Operating Instructions

Smart Device Interface SDI-USB

Note

The Operating instructions were originally written in German. Store in a safe place for future reference. Subject to technical changes without notice. No responsibility is taken for printing or other types of errors.

Contents

1 Important Information

1.1 Note on Using this Document

J. Schmalz GmbH is generally referred to as Schmalz in this document.

The document contains important notes and information about the different operating phases of the product:

- Transport, storage, start of operations and decommissioning
- Safe operation, required maintenance, rectification of any faults

The document describes the product at the time of delivery by Schmalz and is aimed at:

- Installers who are trained in handling the product and can operate and install it
- Technically trained service personnel performing the maintenance work
- Technically trained persons who work on electrical equipment

1.2 The technical documentation is part of the product

1. For problem-free and safe operation, follow the instructions in the documents.
2. Keep the technical documentation in close proximity to the product. The documentation must be accessible to personnel at all times.
3. Pass on the technical documentation to subsequent users.
⇨ Schmalz is not liable for damage or malfunctions that result from failure to heed these instructions.

If you still have questions after reading the technical documentation, contact Schmalz Service at:

www.schmalz.com/services

1.3 Type Plate

The type plate (1) is permanently attached to the Smart Device Interface and must always be clearly legible.

It includes the following information:

- Name
- Part number
- Manufacturing date
- Serial number
- QR code
- CE label
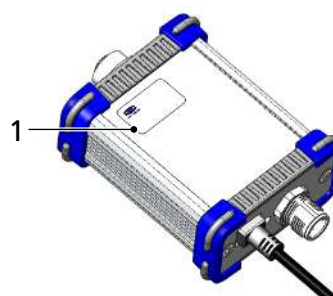
Please specify all the information above when ordering replacement parts, making warranty claims or for any other inquiries.

1.4 Warnings in This Document

Warnings warn against hazards that may occur when handling the product. The signal word indicates the level of danger.

Signal word	Meaning
NOTE	Indicates a danger that leads to property damage.

1.5 Symbol

ⓘ   This symbol indicates useful and important information.

  ✓   This symbol represents a prerequisite that must be met prior to an operational step.

  ▸   This symbol represents an action to be performed.

  ⇨   This symbol represents the result of an action.

Actions that consist of more than one step are numbered:

1. First action to be performed.
2. Second action to be performed.

2 Fundamental Safety Instructions

2.1 Intended Use

The Smart Device Interface SDI-USB is built in accordance with the latest standards of technology and is delivered in a safe operating condition; however, hazards may arise during use.

The SDI serves as an interface between an IO-Link device and a laptop or PC with a Windows operating system. IO-Link devices can be operated, read out and parameterized with the SDI-USB and its corresponding SDIUSB-HMI software program.

Any other use is considered improper by the manufacturer and is deemed as contrary to the designated use.

2.2 Non-Intended Use

Schmalz accepts no liability for damages caused by the use of the product for purposes other than those described under "Intended Use."

Non-intended use includes the following:

- Use in potentially explosive atmospheres

2.3 Personnel qualification

Unqualified personnel cannot recognize dangers and are therefore exposed to higher risks!

1. Electrical work and installations may only be carried out by qualified electrical specialists.
2. Assembly and adjustment work may only be carried out by qualified personnel.

These operating instructions are intended for fitters who are trained in handling the product and who can operate and install it.

2.4 Modifications to the Product

Schmalz assumes no liability for consequences of modifications over which it has no control:

1. The product must be operated only in its original condition as delivered.
2. Use only original spare parts from Schmalz.
3. The product must be operated only in perfect condition.

3 Product Description

3.1 Application

The Smart Device Interface is an IO-Link Class B USB master.

The Smart Device Interface serves as an interface between an IO-Link device and a PC with a Windows operating system. IO-Link devices can be parameterized via the Smart Device Interface and the J. Schmalz GmbH operating software.

3.2 Items Included in Delivery

The following items are included in the delivery:

Part	Quantity	Part no.
SDI-USB	1	21.10.02.00013
M12 cable, 5-pole	1	21.04.05.00158
Power supply unit	1	21.07.01.00070
Operating instructions	1	30.30.01.00953
USB stick with the latest version of the PC or laptop operating software	1	21.10.02.00008
Case	1	30.02.03.00848

3.3 Product Design
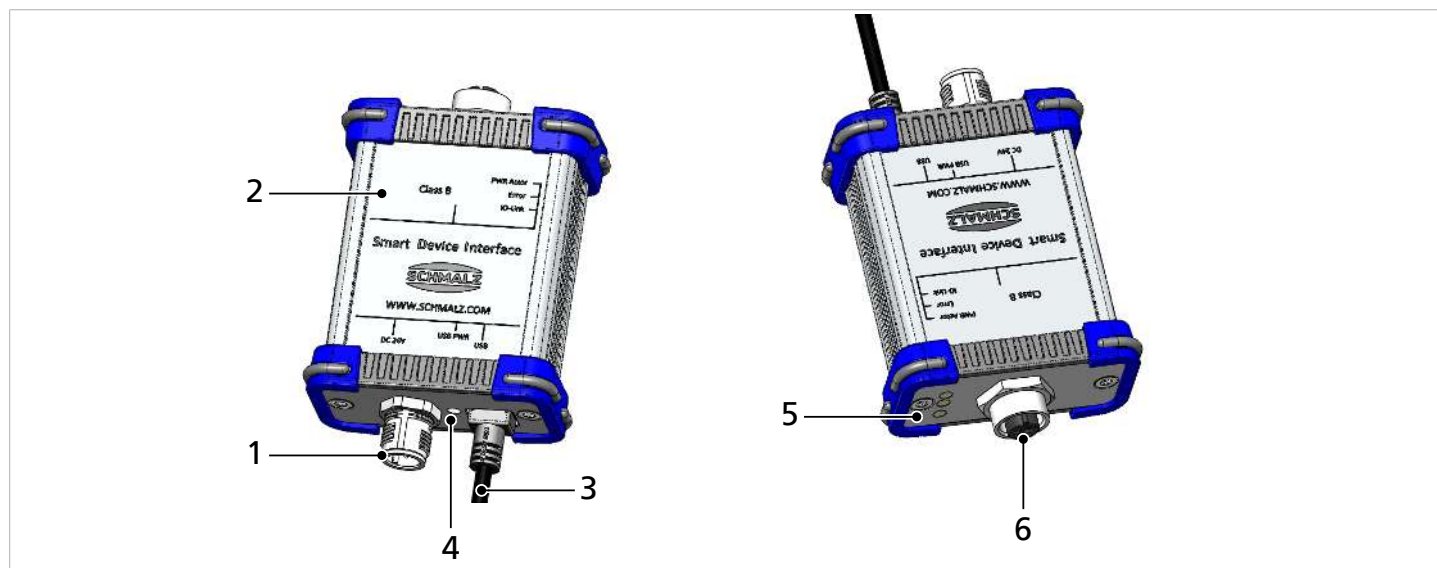
1	Power supply unit connection, DC 24 V supply voltage	4	USB supply voltage LED
2	Front side, display of interfaces	5	LED status indicators
3	USB connection cable	6	IO-Link component connection

3.4 Indicator Elements in Detail

The 4 LEDs indicate the following states:

LED indicators	Item	Meaning	State	Description
	1	LED: IO-Link function indicator	Off	PC software is not started
			Green	Flashing => communication with an IO-Link device is being established Illuminated => data exchange is taking place (Operate)
	2	LED: error	Red	Error, short circuit
	3	LED: actuator voltage	Off	Actuator voltage supply is not activated
			Green	Actuator voltage supply is activated
			Red	Current is too high
	4	LED: USB supply voltage	Off	No USB voltage
			Orange	USB voltage supply is activated

4 Technical Data

4.1 General parameters

Parameter	Unit	Values
Mass	kg	0.135
Protection class	—	III
Ambient temperature range during operation	° C	0 to +45
Storage temperature range	° C	0 to +60
Degree of protection	—	IP40
Length	mm	97
Width	mm	64
Height	mm	33
Cable length (USB)	mm	300

4.2 Electrical Parameters

Parameter	Symbol	Limit values	Unit	Comment
Supply voltage from USB	U_{USB}	5	V_{DC}	PC connection (USB ≤ 500 mA corresponds to DC 24 V / 80 mA)
Supply voltage through M12 socket	U_S	24	V_{DC}	External mains power adapter connection (DC 24 V / 1 A to max. 2A*) * The supply voltage must correspond to the regulations in accordance with EN60204 (protected extra-low voltage). For devices that require a current higher than 1000 mA on the actuator side, an appropriate mains power adapter must be used.
Rated current from USB	I_{USB}	500	mA	—
Rated current from M12 socket	I_S	1	—	Max. 2 A
IO-Link device connection	—	—	—	M12 socket, 5-pole, A-coded, with IO-Link Class B pin assignment

5 Electrical Connection

> **NOTE**
>
> **Connect with the power turned on**
>
> Damage to the electronics and/or malfunction
> ‣ Switch off the power supply before connecting cables!
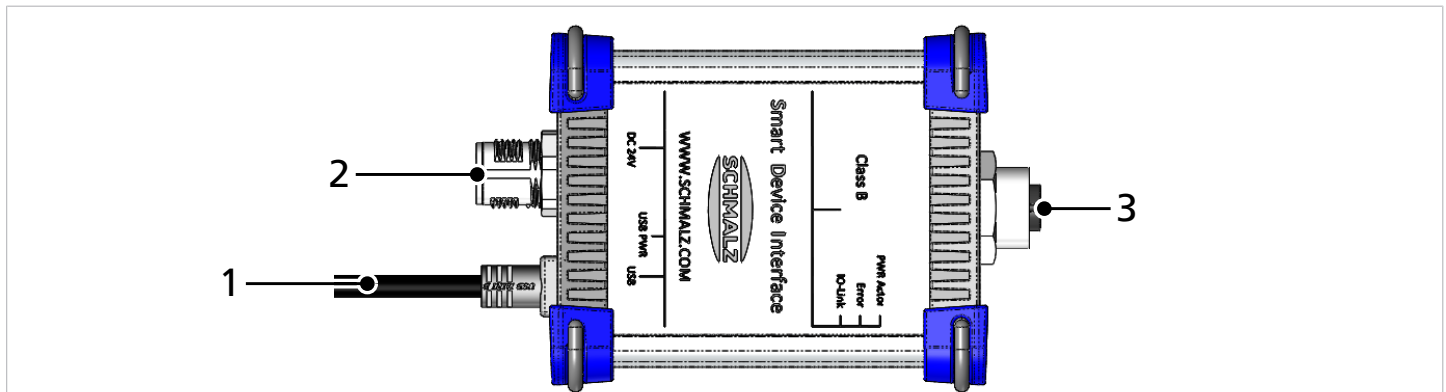
> **NOTE**
>
> **Incorrect supply voltage**
>
> Damage to the device
> ‣ Operate the device using the supplied power supply unit.

5.1 Electrical Connection for the Smart Device Interface

1	USB cable (5 V; 500 mA)	3	M12 socket, 5-pole, A-coded, with IO-Link Class B pin assignment, for IO-Link device
2	External power supply unit connection (DC 24 V / 1 A to max. 2 A*)	—	—

✓ Establish all electrical connections before starting the software

✓ Ensure that there is no voltage

1. Connect the Smart Device Interface to the PC using the USB cable (1). (This voltage supply is sufficient for the SDI and one device with a power requirement of up to 80 mA on the sensor side only (no actuator voltage supply)).

2. Connect the supplied power supply unit to the DC 24 V socket (2) and connect the power supply unit to the supply voltage (min. 100 V to max. 240 V).

> **NOTE**
>
> **Using a power supply unit with a different voltage**
>
> Damage to the device
>
> ▸ Connect only the supplied power supply unit.

⇨ The operating display illuminates and indicates that the device is operating correctly.

3. Connect the IO-Link device to the M12 socket (3) using the supplied M12 cable

## 5.2 Pin Assignment of M12 Socket for IO-Link Class B

M12 socket	Pin	Symbol	Wire color 1)	Function
	1	U_S	Brown	Supply voltage for sensor
	2	U_A	White	Supply voltage for actuator
	3	GND_S	Blue	Sensor ground
	4	C/Q	Black	IO-Link
	5	GND_A	Gray	Actuator ground

1) When using a Schmalz connection line (see accessories)

6 Installing the Software

To parameterize an IO-Link device via the Smart Device Interface, you require the operating software for the Smart Device Interface from J. Schmalz GmbH. You require administrator rights to perform the initial installation.
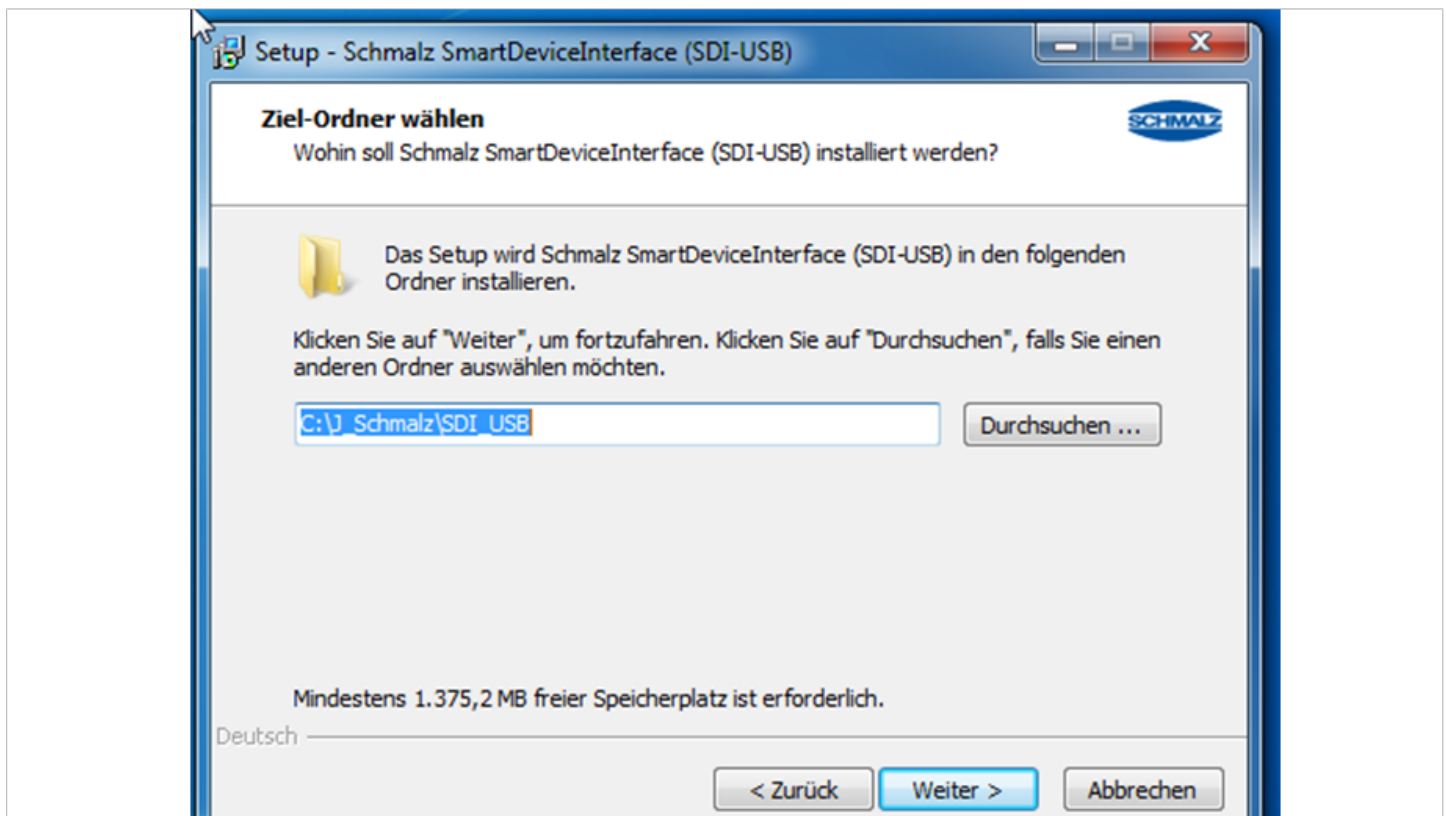
1. Connect the supplied USB stick to your computer.

2. Start the "Setup_SDI-USB.exe" file that is displayed on the removable drive in Explorer.
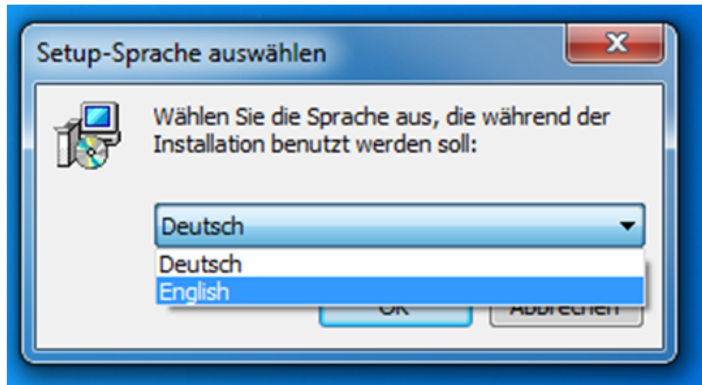
3. Select your language in the popup menu and choose **[OK]** to confirm.
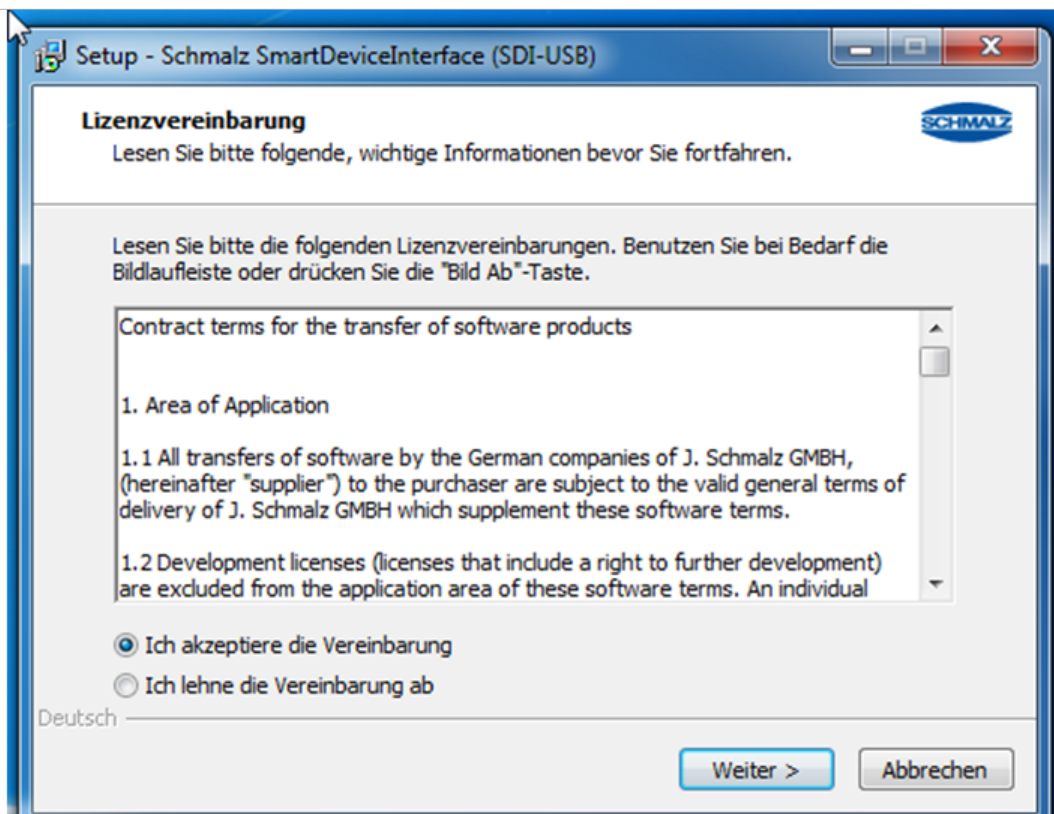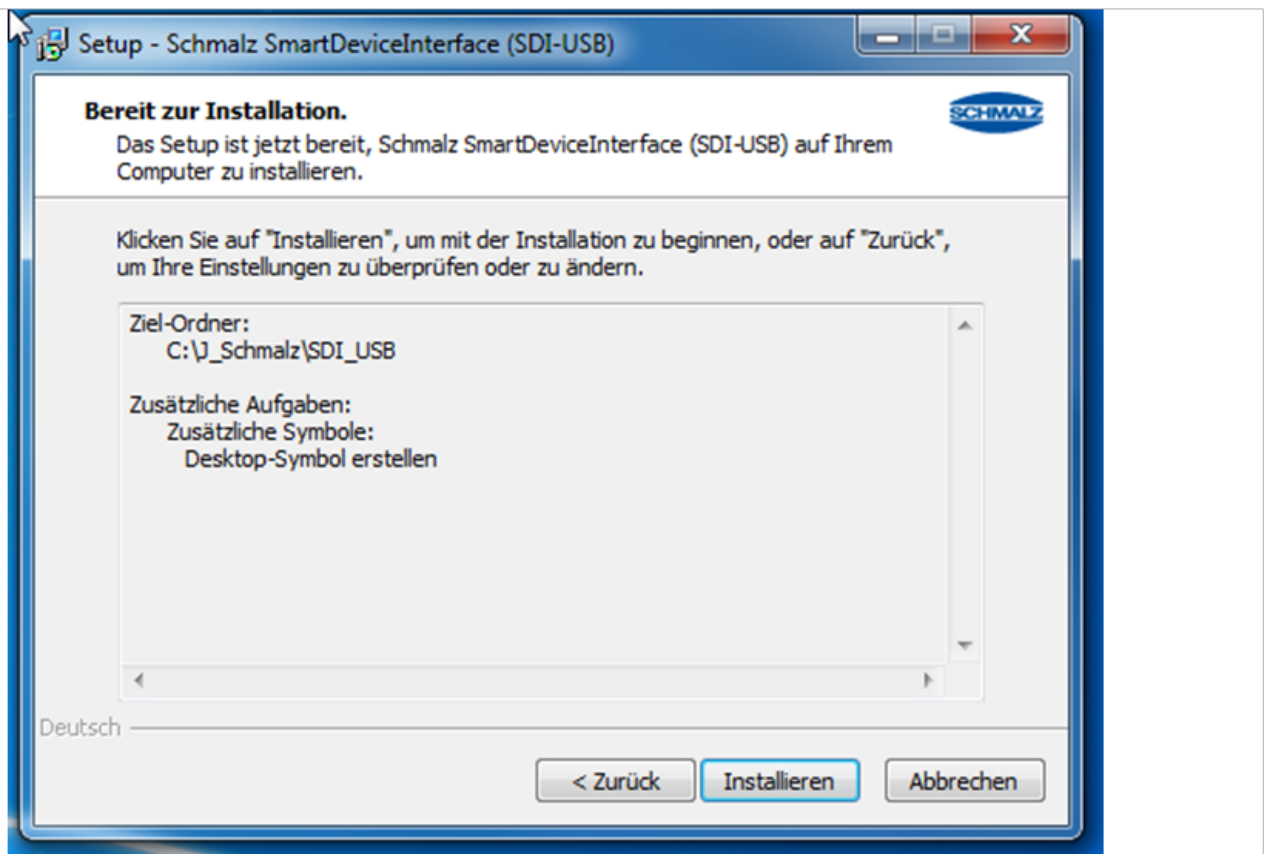

4. Read and confirm the license agreement by choosing **[I ACCEPT THE AGREEMENT]**.
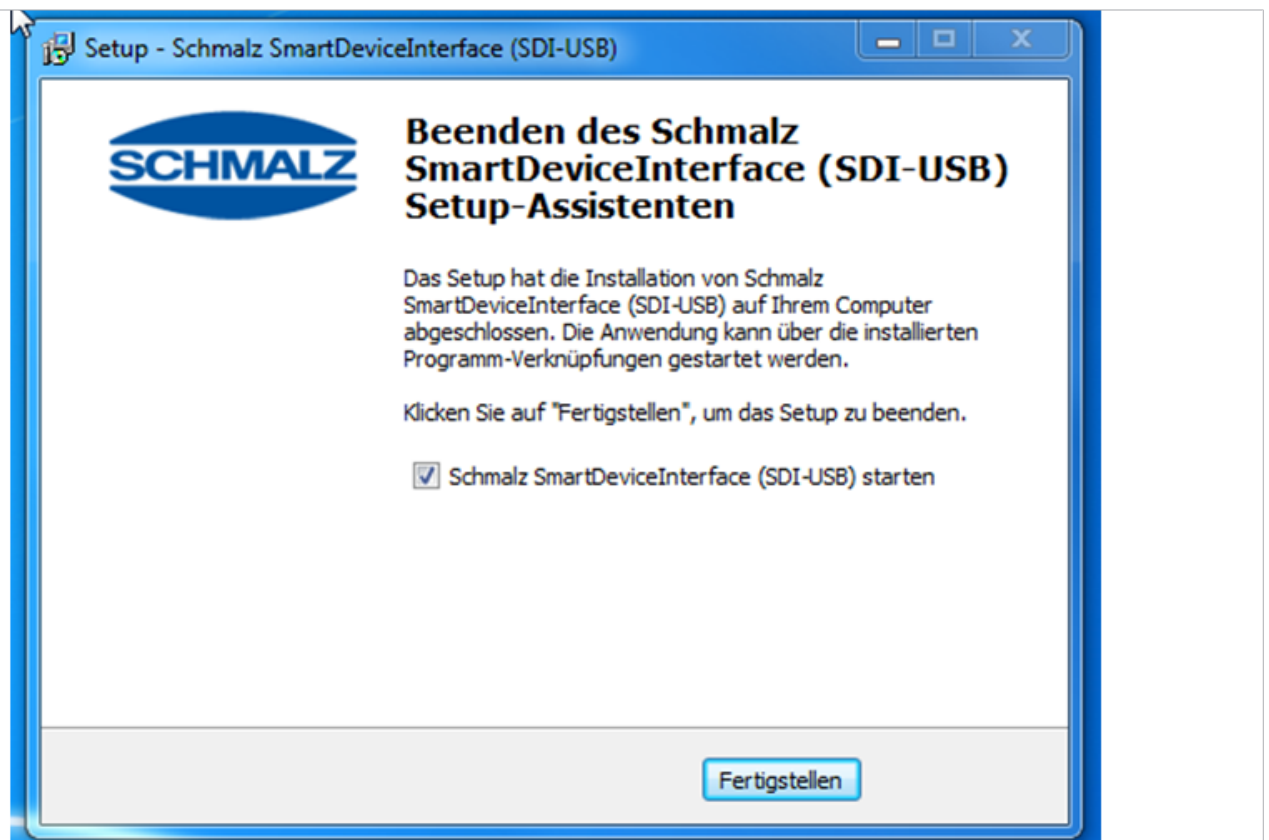
5. Enter the destination folder for the installation.
Create and save the file in the predefined folder C:\J_Schmalz\SCI_USB or choose **[BROWSE ...]** to select a different folder.
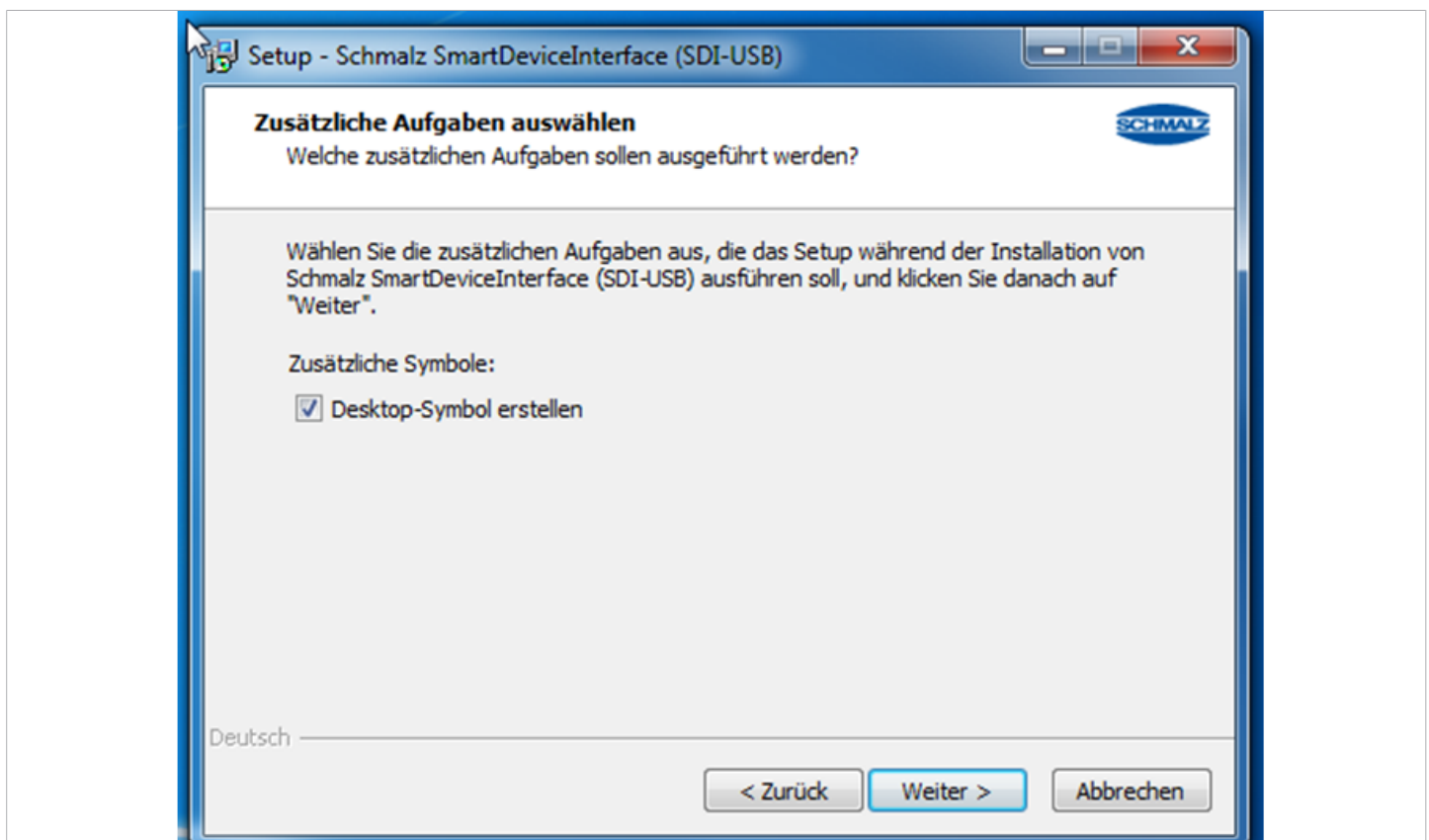
6. Set the checkmark for creating an icon on the desktop.

7. Choose **[INSTALL]** to start the installation.

8. The installation is complete.
If you set the checkmark, the Schmalz Smart Device Interface starts after you choose **[FINISH]**.

1. Once the software starts, the user interface shown here is displayed. The status indicator shows a yellow dot if there is no connection to an IO-Link-capable device.

2. A green status indicator indicates that a device is connected and ready for operation.

If your device is not specified on the user interface, an update is required. You must update the software through the Schmalz homepage.

7 Warranty

IMPORTANT!

A warranty claim can only be accepted by Schmalz if the Smart Device Interface has been installed and used in accordance with its corresponding operating instructions. In the case of inappropriate handling or use of force, any warranty and liability claims shall be void.

Damage and defects resulting from inadequate maintenance and cleaning, improper use, repair or attempted repair by unauthorized persons, as well as damage and defects resulting from alterations or modifications to the Smart Device Interface and from replaced parts or materials that do not conform to the original specification are excluded from the warranty.

8 Maintenance

The product does not require maintenance.

We recommend:

1. Cleaning the surfaces of the LEDs regularly.

2. Checking the screw union and the plug connection regularly.

9 Help with Malfunctions

Malfunction	Possible cause	Solution
IO-Link function indicator LED lights up red	Data transfer error	▸ Transfer the data again
	Short circuit on the IO-Link line	▸ Disconnect the plug connector for the IO-Link component and reconnect it
		▸ Replace the connected device
		▸ Replace the SDI-USB
Error LED lights up red	Short circuit on sensor voltage supply	▸ Disconnect the connected device and check the device current consumption on the sensor side
Actuator voltage LED is off	No actuator voltage	1. Check whether a power supply unit is connected to the M12 socket
		2. Check whether the power supply unit has a mains voltage
Actuator voltage LED lights up red	Short circuit on the actuator voltage supply	▸ Disconnect the connected device and check the device current consumption on the actuator side
USB supply voltage LED is off	No voltage via USB	Check that the USB cable is connected to the PC and that the PC is switched on

10 Accessories

Designation	Part no.	Note
Connection distributor, ASV IO-L-A 2xB-M12-5	10.02.02.04436	Only for SX(M)Pi/X-pump with 2x M12, 5-pole (Y shape) plug connector
Connection cable ASK-S B-M12-8 1000 M12-4 PUR	21.04.05.00167	Only for SX(M)Pi/X-pump with M12, 8-pole plug connector
Connection cable ASK WB-M8-6 2000 S-M12-5	21.10.02.00017	For SCPM(i)
Connection cable ASK B-M12-8 1000 S-M12-5	21.04.05.00212	For ECBPi
Connection cable ASK B-M8-4 5000 K-4P, M 8 coupling	10.06.02.00031	For VSi

11 Disposing of the Product

Recover the disassembled parts for recycling or reuse (provided no agreement on return or disposal has been made).

1. Dispose of the product properly after replacement or decommissioning.

2. Observe the country-specific guidelines and legal obligations for waste prevention and disposal.

12 Declarations of Conformity

12.1 EC Declaration of Conformity

EC Declaration of Conformity

The manufacturer Schmalz confirms that the product Smart Device Interface described in these operating instructions fulfills the following applicable EC directives:

2014/30/EU	Electromagnetic Compatibility
2011/65/EU	Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment

The following harmonized standards were applied:

EN ISO 12100	Safety of machinery — General principles for design — Risk assessment and risk reduction
EN 60529-A1+A2+AC	Degrees of protection provided by housing (IP code)
EN 61000-6-2+AC	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
EN 61000-6-3+A1+AC	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments
EN IEC 63000	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

ℹ The EU Declaration of Conformity valid at the time of product delivery is delivered with product or made available online. The standards and directives cited here reflect the status at the time of publication of the operating and assembly instructions.

12.2 UKCA Conformity

The manufacturer Schmalz confirms that the product described in these operating instructions fulfills the following applicable UK regulations:

2016	Electromagnetic Compatibility Regulations
2012	The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations

The following designated standards were applied:

EN ISO 12100	Safety of machinery — General principles for design — Risk assessment and risk reduction
EN 60529-A1+A2+AC	Degrees of protection provided by housing (IP code)
EN 61000-6-2+AC	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
EN 61000-6-3+A1+AC	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments
EN IEC 63000	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

ℹ The Declaration of Conformity (UKCA) valid at the time of product delivery is delivered with the product or made available online. The standards and directives cited here reflect the status at the time of publication of the operating and assembly instructions.