SEW EURODRIVE

Manual

MOVIFIT® FC – Function Level "Technology" with Interface for PROFINET IO, PROFIBUS or Ethernet/IP Application Solution "Bus Positioning"

Edition 08/2012

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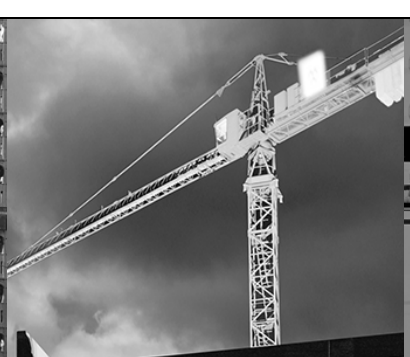


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Contents

1 General Information

1.1 How to use this documentation

The documentation is part of the product and contains important information. The documentation is for everyone who works with this product.

The documentation must be accessible and legible. Make sure that persons responsible for the system and its operation, as well as persons who work independently with the software and the connected units from SEW-EURODRIVE, have read through the documentation carefully and understood it. If you are unclear about any of the information in this documentation, or if you require further information, contact SEW-EURODRIVE.

1.2 Structure of the safety notes

1.2.1 Meaning of signal words

The following table shows the grading and meaning of the signal words for safety notes, warnings regarding potential risks of damage to property, and other notes.

Signal word	Meaning	Consequences if disregarded
DANGER ⚠	Imminent danger	Severe or fatal injuries
⚠ **WARNING**	Possible dangerous situation	Severe or fatal injuries
CAUTION ⚠	Possible dangerous situation	Minor injuries
IMPORTANT!	Possible damage to property	Damage to the drive system or its environment
NOTE	Useful information or tip: Simplifies handling of the drive system.	

1.2.2 Structure of the section-related safety notes

Section-related safety notes do not apply to a specific action, but to several actions pertaining to one subject. The used symbols indicate either a general or a specific hazard.

This is the formal structure of a section-related safety note:

⚠ SIGNAL WORD

Nature and source of danger.

Possible consequence(s) if disregarded.

- Measure(s) to avoid the danger.

1.2.3 Structure of the embedded safety notes

Embedded safety notes are directly integrated in the instructions just before the description of the dangerous action.

This is the formal structure of an embedded safety note:

- **⚠ SIGNAL WORDNature and source of danger.**

  Possible consequence(s) if disregarded.

  – Measure(s) to avoid the danger.

1.3 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 at hand. Therefore, read the documentation before you start working with the software and the connected units from SEW-EURODRIVE.

Make sure that the documentation is available to persons responsible for the machinery and its operation as well as to persons who work independently on the devices. Also ensure that the documentation is legible.

1.4 Exclusion of liability

You must adhere to this documentation and the documentation of the connected devices from SEW-EURODRIVE to ensure safe operation and to achieve the specified product characteristics and performance features.

SEW-EURODRIVE assumes no liability for injury to persons or damage to equipment or property resulting from non-observance of the documentation. In such cases, any liability for defects is excluded.

1.5 Copyright

1.6 Product names and brands

The product names mentioned in this documentation are brands or registered brands of the titleholders.

1.7 Other applicable documentation

Depending on the respective fieldbus, observe one of the following applicable fieldbus manuals:

- For PROFIBUS: MOVIFIT® function level "Technology"
- For PROFINET IO: MOVIFIT® "Technology" function level with PROFINET IO interface
- For Ethernet/IP: MOVIFIT® Function Level "Technology" with EtherNet/IP or Modbus TCP Interface

Additionally observe the following document if you use the "Dual-motor operation" special design:

- Addendum to the operating instructions "MOVIFIT® FC Special Design for Dual-Motor Operation"

Make sure you always use the latest documentation and software version.

Our documentation is available in various languages for download from the SEW homepage (www.sew-eurodrive.com). If you are unclear about any of the information in this documentation or if you require further information, consult SEW-EURODRIVE.

If required, you can order printed copies of the documentation from SEW-EURODRIVE.

2 Safety Notes

2.1 General information

The following basic safety notes must be read carefully to prevent injury to persons and damage to property. The operator must ensure that the basic safety notes are read and adhered to.

Ensure that persons responsible for the machinery and its operation as well as persons who work independently have read through the documentation carefully and understood it. If you are unclear about any of the information in this documentation or if you require further information, please contact SEW-EURODRIVE.

The following safety notes refer to the use of the software. Also adhere to the supplementary safety notes in this document and in the documentation of the connected devices from SEW-EURODRIVE.

This document does not replace the detailed documentation of the connected devices. This documentation assumes that the user has access to and is familiar with the documentation for all connected units from SEW-EURODRIVE.

Never install or start up damaged products. Submit a complaint to the shipping company immediately in the event of damage.

During operation, the devices may have live, uninsulated, and sometimes moving or rotating parts as well as hot surfaces depending on their degree of protection.

Removing covers without authorization, improper use as well as incorrect installation or operation may result in severe injuries to persons or damage to property. Refer to the documentation for additional information.

2.2 Target group

Any work with the software may only be performed by adequately qualified personnel. Qualified personnel in this context are persons who have the following qualifications:

- Appropriate instruction.
- Knowledge of this documentation and other applicable documentation.
- SEW-EURODRIVE recommends additional product training for products that are operated using this software.

Any mechanical work on connected units may only be performed by adequately qualified personnel. Qualified staff in the context of this documentation are persons familiar with the design, mechanical installation, troubleshooting and servicing of the product who possess the following qualifications:

- Training in mechanical engineering, e.g. as a mechanic or mechatronics technician (final examinations must have been passed).
- Knowledge of this documentation and other applicable documentation.

Any electrical work on connected units may only be performed by adequately qualified electricians. Qualified electricians in the context of this documentation are persons familiar with electrical installation, startup, troubleshooting and servicing of the product who possess the following qualifications:

- Training in electrical engineering, e.g. as an electrician or mechatronics technician (final examinations must have been passed).
- Knowledge of this documentation and other applicable documentation.
- Knowledge of the relevant safety regulations and laws.
- Knowledge of the other standards, guidelines, and laws mentioned in this documentation.

The above mentioned persons must have the authorization expressly issued by the company to operate, program, configure, label and ground units, systems and circuits in accordance with the standards of safety technology.

All work in further areas of transportation, storage, operation and waste disposal must only be carried out by persons who are trained appropriately.

2.3 Designated use

SEW-EURODRIVE offers various standardized control programs, so-called application modules.

The "bus positioning" application module is a single-axis application and used for variable positions in conjunction with different speeds and ramps.

2.4 Bus systems

A bus system makes it possible to adapt frequency inverters and/or motor starters to the particulars of the machinery within wide limits. This results in the risk that a change of parameters that cannot be detected externally can result in unexpected, though not uncontrolled, system behavior.

3 System Description

3.1 Area of application

The "bus positioning" application module is used for variable positions in conjunction with different speeds and ramps.

The positioning is carried out via the built-in motor encoder or an optional distance encoder. Only the linear, absolute positioning is supported. You can work with user units.

The following operating modes are supported:

- Jog
- Referencing
- Positioning

3.2 Profiles

The "Bus positioning" application module has the following profiles:

Profile	Scope of functions
8 PD (single-motor operation)	2 process data words for the state of the controller 6 process data words for the motor
14 PD (dual-motor operation)	2 process data words for the state of the controller 6 process data words for motor 1 6 process data words for motor 2

INFORMATION

Profile "Dual-motor operation"

- With the "Dual-motor operation" profile, you may only operate one motor at a time.

The process data assignment for the profiles is listed in chapter "Process data and terminal assignment".

4 Operating Modes

4.1 Jog

Functional description

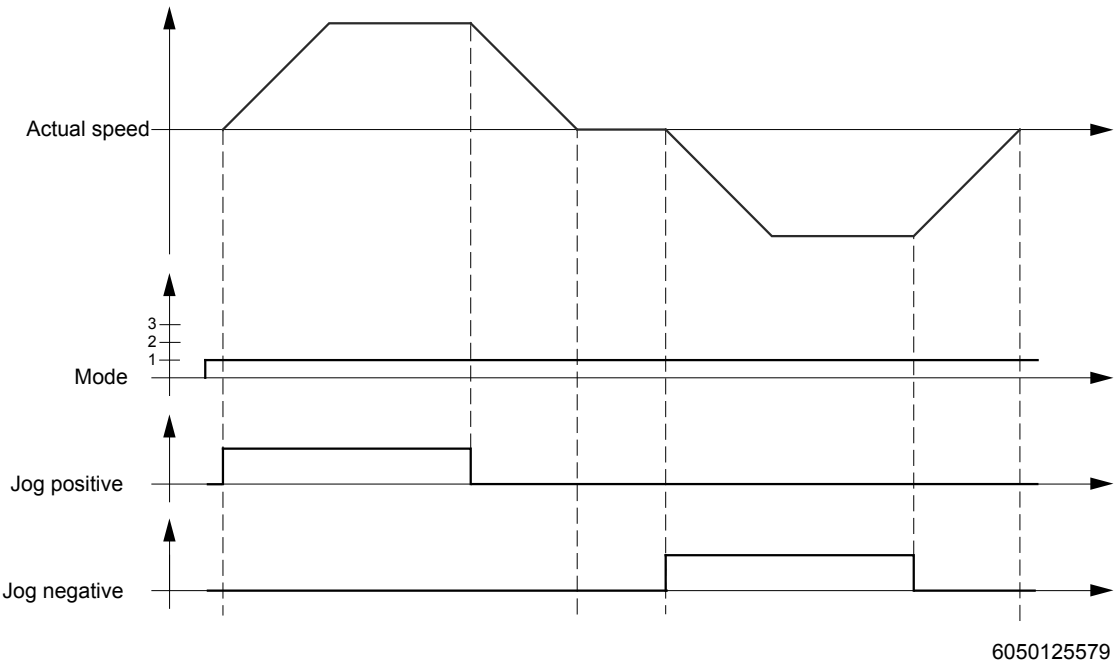
The jog mode is required for service. In this operating mode, the drive can be moved regardless of the automatic operating mode.

In jog mode, you can set the control bits "Jog+" or "Jog-" to move the drive clockwise or counterclockwise. It is not necessary to set the start bit.

The dynamics parameters (speed and the ramps) are specified dynamically via the corresponding process data words.

4.1.1 Jog mode flow diagram

The following figure shows the actual speed of the drive against the status of the input and output signals in jog mode:



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4.2 Referencing

Functional description

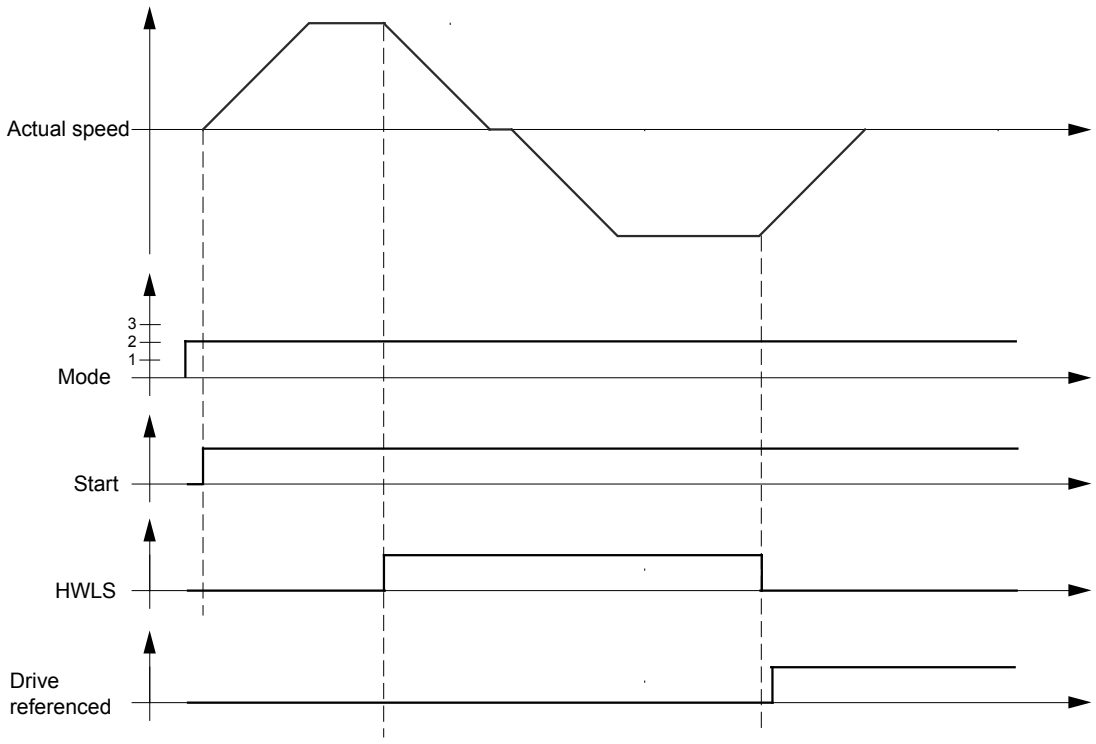
The referencing determines the reference point (machine zero) for positioning operations. The dynamics parameters for reference travel types 3 and 4 are determined during startup already.

The referencing can be triggered by HWLS (see assignment of the input terminals in chapter "Process data and terminal assignment").

Operating mode "mode 2" is selected for reference travel. Once the start bit has been set, the drive moves to the HWLS specified during startup. Then the drive moves clear independently.

4.2.1 Referencing mode flow diagram

The following figure shows the actual speed of the drive against the status of the input and output signals in referencing mode:



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4.3 Positioning

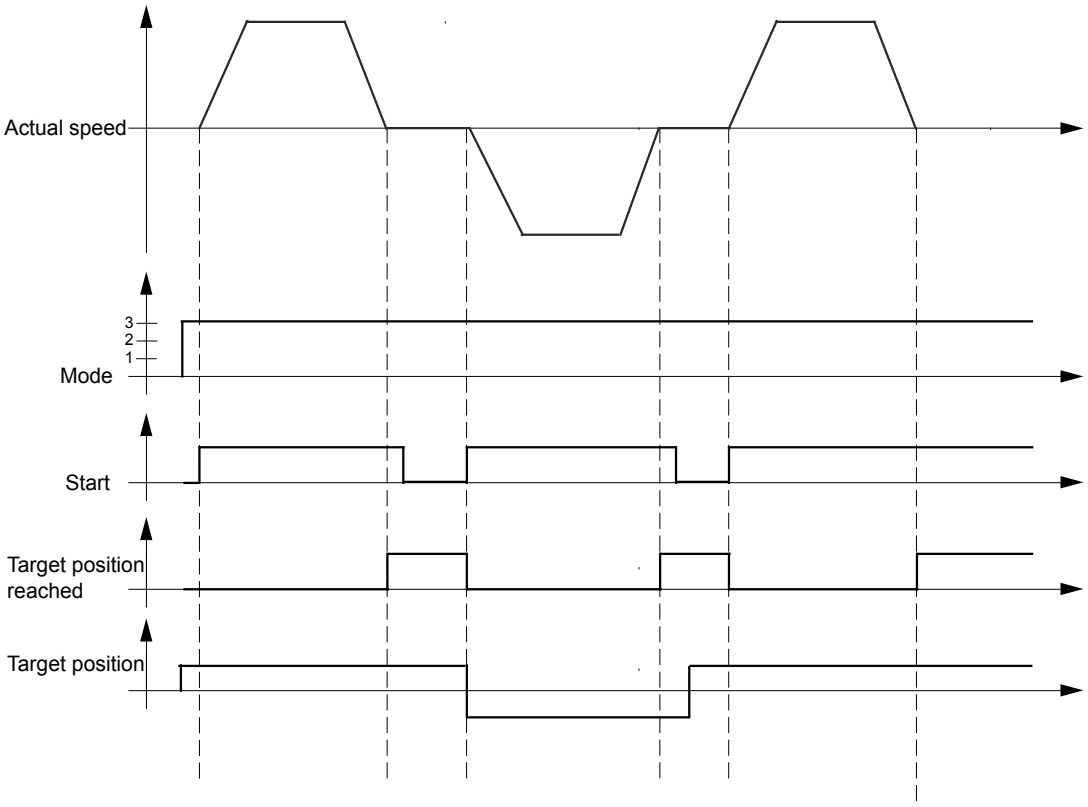
Functional description

Prior to positioning, you have to perform a reference travel. All positioning travels refer to the machine zero specified during referencing.

The dynamics parameters as well as the target position are specified dynamically via the corresponding process data words. The drive moves once the start bit has been set. The bit "Target position reached" is set if the actual position does not deviate from the target position by more than the position window.

4.3.1 Positioning mode flow diagram

The following figure shows the actual speed of the drive against the status of the input and output signals in positioning mode:



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5 Project Planning Information

PC and software

In order to use the application module, you require a PC with a Windows-based operating system and MOVITOOLS® MotionStudio **version 5.70** or higher.

Controller

The application module is used with the following controller:

- MOVIFIT® "Technology" function level with the following interfaces:
  - PROFIBUS interface
  - PROFINET IO
  - Ethernet/IP

Inverter

With this controller, the application module is used only with the decentralized MOVIFIT® FC inverter.

Encoder

The application module is used with the EI7C built-in encoder:

Dual-motor operation

For "dual-motor operation" observe the following note:

INFORMATION

Dual-motor operation

- Note that for this operating mode you require the special design "MOVIFIT® FC for dual-motor operation".
  For more information refer to the addendum to the operating instructions "MOVIFIT® FC special design for dual-motor operation".
- In "dual-motor operation", you can only operate one motor at a time.

Requirement

Correct configuration and proper installation of the units are required for successfully starting up and operating the application modules with the Application Configurator.

You find detailed configuration information in the documentation of the respective units (see chapter "Other applicable documentation").

6 Startup

6.1 Requirements

Check the installation of the inverters and the encoder connection based on the installation notes in the corresponding documentation.

6.2 Setting the "Bus positioning for MOVIFIT®" application module

6.2.1 General settings

The "General settings" comprise the following functions:

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Area	Function	
Group "Fieldbus"	Fieldbus address	• Displays the fieldbus address
	Timeout response	• Here, you can set the timeout response: – No response – Controller inhibit – **Rapid stop** (default setting) – Stop
"Drive configuration" section	Operating mode	• This is where you set the operating mode: – **Single-motor operation** (default setting) – Dual-motor operation Observe the following note
	Repositioning	• ⚠ **DANGER** Repositioning in "VFC&hoist" operating mode. Falling of the hoist. – Disable the repositioning in "VFC&hoist" operating mode. • This is where you set the repositioning: – **enabled** (default setting) The positive edge at the "in position" output signal causes the brake to apply. A reset of the "in position" output signal (e.g. because the set target has been exceeded) triggers a repositioning. – disabled The positive edge at the "in position" output signal causes the brake to apply. However, this setting will not trigger a repositioning even if the target position is exceeded. Only a new starting edge triggers a new positioning.

INFORMATION

Dual-motor operation

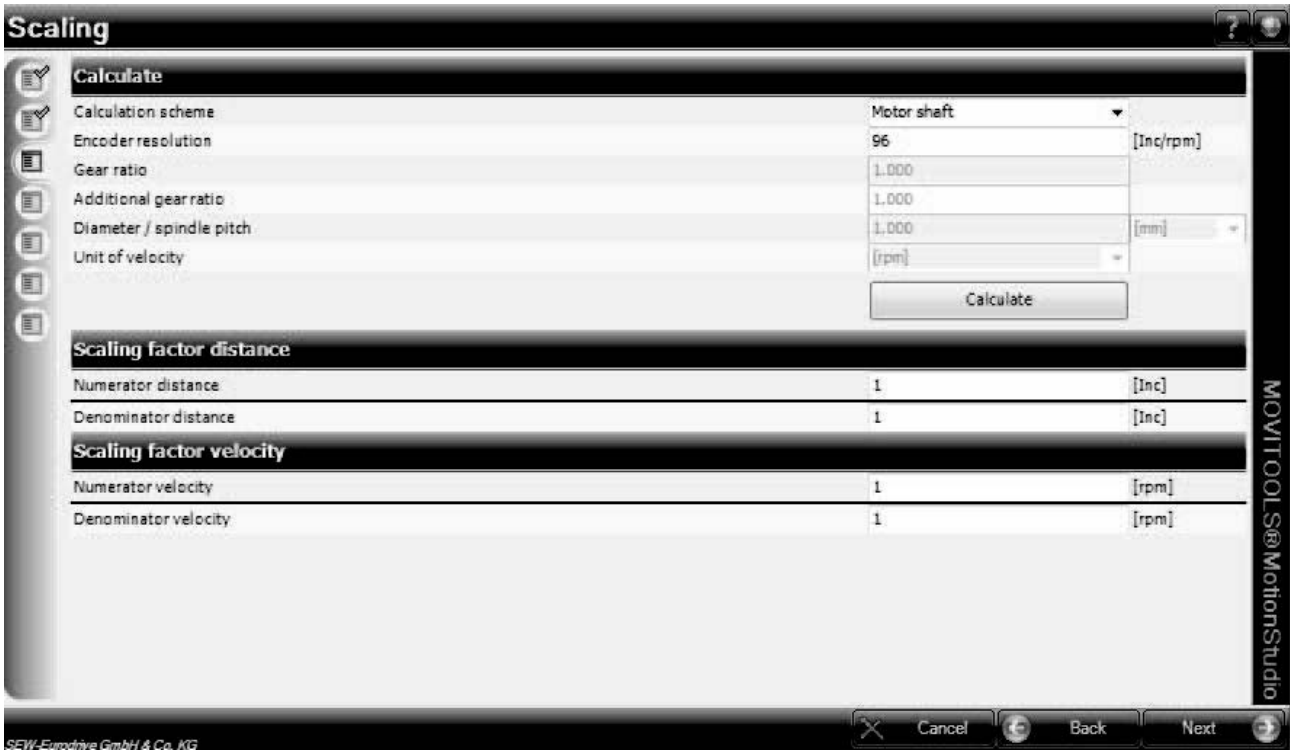
- The following windows show the startup of the single-motor operation.
  If you select the dual-motor operation mode, the scaling, monitoring and reference travel windows additionally comprise the edit boxes for the second drive (2. parameter set).
  – Enter the parameters of the second motor in the same way.

6.2.2 Scaling

If you want to operate the application module with user-defined units, you must enter the corresponding scaling parameters here.

This includes the mechanical parameters of the drive train (gear unit ratio and shaft circumference) and the user-defined units that are used to calculated the scaling.

The "scaling" window offers the following functions:



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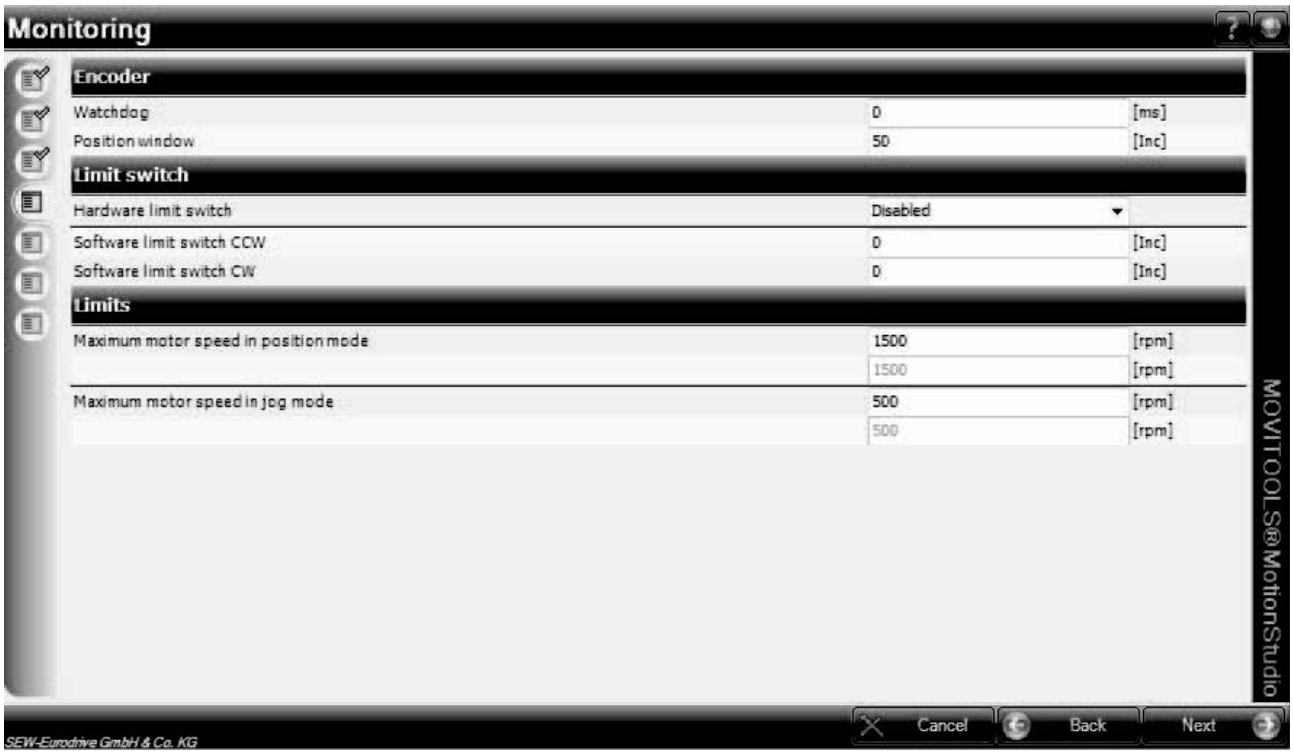
Area	Function	
Calculate	Calculation scheme	• This is where you select the calculation system. – **Motor shaft** (default setting) – Drive wheel – Spindle
	Encoder resolution	• This is where you set the encoder resolution. Permitted values: 4 to **96** [increments/revolution]
	Gear ratio	• This is where you specify the gear unit ratio.
	Additional gear ratio	• This is where you specify the ratio of the additional gear.
	Diameter / spindle pitch	• This is where you set either the diameter or the spindle pitch depending on the selected calculation system.
	Unit of velocity	• This is where you set the measurement unit for the velocity: – [rpm] – [mm/s] – [m/min]
	[Calculate] button	• Click this button to calculate the total scaling factor (numerator/denominator) for the distance and the velocity after you have completed your entries.
Scaling factor for distance	Numerator distance Denominator distance	• This is where you enter the values for the scaling factors (numerator/denominator) directly if you do not use the [Calculate] button Permitted values: 1 to 65535
Scaling factor for velocity	Numerator velocity Ddenominator velocity	

6.2.3 Monitoring

The "Monitoring" window offers the following functions:



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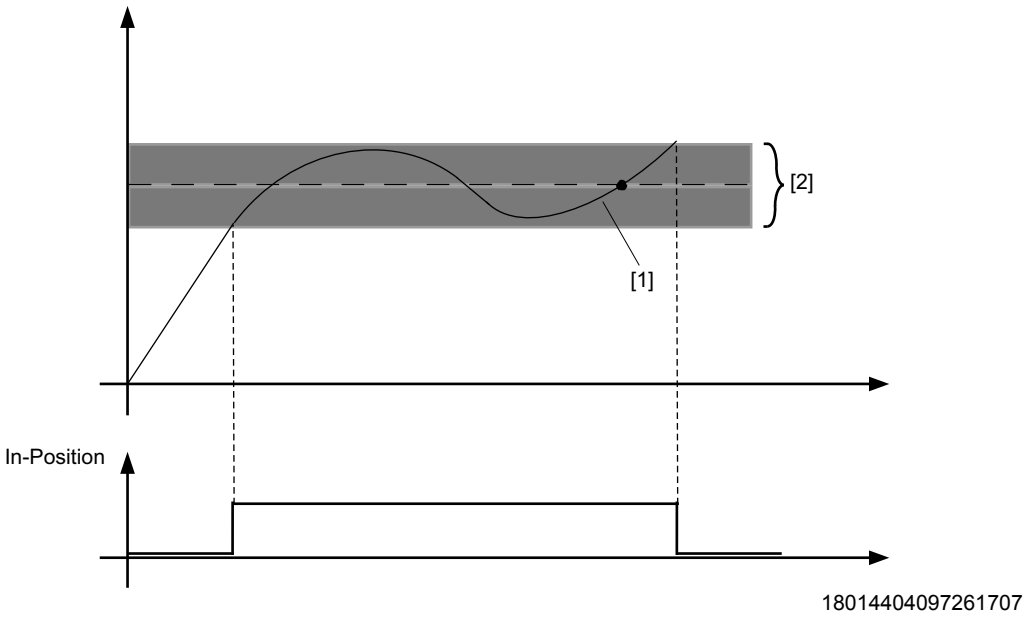
Area	Function	
Encoder	Watchdog	• This is where you specify the monitoring time of the encoder monitoring. Note: The time in [ms] is the interval that checks the encoder signal regarding changes and direction. With monitoring time = "0", the encoder monitoring is disabled.
	Position window	• This is where you enter the value for the position window in order to generate the "In position" signal. Recommended setting: 1/2 motor revolution
Limit switches	Hardware limit switches	• This is where you set the limit switches
	Software limit switches cw/ccw	
Limits	Max. motor speed in positioning mode/jog mode	• This is where you enter the maximum motor speed for the positioning mode/jog mode that is determined via the fieldbus.

Refer to the following pages for more information on the position window and the limit switches.

Position window

The following figure illustrates the meaning of the position window:



[1] Target position
[2] Position window

If the actual position is in the position window [2] when the monitoring function is active, this "in position" signal is activated. The signal is only revoked when the drive leaves the position window.

Limit switches

Hardware limit switches

- "**Activate**":

  Activates monitoring of the positive and negative limits using hardware limit switches.

  For the assignment of the input terminals with the hardware limit switches, refer to chapter "Process data and terminal assignment (page 27)"

- "**Deactivate**":

  Deactivates the monitoring function.

When using the hardware limit switches, they have to be designed as NC contacts for wire-break protection reasons (low = limit switch contacted). In the travel range, the hardware limit switches are located **after** the software limit switches if such are used.

Response when a hardware limit switch is reached:

The axis is decelerated with the currently set ramp value. The inverter issues the error "Hardware limit switch reached" (F29). After an error reset, the drive moves clear of the hardware limit switch with the clear velocity (reference velocity 2) and the error is deleted. For clearing the switches, the drive is accelerated and decelerated with the values for *"enable/rapid stop"*.

Software limit switches

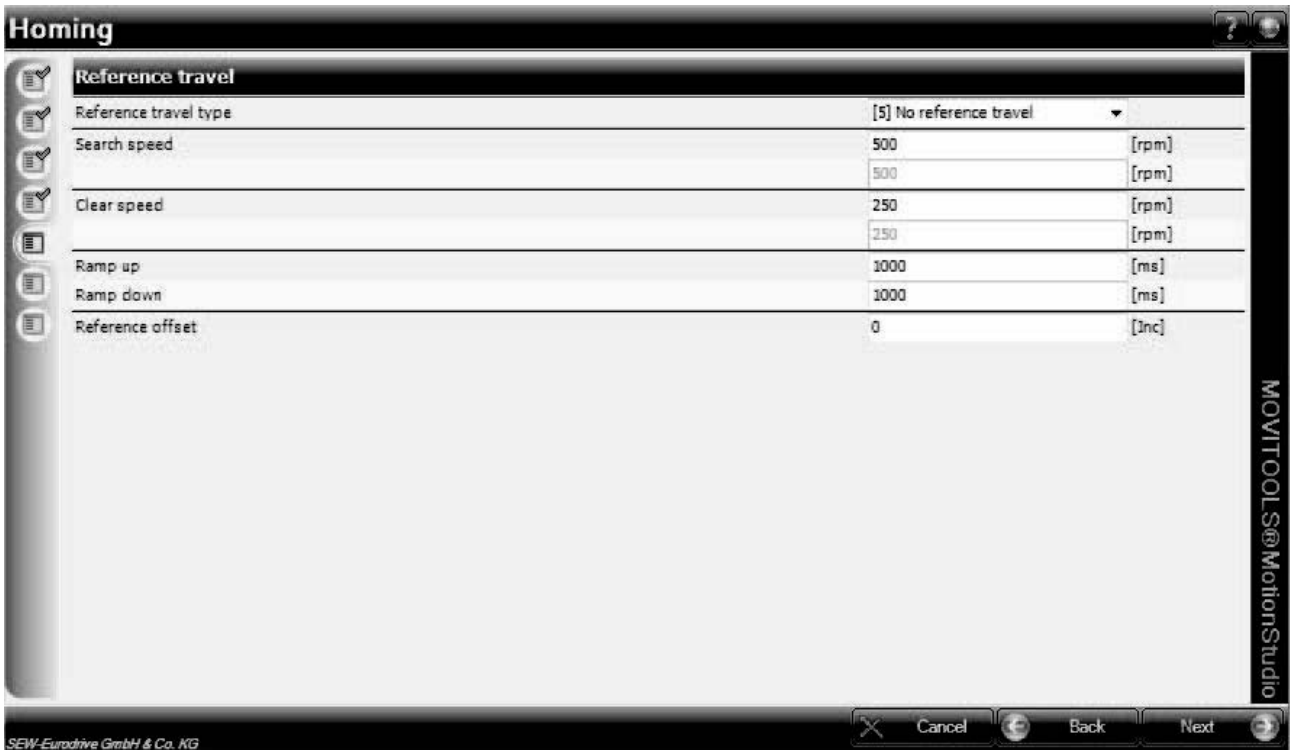
A value (≠0) in the respective field activates monitoring of the positive and negative limits using software limit switches. The permitted travel range is defined by the positive and negative limits. In the travel range, the software limit switches are located **before** the hardware limit switches if such are used.

Response when a software limit switch is reached:

When the drive moves past a software limit switch in "jog" or "positioning" mode, the axis decelerates with the currently set ramp value. The application error message "CW software limit switch reached" (F32) or "CCW software limit switch reached" (F33) is issued. To clear the software limit switch and delete the error, you have to reset the error and initiate axis movement in the direction of the permitted travel range. The velocity, acceleration, and deceleration values of the selected operating mode apply.

6.2.4 Reference travel

The "Reference travel" window offers the following functions:



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Area	Function	
Reference travel	Reference travel type	• This is where you specify the reference travel type: – Type 3: Limit switch right – Type 4: Limit switch left – Type 5: No reference travel For details on the reference travel types, refer to the following page.
	Search speed Clear speed	• This is where you specify the search/clear speed If a reference cam is used for reference travel, the drive moves towards the reference cam with the search speed and away from the reference cam with the clear speed.
	Ramp up Ramp down	• This is where you specify the acceleration/deceleration ramp
	Reference offset	• This is where you specify the reference offset: Based on the reference point that was determined during reference travel, you can now move the machine zero using the reference offset function. The new machine zero is calculated according to the following formula: ***Machine zero = reference position - reference offset*** The reference offset is given in user-defined units.

Reference travel type

The reference travel type defines how the reference run is performed.

This setting also defines the search direction in the individual referencing phases.

The following reference travel types are available:

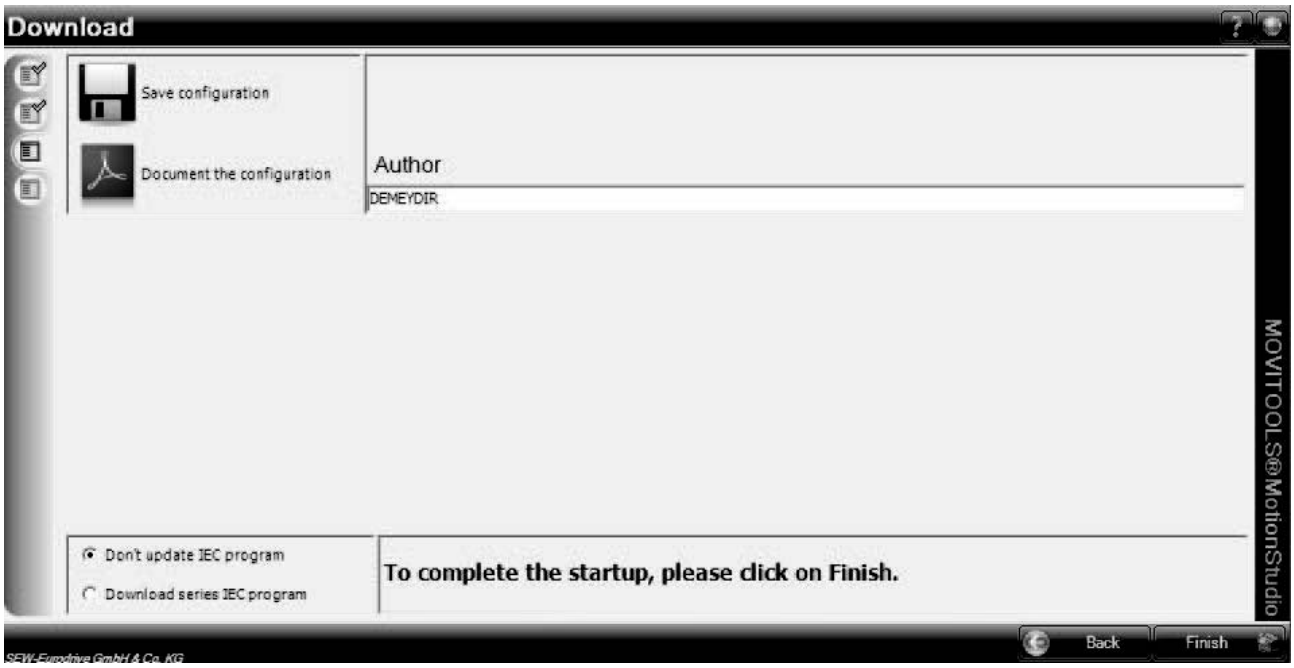
- **Type 3: Limit switch right**
  - First search direction is CW
  - Reference point = Falling edge to the left of the cw limit switch
  - Machine zero = reference position + reference offset
- **Type 4: Limit switch left**
  - First search direction is CCW
  - Reference point = Falling edge to the right of the ccw limit switch
  - Machine zero = reference position + reference offset
- **Type 5: No reference travel**

INFORMATION

- All reference travel types require an enabled drive ready for operation.

7 Download

In the "Download" window, startup is completed.



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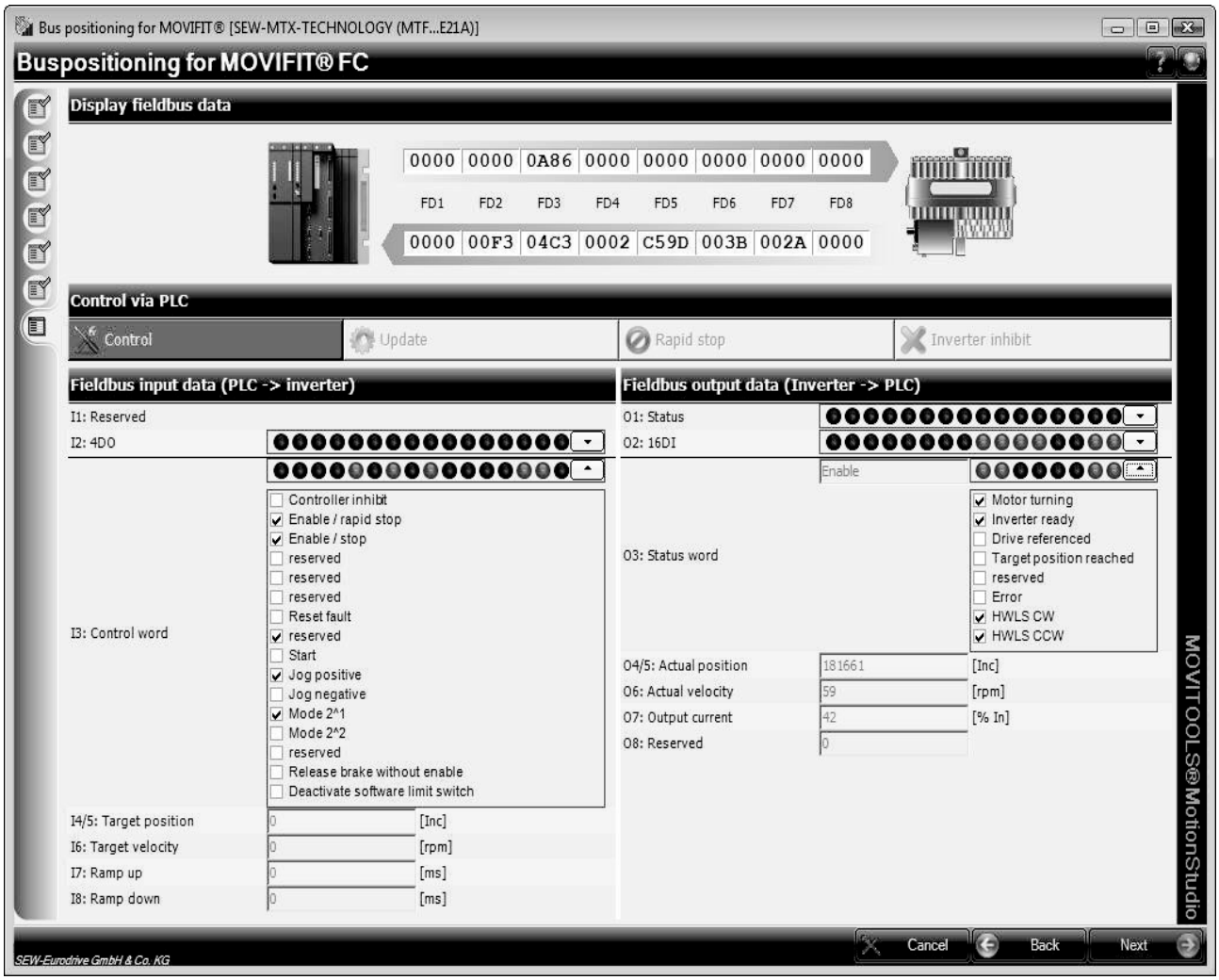
The following control elements are available:

Control element	Function
[Save configuration] button	The [Save configuration] button lets you save setting parameters to a configuration file to have them available for other startup procedures.
[Document configuration] button	The [Document configuration] button lets you create a PDF file, which you can print out. All setting parameters are stored.
"IEC program" radio button	Enabling "Download series IEC program" lets you transfer the IEC program again in the event of a repeated startup.
[Finish] button	The [Finish] button lets you transfer the IEC program and the setting parameters to the MOVIFIT® Technology unit. Once you have finished startup, the user interface changes to monitor mode.

8 Operation and Diagnostics

8.1 Monitor mode and control mode

8.1.1 Monitor mode



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Monitor mode lets you monitor the functions of the application solution.

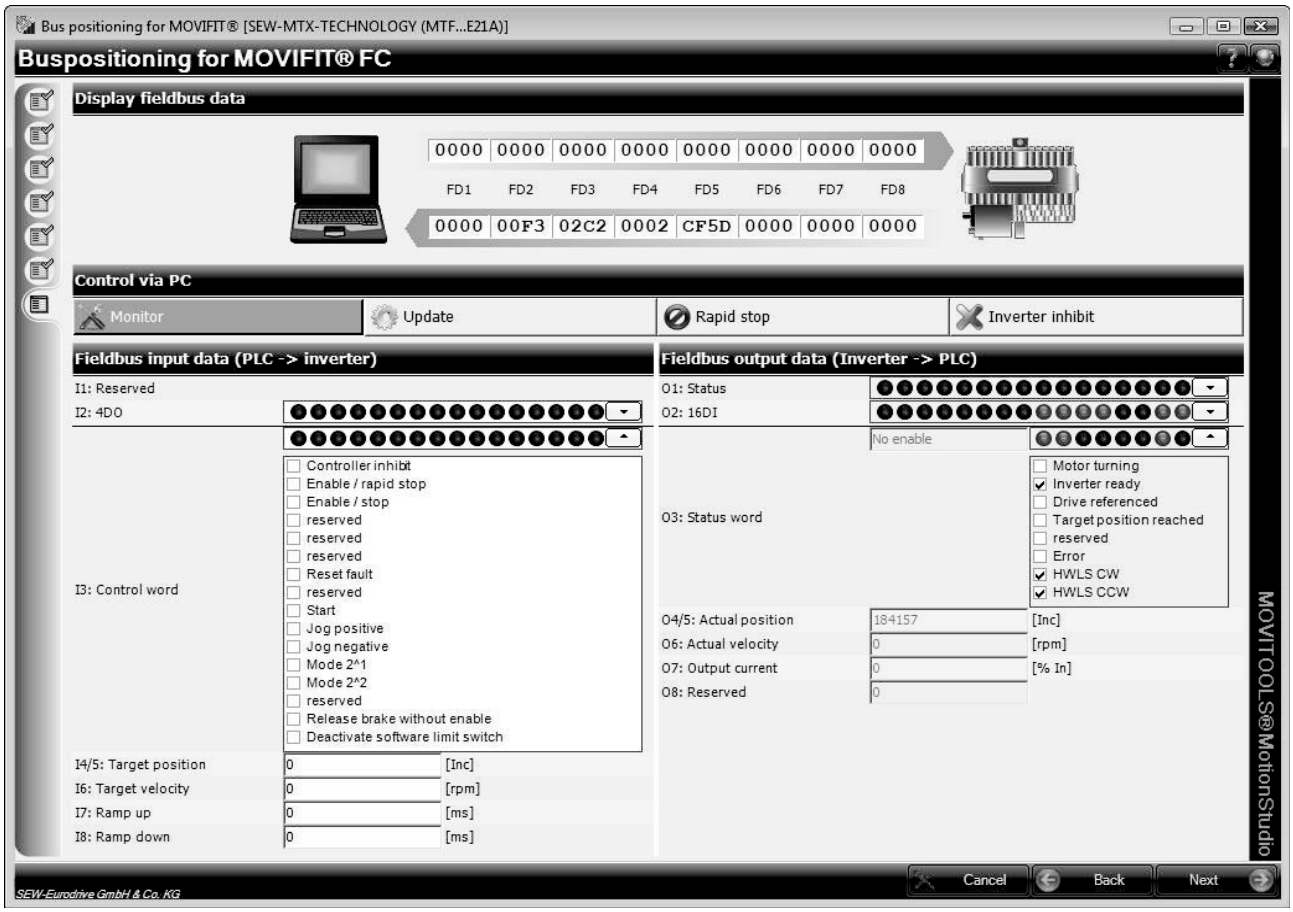
The fieldbus data is displayed in the upper part of the window in hexadecimal notation.

This data is displayed as plain text in the lower part of the window. For detailed information, refer to chapter "Process data and terminal assignment".

The following control elements are available:

Control element	Function
[Control] button	Click [Control] to switch to control mode.

8.1.2 Control mode



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In control mode, you can control the functions of the application solution.

You can change the state of the bits in the control word and the digital outputs. Click the respective buttons for this purpose.

The following control elements are available:

Control elements	Function
[Monitor] button	Pressing the [Monitor] button lets you change to monitor mode.
[Update] button	Pressing the [Update] button transfers the modified setpoints to the MOVIFIT® Technology unit.
[Rapid stop] button	You can use the [Rapid stop] button to stop the axis immediately via the rapid stop ramp
[Inverter inhibit] button	Pressing the [Inverter inhibit] button immediately sets output stage inhibit.

9 Process Data and Terminal Assignment

9.1 Input terminal assignment

The following table shows the input terminal assignment:

Input terminal	Function
DI00	Motor 1 hardware limit switch cw
DI01	Motor 1 hardware limit switch ccw
DI02	Motor 2 hardware limit switch cw (dual-motor operation)
DI03	Motor 2 hardware limit switch ccw (dual-motor operation)
DI04	Motor 1 HTL encoder track A
DI05	Motor 1 HTL encoder track B
DI06	Motor 2 HTL encoder track A (dual-motor operation)
DI07	Motor 2 HTL encoder track B (dual-motor operation)
DI08-DI15	Reserved

9.2 Process data assignment

9.2.1 Overview

The following table lists the process data assignment depending on the selected profile:

Profile	Process data assignment	
	Fieldbus input data	Fieldbus output data
8 PD single-motor operation	I1 = reserved I2 = 4DO	O1 = status O2 = 16DI
	I3 = Motor1: Control word I4 = Motor1: Setpoint position (high word) I5 = Motor1: Setpoint position (low word) I6 = Motor1: Setpoint velocity I7 = Motor1: Acceleration I8 = Motor1: Deceleration	O3 = Motor1: Status word O4 = Motor1 :actual position (high word) O5 = Motor1: Actual position (low word) O6 = Motor1: Actual velocity O7 = Motor1: Output current O8 = Motor1 :Reserved
14 PD (dual-motor operation)	I1 = reserved I2 = 4DO	O1 = status O2 = 16DI
	I3 = Motor2: Control word I4 = Motor2: Setpoint position (high word) I5 = Motor2:setpoint position (low word) I6 = Motor2: Setpoint velocity I7 = Motor2: Acceleration I8 = Motor2: Deceleration	O3 = Motor2: Status word O4 = Motor2: Actual position (high word) O5 = Motor2: Actual position (low word) O6 = Motor2: Actual velocity O7 = Motor2: Output current O8 = Motor2: Reserved

9.2.2 8 PD (single-motor operation)

Fieldbus input data (8 PD)

The following table describes the fieldbus input data from the PLC to the inverter for control via fieldbus with 8 process data words.

Word	Bit	Function	
I1	0-15	Reserved	
I2	0	Digital output DO00	
	1	Digital output DO01	
	2	Digital output DO02	
	3	Digital output DO03	
	4-15	Reserved	
I3	0	/Controller inhibit	0 = Enable 1 = Controller inhibit
	1	Enable/Rapid stop	0 = Rapid stop 1 = Enable
	2	Enable/stop	0 = Stop 1 = Enable
	3	Reserved	
	4	Reserved	
	5	Reserved	
	6	Error reset	
	7	Reserved	
	8	Start	
	9	Jog +	
	10	Jog -	
	11	Mode 2^0	00 = operating mode 0: Reserved 01 = operating mode 1: Jog mode 10 = operating mode 2: Referencing mode 11 = operating mode 3: Positioning mode
	12	Mode 2^1	
	13	Reserved	
	14	Release brake without drive enable	
	15	SWLS deactivated	0 = SWLS activated 1 = SWLS deactivated
I4	0-15	Target position (high word) [user-defined unit]	
I5	0-15	Target position (low word) [user-defined unit]	
I6	0-15	Setpoint speed [user-defined unit]	
I7	0-15	Acceleration ramp [ms] for 0 – 1500 rpm	
I8	0-15	Deceleration ramp [ms] for 0 – 1500 rpm	

Fieldbus output data (8 PD)

The following table describes the fieldbus output data from the inverter to the PLC for control via fieldbus with 6 process data words.

Word	Bit	Function
O1	0	Maintenance switch (mains OFF)
	1	Undervoltage 24 V-S (actuator voltage)
	2	Inverter voltage not applied (24 V-P)
	3-6	Reserved
	7	MOVIFIT® system error
	8	Overload actuator voltage DO00
	9	Overload actuator voltage DO01
	10	Overload actuator voltage DO02
	11	Overload actuator voltage DO03
	12	Overload voltage supply group 1
	13	Overload voltage supply group 2
	14	Overload voltage supply group 3
	15	Overload voltage supply group 4
O2	0-15	Digital input DI00-DI15
O3	0	Motor is running
	1	Frequency inverter ready for operation
	2	Drive referenced
	3	Target position reached
	4	Reserved
	5	Frequency inverter error
	6	CW hardware limit switch
	7	Hardware limit switch CCW
	8-15	Code for status/warning/error of the FI[1)]
O4	0-15	Actual position (high word) [user-defined unit]
O5	0-15	Actual position (low word) [user-defined unit]
O6	0-15	Actual speed [user-defined unit]
O7	0-15	Output current [%] of I_N of the inverter
O8	0-15	Reserved

1) For a detailed description, refer to the applicable documentation of the unit.

9.2.3 14 PD (dual-motor operation)

Fieldbus input data (14 PD)

The following tables describe the fieldbus input data from the PLC to the inverter for control via fieldbus with 14 process data words.

Word	Bit	Function
I1	0-15	Reserved
I2	0	Digital output DO00
	1	Digital output DO01
	2	Digital output DO02
	3	Digital output DO03
	4-15	Reserved

Motor 1

Word	Bit	Function	
I3	0	/Controller inhibit	0 = Enable 1 = Controller inhibit
	1	Enable/Rapid stop	0 = Rapid stop 1 = Enable
	2	Enable/stop	0 = Stop 1 = Enable
	3	Reserved	
	4	Reserved	
	5	Reserved	
	6	Error reset	
	7	Reserved	
	8	Start	
	9	Jog +	
	10	Jog -	
	11	Mode 2^0	00 = operating mode 0: Reserved 01 = operating mode 1: Jog mode 10 = operating mode 2: Referencing mode 11 = operating mode 3: Positioning mode
	12	Mode 2^1	
	13	Reserved	
	14	Release brake without drive enable	
	15	SWLS deactivated	0 = SWLS activated 1 = SWLS deactivated
I4	0-15	Target position (high word) [user-defined unit]	
I5	0-15	Target position (low word) [user-defined unit]	
I6	0-15	Setpoint speed [user-defined unit]	
I7	0-15	Acceleration ramp [ms] for 0 – 1500 rpm	
I8	0-15	Deceleration ramp [ms] for 0 – 1500 rpm	

Motor 2

Word	Bit	Function	
I9	0	/Controller inhibit	0 = Enable 1 = Controller inhibit
	1	Enable/Rapid stop	0 = Rapid stop 1 = Enable
	2	Enable/stop	0 = Stop 1 = Enable
	3	Reserved	
	4	Reserved	
	5	Reserved	
	6	Error reset	
	7	Reserved	
	8	Start	
	9	Jog +	
	10	Jog -	
	11	Mode 2^0	00 = operating mode 0: Reserved 01 = operating mode 1: Jog mode 10 = operating mode 2: Referencing mode 11 = operating mode 3: Positioning mode
	12	Mode 2^1	
	13	Reserved	
	14	Release brake without drive enable	
	15	SWLS deactivated	0 = SWLS activated 1 = SWLS deactivated
I10	0-15	Target position (high word) [user-defined unit]	
I11	0-15	Target position (low word) [user-defined unit]	
I12	0-15	Setpoint speed [user-defined unit]	
I13	0-15	Acceleration ramp [ms] for 0 – 1500 rpm	
I14	0-15	Deceleration ramp [ms] for 0 – 1500 rpm	

Fieldbus output data (14 PD)

The following tables describe the fieldbus output data from the inverter to the PLC for control via fieldbus with 14 process data words.

Word	Bit	Function
O1	0	Maintenance switch (mains OFF)
	1	Undervoltage 24 V-S (actuator voltage)
	2	Inverter voltage not applied (24 V-P)
	3-6	Reserved
	7	MOVIFIT® system error
	8	Overload actuator voltage DO00
	9	Overload actuator voltage DO01
	10	Overload actuator voltage DO02
	11	Overload actuator voltage DO03
	12	Overload voltage supply group 1
	13	Overload voltage supply group 2
	14	Overload voltage supply group 3
	15	Overload voltage supply group 4
O2	0-15	Digital input DI00-DI15

Motor 1

Word	Bit	Function
O3	0	Motor is running
	1	Frequency inverter ready for operation
	2	Drive referenced
	3	Target position reached
	4	Reserved
	5	Frequency inverter error
	6	CW hardware limit switch
	7	Hardware limit switch CCW
	8-15	Code for status/warning/error of the FI[1)]
O4	0-15	Actual position (high word) [user-defined unit]
O5	0-15	Actual position (low word) [user-defined unit]
O6	0-15	Actual speed [user-defined unit]
O7	0-15	Output current [%] of I_N of the inverter
O8	0-15	Reserved

1) For a detailed description, refer to the applicable documentation of the unit.

Motor 2

Word	Bit	Function
O9	0	Motor is running
	1	Frequency inverter ready for operation
	2	Drive referenced
	3	Target position reached
	4	Reserved
	5	Frequency inverter error
	6	CW hardware limit switch
	7	Hardware limit switch CCW
	8-15	Code for status/warning/error of the FI[1)]
O10	0-15	Actual position (high word) [user-defined unit]
O11	0-15	Actual position (low word) [user-defined unit]
O12	0-15	Actual speed [user-defined unit]
O13	0-15	Output current [%] of I_N of the inverter
O14	0-15	Reserved

1) For a detailed description, refer to the applicable documentation of the unit.

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