

SE352 / SE352M

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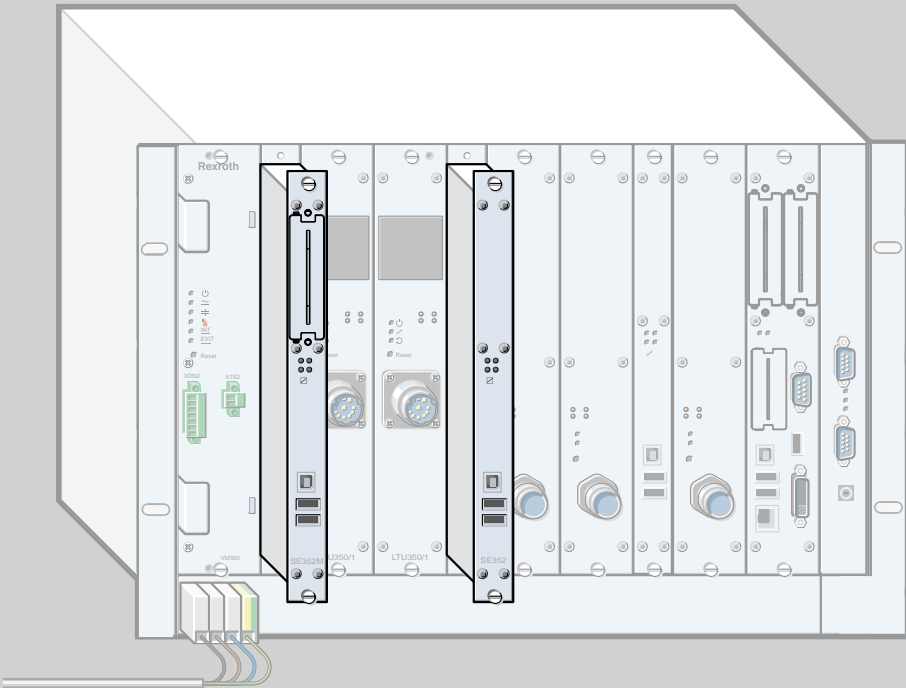


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The data specified above only serve to describe the product. No statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification. It must be remembered that our products are subject to a natural process of wear and aging.

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This document was written in German.

1 About this document

This manual contains important information on the safe and appropriate assembly, transport, commissioning, operation, maintenance, disassembly and simple troubleshooting of the SE352 and SE352M control units.

Read these instructions completely, especially chapter "2 General safety instructions" on page 18, before working with the SE352/SE352M control unit.

Related documents

The SE352 and SE352M control unit is a system component.

Also observe the instructions for the other system components.

Also observe the generally applicable, legal or otherwise binding regulations of European or national legislation and the rules for the prevention of accidents and for environmental protection applicable in your country.

2 General safety instructions

The SE352/SE352M control unit has been manufactured according to the accepted rules of current technology. There is, however, still a danger of personal injury or damage to equipment if the following general safety instructions and the warnings before the steps contained in these instructions are not complied with.

- Read these instructions completely and thoroughly before working with the SE352/SE352M control unit.
- Keep these instructions in a location where they are accessible to all users at all times.

- Always include the operating instructions when you pass the SE352/SE352M control unit on to third parties.

Intended use

The SE352/SE352M control unit is a component in terms of the machine directive 98/37/EC and is not a ready-for-use machine. The product is exclusively intended for being integrated in a machine or system or for being assembled with other components to form a machine or system. The product may be commissioned only if it is integrated in the machine/system for which it is designed and the machine/system fully complies with the EC machine directive. Observe the operating conditions and performance limits specified in the technical data.

The SE352/SE352M control unit is a work appliance and not designed for private use.

Intended use includes having read and understood these instructions, especially the chapter "2 General safety instructions".

The SE352/SE352M control unit is intended for installation in the BT356 card rack or SB35x system box.

Improper use

Any use of the SE352/SE352M control unit other than described in chapter "Intended use" is considered as improper.

Personnel qualifications

Assembly, commissioning and operation, disassembly, service (including maintenance and repair) require basic electrical and mechanical knowledge, as well as knowledge of the appropriate technical terms. In order to ensure operating safety, these activities may therefore only be carried out by qualified technical personnel or an instructed person under the direction and supervision of qualified personnel.

Qualified personnel are those who can recognize possible hazards and institute the appropriate safety measures due to their professional training, knowledge, and experience as well as their understanding of the relevant conditions pertaining to the work to be done. Qualified personnel must observe the rules relevant to the subject area.


Safety instructions in this document


In this manual, there are safety instructions before the steps whenever there is a danger of personal injury or damage to the equipment. The measures described to avoid these hazards must be observed.


Safety instructions are set out as follows:

	 SIGNAL WORD
	Type of RISK!
	Consequences Precautions


- **Safety sign (warning triangle):** draws attention to the risk
- **Signal word:** identifies the degree of hazard
- **Type of risk:** identifies the type or source of the hazard
- **Consequences:** describes what occurs when the safety instructions are not complied with
- **Precautions:** states how the hazard can be avoided

	This warning symbol cautions against dangers to your health. Observe all the safety instructions that follow this symbol to avoid possible injuries or death.
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	This warning symbol cautions against dangers to your health caused by electrical voltage or currents. Observe all the safety instructions that follow this symbol to avoid possible injuries or death.
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 CAUTION
CAUTION indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury or damage to equipment.

ATTENTION!
ATTENTION indicates a situation which, if not avoided, could result in minor or moderate damage to equipment.

 NOTE!
If this information is disregarded, the operating procedure may be impaired.

Adhere to the following instructions

General instructions

Only accessories and add-on units that have been approved for use in Rexroth tightening systems may be used therein. Non-approved components may neither be added nor connected to the system. The same applies to cables and lines which belong to the Rexroth tightening system. Otherwise, functional and system safety is jeopardized.

Observe the regulations for accident prevention and environmental protection for the country where the product is used and at the workplace.

Exclusively use Rexroth products in good technical order and condition.

Check the product for visible defects, for example damage to the circuit board, components, housing, and plug connectors or missing screws.

Only use the product within the performance range provided in the technical data.

Persons who assemble, operate, disassemble or maintain Rexroth products must not consume any alcohol, drugs or pharmaceuticals that may affect their ability to respond.

The warranty only applies to the delivered configuration.

The warranty will not apply if the product is incorrectly assembled or handled or not used as intended.

Do not expose the product to any mechanical loads under any circumstances. Never use the product as a handle or step. Do not place any objects on it.

During assembly

Make sure the relevant system component is not under pressure or voltage before assembling the product or when connecting and disconnecting plugs. Protect the system against being switched on.

Lay cables and lines so that they cannot be damaged, are in accordance with the bending radiuses, and no one can trip over them.

Before commissioning, make sure that all the connection gaskets and plugs are installed correctly to ensure that they are leakproof and fluids and foreign bodies are prevented from penetrating the product.

During commissioning

Let the product acclimate itself for several hours before commissioning, otherwise water may condense in the housing.

Make sure that all electrical connections are either used or covered. Commission the product only if it is installed completely.

During cleaning

Cover all openings with the appropriate protective equipment in order to prevent detergents from penetrating the system.

Never use solvents or aggressive detergents. Only clean the product using a slightly damp, lint-free cloth. Only use water to do this and, if necessary, a mild detergent.

Disposal

Dispose of the product in accordance with the currently applicable national regulations in your country.

3 Delivery contents

The delivery contents include:

- 1 SE352 or SE352M control unit
- 1 control unit operating instructions
- Dummy panel for slot B1 (only with SE352M)

4 Product description

Performance description

The SE352/SE352M control unit is intended for installation in the BT356 card rack and SB35x system box. It can control a maximum of two tightening channels; i.e. it provides the control signals for two servo amplifiers and two tightening spindles or ErgoSpin hand-held nutrunners. Two tightening channels can thus be used with one control unit.

For further information please refer to the system documentation on the SW350 system stick.

Device description

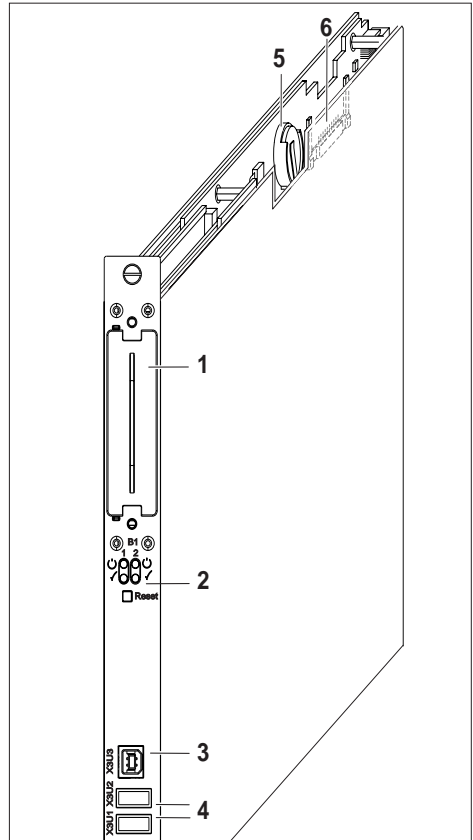


Fig. 1: SE352/SE352M view

Explanation of Fig. 1:

- 1 Only for SE352M: slot B1 for installation of a standard type B module
- 2 LED for tightening channels 1 and 2 and reset button
- 3 USB device interface (X3U3), specification 2.0-compatible
- 4 Two USB host interfaces (X3U1, X3U2), specification USB 2.0
- 5 Battery
- 6 Mass storage slot (X6C1)

B-slot interface (B1) (SE352M)

This interface is intended for use of type B interface modules from Rexroth.

ATTENTION

Damage due to improper assembly!

Damage to the connections

- Carefully insert the modules following the assembly instructions in the module operating instructions.
- Only use interface modules from Rexroth.

The slot can be equipped with any of the following modules:

Tab. 1:

Module	Description	Order number
IM24V	24 V inputs/outputs	0 608 830 259
IMser	Serial	0 608 830 260

LED and reset button

There are four LEDs on the front panel of the control unit, which indicate the operating conditions of tightening channels 1 and 2.

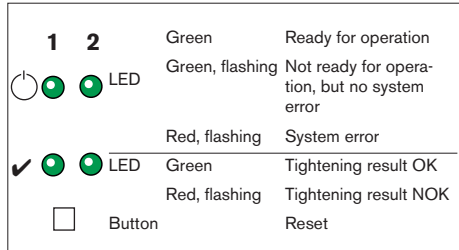


Fig. 2:

* Possible causes: Sequence test, nutrunner in bypass

The reset button can be used to reset the hardware. For further information, please refer to chapter “9 Maintenance and repair” on page 26.

The assignment of the servo amplifiers to the tightening channels is shown in Fig. 3:

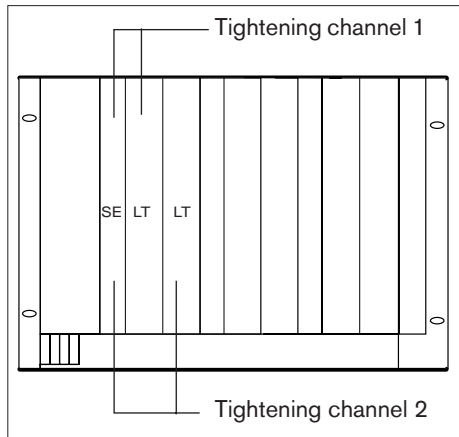


Fig. 3: Tightening channel assignment

USB host interfaces (X3U1, X3U2)

These interfaces are designed as type A sockets. They fulfill the requirements in USB specification 2.0.

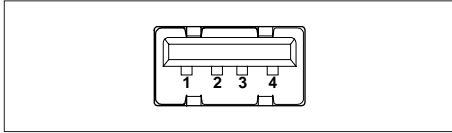


Fig. 4: USB socket, type A

Tab. 2: X3U1, X3U2 assignment

Pin	Signal	Description/ function	Voltage/ current
1	VCC	5 V supply	5 V= / 0.5 A
2	USB_Data-	Send USB data	
3	USB_Data+	Receive USB data	
4	GND	Reference potential for all voltages	PE potential

USB device interface (X3U3)

This interface is intended for the connection of a PC for programming and parameterization. It is designed as a type B socket. It is also compatible with USB 2.0 (maximum data rate of 3 Mbit/s).

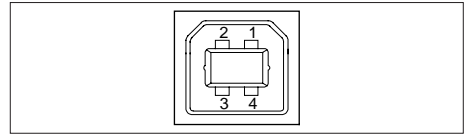


Fig. 5: USB socket, type B

Tab. 3: X3U3 assignment

Pin	Signal	Description/ function	Voltage/ current
1	USB_S_VBUS	5 V supply from PC activates the interface	5 V= / 0.5 A
2	USB_S_Data-	Send USB data	
3	USB_S_Data+	Receive USB data	
4	GND	Reference potential for all voltages	PE potential

Slot for the mass storage (X6C1)

This interface is intended for the use of the CF350 mass storage.

ATTENTION

Damage due to improper assembly!

Damage to the connections

- ▶ Only use mass storage from Rexroth.
- ▶ Insert the CF350 mass storage into the SE352/SE352M control unit with the plug-in connections facing the front, so the "Rexroth" product label (front side of the card) is visible.

5 Transport and storage

For storing and transporting the product, always observe the ambient conditions specified in the technical data (see "Technical data" on page 29).

6 Assembly

When installing the product, always observe the ambient conditions specified in the technical data (see "Technical data" on page 29).

Installing SE352/SE352M control unit

CAUTION

Risk of damage to persons and property!

Assembly of the SE352/SE352M control unit requires basic mechanical and electrical knowledge.

- ▶ Only qualified personnel (see "Personnel qualifications" on page 18) are authorized to assemble the SE352/SE352M control unit.
- ▶ Measures to prevent electrostatic discharge (ESD protection) must be undertaken to protect the module and system components during all assembly work.



CAUTION

Risk of injuries when assembling under voltage!



If you do not switch off the power supply before assembling the SE352/SE352M control unit, you may be injured or the device or system components may be damaged.

- ▶ Switch off power supply for the relevant system component before assembling the SE352/SE352M control unit.



1. Switch off the power supply to the BT356 card rack or SB35x system box and allow for a discharging time of 10 seconds.
2. Insert the SE352/SE352M control unit in the respective slot in the BT356 card rack or SB35x system box.
3. Tighten the knurled bolts on the front. Make sure that the front panel is flush to the BT356 card rack or SB35x system box by tightening the knurled bolts.

7 Commissioning

	 CAUTION
	<p>Risk of damage to persons and property!</p> <p>Commissioning of the SE352/SE352M control unit requires basic mechanical and electrical knowledge.</p> <ul style="list-style-type: none"> ▶ Only qualified personnel (see "Personnel qualifications" on page 18) are authorized to commission the system. ▶ Once the device has been switched off, it cannot be switched back on again until at least 30 seconds have elapsed.

NOTE!

If you use the components in an existing system as a replacement or an extension, you must install the firmware that is used in the system.

The firmware versions and service packs created up to the time of delivery can be found on the system stick. If newer firmware versions and service packs have been created before commissioning, they can be downloaded from the Rexroth homepage.

Before commissioning, check that the plug connections are firmly fitted. Proceed as follows for commissioning:

1. Check whether the battery is correctly seated in the battery holder. If not, insert a battery according to the instructions in Section "9 Maintenance and repair" on page 26.
2. Insert the SE352/SE352M control unit in the card rack or system box.
3. If necessary, insert IMxx interface modules in the SE352/SE352M control unit.
4. Close off slots that are not occupied with interface modules using dummy panels.
5. Turn on the voltage supply for the card rack or system box.
6. Connect the operating computer and set the time with the BS350.
7. Configure the interfaces and program the tightening system.

SE352/SE352M control unit control signals

Tightening cell

A tightening cell is designated as the installed hardware for at least one tightening channel and at least one data interface for communication with the operating or evaluation program or the superior controller. This includes the corresponding tightening programs and tightening applications.

A maximum of two tightening channels can be controlled by one SE352/SE352M tightening controller.

The KE350/KE350G and SE352/SE352M communicate with each other via an internal bus system.

Control signals

The tightening cell communicates with the superior controller via control signals. A PLC assignment table determines which control signals are assigned to the inputs/outputs. The inputs/outputs are assigned in the BS350 operating program.

Further information can be found in:


- the online guide in the operating program (programming the assignment table)
- the system documentation, chapter 5 “Control signals” (3 609 929 918) (signal description, sequence examples, and chronological sequences).

8 Operation

Operation is not necessary while the system is running.

9 Maintenance and repair

Cleaning and care

	! CAUTION
	<p>Any dirt or liquids penetrating the device lead to malfunctions!</p> <p>The safe function of the SE352/SE352M control unit is then no longer assured.</p> <p>► Always provide for absolute cleanliness when working on the SE352/SE352M control unit.</p>

Maintenance

The SE352/SE352M control unit is maintenance-free if used as intended.

Repair

Reset function

A software reset is generated if the reset button is briefly pressed, i.e. for < 1 second. The controller is reset once the button is released.

A hardware reset is generated if the reset button is pressed for a long period, i.e. for > 3 seconds. The controller and the two corresponding servo amplifiers are reset once the button is released.

Exchanging the battery

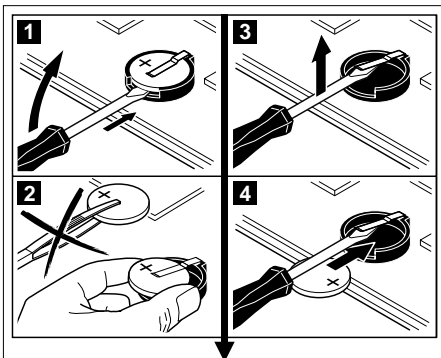


Fig. 6:

The control unit has a built-in battery-buffered SRAM for storing the tightening results. In the event of a power failure, the data in the SRAM is retained thanks to the battery. The system clock is also supplied by the battery. The above mentioned data, as well as date and time, are lost if the battery is discharged. In this case, an error message is created.

Proceed as follows to exchange the battery:

- Carry out data storage (when the battery is exchanged, all data stored in the memory module is lost).
- Remove the discharged battery. Lift the holder slightly with a screwdriver and slide the battery forwards.
- Install a new battery:

ATTENTION

Battery short-circuit!

Discharge

- ▶ Install the battery with your fingers, do not use conductive tools (e.g. tweezers) under any circumstances.
- The positive end must point towards the holder (upwards). To insert the battery, lift the holder slightly and slide the battery under the holder.

- Set the real-time clock again using the BS350 operating program.

The following is a list of recommended batteries.

Tab. 4: Battery: Recommended types

Component	Designation	Manufacturer/supplier	Type	Comment
Lithium cell 3 V	BT1	SONY	CR2450	Lithium battery 3 V, Q ≥ 560 mAh 24.5 x 5 mm
		VARTA	CR2450	

Spare parts



Please refer to the address directory under www.boschrexroth.com and in chapter "16 Service and sales" on page 30 for the addresses of our foreign subsidiaries.

10 Decommissioning

For details about how to disassemble and replace the SE352/SE352M control unit, please refer to chapter "11 Disassembly and replacement" on page 28.

11 Disassembly and replacement

Disassembling the SE352/SE352M

	 CAUTION
	<p>Removing the SE352/SE352M control unit under voltage</p> <p>Damage to the SE352/SE352M control unit!</p> <ul style="list-style-type: none"> ▶ Always switch off the power supply for the relevant system component before disassembling the SE352/SE352M control unit. ▶ For reasons of safety, the SE352/SE352M control unit may only be inserted or removed at the earliest 10 seconds after the power supply to the BT356 card rack or SB35x system box has been switched off.

Proceed as follows to disassemble the SE352/SE352M control unit:

1. Switch off the power supply to the BT356 card rack or SB35x system box and allow for a discharging time of 10 seconds.
2. Loosen the knurled screws on the front side and pull out the SE352/SE352M control unit.
3. Install a corresponding dummy panel, if necessary

Tab. 5: Dummy panels

Type	Dummy panel for	Order number
BP351	Servo amplifier	3 608 878 058
BP352	Controller and servo amplifier	3 608 878 060

12 Disposal

Environmental protection

Careless disposal of the SE352/SE352M control unit could lead to pollution of the environment.

Therefore dispose of the device in accordance with the currently applicable regulations in your country.

You can also send the device to Bosch Rexroth for disposal.

13 Extension and conversion

Do not convert the SE352/SE352M control unit.

14 Troubleshooting

Malfunctions and information on errors are displayed in the tightening system via the BS350.

If you are not be able to remedy an occurring defect, please contact one of the addresses that you can find under www.boschrexroth.com or in the address directory in chapter "16 Service and sales" on page 30.

15 Technical data

Tab. 6:

Designation	SE352	SE352M
Order number	0 608 830 262	0 608 830 263
Admissible ambient temperature during operation	60 °C	
Admissible relative humidity during operation	20 % - 90 % non-condensing	
Admissible storage temperature	– 20 °C to 70 °C	
Admissible relative storage humidity	20 - 95 %	
Protection class	IP20 (~ NEMA 1)	
Dimensions (W x H x D)	24.5 mm x 271 mm x 285 mm	
Weight (without modules)	1.4 kg	