Tina 12A
Connection block
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1 Introduction

Scope
The purpose of these instructions is to describe the connection block Tina 12A 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 12A is a connection block with two 8-pole M12 connectors. It is used to connect two safety devices with 8-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. The 8-pole connectors are intended for two Dalton, Magne or Knox locks where both devices can be locked with the same output signal. Tina 12A also has LED status information and Σ-info signal output from Dalton/Magne/Knox.

The Tina 12A 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

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.

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>Indication</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>
<td></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>
<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

Tina 12A has two summary information output signals on connector 1:

- The Eden summary information output signal on pin-5 indicates the status of the Eden sensors connected to connectors 2 and 3.
- The lock summary information output signal on pin-8 indicates if the devices connected to connectors 2 and 3 are locked.

Eden summary information output signal:

The information output signal on pin-5 is set either high (+24 VDC) or low (0 VDC) depending on four different input signals on pin-1 of 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 (Adam away from Eva) on either of the devices connected to connectors 2 or 3, the information output signal on pin-5 of connector 1 is always low (L).

<table>
<thead>
<tr>
<th>Input signal (pin-1)</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>

Lock summary information output signal:

The summary information output signal on pin-8 of connector 1 is low unless both information signals on pin-8 of connectors 2 and 3 are high, i.e. unless both devices connected to connectors 2 and 3 are locked.

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

<table>
<thead>
<tr>
<th>Manufacturer</th>
</tr>
</thead>
</table>
| Address      | ABB AB / JOKAB SAFETY  
Varlabergsvägen 11  
SE-434 39 Kungsbacka  
Sweden |
| Article number/Ordering data | Tina 12A: 2TLA020054R1800 |

### Power supply

<table>
<thead>
<tr>
<th>Operating voltage</th>
<th>24 VDC +15 %, -15 %</th>
</tr>
</thead>
</table>
| Total current consumption | 60 mA (70 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

<table>
<thead>
<tr>
<th>Protection class</th>
<th>IP67</th>
</tr>
</thead>
</table>
| Ambient temperature | Storage: -30…+70°C  
Operation: -10…+55°C |
| Humidity range | 35 to 85 % (with no icing or condensation) |
| Housing material | PVC |
| Connector | To Vital/Pluto: M12 8-pole male (nr 2)  
From safety device: M12 8-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  
EN ISO 12100-1:2003, EN ISO 12100-2:2003,  
EN 62061:2005  
IEC/EN 61508-1…7 | SIL3, PFH_{i} ≈ 4.50*10^{9} |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 62061</td>
<td>SIL3</td>
</tr>
<tr>
<td>EN ISO 13849-1</td>
<td>Performance level: Pl e, category 4</td>
</tr>
<tr>
<td>EN 954-1</td>
<td>Category 4</td>
</tr>
<tr>
<td>Certificates</td>
<td>TÜV Nord</td>
</tr>
</tbody>
</table>
NB: All measurements in millimetres.
7 EC Declaration of conformity

<table>
<thead>
<tr>
<th>Product</th>
<th>Certificate</th>
<th>Serialnumber</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-contact safety sensor Eden</td>
<td>44 207 10 372092-001</td>
<td>[000 – 000 ... 999-999]</td>
</tr>
<tr>
<td>Adapter unit Tina 1-8, Tina 10-12</td>
<td>44 207 10 372092-001</td>
<td>[000 – 000 ... 999-999]</td>
</tr>
<tr>
<td>Muting unit FMC-Tina</td>
<td>44 207 10 372092-001</td>
<td>[000 – 000 ... 999-999]</td>
</tr>
<tr>
<td>Non-contact safety sensor</td>
<td>44 207 10 372092-001</td>
<td>[000 – 000 ... 999-999]</td>
</tr>
<tr>
<td>including locking function</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magna 2A, 2B, 2AX, 2BX</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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