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JUNE 2021

ABB Jokab Safety

Easy Reference Overview – US

Important Notice

Important information, the connection diagrams and application examples in this document are only general recommendations from ABB. The conditions of a specific application could make alternative connections more suitable.

With regards to the stated functional safety levels, they can only be guaranteed under the assumption that the installation complies with all other functional safety requirements, such as product selection, product placement, cable installation, environmental effects on the system etc.

ABB does not accept any responsibility for any errors or lack of information in this document. It is the responsibility of the machine builder to make sure the correct functional safety levels are achieved.

Click here for the latest release of the
[“Easy Reference”](#)

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Click the Application Guide for wiring, and programming examples

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ABB Jokab Safety

What's been added or new

New – We have Machine Safety Services (MSS) available to help manufacturing facilities comply with safety standards

Click [here](#) for more information



It's important in today's society to make your plant safe for your employees. Contact us today, to learn how we can help.

Jokab.Service@us.abb.com

New – Application Guide, application, wiring, and programming information. Click on image to get the pdf.



Added – Sense non-contact magnetic safety switches with M12 connectors

Click [here](#) for more information



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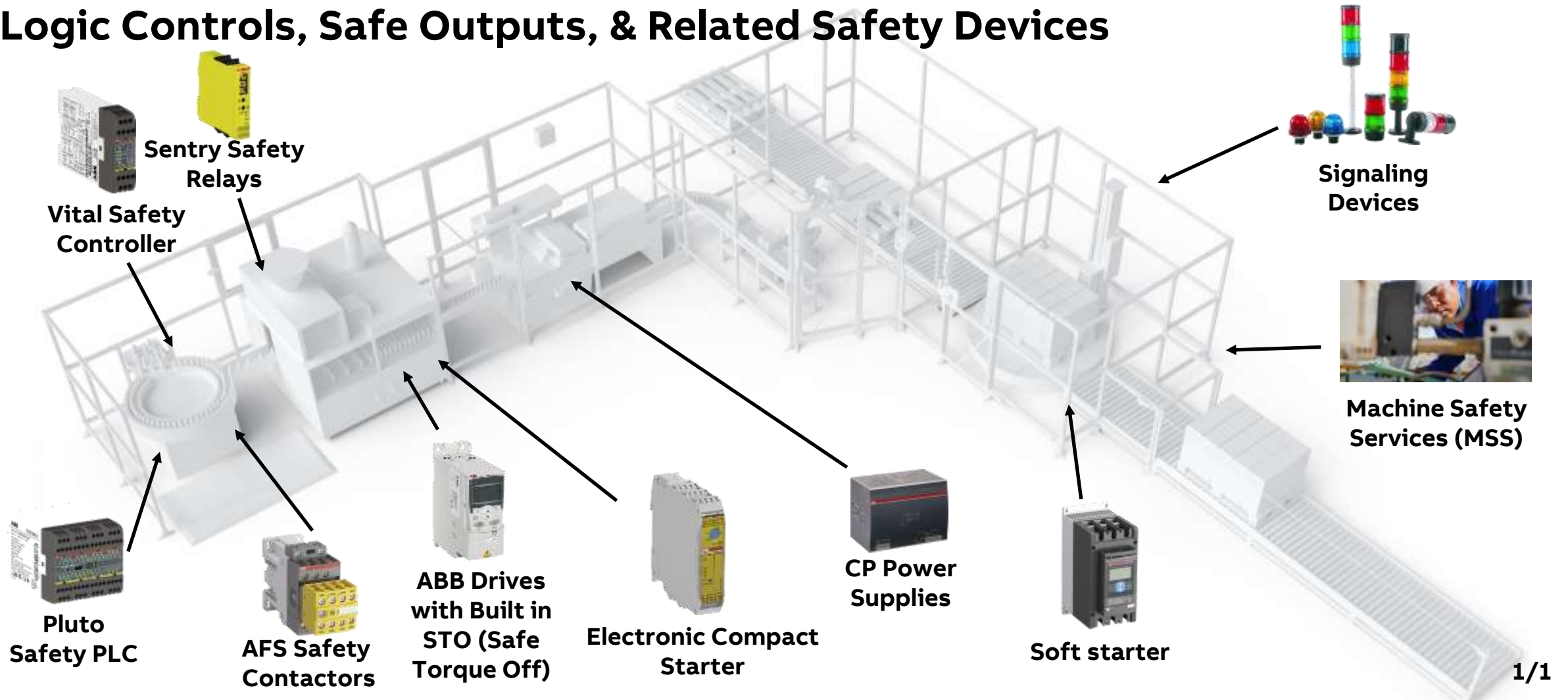
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Logic Controls, Safe Outputs, & Related Safety Devices



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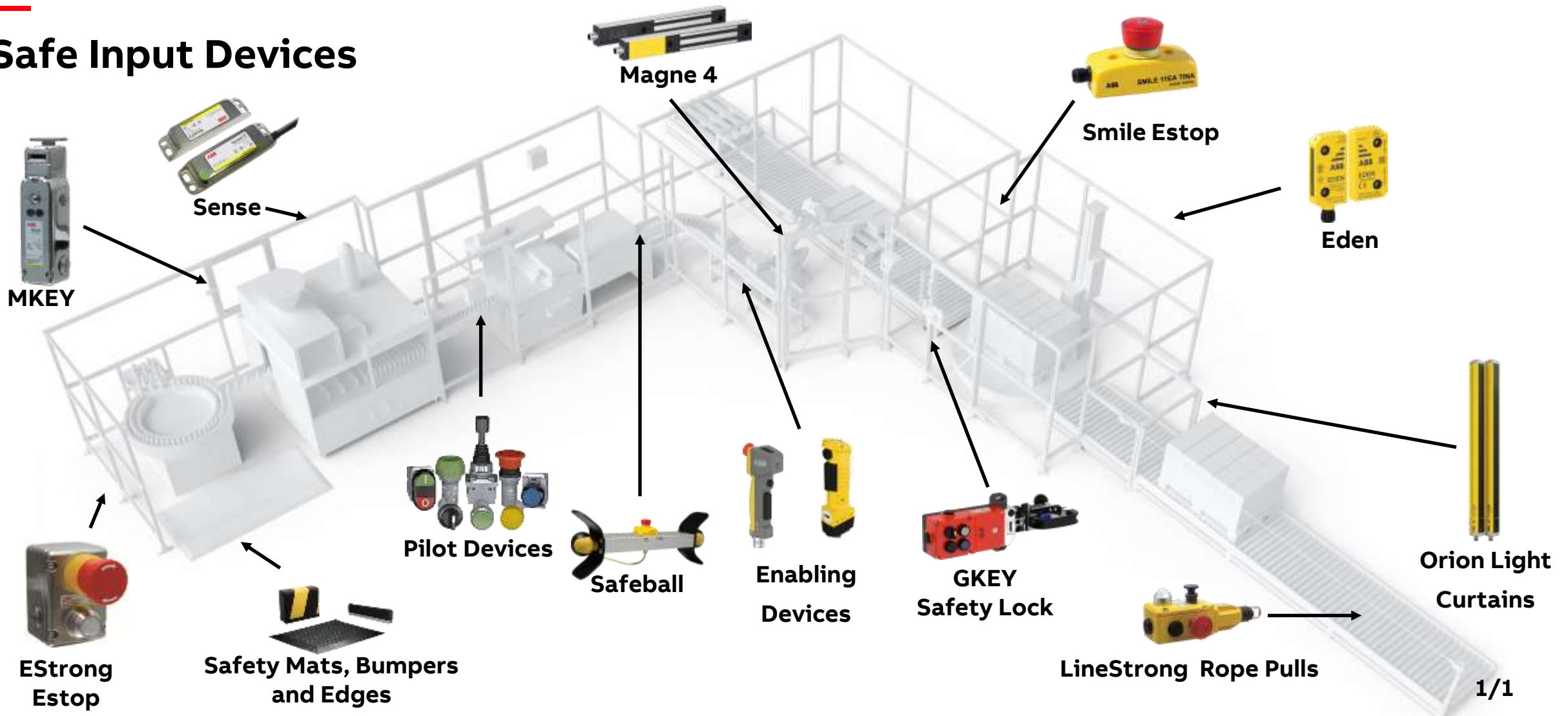
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Safe Input Devices



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Eden OSSD and DYN

Non-contact RF safety sensor

- Help improve machine uptime with a robust and flexible safety sensor.
- Help avoid nuisance tripping and sensor failure, even in harsh environments, with a large temperature range and IP67/69K ratings. Easily installed in any orientation with 360-degree mounting and a large sensing range.
- Used for guarding doors, hatches and detecting position.

Benefits & Features

TÜV-tested to the highest level of EN ISO-13849-1:2015 (Category 4/PLe) and EN 62061:2005/ EN 61508:2010 (SIL3), even with devices in series.

Non-contact safety sensors experience no mechanical wear from regular use and are tolerant to vibration.

Enables enhanced diagnostics with extensive LED indication and auxiliary information lines to help keep your operation running.



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More Resources

[Product Pages - OSSD](#)

[Brochure](#)

[Configurator - DYN](#)

[Product Pages - DYN](#)

[Configurator - OSSD](#)

[Manual - DYN](#)

[Manual - OSSD](#)

[Former Eden to Eden DYN](#)

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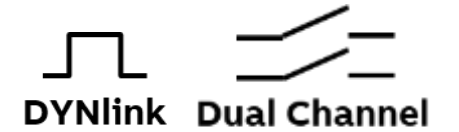
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Eden OSSD and DYN

Non-contact RF safety sensor



Eden OSSD and DYN



Additional Features

- Up to 30 Eden sensors can be attached to any standard dual channel Safety Relay (OSSD) or Vital Controller (DYNlink) and still maintain Cat 4/PLe safety levels.
- Up to 10 Eden sensors with Safety PLC per input (DYNlink) and still maintain Cat 4/PLe safety levels.
- When the Eden is powered up for the first time, the Adam and the Eva will share codes. The Eva General can be replaced with another Eva General since they share the same codes. The Eva Unique satisfies the requirements of EN ISO 14119:2013 and can only be used with the Adam that it is paired with.
- High level of misalignment tolerance (15mm +/- 2mm) because of the RF technology.
- IP69K wash down rated with the M12 connection at the sensor, Large operating temperature span, -40C to 70C (-40F to 158F).
- OSSD style ideal for retrofit and OEM applications where an existing safety relay or safety PLC needs to be used.

IMPORTANT – Eva Unique or General cannot be used with the AS-I Adams which will only work with an AS-I Eva. See the main catalog for AS-I components.

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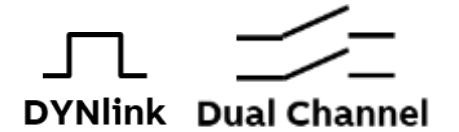
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Eden OSSD and DYN

Non-contact RF safety sensor



Eden OSSD and DYN



Eden OSSD and DYN Info

Information signals for individual status.

Eden OSSD Info can be connected to a safety relay or safety PLC.

Eden DYN Info can be connected to a Vital controller or Pluto Safety PLC.



Eden OSSD and DYN Reset

Local reset via the appropriated Smile Reset button connected to it.

Eden OSSD Reset can be connected to a safety relay or safety PLC.

Eden DYN Reset can be connected to a Vital controller or Pluto Safety PLC.



Eden DYN Status

Individual status for up to 120 devices (30 per statusbus input, 4 per Pluto).

Eden DYN Status can be connected to a Pluto Safety PLC only.

Eden OSSD

Non-contact RF safety sensor

Eden OSSD

NOTES

See cable section at end of Easy Reference Guide for [5 and 8 Pin Cables](#).

2 mounting plates (JSMD4H) are required (1 for Adam and 1 for Eva).



Type	Voltage	M12 Connection	For Single application	For series applications	Local Reset (with Smile Reset)	Actuator	Accessory	Ordering Code
Adam OSSD Info	24VDC	8 pin	●	●				2TLA020051R5700
Adam OSSD Reset	24 VDC	8 pin	●	●	●			2TLA020051R5900
Eva General Code			●	●		●		2TLA020046R0800
Eva Unique Code			●	●		●		2TLA020046R0900
M12-3H Y Splitter	24VDC	5/8 pin		●			●	2TLA020055R0800
JSOP-1	24VDC	5 pin					●	2TLA020053R7000
JSMD4H mounting plate							●	2TLA040033R3600

Eden DYN

Non-contact RF safety sensor

Eden DYN

NOTES

See cable section at end of Easy Reference Guide for [5 Pin Cables](#).

2 mounting plates (JSMD4H) are required (1 for Adam and 1 for Eva).



Type	Voltage	M12 Connection	For Single application	For series applications	Local Reset (with Smile Reset)	Actuator	Accessory	Pluto Only	Ordering Code
Adam DYN Info	24VDC	5 pin	•	•					2TLA020051R5100
Adam DYN Status	24 VDC	5 pin	•	•				•	2TLA020051R5200
Adam DYN Reset	24VDC	5 pin	•	•	•				2TLA020051R5300
Eva General Code			•	•		•			2TLA020046R0800
Eva Unique Code			•	•		•			2TLA020046R0900
M12-3A Y Splitter	24VDC	5 pin		•			•		2TLA020055R0000
M12-3B Y Splitter	24VDC	5 pin					•		2TLA020055R0100
M12-3S Y Splitter	24VDC	5 pin					•	•	2TLA020055R0600
Tina 1A	24VDC	5 pin		•			•		2TLA020054R0000
Tina 4A Port Block	24VDC	5 pin		•			•		2TLA020054R0300
Tina 8A Port Block	24VDC	5 pin		•			•		2TLA020054R0500
Vital 1 Controller	24VDC		•	•					2TLA020052R1000
JSMD4H mounting plate							•		2TLA040033R3600

Magne OSSD and DYN

Process lock with built-in Eden non-contact RF safety sensor

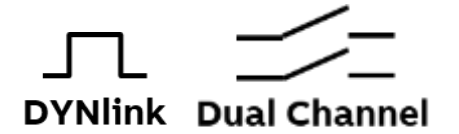
- Helps keep machinery running by controlling unwanted process stops.
- A strong electromagnet secures the door while the built-in Eden safety sensor monitors the status of the door.
- Used in applications where it is important to prevent disturbances of the production process.

Benefits & Features

TÜV-tested to the highest level of EN ISO-13849-1:2015 (Category 4/PLe) and EN 62061:2005/ EN 61508:2010 (SIL3), even with devices in series.

Red/green and blue LEDs available to give visual status to operators. Available with and without built in Eden non-contact sensor.

No moving parts which reduces mechanical faults.



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More Resources

[Product Pages - OSSD](#)

[Brochure](#)

[Manual](#)

[Product Pages - DYN](#)

[Configurator](#)

[Former Magne to Magne DYN](#)

[Application Guide \(External Link\)](#)

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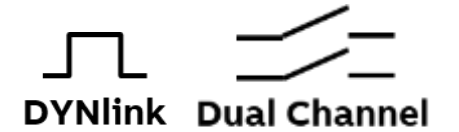
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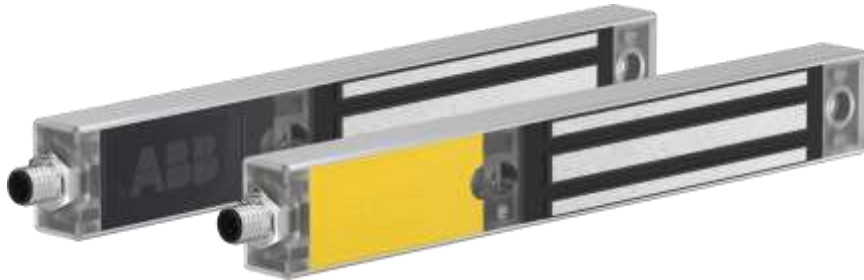
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Magne OSSD and DYN

Process lock with built-in Eden non-contact RF safety sensor



Magne OSSD and DYN



Additional Features

- Magne 3 does not have built in Adam safety sensor.
- Magne 4(X) has a built in Adam Safety Sensor.
- Magne 4(X) require ordering the Eva (for Magne 4) and Anchor Plate separately.
- The metal target (anchor) plate is also ordered separately for all models.
- When the Magne 4 is powered up for the first time, the Magne and the Eva will share codes
The Eva General can be replaced with another Eva General since they share the same codes
The Eva Unique satisfies the requirements of EN/ISO 14119 and can only be used with the Adam that it is paired with.
- Only 350mA current draw compared to 2 amps for a solenoid locking switch.
- 1500N holding force compared to 1000N for a solenoid locking switch.
- Anchor plate (32B) can be ordered with an embedded magnet to hold door closed (30N) when power is not applied.

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Magne OSSD and DYN

Process lock with built-in Eden non-contact RF safety sensor



Eden OSSD and DYN

Magne OSSD Info

Information lines out of device for status. LED indication for locked and safety status.

Magne OSSD Info can be connected to a safety relay or safety PLC.



Magne DYN Info

Information lines out of device for status. LED indication for locked and safety status.

Magne DYN Info can be connected to a Vital controller or Pluto safety PLC.



Magne 3X Non-Safe Lock

Information line out for locked status.

Magne 3X has no built in Eden for safety.



Magne OSSD

Process lock with built-in Eden non-contact RF safety sensor

Magne OSSD

NOTES

See cable section at end of Easy Reference Guide for [5 and 8 Pin Cables](#).

Anchor plate and Eva must be ordered separately.



Magne, Eva and JSM D23 installed on a sliding door.

Type	Voltage	M12 Connection	For Single application	For series applications	Local Reset (with Smile Reset)	Actuator	Accessory	Ordering Code
Magne 4 OSSD Info	24 VDC	8 pin	•	•				2TLA042022R4600
Eva General Code			•	•		•		2TLA020046R0800
Eva Unique Code			•	•		•		2TLA020046R0900
JSMD21B				•			•	2TLA042023R0500
JSMD24							•	2TLA042023R0300
JSMD27							•	2TLA042023R1000
JSMD23							•	2TLA042023R0200
Anchor 32A							•	2TLA042023R1300
Anchor 32B							•	2TLA042023R0400

Magne DYN

Process lock with built-in Eden non-contact RF safety sensor

Magne DYN

NOTES

See cable section at end of Easy Reference Guide for [5 and 8 Pin Cables](#).

Anchor plate and Eva must be ordered separately.



Magne, Eva, JSM D21B, JSM D24 and JSM D27 installed on a conventional door.

Type	Voltage	M12 Connection	For Single application	For series applications	Local Reset (with Smile Reset)	Actuator	Accessory	Ordering Code
Magne 4X DYN Info	24VDC	5 pin	•	•				2TLA042022R3000
Magne 4 DYN Info	24VDC	8 pin	•	•				2TLA042022R3400
Magne 4 DYN Info 2	24 VDC	8 pin	•	•				2TLA042022R3410
Eva General Code			•	•		•		2TLA020046R0800
Eva Unique Code			•	•		•		2TLA020046R0900
JSM D21B				•			•	2TLA042023R0500
JSM D24							•	2TLA042023R0300
JSM D27							•	2TLA042023R1000
JSM D23							•	2TLA042023R0200
Anchor 32A							•	2TLA042023R1300
Anchor 32B							•	2TLA042023R0400

Magne 3X

Process lock

Magne 3X

NOTES

See cable section at end of Easy Reference Guide for [5 Pin Cables](#).

Anchor plate ordered separately.



Type	Voltage	M12 Connection	For Single application	For series applications	Local Reset (with Smile Reset)	Actuator	Accessory	Ordering Code
Magne 3X	24 VDC	5 pin	●	●				2TLA042022R2700
JSMD21B				●			●	2TLA042023R0500
JSMD27							●	2TLA042023R1000
JSMD23							●	2TLA042023R0200
Anchor 32A							●	2TLA042023R1300
Anchor 32B							●	2TLA042023R0400

Orion light curtains

Optical safety devices

- Increase accessibility while maintaining reliable detection.
- Use light curtains to protect large openings in the hard-guarding system, rather than doors. Different resolutions available depending on the application.
- Used where there is frequent interaction with a machine.



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Benefits & Features

Dual OSSD outputs can be used with Safety Rated Contactors, Force Guided Relays, Safety Relays and Safety PLCs to shut down hazardous motion.

Extensive indication, including alignment level, makes it easy to track any errors.

Extended model can be used for advanced applications such as muting, blanking and cascading.

More Resources

[Product Pages](#)

[Manual – Orion 1B](#)

[Manual – Orion 2B](#)

[Brochure](#)

[Manual – Orion 1E](#)

[Manual – Orion 2E](#)

[Focus II to Orion](#)

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Orion light curtains

Optical safety devices

Orion Light Curtains



Additional Features

- Powerful outputs allow for direct control of contactors or force guided relays eliminating the need for a safety relay in between.
- Orion Base units are cost effective safety light curtains with automatic/manual reset functions and external device monitoring (EDM) built in.
- Base models have protective tubes and shields as an accessory to help protect the devices in harsh environments.
- A local reset button can be connected directly to a light curtain. No need for a cable between the reset button and the electrical cabinet or for an extra control module.
- Orion Extended units give you the added functions for the most demanding applications. Features include:
 - External Device Monitoring (EDM)
 - Automatic/Manual Reset
 - Muting (X, L, & T muting, Y cable M12-C02PT62RM used)
 - Blanking (Fixed and Floating, cable M12-C02PT6RB used)
 - Cascading (Up to 3 segments)
 - Range select
 - Push Button Programmable (No software or DIP switches needed)
 - No dead zone

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Orion light curtains

Optical safety devices

Orion Light Curtains



Orion 1 Base

Basic light curtain available in 14mm and 30mm resolution. Built in external device monitoring (EDM) and auto/manual reset. 6m range (14mm models) and 19m range (30mm models).

Orion Base can be connected to a Safety Relay, Safety Contactors, Force Guided Relays or Safety PLC.



Orion 1 Extended

Advanced light curtain available in 14mm and 30mm resolution. Built in external device monitoring (EDM), auto/manual reset, muting, blanking and cascading. 7m range (14mm models) and 20m range (30mm models).

Orion Extended can be connected to a Safety Relay, Safety Contactors, Force Guided Relays or Safety PLC.



Orion 2 Base

Basic light curtain for perimeter application available in 2, 3 and 4 beams. Built in external device monitoring (EDM) and auto/manual reset. 50m operating distance.

Orion Base can be connected to a Safety Relay, Safety Contactors, Force Guided Relays or Safety PLC.



Orion 2 Extended

Extended light curtain for perimeter applications available in 2, 3 and 4 beams. Built in external device monitoring (EDM), auto/manual reset as well as muting. 50m operating distance.

Orion Extended can be connected to a Safety Relay, Safety Contactors, Force Guided Relays or Safety PLC.

Orion light curtains

Optical safety devices

Orion 1 Base

NOTES

See cable section at end of Easy Reference Guide for [5 and 8 Pin Cables](#) (5 pin transmitter and 8 pin receiver).

Standard “L” brackets come with base models.



Type	Voltage	Protective Height (mm/Inch)	Safety Outputs	EDM	Auto/Manual Reset	Ordering Code (14mm)	Ordering Code (30mm)
Orion1-4-X-015-B	24VDC	150/5.9	2 OSSD	●	●	2TLA022300R0000	2TLA022302R0000
Orion1-4-X-030-B	24VDC	300/11.8	2 OSSD	●	●	2TLA022300R0100	2TLA022302R0100
Orion1-4-X-045-B	24VDC	450/17.7	2 OSSD	●	●	2TLA022300R0200	2TLA022302R0200
Orion1-4-X-060-B	24VDC	600/23.6	2 OSSD	●	●	2TLA022300R0300	2TLA022302R0300
Orion1-4-X-075-B	24VDC	750/29.5	2 OSSD	●	●	2TLA022300R0400	2TLA022302R0400
Orion1-4-X-090-B	24VDC	900/35.4	2 OSSD	●	●	2TLA022300R0500	2TLA022302R0500
Orion1-4-X-105-B	24VDC	1050/41.3	2 OSSD	●	●	2TLA022300R0600	2TLA022302R0600
Orion1-4-X-120-B	24VDC	1200/47.2	2 OSSD	●	●	2TLA022300R0700	2TLA022302R0700
Orion1-4-X-135-B	24VDC	1350/53.1	2 OSSD	●	●	2TLA022300R0800	2TLA022302R0800
Orion1-4-X-150-B	24VDC	1500/59.0	2 OSSD	●	●	2TLA022300R0900	2TLA022302R0900
Orion1-4-X-165-B	24VDC	1650/64.9	2 OSSD	●	●	2TLA022300R1000	2TLA022302R1000
Orion1-4-X-180-B	24VDC	1800/70.9	2 OSSD	●	●	2TLA022300R1100	2TLA022302R1100

Orion light curtains

Optical safety devices

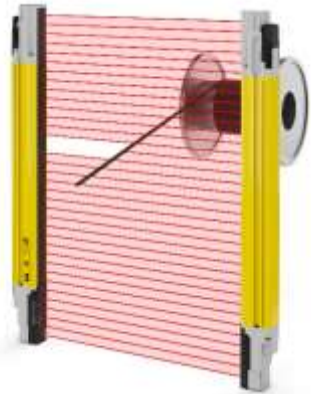
Orion 1 Extended

NOTES

See cable section at end of Easy Reference Guide for [5 and 12 Pin Cables](#) (5 pin transmitter and 12 pin receiver).

Standard “L” brackets come with extended models.

For muting applications, we recommend using an Orion Base with a S20 Pluto to control the muting function. In blanking situations use the M12-C02PT6RB.



Type	Voltage	Protective Height (mm/Inch)	Safety Outputs	EDM	Auto/Manual Reset	Blanking	Muting	Cascading	Ordering Code (14mm)	Ordering Code (30mm)
Orion1-4-X-030-E	24VDC	300/11.8	2 OSSD	●	●	●	●	●	2TLA022301R0100	2TLA022303R0100
Orion1-4-X-045-E	24VDC	450/17.7	2 OSSD	●	●	●	●	●	2TLA022301R0200	2TLA022303R0200
Orion1-4-X-060-E	24VDC	600/23.6	2 OSSD	●	●	●	●	●	2TLA022301R0300	2TLA022303R0300
Orion1-4-X-075-E	24VDC	750/29.5	2 OSSD	●	●	●	●	●	2TLA022301R0400	2TLA022303R0400
Orion1-4-X-090-E	24VDC	900/35.4	2 OSSD	●	●	●	●	●	2TLA022301R0500	2TLA022303R0500
Orion1-4-X-105-E	24VDC	1050/41.3	2 OSSD	●	●	●	●	●	2TLA022301R0600	2TLA022303R0600
Orion1-4-X-120-E	24VDC	1200/47.2	2 OSSD	●	●	●	●	●	2TLA022301R0700	2TLA022303R0700
Orion1-4-X-135-E	24VDC	1350/53.1	2 OSSD	●	●	●	●	●	2TLA022301R0800	2TLA022303R0800
Orion1-4-X-150-E	24VDC	1500/59.0	2 OSSD	●	●	●	●	●	2TLA022301R0900	2TLA022303R0900
Orion1-4-X-165-E	24VDC	1650/64.9	2 OSSD	●	●	●	●	●	2TLA022301R1000	2TLA022303R1000
Orion1-4-X-180-E	24VDC	1800/70.9	2 OSSD	●	●	●	●	●	2TLA022301R1100	2TLA022303R1100

Orion light curtains

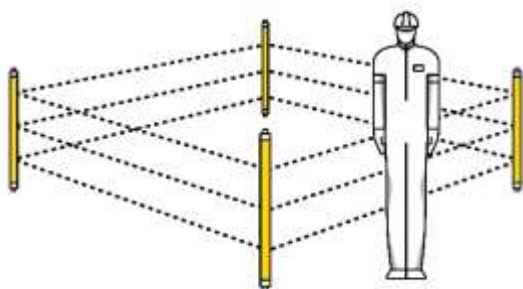
Optical safety devices

Orion 2 Base

NOTES

See cable section at end of Easy Reference Guide for [5 and 8 Pin Cables](#) (5 pin transmitter and 8 pin receiver).

Standard “L” brackets come with base models.



Type	Voltage	Protective Height (number of beams)	Safety Outputs	EDM	Auto/Manual Reset	Ordering Code
Orion2-4-K2-050-B	24VDC	500mm (2 Beams)	2 OSSD	●	●	2TLA022304R0000
Orion2-4-K3-080-B	24VDC	800mm (3 Beams)	2 OSSD	●	●	2TLA022304R0100
Orion2-4-K4-090-B	24VDC	900mm (4 Beams)	2 OSSD	●	●	2TLA022304R0200
Orion2-4-K4-120-B	24VDC	1200mm (4 Beams)	2 OSSD	●	●	2TLA022304R0300

Orion light curtains

Optical safety devices

Orion 2 Extended

NOTES

See cable section at end of Easy Reference Guide for [5 and 8 Pin Cables](#) (5 pin transmitter and 8 pin receiver).

Standard “L” brackets come with extended models.

For muting applications, we recommend using an Orion Base with a S20 Pluto to control the muting function. In blanking situations use the M12-C02PT6RB.



Type	Voltage	Protective Height (number of beams)	Safety Outputs	EDM	Auto/Manual Reset	Ordering Code
Orion2-4-K2-050-E	24VDC	500mm (2 Beams)	2 OSSD	●	●	2TLA022305R0000
Orion2-4-K3-080-E	24VDC	800mm (3 Beams)	2 OSSD	●	●	2TLA022305R0100
Orion2-4-K4-090-E	24VDC	900mm (4 Beams)	2 OSSD	●	●	2TLA022305R0200
Orion2-4-K4-120-E	24VDC	1200mm (4 Beams)	2 OSSD	●	●	2TLA022305R0300

Orion light curtains

Optical safety devices

Orion Accessories

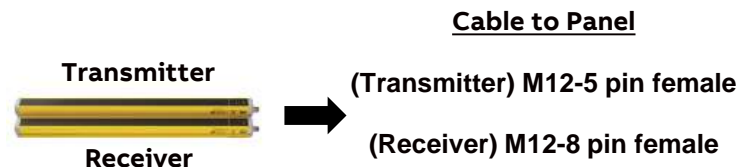


Type	For base model	For extended model	Cable	Bracket	Connection to base transmitter	Connection to base receiver	Connection to extended transmitter	Connection to extended receiver	Ordering Code
M12-C02PT2T	●	●					●		2TLA022315R0100
M12-C02PT6RB	●	●						●	2TLA022315R0200
M12-C02PT62RM	●	●						●	2TLA022315R0300
PT-C1PT	●	●					●	●	2TLA022315R1000
PT-C05PT	●	●					●	●	2TLA022315R1100
PT-C005PT	●	●					●	●	2TLA022315R1200
JSM-03	●			●					2TLA022310R0100
Mirrors	●	●	●	●					See web page
Stands	●	●	●	●					See web page
Wet Tubes	●	●	●	●					See web page
M12-5 Female Cable	●	●	●		●		●		See Cable Section
M12-8 Female Cable	●		●			●			See Cable Section
M12-12 Female Cable	●	●						●	See Cable Section

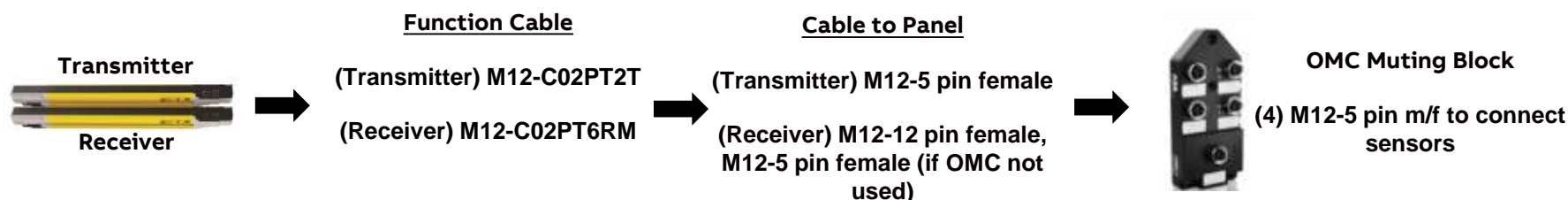
Orion light curtains

Optical safety devices

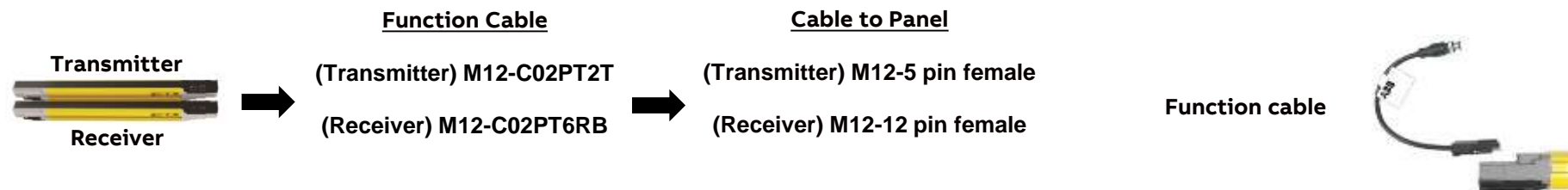
Orion 1 and 2 Base



Orion 1 Extended Muting



Orion 1 Extended Blanking



GKEY safety lock

Mechanical safety lock

- Reduce cabling and enhance functionality.
- Combine locking and control all in a single housing and cable. Any arrangement of ABB Compact series push buttons, emergency stops, and selector switches can be installed.
- Used in applications with long stopping times and where it is important to prevent disturbance of the production process.



1/3

Benefits & Features

Escape release button included as well as safe locking and interlocking function.

LED indication as well as built-in RFID actuator for high-level coding of the key.

Reliable in mechanically demanding environments due to robust design ex. Sliding handle minimizes moving parts.

More Resources

[Product Pages](#)[Configurator](#)[From Knox to GKEY](#)[Brochure](#)[Manual](#)[Application Guide
\(External Link\)](#)

GKEY safety lock

Mechanical safety lock

GKEY

LEDs on GKEY and information lines for status for guard door opened or unlocked.

GKEY can be connected to a safety relay or safety PLC. It can also be connected to a Vital controller if a Tina 2A/2B is used.



Additional Features

- Both the locking function and the interlocking function of GKey TÜV-tested to the highest level of ISO-13849-1:2015 (Category 4/PLe) and IEC 62061:2005 + AC:2015(SIL3).
- Can be padlocked to prevent closing the lock while performing work in the hazard area.
- GKEY can be unlocked with a tool if necessary.
- Power to unlock keeps doors locked even as a result of ex. power loss.
- Hold guards closed with up to 3000N (674lbf) of force.
- Modular design allows you to order just what you need.
- M20 conduit entry.



2TLA050310R0032



2TLA050304R0002

GKEY safety lock

Mechanical safety lock

GKEY 4

NOTES

For a complete safety lock, switch and mounting plate (ordered separately). Rear handle, spring catch, pilot devices and blanking plugs are available (ordered separately).



2TLA050310R0032



2TLA050040R0511



ABB Compact Series Buttons



2TLA050040R0510

Type	Voltage	Accessory	Illuminated	Minimum quantity when ordered	Ordering Code
GKey4 RU (QTY 1)	24VDC	●			2TLA050304R0002
FHS Mounting Plate (QTY 1)		●			2TLA050310R0032
RHS Rear Handle (QTY 1)		●			2TLA050040R0510
SCS Spring Loaded Catch (QTY 1)		●			2TLA050040R0511
Emergency Stop (QTY 1)	24VDC	●			CE3T-10R-02
2 Position Selector (QTY 10)	24VDC	●			C2SS1-10B-20
Green Push Button (QTY 10)	24VDC	●	●	●	CP1-11G-10
Yellow Push Button (QTY 10)	24VDC	●	●	●	CP1-11Y-10
Blue Push Button (QTY 10)	24VDC	●	●	●	CP1-11L-10
Clear Push Button (QTY 10)	24VDC	●	●	●	CP1-11C-10
Black Push Button (QTY 10)	24VDC	●		●	CP2-10B-10
Blanking Plug (QTY 10)		●		●	MA1-8130
Legend Holder (without insert) (QTY 100)		●		●	KA1-8120
M20 Cable Gland (QTY 1)		●			2TLA050040R0002
Tina 2B (QTY 1)	24VDC	●	●		2TLA020054R1100

MKEY

Mechanical safety switches

- Help improve machine uptime with a robust and flexible safety switch.
- Robust design makes it reliable in mechanically demanding environments. Even plastic models have an option for a stainless-steel head. The rotating head allows for easy installation of switches.
- Used in guarding doors and hatches.



Benefits & Features

Cam system in switches all rotate the same direction reducing wear giving long mechanical life and good tolerance to misalignment.

Available in all industry standard footprints.

“Double seal” enables switches to keep its IP rating for the life of the switch.

More Resources

[Product Pages – Mechanical Switches](#)

[Product Pages – Locking Switches](#)

[Application Guide \(External Link\)](#)

MKEY

Mechanical safety switches

MKEY



MKEY 1

Small footprint makes it easy to install in restricted space. Plastic body.

MKEY can be connected to a safety relay or safety PLC.



MKEY 2

Small footprint makes it easy to install in restricted space. Plastic body. Hinged actuator built into switch.

MKEY can be connected to a safety relay or safety PLC.



MKEY 4

Plastic body. Head of switch can either be plastic or stainless steel. Available with 2 options for holding force.

MKEY can be connected to a safety relay or safety PLC.



MKEY 5(Z)

Plastic body or fully stainless steel. Head of switch can either be plastic or stainless steel. Available with 2 options for holding force.

MKEY can be connected to a safety relay or safety PLC.

MKEY

Mechanical safety switches

MKEY



MKEY 6(Z)

Metal body or fully stainless steel. Head of switch can be stainless steel. Available with 2 options for holding force.

MKEY can be connected to a safety relay or safety PLC.



MKEY 8/8M/8ER/8Z

Solenoid locking gate switch. Metal body or fully stainless steel. Available in power to lock or power to unlock. A rear emergency release version is also available.

MKEY can be connected to a safety relay or safety PLC.



MKEY 9/9M

Solenoid locking gate switch. Plastic body with stainless steel head. Available in power to lock or power to unlock.

MKEY can be connected to a safety relay or safety PLC.

MKEY

Mechanical safety switches

MKEY Gate Switches

NOTES

All switches have ½ NPT conduit entry.

“Z” in the part description indicates it is stainless steel & IP69k.

+ Indicates Holding force of 40N (9lbs).

Safety switches with standard keys are listed on this page. Other variations are available but may be subject to minimum quantities.



Type	Safety Outputs	With angle key	With standard key	40N Holding Force	Plastic Head	Stainless Steel Head
MKEY 1	2NC + 1NO	●			2TLA050021R1100	N/A
MKEY 2	2NC + 1NO		●		2TLA050020R1000	N/A
MKEY 4	2NC + 1NO		●		2TLA050001R1100	2TLA050001R1110
MKEY 4 +	2NC + 1NO		●	●	2TLA050001R1101	2TLA050001R1111
MKEY 5	2NC + 1NO		●		2TLA050003R1100	2TLA050003R1110
MKEY 5 +	2NC + 1NO		●	●	2TLA050003R1101	2TLA050003R1111
MKEY 5 SS	2NC + 1NO		●		N/A	2TLA050003R1120
MKEY 5 SS +	2NC + 1NO		●	●	N/A	2TLA050003R1121
MKEY 6	2NC + 1NO	●	●		2TLA050005R1130	2TLA050005R1140
MKEY 6 +	2NC + 1NO	●	●	●	2TLA050005R1131	2TLA050005R1141
MKEY 6 SS	2NC + 1NO	●	●		N/A	2TLA050005R1120
MKEY 6 SS +	2NC + 1NO	●	●	●	N/A	2TLA050005R1121

MKEY

Mechanical safety switches

MKEY Solenoid Locking Switches

NOTES

All switches have ½ NPT conduit entry.

Commonly ordered safety switches with standard keys and 24VDC solenoid are listed on this page.

“Z” in the part description indicates it is stainless steel & IP69k.

Safety switches with standard keys are listed on this page. Other variations are available but may be subject to minimum quantities.



Type	Safety Outputs	Power to Lock	Power to Unlock	Rear Release Stainless Steel Body	Metal Body	Plastic Body	Standard Head	Stainless Steel Head
MKEY 8	4NC + 2NO	●			●		2TLA050011R1132	N/A
MKEY 8	4NC + 2NO	●			●		N/A	2TLA050011R1142
MKEY 8Z	4NC + 2NO	●		●			N/A	2TLA050011R1122
MKEY 8ER	4NC + 2NO	●	●		●		2TLA050015R1132	N/A
MKEY 8ERZ	4NC + 2NO	●		●			N/A	2TLA050015R1122
MKEY 8M	2NC + 1NO	●	●		●		2TLA050013R1132	N/A
MKEY 8M	2NC + 1NO	●			●		N/A	2TLA050013R1142
MKEY 9	2NC + 2NO		●			●	N/A	2TLA050007R1112
MKEY 9M	2NC + 2NO	●				●	N/A	2TLA050009R1112

MKEY

Mechanical safety switches

MKEY Accessories

NOTES

Order specialty key separately.



Standard Key



Flat Key



Plastic Flex Key



SS Flex Key

Type	MKEY 1	MKEY 4	MKEY 5	MKEY 6	MKEY 8	MKEY 9	Accessory	Plastic Head
Std Key for Plastic Head		●	●					2TLA050040R0201
Std Key for SS Heads				●	●	●		2TLA050040R0202
Flat Key		●	●	●	●	●		2TLA050040R0220
Plastic Flex Key		●	●	●	●	●		2TLA050040R0221
Metal Flex Key		●	●	●	●	●		2TLA050040R0203
SS Flex Key		●	●	●	●	●		2TLA050040R0204
Angle Key MKEY 1 Only	●							2TLA050040R0200
Flat Key MKEY 1 Only	●							2TLA050040R0222
Plastic Flex Key MKEY 1 Only	●							2TLA050040R0223
1/2 NPT 316 SS Cable Gland							●	2TLA050040R0001
MKEY 8Z Manual Release Key							●	2TLA050040R0400

Sense

Non-contact safety sensor

- Help compensate for misaligned doors with wide sensing and tolerance for misalignment. Reduce mechanical faults by using a sensor with no moving parts.
- Used in guarding doors and hatches as well as detecting position.
- Commonly stocked with 5m flying lead cables and 250mm Quick Connect cables



Benefits & Features

Both magnetic (reed switches) and coded (transistors) non-contact options available, depending on your guarding requirements. Coded version has built-in LED for status.

Available in all industry standard footprints.

All fitted with back plates to prevent the shrinkage of encapsulation often caused by temperature fluctuation.

More Resources

[Product Pages](#)[Brochure](#)[Application Guide
\(External Link\)](#)

Sense

Non-contact safety sensor

Sense



Sense 1/2

Available in plastic body only. Sense 1 has LED, transistor outputs and coded sensing. Sense 2 is standard reed switches output.

Sense can be connected to a safety relay or safety PLC.



Sense 3/4

Available in plastic or stainless-steel body. Sense 3 has LED, transistor outputs and coded sensing. Sense 4 is standard reed switches output.

Sense can be connected to a safety relay and safety PLC.



Sense 5/6

Available in plastic or stainless-steel body. Sense 5 has LED, transistor outputs and coded sensing. Sense 6 is standard reed switches output.

Sense can be connected to a safety relay or safety PLC.



Sense 7/8

Available in plastic body or stainless-steel body. Sense 7 has LED, transistor outputs and coded sensing. Sense 8 is standard reed switches output.

Sense can be connected to a safety relay or safety PLC.

Sense

Non-contact safety sensor

Sense



Sense 9/10

Available in plastic or stainless-steel body. Sense 9 has LED, transistor outputs and coded magnetic sensing. Sense 10 is standard reed switches output.

Sense can be connected to a safety relay or safety PLC.



Sense 11/12

Available in plastic or stainless-steel body. Sense 11 has LED, transistor outputs and coded magnetic sensing. Sense 12 is standard reed switches output.

Sense can be connected to a safety relay or safety PLC.

Sense

Non-contact safety sensor

Sense Coded

NOTES

“Z” in the part description indicates it is stainless steel & IP69k.

Non-contact switches shown all have 5m or QC cables.
Other variations are available but may be subject to minimum quantities.

All odd number of Sense switches have a coded actuator.



Type	Safety Outputs	Plastic Body	Stainless Steel Body	Hygienic Body	LED	Ordering Code, 5m cable	Ordering Code, M12 8 pin QC 250mm cable
Sense 1 RT	2NC + 1NO	●			●	2TLA050050R5108	2TLA050050R2108
Sense 1 LT	2NC + 1NO	●			●	2TLA050050R5107	2TLA050050R2107
Sense 3	2NC + 1NO	●			●	2TLA050052R5100	2TLA050052R2100
Sense 3Z	2NC + 1NO		●		●	2TLA050052R5120	2TLA050052R2120
Sense 3Z HYG	2NC + 1NO		●	●	●	2TLA050052R5150	2TLA050052R2150
Sense 5	2NC + 1NO	●			●	2TLA050054R5100	2TLA050054R2100
Sense 5Z	2NC + 1NO		●		●	2TLA050054R5120	2TLA050054R2120
Sense 7	2NC + 1NO	●			●	2TLA050056R5100	2TLA050056R2100
Sense 7Z	2NC + 1NO		●		●	2TLA050056R5120	2TLA050056R2120
Sense 9	2NC + 1NO	●			●	2TLA050058R5100	2TLA050058R2100
Sense 9Z	2NC + 1NO		●		●	2TLA050058R5120	2TLA050058R2120
Sense 9Z HYG	2NC + 1NO		●	●	●	2TLA050058R5150	2TLA050058R2150
Sense 11	2NC + 1NO	●			●	2TLA050060R5100	2TLA050060R2100
Sense 11Z	2NC + 1NO		●		●	2TLA050060R5120	2TLA050060R2120

Sense

Non-contact safety sensor

Sense Un-coded

NOTES

“Z” in the part description indicates it is stainless steel & IP69k.

Non-contact switches shown all have 5m or QC cables. Other variations are available but may be subject to minimum quantities.

All even number of Sense switches have an un-coded actuator.



Type	Safety Outputs	Plastic Body	Stainless Steel Body	Hygienic Body	Ordering Code, 5m cable	Ordering Code, M12 8 pin QC 250mm cable
Sense 2 RT	2NC + 1NO	●			2TLA050070R5108	2TLA050070R2108
Sense 2 LT	2NC + 1NO	●			2TLA050070R5107	2TLA050070R2107
Sense 4	2NC + 1NO	●			2TLA050072R5100	2TLA050072R2100
Sense 4Z	2NC + 1NO		●		2TLA050072R5120	2TLA050072R2120
Sense 4Z HYG	2NC + 1NO		●	●	2TLA050072R5150	2TLA050072R2150
Sense 6	2NC + 1NO	●			2TLA050074R5100	2TLA050074R2100
Sense 6Z	2NC + 1NO		●		2TLA050074R5120	2TLA050074R2120
Sense 8	2NC + 1NO	●			2TLA050076R5100	2TLA050076R2100
Sense 8Z	2NC + 1NO		●		2TLA050076R5120	2TLA050076R2120
Sense 10	2NC + 1NO	●			2TLA050078R5100	2TLA050078R2100
Sense 10Z	2NC + 1NO		●		2TLA050078R5120	2TLA050078R2120
Sense 10Z HYG	2NC + 1NO		●	●	2TLA050078R5150	2TLA050078R2150
Sense 12	2NC + 1NO	●			2TLA050080R5100	2TLA050080R2100
Sense 12Z	2NC + 1NO		●		2TLA050080R5120	2TLA050080R2120

Smile and Inca emergency stops

Emergency stops

- Small footprint allows for easy mounting with M12 quick connections instead of screw connections. Available with dual channel or DYNlink technology for integration into existing or new systems.
- Used to stop unsafe machine function in order to prevent an accident or reduce its consequences.



1/5

Benefits & Features

Kiwa-tested to the highest level of (Category 4/PLe), even with devices in series.

Helps reduce downtime with extensive LED indication and auxiliary information lines.

Easily expandable if additional e-stops are needed.

More Resources

[Product Pages – Smile Tina](#)

[Brochure](#)

[Product Pages Inca](#)

[Product Pages – Smile](#)

[Product Pages – Inca Tina](#)

[Manual – Smile Tina](#)

[Manual – Smile](#)

[Manual – Inca Tina](#)

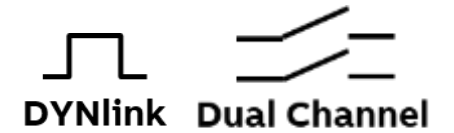
[Manual – Inca](#)

[Dual Channel vs DYNLink](#)

[Application Guide \(External Link\)](#)

Smile and Inca emergency stops

Emergency stops



Smile and Inca Emergency Stops

Smile and Smile Tina



Smile emergency stop for remote mounting. LED status on each device. Tina versions has information line for status.

Smile can be connected to a safety relay or safety PLC. Smile Tina can be connected to a Vital controller or Pluto Safety PLC.

Inca and Inca Tina



Inca emergency stop for panel mounting. LED status on each device. Tina versions has information line for status.

Inca can be connected to a safety relay or safety PLC. Inca Tina can be connected to a Vital controller or Pluto Safety PLC.

Smile Reset



Smile reset for remote mounting. LED on device can be used for status. Comes with color filters and can be used for things like resetting, request to enter, etc...

Smile Reset comes in many versions and can be connected to Safety Relays, Pluto Safety PLC, Orion Light Curtains or Edens.

Smile 41



Smile for remote mounting. Comes with a dual channel estop (2NC) and 3 auxiliary buttons. LED on device can be used for status. Comes with color filters and can be used for things like resetting, request to enter, etc...

Smile 41 must be connected to Pluto Safety PLC.

Smile and Inca emergency stops

Emergency stops



Smile and Smile Tina

NOTES

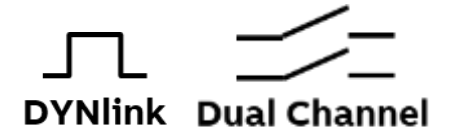
See cable section at end of Easy Reference Guide for [5 Pin Cables](#).



Type	Voltage	M12 Connection	For Single application	For series applications	Dual Channel 2NC DYNlink	Ordering Code
Smile 11EA Tina	24VDC	5 pin	•	•	•	2TLA030050R0000
Smile 12EA Tina	24 VDC	5 pin male/female		•	•	2TLA030050R0200
Smile 11SA Tina	24VDC	5 pin	•	•	•	2TLA030050R0500
Smile 11EA	24VDC	5 pin	•	•	•	2TLA030051R0000
Smile 12EA	24VDC	5 pin male/female		•	•	2TLA030051R0200
Smile 11SA	24VDC	5 pin	•	•	•	2TLA030051R0900

Smile and Inca emergency stops

Emergency stops



Inca and Inca Tina

NOTES

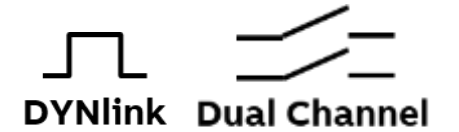
Inca and Inca Tina are designed to fit in a 22.5mm hole.



Type	Voltage	Connection	For Single application	For series applications	Dual Channel 2NC	DYNlink	Accessory	Ordering Code
Inca 1 Tina	24VDC	5 pin	•	•	•			2TLA030054R0000
Inca 1S Tina	24 VDC	5 pin	•	•	•			2TLA030054R0200
Inca 1	24 VDC	5 pin	•	•	•			2TLA030054R0100
Inca 1S	24 VDC	5 pin	•	•	•			2TLA030054R0300
Elevated Yellow Surround							•	2TLA030054R0400
Flat Yellow Surround							•	2TLA030054R0900

Smile and Inca emergency stops

Emergency stops



Smile Reset and Smile 41

NOTES

Smile 11 RA is used with a Safety Relays or Vital Controller. Smile 11RB and Smile 41 are used with Pluto Safety PLC.

See cable section at end of Easy Reference Guide for [5 and 8 Pin Cables](#).



Type	Voltage	M12 Connection	Pluto Only	Adam DYN and OSSD 5 pin Reset	Adam OSSD 8 pin Reset	Orion 1 Base Orion 2 Base, 2 and 3 Extended Orion 3 Base	Ordering Code
Smile 11RA	24VDC	5 pin					2TLA030053R0000
Smile 11RB	24VDC	5 pin	•				2TLA030053R0100
Smile 11RF	24VDC	5 pin(x2)		•			2TLA030053R2600
Smile 11RG	24VDC	8 pin(x2)			•		2TLA030053R2700
Smile 11RO1	24VDC	5 pin				•	2TLA022316R3000
Smile 11RO2	24VDC	5 pin				•	2TLA022316R3100
Smile 11RO3	24VDC	5 pin				•	2TLA022316R3200
Smile 41 EWWWP	24VDC	8 pin	•				2TLA030057R0100

LineStrong rope pulls

Emergency stops

- Easily provide emergency stop protection over long spans.
- Significantly reduce installation time with Quick Link rope system. Help ensure durability even in demanding environments with robust construction.



Benefits & Features

Monitors for a wire break. Contacts will not be held in a normally closed position due to a failure of the spring mechanism and/or welding of the contacts.

LED and wire tension indication to show status.

“Double seal” enables switch to keep its IP rating for the life of the switch.

More Resources

[Product Pages](#)[Manual](#)[Brochure](#)[Application Guide
\(External Link\)](#)

LineStrong rope pulls

Emergency stops

LineStrong Rope Pulls



LineStrong 1

LineStrong with 2NC + 2NO. LED status is available. Optional estop can be installed on device. For installations up to 50m.

LineStrong can be connected to a safety relay or safety PLC.



LineStrong 2 (Z)

LineStrong with 2NC + 2NO. LED status is available. Optional estop can be installed on device. For installations up to 80m. “Z” stainless-steel version can handle up to 100m.

LineStrong can be connected to a safety relay or safety PLC.



LineStrong 3 (Z)

LineStrong with 4NC + 2NO. LED status is available. Optional estop can be installed right on device. L and R versions for installations up to 125m. “D” version can handle up to 200m. “DZ” version can handle up to 250m.

LineStrong can be connected to a safety relay or safety PLC.

LineStrong rope pulls

Emergency stops

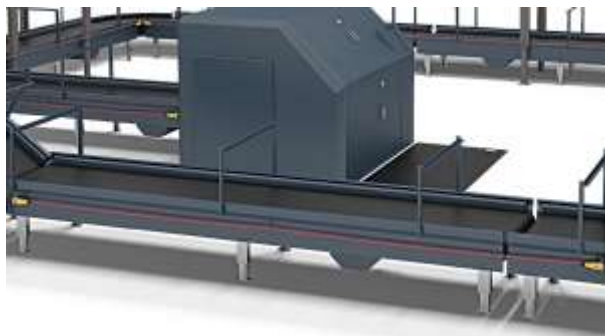
LineStrong 1

NOTES

LED versions on this page are 24VDC. 110VAC and 230VAC are also available.

Emergency stop is ordered separately.

All rope pulls have ½ NPT conduit entry.



Type	Voltage	Conduit Entry	Safety Outputs	For Single application	For series applications	LED 24VDC	Ordering Code
LineStrong 1		½ NPT	2NC+2NO	●	●		2TLA050200R1030
LineStrong 1 with LED	24VDC	½ NPT	2NC+2NO	●	●	●	2TLA050200R1232

LineStrong rope pulls

Emergency stops

LineStrong 2(Z)

NOTES

LED versions on this page are 24VDC. 110VAC and 230VAC are also available.

Emergency stop ordered separately.

“Z” in the part description indicates it is stainless steel and IP69K.

All rope pulls have ½ NPT conduit entry.



Type	Voltage	Conduit Entry	Safety Outputs	For Single application	For series applications	LED 24VDC	Ordering Code
LineStrong 2Z		½ NPT	4NC+2NO	●	●		2TLA050202R1020
LineStrong 2		½ NPT	4NC+2NO	●	●		2TLA050202R1030
LineStrong 2Z with LED	24VDC	½ NPT	4NC+2NO	●	●	●	2TLA050202R1222
LineStrong 2 with LED	24VDC	½ NPT	4NC+2NO	●	●	●	2TLA050202R1232

LineStrong rope pulls

Emergency stops

LineStrong 3L(Z), R(Z) and D(Z)

NOTES

LED versions on this page are 24VDC. 110VAC and 230VAC are also available.

Emergency stop ordered separately.

“Z” in the part description indicates it is stainless steel and IP69K.

All rope pulls have ½ NPT conduit entry.



Type	Voltage	Conduit Entry	Safety Outputs	For Single application	For series applications	LED 24VDC	Ordering Code
LineStrong 3DZ		½ NPT	4NC+2NO	●	●		2TLA050204R1020
LineStrong 3D		½ NPT	4NC+2NO	●	●		2TLA050204R1030
LineStrong 3DZ with LED	24VDC	½ NPT	4NC+2NO	●	●	●	2TLA050204R1222
LineStrong 3D with LED	24VDC	½ NPT	4NC+2NO	●	●	●	2TLA050204R1232
LineStrong 3LZ		½ NPT	4NC+2NO	●	●		2TLA050206R1020
LineStrong 3L		½ NPT	4NC+2NO	●	●		2TLA050206R1030
LineStrong 3LZ with LED	24VDC	½ NPT	4NC+2NO	●	●	●	2TLA050206R1222
LineStrong 3L with LED	24VDC	½ NPT	4NC+2NO	●	●	●	2TLA050206R1232
LineStrong 3RZ		½ NPT	4NC+2NO	●	●		2TLA050208R1020
LineStrong 3R		½ NPT	4NC+2NO	●	●		2TLA050208R1030
LineStrong 3RZ with LED	24VDC	½ NPT	4NC+2NO	●	●	●	2TLA050208R1222
LineStrong 3R with LED	24VDC	½ NPT	4NC+2NO	●	●	●	2TLA050208R1232

LineStrong rope pulls

Emergency stops

LineStrong Accessories

NOTES

(1) Tensioner & (1) Quick link included with kits 50M or less.

(2) Tensioners included with kits greater than 50M (no Quick Link).



Rope Pull Kits



Flex Roller



EStop



Spring



SS Cable Gland



Corner Pulley

Type	Eyebolts	Tensioner/ Gripper	Allen Key	Ordering Code Stainless Steel	Ordering Code Galvanized
5m Rope Pull Kit	3	1	1	2TLA050210R0030	2TLA050210R0020
10m Rope Pull Kit	5	1	1	2TLA050210R0130	2TLA050210R0120
15m Rope Pull Kit	7	1	1	2TLA050210R0230	2TLA050210R0220
20m Rope Pull Kit	9	1	1	2TLA050210R0330	2TLA050210R0320
30m Rope Pull Kit	12	1	1	2TLA050210R0430	2TLA050210R0420
50m Rope Pull Kit	20	1	1	2TLA050210R0530	2TLA050210R0520
80m Rope Pull Kit	30	2	2	2TLA050210R0630	2TLA050210R0620
100m Rope Pull Kit	37	2	2	2TLA050210R0730	2TLA050210R0720
126m Rope Pull Kit	45	2	2	2TLA050210R0830	2TLA050210R0820
Rope Tensioner				2TLA050210R4020	2TLA050210R4030
Corner Pulley				2TLA050210R6020	2TLA050210R6030
Safety Spring				2TLA050211R0004	N/A
Flex Roller				2TLA858006R1300	N/A
½ NPT Cable Gland				2TLA050040R0001	N/A
Estop (for all Linestrongs)				N/A	2TLA050211R0005

EStrong Z emergency stop

Emergency stops

- Increase uptime on your machine even in harsh environments.
- Stainless steel enclosure with IP69K rating can withstand high pressure/temperature washdown.
- Used to stop unsafe machine function to prevent an accident or reduce its consequences.



Benefits & Features

Contacts inside the EStrong go into an open or safe state if the cover is not secured properly to the enclosure.

Easy visual indicator with LED on enclosure to show status.

Ideally suited for industries that have special demands, such as food processing or the chemical industry, thanks to its robust design.

More Resources

[Product Pages](#)[Manual](#)[Brochure](#)[Application Guide
\(External Link\)](#)

EStrong Z emergency stop

Emergency stops

EStrong Z Emergency Stop



EStrong Z Emergency Stop

EStrong emergency stop for remote mounting with 2NC + 2NO contacts. LED status is available. Fully 316 stainless steel and IP67/IP69K rating.

EStrong can be connected to a safety relay or safety PLC.

EStrong Z emergency stop

Emergency stops

EStrong Z Emergency Stop

NOTES

All emergency stops have ½ NPT conduit entry.

LED versions on this page are 24VDC, 110VAC and 230VAC are also available.



Type	Voltage	Safety Outputs	LED 24VDC	LED 110VAC	LED 230VAC	Accessory	Ordering Code
EStrong	24VDC	2NO+2NC					2TLA050220R1020
EStrong with LED	24VDC	2NO+2NC	●				2TLA050220R1222
½ NPT SS Cable Gland		3NO+1NC				●	2TLA050040R0001

Safety mats

Pressure-sensitive devices

- Continuously detect workers inside hazardous areas of a machine when optical/hard-guarding can't be used.
- Active area of safety mat will detect pressure on the surface, and when wired to appropriate safety controller (e.g. USR10), sends a signal to stop the machine.
- Used for person detection and perimeter guarding.



Benefits & Features

Euro Dot slip-free surface comes standard.

Designed so built-in ramp rail can be cut off in case of a “butt cut” design (placing two mats side-by-side).

Rugged design gives safety mats excellent resistance to oil, water and grease.

More Resources

[Product Pages](#)[Manual](#)[Brochure](#)[Application Guide
\(External Link\)](#)

Safety mats

Pressure-sensitive devices

Safety Mats



Safety Mat with built in ramp rail

Safety mat with built in ramp rail. Ramp rail can be cut off if mats are needed to be butted together. 4 conductor 10m cable comes out long side center with flying leads.

Safety mats can be connected to a safety relay or safety PLC.



Safety Mat with blunt cut

Safety mat with blunt cut. Mats can be butted together. Aluminum ramp rail (ordered separately) and corner connectors use to secure mat. 4 conductor 10m cable comes out long side center with flying leads.

Safety mats can be connected to a safety relay or safety PLC.

Safety mats

Pressure-sensitive devices

Safety Mats

NOTES

The US Safety Mats differ from the Safety Mats listed in the European catalogs.

Sizes in descriptions is active area. Add extra length for integrated trim models when sizing a mat for an area. Integrated trim add 1.4”(34mm) to each side. Aluminum trim add 2.4”(62mm) per side.



Type	Voltage	Active Area (in Inches)	Safety Mat w/o Trim (Blunt)	Safety Mat with Integrated Trim
Safety mat 12" x 12"	24VDC	12" x 12"	2TLA858003R2800	2TLA858003R2900
Safety mat 24" x 24"	24VDC	24" x 24"	2TLA858002R3800	2TLA858002R5600
Safety mat 24" x 30"	24VDC	24" x 30"	2TLA858002R3900	2TLA858002R5700
Safety mat 24" x 36"	24VDC	24" x 36"	2TLA858002R4000	2TLA858002R5800
Safety mat 24" x 42"	24VDC	24" x 42"	2TLA858002R4100	2TLA858002R5900
Safety mat 24" x 48"	24VDC	24" x 48"	2TLA858002R4200	2TLA858002R6000
Safety mat 24" x 60"	24VDC	24" x 60"	2TLA858002R4300	2TLA858002R6100
Safety mat 30" x 30"	24VDC	30" x 30"	2TLA858002R4400	2TLA858002R6200
Safety mat 30" x 36"	24VDC	30" x 36"	2TLA858002R4500	2TLA858002R6300
Safety mat 30" x 42"	24VDC	30" x 42"	2TLA858002R4600	2TLA858002R6400
Safety mat 30" x 48"	24VDC	30" x 48"	2TLA858002R4700	2TLA858002R6500

Safety mats

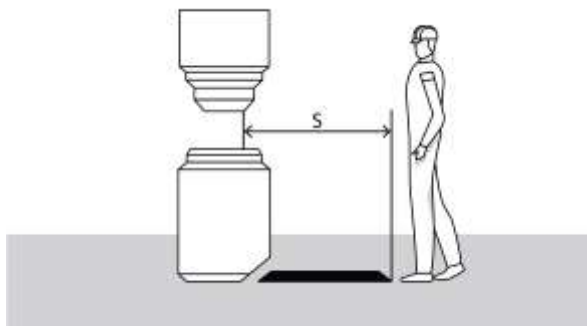
Pressure-sensitive devices

Safety Mats

NOTES

Aluminum Trim Shipments - FedEx can only ship 108", It's LTL freight for longer.

Custom safety mats contact Jokab.service@us.abb.com for pricing.



Type	Voltage	Active Area (in Inches)	Safety Mat w/o Trim (Blunt)	Safety Mat with Integrated Trim
Safety mat 36" x 36"	24VDC	36" x 36"	2TLA858002R4800	2TLA858002R6600
Safety mat 36" x 42"	24VDC	36" x 42"	2TLA858002R4900	2TLA858002R6700
Safety mat 36" x 48"	24VDC	36" x 48"	2TLA858002R5000	2TLA858002R6800
Safety mat 36" x 60"	24VDC	36" x 60"	2TLA858002R5100	2TLA858002R6900
Safety mat 42" x 42"	24VDC	42" x 42"	2TLA858002R5200	2TLA858002R7000
Safety mat 42" x 48"	24VDC	42" x 48"	2TLA858002R5300	2TLA858002R7100
Safety mat 48" x 48"	24VDC	48" x 48"	2TLA858002R5400	2TLA858002R7200
Safety mat 48" x 60"	24VDC	48" x 60"	2TLA858002R5500	2TLA858002R7300
Trim Corner Connector			2TLA858002R7400	N/A
Aluminum Trim per Inch			2TLA858002R7500	N/A

TT safety edges

Pressure-sensitive devices

- Easily detect objects in the path of a slow-moving guard.
- Detects pressure on the surface, and when wired to appropriate safety controller (e.g. USR10), can send a signal to stop movement. Installation is easy with aluminum rail mounting and pre-assembled components.
- Used on the leading edge of a moving guard, e.g. roller doors for welding or CNC machines.



Benefits & Features

Can be ordered to length (per inch) for customizable sizes.

Made of TPE that has a good resistance to ozone, weather and certain chemicals.

More Resources

[Product Pages](#)[Manual](#)[Brochure](#)[Application Guide
\(External Link\)](#)

TT safety edges

Pressure-sensitive devices

Safety Edges



Safety Edge TT 25-30

Safety edge that is 25mm wide by 30mm high. Comes with 5m flying lead cable coming out of each end.

Safety edges can be connected to a safety relay or safety PLC.



Safety Edge TT 25-45

Safety edge that is 25mm wide by 45mm high. Comes with 5m flying lead cable coming out of each end.

Safety edges can be connected to a safety relay or safety PLC.

TT safety edges

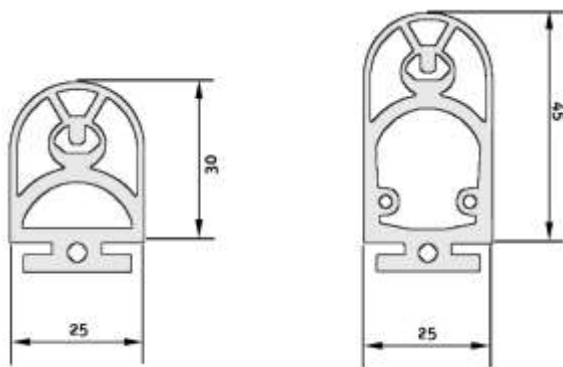
Pressure-sensitive devices

Safety Edges

NOTES

The US Safety Edges differ from the Safety Edges listed in the European catalogs.

Ordered per inch, preassembled (no gluing required), supplied with matching aluminum support profile.



Type	Voltage	Ordering Code
SENTIR 2530 per Inch	24VDC	2TLA858008R0200
SENTIR 2530 End Cap Assembly	24VDC	2TLA858008R0400
AL 2514 Aluminum Rail per Inch	24VDC	2TLA858004R2200
SENTIR 2545 per Inch	24VDC	2TLA858008R0300
SENTIR 2545 End Cap Assembly	24VDC	2TLA858008R0500

Example of ordering a 24-inch edge

Type	QTY	Ordering Code
SENTIR 2530 per Inch	24	2TLA858008R0200
SENTIR 2530 End Cap Assembly	1	2TLA858008R0400
AL 2514 Aluminum Rail per Inch	24	2TLA858004R2200

Safety bumpers

Pressure-sensitive devices

- Guard moving equipment that requires stopping time.
- Compression zone allows for longer stopping times. Available in customizable lengths and footprints so it can easily be adapted to various equipment types.
- Used on machinery like AGVs to detect collisions with objects in its path.



Benefits & Features

Outer material is an artificial leather that provides excellent resistance to most liquids, oils and chemicals.

Models with special outer material and foam for use in outdoor applications.

Dual M8 connectors easily allow series connections in the field.

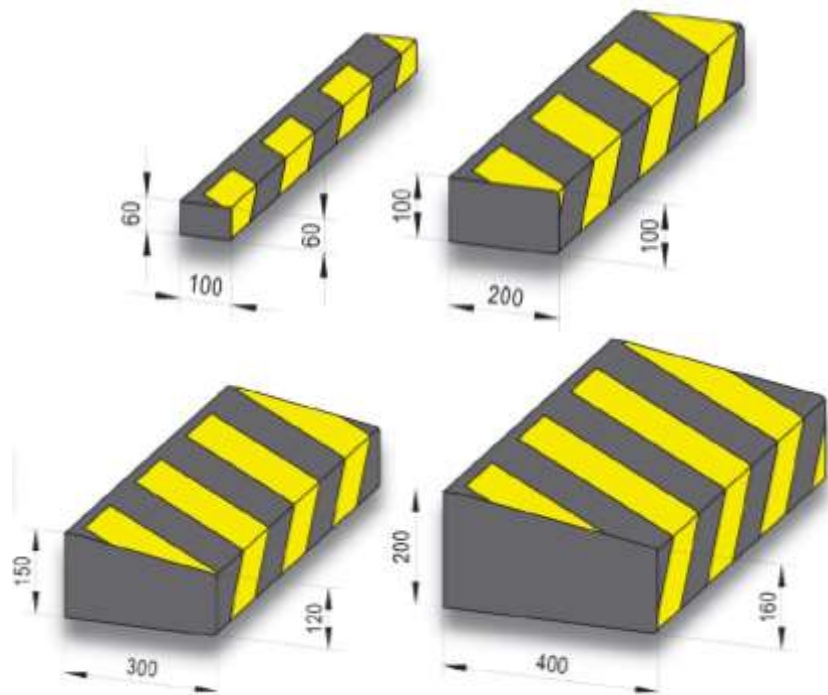
More Resources

[Product Pages](#)[Manual](#)[Brochure](#)[Application Guide
\(External Link\)](#)

Safety bumpers

Pressure-sensitive devices

Safety Bumpers



Additional Features

- Preassembled (no gluing required), supplied with matching aluminum support profile.
- 4 different styles (60mm x 100mm, 100mm x 200mm, 150mm x 300mm and 200mm x 400mm).
- The twin cable connection (5m cable out of each side with M8 connector + M8 cable with flying leads) makes it easy to connect several safety bumpers in series.
- Can be wired to a safety relay or safety PLC.
- The US Safety Bumpers differ from the Safety bumpers listed in the European catalogs. There are no standard bumpers available. Contact Jokab.service@us.abb.com for pricing.

Safeball™

Control devices

- Reduce strain while helping keep machine operators away from hazards. Help improve ergonomics with a unique design, flexible mounting options and low activation force.
- Use one Safeball as hold-to-run button, or two Safeballs for two hand control for e.g. machines with manual loading/unloading.



Benefits & Features

Inspecta approved to EN ISO 12100:2010, EN 574+A1:2008. Suitable for Category 4/Plc with approved safety relay or safety PLC.

Can reduce the need for shrouding to prevent defeat, as the design helps reduce the ability to push all four push buttons in a two- Safeball™ design.

Optional protection coat allows the Safeball™ to be used in harsh environments.

More Resources

[Product Pages](#)[Manual](#)[Brochure](#)[Application Guide
\(External Link\)](#)

Safeball™

Control devices

Safeball™



Safeball™

Safeball™ available in 4 models. 3 models with NO+NC with different cable variation. 1 model with 2NO with short leads. Can be used for both single and two hand control.

Safeball™ can be connected to a safety relay or safety PLC.



Safeball™ Station

Safeball™ station available in 3 models. These station can be used as fixed devices or as a mobile devices. Used for two hand control.

Safeball™ station can be connected to a safety relay or safety PLC.

Safeball™

Control devices

Safeball™

NOTES

Consult the manual for wiring /cabling considerations.



JSTD1-A/B/C/E (Does not include JSM-C5)



JSTD25F



JSTD25H



JSM-C5 Swivel mount



JSM-C7

Type	Voltage	2m cable	10m cable	.2m leads	5 pin M12 (Station)	8 pin M12 (Station)	1NO +1NC(Safeball)	2NO (Safeball)	Station with 2NO + 2NC	Station with 2NO and 2NC with estop Accessory	Ordering Code
JSTD1-A	24VDC	●					●				2TLA020007R3000
JSTD1-B	24VDC			●			●				2TLA020007R3100
JSTD1-C	24VDC		●				●				2TLA020007R3200
JSTD1-E	24VDC	●		●				●			2TLA020007R3400
JSM-C5										●	2TLA020007R0900
JSM C7 Shelf for JSTD25F/H/J										●	2TLA020007R1200
JSTD25F	24VDC				●			●			2TLA020007R6000
JSTD25H	24VDC					●		●			2TLA020007R6300
JSTD25K	24VDC					●			●		2TLA020007R6900
Safeball Protection Coat										●	2TLA020007R1900

JSHD4 enabling device

Control devices

- Maintain control of hazardous motion.
- Acts as an emergency stop if the operator lets go of the control or grips too tightly, helping to ensure operators maintain awareness and control. Ergonomic design makes the JSHD4 easy to operate, even with gloves.
- Used in applications where an operator is in the hazardous area and only limited movement of the machine is allowed.



Benefits & Features

An “anti-tamper” option is available that detects if the JSHD4 is held in the middle position by a human hand. Machine movement will not be permitted if the device is held in a run position by any other (tampering) means.

Red/green LEDs available to give visual status to operators.

Optional protection coat allows the JSHD4 to be used in harsh environments.

More Resources

[Product Pages](#)[Manual](#)[Application Guide
\(External Link\)](#)[Brochure](#)[Old model to new model
conversion](#)

JSHD4 enabling device

Control devices

Enabling Device



JSHD4 Enabling Handle

JSHD4 enabling handle is available in 5 models. Can come with red/green LEDs and a maximum of 2 extra buttons (top and front).

JSHD4 enabling handle can be connected to a safety relay (anti-tamper board recommended) or safety PLC.



Bottom

Bottom for enabling handle is available in many different options. They can have cable glands or with quick connects (M12, ITT Cannon).

Enabling Device Accessories

A wide variety of accessories for enabling devices from holster options to an anti-tamper board.



JSHD4 enabling device

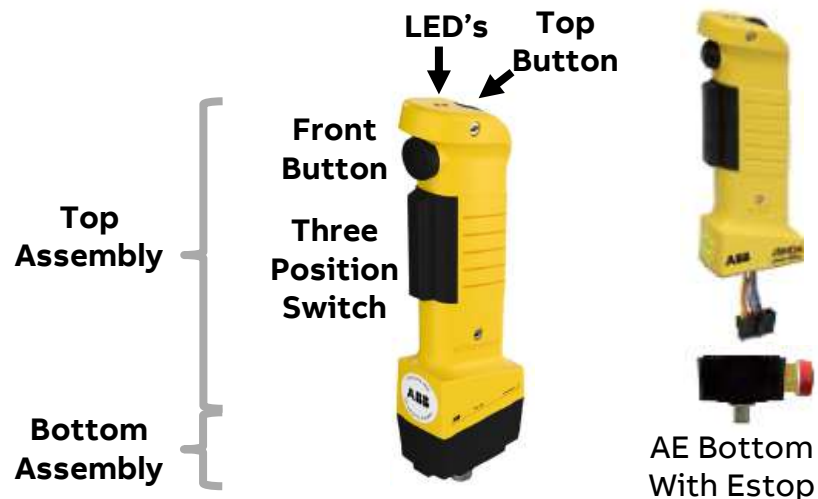
Control devices

Enabling Device Handle

NOTES

In the USA we stock the enabling device handle and bottom part. We do not stock full assemblies.

JSHD4-1 (2TLA020006R2100) cannot use Anti-Tamper Board.



Type	Voltage	LEDS	Top Button	Front Button	Anti-tamper can be used	Ordering Code
JSHD4-1	24VDC					2TLA020006R2100
JSHD4-2	24VDC	•	•	•	•	2TLA020006R2200
JSHD4-3	24VDC	•			•	2TLA020006R2300
JSHD4-4	24VDC			•	•	2TLA020006R2400
JSHD4-5	24VDC		•		•	2TLA020006R2500

Steps for ordering:

- **STEP 1** - Select the desired Handle from among the 5 Standard Handles
- **STEP 2** - Select the desired "Base". Use the Chart from data sheet to double check which "Base" options are available for the Handle selected.
- **STEP 3** - Select the optional "Accessories".

JSHD4 enabling device

Control devices

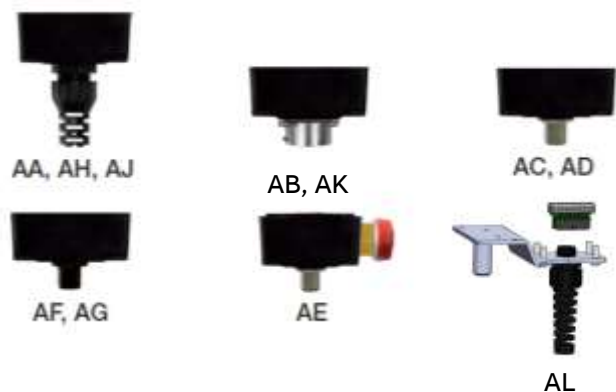
Enabling Device Bottom

NOTES

The USA we stock the enabling device handle and bottom part. We do not stock full assemblies.

See description for cabling requirements.

AE Bottom (2TLA020005R1400) and AK Bottom (2TLA020005R1900) cannot use Anti-Tamper Board.

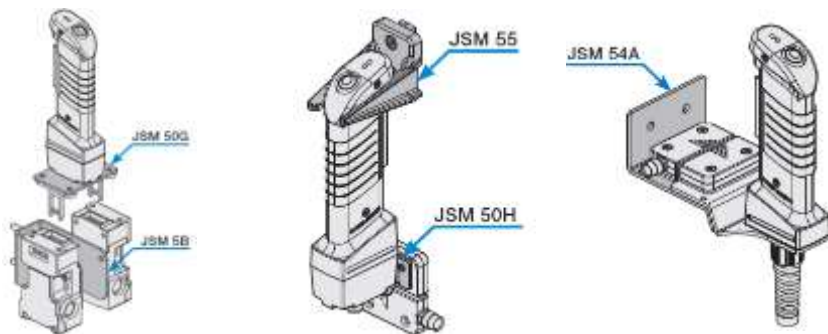


Type	Accessory	Cable Gland	With PCB 10 screw connections	With PCB 16 screw connections	M12 5 pin	M12 8 pin	With Estop	Cannon Connector	Geared to replace older JSHD4 models	Eva Plate	Ordering Code
AA Bottom		•									2TLA020005R1000
AH Bottom		•	•								2TLA020005R1700
AJ Bottom		•		•							2TLA020005R1800
AC Bottom					•						2TLA020005R1200
AD Bottom						•					2TLA020005R1300
AE Bottom						•	•				2TLA020005R1400
AB Bottom								•			2TLA020005R1100
AK Bottom								•	•		2TLA020005R1900
AL Bottom		•	•							•	2TLA020005R2000

JSHD4 enabling device

Control devices

Enabling Device Accessories



Type	Ordering Code
JSM55 Wall Bracket	2TLA040005R0500
JSM5B Bracket for MKEY 4/5	2TLA040005R0700
JSM54A Adam Wall Bracket	2TLA020205R2800
JSM50G Bottom Plate for MKEY 4/5	2TLA020205R6300
JSM50H Eva Bracket	2TLA020205R6400
JSHD4 Protection Coat	2TLA020200R4600
Anti Tamper Board	2TLA020005R0900



JSM5B Wall Bracket
2TLA040005R0500



Bottom Plate JSM50G
2TLA020205R6300
for Mkey 4/5



JSHD4 Protective Coating
2TLA020200R4600



Bottom Plate JSM50H
2TLA020205R6400
for Eden



Anti Tamper Board
2TLA020005R0900

HD5 enabling device

Control devices

- Maintain control of hazardous motion.
- Acts as an emergency stop if the operator lets go of the control or grips too tightly, helping to ensure operators maintain awareness and control. Ergonomic design makes the HD5 easy to operate, even with gloves
- Used in applications where an operator is in the hazardous area and only limited movement of the machine is allowed.



Benefits & Features

Designed to meet the demands of Food and Beverage applications (IP65).

Made of PPh that is approved for contact with foodstuff and that resists the most commonly used chemicals during cleaning.

Red/green LEDs available to give visual status to operators.

More Resources

[Product Pages](#)

[Application Guide
\(External Link\)](#)

[Brochure](#)

HD5 enabling device

Control devices

HD5 Enabling Device



Additional Features

- Auxiliary buttons for additional functions.
- TÜV-tested to the highest level of EN ISO-13849-1:2015 (Category 4/PLe) and IEC 62061:2015 (SIL3)
- Fiberglass Reinforced Plastic.
- Anti-condensation membrane.
- No sharp edges or places where dirt and bacteria can be accumulated.
- Integrated emergency stop and flashlight available.

HD5 enabling device

Control devices

HD5 Enabling Device



HD5 Enabling Handle

HD5 enabling handle is available in 3 models. Can come with red/green LEDs, 2 extra buttons, motion sensor, emergency stop and flashlight.

HD5 enabling handle can be connected to a safety relay or safety PLC.



Enabling Device Accessories

A wide variety of accessories for enabling devices from holster options to cables.

HD5 enabling device

Control devices

HD5 Enabling Device

NOTES

All models come with M23 connector. 19 pin for the fully loaded model. 12 pin for all others.



HD5-S-111 with HD5-M-002

Type	Voltage	Enabling Device	Holder	Cable	Emergency Stop with LED	Home Position Sensor	Motion Sensor	Two Top Buttons	Passive Holder	Active Holder	5m straight M23 12pin	10m straight M23 12pin	10m spiral M23 12pin	Ordering Code
HD5-S-102	24VDC	●			●									2TLA023001R0000
HD5-S-104	24VDC	●						●						2TLA023001R0200
HD5-S-111	24VDC	●			●	●	●	●						2TLA023001R0100
HD5-M-001			●							●				2TLA920509R0001
HD5-M-002			●						●					2TLA920509R0002
JSD-TK10-12	24VDC			●								●		2TLA930051R0000
JSD-TK5-12	24VDC			●							●			2TLA930050R0000
JSD-TK1000S-12	24VDC			●									●	2TLA930034R0000

Pilot devices

Modular and Compact series

Pilot Devices



Features

- Long life due to wiping action of contacts (Automatic cleaning of contacts for problem-free operation).
- Compact range provides extremely reliable IP66, IP67 and IP69K products in just one ordering code.
- Tested beyond the standards for high reliability.
- Save up to 30% installation time with unique tool-free snap on components with modular range.
- Help increase your uptime with products designed and engineered to deliver total reliability.
- Select modular range and get flexible and adjustable products to meet your exact needs.
- Reduce your installation size with compact range.
- High mechanical durability up to 10 million operations.
- High AC 15 electrical ratings: 6 A at 230 V.
- Products available worldwide from ABB.
- See Pilot Devices web page for more information [Click Here](#) or brochure for ordering information [Click Here](#).

1/1

What's New

Safe Inputs

Logic Controls &
Safe Outputs

Machine Safety
Services (MSS)

Application Guide
(External Link)

Videos, Info, &
Configurators

Table of Contents
Complete Listing

ABB

Sentry safety relays

Safety relays

- Reduce panel space and simplify wiring.
- Eliminate the need for intermediate control relays and enjoy high current capacity output, all in a small-footprint (22.5mm-wide) safety relay with minimal wiring points.
- Used for monitoring safety devices, expanding safe outputs, and for timing functions.



Benefits & Features

TÜV-tested to the highest level of EN ISO-13849-1:2015 (Category 4/PLe) and EN 62061:2005/A2:2015/ EN 61508 Parts 1-4:2010 (SIL3).

Timer functions have an accuracy better than 1 percent.

Extensive troubleshooting with 3 color LEDs and advanced models with displays.

More Resources

[Product Pages](#)[Manual](#)[Dual Channel example](#)[Brochure](#)[Former ABB Safety Relays to Sentry](#)[Application Guide \(External Link\)](#)

Sentry safety relays

Safety relays

Sentry Safety Relays



Additional Features

- Models with displays offer preset configurations and extensive fault information.
- Multi-reset function enables reset of up to 10 Sentry safety relays using just one reset button.
- Single Safety Relay (USR models) for all common safety applications helps reduce stock and saves warehouse space.
- Multi-voltage models offer more flexibility and less stock.
- Detachable terminal blocks speeds up connection and replacement.
- Manual or automatic reset easily selectable by switch on the front of the safety relay for many models.
- Extended temperature range of -25°C to +65 °C (old spec. -10°C to +65°C) and relative humidity range of 10% to 95% (old spec 25% to 95%). For SSR10, SSR20 and TSR20 models.

Sentry safety relays

Safety relays

Sentry Safety Relays



BSR - Basic Safety Relays

BSR safety relays are cost effective for basic applications such as emergency stops and expansion of safety outputs.



SSR - Single Function Safety Relays

SSR safety relays are easy-to-use and designed for specific applications such as 1 or 2 channel devices, OSSD and two-hand control devices.



TSR - Timer Safety Relays

TSR safety relays are advanced safety timers with excellent accuracy.



USR - (Configurable) Universal Safety Relays

USR safety relays can be configured to combine all the functions of a BSR, TSR or SSR safety relay.

Sentry safety relays

Safety relays

Sentry Safety Relays

NOTES

a) No monitoring of two-channel fault, e.g. max Category 3 without fault exclusion.

b) Off-delay, On-delay, Time bypass or Time reset Configurable model with display.

c) 85-265 VAC/ 120-275 VDC.



Type	Voltage	Timer	Safety Outputs	Expansion of Safety Outputs	Manual Reset	Two Hand device	Contact Mat Bumper	2 Channel OSSD	2 Channel anti-valent contacts	2 channel equivalent contact	1 channel contact	Ordering Code
BSR10	24VDC		3NO+1NC	•						a)	•	2TLA010040R0000
BSR11	24 VDC		4 NO	•						a)	•	2TLA010040R0200
BSR23	24VDC		4NO+1NC	•							•	2TLA010041R0600
SSR10	24VDC		3NO+1NC	•	•			•		•	•	2TLA010050R0000
SSR20	24VDC		3NO+1NC		•	•				•	•	2TLA010051R0000
SSR32	24VDC	Off delay 0.5s	2NO+2NC Delayed		•			•		•	•	2TLA010052R0400
SSR42	24VDC	Off delay 1.5s	2NO+2NC Delayed		•			•		•	•	2TLA010053R0400
SSR10M	c)		3NO+1NC	•	•					•		2TLA010050R0100
SSR20M	c)		3NO+1NC		•	•						2TLA010051R0100
TSR10	24VDC	0-999s b)	3NO+1NC	•				•		•	•	2TLA010060R0000
TSR20	24VDC	Off delay 0.5s or 1.5s	3NO+1NC	•				•		•	•	2TLA010061R0000
TSR20M	c)	Off delay 0.5s or 1.5s	3NO+1NC	•						•		2TLA010061R0100
USR10	24VDC	0-999s b)	3NO + 1NC		•	•	•	•	•	•	•	2TLA010070R0000
USR22	24VDC	0-999s b)	2NO+2NC Delayed		•	•	•	•	•	•	•	2TLA010070R0400

Vital

Safety controller

- Eliminate fault masking associated with dual channel devices. Help reduce downtime with easy troubleshooting using DYNlink devices' enhanced LED indication and auxiliary information lines.
- Used for monitoring multiple DYNlink devices on the same machine.



Benefits & Feature

TUV-tested to the highest level of ISO13849:2015 (Category 4/PLe) and EN 62061:2005+A1:2013 (SIL3) with DYNlink devices, even in series.

Reduced wiring with using DYNlink devices and accessories.

Easily add new or non-DYNlink devices with Tina adaptors to an existing system. No programming needed.

More Resources

[Product Pages - Vital](#)

[Brochure](#)

[Product Pages - Tina](#)

[Manual](#)

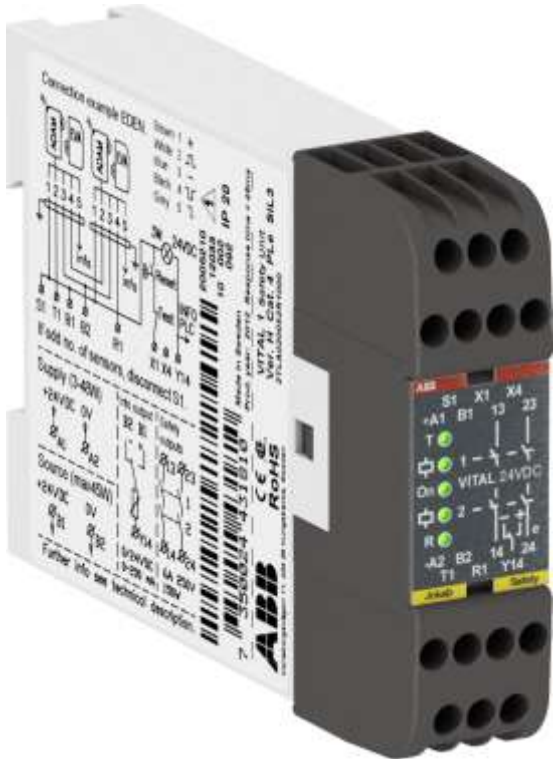
[DynLink Circuit example](#)

[Application Guide \(External Link\)](#)

Vital

Safety controller

Vital DYNlink safety controller



Additional Features

- Up to 30 DYNlink devices can be attached to the Vital 1 Controller.
- Detachable terminal blocks speeds up connection and replacement.
- Manual or automatic reset via wiring.
- 22mm width with 2NO safety outputs.
- Cannot be bypassed at the controller.
- Advanced Diagnostics with use of DYNlink devices– Flashing Lights guide you to the problem.
- Use tina adapters to convert dual channel devices into DYNlink.

Vital

Safety controller

Safety Controller



Vital Safety Controller

Vital safety controller for DYNlink devices such as Eden DYN, Smile Tina, Inca Tina etc... Single stop condition for all devices in the safety circuit.



Tina Adaptors

Tina adaptors bring in non-DYNlink devices such as light curtains, dual channel estops, safety mats etc.. into the DYNlink loop.

Vital

Safety controller

Vital 1 Safety Controller



Type	Voltage	Safety Outputs	Manual and Auto Reset	DYNlink Devices	Ordering Code
Vital 1	24VDC	2NO	•	•	2TLA020052R1000

Tina adapters

Dual Channel to Dynlink adapters

Pluto and Vital Accessories

NOTES

Original Tina 10A/B/C have been replaced with Version 2.

Tina 11/12 work like a Tina 4A/8A but for only two devices.

Type	Voltage	For Estops	For Gate Switches	For Light Curtains	For Safety Mats	For Bypass	Port Block	For Magne	Ordering Code
Tina 1A	24 VDC	●							2TLA020054R0000
Tina 2A	24VDC	●						●	2TLA020054R0100
Tina 2B	24VDC	●	●				●	●	2TLA020054R1100
Tina 3A	24VDC		●	●				●	2TLA020054R0200
Tina 3Aps	24VDC		●				●	●	2TLA020054R1400
Tina 4A	24VDC		●				●	●	2TLA020054R0300
Tina 5A	24VDC	●	●					●	2TLA020054R1900
Tina 6A	24VDC		●	●					2TLA020054R0600
Tina 7A	24VDC	●					●	●	2TLA020054R0700
Tina 8A	24VDC	●					●	●	2TLA020054R0500
Tina 10A V2	24VDC	●						●	2TLA020054R1210
Tina 10B V2	24VDC		●	●	●	●	●	●	2TLA020054R1310
Tina 10C V2	24VDC		●	●	●	●	●	●	2TLA020054R1610
Tina 11A	24VDC							●	2TLA020054R1700
Tina 12A	24VDC							● ●	2TLA020054R1800



Pluto safety PLC

Programmable safety controller

- Simplify your system without sacrificing safety.
- Using a programmable safety controller reduces the need for multiple safety relays. Helps to minimize wiring connections by creating logic using the included software.
- Used for monitoring safety devices for machine and process control.

Benefits & Features

Easily exchange Pluto programmable safety controller in the field without the use of a computer.

TÜV-tested to the highest level of EN ISO-13849-1:2015 (Category 4/PLe) and EN 62061:2015+Corr. 1:2015/ EN 61508 Parts 1-7:2010 (SIL3), whether using DYNlink capable devices or traditional dual channel devices.



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More Resources

[Product Pages](#)

[Manual - Programming](#)

[Manual - Gateways](#)

[Brochure - Pluto](#)

[Manual - Hardware](#)

[Manual - Ethernet Gateways](#)

[Brochure - Statusbus](#)

[Application Guide \(External Link\)](#)

[What's New](#)

[Safe Inputs](#)

[Logic Controls & Safe Outputs](#)

[Machine Safety Services \(MSS\)](#)

[Application Guide \(External Link\)](#)

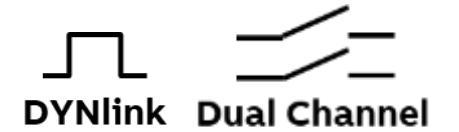
[Videos, Info, & Configurators](#)

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Pluto safety PLC

Programmable safety controller



Pluto Safety PLC

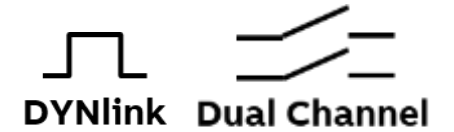


Additional Features

- A ,B, & D models are Safety Bus capable, Up to 32 Pluto's on network, D models with analog safe inputs (0-10VDC, 4-20mA).
- S models are stand alone without Safety Bus network connectivity for smaller projects.
- AS-i models are available, See Pluto brochure for accessories.
- Gateways for many protocols (DeviceNET, Ethernet, EtherCAT, ProfiNET, Profibus, Modbus TCP, etc.).
- Telephone support at no charge.
- StatusBus functionality.
- TUV approved safety function blocks.
- [Pluto Manager Software](#) – No Charge, Download on our website, send your contact info to emailing Jokab.service@us.abb.com.

Pluto safety PLC

Programmable safety controller



Pluto Safety PLC



S20 v2, S46 v2

S models with no safety bus (stand alone). DYNlink and dual channel devices can be used with Pluto. Different sized models depending on input/output requirements.



Pluto A20 v2, B20 v2, B46 v2

A/B models with safety bus (networkable). DYNlink and dual channel devices can be used with Pluto. Different sized models depending on input/output requirements.



Pluto D20, D45

D models with safety bus (networkable). DYNlink and dual channel devices can be used with Pluto. Both models with safe analog inputs. D45 also has high speed counter inputs. Different sized models depending on input/output requirements.

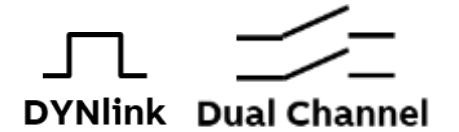


Pluto B22, O2

B22 and O2 models with safety bus (networkable). DYNlink and dual channel devices can be used with Pluto. B22 just have safe inputs and non-safe outputs. No safety outputs. O2 has 2 safe inputs (typically used for monitoring external devices) and 2 banks of safe relay outputs.

Pluto safety PLC

Programmable safety controller



Pluto Safety PLC

NOTES

Pluto A20 v2 has current monitoring for mute lamp (x2).

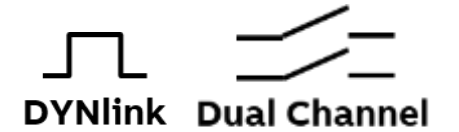
Smaller model are 45mm wide and larger are 90mm wide.



Type	Voltage	Input/Output Total	Safety Outputs	With Bus	With ASI	Safety Inputs	Configurable (Safe In/Non-Safe Out)	Safety Relay Outputs	Safety Transistor Outputs	Safe Analog Inputs	High Speed Counter	Ordering Code
Pluto S20 v2	24VDC	20	4			8	8	2	2			2TLA020070R4700
Pluto S46 v2	24 VDC	46	6			24	16	4	2			2TLA020070R1800
Pluto B20 v2	24VDC	20	4	●		8	8	2	2			2TLA020070R4600
Pluto B22	24VDC	22	0	●		14	8		2			2TLA020070R4800
Pluto B46 v2	24VDC	46	6	●		24	16	4	2			2TLA020070R1700
Pluto D20	24VDC	20	4	●		8	8	2	2	4		2TLA020070R6400
Pluto D45	24VDC	45	6	●		24	15	4	2	8	4	2TLA020070R6600
Pluto ASI	24VDC	12	4	●	●	4	4	2	2			2TLA020070R1100
Pluto B42 ASI	24VDC	42	6	●	●	20	16	4	2			2TLA020070R1400
Pluto O2	24VDC	6	2	●		2	2	2				2TLA020070R8500

Pluto safety PLC

Programmable safety controller



Pluto Gateways

NOTES

Gateways are used with safety bus (networkable) versions of the Plutos.

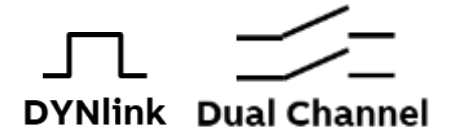
Models with remote monitoring allow for help with troubleshooting (e.g. monitoring of condition of Pluto's, downloading PLC program and upgrading operating system).



Type	Voltage	Profibus	Canbus	Devicenet	Ethernet	EtherCat	Sercos III	Profinet	Modbus TCP	Remote Monitoring	Ordering Code
Gate P2	24VDC	●									2TLA020071R8000
Gate C2	24 VDC		●								2TLA020071R8100
Gate D2	24VDC			●							2TLA020071R8200
Gate E1P	24VDC				●					●	2TLA020071R9000
Gate EC	24VDC					●				●	2TLA020071R9100
Gate S3	24VDC						●			●	2TLA020071R9200
Gate PN	24VDC							●		●	2TLA020071R9300
Gate MT	24VDC								●	●	2TLA020071R9400

Pluto safety PLC

Programmable safety controller



Pluto Accessories

NOTES

Download the latest version of [Pluto Manager](#) on our website under the Pluto Manager tab.

Registration can be obtained by emailing Jokab.service@us.abb.com. Please include company information.



2TLA020070R2600
IDFIX-2K10

Used for easy replacement
of stand-alone Pluto
Use R or R/W for networks



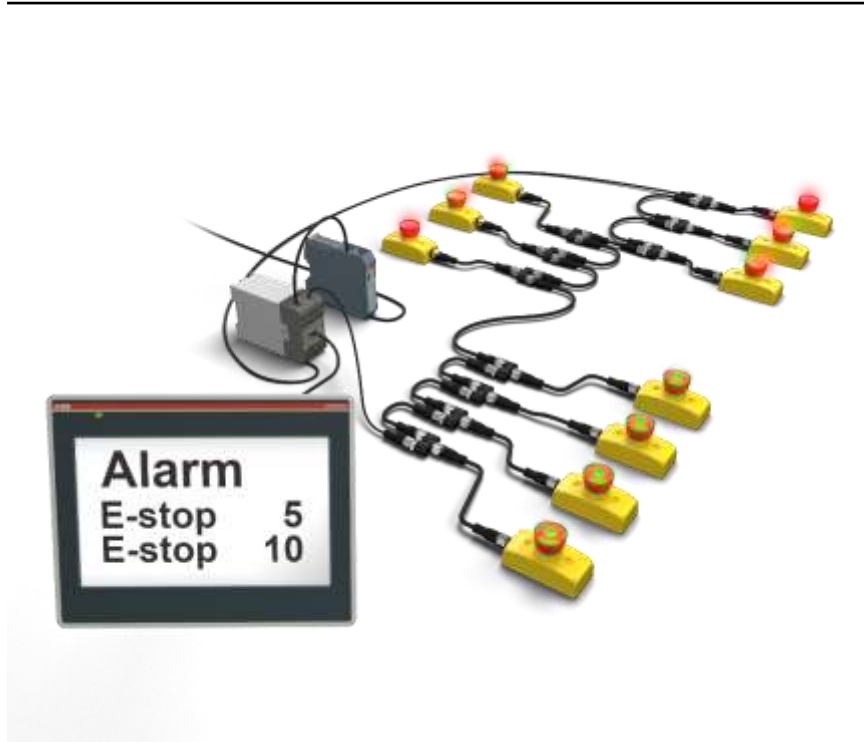
2TLA020070R5800
USB Programming Cable

Type	For Single Pluto	For multiple Plutos	Ordering Code
IDFIX-R	•	•	2TLA020070R2000
IDFIX-RW	•	•	2TLA020070R2100
IDFIX-2K5	•		2TLA020070R2400
IDFIX-2K10	•		2TLA020070R2600
IDFIX-DATA	•	•	2TLA020070R2300
R120	•	•	2TLA020070R2200
Canbus Cable			See cable section
USB Programming Cable			2TLA020070R5800
Pluto Manager	•	•	Free Download

Pluto safety PLC

Programmable safety controller

Statusbus



Features

- Status of up to 30 devices connected to one input on the Pluto programmable safety controller.
- Up to four inputs on the Pluto can be configured for StatusBus = 120 StatusBus Devices.
- Status of safety system is easily sent to HMI to be displayed, help reducing downtime.
- M12 connectors for easy installation.
- Smile, Inca, & Eden have Statusbus models available.

Pluto safety PLC

Programmable safety controller

Statusbus

NOTES

HMI's supporting Modbus ASCII can be used to display status directly using Pluto programming port.

Using the Tina 4A/8A makes wiring for StatusBus easy. You can connect the StatusBus pins easily inside the Tina 4A/8A. See description for cable connections.



Smile StatusBus



INCA StatusBus



Eden StatusBus



FIXA Programming Tool
Optional Not Required



M12-3S
Y-Connector



Tina 4A/8A
Safety Port Block

Type	Voltage	Estop Remote	Estop Panel Mount	Doors/hatches	Actuator	Accessory	Ordering Code
Smile 11EC Tina	24VDC	●					2TLA030050R0900
Inca 1EC Tina	24 VDC		●				2TLA030054R1400
Adam StatusBus	24VDC			●			2TLA020051R5200
Eva General Code	24VDC				●		2TLA020046R0800
Eva Unique Code	24VDC				●		2TLA020046R0900
JSMD4H						●	2TLA040033R3600
FIXA						●	2TLA020072R2000
M12-3S	24VDC	●	●			●	2TLA020055R0600
Tina 1A	24VDC					●	2TLA020054R0000
Tina 4A	24VDC	●	●			●	2TLA020054R0300
Tina 8A	24VDC	●	●			●	2TLA020054R0500

AFS contactors

Contactors for safety applications

AFS Contactors



Features

- Designed for machine safety applications, AFS contactors come with fixed front auxiliary contact block, making them ideal for monitoring and controlling circuits.
- Mechanically linked and mirror contacts help make your system safer.
- AFS contactors can be easily integrated in machine manufacturer's systems complying with standards EN ISO 13849 and EN 62061
- Safety data available in the library of safety software (Sistema, FSDT)...
- Opening time AFS09...AFS38 <35ms.
- "Z" coil version for low current consumption.
- See AFS web page for more information [Click Here](#) or flyer for ordering information [Click Here](#).

Electronic compact starters

Direct-on-line / reversing starter with motor protection

Electronic compact starters



Features

- HF range electronic compact starters.
- Direct-on-line / reversing starter with motor protection. Mechanically linked and mirror contacts help make your system safer.
- 0.6 A, 2.4 A and 6.5 A, for motors up to 3 kW - 400 VAC.
- Up to 9 A for resistive loads.
- Rated operational voltage: 500 VAC.
- Rated control supply voltage: 24 VDC.
- ATEX, SIL3 and PL e approvals
- Automatic, manual or remote reset after thermal trip.
- Electrical life: 30 millions operating cycles.
- IEC / EN 60947-1, IEC / IEN 60947-4-2.
- 22.5 mm, space savings of 90% compared to traditional methods.
- See ECS web page for more information [Click Here](#) or flyer for ordering information [Click Here](#).

ABB Drives

Motor control

Drives



Features

- Broad portfolio of drives suited for many applications.
- Designed to run your motors based on your processes' current demands rather than running them at full speed
- Can be available as stock standards or built to order to meet complex requirements.
- Easy to install and commission.
- Models with built-in and certified Safe Torque Off function for enhanced safety
- Models with direct torque control that give highly accurate open loop control
- Extensive fieldbus and communication options.
- See Drives web page for more information [Click Here](#).

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What's New

Safe Inputs

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ABB

ABB Softstarters

Motor control

Softstarters



Features

- For full speed applications with advanced motor starting.
- Cover any motor application from 3 A to 2160 A.
- Reduced starting current and less electrical stress on the motor and the network.
- Fast and easy to install and set-up with a small footprint.
- Reduced mechanical wear and tear on mechanical equipment.
- Extensive communication options.
- See Softstarters web page for more information [Click Here](#).

Signal towers and beacons

Signal Towers and Beacons



Features

- Fast mounting of signal elements using bayonet fixing.
- No maintenance or replacements needed thanks to long life LEDs.
- Flexibility of signal element combination.
- Easily change bulbs for each element without tools.
- Permanent, blinking, rotating or flashing light elements.
- Siren and buzzer elements with several types of tones.
- High protection degree: signal towers are tested and approved for IP54 and signal beacons for IP65.
- See Signal Tower and Beacon web page for more information [Click Here](#) or catalog for ordering information [Click Here](#).

Power supplies

Power Supplies



Features

- Available in different ranges to cover most application requirement.
- Excellent reliability in daily use.
- All models have a broad input range.
- CP-E range has high efficiency up to 90 % and adjustable voltage output (e.g. Compensate voltage drop).
- CP-T range for 3 phase power input, typical efficiency of 93% and adjustable voltage output (e.g. Compensate voltage drop).
- CP-C.1 range for high performance. With 150% power reserve and operates at an efficiency of up to 94%.
- See Power Supplies web page for more information [Click Here](#) or catalog for ordering information [Click Here](#).

Cables

Cables – Single Ended

NOTES

E.g. M12-C201 = M12-C, 20m, 5 pin female

Cable Description Decoder – M12-CABC			
M12-C	A – Length	B – Connector	C – Connector
	03=0.3m	1=5 pin female	1=5 pin female
	1=1m	2=5 pin male	2=5 pin male
	3=3m	3=8 pin female	3=8 pin female
	6=6m	4=8 pin male	4=8 pin male
	10=10m	5=12 pin female	5=12 pin female
	20=20m	6=12 pin male	6=12 pin male



Type	5 pin M12 female	5 pin M12 male	5 pin 90-degree M12 female	8 pin M12 female	8 pin M12 male	12 pin M12 female	6m length	10m length	20m length	Harsh Environment	Ordering Code
M12-C61	•						•				2TLA020056R0000
M12-C101	•							•			2TLA020056R1000
M12-C201	•								•		2TLA020056R1400
M12-C61HE	•						•			•	2TLA020056R8000
M12-C101HE	•							•		•	2TLA020056R8100
M12-C62		•					•				2TLA020056R0200
M12-C102		•						•			2TLA020056R1200
M12-C61v2			•				•				2TLA020056R0600
M12-C63		•	•	•			•				2TLA020056R3000
M12-C103				•				•			2TLA020056R4000
M12-C203				•					•		2TLA020056R4100
M12-C104					•			•			2TLA020056R4200
M12-C65						•	•				2TLA020056R7200
M12-C105						•		•			2TLA020056R7300
M12-C205						•			•		2TLA020056R7500

Cables

Cables – Double Ended

NOTES

E.g. M12-C112 = M12-C, 1m, 5 pin female, 5 pin male

Cable Description Decoder – M12-CABC

M12-C	A – Length	B – Connector	C – Connector
03=0.3m	1=5 pin female	1=5 pin female	
1=1m	2=5 pin male	2=5 pin male	
3=3m	3=8 pin female	3=8 pin female	
6=6m	4=8 pin male	4=8 pin male	
10=10m	5=12 pin female	5=12 pin female	
20=20m	6=12 pin male	6=12 pin male	



Type	5 pin	8 pin	0.06m length	0.3m length	1m length	3m length	6m length	10m length	20m length	Ordering Code
M12-C00612	●		●				●			2TLA020056R6300
M12-C0312	●			●						2TLA020056R5800
M12-C112	●				●				●	2TLA020056R2000
M12-C312	●					●				2TLA020056R2100
M12-C612	●						●			2TLA020056R2200
M12-C1012	●							●		2TLA020056R2300
M12-C2012	●								●	2TLA020056R2400
M12-C00634		●	●							2TLA020056R6400
M12-C134		●			●					2TLA020056R5000
M12-C334		●				●				2TLA020056R5100

Cables

Cables – Field Wirables



Type	Field Wirable Female	Field Wirable Male	5 pin	8 pin	Ordering Code
M12-C01	•		•		2TLA020055R1000
M12-C02		•	•		2TLA020055R1100
M12-C03	•			•	2TLA020055R1600
M12-C04		•		•	2TLA020055R1700

Cables

Cables – Bulk

NOTES

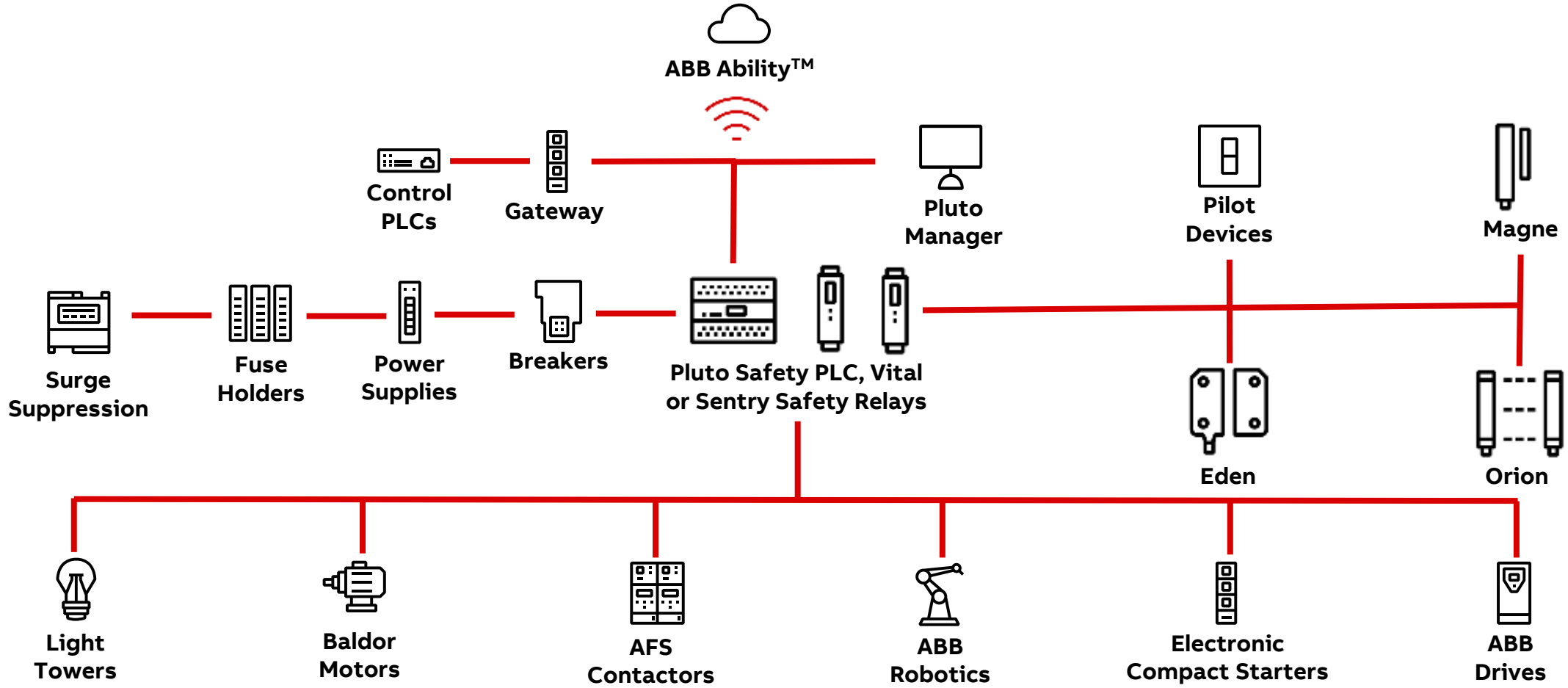
Spools of cables are not stocked in the USA.



Type	Cable 5 conductor	Cable 8 conductor	Cable 9 conductor	Cable 13 conductor	Canbus	Ordering Code
Canbus 50m					●	2TLA020070R6805
Canbus 100m					●	2TLA020070R6810
Canbus 500m					●	2TLA020070R6850
C5 cable 10m	●					2TLA020057R0001
C5 cable 50m	●					2TLA020057R0005
C5 cable 100m	●					2TLA020057R0010
C5 cable 200m	●					2TLA020057R0020
C5 cable 500m	●					2TLA020057R0050
C8 cable 50m		●				2TLA020057R1005
C8 cable 100m		●				2TLA020057R1010
C8 cable 200m		●				2TLA020057R1020
C8 cable 500m		●				2TLA020057R1050
C9 cable 150m			●			2TLA020057R1515
C9 cable 350m			●			2TLA020057R1535
C13 cable 100m				●		2TLA020057R2010
C13 cable 350m				●		2TLA020057R2025

ABB safety related products

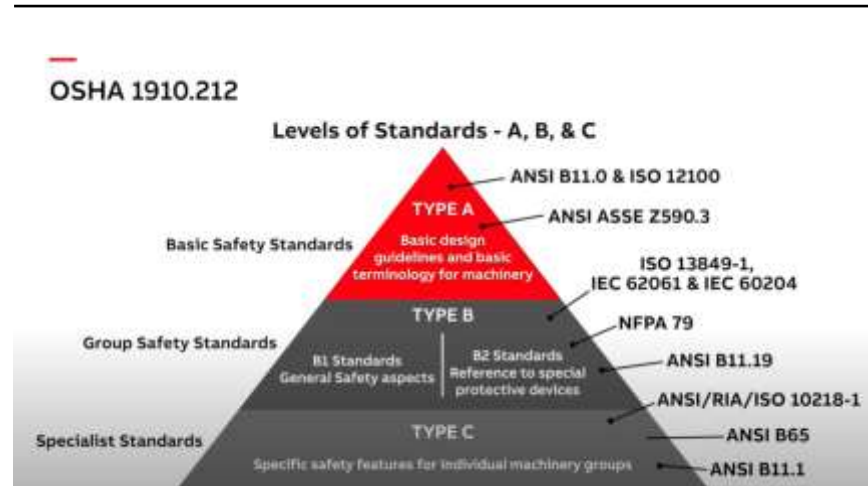
Click on the product to learn more



Machine safety services (MSS)

Machine safety services available

Machine Safety Services (MSS)



Play Video

Let us help you navigate the complexity of machine safety compliance

We Make Safety Simple

Machine Safety Services (MSS)

We can help with machine safety compliance for a single machine, department(s), or plant(s). Our experienced staff can help evaluate, design, and train your personnel on machine safety.

Watch the video on the left to help understand the pit falls of non-compliance.

- **Machine Safety Evaluation** – Detailed report on machine safety features.
- **Safety System Design** – Use our expertise to design a safety system.
- **Safety System Programming** (If Required) – We can program a Pluto Programmable Safety Controller for you, or we can train you to use advanced Pluto functions.
- **Machine Safety Training** customized to your requirements.

Fully customizable machine safety services to address your company's needs.

For assistance, contact your local ABB/JOKAB SAFETY representative or email us at: Jokab.Service@us.abb.com

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Machine safety services (MSS)

Why invest in safety with ABB Jokab Machine Safety Services?



1 Help protect your most valuable resource: your workforce

- While all machinery contains hazards and levels of residual risk, a properly implemented safety system will help protect all people that work on or near the machine—including operators, maintenance personnel, housekeeping, etc.



2 Help avoid costly fines

- Costs of negligence or non-compliance with machine safety standards can be astronomical



3 Help reduce unintended downtime

- “Production Integrated Safety Systems” are intuitive to troubleshoot, helping to reduce downtime and increase revenue



4 Help maintain a positive corporate image

- Retaining a talented and experienced workforce is a challenge. It’s even harder with an unsafe workplace
- Failure to adopt and maintain a safety strategy can damage your reputation for many years to come

ABB Jokab Safety

ABB Jokab Safety support resources

ABB Jokab Safety



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Customer Service		(800) 435-7365	contact.center@us.abb.com

ABB Jokab Safety

Additional information links

Catalogs, Brochures and CAD Drawing Files

[ABB Jokab “Easy Reference”](#)

[ABB Jokab Panorama US](#)

[Protecting your valuable personnel and your company bottom line](#)

[Orion safety light guards Reduce complexity and save time](#)

[Orion safety light guards - Summary](#)

[Pluto Safety Controller for Harsh Enviroments](#)

[Sentry Safety Relay Leaflet](#)

[Safety Contact Mats](#)

[ABB solutions for control panels](#)

Video Links

[Your best Partner for Machine Safety](#)

[Sentry Safety Relay and Eden OSSD Safety Sensor](#)

[How to configure the ABB Sentry safety relays with the display](#)

[ABB's Orion light guards](#)

[Pluto D45 Safety PLC combines Process and Functional Safety](#)

[ABB JOKAB SAFETY - Your best partner for machine safety](#)

[Machine Safety Systems: An open door to smarter operations](#)

[Sentry & Eden Video](#)

Vertical Market Solutions and Products

[Food and Beverage Industries - Machine Safeguarding Products](#)

[Food and Beverage - Machine Safeguarding Solutions](#)

[Packaging Industries - Machine Safeguarding Products](#)

[Packaging industries - Machine Safeguarding Solutions](#)

[Material Handling industries - Machine Safeguarding Products](#)

[Material Handling industries - Machine Safeguarding Solutions](#)

7 Episodes on “Your First Pluto Project”

[Your first Pluto project: Episode 1 – Intro Hardware](#)

[Your first Pluto project : Episode 2 – Adding Pluto units](#)

[Your first Pluto project: Episode 3 – IO configuration](#)

[Your first Pluto project : Episode 4 – Variable names](#)

[Your first Pluto project : Episode 5 – PLC code](#)

[Your first Pluto project: Episode 6 – Compiler](#)

[Your first Pluto project: Episode 7 – Download and Monitor](#)

ABB Jokab Safety

Additional information links

Articles

[Safe bowling with Jokab](#)

[Less is more when it comes to machine safety](#)

[Simplifying safety](#)

[Superior safety: From switches to sensors](#)

[Automating packaging for Baltic food company](#)

Application Examples

[Application Guide \(External Link\) \(US\)](#)

[Application example - Total solution for a robotic training cell](#)

[Application example - Supervision of hatches for composting machine with Eden and Pluto](#)

[Application example - Speed monitoring of radio controlled vehicles with Pluto](#)

[Application Example - Packaging line with robots and safety](#)

[Sentry Connection Diagrams \(European\)](#)

Connection Diagrams and Certificates

[Connection diagrams and certificates are available at the bottom of this page \(New\) Drawing Files](#)

European Catalogs (May differ from US offering)

[European main catalog \(European\)](#)

Configurator

[Eden OSSD](#)

[Eden DynLink](#)

[Gkey](#)

[Magne](#)

Additional Information

[Machine directives, Sistema, etc...](#)

What's New

Safe Inputs

Logic Controls &
Safe Outputs

Machine Safety
Services (MSS)

Application Guide
(External Link)

Videos, Info, &
Configurators

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Additional information links

OEM Stocking Guide

To better serve our customers, the low-voltage components featured in this Stocking Guide are stocked and shipped from our state-of-the-art distribution center located in Mt. Juliet, Tennessee.

[Link](#)

Technical Tuesdays

Technical Tuesdays are a remote learning, professional development hour (PDH) eligible, opportunity via live online webinars from ABB subject matter experts. Register just once for access to the entire series live or on-demand at your convenience.

[Link](#)

OEM InControl Webinars

Reliability, productivity and efficiency are key objectives for any OEM. In this webinar series you will learn how ABB's comprehensive product portfolio can help you maximize your profit, protect your assets and optimize your investments.

[Link](#)

Life Cycle Management

ABB low-voltage products are classified in four different product phases. Summary of main changes in this releases split in the tabs below. Detailed LCM information can be found in the LCM status plan at the bottom of this page.

[Link](#)

ABB Jokab Safety

Educational links

MyLearning (You will need to register)

[Link](#)

Level 0 - A basic overview of machine safety legislation and an introduction to safety products

Target group: Everyone interested in machine safety

Level 1 - An orientation about standards and two key concepts – separation and emergency stop

Target group: All machine safety sales people

Level 2 - An in-depth training about the safety products and the standards connected to them

Target group: Sales and support

Level 3 - An in-depth introduction into the Pluto programmable safety controller

Target group: Sales and support – Required to be allowed to attend a factory training

Level 0 Courses

9CSC007869-GLB-EN - Guide your customer through European machine safety legislation

9CSC007870-GLB-EN - Help your customer understand the CE-mark

9CSC010114-GLB-EN - Introduction to safety devices

Level 1 Courses

9CSC007871 -GLB-EN - Safety Fence System

9CSC007976-GLB-EN - The use of emergency stops

Level 2 Courses

9CSC007783-GLB-EN - Introduction to the standard EN ISO 13849 - Part 1

9CSC007782-GLB-EN - Introduction to the standard EN ISO 13849 - Part 2

9CSC007781-GLB-EN - Introduction to the standard EN ISO 13849 - Part 3

9CSC007975-GLB-EN - The use of a safety stop

9CSC007974-GLB-EN - Fault Masking

9CSC007973-GLB-EN - Safety lock

9CSC008066-GLB-EN - The DYNlink solution

ABB Jokab Safety

Educational links

Level 2 Courses Continued

- 9CSC008067-GLB-EN - GKey safety lock
- 9CSC008068-GLB-EN - Non-contact OSSD switches
- 9CSC008069-GLB-EN - How to adapt other technologies to the DYNlink solution
- 9CSC008070-GLB-EN - Logic devices, safety relays
- 9CSC008071-GLB-EN - Optical safety devices
- 9CSC008072-GLB-EN - Reset functions
- 9CSC008073-GLB-EN - Cables and connectors
- 9CSC008074-GLB-EN - Safety contact mat
- 9CSC008075-GLB-EN - Safety edges and safety bumpers
- 9CSC008076-GLB-EN - Two-hand control device
- 9CSC008077-GLB-EN - Three-position device
- 9CSC008078-GLB-EN - Safe outputs
- 9CSC010115-GLB-EN - Pluto safety controller - Brief introduction
- 9CSC008118-GLB-EN - FSDT - Functional Safety Design Tool

Level 3 Courses

- 9CSC007869-GLB-EN - Guide your customer through European machine safety legislation
- 9CSC008079-GLB-EN - Stand-alone programmable safety controller - Pluto
- 9CSC008080-GLB-EN - A simple Pluto project
- 9CSC008081-GLB-EN - Document a programmable safety controller solution according to ISO 13849
- 9CSC008082-GLB-EN - StatusBus
- 9CSC008083-GLB-EN - Pluto controllers in network
- 9CSC008084-GLB-EN - Gateways
- 9CSC008085-GLB-EN - HMI
- 9CSC008086-GLB-EN - Pluto and analog safety solutions
- 9CSC008087-GLB-EN - Pluto and absolute encoders
- 9CSC008088-GLB-EN - Pluto and incremental encoders
- 9CSC008117-GLB-EN - AS-i

Dual Channel vs DYNLink

Pro's and Con's

Dual Channel

- Dual channel uses either 24VDC and 0VDC on each channel or newer safety relays use 2 different pulses for each channel.
- A short between the channels is detected by the safety relay.
- Faults can be masked by cycling power, opening and closing other doors in series or replacing the safety relay.
- Devices can be jumped out.
- **Caution** - Once Dual Channel devices are put in series to a single safety relay, the level of safety drops down due to fault masking

DYNLink signal

- DYNLink signal is a square wave pulse that inverts 180 degrees through each Eden or Tina adaptor on the circuit.
- With the DYNLink, faults cannot be masked and are identified immediately.
- Devices cannot be jumped out.
- 30 devices can be wired to a Vital(DynLink) controller and still achieve the highest level of safety.
- 1 input on a Pluto Safety PLC can monitor 10 devices to the highest level of safety.
- DYNlink devices have LED status (green, red, green/red alternating) as well as a status output.
- Most DYNLink devices are a 5 wire.

Dual Channel example

DynLink example

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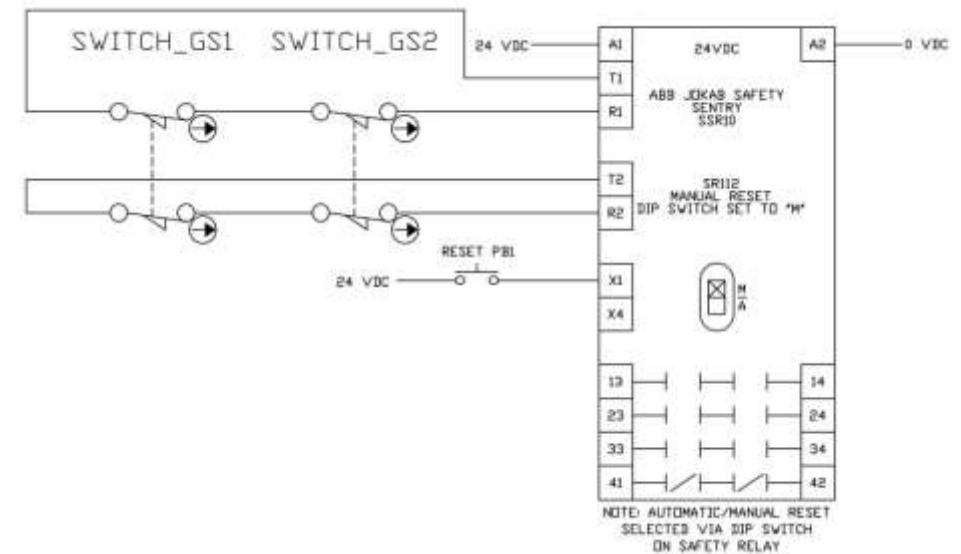
Dual Channel vs DYNLink

Dual Channel example

Dual Channel

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- Faults can be masked by cycling power, opening and closing other doors in series or replacing the safety relay.
- Devices can be jumped out.
- Once devices are put in series to a single safety relay, the level of safety drops down due to the fault masking

Dual Channel circuit example



DynLink example

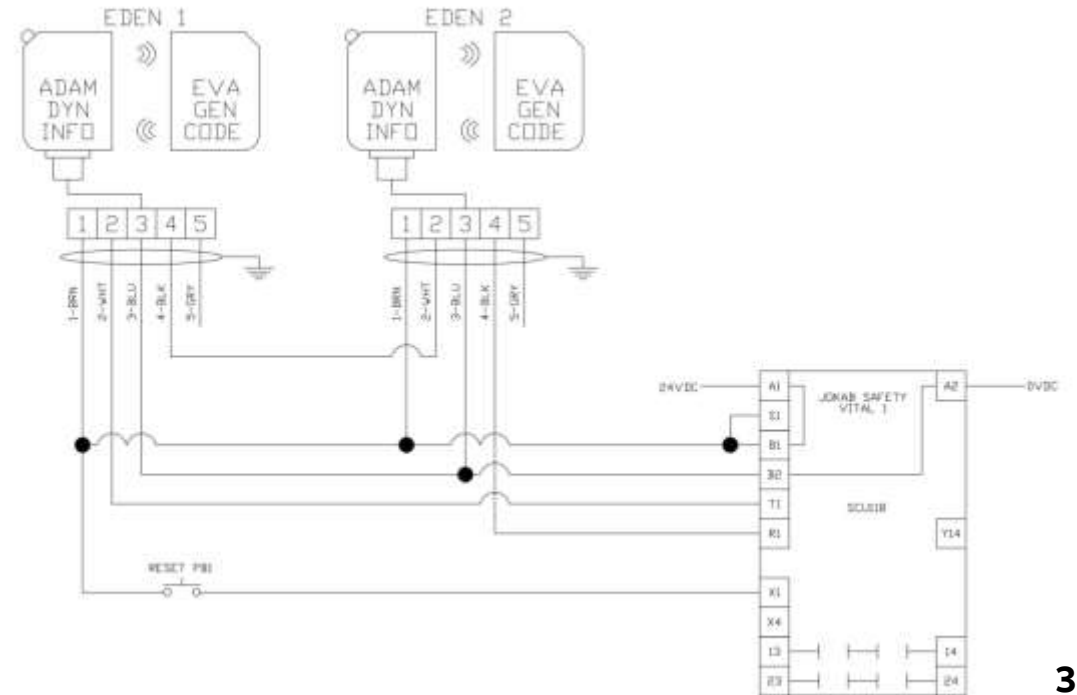
Dual Channel vs DYNLink

DynLink example

DYNLink signal

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- Most DYNLink devices are a 5 wire.

DynLink circuit example



Dual Channel example

Easy Reference overview

How to use the Easy Reference

Easy and Convenient



Link to
Adobe Reader

Easy
Reference

Using the Easy Reference

- The Easy Reference is meant to be an easy-to-use presentation of ABB Jokab Safety products to take with you and use when discussing machine safety applications.
- Go to the link below to access the latest version of the Easy Reference.
- Save the Easy Reference to your device.
- Designed to fit on the screen of your phone, tablet, or computer. Not available in print form.
- Interactive links to web site information, such as manuals, videos, brochures, and data sheets.
- Easily open links and email them.
- Can be used for presentations, design discussions, reference, and training.
- Trouble activating the links? Try downloading Adobe Reader at <http://get.adobe.com/reader/>

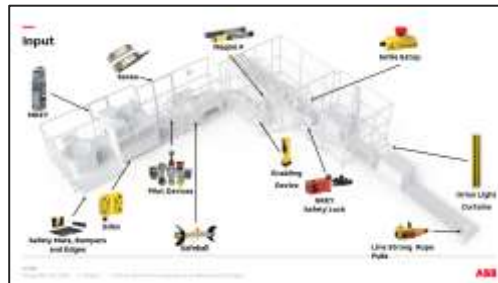
Easy Reference overview

Navigating the Easy Reference

Opening Page



Index (Linked Pictures and List)



Clicking on pictures bring you right to the product pages for that product.

Product Pages



Product pages have key features as well as links to web pages, manuals and configurators.

Ordering Data and Data Sheet Links



Click on underlined part numbers to get data sheet

Data Sheet Window (Web)



Opens on a separate window

Additional Information Links



Videos, brochure and training links.

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