

PRODUCT BROCHURE

Safety control devices

Safeball™ two-hand control device JSHD4 modular enabling device



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JSHD4 modular enabling device



Applications

- Robotic cells and automated equipment bypassing
- Machine adjustments
- Robotic teach processes
- Maintenance processes

Features

- Modular design
- Configurable auxiliary buttons
- LED Indication
- Various connection options



Highest level of safety

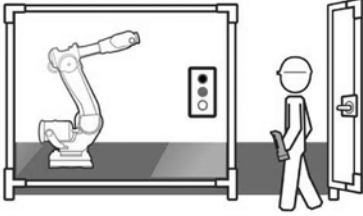
All JSHD4 models comply with PL e/Cat4.



Anti-tamper function

The optional "anti-tamper" function provides an additional signal to indicate that some models of the JSHD4 are being held by a human hand. This helps to prevent the device from fraudulently being held in the run position.

JSHD4 three-position modular enabling device



Trouble shooting

- Allows limited movement of a machine when the operator is in the danger area to locate problem sources

Test running

- Allows testing and monitoring of new operations

Programming

- Three-position device attached to teach pendant for safe programming while in the danger area



Position 1 (Red LED)
STOP function



Enabling button
not pressed or released

Position 2 (Green LED)
START function



Enabling button
pressed to the middle position

Position 3 (Red LED)
STOP function



Enabling button pressed down
fully past the middle position

JSHD4 three-position modular enabling device

1. Choose between five different top units



JSHD4-1
2TLA020006R2100

Anti-tamper board is not available for the JSHD4-1



JSHD4-2
2TLA020006R2200

LEDs

- Front button
- Top button



JSHD4-3
2TLA020006R2300

LEDs



JSHD4-4
2TLA020006R2400

LEDs

- Front button



JSHD4-5
2TLA020006R2500

LEDs

- Top button

2. Choose a bottom part suitable for your assembly



AA, AH, AJ



AB, AK



AC, AD



AF, AG



AE



AL

3. Choose hand recognition for making your three-position device cheat protected (option)



Anti-tamper PCB- 2TLA020005R0900

4. Optional

JSM50H bottom plate for non-contact Eden sensor (Eva) 2TLA020205R6400

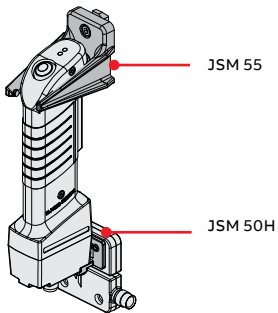


Part number	Description	Bottom assembly
2TLA020005R1000	AA	with cable gland
2TLA020005R1700	AH	with cable gland and PCB with 10 screw connections
2TLA020005R1800	AJ	with cable gland and PCB with 16 screw connections
2TLA020005R1200	AC	with M12 connection (5 poles)
2TLA020005R1300	AD	with M12 connection (8 poles)
2TLA020005R1400	AE	with M12 connection (8 poles) and emergency stop
2TLA020005R1500	AF	with M12 connection (4 poles) and 2 AS-i nodes (for front and top button)
2TLA020005R1600	AG	with M12 connection (4 poles) and 1 AS-i node (without front and top button)
2TLA020005R1100	AB	with Cannon connection
2TLA020005R1900	AK	compatible with old JSHD4 European models
2TLA020005R2000	AL	with cable gland and PCB with 10 screw connections; designed for use with Eva safety sensor to detect removal from JSM 54A holster

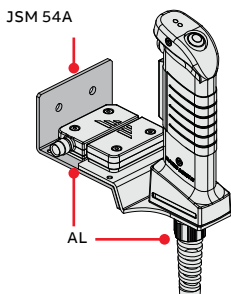
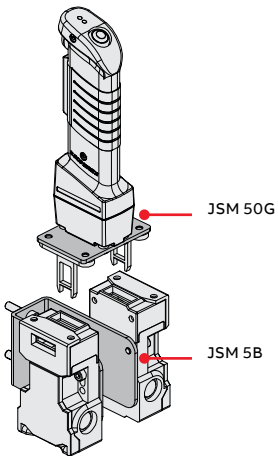
JSHD4 three-position modular enabling device



JSHD4 protection coat



JSM 55 wall bracket and JSM 50H bracket for Eden



JSM 54A wall bracket for Adam (with AL bottom part that has a holder for Eva)

Accessories

Description	Type	Order code
Connectors		
M12-C01 M12-5 pole female, straight	M12-C01	2TLA020055R1000
M12-C03 M12-8 pole female, straight	M12-C03	2TLA020055R1600
JSHK0 12-pole female cannon connector for JSHD4	JSHK0	2TLA020003R0300
Cable with 5 conductors		
C5 Cable 5 x 0.34 cut to length (meters)	C5	2TLA020057R0000
M12-C101 10 m cable and M12-5 female connector	M12-C101	2TLA020056R1000
M12-C201 20 m cable and M12-5 female connector	M12-C201	2TLA020056R1400
Cable with 8 conductors		
C8 Cable 8 x 0.34 cut to length (meters)	C8	2TLA020057R1000
M12-C103 10 m cable and M12-8 female connector	M12-C103	2TLA020056R4000
M12-C203 20 m cable and M12-8 female connector	M12-C203	2TLA020056R4100
Cable with 12 conductors		
HKC12 Cable 12 x 0.25 cut to length (meters)	HKC12	2TLA020003R5500
HK5 Cable 5 m and Cannon female connector	HK5	2TLA020003R4700
HK10 Cable 10 m and Cannon female connector	HK10	2TLA020003R4800
HK20 Cable 20 m and Cannon female connector	HK20	2TLA020003R4900
HK16S4 Spiral cable 1.6 m and Cannon female connector	HK16S4	2TLA020003R5000
HK20S4 Spiral cable 2.0 m and Cannon female connector	HK20S4	2TLA020003R5100
HK32S4 Spiral cable 3.2 m and Cannon female connector	HK32S4	2TLA020003R5200
HK40S4 Spiral cable 4.0 m and Cannon female connector	HK40S4	2TLA020003R3500
HK60S4 Spiral cable 6.0 m and Cannon female connector	HK60S4	2TLA020003R3600
HK80S4 Spiral cable 8.0 m and Cannon female connector	HK80S4	2TLA020003R5300
Brackets and bottom plates		
JSM 55 Wall bracket for three position device	JSM 55	2TLA040005R0500
JSM 5B Wall bracket for 2 pcs MKey5 interlock switches	JSM 5B	2TLA040005R0700
JSM 54A Wall bracket for Adam (used with AL bottom part that has a holder for Eva)	JSM 54A	2TLA020205R2800
JSM 50G Bracket for key switches	JSM 50G	2TLA020205R6300
JSM 50H Bracket for Eden sensor	JSM 50H	2TLA020205R6400
Others		
JSHD4 protection coat	JSHD4 Coat	2TLA020200R4600

Safeball™ two-hand control device



Applications

- Presses
- Punches
- Fixtures
- Shearing machines

Features

- Ergonomic
- Low activation force
- Flexible mounting
- Several grip possibilities
- Highest safety level
- Two-channel switching in each hand



Available in pre-configured stations or modular components

Safeball™ two-hand control device



Safeball™ consists of a spherical ball containing two embedded pushbutton switches, one on each side of the ball. By using this pushbutton configuration, the risk of unintentional activation is minimized and the device is simple and ergonomic to use. Safeball™ can be utilized for either one-hand (one Safeball™) or two-hand (two Safeball™ units) applications.

In both applications in order to meet the required level of safety, the Safeball™ switches are monitored by specified/certified ABB Jokab Safety relays. When the two-hand control device is used, an operation will not be triggered unless all four pushbuttons on the two Safeball™ units are activated within 0.5 seconds of the first button pushed.

Upon the release of one or more pushbuttons, a stop signal is given to the machine. The Safeball™ design allows comfort of use for all hand sizes and operation from numerous gripping positions. Mounting the Safeball™ is also very flexible, allowing the device to be mounted in the most ergonomic position for the operator. The Safeball™ cover and actuator are made of environmentally friendly polypropylene.

Safeball™ should be connected to an ABB Jokab Sentry two-hand anti-tie down safety relay or the Pluto safety PLC.

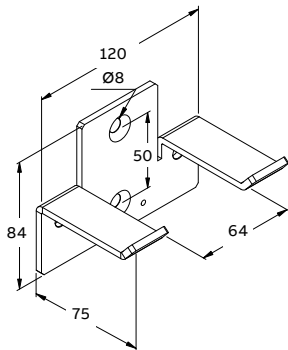
Safeball™ two-hand control device



- JSTD1-A** - Safeball™ 1 NO + 1 NC with 2 m cable
- JSTD1-B** - Safeball™ 1 NO + 1 NC with 0.2 m cable
- JSTD1-C** - Safeball™ 1 NO + 1 NC with 10 m cable
- JSTD1-E** - Safeball™ 2 NO with 0.2 m cable

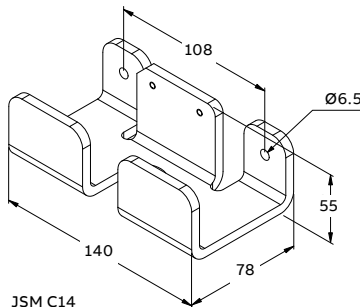


- JSM C5**
- Article number - 2TLA020007R0900
- Angled ball joint for installation of a Safeball™ on a table or a steel housing



JSM C7
Stainless steel
for JSTD25 F/G/H

- JSM C7**
- Article number - 2TLA020007R1200
- Suspension shelf for JSTD25F/H/G/K




JSM C14
Polycarbonate
for JSTD25P-1

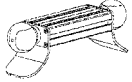
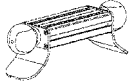
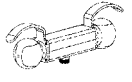

- JSM C14**
- Article number - 2TLA020007R8000
- Suspension shelf for JSTD25P-1

- Safeball™ protection coat
- Article number - 2TLA020007R1900

Safeball™ two-hand control device



Product images	Designation	Ordering information	Description
	JSTD1-A Safeball™ 2 m cable	2TLA020007R3000	Safeball™ device with 1 NO and 1 NC independent switches for dual channel switching as a one-hand device, maximum load of 30 V DC - 2 A resistive. Ergonomic design with several grip possibilities, low activation force (approx. 2N) and flexible mounting options. Provides highest level of safety for use in two-hand control applications when using two Safeball™ units in conjunction with a JSBR4 safety relay or Pluto safety PLC. IP67 protection degree, plastic body, 2 meter molded cable.
	JSTD1-B Safeball™ 200 mm cable	2TLA020007R3100	Safeball™ device with 1 NO and 1 NC independent switches for dual channel switching as a one-hand device, maximum load of 30 V DC - 2 A resistive. Ergonomic design with several grip possibilities, low activation force (approx. 2N) and flexible mounting options. Provides highest level of safety for use in two-hand control applications when using two Safeball™ units in conjunction with a JSBR4 safety relay or Pluto safety PLC. IP67 protection degree, plastic body, 0.25 m wires x 4 for direct connection into an enclosure.
	JSTD1-C Safeball™ 10 m cable	2TLA020007R3200	Safeball™ device with 1 NO and 1 NC independent switches for dual channel switching as a one-hand device, maximum load of 30 V DC - 2 A resistive. Ergonomic design with several grip possibilities, low activation force (approx. 2N) and flexible mounting options. Provides highest level of safety for use in two-hand control applications when using two Safeball™ units in conjunction with a JSBR4 safety relay or Pluto safety PLC. IP67 protection degree, plastic body, 10 meter molded cable.
	JSTD1-E Safeball™ 1NO + 1NO 200 mm cable	2TLA020007R3400	Safeball™ device with 2 NO independent switches for dual channel switching as a one-hand device, maximum load of 30 V DC - 2 A resistive. Ergonomic design with several grip possibilities, low activation force (approx. 2N) and flexible mounting options. Provides highest level of safety for use in two-hand control applications when using two Safeball™ units in conjunction with a JSBR4 safety relay or Pluto safety PLC. IP67 protection degree, plastic body, 0.25 m wires x 4 for direct connection into an enclosure.

Safeball™ – Two-hand devices


Product images	Designation	Ordering information	Description
	JSTD25F Two-hand station, 5 pole	2TLA020007R6000	2-hand device with JSTD1B Safeball™ units. Safeball™ units each have 1 NO and 1 NC independent switches, maximum load of 30 V DC - 2 A resistive. Ergonomic design with several grip possibilities and low activation force (approx. 2N). Buttons are side mounted 44x88 extruded aluminum profile designed for two-hand applications. Pre-wired to an M12 4-pin connector with protective flanges on the Safeball™ units. Highest level of safety can be achieved when used in conjunction with an SSR20(M) safety relay or Pluto safety PLC.
	JSTD25H Two-hand station, 8-pole M12 male	2TLA020007R6300	2-hand device with JSTD1B Safeball™ units. Safeball™ units each have 1 NO and 1 NC independent switches, maximum load of 30 V DC - 2 A resistive. Ergonomic design with several grip possibilities and low activation force (approx. 2N). Buttons are side mounted 44x88 extruded aluminum profile designed for two-hand applications. Pre-wired to an M12 8-pole connector with protective flanges on the Safeball™ units. Highest level of safety can be achieved when used in conjunction with an SSR20(M) safety relay or Pluto safety PLC.
	JSTD25P-1 Two-hand station	2TLA020007R6500	2-hand device with JSTD1B Safeball™ units. Safeball™ units each have 1 NO and 1 NC independent switches, maximum load of 30 V DC - 2 A resistive. Ergonomic design with several grip possibilities and low activation force (approx. 2N). Buttons are side mounted on black aluminum profile designed for two-hand applications. Pre-wired to a 9-pin Zylind connector with dual protective flanges on the Safeball™ units. Integrated Eva inside housing for Eden sensor holster JSMC14. Highest level of safety can be achieved when used in conjunction with an SSR20(M) safety relay or Pluto safety PLC.
	JSTD25K Two-hand station, 8-pole M12 male and E-stop button	2TLA020007R6900	2-hand device with JSTD1B Safeball™ units. Safeball™ units each have 1 NO and 1 NC independent switches, maximum load of 30 V DC - 2 A resistive. Ergonomic design with several grip possibilities and low activation force (approx. 2N). Buttons are side mounted 44x88 extruded aluminum profile designed for two-hand applications. Pre-wired to an M12 8-pole connector with protective flanges on the Safeball™ units. Pre-mounted Smile 10 EA emergency stop button. Highest level of safety can be achieved when used in conjunction with an SSR20(M) safety relay or Pluto safety PLC.

Safeball™ two-hand control device


Safeball™ – Two-hand devices

Product images	Designation	Ordering information	Description
	JSTKO-A	2TLA020007R6600	Connector for JSTD25P-1
	JSTK40S	2TLA020007R6700	4 m long spiral cable for JSTD25P-1
	JSTK80S	2TLA020007R6800	8 m long spiral cable for JSTD25P-1
	Universal shelf for JSTD25P-1	2TLA020007R8000	Universal shelf for JSTD25P-1
	JSM C5	2TLA020007R0900	Flexible mount for mounting the Safeball™ enclosures. Extrusion or table tops. Includes all hardware.
	Safeball™ protection coat	2TLA020007R1900	Extra protection coat for Safeball™
	Protective plates	2TLA020007R6400	Protective plates for Safeball™ including fasteners
	JSM-C7	2TLA020007R1200	Suspension shelf for JSTD25F/H/K

Sentry safety relays – Two-hand control






Product images	Type	Part number	Voltage	Safety outputs
	SSR20	2TLA010051R0000	24 V DC	3 NO + 1 NC
	SSR20M	2TLA010051R0100	85–265 V AC 120–275 V DC	3 NO + 1 NC
	USR10	2TLA010070R0000	24 V DC	3 NO + 1 NC
	USR22	2TLA010070R0400	24 V DC	4 NO

Pluto programmable safety controller



Product images	Title	Part number	Description
	Stand alone	2TLA020070R4700	S20, Safety PLC with 8 failsafe inputs plus 8 non-failsafe outputs/failsafe inputs plus 2 individual failsafe relay outputs plus 2 individually failsafe transistor outputs.
		2TLA020070R1800	S46, Safety PLC with 24 failsafe inputs plus 16 non-failsafe outputs or failsafe inputs plus 4 individual failsafe relay outputs plus 2 individually failsafe transistor outputs.
	Network versions	2TLA020070R4600	B20, Safety PLC with 8 failsafe inputs plus 8 non-failsafe outputs/failsafe inputs plus 2 individual failsafe relay outputs plus 2 individually failsafe transistor outputs. For use with Pluto safe bus and/or a Pluto safety databus.
		2TLA020070R4800	S22, Safety PLC with 14 failsafe inputs plus 8 non-failsafe outputs/failsafe inputs. For use with Pluto safe bus and/or a Pluto safety databus.
		2TLA020070R1700	B46, Safety PLC with 24 failsafe inputs plus 16 non-failsafe outputs/failsafe inputs plus 4 individual failsafe relay outputs plus 2 individually failsafe transistor outputs.
	Analog versions	2TLA020070R6400	D20, Safety PLC with 8 failsafe inputs plus 8 non-failsafe outputs/failsafe inputs plus 2 individual failsafe relay outputs plus 2 individually failsafe transistor outputs. For use with Pluto safe bus and/or a Pluto safety databus. 4 0–10 V/2–20 mA analog inputs.
		2TLA020070R6600	D45, Safety PLC with 24 failsafe inputs plus 15 non-failsafe outputs/failsafe inputs plus 4 individual failsafe relay outputs plus 2 individually failsafe transistor outputs. For use with Pluto safe bus and/or a Pluto safety databus. 8 0–10 V/2–20 mA analog inputs, 4 high speed counter inputs.

Safeball™ cables and connectors

Cable with connectors

	Connector	Female/male	Length	Special feature	Type	Order code			
 2TLC172951F0201	M12-5	Female	3 m		M12-C31	2TLA020056R0500			
			6 m		M12-C61	2TLA020056R0000			
			10 m	Harsh environment, halogen free	M12-C61HE	2TLA020056R8000			
			10 m	Harsh environment, halogen free	M12-C101	2TLA020056R1000			
			20 m		M12-C101HE	2TLA020056R8100			
M12-C61  2TLC010009F0201	Female + male		0.3 m		M12-C0312	2TLA020056R5800			
			0.06 m		M12-C00612	2TLA020056R6300			
			1 m		M12-C112	2TLA020056R2000			
			3 m		M12-C312	2TLA020056R2100			
			6 m		M12-C612	2TLA020056R2200			
			10 m		M12-C1012	2TLA020056R2300			
			16 m	Angled female connector	M12-C1012V2	2TLA020056R6700			
			16 m		M12-C1612	2TLA020056R5400			
			20 m		M12-C2012	2TLA020056R2400			
			M12-C61HE  2TLC172951F0201	Male		6 m		M12-C62	2TLA020056R0200
10 m		M12-C102				2TLA020056R1200			
M12-C334  2TLC172951F0201	M12-8	Female				6 m		M12-C63	2TLA020056R3000
						10 m		M12-C103	2TLA020056R4000
						20 m		M12-C203	2TLA020056R4100
M12-C334  2TLC172951F0201	Female + male		0.06 m		M12-C00634	2TLA020056R6400			
			1 m		M12-C134	2TLA020056R5000			
			3 m		M12-C334	2TLA020056R5100			

Separate cables and connectors

	Description	Type	Order code
 2TLC172657F0201	Connectors		
	M12-5 pole female, straight	M12-C01	2TLA020055R1000
	M12-5 pole male, straight	M12-C02	2TLA020055R1100
	M12-8 pole female, straight	M12-C03	2TLA020055R1600
 2TLC010038F0201	M12-8 pole male, straight	M12-C04	2TLA020055R1700
	Cable with 5 conductors		
	10 m cable with 5 x 0.34 shielded conductors	C5 cable 10 m	2TLA020057R0001
	50 m cable with 5 x 0.34 shielded conductors	C5 cable 50 m	2TLA020057R0005
	100 m cable with 5 x 0.34 shielded conductors	C5 cable 100 m	2TLA020057R0010
	200 m cable with 5 x 0.34 shielded conductors	C5 cable 200 m	2TLA020057R0020
	500 m cable with 5 x 0.34 shielded conductors	C5 cable 500 m	2TLA020057R0050
	Cable with 8 conductors		
	50 m cable with 8 x 0.34 shielded conductors	C8 cable 50 m	2TLA020057R1005
	100 m cable with 8 x 0.34 shielded conductors	C8 cable 100 m	2TLA020057R1010
200 m cable with 8 x 0.34 shielded conductors	C8 cable 200 m	2TLA020057R1020	
500 m cable with 8 x 0.34 shielded conductors	C8 cable 500 m	2TLA020057R1050	

C5 cable

Notes

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Notes



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