mm x 90 mm x 18 mm
Connection	Screw terminals
Order code	SU10/40a/49/116



Signal converter	SU11
Operating voltage	10 V DC ... 30 V DC
Circuit function type	Light ON/Dark ON
Signal output	1 PNP and 1 NPN transistor
Switching voltage/current	max. 30 V DC/max. 0.2 A
Switching frequency	70 Hz
Function displays	Switching status/stability control
Operating temperature	-20 °C ... +60 °C
Dimensions WxHxD	40 mm x 60 mm x 20 mm
Connection	Fixed cable 2.5 m M12 connector, 4-pin
Order code	SU11/40a/49/115 SU11/40a/49/92



MINIATURE TYPE



ML4.1-54-F



ML7-55



ML71-55



MLV12-54

Highlights	<div><div></div> Miniature type</div> <div><div></div> Push-pull output</div> <div><div></div> Sensitivity adjuster</div>		<div><div></div> Miniature type</div> <div><div></div> HF insensitive to extraneous light and protected against mutual interference</div> <div><div></div> Bright, high-visibility LED indicators</div> <div><div></div> TEACH-IN in accordance with proposed standard IEC60947-5-2</div>				<div><div></div> Bright, high-visibility LED indicators to front and rear of device</div> <div><div></div> Robust housing - watertight and impact-resistant – IP67</div> <div><div></div> Mechanical Light ON/Dark ON changeover and sensitivity adjuster</div> <div><div></div> HF insensitive to extraneous light and protected against mutual interference</div>		
Range	1000 mm		2.8 m				7 m		
Light emitter	Red LED		Red LED				Red LED		
Light spot diameter	approx. 20 mm at 400 mm		approx. 180 mm at 2.5 m				approx. 130 mm at 5 m		
Operating voltage	10 V DC ... 30 V DC		10 V DC ... 30 V DC				10 V DC ... 30 V DC		
Switching type	Light ON/Dark ON Dark ON		Dark ON				Light ON/Dark ON, switchable		
Signal output	Push-pull output								
			1 PNP transistor	1 NPN transistor	1 PNP transistor	1 NPN transistor	1 push-pull output	1 push-pull output	2 PNP transistors
Switching voltage/current	max. 30 V DC/max. 0.2 A		max. 30 V DC/max. 100 mA				max. 30 V DC/max. 0.2 A		
Switching frequency	500 Hz		1000 Hz				1000 Hz		
Stability control output		1 PNP stability control output (Alarm)	1 PNP stability control output (Alarm)	1 NPN stability control output (Alarm)	1 PNP stability control output (Alarm)	1 NPN stability control output (Alarm)	1 PNP stability control output (Alarm)		
Test input							Emitter switch-off with 0 V		
Function displays	Switching status/stability control		Power-on/short circuit//switching status/stability control/TEACH-IN				Switching status/stability control		
Operating temperature	-20 °C ... +60 °C		-25 °C ... +60 °C				-40 °C ... +60 °C		
Dimensions WxHxD	18 mm x 31.4 mm x 13.9 mm		23 mm x 31 mm x 11 mm				41.5 mm x 49 mm x 15 mm		
Connection	M8 metal plug connector, 4-pin		M8 plastic plug connector, 4-pin				M12 metal plug connector, 4-pin, rotatable 90°	Fixed cable 2.5 m	M12 metal plug connector, 4-pin, rotatable 90°
Order code	ML4.1-54-F/40b/95/110	ML4.1-54-F/82b/95/110	ML7-55/59/82b/103/143	ML7-55/59/102/126b/143	ML71-55/59/82b/103/143	ML71-55/59/102/126b/143	MLV12-54/76b/124/128	MLV12-54/76b/115/128	MLV12-54/47/76b/124



VISO+



MLV12-54-LAS

- Bright, high-visibility LED indicators to front and rear of device
- Robust housing - watertight and impact-resistant – IP67
- Mechanical Light ON/Dark ON changeover and sensitivity adjuster
- HF insensitive to extraneous light and protected against mutual interference

■ Obstacle size > 0.3 mm



VISO+

MLV41-54-G

- Bright, high-visibility LED indicators to front and rear of device
- Robust slim aluminium housing
- HF insensitive to extraneous light and protected against mutual interference
- Switchable from mode "N"= normal to variant for glass detection



VISO+

RL28-55-V

- Bright, high-visibility LED indicators to front and rear of device
- Foreground suppression, for the detection of shrink film-wrapped objects
- Mechanical Light ON/Dark ON changeover and sensitivity adjuster
- Insensitive to extraneous light, even with pulsed energy-saving lamps

100 mm ... 450 mm		21 m		4 m		12 m	
Red laser diode				Red LED		Red LED	
approx. 0.5 mm at 150 mm to 400 mm		approx. 5 mm at 15 m		approx. 80 mm at 3 m		approx. 200 mm at 12 m	
10 V DC ... 30 V DC				10 V DC ... 30 V DC		10 V DC ... 30 V DC	
Light ON/Dark ON, switchable				Light ON/Dark ON, switchable		Light ON/Dark ON, switchable	
Push-pull output				2 push-pull outputs		1 push-pull output	
						1 PNP transistor	
max. 30 V DC/max. 100 mA				max. 30 V DC/max. 0.2 A		max. 30 V DC/max. 0.2 A	
2500 Hz				1000 Hz		1000 Hz	
1 PNP stability control output (Alarm)						1 PNP stability control output (Alarm)	
Emitter switch-off with 0 V				Emitter switch-off with +UB			
Power-on/short circuit/switching status/stability control				Power-on/short circuit/switching status/stability control/TEACH-IN		Power-on/switching status/stability control	
-40 °C ... +60 °C				-40 °C ... +60 °C		-40 °C ... +60 °C	
41.5 mm x 49 mm x 15 mm				31 mm x 62.4 mm x 13.6 mm		54.3 mm x 88 mm x 25.8 mm	
M12 metal plug connection, 5-pin	M8 metal plug connector, 4-pin	M12 metal plug connection, 5-pin	M8 metal plug connector, 4-pin	M12 metal plug connection, 5-pin	M8 metal plug connector, 4-pin	M12 metal plug connection, 5-pin	Fixed cable 2.5 m
MLV12-54-LAS-300/76b/110/124	MLV12-54-LAS-300/76b/95/110	MLV12-54-LAS-76b/110/124	MLV12-54-LAS-76b/95/110	MLV41-54-G/25/123/124/136	MLV41-54-G/25/95/136	MLV41-54-G/76a/110/123/124	MLV41-54-G/82b/103/123/124
							RL28-55-V/47/82b/105
							RL28-55-V/47/82b/115

PHOTOELECTRIC RETRO-REFLECTIVE SENSORS IN CYLINDRICAL SHAPE



GLV12-54



VL18-54-M



Highlights

- M12 threaded housing, nickel plated brass
- Light ON/Dark ON wiring programmable
- Glare protection with polarisation filter

- Threaded light beam switch in M18 metal housing - IP67
- Clear control panel with especially bright LED indicators
- HF insensitive to extraneous light and protected against mutual interference

Range	1.2 m				4m	
Light emitter	Red LED				Red LED	
Light spot diameter					200 mm at 3.5 m	
Operating voltage	10 V DC ... 30 V DC				10 V DC ... 30 V DC	
Switching type	Light ON: +UB/Dark ON: 0 V				Light ON/Dark ON, switchable	
Signal output	1 NPN transistor	1 PNP transistor	1 NPN transistor	1 PNP transistor	1 PNP transistor	1 push-pull output
Switching voltage/current	max. 30 V DC/max. 300 mA				max. 30 V DC/max. 200 mA	
Switching frequency	700 Hz				500 Hz	
Stability control output					1 PNP stability control output (Alarm)	
Test input	-				-	
Function displays	Switching status				Power-on/short circuit/switching status/stability control	
Operating temperature	-25 °C ... +55 °C				-25 °C ... +55 °C	
Dimensions WxHxD	ø 12 mm x L 65 mm		ø 12 mm x L 55 mm		M18 x 65 mm	
Connection	M12 metal plug connection 4-pin		Fixed cable 2 m		M12 metal plug connector, 4-pin (Vario-Quick)	
Order code	GLV12-54/36/40b/92	GLV12-54/37/40b/92	GLV12-54/36/40b/115	GLV12-54/37/40b/115	VL18-54-M/32/40a/82b/118	VL18-54-M/40a/118/128

Other options available on request



VL18-54-M-LAS



- Threaded light beam switch in M18 metal housing - IP67
- Clear control panel with especially bright LED indicators
- HF insensitive to extraneous light and protected against mutual interference



VL18-54-MS



- Threaded light beam switch in M18 metal housing - IP67
- Side light outlet
- Clear control panel with especially bright LED indicators
- HF insensitive to extraneous light and protected against mutual interference



CP18

- Threaded light beam switch in M18 plastic housing
- AC and DC versions available

18 m		4 m		4 m	4 m
Red laser diode		Red LED		Infrared LED	
approx. 150 mm x 100 mm at 15 m/min. Object size 0.1 mm		200 mm at 3.5 m		Dark ON	
10 V DC ... 30 V DC		10 V DC ... 30 V DC		10 V DC ... 30 V DC	
Light ON/Dark ON, switchable		Light ON/Dark ON, switchable		1 PNP transistor	
1 PNP transistor	1 push-pull output	1 PNP transistor	1 push-pull output	max. 30V DC /max. 0.15 A	
max. 30 V DC/max. 200 mA		max. 30 V DC/max. 200 mA		500 Hz	
500 Hz		500 Hz			
1 PNP stability control output (Alarm)		1 PNP stability control output (Alarm)			
Power-on/short circuit/switching status/stability control		Power-on/short circuit/switching status/stability control		Switching status	
-25 °C ... +55 °C		-25 °C ... +55 °C		-30 °C ... +50 °C	
M18 x 78 mm		M18 x 91 mm		M18 x 60 mm	
M12 metal plug connector, 4-pin (Vario-Quick)		M12 metal plug connector, 4-pin (Vario-Quick)		Fixed cable 2 m	Plastic plug connector M12, 4-pin
VL18-54-M-LAS/32/40a/82b/118	VL18-54-M-LAS/40a/118/128	VL18-54-M/32/40a/82b/118	VL18-54-M/40a/118/128	CP18LDPD2	CP18LDPDC



VISO+

RL28-54-G



VISO+

MLV12-54-G

Highlights	<ul style="list-style-type: none"> Bright, high-visibility LED indicators to front and rear of device Mechanical Light ON/Dark ON changeover and TEACH-IN switch for adjustment of the contrast detection steps 		<ul style="list-style-type: none"> Bright, high-visibility LED indicators to front and rear of device Robust housing - watertight and impact resistant - IP67 Mechanical Light ON/Dark ON changeover and TEACH-IN switch for adjustment of the contrast detection steps 			
	5 m		4 m			
Range	Red LED		Red LED			
Light emitter	approx. 65 mm at 4 m		approx. 80 mm at 3 m			
Light spot diameter	10 V DC ... 30 V DC		10 V DC ... 30 V DC			
Operating voltage	Light ON/Dark ON, switchable		Light ON/Dark ON, switchable			
Switching type	2 PNP transistors		1 push-pull output	1 push-pull output	1 push-pull output	2 PNP transistors
Signal output	max. 30 V DC/max. 0.2 A		max. 30 V DC/max. 0.2 A			
Switching voltage/current	1000 Hz		1000 Hz			
Switching frequency					1 PNP stability control output (Alarm)	1 NPN stability control output (Alarm)
Stability control output			Emitter switch-off with 0 V			
Test input	Switching status/stability control		Switching status/stability control/TEACH-IN			
Function displays	-40 °C ... +60 °C		-40 °C ... +60 °C			
Operating temperature	54.3 mm x 88 mm x 25.8 mm		41.5 mm x 49 mm x 15 mm			
Dimensions WxHxD	Plastic plug connector M12, 5-pin	Fixed cable 2.5 m	M12 metal plug connector, 4-pin, rotatable 90°	Fixed cable 2.5 m	M12 metal plug connector, 4-pin, rotatable 90°	M12 metal plug connector, 4-pin, rotatable 90°
Connection	RL28-54-G/47/105	RL28-54-G/47/115	MLV12-54-G/76b/124/128	MLV12-54-G/76b/115/128	MLV12-54-G/32/82g/124	MLV12-54-G/30/124/126g
Order code						

Other options available on request



VISO+

MLV41-54-G

- Bright, high-visibility LED indicators to front and rear of device
- Robust slim aluminium housing
- HF insensitive to extraneous light and protected against mutual interference
- TEACH-IN switch for adjustment of the contrast detection steps and external teach input
- Switchable to mode "N" = reflex light beam switch with polarisation filter

	4 m		
	Red LED		
	approx. 80 mm at 3 m		
	10 V DC ... 30 V DC		
	Light ON/Dark ON		Light ON/Dark ON, switchable
	2 push-pull outputs	1 push-pull output	1 PNP transistor
	max. 30 V DC/max. 0.2 A		
	1000 Hz		
			1 PNP stability control output (Alarm)
	-	Emitter switch-off with +UB	
	Power-on/short circuit/switching status/stability control/TEACH-IN		
	-40 °C ... +60 °C		
	31 mm x 62.4 mm x 13.6 mm		
	M12 metal plug connection, 5-pin	M8 metal plug connector, 4-pin	Fixed cable 2,5 m
			M12 metal plug connection, 5-pin
MLV41-54-G/25/123/124/136			
MLV41-54-G/25/95/136			
MLV41-54-G/25/115/123/136			
MLV41-54-G/76a/110/123/124			
MLV41-54-G/82b/103/123/124			



MINIATURE TYPE



VISO+

ML7-8

ML71-8



GLV12-8



MINIATURE TYPE

KT10-8

Highlights	<ul style="list-style-type: none">Miniature typeHF insensitive to extraneous light and protected against mutual interferenceBright, high-visibility LED indicatorsTEACH-IN in accordance with proposed standard IEC60947-5-2 <div><div><ul style="list-style-type: none">Side light outlet</div><div><ul style="list-style-type: none">Front light outlet</div></div>				<ul style="list-style-type: none">M12 threaded housing, nickel plated brassLight ON/Dark ON connection programmable				<ul style="list-style-type: none">Miniature version in M4 housingHousing material: High-grade steelThe SU10 or SU11 signal converter is required for operation			
Range	20 mm ... 200 mm				0 mm ... 200 mm				0 mm ... 80 mm, adjustable			
Light emitter	Red LED				Red LED				Infrared LED			
Light spot diameter	approx. 15 mm at 200 m								approx. 15 mm at 80 mm			
Operating voltage	10 V DC ... 30 V DC				10 V DC ... 30 V DC				10 V DC ... 30 V DC			
Switching type	Light on switching				Light ON: +UB/Dark ON: 0 V							
Signal output	1 PNP transistor	1 NPN transistor	1 PNP transistor	1 NPN transistor	1 NPN transistor	1 PNP transistor	1 NPN transistor	1 PNP transistor	See signal converter – page 6			
Switching voltage/current	max. 30 V DC/max. 100 mA				max. 30 V DC/max. 300 mA							
Switching frequency	1000 Hz				700 Hz							
Stability control output												
Function displays	Power-on/short circuit/switching status/stability control/TEACH-IN				Switching status							
Operating temperature	-25 °C ... +60 °C				-25 °C ... +55 °C				-20 °C ... +60 °C			
Dimensions WxHxD	23 mm x 31 mm x 11 mm				ø 12 mm x L 65 mm		ø 12 mm x L 55 mm		M4 x 25 mm			
Connection	M8 plastic plug connector, 4-pin				M12 metal plug connection 4-pin		Fixed cable 2 m		Fixed cable 1.5 m			
Order code	ML7-8-200/25/103/143	ML7-8-200/25/102/143	ML71-8-200/25/103/143	ML71-8-200/25/102/143	GLV12-8-200/36/40b/92	GLV12-8-200/37/40b/92	GLV12-8-200/36/40b/115	GLV12-8-200/37/40b/115	KT10-8-80			

Other options available on request



VISO+

VT18-8-400-M

- Threaded light beam switch in M18 metal housing, IP67
- Clear control panel with especially bright LED indicators
- HF insensitive to extraneous light and protected against mutual interference



VISO+

VT18-8-400-M-LAS

- Threaded light beam switch in M18 metal housing, IP67
- Clear control panel with especially bright LED indicators
- HF insensitive to extraneous light and protected against mutual interference



CP18

- Threaded light beam switch in M18 plastic housing
- AC and DC versions available

VT18-8-400-M/40a/118/128	4 mm ... 400 mm, adjustable	4 mm ... 400 mm, adjustable	100 mm	200 mm	400 mm
	Red LED	Red laser diode	Infrared LED		
	approx. 4 mm at 120 mm	approx. 0.5 mm at 170 mm			
	10 V DC ... 30 V DC	10 V DC ... 30 V DC	10 V DC ... 30 V DC		
	Light ON/Dark ON, switchable	Light ON/Dark ON, switchable	Light ON switching		
	1 push-pull output	1 push-pull output	1 PNP transistor		
	max. 30 V DC/max. 200 mA	max. 30 V DC/max. 200 mA	max. 30 V DC/max. 0.2 A		
	500 Hz	500 Hz	500 Hz		
	Power-on/short circuit/switching status	Power-on/short circuit/switching status	Switching status		
VT18-8-400-M-LAS/40a/118/128	-20 °C ... +60 °C	-20 °C ... +60 °C	-30 °C ... +50 °C		
	M18 x 78 mm	M18 x 78 mm	M18 x 60 mm		
	M12 metal plug connector, 4-pin (Vario-Quick)	M12 metal plug connector, 4-pin (Vario-Quick)	Fixed cable 2 m	Plastic plug connector M12, 4-pin	Fixed cable 2 m
			CP18D1DPL2	CP18D1DPLC	CP18D2DPL2
					CP18D2DPLC
					CP18D4DPL2
					CP18D4DPLC





MINIATURE VERSION

ML6-8-H



Highlights

- Miniature version
- Bright, high-visibility LED indicators to front and rear of device
- HF insensitive to extraneous light and protected against mutual interference
- Precise background suppression - also on reflecting objects
- Minimal black/white difference
- Small, sharp light spot
- Numerous and sturdy mounting alternatives with metal reinforcement

Range	5 ... 20 mm, background suppression from 25 mm	10 ... 40 mm, background suppression from 50 mm	10 ... 60 mm, background suppression
Light emitter (> 6%)	Red LED	Red LED	Red LED
Light spot diameter	approx. 1.5 mm at 20 mm	approx. 3 mm at 40 mm	approx. 4 mm at 60 mm
B/W difference	1 mm	3 mm	10 mm
Operating voltage type	10 V DC ... 30 V DC		
Switching type	Light ON/Dark ON		
Signal output	2 push-pull outputs		
Switching voltage/current	max. 30 V DC/max. 100 mA		
Switching frequency	1000 Hz		
Function displays	Power-on/short circuit/undervoltage/switching status		
Operating temperature	20 °C ... +60 °C		
Dimensions WxHxD	18 mm x 13.9 mm x 31.4 mm		
Connection	M8 plastic plug connector, 4-pin		
Order code	ML6-8-H-20-RT/59/95/136	ML6-8-H-40-RT/59/95/136	ML6-8-H-60-RT//59/95/136

Other options available on request



MINIATURE VERSION

ML6-8-H*/65A



- Miniature version
- Adjustable range
- Bright, high-visibility LED indicators to front and rear of device
- HF insensitive to extraneous light and protected against mutual interference
- Precise background suppression – also on reflecting objects
- Minimal black/white difference
- Small, sharp light spot
- Numerous and sturdy mounting alternatives with metal reinforcement

from 80 mm	10 mm ... 80 mm, background suppression from 100 mm	15 mm ... 120 mm, adjustable
	Red LED	Red LED
	approx. 6 mm at 80 mm	approx. 5 mm at 120 mm
	15 mm	< 10 %
	10 V DC ... 30 V DC	10 V DC ... 30 V DC
	Light ON/Dark ON	Light ON /Dark ON, wiring programmable
	2 push-pull outputs	2 push-pull outputs
	max. 30 V DC/max. 100 mA	max. 30 V DC/max. 100 mA
	1000 Hz	1000 Hz
	Power-on/short circuit/undervoltage/switching status	Power-on/short circuit/undervoltage/switching status
	20 °C ... +60 °C	20 °C ... +60 °C
	18 mm x 13.9 mm x 31.4 mm	18 mm x 13.9 mm x 31.4 mm
	M8 plastic plug connector, 4-pin	M8 plastic plug connector, 4-pin
	ML6-8-H-80-RT/59/95/1366	ML6-8-H-120-RT/59/65a/95/136



MINIATURE VERSION

ML7-8-H



MLV12-8-H



MLV41-8-H



- Miniature version
- Bright, high-visibility LED indicators
- HF insensitive to extraneous light and protected against mutual interference
- Precise background suppression,
- Minimal black/white difference

- Safe detection of all surfaces, irrespective of colour and structure
- Bright, high-visibility LED indicators to front and rear of device
- Insensitive to extraneous light, even with pulsed energy-saving lamps
- Mechanical Light ON/Dark ON changeover and sensitivity adjuster

- Bright, high-visibility LED indicators to front and rear of device
- HF insensitive to extraneous light and protected against mutual interference
- Safe detection of all surfaces, irrespective of colour and structure
- High switching frequency and short response times

5 mm ... 140 mm, adjustable		20 mm ... 250 mm, adjustable		20 mm ... 100 mm, adjustable		20 mm ... 350 mm, adjustable	
Red LED	Infrared LED	Red LED		Red LED	Infrared LED	Red LED	Infrared LED
approx. 5 mm at 120 mm		approx. 8 mm at 250 mm		approx. 3 mm at 100 mm		approx. 8 mm at 350 mm	
< 10 %		< 10 %		< 10 %		< 10 %	
10 V DC ... 30 V DC		10 V DC ... 30 V DC		10 V DC ... 30 V DC		10 V DC ... 30 V DC	
Light ON/Dark ON		Light ON/Dark ON, switchable		Light ON/Dark ON		Light ON/Dark ON	
2 PNP transistors		2 PNP transistors	1 push-pull output	1 push-pull output	1 push-pull output	2 push-pull outputs	
max. 30 V DC/max. 100 mA		max. 30 V DC/max. 0.2 A		max. 30 V DC/max. 100 mA		max. 30 V DC/max. 100 mA	
1000 Hz		1000 Hz		1000 Hz		1000 Hz	
Power-on/short circuit/undervoltage/switching status		Power-on/short circuit/switching status/stability control		Power-on/short circuit/undervoltage/switching status		Power-on/short circuit/undervoltage/switching status	
-20 °C ... +60 °C		-40 °C ... +60 °C		-40 °C ... +60 °C		-40 °C ... +60 °C	
11 mm x 31 mm x 23 mm		41.5 mm x 49 mm x 15 mm		41.5 mm x 49 mm x 15 mm		31 mm x 62.4 mm x 13.6 mm	
M8 plastic plug connector, 4-pin		M12 metal plug connector, 4-pin, rotatable 90°	M12 metal plug connector, 4-pin, rotatable 90°	Fixed cable 2.5 m	M12 metal plug connection, 5-pin	Fixed cable 2.5 m	M8 metal plug connector, 4-pin
ML7-8-H-140-RT/59/65a/120/143	ML7-8-H-140-IR/59/65a/120/143	MLV12-8-H-250-RT/47/65b/124	MLV12-8-H-250-RT/65b/124/128	MLV12-8-H-250-RT/65b/115/128	MLV12-8-H-100-RT/65b/124/128	MLV41-8-H-350-RT/59/115/136	MLV41-8-H-350-RT/59/95/136
						MLV41-8-H-350-RT/59/92/136	MLV41-8-H-350-IR/59/92/136



RL28-8-H



- Bright, high-visibility LED indicators to front and rear of device
- Positive detection including objects with a very low level of reflection
- Mechanical Light ON/Dark ON changeover and range adjuster
- Insensitive to extraneous light, even with pulsed energy-saving lamps



MINIATURE VERSION

KT10-8-H

- Miniature version in M4 housing
- Housing material: High-grade steel
- The SU10 or SU11 signal converter is required for operation

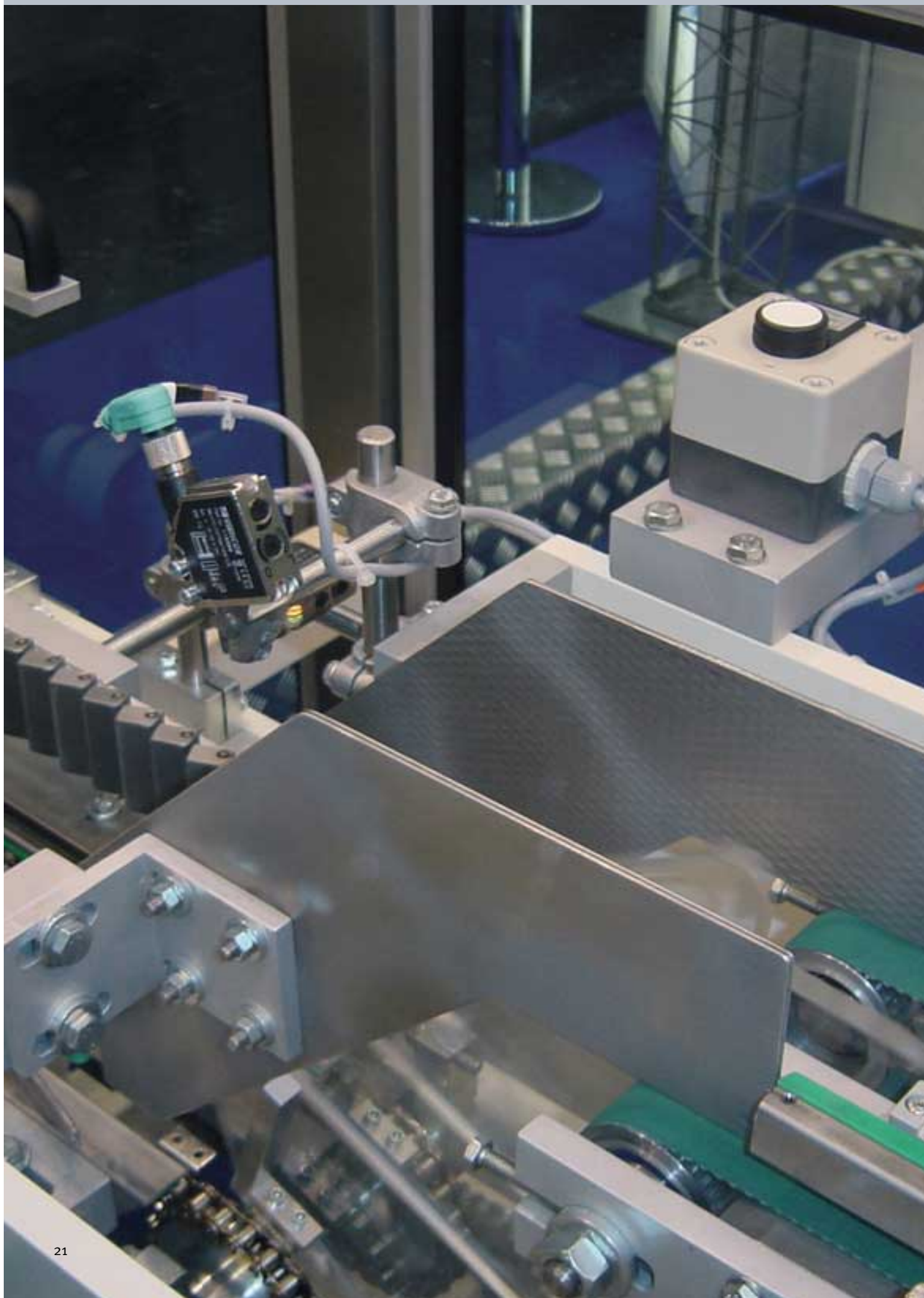


VT18-8-H



- Threaded light beam switch in M18 metal housing - IP67
- Push-pull output stage, 200 mA
- Mechanical Light ON/Dark ON changeover and range adjuster
- No mutual interference
- Background suppression, electrically adjustable

	20 mm ... 400 mm, adjustable		20 mm ... 700 mm, adjustable		0.5 mm ... 8 mm		20 mm ... 120 mm	
	Red LED				Infrared LED		Red LED	
	approx. 12 mm at 400 mm		approx. 15 mm at 700 mm		approx. 2 mm at 8 mm		6 mm at 120 mm	
	< 10 %		< 20 %		< 10 %			
	10 V DC ... 30 V DC				10 V DC ... 30 V DC		10 V DC ... 30 V DC	
	Light ON/Dark ON, switchable						Light ON/Dark ON, switchable	
	2 PNP transistors	1 push-pull output	1 push-pull output	2 PNP transistors	1 push-pull output	1 push-pull output	See signal converter – page 6	
	max. 30 V DC/max. 0.2 A						max. 30 V DC/max. 0.2 A	
	250 Hz				-20 °C ... +60 °C		500 Hz	
	Power-on/switching status/stability control				M4 x 25 mm		Switching status/stability control	
	-40 °C ... +60 °C				Fixed cable 1.5 m		-25 °C ... +60 °C	
	54.3 mm x 88 mm x 25.8 mm						M18 x 65 mm	
	Plastic plug connector M12, 5-pin		Fixed cable 2.5 m		Plastic plug connector M12, 5-pin		Fixed cable 2.5 m	
RL28-8-H-400-RT/47/105								
RL28-8-H-400-RT/105/110								
RL28-8-H-400-RT/110/115								
RL28-8-H-700-RT/47/105								
RL28-8-H-700-RT/105/110								
RL28-8-H-700-RT/110/115								
KT10-8-H-8								
VT18-8-H-120-M/40a/65b/118/128								





MLV40-LL

SU15-G

SU15.1-K

Highlights	<div><div></div>Light guide adapter with quick-release fitting</div> <div><div></div>Robust aluminium housing</div>				<div><div></div>For the connection of glass fibre light guides</div> <div><div></div>Parameter assignment via optical interface (e.g. freely selectable time steps)</div> <div><div></div>Test input and stability control output (Alarm)</div>				<div><div></div>For the connection of plastic light guides with membrane keypad for TEACH-IN</div> <div><div></div>Ergonomic design simplifies installation and operation</div> <div><div></div>Open collector output TTL compatible</div> <div><div></div>Very high-performance red transmission LED</div> <div><div></div>Protected against mutual interaction</div>			
Range	depending on the light guide used				depending on the light guide used				depending on the light guide used			
Light emitter	Red LED		Infrared LED		Red LED				Red LED			
Operating voltage	10 V DC ... 30 V DC				10 V DC ... 30 V DC				10 V DC ... 30 V DC			
Switching type	Light ON/Dark ON				Light ON/Dark ON, switchable				Light ON/Dark ON, switchable			
Signal output	1 PNP and 1 NPN transistor				1 NPN transistor, parameterisable		1 PNP transistor, parameterisable		1 PNP transistor		1 NPN transistor	
Switching voltage/current	max. 30 V DC/max. 0.2 A				max. 30 V DC/max. 0.2 A				max. 30 V DC/max. 100m A			
Switching frequency	1000 Hz				1000 Hz				1.5 kHz			
Stability control output					1 NPN stability control output (Alarm)		1 PNP stability control output (Alarm)		1 PNP stability control output (Alarm), dynamic		1 NPN stability control output (Alarm), dynamic	
Function displays	Switching status/stability control				Switching status/stability control				Switching status/stability control/TEACH-IN			
Operating temperature	-20 °C ... +60 °C				-25 °C ... +70 °C				-10 °C ... +55 °C			
Dimensions WxHxD	31 mm x 62.4 mm x 13.6 mm				59 mm x 35.5 mm x 12 mm				59 mm x 35.5 mm x 12 mm			
Connection	Fixed cable 2 m	M12 metal plug connection, 4-pin	Fixed cable 2 m	M12 metal plug connection, 4-pin	Fixed cable 2 m	M8 metal plug connector, 4-pin	Fixed cable 2 m	M8 metal plug connector, 4-pin	Fixed cable 2 m	M8 metal plug connector, 4-pin	Fixed cable 2 m	M8 metal plug connector, 4-pin
Order code	MLV40-LL-RT/49/115	MLV40-LL-RT/49/92	MLV40-LL-IR/49/115	MLV40-LL-IR/49/92	SU15-G/30/40b/82f/115	SU15-G/30/40b/82f/95	SU15-G/32/40b/82f/115	SU15-G/32/40b/82f/95	SU15.1-K/82f/103/115	SU15.1-K/82f/95/103	SU15.1-K/82f/102/115	SU15.1-K/82f/95/102

Other options available on request

VL18LL

- Light guide device for glass fibre light guide in M18 metal housing
- Clear control panel with especially bright LED indicators
- HF insensitive to extraneous light and protected against mutual interference

depending on the light guide used

Red LED

10 V DC ... 30 V DC

Light ON/Dark ON, switchable

1 NPN
transistor

1 PNP
transistor

1 push-pull
output

max. 30 V DC/max. 0.2 A

500 Hz

Power-on/short circuit/switching status

-25 °C ... +70 °C

M18 x 78 mm

M12 metal plug
connector, 4-pin
(Vario-Quick)

VL18LL-M/30/40a/118

VL18LL-M/32/40a/118

VL18LL-M/40a/118/128



LL for MLV40-LL

	Order code	MLV40-LL-IR Detect/scan. range	MLV40-LL-RT Detect/scan. range
Glass fibre light guide - Single-pass with PVC sheathing	LCE 04-1,1-0,5-WC3	100 mm	50 mm
	LCE 04-1,6-0,5-WC3	280 mm	80 mm
Glass fibre light guide - Reflex with PVC sheathing	LCR 04-1,1-0,5-WC3	50 mm	25 mm
	LCR 04-1,6-0,5-WC2	50 mm	20 mm
	LCR 04-1,6-0,5-Z1	80 mm	40 mm
Glass fibre light guide - Reflex with metal-silicon sheathing	LLR 04-1,6-0,5-G	90 mm	40 mm
	LLR 04-1,6-0,5-QW 1x4	80 mm	35 mm
	LLR 04-1,6-1,0-WC3	80 mm	35 mm
Glass fibre light guide - Single-pass with metal sheathing	LME 04-0,8-0,5-Z1	80 mm	40 mm
Glass fibre light guide - Reflex with metal sheathing	LMR 04-0,5-0,5-WC4	6 mm	5 mm
	LMR 04-0,5-0,5-Z0	7 mm	6 mm
	LMR 04-1,6-0,5-Z1	80 mm	35 mm

LL for SU15-G

	Order code	Detect/scan. range
Glass fibre light guide - Single-pass with PVC sheathing	LCE 06-2,3-0,5-K2	600 mm
Glass fibre light guide - Single-pass with metal sheathing	LME 06-1,9-0,5-K9	500 mm
	LME 06-2,3-0,5-K2	600 mm
Glass fibre light guide - Single-pass with silicon sheathing	LSE 06-1,1-0,5-K9	100 mm
Glass fibre light guide - Reflex with metal sheathing	LMR 06-1,1-0,5-K3	10 mm
	LMR 06-2,3-0,5-K3	45 mm

LL for SU15.1-K

	Order code	Detect/scan. range
Plastic light guide - Single-pass	KLE-C04-1,0-1,0-K104	80 mm
	KLE-C04-1,0-1,0-K106	80 mm
	KLE-C01-1,0-1,0-K107	20 mm
	KLE-C04-1,0-1,0-K108	80 mm
	KLE-C01-1,3-2,0-K112	300 mm
Plastic light guide - Reflex	KLR-C02-1,25-1,0-K73	4 mm
	KLR-C02-1,25-1,0-K75	4 mm
	KLR-C09-1,25-1,0-K76	35 mm
	KLR-C09-1,25-1,0-K77	35 mm

LL for VL18LL

	Order code	Detect/scan. range
Glass fibre light guide - Single-pass with PVC sheathing	LCE 18-2,3-0,5-K2	400 mm
	LME 18-1,9-0,5-K9	160 mm
Glass fibre light guide - Reflex with PVC sheathing	LCR 18-2,7-1,0-K9	50 mm
	LMR 18-1,1-0,5-K3	25 mm
Glass fibre light guide - Reflex with metal sheathing	LMR 18-2,3-0,5-K3	60 mm
	LMR 18-2,7-0,5-K9	40 mm
Glass fibre light guide - Reflex with silicon sheathing	LSR 18-2,3-0,5-K12	25 mm
	LSR 18-3,2-0,5-K1	95 mm

PRINTING MARK CONTRAST SCANNERS



DK10-LAS



DK12



DK20



DKE20

Highlights	<ul style="list-style-type: none"> ■ Laser printing mark scanner for the detection of very small marks ■ Large range of focus: 3 mm ... 300 mm ■ Multi-potentiometer for switching threshold adjustment ■ 30 µs response time, suitable for extremely fast scanning sequences 		<ul style="list-style-type: none"> ■ Small printing mark scanner for the fast detection of arbitrary printing marks ■ TEACH-IN static and dynamic in one unit ■ Double push-pull output stage ■ 40 µs response time, suitable for extremely fast scanning sequences 		<ul style="list-style-type: none"> ■ Direct detection light scanner for detecting arbitrary printing marks ■ Static TEACH-IN procedure for automatic switching threshold adjustment and emitter colour selection ■ Optical system can be rotated through 90° ■ Robust water tight plastic housing ■ High-grade steel housing 	
Range	3 mm ... 300 mm		11 mm		9.5 mm +/- 3 mm	
Light emitter	Red laser diode		LED green, red, blue		LED green, red, blue	
Light spot diameter	approx. 0.8 mm at 300 mm		approx. 1 x 3 mm, along the housing axis		1 mm x 4 mm, along the housing axis	
Operating voltage	10 V DC ... 30 V DC		10 V DC ... 30 V DC		10 V DC ... 30 V DC	
Switching type	Light ON/Dark ON, switchable		Light ON/Dark ON		Light ON/Dark ON	
Signal output	Push-pull output		2 push-pull outputs		Push-pull output	
Analogue output	0.3 mA ... 10 mA				0.3 mA ... 10 mA	
Switching voltage/current	max. 30 V DC/max. 0.2 A		max. 30 V DC/max. 100 mA		max. 30 V DC/max. 0.2 A	
Response time	30 µs		40 µs		30 µs	
Function displays	Switching status		Power-on/undervoltage/switch. status/TEACH-IN		Switching status/TEACH-IN/stability control	
Operating temperature	-20 °C ... +60 °C		-20 °C ... +60 °C		-20 °C ... +60 °C	
Dimensions W x H x D	64.8 mm x 85.6 mm x 33 mm		15 mm x 41.5 mm x 49 mm		64.8 mm x 89.6 mm x 33 mm	
Connection	M12 metal plug connection, 5-pin		M12 metal plug connector, 5-pin, 90° rotatable		M12 metal plug connection, 5-pin	
Order code	DK10-LAS/76a/110/124	DK10-LAS/76a/79b/110/124	DK12-11/124/136	DK20-9,5/110/124	DK20-9,5/79b/110/124	DKE20-9,5/110/124

Other options available on request





DK21



DKE21



DK34

DK35

- Direct detection light scanner for detecting arbitrary printing marks
- Dynamic TEACH-IN procedure for automatic switching threshold adjustment and emitter colour selection
- Optical system can be rotated through 90°

- Robust water tight plastic housing

- High-grade steel housing

- Direct detection light scanner for detecting arbitrary printing marks, with a very high resolution of the contrast steps
- High switching accuracy for highly accurate positioning work
- TEACH-IN procedure for automatic switching threshold adjustment and emitter colour selection:

- Static

- Dynamic

9.5 mm +/- 3 mm

LED green, red, blue

1 mm x 4 mm, along the housing axis

10 V DC ... 30 V DC

Light ON/Dark ON

Push-pull output

max. 30 V DC/max. 0.2 A

30 µs

Switching status/TEACH-IN/stability control

-20 °C ... +60 °C

64.8 mm x 89.6 mm x 33 mm

M12 metal plug connection, 5-pin

DK21-9,5/110/124

DKE21-9,5/110/124

9.5 mm +/- 3 mm

LED green, red, blue

1 mm x 4 mm, along the housing axis

10 V DC ... 30 V DC

Light ON/Dark ON

Push-pull output

max. 30 V DC/max. 0.2 A

30 µs

Switching status/TEACH-IN/stability control

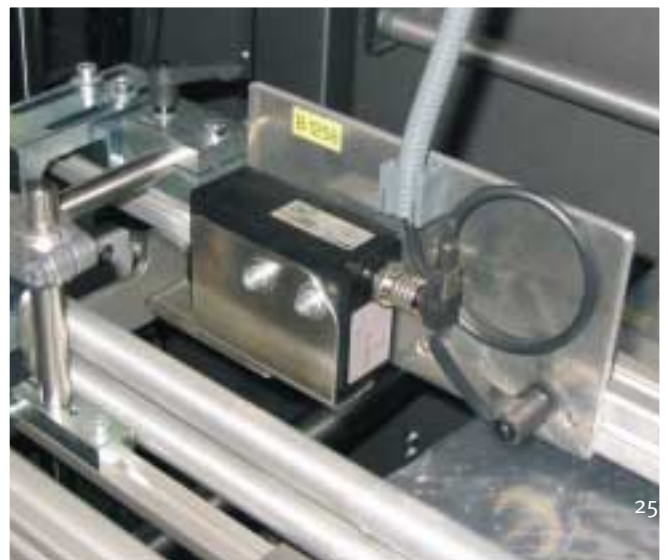
-20 °C ... +60 °C

64.8 mm x 89.6 mm x 33 mm

M12 metal plug connection, 5-pin

DK34-9,5/110/124

DK35-9,5/110/124





DF20



DFE20

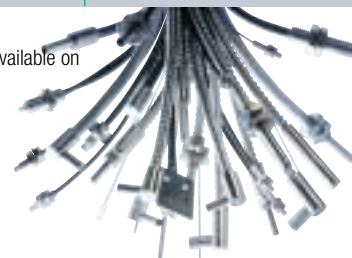


VCS110

Highlights	<ul style="list-style-type: none"> Direct detection light scanner for detecting coloured printing marks on various coloured backgrounds Static TEACH-IN procedure for automatic switching threshold adjustment and emitter colour selection Optical system can be rotated through 90° 			<ul style="list-style-type: none"> Colour storage per TEACH-IN button Up to 10 colours/colour areas can be programmed Colour tolerances can be taught-in Membrane keypad Various light guides
	<ul style="list-style-type: none"> Robust water tight plastic housing 		<ul style="list-style-type: none"> High-grade steel housing 	
Range	9.5 mm +/- 3 mm			max. 100 mm
Light emitter	LED green, red, blue			White light LED
Light spot diameter	1.5 mm	4 mm x 1 mm	1 mm x 4 mm	approx. 5 mm ... 60 mm, depending on light guide used
Operating voltage	10 V DC ... 30 V DC			18 V DC ... 30 V DC
Switching type	PNP to +UB and NPN to 0V switching on detection of mark			Switches to +UB when colour is detected
Signal output	1 PNP and 1 NPN transistor			5 PNP, each with 2 assigned to the measured value memories 4 PNP, binary coded, assigned to the measured value memories
Stability control output				1 PNP, active in the TEACH-IN mode or when all measured value memories are empty
Switching voltage/current	max. 30 V DC/max. 0.2 A			max. 30 V DC/max. 0.4 A
Response time	300 µs			1.2 ms
Function displays	Switching status/TEACH-IN/stability control			1 LED per colour channel, 3 LEDs as adjustment aids
Operating temperature	-20 °C ... +60 °C			-10 °C ... +50 °C
Dimensions W x H x D	64.8 mm x 89.6 mm x 33 mm			109 mm x 151 mm x 48 mm
Connection	M12 metal plug connection, 5-pin			2 M12 metal plug connectors, 7-pin
Order code	DF20/B/49/124	DF20/A/49/124	DFE20/49/124	VCS110-5K VCS110-10K



Other options available on request



Light guide for VCS110

Order code

Plastic light guide, silicon sheathing, M4 head, length 1 m

KLR 05-1,5/3x1,21-1,0-G4

Glass light guide, head 10 mm smooth tube, high-grade steel sheathing, length 1 m

LMR 05-3,6/3x2,6-1,0-Z1

Plastic light guide, head 10 mm smooth tube, steel sheathing, length 5 m

KMR 05-3,2/3x2,5-5,0-Z1



VB10



VB12

Highlights	<div><div></div>Very small</div> <div><div></div>High scan rate</div> <div><div></div>Mounting bracket in delivery package</div> <div><div></div>Very high resolution</div> <div><div></div>Large depth of focus</div>				<div><div></div>Excellent price/performance ratio</div> <div><div></div>Weight optimised with magnesium housing</div> <div><div></div>Flat device, with light outlet on side</div> <div><div></div>Large read angle</div>							
Read distance	50 mm ... 220 mm		40 mm ... 125 mm		30 mm ... 220 mm		10 mm ... 110 mm					
Read angle	52°		60°		70°							
Resolution	0.15 mm (6 mils)		0.076 mm (3 mils)		0.2 mm (8 mils)		0.12 mm (5 mils)					
Scan rate	500 scans/s				350 scans/s							
Grid		15 mm at 220 mm		15 mm at 220 mm	15 mm at 220 mm		15 mm at 220 mm	15 mm at 220 mm				
Interface	RS 232 and RS 485 up to 115.2 kBit/s				RS 232 and RS 485 up to 115.2 kBit/s							
Inputs	External triggering				External triggering							
Outputs	2 outputs (programmable)				2 outputs (programmable)							
Operating voltage	10 V DC ... 30 V DC				10 V DC ... 30 V DC							
Power consumption	2 W				1.5 W							
Light exit					front	side	front	side				
Dimensions	40 mm x 28 mm x 50 mm				80 mm x 22.5 mm x 50 mm							
Laser class	II				II							
Order code	VB10-220	VB10-220-R	VB10-125	VB10-125-R	VB12-220	VB12-220-R	VB12-220-S	VB12-220-S-R	VB12-110	VB12-110-R	VB12-110-S	VB12-110-S-R



Other options available on request





TVI40



RHI58

Highlights

- Incremental encoder
- Target line
- Up to 1,024 ppr

- Incremental encoder
- European industry standard
- Up to 5,000 ppr

Pulse count	Up to 1,024 ppr		Up to 5,000 ppr	
Output/Interface	Push-pull, incremental	RS 422 functionality, incremental	Push-pull, incremental	RS 422, incremental
Output code				
Operating voltage	4.75 V DC ... 30 V DC		10 V DC ... 30 V DC	10 V DC ... 30 V DC or 5 V DC
Switching current per channel	30 mA max.	20 mA max.	40 mA max.	20 mA max.
Output frequency	max. 100 kHz		max. 200 kHz	
Max. rotational speed	6000 min ⁻¹		6000 min ⁻¹	
Moment of inertia	< 4.3 gcm ²		< 40 gcm ²	
Starting torque	< 0.2 Ncm		< 1.5 Ncm	
Shaft load	axial: 20 N, radial: 30 N		angular offset 1°, axial offset max. 1mm	
Operating temperature	-10 °C ... +70 °C		-20 °C ... +80 °C	
Dimensions Diameter x Length	40 mm x 37 mm		58 mm x 31 mm	
Flange type	Clamping flange		Hollow shaft	
Diameter shaft	6 mm, 8 mm		10 mm, 12 mm, 15 mm	
Connection	Fixed cable 0.5 m		Cable	
Order code				





DeviceNet

- Absolute encoder with DeviceNet interface
- Industrial standard
- Addressing via rotary switch in the removable housing cover
- 16 bit singleturn/30 bit multiturn



PROFIBUS

- Absolute encoder with PROFIBUS interface
- Class 1 and 2 in accordance with PNO profile 3.062
- Addressing via rotary switches in the removable housing cover
- 16 bit singleturn/30 bit multiturn



DeviceNet interface
transfer rate: 0.5 Mbit/ s

Binary
10 V DC ... 30 V DC

Code change frequency: 400 kHz
max. 12,000 min⁻¹
50 gcm²
< 5 Ncm

axial: 40 N, radial: 110 N
-40 °C ... +85 °C
58 mm x 92 mm

Clamping and synchro flange, recessed hollow shaft
6 mm, 10 mm
Terminal compartment

PROFIBUS,
Transfer rate: 0.0096 ... 12 Mbaud

Binary
10 V DC ... 30 V DC

Code change frequency: 400 kHz
max. 12,000 min⁻¹
30 gcm²
< 3 Ncm

axial: 40 N, radial: 110 N
-40 °C ... +70 °C
58 mm x 92 mm

Clamping and synchro flange, recessed hollow shaft
6 mm, 10 mm
Terminal compartment

Other options available on request





**Ultrasonic double-sheet control
Series UDB**

Highlights

- Sensor for contact-free discrimination of single and double sheets, labels and adhesive areas
- High operating reliability in dirty conditions, paper thickness detectable between 30 g/m² ... 1200 g/m²
- Positive detection of metallised, glossy and transparent surfaces
- Simple adjustment via TEACH-IN (pulse input)



**Ultrasonic double-sheet control
Series UDC**

- Sensor for contact-free discrimination of single and double sheets
- High operating reliability in dirty conditions, paper thickness detectable between 10 g/m² ... 2000 g/m²
- Compact version, integrated evaluation
- Highly visible status displays in connection area
- Positive detection of metallised, glossy and transparent surfaces
- No TEACH-IN required for the sheet material

Detection range	Separation emitter - receiver: 20 mm ... 80 mm			Separation emitter - receiver: 20 mm ... 60 mm
Operating voltage	20 V DC ... 30 V DC			20 V DC ... 30 V DC
Outputs	3 switching outputs, PNP, normally-open (Air, single sheet, double sheet) to an external monitoring unit			3 switching outputs, PNP, normally-closed (Air, single sheet, double sheet)
Switching voltage/current of the switching outputs	30 V DC/3 x 200 mA			3 x 100 mA
Resolution of the analogue outputs				
Switching frequency				
Response delay	max. 1 ms			approx. 15 ms
Function displays	Switching status			Switching status
Protection class	IP65			IP67
Operating temperature	0 °C ... +60 °C			0 °C ... +60 °C
Dimensions WxHxD	Monitoring unit: 64 mm x 98 mm x 37 mm converter: M18 thread x 1, 35 mm long			M18 thread 22 mm, 72 mm long
Connection	3 V1 plug connectors (M12 x 1), 4-pin			2 m, PVC cable
Ordering information	Sensor for double-sheet detection	Sensor for label-detection	Sensor for adhesive area detection	Sensor for double-sheet detection
Order code	UDB-18GM35-3E2	UDBL-18GM35-3E2	UDBK-18GM35-3E2	UDC-18GM400-3E3

Other options available on request





Ultrasonic sensor Shorty 18GM40

- 40 mm short, compact ultrasonic sensor in M18 metal housing
- High operating reliability in the event of dirt accumulation, integrated temperature compensation
- Function indicator visible from any angle
- Temperature compensation



Ultrasonic Sensors Series 12GM

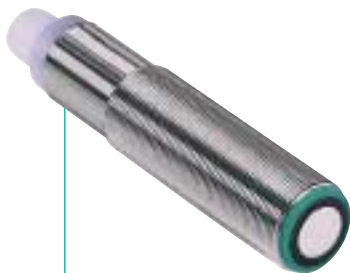
- Miniature ultrasonic sensor in M12 metal housing
- High operating reliability in the event of dirt accumulation, integrated temperature compensation
- Positive detection of metallised, glossy and transparent surfaces
- Simple adjustment via TEACH-IN (control input)



Ultrasonic sensor F12

- Width of ultrasonic cone in the near range can be selected
- Synchronisation possibilities
- Temperature compensation
- Very small blind zone

	30 mm ... 300 mm			30 mm ... 400 mm, adjustable			30 mm ... 800 mm		
	10 (15*) V DC ... 30 V DC			10 (15*) V DC ... 30 V DC			10 V DC ... 30 V DC		
	1 switch output, PNP, normally open/ normally closed parameterisable	1 analogue output 4 mA ... 20 mA short-circuit and overload protected	1 analogue output 0 V ... 10 V short-circuit and overload protected	1 switch output, PNP, normally open/normally closed adjustable	1 analogue output 4 mA ... 20 mA	1 analogue output 0 V ... 10 V	Push-pull output, short-circuit proof, reverse polarity protected		
	200 mA			100 mA			200 mA		
	max. 0.4 mm			max. 0.1 mm					
	8 Hz			10 Hz			max. 4 Hz		
	approx. 30 ms			50 ms			approx. 100 ms		
	Switching status			Switching status			Switching status		
	IP65			IP65			IP67		
	-25 °C ... +70 °C			-25 °C ... +70 °C			-25 °C ... +70 °C		
	M18 thread x 1, 50.2 mm long			M12 thread x 1, 70 mm long			15 mm x 49 mm x 41.5 mm		
	V1 connector (M12 x 1), 4-pin			V1 connector (M12 x 1), 4-pin			Device connector V15 (M12 x 1)		
UB300-18GM40-E5-V1	UB300-18GM40A-E5-V1	UB300-18GM40-I-V1	UB300-18GM40A-I-V1	UB400-12GM-E5-V1	UB400-12GM-I-V1	UB400-12GM-U-V1*	UB800-F12P-EP-V15		



Ultrasonic Sensors Series 18GM

- Small, compact ultrasonic sensor in M18 metal housing
- High operating reliability in the event of dirt accumulation, integrated temperature compensation
- Positive detection of metal plated, glossy and transparent surfaces
- Simple adjustment via TEACH-IN (control input)



Ultrasonic Sensors Series F64

- Miniature ultrasonic single pass light beam switch for the detection and counting of transparent objects
- High operating reliability in dirty conditions, high switching frequency, small beam angle
- Positive detection of metallised, glossy and transparent surfaces

	30 mm ... 500 mm, adjustable					0 mm ... 500 mm	0 mm ... 1500 mm			
	10 (15*) V DC ... 30 V DC					18 V DC ... 30 V DC				
	1 switch output, PNP, normally open/normally closed adjustable	1 switch output, NPN, normally open/normally closed adjustable	2 switch outputs, PNP, normally open/normally closed adjustable	2 switch outputs, NPN, normally open/normally closed adjustable	1 analogue output 4 mA ... 20 mA	1 analogue output 0 V ... 10 V	1 switch output, PNP, normally open	1 switch output, NPN, normally open	1 switch output, PNP, normally open	1 switch output, NPN, normally open
	30 V DC/100 mA		30 V DC/2 x 100 mA		30 V DC/200 mA					
	max. 0.1 mm									
	10 Hz					100 Hz				
	50 ms					120 Hz				
	Switching status					5 ms				
	IP65					Switching status				
	-25 °C ... +70 °C					IP54				
	0 °C ... +60 °C					Switching status				
	M18 thread x 1, 75 mm long					IP54				
	V15 connector (M12 x1), 5-pin					0 °C ... +60 °C				
	V15 connector (M12 x1), 5-pin					25 mm x 40 mm x 18 mm				
	V15 connector (M12 x1), 5-pin					V3 connector (M8 x 1), 3-pin				
	V15 connector (M12 x1), 5-pin					V3 connector (M8 x 1), 3-pin				
	V15 connector (M12 x1), 5-pin					V3 connector (M8 x 1), 3-pin				
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	V15 connector (M12 x1), 5-pin					V				



CAPACITIVE PROXIMITY SWITCHES



Series 12GM

Series 18GM

Series 30GM

Highlights	<ul style="list-style-type: none"> ■ Cyl. type: M12 ■ Sensitivity adjustable via potentiometer ■ LED display ■ With cable or M12 connector 		<ul style="list-style-type: none"> ■ Cyl. type: M18 ■ Sensitivity adjustable via potentiometer ■ LED display ■ With cable or M12 connector 		<ul style="list-style-type: none"> ■ Cyl. type: M30 high-grade steel housing ■ Sensitivity adjustable via potentiometer ■ LED display ■ With cable or M12 connector 	
Installation	embeddable		embeddable		embeddable	
Operating distance	4 mm		8 mm		10 mm	
Assured operating distance	0 mm ... 4 mm		0 mm ... 8 mm		0 mm ... 10 mm	
Operating voltage	10 V DC ... 35 V DC		10 V DC ... 30 V DC		10 V DC ... 60 V DC	
Switch output	1 PNP transistor		1 PNP transistor		1 PNP transistor	
Switching current	200 mA		300 mA		200 mA	
Switching frequency	100 Hz		100 Hz		10 Hz	
Voltage drop	3 V		3 V		2.8 V	
Function displays	Switching status		Switching status		Switching status	
Operating temperature	-25 °C ... 70 °C		-30 °C ... 70 °C		-25 °C ... 70 °C	
Dimensions Diameter x L / W x H x D	M12 x 50 mm	M12 x 60 mm	M18 x 65 mm	M18 x 75 mm	M30 x 69 mm	M30 x 80 mm
Connection	Fixed cable 2 m	M12 metal plug connection, 4-pin	Fixed cable 2 m	M12 metal plug connection, 4-pin	Fixed cable 2 m	M12 metal plug connection, 4-pin
Order code	CJ4-12GM-E	CJ4-12GM-E2	CJ8-18GM-E2	CJ8-18GM-E2-V1	CJ10-30GM-E2	CJ10-30GM-E2-V1

Other options available on request



Series F46

- 5 mm, flat
- Perfect EMC
- Simple installation
- Favourably priced
- Can be mounted on metal

Series F46A

- IP68/IP69k
- PVDF housing
- Resistant to chemicals
- Simple installation
- Can be mounted on metal

Series F64

- High operating distance
- Can be mounted on metal
- Simple installation
- Favourably priced

VariKont series

- High range
- Standard housing shape
- Head can be rotated = flexibility
- Various mounting accessories

not embeddable, can be mounted in rows

5 mm

0 mm ... 3.5 mm

10 V DC ... 30 V DC

1 PNP transistor

100 mA

10 Hz

2 V

Switch status

-25 °C ... 70 °C

50 mm x 20 mm x 5 mm

Fixed cable 2 m

CBN5-F46-E2

not embeddable, can be mounted in rows

5 mm

0 mm ... 3.5 mm

10 V DC ... 30 V DC

1 PNP transistor

100 mA

10 Hz

2 V

Switch status

-25 °C ... 70 °C

50 mm x 20 mm x 5 mm

Fixed cable 2 m

CCN5-F46A-N1

not embeddable

15 mm

0 mm ... 12 mm

10 V DC ... 30 V DC

1 PNP transistor

100 mA

20 Hz

2 V

Switch status

-25 °C ... 70 °C

40 mm x 25 mm x 12 mm

Fixed cable 2 m

CCN15-F64-E2

not embeddable

40 mm

0 mm ... 40 mm

10 V DC ... 60 V DC

2 PNP transistors

200 mA

10 Hz

3 V

Switch status

-25 °C ... 70 °C

118 mm x 40 mm x 40 mm

Terminal compartment

CJ15+U1+A2



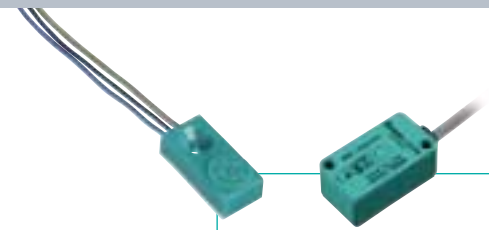
INDUCTIVE PROXIMITY SWITCHES – SQUARE-SHAPED



VariKont M series



VariKont L series



Series NBB

Highlights	<ul style="list-style-type: none"> Head can be rotated flexibly Quick mounting lock V1 connector or terminal compartment Various mounting accessories 		<ul style="list-style-type: none"> Head can be rotated Quick mounting lock LED display visible from all angles V1 plug connector 			
Installation	not embeddable	not embeddable	embeddable		not embeddable	embeddable
Operating distance	15 mm	40 mm	20 mm	20 mm	40 mm	1.5 mm
Assured operating distance	(0 ... 12.15) mm	(0 ... 32.4) mm	(0 ... 16.2) mm	(0 ... 16.2) mm	(0 ... 32.4) mm	(0 ... 1.215) mm
Operating voltage	10 V DC ... 60 V DC		10 V DC ... 30 V DC		5 V DC ... 30 V DC	
Switch output	2 PNP transistors	1 PNP transistor	1 PNP transistor	2 PNP transistors	2 PNP transistors	1 PNP transistor
Switching current	200 mA		200 mA		100 mA	
Switching frequency	500 Hz		150 Hz		0 Hz ... 500 Hz	
Voltage drop	2 V		2 V		3 V	
Function displays	Switching status + Operating voltage		Switching status + Operating voltage			
Operating temperature	-25 °C ... +85 °C		-25 °C ... +85 °C		-25 °C ... +70 °C	
Dimensions BxHxL	30 mm x 30 mm x 91 mm		40 mm x 40 mm x 55.5 mm		8 mm x 4 mm x 16mm	
Connection	Terminal compartment		M12 metal plug connector, 4-pin		PVC cord	
Order code	NCN15-M1K-E5		NBN40-L2-E2-V1	NBB20-L2-E2-V1	NBB20-L2-A2-V1	NBN40-L2-A2-V1
						NBB1,5-F79-E2

Other options available on request





Series NJ

Series NBN

■ Inductive sensors – square-shaped or flat

embeddable					not embeddable		embeddable		not embeddable
1.5 mm	1.5 mm	1.5 mm	1.5 mm	2 mm	4 mm	2 mm	6 mm	6 mm	4 mm
(0 ...1.215) mm				(0 ... 1.62) mm	(0 ... 3.24) mm	(0 ... 1.62) mm	(0 ... 4.8) mm	(0 ... 4.8) mm	(0 ... 3.24) mm
10 V DC ... 30 V DC					10 V DC ... 30 V DC		10 V DC ... 60 V DC		(10 ... 30) V DC
1 PNP transistor	1 PNP transistor	1 PNP transistor	1 PNP transistor	1 PNP transistor					1 PNP transistor
200 mA					200 mA				100 mA
1500 Hz				1000 Hz		1400 Hz	500 Hz		1000 Hz
3 V						2.5 V	3 V		3 V
Switch status					Switch status				Switch status
-25 °C ... +70 °C					-25 °C ... +70 °C				-25 °C ... +70 °C
(46 x 8 x 8) mm	(46 x 8 x 8) mm	(40 x 8 x 8) mm	(40 x 8 x 8) mm	(27.8 x 16 x 10.2) mm	26 mm x 40 mm x 12 mm	26 mm x 40 mm x 12 mm	(45 x 30 x 12) mm	(45 x 30 x 12) mm	(27 x 10 x 6) mm
M8 metal plug connector, 3-pin		Fixed cable			Fixed cable				Fixed cable
NBB1,5-F41-E2-V3	NBB1,5-F41A-E2-V3	NBB1,5-F41-E2	NBB1,5-F41A-E2	NBB2-V3-E2	NJ4-F1-E2	NJ2-F1-E2	NJ6-F-E2	NJ6-F-A2	NBN4-F29-E2



INDUCTIVE PROXIMITY SWITCHES – CYLINDRICAL SHAPE



Series 4GM/5GM



Series 8GM

Highlights

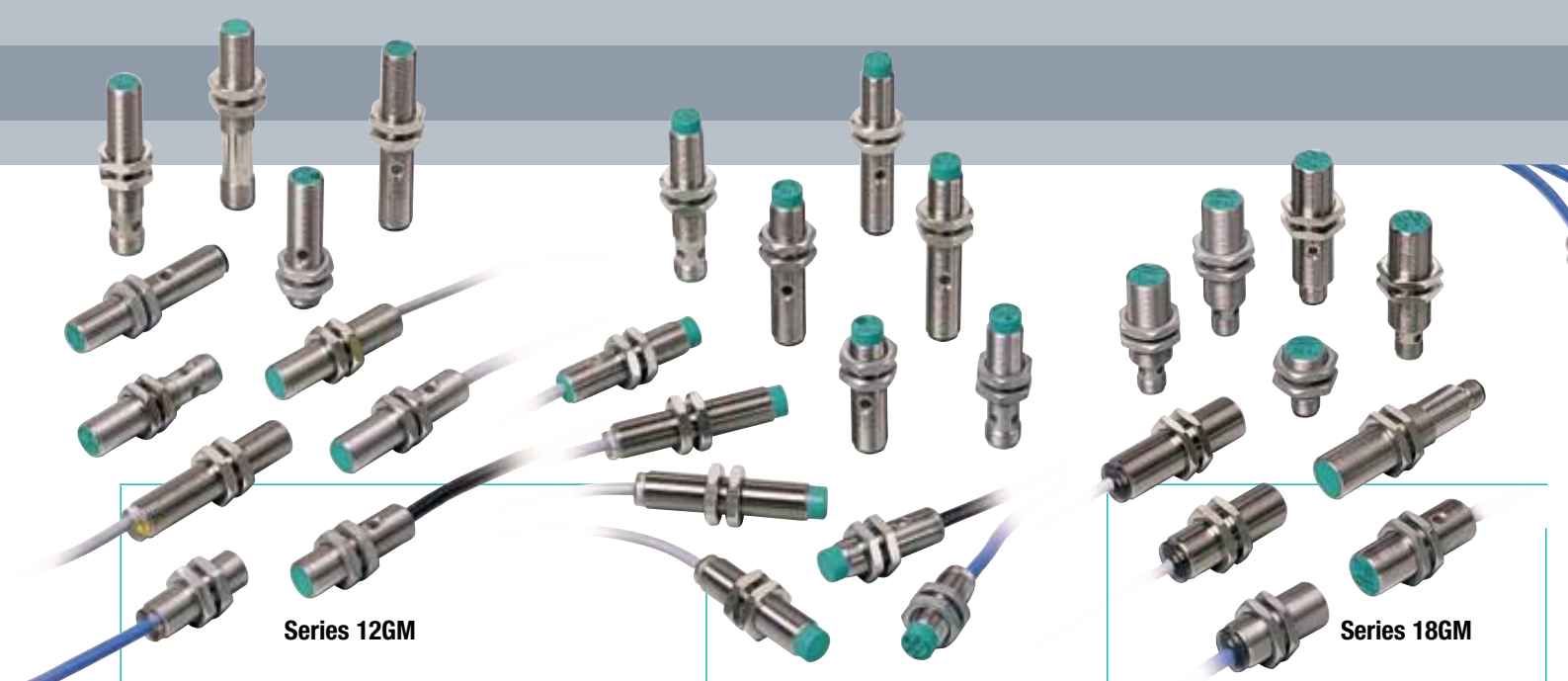
- Inductive sensors - cylindrical, for the contact-free detection of metallic objects
- Miniature type
- High-grade steel housing M4 or M5

- Inductive sensors - cylindrical, for the contact-free detection of metallic objects
- Brass housing, nickel plated

Installation	embeddable			embeddable			not embeddable	
Operating distance	0.6 mm	0.8 mm		1.5 mm	1.5 mm	2 mm	3 mm	2 mm
Assured operating distance	0 mm ... 0.486 mm	0 mm ... 0.648 mm		(0 ... 1.215) mm	(0 ... 1.215) mm		(0 ... 1.62) mm	(0 ... 1.62) mm
Operating voltage	10 V DC ... 30 V DC			10 V DC ... 30 V DC				
Switching output	1 PNP transistor	1 PNP transistor	1 PNP transistor	1 PNP transistor				
Switching current	100 mA			100 mA				
Switching frequency	3000 Hz			1500 Hz				
Voltage drop	2 V	3 V		3 V				
Function displays	Switch status			Switching status				
Operating temperature	-25 °C ... +70 °C			-25 °C ... +70 °C				
Dimensions: Diameter x L	M4 x 19 mm	4 mm x 25 mm	M5 x 25 mm	M8 x 40 mm	M8 x 50 mm	M8 x 30 mm	M8 x 40 mm	M8 x 50 mm
Connection	Fixed cable 2 m			M12 metal plug connector, 4-pin	M8 metal plug connector, 3-pin		M12 metal plug connector, 4-pin	M12 metal plug connector, 4-pin
Order code	NJ0,6-4GM22-E2	NBB0,8-4M25-E2	NBB0,8-5GM25-E2	NBB1,5-8GM40-E2-V1	NBB1,5-8GM50-E2-V3	NBB2-8GM30-E2-V1	NBN3-8GM30-E2-V1	NBN2-8GM40-E2-V1

Other options available on request





Series 12GM

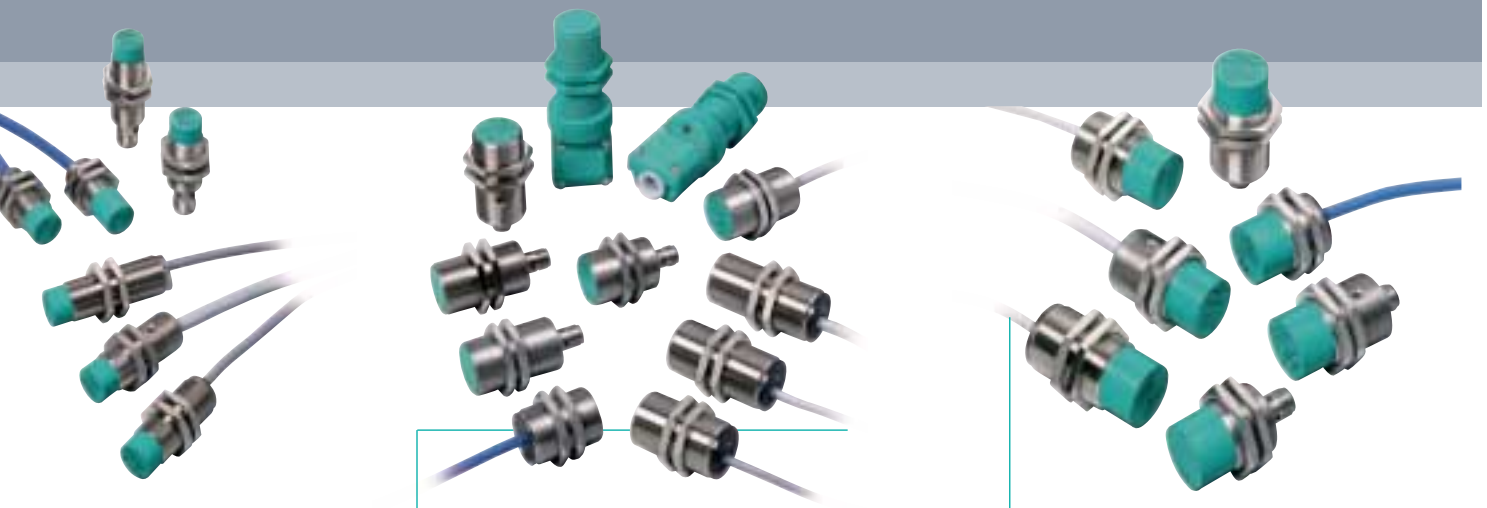
- Inductive sensors - cylindrical, for the contact-free detection of metallic objects
- Brass housing, nickel plated

Series 18GM

- Inductive sensors - cylindrical, for the contact-free detection of metallic objects
- Brass housing, nickel plated

	embeddable			quasi embeddable	not embeddable			embeddable		quasi embeddable	
	2 mm	4 mm	4 mm	6 mm	4 mm	8 mm	10 mm	5 mm	8 mm	12 mm	8 mm
	(0 ... 1.62) mm	(0 ... 1.215) mm	(0 ... 3.24) mm	(0 ... 4.86) mm	(0 ... 3.24) mm	(0... 6.48) mm	(0 ... 8.1) mm	(0 ... 4.05) mm	(0 ... 6.48) mm	(0 ... 9.72) mm	(0 ... 6.48) mm
	10 V DC ... 30 V DC							10 V DC ... 30 V DC			
	1 PNP transistor							1 PNP transistor			
	200 mA							200 mA			
	1500 Hz		800 Hz		1200 Hz	500 Hz	400 Hz	800 Hz	500 Hz		
	3 V		2 V		3 V		2 V	3 V		2 V	
	Switching status							Switching status			
	-25 °C ... +70 °C							-25 °C ... +70 °C			
	M12 x 50 mm	M12 x 30 mm	M12 x 50 mm					M18 x 50 mm	M12 x 30 mm		
	M12 metal plug connector, 4-pin	M8 metal plug connector, 3-pin	M12 metal plug connector, 4-pin					M12 metal plug connector, 4-pin			
	NBB2-12GM50-E2-V1	NBB4-12GM30-E2-V3	NBB4-12GM50-E2-V1	NEB6-12GM50-E2-V1	NBN4-12GM50-E2-V1	NBN8-12GM50-E2-V1	NEN10-12GM50-E2-V1	NBB5-18GM50-E2-V1	NBB8-18GM50-E2-V1	NBB8-18GM30-E2-V1	NEB12-18GM50-E2-V1





Series 30GM

- Inductive sensors - cylindrical, for the contact-free detection of metallic objects
- Brass housing, nickel plated

not embeddable			embeddable			quasi embeddable	not embeddable			
8 mm	12 mm	20 mm	10 mm	15 mm	15 mm	22 mm	15 mm	25 mm	40 mm	
(0 ... 6.48) mm	(0 ... 9.72) mm	(0... 16.2) mm	(0 ... 8.1) mm	(0 ... 12.15) mm	(0 ... 12.15) mm	(0 ... 17.82) mm	(0 ... 12.15) mm		(0 ...32.4) mm	
0 V DC			10 V DC ... 30 V DC							
sistor			1 PNP transistor							
A			200 mA							
		200 Hz	200 Hz							100 Hz
	3 V	2 V	3 V			2 V	3 V	2 V		
status			Switching status							
-70 °C			-25 °C ... +70 °C							
M18 x 50 mm			M30 x 50 mm		M30 x 30 mm	M30 x 60 mm	M30 x 50 mm		M30 x 60 mm	
	Fixed cable 2 m	M12 metal plug connector, 4-pin	M12 metal plug connector, 4-pin							
NBN8-18GM50-E2-V1	NBN12-18GM50-E2	NEN20-18GM50-E2-V	NBB10-30GM50-E2-V1	NBB15-30GM50-E2-V1	NBB15-30GM30-E2-V1	NBB22-30GM60-E2-V1	NBN15-30GM50-E2-V1	NBN25-30GM50-E2-V1	NEN40-30GM60-E2-V1	





Mounting aids

Order code	Description
BF 12 / BF 12-F	Fixing flange for M12 sensors/with fixed stop
BF 18 / BF 18-F	Fixing flange for M18 sensors/with fixed stop
BF 30 / BF 30-F	Fixing flange for M30 sensors/with fixed stop
BF5-30	Universal fixing set for diameters 5 mm ... 30 mm
OMH-04	Mounting aid for M18 sensors on 12 mm round steel, adjustable
MH 01-M18	Mounting aid for M18 sensors on 12 mm round steel, adjustable about 3 axes
9310	Clamping eccentric, 3 set for encoder series 10 and 58
9313	Clamping eccentric, 3 set for encoder series TRD-J
9250	Sprung mounting bracket for encoder series 10 and 58
9213	Sprung mounting bracket for encoder series TRD-J
OMH-MLV12-HWK	Fixing bracket, small for photoelectric sensors Series MLV12
OMH-MLV12-HWG	Fixing bracket, large for photoelectric sensors Series MLV12
OMH-K01	Clamping fitting for dovetail – photoelectric sensors Series MLV12
OMH-K03	Clamping fitting for dovetail – photoelectric sensors Series MLV12
OMH-MLV11-K	Clamping fitting for dovetail – photoelectric sensors Series 28
OMH-4.1	Fixing bracket for photoelectric sensors Series ML4.1 and ML6-8-H
OMH-ML7-01	Fixing bracket for photoelectric sensors Series ML7
OMH-ML7-02	Fixing bracket for photoelectric sensors Series ML71
OHM-ML6	Fixing bracket for photoelectric sensors Series ML4.1 and ML6
OMH-40	Fixing bracket for photoelectric sensors Series MLV40 and MLV41
OMH-VL18	Fixing bracket with tabulating mechanism, mainly for the single-path light beam switch VS18/VSE18

Reflectors

Order code	Description
C110-2	Diameter 84 mm
ORR50	50.9 mm x 50.9 mm
VR10	60 mm x 19.2 mm
H60	60 mm x 40.5 mm
H85	84.5 mm x 84.5 mm
H160	60 mm x 18 mm
Reflex foil OFR-A4	210 mm x 295 mm

Connection cable

Order code	Description
V3-GM-5M-PVC	M8 cable socket, straight, 3-pin with 5 m cable
V3-WM-5M-PVC	M8 cable socket, angled, 3-pin with 5 m cable
V31-GM-5M-PVC	M8 cable socket, straight, 4-pin with 5 m cable
V31-WM-5M-PVC	M8 cable socket, angled, 4-pin with 5 m cable
V1-G-2M-PVC	M12 cable socket, straight, 4-pin with 2 m cable
V1-W-2M-PVC	M12 cable socket, angled, 4-pin with 2 m cable
V1-G-5M-PVC	M12 cable socket, straight, 4-pin with 5 m cable
V1-W-5M-PVC	M12 cable socket, angled, 4-pin with 5 m cable
V1-G	M12 cable sockets, straight, 4-pin, for making up
V1-G-VL18	M12 Vario-Quick plug connector, 4-pin
V1-W	M12 cable socket, angled, 4-pin, for making up
V3-GM	M8 cable socket, straight, 3-pin, for making up
V3-WM	M8 cable socket, angled, 3-pin, for making up
V15-G-2M-PVC	Plug connector straight, M12, 5-pin with 2 m PVC cable
V15-W-2M-PVC	Plug connector angled, M12, 5-pin with 2 m PVC cable
V15-W-2M-PUR	Plug connector angled, M12, 5-pin with 2 m PUR cable
V15-G-5M-PVC	Plug connector straight, M12, 5-pin with 5 m PVC cable
V15-W-5M-PVC	Plug connector angled, M12, 5-pin with 5 m PVC cable

Other accessories available on request





AS-INTERFACE

The AS-Interface product information gives you an overview of our complete portfolio: master and gateways for the connection to host field buses, power units, slaves in the form of coupling modules or intelligent sensors, system accessories and AS-Interface safety at work.

Data Matrix

The standardised Data Matrix Code is the intelligent continued development of the barcode. The Data Matrix technology used for identification purposes is based on modern image processing and is characterised by: extremely high failsafe operation, storage of a large amount of data in the smallest of space and a high reading speed. If you are interested in our Data Matrix reading and monitoring units ask for our product overview Identification systems!



Safety Systems

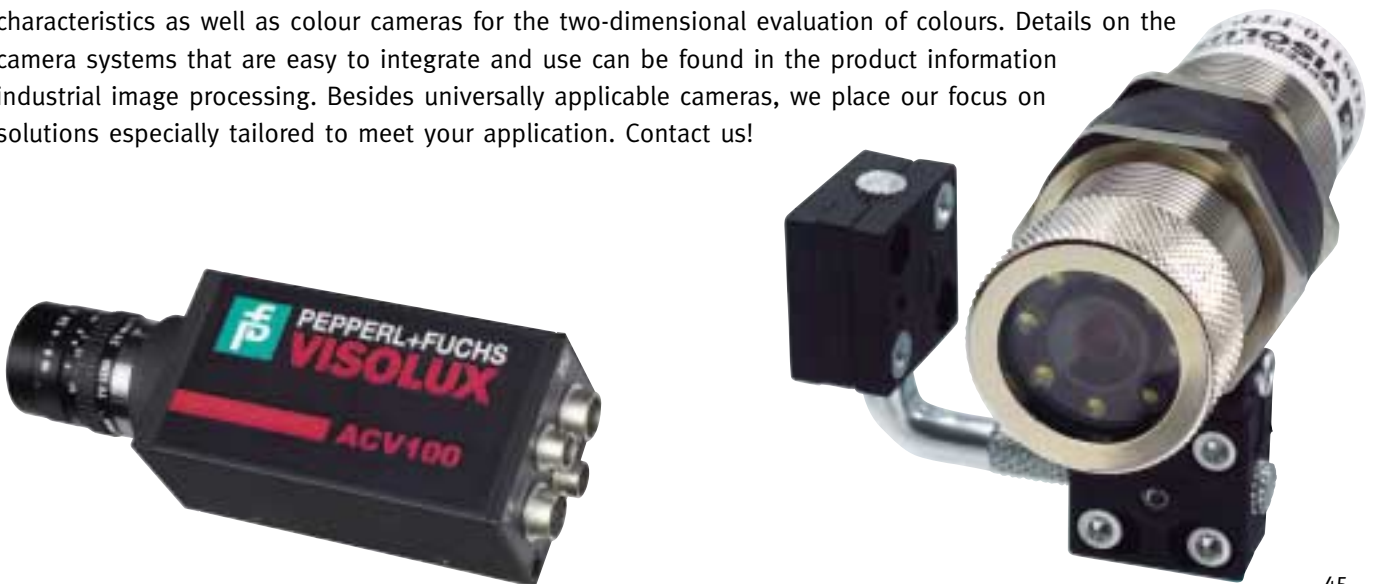
Safety means protection from danger and hazards. From the contact-free protection device to system solutions with economical safety technology. From the individual safety light sensor to multibeam machine protection.

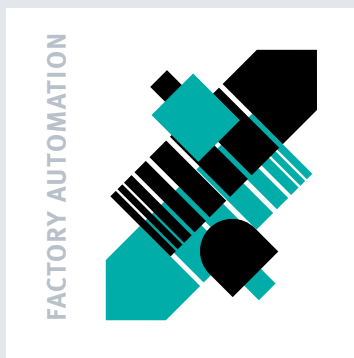
For finger protection, hand protection or body protection. The product overview safety systems provides you with more information on our safety sensors and monitoring units. Do you already know the SafeBox?



VISION SENSOR TECHNOLOGY

Where conventional sensor technology reaches its limits – e.g. when detecting complex scenes – our vision technology comes into play. Our product spectrum includes black/white systems for detecting contours and surface characteristics as well as colour cameras for the two-dimensional evaluation of colours. Details on the camera systems that are easy to integrate and use can be found in the product information industrial image processing. Besides universally applicable cameras, we place our focus on solutions especially tailored to meet your application. Contact us!





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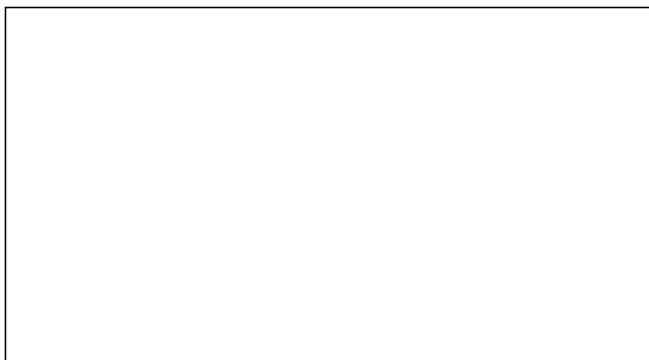
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