

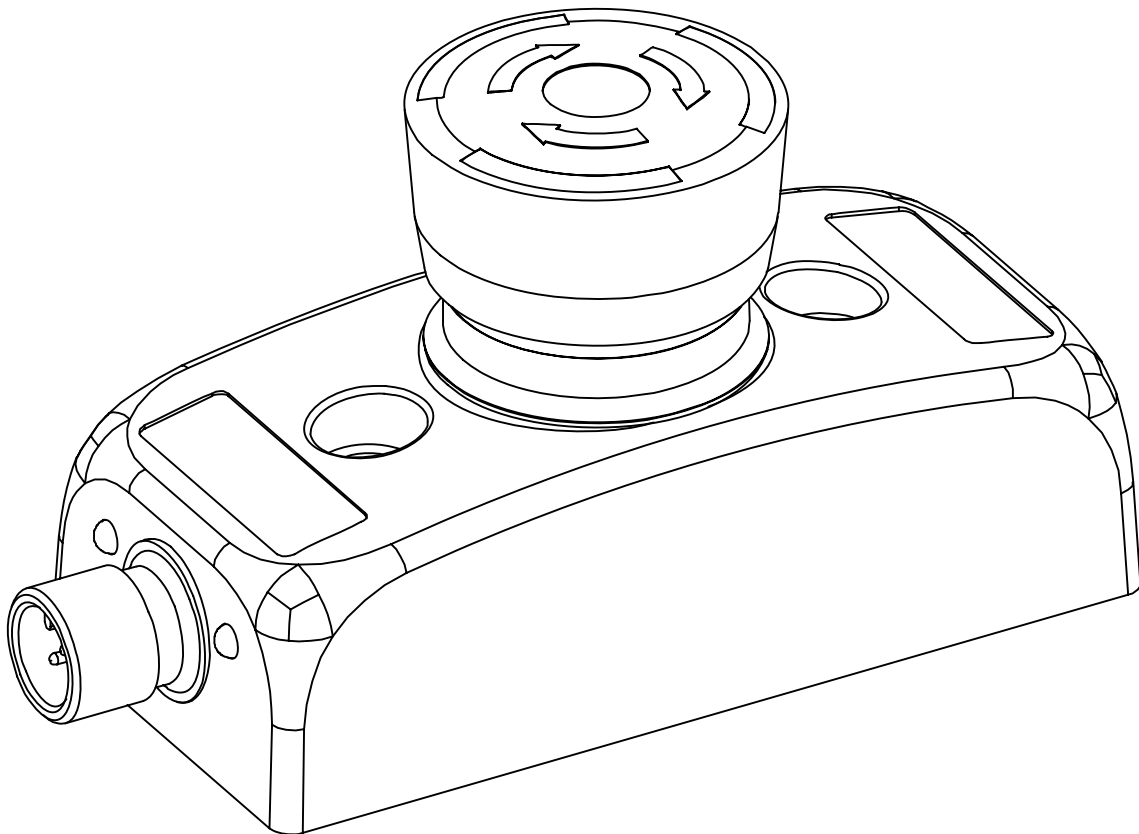
Original instructions

Smile 11EA AS-i

Emergency stop with safe AS-i input slave

Smile 11SA AS-i

Safety stop with safe AS-i input slave



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.

Please know and observe all prohibitions of use applicable to the products.

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1 Introduction

Scope

The purpose of these instructions is to describe the emergency stop Smile 11EA 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.

2 Overview

General description

Smile 11EA AS-i is an emergency stop with a built-in dual channel safe AS-i input slave. Smile 11SA AS-i has a similar dual channel safe AS-i input slave, but is intended for use as a safety stop and therefore has a black pushbutton. 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! Both Smile 11EA AS-i and Smile 11SA AS-i normally needs to be complemented with other safety functions such as interlocking guards etc. Refer to risk analysis.

NB: The emergency stop (Smile 11EA AS-i) should not be used as normal stop of the machine, only in case of emergency.

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.

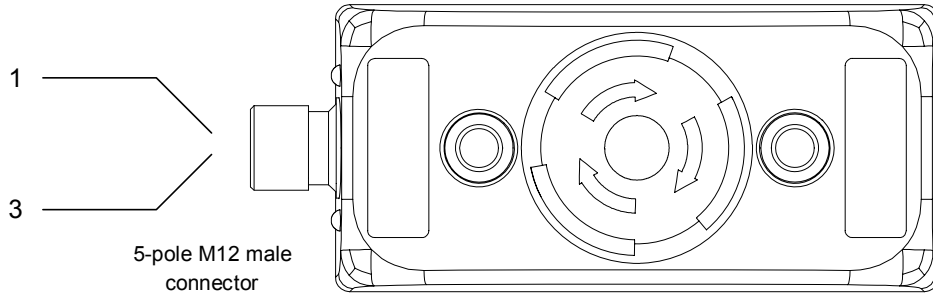
Failure to comply with instructions, operation that is not in accordance with the use prescribed in these instructions, improper installation or handling of the device can affect the safety of people and the plant.

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.

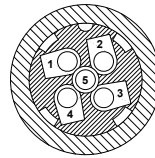
3 Connections

Smile 11EA/SA AS-i connections

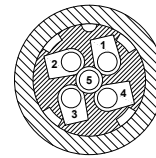


5-pole M12-connector:

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



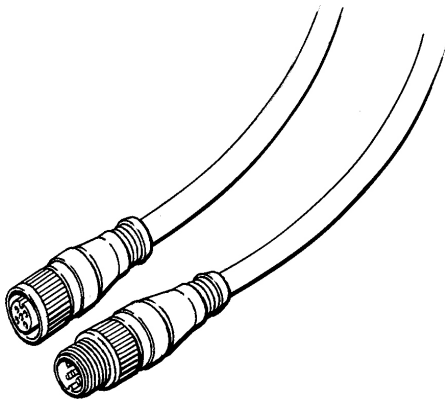
M12 5-pole male
seen from cable
side



M12 5-pole female
seen from cable
side

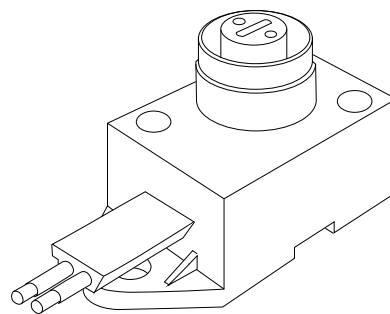
Accessories for connection to the AS-i bus

Type	Article number	Description
AS-i T-connector with M12	2TLJ020073R0000	Flat cable connector to M12
M12-C112	2TLJ020056R2000	1 m cable, 5-pole, 0.34 mm ² , M12 female + M12 male connectors
M12-C312	2TLJ020056R2100	3 m cable, 5-pole, 0.34 mm ² , M12 female + M12 male connectors



5 x 0.34 mm² cable, screen with straight female + male M12 connectors.
Screen connected to pin 3 (0 VDC) on male connector.

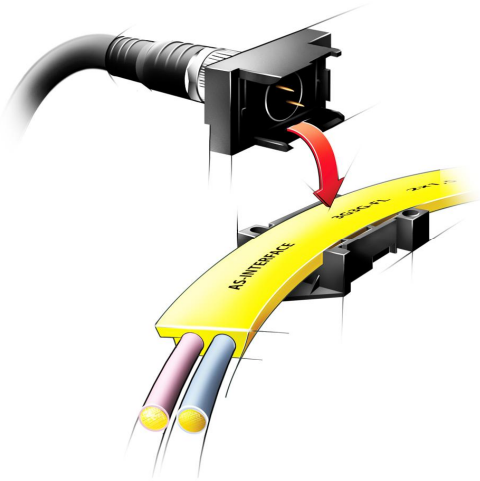
Article numbers:
2TLJ020056R2000 (1 m)
2TLJ020056R2100 (3 m)



Flat cable connector to M12

Article number:
2TLJ020073R0000

4 Installation and maintenance



Both Smile 11EA AS-i and Smile 11SA AS-i is 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 11EA AS-i or Smile 11SA AS-i 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 (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.

5 Operation

Smile 11EA AS-i

Emergency stop:

Push the emergency stop button. An actuating force of 22 ± 4 N is required and the actuator travel is approximately 4 mm to latch.

Unlatch emergency stop button:

Turn the button clockwise until the button is unlatched.

Smile 11SA AS-i

Safety stop:

Push the safety stop button. An actuating force of 22 ± 4 N is required and the actuator travel is approximately 4 mm to latch.

Unlatch safety stop button:

Turn the button clockwise until the button is unlatched.

LED indication

The LED indication is identical on both models (Smile 11EA AS-i and Smile 11SA AS-i).

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.

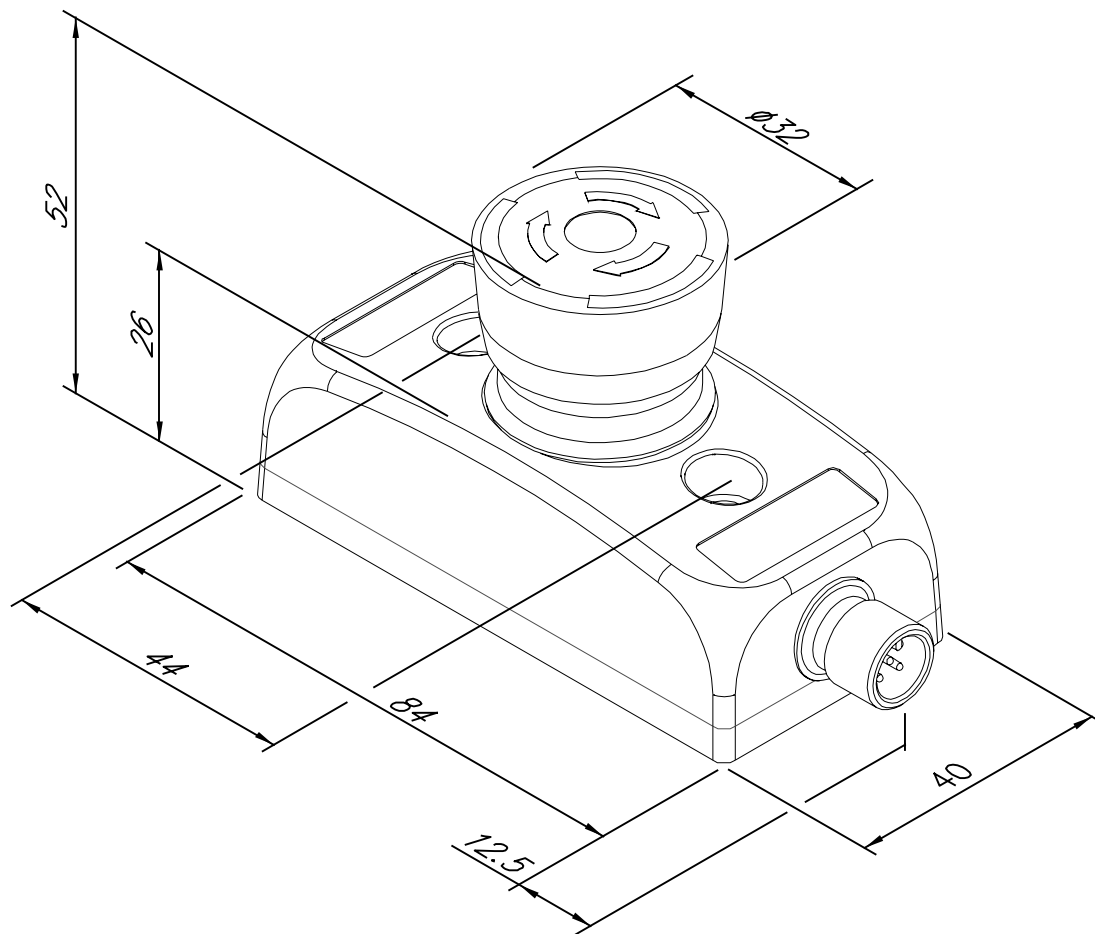
AS-i (Green)	Fault (Red)	Description
OFF	OFF	AS-i power missing
ON	OFF	Normal operation
ON	ON	No data exchange with master
Flash	ON	No data exchange because address = 0

6 Technical data

Manufacturer	
Address	ABB AB / JOKAB SAFETY Varlabergsvägen 11 SE-434 39 Kungsbacka Sweden
Article number / ordering data	Smile 11EA AS-i: 2TLJ030052R0000 Smile 11SA AS-i: 2TLJ030052R0100
AS-i data	
AS-i profile	S-7.B.0
Addressing	M12-connector
Slave 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	52 x 40 x 84 (+12.5 mm M12 contact) (H x W x L)
Colour	Base: Yellow Emergency stop pushbutton (Smile 11EA AS-i): Red Safety stop pushbutton (Smile 11SA AS-i): Black
Actuating force	22 ± 4 N
Actuator travel	Approx. 4 mm to latch
Mechanical life	> 50 000 operations
Safety / Harmonized Standards	
Conformity	European Machinery Directive 2006/42/EC  EN ISO 12100:2010, EN 954-1:1996, EN ISO 13849-1:2008/AC:2009, EN ISO 13849-2:2008, EN 60204-1:2007+A1, EN ISO 13850:2008 
IEC/EN 61508-1...7	SIL3, PFD _{avr} : 2.95*10 ⁻⁵ , PFH _d : 6.95*10 ⁻⁹
EN 62061	SIL3
EN ISO 13849-1	Performance level: PL e, category 4 MTTF _d : High
EN 954-1	Category 4
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)

Dimensions

Smile 11EA/SA AS-i Dimensions



NB: All measurements in millimetres.

CAD model

Complete CAD models are available through the webpage

- 1) Visit www.jokabsafety.com.
- 2) Choose language **English** in the menu at the top of the page.
- 3) In the menu to the left, choose **Products**.
- 4) A list of products is now shown. Choose **3D CAD files**. This will open a new window called "Jokab Safety AB – SolidComponents".
- 5) In the new window there is a menu to the left, showing different product categories. Smile 11EA AS-i and Smile 11SA AS-i belong to the category **Emergency stops**, find it in the list and click it. If the language changed in the new window, click the corresponding flag at the top of the page to choose language again (Swedish, English or German available).
- 6) Choose **Smile** in the list now shown.
- 7) Choose a preferred format in the scroll down list next to "CAD-format" (SolidWorks, ProE, Sat, Step, Parasolid, Iges, Dwg, Dxf).
- 8) Click the **save icon** in front of the desired CAD model.
- 9) The CAD model will now be added to the list of downloads. Click the **save icon** again in the new list to start the download.

7 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

Person authorised to compile the technical file

Lars-Magnus Felth
ABB AB
JOKAB Safety
Varlabergsgatan 11
SE-434 39 Kungsbacka
Sweden

Product

Emergency stop device Smile11EA, AS-i

Certificates

11-SKM-CM-0103
(for emergency stop device)

44 799 10 555632 000
(for AS-i part)

Notified Body

Inspecta Sweden AB
Box 30100
SE-104 25 Stockholm
Sweden
Notified Body No. 0409

TÜV NORD CERT GmbH
Langemarckstrasse 20
45141 Essen
Deutschland

Notified Body No. 0044

Used harmonized standards

EN ISO 12100:2010, EN 954-1:1996, EN ISO 13849-1:2008/AC:2009,
EN ISO 13849-2:2008, EN 60204-1:2007+A1, EN ISO 13850:2008

Mats Linger
PRU Manager
Kungsbacka 2011-03-04

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Original

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