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.

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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.

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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.

ℹ️ 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

### Orion Receiver:
- M12 8-pole 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 V
  - 8) Red: (LMS)

### Orion Transmitter:
- M12 5-pole female, Tina 10C
  - 1) Brown: +24 VDC
  - 2) White: -
  - 3) Blue: 0 V
  - 4) Black: -
  - 5) Grey: -

### Smile reset button depending on Orion model

<table>
<thead>
<tr>
<th>Orion</th>
<th>Smile, order code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orion1 Base</td>
<td>Smile 11RO1, 2TLA022316R3000</td>
</tr>
<tr>
<td>Orion2 Base</td>
<td>Smile 11RO2, 2TLA022316R3100</td>
</tr>
<tr>
<td>Orion2 Extended</td>
<td>Smile 11RO2, 2TLA022316R3100</td>
</tr>
<tr>
<td>Orion3 Base</td>
<td>Smile 11RO3, 2TLA022316R3200</td>
</tr>
<tr>
<td>Orion1 Extended</td>
<td>—</td>
</tr>
<tr>
<td>Orion2 Extended</td>
<td>—</td>
</tr>
<tr>
<td>Orion3 Extended</td>
<td>—</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Orion</th>
<th>Cable, order code</th>
<th>Tina 10A/C</th>
<th>Tina 10B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orion1 Base</td>
<td>M12-CTO1BA, 2TLA022315R3000</td>
<td>√</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>M12-CTO1BM, 2TLA022315R3100</td>
<td>—</td>
<td>√</td>
</tr>
<tr>
<td>Orion2 Base</td>
<td>M12-C134, 2TLA020056R5000</td>
<td>√</td>
<td>—</td>
</tr>
<tr>
<td>Orion2 Extended</td>
<td>M12-C334, 2TLA020056R5100</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Orion3 Base</td>
<td>M12-CTO3B, 2TLA022315R3200</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Orion1 Extended</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

### Connector seen from cable side

- M12 5-pole male
- M12 5-pole female
- M12 8-pole male
- M12 8-pole female
⚠️ **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.

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

The use of shielded cable is mandatory between this unit and the rest of the safety circuit.

### Connection examples
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

<table>
<thead>
<tr>
<th>LED indication</th>
<th>Expected causes of faults</th>
<th>Checking and measures to take</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lights red</td>
<td>Sensor open</td>
<td>Check status of the sensor</td>
</tr>
<tr>
<td></td>
<td>Bad connection between loops</td>
<td>Carefully check cable to the light beam</td>
</tr>
<tr>
<td></td>
<td>+24 VDC input to pin-2 (no DYNlink signal)</td>
<td>Check if there is +24 VDC to input (pin-2). If Yes, check cable or unit before and fix it.</td>
</tr>
<tr>
<td>No lights</td>
<td>Loss of power supply</td>
<td>Check +24 VDC / 0 V power supply</td>
</tr>
<tr>
<td>Lights green (but no DYNlink output detected)</td>
<td>Defected DYNlink signal input to unit (asymmetric pulses)</td>
<td>Check the DYNlink input or the unit before</td>
</tr>
<tr>
<td>Weak lights or red and green lights at the same time</td>
<td>The unit is defect</td>
<td>The unit needs to be replaced. Contact ABB Jokab Safety.</td>
</tr>
</tbody>
</table>

⚠️ 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

<table>
<thead>
<tr>
<th>LED on Tina</th>
<th>Indicator</th>
<th>Description</th>
<th>Input signal on pin-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Safety circuit closed (protection OK)</td>
<td>DYNlink signal in</td>
<td></td>
</tr>
<tr>
<td>Green-Red (flash)</td>
<td>Safety circuit open (protection OK)</td>
<td>0 V in</td>
<td></td>
</tr>
<tr>
<td>Red</td>
<td>Safety circuit interrupted (protection open)</td>
<td>+24 VDC in or safety circuit interrupted</td>
<td></td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Input signal on pin-2</th>
<th>OSSD inputs</th>
<th>Information output on pin-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>No DYNlink signal or connected to 0 VDC</td>
<td>Any or both OSSD inputs low, i.e. safety interrupted</td>
<td>Low</td>
</tr>
<tr>
<td>No DYNlink signal or connected to 0 VDC</td>
<td>Both OSSD inputs high</td>
<td>High</td>
</tr>
<tr>
<td>Constant +24 VDC</td>
<td>Any or both OSSD inputs low, i.e. safety interrupted</td>
<td>Low</td>
</tr>
<tr>
<td>Constant +24 VDC</td>
<td>Both OSSD inputs high</td>
<td>Low</td>
</tr>
<tr>
<td>DYNlink signal exist</td>
<td>Any or both OSSD inputs low, i.e. safety interrupted</td>
<td>Low</td>
</tr>
<tr>
<td>DYNlink signal exist</td>
<td>Both OSSD inputs high</td>
<td>High</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Information output signal switch delay</th>
<th>High → Low</th>
<th>Low → High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delay for switching information output signal</td>
<td>~ 160 ms</td>
<td>~ 2 ms</td>
</tr>
</tbody>
</table>

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

| Manufacturer | ABB JOKAB SAFETY  
| Varlabergsvägen 11  
| SE-434 39 Kungsbacka  
| Sweden |
|---|---|
| **Address** |  
| **Order code/Ordering data** | Tina 10A v2: 2TLA020054R1210  
| Tina 10B v2: 2TLA020054R1310  
| Tina 10C v2: 2TLA020054R1610 |

### Power supply (Orion supply excluded)

<table>
<thead>
<tr>
<th>Required power supply type</th>
<th>PELV/SELV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>+24 VDC ±20%</td>
</tr>
</tbody>
</table>
| 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 |

**Note:** 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 | Typical: 22 VDC  
| low | < 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  
| IEC/EN 61508-1…7   | SIL3, $PFH_L = 4.50 \times 10^{-9}$ |
| EN 62061           | SIL3                                |
| EN ISO 13849-1      | Performance level: PL, 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        | ![Certificate](image) |
| 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)

We ABB AB JOKAB SAFETY
Varlabergsvägen 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 – Machines
2014/30/EU – EMC
2011/65/EU – RoHS

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

Product Certificate
Adaptor unit 44 799 16135523
Tina 10

Certification body
TÜV NORD CERT GmbH
Langemarkstrasse 20
45141 Essen
Germany

Used harmonized standards

Other used standards
EN 61508:2010

Tobias Gentzel
R&D Manager
Kungsbacka 2018-11-01

Original

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