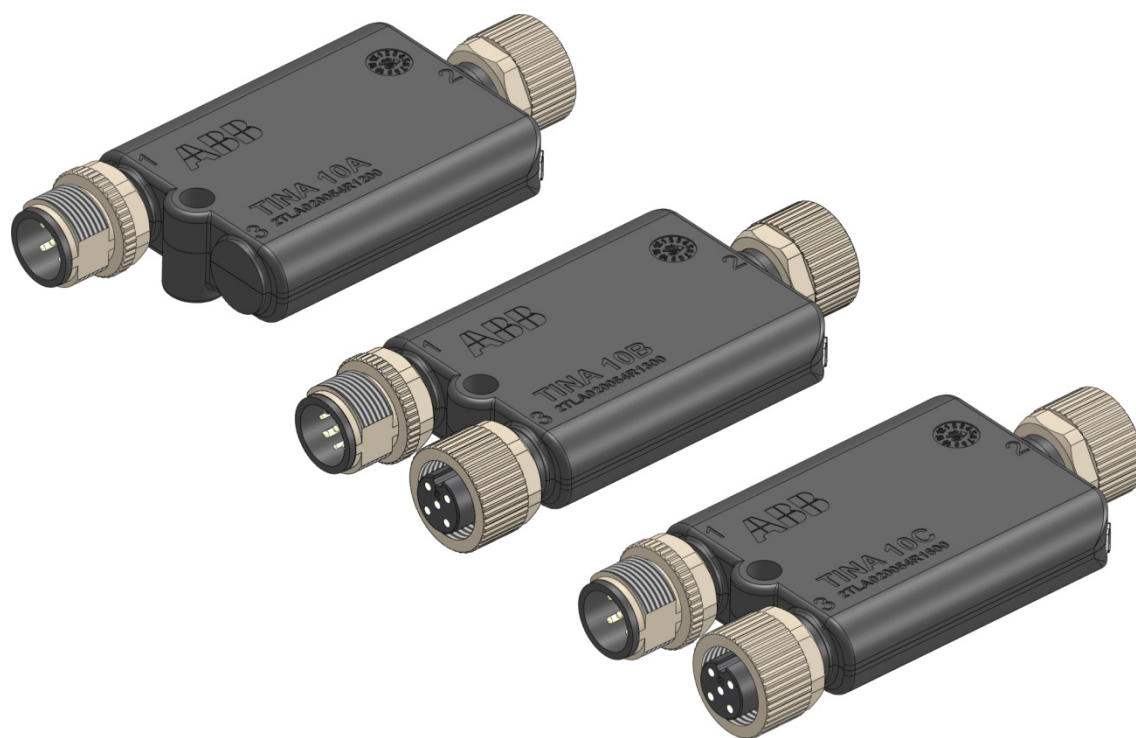


Original instructions

Tina 10A/B/C

Adaptor unit



Read and understand this document

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

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1 Introduction

Scope

The purpose of these instructions is to describe the adaptor units Tina 10A/B/C 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

ABB/Jokab Safety adaptor units are used to adapt conventional safety sensors where the safety relies on e.g. one- or two-channel static signals, OSSD outputs, or short circuit detection, to the dynamic safety circuit monitored by a Vital safety module or Pluto safety-PLC.

Tina 10A, -B and -C are used to adapt Focus light beams and light curtains with OSSD outputs to the dynamic safety circuit. This also enables complete external interconnections using cables with M12 connectors only, which reduces the cabling to and connections in the apparatus enclosure.

All Tina 10 units have an 8-pole female M12 connector for easy connection to a Focus receiver and a 5-pole male M12 connector for quick installation to the dynamic safety circuit. Tina 10B has an extra 5-pole female M12 connector that enables reset, a reset lamp and switching the Focus supply voltage ON/OFF. The Tina 10C also has an extra 5-pole female M12 connector but the extra connector is instead used to connect a Focus transmitter (for power supply instead of using an extra M12-3B).

The Tina 10A/B/C adaptor unit is intended for use in safety circuits in accordance with EN 60204-1.

Safety regulations

Warning!

Carefully read through this entire manual before using the device.

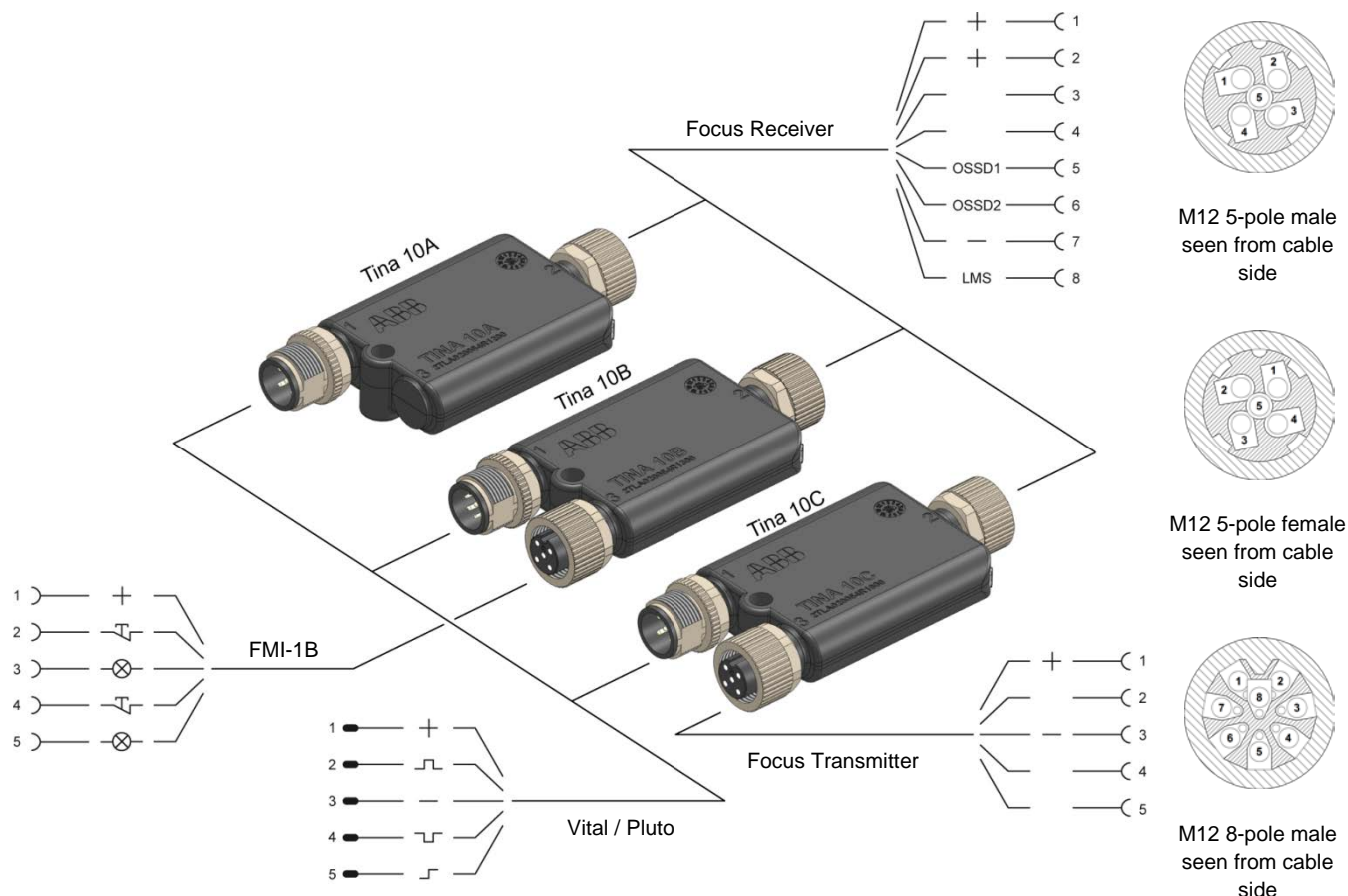
The devices shall be installed by a trained electrician following the Safety regulations, standards and the Machine directive.

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



Focus Receiver connector:

8-pole M12 female, Tina 10A/B/C

- 1) White: +24 VDC
- 2) Brown: +24 VDC
- 3) Green: -
- 4) Yellow: -
- 5) Grey: OSSD1
- 6) Pink: OSSD2
- 7) Blue: 0 VDC
- 8) Red: LMS

Vital / Pluto connector:

M12 5-pole male, Tina 10A/B/C

- 1) Brown: +24 VDC
- 2) White: Dynamic signal input
- 3) Blue: 0 VDC
- 4) Black: Dynamic signal output
- 5) Grey: Information

FMI-1B connector:

M12 5-pole female, Tina 10B

- 1) Brown: +24 VDC
- 2) White: Power "OFF"
- 3) Blue: Reset lamp
- 4) Black: Test / Reset 1
- 5) Grey: Muting lamp

Focus Transmitter connector:

M12 5-pole female, Tina 10C

- 1) Brown: +24 VDC
- 2) White: -
- 3) Blue: 0 VDC
- 4) Black: -
- 5) Grey: -

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

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

Warning!

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

The OSSD connections shall not be used for purposes other than intended. All loading or tampering with loops can lead to serious risk of life.

4 Installation and maintenance

Installation precautions

First attach the cable or device to the M12 connector on Tina, then gently hold the Tina unit to the mounting surface and attach the unit using an M4 bolt.

 **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 (e.g. put a hand between Focus Receiver and Transmitter). The LED should light red.
- The LED should light green when protection is OK and the safety circuit before this unit is not interrupted.

Troubleshooting

| LED indication | Expected causes of faults | Checking and measures to take |
|--|---|---|
| Lights red | Sensor open | Check status of the sensor |
| | Bad connection between loops | Carefully check cable to the light beam |
| | 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. |

 **Warning!** Replace 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, Vital/Pluto connector) is set either high (+24 VDC) or low (0 VDC) depending on four different input signals (pin-2, Vital/Pluto connector):


- **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)

When OSSD1 and OSSD2 are both high, the information output signal depends on the input signal according to the table below. Note that if the safety is interrupted on the device connected to this unit, 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 | ~ 140 ms | ~ 2 ms |

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

6 Technical data

Manufacturer

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

Article number/Ordering data Tina 10A: 2TLA020054R1200
Tina 10B: 2TLA020054R1300
Tina 10C: 2TLA020054R1600


Power supply

Operating voltage 24 VDC +20 %, -20 %
Total current consumption 60 mA (70 mA with max information output)
Information output: Max 10 mA
Time delay t (in/out) $t < 120 \mu s$
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

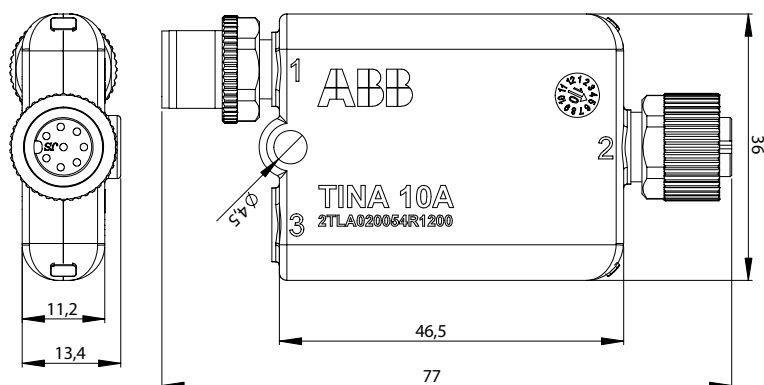
Protection class IP67
Ambient temperature Storage: -10...+55°C
Operation: -10...+55°C
Humidity range 35 to 85 % (with no icing or condensation)
Housing material PVC
Connector Tina 10A: M12 8-pole female, M12 5-pole male
Tina 10B: M12 8-pole female, M12 5-pole female, M12 5-pole male
Tina 10C: M12 8-pole female, M12 5-pole female, M12 5-pole male
Size 77 x 36 x 15 mm (L x W x H)
Weight ~40 g
Colour Black

Safety / Harmonized Standards

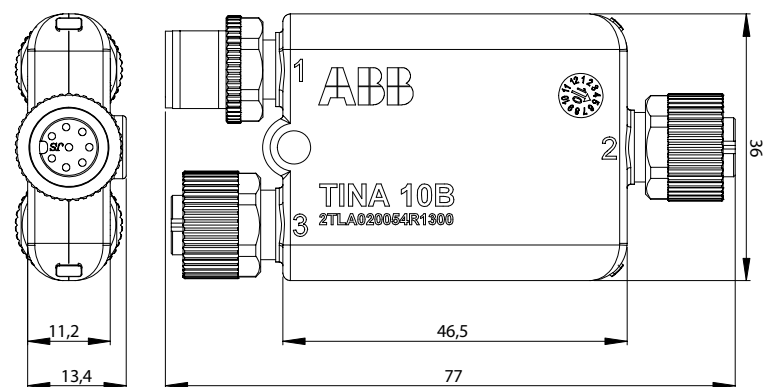
Conformity European Machinery Directive 2006/42/EC

EN ISO 12100-1:2003, EN ISO 12100-2:2003,
EN 60204-1:2007, EN 954-1:1996, EN ISO 13849-1:2008,
EN 62061:2005, EN 61496-1:2004 + A1:2008
IEC/EN 61508-1...7 SIL3, PFH_d: $4.50 \cdot 10^{-9}$
EN 62061 SIL3
EN ISO 13849-1 Performance level: Pl e, category 4
EN 954-1 Category 4
Certificates TÜV Nord

Dimensions

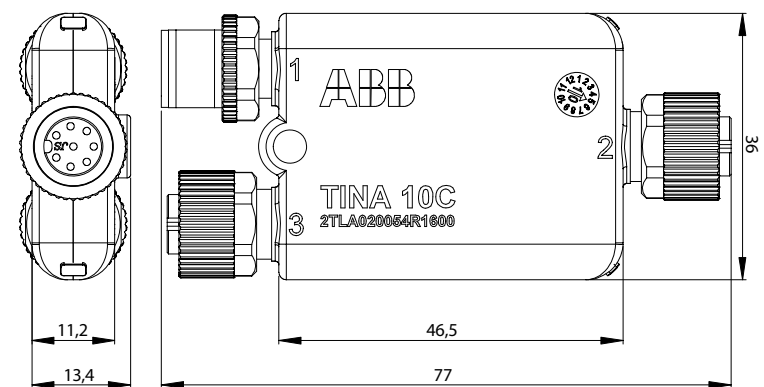
Tina 10A



Tina 10B



Tina 10C



NB: All measurements in millimetres.

7 EC Declaration of conformity



EC Declaration of conformity

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

We **ABB AB**
JOKAB SAFETY
Varlbergsvägen 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
2004/108/EC

Authorised to compile the technical file

ABB AB
JOKAB SAFETY
Varlbergsvägen 11
SE-434 39 Kungsbacka
Sweden

| <u>Product</u> | <u>Certificate</u> | <u>Serialnumber</u> |
|--|----------------------|-------------------------|
| Non-contact safety sensor Eden (Adam, Eva) E/C/EC | 44 799 12 408341-003 | [000 – 000 ... 999-999] |
| Adapter unit Tina 1-8, Tina 10-12 | 44 799 12 408341-003 | [000 – 000 ... 999-999] |
| Muting unit FMC-Tina | 44 799 12 408341-003 | [000 – 000 ... 999-999] |
| Non-contact safety sensor Eden including locking function Magne 2A, 2B, 2AX, 2BX | 44 799 12 408341-003 | [000 – 000 ... 999-999] |

Certification body

TÜV NORD CERT GmbH
Langemarckstrasse 20
45141 Essen
Germany

Used harmonized standards

EN ISO 12100-1:2010, EN ISO 13849-1:2008, EN 62061:2005,
EN 60204-1:2006+A1:2009, EN 60664-1:2007, EN 61000-6-2:2005,
EN 61000-6-4:2007, EN 60947-5-1:2004, EN 1088+A2:2008

Other used standards

EN 61508:2010



Jesper Kristensson
PRU Manager
Kungsbacka 2012-05-31

www.abb.com
www.jokabsafety.com

Original

ABB AB / JOKAB SAFETY Varlbergsvägen 11, SE-434 39 Kungsbacka, Sweden

www.abb.com/lowvoltage