JSHD4
Three-position enabling device
Read and understand this document

Please read and understand this document before using the products. Please consult your ABB/JOKAB SAFETY representative if you have any questions or comments.

WARRANTY

ABB/JOKAB SAFETY’s exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by ABB/JOKAB SAFETY.

ABB/JOKAB SAFETY MAKES NO WARRANTY OR REPRESENTATION, EXPRESSED OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS, ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OR THEIR INTENDED USE. ABB/JOKAB SAFETY DISCLAIMS ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED.

LIMITATIONS OF LIABILITY

ABB/JOKAB SAFETY SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall responsibility of ABB/JOKAB SAFETY for any act exceed the individual price of the product on which liability asserted.

IN NO EVENT SHALL ABB/JOKAB SAFETY BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS ABB/JOKAB SAFETY’S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

SUITABILITY FOR USE

ABB/JOKAB SAFETY shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer’s application or use of the product. At the customer’s request, ABB/JOKAB SAFETY will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.

Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, and installations subject to separate industry or government regulations.

Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE ABB/JOKAB SAFETY PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

PERFORMANCE DATA

While every effort has been taken to ensure the accuracy of the information contained in this manual ABB/JOKAB SAFETY cannot accept responsibility for errors or omissions and reserves the right to make changes and improvements without notice. Performance data given in this document is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of ABB/JOKAB SAFETY’S test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the ABB/JOKAB SAFETY Warranty and Limitations of Liability.
## Table of Contents

1. **Introduction** ......................................................................................................................................... 4
   - Scope .................................................................................................................................................. 4
   - Audience ........................................................................................................................................... 4
   - Prerequisites ....................................................................................................................................... 4
   - Special notes ...................................................................................................................................... 4

2. **Overview** ........................................................................................................................................ 5
   - General description ............................................................................................................................ 5
   - Safety regulations ............................................................................................................................... 5
   - Function description ........................................................................................................................... 6

3. **Connections** .................................................................................................................................. 7
   - Top parts ........................................................................................................................................... 7
   - Anti-tamper PCB .............................................................................................................................. 8
   - Bottom parts ..................................................................................................................................... 8
   - Connection examples ....................................................................................................................... 11

4. **Installation and maintenance** .................................................................................................... 12
   - Assembly instructions ..................................................................................................................... 12
   - Installation precautions ................................................................................................................... 13
   - Maintenance .................................................................................................................................... 13

5. **Operation** .................................................................................................................................... 14
   - Three-position button ..................................................................................................................... 14
   - Front and top button ....................................................................................................................... 14
   - Anti-tampering device ...................................................................................................................... 14
   - LED indication .................................................................................................................................. 15

6. **Model overview** .......................................................................................................................... 16
   - Separate parts, to be assembled by customer .................................................................................... 16
   - Complete handles, ready to use ....................................................................................................... 16
   - Accessories ....................................................................................................................................... 17

7. **Technical data** ............................................................................................................................... 18
   - Dimensions ......................................................................................................................................... 19

8. **EC Declaration of conformity** .................................................................................................... 20
1 Introduction

Scope

The purpose of these instructions is to describe the three-position enabling device JSHD4 and to provide the necessary information required for assembly, installation and maintenance. The instructions also include information necessary to connect JSHD4 to a safety circuit. Note that JSHD4 can be connected to both safety relays in the RT-series and safety-PLC Pluto.

Specific AS-i data and other instructions for enabling devices with AS-i nodes are left out and can be found in the instructions manual for JSHD4 AS-i.

Audience

This document is intended for authorized installation personnel.

Prerequisites

It is assumed that the reader of this document has knowledge of the following:

- Basic knowledge of ABB/Jokab Safety products.
- Knowledge of safety devices and safety circuits.
- Knowledge of machine safety.

Special notes

Pay attention to the following special notes in the document:

**Warning!** An instruction or procedure which, if not carried out correctly, may result in injury to the technician or other personnel.

**Caution!** Danger of damage to the equipment! An instruction or procedure which, if not carried out correctly, may damage the equipment.

**NB:** Notes are used to provide important or explanatory information.
2 Overview

General description

JSHD4 is a dual channel three-position enabling device, intended for use in hazardous areas where no other protection is possible or practical. The device as a stand-alone unit is not sufficient for this task and must be connected to a suitable control unit (safety relay or safety-PLC) with two channel inputs and short-circuit detection. Also, the machinery or equipment causing the potential danger may need to be set in jog-mode or by other means limited in movement, speed, temperature etc.

Two three-position push buttons operated by one common surface ensures a high level of safety, both when released and when pressed into the third and final position. The safety contacts are closed only in the middle position, but are opened if pressed further and remain open during the return to the top (resting) position.

The anti-tampering device consists of a capacitive sensor and an accelerometer. By combining these sensors the device can be used to determine if an operator is holding the enabling device. This can be used if there is any risk for tampering of the enabling device.

JSHD4 is based on a modular system that allows for a number of different versions of a complete enabling device to be created, using different top parts (handles) and bottom parts (with different cables and connectors, AS-i nodes, emergency stop, etc). There are also a number of accessories available, such as fittings for safety switches/sensors, anti-tampering electronics, cables and resting stations. For more information, see chapter Model overview.

For more details on JSHD4 operation, see chapter Operation.

⚠️ Warning! The anti-tampering device is not a safety function; the safety relies on the three-position button being operated as intended.

Safety regulations

⚠️ Warning!

Carefully read through this entire manual before using the device.

The devices shall be installed by a trained electrician following the Safety regulations, standards and the Machine directive.

Failure to comply with instructions, operation that is not in accordance with the use prescribed in these instructions, improper installation or handling of the device can affect the safety of people and the plant.

For installation and prescribed use of the product, the special notes in the instructions must be carefully observed and the technical standards relevant to the application must be considered.

In case of failure to comply with the instructions or standards, especially when tampering with and/or modifying the product, any liability is excluded.
Function description

Three-position principle

A three-position enabling switch provides signals that:

- when activated, allows a machine or other equipment to be initiated by a separate start control, and
- when de-activated, initiate a stop function and prevent an initiation of machine/equipment operation.

A three-position switch can also be used as a hold-to-run device. Used as such a device, the machine may already be running and by putting the device in position 2 (ON) and removing it from a holder with position sensor, another guarding system (light curtain, door interlock switch etc) is muted and the restricted area can be entered without stopping the machine. Certain limitations in time, speed etc may be needed to ensure an acceptable safety level.

Two three-position switches are used and operated simultaneously, to provide a dual channel safety system.

The three positions are designated as follows:

- Position 1: OFF state of the contact (actuator is not pressed)
- Position 2: ON state of the contact (actuator is pressed to the normal enabling position)
- Position 3: OFF state of the contact (actuator is fully depressed).

When released, the actuator always returns to position 1, regardless of whether it was in position 2 or 3. During this return movement, the contact(s) remain open.

In addition to the three-position safety function, JSHD4 can be equipped other features such as push buttons for selectable functions (start, stop, gripping tool, etc), an emergency stop or an anti-tampering sensor.

Anti-tampering device

Many versions of JSHD4 can be equipped with a sensor that prevents tampering (for instance by keeping the three-position switches in ON-position using a rubber band or similar). The sensor detects a human hand and also the small movements/vibrations that are normal when holding the handle. If both these requirements are fulfilled (detected), a contact is closed. When properly connected, the contact can be used to open the safety circuit, and thus prohibit tampering.
3 Connections

Top parts

Electrical connections – JSHD4-1

S1 = Three-position button #1 (top)
S2 = Three-position button #2 (bottom)

JSHD4-1:
1) S2 – Common
2) S2 – Actuated
3) S1 – Common
4) S1 – Actuated
5) S2 – Not actuated

Electrical connections – JSHD4-2, -3, -4, -5

NB: The 2x8 Molex female on top parts JSHD4-2...5 mates with corresponding connector on bottom parts.

S1 = Three-position button #1 (top)
S2 = Three-position button #2 (bottom)
S3 = Top push button
S4 = Front push button
LED 1 = Red LED
LED 2 = Green LED

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
<th>JSHD4-2</th>
<th>JSHD4-3</th>
<th>JSHD4-4</th>
<th>JSHD4-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>S1 – Common</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>2</td>
<td>S2 – Common</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>3</td>
<td>S1 – Actuated</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>4</td>
<td>S2 – Actuated</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>5</td>
<td>+24 VDC (LED 2)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>6</td>
<td>+24 VDC (LED 1)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>7</td>
<td>S1 – Not actuated</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>8</td>
<td>S2 – Not actuated</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>9</td>
<td>0 VDC (LED 1, LED 2)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>10</td>
<td>S3 – Actuated</td>
<td>-</td>
<td>-</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>11</td>
<td>S4 – Actuated</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>S3, S4 – Common</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>
Anti-tamper PCB

The optional anti-tamper PCB may be connected separately or in series with one of the three-position push buttons (S1 or S2).

⚠️ Warning!

When the anti-tamper PCB is connected in series with a three-position button, one out of the two alternatives below must be implemented to ensure proper functionality of the three-position switch:

1. Simultaneous check of the two channels at actuation of the switches.
2. Supervised reset of the three-position button connected in series with the anti-tamper PCB.

Bottom parts

Electrical connections – AB

Bottom part - AB:
12-pole male Cannon connector

1 ) A) S1 – Common*
2 ) B) S1 – Actuated
3 ) C) S2 – Common
4 ) D) S2 – Actuated
5 ) E) S1 – Not actuated
6 ) F) S3, S4 – Common
7 ) G) S3 – Actuated
8 ) H) S4 – Actuated
9 ) J) +24 VDC (anti-tamper)
10 ) K) 0 VDC (anti-tamper, LED 1, LED 2)
11 ) L) Anti-tamper – Common
12 ) M) Anti-tamper – Operator detected

Male pins in 2x8 Molex male

* NB: COM signal must be +24 VDC for proper LED and anti-tamper PCB function.

NB: 12-pole Cannon connector, wiring suited for any monitor. Anti-tamper PCB is possible.

Electrical connections – AC

Bottom part – AC:
5-pole M12 connector

1 ) Brown: S2 – Common
2 ) White: S1 – Common
3 ) Blue: S2 – Actuated
4 ) Black: S1 – Actuated
5 ) Grey: S1 – Not actuated

NB:
Connections according to factory assembled units.
Suggested use for manual assembly. Cable colours for each pin according to the list.

NB: 5-pole male M12 connector. Suited for top part JSMD4-1 only. Wiring suited for safety relays in the RT-series and Pluto safety-PLC. Anti-tamper PCB is not possible.
Electrical connections – AD

Bottom part – AD:
8-pole male M12-connector

1) S2 – Common
2) S1, S3, S4 – Common*
3) S3 – Actuated
4) S4 – Actuated
5) S1 – Actuated
   Anti-tamper – Common
6) S2 – Actuated
7) 0 VDC (anti-tamper, LED 1, LED 2)
8) Anti-tamper – Operator detected

* NB: COM signal must be +24 VDC for proper LED and anti-tamper PCB function.

NB: 8-pole male M12 connector with wiring suitable for safety relays in the RT-series and Pluto safety-PLC. A jumper must be placed over pins 14-16 on the 2x8 Molex connector if an anti-tamper PCB is not used.

Electrical connections – AE

Bottom part – AE:
8-pole male M12-connector

1) S2 – Common
2) S1 – Common*
3) S2 – Actuated
   0 VDC (LED 1, LED 2)
4) S1 – Actuated
5) E1 (E-stop channel 1)
6) E1 (E-stop channel 1)
7) E2 (E-stop channel 2)
8) E2 (E-stop channel 2)

* NB: COM signal must be +24 VDC for proper LED function.

NB: 8-pole male M12 connector with wiring suitable for safety relays in the RT-series. An emergency stop push button is attached on the bottom part and is connected to pins 13-16 on the 2x8 Molex connector. Anti-tamper PCB or extra push buttons are not possible for this unit.
**Electrical connections – AH**

Bottom part – AH:
10-pole screw terminal

1) S1, S3, S4 – Common*
2) S2 – Common
3) S1 – Actuated
4) S2 – Actuated
5) S1 – Not actuated
6) 0 VDC (anti-tamper, LED 1, LED 2)
7) S3 – Actuated
8) S4 – Actuated
9) Anti-tamper – Common
10) Anti-tamper – Operator detected

* NB: COM signal must be +24 VDC for proper LED and anti-tamper PCB function.

NB: 10-pole screw terminal with wiring suited for safety relays in the RT-series or Pluto safety-PLC. Intended for user assembled cable. Anti-tamper PCB is possible.

**Electrical connections – AJ**

Bottom part – AJ:
16-pole screw terminal

According to top part.

NB: 16-pole screw terminal, wiring suited for any monitor. Intended for user assembled cable. Anti-tamper PCB is possible.
Connection examples

**Connection example – JSHD4-2-AB-A connected to an RT6 safety relay via the 12-wire cable JSHK10-K**

NB: The anti-tamper unit is connected in series with one three-position channel (S1). The supervised reset (input X1) is required to maintain highest level of safety. Top and front push buttons are not shown connected, but can be wired according to user demands.
4 Installation and maintenance

Assembly instructions

If a complete and ready to install unit is at hand, connect the cable to the control unit and connect enabling device to the cable. Otherwise, first assemble top and bottom part and, if needed, the anti-tampering unit (PCB) following the instructions below.

1. If used, insert pins from anti-tamper unit (D) into connector (B) from handle (A).
   13: Red  14: Black  15: Blue  16: Pink
2. Insert PCB as shown, components facing forward. Push it all the way in.
3. If no anti-tamper is used, a jumper may need to be inserted between positions 14 and 16 in connector (B), depending on bottom part.
4. Remove protective liner from gasket (C) on handle.
5. Join connectors (B) and (E).
6. Press bottom part (F) against handle and tighten screws (G).

JSM55 installation

JSM 55 is designed to fit onto ABB/Jokab Safety Quick-Guard aluminium fencing extrusions, but can be used on any flat surface.

If the two pre-mounted nuts are used, place them in the groove in the extrusion, and then loosen each screw three turns before tightening them.
Installation precautions

⚠️ Warning! All the safety functions must be tested before starting up the system.

Maintenance

⚠️ Warning!

The safety functions and the mechanics shall be tested regularly, at least once every year to confirm that all the safety functions are working properly (EN 62061:2005).

In case of breakdown or damage to the product, contact the nearest ABB/Jokab Safety Service Office or reseller. Do not try to repair the product yourself since it may accidentally cause permanent damage to the product, impairing the safety of the device which in turn could lead to serious injury to personnel.
5 Operation

Three-position button

The three possible positions of the main button represent three different states according to the figure below.

State 1 – ”Resting state”:
- Button rested, i.e. not pressed.
- Process not allowed to run.
- Waiting for the button to be pressed into its middle position (“operating state”).

State 2 – ”Operating state”:
- Button actuated, pressed into its middle position.
- Process is allowed to run.
- Process is stopped if the button is released or pressed to its end position (“stopping state”).

State 3 – ”Stopping state”:
- Button is pressed to its third and final position.
- Process is stopped by the control unit.
- Button must be released into ”resting state” before “operating state” can be reached again.

Front and top button

The front and top button functionality are user defined and can be used for start/stop of individual movements etc. They have no intrinsic safety and are only to be used for subordinate functions.

Anti-tampering device

The anti-tampering device has two requirements to determine if JSHD4 is operated correctly:

1 ) A capacitive sensor determines if the device is held by a hand.
2 ) An accelerometer determines if the device is moving.

The internal contact is opened if the device is not held by a hand or if it has not moved for more than 20 seconds.

NB: Not all models are equipped with the additional (front and/or top) button or the anti-tampering device, see Model overview for further details.

⚠️ Warning! The signals from the front and/or top button, as well as the anti-tampering device, are non-failsafe and must never be used for safety functions. They may enhance the safety level but can not be used alone, only in combination with other safety functions.
**LED indication**

*This section does not apply to JSHD4-1.*

**LEDs on the top of the device**

<table>
<thead>
<tr>
<th>Red</th>
<th>Green</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>OFF</td>
<td><strong>A</strong>) No power or LED function not connected OR</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>B</strong>) Power on, safety channel 1 in OK position but anti-tamper not OK</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
<td>Power on, safety channel 1 not in OK position</td>
</tr>
<tr>
<td>ON</td>
<td>ON</td>
<td>Power on, device faulty, muted, or improperly connected.</td>
</tr>
<tr>
<td>OFF</td>
<td>ON</td>
<td>Power on, safety channel 1 in OK position (and anti-tamper OK)</td>
</tr>
</tbody>
</table>
6 Model overview

A complete three-position device consists of one top part and one bottom part. It is also possible to add an optional anti-tampering electronic unit to most combinations of top and bottom parts. These three parts can be ordered as one factory assembled unit or as separate parts to be assembled by a user with the necessary training and knowledge in machine safety. A full list of all parts with descriptions and possible combinations can be found at www.abb.com/lowvoltage.

Separate parts, to be assembled by customer

<table>
<thead>
<tr>
<th>Type</th>
<th>Article number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JSHD4-1</td>
<td>2TLA020006R2100</td>
<td>Top part, no buttons, no LEDs, no possibility for anti-tamper.</td>
</tr>
<tr>
<td>JSHD4-2</td>
<td>2TLA020006R2200</td>
<td>Top part, top and front button, LEDs, possibility for anti-tamper.</td>
</tr>
<tr>
<td>JSHD4-3</td>
<td>2TLA020006R2300</td>
<td>Top part, no buttons, LEDs, possibility for anti-tamper.</td>
</tr>
<tr>
<td>JSHD4-4</td>
<td>2TLA020006R2400</td>
<td>Top part, front button, LEDs, possibility for anti-tamper.</td>
</tr>
<tr>
<td>JSHD4-5</td>
<td>2TLA020006R2500</td>
<td>Top part, top button, LEDs, possibility for anti-tamper.</td>
</tr>
<tr>
<td>Anti-tamper</td>
<td>2TLA020005R0900</td>
<td>Anti-tamper unit</td>
</tr>
<tr>
<td>AA</td>
<td>2TLA020005R1100</td>
<td>Bottom part, 12-pole connector.</td>
</tr>
<tr>
<td>AC</td>
<td>2TLA020005R1200</td>
<td>Bottom part, 5-pole M12 connector.</td>
</tr>
<tr>
<td>AD</td>
<td>2TLA020005R1300</td>
<td>Bottom part, 8-pole M12 connector.</td>
</tr>
<tr>
<td>AE</td>
<td>2TLA020005R1400</td>
<td>Bottom part, 8-pole M12 connector with E-stop.</td>
</tr>
<tr>
<td>AF</td>
<td>2TLA020005R1500</td>
<td>Bottom part, 4-pole M12 connector, 2 AS-i nodes (safe + standard node).</td>
</tr>
<tr>
<td>AG</td>
<td>2TLA020005R1600</td>
<td>Bottom part, 4-pole M12 connector, 1 AS-i node (safe node).</td>
</tr>
<tr>
<td>AH</td>
<td>2TLA020005R1700</td>
<td>Bottom part, 10-pole screw terminal, cable gland.</td>
</tr>
<tr>
<td>AJ</td>
<td>2TLA020005R1800</td>
<td>Bottom part, 16-pole screw terminal, cable gland.</td>
</tr>
</tbody>
</table>

Complete handles, ready to use

<table>
<thead>
<tr>
<th>Type</th>
<th>JSHD4-1</th>
<th>JSHD4-2</th>
<th>JSHD4-3</th>
<th>JSHD4-4</th>
<th>JSHD4-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>2TLA019995R0000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>AB</td>
<td>-</td>
<td>2TLA019995R0200</td>
<td>2TLA019995R1200</td>
<td>2TLA019995R2400</td>
<td>2TLA019995R3400</td>
</tr>
<tr>
<td>AB-A</td>
<td>-</td>
<td>2TLA019995R0300</td>
<td>2TLA019995R1300</td>
<td>2TLA019995R2500</td>
<td>2TLA019995R3500</td>
</tr>
<tr>
<td>AC</td>
<td>2TLA019995R0100</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>AD</td>
<td>-</td>
<td>2TLA019995R0400</td>
<td>2TLA019995R1400</td>
<td>2TLA019995R2600</td>
<td>2TLA019995R3600</td>
</tr>
<tr>
<td>AD-A</td>
<td>-</td>
<td>2TLA019995R0500</td>
<td>2TLA019995R1500</td>
<td>2TLA019995R2700</td>
<td>2TLA019995R3700</td>
</tr>
<tr>
<td>AE</td>
<td>-</td>
<td>-</td>
<td>2TLA019995R1600</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>AF</td>
<td>-</td>
<td>2TLA019995R0600</td>
<td>2TLA019995R1700</td>
<td>2TLA019995R2800</td>
<td>2TLA019995R3800</td>
</tr>
<tr>
<td>AF-A</td>
<td>-</td>
<td>2TLA019995R0700</td>
<td>2TLA019995R1800</td>
<td>2TLA019995R2900</td>
<td>2TLA019995R3900</td>
</tr>
<tr>
<td>AG</td>
<td>-</td>
<td>-</td>
<td>2TLA019995R1900</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>AH</td>
<td>-</td>
<td>2TLA019995R0800</td>
<td>2TLA019995R2000</td>
<td>2TLA019995R3000</td>
<td>2TLA019995R4000</td>
</tr>
<tr>
<td>AH-A</td>
<td>-</td>
<td>2TLA019995R0900</td>
<td>2TLA019995R2100</td>
<td>2TLA019995R3100</td>
<td>2TLA019995R4100</td>
</tr>
<tr>
<td>AJ</td>
<td>-</td>
<td>2TLA019995R1000</td>
<td>2TLA019995R2200</td>
<td>2TLA019995R3200</td>
<td>2TLA019995R4200</td>
</tr>
<tr>
<td>AJ-A</td>
<td>-</td>
<td>2TLA019995R1100</td>
<td>2TLA019995R2300</td>
<td>2TLA019995R3300</td>
<td>2TLA019995R4300</td>
</tr>
</tbody>
</table>

NB: A darker square in the table indicates that anti-tamper is not possible with this combination.
Not all combinations of top and bottom parts are possible or meaningful. The table above shows the part number for possible combinations. The designation is created as JSHD4-X-YY-Z, where X is the number for the top part, YY the two letters for the bottom part and Z means (if present) A: anti-tamper electronics included. A complete order information would look like 2TLA019995R0000 JSHD4-1-AA or 2TLA019995R0700 JSHD4-2-AF-A.

**Accessories**

Accessories and spare parts are ordered separately and assembled by the user. For a full list see www.abb.com/lowvoltage.

<table>
<thead>
<tr>
<th>Type</th>
<th>Article number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-tamper PCB</td>
<td>2TLA020005R0900</td>
<td>Anti-tamper electronics, can be field fitted but will not work with all bottom parts and not with JSHD4-1. See table above.</td>
</tr>
<tr>
<td>JSHK10-K</td>
<td>2TLA020003R1100</td>
<td>10 m cable with 12-pole connector (for bottom part AB).</td>
</tr>
<tr>
<td>JSHK60S4</td>
<td>2TLA020103R3200</td>
<td>6 m spiral cable with 12-pole connector (for bottom part AB).</td>
</tr>
<tr>
<td>JSM 55</td>
<td>2TLA040005R0500</td>
<td>Wall fixing for three-position device</td>
</tr>
<tr>
<td>JSM 50H</td>
<td>2TLA020205R6300</td>
<td>Fitting for Eden sensor (Eva unit).</td>
</tr>
<tr>
<td>JSM 50G</td>
<td>2TLA020205R6400</td>
<td>Plate for JSNY5 actuators.</td>
</tr>
<tr>
<td>M12-C101</td>
<td>2TLA020056R1000</td>
<td>10 m cable with 5-pole M12-connector (for bottom part AC).</td>
</tr>
<tr>
<td>M12-C103</td>
<td>2TLA020056R4000</td>
<td>10 m cable with 8-pole M12-connector (for bottom part AD).</td>
</tr>
<tr>
<td>Gasket</td>
<td>2TLA020200R1200</td>
<td>Gasket between handle and bottom part (spare part).</td>
</tr>
<tr>
<td>Cable gland</td>
<td>2TLA020203R1700</td>
<td>Gland with cable protection, M16 (spare part).</td>
</tr>
</tbody>
</table>

10 m cable with M12-connector

Article numbers:
2TLA020056R1000 (5-pole)
2TLA020056R4000 (8-pole)

JSM55
Wall fixing for three-position device

Article number:
2TLA040005R0500
# Technical data

## Manufacturer

| Address | ABB AB / JOKAB SAFETY  
Varlabergsvägen 11  
SE-434 39 Kungsbacka  
Sweden |

## Power supply

<table>
<thead>
<tr>
<th>Operating voltage</th>
<th>24 VDC ± 10% at +20° C ambient temperature</th>
</tr>
</thead>
</table>
| Maximum current allowed | Three-position channel: 20 mA  
Push button: 500 mA |

## General

<table>
<thead>
<tr>
<th>Protection class</th>
<th>IP65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature</td>
<td>-10…+50° C</td>
</tr>
<tr>
<td>Size</td>
<td>See drawing</td>
</tr>
</tbody>
</table>
| Operating force | Approx. 15N for three-position buttons (ON)  
Approx. 45N for three-position buttons (OFF)  
Approx. 2.5N for top/front push button |
| Weight | Approx 0.2 kg without cable |
| Material | Handle: Polyamide and Noryl  
Rubber: Neoprene |
| Colour | Yellow and black |
| Connector | Cable or contact depending on version |
| Mechanical life | $10^6$ cycles top to middle position  
$10^5$ cycles middle to bottom position, and top/front button. |

## Warning!

When connecting the enabling device to a control unit, make a function check immediately to detect any short circuits or two channel faults.

## Safety / Harmonized Standards

<table>
<thead>
<tr>
<th>Conformity</th>
<th>European Machinery Directive 2006/42/EC</th>
</tr>
</thead>
</table>

| Safety Standards | EN ISO 13849-1  
Performance level: PL e, category 4  
B_{100} 2,000,000 (to middle position)  
B_{100} 968,000 (to bottom position) |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EN 954-1 Category 4</td>
</tr>
<tr>
<td>Certificates</td>
<td>Inspecta</td>
</tr>
</tbody>
</table>
NB: All measurements in millimetres.
8 EC Declaration of conformity

EC Declaration of conformity
(according to 2006/42/EC, Annex 7A)

We, ABB AB
JOKAB SAFETY
Varlabergsvägen 11
SE-434 39 Kungsbacka
Sweden

declare that the safety components of JOKAB SAFETY manufacture with type
designations and safety functions as listed below, are in conformity with the
Directive
2006/42/EC

Authorised to compile the technical
file
ABB AB
JOKAB SAFETY
Varlabergsvägen 11
SE-434 39 Kungsbacka
Sweden

Product
Three position device, JSHD4
versions
1AA, 1AC, 2AB, 2AB-A, 2AD,
2AD-A, 2AH, 2AH-A, 3AB, 3AB-A,
3AD, 3AD-A, 3AE, 3AH, 3AH-A,
4AB, 4AB-A, 4AD, 4AD-A, 4AH,
4AH-A, 5AB, 5AB-A, 5AD, 5AD-A,
5AH, 5AH-A

Certificate
11-SK-M-CM-0110

Notified Body
Inspecta Sweden AB
Box 30100
SE-104 25 Stockholm
Sweden
Notified Body No. 0409

Used harmonized standards
EN 60204-1:2006+A1 2009

Jesper Krotensson
PRU Manager
Kungsbacka 2011-12-16

www.abb.com
www.jokabsafety.com

Original