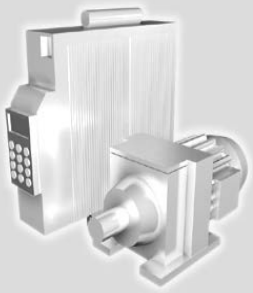
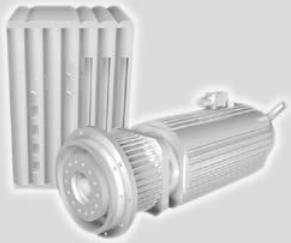
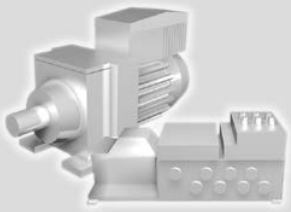
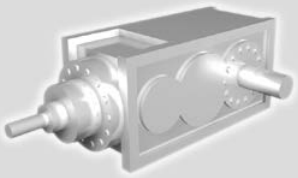
SEW EURODRIVE









DFE32B PROFINET IO
Fieldbus Interface

Edition 09/2007

11614226 / EN

Manual

SEW EURODRIVE

Phone: 800.894.0412 - Fax: 888.723.4773 - Web: www.clrwtr.com - Email: info@clrwtr.com

1 General Notes 6
1.1 Structure of the safety notes 6
1.2 Right to claim under warranty 6
1.3 Exclusion of liability 6

2 Safety Notes 7
2.1 Other applicable documentation 7
2.2 General safety notes for bus systems 7
2.3 Safety functions 7
2.4 Hoist applications 7
2.5 Product names and trademarks 7
2.6 Waste disposal 8

3 Introduction 9
3.1 Content of the manual 9
3.2 Additional documentation 9
3.3 Features 9
3.3.1 MOVIDRIVE® B, MOVITRAC® B and PROFINET 9
3.3.2 Access to all information 10
3.3.3 Monitoring functions 10
3.3.4 Diagnostics 10
3.3.5 Fieldbus monitor 10

4 Assembly and Installation Notes 11
4.1 Installing the DFE32B option card in MOVIDRIVE® MDX61B 11
4.1.1 Before you begin 12
4.1.2 Basic procedure for installing and removing an option card (MDX61B, BG 1 - 6) 13
4.2 Installing the DFE32B option card in MOVIDRIVE® B 14
4.2.1 Connecting a system bus (SBus 1) between a MOVITRAC® B and the DFE32B option 14
4.2.2 Connecting system bus (SBus 1) between several MOVITRAC® B units 15
4.3 Installing the DFE32B/UOH11B gateway 17
4.4 Connection and terminal description DFE32B option 18
4.5 Pin assignment 19
4.6 Shielding and routing bus cables 20
4.7 TCP / IP addressing and subnetworks 21
4.8 Setting the IP address parameters via DCP 23
4.9 Procedure after device replacement 24
4.9.1 Device replacement MOVIDRIVE® B 24
4.9.2 Device replacement MOVITRAC® B / gateway 24
4.10 Operating display DFE32B option 25
4.10.1 PROFINET-LEDs 25
4.10.2 Gateway LED 26

5 Project Planning with PROFINET 28
5.1 Project planning for the PROFINET IO controller 28
5.1.1 Assigning the PROFINET device name 29
5.1.2 Project planning for the PROFINET interface for MOVIDRIVE® B 31
5.1.3 Project planning for MOVITRAC® B or gateway with DFE32B option 37
5.1.4 Project planning for the PROFINET interface for MOVITRAC® B 38
5.2 Auto setup for gateway operation 44
5.3 Setting the MOVIDRIVE® MDX61B drive inverter 46

5.4 Setting the MOVITRAC® B frequency inverter ... 47
5.5 Startup procedure for MDX61B with DFE32B option ... 48
5.5.1 Preliminary work ... 48
5.5.2 Starting up MOVIDRIVE® B with DC 24 V or AC 400 V ... 48
5.6 Startup procedure for the DFE32B option as gateway ... 50
5.6.1 Preliminary work ... 50
5.6.2 Starting up units with DC 24 V or AC 400 V ... 51

6 PROFINET Operating Behavior ... 53
6.1 Introduction ... 53
6.2 The integrated Ethernet switch ... 55
6.3 Process data configuration ... 56
6.4 Controlling the MOVIDRIVE® MDX61B drive inverter ... 57
6.4.1 Control example SIMATIC S7 with MOVIDRIVE® MDX61B ... 58
6.4.2 PROFINET timeout (MOVIDRIVE® MDX61B) ... 58
6.4.3 Fieldbus timeout response (MOVIDRIVE® MDX61B) ... 58
6.5 Controlling the MOVITRAC® B (gateway) frequency inverter ... 59
6.5.1 Control example for SIMATIC S7 with MOVITRAC® B (gateway) ... 60
6.5.2 SBus timeout ... 60
6.5.3 Unit error ... 60
6.5.4 Fieldbus timeout response of the DFE32B in gateway operation ... 60
6.6 SIMATIC S7 Sample program ... 61
6.7 PROFINET alarms using the example of MOVIDRIVE® B ... 62

7 Configuration via PROFIdrive Data Set 47 ... 64
7.1 Introducing PROFINET data sets ... 64
7.1.1 Features of the SEW-EURODRIVE PROFINET units ... 65
7.2 Structure of the PROFINET parameter channel ... 66
7.2.1 Parameter setting procedure via data set 47 ... 67
7.2.2 Controller processing sequence ... 68
7.2.3 Addressing connected inverters ... 69
7.2.4 MOVILINK® parameter requests ... 70
7.2.5 PROFIdrive parameter requests ... 75
7.3 Read or write parameters via data set 47 ... 80
7.3.1 Sample program for SIMATIC S7 ... 80
7.3.2 Technical data PROFINET for MOVIDRIVE® DFE32B ... 80
7.3.3 Error codes of the PROFINET services ... 81

8 Integrated Web Server ... 82
8.1 Software requirements ... 82
8.2 Security settings ... 82
8.3 Homepage layout MOVIDRIVE® MDX61B with DFE32B option ... 82
8.4 Structure of the diagnostics applet ... 83
8.5 Access protection ... 87

9 MOVITOOLS® MotionStudio via Ethernet ... 88
9.1 Overview ... 88
9.2 Procedure for configuring units ... 89
9.3 Communication with external units ... 92

10 Error Diagnostics ... 94
10.1 Diagnostic procedures ... 94
10.2 Error list in gateway operation ... 97

11 Technical Data 98
11.1 DFE32B for MOVIDRIVE® B, MOVITRAC® B and UOH11B gateway housing 98
11.2 Dimension DFE32B via UOH11B gateway housing 99

12 Index 100

1 General Notes

1.1 Structure of the safety notes

The safety notes in this manual are designed as follows:

Symbol	SIGNAL WORD
	Nature and source of hazard. Possible consequence(s) if disregarded. • Measure(s) to avoid the hazard.

Symbol	Signal Word	Meaning	Consequences if disregarded
Example:  General hazard  Specific hazard, e.g. electric shock	**HAZARD**	Imminent hazard	Severe or fatal injuries
	WARNING	Possible hazardous situation	Severe or fatal injuries
	CAUTION	Possible hazardous situation	Minor injuries
	**STOP**	Possible damage to property	Damage to the drive system or its environment
	**NOTE**	Useful information or tip. Simplifies drive system handling	

1.2 Right to claim under warranty

A requirement of fault-free operation and fulfillment of any rights to claim under limited warranty is that you adhere to the information in the documentation. Therefore, read the manual before you start operating the device!

Make sure that the manual is available to persons responsible for the plant and its operation, as well as to person who work independently on the device. You must also ensure that the documentation is legible.

1.3 Exclusion of liability

You must comply with the information contained in the MOVIDRIVE®- / MOVITRAC® documentation to ensure safe operation and to achieve the specified product characteristics and performance requirements. SEW-EURODRIVE assumes no liability for injury to persons or damage to equipment or property resulting from non-observance of these operating instructions. In such cases, any liability for defects is excluded.

2 Safety Notes

2.1 Other applicable documentation

- Installation and startup only by trained personnel observing the relevant accident prevention regulations and the following documents:
  - "MOVIDRIVE® MDX60B / 61B operating instructions
  - "MOVITRAC® B" operating instructions
- Read through this manual carefully before you commence installation and startup of the DFE32B option.
- As a prerequisite to fault-free operation and fulfillment of warranty claims, you must adhere to the information in the documentation.

2.2 General safety notes for bus systems

This communication system allows you to match the MOVIDRIVE® drive inverter to the specifics of your application. As with all bus systems, there is a danger of invisible, external (as far as the inverter is concerned) modifications to the parameters which give rise to changes in the unit behavior. This may result in unexpected (not uncontrolled) system behavior.

2.3 Safety functions

The MOVIDRIVE® MDX60B/61B and MOVITRAC® B drive inverters may not perform safety functions without higher-level safety systems. Use higher-level safety systems to ensure protection of equipment and personnel.

For safety applications, refer to the information in the following publications.

- Safe disconnection for MOVIDRIVE® / MOVITRAC® B

Use only those components in safety applications that were explicitly designed and delivered for this purpose by SEW-EURODRIVE.

2.4 Hoist applications

MOVIDRIVE® MDX60B/61B and the MOVITRAC® B are not designed for use as a safety device in hoist applications..

Use monitoring systems or mechanical protection devices as safety equipment to avoid possible damage to property or injury to people.

2.5 Product names and trademarks

The brands and product names in this manual are trademarks or registered trademarks of the titleholders.

2.6 Waste disposal

Please follow the current national regulations.

Dispose of the following materials separately in accordance with the country-specific regulations in force, as:

- Electronics scrap
- Plastics
- Sheet metal
- Copper

etc.

3 Introduction

3.1 Content of the manual

This user manual describes

- Install the DFE32B PROFINET IO option card in the MOVIDRIVE® MDX61B drive inverter.
- Use the DFE32B PROFINET IO option card in the MOVITRAC® B frequency inverter and in the UOH11B gateway housing
- Start up the MOVIDRIVE® B with the PROFINET fieldbus system
- Start up the MOVITRAC® B with the PROFINET gateway
- Configuring the PROFINET using GSD files
- Operating MOVITOOLS® MotionStudio via PROFINET.
- Diagnostics via integrated web server

3.2 Additional documentation

For information on how to connect MOVIDRIVE® / MOVITRAC® B straightforwardly and effectively to the PROFINET IO fieldbus system, you should request the following additional publications about fieldbus technology:

- MOVIDRIVE® Fieldbus Unit Profile manual
- MOVITRAC® B / MOVIDRIVE® B system manual

The manual for the MOVIDRIVE® Fieldbus Unit Profile and MOVITRAC® B system manual describes the fieldbus parameters and their coding, as well as explaining the whole range of various control concepts and application options in the form of brief examples.

The MOVIDRIVE® fieldbus unit profile manual provides a list of all parameters of the drive inverter that can be read and written via the several communication interfaces such as Systembus, RS485 and via the field bus interface.

3.3 Features

With the DFE32B PROFINET IO option and their powerful universal fieldbus interface, the MOVIDRIVE® MDX61B drive inverter and the MOVITRAC® B frequency inverter allow for a connection to higher-level automation systems.

3.3.1 MOVIDRIVE® B, MOVITRAC® B and PROFINET

The behavior of the inverter which forms the basis of PROFINET operation is referred to as the unit profile. It is independent of any particular fieldbus and is therefore a uniform feature. This feature allows the user to develop fieldbus-independent drive applications. This makes it much easier to change to other bus systems, such as DeviceNet (option DFD).

3.3.2 Access to all information

MOVIDRIVE® MDX61B and MOVITRAC® B offer digital access to all drive parameters and functions via the PROFINET interface. The drive inverter is controlled via fast, cyclic process data. Via this process data channel, you can enter setpoints such as the setpoint speed, ramp generator time for acceleration/deceleration, etc. as well as trigger various drive functions such as enable, control inhibit, normal stop, rapid stop, etc. At the same time you can also use this channel to read back actual values from the drive inverter, such as actual speed, current, unit status, error number or reference signals.

3.3.3 Monitoring functions

Using a fieldbus system requires additional monitoring functions for the drive technology, for example, time monitoring of the fieldbus (fieldbus timeout) or rapid stop concepts. You can, for example, adapt the monitoring functions of MOVIDRIVE® / MOVITRAC® specifically to your application. You can determine, for instance, which of the drive inverter's error responses should be triggered in the event of a bus error. It is a good idea to use a rapid stop function for many applications. However you can also freeze the last setpoints so that the drive continues to operate with the most recently valid setpoints (for example, conveyor belt). As the range of functions for the control terminals is also guaranteed in fieldbus mode, you can continue to implement rapid stop concepts using the terminals of the drive inverter, irrespective of the fieldbus used.

3.3.4 Diagnostics

The MOVIDRIVE® drive inverter and the MOVITRAC® B frequency inverter offer you numerous diagnostics options for startup and service. For example, you can use the integrated fieldbus monitor to control setpoint values sent from the higher-level controller as well as the actual values. The integrated Web server allows you to access the diagnostic values using a standard browser.

3.3.5 Fieldbus monitor

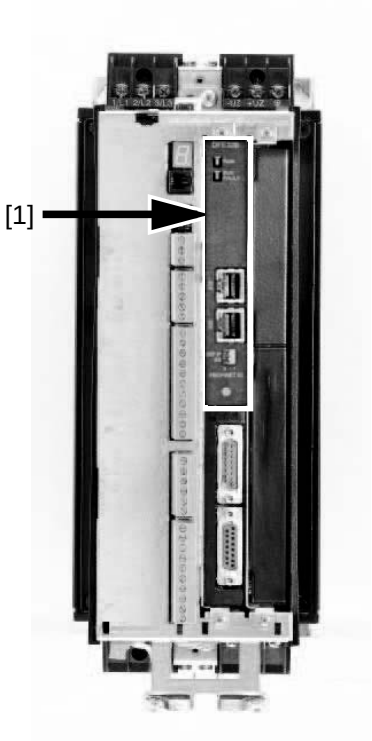
Furthermore, you are supplied with a variety of additional information about the status of the fieldbus interface. The fieldbus monitor function in conjunction with the MOVITOOLS® MotionStudio PC software offers you an easy-to-use diagnostic tool for setting all drive parameters (including the fieldbus parameters) and for displaying the fieldbus and device status information in detail.

4 Assembly and Installation Notes

This section contains information about assembly and installation of the DFE32B PROFINET IO option card in the MOVIDRIVE® MDX61B, MOVITRAC® B and UOH11B gateway housing.

4.1 Installing the DFE32B option card in MOVIDRIVE® MDX61B

	NOTES
	• **Only SEW-EURODRIVE engineers are allowed to install or remove option cards for MOVIDRIVE® MDX61B size 0.** • **Option cards can only be installed or removed by users for MOVIDRIVE® MDX61B sizes 1 to 6.** • **You have to connect the DFE32B PROFINET IO option to fieldbus slot 1.** • **Only use connectors and cables approved for PROFINET IO when cabling.**



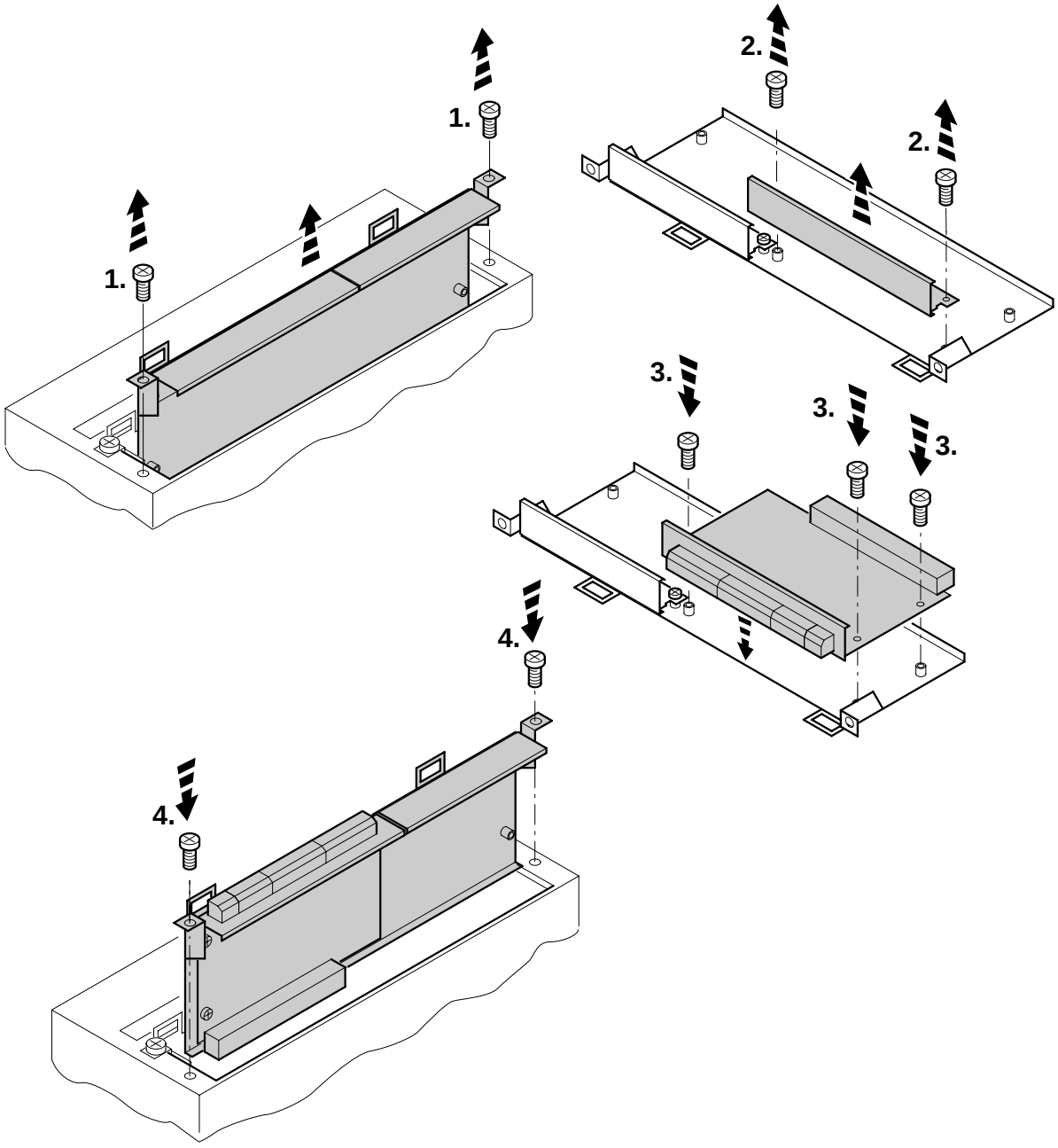
62179AXX

4.1.1 Before you begin

Read the following notes before installing or removing an option card:

- Disconnect the inverter from the power. Switch off the 24 V DC and the supply voltage.
- Take appropriate measures to protect the option card from electrostatic charge (use discharge strap, conductive shoes, and so on) before touching it.
- **Before installing** the option card, remove the keypad and the front cover (→ operating instructions MOVIDRIVE® MDX60B/61B, section 'Installation').
- **After installing** the option card, replace the keypad and the front cover (→ operating instructions MOVIDRIVE® MDX60B/61B, section 'Installation').
- Keep the option card in its original packaging until immediately before you are ready to install it.
- Hold the option card by its edges only. Do not touch any components.

4.1.2 Basic procedure for installing and removing an option card (MDX61B, BG 1 - 6)



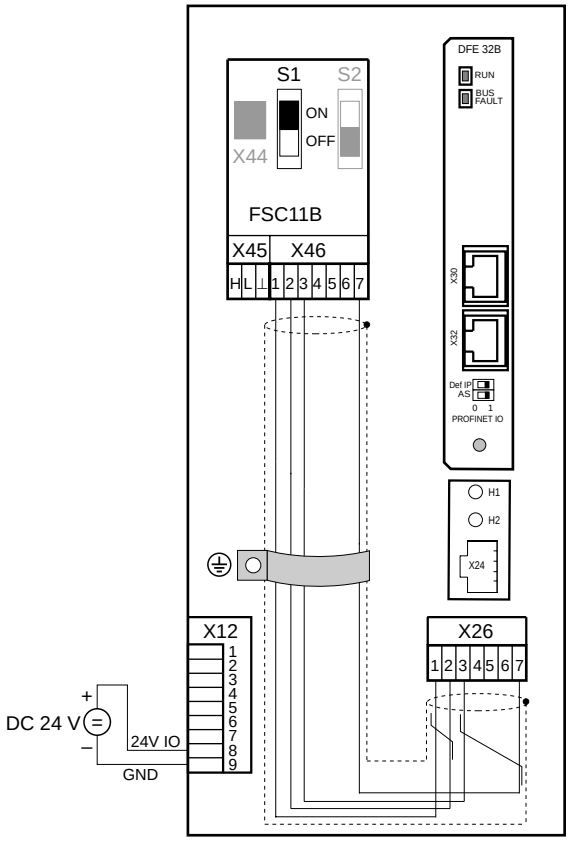
60039AXX

1. Remove the two retaining screws holding the card retaining bracket. Pull the card retaining bracket out evenly from the slot (do not twist!).
2. Remove the two retaining screws of the black cover plate on the card retaining bracket. Remove the black cover plate.
3. Position the option card onto the retaining bracket so that the three retaining screws fit into the corresponding bores on the card retaining bracket.
4. Insert the retaining bracket with installed option card into the slot, pressing slightly so it is seated properly. Secure the card retaining bracket with the two retaining screws.
5. To remove the option card, follow the instructions in reverse order.

4.2 Installing the DFE32B option card in MOVIDRIVE® B

	NOTES
	• MOVITRAC® B does not require special firmware status. • Only SEW-EURODRIVE engineers are allowed to install or remove option cards for MOVITRAC® B.

4.2.1 Connecting a system bus (SBus 1) between a MOVITRAC® B and the DFE32B option



61633AXX

X46	X26	Terminal assignment
X46:1	X26:1	SC11 SBus +, CAN high
X46:2	X26:2	SC12 SBus –, CAN low
X46:3	X26:3	GND, CAN GND
X46:7	X26:7	DC 24 V

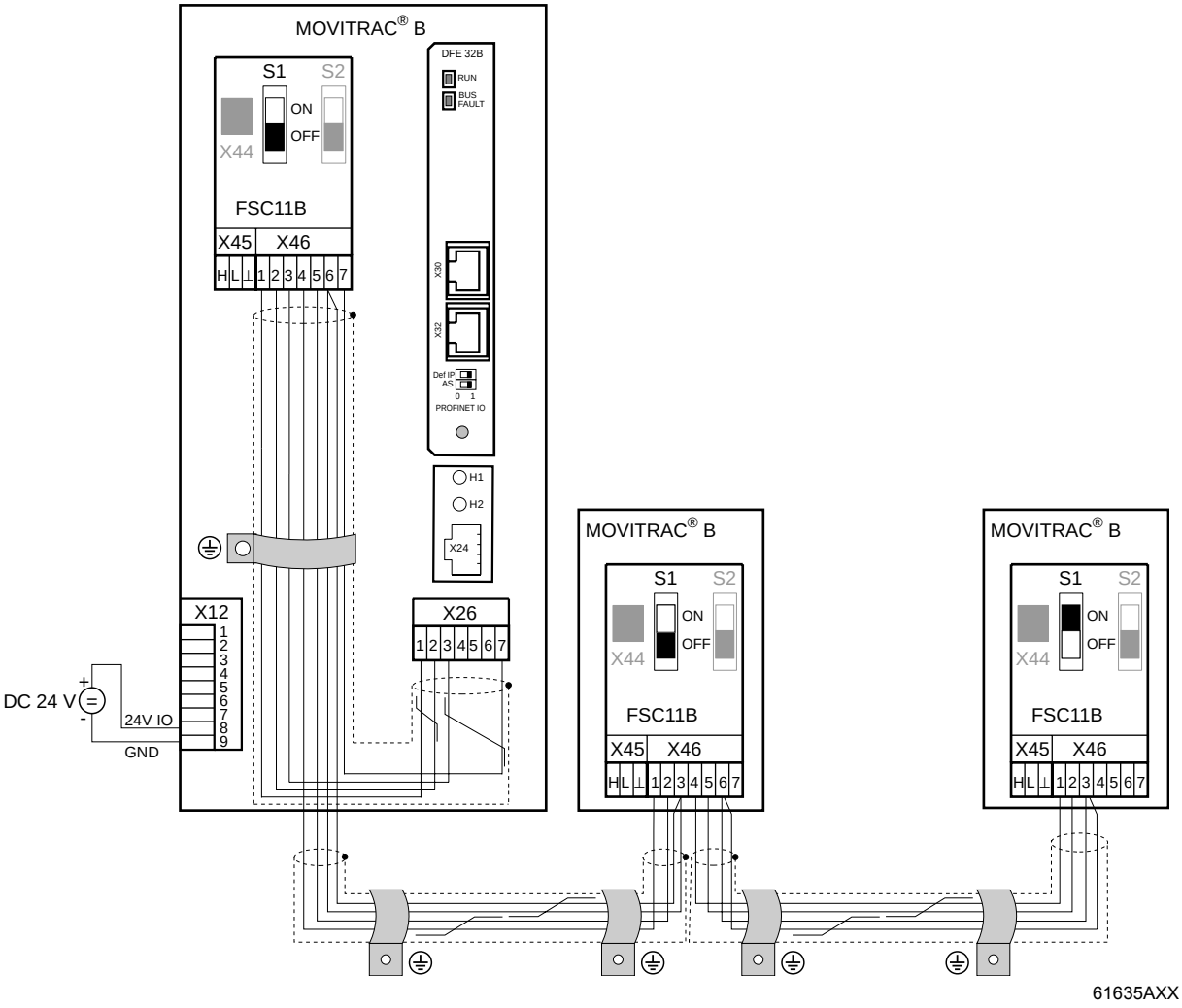
X12	Terminal assignment
X12:8	DC+24 V input
X12:9	GND reference potential for the binary inputs

To simplify cabling, the DFP32B can be supplied with DC 24 V from X46.7 of the MOVITRAC® to X26.7.

MOVITRAC® B must be supplied with DC 24 V at terminals X12.8 and X12.9 when it supplies the DFE32B option.

Activate the system bus terminating resistor at the FSC11B option (S1 = ON).

4.2.2 Connecting system bus (SBus 1) between several MOVITRAC® B units



MOVITRAC® B		DFE32B via UOH11B gateway housing	
X46	**Terminal assignment**	**X26**	**Terminal assignment**
X46:1	SC11 (System bus high, incoming)	X26:1	SC11 SBus +, CAN High
X46:2	SC12 (System bus low, incoming)	X26:2	SC12 SBus –, CAN Low
X46:3	GND (System bus reference)	X26:3	GND, CAN GND
X46:4	SC21 (System bus high, outgoing)		
X46:5	SC22 (System bus low, outgoing)		
X46:6	GND (System bus reference)		
X46:7	DC 24 V	X26:7	DC 24 V

X12	Terminal assignment
X12:8	DC+24 V input
X12:9	GND reference potential for the binary inputs

Please note:

- Use a 2x2 core twisted pair and shielded copper cable (data transmission cable with braided copper shield). Connect the shield flatly on both sides of the electronics shield clamp of MOVITRAC® B. Also connect the ends of the shield to GND. The cable must meet the following specifications:
  - Cable cross section 0.25 mm^2 (AWG18) ... 0,75 mm2 (AWG23)
  - Line resistance 120 Ω at 1 MHz
  - Capacitance per unit length ≤ 40 pF/m at 1 kHz
    Suitable cables are CAN bus or DeviceNet cables.
- The permitted total cable length depends on the baud rate setting of the SBus:
  - 250 kBaud: 160 m
  - 500 kBaud: 80 m
  - 1000 kBaud: 40 m
- Connect the system bus terminating resistor (S1 = ON) at the end of the system bus connection. Switch off the terminating resistor on the other units (S1 = OFF). The DFE32B gateway must always be connected either at the beginning or the end of the system bus connection and feature a permanently installed terminating resistor.

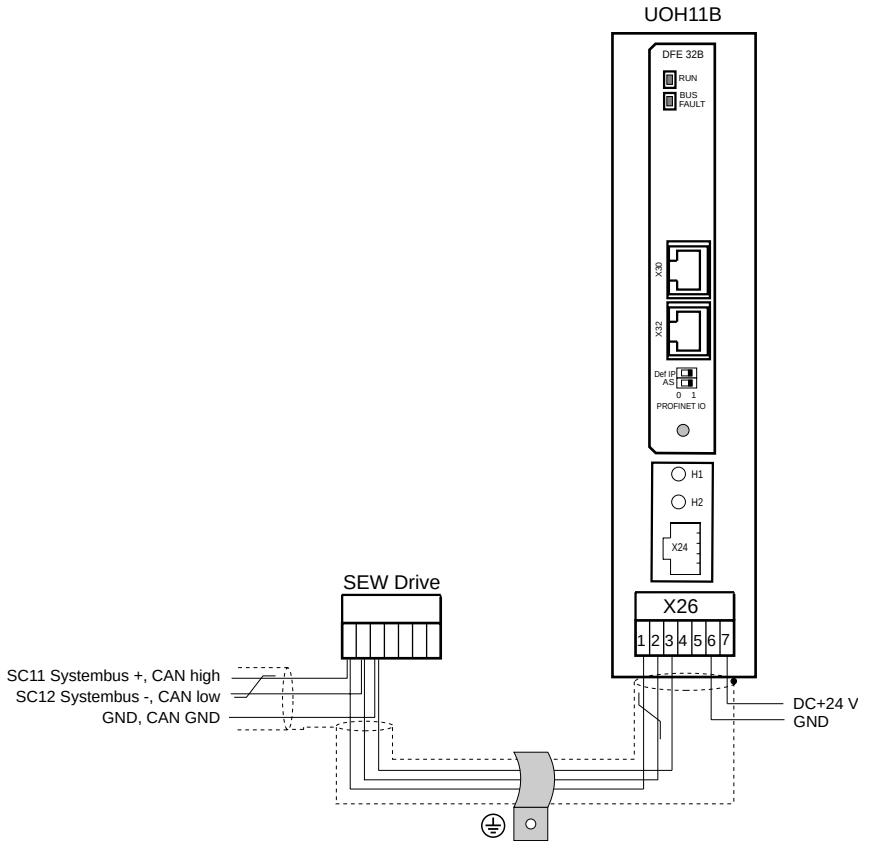
NOTES

- There must not be any potential displacement between the units connected with the SBus. Take suitable measures to avoid a potential displacement, e.g. by connecting the unit ground connectors using a separate lead.
- Point-to-point wiring is not permitted.

4.3 Installing the DFE32B/UOH11B gateway

The following figure shows the connection of the DFE32B option via the UOH11B:X26 gateway housing.

	NOTE
	• Only SEW-EURODRIVE engineers are allowed to install or remove option cards in/from the UOH11B gateway housing.



61636AXX

UOH11B gateway housing	
X26	**Terminal assignment**
X26:1	SC11 system bus +, CAN high
X26:2	SC12 system bus, CAN low
X26:3	GND, CAN GND
X26:4	Reserved
X26:5	Reserved
X26:6	GND, CAN GND
X26:7	DC 24 V

The gateway housing has a power supply of DC 24 V that is connected to X26.

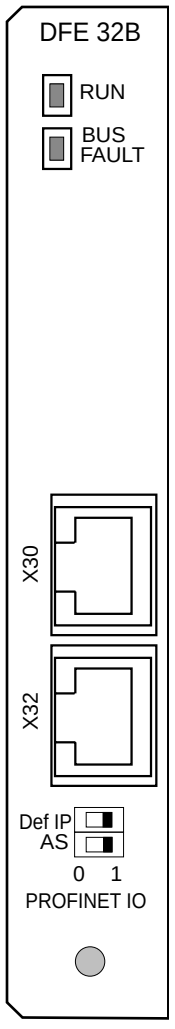
Connect the system bus terminating resistor at the end of the system bus connection.

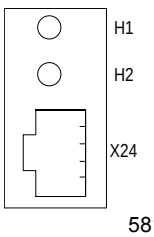
4.4 Connection and terminal description DFE32B option

Part number DFE32B PROFINET IO fieldbus interface option: 1821 345 6

NOTES

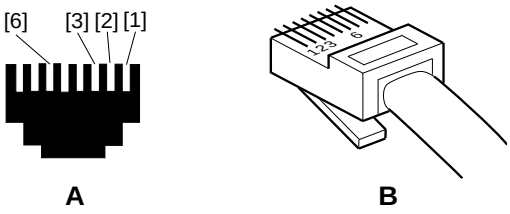
- The "DFE32B PROFINET IO fieldbus interface " is only possible in conjunction with MOVIDRIVE® MDX61B, not with MDX60B.
- Plug the DFE32B option into the fieldbus slot.

Front view of DFE32B	Description	DIP switches	Function
	**LED RUN (red/yellow/green)** **LED BUS FAULT (red/yellow/green)**		Shows the current status of the DFE32B. Shows the status of the PROFINET IO connection.
	X30: Ethernet connection **LED Link (green)** **LED Activity (yellow)** **X32: Ethernet connection** **LED Link (green)** **LED Activity (yellow)**		
	DIP switches	**AS** **DEF IP**	Auto setup for gateway operation Resets the address parameters to the following default values: • IP address: 192.168.10.4 • Subnetwork mask: 255.255.255.0 • Gateway: 1.0.0.0 • PROFINET device name: PNETDeviceName_MACID

Front view of MOVITRAC® B, DFE32B and UOH11B	Description	Function
	**LED H1 (red)**	System error (only for gateway functions)
	LED H2 (green)	Reserved
	X24 X terminal	RS485 interface for diagnostics via PC and MOVITOOLS® MotionStudio (only for MOVITRAC® B)

4.5 Pin assignment

Use prefabricated, shielded RJ45 plug connectors compliant with IEC 11801, edition 2.0, category 5.



54174AXX

Figure 1: Pin assignment of an RJ45 plug connector

A = Front view

B = View from back

[1] Pin 1 TX+ Transmit Plus

[2] Pin 2 TX– Transmit Minus

[3] Pin 3 RX+ Receive Plus

[6] Pin 6 RX– Receive Minus

Connection MOVIDRIVE® B / MOVITRAC® B / Ethernet

To connect the DFE32B, connect the Ethernet interface X30 or X32 (RJ45 connector) using a category 5, class D shielded twisted-pair cable in compliance with IEC 11801 edition 2.0. The integrated switch provides support for realizing a line topology.

	NOTES
	• According to IEC 802.3, the maximum cable length for 10 / 100 MBaud Ethernet (10BaseT / 100BaseT), e.g. between DFE32B and switch, is 100 m. • VLAN tag prioritized Ethernet frames with the frame identification 8892_{hex} are used for the real-time data exchange with PROFINET IO. This requires switched networks. The switches must support prioritization. Hubs are not permitted. Data transmission takes place using the full duplex process with 100 MBit. Detailed information on cabling can be found in the 'PROFINET installation guideline' publication that was issued by the PROFINET user organization.

4.6 Shielding and routing bus cables

Only use shielded cables and connection elements that also meet the requirements of category 5, class 2 in compliance with IEC 11801 edition 2.0.

Correct shielding of the bus cable attenuates electrical interference that may occur in industrial environments. The following measures ensure the best possible shielding:

- Manually tighten the mounting screws on the connectors, modules, and equipotential bonding conductors.
- Use only connectors with a metal housing or a metallized housing.
- Connect the shielding in the connector over a wide surface area.
- Apply the shielding of the bus cable on both ends.
- Route signal and bus cables in separate cable ducts. Do not route them parallel to power cables (motor leads).
- Use metallic, grounded cable racks in industrial environments.
- Route the signal cable and the corresponding equipotential bonding close to each other using the shortest possible route.
- Avoid using plug connectors to extend bus cables.
- Route the bus cables closely along existing grounding surfaces.

	**STOP** In case of fluctuations in the ground potential, a compensating current may flow via the bilaterally connected shield that is also connected to the protective earth (PE). Make sure you supply adequate equipotential bonding according in accordance with relevant VDE regulations in such a case.

4.7 TCP / IP addressing and subnetworks

Introduction

The settings for the address of the IP protocol are made using the following parameters:

- IP address
- Subnetwork mask
- Standard gateway

The addressing mechanisms and subdivision of the IP networks into subnetworks are explained in this chapter to help you set the parameters correctly.

IP address

The IP address is a 32 bit value that uniquely identifies a station in the network. An IP address is represented by four decimal numbers separated by decimal points.

Example: 192.168.10.4

Each decimal number stands for one byte (= 8 bits) of the address and can also be represented using binary code (→ following table).

Byte 1		Byte 2		Byte 3		Byte 4
11000000	.	10101000	.	00001010	.	00000100

The IP address comprises a network address and a station address (→ following table).

Network address	Station address
192.168.10	4

The part of the IP address that denotes the network and the part that identifies the station is determined by the network class and the subnetwork mask.

Station addresses cannot consist of only zeros or ones (binary) because they represent the network itself or a broadcast address.

Network classes

The first byte of the IP address determines the network class and as such represents the division into network addresses and station addresses.

Value range Byte 1	Network class	Complete network address (Example)	Meaning
0 ... 127	A	10.1.22.3	10 = Network address 1.22.3 = Station address
128 ... 191	B	172.16.52.4	172.16 = Network address 52.4 = Station address
192 ... 223	C	192.168.10.4	192.168.10 = Network address 4 = Station address

This rough division is not sufficient for a number of networks. They also use an explicit, adjustable subnet mask.

Subnet mask

A subnet mask is used to divide the network classes into even finer sections. Like the IP address, the subnet mask is represented by four decimal numbers separated by decimal points. Every decimal number stands for one byte.

Example: 255.255.255.128

Each decimal number stands for one byte (= 8 bits) of the subnet mask and can also be represented using binary code (→ following table).

Byte 1		Byte 2		Byte 3		Byte 4
11111111	.	11111111	.	11111111	.	10000000

If you compare the IP addresses with the subnet masks, you see that in the binary representation of the subnet mask all ones determine the network address and all the zeros

determine the station address (→ following table).

		Byte 1		Byte 2		Byte 3		Byte 4
IP address	decimal	192	.	168.	.	10	.	128
	Binary	11000000	.	10101000	.	00001010	.	10000000
Subnetwork mask	decimal	255	.	255	.	255	.	128
	Binary	11111111	.	11111111	.	11111111	.	10000000

The class C network with the address 192.168.10. is further subdivided into 255.255.255.128 using the subnetwork mask. Two networks are created with the address 192.168.10.0 and 192.168.10.128.

The following station addresses are permitted in the two networks:

- 192.168.10.1 ... 192.168.10.126
- 192.168.10.129 ... 192.168.10.254

The network stations use a logical AND operation for the IP address and the subnetwork mask to determine whether there is a communication partner in the same network or in a different network. If the communication partner is in a different network, the standard gateway is addressed.

Standard gateway

The standard gateway is also addressed via a 32-bit address. The 32-bit address is represented by four decimal numbers separated by decimal points.

Example: 192.168.10.1

The standard gateway establishes a connection to other networks. In this way, a network station that wants to address another station can use a logical AND operation with the IP address and the subnetwork mask to decide whether the desired station is located in the same network. If this is not the case, the station addresses the standard gateway (router), which must be part of the actual network. The standard gateway then takes on the job of transmitting the data packages.

4.8 Setting the IP address parameters via DCP

Initial startup

For PROFINET IO, the IP address parameters are determined via the "DCP" protocol (**D**iscovery and **C**onfiguration **P**rotocol). DCP operates with device names (Device Name). The device name uniquely identifies a PROFINET IO station in the network. It is identified with the PROFINET IO controller for the project planning of the station and also set using the project planning software on the PROFINET IO device. With the aid of the device name, the controller identifies the device during startup and transfers the corresponding IP address parameters. Settings directly on the slave are no longer required. The basic procedure is described with SIMATIC STEP 7 as an example in chapter "Project Planning with PROFINET" (→ section "Assigning the PROFINET device name").

Resetting the IP address parameters

If you do not know the IP address parameters and cannot access the inverter using the serial interface or the DBG60B keypad, you can reset the IP address parameters to the default values using the DIP switch "Def IP".

This action resets the DFE32B option to the following default values:

- IP address: 192.168.10.4
- Subnetwork mask: 255.255.255.0
- Default gateway: 1.0.0.0
- PROFINET device name: PNETDeviceName_MACID

Proceed as follows to reset the IP address parameters to the default values:

- Switch off the 24 V DC supply voltage and the mains voltage.
- Set the DIP switch "Def IP" on the DFE32B option to "1."
- Switch the 24 V DC supply voltage and the mains voltage back on.
- Wait until the DFE32B option boots up. The "RUN" LED is green when the option is ready.

You can now access the inverter via the IP address 192.168.10.4. Proceed as follows to set new IP address parameters:

- Start a web browser and access the homepage of the DFE32B option or start MOVITOOLS® MotionStudio.
- Select the address parameters you want.
- Set the DIP switch "Def IP" on the DFE32B option to "0."
- The new address parameters are adopted after the device is switched off and switched on again.

4.9 Procedure after device replacement

4.9.1 Device replacement MOVIDRIVE® B

If you insert the memory card of the replaced MOVIDRIVE® B in the new MOVIDRIVE® B, the new device is recognized by the PROFINET IO controller without any additional measures.

	NOTE
	If you do not install the memory card of the replaced MOVIDRIVE® B in the new MOVIDRIVE® B, you have to perform a complete startup of the inverter or you have to load the saved parameter set into the new MOVIDRIVE® B. Further, you have to set the PROFINET IO device name again using the project planning software. Proceed as with an initial startup (→ chapter "Project Planning with PROFINET").

There are no measures required if only the DFE32B option is replaced.

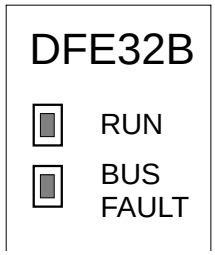
4.9.2 Device replacement MOVITRAC® B / gateway

- Only for device replacement MOVITRAC® B with fieldbus option: You have to load the saved parameter set into the new MOVITRAC® B or you have to perform a complete startup of the inverter (→ operating instructions MOVITRAC® B).
- You have to set the PROFINET IO device name again using the project planning software. Proceed as with an initial startup (→ chapter "Project Planning with PROFINET").
- **Prior to the auto setup**, check the parameters *P884 SBus Baud Rate* and *P831 Reaction Fieldbus Timeout*. The baud rate of the devices connected to the SBus has to correspond to the baud rate of the gateway (DFE32B). Use the parameter tree of the gateway in MOVITOOLS® MotionStudio.
- Now activate the auto setup function. Set the DIP switch "AS" on the DFE32B option to "1."

4.10 Operating display DFE32B option

4.10.1 PROFINET-LEDs

There are two LEDs on the DFE32B option card that display the current status of the DFE32B option and the PROFINET system.



61629AXX

RUN LED

The **RUN** LED indicates that the bus electronics are operating correctly

States of the RUN LED	Cause of error	Remedy
Green	• DFE32B hardware OK. • Proper operation	–
Off	• DFE32B is not ready for operation	• Switch the unit on again. Consult SEW service if the error occurs again.
Red	• Error in the DFE32B hardware	
Flashing green	• Hardware of the DFE32B does not boot up.	
Flashing yellow		• Switch the unit on again. Set default IP addressparameter via DIP switch "DEF IP" . Consult SEW service if the error occurs again.
Yellow		• Switch the unit on again. Consult SEW service if the error occurs again.

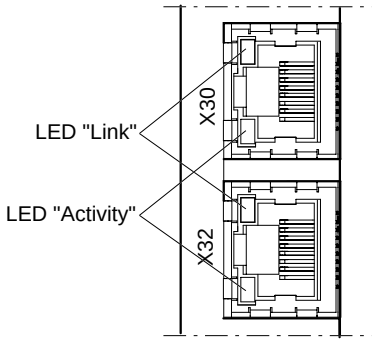
BUS FAULT LED

The **BUS FAULT** LED displays the status of the PROFINET.

Status of the BUS FAULT LED	Cause of error	Remedy
Off	• PROFINET IO device is currently exchanging data with the PROFINET IO controller (Data Exchange).	-
Flashing green **Flashing green/red**	• The flashing function in the PROFINET IO controller project planning is activated to visually localize the stations.	-
Red	• Connection to the PROFINET IO controller has failed. • PROFINET IO device does not detect a link • Bus interruption • PROFINET IO controller is not in operation	• Check the PROFINET connection of the DFE32B option • Check the PROFINET IO controller • Check the cabling of your PROFINET network
Yellow **Flashing yellow**	• The STEP 7 hardware configuration contains a module that is not permitted.	• Switch the STEP 7 hardware configuration to ONLINE and analyze the status of the components of the slots in the PROFINET IO device.

Link / Activity LED

The two LEDs, **Link (green)** and **Activity (yellow)**, integrated in the RJ45 plug connectors (X30, X32) display the status of the Ethernet connection.



61880AXX

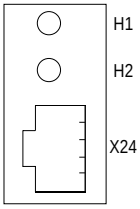
LED / Status	Meaning
Link / Green	There is an Ethernet connection.
Link / Off	There is no Ethernet connection.
Activity / Yellow	Data is currently being exchanged via Ethernet.

NOTES

- As the firmware of the DFE32B option card requires approximately 10 seconds for initialization, the status "0" (inverter not ready) is displayed in the 7-segment display of MOVIDRIVE® during this time.
- The Run LED on the DFE32B option card lights up green.

4.10.2 Gateway LED

LEDs H1 and H2 indicate the communication status in gateway operation.



58129axx

LED H1 Sys-fault (red)		Only for gateway function
Status	**State**	**Description**
Red	System error	Gateway is not configured or one of the drives is inactive.
Off	SBus ok	Gateway is configured correctly
Flashes	Bus scan	Bus is being checked by the gateway

	NOTES
	• LED **H2** H2 (green) is currently reserved. • X-terminal X24 is the RS-485 interface for diagnostics via PC and MOVITOOLS® MotionStudio.

5 Project Planning with PROFINET

This Chapter describes the project planning for the MOVIDRIVE® B and MOVITRAC® B / gateway inverters with the DFE32B option. The following GSD file is used for the project planning of the DFE32B with MOVIDRIVE® B or in MOVITRAC® B:

GSDML-V2.1-SEW-DFE-DFS-2Ports-jjjjmmtt.xml

This GSD file contains the unit description for the operation of the DFE32B in MOVIDRIVE® B or as fieldbus gateway for MOVITRAC® B.

5.1 Project planning for the PROFINET IO controller

This chapter describes the project planning for MOVIDRIVE® B or MOVITRAC® B with PROFINET using the current GSD(ML) file. The configuration is described using the example of the SIMATIC Manager project planning software with a SIMATIC CPU 315F 2 PN/DP.

Initializing the GSD file

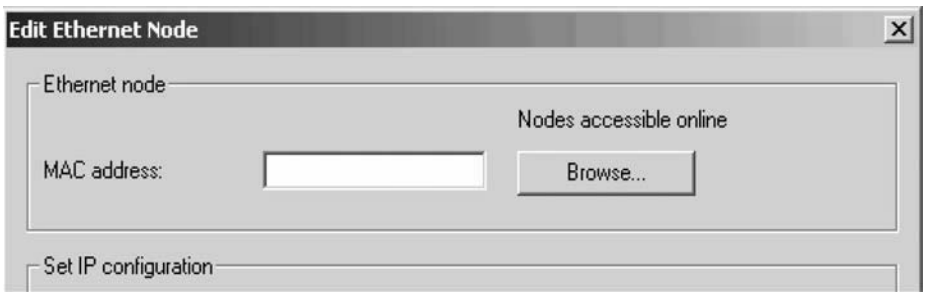
- Start STEP7 HWCONFIG and select the [Install new GSD file] menu item in the [Extras] menu.
- Select the file "GSDML-V2.1-SEW-DFE-DFS-2Ports-JJJJMMTT.xml" on the "Software ROM 7" CD as in the following dialog. "JJJJMMTT" [YYYYMMDD] represents the date of the file. You can navigate to the required directory using the 'Browse' button. Confirm your selection with [OK].
- You will find the SEW PROFINET IO DFE32B interface under [Other field devices] / [Drives] / [SEW] / [DFE/DFS(2Ports)].

	NOTE
	The latest GSD file version is also available for download on the SEW website in the "Software" section.

5.1.1 Assigning the PROFINET device name

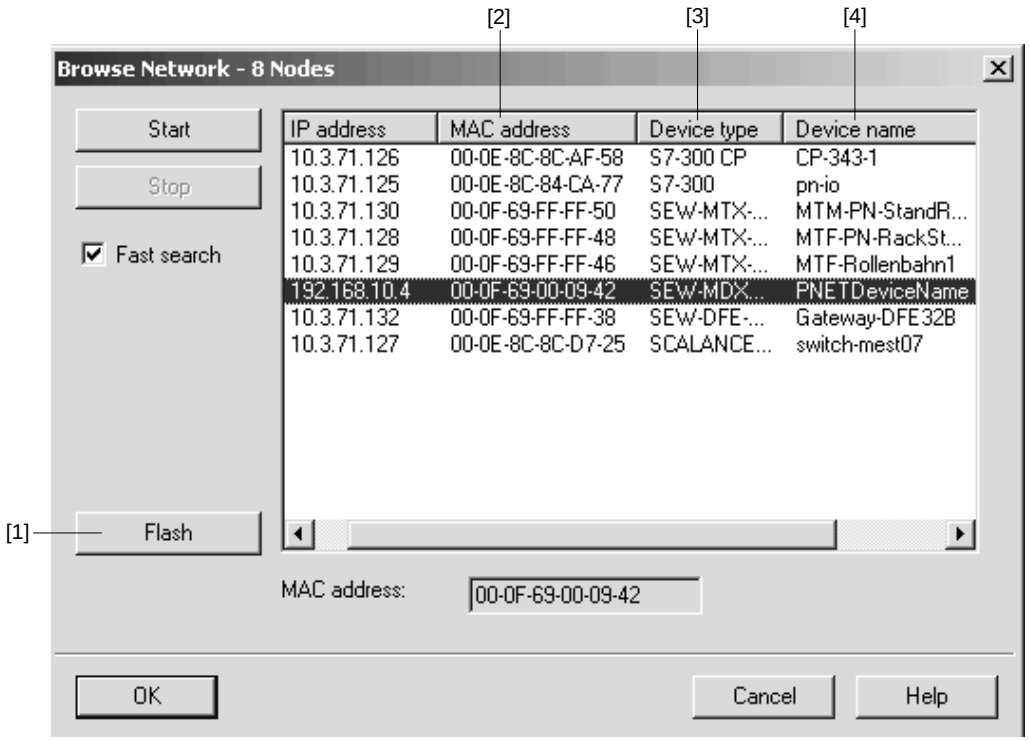
The general procedure is described with SIMATIC STEP 7 as an example .

- In STEP 7 HWKONFIG, select [PLC] / [Ethernet] / [Edit Ethernet Node ...].



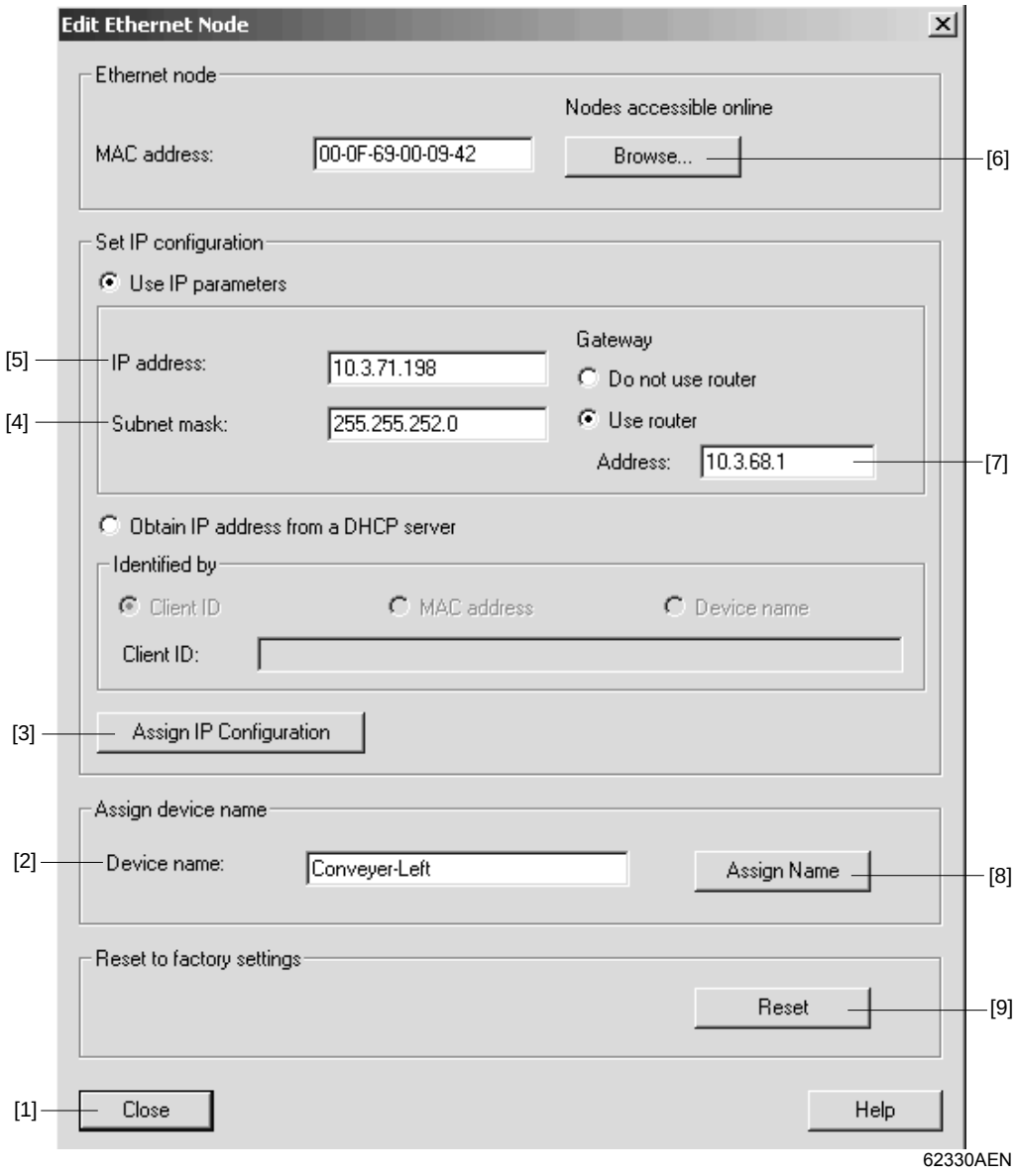
11727AEN

- Click on "Browse". You receive an overview of all PROFINET IO nodes that you can reach online with your project planning tool (→ following figure).



62340AEN

- Choose the required station. The SEW node appears as "SEW-MDX61B+DFE32B" under Device type [3]. The device name [4] is set to 'PNETDeviceName' ex works and must be adapted to your system conditions. Several MDX61B units can be distinguished between by the MAC addresses [2] displayed. The MAC address [2] is attached to the DFE32B option. Use the [Flash] button [1] to enable the Status LED to flash green for the selected DFE32B in order to check your selection.



62330AEN

[1]	"Close" button.
[2]	"Device name" input field
[3]	"Assign IP Configuration" button
[4]	"Subnet mask" input field
[5]	" IP address" input field
[6]	"Browse" button
[7]	" Router address" Input field
[8]	"Assign name" button
[9]	" Reset" button

- Enter the device name in the "Device name" input field [2] and click the [Assign name] button [8]. The device name is now transferred to the station and saved there. It can be up to 255 characters long.
- Specify an IP address [5] and a subnet mask [4] as well as a router address [7] if required. Click the [Assign IP Configuration] button [3].

	NOTE
	The IO controller must not yet be in a cyclic data transmission with the IO devices.

- Click the [Browse] button [6] again to check whether your settings were adopted.

  Click the [Close] button [1].
- You can reset the device name of the DFE32B online via the [Reset] button. Now you need to restart the DFE32B.

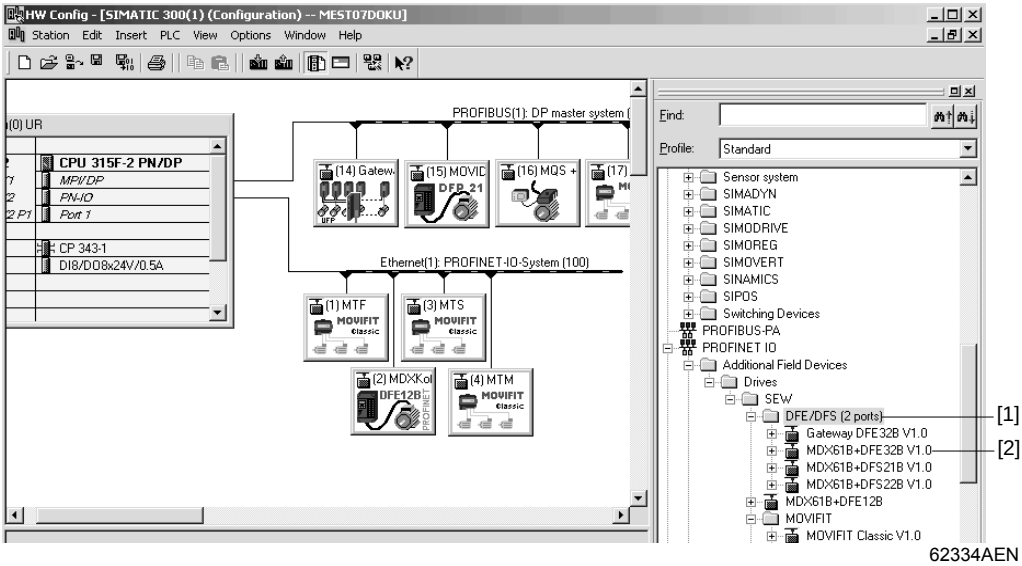
5.1.2 Project planning for the PROFINET interface for MOVIDRIVE® B

Creating a new project

Start the SIMATIC Manager and create a new project. Select your control type and add the required modules. The OB82, OB86 and OB122 modules are particularly useful.

The OB82 module makes sure that the controller does not go to 'STOP' for so-called diagnostic alarms. The OB86 module indicates the failure of the decentralized periphery. The OB122 module is called up if the controller cannot access data of a station of the decentralized periphery. This can occur, for example, when the DFE32B is ready for operation later than the control system.

- Start STEP7 HWCONFIG and select the PN-IO slot in the control rack.
- Add a PROFINET IO system by right-clicking the context menu with your mouse. Specify an IP address for the PROFINET IO controller when doing this. Add a new PROFINET subsystem using the [Ethernet] button.
- Open [PROFINET IO] / [ADDITIONAL FIELD UNITS] / [Drives] / [SEW] / [DFE/DFS(2Ports)] [1] in the hardware catalog.

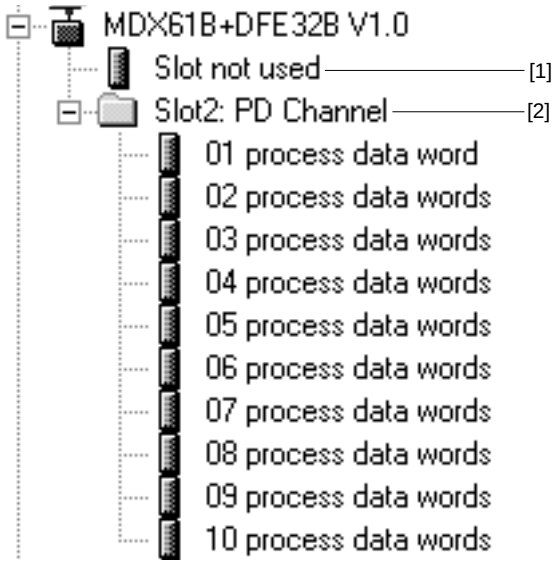


62334AEN

- Move the entry "MDX61B+DFE32B" [2] to the PROFINET IO/ system with the mouse and assign a PROFINET station name.

  This name must later correspond to the PROFINET unit name specified in the DFE32B.
- Delete the entry on slot 2 in to perform the project planning for your application. Select the process data configuration required for your application.
- Specify the I/O and periphery addresses for the configured data widths and save your configuration.

  The slot model is used for project planning with PROFINET. Each slot is assigned to a DFE32B communication interface.



62335AEN

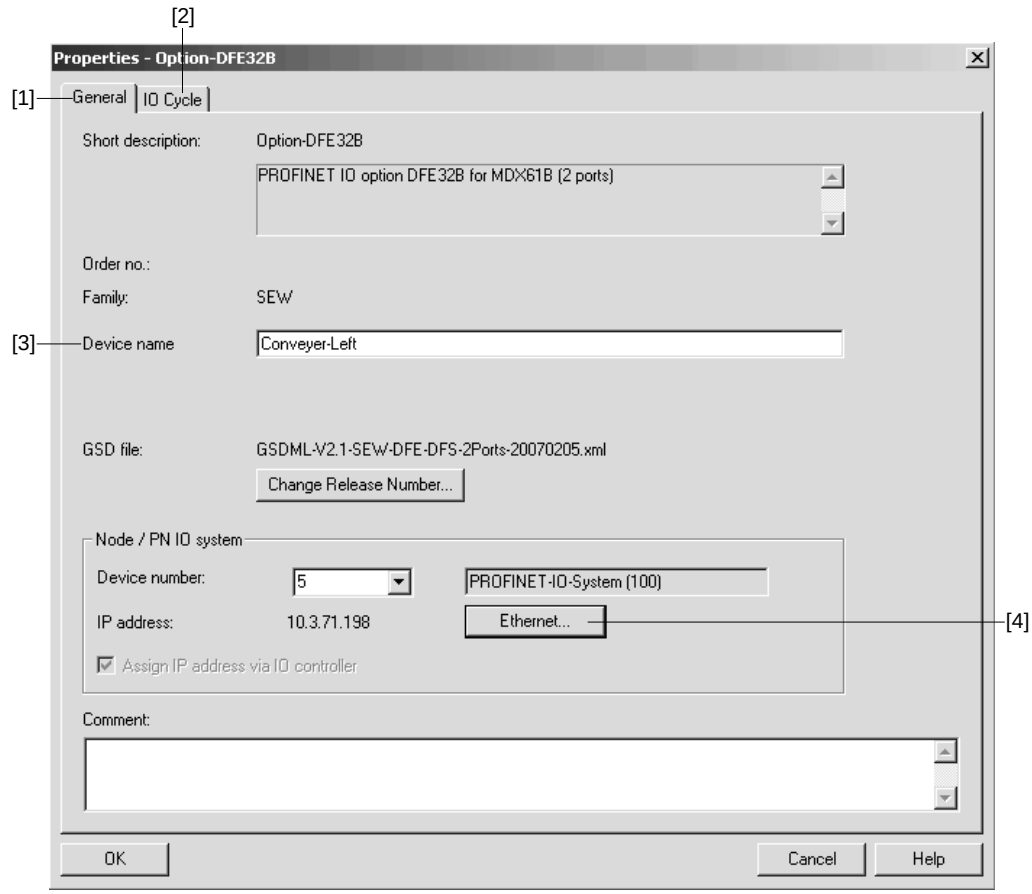
Slot 1: Must be indicated as Slot not used [1]

Slot 2: Process data channel [2]. Number of process data periodically exchanged between PROFINET IO controller and PROFINET IO device.

- Add data exchange with the new units to your program.
- Process data transfer is consistent. SFC14 and SFC15 can be used to transfer process data.

Configuring the nodes

When the individual slots are configured, the new node has to be configured with further settings. The following dialog appears by double-clicking on the new node's unit symbol.

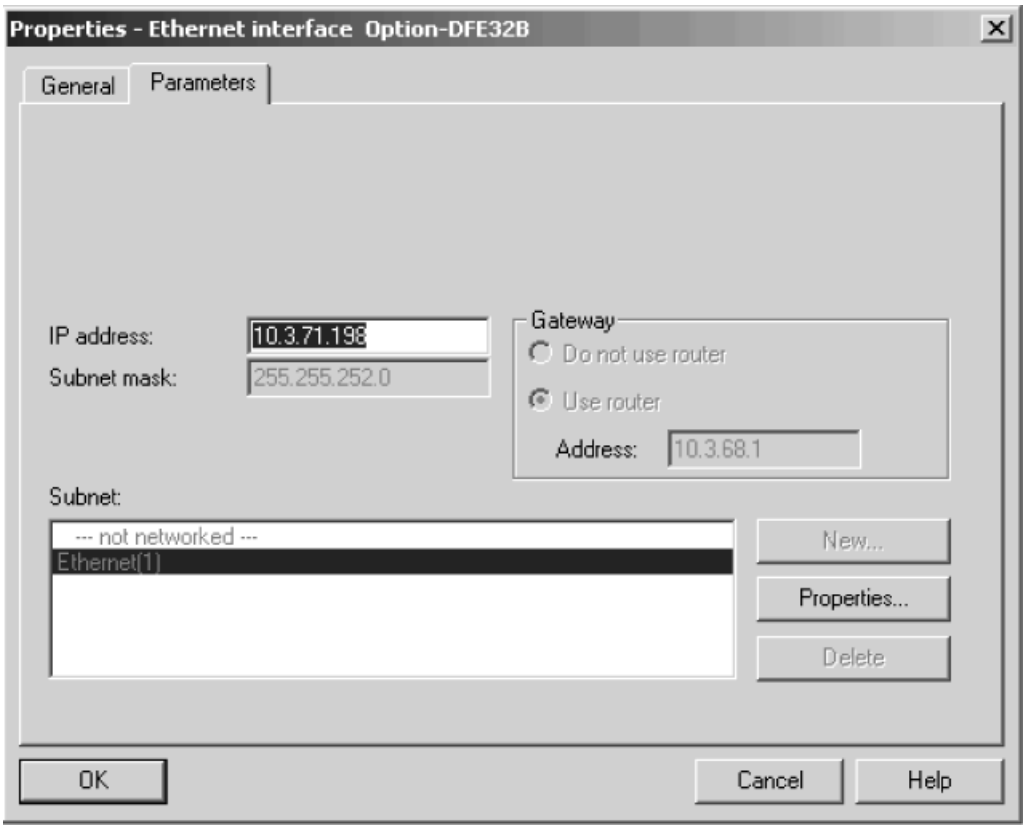


62255AEN

[1]	"General" tab page
[2]	"IO Cycle" tab page
[3]	"Device name" input field
[4]	"Ethernet" button.

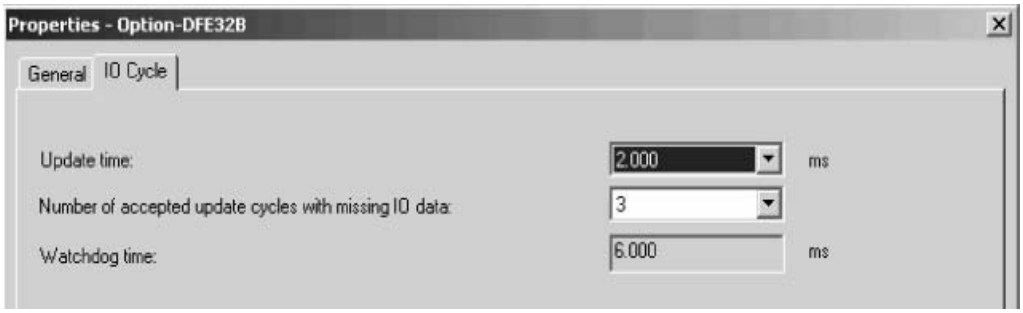
- Enter the previously specified device name in the "Device name" input field [3] on the "General" tab page [1] . Observe the coding.

- To enter the previously specified IP address (→ following figure), click the [Ethernet] button [4] in the "Node / PN IO system" field.



11728AEN

- On the "IO Cycle" tab page [2], you can specify an update time for the node to update its process data. The DFE32B option in MOVIDRIVE® B supports a minimum update time of 2 ms (→ following figure).



11729AEN

Starting the-controller

Load the configuration in the SIMATIC S7 and start the module. The Error LED of the controller should now go out.

The LEDs of the DFE32B option should have the following statuses:

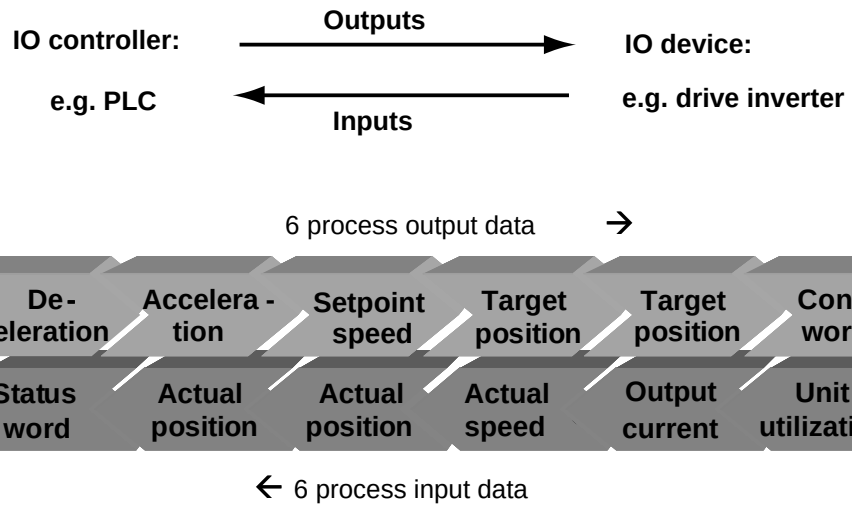
- RUN LED Lights up green
- BUS FAULT LED: Off
- Link / Activity LED: flicker

If this is not the case, check the configuration, especially the device name and the IP address of the participant.

Project planning-example for the-process data con-figuration of MOVIDRIVE® B

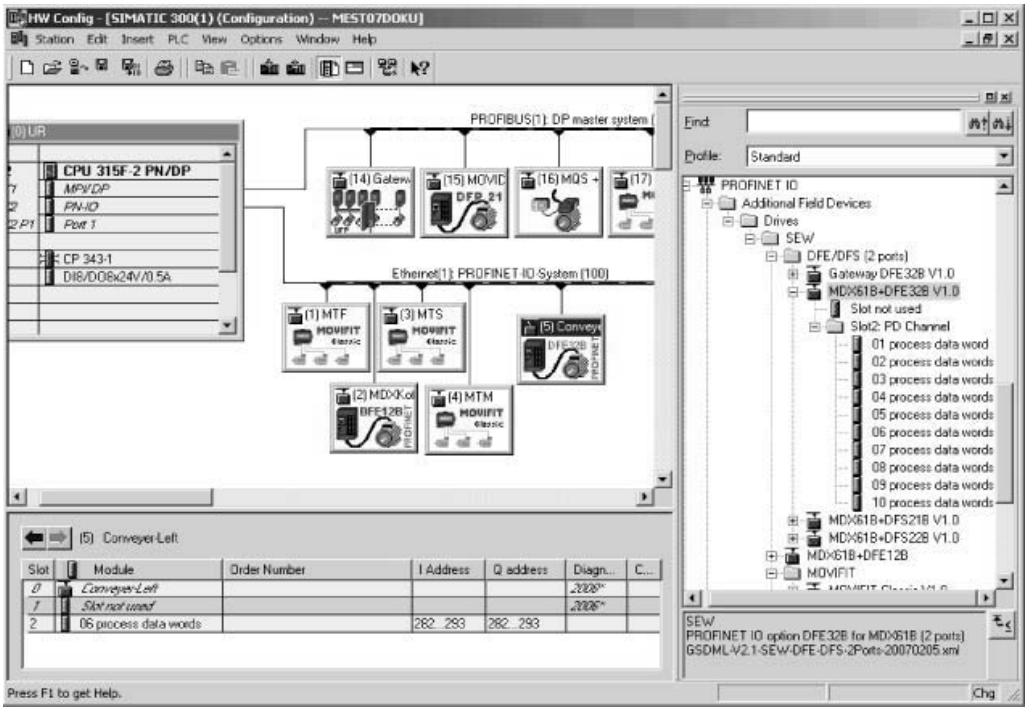
This example is to show the positioning of the drive via MOVIDRIVE® B. The "Extended positioning via bus" application module can be used.

The information between PLC and inverter is exchanged via 6 process data.



62347AEN

The following figure shows the corresponding PROFINET parameter settings.



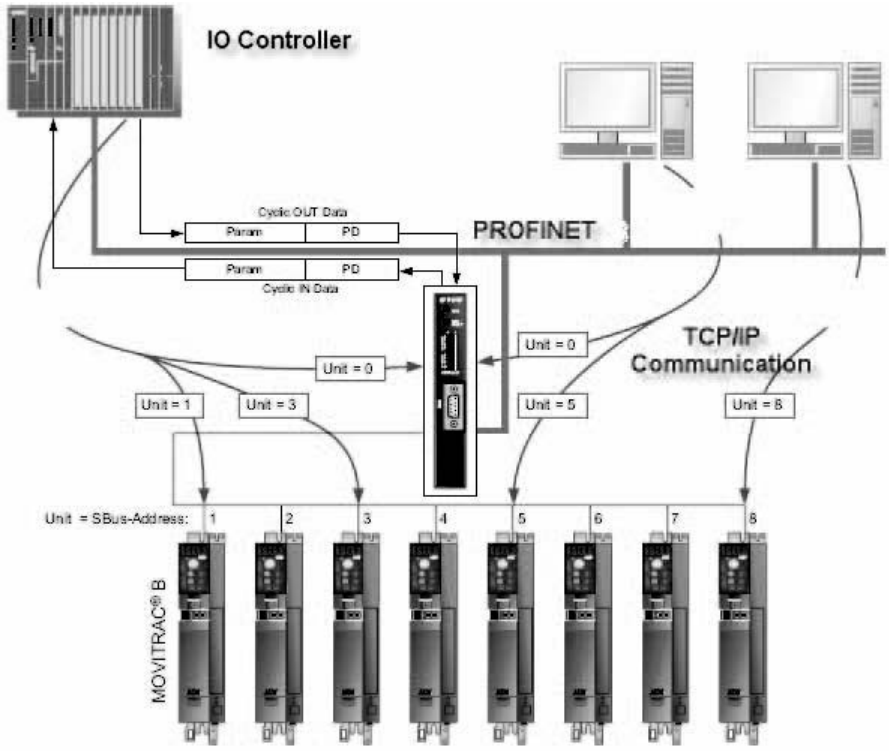
11730AEN

5.1.3 Project planning for MOVITRAC® B or gateway with DFE32B option

General information

The inverter must be given a specific PROFINET configuration by the IO controller to define type and number of input and output data used for the transmission. You have the opportunity to control the drives via process data and to read and write all parameters of the fieldbus interface in an acyclic way.

The following figure describes the data exchange between the programmable controller (IO controller), the fieldbus interface (IO device) and an inverter with process data channel.



62258AXX

Configuring the process data

The PROFINET interface allows for different configurations for the data exchange between IO controller and IO device. The configurations are determined by the default process data width for SEW inverters of three process data words. The fieldbus interface then distributes these process data words to the individual devices. The PROFINET interface accepts 1×3 to 8×3 process data words.

	NOTE
	3 PDs are always assigned to any SBus station.

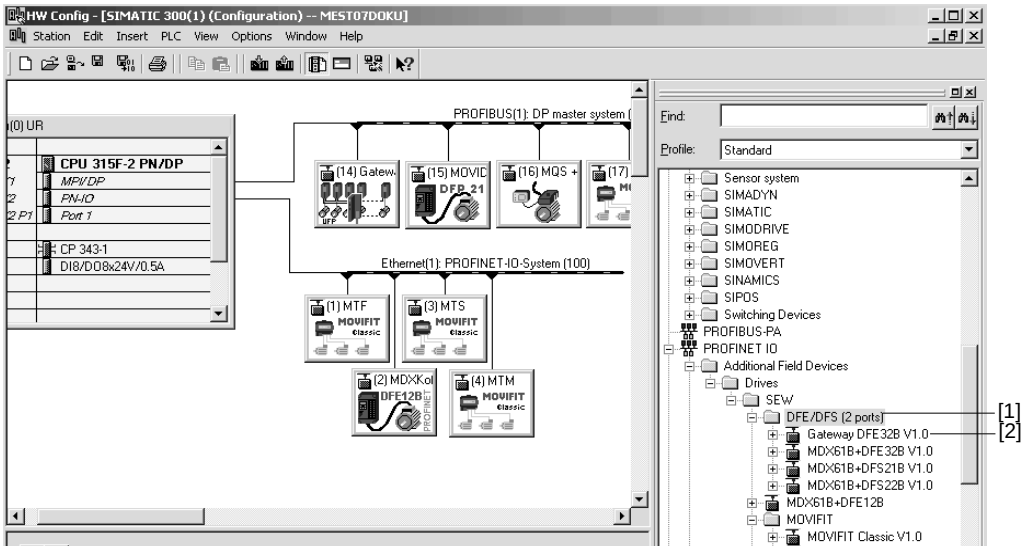
5.1.4 Project planning for the PROFINET interface for MOVITRAC® B

Creating a new project

Start the SIMATIC Manager and create a new project. Select your control type and add the required modules. The OB82, OB86 and OB122 modules are particularly useful.

The OB82 module makes sure that the controller does not go to 'STOP' for so-called diagnostic alarms. The OB86 module indicates the failure of the decentralized periphery. The OB122 module is called up if the controller cannot access data of a station of the decentralized periphery. This can occur, for example, when the DFE32B is ready for operation later than the control system.

- Start STEP7 HWCONFIG and select the PROFINET IO slot in the control rack.
- Add a PROFINET IO system by right-clicking the context menu with your mouse. Specify an IP address for the PROFINET IO controller when doing this. Add a new PROFINET subsystem using the [Ethernet] button.
- Open [PROFINET IO] / [ADDITIONAL FIELD UNITS] / [Drives] / [SEW] / [DFE/DFS(2Ports)] [1] in the hardware catalog.

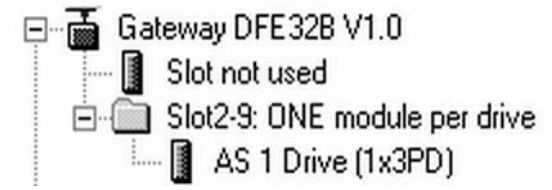


62338AEN

- Move the entry "Gateway DFE32B" [2] to the PROFINET IO/ system with the mouse and assign a PROFINET station name.

  This name must later correspond to the PROFINET unit name specified in the DFE32B.
- The inverters connected to the gateway are represented in PROFINET as of slot 2. Delete the entries for the respective slots depending on the number of connected inverters (e.g. slot 2 to slot 7 for a configuration of 5 inverters).
- Move the entry "AS 1 Drive (1x3PD)" to the free slots.
- Specify the I/O and periphery addresses for the configured drives and save your configuration.

The slot model is used for project planning with PROFINET. Each slot is assigned to a DFE32B fieldbus interface. The following segmentation is used for the gateway function of the DFE32B.



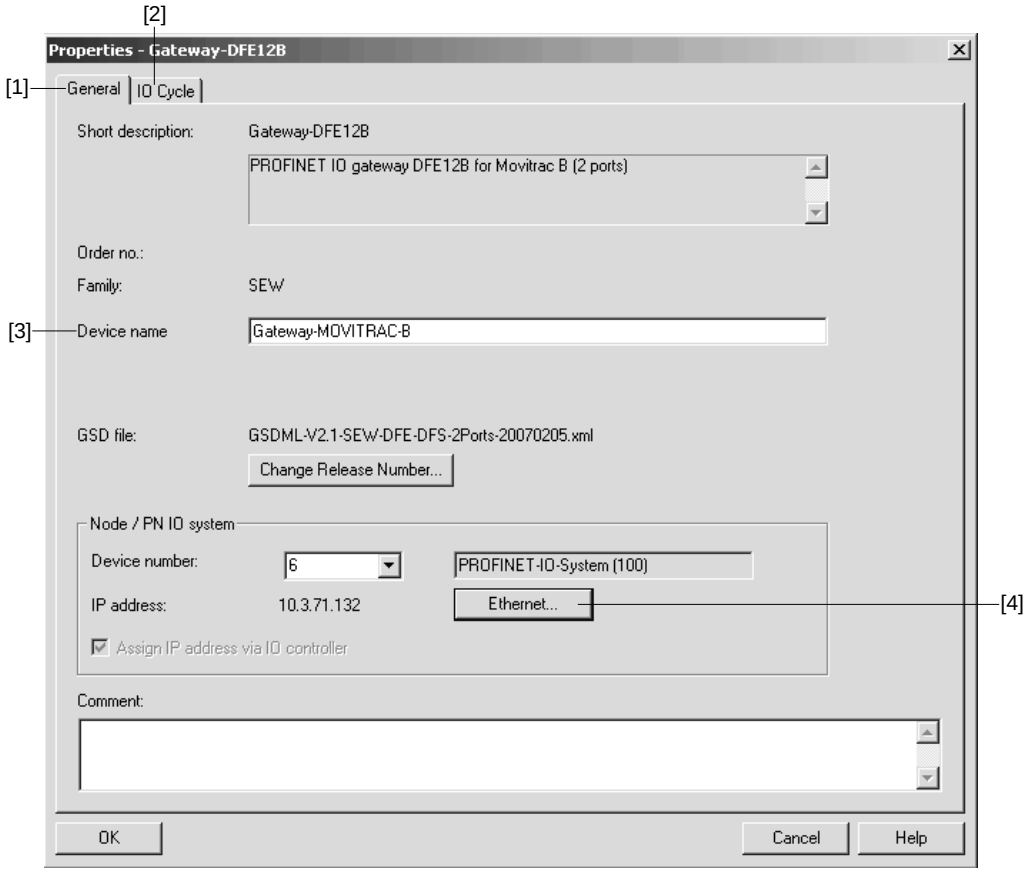
11731AEN

Slot 1 is not currently not used. Slots 2 ... 9 are assigned process data channels for connected devices and and 3 process data per drive.

- Add data exchange with the new units to your program.
- Process data transfer is consistent. SFC14 and SFC15 can be used to transfer process data.

Configuring the nodes

When the individual slots are configured, the new node has to be configured with further settings. The following dialog appears by double-clicking on the new node's unit symbol.

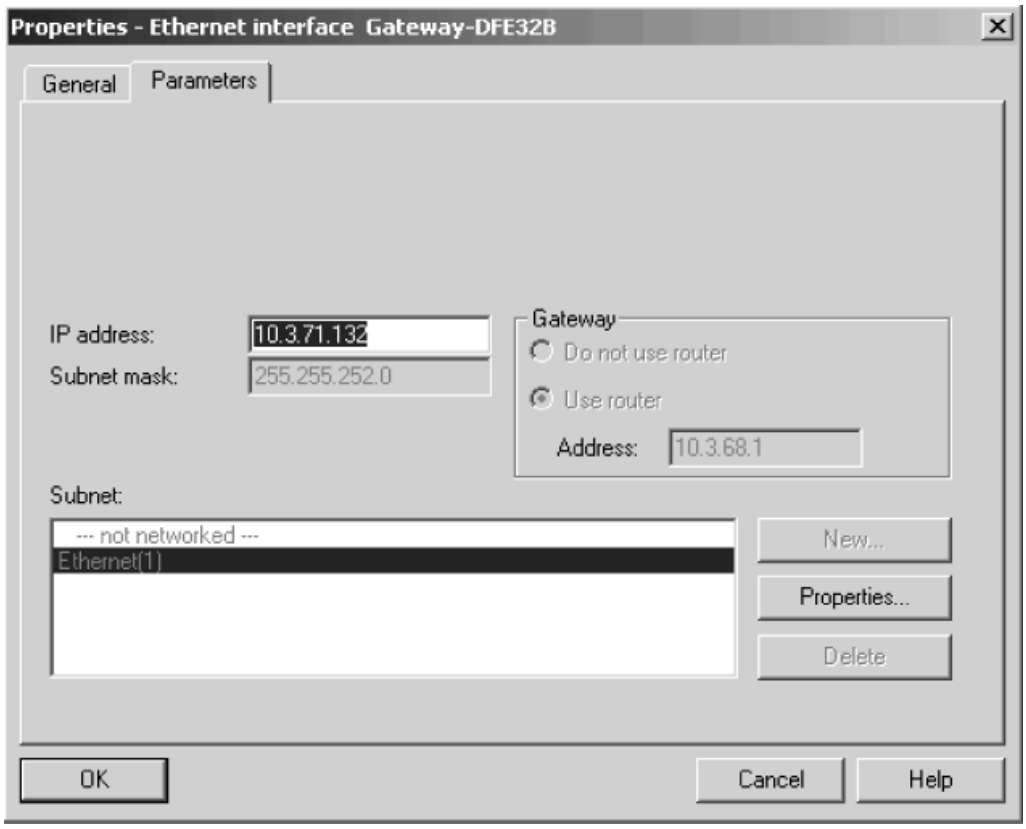


62336AEN

[1]	[General] tab page
[2]	"IO Cycle" tab page
[3]	"Device name" input field
[4]	"Ethernet" button.

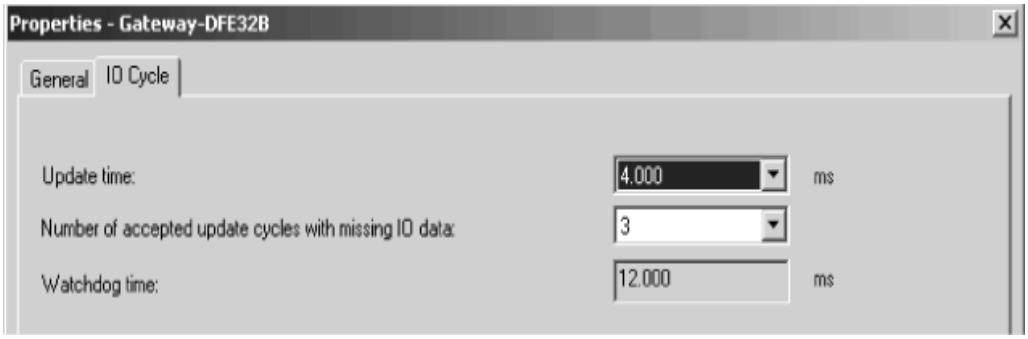
- Enter the previously specified device name in the "Device name" input field [3] on the "General" tab page [1] . Observe the coding.

- To enter the previously specified IP address (→ following figure), click the [Ethernet] button [4] in the "Node / PN IO system" field.



11732AEN

- On the "IO Cycle" tab page [2], you can specify an update time for the node to update its process data. The DFE32B option in MOVITRAC® B supports a minimum update time of 4 ms (→ following figure).



11733AEN

Starting the-controller

Load the configuration in the SIMATIC S7 and start the module. The Error LED of the controller should now go out.

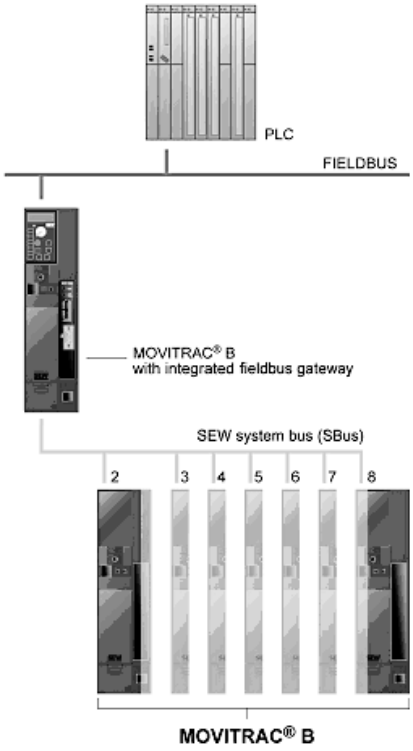
The LEDs of the DFE32B option should have the following statuses:

- RUN LED Lights up green
- BUS FAULT LED: Off
- Link / Activity LED: flicker

If this is not the case, check the configuration, especially the device name and the IP address of the participant.

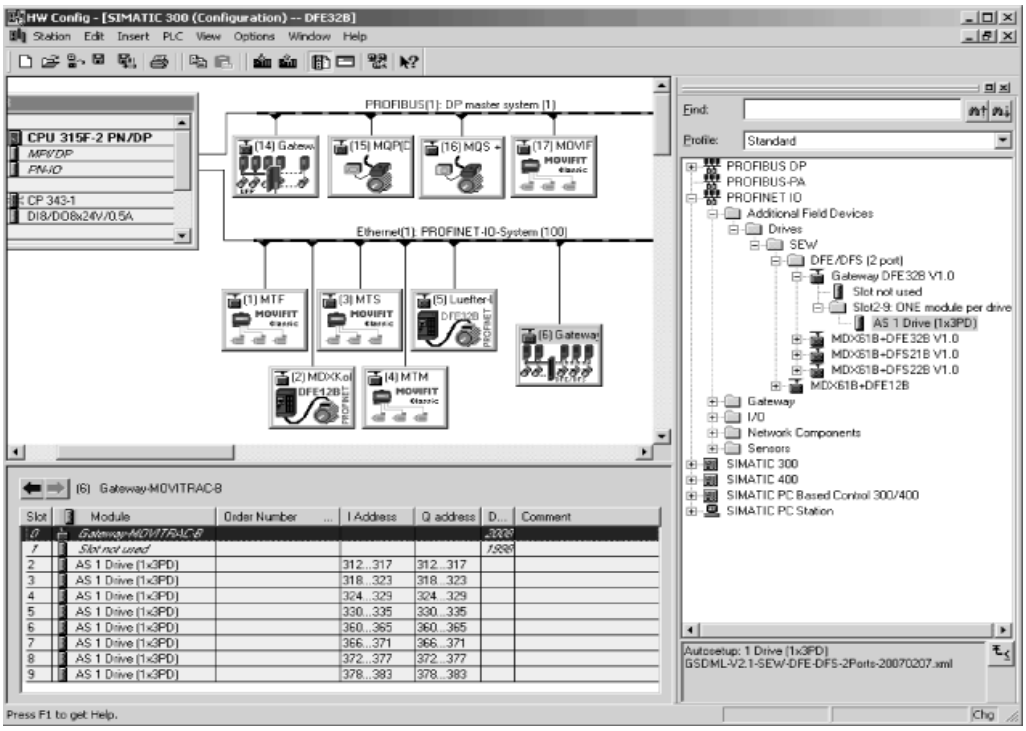
Application example

8 MOVITRAC® B frequency inverters are to be operated at a variable speeds in this example. The information between PLC and the individual inverters is exchanged via 3 process data.



62260AXX

The following figure shows the corresponding PROFINET parameter settings.



11734AEN

5.2 Auto setup for gateway operation

The Auto setup function enables startup of the DFE32B as gateway to be performed without a PC. It is activated via the auto setup DIP switch (see chapter "Installing the DFE32B / UOH11B gateway page 17).

	NOTE
	Switching on the Auto setup DIP switch causes the function to be performed once. **The Auto setup DIP switch must then remain in the ON position.**The function can be reactivated by turning the DIP switch off and back on again.

As a first step, the DFE32B searches for drive inverters on the SBus below its hierarchical level. This process is indicated by the **H1** LED (system error) flashing briefly. For this purpose, different SBus addresses must be set for the drive inverters (P813). We recommend assigning the addresses beginning with address 1 in ascending order based on the arrangement of inverters in the switch cabinet. The process image on the fieldbus side is expanded by three words for each detected drive inverter.

The **H1** LED remains lit if no drive inverter was located. A total of up to eight drive inverters is taken into account. The following figure shows the process image for three drive inverters with three words each of process output data and process input data.

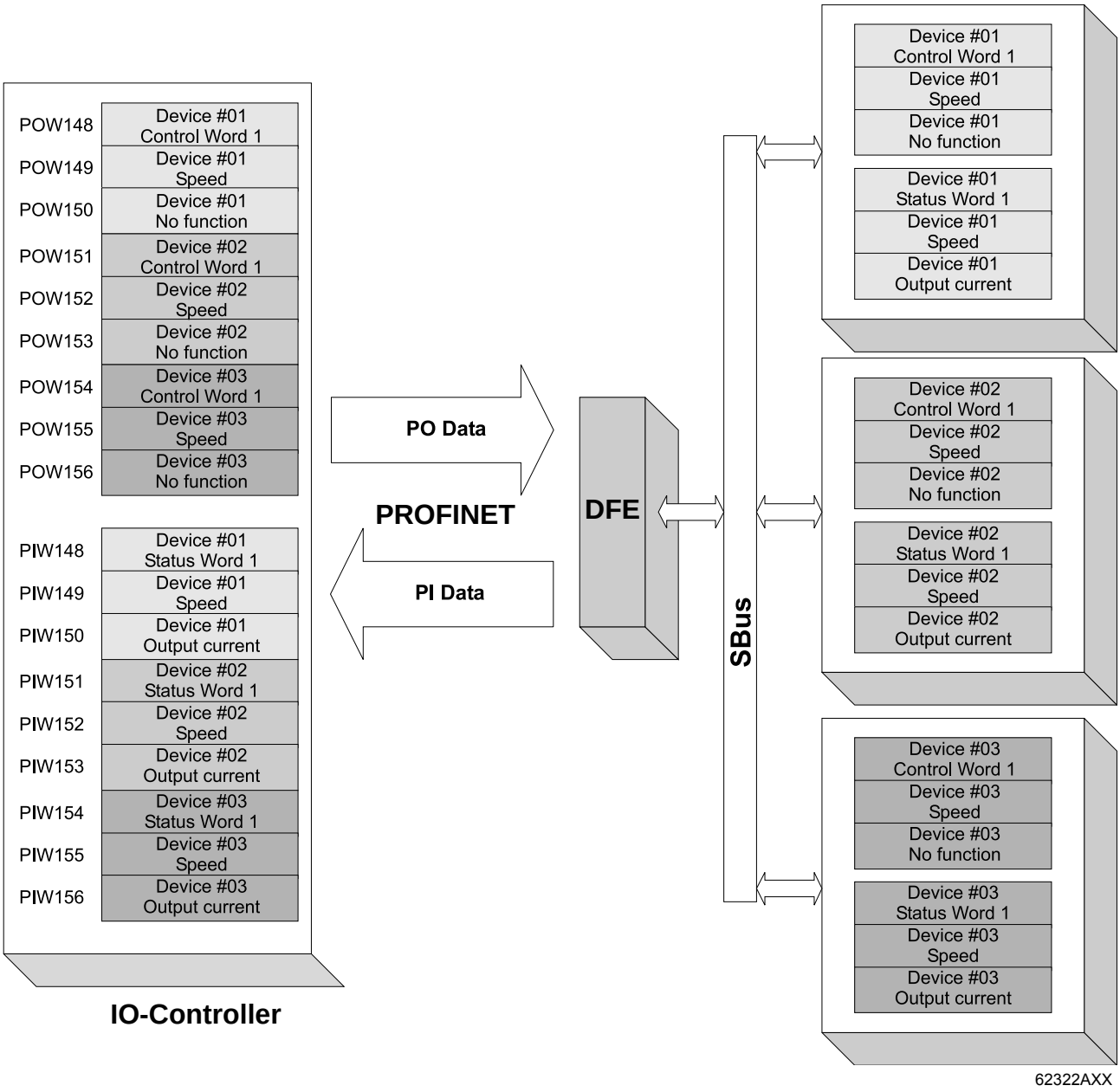
After the search is completed, the DFE32B periodically exchanges three process data words with each connected drive inverter. The process output data are fetched from the fieldbus, divided into blocks of three and transmitted. The drive inverters read the process input data, put them together and send them to the fieldbus master.

The cycle time of the SBus communication is 2 ms per node at a baud rate of 500 kBit/s without any additional engineering activities.

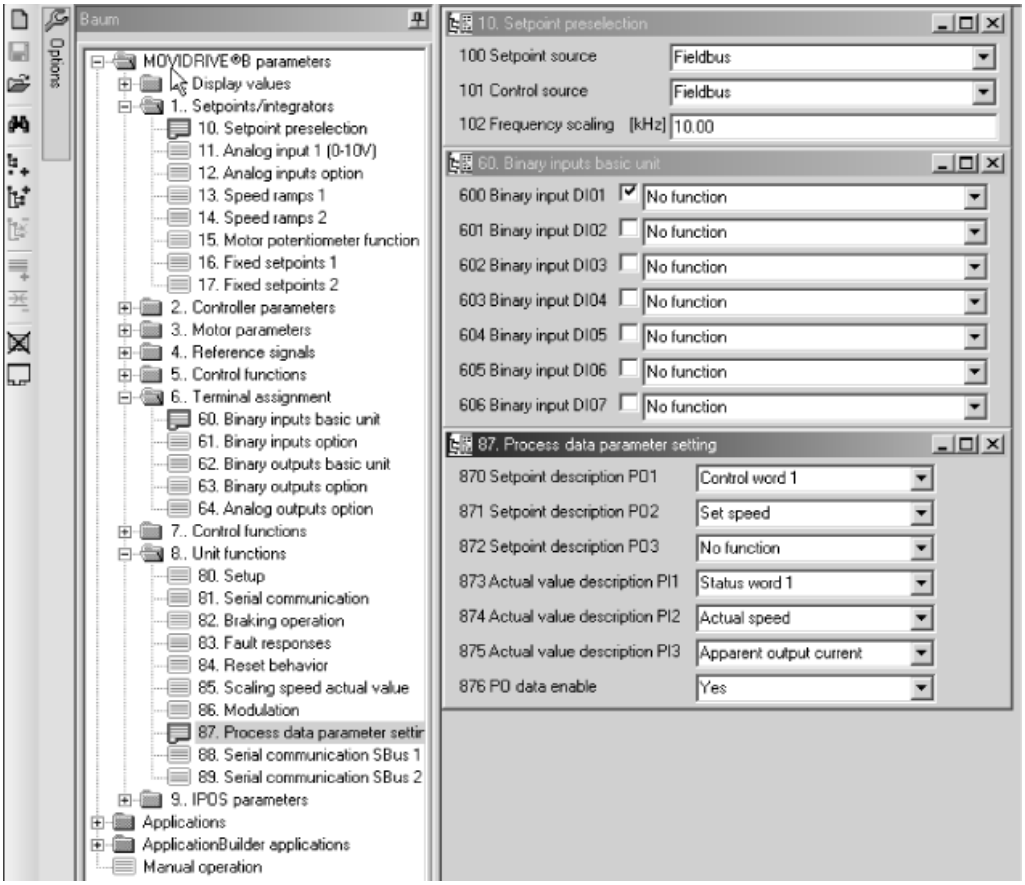
Thus, for an application with 8 inverters on the SBus, the cycle time of the process data update is then 8 x 2 ms = 16 ms.

	NOTE
	Perform auto setup again in the following cases, since the DFE32B stores these values once during auto setup. All devices installed at the SBus must be switched on. At the same time, the process data assignments of the connected drive inverters may not be changed dynamically after Auto setup. • If you change the process data assignment of the drive inverters connected to the DFE32B. • If you changed the SBus address of one of the connected devices. • If you add or remove devices.

The following illustration shows the data exchange between the PLC, the DFE32B option and the inverter.



5.3 Setting the MOVIDRIVE® MDX61B drive inverter



11638AEN

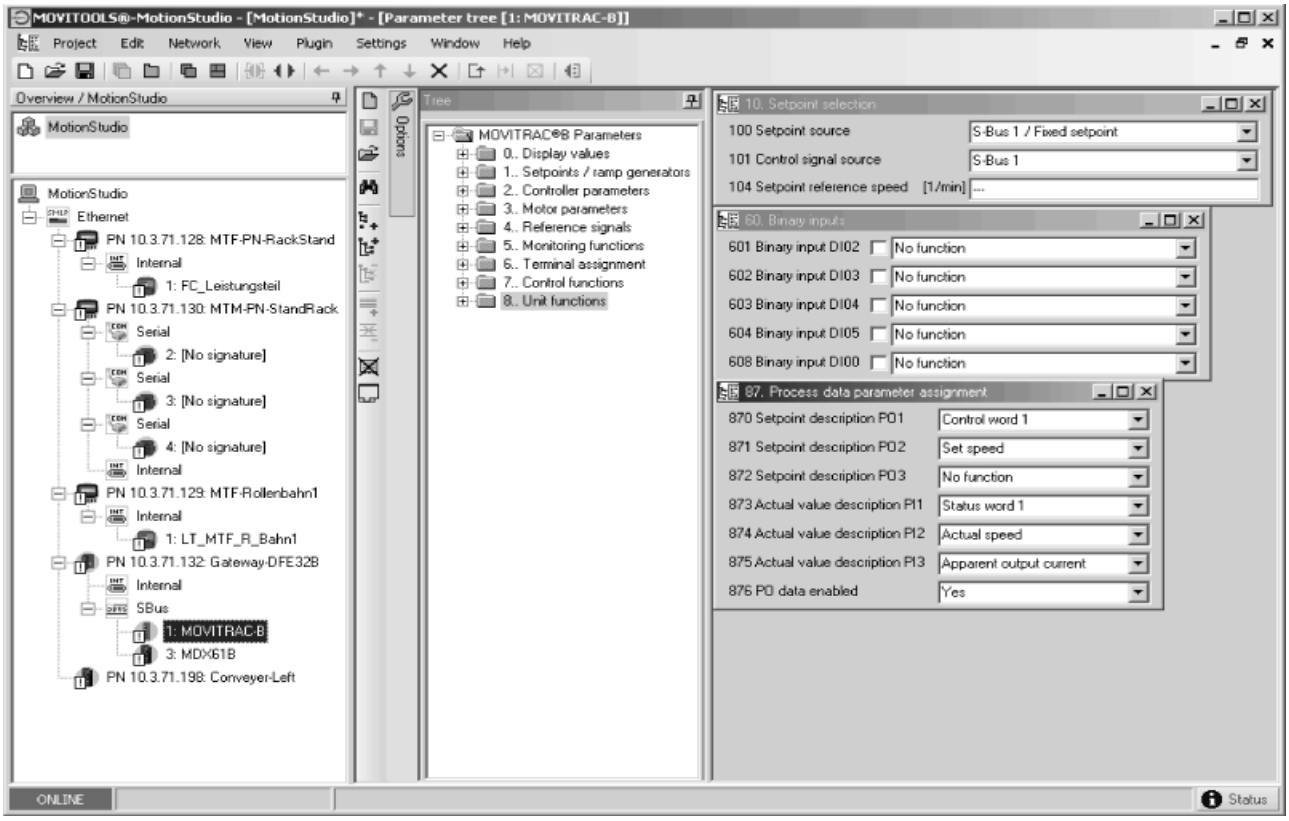
To control the drive inverter via PROFINET, you must first switch the drive inverter to control signal source (P101) and setpoint source (P100) = FIELDBUS. The FIELDBUS setting means the drive inverter parameters are set for control and setpoint entry via PROFINET. The MOVIDRIVE® drive inverter then responds to the process output data transmitted from the master programmable controller.

The parameters of the MOVIDRIVE® drive inverter can be set straight away via PROFINET without any further settings once the PROFINET option card has been installed. For example, all parameters can be set by the master programmable controller after power-on.

Activation of the control signal source and setpoint source FIELDBUS is signaled to the machine controller using the "Fieldbus mode active" bit in the status word.

For safety reasons, you must also enable the drive inverter at the terminals for control via the fieldbus system. Therefore, you must wire and program the terminals in such a way that the drive inverter is enabled via the input terminals. For example, the simplest way of enabling the drive inverter at the terminals is to connect the DIØØ (function / CONTROLLER INHIBIT) input terminal to a DC +24 V signal and to program input terminals DIØ1 ... DIØ3 to NO FUNCTION.

5.4 Setting the MOVITRAC® B frequency inverter



11736AEN

To control the frequency inverter via PROFINET, you must switch the drive inverter to *control signal source (P101)* and *setpoint source (P100)* = SBus beforehand. The SBus setting means the inverter parameters are set for control and setpoint entry via gateway. The MOVITRAC® frequency inverter then responds to the process output data transmitted from the master programmable controller.

It is necessary to set the SBus1 timeout interval (P815) to a value other than 0 ms for the MOVITRAC® frequency inverter to stop if faulty SBus communication is encountered. We recommend a value in the range 50 ... 200 ms.

Activation of the control signal source and setpoint source SBus is signaled to the higher-level controller using the "SBus mode active" bit in the status word.

For safety reasons, you must also enable the inverter at the terminals for control via the fieldbus system. Therefore, you must wire and program the terminals in such a way that the inverter is enabled via the input terminals. The simplest way of enabling the frequency inverter at the terminals is, for example, to connect the DIØ1 (function CW/STOP) input terminal to a DC +24-V signal and to set the remaining input terminals to NO FUNCTION.

NOTES

- Set the parameter *P881 SBus address* to values between 1 to 8 in ascending order.
- The SBus address 0 is used by DFE32B gateway and therefore must not be used.
- Set *P883 SBus timeout* to values between 50 ... 200 ms

5.5 Startup procedure for MDX61B with DFE32B option

The following sections will describe the the startup procedure for a MOVIDRIVE® B with the DFE32B PROFINET IO option step-by-step.

5.5.1 Preliminary work

Step 1: Installing the required software

1. FTDI Driver for USB11A programming interface
   - Connect USB11A to the PC. Windows hardware detection installs the required FTDI driver.
   - the FTDI driver is available on the Software ROM 7 or on the SEW website.
2. GSD file: SEW-DFE32B-2-Port_V2.1-JJJJ.MM.TT.xml
3. MOVITOOLS® MotionStudio version 5.40 and higher.

Step 2: Installing the devices

1. Install MOVIDRIVE® MDX60B/61B according to operating instructions:
   - Supply system cable
   - Motor cable
   - Brake resistor
   - DC 24 V backup voltage
2. Install PROFINET and connect DFE32B to PROFINET.

5.5.2 Starting up MOVIDRIVE® B with DC 24 V or AC 400 V

Step 1: Configuring MOVIDRIVE® B

1. Start MOVITOOLS® MotionStudio and open a new project.

   Specify a project name and assign USB11A programming interface according to serial COM interface.
   - When the USB11A programming interface is connected to the PC for the first time, Windows hardware detection installs the required FTDI driver
   - If USB11A is not recognized, check the assignment to the COM interface. The suitable COM port is marked by "USB"
2. Connect the PC to MOVIDRIVE® B via USB11A programming interface.
3. Perform a unit scan. Mark the unit with the mouse button and select [Startup] / [Parameter tree] via the right mouse button.
4. Set *P100 setpoint source* and *P101 control signal source* to "Fieldbus".
5. For simple control via fieldbus, the binary inputs can be set to "No Function" via the parameters P601 ... P608.
6. Check the parameter setting for the process data (P87x). The parameters for control word and status word must be set. Set *P876 PO data enable* to "Yes".

Step 2: Configuring PROFINET

1. Start the control manufacturer's software to configure the hardware (e.g. STEP 7-HWKONFIG).
2. Install the GSD file if necessary (→ chapter "Preliminary work")
3. Check whether PC and control are in the same subnetwork:
   - Are the IP addresses of PC and CPU identical up to the lowest byte?
   - Is the subnet mask identical?
4. Check whether a TCP/IP communication can be set up.
5. Carry out the PROFINET configuration according to this manual.
   - Assign PROFINET device name
   - Assign IP configuration if necessary
   - Perform process data configuration
   - Load the configuration to the controller
6. The BUS FAULT LED of the DFE32B option is off when PROFINET is successfully configured. Process data is now being exchanged.
7. Extent control program and set up process data exchange to MOVIDRIVE® B.
8. Start MOVITOOLS® MotionStudio and open a new project. Set up "Ethernet" as communication interface.
   - Alternatively, MOVITOOLS® MotionStudio can be operated via serial communication with USB11A. Connect PC with MOVIDRIVE® B.
9. Perform a unit scan.
10. Mark MOVIDRIVE® B and select [Diagnostics] / [Bus monitor] with the right mouse button. Check whether the project data exchange between control and MOVIDRIVE® is working.
11. Switch on the supply voltage and enable MOVIDRIVE® B at the terminals (DI00=1). Activate unit enable via control word 1 = 0x0006 .
    - If MOVIDRIVE® B remains in "No Enable", check terminal assignment (parameter group P60x) and supply further binary inputs with DC 24 V if required.

5.6 Startup procedure for the DFE32B option as gateway

The following sections will describe the the startup procedure for a MOVITRAC® B with the DFE32B PROFINET IO option as gateway step-by-step.

5.6.1 Preliminary work

Step 1: Installing the required software

1. FTDI Driver for USB11A programming interface
   - Connect USB11A to the PC. Windows hardware detection installs the required FTDI driver.
   - the FTDI driver is available on the Software ROM 7 or on the SEW website.
2. GSD file: SEW-DFE32B-2-Port_V2.1-JJJJ.MM.TT.xml
3. MOVITOOLS® MotionStudio version 5.40 and higher.

Step 2: Installing the devices

1. Install MOVITRAC® B according to operating instructions:
   - Supply system cable
   - Motor cable
   - Brake resistor
   - DC 24 V backup voltage
2. Install PROFINET and connect gateway to PROFINET.
3. Install the system bus according to this manual.
4. Activate terminating resistor at final node.

5.6.2 Starting up units with DC 24 V or AC 400 V

Step 1: Configure MOVITRAC® B

1. Start MOVITOOLS® MotionStudio and open a new project.

   Specify a project name and assign USB11A programming interface according to serial COM interface.

   – When the USB11A programming interface is connected to the PC for the first time, Windows hardware detection installs the required FTDI driver
   – If USB11A is not recognized, check the assignment to the COM interface. The suitable COM port is marked by "USB"
2. Connect the PC to MOVITRAC® B via USB11A programming interface.
3. Perform a unit scan. Mark the unit with the mouse button and select [Startup] / [Parameter tree] via the right mouse button.
4. Set the parameters for *P881 SBus address* in ascending order (1 ... 8) unequal to 0 Set *P883 SBus timeout interval* to 50 ... 200 ms
5. Set *P100 setpoint source* to "SBus1 / fixed setpoint" and *P101 control signal source* to"SBus1".
6. For simple control via fieldbus, the binary inputs can be set to "No Function" via the parameters P601 ... P608.
7. Check the parameter setting for the process data (P87x). The parameters for control word and status word must be set. Set *P876 PO data enable* to "Yes".
8. Repeat steps 2 to 7 for the individual units connected to the SBus.
9. Activate "Auto setup" function via DIP switch "AS" of the DFx gateway. Set DIP switch "AS" to "1". H1 LED flashes during the scan and goes out after successful completion.
10. Connect the PC to DFx gateway via USB11A programming interface.
11. Perform a unit scan. Now, the DFx gateway and all units installed at the SBus must be accessible.
12. Mark DFx gateway and select [Diagnostics] / [Monitor Fieldbus Gateway DFx] with the right mouse button. Go to the "Gateway Configuration" tab page and check whether the "Auto setup" function has recognized all units. If not, check

    – the SBus installation
    – whether the terminating resistor is connected to the final unit
    – the SBus addresses of the individual units

Step 2: Configuring PROFINET

1. Start the control manufacturer's software to configure the hardware (e.g. STEP 7-HWKONFIG).
2. Install the GSD file if necessary (→ chapter "Preliminary work")
3. Check whether PC and control are in the same subnetwork:
   - Are the IP addresses of PC and CPU identical up to the lowest byte?
   - Is the subnet mask identical?
4. Check whether a TCP/IP communication can be set up.
5. Carry out the PROFINET configuration according to this manual.
   - Assign PROFINET device name
   - Assign IP configuration if necessary
   - Perform process data configuration
   - Load the configuration to the controller
6. The BUS FAULT LED of the DFE32B option is off when PROFINET is successfully configured. Process data is now being exchanged.
7. Extend control program and set up process data exchange to DFx gateway.
8. Start MOVITOOLS® MotionStudio and open a new project. Set up "Ethernet" as communication interface.
   - Alternatively, MOVITOOLS® MotionStudio can be operated via serial communication with USB11A. Connect PC with DFx gateway.
9. Perform a unit scan. DFx gateway and all units installed at the SBus must now be accessible if the MOVITRAC® B units have been configured beforehand.
10. Activate DFx gateway with the mouse button start the "Monitor DFx Fieldbus Gateway" tool with the right mouse button. Switch to the "Process data monitor" window and check whether the process data exchange between control and gateway is working.
11. Switch on the supply voltage and enable MOVITRAC® B at the terminals (DI01=1). Activate unit enable via control word 1 = 0x0006
    - If MOVITRAC® B remains in "No Enable", check terminal assignment (parameter group P60x) and supply further binary inputs with DC 24 V if required.

6 PROFINET Operating Behavior

6.1 Introduction

Classic fieldbus communication is enhanced by fast Ethernet technology as a physical transmission medium using PROFINET IO. Profinet supports real-time capable process communication as well as open communication via Ethernet TCP/IP. PROFINET distinguishes between three communication classes that differentiate in terms of efficiency and functionality.

Three communication classes

- **TCP/IP**

  Open Ethernet TCP / IP communication without real-time requirements (e.g. web technology)

- **RT (Real-Time)**

  IO data exchange between automation units in real-time (> 1 ms).

- **IRT (Isochronous Real-Time)**

  Isochronous real-time communication for synchronized IO data exchange (e.g. for motion control applications - not for DFE32B option).

The DFE32B option meets the requirements of the PROFINET RT class and provides open communication via TCP / IP or UDP / IP.

Three unit classes

PROFINET IO differentiates between three unit types - 'IO controller', 'IO device' and 'IO supervisor'.

- **IO controller**

  The IO controller undertakes the master function for the cyclic IO data exchange with the decentralized field units and is usually implemented as a communication interface of a controller. It is similar to a PROFIBUS DP master class 1. A PROFINET IO system can have several IO controllers.

- **IO device**

  All field units of PROFINET IO that are controlled by an IO controller are designated as IO devices, e.g. I/O, drives, valve terminals, etc. IO devices are comparable with PROFIBUS DP slave participants. The DFE32B option is a PROFINET IO device.

- **IO supervisor**

  Programming devices / PC with corresponding engineering / diagnostic tools are designated as IO supervisors. IO supervisors have access to process and parameter data as well as alarm and diagnostic information.

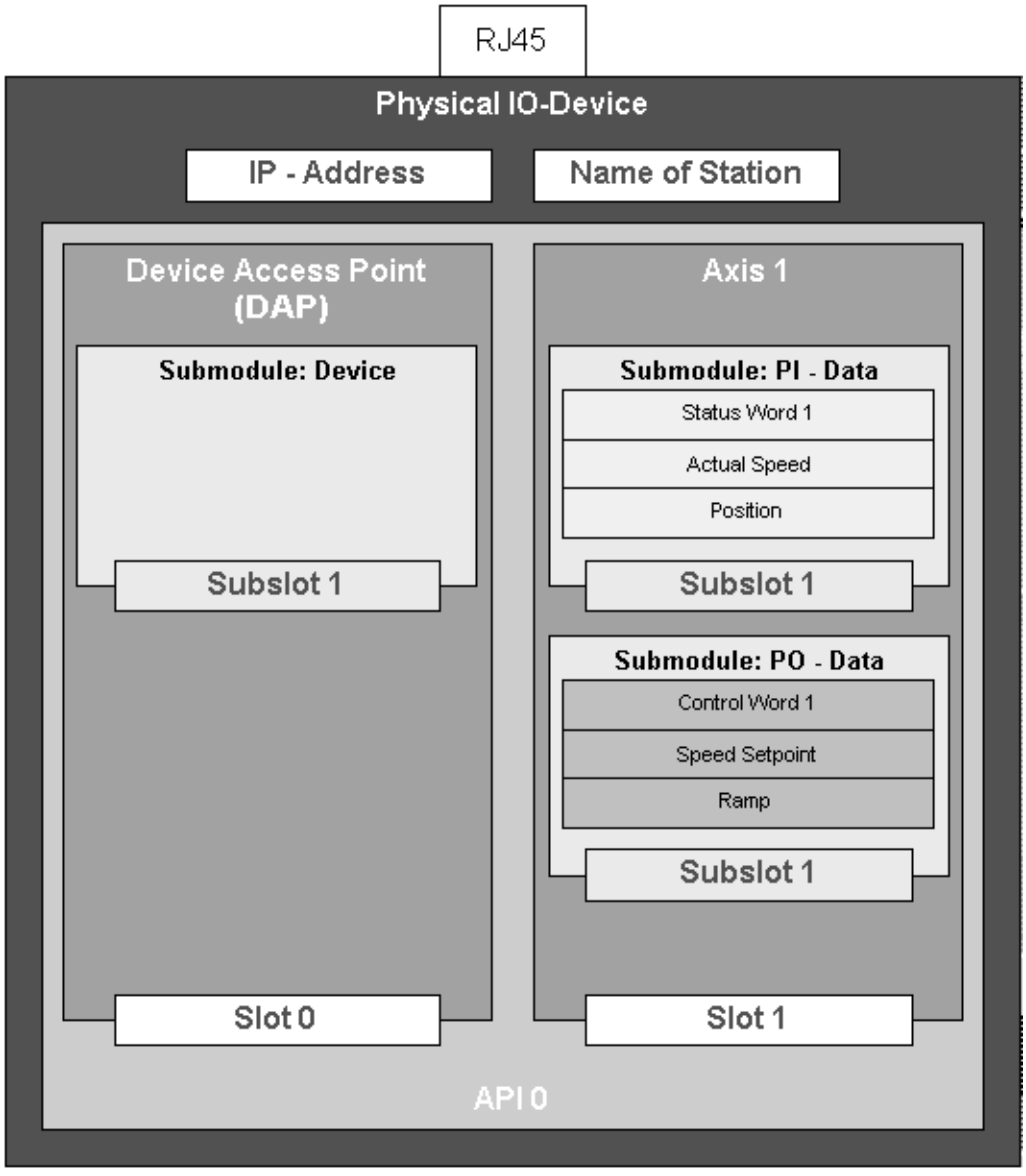
Communication model

The communication model of PROFINET IO is based on the many years of experience with PROFIBUS DP-V1. The master slave access procedure was mapped on a provider-consumer model.

Several communication channels are used for the data exchange between IO controller and IO devices. The cyclic IO data and the event-driven alarms are transferred via real-time channels. The standard channel based on UDP / IP is used for parameter settings, configuration and diagnostic information.

Unit model

The known decentralized periphery of PROFIBUS DP was enhanced for the device model. The device model is based on slot and subslot mechanisms where modular devices with slots can be implemented for modules and submodules. In this way, the slot and submodules are represented by subslots for the modules. These mechanisms also enable logical modularization, e.g. for a drive system (→ following figure).



58645AXX

A single drive axle is represented as a module under PROFINET IO. Several submodules can be plugged into this module. The submodules determine the process data interface to the IO controller or the data traffic partner. Thus they have provider or consumer quality. The model provides the option to plug several modules into an IO device for multi-axis systems that have a common PROFINET IO interface. In this way, each module again represents a single axis. Slot 0 is used as a Device Access Point (DAP) and usually represents the IO device.

6.2 The integrated Ethernet switch

You can use the integrated Ethernet switch to achieve line topologies known from the fieldbus technology. There are other possible bus topologies such as star or tree, of course. Ring topologies are not supported.

	NOTES
	The number of industrial Ethernet switches connected to the line affects the telegram runtime. If a telegram passes through the units, the telegram runtime is delayed by the Store & Forward function of the Ethernet switch: • for a telegram length of 64 Byte by approximately 10 µs (at 100 Mbit/s) • for a telegram length of 1500 Byte by approximately 130 µs (at 100/Mbit/s) This means that the more units a telegram has to pass through, the higher the telegram runtime is.

Autocrossing

The two ports leading out of the Ethernet switch have autocrossing functionality. This means you can use patch or cross-over cables to connect the next Ethernet node.

Autonegotiation

The baud rate and the duplex mode is negotiated by both Ethernet nodes when establishing the connection. The two Ethernet ports of the PROFINET interface support autonegotiation functionality and operate at a baud rate of 100 Mbit or 10 Mbit in full duplex or half duplex mode.

	NOTE
	PROFINET IO networks must be operated at a baud rate of 100 Mbit in full duplex mode.

Monitoring the LINK status

Both ports allow for a monitoring of the LINK status. You can set up this function via the STEP 7 hardware configuration as follows:

- Select slot 0 in STEP 7.
- Select [Object properties] from the context menu.
- Select the tab "Parameters".

Only set the monitoring for the port that sends data packages to other nodes and not to the control. If a LINK DOWN is detected when the monitoring function is switched on, the PROFINET device sends a diagnostics alarm to the control via the other port (→ chapter "PROFINET alarms using the example of MOVIDRIVE® B")

6.3 Process data configuration

For the DFE32B option, Slot 1 must be configured as 'slot not used'. Modules with 1 to 10 I/O words can be plugged into slot 2. After the unit sis switched on and before the IO controller establishes the communication, the configuration is set to 3 process data words I/O. It can be changed by the IO controller while the communication is established. The current configuration is shown in *P090 PD configuration*.

Permitted configurations

ID	Process data length
101	1 process data word I/O
102	2 process data words I/O
103	3 process data words I/O
104	4 process data words I/O
105	5 process data words I/O
106	6 process data words I/O
107	7 process data words I/O
108	8 process data words I/O
109	9 process data words I/O
110	10 process data words I/O

The DAP (Device Access Point) is designated as ID 100 (slot 0, subslot 1)

NOTE

The configuration of the DFE32B option is compatible to the DFE12B option. That means that you do not have to change the configuration when you replace the DFE12B option with the DFE32B option. The DFE32B option then accepts 1 ... 10 process data words on slot 1.

6.4 Controlling the MOVIDRIVE® MDX61B drive inverter

The drive inverter is controlled via the process data channel which is up to 10 I/O words in length. These process data words may be mapped in the I/O or peripheral area of the controller if a programmable controller is used as IO controller and can be addressed as usual.

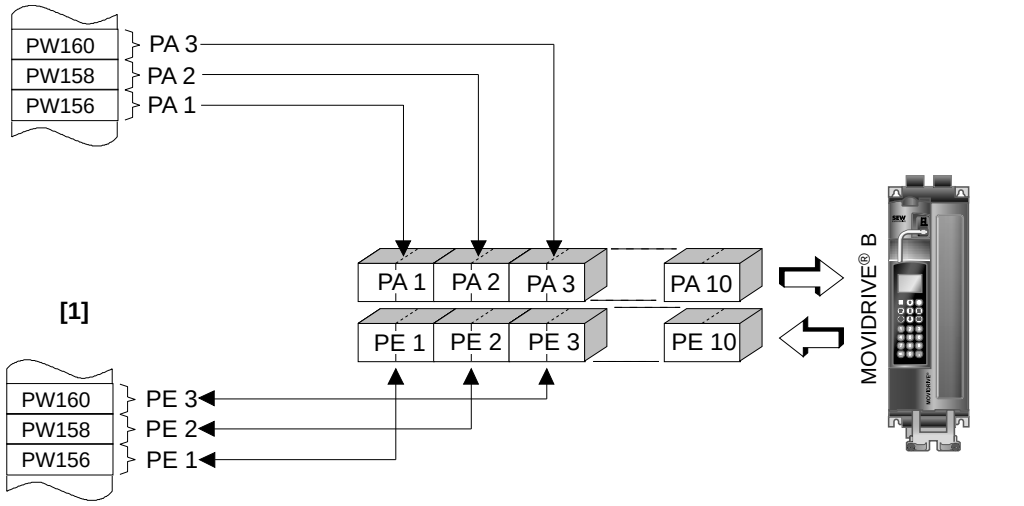


Figure 2: Mapping PROFINET data in the PLC address range

[1] PLC address range

PI1 ... PE10 Process input data
PO1 ... PO10 Process output data

	NOTES
	For more information about controlling via the process data channel, in particular regarding the coding of the control and status word, refer to the Fieldbus Unit Profile manual.

6.4.1 Control example SIMATIC S7 with MOVIDRIVE® MDX61B

The drive inverter is controlled using Simatic S7 in accordance with the selected process data configuration either directly using load and transfer commands or by means of special system functions, *SFC 14 DPRD_DAT* and *SFC15 DPWR_DAT*.

In principle, S7 data lengths of 3 bytes or more than 4 bytes must be transmitted using system functions SFC14 and SFC15.

Consequently, the data in the following table applies:

Process data configuration	STEP 7 access via
1 PD	Load / transfer commands
2 PD	Load / transfer commands
3 PD	System functions SFC14/15 (length 6 bytes)
6 PD	System functions SFC14/15 (length 12 bytes)
10 PD	System functions SFC14/15 (length 20 bytes)

6.4.2 PROFINET timeout (MOVIDRIVE® MDX61B)

If the data transfer via PROFINET is faulty or interrupted, the response monitoring time in MOVIDRIVE® elapses (if configured in the IO control). The **BUS FAULT** LED lights up or flashes to indicate that no new user data is being received. At the same time, MOVIDRIVE® performs the error response selected with *P831 Fieldbus timeout response*.

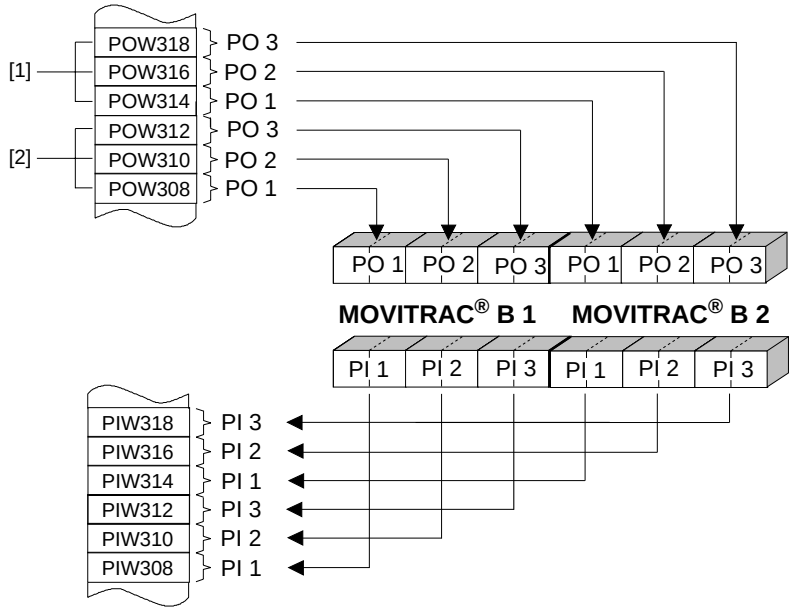
P819 Fieldbus timeout displays the response monitoring time specified by the IO controller during the PROFINET startup. The timeout can only be changed via the IO controller. Although modifications made via the keypad or MOVITOOLS® MotionStudio are displayed, they do not have any effect and are overwritten when the PROFINET is next started up.

6.4.3 Fieldbus timeout response (MOVIDRIVE® MDX61B)

Parameter *P831 Response Fieldbus Timeout* is used to set the error response that is triggered via the fieldbus timeout monitoring function. The setting made here must correspond to the setting in the master system (S7: response monitoring).

6.5 Controlling the MOVITRAC® B (gateway) frequency inverter

The inverter is controlled via the process data channel, which is up to 3 I/O words in length. These process data words are reproduced in the I/O or peripheral area of the controller, for example when a programmable logic controller is used as the IO controller. As a result, they can be addressed in the usual manner.



58612AXX

Figure 3: Mapping PROFINET data in the PLC address range

[1] Address range MOVITRAC® B, device 2

[2] Address range MOVITRAC® B, device 1

PO = process output data PI / PI = process input data

6.5.1 Control example for SIMATIC S7 with MOVITRAC® B (gateway)

The inverter is controlled using SIMATIC S7 in accordance with the selected process data configuration either directly using load and transfer commands or by means of special system functions SFC 14 DPRD_DAT and SFC15 DPWR_DAT.

In principle, S7 data lengths of 3 bytes or more than 4 bytes must be transmitted using system functions SFC14 and SFC15.

Process data configuration	STEP 7 access via
3 PD ... 24 PD	System functions SFC14/15 (length: 6 ... 48 bytes)
Param + 3 PD ... 24 PD	System functions SFC14/15 (length 6 ... 48 bytes for PD + 8 bytes for parameter)

6.5.2 SBus timeout

If one or more drive inverters on the SBus can no longer be addressed by the DFE32B, the gateway enters error code *F11 System fault*, in status word 1 of the corresponding inverter. The **H1** LED (system fault) lights up, and the error is also displayed via the diagnostics interface. It is necessary to set the *SBus timeout interval (P815)* of the MOVITRAC® B system error to a value other than 0 for the inverter to stop. The error resets itself in the gateway. In other words, the current process data is exchanged immediately after restarting the communication.

6.5.3 Unit error

The gateways detect a series of errors during the self test and respond by locking themselves. For the exact error responses and according measures please refer to the error list (→ chapter "Error list in gateway operation"). A hardware defect causes error *F111 system fault* to be displayed on the fieldbus process input data for status words 1 of all drive inverters. The **H1** LED (system fault) at the DFE is lit. The exact error code of the gateway status can be displayed via the diagnostics interface with MOVITOOLS® MotionStudio (Tool "Status").

6.5.4 Fieldbus timeout response of the DFE32B in gateway operation

You can set how the gateway should respond in case of timeout using the *P831 Fieldbus timeout response* parameter.

No response	The drives on the subordinate SBus continue with the last setpoint value. These drives **cannot** be controlled when the PROFIBUS communication is interrupted.
PA_DATA = 0 (factory setting)	The rapid stop is activated for all drives that have a process data configuration with control word 1 or 2 when a PROFINET timeout is detected. For this, the gateway sets the bits 0 ... 2 of the control word to 0. The drives are stopped with the rapid stop ramp.

6.6 SIMATIC S7 Sample program

	NOTE
	This example is a special and free service that demonstrates only the basic approach to generating a PLC program as a non-binding sample. We are not liable for the contents of the sample program.

In this example, the project planning for MOVIDRIVE® B or MOVITRAC® B has the process data configuration "3 PD" on input addresses PIW576... and output addresses POW576....

A data block DB3 is created with about 50 data words.

When SFC14 is called, the process input data is copied to data block DB3, data words 0, 2 and 4. When SFC15 is called after the control program has been processed, the process output data are copied from data words 20, 22 and 24 to the output address POW 576 ...

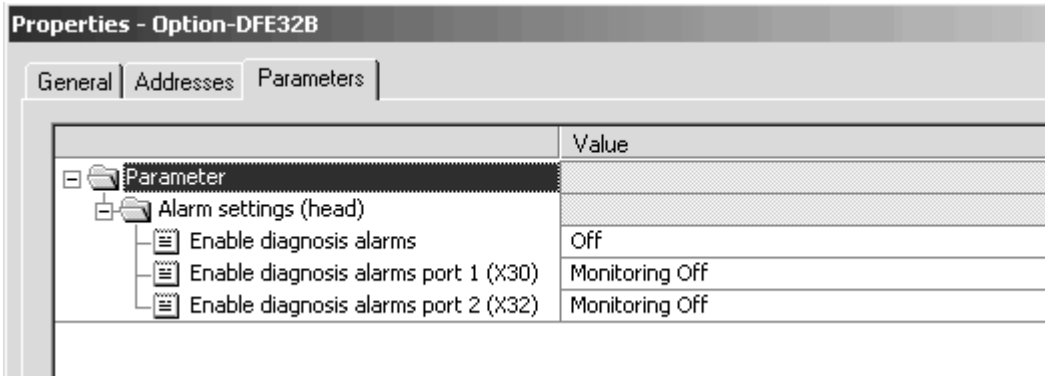
Note the length specification in bytes for the RECORD parameter. The length information must correspond to the configured length.

Refer to the online help for STEP 7 for further information about the system functions.

```
//Start of cyclical program processing in OB1
BEGIN
NETWORK
TITLE =Copy PI data from servo drive to DB3, word 0/2/4
CALL SFC  14 (DPRD_DAT)    //READ IO DeviceRecord
  LADDR  := W#16#240 //Input address 576
  RET_VAL:= MW 30          //Result in flag word 30
  RECORD := P#DB3.DBX 0.0 BYTE 6 //Pointer

NETWORK
TITLE =PLC program with drive application
// PLC program uses the process data in DB3 for
// drive control

L  DB3.DBW 0//Load PI1 (status word 1)
L  DB3.DBW 2      //Load PI2 (actual speed value)
L  DB3.DBW 4      //Load PI3 (no function)

L  W#16#0006
T DB3.DBW 20//Write 6hex to PO1 (control word = enable)
L 1500
T DB3.DBW 22//Write 1500dec to PO2 (speed setpoint = 300 1/min)
L  W#16#0000
T DB3.DBW 24//Write 0hex to PO3 (has no function)

//End of cyclical program processing in OB1
NETWORK
TITLE =Copy PO data from DB3, word 20/22/24 to the inverter
CALL SFC  15 (DPWR_DAT)            //WRITE IO Device Record
  LADDR  := W#16#240               //Output address 576 = 240hex
  RECORD := P#DB3.DBX 20.0 BYTE 6  //Pointer to DB/DW
  RET_VAL:= MW 32                  //Result in flag word 32
```

6.7 PROFINET alarms using the example of MOVIDRIVE® B

The DFE32B supports diagnostics alarms in case of a unit error. These diagnostic alarms are switched off at the factory. Proceed as follows to enable the diagnostics alarms in STEP 7 HWKONFIG (→ following figure).



62269AEN

Diagnostics alarm of the MOVIDRIVE®

- Select slot 2 of DFE32B.
- Press the right mouse button and select [Object properties] or double-click on the slot. The "DFE32B properties" window opens.
- Select the "Parameters" tab.
- Set the diagnostics alarm to "ON" and confirm with [OK]

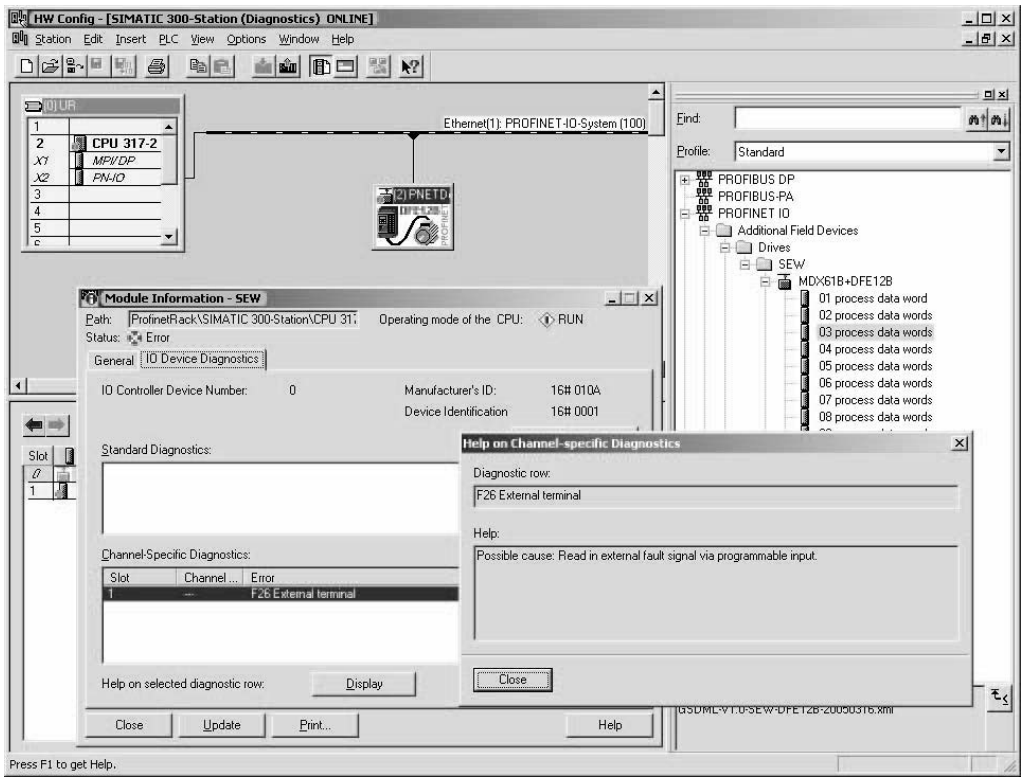
  In case of an error of the MOVIDRIVE®, a diagnostics alarm is generated and you can read the error message of the MOVIDRIVE® in plain text.

Diagnostics alarm of the integrated switch

- Select slot 0 of DFE32B.
- Press the right mouse button and select [Object properties] or double-click on the slot. The "DFE32B properties" window opens.
- Select the "Parameters" tab. Set "Alarm Port 1" or "Alarm Port 2" to "ON" and confirm with [OK]. In a line topology, the respective port of the Ethernet node must be monitored that leads to the subsequent Ethernet node (coming from the PLC).

  The DFE32B uses this setting to monitor the unit communication with adjacent nodes. A diagnostics alarm is generated if the DFE32B detects an inactive partner at port 1 or 2.

A unit error of the MOVIDRIVE® B or the integrated switch results in a diagnostics alarm being sent to the SIMATIC control as a so-called "incoming event". The "SF" LED lights up red. You can determine the cause of the error in STEP 7 HWKONFIG. Go to ONLINE, mark the symbol of the DFE32B and check the module information via the context menu (right mouse button).

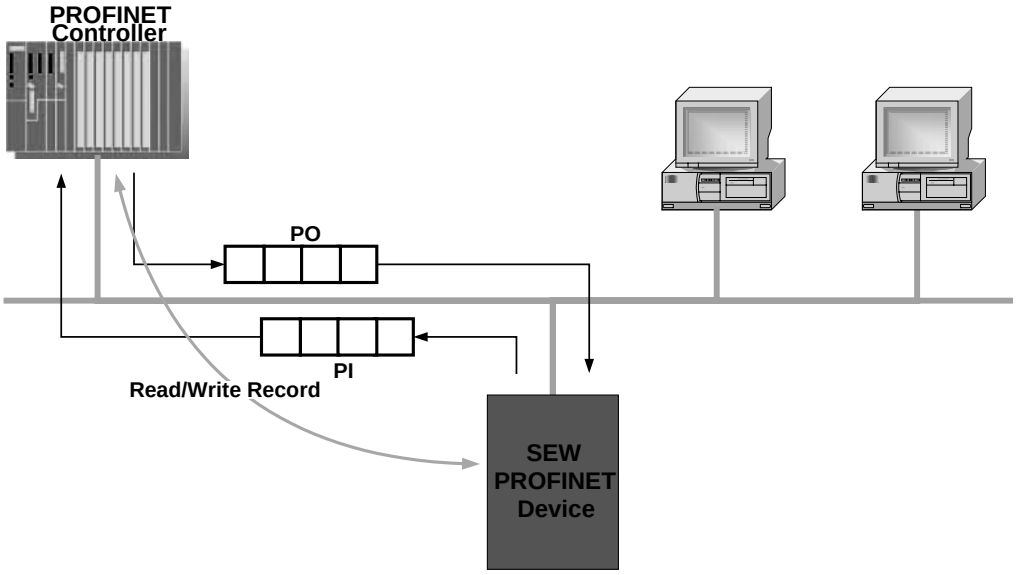


58647AXX

7 Configuration via PROFIdrive Data Set 47

7.1 Introducing PROFINET data sets

With "Read Record" and "Write Record", PROFINET offers acyclic services that can be used to transfer parameter data between PROFINET controller (master) and a PROFINET device (slave). Via UDP (User Datagram Protocol), the priority of this data exchange is lower than the priority of the process data exchange.



62204AXX

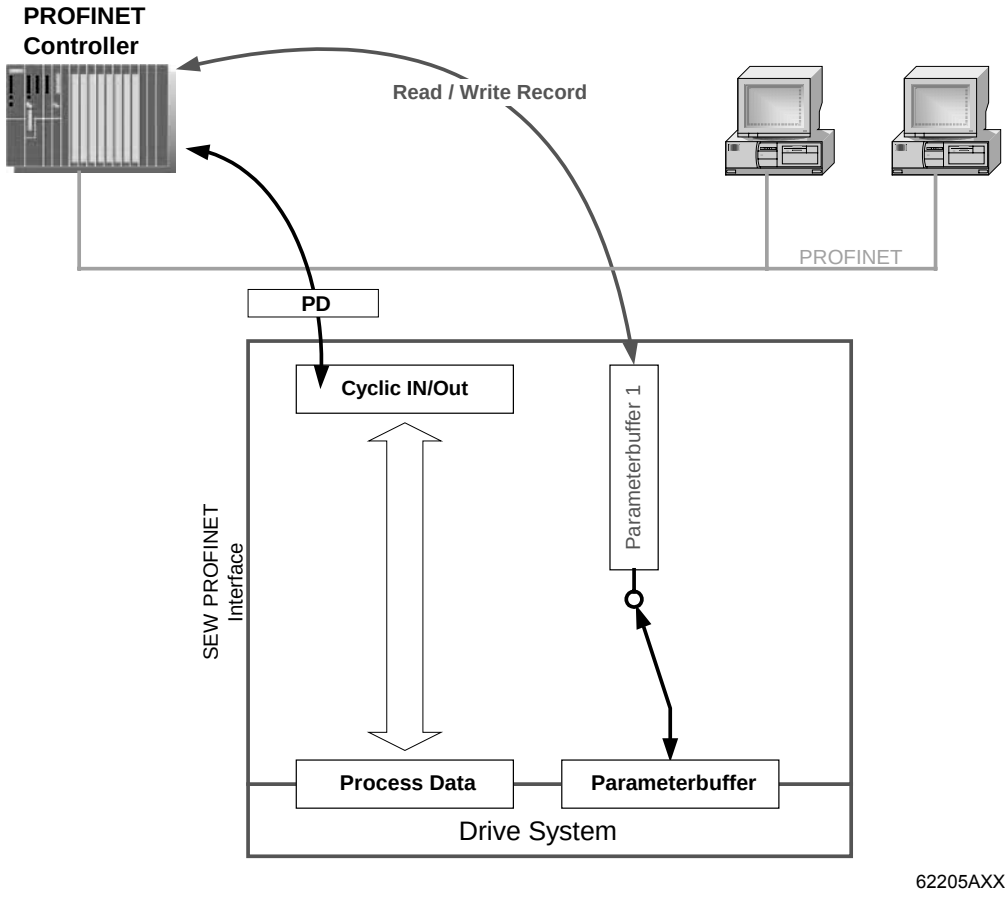
The user data transported via an acyclic PROFINET service is grouped in a data set. Each data set is clearly addressed by the following characteristics:

- API
- Slot number
- Subslot number
- Index

The structure of data set 47 is used for the parameter exchange with SEW-EURODRIVE PROFINET units. The structure of data set 47 is specified in the PROFIdrive profile drive technology of the PROFIBUS user organization as of V4.0 as PROFINET parameter channel. Different procedures for accessing parameter data of the SEW-EURODRIVE PROFINET unit are provided via this parameter channel.

7.1.1 Features of the SEW-EURODRIVE PROFINET units

The SEW-EURODRIVE PROFINET units that support acyclic Read Record and Write Record services all have the same communication characteristics. The units are basically controlled via a PROFINET controller with cyclic process data. Additionally, this controller (usually a PLC) can set the parameters for the SEW-EURODRIVE PROFINET unit via Read Record and Write Record.



7.2 Structure of the PROFINET parameter channel

Generally, the parameter setting of the drives to the PROFIdrive-Base Mode Parameter Access of profile version 4.0 is implemented via data set 47. The *Request ID* entry is used to distinguish between parameter access based on PROFIdrive profile or via SEW-MOVILINK® services. The following table shows the possible codes of the individual elements. The data set structure is the same for PROFIdrive and MOVILINK® access.

62206AXX

The following MOVILINK® services are supported:

- 8-byte MOVILINK® parameter channel with all the services supported by the inverter such as
  - READ parameters
  - WRITE parameter
  - WRITE parameter volatile
  - etc.

Box	Data type	Values
	Unsigned8	0x00 Reserved 0x01 ... 0xFF
Request ID	Unsigned8	**0x40 SEW MOVILINK® service** 0x41 SEW Data Transport
Response ID	Unsigned8	Response (+): 0x00 Reserved **0x40 SEW MOVILINK® service (+)** 0x41 SEW Data Transport Response (–): **0xC0 SEW MOVILINK® service (–)** 0x41 SEW Data Transport
	Unsigned8	0x00 ... 0xFF Number of axes 0 ... 255
No. of parameters	Unsigned8	0x01 ... 0x13 1 ... 19 DWORDs (240 DP-V1 data bytes)
Attributes	Unsigned8	**For SEW MOVILINK® (Request ID = 0x40):** **0x00 No service** **0x10 READ parameters** **0x20 WRITE parameter** **0x40 Read Minimum** **0x50 Read Maximum** **0x60 Read Default** **0x80 Read Attribute** **0x90 Read EEPROM** **0xA0 ... 0xF0 Reserved** SEW Data Transport: 0x10 Value
No. of elements	Unsigned8	0x00 For parameters that are not indexed 0x01 ... 0x75 Quantity 1 ... 117
Parameter Number	Unsigned16	0x0000 ... 0xFFFF MOVILINK® parameter index
Subindex	Unsigned16	0x0000 SEW: always 0
Format	Unsigned8	0x43 Double word 0x44 Error
No. of Values	Unsigned8	0x00 ... 0xEA Quantity 0 ... 234
Error Value	Unsigned16	0x0080 + MOVILINK®-Additional Code Low **For SEW MOVILINK® 16 Bit error value**

7.2.1 Parameter setting procedure via data set 47

Parameter access takes place with the combination of the *WRITE RECORD* and *READ RECORD* PROFINET services. The parameter setting order is transferred to the IO device using the *WRITE.req*, whereupon it is processed internally.

The controller now sends a *READ.req* to pick up the parameter setting response. The device sends a positive response *READ.res*. The user data now contain the parameter setting response of the parameter setting order that was previously sent with *WRITE.req* (see the following figure). This mechanism applies to a PROFINET controller.

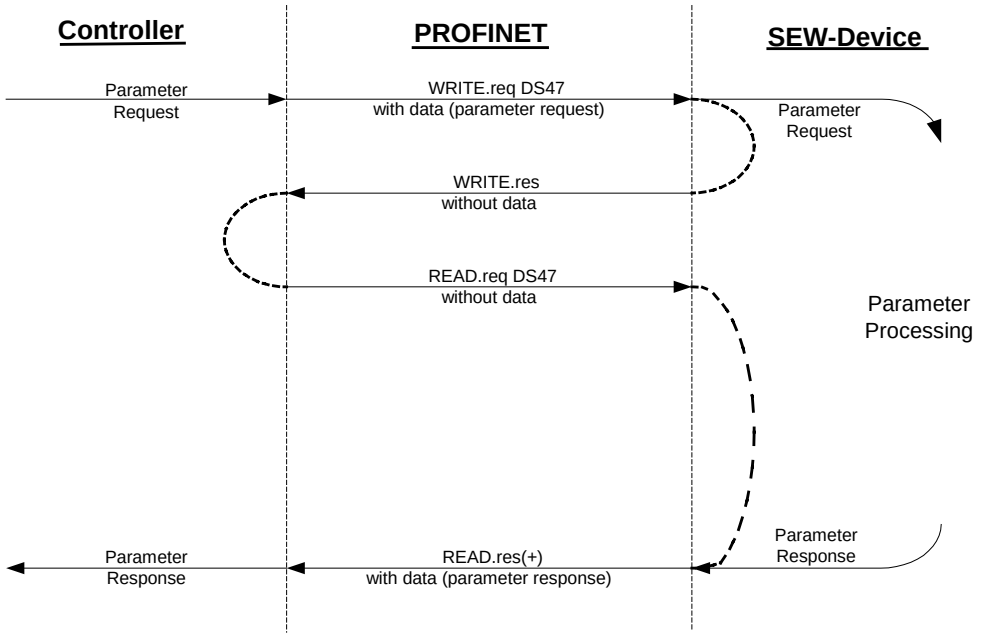
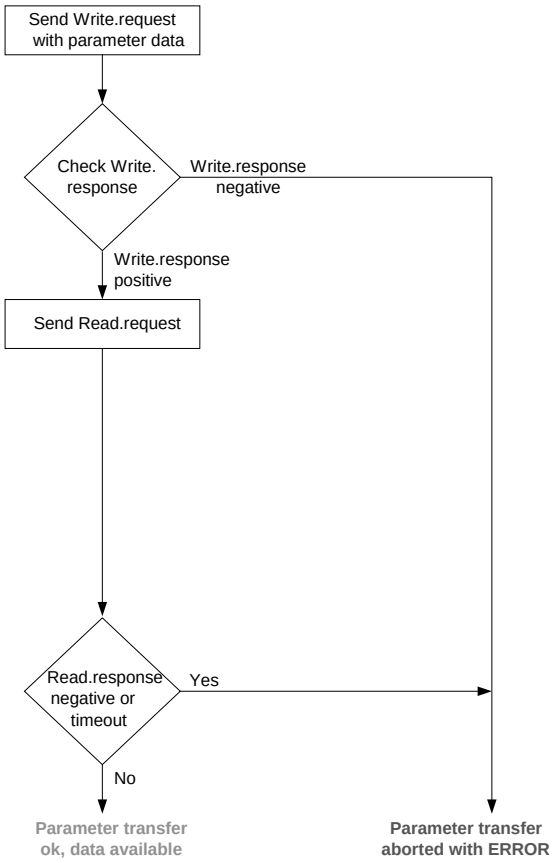


Figure 4: Telegram sequence for parameter access via Read/Write Record

7.2.2 Controller processing sequence

If the bus cycles are very short, the request for the parameter response arrives before the SEW device has concluded the parameter access in the device. This means that the response data from the SEW device is not yet available. In this state, the device delays the response to the *Read Record Request*.



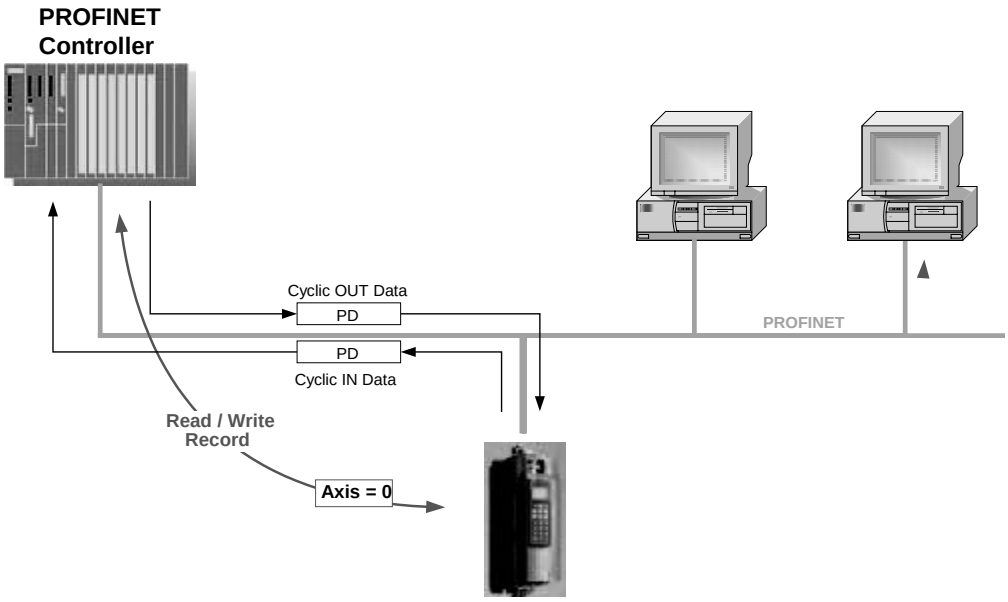
62209AEN

7.2.3 Addressing connected inverters

The structure of the DS47 data set defines an *axis* element. This element is used to reach multi-axis drives that are operated via one PROFINET interface. The *axis* element addresses one of the units connected via the PROFINET interface.

Addressing a MOVIDRIVE® B on the PROFINET

With the setting *Axis = 0*, the parameters of the MOVIDRIVE® B drive inverter are accessed. Since there are no drive units connected to the MOVIDRIVE® B, an access with *Axis > 0* is returned with an error code.



62210AXX

7.2.4 MOVILINK® parameter requests

The MOVILINK® parameter channel of the SEW inverter is directly mapped in the structure of data set 47. The Request ID 0x40 (SEW MOVILINK® service) is used for the exchange of MOVILINK® parameter setting orders. Parameter access with MOVILINK® services usually takes place according to the structure described below. The typical telegram sequence for data set 47 is used.

Request ID: 0x40 SEW MOVILINK® service

The actual service is defined by the data set element *Attribute* in the MOVILINK® parameter channel. The high nibble of the element corresponds to the MOVILINK® service code.

Example for reading a parameter via MOVILINK®

The following tables give an example of the structure of the *WRITE.request* and *READ.response* user data for reading an individual parameter via the MOVILINK® parameter channel.

Sending parameter request

The table shows the coding of the user data for the *WRITE.request* PROFINET service. The *WRITE.request* service is used to transfer the parameter setting request to the inverter. The firmware version is read.

The following table shows the WRITE request header for transferring the parameter request.

Service	WRITE. request	Description
API	0	Fixed setting = 0
Slot_Number	0	Random, (is not evaluated)
Subslot_Number	1	Fixed setting = 1
Index	47	Index of the data set for the parameter request; constant index 47
Length	10	10byte user data for parameter request

The following table shows the WRITE.request user data for MOVILINK® "Read parameters".

Byte	Box	Value	Description
0		0x01	Individual reference number for the parameter setting request is mirrored in the parameter response
1	Request ID	0x40	SEW MOVILINK® service
2		0x00	Axis number; 0 = single axis
3	No. of parameters	0x01	1 parameter
4	Attributes	0x10	MOVILINK® service “READ parameter”
5	No. of elements	0x00	0 = access to direct value, no subelement
6, 7	Parameter Number	0x206C	MOVILINK® index 8300 = “Firmware version”
8, 9	Subindex	0x0000	Subindex 0

Query parameter response

The following table shows the coding of the READ.request user data including the PROFINET header.

Service	READ. request	Description
API	0	Fixed setting = 0
Slot_Number	0	Random, (is not evaluated)
Subslot_Number	1	Fixed setting = 1
Index	47	Index of the data set for the parameter request; constant index 47
Length	240	Maximum length of response buffer in the master

Positive MOVILINK® parameter setting response

The table shows the READ.response user data with the positive response data of the parameter setting request. The parameter value for index 8300 (firmware version) is returned as an example.

Service	READ. request	Description
API	0	Fixed setting = 0
Slot_Number	0	Random, (is not evaluated)
Subslot_Number	1	Fixed setting = 1
Index	47	Index of the data set for the parameter request; constant index 47
Length	10	Maximum length of response buffer in the master

Byte	Box	Value	Description
0		0x01	Reflected reference number from the parameter setting request
1	Response ID	0x40	Positive MOVILINK® response
2		0x00	Reflected axis number; 0 = single axis
3	No. of parameters	0x01	1 parameter
4	Format	0x43	Parameter format: Double word
5	No. of values	0x01	1 value
6, 7	Value High	0x311C	Higher-order part of the parameter
8, 9	Value Low	0x7289	Lower-order part of the parameter
			Decoding: 0x 311C 7289 = 823947913 dec >> firmware version 823 947 9.13

Example for writing a parameter via MOVILINK®

The following tables show the sequence of the *WRITE* and *READ* services for non-volatile writing of the value 12345 to IPOS$^{plus®}$ variable H0 (parameter index 11000) as an example. The MOVILINK® service *Write Parameter volatile* is used for this purpose.

Send „WRITE parameter volatile“ request

Service	WRITE. request	Description
API	0	Fixed setting = 0
Slot_Number	0	Random, (is not evaluated)
Subslot_Number	1	Fixed setting = 1
Index	47	Index of the data set for the parameter request; constant index 47
Length	16	16 byte user data for order buffer

The following table shows the WRITE.request user data for MOVILINK® "Write parameters volatile.

Byte	Box	Value	Description
0		0x01	Individual reference number for the parameter setting order is reflected in the parameter response
1	Request ID	0x40	SEW MOVILINK® service
2		0x00	Axis number; 0 = single axis
3	No. of parameters	0x01	1 parameter
4	Attributes	0x30	MOVILINK® service “WRITE parameter volatile”
5	No. of elements	0x00	0 = access to direct value, no subelement
6, 7	Parameter Number	0x2AF8	Parameter index 11000 = ’IPOS variable H0’
8, 9	Subindex	0x0000	Subindex 0
10	Format	0x43	Double word
11	No. of values	0x01	Change 1 parameter value
12, 13	Value High word	0x0000	Higher-order part of the parameter value
14, 15	Value Low word	0x0BB8	Lower-order part of the parameter value

After sending this WRITE.request, the WRITE.response is received. If there was no status conflict in processing the parameter channel, a positive WRITE.response occurs. Otherwise, the status error is located in Error_code_1.

Query parameter response

The following table shows the coding of the READ.req user data including the PROFINET- header.

Service	READ. request	Description
API	0	Fixed setting = 0
Slot_Number	0	Random, (is not evaluated)
Subslot_Number	1	Fixed setting = 1
Index	47	Index of the data set for the parameter request; constant index 47
Length	240	Maximum length of response buffer in the master

Positive response to “WRITE Parameter volatile”

Service	READ. response	Description
API	0	Fixed setting = 0
Slot_Number	0	Random, (is not evaluated)
Subslot_Number	1	Fixed setting = 1
Index	47	Index of the data set for the parameter request; constant index 47
Length	4	4 byte user data in response buffer

Byte	Box	Value	Description
0		0x01	Reflected reference number from the parameter setting request
1	Response ID	0x40	Positive MOVILINK® response
2		0x00	Reflected axis number; 0 = single axis
3	No. of parameters	0x01	1 parameter

Negative parameter response

The following table shows the coding of a negative response of a MOVILINK® service. Bit 7 is entered in the the response ID if the response is negative.

Service	WRITE. response	Description
API	0	Fixed setting = 0
Slot_Number	0	Random, (is not evaluated)
Subslot_Number	1	Fixed setting = 1
Index	47	Index of the data set for the parameter request; constant index 47
Length	8	8 byte user data in response buffer

Byte	Box	Value	Description
0		0x01	Reflected reference number from the parameter setting order
1	Response ID	0xC0	Negative MOVILINK® response
2		0x00	Reflected axis number; 0 = single axis
3	No. of parameters	0x01	1 parameter
4	Format	0x44	Error
5	No. of values	0x01	1 error code
6, 7	Error value	0x0811	MOVILINK® return code e. g. ErrorClass 0x08, add. code 0x11 (see section "MOVILINK® configuration return codes for PROFINET" on page 73 page 74)

MOVILINK® configuration return codes for PROFINET

The following table shows the return codes that are returned by the SEW PROFINET interface module in case of an error in the PROFINET parameter access.

MOVILINK® Return codes (hex)	Description
0x0810	Invalid index, parameter index does not exist in the unit
0x0811	Function / parameter not implemented
0x0812	Read access only
0x0813	Parameter lock activated
0x0814	Factory setting is active
0x0815	Value for parameter too large
0x0816	Value for parameter too small
0x0817	Required option card not installed
0x0818	Error in system software
0x0819	Parameter access only via RS-485 process interface
0x081A	Parameter access only via RS-485 diagnostics interface
0x081B	Parameter is access-protected
0x081C	Controller inhibit is required
0x081D	Invalid value for parameter
0x081E	Factory setting was activated
0x081F	Parameter was not saved in EEPROM
0x0820	Parameter cannot be changed with output stage enabled/reserved
0x0821	Reserved
0x0822	Reserved
0x0823	Parameter may only be changed at IPOS program stop
0x0824	Parameter may only be changed when auto setup is deactivated
0x0505	Incorrect coding of management and reserved byte
0x0602	Communication error between inverter system and fieldbus interface
0x0502	Timeout of secondary connection (e.g. during reset or with Sys-Fault)
0x0608	Incorrect coding of the format field

7.2.5 PROFIdrive parameter requests

The PROFIdrive parameter channel of SEW inverters is directly mapped in the structure of data set 47. Parameter access with PROFIdrive services usually takes place according to the structure described below. The typical telegram sequence for data set 47 is used. PROFIdrive only defines the two request IDs

Request ID: 0x01request parameter (PROFIdrive)

Request ID: 0x02change parameter (PROFIdrive)

This means there is restricted data access in comparison with the MOVILINK® services.

	NOTE
	The request ID *0x02 Change Parameter (PROFIdrive)* results in remanent write access to the selected parameter. Consequently, the internal flash/EEPROM of the inverter is written with each write access. Use the MOVILINK® service „WRITE Parameter volatile“ if parameters must be written cyclically at short intervals. With this service, you only alter the parameter values in the RAM of the inverter.

Example for reading a parameter via PROFIdrive

The following tables show an example of the structure of the WRITE.request and READ.res user data for reading an individual parameter via the MOVILINK® parameter channel.

Sending parameter request

The table shows the coding of the user data for the WRITE.req service specifying the PROFINET header. The WRITE.req service is used to transfer the parameter setting request to the inverter.

Service:	WRITE.request	Description
Slot_Number	0	Random, (is not evaluated)
Index	47	Index of the data set; constant index 47
Length	10	10 byte user data for parameter request

Byte	Box	Value	Description
0		0x01	Individual reference number for the parameter setting order that is reflected in the parameter response
1	Request ID	0x01	Request parameter (PROFIdrive)
2		0x00	Axis number; 0 = single axis
3	No. of parameters	0x01	1 parameter
4	Attributes	0x10	Access to parameter value
5	No. of elements	0x00	0 = access to direct value, no subelement
6, 7	Parameter Number	0x206C	MOVILINK® index 8300 = “Firmware version”
8, 9	Subindex	0x0000	Subindex 0

Query parameter response

The following table shows the coding of the READ.req user data including the PROFINET header.

Service:	READ.request	Description
Slot_Number	0	Random, (is not evaluated)
Index	47	Index of the data set; constant index 47
Length	240	Maximum length of response buffer in the PN controller

Positive PROFIdrive parameter response

The table shows the READ.res user data with the positive response data of the parameter setting request. The parameter value for index 8300 (firmware version) is returned as an example.

Service:	READ.request	Description
Slot_Number	0	Random, (is not evaluated)
Index	47	Index of the data set; constant index 47
Length	10	10 byte user data in response buffer

Byte	Box	Value	Description
0		0x01	Reflected reference number from the parameter setting order
1	Response ID	0x01	Positive response for „Request Parameter“
2		0x00	Reflected axis number; 0 = single axis
3	No. of parameters	0x01	1 parameter
4	Format	0x43	Parameter format: Double word
5	No. of values	0x01	1 value
6, 7	Value Hi	0x311C	Higher-order part of the parameter
8, 9	Value Lo	0x7289	Lower-order part of the parameter
			Decoding: 0x 311C 7289 = 823947913 dec >> firmware version 823 947 9.13

Example for writing a parameter via PROFIdrive

The following tables show an example of the structure of the *WRITE* and *READ* services for the **remanent** writing of the internal setpoint n11 (see section "Example for writing a parameter via MOVILINK®"). page 72). The PROFIdrive service *change parameter* is used for this purpose.

Send "WRITE parameter" request

The following table shows the PROFINET header of the WRITE request with parameter request.

Service:	WRITE.request	Description
Slot_Number	0	Random, (is not evaluated)
Index	47	Index of the data set; constant index 47
Length	16	16 byte user data for order buffer

The following table shows the WRITE.req user data for the PROFINET service "Change Parameter".

Byte	Box	Value	Description
0		0x01	Individual reference number for the parameter setting order is reflected in the parameter response
1	Request ID	0x02	Change parameter (PROFIdrive)
2		0x01	Axis number; 0 = single axis
3	No. of parameters	0x01	1 parameter
4	Attributes	0x10	Access to parameter value
5	No. of elements	0x00	0 = access to direct value, no subelement
6, 7	Parameter Number	0x7129	Parameter index 8489 = P160 n11
8, 9	Subindex	0x0000	Subindex 0
10	Format	0x43	Double word
11	No. of values	0x01	Change 1 parameter value
12, 13	Value HiWord	0x0000	Higher-order part of the parameter value
14, 15	Value LoWord	0x0BB8	Lower-order part of the parameter value

After sending this WRITE.request, the WRITE.response is received. If there was no status conflict in processing the parameter channel, a \positive WRITE.response occurs. Otherwise, the status error is located in Error_code_1.

Query parameter response

The following table shows the coding of the WRITE.req user data including the PROFINET header.

Field	Value	Description
Function_Num		READ.req
Slot_Number	X	Slot number not used
Index	47	Index of the data set
Length	240	Maximum length of response buffer in the PN controller

Positive response to "WRITE Parameter"

The following table shows the PROFINET header of the positive READ.response with parameter setting response.

Service:	READ.response	Description
Slot_Number	0	Random, (is not evaluated)
Index	47	Index of the data set; constant index 47
Length	4	4 byte user data in response buffer

The following table shows the positive response for the PROFINET service "Change Parameter".

Byte	Box	Value	Description
0		0x01	Reflected reference number from the parameter setting order
1	Response ID	0x02	Positive PROFIdrive response
2		0x01	Reflected axis number; 0 = single axis
3	No. of parameters	0x01	1 parameter

Negative parameter response

The following table shows the coding of a negative response of a PROFIdrive service. Bit 7 is entered in the response ID if the response is negative.

Service:	READ.response	Description
Slot_Number	0	Random, (is not evaluated)
Index	47	Index of the data set; constant index 47
Length	8	8 byte user data in response buffer

Byte	Box	Value	Description
0	Response reference	0x01	Reflected reference number from the parameter setting order
1	Response ID	0x810x82	Negative response for Request Parameter Negative response for Change Parameter
2		0x00	Reflected axis number; 0 = single axis
3	No. of parameters	0x01	1 parameter
4	Format	0x44	Error
5	No. of values	0x01	1 error code
6, 7	Error value	0x0811	MOVILINK® return code e. g. ErrorClass 0x08, add. code 0x11 (see section "MOVILINK® configuration return codes for PROFINET" on page 74)

PROFIdrive return codes for PROFINET

The following table shows the coding of the error number in the PROFIdrive parameter response according to PROFIdrive profile V3.1. This table applies if you use the PROFIdrive services "Request Parameter" and/or "Change Parameter"

Error no.	Meaning	Used for
0x00	Invalid parameter number.	Access to non-existent parameters
0x01	Parameter value cannot be changed	An attempt was made to change a parameter value that cannot be changed
0x02	Minimum or maximum value exceeded	An attempt was made to change a value to one that is outside of the limit values
0x03	Incorrect subindex	Access to non-existent subindex
0x04	No assignment	Access with subindex to parameter that is not indexed
0x05	Incorrect data type	An attempt was made to change a replace a value with one that does not correspond to the data type of the parameter
0x06	Setting not permitted (can only be reset)	An attempt was made to set a value to one larger than 0 where this is not permitted
0x07	Description element cannot be changed	Access to description element that cannot be changed
0x08	Reserved	(PROFIdrive Profile V2: PPO write query for IR not available)
0x09	Description does not exist	Access to description that is not accessible (parameter value is exists)
0x0A	Reserved	(PROFIdrive Profile V2: incorrect access group)
0x0B	No operation priority	An attempt was made to change a parameter without change rights
0x0C	Reserved	(PROFIdrive Profile V2: incorrect password)
0x0D	Reserved	(PROFIdrive Profile V2: text cannot be read in cyclic data transfer)
0x0E	Reserved	(PROFIdrive Profile V2: name cannot be read in cyclic data transfer)
0x0F	No text assignment available	Access to text assignment that is not accessible (parameter value exists)
0x10	Reserved	(PROFIdrive Profile V2: no PPO write)
0x11	Request cannot be executed due to the operating mode	Access is currently not possible and the reason is not explained
0x12	Reserved	(PROFIdrive Profile V2: other error)
0x13	Reserved	(PROFIdrive Profile V2: data cannot be read in cyclic exchange)
0x14	Illegal value	An attempt was made to change a value to one that is in the permitted range but is not permitted due to other long-term reasons (parameter with specified individual values)
0x15	Response is too long	The length of the current response exceeds the maximum transmittable length
0x16	Invalid parameter address	Invalid value or value that is not valid for this attribute, number of elements, parameter number, subindex or a combination of these factors.
0x17	Incorrect format	Write request: Invalid format or parameter data format that is not supported
0x18	Number of values is not consistent	Write request: Number of values of parameter data does not correspond to the number of elements in the parameter address
0x19	Axis does not exist	Access to an axis that does not exist
up to 0x64	Reserved	–
0x65..0xFF	Depends on the manufacturer	–

7.3 Read or write parameters via data set 47

7.3.1 Sample program for SIMATIC S7

The STEP 7 code stored in the GSD file shows how parameters are accessed via the STEP 7 system function modules SFB 52/53. You can copy the STEP 7 code and import/compile it as a STEP 7 source.

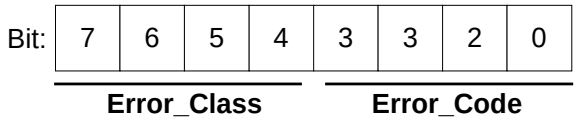
	NOTES
	• There is an example of a function module for SIMATIC S7 controls available for download in the "Software" section on the SEW website. • This example is a special and free service that demonstrates only the basic approach to generating a PLC program as a non-binding sample. We are not liable for the contents of the sample program.

7.3.2 Technical data PROFINET for MOVIDRIVE® DFE32B

GSD file for PROFINET:GSDML-V2.1-SEW-DFE-DFS-2Ports-jjjj.mm.tt.xml	
Module name for project planning:	MOVIDRIVE DFE32B
Supported data set:	Index 47
Supported slot number:	Recommendation: 0
Manufacturer code:	10A hex (SEW-EURODRIVE)
Profile ID:	0
C2 response timeout	1 s
Max. length C1 channel:	240 byte
Max. length C2 channel:	240 byte

7.3.3 Error codes of the PROFINET services

The following table shows possible error codes of PROFINET services that may occur in the event of an error in the communication on PROFINET telegram level. This table is relevant if you want to write your own parameter assignment block based on the PROFINET services because the error codes are reported directly back on the telegram level.



Error_Class (from PROFINET-Specification)	Error_Code (from PROFINET-Specification)	PROFINET Parameter channel
0x0 ... 0x9 hex = reserved		
0xA = application	0x0 = read error 0x2 = module failure 0x3 to 0x7 = reserved 0x8 = version conflict 0xA to 0xF = user specific	
0xB = access	0x0 = invalid index	0xB0 = No data block Index 47 (DB47); parameter requests are not supported
	0x1 = write length error 0x2 = invalid slot 0x3 = type conflict 0x4 = invalid area	
	0x5 = state conflict	0xB5 = Access to DB 47 temporarily not possible due to internal processing status
	0x6 = access denied	
	0x7 = invalid range	0xB7 = WRITE DB 47 with error in the DB 47 header
	0x8 = invalid parameter 0x9 = invalid type 0xA to 0xF = user specific	
0xC = resource	0x0 = read constraint conflict 0x1 = write constraint conflict 0x2 = resource busy 0x3 = resource unavailable 0x4..0x7 = reserved 0x8..0xF = user specific	
0xD...0xF = user specific		

8 Integrated Web Server

The DFE32B option card has a homepage for simple web diagnostics of MOVIDRIVE® and MOVITRAC®. Enter the configured IP address to access the homepage.

You can use the web page to access information about service and diagnostics.

8.1 Software requirements

The website has been tested with Microsoft® Internet Explorer 5.0 and Mozilla® Firefox 2.0. To display dynamic elements you will need the Java 2 Runtime Environment SE, v1.5.0 or above.

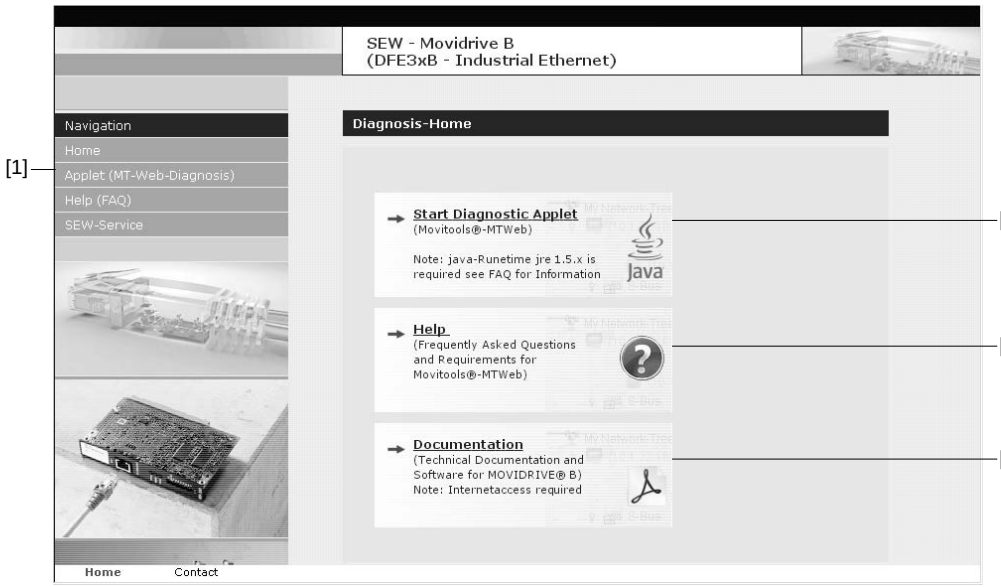
If the Java 2 Runtime Environment is not installed on your system, the program will connect to Java and start an automatic download, if you allow it. Should you encounter any problems, you can also download Java 2 Runtime SUN website and install it locally.

8.2 Security settings

If you are using a firewall or if you have a personal firewall installed on your system, they could prevent you from accessing the Ethernet units. In this situation, you should allow outgoing TCP/IP and UDP/IP traffic.

- An applet 'sewAppletsMoviEWeb.JAppletWeb' will prompt you to accept a certificate. Click <Execute>. the certificate will be imported to the certificate list of the Java 2 Runtime Environment
- Click the check box 'Always trust content from this publisher' in order to avoid this dialog for future executions.

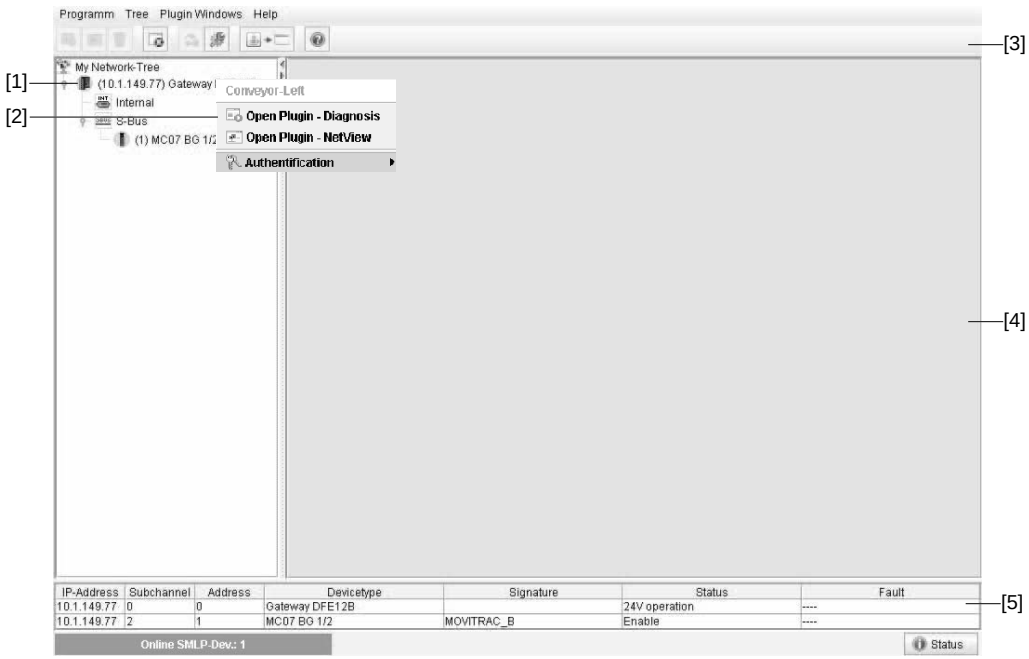
8.3 Homepage layout MOVIDRIVE® MDX61B with DFE32B option



62223AXX

[1] Navigation bar	
[2] Main window (Home)	Button for starting the diagnostics applet
[3] Main window (Home)	Button for displaying website help
[4] Main window (Home)	Link to the MOVIDRIVE® B documentation page (Internet access required)

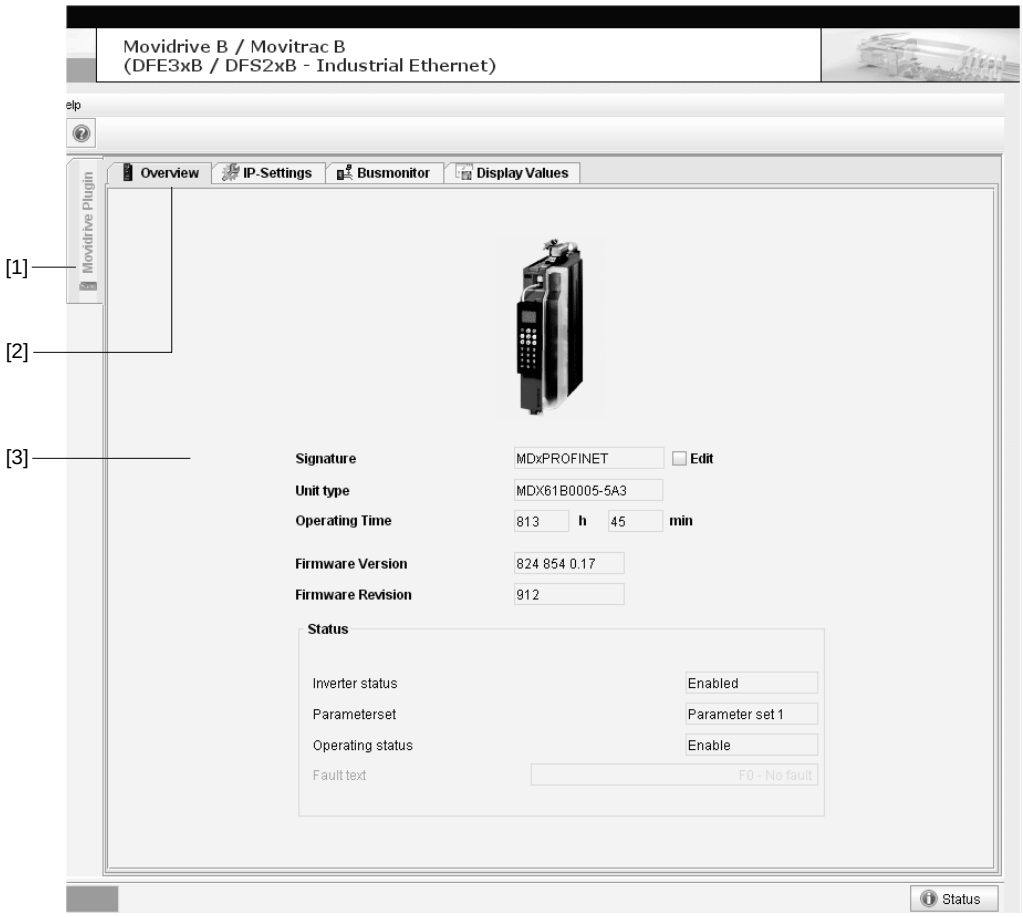
8.4 Structure of the diagnostics applet



62225AXX

[1] Tree view / Overview	The tree displays the MOVIDRIVE® B Ethernet unit in the network node 'My Network Tree'. Individual subsystems of the corresponding unit versions are displayed below that; they may contain additional units.
[2] Popup menu when you right-click on a unit in the tree	You can navigate to the plugins of an individual unit by right-clicking a unit in the tree. A popup window appears, which leads you to that unit's plugins. Further, you can adjust the access settings for a MOVIDRIVE® B (see chapter "Access protection" Right-click on the network node and select "Scan" to detect new units and display them in the tree.
[3] Toolbar (Quick selection using buttons)	 [a] Rescan unit tree and display it in the tree [b] Open plugin for selected unit in unit tree [c] Overview plugin for selected unit in unit tree, see section "Plugin window (Overview)" [d] Close the selected plugin [e] Settings for Ethernet communication and scanner [f] Change to window mode or applet mode [g] Display information dialog box
[4] Plugin window	ee section "Plugin window"
[5] Status table and unit status	The table is visible by default. It lists all units and subunits found during a scan. Since the status table sends cyclical parameter requests to the unit, you can also close the table using the status button (bottom right).

Plugin window

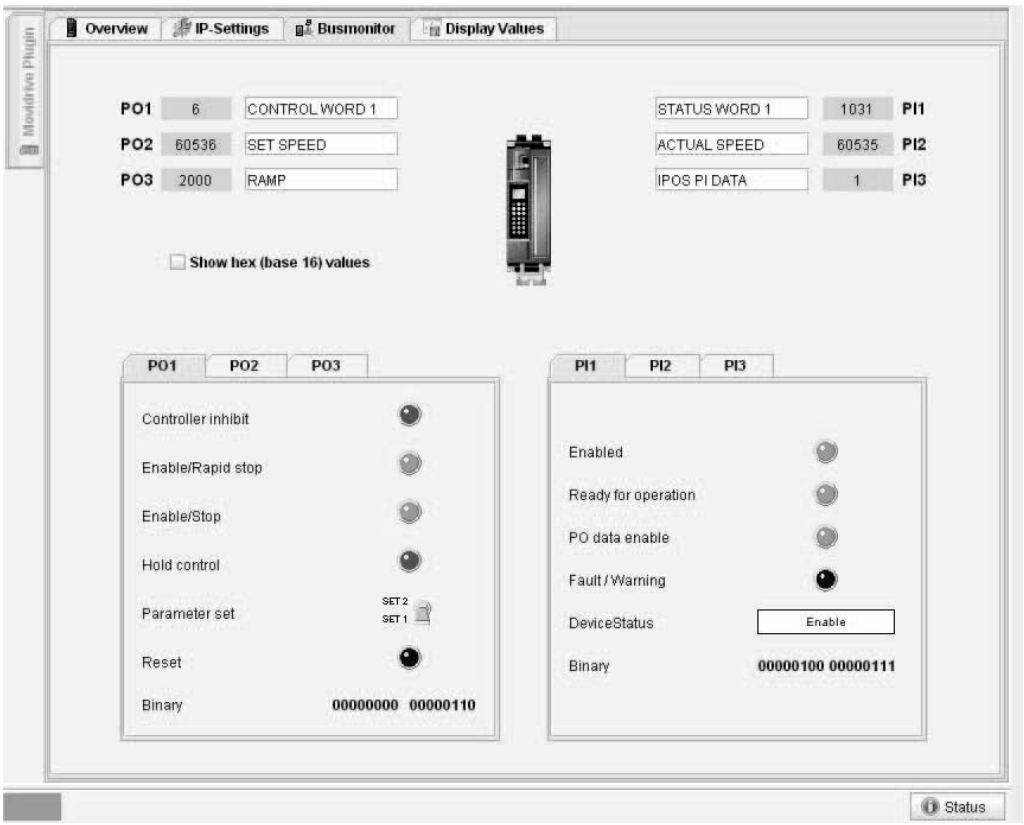


62226AXX

[1] Tab for open plugins	If you have opened multiple plugins (e.g. plugins of various units), they are listed in the tab.
[2] Tab within the plugin (shows parameter displays being implemented)	If the selected unit has several display columns, the tab will display those columns.
[3] Main window with display values and figures	The main window gives a visualization of the parameters.

Example: Busmonitor plugin for MOVIDRIVE®

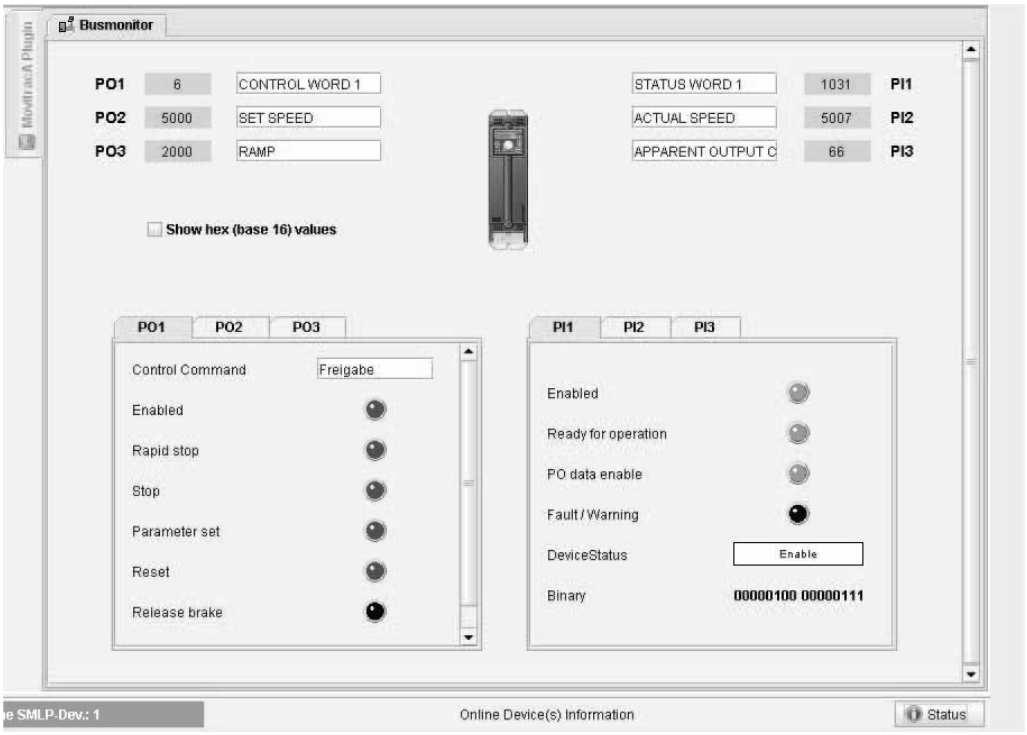
This plugin is used to display the process data between the control and the MOVIDRIVE® B and also for diagnosing the process data assignment.



62229AXX

Example: Busmonitor plugin for MOVITRAC®

This plugin is used to display the process data between the control and the MOVITRAC® B and also for diagnosing the process data assignment.

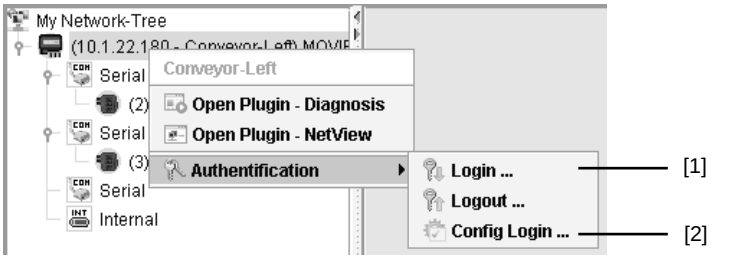


62230AXX

8.5 Access protection

Access to the drive parameters and diagnostics information can be protected by a password. The access protection is deactivated as standard. You can activate the access protection function by assigning a password [2]. To deactivate the function again, delete the password (blank password).

If access protection is activated, a login dialog [1] will appear to request the saved password.



61662AXX

[1] Login

[2] Config Login

Under "User" in the login dialog, you can select "Observer" or "Maintenance".

- Observer
  - The drive unit parameters can be read with MOVITOOLS® MotionStudio but not changed.
  - The current parameter settings can be uploaded from the unit to the PC (parameter set upload).
  - It is not possible to download a parameter set or an IPOS$^{plus®}$ program.
  - Diagnostics via MOVITOOLS® MotionStudio is possible, the scope settings, however, cannot be changed.

- Maintenance
  - MOVITOOLS® MotionStudio can be operated without any limitations.

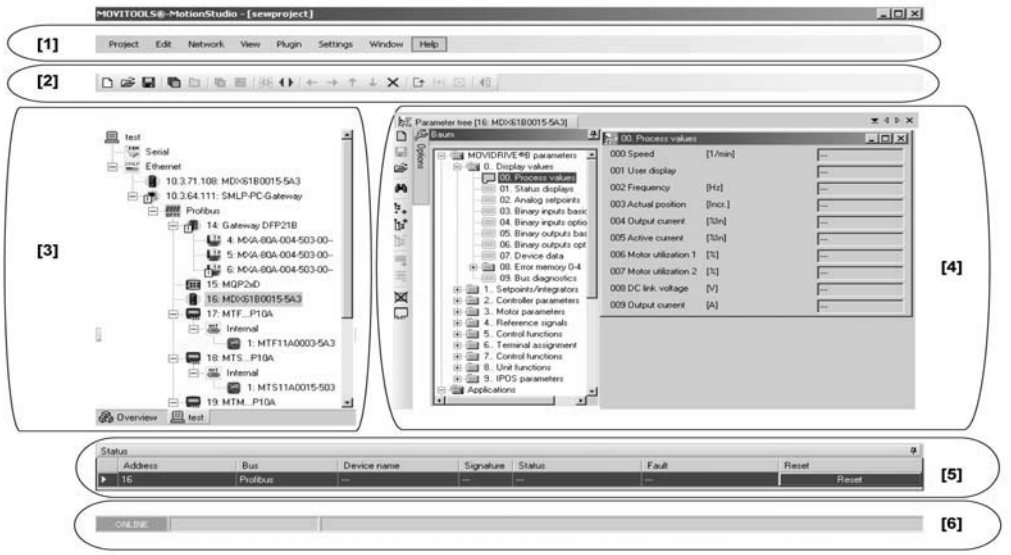
9 MOVITOOLS® MotionStudio via Ethernet

The MOVITOOLS® software (version 5.40 or above) enables straightforward parameter setting, visualization and diagnostics for your drive application. With MOVITOOLS® MotionStudio, you can communicate with the MOVIDRIVE® MDX61B drive inverter, the DFE32B gateway and the SEW units connected to the gateway via Ethernet via the DFE32B option card.

STOP	**STOP**
	Before starting MOVITOOLS® MotionStudio, you must add exceptions to your firewall for the installed software components. • In your firewall, enter all the executable programs that belong to the software components you have installed. • Check your firewall settings. It is possible that the firewall prevents the execution of a program in the background. In other words, the user does not receive a message. • Check whether an Ethernet communication can be established between the PC and the DFE32B. To do so, you can use the "ping" command of the Windows command prompt (Example: ping 10.3.71.15).

9.1 Overview

The MOVITOOLS® MotionStudio user interface comprises a central framework and the individual tools. These are started as separate applications from the framework, or they are integrated into the framework as plugins. The following figure shows the areas within the framework.



11721AEN

Areas and their functions

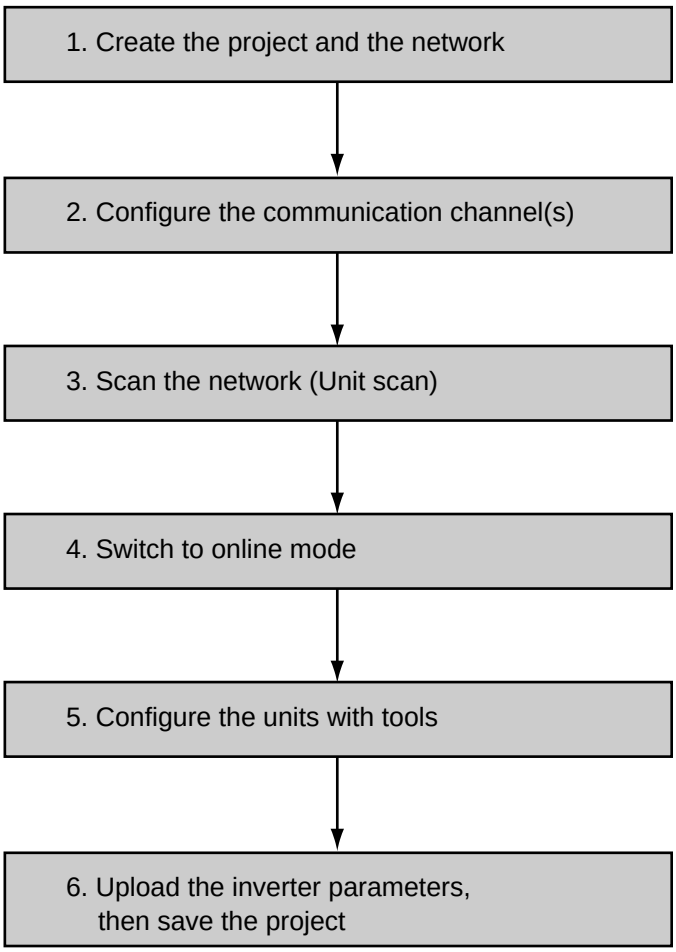
The following table describes the areas within the framework and their function.

[1] Menu bar	The main menu and toolbar contain all the important commands for navigating the framework.
[2] Toolbar	
[3] Area for project views	Information about the units in a project. The information is visualized using the following types of project views: • Network View • Project Planning View
[4] Area for plugins	The tools are displayed in the form of plugins in this area. The plugins are displayed either using tabs or as a separate window. The display depends on the selected tool. In this example, the "Parameter tree" tool has been selected for a MOVIDRIVE®.
[5] Unit status area	You can display the status information of units that are accessible online in the "Status bar". You can also hide the "unit status" area.
[6] Status bar	You can view the current communication status of the MOVITOOLS® MotionStudio in the status bar. This is where progress information is displayed during a unit scan.

9.2 Procedure for configuring units

Overview

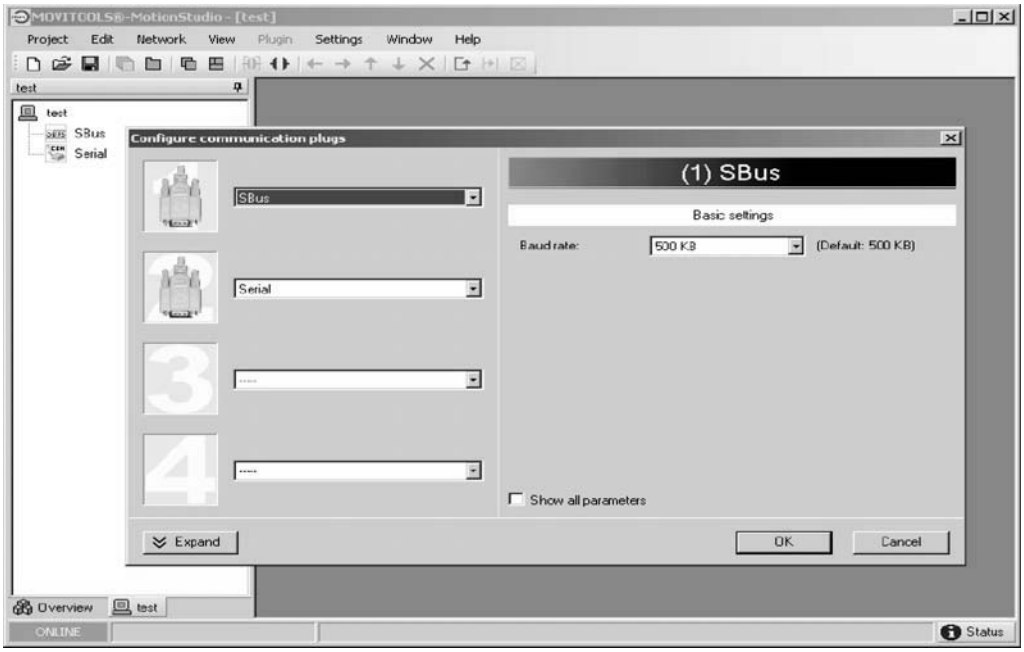
The following figure shows the main steps to configure units with MOVITOOLS® MotionStudio.



62348AEN

Step 1: Create the project and the network

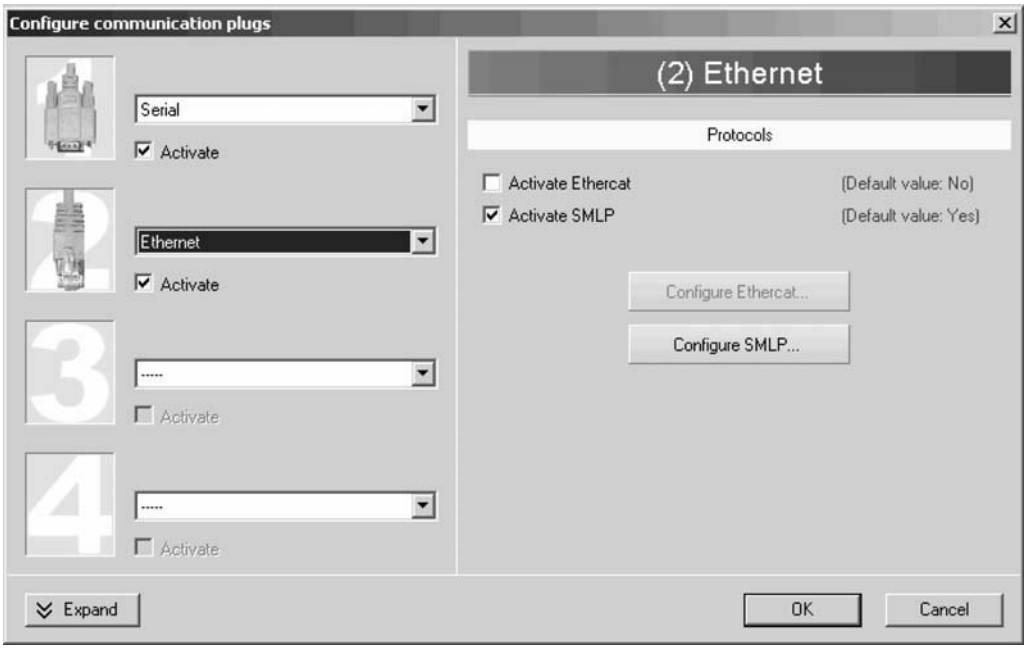
- Make sure that 'New project' is selected and confirm. The "New project" window opens.
- Enter a name and directory for the new project and confirm your entries. The "New network" window opens.
- Enter a name for the new network and confirm your entries. The main screen opens and the 'Configure communication plugs' window opens.



11723AEN

Step 2: Configure the communication channel

- Set the first or an additional communication channel to "Ethernet".



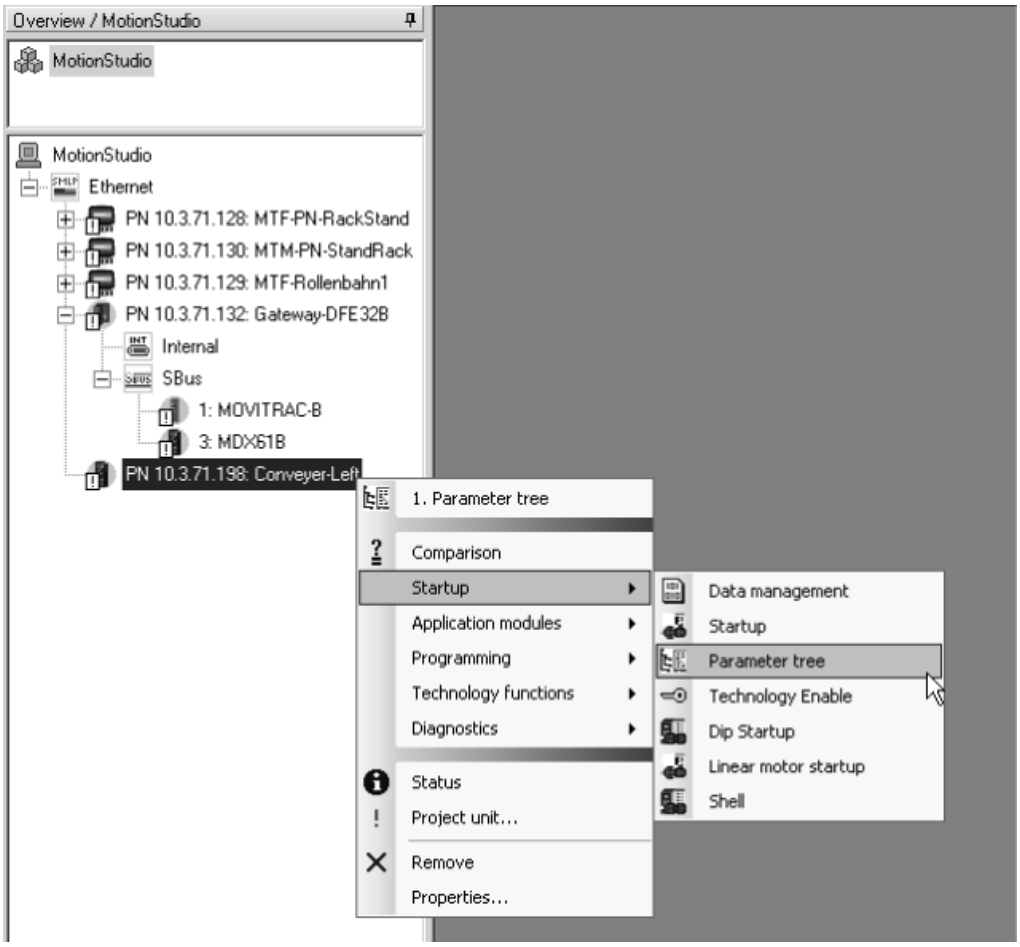
11724AEN

Step 3: Scan the network (unit scan)

- Scan the network with (unit scan).

Step 4: Configure units with tools

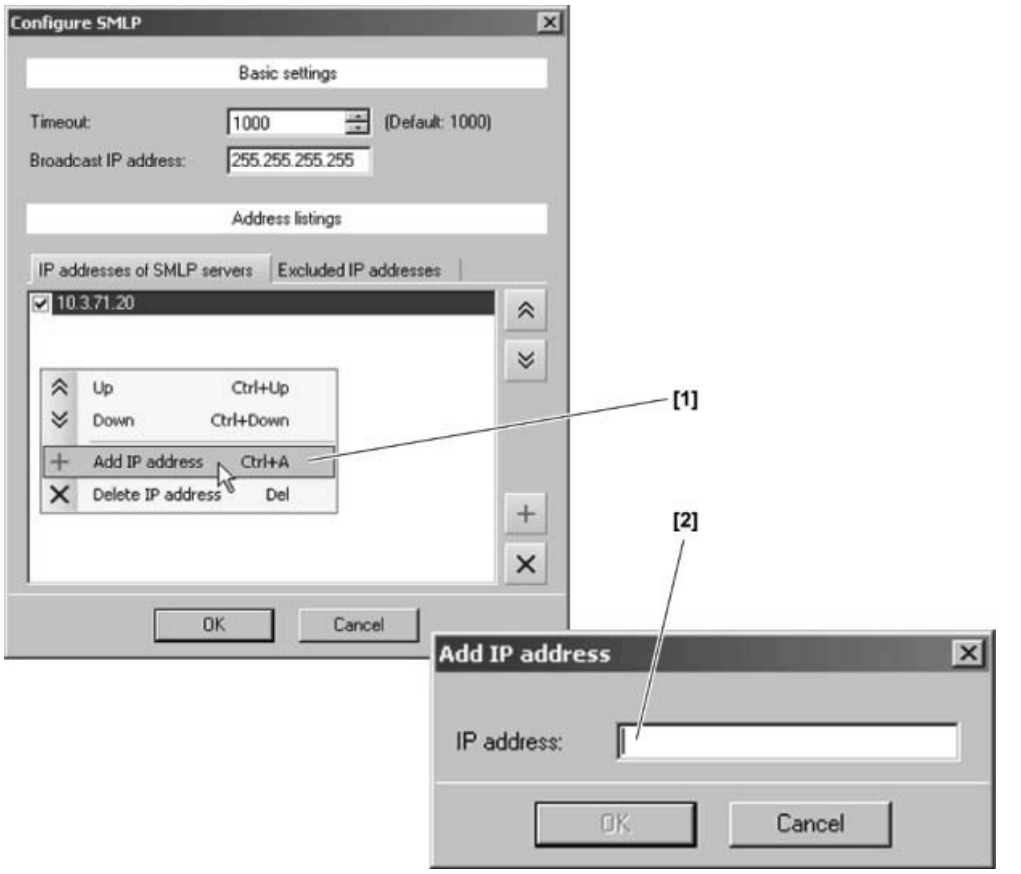
- Activate the online mode with .
- Select the unit you want to configure.
- Right-click to open the context menu and display the tools for configuring the unit.



11737AEN

9.3 Communication with external units

If you want to establish an Ethernet communication with units **outside** the local network segment, click "Configure SMLP".



11726AEN

- Open the context menu [1] by clicking on the button or via the key combination [Ctrl-A] to add an IP address.
- Enter the respective IP address of the DFE32 units in the "IP address" field.

Parameters for SMLP

The following table describes the parameters for SMLP (Simple MOVILINK® Protocol).

Parameters	Description	Note
Timeout	Waiting time in [ms] that the client waits for a reply from the server after it has made a request.	Default setting: 1000 ms Increase the value as required if a delay in communication is causing malfunctions.
Broadcast IP address	IP addresses of the local network segment within which the unit scan is carried out	In the default setting, the unit scan only retrieves units that are in the local network segment.
IP address SMLP server	IP address of the SMLP server or of other units that are to be included in the unit scan but are outside the local network segment	Enter the following IP address: • the IP address of the SIMATIC S7 control if you run a direct communication from Ethernet to PROFIBUS via SIMATIC S7. • the IP address of units that are to be included in the unit scan but are outside the local network segment.

10 Error Diagnostics

10.1 Diagnostic procedures

The diagnostic procedures described in the following section demonstrate the error analysis methods for the most frequent problems:

- Inverter does not work on PROFINET IO
- Inverter cannot be controlled using the IO controller

For more information dealing specifically with the inverter parameter settings for various fieldbus applications, refer to the *Fieldbus Unit Profile manual and the MOVIDRIVE® parameter list*.

Diagnostic problem 1: Inverter does not work on PROFINET IO.
Initial status:
- Inverter is connected to PROFINET IO
- Inverter configured in IO controller and bus communication is active

↓

Is the bus connector plugged in? — No → **[A]**

Yes ↓

Response of the Link LED? — OFF → [C]

Green ↓

Inverter has no connection to Ethernet

↓

Check the configured and set PROFINET name.

↓

PROFINET names identical? — No → **[D]**

Yes ↓

You may have configured an incorrect unit type or defined the configuration incorrectly.

↓

Delete configuration for the inverter from the PROFINET IO network.

↓

Perform project planning for the inverter again, choosing the unit designation "MOVIDRIVE+DFE32B".
Assign the address range for your control system.

↓

Now load the configuration in the PROFINET IO controller and start the bus communication again.

Yes ↓

Response of the BUS FAULT LED? — Yellow → / Red → **[B] [C]**

Off ↓

[A] Check the bus cabling.

[B] The DFE32B option was not yet configured or configured incorrectly. Check the configuration, particularly the device name and the IP address.

↓

[C] The DFE32B option indicates that the PROFINET IO controller has not yet established communication.

↓

The PROFINET IO controller is switched off or has not yet been started up.

[D] Adapt PROFINET names!

Diagnostic problem 2:
Inverter cannot be controlled via the IO controller
Initial status:
- Bus communication with inverter OK (LED BUS FAULT off)
- Inverter running with 24 V (no supply voltage)

↓

The problem is either caused by incorrect parameter settings in the inverter or a faulty control program in the PROFINET IO controller.

↓

Use P094 ... P097 (setpoint description PO1 ... PO3) to check whether the setpoints sent by the controller are received correctly.
To do so, send a setpoint other than 0 as a test in each output word.

↓

Setpoints received? Yes → **[A]**

No

↓

Check that the correct settings have been made for the following drive parameters:
- P100 SETPOINT SOURCE FIELDBUS
- P101 CONTROL SIGNAL SOURCE FIELDBUS
- P876 ENABLE PO DATA YES

↓

Settings OK? No → **[B]**

Yes

↓

The problem may be caused by your control program in the IO controller.

↓

Check that the address used in the program is the same as the address for project planning.
Note that the inverter requires consistent data and access must take place within the control program, if necessary, via special system functions (for example, SIMATIC S7, SFC 14 / 15).

[A]	Setpoints are transferred. Check whether the drive inverter has been enabled at the terminals.

[B]	Correct settings.

10.2 Error list in gateway operation

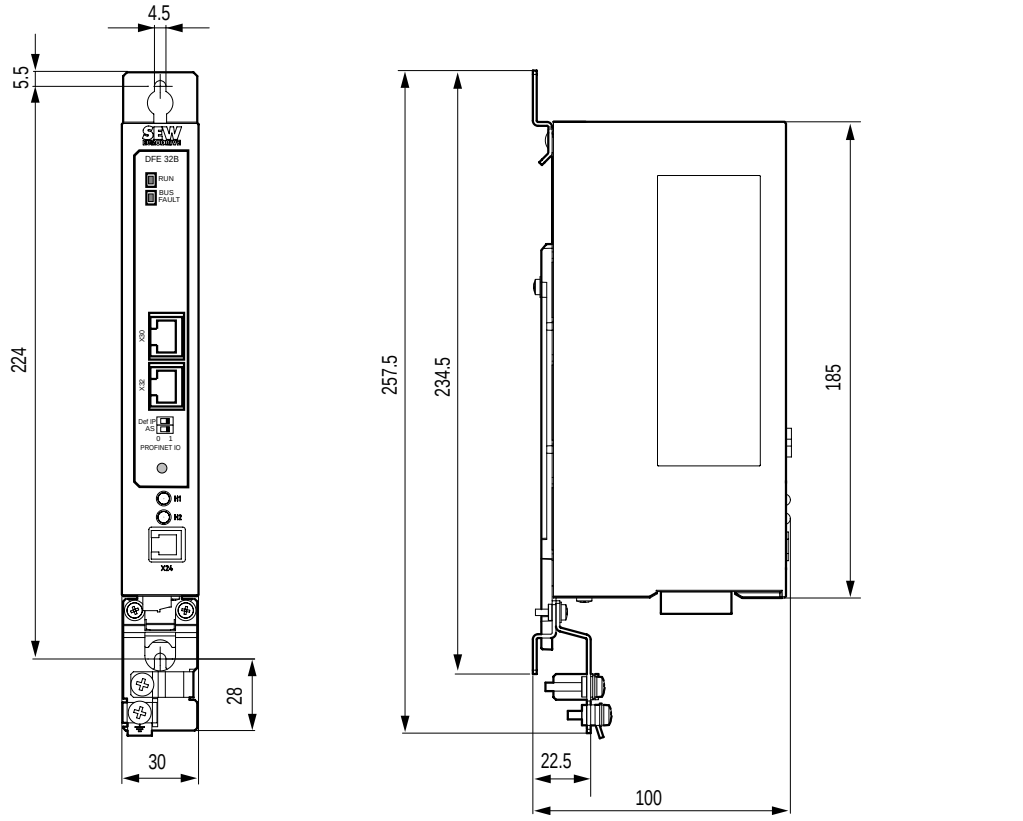
Error code	Designation	Response	Cause	Measure
25	EEPROM	SBus communication stopped	Error while accessing EEPROM	Activate factory settings, perform reset and set parameters for DFE again. Contact SEW service if the error occurs again
28	Fieldbus timeout	Default: PO data = 0 Error response adjustable via P831	No communication between master and slave within the projected response monitoring.	• Check communications routine of the master • Extend the fieldbus timeout interval (response monitoring) in the master configuration or deactivate monitoring
37	Watchdog error	SBus communication stopped	Error during execution of system software	Contact SEW Service.
38	Internal error	SBus communication stopped	Inverter electronics is faulted, possibly due to EMC influence	Check ground connections and shielding and correct, if necessary. Contact SEW service if this error occurs again.
45	Error Initialization	SBus communication stopped	Error after self-test during reset	Perform a reset. Consult SEW service if the error occurs again.
111	System error device timeout	None	Check the red system error LED (**H1**) of the DFE. If this LED is on, one or several participants on the SBus could not be addressed within the timeout interval. If the red system error LED (**H1**) flashes, the DFE itself is in an error state. In this case, error F111 was reported to the control only via fieldbus.	Check voltage supply and SBus cabling, check SBus terminating resistors. Check the project planning if the DFE was configured with the PC. Switch DFE off and on again. If the error is still present, query the error via diagnostic interface and perform the action described in this table.

11 Technical Data

11.1 DFE32B for MOVIDRIVE® B, MOVITRAC® B and UOH11B gateway housing

DFE32B option	
Part number	1821 345 6
Power consumption	P = 3 W
Voltage supply (only in gateway operation)	U = DC 24 V (–15 %, +20 %) I_{max} = DC 200 mA P_{max} = 3.4 W
Application protocols	• **PROFINET IO** (Ethernet frames with frame identification 8892_{hex}) to -control and set parameters for the drive inverter. • **HTTP** (Hypertext Transfer Protocol) for diagnostics using a Web browser. • **SMLP** (Simple Movilink Protocol), protocol used by MOVITOOLS®.
Port numbers used	• 300 (SMLP) • 80 (HTTP)
EtherNet services	• ARP • ICMP (Ping)
ISO / OSI layer 2	EtherNet II
Baud rate	100 Mbaud in full duplex process
Connection technology	RJ45
Addressing	4 byte IP address or MAC-ID (00:0F:69:xx:xx:xx)
Manufacturer ID (Vendor ID)	$010A_{hex}$
Tools for startup	• MOVITOOLS® MotionStudio version 5.40 and higher. • DBG60B keypad
Firmware status of MOVIDRIVE® MDX61B	Firmware status 824 854 0.17 or above (→ Display with P076)

11.2 Dimension DFE32B via UOH11B gateway housing



12 Index

A

Access protection 87
Addressing 98
Assembly and Installation Notes 11
DFE32B option card in MOVIDRIVE® MDX61B 11
DFE32B option card in MOVITRAC® B 14
Installing and removing an option card 13
Assembly and Installation Notes
DFE32B / UOH11B gateway 17
Auto setup for gateway operation 44

B

Baud rate 16, 98
Bus cables
Shielding and routing 20
BUS FAULT LED 25

C

Configuration via PROFIdrive Data Set 47 64
Addressing connected inverters 69
Controller processing sequence 68
Error codes of the PROFINET services 81
Features of the SEW-EURODRIVE PROFINET units 65
Introducing PROFINET data sets 64
MOVILINK® parameter requests 70
Parameter setting procedure via record 47 ..67
PROFIdrive parameter requests 75
Read or write parameters via data set 47 80
Sample program for SIMATIC S7 80
Structure of the PROFINET parameter channel 66
Technical data PROFINET for MOVIDRIVE® DFE32B 80
Connection
DFE32B option 18
System bus (SBus 1) between a MOVITRAC® B unit and DFE32B 14
System bus (SBus 1) between several MOVITRAC® B units 15
Connection MOVIDRIVE®/MOVITRAC®
Ethernet 19
Connection technology 98
Control
MOVIDRIVE® MDX61B 57
MOVITRAC® B 59
Control example 58

D

DFE32B
Connection 18
Operating display 25
Terminal description 18
Diagnostic procedures 94
Diagnostics 10

E

Error Diagnostics 94
Diagnostic procedures 94
Error list in gateway operation 97
Exclusion of liability 6

F

Fieldbus monitor 10

G

Gateway operation, error list 97
General Information
Exclusion of liability 6
General notes 6
right to claim under warranty 6
Structure of the safety notes 6

H

Homepage layout 82

I

IP address 21

L

Link / Activity LED 26

M

Monitoring functions 10
MOVIDRIVE® MDX61B
Control 57
Setting the drive inverter 46
MOVITOOLS® MotionStudio via PROFINET 88
MOVITRAC® B
Control 59
Setting the frequency inverter 47

N

Network classes 21

O

Operating display DFE32B 25
BUS FAULT LED 25
Link / Activity LED 26
RUN LED 25
Option card
Installation and removal 13
Other applicable documentation 7

P

Part number 98
Pin assignment of an RJ45 plug connector 19
Plugin window 84
Sample plugin busmonitor for MOVITRAC® 86
Sample plugin busmonitor for MOVIDRIVE® 85
Procedure after device replacement 24
Device replacement MOVIDRIVE® B 24

Device replacement MOVITRAC® B / gateway 24
Process data configuration 56
Permitted configurations 56
PROFINET
Timeout 58
PROFINET Operating Behavior 53
Communication model 54
Process data configuration 56
Three communication classes 53
Three unit classes 53
Unit model 54
PROFINET-LEDs 25
Project planning for the PROFINET interface for MOVIDRIVE® B 31
Project planning for the PROFINET interface for MOVITRAC® B 38
Project planning for the PROFINET IO controller
Assigning the PROFINET device name 29
Project planning for the PROFINET interface for MOVIDRIVE® B 31
Project planning for the PROFINET interface for MOVITRAC® B 38
Project planning of the PROFINET IO controller
Initializing the GSD file 28
Project Planning with PROFINET
Project planning for the PROFINET IO controller 28
Protocol variants 98

R

Read or write parameters via data set 47 80
Resetting the IP address parameters 23
right to claim under warranty 6
RUN LED 25

S

Safety Notes 7
Safety notes
General safety notes for bus systems 7
Hoist applications 7
Structure of the safety notes 6
Sample program
SIMATIC S7 ....61, 80
SBus
Timeout 60
Setting
MOVIDRIVE® MDX61B drive inverter 46
MOVITRAC® B frequency inverter 47
Setting the IP address parameters via DCP 23
Initial startup 23
Setting the IP address parameters via DCP
Resetting the IP address parameters 23
SIMATIC S7 58
Sample program 61, 80
Standard gateway 22
Startup procedure for MDX61B with DFE32B option 48
Preliminary work 48
Starting up MOVIDRIVE® B with DC 24 V or AC 400 V 48
Startup procedure for the DFE32B option as gateway 50
Preliminary work 50
Starting up units with DC 24 V or AC 400 V 51
Structure of the diagnostics applet 83
Subnet mask 21

T

TCP / IP addressing and subnetworks
Subnet mask 21
TCP / IP addressing and subnetworks 21
IP address 21
Standard gateway 22
Technical Data DFE32B 98
Terminal description
DFE32B option 18
Timeout
PROFINET 58
SBus 60

W

Web Server 82
Homepage layout 82
Plugin window 84
Structure of the diagnostics applet 83
Web server
Access protection 87
Software requirements 82
Web Server
Security settings 82