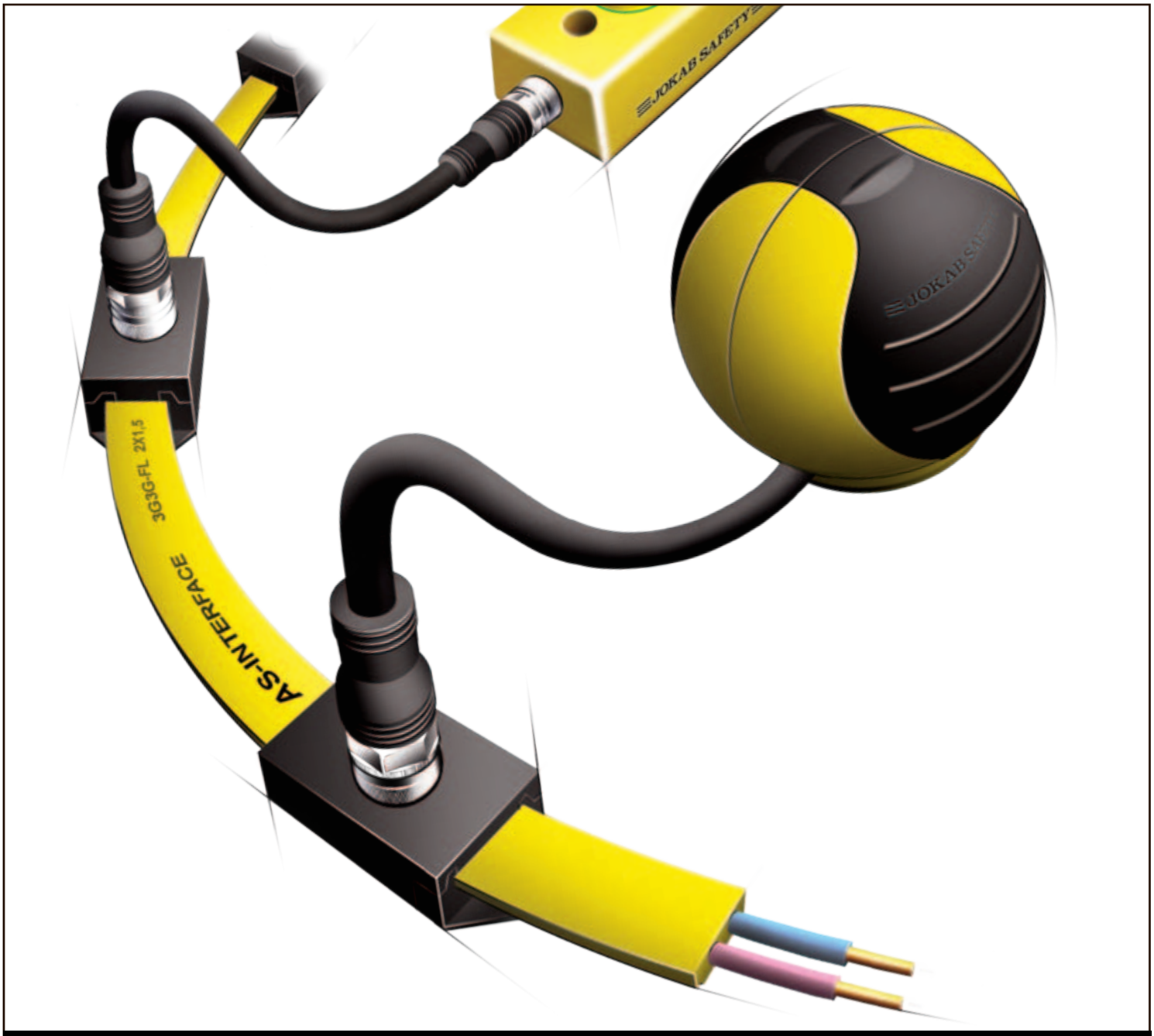


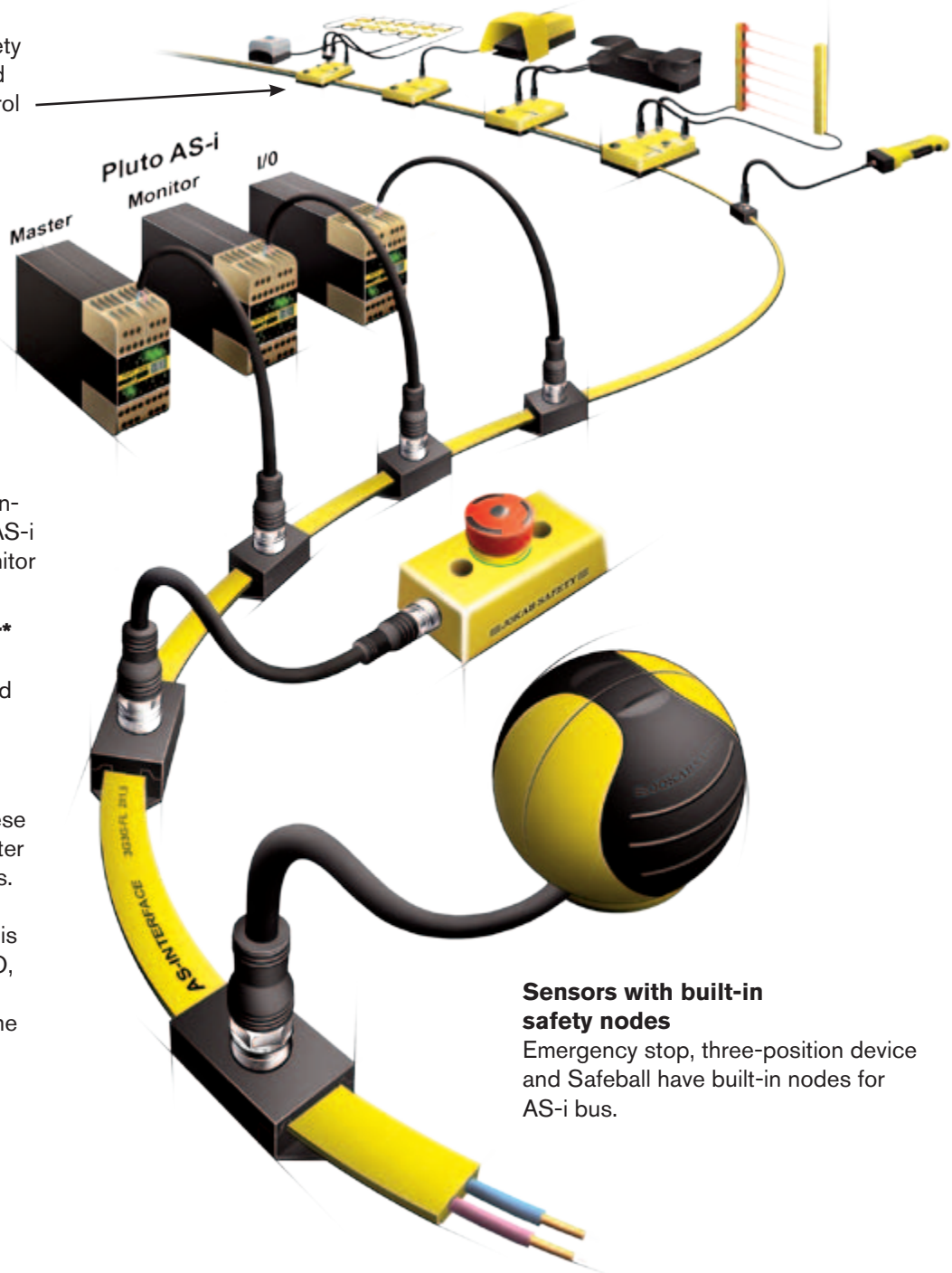
AS-i Safety
ABB Jokab Safety

Power and productivity
for a better world™

AS-i Safety – safety is now simple!

All sensors, I/O units and PLC are connected to an optional location on the same cable which can be easily moved as required. The function of the units is determined in the software which can be easily modified.

Urax safety node
Urax has safety inputs for safety devices and reset buttons and outputs, for example, for control of process locks.



A Pluto AS-i can be used in three ways:

1. Pluto as Safety Master*
The master distributes and controls communications on the AS-i bus and serves as Safety Monitor at the same time.

2. Pluto as Safety Monitor*
The monitor listens to what is going on with the AS-i bus and controls safe outputs.

3. Pluto as Safety I/O*
Several safe inputs and/or outputs are controlled and these communicate with a safe master or monitor across the AS-i bus.

*Regardless of whether Pluto is used as Master, Monitor or I/O, it can control and monitor the safety of a machine at the same time.

Sensors with built-in safety nodes
Emergency stop, three-position device and Safeball have built-in nodes for AS-i bus.

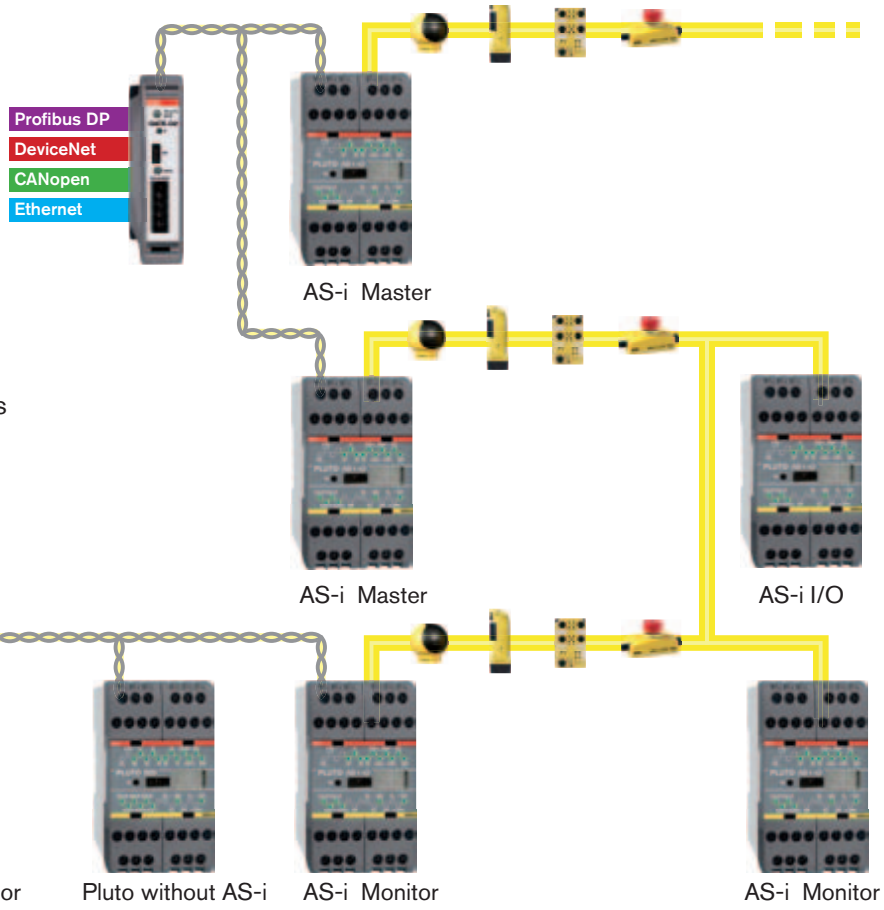
Nodes
The safety nodes (max 31) and A/B nodes (max 62) are connected to the AS-i bus for both inputs and outputs.

Cable length
Normally, the AS-i bus has a total length of up to 100 m but can be increased to 500 m.

The market's most flexible AS-i Safety PLC!

Pluto AS-i can be used as Safety Master, Monitor or I/O and can control and monitor the safety of a machine at the same time.

You can use Gateways to easily communicate with other bus systems.



You can connect Pluto AS-i with other Plutos both via the AS-i bus and via Pluto's safety bus.

Why is AS-i Safety so good from a safety aspect?
Connection is simple as all units are connected to the same AS-i cable/bus. This thereby minimises the risk of faulty connection. Each safety node has its own address and a unique safety code.

It is also easy to introduce changes to the safety system without significant cost in comparison to traditional safety systems that require new wiring from the electrical cabinet for each new safety device. Experience also shows that most safety systems need to be supplemented later by adapting the safety to suit the work that needs to be carried out to keep production running.

Programming of Pluto AS-i is made easy in TÜV-reviewed software with ladders and finished blocks for different safety features. The Pluto Manager software is also free to download from our website.

How large can you build the system?
From a technical aspect there are no constraints on the size of the system. A Pluto PLC can, in addition to processing a complete AS-i bus, communicate with another Pluto either through a Pluto safety bus or through an AS-i bus.

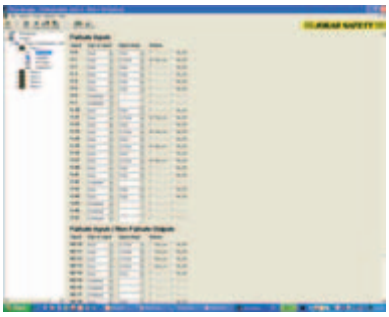
Through Pluto's safety bus, each Pluto can be a party to the I/Os of others and a total of 32 Plutos can be linked in this way. If two Plutos are connected to each other via the AS-i bus, each Pluto can be connected to 31 other Plutos.

Using Gateways the system can be expanded further to other bus systems for information exchange.

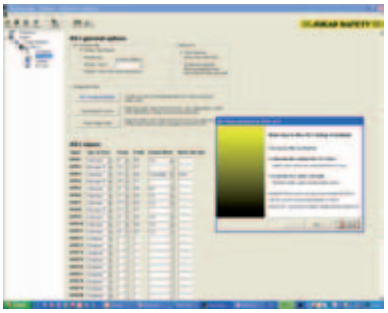
What other connections does Pluto AS-i have apart from the AS-i bus and Pluto's safety bus?
Pluto AS-i has 4 intrinsically safe outputs, 4 safe inputs and 4 I/Os that can be used in a way of your choice. Either as 4 safe digital inputs, as 4 safe analogue inputs, as 4 non-safe outputs or as 4 outputs and inputs simultaneously. If more I/Os are needed, you can connect Pluto AS-i to Pluto B20 or B46 via Pluto's safety bus.

Pluto Manager – a program for safety

Pluto Manager
Programming of Pluto, nodes, gateways etc. is done with ladders or Boolean algebra with timers, auxiliary memories, registers, sequence programming and TÜV approved blocks.
The program also has functions for reading and making diagnoses of nodes on the AS-i bus.



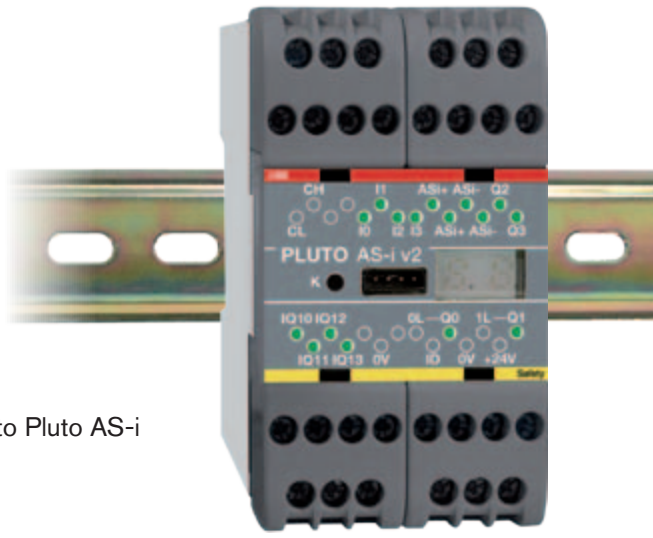
You can load programs:
- via a PC
- from one Pluto to another Pluto
- from an Idfix-prog. (also used as program backup)



The program is free to download from our website or can be sent via e-mail.

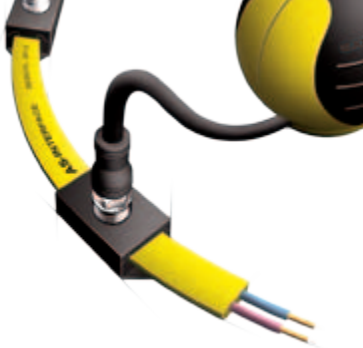
Our product range for AS-i

Pluto AS-i (version 2 with greater capacity and more options)
Idfix for codes and programs
Urax safety nodes
Sensors with built-in safety node
A/B nodes
Push button box for AS-i
Cables
Electronics for cable extension
Couplings for AS-i bus and M12 connections
Power supply unit for AS-i bus 30 V



In addition you can connect:
- all our sensors to AS-i via Urax
- all Pluto PLC, gateways and absolute sensors via Pluto's safety bus to Pluto AS-i
- operator panel, HMI, via the programming port on Pluto
- expansion relay for more outputs

Sensors with built-in AS-i safety nodes



Smile, Safeball and JSHD4 have built-in AS-i nodes for direct connection to the AS-i bus.

Three position device JSHD4

Cable with two wires to the AS-i bus provides low weight and better ergonomics.

Sensors that sense your hand!

We have developed our three-position device JSHD4 with sensors to ensure that it is a human hand that grips the device (fraud-proof) and with built-in AS-i nodes.

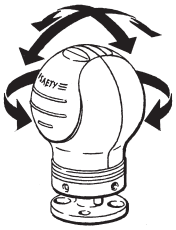
The three-position device is used for settings, fault tracing and test running when no other protection is possible or feasible. The device is hand-held and the operator may, in a panic situation, either simply press harder or release the device to stop the machine.

With a two-wire connection the cable is light and the user has a multi-function three-position device. In addition to the safety node for duplicating three-position button, the three position device also has a node for hand-sensing (fraud protection), 2 extra buttons for optional functions as well as 2 LEDs for indication.

Small yet robust emergency stop with LED!

Smile is a small and robust emergency stop with a width of 40 mm. The centred mounting holes make installation of the emergency stop easy especially in aluminium profiles that are often used for machine construction and machine protection.

You can connect Smile directly to the AS-i bus. The built-in safety node has safe inputs for the duplicate contacts and two non-safe outputs to control lamp indication on the emergency stop button. Red indicates a pressed emergency stop while green indicates operational mode, i.e. reset position. Indication is controlled by the PLC program and you can therefore adapt the indication to suit individual customer requirements.



Safeball can be fitted with a ball joint that can be turned and angled.

Safeball fits all hands!

Safeball, is a globally-unique control device with ergonomic design that fits all hands and offers many grip options. Safeball has double safety for each hand, i.e. two buttons on each ball need to be pressed. Safeball has now been fitted with a safety node for connecting directly to the AS-i bus. Safeball can be used for either one or two hand operation.

Safety nodes for connection of sensors

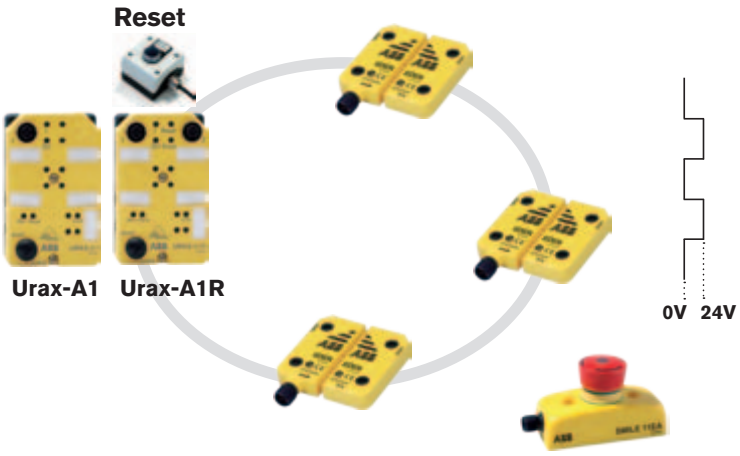
The Urax safety node has safety inputs for sensors and reset buttons and outputs, for example, for process locks.

Urax-A/B for dynamic safety sensors provide the ability to connect several sensors in a series at the highest safety level PL e according to EN ISO 13849-1.

Urax-A1 and A1R

A safety node where you can connect up to 3 dynamic sensors, Eden, as per PL e EN ISO 13849-1 and a reset button (R) with indication. Switches adapted for dynamic sensors, e.g. Smile Tina can also be connected to the safety circuit. Urax-A also has an output for non-safe control.

The dynamic safety sensor Eden is supervised by Urax over a hundred times per second which ensures a high level of safety.

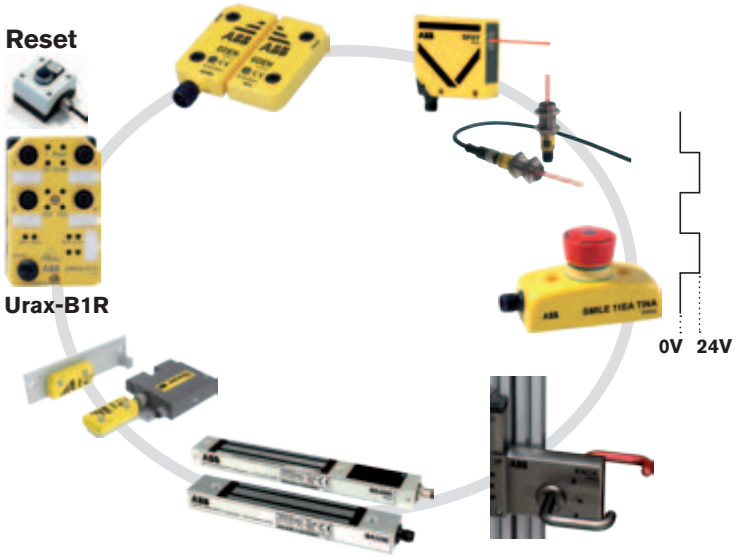


Urax-B1R

A safety node with extra 24 VDC where you can connect up to 10 dynamic sensors, Eden, as per PL e EN ISO 13849-1 and a reset button (R) with indication. It also has three non-safe outputs, for example, for controlling process locks.

Urax-B1R can also be used for the Smile Tina emergency stop, a Spot light barrier or locks with built-in Eden such as the Dalton process lock, Magne magnetic lock and Knox safety lock. For the safe unlocking of Knox, a safe output from Pluto is needed.

The dynamic safety sensors Eden and Spot are supervised by Urax over a hundred times per second which ensures a high level of safety.

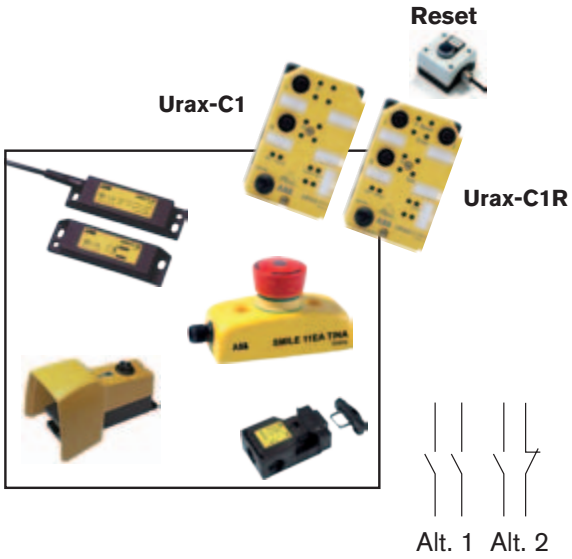


Urax-C1/C1R

Safety node for connection of switches with contacts and a reset button (R) with indication. The switch contacts are supervised each time they are actuated, for example, when a cover with a breaker is opened.

Connection is possible to Urax-C in three ways:

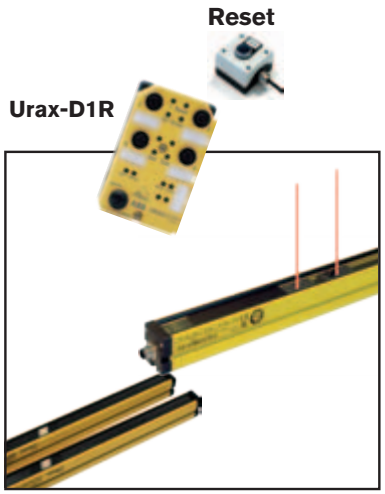
Alternative 1. One switch with two contacts (open in safe position) to one M12 connection.
Alternative 2. One switch, for example, magnetic switch JSNY7 with alternating contacts to one M12 connection.
Alternative 3. Two switches each with a contact (open in safe position) to each M12 connection.



Urax-D1R

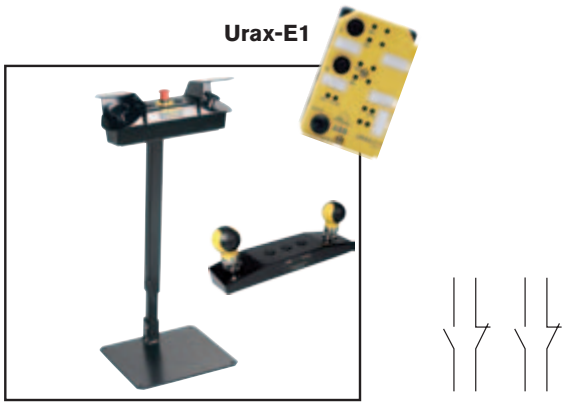
Safety node for connection of safety devices with two OSSD outputs and a reset button (R) with indication. Urax-D is used for light barriers and light curtains Focus which have self-monitoring outputs.

It also has three non-safe outputs, for example, for controlling process locks and connection for extra 24 VDC.



Urax-E1

Safety node for connecting two-hand control devices with two buttons that have alternating contacts to be actuated within 0.5 s to enable the Urax-E to give the ready signal. Urax-E can be used for the traditional two-hand control device and for our unique two-hand control device with Safeball which has double safety for each hand.



Contact us

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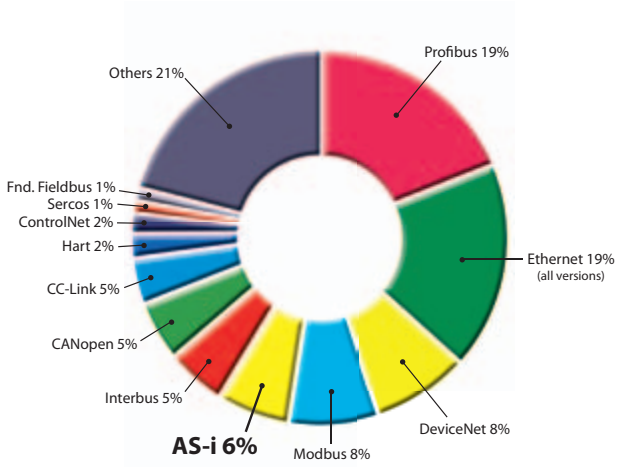
AS-interface
– an intelligent cable running system

The AS-interface field bus system began its life in the 1990s. The system resulted from a partnership between several component manufacturers for machine control. The idea was a bus system at a component level where the aim was simplicity and flexibility. Following the launch of the system many new and innovative ideas have been added.



Market shares for industrial buses in automation for manufacturing. (source: IMS Research 2008 Germany, SPS - Magazine issue 7-2009)

AS-International Association

The AS-International Association was founded in 1991 for coordination and marketing purposes. The AS-i association serves both as an advisor and auditor to ensure that the AS-i standard is maintained.

The aim of the AS-i association is that the AS-interface is to be a global standard for simple communications for components in the automation industry.

The distinguishing factor of the AS-interface is that data communications is integrated with the power supply. This is done in a simple 2-wire cable. In 2001, safety was integrated with the AS-interface via the working group Safety at Work which includes Jokab Safety.

Jokab Safety's investment in the AS-Interface

In 2007 Jokab Safety launched its Pluto AS-i, a safety-PLC with AS-interface.

A unique AS-i safety-PLC that can serve both as a Safety Master and Safety Monitor in one, i.e. it can both maintain and monitor an AS-i bus.

In 2009 we have further enhanced our AS-i program. We have now improved Pluto AS-i, Pluto Manager and developed safety nodes for direct connection to the AS-i bus.

The AS-interface makes it easy to connect and remove products to and from the AS-i bus.