

Sommer-automatic

Grippers

Separators

Swivel units

Rotating jaws

Axial compensators

Tool changers

Linear cylinders

Shock absorbers

Rotary cylinders

Air vane motors

Vacuum components

Accessories

Quick finder

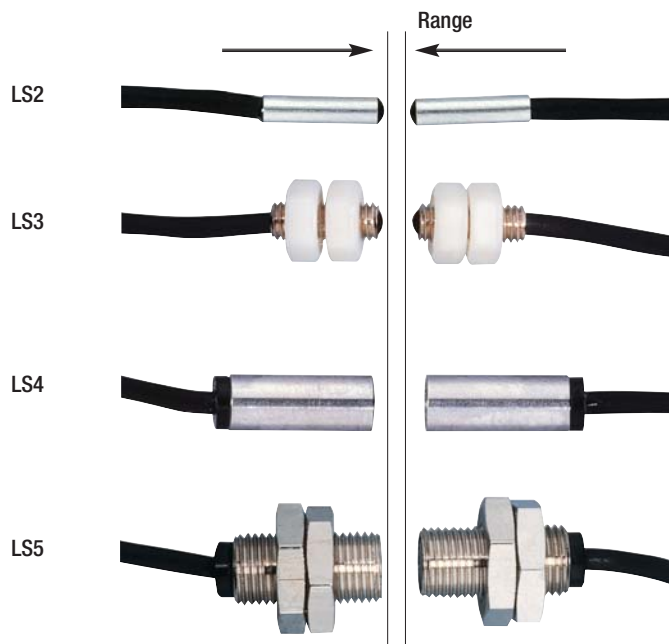


UV1

Amplifier thru-beam micro-sensors

Amplifier

Order no.:				
UV1				
Function:				
tacted				
Cutoff frequency [Hz]:				
500				
Impulse-duration selectable [ms]:				
0 or 50				
Operating voltage[VDC]:				
10-30				
Load Current [mA]:				
200				
Consumption [mA]:				
50				
Housing-material:				
ABS				
Min./max. operating temperature. [°C]:				
-10/+55				
Protection class:				
IP65				
Weight [kg]:				
0,067				



Thru-beam micro-sensors

Order no.:				
LS2	LS3	LS4	LS5	
Range max. [mm]:				
200	200	1200	1200	
Diameter [mm]:				
2	M3	4	M5x0,5	
Wire Length [m]:				
2	2	2	2	
Wire-Ø [mm]:				
2,3	2,3	2,3	2,3	

Matching UV1 amplifier

Our Thru-beam micro-sensors are almost too small to be believed. On Thru-beam sensors, the transmitter and receiver are arranged separately. They lie opposite each other, so that the receiver receives the light coming directly from the transmitter. In contrast to glass fiber light scanners. Thru-beam micro-sensors are fitted with a highly flexible cable, and are therefore more mobile. The cable also helps in simplifying installation.

Accessories 1

Accessories 2

Accessories 3

Accessories 4

Accessories 5

Accessories 6

Proximity Switch

Connection cable

Central distributor

Mounting blocks

Inductive proximity switch (quick connect)



G	H	I	J	I	I	K	L	L	L
Order no.:									
NJ4-E2S	NJ6,5-E2S	NJ8-E2S	NJ8-E2S/01	NJ8-E2S/04	NJ8-E2S/05	NJ12-E2S	NJ12-E2S/01	NJ12-E2S/02	NJ12-E2S/03
Size [mm]:									
Ø 4	Ø 6,5	M8x1	M8x1	M8x1	M8x1	M12x1	M12x1	M12x1	M12x1
Dimension L [mm]:									
41	44	44	50	30	30	33	50	70	50
Dimension K [mm]:									
20	-	30	30	-	-	24	30	40,5	30
Form of installation:									
flush	flush	flush	flush	flush	flush	flush	flush	flush	flush
Dimensioning switching distance S_n [mm]:									
0,8	1,5	2	1,5	1,5	1,5	2	4	2	2
Secured switching distance S_n [mm]:									
0...0,65	0...1,2	0...1,6	0...1,2	0...1,2	0...1,2	0...1,6	0...3,2	1,6	0...1,6
Dimensioning operating voltage [V DC]:									
24	24	24	24	24	24	24	24	24	24
Dimensioning insulation voltage [V DC]:									
75	75	75	75	75	75	75	75	250	250
No load operating current [mA]:									
100	200	200	200	200	200	130	130	200	200
Transient current / dampened / undampened [mA]:									
<12/<5	<25/<12	<25/<12	<25/<12	<20/<12	<8/<1	<25/<12	<25/<12	<8/<1	<10/<4
Residual current [μ A]:									
< 80	< 80	< 80	< 80	< 80	< 10	<80	< 80	< 10	< 10
Safe against incorrect poling:									
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Overload-proof :									
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Repetition precision [%]:									
< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Ambient temperature min./max. [°]:									
-25/+70	-25/+70	-25/+70	-25/+70	-25/+70	-40/+85	-25/+70	-25/+70	-40/+85	-25/+70
Switching frequency [Hz]:									
<1000	<1500	1000	1500	1500	3000	1000	600	3000	5000
LED Function display:									
yes	yes	yes	yes	no	yes	yes	yes	yes	yes
Protection class to IEC 529:									
IP 67	IP 67	IP 67	IP 67	IP 65	IP 67	IP 67	IP 67	IP 68	IP 68
Housing material (non-rusting or nickel-plated):									
Steel	Steel	Steel	Steel	Steel	Steel	Messing	Messing	Steel	Messing
Kind of connection:									
Plug	Plug	Plug	Plug.	Plug	Plug	Plug	Plug	Plug	Plug
Number of conductors x cross-section of conductors [mm ²]:									
-	-	-	3 x 0,14	-	-	-	-	-	-
Approval:									
-	-	UL	UL	UL	UL	UL	UL	UL	-

All switches are PNP, sourcing

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Shock absorbers

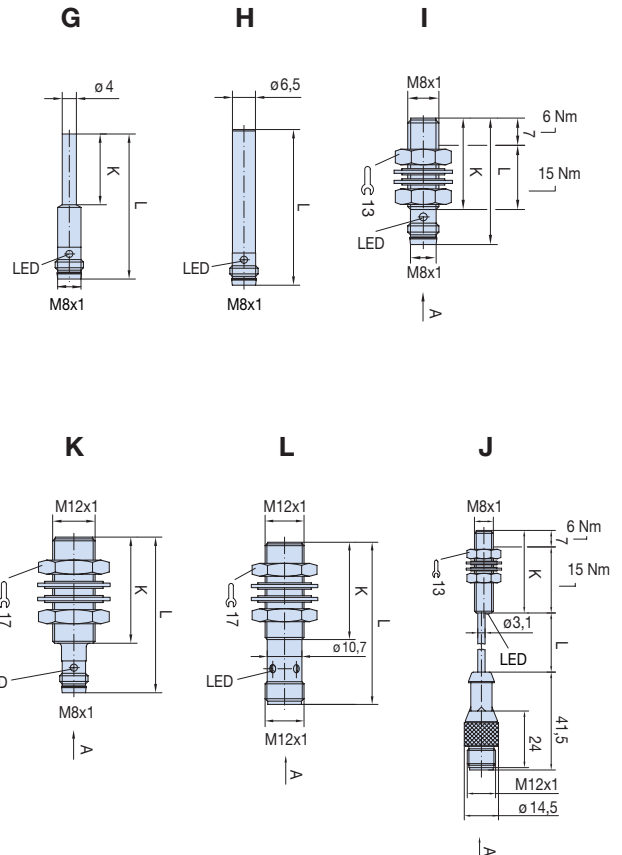
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SP *i-tec* 2005

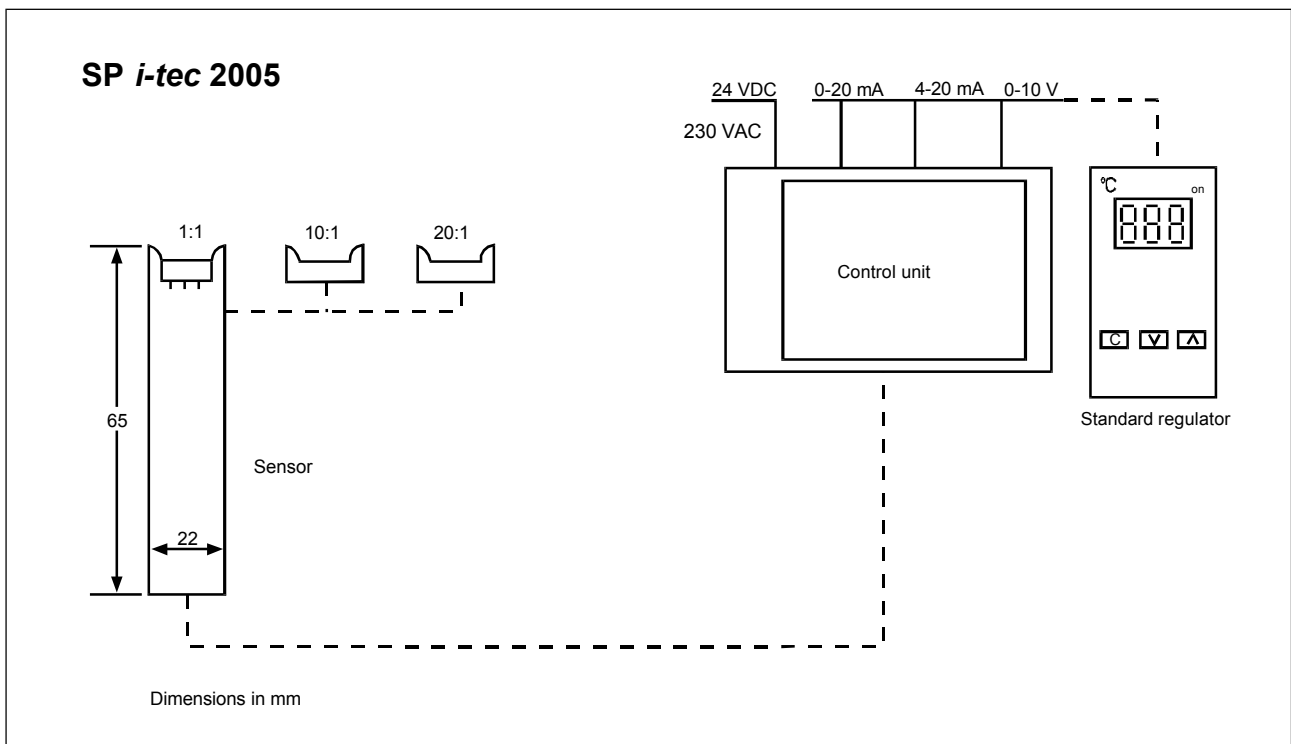
Controlling and regulation of industrial production processes contactless with infrared



The SP *i-tec* 2005 is an infrared non-contact temperature measuring instrument for combination with all standard temperature regulators and PLC's.

- ▶ Temperature range switchable: 0-100°C, 0-200°C, 0-250°C, 0-400°C or 0-500°C. Optional 400-1200°C
- ▶ Calibrated to international standards
- ▶ Output exchangeable: 0-20 mA, 4-20 mA or 0-10 V
- ▶ Separate plug-in sensor with exchangeable optics
- ▶ Sensor with connection for air cooling and lens cleaning
- ▶ Protective jacket of teflon or metal
- ▶ General applicable for the controlling and regulation of industrial processes
- ▶ Mounting on DIN rail possible
- ▶ Sensor cable up to 40 m
- ▶ Temperature registration of all materials before, during and after the production process
- ▶ Small dimensions, easy to install
- ▶ Spot sizes up to 1 mm
- ▶ Also in stainless steel available

Technical specifications			
Temperature range	0-100°C, 0-200°C, 0-250°C, 0-400°C, 0-500°C. Optional 400-1200°C	Acceptable ambient temperature/sensor	0 to 50°C (without cooling)
Resolution	0,1°C	Acceptable ambient temperature/unit	0 to 60°C
Response time	50 ms	Acceptable moisture	Sensor: 65%
Accuracy	± 1% of the temperature range	Power Supply	24 VDC or 230 VAC
Repeatability	0,5°C (0 to 100°C) 1,0°C (above 100°C)	Dimensions/housing	W = 120 mm, H = 80 mm, D = 60 mm
Distance/ Aperture spot	1 : 1 (see the options as well)	Dimensions/sensor	L = 65 mm, Ø = 22 mm (40 mm with protective jacket)
Minimum spot size diameter	8 mm Ø Optional 2.5 mm Ø	Output	0 - 20 mA, 4 - 20 mA or 0 - 10 V
Spectral response	8 - 14 µm	Max. load	500 OHM
Emissivity coefficient compensation	1,0 - 0,1	Cable connection	PG 7, plastic



Options

- ▶ Auxiliary optic for distance/measuring spot 10 : 1 (smallest measuring spot 8 mm in 50 mm distance)
- ▶ Auxiliary optic for distance/measuring spot 20 : 1 (smallest measuring spot 13 mm in 146 mm distance)
- ▶ Laser sighting to pinpoint targets
- ▶ Air cooling kit: pressure regulator, incl. filter and hose (3 m)
- ▶ Protective jacket of teflon or metal
- ▶ Cable extension up to 40 m

Adjust switching distance on mic-xxx/D:

1. Press pushbuttons T1 and T2 simultaneously for 3 sec until the LED flashes yellow
2. Set switching distance (*): T1 increases switching distance T2 decreases switching distance (if an object is detected within the actual switching distance, the LED is illuminated permanently yellow; otherwise it flashes yellow)
3. Do not press any button for 20 sec: the programmed switching distance is stored permanently within an EEPROM; mic-xxx/D returns to its normal operating mode

Adjust switching distance on mic-xxx/DD:

1. Press pushbuttons T1 and T2 simultaneously for 3 sec until LEDs D1 and D2 flash yellow.
2. Release buttons: the LEDs flash vice versa.
3. Select switching output: T1 chooses output S1 (D1 yellow, D2 off) T2 chooses output S2 (D2 yellow, D1 off)
4. Set switching distance (*): T1 increases switching distance T2 decreases switching distance (if an object is detected within the actual switching distance, the LED is illuminated permanently yellow; otherwise it flashes yellow).
5. Do not press any button for 20 sec: the programmed switching distance is stored permanently within an EEPROM; mic-xxx/DD returns to its normal operating mode.

Repeat step 1-5 for each switching output.

Select switching function on mic-xxx/D and mic-xxx/DD:

1. Press pushbuttons T1 and T2 simultaneously for 10 sec until yellow flashing stops and both LEDs are on permanently (only 1 LED on /D).
2. Release buttons: LED flashes green: n.c. LED flashes red: n.o.

(/DD: LED D1 indicates the function of switching output S1, D2 the one of S2).

3. Button T1 toggles the function of S1, button T2 toggles the function of S2.
4. Do not press any button for 20 sec: the programmed switching characteristic is stored permanently in an EEPROM; the sensor returns to its normal operating mode

Remark:
In normal operating mode red LEDs indicate that the corresponding switching distance is reached - independent of the selected switching characteristic.

Adjust window margins on mic-xxx/IU:

Hint: Set the inner margin (the margin near to the sensor) first, then set the outer margin. Please take into consideration, that the margins cannot be set closer than a minimum difference of 20 to 50 mm - depending on the sensortype

1. Press pushbuttons T1 and T2 simultaneously for 3 sec until both LEDs flash yellow.
2. Release buttons: The LEDs flash vice versa.
3. Press button T2 to select inner margin (D2 yellow, D1 off) Press button T1 to select outer margin (D1 yellow, D2 off).
4. Move margin (*): T1 increases distance T2 decreases distance
5. Do not press any button for 20 sec: The programmed margin will be stored permanently in an EEPROM; mic-xxx/IU returns to its normal operating mode

Repeat step 1-5 for each margin

Select output characteristic on mic-xxx/IU:

1. Press pushbuttons T1 and T2 simultaneously for 10 sec until flashing stops and both LEDs D1 and D2 are illuminated yellow.
2. Release buttons: LEDs flash green: falling output characteristic (20-4 mA / 10-0 V) LEDs flash red: rising output characteristic (4-20 mA / 0-10 V)

3. T1 chooses falling output characteristic T2 chooses rising output characteristic
4. Do not press any button for 20 sec: The programmed characteristic will be stored permanently within an EEPROM; mic-xxx/IU returns to its normal operating mode.

Remark:
If an object is detected within the margins, both LEDs are illuminated green. If the distance of an object falls below the inner margin, LED D2 turns red. If no object is detected or the object is off the outer margin, LED D1 turns red.

When switching on the power supply mic-xxx/IU checks the load resistance, which is connected to the analogue output. It automatically decides which output mode to choose (voltage or current).

*** Quick adjust on mic-xxx/D/DD/IU:**

If the pushbuttons T1 and T2 are pressed simultaneously, the sensor saves the actual distance as the switching distance respectively the analogue window margin in to the EEPROM; the sensor returns to the normal operating mode immediately (learning function).

Pinning of plug connector:

All mic-sensors come with a 5-pin plug connector Binder Series 713

The pinning of the plug and the cable colours of the KSTx connector cables (to be ordered separately) can be found in the following table:

pin-nr.	/DD	/D	/IU	kleur
1	+UB	+UB	+UB	brown
2	S1	-	analogue	white
3	-UB	-UB	-UB	blue
4	S2	S	-	black
5	Contr.	Contr.	Contr.	grey

View onto plug (male):



- **0,36 mm-resolution**
- **5 different detection ranges (max. values from 30 to 6000 mm)**
- **3 outputs available**
 - 1 PNP switching outputs
 - 2 PNP switching outputs
 - analogue output
- **4 - 20 mA en 0 - 10V**
- **N.O. en N.C. selectable**
- **Automatic selection of voltage or current output**
- **Touchcontrol (settings by pushbuttons)**
- **Protects against short circuit and reverse polarity**

Ultrasonic proximity switches of the mic-family work on the principle of the echo runtime measurement.

The sensor emits short burst impulses. When hitting a target, these bursts are reflected and returned to the sensor. From the runtime between sending and receiving the sensor then calculates the distance to the detected object.

Depending on the output type the measured distance is either transformed into an analogue signal or the switching output is set, when the distance has fallen below the selected trip distance. All adjustments are made via 2 push-buttons which are located aside the housing (TouchControl). Three-colour-LED's indicate all possible operating states.

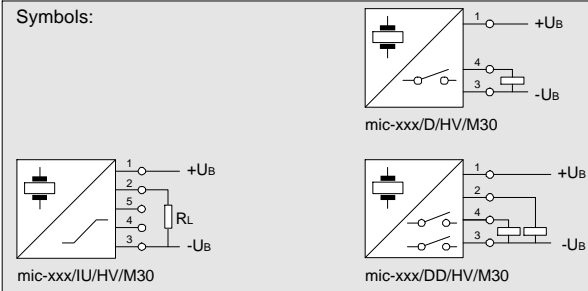
On devices with switching output the output function can be set to normally open (n.o.) or normally closed (n.c.)

The analogue signal of mic-sensors shows a very high accuracy and a minimal linearity error.

The output characteristic of the analogue signal can be set to rising or falling values, when an object approaches.

Common electrical and mechanical data	
Supply voltage U_B :	12 to 30 VDC, reverse polarity protected
Voltage ripple:	$\pm 10\%$
Current consumption:	$\leq 60\text{ mA}$ ($\leq 70\text{ mA}$ mic-xxx/IU)
Switching output mic-xxx/D and /DD:	PNP, $U_B - 2\text{ V}$, $I_{max} = 500\text{ mA}$ Protected against short circuit and reverse polarity, default function set to n.o.
Analogue output: mic-xxx/IU:	Current output 4 - 20 mA ($R_L = \leq 500\ \Omega$, $U_B \geq 20\text{ V}$; $R_L < 100\ \Omega$, $U_B \geq 12\text{ V}$) Voltage output 0 - 10 V ($R_L = \geq 100\text{ k}\ \Omega$, $U_B \geq 15\text{ V}$) Automatic selection by measuring R_L
Housing:	Bass-pipe, nickelized, (opt. stainless steel), thread M30*1,5
Control Elements (TouchControl):	2 pushbuttons, accessible aside the housing
Display Elements:	2 three-colour LED's (1 LED on mic-xxx/D) green: under operation red: distance below trip point or object outside selected windows margins yellow (on or blinking): programming
Operating temperature:	-20°C to +70°C
Storage temperature:	-40°C to +85°C
Connector type::	Universal plug Binder Series 713 material PBTP

Symbols:



mic- Ultrasonic proximity switches - Overview

Operating range	30 - 250 mm	60 - 350 mm	200 - 1300 mm	350 - 3400 mm	800 - 6000 mm
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1 PNP switch output
2 PNP switch outputs
Analogue output

Housing dimensions

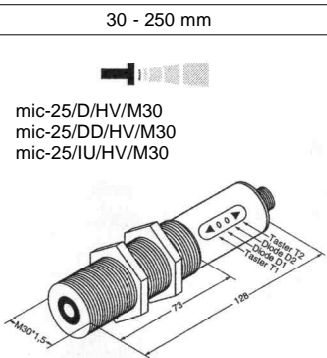
Blind zone
(software reduction)
Angle of beam spread
Transducer frequency
Resolution, sampling rate
Reproducibility
(constant environment)
Temperature drift
Switchinghysteresis mic-xxx/D en /DD
Switchingfrequency mic-xxx/D en /DD
Setting time of analogue output
mic-xxx/IU
Protection class according DIN 40 050

Detection areas using different reflectors

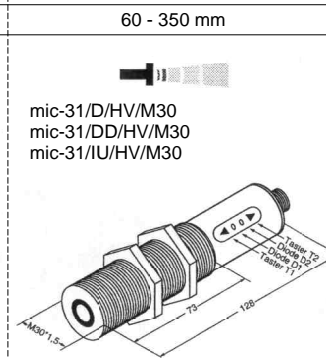
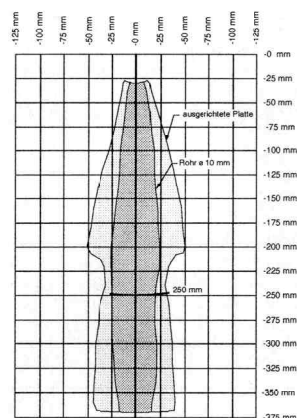
The area shaded in dark grey represents the area where a standardized test reflector (pipe) is detected securely. This is defined to be the working area of the sensor.

The area shaded in a lighter grey represents the area where a big test reflector (plate) is detected - assuming an optional orientation towards the sensor.

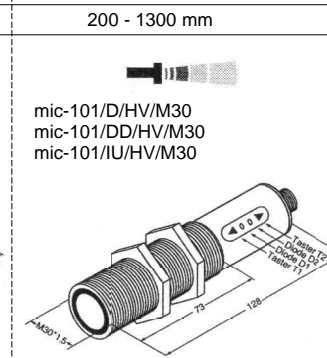
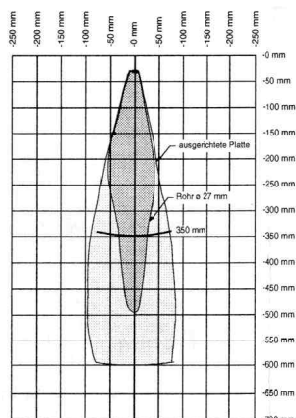
Outside of the grey areas there is no detection of targets.



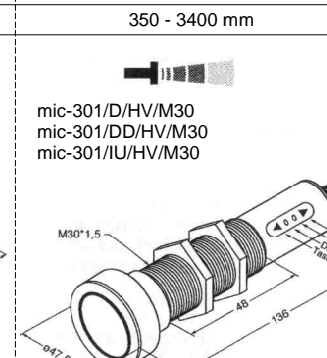
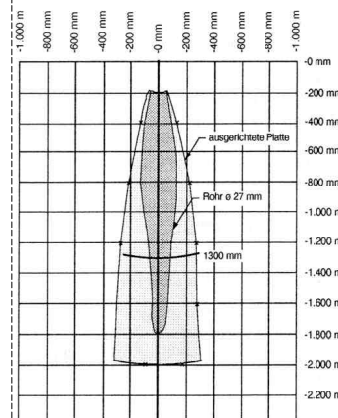
0 mm to 30 mm
See detection area
ca. 320kHz
0,36 mm
± 1 mm
0,17% / K
2,5 mm
14 Hz
40 ms
IP 65



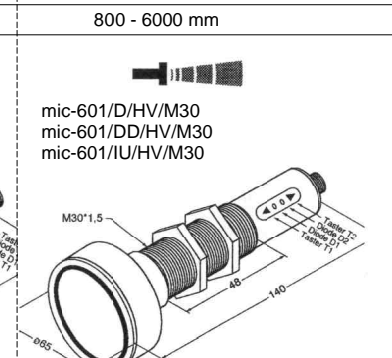
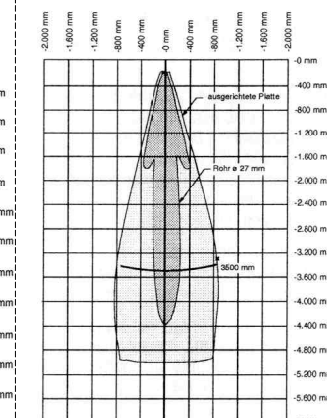
0 mm to 60 mm
See detection area
ca 400kHz
0,36 mm
± 1 mm
0,17% / K
5 mm
8 Hz
55 ms
IP 65



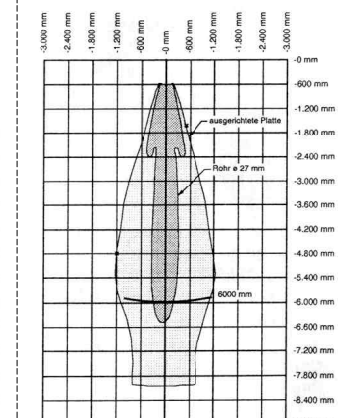
0 mm to 200 mm
See detection area
ca 200kHz
0,36 mm
± 2 mm
0,17% / K
20 mm
7 Hz
70 ms
IP 65




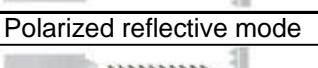
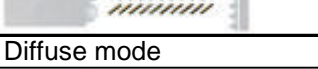
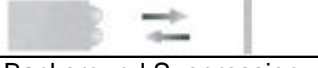
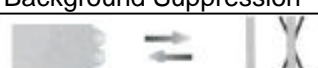
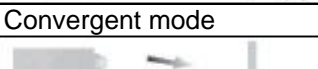









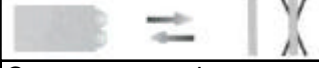
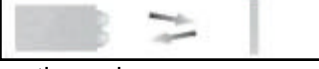

0 mm to 350 mm
See detection area
ca 120kHz
1 mm
± 3 mm
0,17% / K
50 mm
4 Hz
130 ms
IP 65




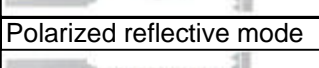


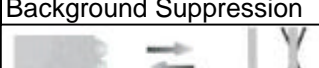
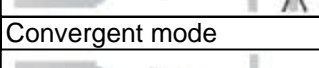






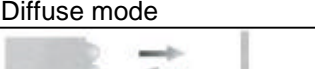
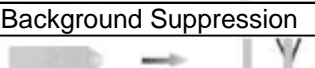
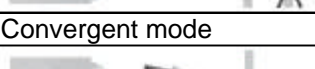
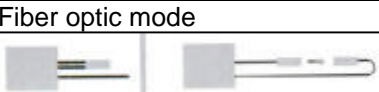





0 mm to 800 mm
See detection area
ca 80kHz
1 mm
± 4 mm
0,17% / K
100 mm
2 Hz
225 ms
IP 65





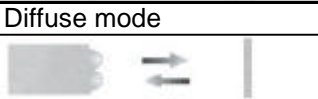
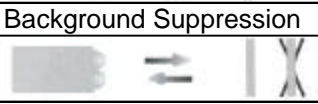
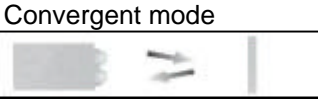
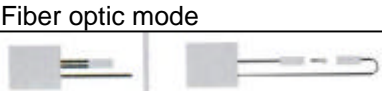








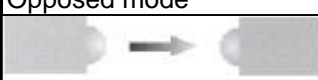
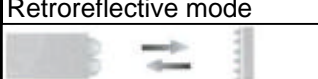

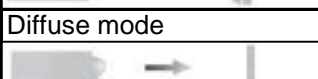
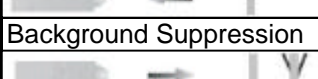
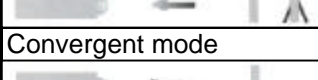
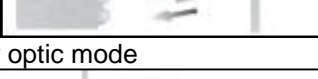




Photoelectric Sensors		
Series		SP-UP
Sensing Range	Opposed mode 	4.0m
	Retroreflective mode 	2.1m
	Polarized reflective mode 	1.0m
	Diffuse mode 	1, 200mm 2, 50mm (Wide-angle)
	Background Suppression 	
	Convergent mode 	10mm (Spot size: 1mm) 20mm (Spot size: 1.75mm)
	Fiber optic mode 	
	Dimensions (h x w x d)	20 x 8.0 x 35
	Housing material	PBT resin
Protection class	IP67	
Operating temperature	-20°C - +70°C	
Power supply : DC	10 - 30 V	
AC (50/60Hz)		
AC/DC		
Output mode : NPN	150 mA	
PNP	150 mA	
NPN / PNP		
SCR or FET		
Relay		
Analog		
S.S.R.		
Time delay option		
Light on or Dark on	Changeable	
High speed style		
Self test + alarm		
Namur		
Connection : Cable		
Micro		
Mini		
Euro		
Pico		
Terminal		
Pigtail		





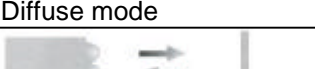
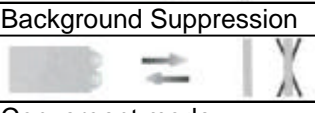

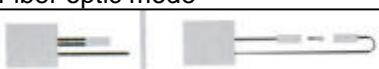



<h1>Photoelectric Sensors</h1>			
Series		SP-MP	
Sensing Range	Opposed mode	30m (Long range) 3m (Shot range) 0.3m (Plastic detection)	
			
	Retroreflective mode	5.0m	
			
	Polarized reflective mode	2.0m	
			
	Diffuse mode	1, 0.38m 2, 0.30m 3, 0.13m	
			
	Background Suppression		
	Convergent mode	43mm (Long range) 16mm (Shot range)	
			
Fiber optic mode	Glass or Plastic		
			
Dimensions (h x w x d)	31 x 12 x 53/73/86		
Housing material	PBT resin		
Protection class	IP66		
Operating temperature	-20°C - +70°C		
Power supply : DC	10 - 30 V		
AC (50/60Hz)	24 - 240 V		
AC/DC			
Output mode : NPH			
PNP			
NPN / PNP	Bipolar: 150mA		
SCR or FET	200mA		
Relay			
Analog			
S.S.R.			
Time delay option			
Light on or Dark on	Changeable		
High speed style	<input checked="" type="radio"/>		
Self test + alarm			
Namur			
Connection : Cable	<input checked="" type="radio"/>		
Micro	<input type="radio"/>		
Mini			
Euro	<input type="radio"/>		
Pico	<input type="radio"/>		
Terminal			
Pigtail	<input checked="" type="radio"/>		



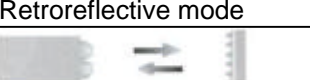

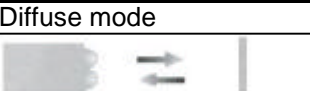
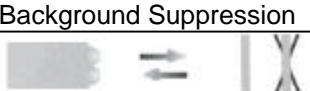
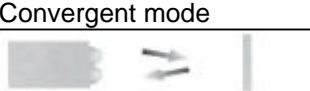
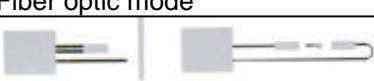



Photoelectric Sensors		
Series		SP-EP
Sensing Range	Opposed mode 	1.8m
	Retroreflective mode 	5.0m
	Polarized reflective mode 	
	Diffuse mode 	200mm (Long range) 76mm (Shot range)
	Background Suppression 	
	Convergent mode 	12mm (Infrared) 16mm (Visible red)
	Fiber optic mode 	Glass or Plastic
	Dimensions (h x w x d)	38 x 32 x 30
Housing material	PBT resin	
Protection class	IP66	
Operating temperature	0°C - +50°C	
Power supply : DC	10 - 30 V	
AC (50/60Hz)	24 - 240 V	
AC/DC		
Output mode : NPH		
PNP		
NPN / PNP	Bipolar: 150mA	
SCR or FET	200mA	
Relay		
Analog		
S.S.R.		
Time delay option		
Light on or Dark on	Solid-state	
High speed style	<input checked="" type="radio"/>	
Self test + alarm		
Namur		
Connection : Cable	<input checked="" type="radio"/>	
Micro		
Mini		
Euro		
Pico		
Terminal		
Pigtail	<input checked="" type="radio"/>	

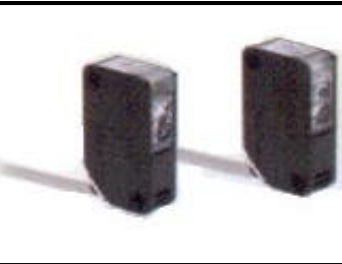


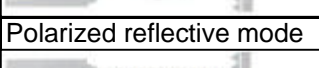


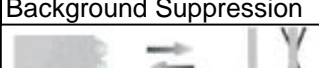
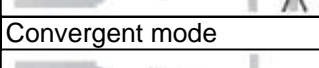

Photoelectric Sensors		
Series		SP-RP74
Sensing Range	Opposed mode 	152m (Long range) 61m (Shot range)
	Retroreflective mode 	50.8mm - 9.14m
	Polarized reflective mode 	50.8m - 4.87m
	Diffuse mode 	1. 50.8mm - 3.04m 2. 50.8mm - 1.52m
	Background Suppression 	
	Convergent mode 	
	Fiber optic mode 	Glass or Plastic
	Dimensions (h x w x d)	91 x 45 x 49
Housing material	PBT resin	
Protection class	IP67	
Operating temperature	-34°C - +70°C	
Power supply : DC	10 - 40 V	
AC (50/60Hz)	24 - 240 V	
AC/DC	24-240/12-240	
Output mode : NPH	250mA	
PNP	250mA	
NPN / PNP	250mA	
SCR or FET		
Relay	3 A, N.O./N.C.	
Analog		
S.S.R.	300mA, 2ms	
Time delay option	ON.OFF One-shot delay	
Light on or Dark on	Changeable	
High speed style		
Self test + alarm		
Namur		
Connection : Cable		
Micro		
Mini		
Euro		
Pico		
Terminal		
Pigtail		






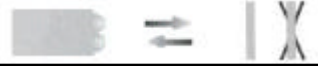




Photoelectric Sensors		
Series		SP-200 serie
Sensing Range	Opposed mode 	28m
	Retroreflective mode 	
	Polarized reflective mode 	10m
	Diffuse mode 	800mm
	Background Suppression 	50 - 300mm
	Convergent mode 	
	Fiber optic mode 	Glass or Plastic
	Dimensions (h x w x d)	77.5 x 25 x 63
Housing material	PBT resin	
Protection class	IP66	
Operating temperature	-25°C - +55°C	
Power supply : DC	10 - 30 V	
AC (50/60Hz)	24 - 240 V	
AC/DC	24-240/12-240	
Output mode : NPH	100 mA	
PNP	100 mA	
NPN / PNP	100 mA	
SCR or FET		
Relay	3A, N.O.	
Analog		
S.S.R.		
Time delay option	ON.OFF. One-shot delay	
Light on or Dark on	Changeable	
High speed style		
Self test + alarm		
Namur		
Connection : Cable		
Micro		
Mini		
Euro		
Pico		
Terminal		
Pigtail		




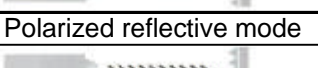
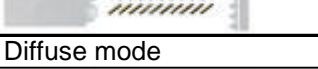
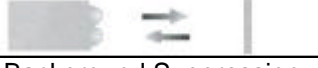
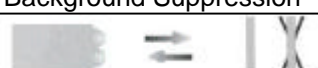
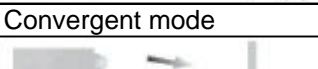
<h1>Photoelectric Sensors</h1>		
Series		SP-9 Serie
Sensing Range	Opposed mode 	22m
	Retroreflective mode 	
	Polarized reflective mode 	13m
	Diffuse mode 	
	Background Suppression 	1. 100 - 300mm 2. 150 - 500mm
	Convergent mode 	
	Fiber optic mode 	
	Dimensions (h x w x d)	60 x 20 x 43
Housing material	PBT resin	
Protection class	IP67	
Operating temperature	-25°C - +55°C	
Power supply : DC	10 - 30 V	
AC (50/60Hz)	24 - 240 V	
AC/DC	24-240/12-240	
Output mode : NPH	100 mA	
PNP	100 mA	
NPN / PNP	100 mA	
SCR or FET		
Relay	3A, N.O./N.C.	
Analog		
S.S.R.		
Time delay option		
Light on or Dark on	Changeable	
High speed style		
Self test + alarm		
Namur		
Connection : Cable		
Micro		
Mini		
Euro		
Pico		
Terminal		
Pigtail		




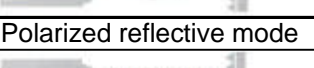


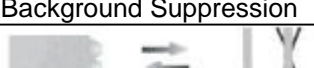
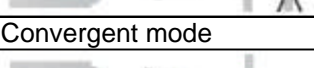
Photoelectric Sensors		
Series		SP-9 serie
Sensing Range	Opposed mode 	22m
	Retroreflective mode 	13m
	Polarized reflective mode 	
	Diffuse mode 	
	Background Suppression 	1. 40 - 100mm 2. 100 - 300mm
	Convergent mode 	
	Fiber optic mode 	
	Dimensions (h x w x d)	42 x 15 x 32
Housing material	PBT resin	
Protection class	IP67	
Operating temperature	-25°C - +55°C	
Power supply : DC	10 - 30 V	
AC (50/60Hz)		
AC/DC		
Output mode : NPN	100 mA	
PNP	100 mA	
NPN / PNP		
SCR or FET		
Relay		
Analog		
S.S.R.		
Time delay option		
Light on or Dark on	Changeable	
High speed style		
Self test + alarm		
Namur		
Connection : Cable		
Micro		
Mini		
Euro		
Pico		
Terminal		
Pigtail		




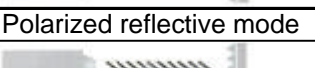
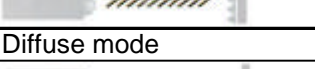
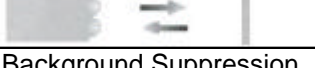
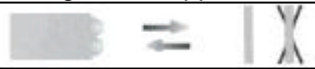





<h1>Photoelectric Sensors</h1>		
Series		SP-300 serie
Sensing Range	Opposed mode 	8.5m
	Retroreflective mode 	
	Polarized reflective mode 	4.0m
	Diffuse mode 	10 - 400mm
	Background Suppression 	
	Convergent mode 	10 - 90mm
	Fiber optic mode 	
	Dimensions (h x w x d)	37 x 12 x 29
Housing material	PBT resin	
Protection class	IP67	
Operating temperature	-25°C - +55°C	
Power supply : DC	10 - 30 V	
AC (50/60Hz)		
AC/DC		
Output mode : NPN	100 mA	
PNP	100 mA	
NPN / PNP		
SCR or FET		
Relay		
Analog		
S.S.R.		
Time delay option		
Light on or Dark on	Changeable	
High speed style		
Self test + alarm		
Namur		
Connection : Cable		
Micro		
Mini		
Euro		
Pico		
Terminal		
Pigtail		




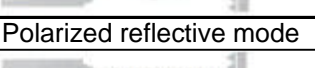


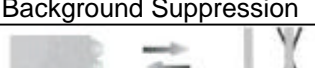
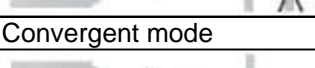



Photoelectric Sensors		
Series		SP-900 serie
Sensing Range	Opposed mode 	10m (Red light) 30m (infrared)
	Retroreflective mode 	7m (Infrared)
	Polarized reflective mode 	5m (Red light)
	Diffuse mode 	700mm (Infrared)
	Background Suppression 	
	Convergent mode 	
	Fiber optic mode 	
	Dimensions (h x w x d)	62 x 35 x 18
Housing material	ABS	
Protection class	IP66	
Operating temperature	-20°C - +55°C	
Power supply : DC		
AC (50/60Hz)		
AC/DC	12-240V DC or 24-240V AC	
Output mode : NPH		
PNP		
NPN / PNP		
SCR or FET		
Relay	SPDT	
Analog		
S.S.R.		
Time delay option		
Light on or Dark on	Light-On/Dark-On	
High speed style		
Self test + alarm		
Namur		
Connection : Cable		
Micro		
Mini		
Euro		
Pico		
Terminal		
Pigtail		



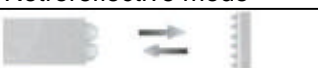

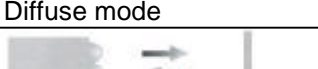
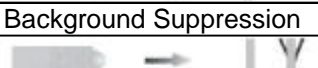
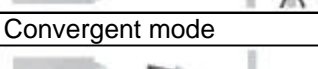
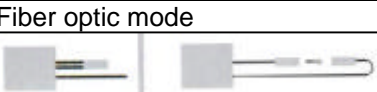



Photoelectric Sensors		
Series		SP-Separate Amplifier Sensors
Sensing Range	Opposed mode 	1. 350mm 2. 30mm
	Retroreflective mode 	
	Polarized reflective mode 	
	Diffuse mode 	1. 60mm 2. 200mm
	Background Suppression 	
	Convergent mode 	1. 6-35mm 2. 3-30mm
	Fiber optic mode 	16mm
	Dimensions (h x w x d)	33 x 13 x 69 / 22 x 8.5 x 11
Housing material	PBT resin	
Protection class	IP67	
Operating temperature	-20°C - +55°C	
Power supply : DC	10 - 30 V	
AC (50/60Hz)		
AC/DC		
Output mode : NPH	100 mA	
PNP	100 mA	
NPN / PNP		
SCR or FET		
Relay	OFF delay	
Analog		
S.S.R.		
Time delay option		
Light on or Dark on	Changeable	
High speed style		
Self test + alarm		
Namur		
Connection : Cable		
Micro		
Mini		
Euro		
Pico		
Terminal		
Pigtail		



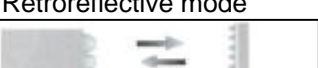
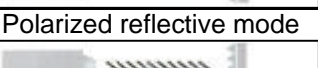
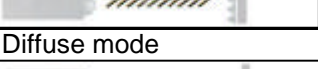
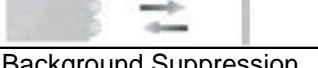
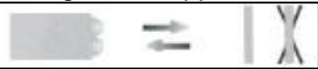





Photoelectric Sensors		
Series		SP-FOS1
Sensing Range	Opposed mode 	400mm
	Retroreflective mode 	
	Polarized reflective mode 	
	Diffuse mode 	700mm
	Background Suppression 	
	Convergent mode 	
	Fiber optic mode 	
	Dimensions (h x w x d)	34 x 12 x 59
	Housing material	Plastic
Protection class	IP66	
Operating temperature	-25°C - +50°C	
Power supply : DC	10 - 30 V	
AC (50/60Hz)		
AC/DC		
Output mode : NPH	100 mA	
PNP	100 mA	
NPN / PNP		
SCR or FET		
Relay		
Analog		
S.S.R.		
Time delay option		
Light on or Dark on	Changeable	
High speed style		
Self test + alarm	●	
Namur		
Connection : Cable	●	
Micro		
Mini		
Euro		
Pico	⊕	
Terminal		
Pigtail		



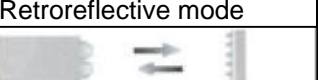

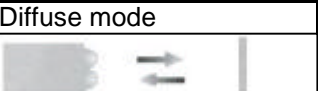
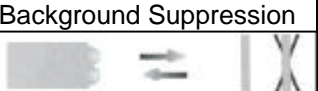
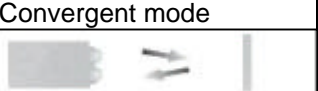
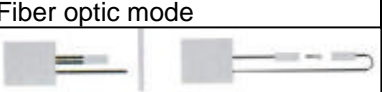




Photoelectric Sensors		
Series		SP-M8
Sensing Range	Opposed mode 	150mm (Red light) 80mm (Infrared)
	Retroreflective mode 	
	Polarized reflective mode 	
	Diffuse mode 	
	Background Suppression 	
	Convergent mode 	
	Fiber optic mode 	
	Dimensions (h x w x d)	M8 x 1 x 54 / 60
Housing material	Metal or Plastic	
Protection class	IP67	
Operating temperature	-25°C - +50°C	
Power supply : DC	10 - 30 V	
AC (50/60Hz)		
AC/DC		
Output mode : NPN	150 mA	
PNP	150 mA	
NPN / PNP		
SCR or FET		
Relay		
Analog		
S.S.R.		
Time delay option		
Light on or Dark on	Solid-state	
High speed style		
Self test + alarm		
Namur		
Connection : Cable	●	
Micro		
Mini		
Euro		
Pico	⊕	
Terminal		
Pigtail	●	


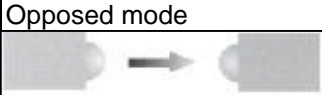
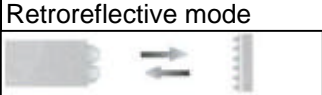

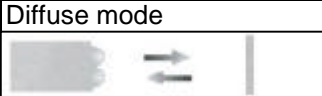
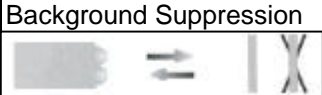
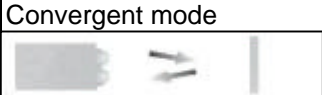
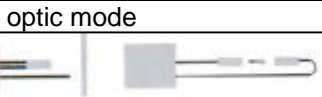




Photoelectric Sensors		
Series		SP-M12
Sensing Range	Opposed mode 	5.2m
	Retroreflective mode 	2.0m
	Polarized reflective mode 	
	Diffuse mode 	200mm
	Background Suppression 	
	Convergent mode 	
	Fiber optic mode 	
	Dimensions (h x w x d)	M12 x 1 x 66 / 80
Housing material	Metal or Plastic	
Protection class	IP67	
Operating temperature	-25°C - +70°C	
Power supply : DC	10 - 30 V	
AC (50/60Hz)		
AC/DC		
Output mode : NPN	150 mA	
PNP	150 mA	
NPN / PNP		
SCR or FET		
Relay		
Analog		
S.S.R.		
Time delay option		
Light on or Dark on	Solid-state	
High speed style		
Self test + alarm		
Namur		
Connection : Cable		
Micro		
Mini		
Euro		
Pico		
Terminal		
Pigtail		




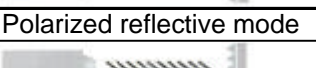
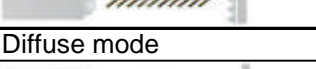
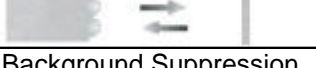
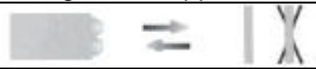




Photoelectric Sensors		
Series		SP-M12Y
Sensing Range	Opposed mode 	5.2m
	Retroreflective mode 	2.0m
	Polarized reflective mode 	
	Diffuse mode 	200mm
	Background Suppression 	
	Convergent mode 	
	Fiber optic mode 	
	Dimensions (h x w x d)	M12 x 1 x 65
Housing material	Metal or Plastic	
Protection class	IP67	
Operating temperature	-25°C - +70°C	
Power supply : DC	10 - 30 V	
AC (50/60Hz)		
AC/DC		
Output mode : NPN	150 mA	
PNP	150 mA	
NPN / PNP		
SCR or FET		
Relay		
Analog		
S.S.R.		
Time delay option		
Light on or Dark on	Solid-state	
High speed style		
Self test + alarm		
Namur		
Connection : Cable		
Micro		
Mini		
Euro		
Pico		
Terminal		
Pigtail		




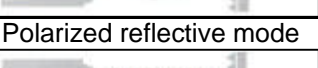


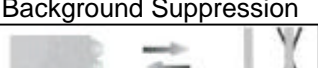
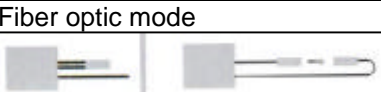




Photoelectric Sensors		
Series		SP-M12Z
Sensing Range	Opposed mode 	5.2m
	Retroreflective mode 	2.0m
	Polarized reflective mode 	
	Diffuse mode 	200mm
	Background Suppression 	
	Convergent mode 	
	Fiber optic mode 	
	Dimensions (h x w x d)	M12 x 1 x 75 / 85
Housing material	Metal or Plastic	
Protection class	IP67	
Operating temperature	-25°C - +70°C	
Power supply : DC	10 - 30 V	
AC (50/60Hz)		
AC/DC		
Output mode : NPN	150 mA	
PNP	150 mA	
NPN / PNP		
SCR or FET		
Relay		
Analog		
S.S.R.		
Time delay option		
Light on or Dark on	Solid-state	
High speed style		
Self test + alarm		
Namur		
Connection : Cable		
Micro		
Mini		
Euro		
Pico		
Terminal		
Pigtail		

Photoelectric Sensors		
Series		SP-M18
Sensing Range	Opposed mode 	15m
	Retroreflective mode 	3.0m
	Polarized reflective mode 	1.0m
	Diffuse mode 	1. 150mm 2. 500mm
	Background Suppression 	
	Convergent mode 	
	Fiber optic mode 	
	Dimensions (h x w x d)	M18 x 65 / 80 / 90
Housing material	Metal or Plastic	
Protection class	IP67	
Operating temperature	-25°C - +55°C	
Power supply : DC	10 - 30 V	
AC (50/60Hz)	20 - 264 V	
AC/DC	200 mA	
Output mode : NPN	200 mA	
PNP	200 mA	
NPN / PNP	300 mA	
SCR or FET		
Relay		
Analog		
S.S.R.		
Time delay option	Changeable	
Light on or Dark on		
High speed style		
Self test + alarm		
Namur		
Connection : Cable		
Micro		
Mini		
Euro		
Pico		
Terminal		
Pigtail		

Photoelectric Sensors		
Series		SP-M18Y
Sensing Range	Opposed mode 	15m
	Retroreflective mode 	3.0m
	Polarized reflective mode 	1.0m
	Diffuse mode 	1. 150mm 2. 500mm
	Background Suppression 	
	Convergent mode 	
	Fiber optic mode 	
	Dimensions (h x w x d)	M18 x 1 x 65
Housing material	Metal or Plastic	
Protection class	IP67	
Operating temperature	-25°C - +55°C	
Power supply : DC	10 - 30 V	
AC (50/60Hz)	20 - 264 V	
AC/DC	200 mA	
Output mode : NPN	200 mA	
PNP	200 mA	
NPN / PNP	300 mA	
SCR or FET		
Relay		
Analog		
S.S.R.		
Time delay option	Changeable	
Light on or Dark on		
High speed style		
Self test + alarm		
Namur		
Connection : Cable		
Micro		
Mini		
Euro		
Pico		
Terminal		
Pigtail		

Photoelectric Sensors		
Series		SP-M18Z
Sensing Range	Opposed mode 	15m
	Retroreflective mode 	3.0m
	Polarized reflective mode 	1.0m
	Diffuse mode 	1. 150mm 2. 500mm
	Background Suppression 	
	Convergent mode 	
	Fiber optic mode 	
	Dimensions (h x w x d)	M18 x 1 x 75 / 87
Housing material	Metal or Plastic	
Protection class	IP67	
Operating temperature	-25°C - +55°C	
Power supply : DC	10 - 30 V	
AC (50/60Hz)	20 - 264 V	
AC/DC	200 mA	
Output mode : NPN	200 mA	
PNP	200 mA	
NPN / PNP	300 mA	
SCR or FET		
Relay		
Analog		
S.S.R.		
Time delay option	Changeable	
Light on or Dark on		
High speed style		
Self test + alarm		
Namur		
Connection : Cable		
Micro		
Mini		
Euro		
Pico		
Terminal		
Pigtail		

Photoelectric Sensors		
Series		SP-D30
Sensing Range	Opposed mode 	200m
	Retroreflective mode 	
	Polarized reflective mode 	
	Diffuse mode 	
	Background Suppression 	
	Convergent mode 	
	Fiber optic mode 	
	Dimensions (h x w x d)	M30 x 1.5 x 102 / 116
Housing material	Metal or Plastic	
Protection class	IP67	
Operating temperature	-40°C - +70°C	
Power supply : DC	10 - 30 V	
AC (50/60Hz)	24 - 240 V	
AC/DC	250 mA	
Output mode : NPN	250 mA	
PNP		
NPN / PNP	500 mA	
SCR or FET		
Relay		
Analog		
S.S.R.		
Time delay option	Changeable	
Light on or Dark on		
High speed style		
Self test + alarm		
Namur		
Connection : Cable		
Micro		
Mini		
Euro		
Pico		
Terminal		
Pigtail		

<h1>Photoelectric Sensors</h1>		
Series		SP-M30
Sensing Range	Opposed mode 	60m
	Retroreflective mode 	
	Polarized reflective mode 	
	Diffuse mode 	
	Background Suppression 	
	Convergent mode 	
	Fiber optic mode 	
	Dimensions (h x w x d)	M30 x 1.5 x 69 / 78 / 81 / 90
	Housing material	Metal or Plastic
Protection class	IP67	
Operating temperature	-40°C - +70°C	
Power supply : DC	10 - 30 V	
AC (50/60Hz)	20 - 250 V	
AC/DC	150 mA	
Output mode : NPN	150 mA	
PNP		
NPN / PNP	300 mA	
SCR or FET		
Relay		
Analog		
S.S.R.		
Time delay option	Changeable	
Light on or Dark on		
High speed style		
Self test + alarm		
Namur		
Connection : Cable		
Micro		
Mini		
Euro		
Pico		
Terminal		
Pigtail		

SP LAM-50 Laser Distance Measuring Module Precise - Robust - Reflectorless



Measures distances with millimetre accuracy.

Precisely defines positions.

Registers movements.

Measuring system:

- The SP-Lam 50 provides an opto-electronic distance measuring module for industrial applications.
- The module works based on the non-contact principle of comparative phase measurement (amplitude modulation).
- Laser diode (cw operation) divergence of 0.6 mrad for measurement with pinpoint accuracy.
- Outputs measured result via RS 232 / RS 422 data interface (switchable).
- Digital switching output / analog output from 4 mA to 20 mA.
- Sensor alignment easily achieved with the help of a red pilot laser.

Features:

- Laser class 2 for safe operation.
- Non-reflector measurement.
- Measures randomly selectable surface with millimetre accuracy.
- Can easily be mounted and made operational.
- Allows field bus integration.
- Meets IP 65 standards for industrial use.

Application:

- Monitoring of conveyor / delivery systems and crane equipment.
- Distance and position measurement.
- Fill-level measurement.
- Security applications.
- Position monitoring for moving objects.

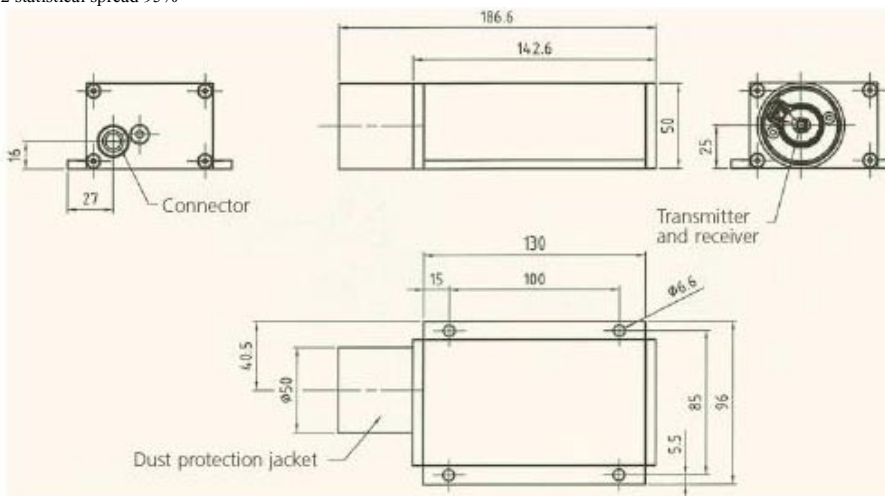
SP LAM-50 Laser Distance Measuring Module

Specifications

Measuring range*1:	Distances greater than 100 m are possible depending on surface reflectance, 0.2 to 30 m on any natural surface
Measuring accuracy*2:	± 3 mm
Measuring resolution:	0.1 mm
Measuring rate:	Typically 5 Hz (up to 10 Hz available)
Laser divergence:	0.6 mrad
Laser classification:	<1 mW under IEC 825-1, laser class 2
Wavelength:	650 nm
Interface:	RS 232 / RS 422 (switchable), baud rate 9600, format 8n1, selection of measuring functions, scaling, and measuring time via commands, output of measured values, inner temperature, error codes, single measurement mode available with external synchronisation on special request.
Switching output:	Programmable switching threshold and hysteresis, "high-side-switch" with 0.5 A load capacity.
Analog output:	programmable distance range limits, 4 mA to 20 mA
Operating temperature:	- 10 °C to + 50 °C
Supply voltage:	10 V to 30 V
Phys. dimensions (L × B × H):	(130 × 63 × 43) mm
Weight:	About 850 g
Internal protection class:	IP65

*1 dependent on target reflectivity, stray light influences and atmospheric conditions

*2 statistical spread 95%



*Product design and specifications to continuous ongoing development.
We reserve the right to make changes in the interest of technical progress*