Original instructions

Tina 11A
Connection block
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.

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1 Introduction

Scope
The purpose of these instructions is to describe the connection block Tina 11A 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

Tina 11A is a connection block with two 5-pole M12 connectors. It is used to connect two safety devices with 5-pole M12 connectors to the dynamic safety circuit. This simplifies wiring and reduces cable costs. Several connection blocks can be connected to one Vital or Pluto. Tina 11A also has LED status information and Σ-info signal output from the connected safety devices.

The Tina 11A connection block 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

5-pole M12 connector:
(x1 male, x2 female)
1) Brown: +24 VDC
2) White: Dynamic signal input
3) Blue: 0 VDC
4) Black: Dynamic signal output
5) Grey: Information

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).
Caution! All cable colours according to ABB Jokab Safety standard cables.
Caution! All cable colours according to ABB Jokab Safety standard cables.
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 dynamic safety circuit (connection nr 2) to this unit. The LED should flash between green and red.
- The LED should light green when protection is OK and if the safety circuit(s) before this unit is not interrupted.

Troubleshooting

<table>
<thead>
<tr>
<th>LED indicator note</th>
<th>Expected causes of faults</th>
<th>Checking and measures to take</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lights red</td>
<td>24 VDC input to pin-2 (no dynamic 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 VDC power supply</td>
</tr>
<tr>
<td>Lights green (but no dynamic output detected)</td>
<td>Defected dynamic signal input to unit (asymmetric pulses)</td>
<td>Check the dynamic 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>Description</th>
<th>Input signal on pin-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Safety circuit closed (protection OK)</td>
<td>Dynamic signal in</td>
</tr>
<tr>
<td>Green-Red (flash)</td>
<td>Safety circuit open (protection OK)</td>
<td>No dynamic signal in or 0 VDC in</td>
</tr>
<tr>
<td>Red</td>
<td>Safety circuit interrupted (protection open)</td>
<td>+24 VDC in or safety circuit interrupted</td>
</tr>
</tbody>
</table>

Information output signal attributes

The information output of the unit (pin-5, connector 1) is set either high (+24 VDC) or low (0 VDC) depending on four different input signals (pin-2, connector 1):

- **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 on either of the devices connected to connectors 2 or 3, the information output signal on connector 1 is always low (L).

<table>
<thead>
<tr>
<th>Input signal (pin-2)</th>
<th>Dynamic signal</th>
<th>No dynamic signal</th>
<th>+24 VDC</th>
<th>0 VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Info output signal (pin-5)</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Info output signal switch</th>
<th>H → L</th>
<th>L → H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delay</td>
<td>~ 95 ms</td>
<td>~ 80 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).
### 6 Technical data

| Manufacturer | ABB JOKAB SAFETY  
| Varlabergsvägen 11  
| SE-434 39 Kungsbacka  
| Sweden |
| Article number/Ordering data | Tina 11A: 2TLA020054R1700 |

#### Power supply

| Operating voltage | 24 VDC +15 %, -15 % |
| Total current consumption | 17 mA (27 mA with max information output)  
| 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)  
| Dynamic output: between 9 and 13 volt (RMS)  
| Information output: ~ 23 VDC |

#### General

| Protection class | IP67 |
| Ambient temperature | Storage: -30…+70°C  
| Operation: -10…+55°C |
| Humidity range | 35 to 85 % (with no icing or condensation) |
| Housing material | PVC |
| Connector | Out: M12 5-pole male (nr 2)  
| In: M12 5-pole female (nr 1,3) |
| 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  
| CE  
| EN ISO 12100-1:2003, EN ISO 12100-2:2003,  
| EN 62061:2005 |
| IEC/EN 61508-1…7 | SIL3, PFHₓ: 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, cCSAus |

The ABB Jokab Safety branded product with article number beginning with 2TLJ is fully compatible with the ABB branded product with article number beginning with 2TLA.
Dimensions

NB: All measurements in millimetres.
7 EC Declaration of conformity

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
2008/65/EC
2004/108/EC

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

Product | Certificate | Serialnumber
--- | --- | ---
Non-contact safety sensor Eden (Adam, Eva) E/C/EC 44 798 12 409341-003 | [000 – 000 ... 999-999]
Adapter unit Tina 1-8, Tina 10-12 44 798 12 409341-003 | [000 – 000 ... 999-999]
Muting unit FMC-Tina 44 798 12 409341-003 | [000 – 000 ... 999-999]
Non-contact safety sensor Eden including locking function Magne 2A, 2B, 2AX, 2BX 44 798 12 409341-003 | [000 – 000 ... 999-999]

Certification body TÜV NORD CERT GmbH
Langenmarkstrasse 20
45141 Essen
Germany


Other used standards EN 61508:2010

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Kungsbacka 2012-05-31

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Original

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