

Light array cegard / Process Eco

English
Deutsch

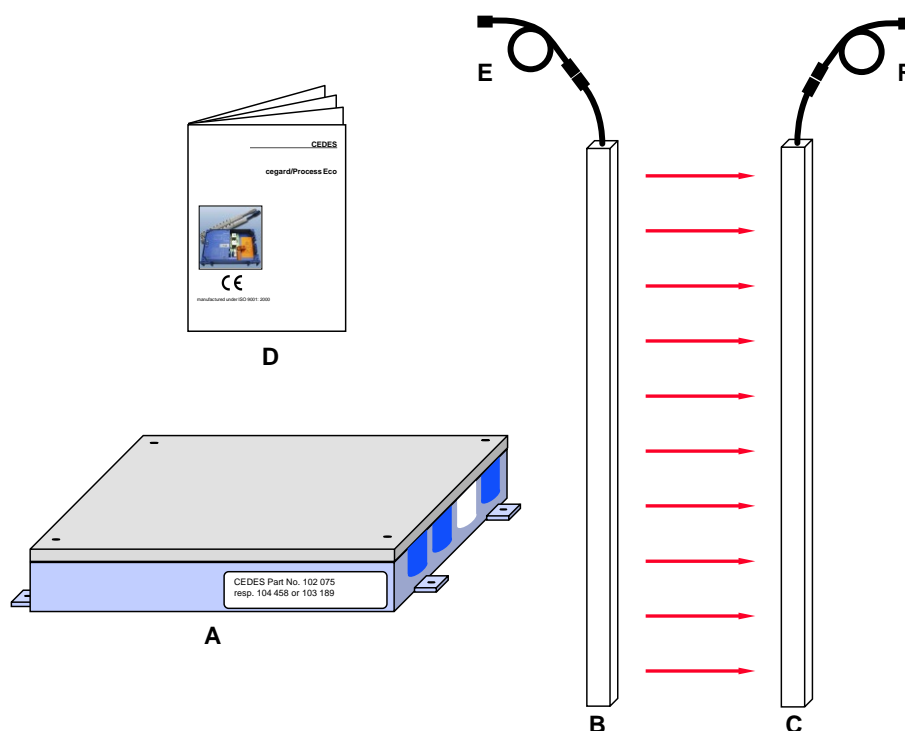


IMPORTANT NOTE

FOLLOW THE INSTRUCTIONS GIVEN IN THIS MANUAL CAREFULLY. FAILURE TO DO SO MAY CAUSE CUSTOMER COMPLAINTS AND SERIOUS CALL BACKS. KEEP INSTRUCTION MANUAL ON SITE.

1. Part list

Part Name	Catalog Number	Description
Process Eco System	45CSA-103608-Mxxxx	According configuration sheet Mxxxx with 8, 16, 24 or 32 elements, consisting of : A) Controller B) Emitter C) Receiver D) This manual E) Connection cable (Emitter, with plug or attached) R) Connection cable (Receiver with plug or attached)
Control unit EcoC-230-Rel	45CSA-102075	17 ... 240 VAC / DC, Relay
Control unit EcoC-24-Rel-T	45CSA-104458	24 VDC, Relay, Test input
Connection Cable	445L-106507 45CSA-104481	Connection Cable, 8 Pin, 5 Meter, MiniDin/M-RJ45 Connection Cable, 8 Pin, 15 Meter, MiniDin/M-RJ45
Extension Cable	445L-102793	Extension Cable, 8 Pin, 3 Meter, MiniDin/M-MiniDin/F

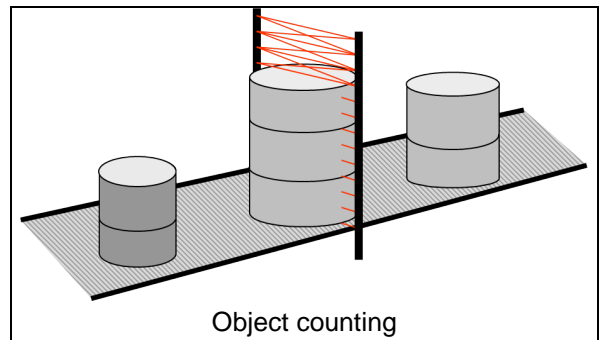


2. Typical Applications



Further applications:

- For detection and counting of small and large objects
 - For large surveillance zones i.e. transport conveyor systems
 - For guarding objects from access
- ... and many more



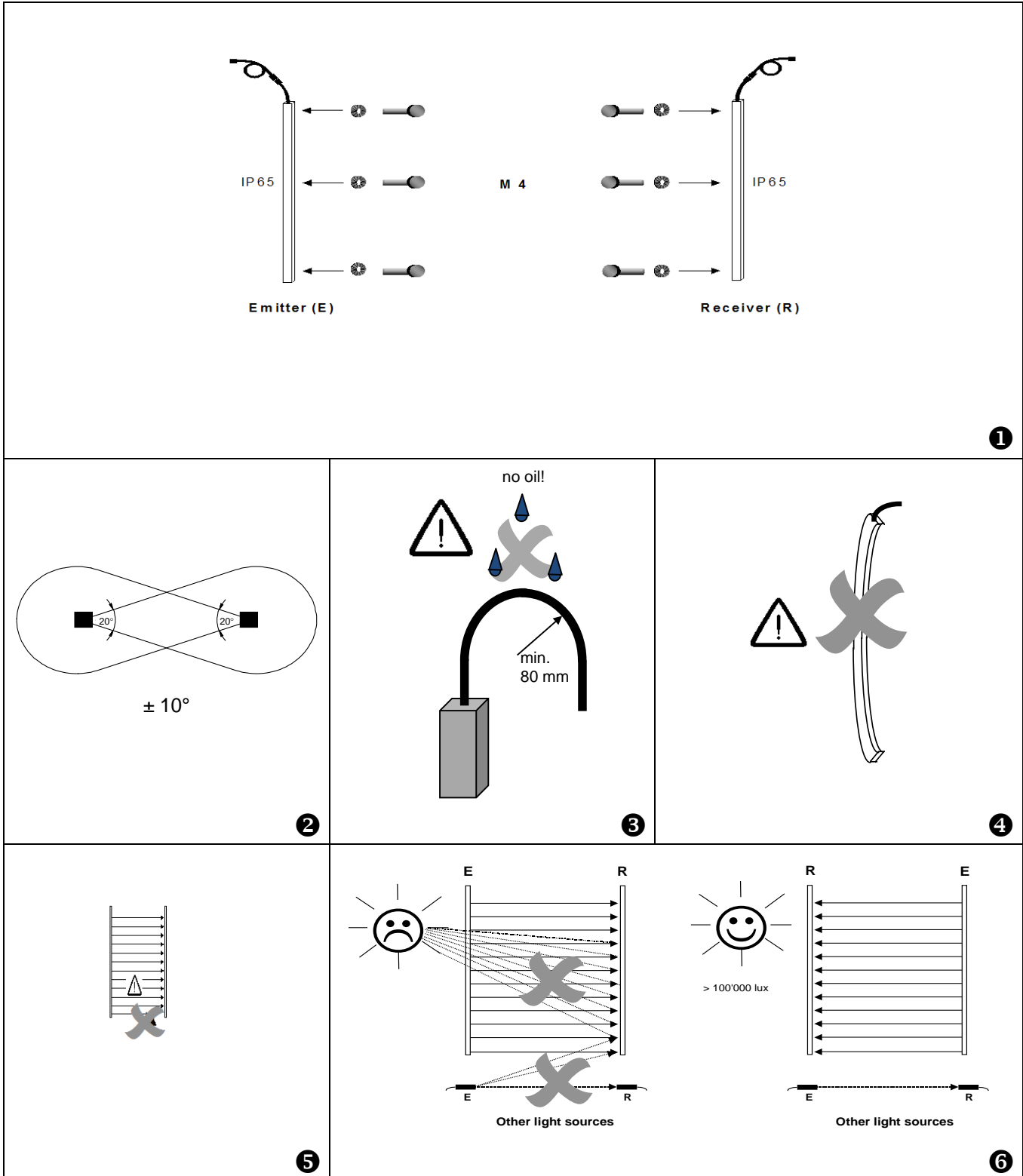
3. Application Restrictions

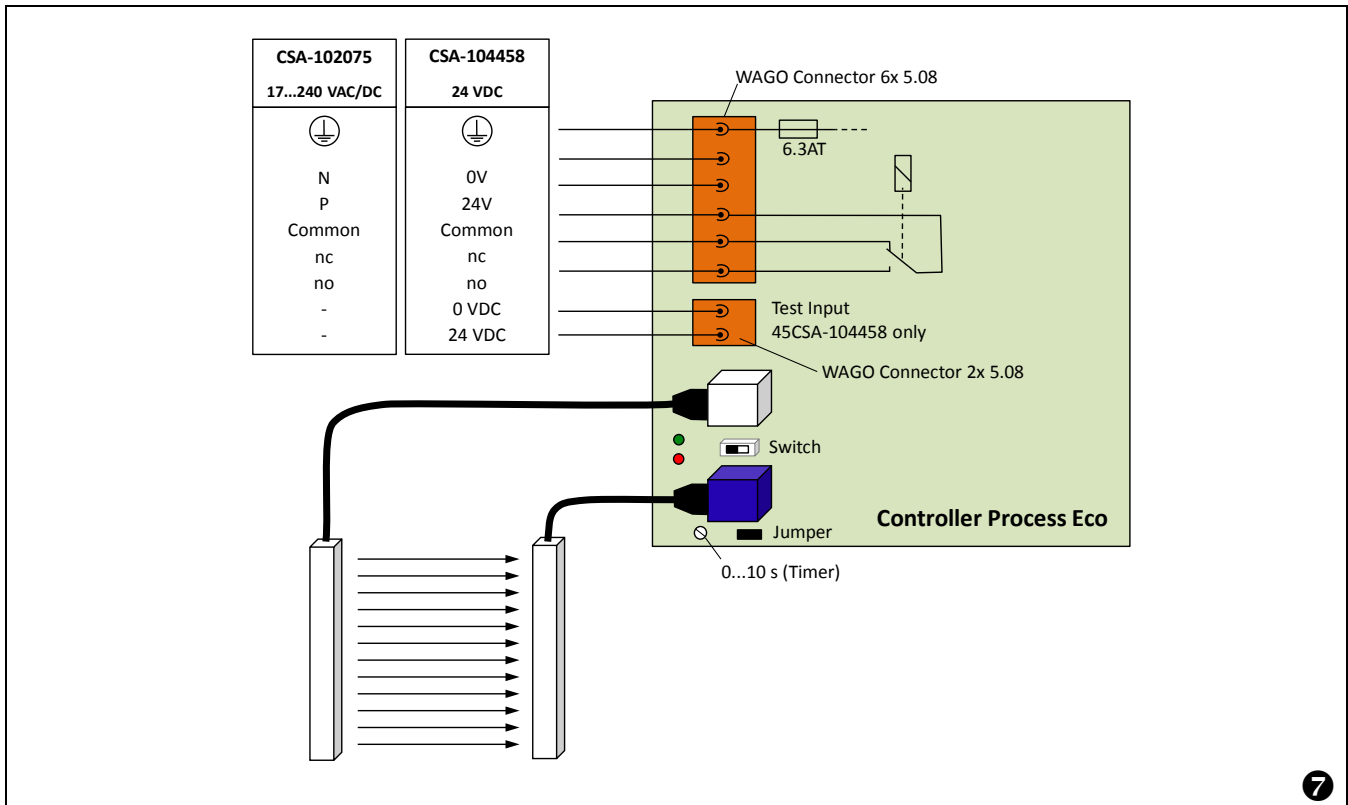
CAUTION!

DO NOT USE THIS LIGHT CURTAIN FOR THE PROTECTION OF DANGEROUS MACHINERY NOR IN EXPLOSIVE ATMOSPHERES NOR RADIOACTIVE ENVIRONMENTS! USE ONLY SPECIFIC AND APPROVED TYPES OF SAFETY DEVICES FOR SUCH APPLICATIONS OTHERWISE SERIOUS INJURY OR DEATH OF PERSONNEL MAY OCCUR!

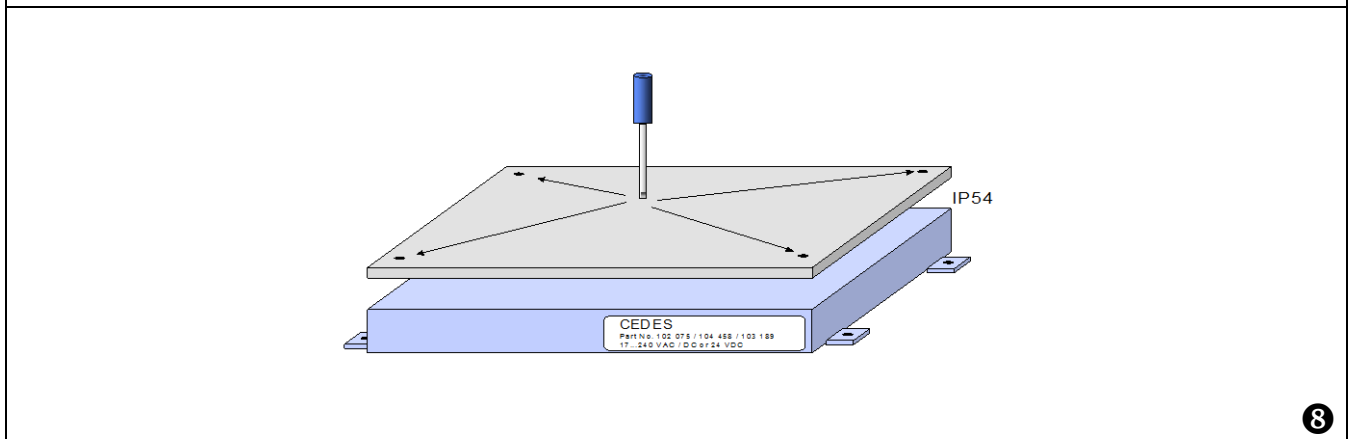


4. Installation



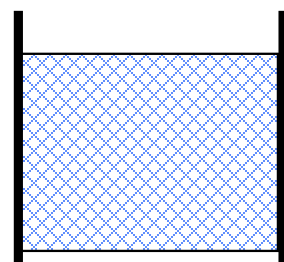
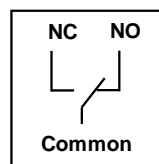
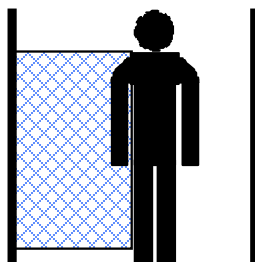
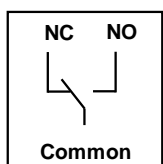


7



8

Output: Relay



4.1. Process/Eco opto edges

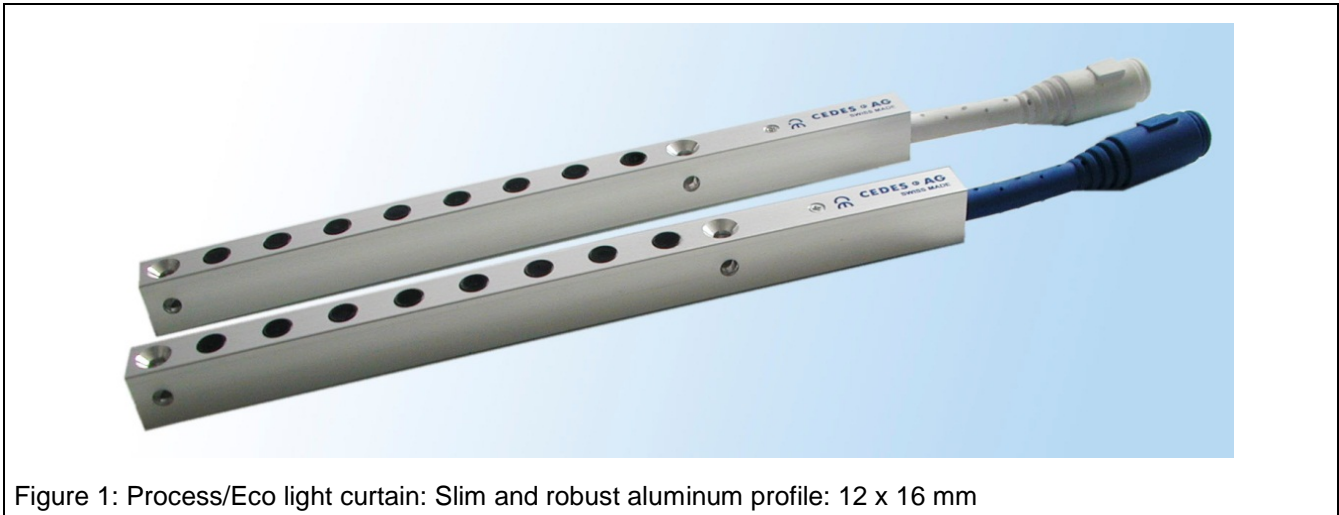


Figure 1: Process/Eco light curtain: Slim and robust aluminum profile: 12 x 16 mm

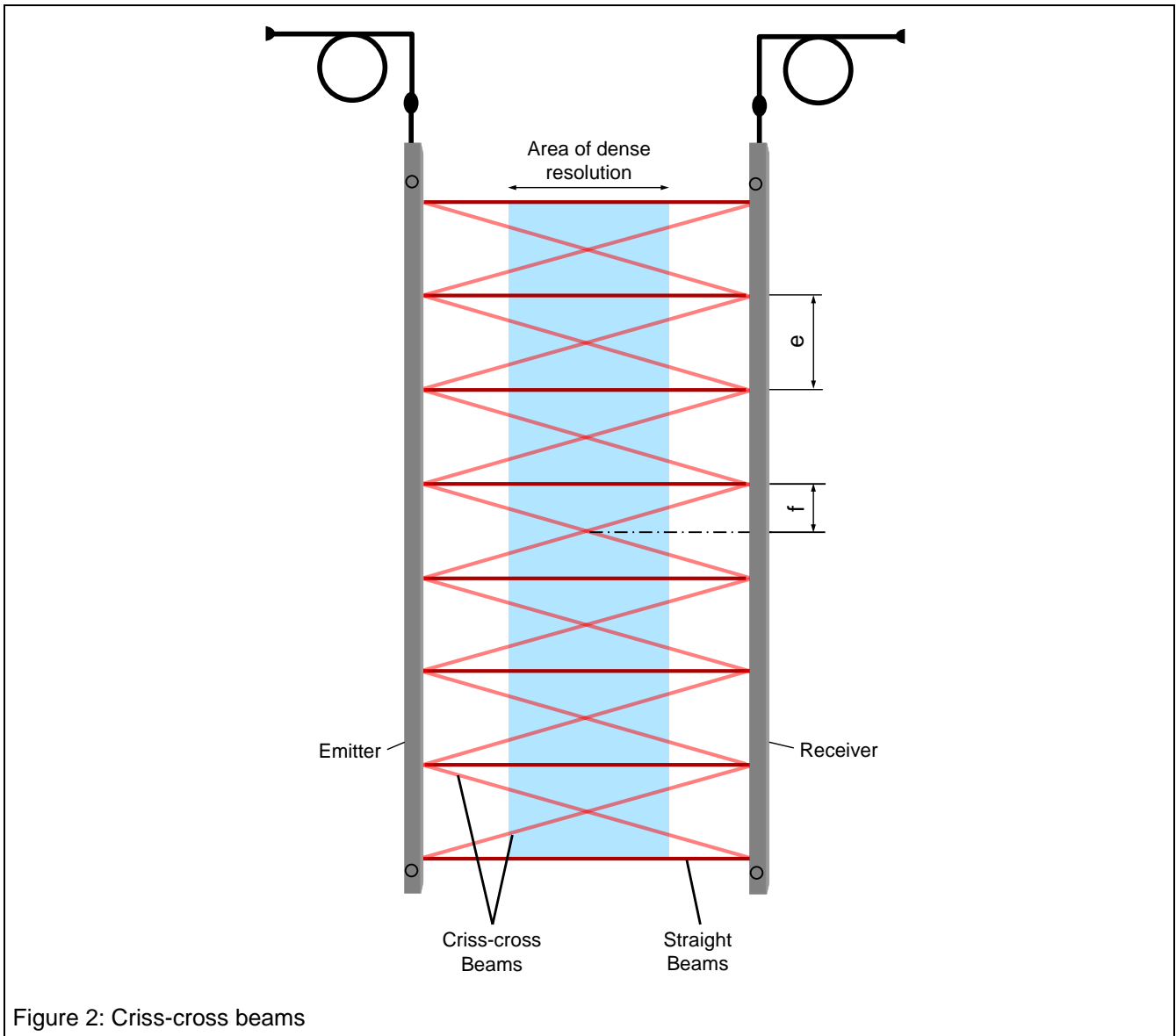
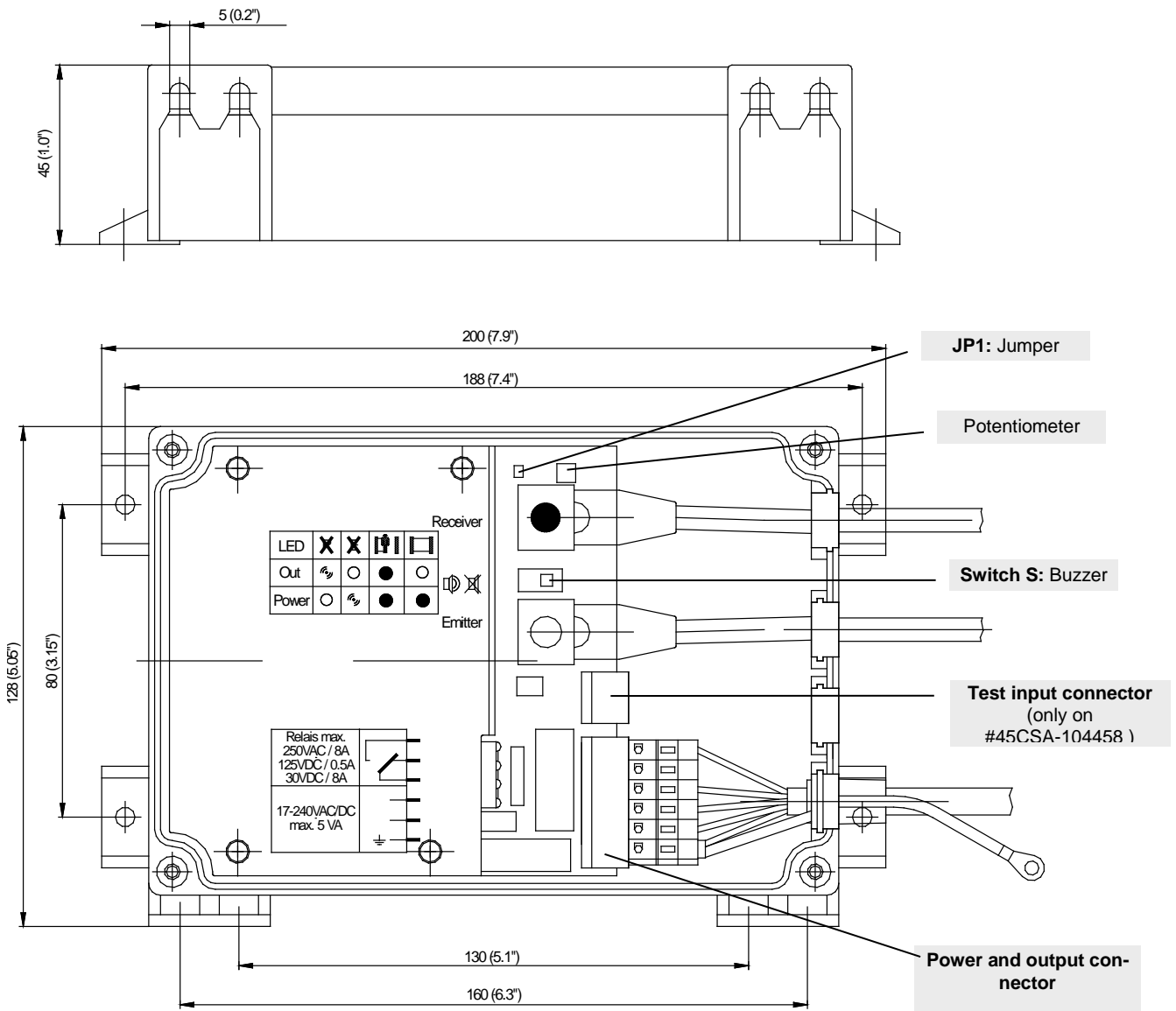
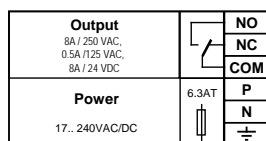
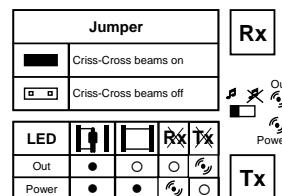
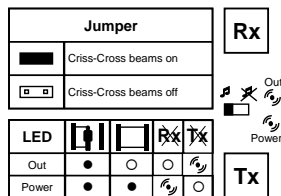


Figure 2: Criss-cross beams

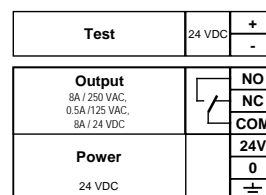
4.2. Dimensions of Process/Eco control unit



Dimensions in mm (inches)



P-EcoC-230-Rel
Catalog No. 45CSA-102075



P-EcoC-24-Rel-T
Catalog No. 45CSA-104458

4.3. Features

- Self-calibrating, fault tolerant
- Easy installation without alignment
- Dense surveillance area
- Robust and reliable
- Integrated diagnostics
- Very low price due to economy of scale
- Off time delay, adjustable

4.4. Applications

cegard/Process Eco is ideal for more comfort on machines and automation processes.



IMPORTANT WARNING:

This product is not a safety sensor to protect human life or human injury from dangerous parts of machinery.

4.5. Functional description

Between emitter E and receiver R a high density surveillance area is built up with straight and crossed beams. A built-in calibration feature of each individual beam to eliminate any adjustment, suppress light interference or control influence from dirt. Automatically adjust the power to provide the optimal operating conditions. These features give cegard/Process Eco an outstanding functional reliability. Any interruption of the surveillance area by an object or a person will be detected and the output signal will be switched.

4.6. Installation

Due to the large optical aperture angle and the automatic calibration feature there is no alignment needed as long as the light curtains are within the specified aperture angle, picture ②).

For **installation of the light curtains** please note that,

- both cables exit the profile in the same direction
- they are securely fastened
- they must not be bent or be exposed to tension
- the cable is not stretched or squeezed
- the cable is well fastened and routed
- ensure a cable radius > 80 mm
- avoid dirt on the light curtains
- avoid contamination by oil or greasy fluids
- avoid interference with other infrared sources like single opto sensors, energy saving lamps, direct sun light, etc.
- Make sure that operating range corresponds with specifications of the emitter light curtain.


Installation of control unit:

The connection diagram inside the control unit explains correct connection and use:

- Fix the control unit with 4 screws.
- Connect the earth terminal (⊕) with low impedance (< 10 Ω) to protective earth of the power supply.
- Connect the blue connector (receiver curtain) to the receiver terminal and the white connector (emitter curtain) to the emitter terminal. Make sure the connectors are properly secured.
- For controller with test input (45CSA-104458): Connect 0 V and + 24 VDC to the test input connector.
- Connect the desired output signals.
- Connect power.
- Set Jumper JP1, Potentiometer and Switch S (see chapter "Operation" on page 9).
- Close controller cover and screw tightly ⑧.
- Switch power on.
Light curtains calibration takes place within approximately 5 seconds. The buzzer is beeping during calibration.
- Test controller output signal by interrupting light curtain ⑨.

cegard/Process Eco is now ready!

4.7. Operation

	<p>Danger 120 / 240 Volts</p> <p>Disconnect power before opening the control unit!</p>
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The diagram of the control unit on page 5 (picture 7) explains the connection and operation.

4.7.1. Buzzer (Switch S)

Switch S activates the buzzer. The buzzer will be heard when the light curtain is interrupted.

4.7.2. Criss-cross beam mode (Jumper JP1)

JP1 set = Criss-cross beam mode on
 JP1 off = Criss-cross beam mode off

With the criss-cross beam mode is active, the smallest object size detected is in the area of high resolution (figure 2, page 6). In this area the minimum object size detected (f) is equivalent to half the element separation distance, plus 7 mm (beam diameter). In order for the criss-cross mode to function properly a minimum operating distance must be obeyed.

With the criss-cross beam mode off, the response time is reduced. Minimum object size detected in this mode is equal to the element separation distance (e), plus 7 mm (beam diameter).

4.7.3. Output off delay (potentiometer)

The output can be delayed after the protective area is no longer interrupted. The delay time is adjustable with the potentiometer between 0 ... 10 s . Default is 0 s.

4.7.4. Test input

This function is only available on the controller EcoC-24-Rel-T (45CSA-104458).

The test input is used for turning the emitter off, and thereby provoking the controller output to also switch off. This functionality allows higher level controller to test the complete light curtain system.

For normal operation of the light curtain system, +24 VDC must be connected to the test input.

	Condition	Relay Output
1	Test Input + 24 VDC Light beam interrupted	Common - NC
2	Test Input + 24 VDC Light beam not interrupted	Common - NO
3	Test Input 0 VDC Light beam not interrupted	Common - NC
4	Test Input 0 VDC Light beam interrupted	Common - NC

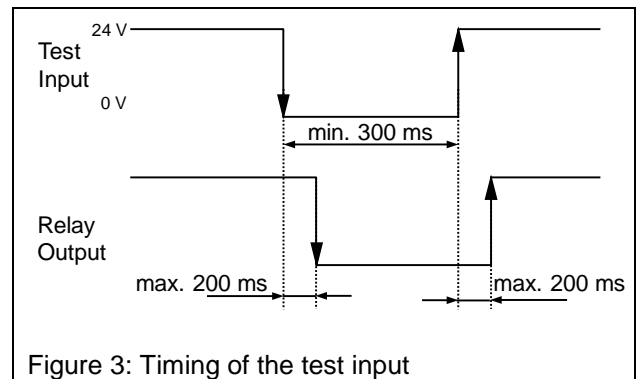
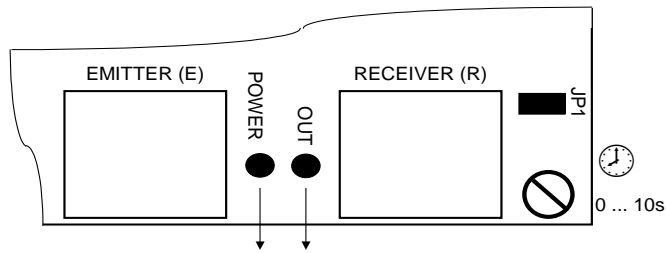


Figure 3: Timing of the test input

4.8. Cleaning the light curtain

Use soapy water only. Any use of abrasive or inappropriate cleaning solvents may cause loss of range or failure.

4.9. Trouble shooting



Indication		green	yellow	Action
Person or object detected		●	●	<ul style="list-style-type: none"> • Normal operation
No object		●	○	<ul style="list-style-type: none"> • Normal operation
No function		○	○	<ul style="list-style-type: none"> • Check power supply • Change fuse, order spare fuse
Surveillance area not interrupted, output in off position		●	●	<ul style="list-style-type: none"> • Test input = + 24 VDC (Pin 0V and 24V) connected? • Check installation and cables • Clean emitting and receiving surfaces • Interfering of foreign light sources (e.g. sun or IR-sensors). • Change control unit • Change emitter and receiver edge.
Receiver R defective			⊙	<ul style="list-style-type: none"> • Check wiring and connectors • Connect E / R light curtain with protective earth? • Replace receiver light curtain
Emitter E defective		⊙		<ul style="list-style-type: none"> • Check wiring and connectors • Connect E / R light curtain with protective earth? • Replace emitter light curtain
R & E defective		⊙	⊙	<ul style="list-style-type: none"> • Check wiring and connectors • Connect control unit and E / R light curtain with protective earth?
Object not detected		●	○	<ul style="list-style-type: none"> • Check for specular reflection from nearby parts and surfaces

● = LED on ○ = LED off ⊙ = LED flashing

5. Technical Data

Control unit

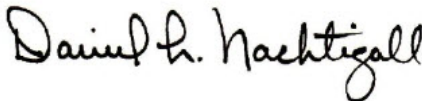
Type Catalog No	EcoC-230-Rel 45CSA-102075	EcoC-24-Rel-T 45CSA-104458
Power supply	17 ... 240 VAC / DC	24 VDC ± 20 %
Current consumption (without load)	max. 280 mA	max. 90 mA
Relay output	250 VAC / 8 A 125 VDC / 0.5 A 30 VDC / 8 A min. 5 VDC / 10 mA	250 VAC / 8 A 125 VDC / 0.5 A 30 VDC / 8 A min. 5 VDC / 10 mA
Test input	no	yes
Connector	6 pin terminal block	6 & 2 pin terminal block
Off time delay	0 .. 10 seconds	
Indicators (LED)	Power, beam status, failure	
Enclosure rating (control unit)	IP54	
Temperature range - Operation - Storage	-20 ... +65°C -20 ... +70°C	
Operation humidity	5 ... 95 % non condensing	
Operation vibration / shock	IEC 60068-2-6	
EMC	2006/95/EC (Low Voltage Directive), 2004/108/EC (EMC Directive)	
Material housing	ABS, color blue (similar to RAL 5005)	
Weight	350 g	
Electrical lifespan	>100 * 10 ³ operating cycles	
Mechanical lifespan	>20 10 ⁶ operating cycles	

Light curtain

Operation wave length	Infrared approx. 900 nm
No. of sensors per light curtain	8 / 16 / 24 / 32
No. of beams per sensor	1 - 3
Operating range	0 ... 5 m or 3 ... 8 m according configuration Mxxxx (for criss-cross beams see minimum working distance restriction)
Max. ambient light	100'000 Lux
Minimum object size	Element separation + 7 mm
Minimum operating range in criss-cross operation mode	10x element spacing (dim e in Figure 2)
Typical response time (without relay delay) - with criss-cross beams (Jumper on) - without criss-cross beams (Jumper off)	(8, 16, 24, 32 elements) 32 ms, 58 ms, 82 ms, 110 ms 23 ms, 40 ms, 57 ms, 78 ms
Max Response time (without relay delay) - with criss-cross beams (Jumper on) - without criss-cross beams (Jumper off)	(8, 16, 24, 32 elements) 64 ms, 116 ms, 164 ms, 220 ms 46 ms, 80 ms, 114 ms, 156 ms
Light curtain length	According to configuration Mxxx (max 2.4 m)
Position mounting holes [mm]	According to configuration Mxxx
Cable length	Standard: Pigtail with Mini-Din, 5 m connector cable each Customer specification: Fixed cable (no connector) emitter up to 10 m / receiver up to 30 m
Temperature range - Operation - Storage	-20 ... +65°C -20 ... +70°C
Operation humidity	5 ... 95 % non condensing
Vibration / shock	IEC 60068-2-6
EMC	2006/95/EC (Low Voltage Directive), 2004/108/EC (EMC Directive)
Enclosure rating	IP65 (IP67 upon request)
Materials: Lenses / Profiles	Polycarbonate / Aluminum
Color of profiles	Aluminum anodized (standard) or black anodized
Weight / profile	150 g (light curtain length 500 mm)

6. CE declaration of conformity

EU Declaration of Conformity

<i>Identification of the product:</i>		Light Curtain for Factory Automation
<i>Name and address of the manufacturer:</i>		<i>Name and address of the authorised representative:</i>
Cedes Safety & Automation AG		Rockwell Automation B.V.
Science Park, Kantonsstrasse 14		Rivium Promenade 160
CH-7302 Landquart		2909 LM Capelle aan den IJssel
Switzerland		The Netherlands
<i>This declaration of conformity is issued under the sole responsibility of the manufacturer.</i>		
<i>Object of the declaration:</i>		Allen-Bradley Process Eco, 45CSA Series <i>(reference the attached list of catalogue numbers)</i>
<i>The object of the declaration described above is in conformity with the relevant EU harmonisation legislation:</i>		
2006/95/EC	Low Voltage Directive	(LVD)
2004/108/EC	EMC Directive	(EMC)
<i>References to the relevant harmonised standards used or references to the specifications in relation to which conformity is declared:</i>		
EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011	Information technology equipment – Safety – Part 1: General requirements (Applicable clauses only)	
EN 61000-6-4:2007	Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emissions standard for industrial environments	
EN 61000-6-2:2005	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments	
<i>Additional information:</i>		
<i>Year of CE Marking (LVD):</i>	2002	
<i>Signed for and on behalf of the above named manufacturer:</i>		
<i>Place and date of issue:</i>	Landquart, Switzerland	05-Nov-2013
<i>Name, function:</i>	Daniel L. Nachtigall, Technical Leader – Product Certification Engineering	
<i>Signature:</i>		

Catalogue Number	Series ¹	Description	Directive ²	
			EMC	LVD
45CSA-103608-Mxxx		Process Eco Emitter/Receiver Pair w/ 17...240Vac control unit	Yes	Yes
45CSA-103608-Mxxx		Process Eco Emitter/Receiver Pair w/ 15...30Vdc control unit	Yes	N/R
45CSA-102075		Process Eco Control Unit; 17...240Vac input, relay output	Yes	Yes
45CSA-104458		Process Eco Control Unit; 15...30Vdc input, relay output	Yes	N/R

- 1) If no series number is given, then all series are covered.
- 2) Yes = Product is certified to this directive.
N/R = This directive is not required for this product.