# Programmable safety controller
Pluto

Pluto is a cost effective, powerful and compact programmable safety controller used in a variety of applications: in large and small systems, for process and functional safety, and even on trains.

Pluto can control most types safety devices on the market, as well as ABB Jokab Safety DYNlink safety devices, analog sensors, encoders, contactors, valves and many more. Programming is done easily in the complimentary software, Pluto Manager.

The models with safety bus communication simplify the design of safety systems, thanks to our All-Master concept. A wide range of gateways allows communication with other networks and also remote monitoring of a Pluto system. Some models also offer AS-i safety.
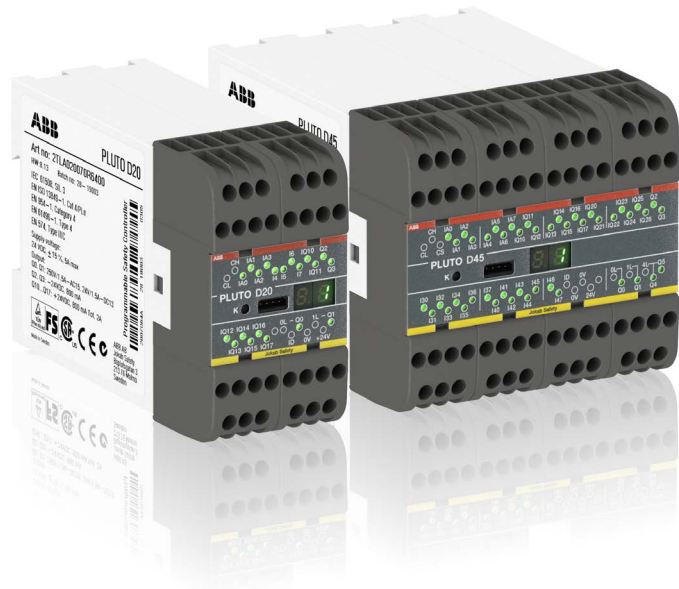
Speed up your projects

Great flexibility
Up to 32 Pluto units can exchange data on the same safety bus, and the unique All-Master system allows simple scaling, splitting and modification.

Powerful yet compact
Pluto offers unexpected features for its size, like real programming and speed monitoring, which enables Pluto to replace more complex PLC systems in some applications.

More sensors per input and less cabling
The DYNlink solution allows series connection of up to 10 safety devices on each input. StatusBus and light button feature also reduces cabling to a minimum.

Optimum interface

Programming software free of charge
Pluto Manager is an easy to use PC based programming software provided free of charge.

Easy programming
Ready-made TÜV approved function blocks for safety functions make it easy to reach PL e/SIL3. Ladder logic and text programming allow the design of more advanced functions and the control of complete machines.

Communication with external networks
Pluto gateways provide a two-way communication between the Pluto safety bus and other field buses.

Continuous operation

Easy modification
Easy and quick replacement of units without any configuration.

Flexible monitoring
Online monitoring from any Pluto in the system and remote monitoring and control with an Ethernet gateway.

ABB

Features
Pluto

I/Os

Failsafe inputs (I) are used to connect the safety devices to be monitored. Some of them can be used as analog inputs and counter inputs. The choice is made in the Pluto program when the I/Os are configured. Depending on the model, the analog inputs can be low resolution 0-27 V or high resolution 0-10 V/4-20 mA. The fast counter inputs can handle frequencies up to 14 kHz.

Failsafe inputs/non-failsafe outputs (IQ) are terminals that can be used as failsafe inputs or communication outputs (non-failsafe). The choice is made in the Pluto program when the I/Os are configured. A specific configuration is "light button" which means that both the contact and the LED indicator of an illuminated push-button are connected to only one IQ, thus saving one I/O.

Failsafe outputs (Q) are individually safe and independently programmable outputs. There are both relay and transistor outputs. The transistor outputs deliver a negative voltage (-24 VDC) that facilitates the detection of a short circuit with other voltage potentials and increases safety. The transistor outputs are primarily intended for electromechanical components such as contactors and valves.

DYNlink solution

The DYNlink circuit is a unique solution that allows up to 10 DYNlink devices to be connected in series to a Pluto input while still reaching up to Cat. 4/PL e/SIL3. This saves inputs and cabling, since to reach the same level with standard two-channel safety devices, two inputs are necessary and series connection is not possible.
The DYNlink solution checks the signal 200 times/second and a fault such as a short circuit will be detected before any safety device is used.
Examples of DYNlink devices are Eden, Spot and Smile Tina. Most two-channel safety devices can be connected to the DYNlink solution using Tina adapters.

StatusBus functionality

The StatusBus functionality is available with some DYNlink devices and allows to collect the status of each individual safety device, even when connected in series. A single input on Pluto can collect the status of up to 30 safety devices. The devices are connected using standard cable and M12-5 connectors. No specific bus cable or extra communication module is necessary. All Pluto models offer the StatusBus functionality.
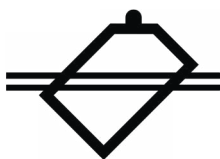
Safety bus with All-Master function

The unique All-Master system allows simple scaling, splitting and modification of the safety system.

In a traditional safety PLC network, there is one Master and additional Slave units. But for Plutos connected to a safety bus, all units are Masters and make their own decisions, while still having the possibility to listen to what is happening to the other Plutos on the safety bus. This enables great flexibility when it comes to modification of the safety system. It also enables very simple replacement of a broken Pluto, since all Plutos have a copy of the application software of all other Plutos on the safety bus stored locally. If the replacement Pluto is given the same ID as the broken Pluto (using IDFIX), the software is downloaded from the safety bus with a simple button on the front of Pluto.

Up to 32 Pluto units can be connected to the Pluto safety bus. The Pluto S20 and S46 are stand-alone models and cannot be connected to the Pluto safety bus. All other models have bus functionality. The Safety bus functionality is necessary in order to use a Pluto gateway.

AS-i communication

AS-i reduces cabling and installation time and makes it almost impossible to connect incorrectly. Up to 62 devices/31 safety devices can be connected to a flat communication cable running around the cell. Connectors with piercing technology and self-healing cables are used (also called vampire connectors) and the sensors can easily be moved with minimum effort.
AS-i Safe bus communication makes it easy to reach PL e/SIL3 and eliminates the risk of short circuit between signals in the same cable, which is not allowed for Category 4.
The ABB Jokab Safety AS-i products, including the Pluto AS-i models, are easy to use and Pluto Manager makes it easy to address the devices and read their status. Of course, ABB Jokab safety AS-i products are also compatible with AS-i products from other brands.
Pluto AS-i and Pluto B42 AS-i can either be used as masters of an AS-i bus, slaves of an AS-i master or safety monitors on an AS-i bus with another AS-i master. Therefore, they can also operate as safe I/O modules for the AS-i bus. Besides controlling all devices connected to the AS-i bus, a number of non-AS-i devices can be connected to the standard I/Os of Pluto, and there is still the possibility to communicate with other Plutos using the Pluto safety bus. In all, this leads to huge possibilities when designing the safety system.
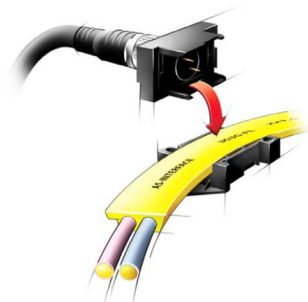
Features
Pluto

Pluto Manager

Pluto Manager is the programming software for Pluto, down-loaded free of charge from our website http://new.abb.com/low-voltage/products/safety-products/programmable-safety-controllers/pluto

An update function in Pluto Manager helps you to always have the latest version installed as long as you have an Internet connection. Pluto Manager is a user friendly PC software that allows a simple configuration of the Pluto I/Os and program-ming in ladder logic and with TÜV approved function blocks.
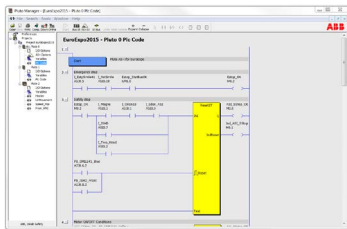
Examples of what the available function blocks can handle:
- Two-channel safety devices, with or without Reset and Monitoring.
- Single channel functions with Reset.
- Muting functions
- Encoders and counters
- Communication with Gateways, AS-i and StatusBus

Examples of ladder logic functions provided:
- Boolean instructions, Edge/inverted edge detection, Latch function, Toggle
- Timers
- Addition, Subtraction, Multiplication, Division
- Remanent memories
- Registers: 16 and 32 bit
- Sequence programming
- Option handling
- Online monitoring

In Pluto Manager there is a unique Option handling function suitable for series production of machines with different cus-tomer options. All versions of a machine type can have the same PLC program. To handle the different customer options, check boxes are used to set memories that activate the differ-ent functions of the code.

Current monitoring

Pluto A20 has a special current monitoring function. The func-tion is mainly used to check if the connected muting lamps are working.

Harsh Environment

Pluto D20 and D45 are available in models that are suited for harsh environments and railway rolling stock in particular. These models have certificates for railway standards (e.g. EN 50126) and comply with standards for railway applications (EN 50155) that includes requirements on important electrical and mechanical aspects, as well as fire and smoke protection standard (EN 45545).

Remote monitoring and control

Remote monitoring allows the connection to a remote Pluto system via the Internet and an Ethernet gateway. Pluto Man-ager is used for the monitoring.
This function can be used for:
- Support of local maintenance personnel during trouble-shooting
- Regular monitoring of the status of the machine or process
- Follow-up of operational data like number of cycles/day or runtime.

Pluto Manager also offers remote control of a Pluto system using the Internet and an Ethernet gateway.
With the remote control function it is possible to:
- Download a program from PC to the remote Pluto
- Configure addressing of AS-i and StatusBus slaves, write IDFIX code
The security of the remote control function is guaranteed by use of the K-button on Pluto. A change in a remote Pluto system cannot be made without a person at the remote Pluto confirming the action by pressing the K-button.

Configuration of the gateway itself, e.g. switching remote control on/off, can only be made via the programming port on the gateway and not via the Ethernet port.

Internet

Pluto Manager

Pluto system

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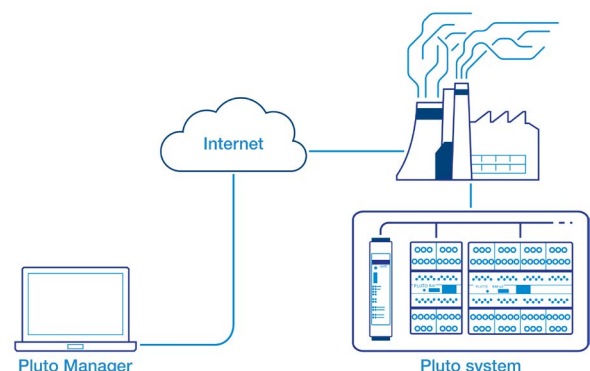
Accessories
Pluto

Pluto gateways

Pluto gateways provide two-way communication between the Pluto safety bus, i.e. all the Pluto units connected to it, and other field buses. Several models are available for the most common field buses.

Ready-made function blocks in Pluto Manager facilitate the communication. A gateway can be located anywhere on the Pluto safety bus.

Pluto safe encoders

Rotary absolute encoders can be used for safe position determination.

Our safe encoders are intended to be connected to the Pluto safety bus. They are available in single and multi-turn versions, with shaft or hollow shaft. Up to 16 absolute encoders can be connected to a Pluto safety bus. In Pluto Manager, specific function blocks make it easy to read and evaluate the values of two encoders forming a PL e/SIL3 solution. Apart from position, the speed values are available which means that also zero speed and overspeed can be monitored.

Examples of applications are gantry robots, industrial robots, and also eccentric shaft presses, where the encoders can replace existing cam mechanisms.

Operator panels

An operator panel can be connected to the programming port of Pluto with a specific cable and communicate with Pluto in MODBUS ASCII. We recommend the ABB CP600 series operator panels that offer the appropriate communication driver. An operator panel can also communicate with Pluto via a GATE-MT gateway.

Pluto S20 v2

Pluto A20 v2

Pluto D45

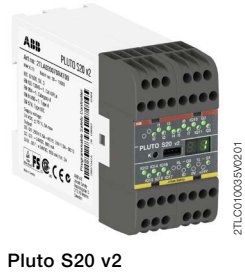Pluto AS-i

Pluto ordering table

Pluto is available in different models depending on the needs of your application. Optional features includes bus communication, AS-i bus, high resolution analog inputs, current monitoring and adaption for harsh environments.

| AS-i	Safety bus	Failsafe outputs a)	Failsafe inputs (max) b)	Analog inputs (max) b)	Fast counter inputs (max) b)	StatusBus inputs (max) b)	Non failsafe outputs (max) b)	Width mm	Type	Order code
No	No	4	16	1 c)	-	4	8	45	Pluto S20	2TLA020070R4700
		6	40	3 c)	-	4	16	90	Pluto S46	2TLA020070R1800
	Yes	-	22	1 c)	-	4	8	45	Pluto B22 e)	2TLA020070R4800
		2	4	-	-	2	2	45	Pluto O2 f)	2TLA020070R8500
		4	16	1 c)	-	4	8	45	Pluto A20 g)	2TLA020070R4500
									Pluto B20	2TLA020070R4700
				4 d) + 1 c)	-	4	8	45	Pluto D20	2TLA020070R6400
									Pluto D20 (Harsh Env) h)	2TLA020070R6401
		6	40	3 c)	-	4	16	90	Pluto B46	2TLA020070R1700
			39	8 d)	4	4	15	90	Pluto D45	2TLA020070R6600
									Pluto D45 (Harsh Env) h)	2TLA020070R6601
Yes	Yes	4	8	4 c)	-	4	4	45	Pluto AS-i	2TLA020070R1100
		6	36	3 c)	-	4	16	90	Pluto B42 AS-i	2TLA020070R1400

a) Failsafe outputs

    2 failsafe outputs:
  - 2 independent individually safe potential free relay outputs (Q0 and Q1) with 3 contacts each
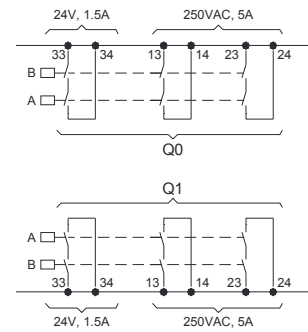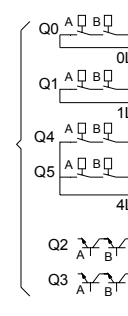

    4 failsafe outputs:
  - 2 independent individually safe potential free relay outputs (Q0 and Q1)
  - 2 independent individually safe transistor outputs (-24 VDC) (Q2 and Q3)

    6 failsafe outputs:
  - 2 independent individually safe potential free relay outputs (Q0 and Q1)
  - 2 independent individually safe potential free relay outputs with common supply (Q4 and Q5)
  - 2 independent individually safe transistor outputs (-24 VDC) (Q2 and Q3)

b) -The number of failsafe inputs available decreases with the number of used non-failsafe outputs, analog inputs, fast counter inputs and StatusBus inputs.
    -The number of analogue inputs available decreases with the number of used fast counter inputs.
    -The number of non-failsafe outputs available decreases with the number of StatusBus inputs used.
    Check the Pluto hardware manual for more information.

c) 0-27 V analog inputs

d) 0-10 V/4-20 mA (high resolution) analog inputs

e) Expansion model with failsafe inputs and no failsafe outputs.

f) Expansion model with 2 failsafe outputs with 3 contacts each. Also possible to use as stand-alone unit.

g) Model with current monitoring

h) Pluto D20 (Harsh Env) and Pluto D45 (Harsh Env) have coated circuit boards and can be used in severe environments where cold and condensation can cause problems, like on trains and other vehicles and in the wind energy segment.

    - They comply with railway standard EN 50155
    - They can be used on all trains up to the highest hazard level (HL3) according to the fire and smoke protection standard EN 45545.

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Ordering information
Pluto accessories

IDFIX identifiers

IDFIX is an identification circuit that is connected to Pluto. It must be used:
- when several Pluto are connected to the Pluto Safety bus (IDFIX-R or IDFIX-RW)
- with Pluto AS-i and Pluto B42 AS-i (IDFIX-DATA)
- to get the possibility to replace a stand-alone Pluto with a new one without the need of a PC (IDFIX-PROG stores the Pluto program)
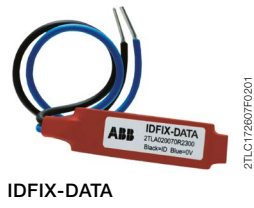
IDFIX-R

IDFIX-RW

IDFIX-DATA

IDFIX-PROG 2k5

IDFIX-PROG 10k

FIXA

R120 Resistor

Description	Type	Order code
Pre-programmed unique identification number.	IDFIX-R	2TLA020070R2000
Programmable identification number, i.e. the user can choose the identification number.	IDFIX-RW	2TLA020070R2100
Programmable identification number and storage of AS-i safety codes. Must be used with Pluto AS-i and Pluto B42-AS-i.	IDFIX DATA	2TLA020070R2300
Programmable identification number and storage of the Pluto program, 2.5 Kbyte. Especially useful for stand-alone Pluto.	IDFIX-PROG 2k5	2TLA020070R2400
Programmable identification number and storage of the Pluto program, 10 Kbyte. Especially useful for stand-alone Pluto.	IDFIX-PROG 10k	2TLA020070R2600

Pluto cables and connection accessories

Description	Type	Order code
Pluto programming and on-line monitoring cable. For a PC serial port, 9-pole D-sub connector.	Pluto cable serial	2TLA020070R5600
Pluto programming and on-line monitoring cable. For a PC USB port.	Pluto cable USB	2TLA020070R5800
Cable for connecting a HMI-panel to the Pluto programming port. Connector on HMI-side: 15-pole D-sub. On Pluto side: 90 degrees angled Modbus contact.	Pluto cable HMI	2TLA020070R5700
Cable for connecting HMI-panel ABB CP400 to Pluto programming port. Connector on HMI-side: 9-pole D-sub.	Pluto cable CP400	2TLA020070R6700
Cable for connecting HMI-panel ABB CP600 to Pluto programming port. Connector on HMI-side: 9-pole D-sub.	Pluto cable CP600	2TLA020070R6900
Bus cable for Pluto safety bus, 2 x 0.75 mm^2. Ordered by meter, cut to size. Minimum order length 10 m.	PCABLE-000	2TLA020070R6800
Bus cable for Pluto safety bus, 2 x 0.75 mm^2. 50-meter ring.	PCABLE-050	2TLA020070R6805
Bus cable for Pluto safety bus, 2 x 0.75 mm^2. 100-meter ring.	PCABLE-100	2TLA020070R6810
Bus cable for Pluto safety bus, 2 x 0.75 mm^2. 500-meter drum.	PCABLE-500	2TLA020070R6850
Bus cable for Pluto safety bus, 2 x 0.75 mm^2. Halogen free. Ordered by meter, cut to size. Minimum order length 10 m.	PCABLE-000-HF	2TLA020070R8600
Bus cable for Pluto safety bus, 2 x 0.75 mm^2. Halogen free. 50-meter ring.	PCABLE-050-HF	2TLA020070R8605
Bus cable for Pluto safety bus, 2 x 0.75 mm^2. Halogen free. 100-meter ring.	PCABLE-100-HF	2TLA020070R8610
Bus cable for Pluto safety bus, 2 x 0.75 mm2. Halogen free. 500-meter drum.	PCABLE-500-HF	2TLA020070R8650
Terminal block with capacitor, 12nF, for connection between 0 V of Pluto supply and earth in order to reduce problems with conducted disturbances.	Pluto capacitor	2TLA020070R3200

Other accessories

Description	Type	Order code
Set of function blocks for mechanical presses.	Pluto press block	2TLA020070R4100
Smile reset button for light button function with M12-5 connector.	Smile 11 RB	2TLA030053R0100
Handheld terminal AS-i/StatusBus. Used for e.g. addressing and test. Connection to PC via USB-micro cable	FIXA	2TLA020072R2000
Terminating resistor for Pluto safety bus. Necessary for each stand-alone Pluto and on the Pluto units at each end of the Pluto safety bus. Should be removed from the other Pluto units.	R120 Resistor	2TLA020070R2200

Pluto spare parts (included when ordering a Pluto)

Description	Type	Order code
Contact block for safety relays and Pluto. 7 poles. Grey.	Contact block 7 grey	2TLA081200R1500

Ordering information
DYNlink solution

Tina adaptation units to DYNlink

The Tina devices adapt the DYNlink signals from Pluto to safety components with mechanical contacts, such as E-stops, switches and light beams/curtains with dual outputs. Tina is available in several versions depending on the type of safety component that is connected to the DYNlink solution. Also available is connector blocks and a blind plug.

Tina 2A

2TLC172453F0201

Tina 2B

2TLC172455F0201

Tina 3A

2TLC172459F0201

Tina 7A

2TLC172469F0201

Tina 10A

2TLC172473F0201

Type of safety device	Type of connection to the DYNlink loop	Description	Type	Order code
Devices with positively driven force-guided contacts like E-stop buttons and key switches	Via the device connection	Mounted directly on the device enclosure to a M20 cable entry.	Tina 2A	2TLA020054R0100
		Placed inside the safety device enclosure	Tina 2B	2TLA020054R1100
	M12-5 male connector	Mounted directly on the device enclosure to a M20 cable entry.	Tina 3A	2TLA020054R0200
	M12-5 male connector with extra conductor for the supply of the safety device	Two circuits and with supply voltage for the safety sensor. Connects to a M20 cable entry.	Tina 3Aps	2TLA020054R1400
	Removable terminal blocks	Mounted on a DIN rail in the electrical cabinet. Note that the connected safety device(s) must be mounted on the same cabinet.	Tina 7A	2TLA020054R0700
Devices with OSSD outputs like Orion light guards	M12-5 male connector	Adaptation of OSSD to DYNlink. Two M12 connectors.	Tina 10A	2TLA020054R1200
		Adaptation of OSSD to DYNlink with possibility to connect a local reset button. Three M12 connectors.	Tina 10B	2TLA020054R1300
		Adaptation of OSSD to DYNlink with possibility to power the transmitter. Three M12 connectors.	Tina 10C	2TLA020054R1600
Safety mats, edges and bumpers with short-circuit detection	M12-5 male connector	Short-circuit detection and adaptation to DYNlink.	Tina 6A	2TLA020054R0600

Connection blocks for serial connection of DYNlink devices (or devices with Tina adapter)

Description	Type	Order code
Connection block for the serial connection of up to 4 DYNlink devices with M12-5 connectors	Tina 4A	2TLA020054R0300
Connection block for the serial connection of up to 8 DYNlink devices with M12-5 connectors	Tina 8A	2TLA020054R0500
Connection block for the serial connection of two DYNlink devices with M12-5 connectors	Tina 11A	2TLA020054R1700
Connection block for the serial connection of two DYNlink devices with M12-8 connectors, e.g. Dalton and Magne.	Tina 12A	2TLA020054R1800

Tina 10B

2TLC172475F0201

Blind plug to complete the serial connection on a connection block

All M12 connectors on Tina 4A or Tina 8A must be connected to a safety device or a Tina 1A. For example, if only 6 devices are connected to a Tina 8A, two Tina 1A are necessary.

Description	Type	Order code
Tina 1A is a blind plug connected to the unused M12 connectors of the connection blocks Tina 4A and Tina 8A.	Tina 1A	2TLA020054R0000

Tina 10C

2TLC172477F0201

Tina 6A

2TLC172467F0201

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Ordering information
Accessories

GATE-C2

GATE-EC

RSA 597

RSA 698

Pluto gateways

With the use of a gateway, Pluto can communicate with other control systems and form a part of a larger network. The gateway models GATE-D2 and C2 can also be used as an extension of the safety bus cable to extend the Pluto network.

Fieldbus	Ethernet	Type	Order code
CANopen		GATE-C2	2TLA020071R8100
DeviceNet		GATE-D2	2TLA020071R8200
PROFIBUS-DP		GATE-P2	2TLA020071R8000
EtherCAT	x	GATE-EC	2TLA020071R9100
Ethernet/IP	x	GATE-EIP	2TLA020071R9000
Modbus TCP	x	GATE-MT	2TLA020071R9400
PROFINET	x	GATE-PN	2TLA020071R9300
SERCOS III	x	GATE-S3	2TLA020071R9200

For more information, see the gateway manuals:
Pluto gateways 2TLC172009M0210
Pluto Ethernet gateways 2TLC172285M0203

Pluto safe encoders

The safe encoders can be used together with Pluto to safely determine the position of machine movements.

Function	Shaft	Shaft diameter (mm)	Type of connection	Type	Order code
Single-turn	Solid	10	Connector male 12 poles	RSA 597 connector	2TLA020070R3600
		6	1.5 m cable	RSA 597 1.5 m cable	2TLA020070R3300
	Hollow	12	2 m cable	RHA 597 2 m cable	2TLA020070R3400
			10 m cable	RHA 597 10 m cable	2TLA020070R5900
Multi-turn	Solid	6	M12 connector	RSA 698 6 mm solid	2TLA020071R7800
		10	M12 connector	RSA 698 10 mm solid	2TLA020070R3700
	Holow	12	M12 connector	RHA 698 hollow	2TLA020071R7900

For more information, see the manual:
Pluto safe encoders 2TLC172006M0206

Pluto safe encoders accessories

Description	Type	Order code
Female 12 pole connector to be used with absolute encoder "RSA 597 connector". Connector to be mounted on the cable.	Connector for absolute encoder	2TLA020070R3900
M12 plug with Pluto safety bus termination resistor. To be used when the encoder is at one end of the Pluto safety bus.	M12-CANend	2TLA020061R0300

CP604

Operator panels

An operator panel (also called HMI) can be connected to the Pluto programming port (on the Pluto front) with a special cable and communicate with Pluto using MODBUS ASCII. We recommend the ABB CP600 series that offer the appropriate communication driver. An operator panel can also communicate with Pluto via a GATE-MT gateway.

Description	Type	Order code
Operator panel, 4.3" touch screen, 480 x 272 pixels	CP604	1SAP504100R0001

For more sizes and version, see: http://new.abb.com/plc/control-panels

Ordering information
AS-i

AS-i cable yellow

2TLC172742F0201

Cables and connection accessories for AS-i

Description	Type	Order code
Cable for AS-i, power and data, +30 VDC, yellow, EPDM	AS-i cable yellow	2TLA020074R9000
Cable for AS-i, additional power, +24 VDC, black, EPDM	AS-i cable black	2TLA020074R9100
M12-5 female connector with vampire connector for AS-i flat cable.	AS-i T-connector M12	2TLA020073R0000
As-i flat cable splitter used to make T-connections and to extend cables.	AS-i splitter box	2TLA020073R0300

FIXA

2TLC172744F0201

AS-i accessories

Description	Type	Order code
Handheld terminal AS-i/StatusBus, used for e.g. addressing and test. Connection to PC via USB-micro cable. Connection to PC via USB-micro cable.	FIXA	2TLA020072R2000
Cable for addressing M12-5 devices like Adam AS-i with Fixa. 1 m cable 5 x 0.34 mm^2 + screen with straight M12 female + male connectors. Screen connected to pin3 (0 V) on male connector.	M12-C112	2TLA020056R2000
Cable for addressing Urax adapters with Fixa. M12-5 male connector on one side and jack socket on the other side.	AS-i addressing cable	2TLA020073R0900

URAX-A1

Urax adaptation devices for AS-i

Urax are adaptation devices for the AS-i bus that enables the connection of safety sensors and non-safe products to AS-i safety.

Type of safety device to connect	Non-failsafe outputs [1]	Local reset [2]	Type	Order code
DYNlink devices, e.g. Eden. Up to three devices in series	1	No	URAX-A1	2TLA020072R0000
		Yes	URAX-A1R	2TLA020072R0100
DYNlink devices with need for extra power, e.g. Magne, Knox and Dalton. Up to 10 devices in series. Black AS-i cable needed.	3	Yes	URAX-B1R	2TLA020072R0200
Devices with two potential free contacts, NO + NO or NO + NC, e.g. Smile and MKey.	-	No	URAX-C1	2TLA020072R0300
		Yes	URAX-C1R	2TLA020072R0400
Devices with OSSD outputs, e.g. Orion light guards. Black AS-i cable needed.	3	Yes	URAX-D1R	2TLA020072R0500
Two-hand devices according to EN 574 type IIIC, e.g. two Safeball.	-	No	URAX-E1	2TLA020072R0600

1) Non-failsafe outputs can be used for e.g. indicators and locking signal.
2) Possibility to connect an illuminated push-button to Urax, to reset the safety devices connected to Urax. All models with local reset possibility can still be used with manual or automatic reset.

For more information, see the user manual:
Urax 2TLC172008M0201

JSAUR1

2TLC172765F0201

Accessories to Urax adapters

Description	Type	Order code
Bracket for mounting Urax on ABB Jokab Safety fence system. Includes fasteners.	JSM D25	2TLA020070R3900
URAX bottom plate	URAX Bottom	2TLA020072R9900
M12 plug needed when Urax with local reset possibility (URAX-x1R) is used in automatic reset.	JSAUR1	2TLA020073R0100

ABB I Pluto 9

Technical data
Pluto

Technical data

Approvals	
	Railway: TÜV Rheinland InterTraffic

Conformity	
	CE
	2006/42/EC - Machinery
	2014/30/EU - EMC
	2011/65/EU - RoHS
	EN ISO 13849-1:2008+AC:2009, EN 62061:2005, IEC 61511-1:2003+Corr.1:2004, EN 50156-1:2004, IEC 61508:2010, EN 60204-1:2006+A1:2009, EN 50178:1997, EN 61496-1:2004+A1:2008+AC:2010, EN 574:1996+A1:2008

Functional safety data

		PFH_D Failsafe relay outputs	PFH_D Failsafe
EN 61508:2010	SIL3	2.00×10^{-9}	1.5×10^{-9}
EN 62061:2005+A1:2013	SILCL3	2.00×10^{-9}	1.5×10^{-9}
EN ISO 13849-1:2008	PL e/Cat.4	2.00×10^{-9}	1.5×10^{-9}

Electrical data

Electrical insulation	Category II in accordance with IEC 61010-1		
Operating voltage	+24 VDC ± 15%		
Failsafe outputs Q	Transistor, -24 VDC, 800 mA		
Q2, Q3 Q0, Q1, (Q4, Q5)	Relay outputs AC-12: 250 V / 1.5 A VAC-15: 250 V /1.5 A VDC-12: 50 V /1.5 A DC-13: 24 V / 1.5 A	Pluto O2 Relay outputs AC-12: 250 V / 5 A AC-15: 250 V / 3 A DC-12: 60 V / 5 A DC-13: 24 V / 3 A	Pluto O2 Relay outputs (33-34) AC-12: 24 V / 1.5 A AC-15: 24 V / 1.5 A DC-12: 24 V / 1.5 A DC-13: 24 V / 1.5 A

Installation	35 mm DIN rail
Ambient temperature	−10°C to +50°C

Pluto safety bus

Max. number of Pluto units	32
Cable length	Up to 600 m

Pluto AS-i bus

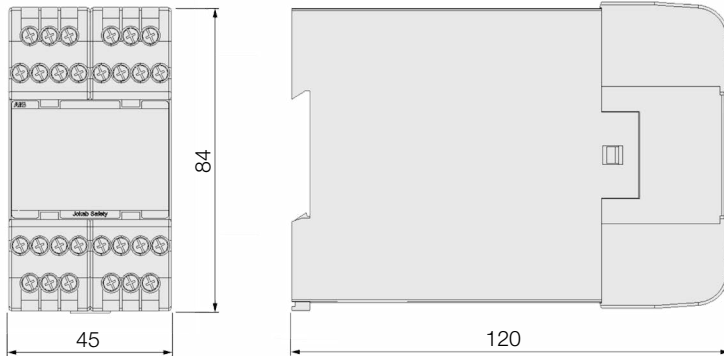| Number of slave units	31 safe slaves, 62 non-safe slaves
Bus cable length	Up to 500 m

More information

For more information, e.g. the complete technical information, see product manual:
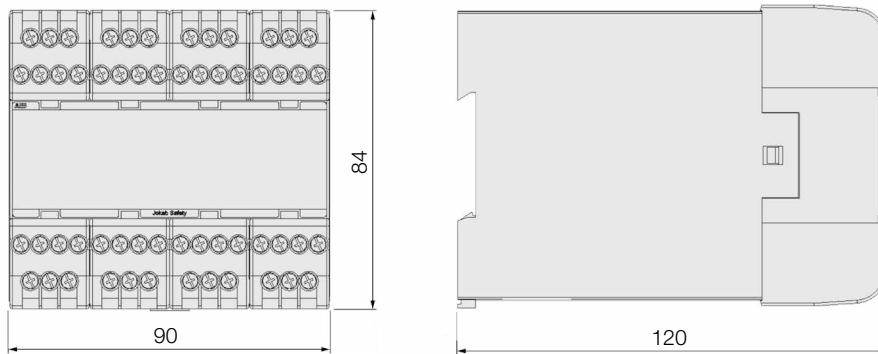Pluto hardware manual 2TLC172009M0210

Dimension drawings
Pluto

Single size

84

45

120

Double size

84

90

120

All dimensions in mm

ABB I Pluto 11

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