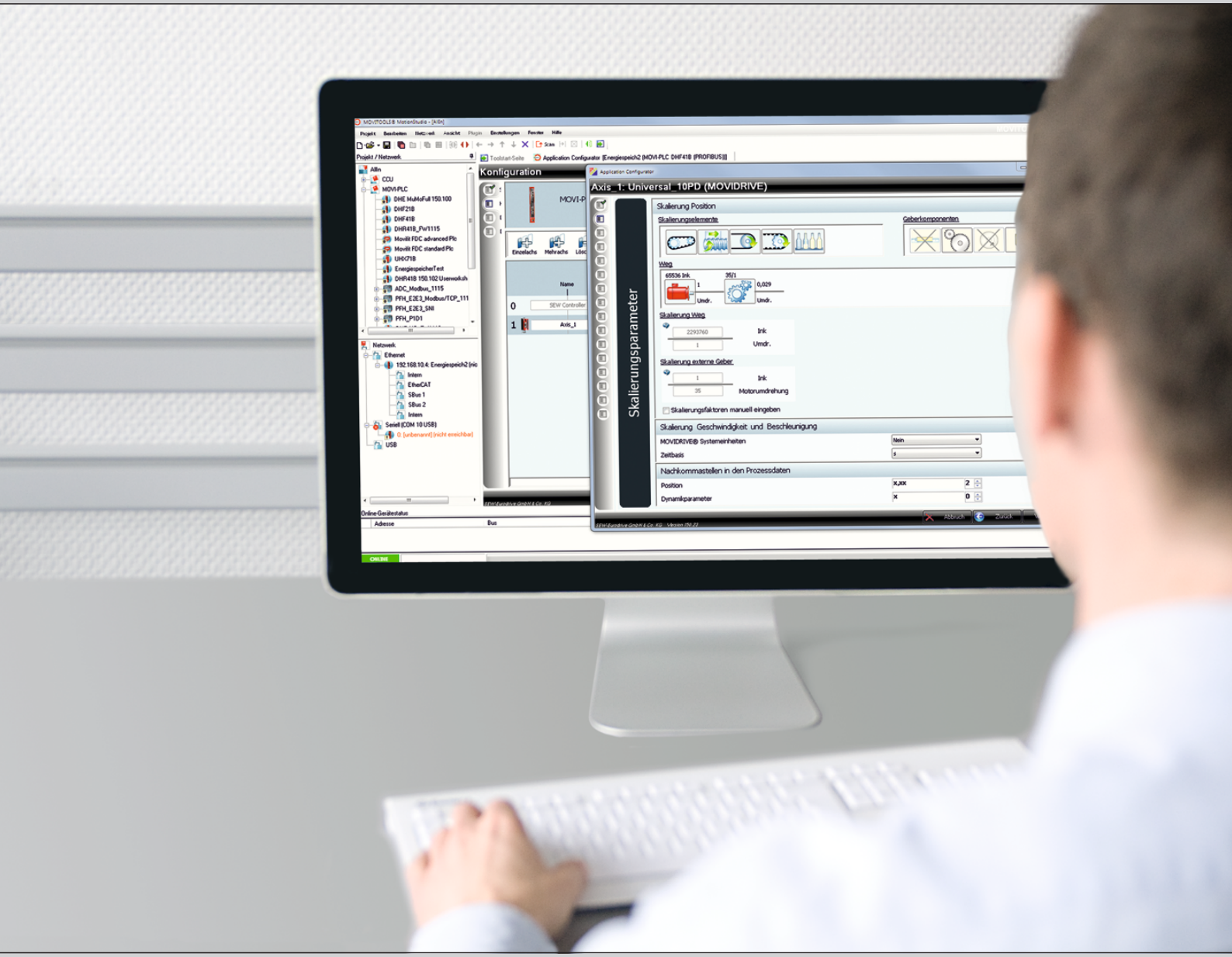
SEW EURODRIVE

Manual



Universal Module Application Module

Edition 12/2016

23028513/EN

Table of contents

23028513/EN – 12/2016

23028513/EN – 12/2016

23028513/EN – 12/2016

1 General information

1.1 About 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 of SEW-EURODRIVE have read through the manual 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.

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.

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

1.2.2 Structure of section-related safety notes

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

This is the formal structure of a safety note for a specific section:

SIGNAL WORD

Type and source of hazard.

Possible consequence(s) if disregarded.

- Measure(s) to prevent the hazard.

Meaning of the hazard symbols

The hazard symbols in the safety notes have the following meaning:

Hazard symbol	Meaning
	General hazard

23028513/EN – 12/2016

Hazard symbol	Meaning
	Warning of dangerous electrical voltage
	Warning of hot surfaces
	Warning of risk of crushing
	Warning of suspended load
	Warning of automatic restart

1.2.3 Structure of embedded safety notes

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

This is the formal structure of an embedded safety note:

⚠ **SIGNAL WORD!** Type and source of hazard. Possible consequence(s) if disregarded. Measure(s) to prevent the hazard.

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 units. Also ensure that the documentation is legible.

1.4 Exclusion of liability

Please observe this documentation as well as the documentation for the software used and the SEW-EURODRIVE devices connected. This documentation must be observed to ensure that the devices operate safely and that the specified product properties and performance characteristics are achieved.

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, SEW-EURODRIVE assumes no liability for defects.

23028513/EN – 12/2016

1.5 Copyright notice

1.6 Product names and trademarks

The brands and product names in this documentation are trademarks or registered trademarks of their respective titleholders.

1.7 Other applicable documentation

The "applicable documentation" is listed in the documentation for the configuration software "Application Configurator for CCU".

Always use the latest edition of the documentation and software.

Our documentation is available in various languages for download from the website (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.

23028513/EN – 12/2016

2 Safety notes

2.1 Use

Make sure that the basic safety notes are read and observed. Make sure that persons responsible for the machinery and its operation as well as persons who work on the device 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, contact SEW-EURODRIVE.

The following safety notes refer to the use of the software.

This document does not replace the detailed documentation for the connected devices. This documentation assumes that the user has access to and is familiar with the documentation for all connected products.

Do not perform installation or startup if the product is damaged.

Removing required covers without authorization, improper use or incorrect installation and operation may result in severe injury to persons, or damage to machinery.

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

2.2 Target group

Software specialist

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.

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

2.3 Designated use

The "Universal module" application module is a single-axis module used for speed-controlled and positioning applications.

Use the device-independent "Application Configurator" configuration software to start up and configure the axes for the application module and to download the complete configuration to the controller.

2.4 Bus systems

A bus system makes it possible to adapt electronic drive components to the particulars of the machinery within wide limits. There is a risk that a change of parameters that cannot be detected externally may result in unexpected (but not uncontrolled) system behavior and may have a negative impact on operational safety, system availability, or data security.

23028513/EN – 12/2016

Especially in Ethernet-based networked systems and with engineering interfaces, make sure that unauthorized access is prevented.

Use IT-specific safety standards to increase access protection to the ports. For a port overview, refer to the respective technical data of the used device.

23028513/EN – 12/2016

3 Project planning information

3.1 Requirements

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").

3.2 PC and software

The application module is part of the "Application Configurator" configuration software. For this reason, the system requirements of the Application Configurator apply. They are listed in the documentation for the "Application Configurator for CCU" configuration software.

3.3 Approved unit combination

The assignment of inverters to the respective CCU controller (performance class: standard or advanced) is listed in the documentation for the configuration software "Application Configurator for CCU".

23028513/EN – 12/2016

4 System description

4.1 Area of application

The *universal module* application module is used for all speed-controlled and positioning applications in user units. Functional extensions such as synchronism or Touchprobe evaluation allow for a wide range of possible applications.

The application module is equipped with a consistent process data interface that is simply extended with increasing functionality. Thus the profiles of the *universal module* are downward compatible.

INFORMATION

If you use this application module for positioning tasks, you require a drive with encoder.

4.2 Scope of functions of process data profiles

The *universal module* application module has the following interrelated process data profiles.

Profile	Scope of functions
4 PD	Operating modes: • Speed mode • Jog mode Functions: • Velocity and dynamics parameters in user units • **INFORMATION:** Motors without encoder are only supported in this profile.
6 PD	Operating modes (in addition to 4 PD profile): • Referencing mode • Absolute positioning mode – linear and modulo
7 PD	Operating modes (in addition to 6 PD profile): • Synchronism • Relative positioning mode – linear and modulo
10 PD	Operating modes (in addition to 7 PD profile): • Positioning mode – Touchprobe (TP) with sensor-based positioning – linear and modulo • Speed synchronism Functions: • Torque limiting • Reading the Touchprobe position • Digital inputs and digital outputs

The process data assignment for the profiles is listed in chapter "Process data assignment" (→ 🗎 70).

23028513/EN – 12/2016

5 Operating mode

5.1 Scope of functions of the process data profiles

The combination of main operating mode and submode you can use depends on the process data profile you have chosen.

INFORMATION

You select a submode via sub control word I7 (SubMode). This means that submodes can only be used with a profile including at least 7 process data. Via fieldbus, submode "0" always corresponds to the first submode of the selected main operating mode.

The following tables show the operating modes of the process data profiles.

5.1.1 4 PD profile

Operating mode	Submode
1: Speed control	–
2: Jog mode	–

5.1.2 6 PD profile

Operating mode	Submode[1)]
1: Speed control	-
2: Jog mode	–
3: Referencing mode	Static (configured) reference offset
4: Positioning mode	Absolute positioning

1) The submode is fixed and therefore cannot be changed.

5.1.3 7 PD profile

Operating mode	Submode[1)]
1: Speed control	–
2: Jog mode	–
3: Referencing mode	0/30: Static (configured) reference offset (default) 31: Variable reference offset (via process data I5/I6 *Setpoint position*)
4: Positioning mode	0/40: Absolute positioning (default) 41: Relative positioning, positive 42: Relative positioning, negative
6: Synchronism	0/60: Speed synchronism 61: Speed synchronism with fieldbus setpoint as speed source
7: Emergency mode	0/70: Emergency mode without external encoder

1) A submode is selected using sub control word I7 (SubMode).

23028513/EN – 12/2016

5.1.4 10 PD profile

Operating mode	Submode[1)]
1: Speed control	–
2: Jog mode	–
3: Referencing mode	0/30: Static (configured) reference offset (default) 31: Variable reference offset (via process data I5/I6 *Setpoint position*)
4: Positioning mode	0/40: Absolute positioning (default) 41: Relative positioning, positive 42: Relative positioning, negative
5: Positioning mode – Touchprobe	0/50: Absolute positioning with remaining travel processing 51: Endless movement positive with remaining travel processing 52: Endless movement negative with remaining travel processing
6: Speed synchronism	0/60: Speed synchronism 61: Speed synchronism with fieldbus setpoint as speed source
7: Emergency mode	0/70: Emergency mode without external encoder

1) A submode is selected using sub control word I7 (SubMode).

5.2 Requirements for the cycle diagrams

The operating principle is illustrated by a typical cycle diagram for every operating mode. You will also find a description of the sequence relating to the cycle diagram. For information on the requirements for the cycle diagram and sequence, see the following table:

Requirements	Process data/signal states
Ready for operation	O1:1 *FI ready* = "1"
No fault	O1:5 *FI fault* = "0" O1:6 *FI warning* = "0" O1:7 *Application fault* = "0"
Inverter enabled (the inverter is currently in position control)	I1:2 *Enable/stop* = "1" or I1:2 *Enable/rapid stop* = "1" O1:8 – O1:15 *Status* = "5" or "10"
The axis must be referenced in certain cases (for positioning movements)	O1:2 *Axis referenced* = "1"
Startup has been performed correctly	
Hardware terminals enabled	

23028513/EN – 12/2016

5.3 Operating mode 1: Speed control

Once you have selected the direction of rotation, the single axis can be moved subject to speed control. Selecting both directions of rotation or not selecting a direction of rotation at all will stop an ongoing movement. Once the specified speed is reached, "setpoint reached" is signaled back.

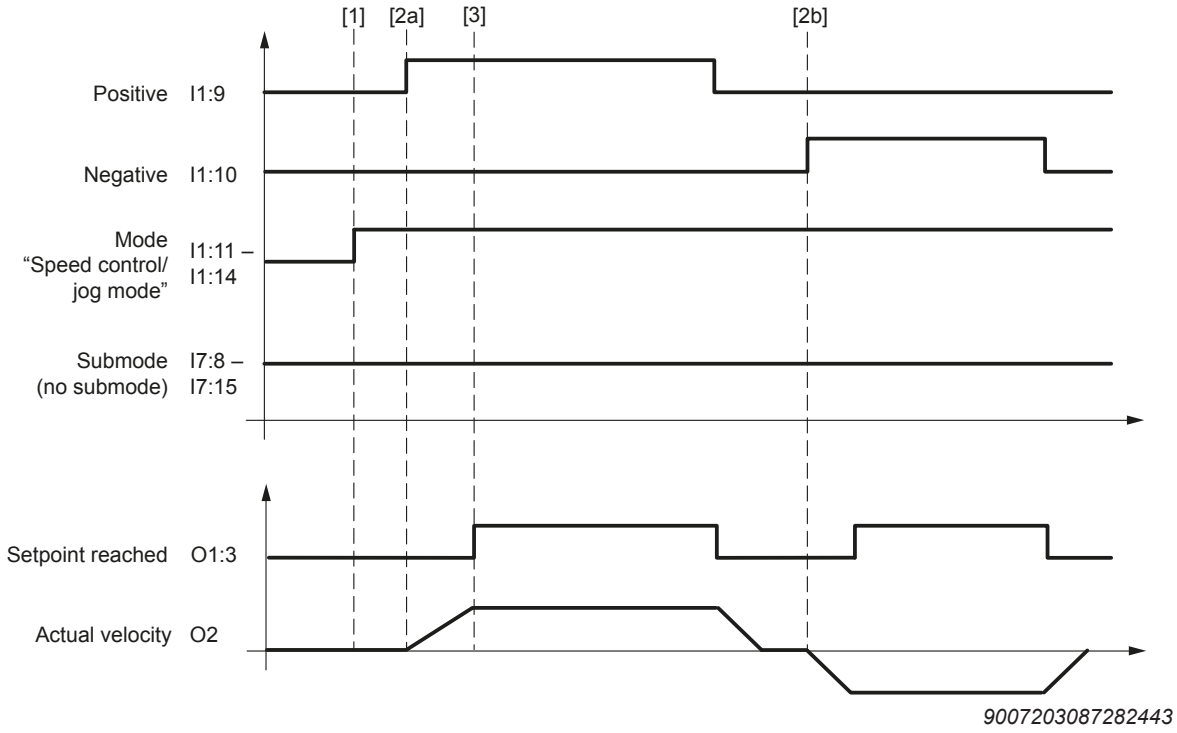
Note that software limit switch monitoring is disabled in "speed control" operating mode.

You can use this operating mode to move asynchronous motors without encoder feedback, for example.

Submodes are not available.

5.3.1 Sample sequence: Speed control

Cycle diagram



9007203087282443

Process sequence and signal states [1] to [3]

No.	Sequence	Process data/signal states
[1]	"Speed control/jog mode" is activated without submode	I1:11 – I1:14 *Mode* 2^0 – 2^3 = "1/2"
	Dynamics parameters are accepted (also during ongoing movement)	I2 *Setpoint velocity* I3 *Acceleration* I4 *Deceleration*
[2a] [2b]	Axis starts by setting the jog direction	I1:9 *Positive* = "1" I1:10 *Negative* = "1"
[3]	*Setpoint reached* feedback is set once the setpoint velocity is reached.	O1:3 *Setpoint reached* = "1"

23028513/EN – 12/2016

For detailed information on process data assignment, refer to chapter "Process data assignment" (→ 🗎 70).

5.4 Operating mode 2: Jog mode

Once you have selected the direction of rotation, the single axis can be moved subject to position control. The travel range can be safeguarded by software limit switches. Selecting both directions of rotation or not selecting a direction of rotation at all will stop an ongoing movement. Once the specified speed is reached, "speed reached" is signaled back.

Submodes are not available.

5.4.1 Sample sequence: Jog mode

Except for selecting the operating mode, control is performed as described in "Operating mode 1: Speed control" (→ 🗎 15).

5.5 Operating mode 3: Referencing mode

The actual position is set to the specified reference offset depending on the selected reference travel type.

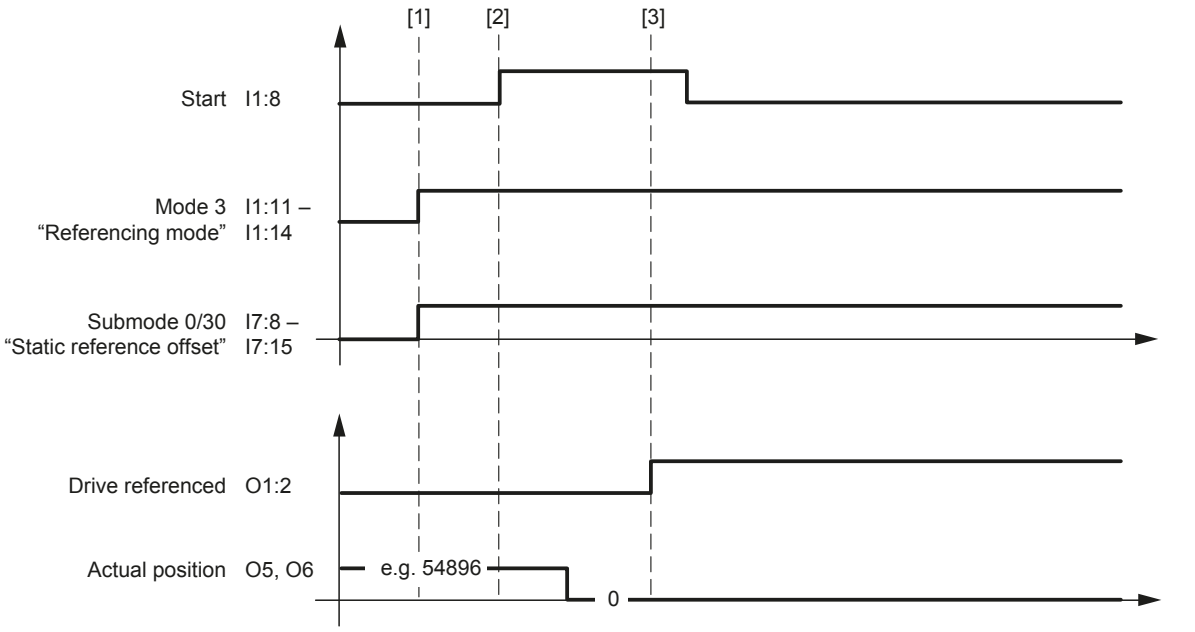
The following table lists the features of the various submodes:

Submode	Characteristics
0/30: Static reference offset	The reference offset is adopted from the startup parameters. Changing the reference offset requires that you change the configuration on the user interface of the Application Configurator.
31: Variable reference offset	In this submode, you can specify a variable reference offset using process data word I5/I6 *Setpoint position*. Specifying a variable reference offset will not change the configuration value for the static reference offset (see submode 30). Set the values for the operating mode, submode, and the variable reference offset before the positive edge of the start signal because the values are applied with this edge.

23028513/EN – 12/2016

5.5.1 Sample sequence: Submode 30 static reference offset

Cycle diagram



9007203091214219

Process sequence and signal states [1] – [3]

No.	Sequence	Process data/signal states
[1]	"Referencing mode" is activated	I1:11 – I1:14 *Mode* 2^0 – 2^3 = "3"
	"Static reference offset" submode is activated	I7:8 – I7:15 *SubMode* = "0/30"
[2]	The start signal is activated	I1:8 *Start* = "1"
[3]	*Drive referenced* is signaled back	O1:2 *Drive referenced* = "1" O5, O6 *Actual position* = "0" (unless another static reference offset has been configured)

For detailed information about process data assignment, refer to chapter "Process data assignment" (→ 🗎 70).

5.5.2 Sample sequence: Submode 31 variable reference offset

For "variable reference offset" mode, the value of the reference offset must be sent at the moment at which the start signal is set via I5/I6 *Setpoint position* process data. When the drive signals *Drive referenced* (O1:2), then this value indicates the *actual position* (O5/O6). Referencing is now completed.

23028513/EN – 12/2016

5.6 Operating mode 4: Positioning mode

Depending on the submode, positioning of the drive is absolute with reference to the machine zero (reference point) or relative to the current position.

The following table lists the characteristics of the submodes.

Submode (SubMode)	Characteristic
0/40: Absolute positioning	• "Linear" axis type: Setpoint position with processing of signs • "Modulo" axis type: setpoint position is **0 ≤ target position < ModuloMax**[1)]
41: Relative positioning positive	The setpoint position is processed as value and is added relative to the actual position. Performing a reference travel is not required. A **target position ≥ ModuloMax**[1)] can only be specified on MOVIAXIS®, MOVITRAC® LTP-B/ LTX or in the Technology universal module.
42: Relative positioning negative	The setpoint position is processed as value and is subtracted relative to the actual position. Performing a reference travel is not required. A **target position ≥ ModuloMax**[1)] can only be specified on MOVIAXIS®, MOVITRAC® LTP-B/ LTX or in the Technology universal module.

1) ModuloMax = maximum value for modulo travel strategy.

You find detailed information about submodes in the following chapters.

5.6.1 Submode 40: Absolute positioning

In this submode, you can position the drive absolutely with reference to machine zero (reference point).

INFORMATION

Effect of the control width of the modulo axis during absolute positioning

The following behavior might occur in MOVIDRIVE®, MOVIGEAR®, MOVIPRO® LT or MOVITRAC® B when using absolute positioning for a modulo axis with "positive" or "negative" travel strategy (does not apply when using "short distance" modulo travel strategy):

- Specifying a setpoint position close to the current actual position can cause the axis to turn completely depending on the real actual position.

Modulo travel strategy

Select the modulo travel strategy using control bits I1:9 *Positive* and I1:10 *Negative* according to the following table.

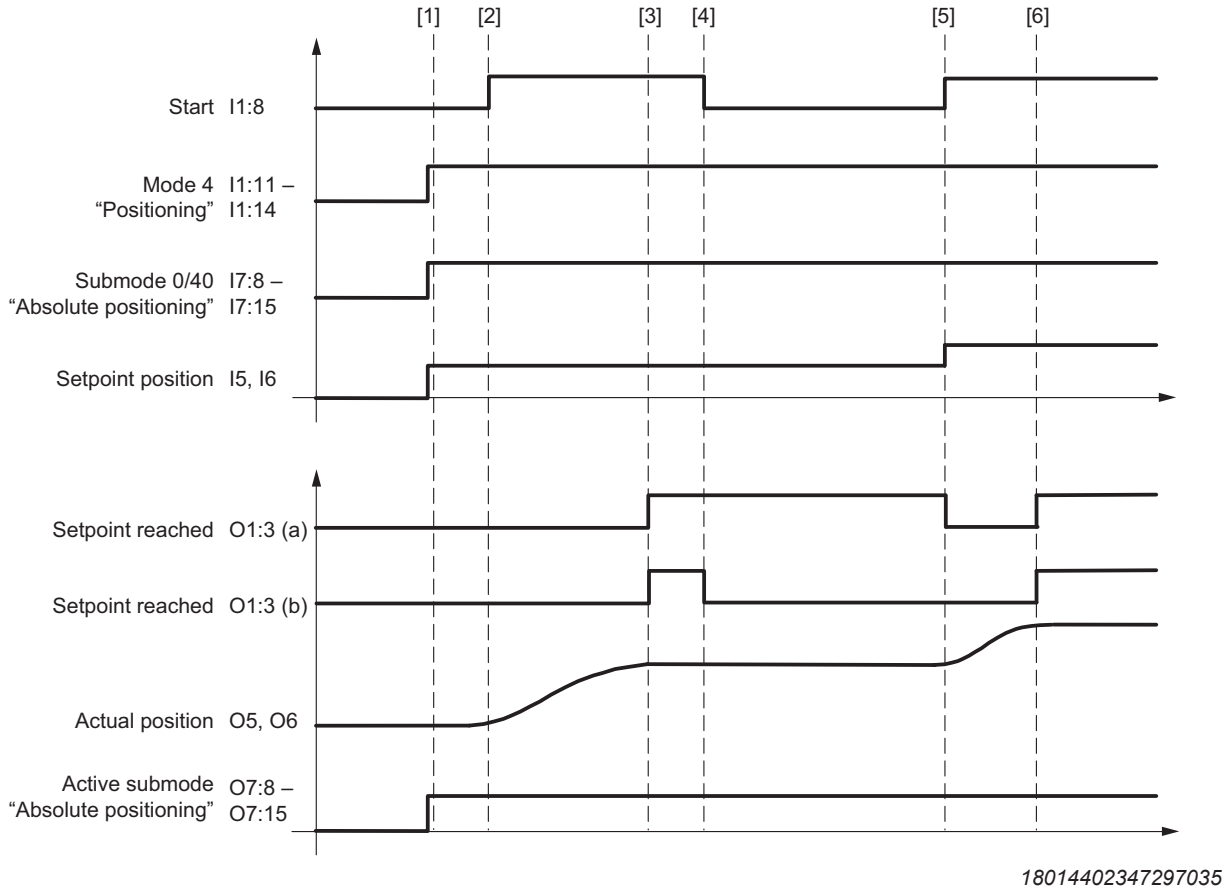
I1:9 *Positive*	I1:10 *Negative*	Modulo travel strategy
0	0	Short distance
1	0	Positive
0	1	Negative

23028513/EN – 12/2016

I1:9 *Positive*	I1:10 *Negative*	Modulo travel strategy
1	1	Short distance

Sample sequence: Submode 40 Absolute positioning

Cycle diagram



18014402347297035

Process sequence and signal states [1] to [6]

No.	Sequence	Process data/signal states
[1]	"Positioning mode" is activated	I1:11 – I1:14 *Mode* 2^0 – 2^3 = "4"
	"Absolute positioning" submode is activated	I7:8 – I7:15 *SubMode* = "0/40"
	Status word is queried to obtain feedback about the activated submode	O7:8 – O7:15 *SubMode* = "40"
	Dynamics parameters are accepted cyclically (also during ongoing movement)	I2 *Setpoint velocity* I3 *Acceleration* I4 *Deceleration*
	Specification of setpoint	I5:High word *setpoint position* I6:Low word *setpoint position*
[2] [5]	Start signal activated **INFORMATION:** A new setpoint position is accepted immediately when the start signal is set.	I1:8 *Start* = "1"

No.	Sequence	Process data/signal states
[3] [6]	*Setpoint reached* feedback is set once the setpoint position is reached. The drive stops subject to position control.	O1:3 *Setpoint reached* = "1"
[4]	Start is reset when positioning is finished.	I1:8 *Start* = "0"
[4] – [5]	(a): "InPosition" function as handshake of the start bit = *disabled* (default setting) (b): "InPosition" function as handshake of the start bit = enabled See chapter "InPosition monitoring" (→ 🗎 50).	O1:3 *Setpoint reached*

Stopping

Sequence	Process data/signal states
Depending on the selected signal, the following ramps are used for stopping (in increasing priority order):	
• Positioning ramp	I1:8 *Start* = "0"
• Stop ramp/ rapid stop ramp	I1:1 *Enable/stop* = "0"/ I1:2 *Enable/rapid stop* = "0"
Changing the operating mode has the effect that the last travel job is deleted and the target is calculated anew.	O7:8 – O7:15 *SubMode*

For detailed information on process data assignment, refer to chapter "Process data assignment" (→ 🗎 70).

23028513/EN – 12/2016

5.6.2 Submode 41/42: Relative positioning positive/negative

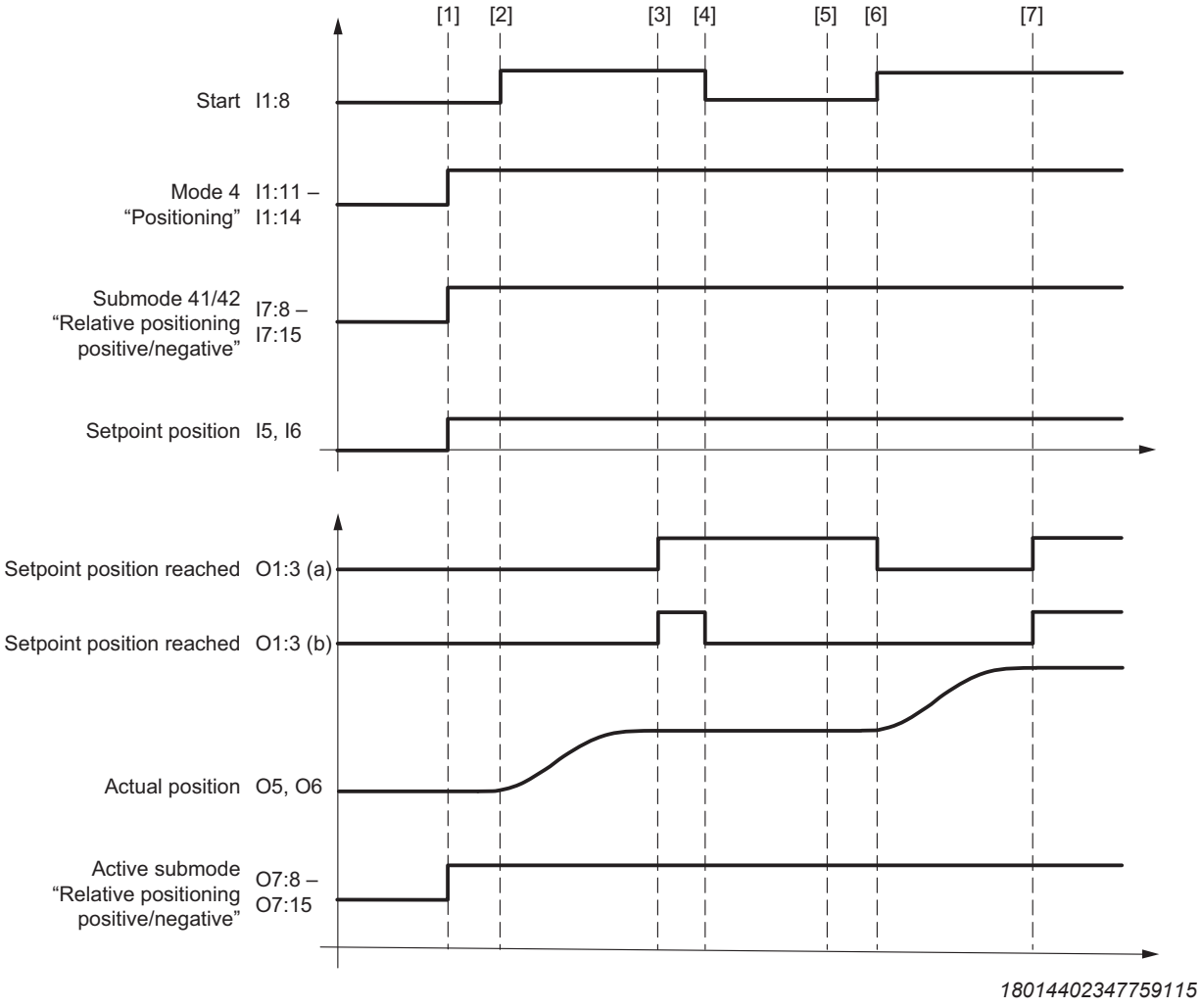
In this submode, the drive can be moved relatively to the present position (example: cyclical operation with a conveyor belt).

Modulo travel strategy

The direction of the modulo travel strategy is selected by means of the submode.

Sample sequence: Submode 41/42 Relative positioning positive/negative

Cycle diagram



23028513/EN – 12/2016

Process sequence and signal states [1] to [7]

No.	Sequence	Process data/signal states
[1]	"Positioning mode" is activated	I1:11 – I1:14 *Mode* 2^0 – 2^3 = "4"
	"Relative positioning positive/negative" submode is activated	I7:8 – I7:15 *SubMode* = "41/42"
	Dynamics parameters are accepted cyclically (also during ongoing movement)	I2 *Setpoint velocity* I3 *Acceleration* I4 *Deceleration*
	Status word is queried to obtain feedback about the activated submode	O7:8 – O7:15 *SubMode* = "41/42"
	Specification of relative position	I5:High word *setpoint position* I6:Low word *setpoint position*
[2] [6]	Start signal activated **INFORMATION:** The relative position is calculated once with the rising edge of the start signal, and is saved.	I1:8 *Start* = "1"
[3]	*Setpoint reached* feedback is set once relative positioning is finished. The drive stops subject to position control. Another cycle movement is triggered with the next rising edge of the start signal.	O1:3 *Setpoint reached* = "1"
[4] – [5]	(a): "InPosition" function as handshake of the start bit = *disabled* (default setting) (b): "InPosition" function as handshake of the start bit = enabled See chapter "InPosition monitoring" (→ 🗎 50).	O1:3 *Setpoint reached*
[7]	*Setpoint reached* feedback is set once relative positioning is finished. The drive stops subject to position control.	O1:3 *Setpoint reached* = "1"

Stopping

No.	Sequence	Process data/signal states
[4]	Depending on the selected signal, the following ramps are used for stopping (in increasing priority order):	
	• Positioning ramp	I1:8 *Start* = "0"
	• Stop ramp/ rapid stop ramp	I1:1 *Enable/stop* = "0"/ I1:2 *Enable/rapid stop* = "0"
[5]	Changing the operating mode has the effect that the last travel job is deleted and the target is calculated anew.	O7:8 – O7:15 *SubMode*

For detailed information on process data assignment, refer to chapter "Process data assignment" (→ 🗎 70).

23028513/EN – 12/2016

5.7 Operating mode 5: Positioning mode – Touchprobe (TP)

In this operating mode, positioning starts when the sensor trips (Touchprobe event). The length of the travel distance (remaining travel) is specified via fieldbus. Each Touchprobe event can be used only once for sensor-based positioning with each time the I7:0 *Activate Touchprobe* is set.

You can limit Touchprobe processing to certain areas of the travel distance by activating/deactivating the sensor.

INFORMATION

Overlapping of functions

The Touchprobe input DI02 might overlap with other functions depending on the frequency inverter in use. To prevent this from happening, disable the default input assignment (→ 🗎 74).

INFORMATION

Touchprobe function always assigned to DI02

The Touchprobe function is assigned to digital input DI02. This applies to all units even when an option card is used.

INFORMATION

No torque limiting in "positioning mode – Touchprobe" mode

The "torque limiting" function cannot be used for "positioning mode – Touchprobe" operating mode.

INFORMATION

Priority of acceleration ramps over the target position

If the intended remaining travel cannot be achieved using the specified ramp, then overshooting might occur with linear axes or multiple rotations with modulo axes.

5.7.1 Submodes

The following table lists the features of the various submodes:

Submode		Characteristic
0/50:	Absolute positioning with remaining travel processing	The axis stops when the target position is reached. The target position is specified in process data word I5:High word *Setpoint position* und I6:Low word *Setpoint position*. Select the modulo travel strategy using control bits I1:9 *Positive* and I1:10 *Negative*, see section "Modulo travel strategy" (→ 🗎 24). **0 < target position < ModuloMax**[1)]

23028513/EN – 12/2016

Submode		Characteristic
51/52	Endless movement positive/negative with remaining travel processing	The axis moves "endlessly" in positive/negative direction of travel. In this submode, the travel strategy for modulo using control word I1 is disabled. Prior reference travel is not required.

1) ModuloMax = maximum value in modulo travel strategy.

For details on submodes, refer to the following chapters:

5.7.2 Submode 50: Absolute positioning with remaining travel processing

The axis positions to an absolute position. If a Touchprobe event occurs while approaching the absolute position, then the axis positions to the remaining travel specified via fieldbus.

The remaining travel is specified according to the direction of travel. This means for example that when positive remaining travel is specified in negative direction of travel then the direction of rotation of the drive changes as soon as the Touchprobe event occurs.

INFORMATION

Effect of the control width of the modulo axis during absolute positioning

The following behavior might occur in MOVIDRIVE®, MOVIGEAR®, MOVIPRO® LT or MOVITRAC® B when using absolute positioning for a modulo axis with "positive" or "negative" travel strategy (does not apply when using "short distance" modulo travel strategy):

- Specifying a setpoint position close to the current actual position can cause the axis to turn completely depending on the real actual position.

Modulo travel strategy

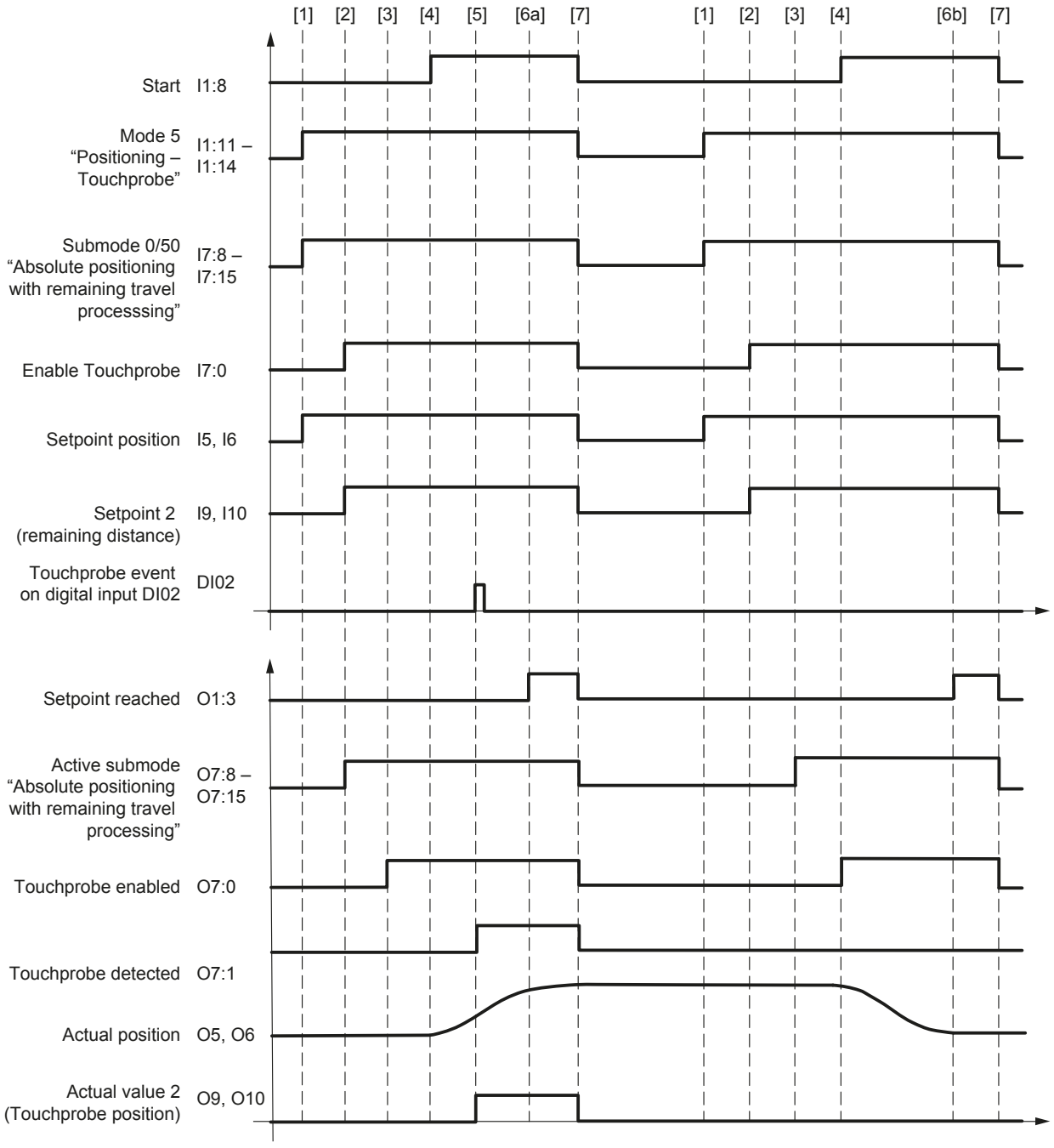
Select the modulo travel strategy using control bits I1:9 *Positive* and I1:10 *Negative* according to the following table.

I1:9 *Positive*	I1:10 *Negative*	Modulo travel strategy
0	0	Short distance
1	0	Positive
0	1	Negative
1	1	Short distance

23028513/EN – 12/2016

Sample sequence: Submode 50 Absolute positioning with remaining travel processing

Cycle diagram



18014402350295691

Process sequence and signal states [1] to [7]

No.	Sequence	Process data/signal states
[1]	"Positioning mode – Touchprobe" operating mode is activated	I1:11 – I1:14 *Mode* 2^0 – 2^3 = "5"
	"Absolute positioning with remaining travel processing" submode is activated	I7:8 – I7:15 *SubMode* = "0/50"
	Dynamics parameters are accepted cyclically (also during ongoing movement)	I2 *Setpoint velocity* I3 *Acceleration* I4 *Deceleration*
	Status word is queried to obtain feedback about the activated operating mode	O7:8 – O7:15 *SubMode* "50"
	Absolute setpoint position specified (if no Touchprobe event occurs)	I5, I6 *Setpoint position*
[2]	*Activate Touchprobe* Transfer setpoint 2 (remaining travel)	I7:0 *Activate Touchprobe* = "1" I9:High word *setpoint 2* I10:Low word *setpoint 2*
[3]	Status subword is queried to obtain feedback about the *Touchprobe activated* signal	O7:0 *Touchprobe activated* = "1"
[4]	Start signal activated The absolute setpoint position is calculated once with the rising edge of the start signal, and is saved.	I1:8 *Start* = "1"
[5]	*Touchprobe detected* feedback The Touchprobe position is transferred with *actual value 2*. The following applies: *Remaining travel position* = *actual value 2* + *setpoint 2*	O7:1 *Touchprobe detected* = "1" O9, O10 *actual value 2*
[6]	*Setpoint reached* feedback is set once "remaining travel position" (6a) / "setpoint position" (6b) is reached. The drive stops subject to position control.	O1:3 *Setpoint reached* = "1"
[7]	Reset of all process data/signals	

Stopping

Sequence	Process data/signal states
Depending on the selected signal, the following ramps are used for stopping (in increasing priority order):	
• Positioning ramp	I1:8 *Start* = "0"
– *Touchprobe not detected*: Setting the start signal again continues endless movement.	
– *Touchprobe detected*: The drive moves to the calculated remaining travel position and then stops subject to position control.	
• Stop ramp/ rapid stop ramp When you set enable again, Touchprobe positioning is initialized.	I1:1 *Enable/stop* = "0"/ I1:2 *Enable/rapid stop* = "0"

For detailed information on process data assignment, refer to chapter "Process data assignment" (→ 🗎 70).

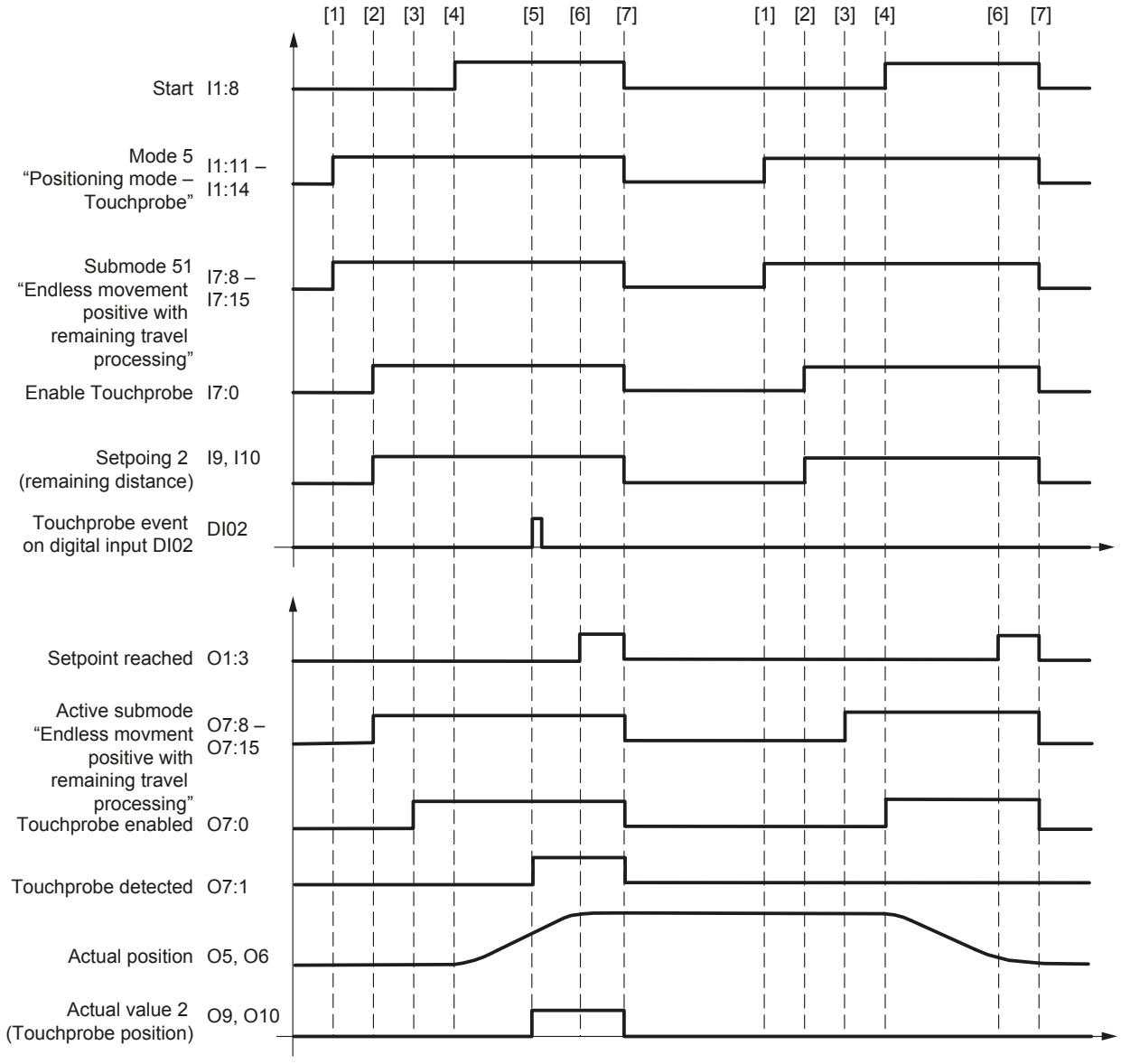
23028513/EN – 12/2016

5.7.3 Submode 51/52: Endless movement positive/negative with remaining travel processing

The axis now travels "endlessly" in positive/negative direction of travel. Once a Touchprobe event occurs, the axis positions a positive remaining travel in travel direction. A negative remaining travel causes a reversal of the direction of rotation.

Sample sequence: Submode 51/52 Endless movement positive/negative with remaining travel processing

Cycle diagram



18014402344369291

Process sequence and signal states [1] to [7]

No.	Sequence	Process data/signal states
[1]	"Positioning mode – Touchprobe" operating mode is activated	I1:11 – I1:14 *Mode* 2^0 – 2^3 = "5"
	"Endless movement positive/negative with remaining travel processing" submode is activated	I7:8 – I7:15 *SubMode* = "51/52"
	Dynamics parameters are accepted cyclically (also during ongoing movement)	I2 *Setpoint velocity* I3 *Acceleration* I4 *Deceleration*
	Status subword is queried to obtain feedback about the activated operating mode	O7:8 – O7:15 *SubMode* = "51/52"
[2]	*Activate Touchprobe* Transfer setpoint 2 (remaining travel)	I7:0 *Activate Touchprobe* = "1" I9:High word *setpoint 2* I10:Low word *setpoint 2*
[3]	*Touchprobe activated* feedback	O7:0 *Touchprobe activated* = "1"
[4]	Start signal activated	I1:8 *Start* = "1"
[5]	Status subword is queried to obtain feedback about the *Touchprobe activated* signal The Touchprobe position is transferred in *actual value 2*. The following applies: *Remaining travel position = actual value 2 + setpoint 2*	O7:1 *Touchprobe detected* = "1" O9, O10 *actual value 2*
[6]	*Setpoint reached* feedback is set once the remaining travel position is reached. The drive stops subject to position control.	O1:3 *Setpoint reached* = "1"
[7]	Reset of all process data/signals	

Stopping

Sequence	Process data/signal states
Depending on the selected signal, the following ramps are used for stopping (in increasing priority order):	
• Positioning ramp – *Touchprobe not detected*: Setting the start signal again continues endless movement. – *Touchprobe detected*: The drive moves to the calculated remaining travel position and then stops subject to position control.	I1:8 *Start* = "0"
• Stop ramp/ rapid stop ramp When you set enable again, Touchprobe positioning is initialized.	I1:1 *Enable/stop* = "0"/ I1:2 *Enable/rapid stop* = "0"

For detailed information on process data assignment, refer to chapter "Process data assignment" (→ 🗎 70).

23028513/EN – 12/2016

5.8 Operating mode 6: Synchronism

Speed synchronism to the master value specified at startup begins with the start signal. The following master values are possible:

- Configured master axis
- Analog input signal that is interpreted as speed setpoint:
  - Analog voltage input
  - Analog current input
  - Frequency input (only available for MOVIGEAR® B / DRC.. with GIO13B option card)
- Fieldbus setpoint

The master value is interpreted as speed setpoint. The following configured system limits determine the quality of synchronism and must be 10% higher than the course of the master value:

- Maximum acceleration
- Maximum deceleration
- Maximum velocity

The "setpoint reached" signal is issued as soon as the actual speed is within the speed window around the speed setpoint. A possible position offset to the master offset is not corrected.

5.8.1 Direction of rotation reversal

Some applications require the dynamic change of the reference direction based on the master setpoint.

The table below shows how you can invert the reference direction using control bits I1:9 *Positive* and I1:10 *Negative*.

I1:9 *Positive*	I1:10 *Negative*	Effect
0	0	No effect
1	0	No effect
0	1	The speed setpoint is multiplied by "-1".
1	1	No effect

23028513/EN – 12/2016

5.8.2 Submodes

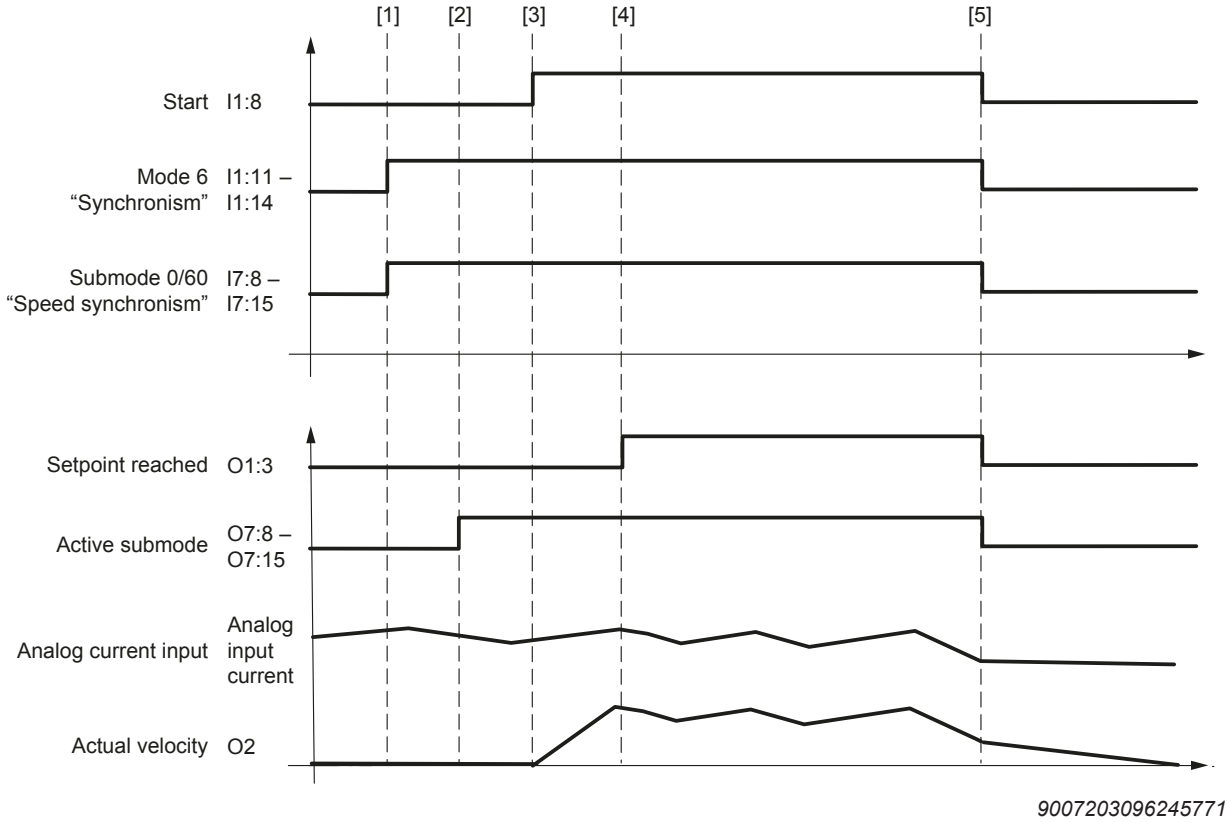
The following table lists the characteristics of the submodes.

Submode (SubMode)		Characteristics
0/60:	Speed synchronism	The following function can be activated during start-up: • **Stop master if slave error occurs** When "start" is activated, the following events cause the master axis to stop immediately: – Synchronized slave axis no longer in position control – Synchronized slave axis in fault status – Synchronized slave axis no longer synchronized
61:	Speed synchronism based on fieldbus setpoint	• **Principle** This submode allows for switching on the fly from an analog speed setpoint (submode 60, e.g. analog voltage value) to a speed setpoint that is specified variably by a fieldbus (submode 61). The setpoints are processed free of jerk at the moment of switching from one submode to the other. • **Requirement** The operating mode and the start signal must remain active.

23028513/EN – 12/2016

Sample sequence: Submode 60 Speed synchronism

Cycle diagram



9007203096245771

Process sequence and signal states [1] to [5]

No.	Sequence	Process data/signal states
[1]	"Synchronism" mode is activated	I1:11 – I1:14 *Mode* 2^0 – 2^3 = "6"
	"Speed synchronism" submode is activated	I7:8 – I7:15 *SubMode* = "0/60"
	Dynamics parameters are accepted cyclically Only in submode 61 "Speed synchronism based on fieldbus setpoint": setpoint velocity is accepted cyclically	I3 *Acceleration* I4 *Deceleration* I2 *Setpoint velocity*
[2]	Status word is queried to obtain feedback about the activated operating mode	O7:8 – O7:15 *SubMode* = "60"
[3]	Start signal activated	I1:8 *Start* = "1"
[4]	*Setpoint reached* feedback is set once the slave axis follows the specified speed setpoint within the specified speed window.	O1:3 *Setpoint reached* = "1"
[5]	Speed synchronism is left when the operating mode is deactivated. The axis comes to a stop using the deceleration specified in process data word I4.	I1:11 – I1:14 *Mode* 7:8 – I7:15 *SubMode*

For detailed information on process data assignment, refer to chapter "Process data assignment" (→ 🗎 70). Also refer to the information on the "Stop master if slave error occurs" function.

5.9 Operating mode 7: Emergency mode

In this operating mode, the external encoder is disabled. The drive is moved via motor encoder in "speed control" operating mode (→ 🗎 15).

INFORMATION

- Note that software limit switch monitoring is disabled in "emergency mode".
- Note that "emergency mode" can only be used in combination with the following units:
  - MOVIDRIVE® B
  - MOVIAXIS® B
  - MOVIPRO® with internal power section

5.9.1 Submode

The following table lists the features of the submode:

Submode	Characteristics
0/70: Emergency mode ext. encoder	Selecting this submode saves the following actual values: • Absolute encoder type • External encoder monitoring Next, "speed control" mode is enabled, see chapter "Speed control" (→ 🗎 15). Deselecting the submode writes back the saved data.

23028513/EN – 12/2016

6 Functions

The functions described in the following chapters complement the operating modes. The functions are selected by means of digital signals available for this purpose.

INFORMATION

Double assignment of process data ranges

Conflicts/misinterpretations might occur when activating the functions described in the following sections.

- The functions "torque limitation" and "Touchprobe" cannot be used at the same time.

6.1 Software limit switches

Software limit switches are used to limit the travel range. They are enabled using the startup wizard.

The travel range is monitored when the software limit switches are enabled (condition: positive limit switch position > negative limit switch position). If the actual position exceeds the set limit value, the drive stops along the configured rapid stop ramp.

To exit the travel range, disable the software limit switch using control bit I1:15 */SWLS*.

6.2 Torque limitation

Using the *setpoint 2* signal, you can specify a limit value for the motor current or the torque. Sequences, such as "movement to fixed stop" are possible in this way.

Startup data are saved with the rising edge of signal I7:2 *Activate torque limitation*. Both the actual value and the setpoint value of the current are scaled in the unit [0.1 % × I_n]. A requirement for proper functioning is that the Touchprobe function is disabled.

The following startup data are saved:

- Current limit (VFC speed control)
- Torque limit (CFC/servo)
- Speed monitoring
- Lag error limit

Next, speed monitoring and lag error limit are disabled, and the drive adopts the fieldbus setpoint value for torque limitation. Signal O7:2 *Torque limitation active* is set. Deactivating the function writes back the saved data.

INFORMATION

Deactivating torque limitation

A lag error can occur when deactivating torque limitation in "position control" axis condition.

- Disable torque limitation only when the axis is inhibited

23028513/EN – 12/2016

INFORMATION

No torque limitation in "positioning mode – Touchprobe" operating mode

The "torque limitation" function cannot be used in "positioning mode – Touchprobe" operating mode.

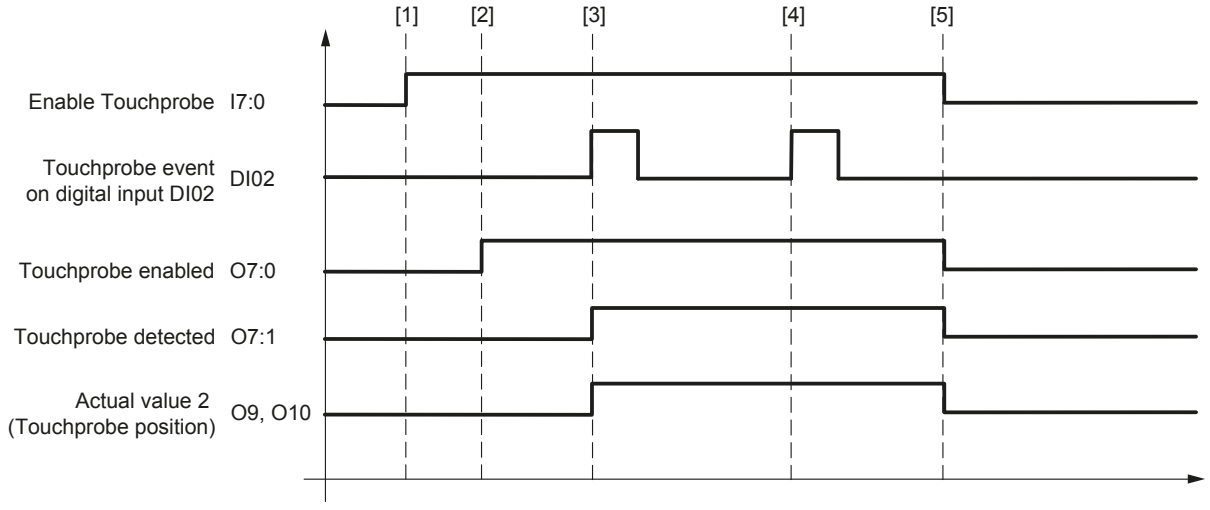
6.3 Touchprobe function

The purpose of the Touchprobe function is to detect the actual position of the drive. This position is detected via digital input (Touchprobe input of the drive). The function is enabled with the rising edge of input I7:0 *Enable Touchprobe.*

Signal O7:0 *Touchprobe enabled* indicates that the Touchprobe input is evaluated. When a Touchprobe event is triggered, the current (Touchprobe) position is copied to O9/O10 *Actual value 2* and signal O7:1 *Touchprobe detected* is set additionally. Further Touchprobe processing is inhibited. The Touchprobe input can be evaluated again with another rising edge of O7:0 *Touchprobe enabled*.

The activated Touchprobe function is disabled by setting signal I7:0 *Enable Touchprobe* to "0". In this case, signals O7:0 *Touchprobe enabled* and O7:1 *Touchprobe detected* as well as the indicated Touchprobe position O9/O10 *Actual value 2* are set to "0".

Cycle diagram



15399911691

No.	Sequence	Process data/signal states
[1]	The Touchprobe function is enabled.	I7:0 *Enable Touchprobe* = "1"
[2]	The Touchprobe function is active.	O7:0 *Touchprobe active* = "1"
[3]	The Touchprobe event is triggered. The current position is saved and is output via process data.	DI02 = "1" O7:1 *Touchprobe detected* = "1" O9 *Actual value 2* = "1" Actual (Touchprobe) position
[4]	Another Touchprobe event is not evaluated. It can only be evaluated with the next rising edge of signal I7:0 *Enable Touchprobe*.	–

23028513/EN – 12/2016

No.	Sequence	Process data/signal states
[5]	The Touchprobe function is disabled. The outputs are reset.	I7:0 *Enable Touchprobe* = "0" O7:0 *Touchprobe active* = "0" O7:1 *Touchprobe detected* = "0" O9 *Actual value 2* = "0"

6.4 Digital inputs and digital outputs

6.4.1 Digital inputs

The digital inputs are the image of the input terminals of the connected inverter and are signaled back via process data word O8.

6.4.2 Digital outputs

The digital outputs of the connected inverter are activated using the control bits in process data word I8.

⚠ WARNING

When resetting a fault, the digital outputs are set to "0" (default value).

This means that auxiliary axes, which are controlled via the digital outputs, are switched off unintentionally.

- Do **not** control auxiliary axes using the digital outputs of the inverter.
- Make sure that the machine is in a safe state.

6.5 Stop master if slave error occurs

This monitoring function is used to monitor the device state of connected slaves of the axis system in operating mode 6 "Synchronism". This means that the master moves only when the slaves are synchronized and no error is present.

If an error is detected in the axis system, the master stops along a rapid stop ramp. The master continues movement as soon as the slave errors are reset.

INFORMATION

It might be necessary to re-adjust and synchronize the slaves again.

6.6 Release brake with inhibited output stage (only MG/DRC/ELVCD)

The function "release brake with inhibited output stage" allows for releasing the brake when the controller is inhibited. The function is operated using control word 1.

1. Prerequisite:
   - I1:0 "Controller inhibit" = TRUE
   - I1:1 "Enable/rapid stop" = FALSE
   - I1:2 "Enable/stop" = FALSE

23028513/EN – 12/2016

2. "Release brake with inhibited output stage" bit = TRUE
3. The brake remains released irrespective of the switching of the individual bits "controller inhibit", "enable/rapid stop" or "enable/stop".

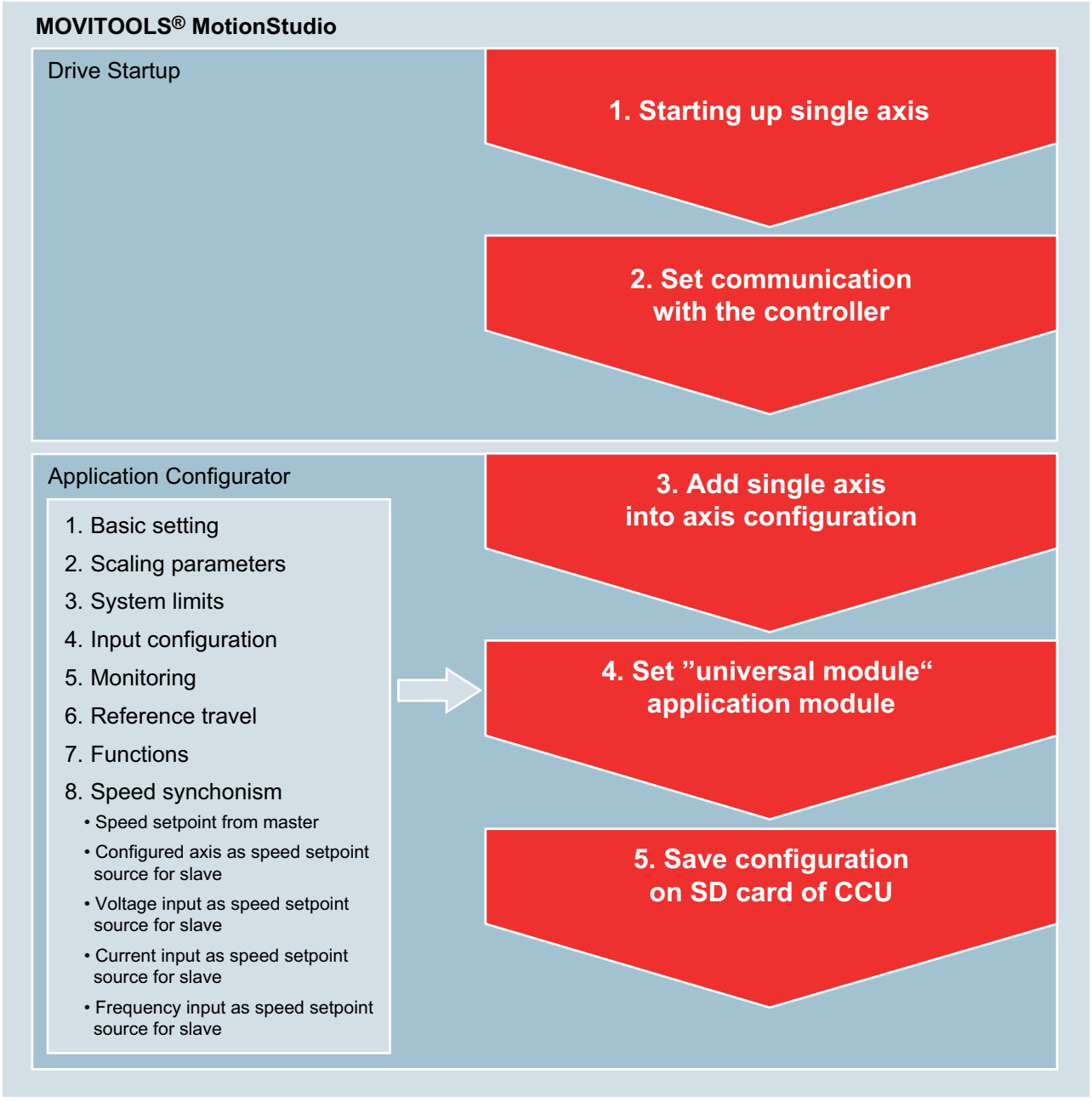
Applying the brake:

To apply the brake, set the bit "release brake with inhibited output stage" to FALSE, or enable the drive completely and then revoke enable again.

23028513/EN – 12/2016

7 Startup

7.1 Startup procedure



9007202832471307

INFORMATION

Before performing steps 3 to 5 in the *Application Configurator*, perform single-axis startup for each axis of the corresponding controller using "Drive Startup for MOVI-PLC®" (steps 1 to 2).

"Drive Startup for MOVI-PLC®" resets the device to its factory setting and writes the required parameters of the frequency inverter to correctly control the drive.

7.1.1 Regarding steps 1 to 2

1. Select the **inverter** you want to start up in the network view of MOVITOOLS® MotionStudio.
2. Right-click to open the context menu of the inverter.
3. Select the menu command [Technology editor] > [Drive Startup for MOVI-PLC®/CCU].
   ⇨ Drive Startup for MOVI-PLC®/CCU is started.
4. Follow the instructions of the wizard.

7.1.2 Regarding steps 3 to 5:

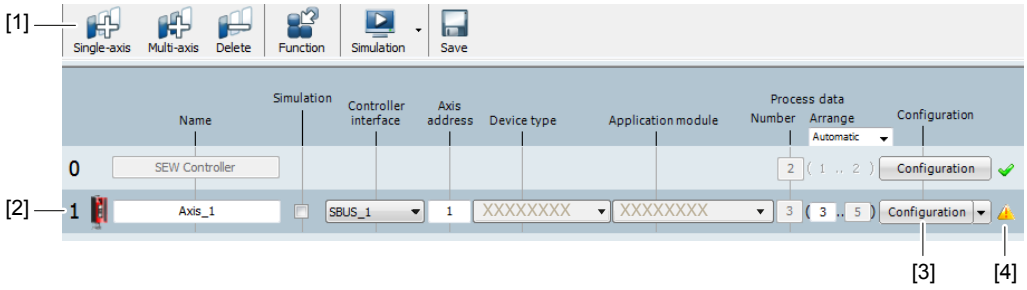
1. Select the **controller** in the network view of MOVITOOLS® MotionStudio.
2. Right-click to open the context menu of the controller.
3. Choose [Application modules] > [Application Configurator] from the menu.
   ⇨ The Application Configurator opens.
4. To create a new configuration, click [Configuration].

Steps 3 to 5 are described in detail below.

7.2 Adding a single axis in the axis configuration

Proceed as follows:

1. Click the button [1] in the configuration interface of the Application Configurator.



36028800437762955

   ⇨ A new line appears in the axis section [2].
2. Configure the axis according to your requirements:
   ⇨ Name of the axis
   ⇨ Simulation mode (on or off)
   ⇨ Controller interface
   ⇨ Address
   ⇨ Device type
3. Select the required application module with a suitable profile.
4. Click the button [3].
   ⇨ A software wizard for setting the application module appears.

23028513/EN – 12/2016

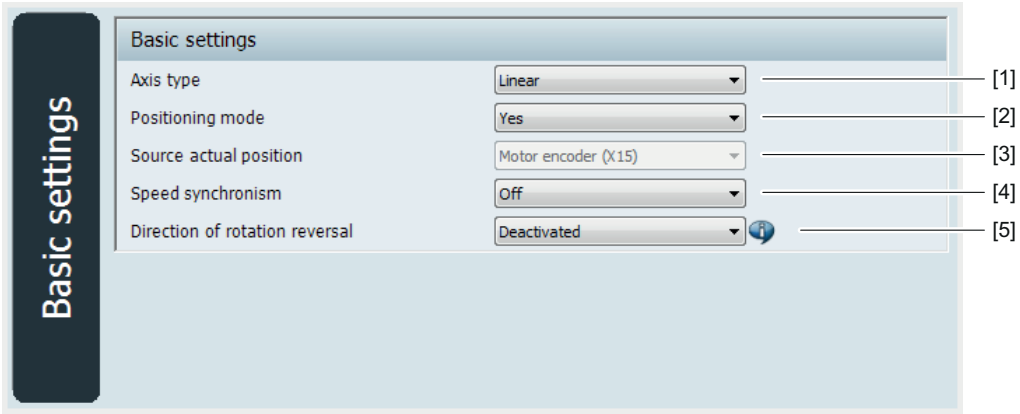
5. Follow the instructions of the wizard as described in the following chapter "Setting the application module".
   ⇨ Once you have completed the instructions of the software wizard, the yellow warning symbol [4] turns into a green check.
6. Click [Next].
   ⇨ The "Download" window is displayed (see "Application Configurator for CCU" manual).

7.3 Configuring the application module

The wizard for configuring the Application Configurator guides you through the following configuration windows of the application module.

7.3.1 Basic setting

In this window you can make the following basic settings:



27021601345043339

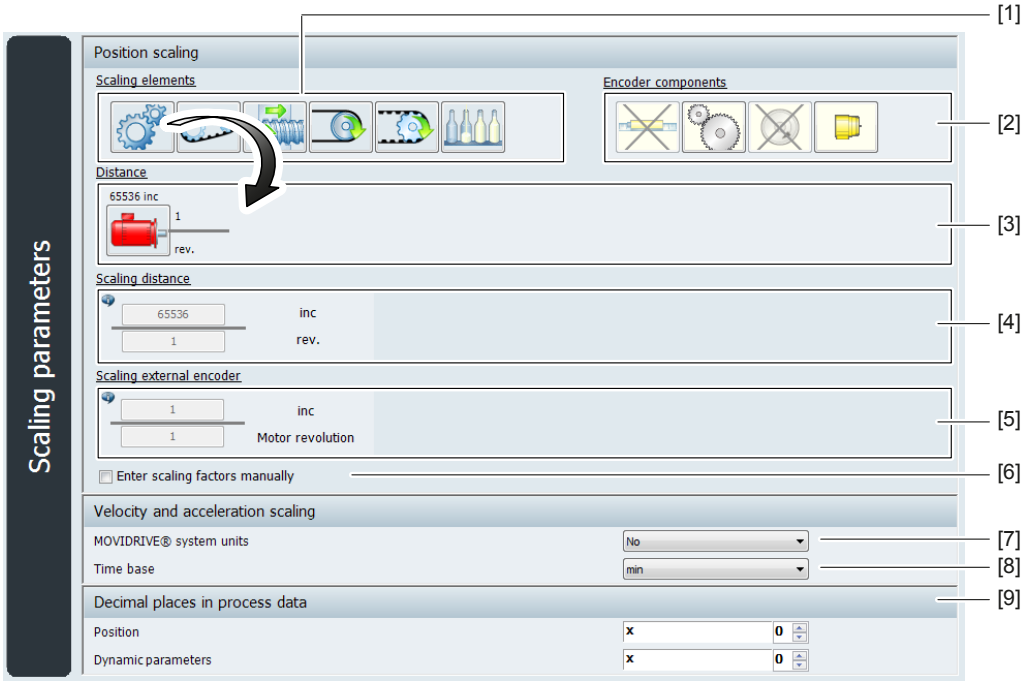
No.	Description
[1]	Here you can choose the axis type: • **Linear** This setting means the travel range is limited to 2^{31} user units. You can additionally limit this range by using hardware or software limit switches. • **Modulo** This setting means the travel range is endless. The processing of hardware and software limit switches is disabled.
[2]	Here you can activate positioning mode: • **Yes** Activates positioning mode. • **No** Deactivates positioning mode. This setting reduces the time needed for startup because functions of the subsequent windows are skipped.

No.	Description
[3]	Here you can set the source of the actual position (independent of the device). You can choose between motor encoder and distance encoder. A distance encoder is managed directly by the axis. This means you merely have to specify to which port/slot the encoder is connected. • **MOVIAXIS®** Encoder 1: Motor encoder (default setting) Encoder 2: Encoder on option card slot 2 Encoder 3: Encoder on option card slot 3 • **MOVIDRIVE® B** Encoder 1: X15 Motor encoder (default setting) Encoder 2: X14 External encoder Encoder 3: X62 Absolute encoder
[4]	Here you can choose the type of speed synchronism: • **Off** Deactivates synchronism. This setting reduces the time needed for startup because functions of the subsequent windows are skipped. • **Master** This setting activates speed synchronism with the master axis. You can configure the "speed window" during startup. • **Configured axis as speed setpoint** Activates speed synchronism of the slave axis to a configured axis. • **Voltage input as speed setpoint source** Activates speed synchronism of the slave axis to an analog voltage input. • **Current input as speed setpoint source** Activates speed synchronism of the slave axis to an analog current input. • **Frequency input as speed setpoint (only available for MOVIGEAR®B / DRC..)** Activates speed synchronism of the slave axis to a frequency input.
[5]	Here you can activate or deactivate the direction of rotation reversal of the axis (**only available for MOVIGEAR® B / DRC..)**.

23028513/EN – 12/2016

7.3.2 Scaling parameters

In this window you can set the scaling factors for distance and, if installed, for external encoders.



27021601345054731

No.	Description
[1]	Here you can choose from the following scaling components: • **Gear unit** • **Additional transmission** • **Spindle** • **Drive wheel** • **Toothed belt pulley** • **User units**
[2]	In this section you can choose from the following encoder components: • **Linear encoder** • **Encoder gear unit** • **Measuring wheel** • **Drive wheel** • **Rotary encoder** **INFORMATION:** The most commonly used linear encoders are listed with the resolution in a drop-down list. For rotary encoders, you enter the resolution manually, see section "Resolution of rotary external encoders" (→ 🗎 43).

No.	Description
[3]	In this section you can combine the scaling and encoder components to a mechanically coupled chain. The components should simulate the constellation of the mechanical components. This chain is then used to calculate the scaling for the distance [4] and, if available, for the external encoder [5]. 1. Move the required scaling [1] and encoder components [2] one after the other into this area in the correct order. 2. Note that only certain combinations are reasonable, which is why some components are disabled. 3. Finally you can configure the properties of the selected components in more detail by double-clicking the respective icon. **INFORMATION:** A motor revolution is mapped to 65536 increments regardless of the physical encoder resolution.
[4]	This section shows the scaling of the distance in user units or in revolutions. The scaling of the distance indicates by how many increments the encoder will increment if the axis is moved for a certain distance. The scaling can be entered manually when [6] is enabled.
[5]	This section shows the scaling of the external encoder if such an encoder has been set for "actual position source". The external encoder indicates the ratio of the increments of the external encoder and the revolutions of the motor. The scaling can be entered manually when [6] is enabled.
[6]	By activating this check box you can directly enter scaling factors in sections [4] and [5]. The scaling factors are independent of the mechanical chain in section [3].
[7]	In this section you can choose whether you want to use the system units of MOVIDRIVE® B: • **No** The system units of MOVIDRIVE® B are not used. • **Yes** The following system units are used: – Unit of the speed: 1 rpm – Unit of the acceleration and deceleration time for a speed difference of 3000 rpm: 1 ms
[8]	In this section you can choose the time base you want to use: • **Minutes [min]** The following units are derived: – Velocity: [Distance/min] – Acceleration: [Distance/min×s] • **Seconds [s]** The following units are derived: – Velocity: [Distance/s] – Acceleration: [Distance/s^2]

23028513/EN – 12/2016

No.	Description
[9]	In this section you can enter the decimal positions for the following values: • **Position** • **Dynamics parameters** (acceleration, deceleration) **INFORMATION:** The decimal positions specified in this section only affect the fieldbus interface.

Resolution of rotary external encoders

For rotary external encoders, observe the following convention for entering the resolution:

Unit	Interface	Resolution	Sample encoder type
MOVIAXIS®	All	Resolution of the single-turn encoder	AV1Y (Heidenhain ROQ424), 512 inc./revolution
MOVIDRIVE® B	X62 on DIP11B or DEH21B	Resolution of the absolute encoder	T&R CE65M, 4096 inc./revolution
	X14 on DEU21B	Resolution of the single-turn encoder	AV1Y (Heidenhain ROQ424), 512 inc./revolution
	X14 on DEH11B	4-fold resolution of the single-turn encoder	AV1Y (Heidenhain ROQ424), 2048 inc./revolution

Example: Scaling parameters

The following example illustrates how to compile and parameterize scaling elements and encoder components.

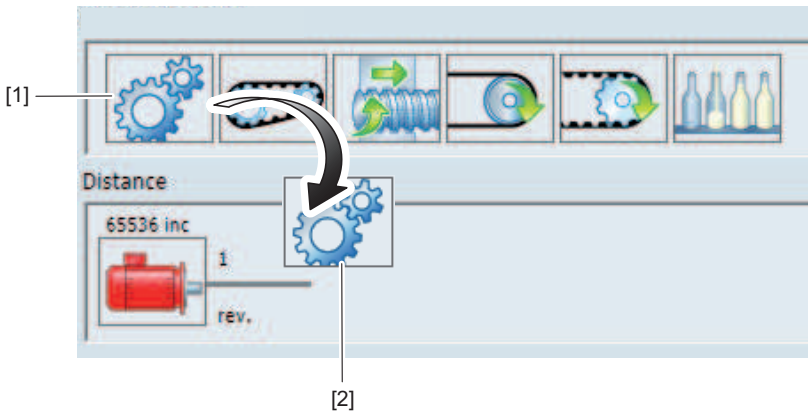
The example is based on the following conditions:

Scaling parameter	Input value
Gear unit reduction ratio (i)	13.52
Carrying wheel diameter	350 mm
Linear distance encoder	Type: DME5000-0.1 Resolution: 10 increments per mm

23028513/EN – 12/2016

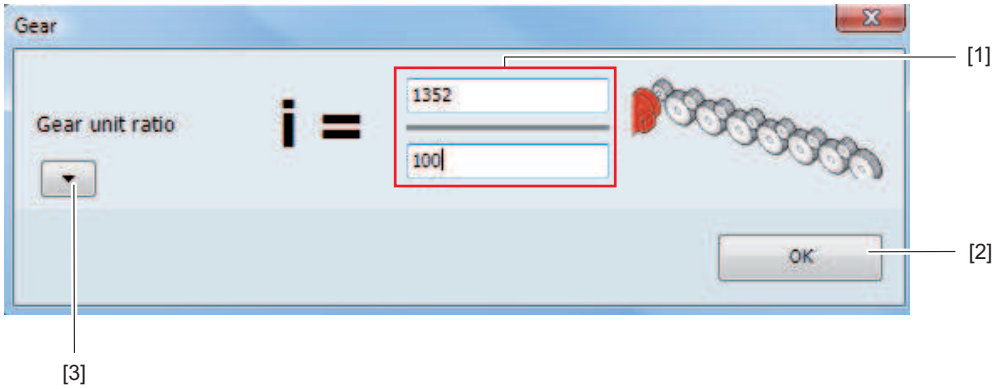
Proceed as follows:

1. Use drag and drop to place the "gear unit" scaling element into the "distance" area [2].



9007205556691979

2. Double-click "gear unit".
3. Enter the value (13.52) for the gear unit ratio (i). Use numerator and denominator [1].



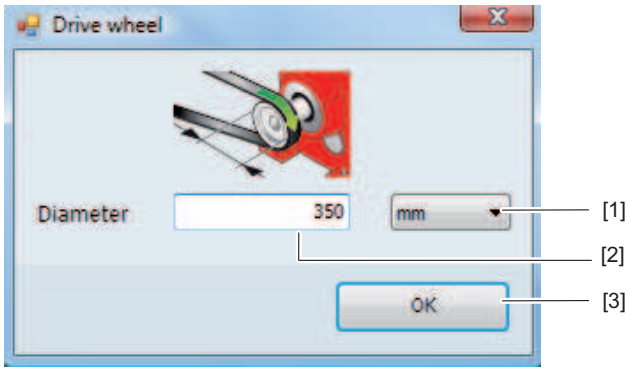
6301959563

INFORMATION: If you have several gear unit stages, you can enter the respective ratio in the expanded view [3]. The value "13.52" in the example is rounded. For modulo applications, we recommend that you request the exact value from SEW-EURODRIVE.

4. Click [OK].
5. Use drag and drop to place the "drive wheel diameter" scaling element into the "distance" area [2].
6. Double-click the "drive wheel diameter" scaling element.

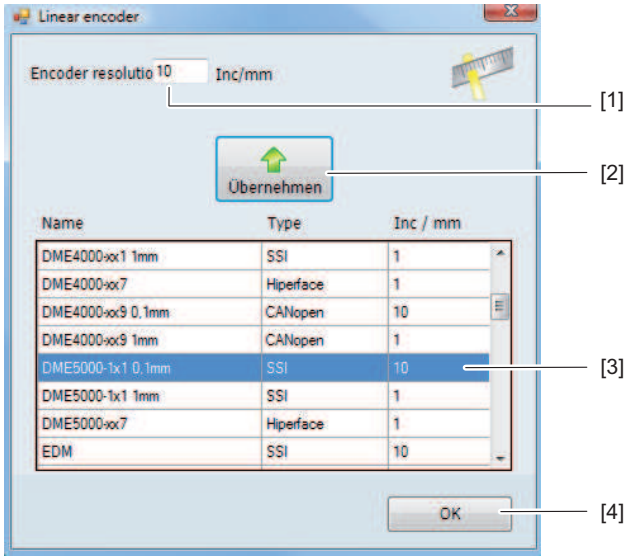
23028513/EN – 12/2016

7. Enter the value (350) in [2] and choose the unit [mm] from [1]:



6301994123

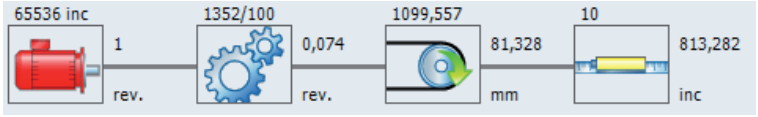
8. Click [OK].
9. Use drag and drop to place the "linear encoder" component into the "distance" area [2] (second to last figure above).
10. Double-click "linear encoder" and select the encoder type (DME5000-1×1 0.1 mm) [3].



6302413067

11. Click button [2] to enter the value of the encoder resolution (10 increments) in the text field [1].
12. Click [OK].

    ⇨ The result of your selection with the values you have entered is illustrated below:

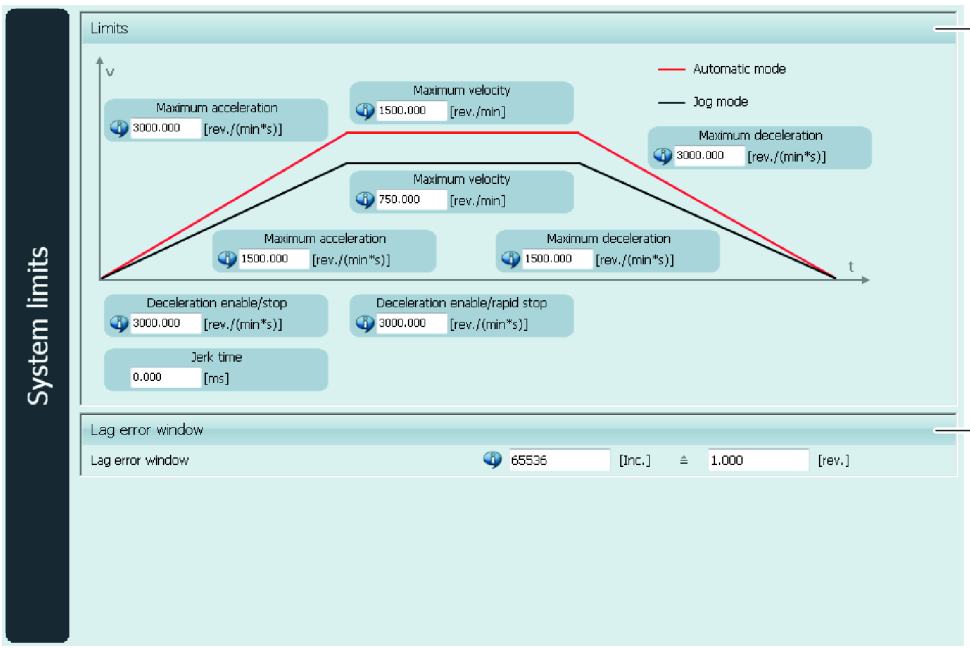


6302422795

13. Choose the time base for speed and acceleration (minute [min], second [s]).

7.3.3 System limits

In this window you can set the system limits of the axis.



27021601345066251

No.	Description
[1]	In this section you can set the following limit values for the dynamic properties: • **Maximum acceleration** (automatic mode) • **Maximum velocity** (automatic mode) • **Maximum deceleration** (automatic mode) • **Maximum acceleration** (jog mode) • **Maximum velocity** (jog mode) • **Maximum deceleration** (jog mode) **INFORMATION:** You can set these 3 values (maximum acceleration/velocity/deceleration) separately for jog mode and for automatic mode. These values limit the dynamics parameters specified by the fieldbus. • **Jerk** Increasing the jerk (> 0 ms) protects the mechanical components and achieves smoother acceleration and deceleration behavior. • **Deceleration enable/stop** The set stop ramp is active when signal I1:2 *Enable/stop* = "0". • **Deceleration enable/rapid stop** The set rapid stop ramp is active when signal I1:1 *Enable/rapid stop* = "0", or in the event of a fault.
[2]	In the lag error window, you can set the maximum permitted lag error in position-controlled operation.

23028513/EN – 12/2016

INFORMATION

Make sure that values ≠ 0 are assigned to maximum acceleration, maximum velocity and maximum deceleration, and that there is a control tolerance of, for example, +10% based on the maximum dynamics of the required travel profile.

7.3.4 Input configuration (only available for MOVIGEAR® B / DRC..)

This window provides the following function:

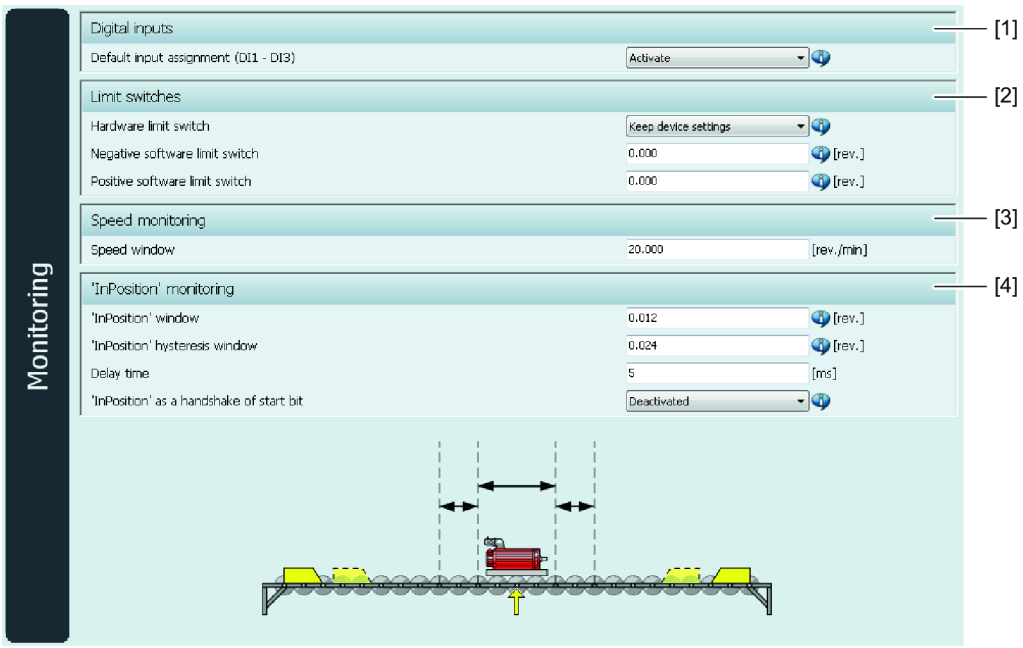
15326951947

No.	Description
[1]	In this section you can choose the digital inputs to be evaluated in MOVIGEAR® B / DRC..: • **Onboard** Digital inputs of the basic unit MOVIGEAR® B / DRC.. • **GIO** Digital inputs of the GIO12B/GIO13B option card of MOVIGEAR B / DRC..

For information on the process data assignment of the digital inputs, see chapter "Process data assignment of input/output terminals of MOVIGEAR® B / DRC.." (→ 🗎 74).

7.3.5 Monitoring

In this window you can set the following monitoring functions:



36028800599819147

No.	Description
[1]	Here you can set whether you wish to use the default input assignment for the digital inputs (DI01 to DI03): • **Keep device setting** The assignment according to the parameter tree of the device applies. The controller does not change these settings. If you want to change the device assignment, edit the respective parameter group in the parameter tree in MOVITOOLS® MotionStudio. • **Activate** The default input assignment for the digital inputs applies to the respective inverter, see chapter "Default input assignment" (→ 🗎 74). • **Deactivate** Digital inputs with default values assigned to them are set to "IPOS input" or "No function" depending on the device type, see chapter "Default input assignment" (→ 🗎 74). Digital inputs without "default input assignment" (→ 🗎 74) remain unchanged.
[2]	Here you can set the following limit switches: • **Hardware limit switches** – Keep device setting – Activate – Deactivate • **Software limit switches** – Positive position – Negative position You find detailed information about the setting options on the following pages.

23028513/EN – 12/2016

No.	Description
[3]	Here you can enter the speed for the speed window.
[4]	Here you can set the two windows for "InPosition" monitoring and for the time until which "setpoint reached" is signaled in positioning mode. You find detailed information about the setting options on the following pages.

Hardware limit switches

- **Keep device settings**

  The settings according to the parameter tree of the device apply. The controller does not change these settings. If you want to change the device settings, you have to edit the relevant parameter group in MOVITOOLS® MotionStudio.

- **Activate**

  Activates the monitoring of positive and negative limits implemented through hardware limit switches. For assignment information, refer to chapter "Default input assignment" (→ 🗎 74).

- **Deactivate**

  Deactivates monitoring.

  Depending on the device type, digital inputs with default input assignment are set to "IPOS input" or "No function". Digital inputs without "default input assignment" (→ 🗎 74) remain unchanged.

When using hardware limit switches, they have to be designed as **NC contacts** for wire-break protection reasons. 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 hit

The axis decelerates based on the value set for "enable/rapid stop". The inverter signals the fault "Hardware limit switch hit" (F29). After a fault reset, the drive moves clear of the hardware limit switch with the retraction speed (reference velocity 2), and the fault is cleared. The retraction speed is decelerated and accelerated with the value 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.

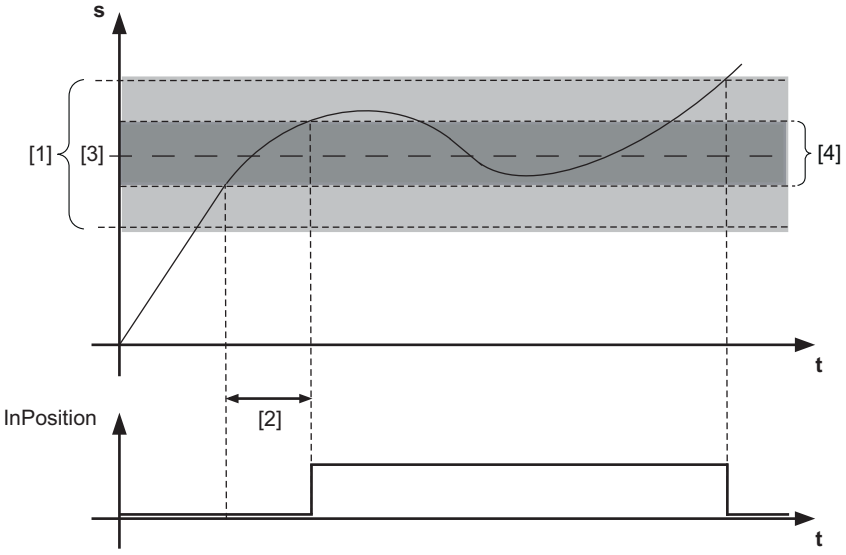
Response when a software limit switch is hit

When the drive moves past a software limit switch in "jog" or "positioning" mode, the axis stops with the deceleration value set in "enable/rapid stop". The application fault "Positive limit switch hit" (F32) or "Negative software limit switch hit" (F33) is issued. A "fault reset" and moving the axis in the direction of the permitted travel range moves the drive clear of the software limit switch and deletes the fault. The velocity, acceleration and deceleration values of the selected operating mode apply.

23028513/EN – 12/2016

InPosition monitoring

The following figure illustrates the meaning of the parameters.



9007202588681739

[1]	"InPosition" hysteresis window
[2]	Deceleration time
[3]	Target position
[4]	"InPosition" window
InPosition	"InPosition" signal
s	Distance
t	Time

"InPosition" monitoring uses 2 windows to activate and deactivate the "InPosition" signal.

The "InPosition" signal is issued when the actual position is in the inner **"InPosition" window** [4] when monitoring is active. The signal is not revoked until the outer **"InPosition hysteresis window** [1] is left.

The "InPosition" signal is set again when the drive enters the inner "InPosition" window [4] again with the same target position. A relatively small window can be used to activate the "InPosition" signal due to the hysteresis even when the drive overshoots the actual position. The deceleration time and the "InPosition" hysteresis window prevent bouncing of the "InPosition" signal.

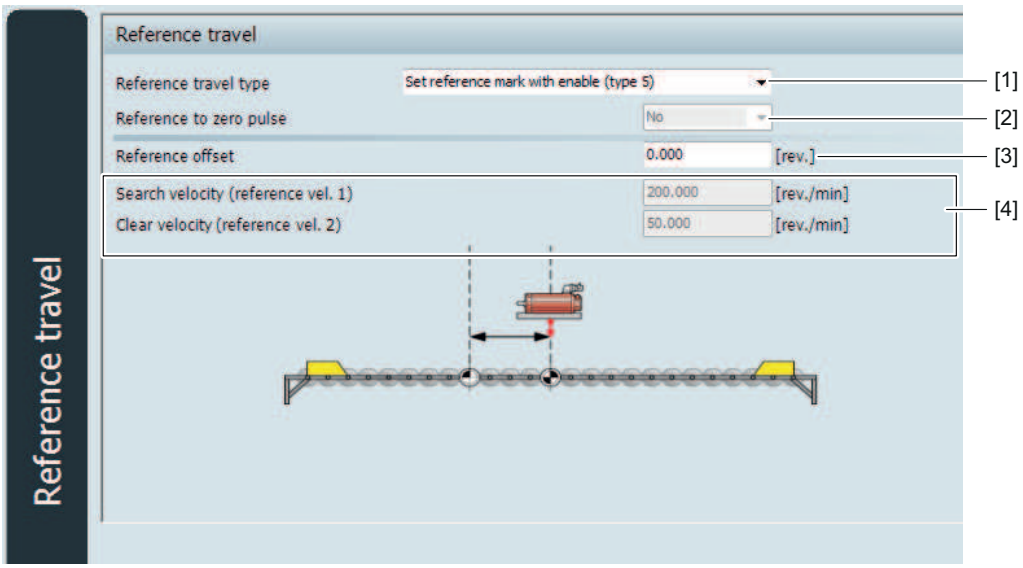
The function **"InPosition as handshake of the start bit"** can be used in the operating modes "positioning mode" (4) and "positioning mode – Touchprobe" (5). This function can be set as follows:

- **Deactivated:** "InPosition" is evaluated even if *Start* = FALSE (default).
- **Activated:** "InPosition" is only evaluated if *Start* = TRUE.

23028513/EN – 12/2016

7.3.6 Reference travel

In this window you can set the reference travel parameters.

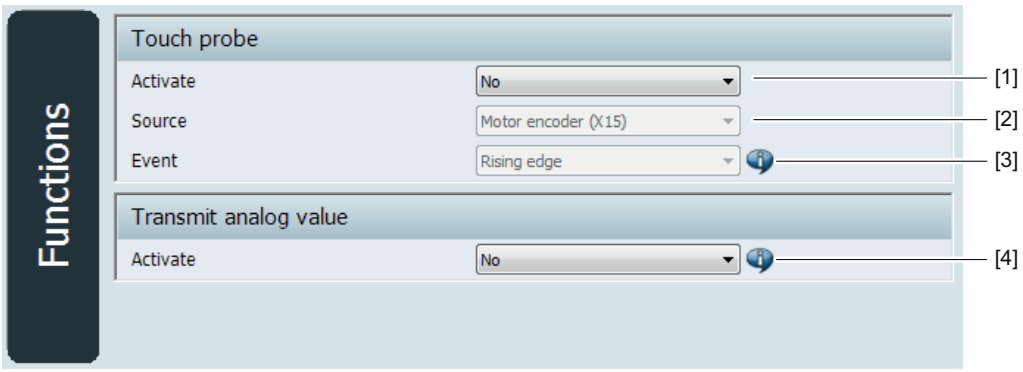


18014402090349451

No.	Description
[1]	Here you can choose the reference travel type. The reference travel type defines how the reference travel is performed. There are different reference travel types available depending on the unit in use. For more information, refer to the documentation of the respective unit. The following options are available depending on the selected reference travel type.
[2]	Here you can set whether reference travel takes place to the edge change of the reference cam or to the subsequent zero pulse of the encoder. • **Yes:** 0 pulse • **No:** Edge change
[3]	Here you can enter the reference offset. Based on the reference point that was determined during reference travel, you can move the axis zero using the reference offset. The new axis zero is calculated according to the following equation: **Axis zero = reference position - reference offset** The reference offset is given in user units.
[4]	Here you can enter the search velocity and the retraction speed. If a reference cam is used for reference travel, the drive moves towards the reference cam at search velocity and away from the reference cam at retraction speed. The axis accelerates and decelerates with the value set for "Enable/rapid stop". Velocities are given in user units.

7.3.7 Functions

This window provides the following functions:



18014402090362123

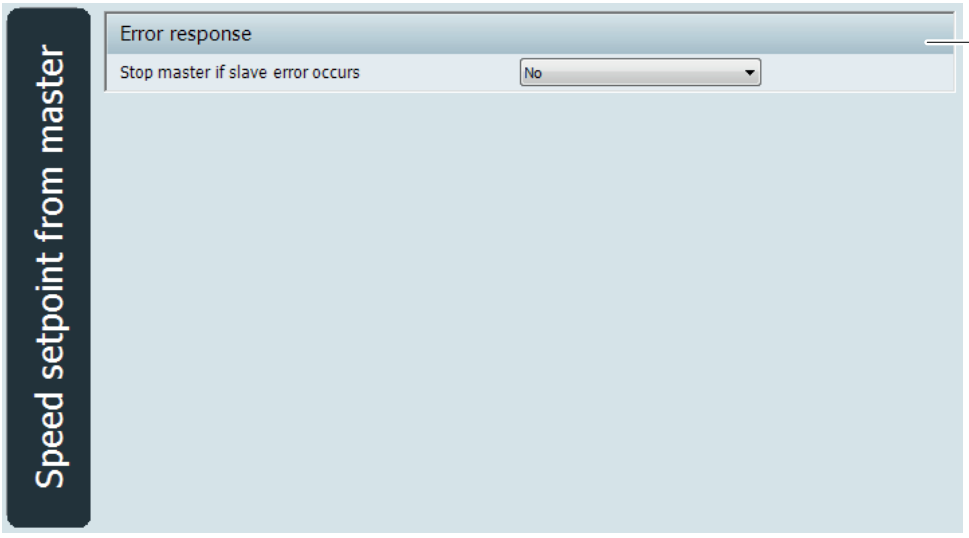
No.	Description
[1]	Here you activate the Touchprobe function: • **No**: Disables the Touchprobe function (default setting). • **Yes**: Enables the Touchprobe function.
[2]	Here you choose the source for the activated Touchprobe function. You can choose between motor encoder and external encoder. An external encoder is managed directly by the axis. This means you merely have to specify to which port/slot the encoder is connected. • **MOVIAXIS®** Encoder 1: Motor encoder (default setting) Encoder 2: Encoder on option card slot 2 Encoder 3: Encoder on option card slot 3 • **MOVIDRIVE® B** Encoder 1: X15 Motor encoder (default setting) Encoder 2: X14 External encoder Encoder 3: X62 Absolute encoder
[3]	Here you choose the edge of the Touchprobe signal on the interrupt input: • **Rising edge** (default setting) • **Falling edge** • **Rising or falling edge** The following terminals are assigned to digital input DI02 depending on the unit: • MOVIAXIS®: Terminal X10:13 • MOVIDRIVE® B: Terminal X13:3 • MOVIGEAR® B / DRC..: Terminal X5131:2 For more terminal assignments, refer to the respective unit documentation.

23028513/EN – 12/2016

No.	Description
[4]	Here you activate the transfer of analog values **(only available for MOVIGEAR® B / DRC..)**: • **No**: Disables the transfer of analog values of the GIO13B option card (default setting). • **Analog input/analog output**: The analog output is controlled via setpoint 2. The analog input is output via actual value 2. • **Frequency input/analog output:** The analog output is controlled via setpoint 2. The frequency input is output via actual value 2. **INFORMATION:** The Touchprobe function cannot be used when analog values are transferred.

7.3.8 Speed setpoint from master

In this window you can activate the function "stop master if slave error occurs".

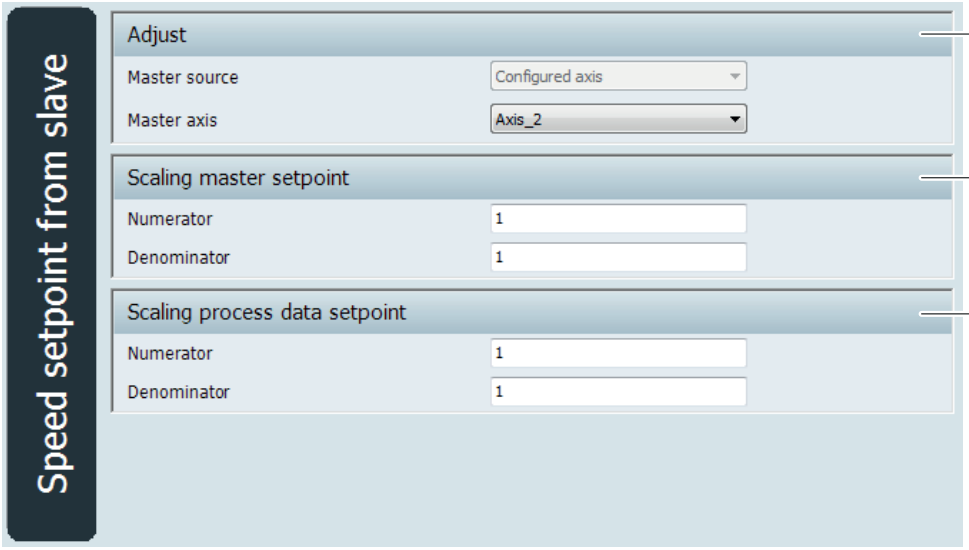


18014402090375179

No.	Description
[1]	Here you can activate the stopping of the master axis in the event of a slave axis error: • **No** Disables monitoring of the slave axis. • **Yes** Enables monitoring of the slave axis. With this setting, the master axis is stopped when an error occurs in a synchronized slave axis.

7.3.9 Speed synchronism – Configured axis as speed setpoint for the slave

This window provides the following functions:



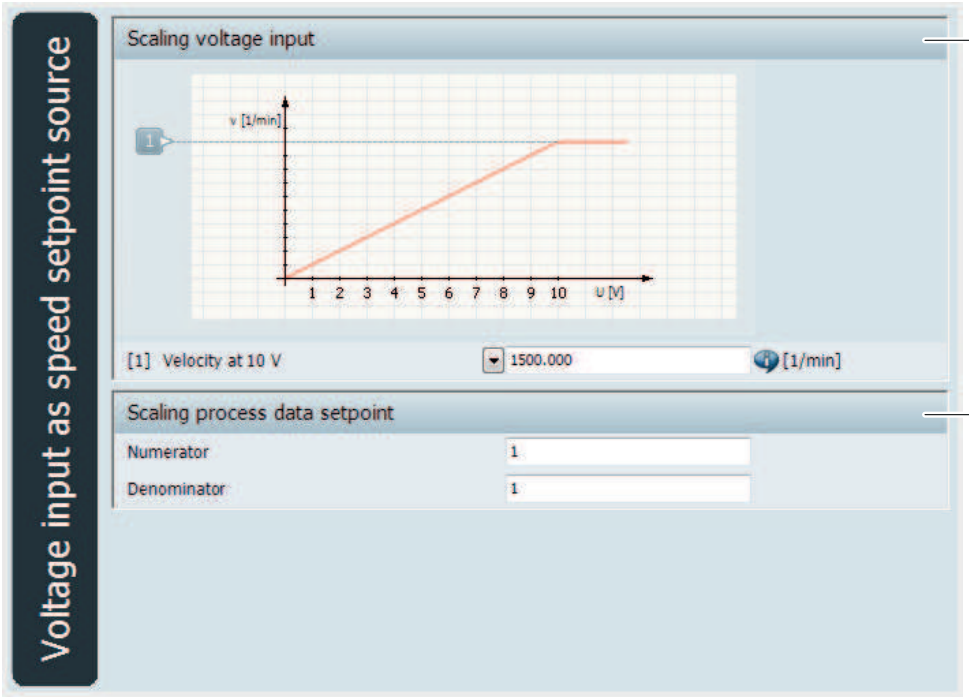
27021601345129611

No.	Description
[1]	Here you choose the master axis. Permitted range of values: 1 – 16
[2]	Here you enter the speed ratio between master and slave axis. **INFORMATION:** Using the numerator/denominator ratio, you can compensate different gear unit factors between master and slave axes.
[3]	Here you can enter the values for numerator and denominator of your required scaling of the process data setpoint. The setpoint velocity specified via fieldbus is transferred to the axis with the scaling you entered in this section.

23028513/EN – 12/2016

7.3.10 Speed synchronism – Voltage input as speed setpoint source for the slave

This window provides the following functions:

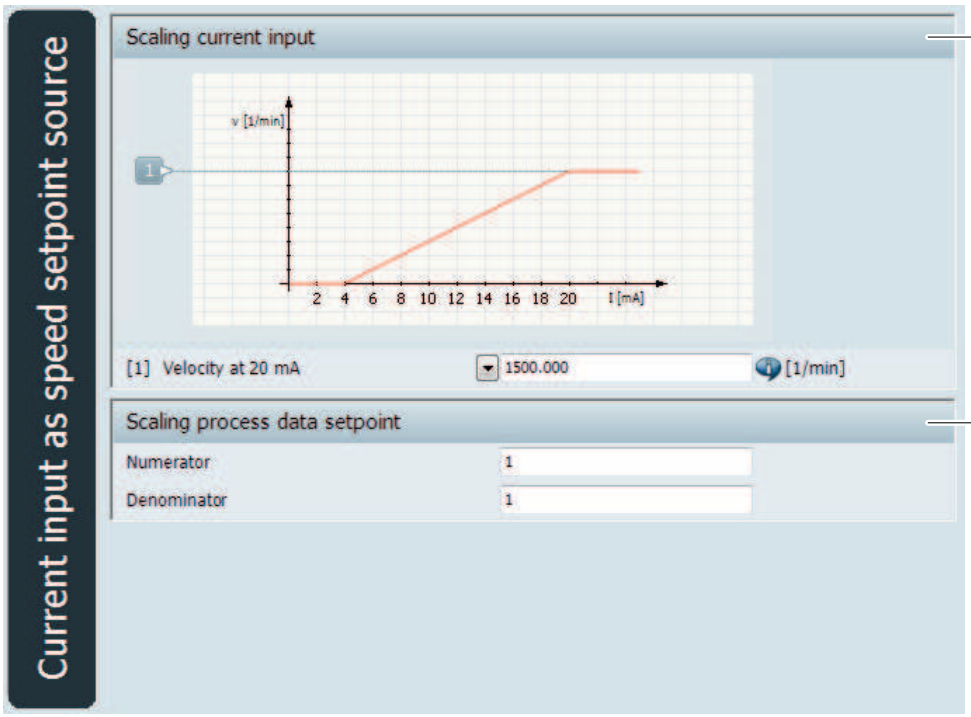


27021601345157643

No.	Description
[1]	Here you can enter the speed at a voltage of 10 V. Instead, you can enter the speed depending on a variable voltage value. **Normalization:** With a rise of 10 V you cover the speed range from 0 rpm up to maximum speed (10000 digits internal resolution).
[2]	Here you can enter the values for numerator and denominator of your required scaling of the process data setpoint.

7.3.11 Speed synchronism – Analog current input as speed setpoint source for the slave

This window offers the following functions:



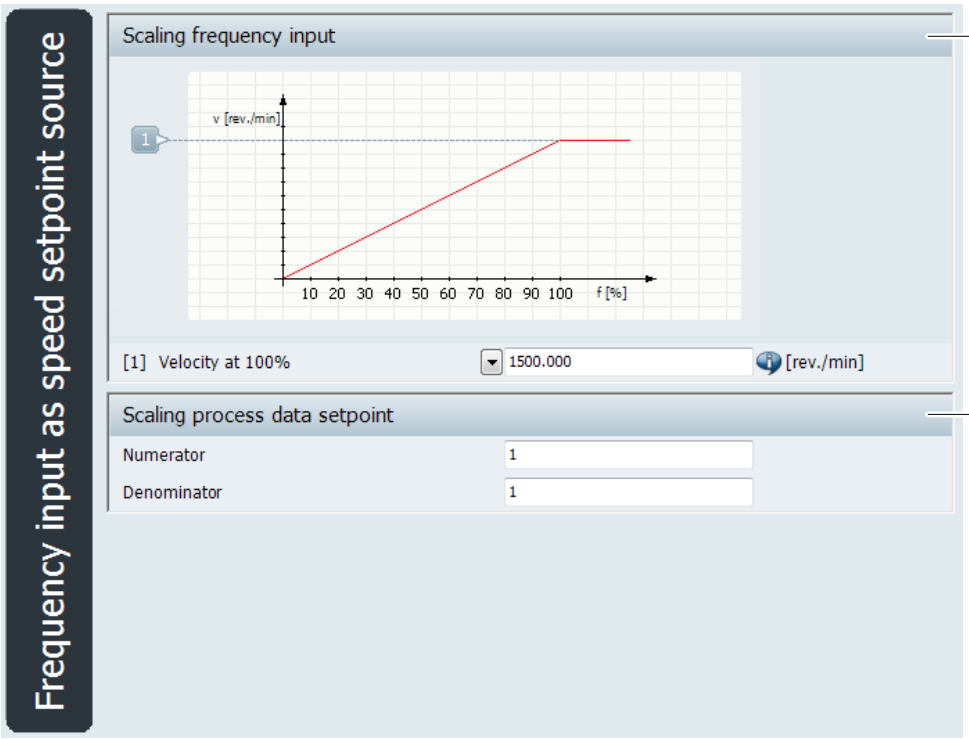
27021601504738315

No.	Description
[1]	Here you set the speed for a current of 20 mA. Optionally, you can enter the speed depending on a variable current value. **Normalization:** With a range of 0 to 20 mA, you cover the speed range from 0 rpm up to maximum speed (1000 digits internal resolution).
[2]	Here you enter the values for numerator and denominator of your required scaling of the process data setpoint.

23028513/EN – 12/2016

7.3.12 Speed synchronism – Frequency input as speed setpoint source for the slave (only available for MOVIGEAR® B / DRC..)

This window offers the following functions:



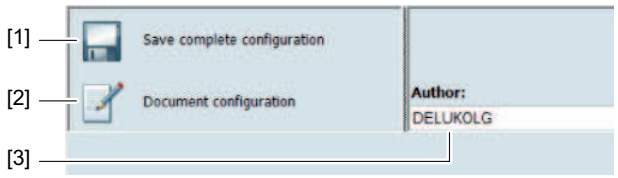
27021601505139083

No.	Description
[1]	Here you set the speed in relation to 100%. Optionally, you can enter the speed depending on a variable frequency value. **Normalization:** With a range of 0 to 100%, you cover the speed range from 0 rpm up to maximum speed (10000 digits internal resolution).
[2]	Here you enter the values for numerator and denominator of your required scaling of the process data setpoint.

7.4 Saving the configuration on the SD card of the controller

7.4.1 Completing the axis configuration

After successful axis configuration, the following functions are available in the displayed window.



14794534795

No.	Description
[1]	Click this button to save the configuration to a configuration file (*.AppConfig.zip) on your computer. You can then use the values to start up more application modules, see chapter "Initial screen" in the "Application Configurator for CCU" documentation.
[2]	Click this button to create a PDF file with a configuration report.
[3]	If you enter a name into this edit box, it will be shown in the report.

Saving the entire configuration to a configuration file (*.AppConfig.zip)

Proceed as follows:

1. Click button [1].
   ⇨ A window opens with the directory structure of your computer.
2. Search the desired storage location in the directory structure.
3. Enter a random name for the configuration.
4. To close the dialog, click [Save].

⇨ You have now saved the configuration.

Finishing the configuration

Proceed as follows:

1. To exit the wizard, click [Finish].

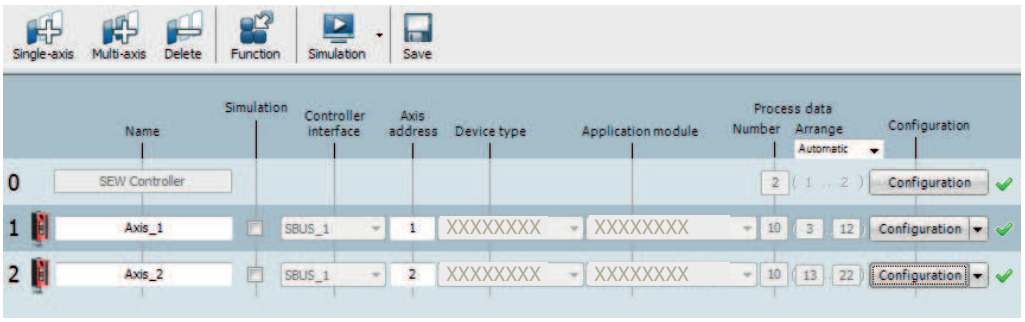
⇨ You have now completed the configuration.

⇨ The screen of the Application Configurator is displayed again.

23028513/EN – 12/2016

7.4.2 Finishing the configuration

The following window shows the complete configuration.



9007214493540747

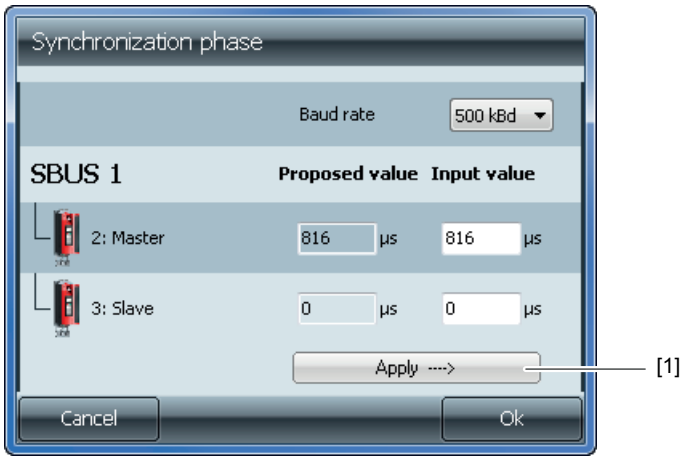
To finish the complete configuration, click [Next].

If you **use MOVIDRIVE® B**, the window for setting the synchronization phase opens depending on the configuration, see the next chapter.

If you **DO NOT use MOVIDRIVE® B**, skip the next chapter and go directly to chapter "Downloading the configuration".

7.4.3 Setting the synchronization phase on MOVIDRIVE® B

Once you have completed the configuration, the following window opens depending on the configuration.



13678964491

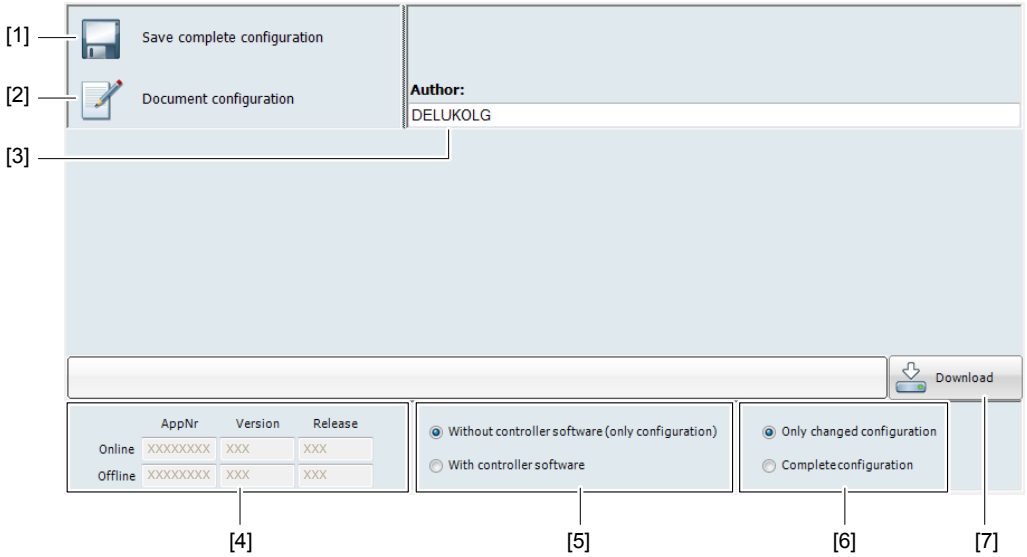
INFORMATION

SEW-EURODRIVE recommends that you set a baud rate of 1 MBaud on the devices and in the software interface.

1. To accept the suggested values, click [1].
   ⇨ The values are applied.
2. To finish the configuration, click [OK].
   ⇨ Configuration is now finished.

7.4.4 Downloading the configuration

When you have configured the application module, the following data is available under "Download".



9007212935349131

No.	Description
[1]	Click this button to save the configuration to a configuration file (*.AppConfig.zip) on your computer. You can then use the values to start up more application modules. Refer to the "Application Configurator for CCU" documentation for more information.
[2]	Click this button to generate a report of the configuration as a PDF file.
[3]	The name you enter into this edit box will be shown in the report.
[4]	In this section you see the information of the application module that is installed offline on your computer and online on the controller: • Part number • Version • Release
[5]	Use the radio buttons to choose if you want to download the configuration with or without controller software.
[6]	These radio buttons let you choose between downloading the modified configuration or the complete configuration.
[7]	Click this button to download the configuration.

1. Make the required settings.
2. Click this button [7] to download the configuration.

⇨ The configuration is downloaded.

⇨ The controller is ready for operation.

⇨ Click [Next] to get back to the configuration interface of the Application Configurator.

⇨ You can start operation or the test run in diagnostics (see following chapter).

23028513/EN – 12/2016

8 Operation and diagnostics

The application module is operated using the fieldbus interface of the controller.

The Application Configurator provides the following functions for startup and diagnostics:

- **Overview** (initial screen of diagnostics)

  Detail diagnostics of the individual application modules.

- **PD monitor** (process data monitor)

  Fieldbus interface diagnostics, see chapter "PD monitor" (→ 🗎 68).

- **Trace**

  Recording of various process signals such as velocity, position of the axis, etc., see chapter "Trace" (→ 🗎 69).

- **Extended diagnostics**

  Extended diagnostics is used for expert diagnostics, see chapter "Extended diagnostics" (→ 🗎 69).

These functions are activated by clicking button [1] on the initial screen of the Application Configurator.

9007213353390219

The individual diagnostics options are described in the following chapters. You find detailed information about the individual functions of the Application Configurator in the documentation for the "Application Configurator for CCU" configuration software.

Adhere to the following warning note:

⚠ DANGER

Unexpected movement of the machine.

Severe or fatal injuries.

Unexpected movement of the machine is possible in the following situations:

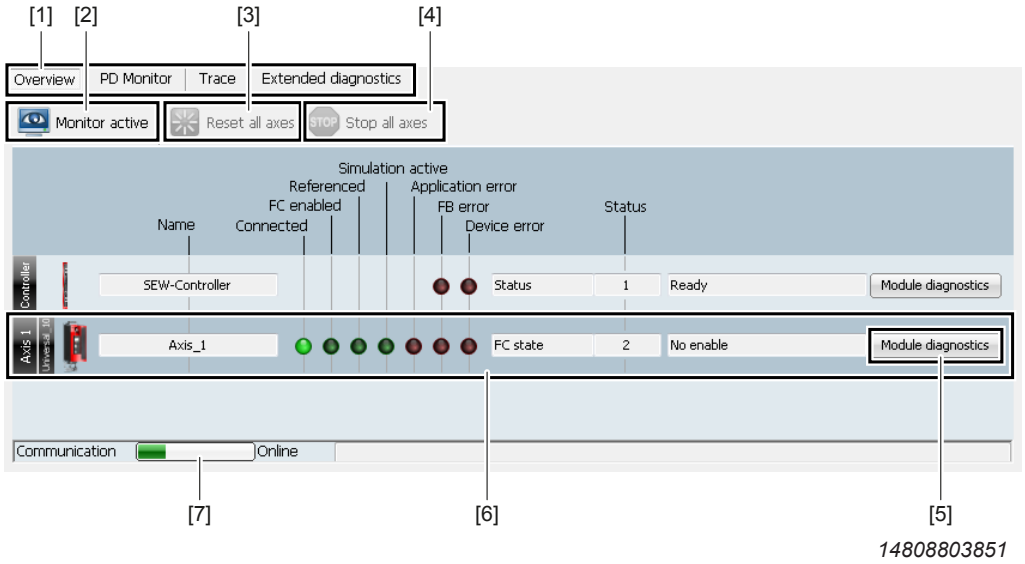
- When switching from monitor mode [Monitor active] to control mode [Control active] and vice versa.
- After clearing the fieldbus input data.

→ Make sure that an automatic restart or stop of the machine represents no danger to people or equipment.

→ Make sure that the machine is in a safe state.

8.1 Overview of diagnostics

The following window opens once you change to diagnostics in the Application Configurator. Here you can open the detailed diagnostics of the various application modules. The information displayed in this window is based on the respective variables of the controller.



14808803851

No.	Description
[1]	These buttons let you access the following functions: • **Overview** (initial screen of diagnostics) • **PD monitor** (process data monitor) • **Trace** • **Extended diagnostics** These functions are described in detail in the subsequent chapters.

23028513/EN – 12/2016

No.	Description
[2]	Click this button to change to monitor mode or control mode. • In **monitor mode** you monitor the functions of the application module. • In **control mode**, you control the functions of the application module. **INFORMATION:** Observe the warning note in chapter "Operation and diagnostics" (→ 🗎 61). **INFORMATION:** The control mode of the PD monitor must not be activated simultaneously with the control mode.
[3]	Click this button to acknowledge the faults of all axes.
[4]	Click this button to stop all configured axes (for example in case of a hazard). Deceleration is carried out via the emergency stop ramps.
[5]	Click this button to acknowledge the module diagnostics of the application module.
[6]	This area displays the individual axes. The application module is shown as axis group.
[7]	This area displays the communication status of the controller. For successful diagnostics and control, the status "online" must be displayed and the green progress bar must be completed.

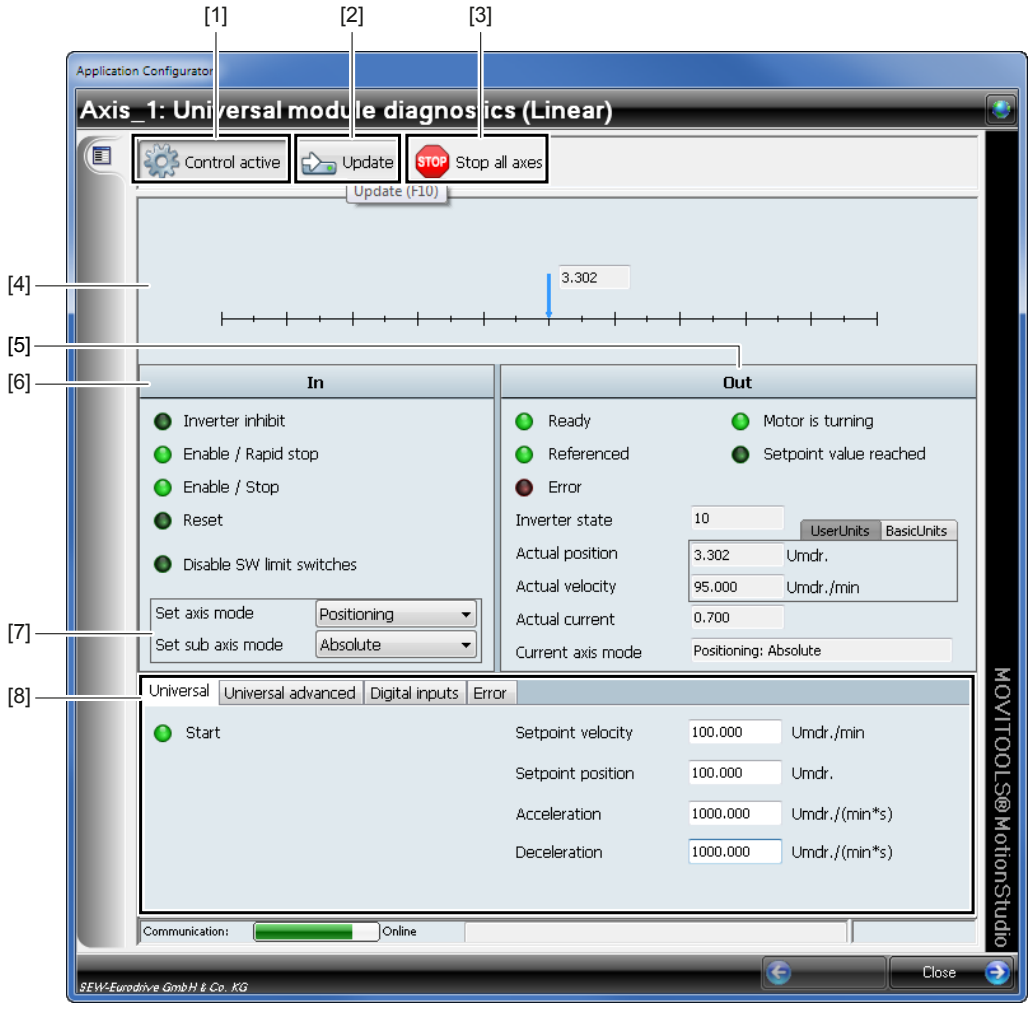
8.2 Module diagnostics

Module diagnostics provides you with module-specific diagnostics information regarding the process data interface, the operating states, and faults.

To open module diagnostics, click [Module diagnostics] on the "Overview" tab, see chapter "Overview of diagnostics" (→ 🗎 62).

23028513/EN – 12/2016

The basis for module diagnostics are all input and output data of the process data interface. The data is grouped according to subjects, and is displayed graphically. Unlike the PD monitor, not a direct image of the fieldbus data is displayed but the actual variables of the application module are visualized.



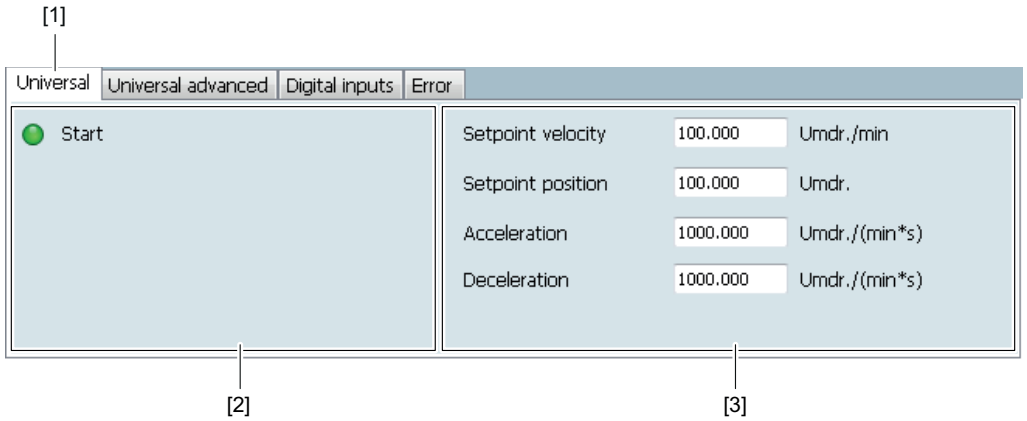
14809503243

No.	Description
[1]	Click this button to change to monitor mode or control mode. • In **monitor mode** you monitor the functions of the application module. • In **control mode**, you control the functions of the application module. **INFORMATION:** Observe the warning note in the chapter "Operation and diagnostics" (→ 🖹 61). **INFORMATION:** The control mode of the PD monitor cannot be activated simultaneously with the control mode of module diagnostics.
[2]	Click this button to transfer the input data to the controller. The button is only enabled in control mode. **INFORMATION:** In the configuration settings of the controller, you can adjust the settings in such a way that the button is no longer displayed. This way, each change of input data in control mode is transmitted directly to the controller.
[3]	Click this button to stop all configured axes (for example in case of a hazard). Deceleration is carried out based on emergency stop ramps.

No.	Description
[4]	In this section you can monitor the operation of the selected operating mode.
[5]	This section displays general output data that are independent of operating mode and function.
[6]	This section displays the following input data that are independent of operating mode and function.
[7]	In this section you can select the operating mode and the submode.
[8]	These tabs provide more input and output information: • **Universal:** Basic functions of an operating mode • **Universal advanced:** Additional functions of the universal module – Torque limitation – Touchprobe • **Digital inputs** • **Error** For details on the tabs, refer to the next chapters.

8.2.1 Tab: Universal

This tab adjusts to the selected operating mode. The tab displays the following information depending on the selected operation mode.



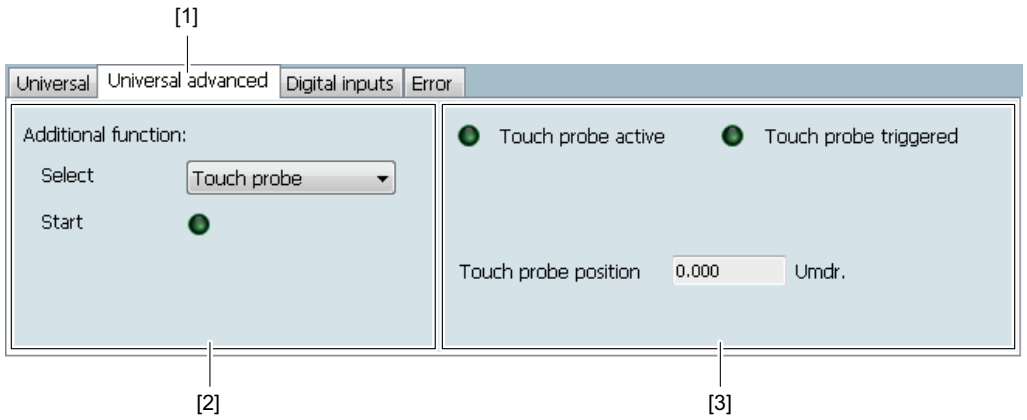
15344758923

No.	Description
[1]	The "Universal" tab is selected.
[2]	This section shows the control bit, e.g. start.
[3]	This section shows control values such as velocity, position, acceleration, deceleration.

8.2.2 Tab: Universal advanced

This tab shows the following additional functions of the universal module.

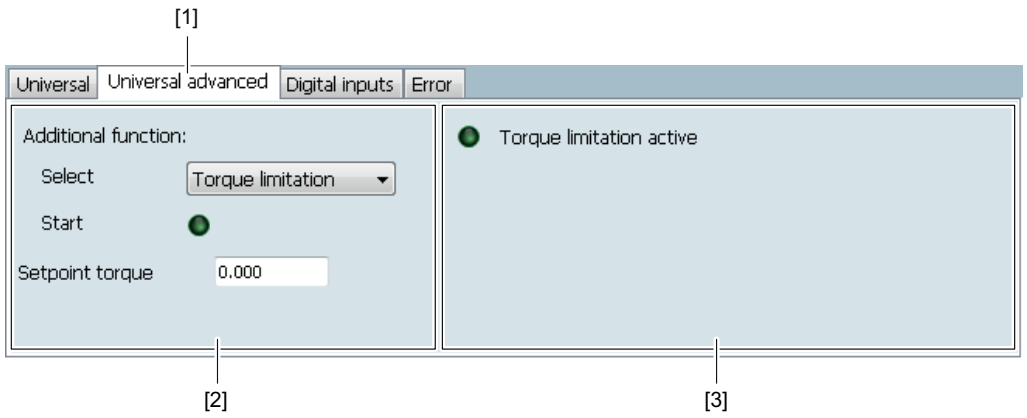
Touchprobe



15345259275

No.	Description
[1]	The "Universal advanced" tab is selected.
[2]	In this section you can activate the Touchprobe function.
[3]	This section displays the following status information of the Touchprobe function: • Touchprobe enabled • Touchprobe triggered • Touchprobe position

Torque limitation



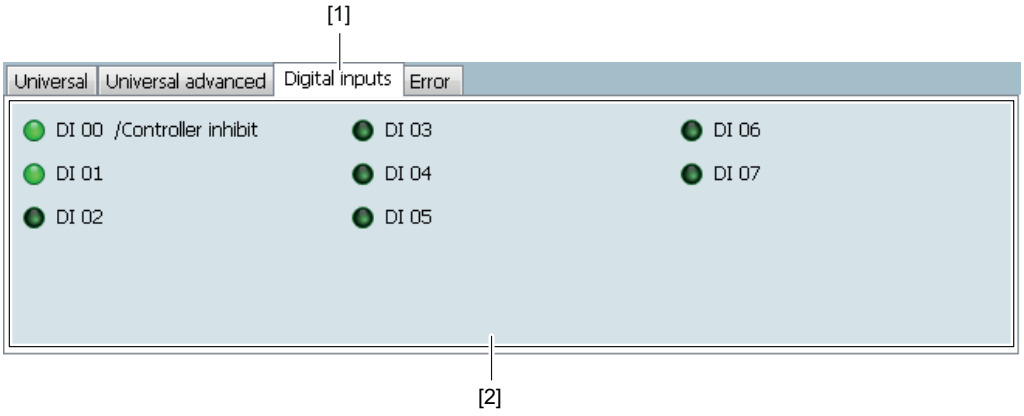
15345254667

No.	Description
[1]	The "Universal advanced" tab is selected.
[2]	In this section you can activate torque limitation and specify the setpoint torque.
[3]	This section displays the status.

23028513/EN – 12/2016

8.2.3 Tab: Digital inputs

This tab shows the following information.

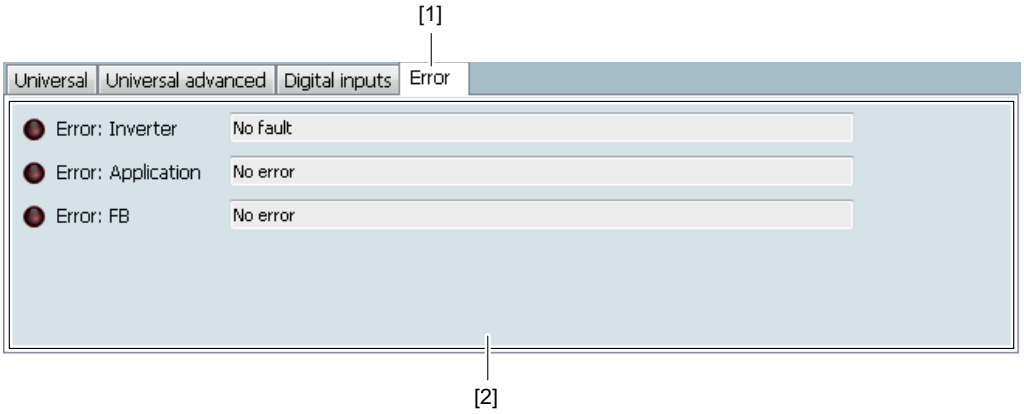


15345263115

No.	Description
[1]	The "Digital inputs" tab is selected.
[2]	This section displays the digital inputs of the inverter.

8.2.4 Tab: Error

This tab shows the following information.

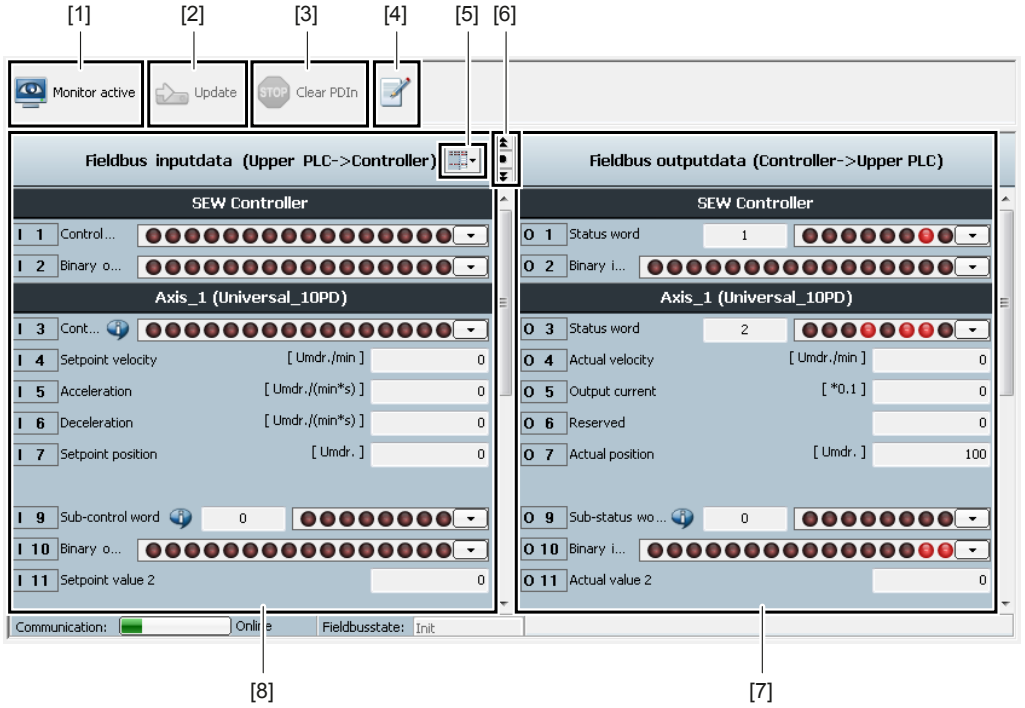


15345753355

No.	Description
[1]	The "Error" tab is selected.
[2]	This section displays faults that have occurred: • Inverter fault • Application fault • Function block fault

8.3 PD monitor

The PD monitor is used for diagnostics and for introduction of the fieldbus interface. The content of the PD monitor is based on the data from the SEW controller and the configured application module. The PD monitor only accesses data of the fieldbus interface and displays fieldbus input data and output data that are exchanged between the controller and the higher-level controller.



15321799179

No.	Description
[1]	Click this button to change to monitor mode or control mode. • In **monitor mode**, you monitor the functions of the application module. • In **control mode**, you control the functions of the application module. **INFORMATION:** Observe the warning note in chapter "Operation and diagnostics" (→ 🗎 61). **INFORMATION:** The control mode of the PD monitor must not be activated simultaneously with the control mode.
[2]	Click this button to send the input data to the controller. The button is only enabled in control mode. **INFORMATION:** In the configuration settings of the controller, you can adjust the settings in such a way that the button is no longer displayed. This way, each change of input data in control mode is sent directly to the controller.
[3]	Click this button to reset all input data or set all input data to zero.
[4]	Click this button to create a PDF file with the process data (for example for the programmer of the PLC).
[5]	Clicking this icon lets you save or download the current input data assignment for later use. Click the icon and select the required option.

23028513/EN – 12/2016

No.	Description
[6]	Use these icons to navigate between the axes: •  : Navigate to the previous axis •  : Navigate to the next axis •  : Drop-down list to directly go to a specific axis
[7]	This area displays the output data. **INFORMATION:** The output data are only displayed and cannot be changed in the user interface.
[8]	This area displays the input data. **INFORMATION:** In control mode you can change the input data.

For more detailed information about individual fieldbus data, refer to the respective info field or to chapter "Process data assignment" (→ 🗎 70).

8.4 Trace

Using trace lets you record various process signals (velocities, axis positions, etc.) of individual axes. You can record up to 4 channels at the same time.

For detailed information, refer to the documentation of the Application Configurator.

8.5 Extended diagnostics

Extended diagnostics is used for expert diagnostics. Here you find the variable structures of the public global controller variables.

For detailed information, refer to the documentation of the Application Configurator.

23028513/EN – 12/2016

9 Process data assignment

9.1 Overview

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

Profile	Process data			
	Process input data		Process output data	
4 PD	I1	= Control word	O1	= Status word
	I2	= Setpoint velocity	O2	= Actual velocity
	I3	= Acceleration	O3	= Output current (× 0.1)
	I4	= Deceleration	O4	= Reserved
6 PD	I5	= Setpoint position (high word)	O5	= Actual position (high word)
	I6	= Setpoint position (low word)	O6	= Actual position (low word)
7 PD	I7	= Sub-control word	O7	= Sub-status word
10 PD	I8	= Digital outputs	O8	= Digital inputs[1)]
	I9	= Setpoint 2 (high word)	O9	= Actual value 2 (high word)
	I10	= Setpoint 2 (low word)	O10	= Actual value 2 (low word)

[1)] For the default input assignment, refer to the Appendix.

23028513/EN – 12/2016

9.2 Process input data

The following table shows the assignment of process input data from the PLC to the inverter for fieldbus control with 10 process data words.

Word		Bit	Function	
I1	Control word	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	Release brake with inhibited output stage (MG/DRC/ELVCD)	
		6	Reset fault	
		7	Reserved	
		8	Start	
		9	Positive	
		10	Negative	
		11	Mode 2^0	0000 = Reserved
		12	Mode 2^1	0001 = Operating mode 1: Speed control
		13	Mode 2^2	0010 = Operating mode 2: Jog mode
		14	Mode 2^3	0011 = Operating mode 3: Referencing mode 0100 = Operating mode 4: Positioning mode 0101 = Operating mode 5: Positioning mode – Touchprobe 0110 = Operating mode 6: Synchronism 0111 = Operating mode 7: Emergency mode
		15	/SWLS	0 = Software limit switch enabled 1 = Software limit switch disabled
I2	Setpoint velocity	0 – 15	[User unit]	
I3	Acceleration	0 – 15	[User unit]	
I4	Deceleration	0 – 15	[User unit]	
I5	Setpoint position (high word)	0 – 15	[User unit]	
I6	Setpoint position (low word)	0 – 15	[User unit]	

23028513/EN – 12/2016

Word		Bit	Function		
I7	Sub-control word	0	Activate Touchprobe		
		1	Reserved		
		2	Activate torque limiting		
		3	Reserved		
		4	Reserved		
		5	Reserved		
		6	Reserved		
		7	Reserved		
		8 – 15	SubMode	Operating mode: Speed control	No submode available
				Operating mode: Jog mode	No submode available
				Operating mode: Referencing mode	0/30: Static (configured) reference offset (default) 31: Variable reference offset (via process data I5/I6 *setpoint position*)
				Operating mode: Positioning mode	0/40: Absolute positioning (default) 41: Relative positioning positive 42: Relative positioning negative
				Operating mode: Positioning mode – Touchprobe	0/50: Absolute positioning 51: Relative positioning positive 52: Relative positioning negative
				Operating mode: Synchronism	0/60: Speed synchronism 61: Speed synchronism based on fieldbus setpoint
				Operating mode: Emergency mode	0/70: Emergency mode without external encoder
I8	Digital outputs	0 – 7	Function DO00 – DO07		
		8 – 15	Function DO10 – DO17		
I9	Setpoint 2 (high word)	0 – 15	[User unit]		
I10	Setpoint 2 (low word)	0 – 15	[User unit]		

23028513/EN – 12/2016

9.3 Process output data

The following table shows the process output data from the inverter to the PLC for fieldbus control with 10 process data words.

Word		Bit	Function
O1	Status word	0	Motor is running
		1	Frequency inverter ready for operation
		2	Drive referenced
		3	Setpoint reached
		4	Brake released
		5	Frequency inverter fault
		6	Frequency inverter warning
		7	Application fault
		8 – 15	Code for status/warning/error of the FU[1] Application error codes[2]
O2	Actual velocity	0 – 15	[User unit]
O3	Output current	0 – 15	[User unit] × 0.1
O4	Reserved	0 – 15	Reserved
O5	Actual position (high word)	0 – 15	[User unit]
O6	Actual position (low word)	0 – 15	[User unit]
O7	Sub status word	0	Touchprobe enabled
		1	Touchprobe detected
		2	Torque limitation active
		3	Reserved
		4	Reserved
		5	Reserved
		6	HWLS positive
		7	HWLS negative
		8 – 15	SubMode (see I7)
O8	Digital inputs	0 – 7	Function DI00 – DI07
		8 – 15	Function DI10 – DI17
O9	Actual value 2 (high word)	0 – 15	[User unit]
O10	Actual value 2 (low word)	0 – 15	[User unit]

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

2) For a detailed description, refer to the applicable documentation of the Application Configurator.

23028513/EN – 12/2016

10 Appendix

10.1 Default input assignment

The following table shows the terminal assignment of the respective device with activated default assignment and activated hardware limit switches.

Digital input	Default input assignment				
	MOVIDRIVE® B MOVIAXIS® B MOVITRAC® LTP-B/LTX	**MOVIPRO® ADC**	**MOVIGEAR® DSC-B / SNI-B / DRC..**	**MOVIGEAR® DSC-B / SNI-B / DRC.. with GIO12B/GIO13B**	**MOVITRAC® B (in preparation)**
DI00	/Controller inhibit				/HWLS positive
DI01	Enable/stop				CW/stop
DI02	Fault reset[1)]	Fault reset[1)]	Reference cam[1)]	[1)]	/HWLS negative
DI03	Reference cam	Reference cam	/HWLS positive		
DI04	/HWLS positive	/HWLS positive	/HWLS negative		
DI05	/HWLS negative	/HWLS negative			
DI11				Reference cam	
DI12				/HWLS positive	
DI13				/HWLS negative	

1) When using the Touchprobe function, set digital input DI02 to "No function" or "IPOS input".

You find detailed information on how to configure digital inputs in chapter "Monitoring" (→ 🗎 48).

10.2 Process data assignment of input/output terminals of MOVIGEAR® B / DRC..

The following table shows the process data assignment of input/output terminals of MOVIGEAR® B / DRC..

Process data	Input/output	Hardware
I8:8 – I8:9	DO10 – DO11	Option cards GIO12B, GIO13B
O8:1 – O8:4	DI01 – DI04	Basic unit MOVIGEAR® B/ DRC..[1)]
O8:8 – O8:11	DI10 – DI13	Option cards GIO12B, GIO13B

1) The basic unit is not equipped with digital outputs.

23028513/EN – 12/2016

Index

23028513/EN – 12/16

L

M

N

O

P

R

S

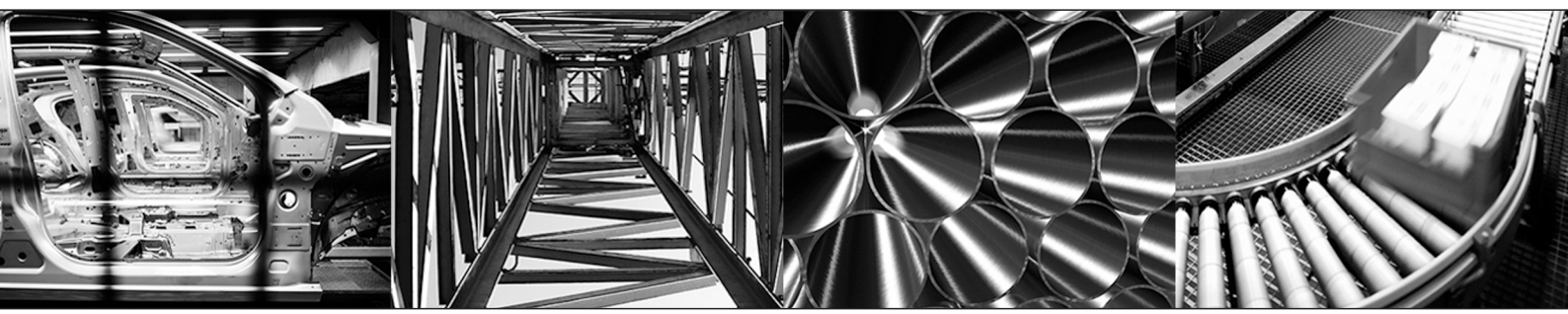
23028513/EN – 12/16

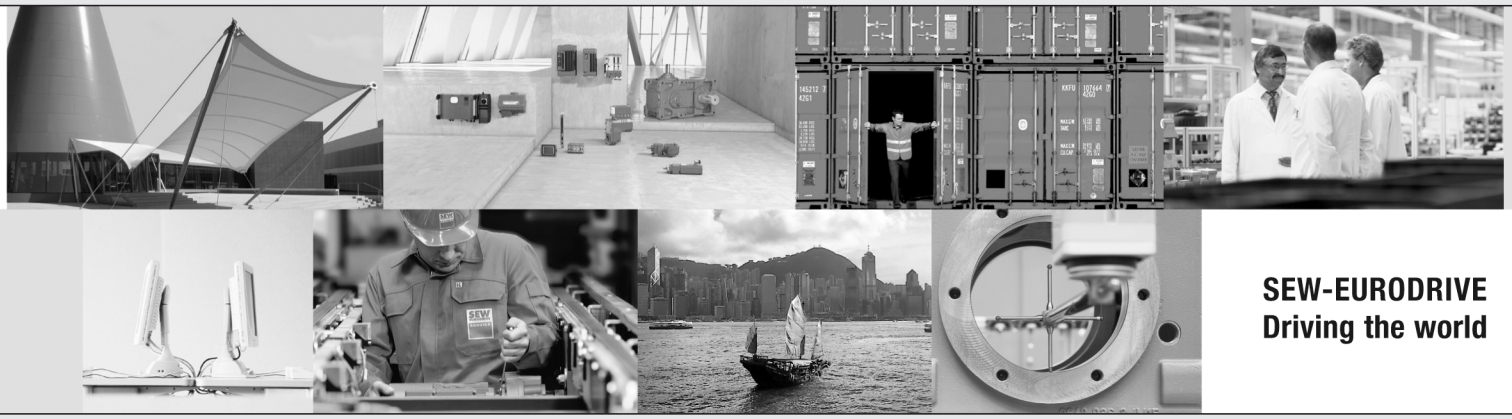
T

U

W

23028513/EN – 12/16





SEW-EURODRIVE
Driving the world

SEW-EURODRIVE GmbH & Co KG
P.O. Box 3023
76642 BRUCHSAL
GERMANY
Phone +49 7251 75-0
Fax +49 7251 75-1970
sew@sew-eurodrive.com
➞ **www.sew-eurodrive.com**