

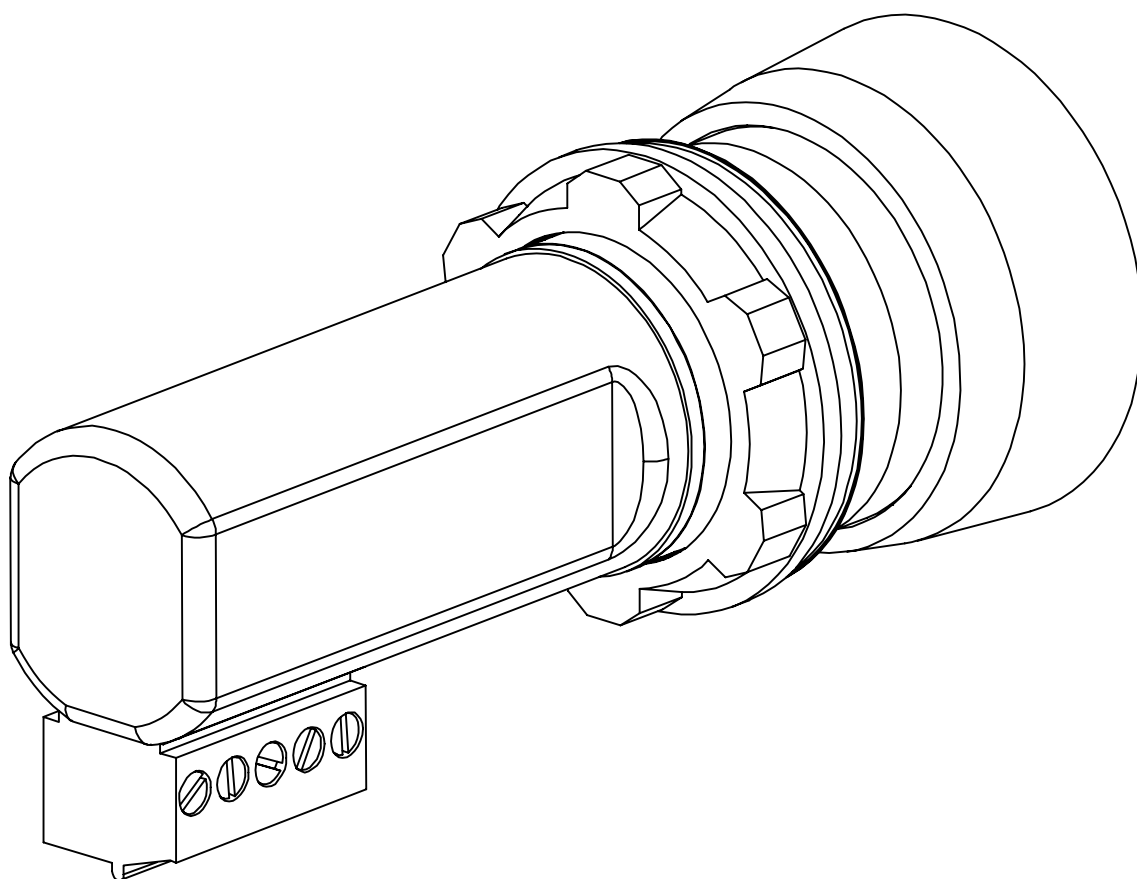
Original instructions

# INCA-1 Tina

Emergency stop for enclosure installation

# INCA-1S Tina

Safety stop for enclosure installation



## Read and understand this document

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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**

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# 1 Introduction

## Scope

The purpose of these instructions is to describe the emergency stop INCA-1 Tina and safety stop INCA-1S Tina, and to provide the necessary information required for installation and operation.

## 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

INCA-1 Tina is an emergency stop device designed for installation in a 22.5 mm slot in an apparatus enclosure. INCA Tina is intended for use in safety circuits in accordance with EN 60204-1.

There is an INCA-1S with black stop button, which is intended for use as a safety stop.

INCA Tina units are adapted for the dynamic safety circuit and must be connected to either a Vital safety module or Pluto safety-PLC.

 **Warning!** The emergency stop INCA Tina normally needs to be complemented with other safety functions such as interlocking guards etc. Refer to risk analysis.

NB: The emergency stop (INCA-1 Tina) should not be used as normal stop of the machine, only in case of emergency.

### 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.

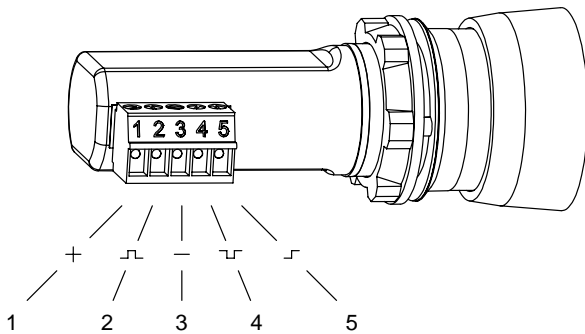
Failure to comply with instructions, operation that is not in accordance with the use prescribed in these instructions, improper installation or handling of the device can affect the safety of people and the plant.

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.

### 3 Connections

#### Electrical connections – INCA Tina



#### INCA Tina

5-pin connection block

- 1 ) +24 VDC
- 2 ) Dynamic signal input
- 3 ) 0 VDC
- 4 ) Dynamic signal output
- 5 ) Information output

NB: Shielded cable is recommended between this unit and the rest of the safety circuits.

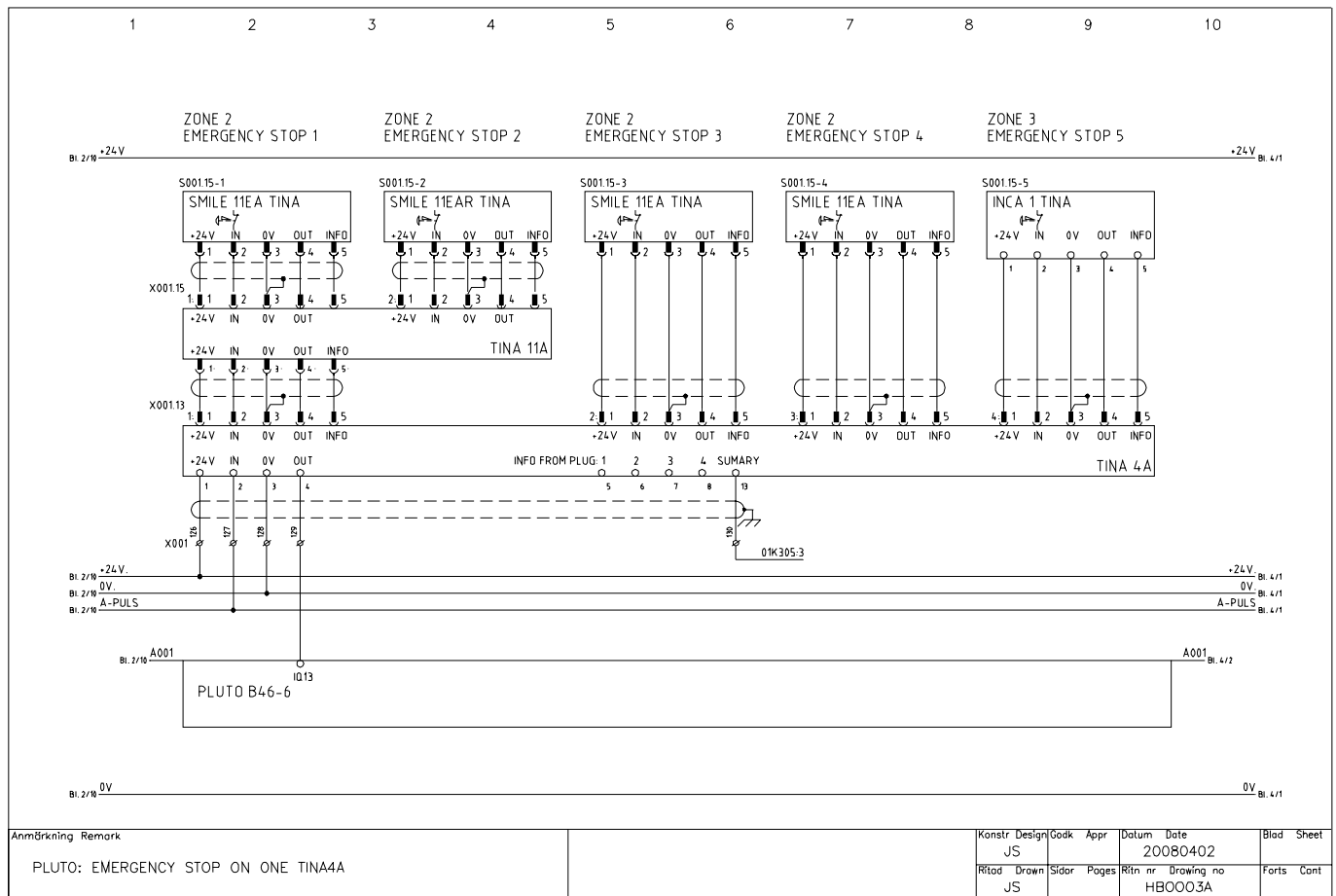
**Caution!** Follow the pin numbers as labelled on the unit.

**Warning!** The information channel output shall **never** be used for the safety purpose(s).

#### Connection examples

##### Connection example – INCA 1 Tina

Smile Tina and INCA Tina units connected to Pluto safety-PLC through Tina 4A and Tina 11A connection blocks.




Anmärkning Remark		Konstr Design	Code	Appr	Datum Date	Blad Sheet
PLUTO: EMERGENCY STOP ON ONE TINA4A		JS			20080402	
		Ritad Drawn	Sidor	Pages	Ritn nr Drawing no	Forts Cont
		JS			HBOO03A	

## 4 Installation and maintenance

### Installation precautions

First mount INCA Tina in the apparatus enclosure slot and then attach and fasten the M22 nut. Finally, attach the connection block.

 **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.

### Testing of the safety functions


Make sure the safety unit is working properly by following these steps:

- Interrupt the dynamic safety circuit before this unit. The LED should flash between green and red.
- Interrupt protection (i.e. push the E-stop button). The LED should light red.
- The LED should light green when protection is OK and the safety circuit is not previously broken.

### Troubleshooting

LED indicator note	Expected causes of faults	Checking and measures to take
Lights red	E-stop button is down	Reset the button by turning it clockwise and pulling it upward.
	24 VDC input to pin-2 (no dynamic signal)	Check if there is 24 VDC to input (pin-2). If Yes, check cable or unit before and fix it.
No lights	Loss of power supply	Check 24 VDC / 0 VDC power supply
Lights green (but no dynamic output detected)	Defected dynamic signal input to unit (asymmetric pulses)	Check the dynamic input or the unit before
Weak lights or red and green lights at the same time	The unit is defect	The unit needs to be replaced. Contact ABB/Jokab Safety.

NB: Tina 1A can be used instead of this unit to check if the safety circuit is OK (**only** for test).

 **Warning!** Replace a defected unit with a new one and **never** bypass the safety circuit using Tina 1A or any other solution.

## 5 Operation

### LED indication

LED	Indication	Description	Input signal on pin-2
LED on Tina	Green	Safety circuit closed (protection OK)	Dynamic signal in
	Green-Red (flash)	Safety circuit open (protection OK)	No dynamic signal in <u>or</u> 0 VDC in
	Red	Safety circuit interrupted (protection open)	+24 VDC in <u>or</u> safety circuit interrupted

### Information output signal attributes

The information output of the unit (pin-5) is set either high (+24 VDC) or low (0 VDC) depending on four different input signals (pin-2):

- **Dynamic signal** - Dynamic signal input exist, i.e. the safety circuit is OK up until this unit
- **No dynamic signal** - Dynamic signal input does not exist, i.e. the safety circuit is interrupted before this unit.
- **+24 VDC** - A constant +24 VDC signal is applied = high (H)
- **0 VDC** - The pin is connected to 0 VDC = low (L)


The information output signal depends on the input signal according to the table below. Note that if the safety is interrupted; i.e. if the emergency button is pressed, the information output signal is always low (L).

Input signal (pin-2)	Dynamic signal	No dynamic signal	+24 VDC	0 VDC
Info output signal (pin-5)	High	High	Low	High

The delay for switching the information signal output from high to low (H → L) and low to high (L → H) is given in the table below.

Info output signal switch	H → L	L → H
Delay	~ 12 ms	~ 0 ms

NB: If the unit detects an error (short circuit or interruption) lasting shorter than 13 ms the information output signal is set to low for 1.2 s (1200 ms) and then set to high again. This does not affect Vital since it needs a longer interruption to release. Pluto however does release, which means that a filter (20 ms) must be implemented if this function is needed.

 **Warning!** The information output signal is not a failsafe signal and shall **never** be used for the safety purpose(s).

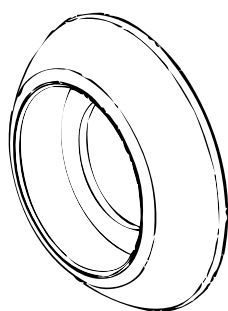


## 6 Model overview

Type	Article number	Description
INCA 1 Tina	2TLA030054R0000	Emergency stop, red button, 5-pin connection block
INCA 1S Tina	2TLA030054R0200	Safety stop, black button, 5-pin connection block

### Accessories

Type	Article number	Description
Front ring	2TLA030054R0400	Yellow surround for emergency stop button.
Emergency stop sign	2TLA030054R0500	Ø22.5 mm, Swedish, Danish, Finnish
Emergency stop sign	2TLA030054R0600	Ø22.5 mm, English, French, German



Front ring  
Yellow surround for emergency stop button.

Article number:  
2TLA030054R0400



Emergency stop sign

Article number:  
S, D, F: 2TLA030054R0500  
E, F, T: 2TLA030054R0600

## 7 Technical data

Manufacturer	
Address	ABB AB / JOKAB SAFETY Varlabergsvägen 11 SE-434 39 Kungsbacka Sweden
Power supply	
Operating voltage	24 VDC +15 %, -25 %
Total current consumption	47 mA (57 mA with max information output) Information output: Max 10 mA
Time delay t (in/out)	t < 70 µs
Voltage supply at normal operation (protection OK) and 24 VDC supply voltage	Dynamic input: between 9 and 13 volt (RMS) Dynamic output: between 9 and 13 volt (RMS) Information output: ~ 23 VDC
General	
Protection class	IP65, connector IP20
Ambient temperature	Storage: -30...+70°C Operation: -10...+55°C
Humidity range	35 to 85 % (with no icing or condensation)
Housing material	Polyamide PA66, Macromelt, polybutylenterephthalate PBT, Polypropene PP, UL 94 V0
Contact material	Silver alloy, gold plated
Connectors	5-pin connection block
Size	See drawing
Weight	~ 40 g
Colour	Yellow base, red or black button
Actuator force (E-stop button)	22 +/- 4N
Actuator travel	~ 4 mm to latch
Mechanical life	> 50,000 operations
Impact resistance (half sinusoidal)	Max. 150 m/s <sup>2</sup> , pulse width 11 ms, 3-axis (as per EN IEC 60068-2-27)
Vibration resistance (half sinusoidal)	Max. 50m/s <sup>2</sup> at 10 Hz, 10 cycles, 3-axis (as per EN IEC 60068-2-6)
Climate resistance	
Damp heat, cyclical	96 hours, +25°C / 97%, +55°C / 93% relative humidity, as per EN IEC 60068-2-30
Damp heat, sustained	56 days, +40°C / 93% relative humidity, as per EN IEC 60068-2-78
Dry heat	96 hours, +70°C, as per EN IEC 60068-2-2
Cooling	96 hours, -40°C, as per EN IEC 60068-2-1
Salt mist	96 hours, +35°C in a chemical solution with NaCl as per EN IEC 60068-2-11

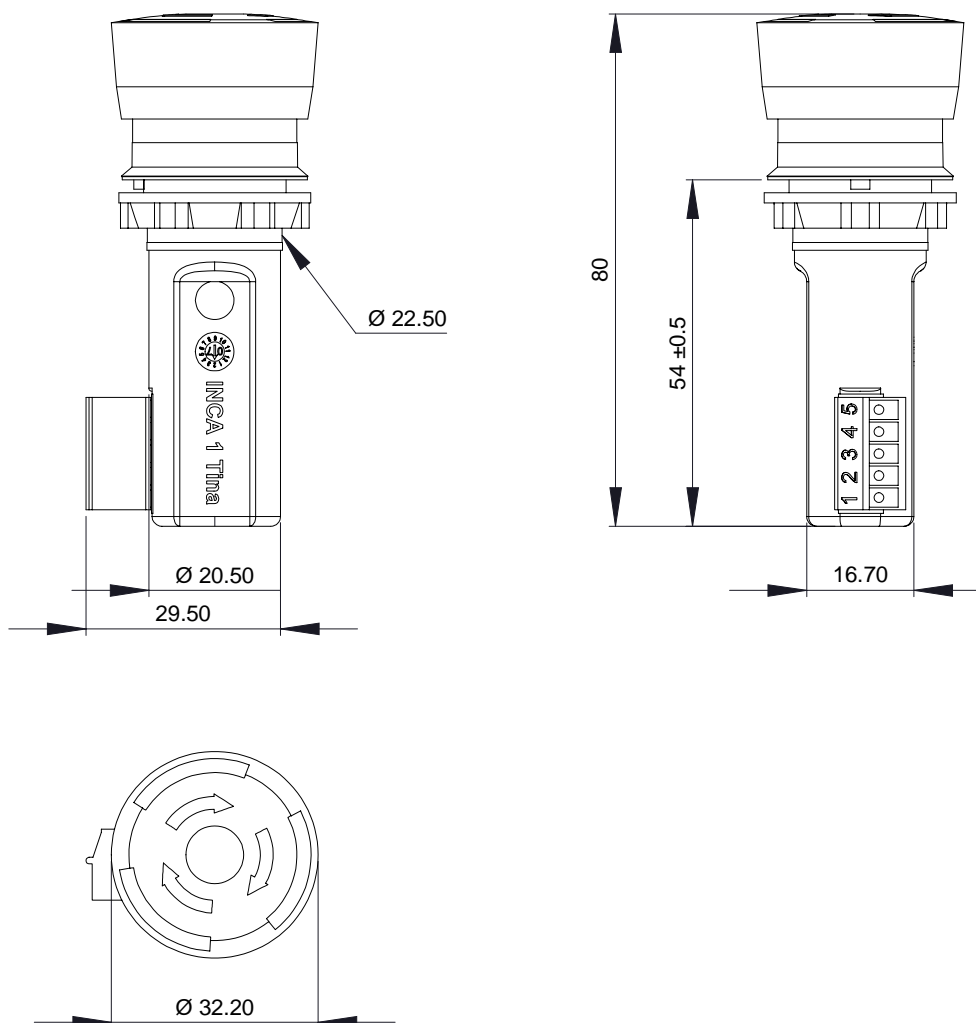
### Safety / Harmonized Standards

Conformity	European Machinery Directive 2006/42/EC <b>CE</b> EN ISO 12100:2010, EN 954-1:1996/EN ISO 13849-1:2008, EN 62061:2005, EN 61508:2010, EN 60204-1:2006+A1:2009, IEC 60664-1:2007, EN 61000-6-2:2005, EN 61000-6-4:2007, EN 60947-5-5:2005, EN ISO 13850:2006
IEC/EN 61508-1...7	SIL3, PFH <sub>d</sub> : 4.66*10 <sup>-9</sup>
EN 62061	SIL3
EN ISO 13849-1	Performance level: PL e, category 4
EN 954-1	Category 4
Certificates	TÜV Nord

**Warning!** The maximum number of operations (cycles) for the emergency stop INCA Tina is 6050 operations.


## Dimensions

### INCA Tina Dimensions



NB: All measurements in millimetres.

## 8 EC Declaration of conformity



**EC Declaration of conformity**  
(according to 2006/42/EC, Annex2A)

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

**JOKAB SAFETY**  
Varlabergsvägen 11  
SE-434 39 Kungsbacka  
Sweden


2006/42/EC  
2006/95/EC  
2004/108/EC

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

<u>Product</u>	<u>Certificate</u>	<u>Serialnumber</u>
Emergency stop device Smile Tina	44 207 11 372092-001	[000 – 000 ... 999-999]
Emergency stop device Inca-Tina	44 207 11 372092-001	[000 – 000 ... 999-999]

Notified body **TÜV NORD CERT GmbH**  
Langemarckstrasse 20  
45141 Essen  
Germany  
Notified body No. 0044

Used harmonized standards **EN ISO 12100:2010, EN 954-1:1996/EN ISO 13849-1:2008, EN 62061:2005, EN 61508:2010, EN 60204-1:2006+A1:2009, IEC 60664-1:2007, EN 61000-6-2:2005, EN 61000-6-4:2007, EN 60947-5-5:2005, EN ISO 13850:2006**

  
Jesper Kristensson  
PRU Manager  
Kungsbacka 2011-10-18

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

Original

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