

Original Instructions

# Tina 10A/B/C

## Adaptor unit



## 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**

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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 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.

**Note:**

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 DYNlink safety circuit monitored by a Vital safety module or Pluto safety-PLC.

Tina 10A, -B and -C are used to adapt Orion or Focus light beams and light curtains with OSSD outputs to the DYNlink 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 an Orion receiver and a 5-pole male M12 connector for quick installation to the DYNlink safety circuit. Tina 10B has an extra 5-pole female M12 connector that enables local reset with a Smile reset button. The Tina 10C also has an extra 5-pole female M12 connector but the extra connector is instead used to connect an Orion 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.

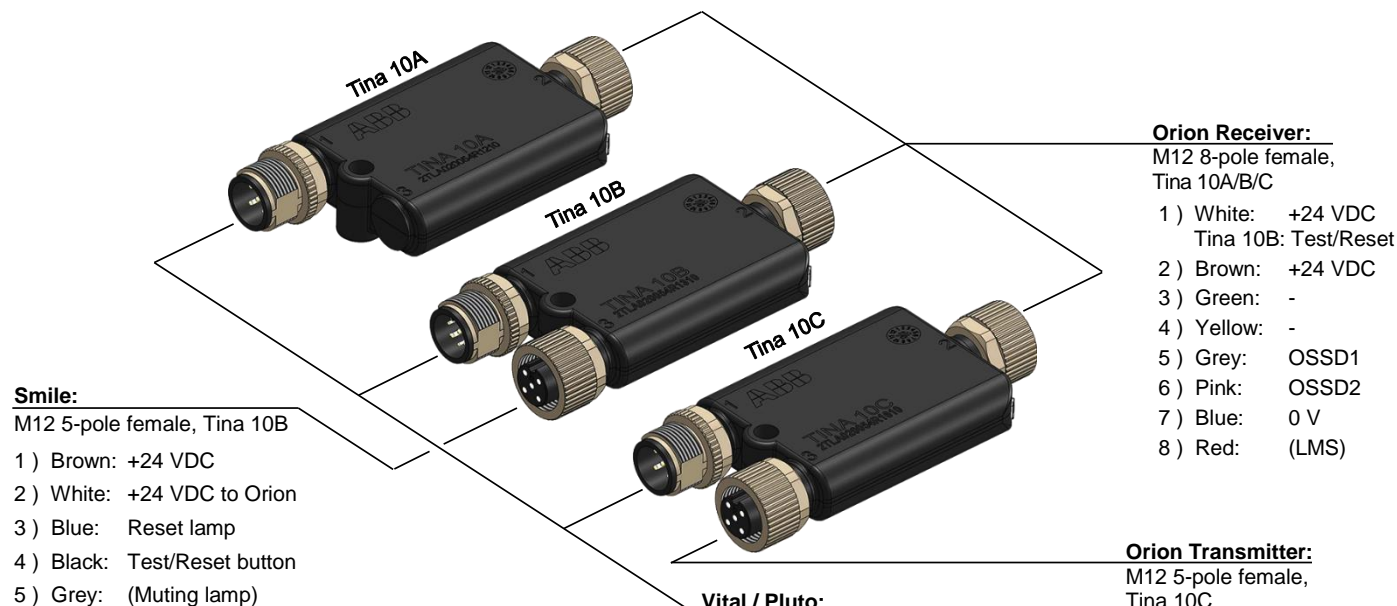
The devices shall be installed by a trained electrician following the Safety regulations, standards and the Machine directive.

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



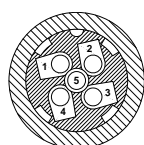
#### Smile reset button depending on Orion model

Orion	Smile, order code
Orion1 Base	Smile 11RO1, 2TLA022316R3000
Orion2 Base Orion2 Extended Orion3 Extended	Smile 11RO2, 2TLA022316R3100
Orion3 Base	Smile 11RO3, 2TLA022316R3200
Orion1 Extended	—

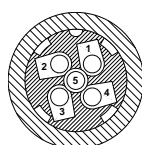
#### Cable between Orion and Tina 10A/B/C depending on Orion model

Orion	Cable, order code	Tina 10A/C	Tina 10B
Orion1 Base	M12-CTO1BA, 2TLA022315R3000	√	—
	M12-CTO1BM, 2TLA022315R3100	—	√
Orion2 Base Orion2 Extended Orion3 Extended	M12-C134, 2TLA020056R5000 M12-C334, 2TLA020056R5100	√	√
Orion3 Base	M12-CTO3B, 2TLA022315R3200	√	√
Orion1 Extended	—	—	—

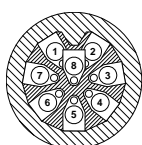
#### Connector seen from cable side



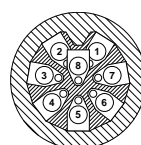
M12 5-pole male



M12 5-pole female



M12 8-pole male




M12 8-pole female



## 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 shall 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+A2:2015).

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 DYNlink safety circuit before this unit. The LED should flash between green and red.
- Interrupt protection (e.g. put a hand between Orion 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 DYNlink 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 V power supply
Lights green (but no DYNlink output detected)	Defected DYNlink signal input to unit (asymmetric pulses)	Check the DYNlink 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)	DYNlink signal in
	Green-Red (flash)	Safety circuit open (protection OK)	0 V in
	Red	Safety circuit interrupted (protection open)	+24 VDC in <u>or</u> safety circuit interrupted

### Information output signal attributes

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.

Input signal on pin-2	OSSD inputs	Information output on pin-5
No DYNlink signal or connected to 0 VDC	Any or both OSSD inputs low, i.e. safety interrupted	Low
No DYNlink signal or connected to 0 VDC	Both OSSD inputs high	High
Constant +24 VDC	Any or both OSSD inputs low, i.e. safety interrupted	Low
Constant +24 VDC	Both OSSD inputs high	Low
DYNlink signal exist	Any or both OSSD inputs low, i.e. safety interrupted	Low
DYNlink signal exist	Both OSSD inputs high	High

Information output signal switch delay	High → Low	Low → High
Delay for switching information output signal	~ 160 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 JOKAB SAFETY Varlabergsvägen 11 SE-434 39 Kungsbacka Sweden
Order code/Ordering data	Tina 10A v2: 2TLA020054R1210 Tina 10B v2: 2TLA020054R1310 Tina 10C v2: 2TLA020054R1610
Power supply (Orion supply excluded)	
Required power supply type	PELV/SELV
Operating voltage	+24 VDC ±20 %
Total current consumption	Nominal: 25 mA Maximal: 35 mA
DYNlink signal (Power supply voltage is +24 VDC, if not stated otherwise)	
DYNlink Input signal voltage	Minimal: 8 V <sub>RMS</sub> Maximal: 15 V <sub>RMS</sub>
DYNlink Output signal voltage	Minimal: 8 V <sub>RMS</sub> Maximal: 15 V <sub>RMS</sub>
Time delay between DYNlink input signal and DYNlink output signal	t < 120 µs
<b>Note:</b> The purpose of stating the voltage in RMS is to facilitate the measurement of the square-wave DYNlink signal with a multimeter.	
Information output (Power supply voltage is +24 VDC, if not stated otherwise)	
Output voltage high low	Typical: 22 VDC < 2 VDC
Output current	Maximum: 10 mA
OSSD inputs (Power supply voltage is +24 VDC, if not stated otherwise)	
Input current per channel	Typical: 10 mA
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	TPU
Connector	Tina 10A v2: M12 8-pole female, M12 5-pole male Tina 10B v2: M12 8-pole female, M12 5-pole female, M12 5-pole male Tina 10C v2: 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

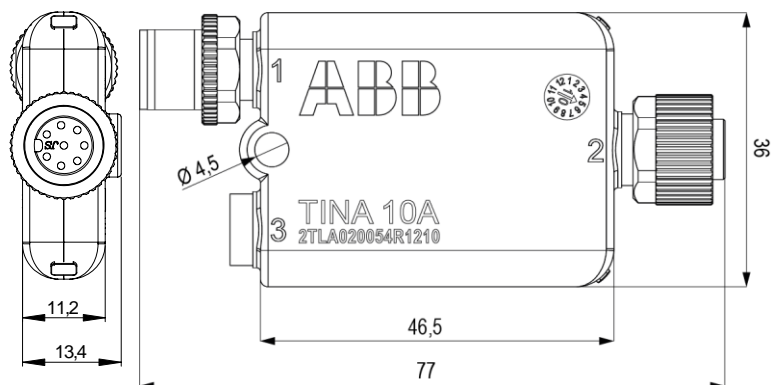
Conformity	European Machinery Directive 2006/42/EC EN ISO 12100:2010, EN 60204-1:2006+A1:2009, EN 62061:2005+A2:2015, EN ISO 13849-1:2015, EN 61496-1:2013
IEC/EN 61508-1...7	SIL3, PFH <sub>D</sub> = 4.50·10 <sup>-9</sup>
EN 62061	SIL3
EN ISO 13849-1	Performance level: PLe, category 4
Certificates	TÜV Nord

### Information for use in USA/Canada

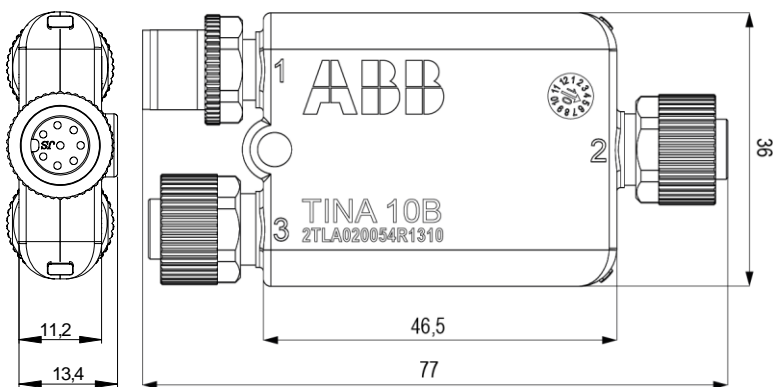
Power source	A suitable isolating source must be used in conjunction with a fuse in accordance with UL248. The fuse must be rated max. 4 A and installed in the +24 VDC power supply, to limit the available current.
Certificate	
Pollution degree	2
Altitude	2000 m (max)
Humidity	80% max for temperatures up to 31°C
Electrical supply	24 VDC, 25 mA
Indoor use statement	For indoor use only
Temperature	-10 to 55°C

## Dimensions

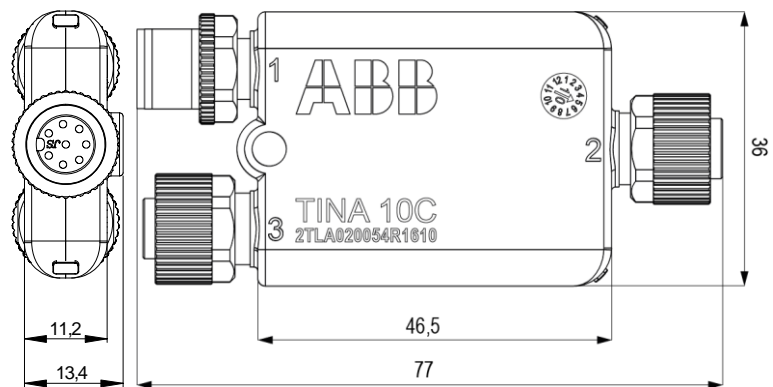
### Tina 10A



### Tina 10B



### Tina 10C



**Note:** All measurements in millimetres.

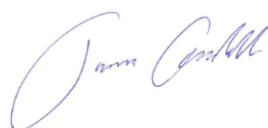
## 7 EC Declaration of conformity



### EC Declaration of conformity

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

<p>We ABB AB JOKAB SAFETY Varlabergsvägen 11 SE-434 39 Kungälv Sweden</p>	<p>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 – Machines 2014/30/EU – EMC 2011/65/EU – RoHS</p>
<p>Authorised to compile the technical file</p>	<p>ABB AB JOKAB SAFETY Varlabergsvägen 11 SE-434 39 Kungälv Sweden</p>
<p><b>Product</b> Adaptor unit Tina 10</p>	<p><b>Certificate</b> 44 799 16135523</p>
<p>Certification body</p>	<p>TÜV NORD CERT GmbH Langemarckstrasse 20 45141 Essen Germany</p>
<p>Used harmonized standards</p>	<p>EN ISO 12100:2010, EN ISO 13849-1:2015, EN ISO 13849-2:2012, EN 62061:2005+A1:2013+A2:2015, EN 60204-1:2006+A1:2009, EN 60664-1:2007, EN 61000-6-2:2005, EN 61000-6-4:2007</p>
<p>Other used standards</p>	<p>EN 61508:2010</p>



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