Original instructions

# Tina 1A

## Blanking plug

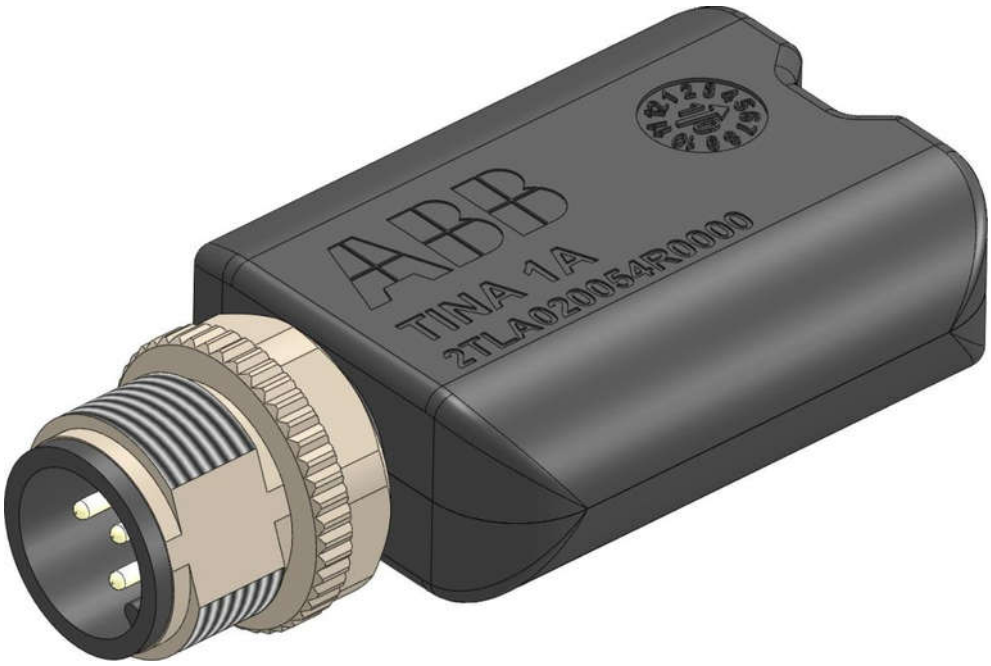



**ABB AB / Jokab Safety** Varlabergsvägen 11, SE-434 39 Kungsbacka, Sweden
www.abb.com/lowvoltage

# 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

**3 Connections ..... 6**

Connection examples ..... 7

**4 Installation and maintenance ..... 8**

Installation precautions ..... 8

Maintenance ..... 8

Testing of the safety functions ..... 8

Troubleshooting ..... 8

**5 Operation ..... 9**

LED indication ..... 9

**6 Technical data ..... 10**

Dimensions ..... 11

**7 EC Declaration of conformity ..... 12**

# 1 Introduction

## Scope

The purpose of these instructions is to describe the blanking plug Tina 1A 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!<br>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!<br>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

Tina 1A is a unit intended for use with connection blocks Tina 4A or Tina 8A, where Tina 1A is used as a blanking plug in unused M12 connections.

The Tina 1A blanking plug is intended for use in safety circuits in accordance with EN 60204-1.

⚠ **Warning!** In order to maintain the safety, this unit must never replace any other unit than another Tina 1A.

## Safety regulations

⚠ **Warning!**

Carefully read through this entire manual before using the device.

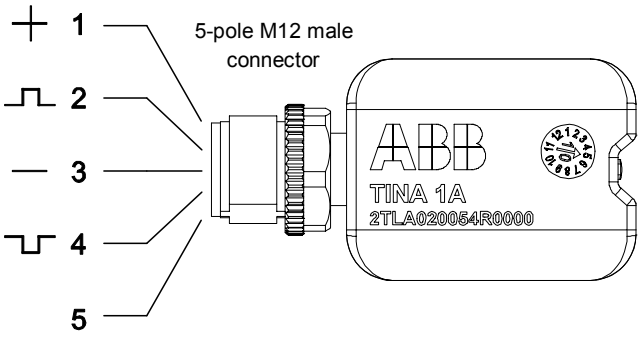
The devices shall be installed by a trained electrician following the Safety regulations, standards and the Machine directive.

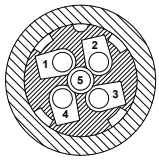
Failure to comply with instructions, operation that is not in accordance with the use prescribed in these instructions, improper installation or handling of the device can affect the safety of people and the plant.

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.

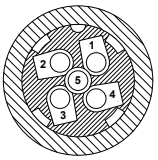
In case of failure to comply with the instructions or standards, especially when tampering with and/or modifying the product, any liability is excluded.

# 3 Connections




M12 5-pole male seen from cable side




M12 5-pole female seen from cable side

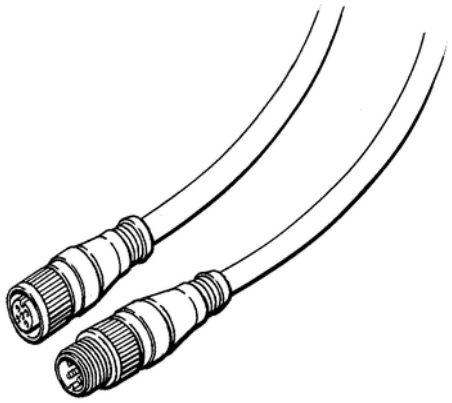
**5-pole M12-connector:**

1 ) Brown: +24 VDC
2 ) White: Dynamic signal input
3 ) Blue: 0 VDC
4 ) Black: Dynamic signal output
5 ) Grey: Not used

**Caution!** All cable colours according to ABB/Jokab Safety standard cables.

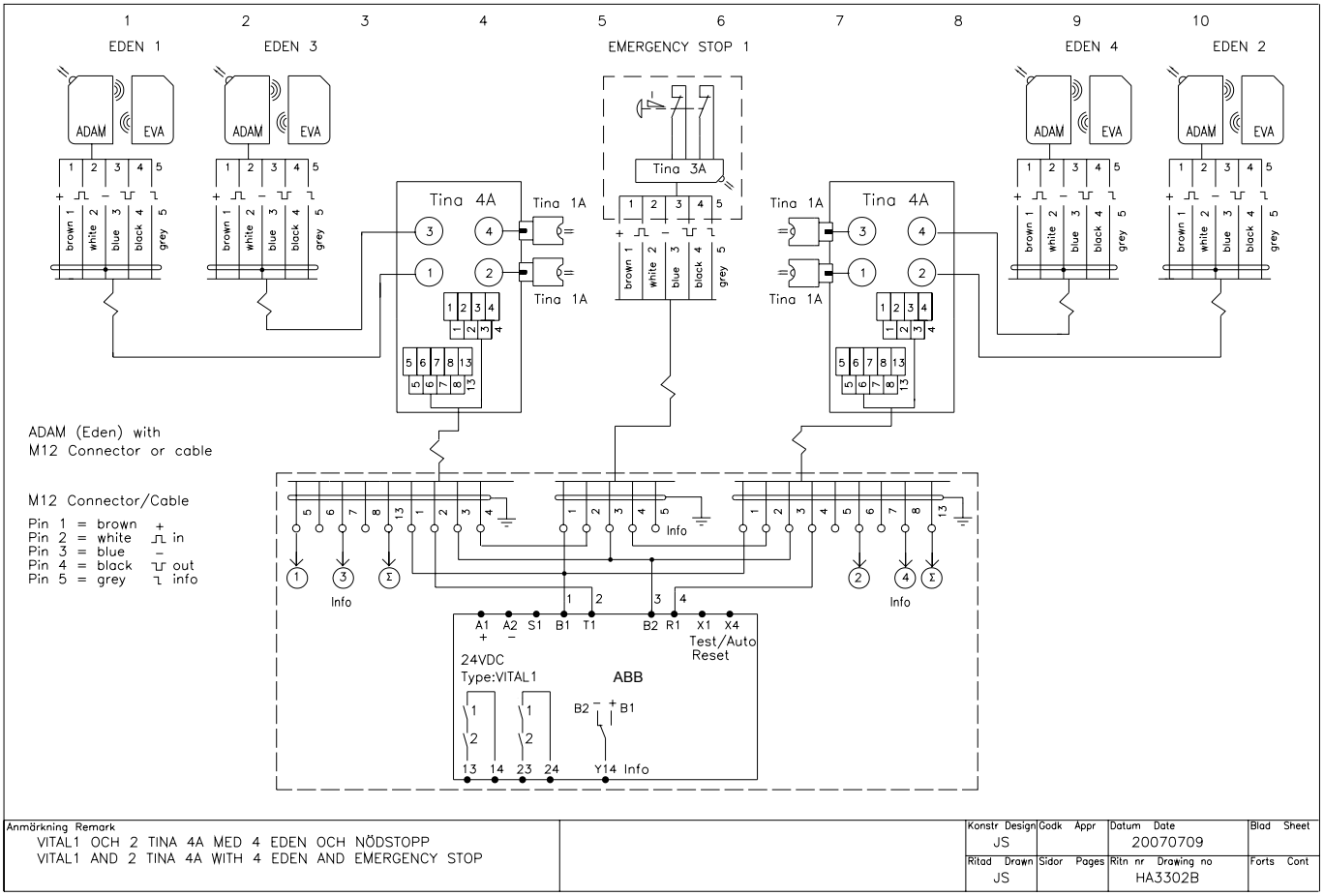
### Accessories for connection to the safety circuit

| Type | Article number | Description |
|---|---|---|
| M12-C112 | 2TLA020056R2000 | 1 m cable, 5-pole, 0.34 $mm^2$, M12 female + M12 male connectors |
| M12-C312 | 2TLA020056R2100 | 3 m cable, 5-pole, 0.34 $mm^2$, M12 female + M12 male connectors |



5 x 0.34 $mm^2$ cable, screen with straight female + male M12 connectors.
Screen connected to pin 3 (0 VDC) on male connector.
Article number: 2TLA020056R2000 (1 m), 2TLA020056R2100 (3 m)

## Connection examples




**Caution!** All cable colours according to ABB/Jokab Safety standard cables.

# 4 Installation and maintenance

## Installation precautions

When attaching Tina 1A to the connection block, use max tightening torque 0.25 Nm.

⚠ **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 will flash between green and red.
- The LED will light green when protection is OK and if the safety circuit(s) before this unit is not interrupted.

## Troubleshooting

| LED indicator note | Expected causes of faults | Checking and measures to take |
|---|---|---|
| Lights red | 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: Another Tina 1A can be used instead of this unit to check if the safety circuit is OK (**only** for test).

# 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 or 0 VDC in |
| | Red | - | +24 VDC in |

# 6 Technical data

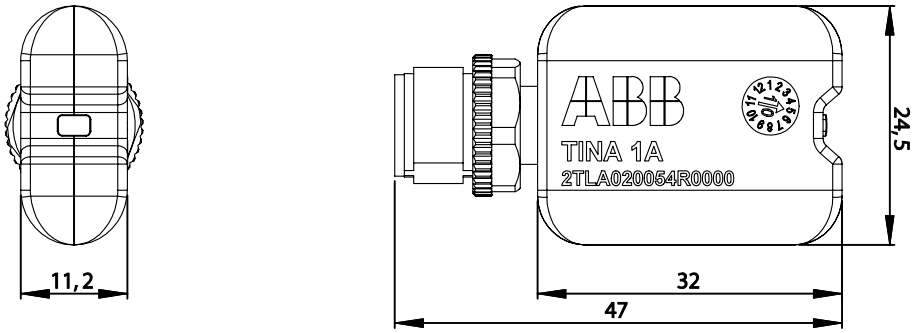
| Manufacturer | |
|---|---|
| Address | ABB AB / JOKAB SAFETY<br>Varlabergsvägen 11<br>SE-434 39 Kungsbacka<br>Sweden |
| Article number/Ordering data | Tina 1A: 2TLA020054R0000 |

| Power supply | |
|---|---|
| Operating voltage | 24 VDC +15 %, -25 % |
| Total current consumption | 17 mA (27 mA with max information output)<br>Information output: Max 10 mA |
| Time delay t (in/out) | t < 60 µs |
| Voltage supply at normal operation (protection OK) and 24 VDC supply voltage | Dynamic input: between 9 and 13 volt (RMS)<br>Dynamic output: between 9 and 13 volt (RMS)<br>Information output: ~ 23 VDC |

| General | |
|---|---|
| Protection class | IP67 |
| Ambient temperature | Storage: -30…+70°C<br>Operation: -10…+55°C |
| Humidity range | 35 to 85 % (with no icing or condensation) |
| Housing material | PVC |
| Connector | M12 5-pole male |
| Size | 47 x 25 x 15 (L x W x H) |
| Weight | ~ 20 g |
| Colour | Black |

| Safety / Harmonized Standards | |
|---|---|
| Conformity | European Machinery Directive 2006/42/EC<br>CE<br>EN ISO 12100-1:2003, EN ISO 12100-2:2003,<br>EN 60204-1:2007, EN 954-1:1996, EN ISO 13849-1:2008,<br>EN 62061:2005 |
| IEC/EN 61508-1…7 | SIL3, PFHd: $4.50*10^{-9}$ |
| EN 62061 | SIL3 |
| EN ISO 13849-1 | Performance level: Pl e, category 4 |
| EN 954-1 | Category 4 |
| Certificates | TÜV Nord |

## Dimensions




NB: All measurements in millimetres.

# 7 EC Declaration of conformity

## EC Declaration of conformity

**(according to 2006/42/EC, Annex2A)**

| | | |
|---|---|---|
| We | ABB AB<br>JOKAB SAFETY<br>Varlabergsvägen 11<br>SE-434 39 Kungsbacka<br>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<br>2006/42/EC<br>2006/95/EC<br>2004/108/EC |
| Person authorised to compile the technical file | | Lars-Magnus Felth<br>ABB AB<br>JOKAB SAFETY<br>Varlabergsvägen 11<br>SE-434 39 Kungsbacka<br>Sweden |

| **Product** | **Certificate** | **Serialnumber** |
|---|---|---|
| Non-contact safety sensor Eden (Adam , Eva) E/C/EC | 44 207 10 372092-001 | [000 – 000 ... 999-999] |
| Adapter unit Tina 1-8, Tina 10-12 | 44 207 10 372092-001 | [000 – 000 ... 999-999] |
| Muting unit FMC-Tina | 44 207 10 372092-001 | [000 – 000 ... 999-999] |
| Non-contact safety sensor including locking function Magne 2A, 2B, 2AX, 2BX | 44 207 10 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 12100-1,-2, EN 954-1, EN ISO 13849-1, EN 62061, EN 60204-1, IEC 60664-1, EN 61000-6-2, EN 61000-6-4, EN 60947-5-1, EN 1088

Mats Linger
MD
Kungsbacka 2011-03-02

www.abb.com
www.jokabsafety.com

Original