# Harsh environment long distance photoelectric Sensor in metal housing

E3NT

- 4 Diffuse reflective E3NT-L application optimized models:
  - Extra long distance type for setting distances up to 3 m
  - Window heating type for low temperature environments
  - Analog output type for distance information
  - Fast response type for high speed detection and counting
- Retro reflective E3NT-R models with sensing distance up to 16 m
- Two programmable outputs for 'window teaching'
- Double triangulation for stable detection of reflective objects
- IP67 and IP69k for highest resistance in wet environments

IP67 IP69k

C E

Application
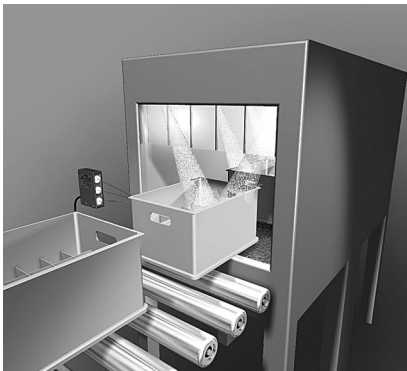
Condensation in often cleaned environments or due to rapid temperature changes is prevented by the completely sealed housing of the E3NT and the optional window heating.
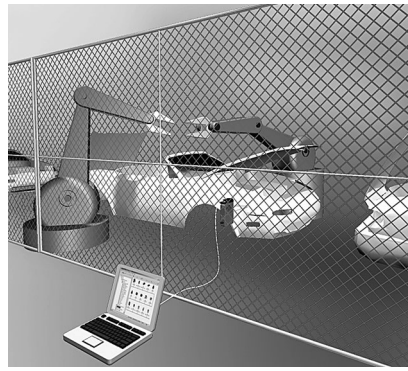
With the optic link, the sensor can be remotely set and checked while it is operating in an area where access is restricted.

This robust sensor is ideal for operation in harshest environments.

Ordering Information

Sensors

Sensing method	Type	Appearance	Connection method	Sensing / Setting distance	Model
Distance setting (BGS/FGS)	Long distance		M12 Connector (5-pole)	0.2 m .. 3.0 m (90% remission) 0.2 m .. 2.7 m (6% remission) 200 mm — 3,000 mm	E3NT-L17-20
					E3NT-L37-20
	Window heating			0.2 m .. 2.0 m 200 mm — 2,000 mm	E3NT-LH17
					E3NT-LH37
	Fast response				E3NT-L17
					E3NT-L37
	Analog and digital output				E3NT-L27
					E3NT-L47
Retro reflective (with MSR-polarisation)	Long distance			0.2 m .. 16.0 m (with E39-R8) 200 mm — 16,000 mm	E3NT-R17
					E3NT-R37

Accessories (order separately)
Optical data link

Communication method to sensor	Appearance	Communication method to PC	Model
IR data interface		RS232	E3NT-AL232 2M

Laser alignment aid

Max. distance for visible spot	Appearance	Operation time	Model
50 m		min. 5 hours with new battery	E3NT-AP1

Mounting brackets

Appearance	Model	Qty.	Remarks
	E39-EL1	1	Universal mounting bracket
	E39-EL2	1	Adapter bracket (for use of the universal mounting bracket for not matching holes)
	E39-EL3	1	Adapter bracket replacing E3N with E3NT

Reflectors
E39-R8
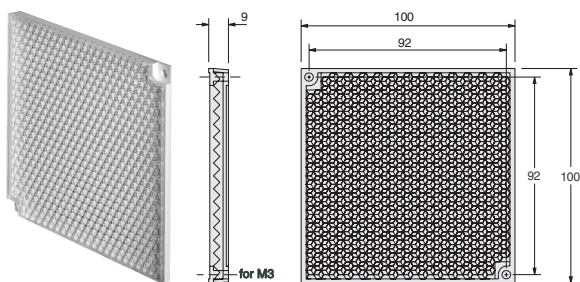
Sensor I/O connectors

Size	Cable type	Shape		Cable length	Model
M12	Standard 5-pole	Straight		2m	XS2F-D521-DG0-A
				5m	XS2F-D521-GG0-A
		L-shape		2m	XS2F-D522-DG0-A
				5m	XS2F-D522-GG0-A
	Standard 4-pole (Pin 5 not connected)	Straight		2m	934 401 101 (PVC)
					934 401 201 (PUR)
				5m	934 401 100 (PVC)
					934 401 200 (PUR)
		L-shape		2m	934 402 102 (PVC)
					934 402 201 (PUR)
				5m	934 402 100 (PVC)
					934 402 200 (PUR)

E3NT

Rating/performance

Sensors

Item	Model				
	E3NT-L17 E3NT-L37	E3NT-L27 E3NT-L47	E3NT-LH17 E3NT-LH37	E3NT-L□7-20	E3NT-R
Sensor type	Diffuse reflective sensor with background suppression respectively foreground suppression				Retroreflective sensor
Signal evaluation	Double triangulation method				Polarization
Configuration	By push button on the sensor or with a PC connected via the optical data link E3NT-AL232 2m				
Operating modes	Background suppression, foreground suppression, background and foreground suppression (2-point window evaluation)				---
Light source	Infrared LED 850 - 880 nm				Red LED 660 nm
Rated sensing distance	2 m			3 m	16 m
Setting distance Sr	Distance – setting possible between				---
	0.2 ... 2.0 m (90 % remission) 0.2 ...1.7 m (6 % remission)		0.2 ... 2.0 m (90 % remission) 0.2 ...1.4 m (6 % remission)	0.2 ... 3.0 m (90 % remission) 0.2 ...2.7 m (6% remission)	0.2 ... 16.0 m
Standard measured object	Kodak gray card 90% (white), size: 200 x 200 mm				---
Blind zone	< 0.1 m				< 0.15 m
Black/white error (6%/90%)	< 15 % of setting distance Sr				---
Hysteresis (typical)	< 5 % of setting distance Sr or 4 cm (for white 90 %) < 10 % of setting distance Sr or 6 cm (for black 6 %)			< 10 % of setting distance Sr or 10 cm (for white) < 15 % of setting distance Sr or 10 cm (for black)	---
Repetition accuracy	< 5 % (of setting distance Sr) or 4 cm			< 5 % (of setting distance Sr) or 10 cm	---
Light spot diameter	< 40 mm in the case of Sr = 2 m				app. 100 mm[1] at 10 m
Minimum object size	> 40 mm				
Ambient light immunity to EN 60947-5-2:	Halogen lamps (100-120 Hz > 10,000 lux Fluorescent lamps (30 kHz) > 5,000 lux Energy saving lamps > 2,000 lux				
Utilization category to EN 60947-5-2	DC 12				
Rated operating voltage	+ 24 V DC, polarized				
Operating voltage range	+ 10 ... + 30 V DC			+ 11 ... + 30 V DC	+ 10 ... + 30 V DC
Current consumption	< 90 mA (display off) < 110 mA (display on)	< 100 mA (display off) < 120 mA (display on)	< 220 mA with front pane heating	< 110 mA (display off) < 130 mA (display on)	< 80 mA (display off) < 110 mA (display on)
Power-on delay	< 300 ms				
Input – / Output – pins	Pin 2 = Input (In 2) or output (Out 2), depending on configuration Pin 4 = Output (Out 1)				
	Pin 5 = Input (In 1)	Pin 5 = Analog output	Pin 5 = Input (In 1)		
Digital Outputs	User set functions (e.g. switching output, alarm output, ...)				
Output circuit	User set PNP (open collector), NPN (open collector) or complementary (push-pull)				
Output current	max. 100 mA				
Voltage drop	< 2.0 V				
Residual current	< 100 µA				
Circuit protection	Reversed power supply, overload, short-circuit (pulsed)				

Item		Model				
		E3NT-L17 E3NT-L37	E3NT-L27 E3NT-L47	E3NT-LH17 E3NT-LH37	E3NT-L□7-20	E3NT-R
Inputs		User set functions (e.g. teach-in, trigger, test, ...)				
	Input circuit	Voltage input +10 V ... U_{supply}			Voltage input +11 V ... U_{supply}	Voltage input +10 V ... U_{supply}
	Input pulse duration	min. 1 ms				
Analog Output			Current output 3..21mA: • 3 mA correspond to distance < 0.2 m • 4 ... 20 mA correspond to distance 0.2 m ... 2.0 m • 21 mA correspond to distance > 2.0 m (or no object)			
Switch-on/off time (T_{ON} / T_{OFF})		⩽2.5 ms	⩽5 ms	⩽2.5 ms	⩽20 ms	⩽2.0 ms
Insulation resistance		20 MΩ at 500 V DC				
Insulation voltage strength		1,0 kV AC, 50/60 Hz (1 min)				
Impulse strength (insulation)		1,5 kV				
Dimensions (length x width x depth)		85 x 27 x 65 mm				
Materials						
	Housing	Powder-coated aluminum, sea-water resistant, 231 GD AlSi12 (Cu) (standard version)				
	Front pane	Glass				
	Keyboard	HTV silicone				
	Seals	RTV silicone				
Housing color		Grey, RAL 7030				
Assembly		Screw fastening by way of four M5 threads and two M5 through holes or with universal mounting bracket (order separately)				
Connection		M12 connector, 5-pole (piercing)				
Ambient temperature range		- 25 °C ... + 55 °C	- 10 °C ... + 55 °C (analog output)	- 40 °C ... + 55 °C	- 25 °C ... + 55 °C	
Storage temperature range		- 40 °C ... + 60 °C			- 40 °C ... + 70 °C	
Permissible relative humidity		35 % ... 95 %, no condensation				
Enclosure rating		IP 67 (EN 60529), IP 69k (DIN 40050)				
Protection class		II (50 V DC)				
Vibration resistance		± 1.5 mm, 1 h , 10 - 70 Hz (IEC 68-2-6)				
Shock resistance		300 m/s² (IEC 68-2-27)				
User set parameters		- Mode - Output function - Teach/set switching points - Output switching - Function on connector pin 2 and 5 - Switch-on and off delay - Type of switch-off time function - Type of display on the sensor - Keyboard lock - Energy saving mode - Display direction - Reset to factory defaults				

*1. see diagramm

Accessories

E3NT-AL 232 2 M

Item	
Dimensions (length x width x depth)	29.5 x 72.9 x 26.4 mm
Housing material	ABS and PMMA (IR transparent)
Housing colour	Black, RAL 9005
Assembly	Snap mounting on sensor
Connection	2 m connecting cable with 9-pole sub-D connector
Ambient temperature range	- 10 °C ... + 50 °C
Storage temperature range	- 40 °C ... + 60 °C
Permission relative humidity	35% ... 85%, no condensation
Degreee of protection to EN 60529 / IEC 529	IP 54
Emitted light	IR communication element 880 nm
Rated operating voltage	Via RS 232 interface from PC
Current consumption	6 mA

E3NT-AP1

Item	
Supply voltage	3 V DC
Battery type	Button battery Ø 11.6 mm, thickness: 5.4 mm, 3 Vm, type: CR1/3N
Ambient temperature range	+ 10 °C ... + 40 °C
Storage temperature range	- 40 °C ... + 60 °C (with no icing or condensation)
Ambient humidity	Operation and storage: 35% ... 85% (with no icing or condensation)
Ambient environment	No corrosive gases
Operation time period	min. 5 hours operation with 1 new battery
Degree of protection	IP20 (EN 60529)
Case material	Case: ABS/PC Base plate: Aluminium
Weight	Approx. 42 g
Accessories:	1 Instruction sheet, 1 battery type CR1/3N
Max. distance for a visible beam spot	about 50 m (depending on the ambient light and surface conditions)
Laser beam power	< 1 mW
Laser class	Laser Class II

Characteristic data (typical)

E3NT-L17/L37 and E3NT-LH17/LH37

Operating range
(90% remission)
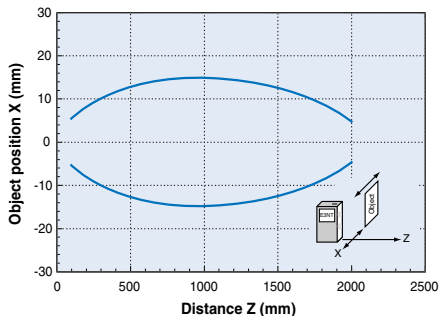
Black/White - Error
(6% - 90% remission)
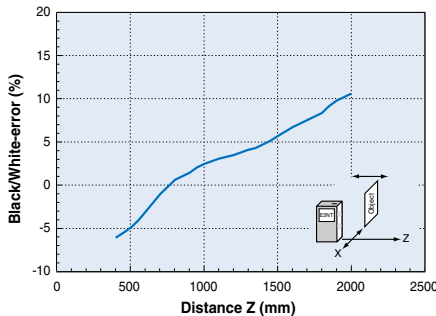
Hysteresis
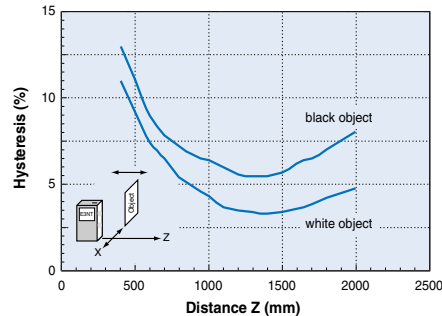
E3NT-L27/L47

Analog output current
(90% remission)
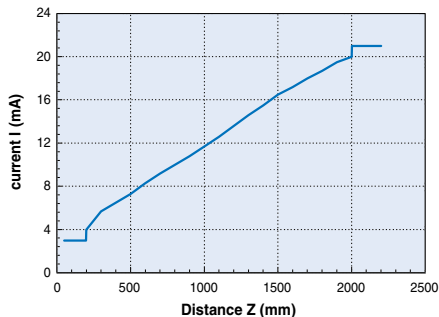
E3NT-L17-20 and E3NT-L37-20

Parallel Operating range
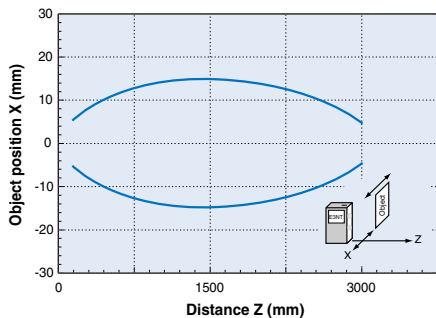
Black/White - Error
(6% - 90% remission, typical)
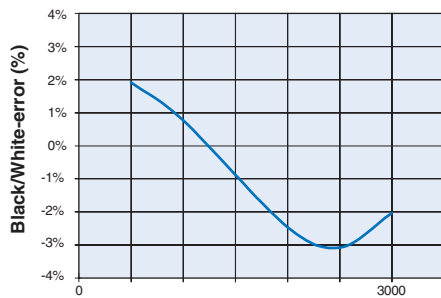
Hysteresis (typical)

E3NT-R

Spotsize

Circuit diagram

Output

Push-pull output circuit (Out1 at pin 4 / Out2 at pin 2)	Load connection		
	PNP	NPN	Analog
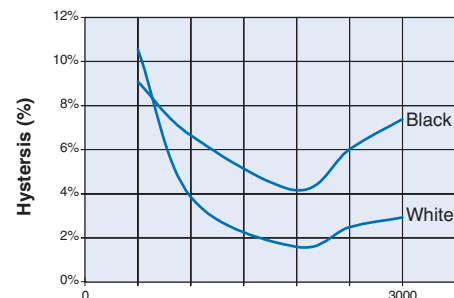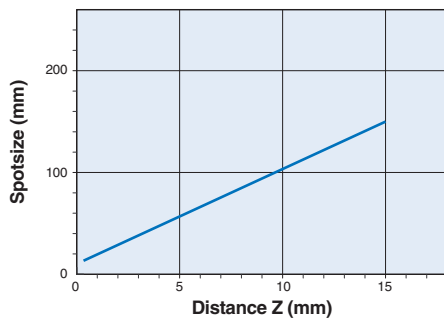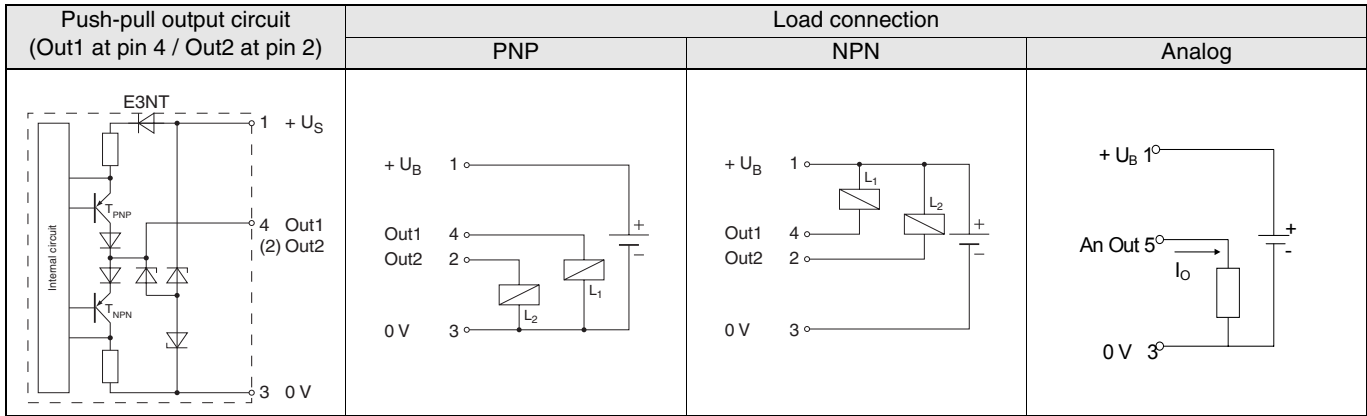
When use is made of the PNP or NPN output circuit, the output circuit that is not selected is deactivated. When used as a complementary output, NPN or PNP outputs act in antiphase as the switch state changes.

Input

In2 at pin 2	In1 at pin 5 (not available for analogue output models)
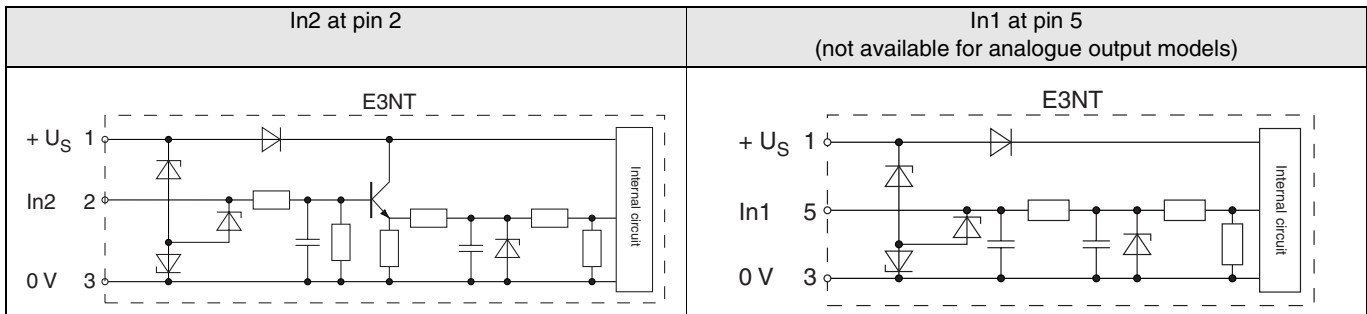
The sensor inputs are realised in positive logic and detect a positive voltage level of more than 1 ms duration as a valid signal if the voltage level is between 10 V and the power supply voltage.

Connectors
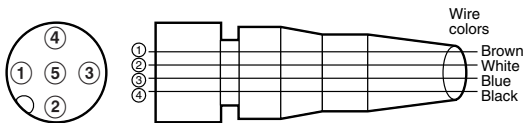
Class	Wire jacket color	Connector pin no.	Application
For DC	Brown	1	Power supply (+V)
	White	2	Output or Input Out2 / In2
	Blue	3	Power supply (0V)
	Black	4	Output Out1
	Grey	5*	Analog Output or Input In1

* Not connected for standard 4-pole connectors

Nomenclature

LED display	The distance from the measured object and the names of the menu levels during set-up of the sensor are displayed by the 4-digit 7-segment LED display. The display appears as red digits or letters. If the sensor is set to a bar chart display, the distance from the measured object is displayed as a green LED bar chart.		
LED	The switching status and the stability of the two outputs are signalled as follows by two LEDs, visible from the top and the front of the sensor:		
	Yellow LED (Output 1)	ON	Object stably detected
		Blinking	Object not stable detected
		OFF	No object within range
	Red LED (Output 2)	ON	Object stably detected
		Blinking	Object not stable detected
		OFF	No object within range
	Status LED	ON	Set-up menu selected
		Blinking	Menu level with change of setting distance
		OFF	RUN (normal) mode

Operation

Setting the switching points

The switching points can either be user set (Teach-in mode) with a measured object positioned at the corresponding distance or can be set using the setting input, for remote setting. For each output of the sensor (up to two), up to two switching points can be user set.

Only one switching point is active in the foreground and background suppression modes.

For the 2-point window evaluation mode, two switching points must be set.

Teaching the switching points in the normal mode

The sensor is set at the factory for both outputs to **BGS**, light on.

1. Place the target object in front of the sensor at the desired position.
2. Teach the switching point for output 1:
- Beginning with the ⊕ key, press it simultaneously with the ENTER ⊙ key. Threshold level is obtained and the output/LED is updated. Status LED is blinking.
- Using the ⊕/⊖ keys an adjustment of the switching point is possible. The output/LED is updated immediately.
- Pressing the ENTER ⊙ key for more than 2 seconds or after 2 minutes without any activation of the keys, the sensor returns to normal operation. The status LED is turned off.
3. Teach the switching point for Output 2:
- Beginning with the ⊖ key, press it simultaneously with the ENTER ⊙ key.

Main menu structure
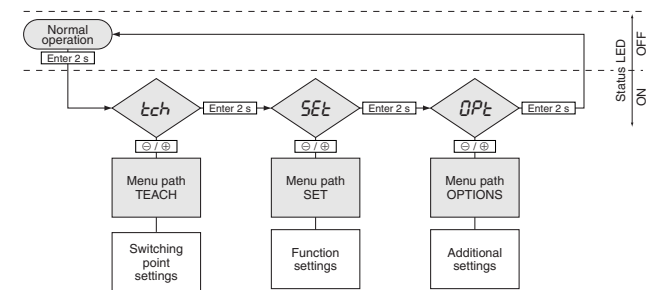
When the ENTER ⊙ key is pressed for 2 seconds, the sensor switches from the normal mode to the TEACH menu path. The sensor switches to each next menu path when the ENTER ⊙ key is repeatedly pressed for 2 seconds. In the menu paths, the required parameters can be selected by pressing ⊖ and ⊕ keys.

ℹ To skip a menu path, you can also press the ENTER key for 4 seconds.

ℹ [ENTER]   Press the ENTER ⊙ key < 1 second

ℹ [ENTER 2s]   Press the ENTER ⊙ key > 2 seconds.

TEACH menu

Menu items

Normal operation
Enter 2 s

tch — Enter 2 s →

Status LED is blinking

**Teaching
Switching point A
Output 1**

tc-A — Enter → Output 1 Switch. point A teached → Set Switch. point A in m with ⊖ / ⊕ — Enter

**Teaching
Switching point B [1.)]
Output 1**

tc-b — Enter → Output 1 Switch. point B teached → Set Switch. point B in m with ⊖ / ⊕ — Enter

**Teaching
Switching point C
Output 2 [2.)]**

tc-C — Enter → Output 2 Switch. point C teached → Set Switch. point C in m with ⊖ / ⊕ — Enter

**Teaching
Switching point D [1.)]
Output 2 [2.)]**

tc-d — Enter → Output 2 Switch. point D teached → Set Switch. point D in m with ⊖ / ⊕ — Enter

Status LED is blinking

**Setting of
Switching point A
Output 1
0 ... 2.5 m
in 1 cm increments**

Ad-A — Enter → Set Switch. point A in m with ⊖ / ⊕ — Enter → Output 1 Switch. point A set

**Setting of
Switching point B [1.)]
Output 1
0 ... 2.5 m
in 1 cm increments**

Ad-b — Enter → Set Switch. point B in m with ⊖ / ⊕ — Enter → Output 1 Switch. point B set

**Setting of
Switching point C
Output 2 [2.)]
0 ... 2.5 m
in 1 cm increments**

Ad-C — Enter → Set Switch. point C in m with ⊖ / ⊕ — Enter → Output 2 Switch. point C set

**Setting of
Switching point D [1.)]
Output 2 [2.)]
0 ... 2.5 m
in 1 cm increments**

Ad-d — Enter → Set Switch. point D in m with ⊖ / ⊕ — Enter → Output 2 Switch. point D set

Enter 2 s

SEt

1.) In the 2-point window evaluation mode, two switching points (A/B and C/D) can be set for each output. In the foreground and background suppression modes, only one switching point (A and C) can be set for each output. Then, only these switching points, A and C, can be set in the TEACH menu path. B and D switching points are not available.

2.) If connector pin 2 is set as an input, only the switching points for Output 1 can be set.

SET menu

Menu items

Normal operation

Enter 2 s
Enter 2 s

SEt — Enter 2 s →

Function Output 1

Out 1 — Enter → Select function with ⊖ / ⊕ | Background suppression **b5S** / Foreground suppression **F5S** / Window evaluation **2-P** — Enter → Select function with ⊖ / ⊕ | light-on **L-on** / dark-on **d-on** — Enter

Function Output 2 [1]

Out2 — Enter → Select function with ⊖ / ⊕ | Background suppression **b5S** / Foreground suppression **F5S** / Window evaluation **2-P** — Enter → Select function with ⊖ / ⊕ | light-on **L-on** / dark-on **d-on** — Enter

Switch-on delay [2] [5] **Output 1** 0 ... 9999 ms in 1 ms decrements

tr-1 — Enter → Set time in ms with ⊖ / ⊕ — Enter → Switch-on delay Output 1 parameterised

Switch-off delay [2] [3] **Output 1** 0 ... 9999 ms in 1 ms decrements

tF-1 — Enter → Set time in ms with ⊖ / ⊕ — Enter → Switch-off delay Output 1 parameterised

Switch-on delay [2] [5] **Output 2** [1] 0 ... 9999 ms in 1 ms decrements

tr-2 — Enter → Set time in ms with ⊖ / ⊕ — Enter → Switch-on delay Output 2 parameterised

Switch-off delay [2] [3] **Output 2** [1] 0 ... 9999 ms in 1 ms decrements

tF-2 — Enter → Set time in ms with ⊖ / ⊕ — Enter → Switch-off delay Output 2 parameterised

Distance display

d iSP — Enter → Select function with ⊖ / ⊕ | Absolute **AbS** / Bar graph **bAr** — Enter

Key lock [4]

LOCH — Enter → Select function with ⊖ / ⊕ | Locking OFF **oFF** / Locking ON **on** — Enter

Enter 2 s

OPt

1.) If connector pin 2 is set as an input, the switch-on/off delay function can only be set for Output 1. A second switching output is not available.
2.) If the switch-on/off delay is off in the OPTIONS menu path, the switch-on/off delay parameters do not appear in the SET menu path.
3.) The outputs behave differently depending on the switch-off delay function that is set in the OPTIONS menu path.
4.) The key lock becomes active again when no keys have been pressed for approx. 5 minutes.
   The key lock can be temporarily cancelled by pressing the ⊕ and ⊖ keys for 4 seconds.
5.) The On-delay-setting tr-1 or tr-2 are only available if the switch-on/off de-lay in the OPTIONS menu path is set to on-1.

OPTIONS menu

Menu items

Normal operation

Enter 2 s
Enter 2 s
Enter 2 s

OPt — Enter 2 s →

Function Connector pin 2

Pin2 — Enter →

Select function with ⊖/⊕

| Input | in | Enter |
| Output | oUt | Enter |

Select function with ⊖/⊕

Teach input A	tCHA	
Teach input B	tCHb	
Test input	tESt	
Trigger input	triG	Enter

Select function with ⊖/⊕

| Switching output | oUt2 | |
| Alarm output | ALAr | Enter |

Function Connector pin 5

Pin5 — Enter →

Select function with ⊖/⊕

Teach input A	tCHA
Teach input B	tCHb
Teach input C	tCHC
Teach input D	tCHd	Enter
Test input	tESt
Trigger input	triG
Input off	oFF	3.)

Function Switch-on / switch-off delay Output 1

ti-1 — Enter →

Select function with ⊖/⊕

Switch-on / switch-off delay OFF	oFF
Switch-on / switch-off delay NORMAL	on-1	Enter
Switch-off delay Minimum pulse width	on-2
Switch-off delay Single pulse	on-3

Function Switch-on / switch-off delay Output 2 1.)

ti-2 — Enter →

Select function with ⊖/⊕

Switch-on / switch-off delay OFF	oFF
Switch-on / switch-off delay NORMAL	on-1	Enter
Switch-off delay Minimum pulse width	on-2
Switch-off delay Single pulse	on-3

Energy saving mode ECO 2.)

ECO — Enter →

Select function with ⊖/⊕

| ECO-Mode ON | on | Enter |
| ECO-Mode OFF | oFF |

Turn display

FLiP — Enter →

Select function with ⊖/⊕

| oFF | Enter |
| on |

Output stage

n-P — Enter →

Select function with ⊖/⊕

Plus switching	PnP
Minus switching	nPn	Enter
Complementary	CoPL

Reset to Works default

rSEt — Enter →

Select function with ⊖/⊕

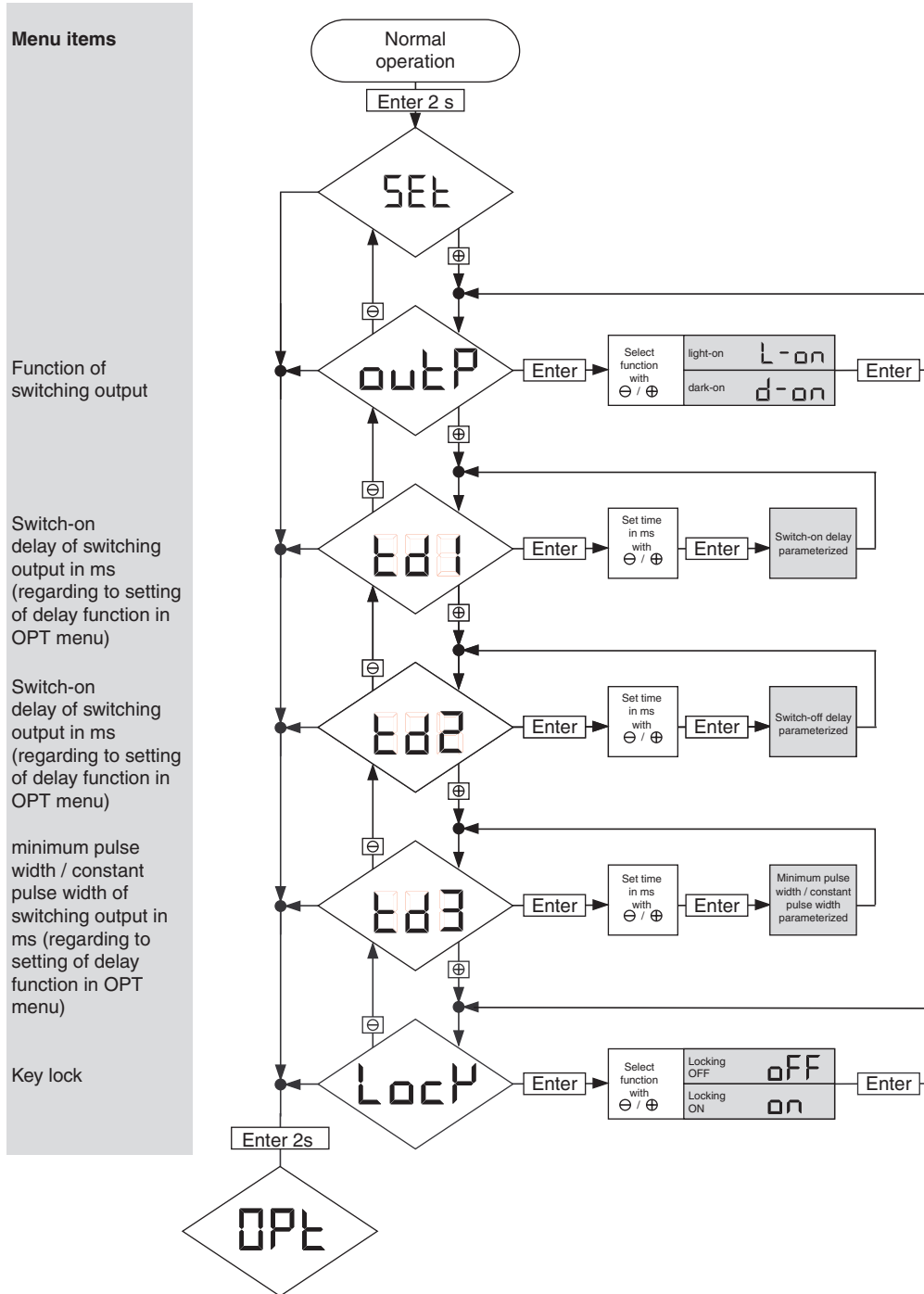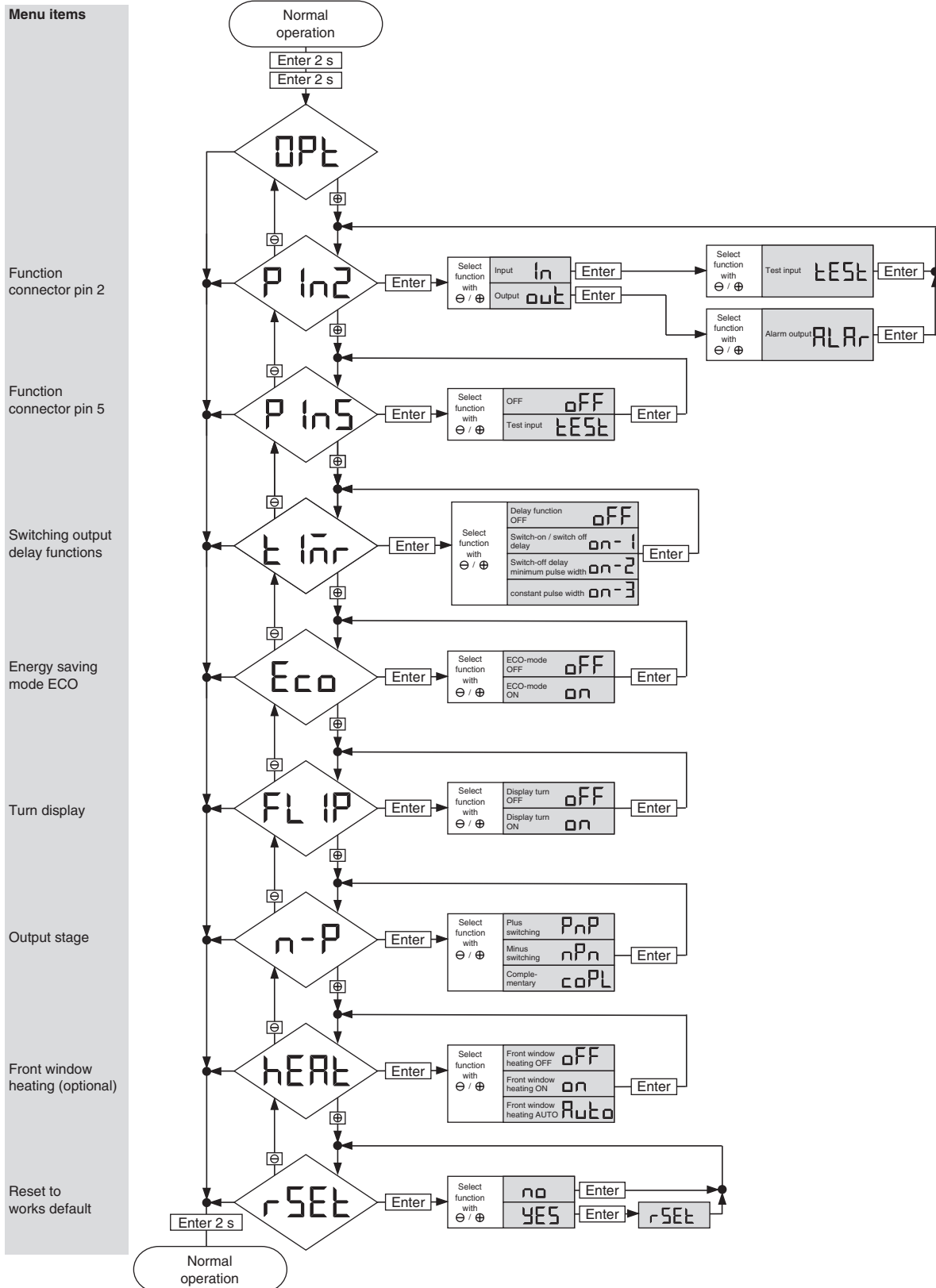| no | Enter |
| YES | Enter | donE | Enter |

Enter 2 s

Normal operation

1.) If connector pin 2 is set as an input, the type of switch-on/off delay option can only be set for Output 1.
2.) If the ECO energy saving mode is on, the display is switched off if no keys are pressed for about 5 minutes. The display is switched on again when any key is pressed.
3.) Firmware 1.10 and higher

SET menu E3NT-R

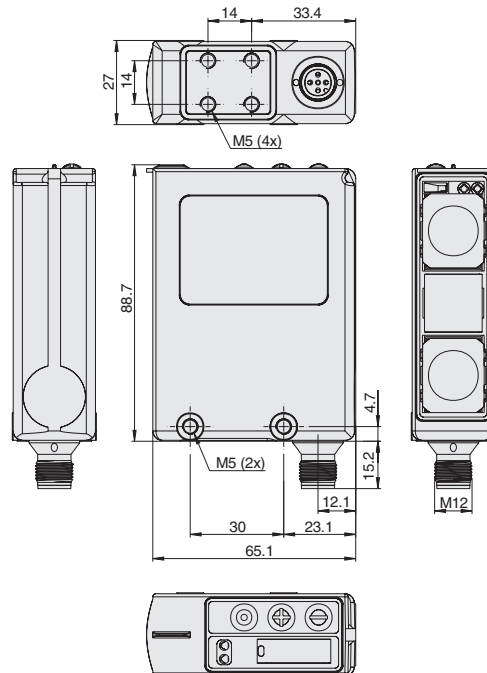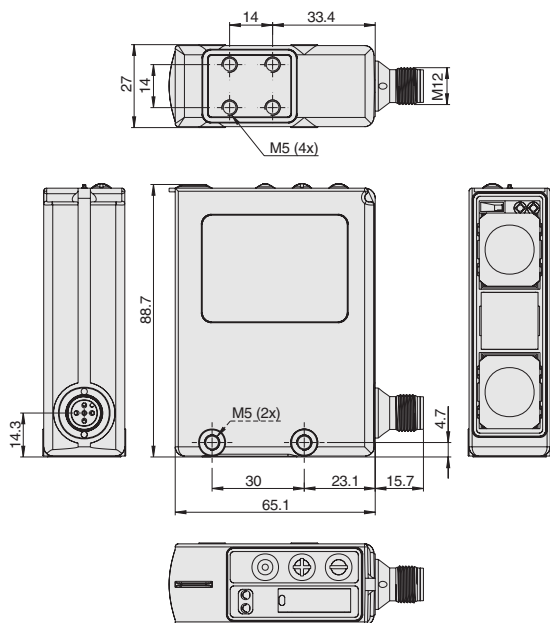| Menu items	
	Normal operation
	Enter 2 s
	SEt
Function of switching output	**outP** — Enter — Select function with ⊖ / ⊕ : light-on **L-on** / dark-on **d-on** — Enter
Switch-on delay of switching output in ms (regarding to setting of delay function in OPT menu)	**td1** — Enter — Set time in ms with ⊖ / ⊕ — Enter — Switch-on delay parameterized
Switch-on delay of switching output in ms (regarding to setting of delay function in OPT menu)	**td2** — Enter — Set time in ms with ⊖ / ⊕ — Enter — Switch-off delay parameterized
minimum pulse width / constant pulse width of switching output in ms (regarding to setting of delay function in OPT menu)	**td3** — Enter — Set time in ms with ⊖ / ⊕ — Enter — Minimum pulse width / constant pulse width parameterized
Key lock	**LocY** — Enter — Select function with ⊖ / ⊕ : Locking OFF **oFF** / Locking ON **on** — Enter
	Enter 2s
	OPt

OPTIONS menu E3NT-R

Menu items

Normal operation

Enter 2 s
Enter 2 s

OPt

Function connector pin 2 — **P In2** — Enter — Select function with ⊖ / ⊕ : Input **In** — Enter → Select function with ⊖ / ⊕ : Test input **tESt** — Enter
Output **out** — Enter → Select function with ⊖ / ⊕ : Alarm output **ALAr** — Enter

Function connector pin 5 — **P In5** — Enter — Select function with ⊖ / ⊕ : OFF **oFF** — Enter
Test input **tESt**

Switching output delay functions — **t Imr** — Enter — Select function with ⊖ / ⊕ :
Delay function OFF **oFF**
Switch-on / switch off delay **on-1** — Enter
Switch-off delay minimum pulse width **on-2**
constant pulse width **on-3**

Energy saving mode ECO — **Eco** — Enter — Select function with ⊖ / ⊕ :
ECO-mode OFF **oFF** — Enter
ECO-mode ON **on**

Turn display — **FL IP** — Enter — Select function with ⊖ / ⊕ :
Display turn OFF **oFF** — Enter
Display turn ON **on**

Output stage — **n-P** — Enter — Select function with ⊖ / ⊕ :
Plus switching **PnP**
Minus switching **nPn** — Enter
Complementary **coPL**

Front window heating (optional) — **hEAt** — Enter — Select function with ⊖ / ⊕ :
Front window heating OFF **oFF**
Front window heating ON **on** — Enter
Front window heating AUTO **Auto**

Reset to works default — **rSEt** — Enter — Select function with ⊖ / ⊕ :
no — Enter
YES — Enter — **rSEt**

Enter 2 s

Normal operation

OMRON

Dimensions

Sensors

E3NT-L17
E3NT-L27
E3NT-LH17

E3NT-L37
E3NT-L47
E3NT-LH37

Accessoires (order separately)

Optical data link
E3NT-AL232 2m

cable 2 m

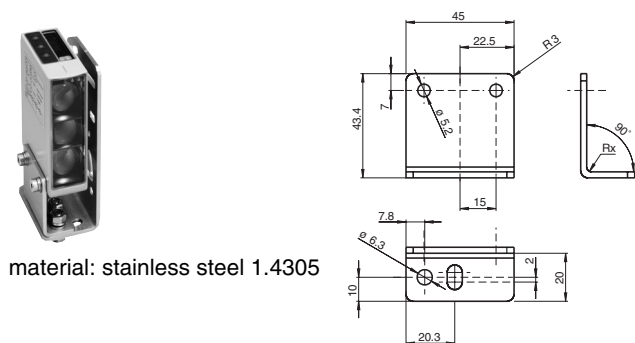Sub-D connector 9-pole, female
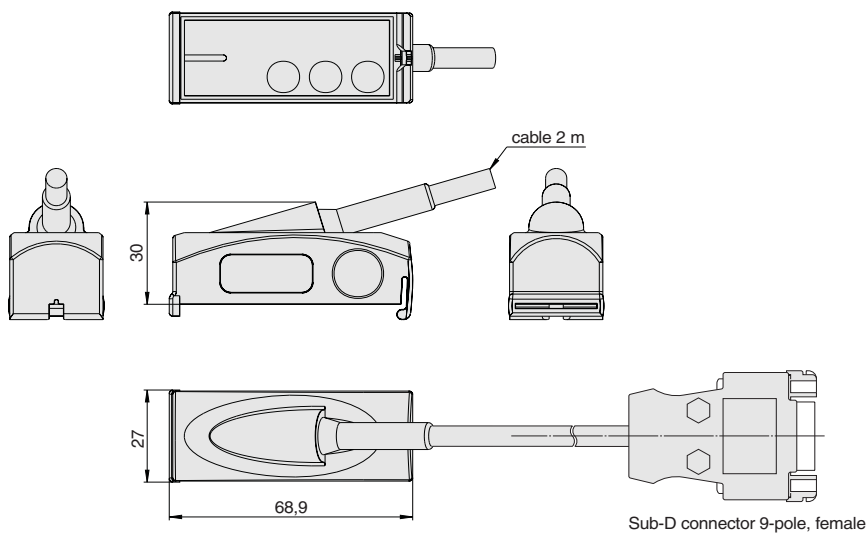
Laser alignment aid
E3NT-AP1

30

27

68,9

Universal mounting bracket
E39-EL1

material: stainless steel 1.4305
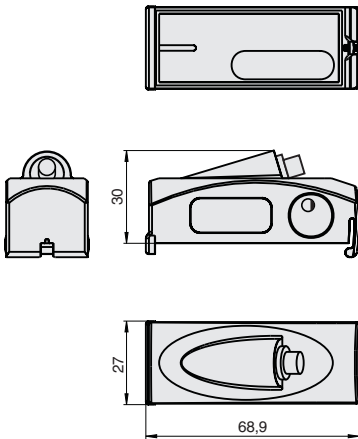
Adapter bracket
E39-EL2
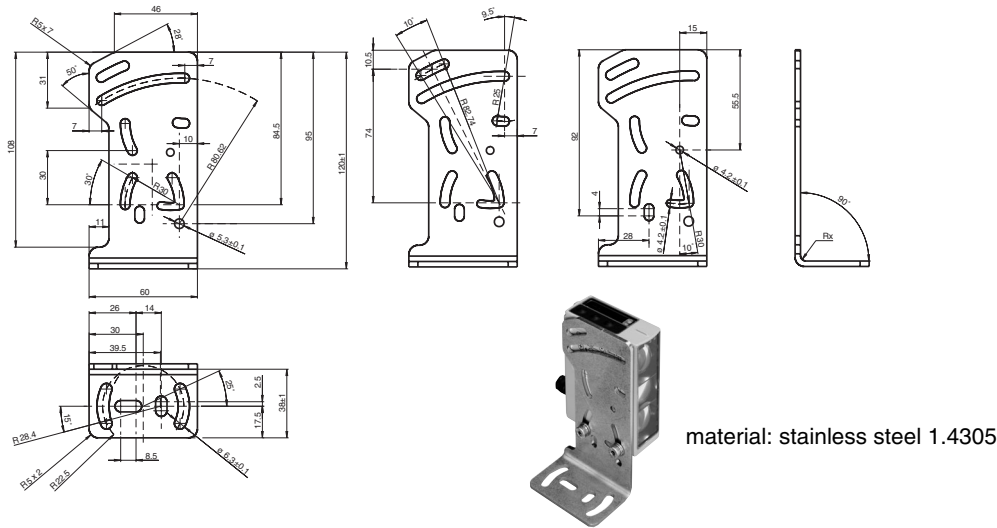
material: stainless steel 1.4305

Replacement bracket for E3N with E3NT
E39-EL3
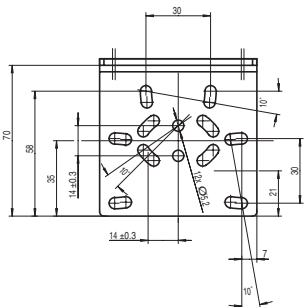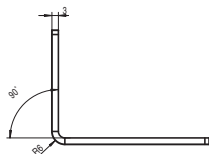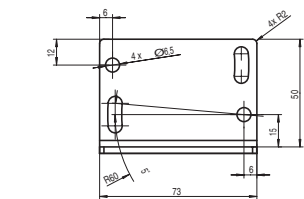
material: stainless steel 1.4305

Precautions

Mounting Directions

Sensor assembly

Contrary to sensors with single triangulation, E3NT with double triangulation, allows the measured object's direction of motion to be in all three directions. Thus, the rotatory position of the sensor about its optical axis can be chosen freely.
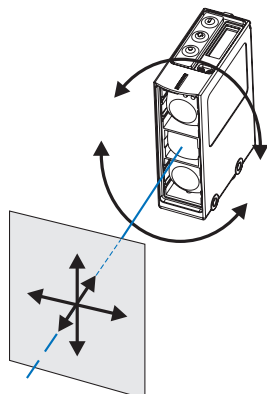
If the light spot is not completely on the same plane as the target object (minimum object size) the distance is not determined and malfunction can occur. If necessary a trigger signal or timer function has to be applied.
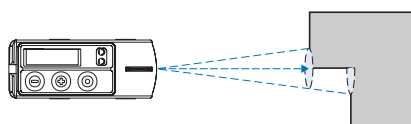
The sensor must be fitted so that:
- It is correctly aligned before it is adjusted
- It is protected as far as possible against vibration and shock
- It is protected as far as possible against extraneous incident light
- It is protected as far as possible against damage and soiling
- Electrical connection is possible
- It is as accessible as far as possible for maintenance work
- Operation of the push buttons is possible
- The display is visible.

Sensor's assembly direction

As far as possible, the sensor's optical surface should be aligned parallel to the surface of the measured object.
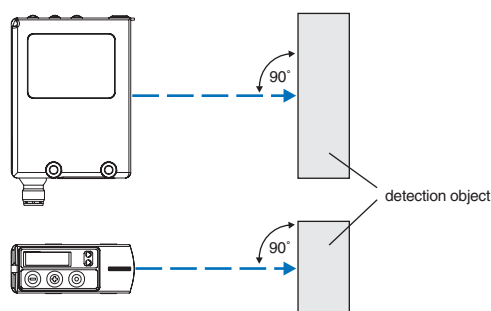
If the measured object has a glossy, reflecting surface, the sensor's optical system should be tilted by 5 … 10° in relation to the surface of the measured object.
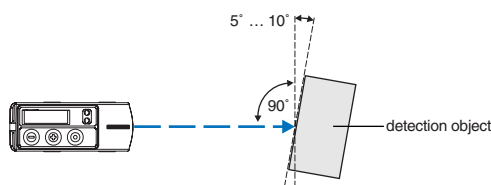
If there is a reflecting surface in parallel with the sensor's optical axis, this might lead to unstable switching states.

Therefore, reflecting objects within the sensor's optical axis should be avoided.

If this should not be possible, the reflecting surface should not be parallel to the sensor's optical axis, but should be rotated by at least 10°.

Mirror-like objects can cause malfunction inside and outside the sensing range. Avoid mirror-like objects in or close to the optical axis.

Inspection and Maintenance

Cleaning

Do not use any scratching or abrasive cleaning materials. The protective pane of the optical system might get damaged.

The sensor requires no maintenance.

Remove dirt build up from the optical system and the display at regular intervals only with a soft, non abrasive fabric. Residual dirt may have influence on the switching point and display accuracy.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. E332-E2-02   In the interest of product improvement, specifications are subject to change without notice.