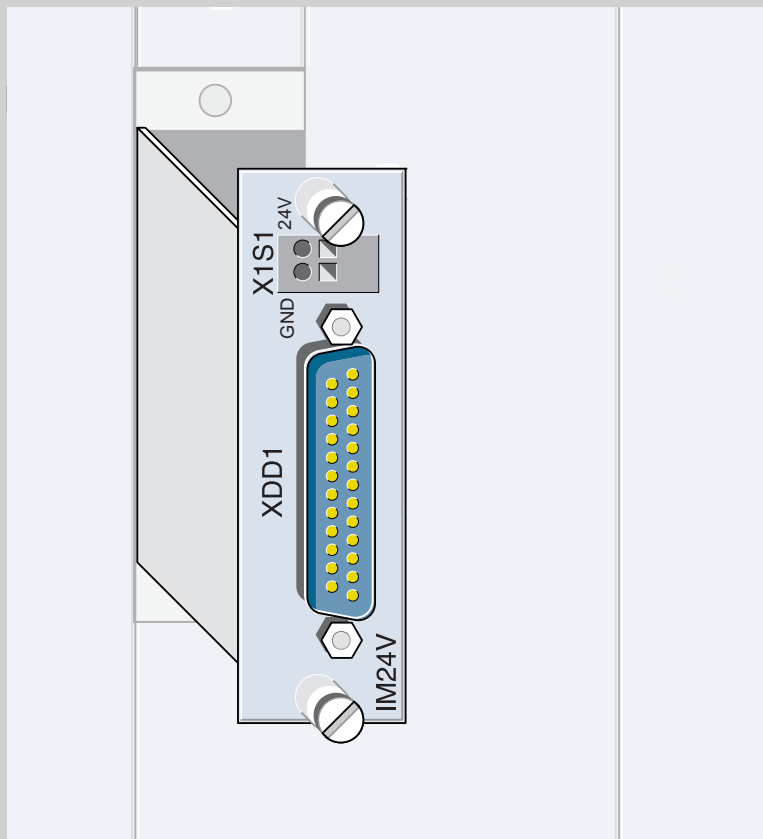


# IM24V

3 609 929 B37/  
2008-09



## Table of Contents

About this document .....	17
General safety instructions .....	17
Delivery contents .....	19
Product description .....	20
Transport and storage .....	23
Assembly .....	23
Commissioning .....	24
Operation .....	24
Maintenance and repair .....	25
Decommissioning .....	25
Disassembly and replacement .....	25
Disposal .....	26
Extension and conversion .....	26
Troubleshooting .....	26
Technical data .....	27
Service and sales .....	28

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.

© This document, as well as the data, specifications and other information set forth in it, are the exclusive property of Bosch Rexroth AG. It may not be reproduced or given to third parties without its consent.

This document was written in German.

## 1 About this document

# 1 About this document

These instructions contain important information on the safe and appropriate assembly, transportation, commissioning, operation, maintenance, disassembly and simple troubleshooting of the IM24V interface module.

Read these instructions completely, especially the chapter “2 General safety instructions” on page 17, before working with the IM24V interface module.

### Related documents

The IM24V interface module is a system component.

Also observe the instructions for the other system components.

Also observe the generally applicable, legal or otherwise binding regulations of the 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 IM24V interface module 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 IM24V interface module.
- 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 IM24V interface module on to third parties.

### Intended use

The IM24V interface module is a component in terms of the machine directive 98/37/EC (partial 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 IM24V interface module 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 IM24V interface module is intended for installation in components for the Tightening System 350.

### Improper use

Any use of the IM24V interface module 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.

## 2 General safety instructions

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:


	 <b>SIGNAL WORD</b>
	<b>Type of RISK!</b>
	Consequences <b>Precautions</b>

- **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.
---	---

	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.
---	--

The signal words have the following meaning:

 <b>CAUTION</b>
<b>CAUTION</b> indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury or damage to equipment.

<b>ATTENTION</b>
<b>ATTENTION</b> indicates a situation which, if not avoided, could result in minor or moderate damage to equipment.

### Adhere to the following instructions

#### General safety instructions

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 printed card, components, housing, and plug connectors or missing screws.

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

### 3 Delivery contents

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. 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 plug connectors are installed correctly, undamaged, and that all screws are tightened.

#### **During commissioning**

Before 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 IM24V interface module
- 1 operating instructions for the IM24V interface module

## 4 Product description

## 4 Product description

**Performance description**

The IM24V interface module makes it possible to control a tightening system via a 24 V interface or to output 24 V status signals from the tightening system. Actuators and initiators can also be connected at this interface. Several of these modules can be used within a tightening system. The appropriate function is simply selected in the operating program.

The IM24V offers the option to completely isolate the inputs and outputs galvanically. A power pack, which is not included in the delivery contents, is necessary to do this.

**Device description**

The module provides 10 inputs and 13 outputs. The outputs are short circuit-proof and protected against reverse polarity.

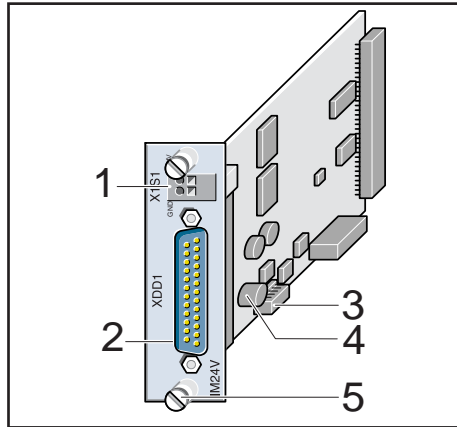


Fig. 1: IM24V interface module

- 1 X1S1 interface
- 2 XDD1 interface
- 3 Jumper for internal/external power supply
- 4 Fuse
- 5 Screws

## 4 Product description

### X1S1 interface

This interface is designed as a two-pin spring-type terminal to connect an external 24 V power supply.

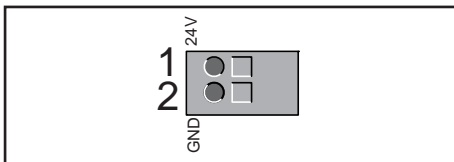


Fig. 2: Two-pin spring-type terminal (female)

Table 1 X1S1

Pin	Signal	Description/ function	Voltage/ current
1	24 V	24 V external supply voltage	24 V, 3 A
2	0V	Reference potential for external 24 V	

### XDD1 interface

This interface is designed as a 25-pin SUB-D plug connector for digital inputs/outputs. The logical assignment of the internal tightening system signals to the respective inputs/outputs is done with the BS350 operating system.

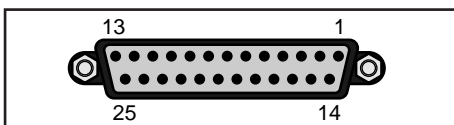


Fig. 3: 25-pin SUB-D plug connector (female)

Table 2 XDD1

Pin	Signal	Description/ Function	Voltage/ current
1	24 V	24 V external supply voltage	24 V, 3 A
2	I2	Input 2	24 V
3	I4	Input 4	24 V
4	I6	Input 6	24 V
5	I8	Input 8	24 V
6	I10	Input 10	24 V
7	O2	Output 2	24 V/500 mA
8	O4	Output 4	24 V/500 mA
9	O6	Output 6	24 V/500 mA
10	O8	Output 8	24 V/500 mA
11	O10	Output 10	24 V/500 mA
12	O12	Output 12	24 V/500 mA
13	0V	Reference potential for 24 V external	
14	I1	Input 1	24 V
15	I3	Input 3	24 V
16	I5	Input 5	24 V
17	I7	Input 7	24 V
18	I9	Input 9	24 V
19	O1	Output 1	24 V/500 mA
20	O3	Output 3	24 V/500 mA
21	O5	Output 5	24 V/500 mA
22	O7	Output 7	24 V/500 mA
23	O9	Output 9	24 V/500 mA
24	O11	Output 11	24 V/500 mA
25	O13	Output 13	24 V/500 mA

## 4 Product description

### Jumper

The jumper on the circuit board makes it possible to select between an internal and external power supply for the outputs.

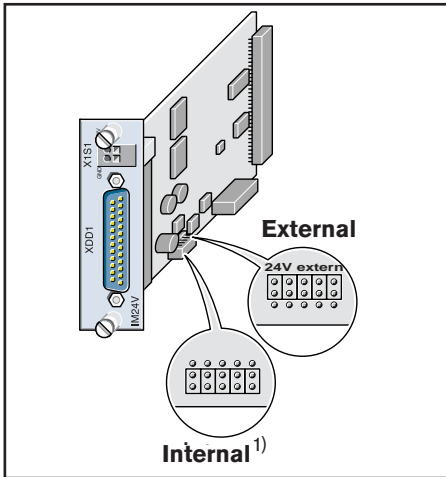


Fig. 4: IM24V, side view, jumper assignment for internal/external power supply  
<sup>1)</sup> Factory setting

The internal power supply is used if "Internal" is selected. The total current for the outputs may not exceed max. 1 A.

The external power supply, which must be connected at the X1S1 or XDD1 interface, is used if "External" is selected. The total current for the outputs may not exceed max. 3 A (protected via a fuse).

### ATTENTION

The voltage circuits on the terminal are safely isolated from the mains circuits (safe isolation in accordance with EN50178). The requirements for safe isolation of electric circuits must be observed if using the connection options on this terminal.

### Fuse

The maximum permissible current is limited to 3.15 A via the UL fuse if an external power supply is used.

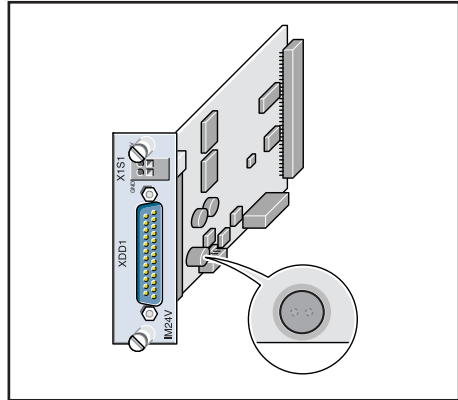


Fig. 5: Fuse

Table 3

Microfuse type	Supplier
TR 5, no. 372; 3.15 A delayed; spacing 5.08 mm, pin length 4.3 mm	Wickmann
MSTU 250, 3.15 A delayed; spacing 5.08 mm, pin length 4.3 mm	Schurter



5 Transport and storage

## 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 27).


## 6 Assembly


When installing the product always observe the ambient conditions specified in the technical data (see "Technical data" on page 27).

### Required tools

- Screwdriver for spring-type terminal

### Assembling the IM24V

	<b>⚠ CAUTION</b>
	<p><b>Risk of injuries and damage to property!</b></p> <p>Assembly of the IM24V interface module requires basic mechanical and electrical knowledge.</p> <ul style="list-style-type: none"> <li>▶ Only qualified personnel are authorized to assemble the IM24V interface module (see "Personnel qualifications" on page 17).</li> <li>▶ Measures to prevent electrostatic discharge (ESD protection) must be undertaken to protect the module and system components during all assembly work.</li> </ul>

	<b>⚠ CAUTION</b>
	<p><b>Risk of injuries when assembling under voltage!</b></p> <p>If you do not switch off the power supply before assembling the IM24V interface module, you may get injured or the device or system components may be damaged.</p> <ul style="list-style-type: none"> <li>▶ Always switch off the power supply to the relevant system component before assembling the IM24V interface module.</li> </ul>

1. Always switch off the power supply to the relevant system component before assembling the IM24V interface module.
2. Insert the IM24V interface module into the appropriate slot on the system component (B1 or B2) until it catches (example in Fig. 6).
3. Tighten the front knurled bolts until the front panel fits tightly.

## 7 Commissioning

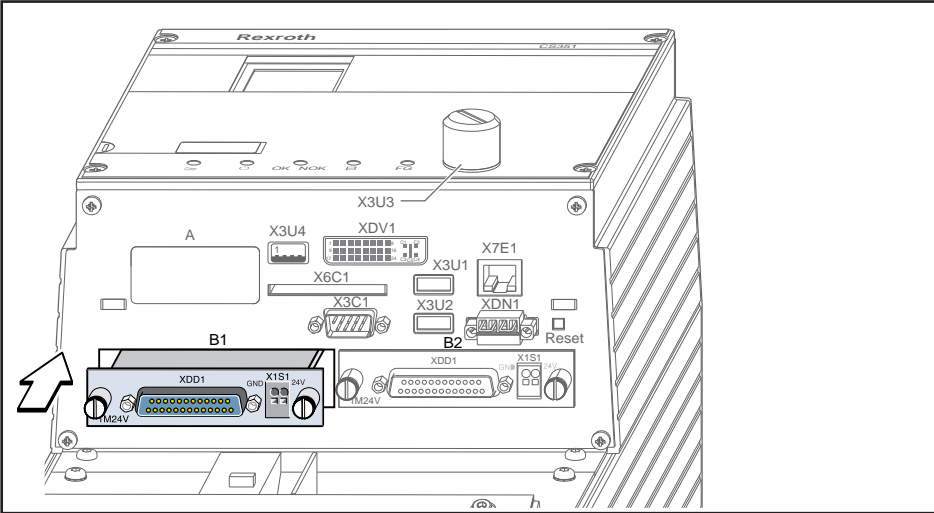



Fig. 6: Example: Slots B1, B2 on the CS351 Compact System

## 7 Commissioning

 <b>CAUTION</b>
<p><b>Risk of injuries and damage to property!</b></p> <p>Commissioning of the IM24V interface module requires basic mechanical and electrical knowledge.</p> <p>► Only qualified personnel are authorized to commission the system (see “Personnel qualifications” on page 17).</p>

- Before commissioning, check that all plug-in connections have the correct seat.
- Switch on the power supply for the system components.

With the exception of the jumpers described in section 4, there are no further setting elements on the IM24V interface module.



## 8 Operation

Operation is not necessary while running.

## 9 Maintenance and repair

## 9 Maintenance and repair

### Cleaning and care

	 <b>CAUTION</b>
	<p><b>Any dirt or liquids penetrating the device lead to malfunctions!</b></p> <p>Safe function of the IM24V interface module is no longer ensured.</p> <p>▶ Always provide for absolute cleanness when working on the IM24V interface module.</p>

### Maintenance

The IM24V interface module is maintenance-free if used as intended.

### Spare parts

The addresses for our national representatives can be found at [www.boschrexroth.com](http://www.boschrexroth.com) and in the address directory in chapter "16 Service and sales" on page 28.

## 10 Decommissioning



For details about how to disassemble or replace your IM24V interface module please refer to chapter "11 Disassembly and replacement" on page 25.

## 11 Disassembly and replacement

### Required tools

- Screwdriver for spring-type terminal

### Disassembling the IM24V interface module

	 <b>CAUTION</b>
	<p><b>Disconnecting the IM24V interface module while under voltage</b></p> <p>Damage to the IM24V interface module!</p> <p>▶ Make sure that the relevant system components are not under voltage before removing the IM24V interface module.</p>

Proceed as follows to disassemble the IM24V interface module:

1. Make sure the relevant system components are not under voltage.
2. Loosen the front knurled bolts and pull out the IM24V interface module.
3. Assemble a dummy panel, if necessary.

12 Disposal

## 12 Disposal

### Environmental protection

Careless disposal of the IM24V interface module 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

### Plugging the jumper into an external power supply

1. Disassemble the IM24V as described in chapter "11 Disassembly and replacement".
2. Plug the jumper into "External" (see page 22).
3. Assemble the IM24V as described in chapter "6 Assembly".

## 14 Troubleshooting

### Diagnosis options

Malfunctions and information on errors are displayed in the tightening system, e.g. in the BS350.

The IM24V interface module:

- monitors the 24 V outputs for overloading and short circuits
- monitors the state of the fuses for an external power supply
- monitors the 24 V supply.

If you should not be able to remedy an occurring defect, please contact one of the addresses that you can find under [www.boschrexroth.com](http://www.boschrexroth.com) or in the address directory in chapter "16 Service and sales" on page 28.

15 Technical data

## 15 Technical data

**Table 4**

<b>General data</b>	<b>IM24V</b>
Order number	0 608 830 259
Dimensions (width x height x depth)	22 x 88 x 124 mm
Outputs	Max. constant current per output: 500 mA, max. total current: 3 A, short circuit-proof, overload-proof
X1S1 wire cross-section	1.5 mm <sup>2</sup> without wire end sleeve
Supply voltage on X1S1	18.5 V - 30.2 V
Input level low	0 V to 5 V
Input level high	13.0 V - 30.2 V
Maximum input current	15 mA
Weight	85 g
Unshielded connection cable	Maximum 30 m
Application temperature range	Designed for operation in System 350 components
Storage temperature range	-20°C up to 70°C
Permissible application humidity	20% - 90%, non-condensing
Permissible storage humidity	20 - 95%
Protection class according to EN 60529/IEC529	IP 20 (~NEMA 1) when installed
Installation position	Any