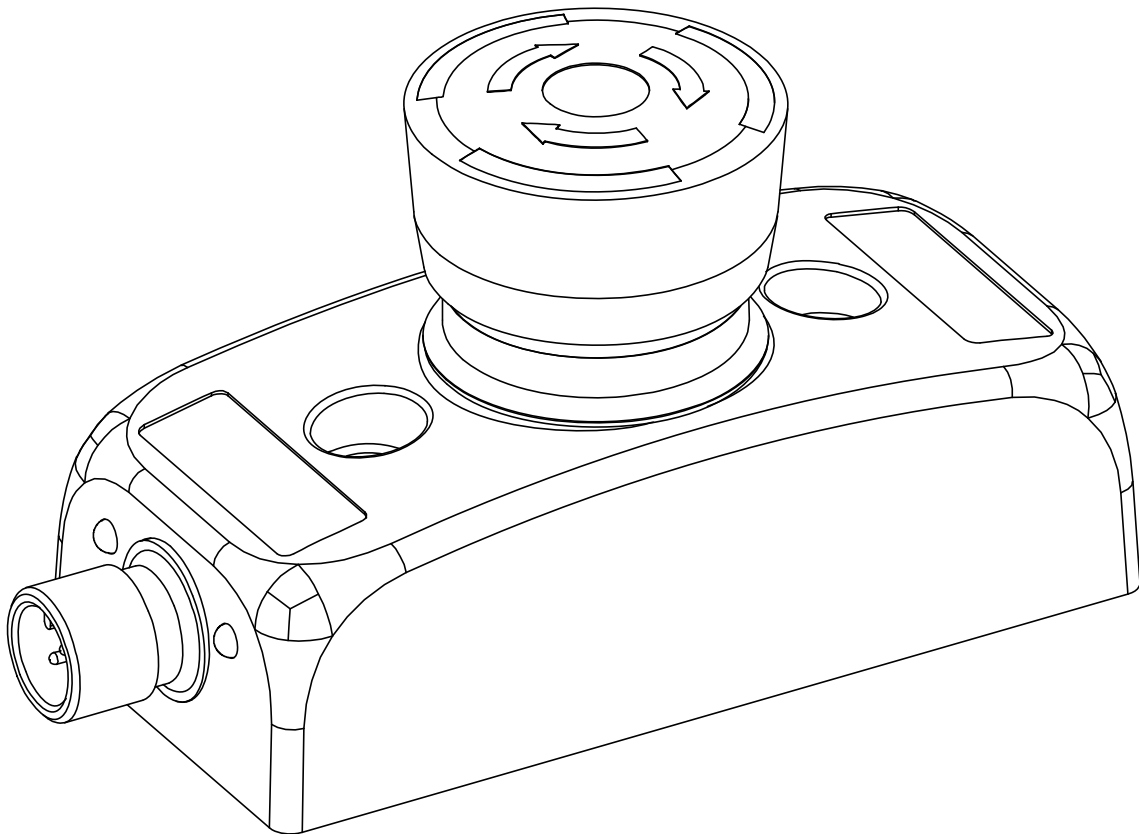


Original instructions

# Smile 11 AS-i

## Emergency stop with safe AS-i input node



## 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**

ABB JOKAB SAFETY's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by ABB JOKAB SAFETY.

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IN NO EVENT SHALL ABB JOKAB SAFETY BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS ABB JOKAB SAFETY'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

### **SUITABILITY FOR USE**

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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 emergency stop Smile 11EA AS-i, Smile 11EAR AS-i and the safety stop Smile 11SA AS-i, 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 the AS-i system.
- 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.

## 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.

## 2 Overview

### General description

Smile 11EA AS-i is an emergency stop with a built-in dual channel safe AS-i input node. Smile 11SA AS-i has a similar dual channel safe AS-i input node, but is intended for use as a safety stop and therefore has a black pushbutton. Smile 11EAR AS-i works the same way as Smile 11EA AS-I but is designed to be mounted on the inside of a control cabinet, with the emergency stop button through the cabinet wall.

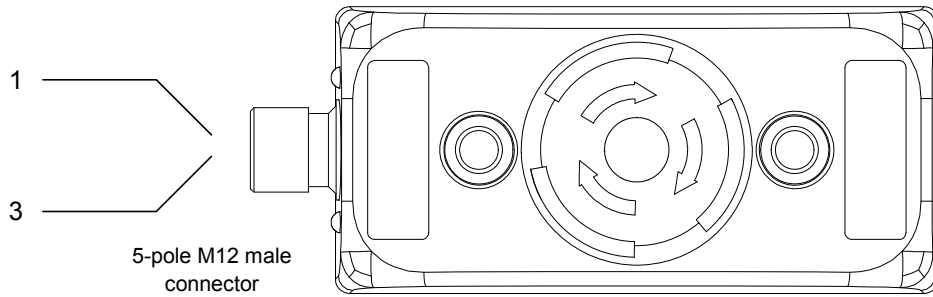
The AS-i bus and the safety around it is specified by the two organisations “AS-International Association” and “AS-Interface Safety at Work”, and is described in the publication “AS-Interface The Automatic Solution”.

 **Warning!** Smile normally needs to be complemented with other safety functions such as interlocking guards etc. Refer to risk analysis.

NB: The emergency stop should not be used as normal stop of the machine, only in case of emergency.

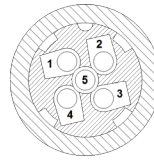
### 3 Connections

#### Smile 11EA/SA AS-i connections

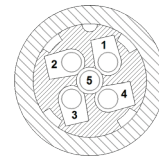


#### 5-pole M12-connector:

- 1 ) AS-i +
- 2 ) Not used
- 3 ) AS-i -
- 4 ) Not used
- 5 ) Not used



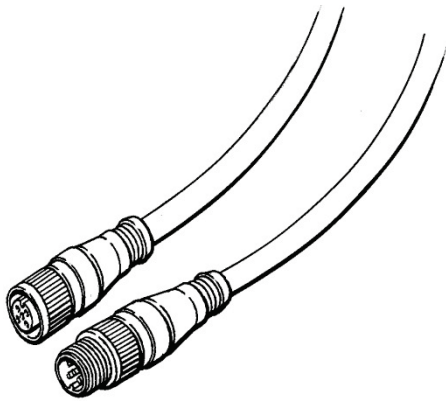
M12 5-pole male  
seen from cable side



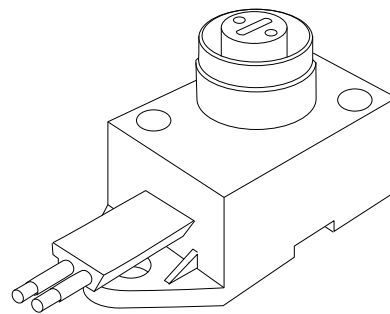
M12 5-pole female  
seen from cable side

#### Accessories for connection to the AS-i bus

Type	Article number	Description
AS-i T-connector with M12	2TLA020073R0000	Flat cable connector to M12
M12-C112	2TLA020056R2000	1 m cable, 5-pole, 0.34 mm <sup>2</sup> , M12 female + M12 male connectors
M12-C312	2TLA020056R2100	3 m cable, 5-pole, 0.34 mm <sup>2</sup> , M12 female + M12 male connectors

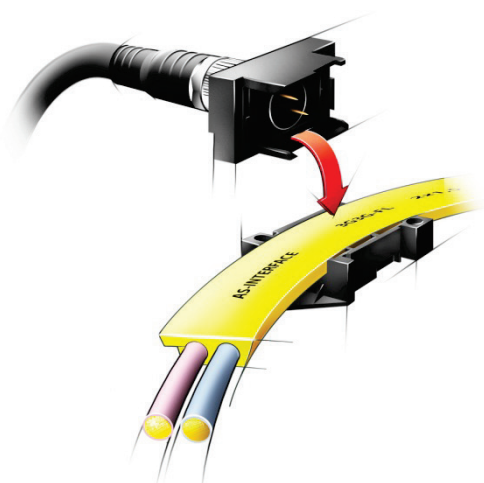


5 x 0.34 mm<sup>2</sup> cable, screen with straight female and male M12 connectors.  
Screen connected to pin 3 (0 VDC) on male connector.



Flat cable connector to M12

## 4 Installation and maintenance



All Smile 11 are supplied with 30 VDC from the AS-i bus.

Recommended connection to the AS-i bus is through a flat cable connector to M12 (see figure to the left), making it possible to quickly and easily connect the unit to the yellow AS-i cable.

Both Smile models can also be connected directly to the AS-i bus using only two cables (pin-1 and 3 of the M12-connector on the unit) according to “Connections” above.

### Installation precautions

Mount Smile 11 using two M5 bolts, before attaching the M12-connector.

**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.

**Warning!** 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.

**Caution!** ABB Jokab Safety will not accept responsibility for failure of the switch functions if the installation and maintenance requirements shown in this sheet are not implemented. These requirements form part of the product warranty.

## 5 Operation

### Stop button:

Push the button.

An actuating force of  $22 \pm 4$  N is required and the actuator travel is approximately 4 mm to latch.

Turn the button clockwise to unlatch the button.

### LED indication

The LED indication is identical on all models.

### LED in pushbutton:

The LED indication is programmed individually in the PLC-program according to the table below.

LED	Indication	Description
Red	ON	Out bit 1 ON
	OFF	Out bit 1 OFF or Out bit 1&2 ON.
Green	ON	Out bit 2 ON
	OFF	Out bit 2 OFF or Out bit 1&2 ON.

### AS-i LED and Fault LED in combination:

LED pair by the M12-connector.

AS-i (Green)	Fault (Red)	Description
OFF	OFF	AS-i power missing
ON	OFF	Normal operation
OFF	ON	No data exchange with master
FLASH	ON	No data exchange because address = 0



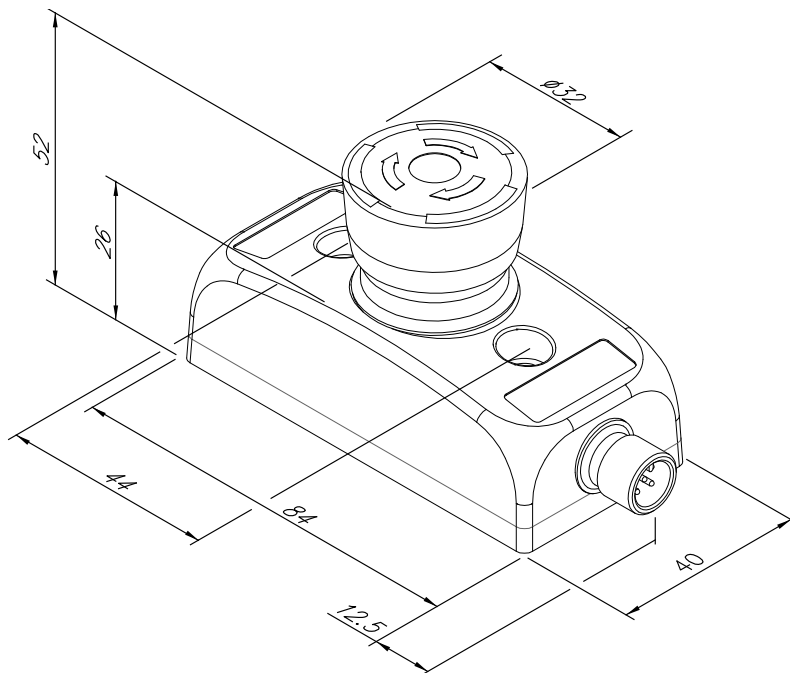
## 6 Model overview

Type	Article number	Description
Smile 11EA AS-i	2TLA030052R0000	Emergency stop
Smile 11SA AS-i	2TLA030052R0100	Safety stop
Smile 11EAR AS-i	2TLA030052R0200	Emergency stop button, inverted mounting

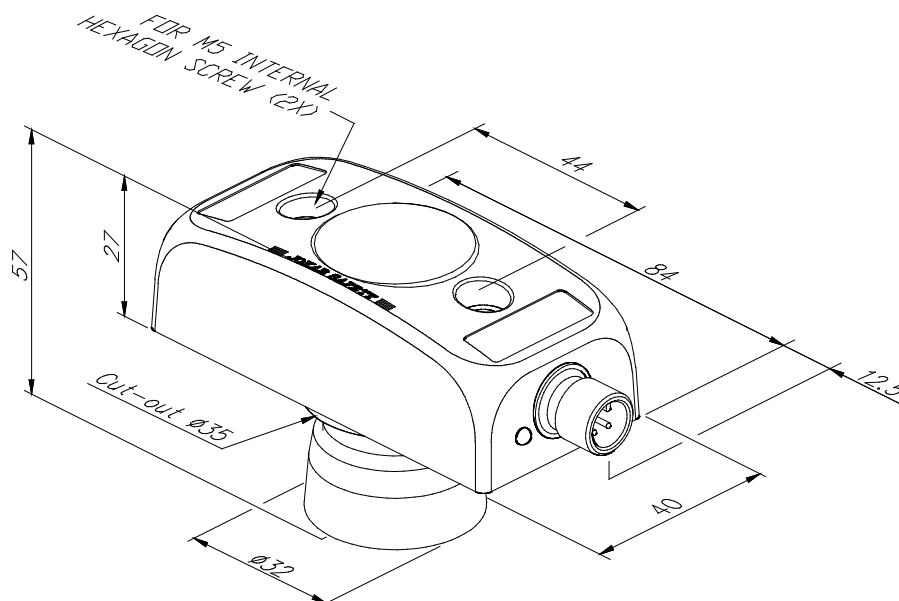
The Jokab Safety branded product with article number beginning with 2TLJ is fully compatible with the ABB branded product with article number beginning with 2TLA.

### Dimensions

#### Smile 11 AS-i



#### Smile 11 EAR AS-i



NB: All measurements in millimetres.

## 7 Technical data

### Manufacturer

Address	ABB JOKAB SAFETY Varlabergsvägen 11 SE-434 39 Kungsbacka Sweden
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### AS-i data

AS-i profile	S-7.B.0
Addressing	M12-connector
Node address at delivery	0
Response time over AS-i bus	5 ms (+ response time of safety monitor)


### Power supply

Operating voltage	30 VDC, AS-i bus. Tolerance 26.5 – 31.6 V DC.
Total current consumption	< 60 mA

### General

Degree of protection	IP65
Ambient temperature	-25...+50°C
Size (H x W x L)	52 x 40 x 84 mm (+12.5 mm M12 contact)
Colour	Base: Yellow Emergency stop pushbutton: Red Safety stop pushbutton: Black
Actuating force	22 ± 4 N
Actuator travel	Approx. 4 mm to latch
Mechanical life	> 50 000 operations

### Safety-related characteristic data and Conformity

Conformity	European Machinery Directive 2006/42/EC EN ISO 12100:2010, EN ISO 13849-1:2008/AC:2009, EN ISO 13849-2:2012, EN 60204-1:2007+A1, EN ISO 13850:2008 
IEC/EN 61508-1...7	SIL3, PFD <sub>avr</sub> : 2.95*10 <sup>-5</sup> , PFH <sub>d</sub> : 6.95*10 <sup>-9</sup>
EN 62061	SIL3
EN ISO 13849-1	Performance level: PL e, category 4 MTTF <sub>d</sub> : High
EN 60947-5-1 & -5	For E-stop button / Safety stop button
EN ISO 13850:2008	For E-stop button / Safety stop button
Certificates	TÜV Nord (AS-i), Inspecta (Emergency stop)

## 8 EC Declaration of conformity



### EC Declaration of conformity

(according to 2006/42/EC, Annex2A)

We **ABB AB**  
**JOKAB SAFETY**  
 Varlabergsgatan 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  
 2006/95/EC

Authorised to compile the technical file

**ABB AB**  
**JOKAB Safety**  
 Varlabergsgatan 11  
 SE-434 39 Kungsbacka  
 Sweden

#### Product

Emergency stop device Smile  
 11EA AS-i  
 11EAR AS-i

#### Certificates

11-SKM-CM-0103 44 799 10 555632 000

(for emergency stop device)

(for AS-i part)

Notified Body

Inspecta Sweden AB  
 Box 30100  
 SE-104 25 Stockholm  
 Sweden

TÜV NORD CERT GmbH  
 Langemarckstrasse 20  
 45141 Essen  
 Deutschland

Notified Body No. 0409

Notified Body No. 0044

Used harmonized standards

EN ISO 12100:2010, EN ISO 13849-1:2008/AC:2009,  
 EN ISO 13849-2:2012, EN 60204-1:2007+A1, EN ISO 13850:2008,  
 IEC 60947-5-5:2005



Jesper Kristensson  
 PRU Manager  
 Kungsbacka 2014-02-17

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[www.abb.com/jokabsafety](http://www.abb.com/jokabsafety)

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