

Eden Non-Contact Non-Magnetic Safety Sensor for the Highest Level of Safety

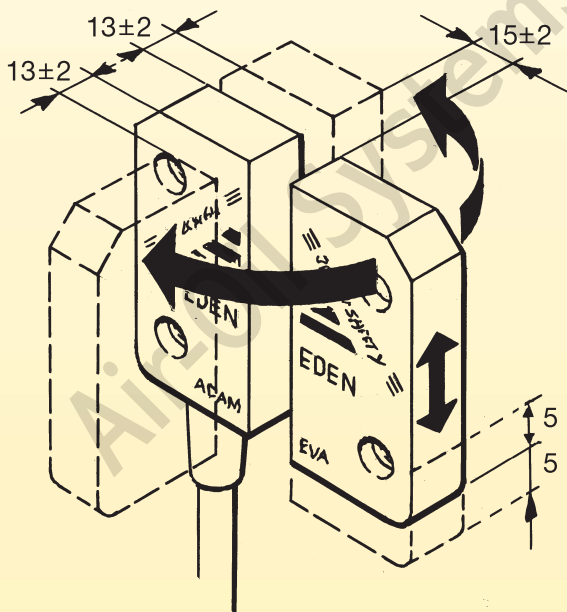
Eden — Adam and Eva — is a non-contact safety sensor for use on interlocked gates, hatches, etc. A coded signal is transmitted from the control device Vital or from the safety PLC Pluto via Adam to Eva, which modifies the signal and sends it back again. The maximum sensing distance between Adam and Eva is currently 15mm +/- 2 mm.

Up to 30 Edens can be connected in series to Vital and still achieve the same safety level in the safety circuit. It is also possible to connect safety light beams and E-stops in the same safety circuit.

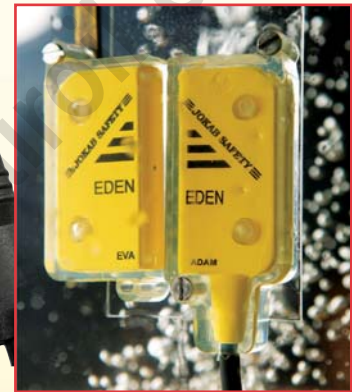
Adam is available with cable lengths up to 20 m and with M12 connectors. The LED on Adam provides indication of four different conditions, contact/non-contact between Adam and Eva, alignment, and safety status. The same information is also available via the Adam connection cable. For harsh environments, Jokab Safety offers Eden E — Adam E and Eva E. There is also a coded version Eden EC, Adam EC and Eva EC.

Flexible Mounting

The ability to operate at distances of up to 15mm and at different detection directions allows a wide range of mounting possibilities.



Eden E for harsh environments



Applications

- Doors and Hatches
- Position Control
- Sector Detection
- Slot Detection

Features

- Safety category 4 according to EN 954-1/EN ISO 13849-1 together with Vital or Pluto
- Non-contact detection, large sensing distance 0 - 15 mm +/- 2 mm
- Up to 30 sensors connected in series at safety category 4
- Versatile mounting, 360° detection
- Protection class IP67 (Eden E - IP69K)
- Signal will penetrate through non-metallic materials (wood, plastic, etc.)
- Safety light beams, E-stops and Eden can be connected in the same safety circuit together with Vital or Pluto meeting safety category 4 (EN 954-1/EN ISO 13849-1)
- LED indication on sensor and status information via the connector cable
- Small hysteresis (< 1mm)
- Eden C and Eden EC - available coded versions

Approvals



Eden Application Examples

Eden to Detect Position

Adam and Eva has contact only if they are within 15 mm from each other.

Eden Used for Sector Detection

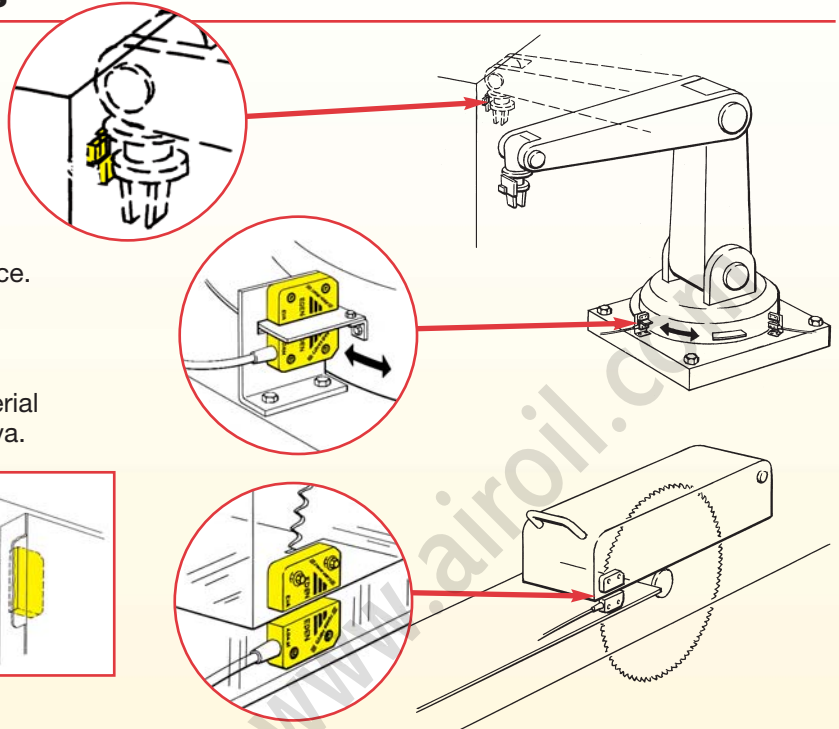
Metal stops the signal between Adam and Eva. Additional Eden sensor(s) can be mounted to detect metal plate(s) in place.

Eden Used for Detection of Position of Saw Guard

Wood, plastic and other non-metallic material lets the signal pass between Adam and Eva.

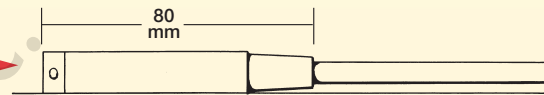
Eden Hidden in Doors and Hatches

Non-metallic door material between Adam and Eva allows signal through.



Eden Mounting

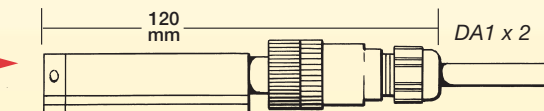
Mounting Adam with integral cable.



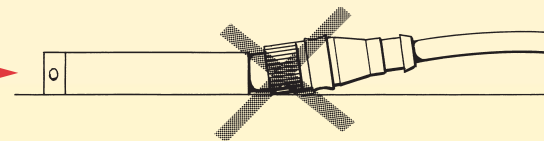
Mounting with one protection plate (DA1) for Adam M12 using prewired molded M12 connector.



Mounting with two protection plates (DA1) for Adam M12 using field wirable M12 connector.

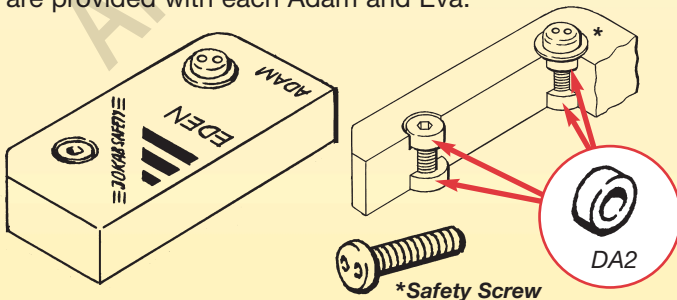


Wrong mounting without protection plate may cause permanent damage to sensor.



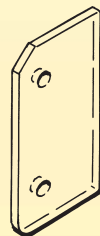
DA2 Mounting Spacer

The DA2 mounting spacer must be used in order to physically protect Eden from damage. Four spacers are provided with each Adam and Eva.



DA1 Protection Plate

Four protection plates (2.5 mm) are supplied with Adam M12. To protect Adam and Eva protection plate (DA1) can be used on both sides.



Eden Technical Data

Manufacturer..... JOKAB SAFETY

Ordering Data/Article Numbers..... see page 53-54

Safety Category together with Vital or Pluto
(according to EN 954-1/EN ISO 13849-1)..... 4

Color..... yellow and black

Weight

- Adam M12.....30 g
- Adam 3 m..... 220 g (including cable)
- Adam 10 m..... 650 g (including cable)
- Adam E10 m..... 660 g (including cable)
- Adam EC..... 660 g (including cable)
- Eva..... 26 g
- Eva E..... 36 g
- Eva EC..... 36 g

Power Supply..... 24VDC +15%/-25%

Power Consumption

- Adam without info output..... 45 mA
- Adam with info output..... max. 55 mA

Max. Cable Length..... see Vital Technical Data

Ambient Temperature

- Eden/Eden C..... -40°C to +70°C (operation)
-25°C to +70°C (storage)
- Adam E/Adam EC..... -40°C to +70°C (operation)
-25°C to +70°C (storage)
(Test OK +90°C to 100°C)

Protection Class

- Eden..... IP67
- Eden E/Eden EC..... IP69K

Mounting..... M4 screw, e.g. safety screw
20-053-42. Max torque 2 Nm
(screws should be locked with Loctite or similar)

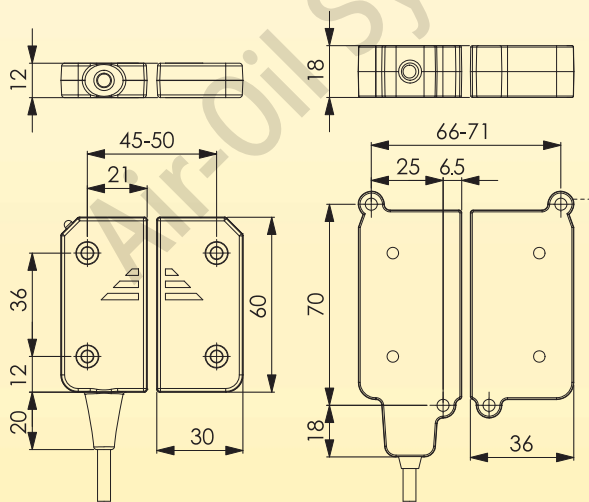
Detection Distance Max

- Adam/Eva 15+/-2 mm..... Flash 2 mm before red position
- Adam C/Eva C 12+/-2 mm..... Flash 2 mm before red position
- Adam E/Eva E 12+/-2 mm..... Flash 2 mm before red position
- Adam/Eva EC 10+/-2 mm..... Flash 2 mm before red position
- Hysteresis..... approx. 1 mm

*Metal may have influence on detection distance.
This can be prevented by protection plates, DA1.*

Minimum Distance between Eden Pairs..... 50 mm

Life..... >10⁷ cycles



Minimum distance to metal when there is metal on one or more sides.

- Adam/Eva, Adam EC/Eva EC (1)..... 0 mm
- Adam/Eva, Adam EC/Eva EC (more)..... 2.5 mm
- Adam E/Eva E (1)..... 0 mm
- Adam E/Eva E (more)..... 0 mm
- Adam C/Eva C (1)..... 5 mm
- Adam C/Eva C (more)..... 5 mm

Material..... Macromelt (based on polyamid)
(Eden E and Eden EC is also covered by PUR, polyurethane)

Chemical Resistance

- Macromelt.....cutting oils, vegetable and animal oils, hydrogen peroxide, diluted acids and bases: good
(alcohol and strong acids: not recommended)
- PU (Eden E and Eden EC)..... cutting oils, vegetable and animal oils, hydrogen peroxide, diluted acids and bases, alcohols: good
(strong oxidating acids: not recommended)

LED on Adam

- Green..... Eva within range, safety circuit closed (door closed)
- Flashing..... Eva within range, earlier safety circuit open (door closed)
- Red..... Eva out of range, safety circuit open (door open)
- Fast Flashing..... Eva within 2 mm from maximum sensing distance (door closed)

Cable..... 3 or 10 m, Ø5.7 mm, black PVC
5 x 0.34 mm² + screen, UL 2464

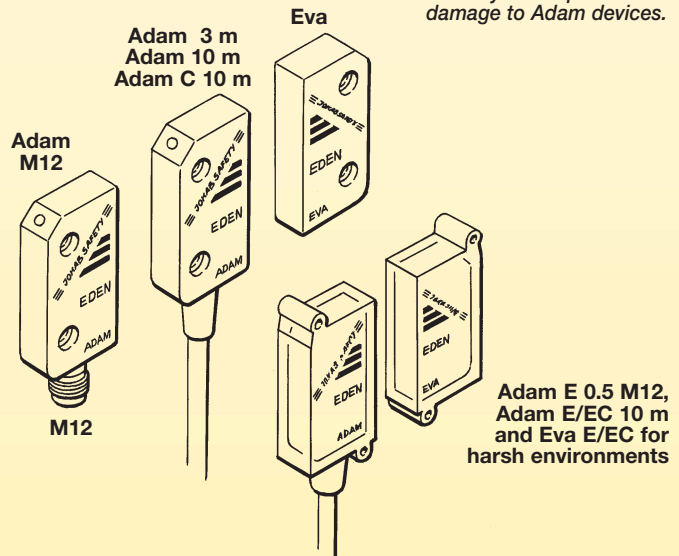
Connector..... M12: 5-pin male contact

Connections

- Brown (1)..... +24 VDC
- White (2)..... dynamic signal in
- Blue (3)..... 0 VDC
- Black (4)..... dynamic signal out
- Grey (5)..... info output (see below)

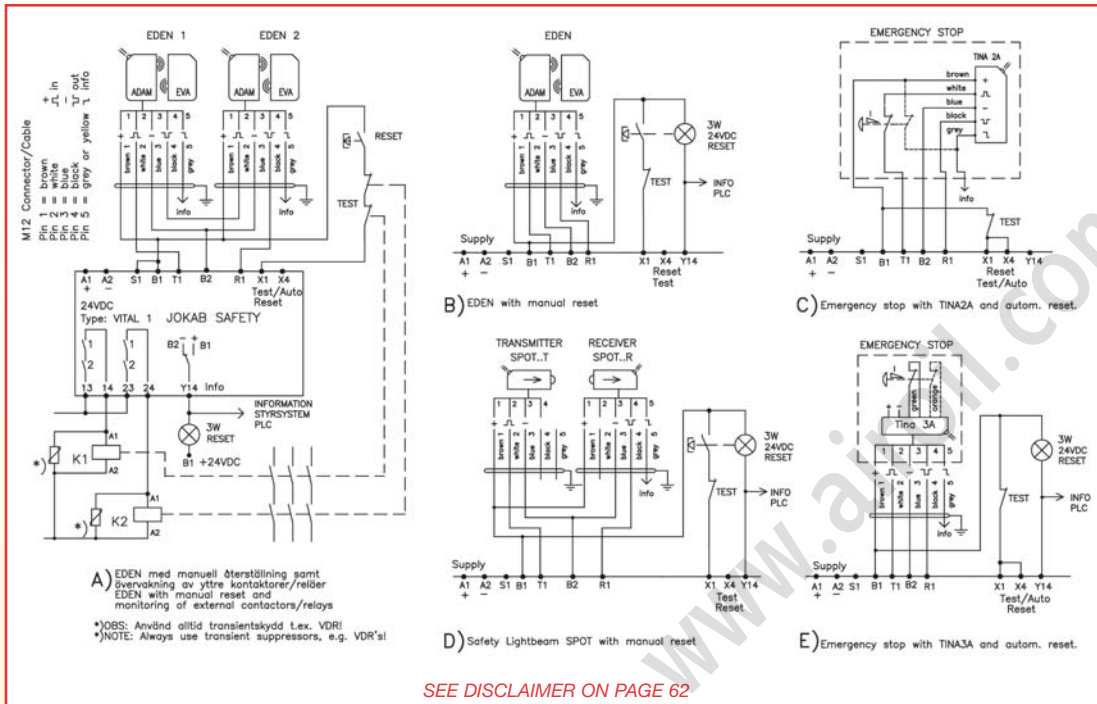
24 VDC when LED is green or flashing
(tolerance -2 VDC) 10mA max
0 VDC when LED is red (tolerance +2 VDC)

Warning: Incorrect connection may cause permanent damage to Adam devices.



Eden Connection Example

Connection of Eden to Vital 1



Eden Connection Example

Connection of Eden to Pluto

