

Original instructions

# EStrong-series

## Emergency Stop



## 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.

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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.

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# 1 Introduction

## Scope

The purpose of these instructions is to describe the emergency stop EStrong-series, and to provide the necessary information required for assembly, installation, operations, checks and adjustments after installation, and maintenance. The instructions also include information necessary to connect EStrong to a safety circuit.

## 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 machine safety.

## Special notes

Pay attention to the following special notes in the document:

 **Warning!** Danger of severe personal injury!  
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

Emergency Stop switches are mounted on machines and sections of plant conveyors that cannot be protected by guards or as a complement to guards. In combination with any dual channel safety monitoring controllers these switches can be used as emergency stop devices and monitored for up to Category 4/PLe to ISO 13849-1.

The EStrongZ is an emergency stop designed to provide a robust unit in exposed and severe environments.

### 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

The EStrongZ contact block configuration is a 2NC and 2NO and the emergency stop is mounted with 4 x M4 screws from the inside.

The EStrongZ has a special lid that is mechanical linked to the emergency stop safety mechanism. This means that the safety contacts will open if the lid is removed.

This Emergency stop is made in a total rugged stainless steel 316 body, developed for applications such as food processing and chemical industry. Since the EStrongZ has a double seal lid gasket and seals, it has an IP69K enclosure protection and can therefore be high pressure hosed with detergent at high temperature.

As an option the EStrongZ can be ordered with a two colour LED that can be seen easily from a distance.

EStrong Emergency stop switches conform to European Standard EN ISO 13850 and IEC 60947-5-5. They have a positive mechanical linkage between the switch contacts and the E-Stop Button. The switches are mechanically latched and can then only be returned to the operational condition by resetting the button as required by EN ISO 13850.

EStrongZ also exist in a version(EStrongZX) with certified explosion proof contact block. EStrongZX is also in stainless steel and can be used in European Zone 1, 2, 21,22 environments. (Gas and Dust)

### 3 Connections

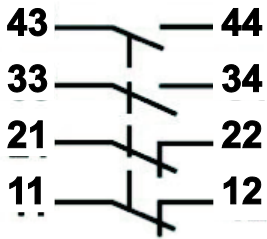
See Chapter Installation and Maintenance for more information regarding installation.

#### Connections

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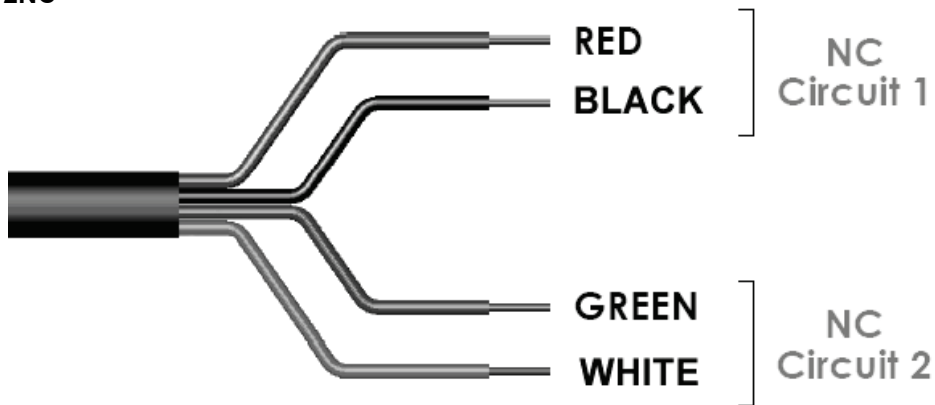
EStrongZ

2NC 2NO



EstrongZ, explosion proof

2NC



## 4 Installation and maintenance

### Installation

1. The installation of all ABB Jokab Safety switches must be in accordance with a risk assessment for the individual application and in accordance with local wiring regulations and EN 60204-1. Installation must only be carried out by competent personnel and in accordance with these instructions.
2. M4 mounting bolts must be used to fix the switches. Tightening torque for mounting bolts to ensure reliable fixing is 4 Nm. Tightening torque for the lid screws, conduit entry plugs and cable glands must be 1,5 Nm to ensure IP seal. Only use the correct size gland for the conduit entry and cable outside diameter.
3. Check operation of all switches and control circuits by activating the switch (Depress the red button) and resetting each switch by twisting the red button. Ensure each time that the switches latch off and require manual resetting.
4. Wiring LED (Not on LineStrong1):

Black or Terminal 2 is 0VDC.

When 24VDC is applied to the Red wire or Terminal 1, the lamp will illuminate Red.

When 24VDC is applied to the Green wire or Terminal 3, the lamp will illuminate Green.

If the LED is fitted but is not used ensure the conductors remain coiled and fixed away from the internal mechanism.

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



- 1) Terminal 1 or Red
- 2) Terminal 3 or Green
- 3) Terminal 2 or Black

### Maintenance

**Every week:** Check correct operation of all the control circuits and latching mechanism. Inspect for damage to the Emergency stop or casing.

**Every 6 months:** Isolate power and remove cover. Check screw terminal tightness and check for signs of moisture ingress.

**⚠ Warning!** The safety functions and the mechanics shall be tested regularly.

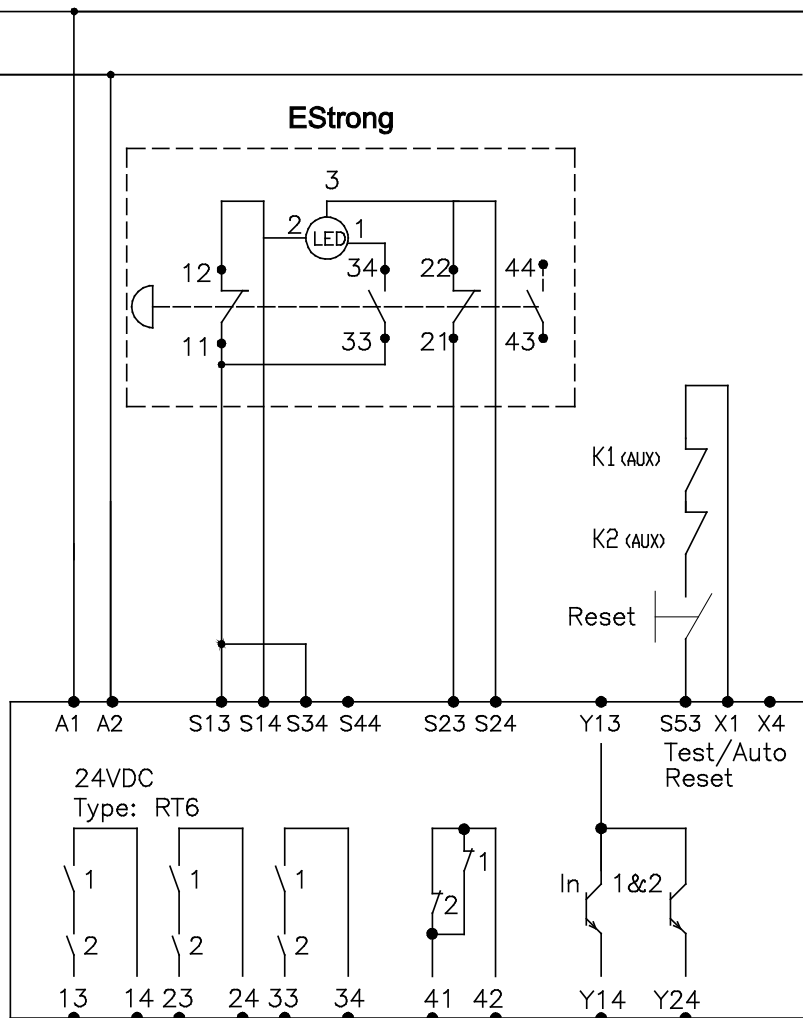
**⚠ Warning!** In case of breakdown or damage to the product, contact the nearest ABB Jokab Safety Service Office or reseller. Do not try to repair the product yourself since it may accidentally cause permanent damage to the product, impairing the safety of the device which in turn could lead to serious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

**Caution!** ABB Jokab Safety will not accept responsibility for failure of the switch functions if the installation and maintenance requirements shown in this sheet are not implemented. These requirements form part of the product warranty.

## 5 Application examples

24V dc

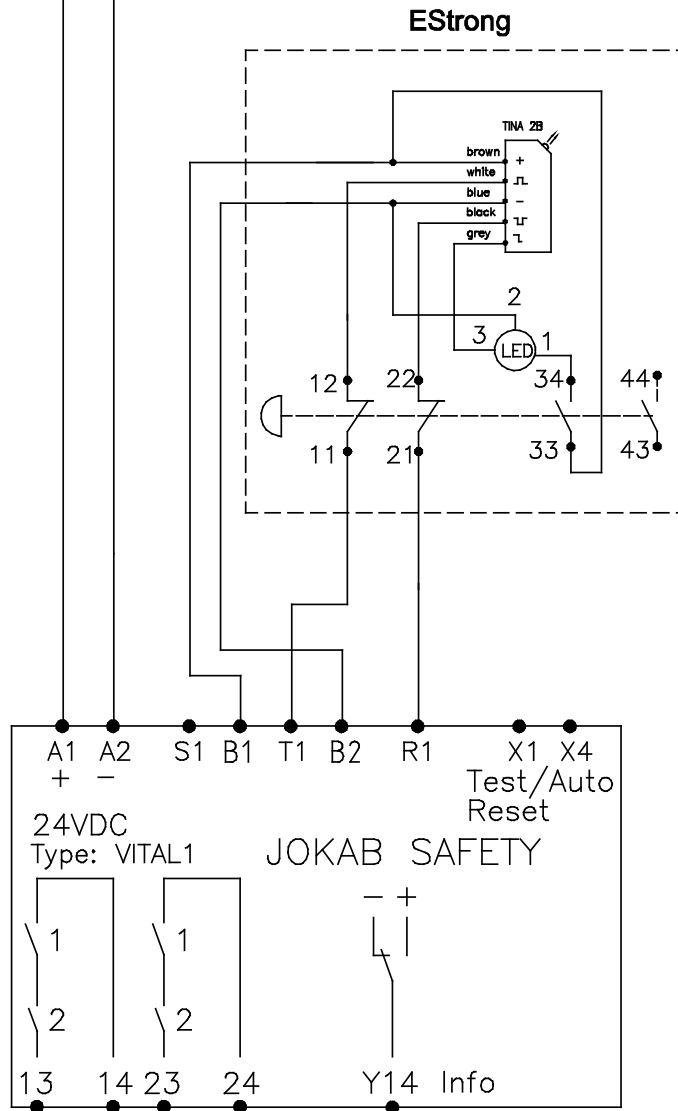
0V





24V dc

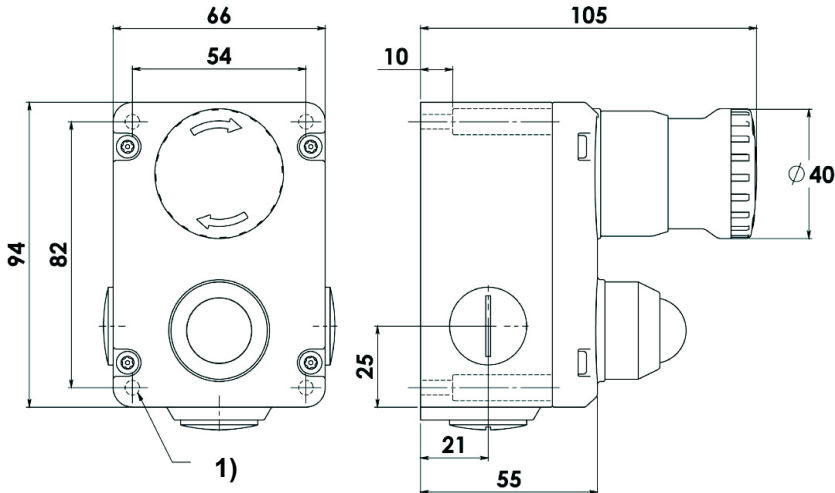
0V



## 6 Model overview

Type	Article number	Description
EStrongZ	2TLA050220R0020	2NC/2NO, M20, stainless steel
EStrongZ	2TLA050220R0222	2NC/2NO, M20, LED, stainless steel
EStrongZX	2TLA050220R0025	2NC, 3m cable, stainless steel, explosion proof

### Dimensions



1) Fixing holes for M4 screws

NB! All measurements are in mm

### Accessories

Type	Article number	Description
Gland	2TLA050040R0002	Stainless steel cable gland M20 x 1.5
Conduit Plug	2TLA050040R0004	Stainless steel conduit plug M20 x 1.5
Spare LED	2TLA050211R0001	LED Green/Red 24VDC
Tina 3A	2TLA020054R0200	Adaptation unit for dynamic circuit with M20 fitting and M12 connector.
Tina 2A	2TLA020054R0100	Adaptation unit for dynamic circuit with M20 fitting.
Tina 2B	2TLA020054R1100	Adaptation unit for dynamic circuit, internal assembly.

## 7 Technical data

### Manufacturer

Address	ABB AB / JOKAB SAFETY Varlabergsvägen 11 SE-434 39 Kungsbacka Sweden
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### Electrical characteristics

Contact type	IEC/EN60947-5-1 double break typ Zb
Contact material	Silver
Termination	Clamp up to 2,5 mm <sup>2</sup> Conductors
Utilization category	AC15 A300 3A 240VAC 3A/120VAC 6A/24VDC 2.5A inductive
Thermal current (I <sub>th</sub> )	10 A
Rated insulation/withstand voltages	500 VAC/2500 VAC
Short circuit overload protection	Fuse externally 10 A (FF)

### Explosion Proof version (X)

Classification	Ex d IIC T6 (-20°C ≤ Ta ≤ +60°C) Gb Ex tb IIIC T85°C (-20°C ≤ Ta ≤ +60°C) Db
Rated Voltage	250V AC/DC
Rated Current	2 pole 4A 4 pole 2.5A

### General

Enclosure classification	IP67, IP69K
Ambient temperature	-25...+80°C
Size	See drawing
Shock resistance	15 g 11 ms
Enclosure/Cover	Stainless steel 316
Mounting position	Any
Mounting bolts	4 x M4
Torque settings	Mounting M5 4,0 Nm Lid T20 Torx M4 1,5 Nm Terminals 1,0 Nm
Conduit entries	3 x M20 x 1.5

## Safety-related characteristic data and Conformity

Conformity	European Machinery Directive 2006/42/EC EN ISO 12100:2010, EN ISO 13850:2008, EN 60204-1:2006+A1:2009 EN 60947-1:2007+A1:2011, EN 60947-5-1:2004+A1:2009, EN 60947-5-5:1997+A1:2005
EN ISO 13849-1	Up to PL e, cat. 4 depending on system architecture
EN 62061	Up to SIL3 depending on system architecture
Safety data	
Mechanical reliability B <sub>10d</sub>	1 500,000 operations at 100 mA load
PFH <sub>D</sub>	<1.0 x 10 <sup>-7</sup>
Proof test interval (life)	21 years
MTTF <sub>d</sub>	214 years (8 cycles per hour/24 hours per day/365 days per year)
Certifications	TÜV, cULus
Information with regard to UL 508	Use 12AWG copper conductors only Electrical Rating: A300 48W5 Type 1 Enclosure Max. Switching Current / Volt / Amp: 120V 6A (720VA break) PF 0.38, 240V 3A (720VA break) PF 0.38

## 8 EC Declaration of conformity



### EC Declaration of conformity

(according to 2006/42/EC, Annex 2A)

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

declare that the safety components of ABB AB make with type designations and safety functions as listed below, is in conformity with the Directives

2006/42/EC  
2006/95/EC

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

#### Product

Emergency stop device  
EStrongZ

Used harmonized standards EN ISO 12100:2010, EN ISO 13850:2008, EN 60204-1:2006:+A1:2009

Other used standards EN 60947-1:2007:+A1:2011, EN 60947-5-1:2004:+A1:2009,  
EN 60947-5-5:1997:+A1:2005



Jesper Kristensson  
PRU Manager  
Kungsbacka 2012-08-03

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[www.abb.com](http://www.abb.com)  
[www.jokabsafety.com](http://www.jokabsafety.com)

Original



## EC Declaration of conformity

(according to 2006/42/EC, Annex2A)

We **ABB AB**  
**JOKAB SAFETY**  
Varlbergsgatan 11  
SE-434 39 Kungsbacka  
Sweden

declare that the safety components of ABB AB make with type designations and safety functions as listed below, is in conformity with the Directives

2006/42/EC  
2006/95/EC  
94/9/EC

Authorised to compile the technical file **ABB AB**  
**JOKAB Safety**  
Varlbergsgatan 11  
SE-434 39 Kungsbacka  
Sweden

### Product

Emergency stop device with explosion proof internal contact block  
EStrongZX

### EC-Type Certificate

Baseefa11ATEX0287X (94/9/EC)

### Notified body

Baseefa Ltd  
Buxton  
Derbyshire  
SK17 9RZ  
United Kingdom  
Notified body No. 1180

### Used harmonized standards

EN ISO 12100:2010, EN ISO 13850:2008, EN 60204-1:2006+A1:2009,  
EN 60079-0:2011, EN 60079-1:2007, EN 60079-31:2008

### Other used standards

EN 60947-1:2007+A1:2011, EN 60947-5-1:2004+A1:2009,  
EN 60947-5-5:1997+A1:2005

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[www.abb.com](http://www.abb.com)  
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