

SAFETY PRODUCTS

Tina 10A/B/C Adapter unitProduct Manual



Read and understand this document

Please read and understand this document before using the products. Please consult ABB with any questions or comments.

Suitability for use

ABB shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the product. Third party certificates for the products are available at https://new.abb.com/low-voltage/products/safety-products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

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 PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

Descriptions and examples show how the product works and can be used. It does not mean that it fulfills the requirements for all types of machines and processes. The buyer/user is responsible for installing and using the product according to applicable standards and regulations. We reserve the right to make changes to the product and the documentation without prior notice.

Table of Contents

1	Intro	duction	4
	1.1	Purpose of document	4
	1.2	Intended audience	4
	1.3	Reading prerequisites	4
	1.4	Special notes	4
2	Safet	у	5
	2.1	Safety precautions	
3	Produ	uct description	€
4	Insta	llation	7
	4.1	Installation precautions	7
	4.2	Testing safety functions	7
5	Conn	ections	٤
	5.1	Connection examples	.10
6	Funct	ions	. 11
	6.1	LED Indications	. 11
	6.2	Information output signal attributes	. 11
7	Maint	enance	.12
	7.1	Maintenance precautions	.12
8	Trouk	oleshooting	. 13
	8.1	LED indications	.13
9	Dime	nsions	.14
10	Techr	nical data	.15
ΤŢ	Decia	ration of conformity	. т/

Introduction 1

Purpose of document 1.1

The purpose of this document is to describe the functions and to provide instructions for installation, operation, maintenance and troubleshooting of the product.

1.2 Intended audience

This document is intended for authorized personnel.

1.3 **Reading prerequisites**

It is assumed that the reader of this document has knowledge of the following:

- Basic knowledge of ABB safety products
- Knowledge of machine safety

Special notes 1.4

Pay attention to special notes in the document:

Warning! Risk 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! Risk of damage to the equipment!

An instruction or procedure which, if not carried out correctly, may damage

the equipment.

Note! Important or explanatory information.

2 Safety

2.1 Safety precautions

The safety precautions must be followed during installation, operation, maintenance and troubleshooting.

It is the responsibility of the user to ensure the correct overall functionality.

Warning! Carefully read through the <u>entire</u> product manual before using the device.

Warning! The devices <u>shall</u> be installed by authorized personnel following applicable

Safety regulations, standards and the Machinery directive.

Warning! Failure to comply with instructions, operation that is not in accordance with the use prescribed in the instructions, improper installation or

handling of the device can affect the safety of people and the plant.

Warning! 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.

Warning! 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 Product description

ABB adapter units are used to adapt conventional safety devices 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 safety controller or a safety PLC.

Tina 10A, Tina 10B and Tina 10C are used to adapt 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.

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/10B/10C adapter unit is intended for use in safety circuits in accordance with EN 60204-1.

Installation 4

- Attach the cable or device to the M12 connector on Tina.
- Gently hold the Tina unit to the mounting surface and attach the unit using an M4 bolt.
- See max. tightening torques in chapter "Technical data".

Installation precautions 4.1



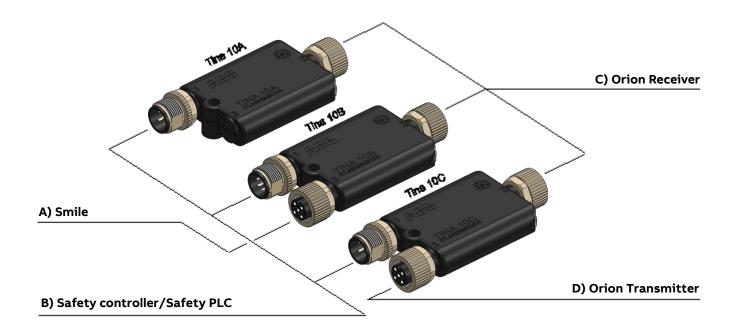
Warning! All safety functions <u>shall</u> be tested before starting up the system.

Testing safety functions 4.2

After each step the status of the input can be read on the monitoring device.

Steps for testing	LED indication	DYNlink signal output
Interrupt the DYNlink safety circuit before the unit to be tested	Green/red flashing	Shall go low
2. Close the DYNlink safety circuit	Green	Shall generate a DYNlink signal
3. Interrupt the DYNlink safety circuit (e.g. put a hand between Orion receiver and transmitter)	Red	Shall go low

Connections 5



A) Smile M12 5-pole female, Tina 10B			
1	Brown	+24 VDC	
2	White	+24 VDC to Orion	
3	Blue	Reset lamp	
4	Black	Test/Reset button	
5	Grey	(Muting lamp)	

A) Smile M12 5-pole female, Tina 10B			•	C) Orion Receiver M12 8-pole female, Tina 10 A/B/C		
1	Brown	+24 VDC	1	White	Tina 10A/10C: +24 VDC Tina 10B: Test/Reset	
2	White	+24 VDC to Orion		Drown	+24 VDC	
3	Blue	Reset lamp	<u> </u>	Brown	+24 VDC	
4	Black	Test/Reset button	<u> </u>	Green	-	
		,	 4	Yellow	-	
	Grey	(Muting lamp)	5	Grey	OSSD1	
			6	Pink	OSSD2	

Blue

Red

8

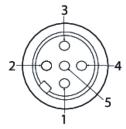
1 Brown +24 VDC 2 White DYNlink signal input 3 Blue 0 VDC	B) Safety controller/Safety PLC M12 5-pole male, Tina 10A/B/C			
3 Blue 0 VDC	1	Brown	+24 VDC	
	2	White	DYNlink signal input	
4 Black BYARink signal autout	3	Blue	0 VDC	
4 Black DYNIINK Signal output	4	Black	DYNlink signal output	
5 Grey Information	5	Grey	Information	

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

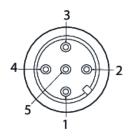
Tina 10B: Muting lamp

0 VDC

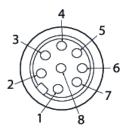
Connector seen from cable side



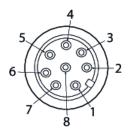
M12 5-pole male connector



M12 5-pole female connector



M12 8-pole male connector



M12 8-pole female connector

Note! Which Smile reset button to use is depending on Orion model used – see product catalog on ABB web.

Note! Which cable to use between Orion and Tina 10A/B/C is depending on Orion model used – see product catalog on ABB web.

Marning! Information output signals shall <u>never</u> be used for safety purpose(s).

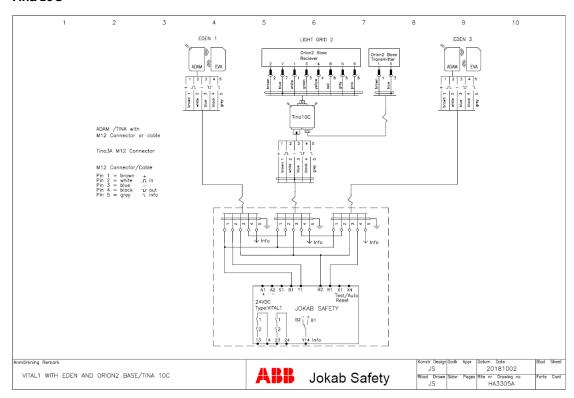
Warning! The OSSD connections shall <u>not</u> be used for purposes other than intended. All tampering with the safety device can lead to serious risk to life.

(!) Caution! All cable colors according to ABB standard cables.

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

5.1 Connection examples

Tina 10C



(!) Caution! All cable colors according to ABB standard cables.

Functions 6

6.1 **LED Indications**

LED indication	Description	DYNlink state
Green	Safety inputs ON (protection OK)	DYNlink signal
Green/red flashing	Safety inputs ON (protection OK)	0 VDC, DYNlink interrupted before this unit
Red	Safety input OFF	0 VDC or DYNlink signal
	Safety inputs at any state	+24 VDC connected to DYNlink signal input (pin-2) or interrupted in this unit

Information output signal attributes 6.2

The information output of the unit is set depending on the state of the safety inputs:

Safety inputs (OSSD1 and OSSD2)	Information output
One or both safety inputs OFF	Low
Both safety inputs ON	High

The delay for switching the information output signal:

Information output signal switch	High -> Low	Low -> High
Delay	~ 160 ms	~ 2 ms

Note!

If one or both safety inputs are OFF longer than 70 ms the information output is set low for approximately 1.2 s. If any of the safety inputs stay OFF the information output stays low. If any of the safety inputs are OFF for less than 50 ms the information output will stay high.

Warning! Information output signals shall <u>never</u> be used for safety purpose(s).

Maintenance 7

Maintenance shall be done in accordance with a risk assessment for the individual application.

7.1 **Maintenance precautions**



Marning! 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.



Warning! In case of breakdown or damage to the product, contact ABB. 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.

Troubleshooting 8

LED indications 8.1

LED indication	Probable cause	Action
Red	Device interrupted	Check status of the device.
	Bad connection to the device	Check cable to the light beam and fasten carefully.
	+24 VDC connected to DYNlink signal input (pin-2)	Check if there is +24 VDC on DYNlink signal input (pin-2). If yes, check cable connections or the unit before.
No LED light	Loss of power supply	Check +24 VDC / 0 VDC power supply.
Green (but no DYNlink output detected)	Defective DYNlink signal input to unit	Check the DYNlink input or the unit before.
Weak lights or red and green lights at the same time	Unit is defective	Replace the unit.

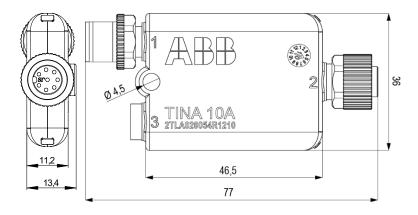
Marning!

Replace defective unit with a new one and never bypass the safety circuit using Tina 1A or any other solution.

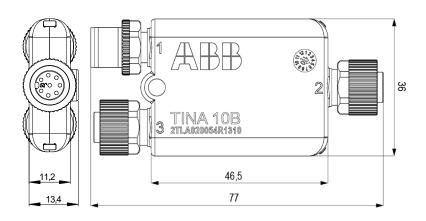
9 Dimensions

All dimensions are in mm.

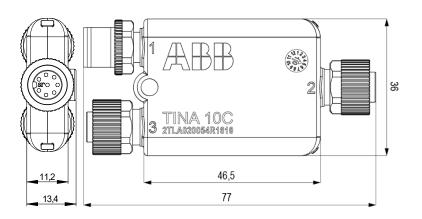
Tina 10A



Tina 10B



Tina 10C



10 Technical data

Further information about the product and accessories is found at: new.abb.com/low-voltage/products/safety-products

Stated technical data apply when power supply voltage is +24 VDC and ambient temperature is +25 $^{\circ}$ C, unless stated otherwise.

Manufacturer	
Address	ABB Electrification Sweden AB SE-721 61 Västerås Sweden
Order code/Ordering data	2TLA020054R1210: Tina 10A v2 Adapter unit
	2TLA020054R1310: Tina 10B v2 Adapter unit
	2TLA020054R1610: Tina 10C v2 Adapter unit
Power supply (Orion supply exclu	uded)
Required power supply type	PELV/SELV, not intended to be connected to a DC distribution network. Note: A DC distribution network is defined in IEC 61326-3-1:2017 as "Local DC electricity supply network in the infrastructure of a certain site or building intended for connection of any type of equipment".
Operating voltage	+24 VDC ±20 %
Total current consumption	Nominal: 25 mA Maximum: 35 mA
-	is the supply current when there is no information erating voltage and ambient temperature range.
DYNlink signal	
DYNlink signal DYNlink Input signal voltage	Minimum: 8 V _{RMS} Maximum: 15 V _{RMS}
DYNlink Input signal voltage DYNlink Output signal voltage	$\label{eq:maximum: 15 V_{RMS}} Maximum: 8 \ V_{RMS} \\ Maximum: 15 \ V_{RMS} \\ voltage in RMS is to facilitate the measurement of the$
DYNlink Input signal voltage DYNlink Output signal voltage Note: The purpose of stating the	$\label{eq:maximum: 15 V_{RMS}} Maximum: 8 \ V_{RMS} \\ Maximum: 15 \ V_{RMS} \\ voltage in RMS is to facilitate the measurement of the$
DYNlink Input signal voltage DYNlink Output signal voltage Note: The purpose of stating the square-wave DYNlink signal with a Time delay between DYNlink	$\label{eq:maximum: 15 V_{RMS}} Maximum: 8 V_{RMS} \\ Maximum: 15 V_{RMS} \\ voltage in RMS is to facilitate the measurement of the a multimeter. $
DYNlink Input signal voltage DYNlink Output signal voltage Note: The purpose of stating the square-wave DYNlink signal with a time delay between DYNlink input and output signal (TDELAY)	$\label{eq:maximum: 15 V_{RMS}} Maximum: 8 V_{RMS} \\ Maximum: 15 V_{RMS} \\ voltage in RMS is to facilitate the measurement of the a multimeter. $
DYNlink Input signal voltage DYNlink Output signal voltage Note: The purpose of stating the square-wave DYNlink signal with a time delay between DYNlink input and output signal (TDELAY) Information output Output voltage high	Maximum: 15 V _{RMS} Minimum: 8 V _{RMS} Maximum: 15 V _{RMS} voltage in RMS is to facilitate the measurement of the a multimeter. Maximum: 120 μs Nominal: Operating voltage - 2 VDC
DYNlink Input signal voltage DYNlink Output signal voltage Note: The purpose of stating the square-wave DYNlink signal with a Time delay between DYNlink input and output signal (TDELAY) Information output Output voltage high low	Maximum: $15 V_{RMS}$ Minimum: $8 V_{RMS}$ Maximum: $15 V_{RMS}$ voltage in RMS is to facilitate the measurement of the a multimeter. Maximum: $120 \mu s$ Nominal: Operating voltage - $2 VDC$ Maximum: $2 VDC$
DYNlink Input signal voltage DYNlink Output signal voltage Note: The purpose of stating the square-wave DYNlink signal with a square delay between DYNlink input and output signal (TDELAY) Information output Output voltage high low Output current	Maximum: $15 V_{RMS}$ Minimum: $8 V_{RMS}$ Maximum: $15 V_{RMS}$ voltage in RMS is to facilitate the measurement of the a multimeter. Maximum: $120 \mu s$ Nominal: Operating voltage - $2 VDC$ Maximum: $2 VDC$
DYNlink Input signal voltage DYNlink Output signal voltage Note: The purpose of stating the square-wave DYNlink signal with a Time delay between DYNlink input and output signal (TDELAY) Information output Output voltage high low Output current OSSD inputs	Maximum: 15 V _{RMS} Minimum: 8 V _{RMS} Maximum: 15 V _{RMS} voltage in RMS is to facilitate the measurement of the a multimeter. Maximum: 120 μs Nominal: Operating voltage - 2 VDC Maximum: 2 VDC Maximum: 10 mA
DYNlink Input signal voltage DYNlink Output signal voltage Note: The purpose of stating the square-wave DYNlink signal with a Time delay between DYNlink input and output signal (TDELAY) Information output Output voltage high low Output current OSSD inputs Input current per channel	Maximum: 15 V _{RMS} Minimum: 8 V _{RMS} Maximum: 15 V _{RMS} voltage in RMS is to facilitate the measurement of the a multimeter. Maximum: 120 μs Nominal: Operating voltage - 2 VDC Maximum: 2 VDC Maximum: 10 mA
DYNlink Input signal voltage DYNlink Output signal voltage Note: The purpose of stating the square-wave DYNlink signal with a time delay between DYNlink input and output signal (TDELAY) Information output Output voltage high low Output current OSSD inputs Input current per channel General	Maximum: 15 V _{RMS} Minimum: 8 V _{RMS} Maximum: 15 V _{RMS} voltage in RMS is to facilitate the measurement of the a multimeter. Maximum: 120 μs Nominal: Operating voltage - 2 VDC Maximum: 2 VDC Maximum: 10 mA Nominal: 10 mA

Housing material	TPU
Connectors	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
Tightening torque	M12 connector: 0.6 Nm M4 bolt: 1 Nm
Size (L x W x H)	77 x 36 x 15 mm
Weight	~ 40 g
Color	Black
Directives / Harmonized standard	ds
Conformity	European Machinery Directive 2006/42/EC 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 EN 61508:2010
IEC/EN 61508-17	SIL3, PFH _D = 4.50·10 ⁻⁹
EN 62061	SIL3
EN ISO 13849-1	PL e, category 4
Certificates	TÜV Nord, cCSAus
Information for use in USA/Canad	da
Pollution degree	2
Altitude	2000 m (max)
Humidity	80% max for temperatures up to 31 °C
Indoor use statement	For indoor use only

11 Declaration of conformity

EC Declaration of conformity



EC Declaration of conformity

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

We ABB Electrification Sweden AB

721 61 Västerås 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 - RoHS2 + 2015/863

Authorised to compile the technical

file

ABB Electrification Sweden AB

721 61 Västerås Sweden

<u>Product</u> Adaptor unit Tina 10A, 10B, 10C <u>Certificate</u>

44 799 16135523

Certification body TÜV NORD CERT GmbH

Langemarckstrasse 20

45141 Essen Germany

Used harmonized standards 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

Other used standards EN 61508:2010

Alessandro Pelandi R&D Manager

Västerås 2023-01-11

abb.com/lowvoltage

Original

UK Declaration of conformity



Declaration of conformity

(according to 2008 No 1597)

We ABB Electrification Sweden AB

SE-721 61 Västerås

Sweden

declare that the safety components of ABB Electrification Sweden AB make with type designations and safety functions as listed below, is in conformity with UK Statutory Instruments (and their amendments)

2008 No 1597 – Supply of Machinery (Safety) Regulations (MD) 2016 No. 1091 – Electromagnetic Compatibility Regulations (EMC) 2012 No 3032 – Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations

(RoHS)

Authorized representative

ABB Limited Tower Court Coventry CV6 5NX United Kingdom

Authorised to compile the technical

file

ABB Limited Tower Court Coventry CV6 5NX United Kingdom

Products

Adapter unit Tina 10A Tina 10B Tina 10C

Used designated standards EN ISO 12100:2010, EN ISO 13849-1:2015,

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

Other used standards EN 61508:2010

Magnus Backm

Magnus Backman R&D Manager

Västerås 2021-05-04

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