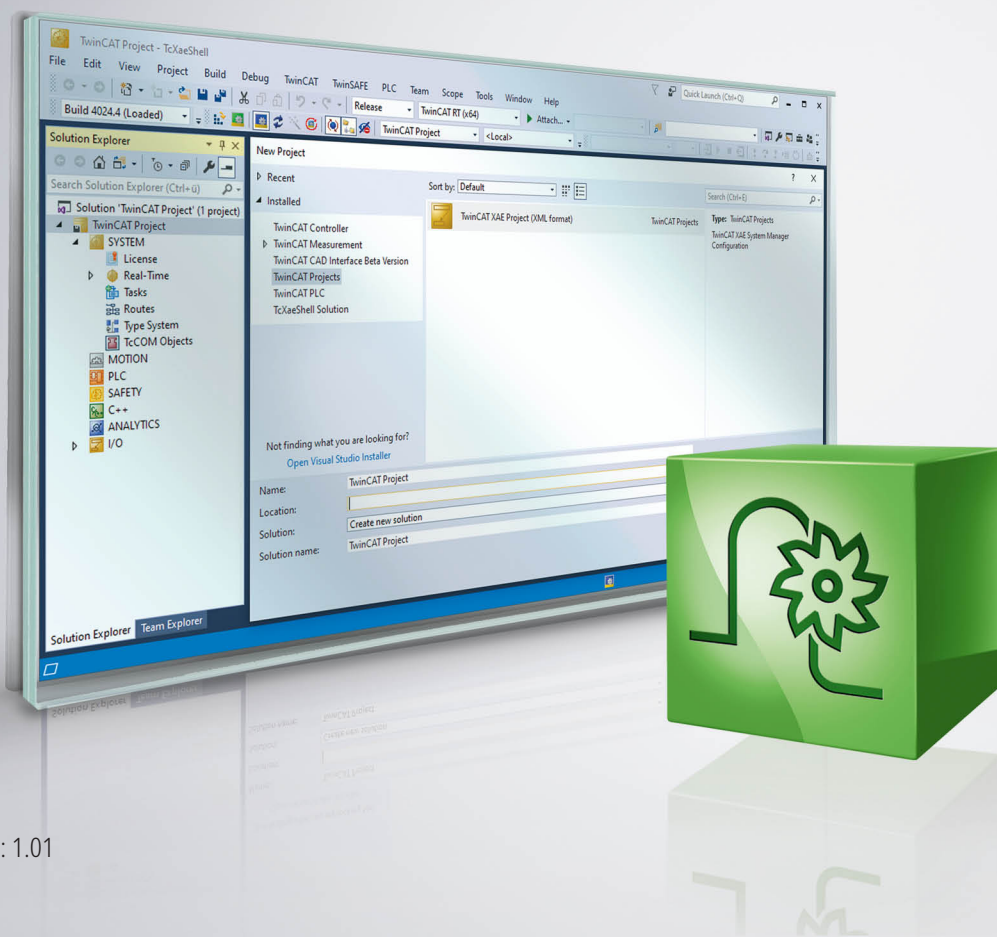


Functional description | EN

## TF5200 | TwinCAT 3 CNC

Parameterising the DRIVE command





## Notes on the documentation

This description is only intended for the use of trained specialists in control and automation engineering who are familiar with the applicable national standards.

It is essential that the documentation and the following notes and explanations are followed when installing and commissioning the components.

It is the duty of the technical personnel to use the documentation published at the respective time of each installation and commissioning.

The responsible staff must ensure that the application or use of the products described satisfy all the requirements for safety, including all the relevant laws, regulations, guidelines and standards.

### Disclaimer

The documentation has been prepared with care. The products described are, however, constantly under development.

We reserve the right to revise and change the documentation at any time and without prior announcement.

No claims for the modification of products that have already been supplied may be made on the basis of the data, diagrams and descriptions in this documentation.

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# General and safety instructions

## Icons used and their meanings

This documentation uses the following icons next to the safety instruction and the associated text. Please read the (safety) instructions carefully and comply with them at all times.

## Icons in explanatory text

1. Indicates an action.

⇒ Indicates an action statement.

### DANGER

#### Acute danger to life!

If you fail to comply with the safety instruction next to this icon, there is immediate danger to human life and health.

### CAUTION

#### Personal injury and damage to machines!

If you fail to comply with the safety instruction next to this icon, it may result in personal injury or damage to machines.

### NOTE

#### Restriction or error

This icon describes restrictions or warns of errors.

#### ● Tips and other notes



This icon indicates information to assist in general understanding or to provide additional information.

## General example

Example that clarifies the text.

## NC programming example

Programming example (complete NC program or program sequence) of the described function or NC command.

#### ● Specific version information



Optional or restricted function. The availability of this function depends on the configuration and the scope of the version.

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# 1 Overview

## Task

The functionality described in this documentation permits the drive-independent setting of drive parameters by the #DRIVE command in the NC program. The CNC kernel is configured accordingly to adjust to the relevant drive profile type used.

## Characteristics

The NC command is executed in parallel to the subsequent processing of the NC program at the time of interpolation. Program processing is not stopped in default mode. When the drive parameter is transferred, the parameter must be present and writeable in the drive. If the program is aborted (CNC reset), any changed values are retained.

## Parametrisation

Since every drive is coupled to a particular axis, the corresponding [drive parameters](#) [► 16] are configured individually for every axis.

## Programming

Drive functions are controlled by the NC command [#DRIVE WR SYN \[...\]](#) [► 12].



This functionality is currently supported for SERCOS, CANopen and PROFIdrive drive profiles only.

## Links to other documents

For the sake of clarity, links to other documents and parameters are abbreviated, e.g. [PROG] for the Programming Manual or P-AXIS-00001 for an axis parameter.

For technical reasons, these links only function in the Online Help (HTML5, CHM) but not in pdf files since pdfs do not support cross-linking.



## 2 Description

Drive functions are addressed in different ways depending on the drive profile used, e.g.:

- The drive parameter set for SERCOS drives is switched over using the parameters S-0-216 and S-0-217.
- For PROFIdrive drives the parameter set is switched over by control bits in the STW1 in the cyclically transferred setpoint telegram.
- Set the torque limit:with SERCOS drives by:
  - Write the parameter S-0-0092 via the service channel
  - Enter the parameters of S-0-0092 in the cyclic telegram
- Set the torque limit:for PROFIdrive drives by:
  - Manufacturer-specific telegram element MomRed (signal no. 50101 for SIEMENS 611u).

The #DRIVE command sets the various drive functions in a standardised syntax in the NC program irrespective of the drive profile.

```
#DRIVE WR SYN [AX=X KEY=MOMRED, VAL=437]
```

### Name of drive function

Enter the name used to address the drive function in the NC program in the P-AXIS-00396 parameter.

### 2.1 Drive datum to be transferred

The parameter P-AXIS-00398 defines the name of the datum transferred to the drive. At this point the drive profile independent name of the drive function is mapped into the drive-specific nomenclature as parameterised in the P-AXIS-00396 parameter.

If cyclic transfer is parameterised for the drive parameter, the drive parameter must be present in the cyclic process data.

If the drive parameter is transferred over the parameter channel, the parameter must be present and writable to the drive.

Enter the data type of the drive parameter to be transferred in the P-AXIS-00399 parameter.

#### Possible values are:

"SGN08"	Signed 8-bit value
"SGN16"	Signed 16-bit value
"SGN32"	Signed 32-bit value
"BITARRAY_16"	Bit string with 16 bits (see Section "Bitwise writing")
"BITARRAY_32"	Bit string with 32 bits (see Section "Bitwise writing")

## 2.2 Transfer type

The values can be transferred for most drive profiles

- cyclically as process datum or
- over an acyclical parameter channel

The parameter P-AXIS-00397 defines how the transferred datum is transferred to the drive.

**Possible values are:**

"CYCLIC"	Transfer is cyclical in the process data
"ACYCLIC"	Transfer is over the acyclical parameter channel
"IGNORE"	No data is transmitted to the drive.

## 2.3 Limitation of the output value

The value transferred to the drive can be configured to maximum (P-AXIS-00409) and minimum (P-AXIS-00408) values.

If the value specified in the #DRIVE command is outside the configured limits, the value is automatically limited to the configured limit; **no** error message is output.

The limits are scaled by the parameter P-AXIS-00401.

### NOTE

When limits are configured, make sure they are within the value range specified by the P-AXIS-00399 data type.

If the permitted value range is exceeded, the error message (P-ERR-70384, P-ERR-70383) is output and the limit is automatically corrected.

If no limits are configured, no limitation is applied.

The configured maximum value needs to be greater than the minimum value, otherwise a warning (P-ERR-70385) is output and the limits are swapped.

## 2.4 Value after controller start-up

When the drive parameter is sent to the drive by cyclic transfer, the parameter P-AXIS-00400 can set the value that is transferred immediately after controller start-up.

If torque scaling is used (P-AXIS-00401), the start-up value is also scaled before it is written.

## 2.5 Bitwise writing

With bitwise writing of drive values by the #DRIVE command, one or several bits of a value transferred to the drive can be set or deleted.

In this case set the data type in parameter P-AXIS-00399 to:

- „BITARRAY\_8“
- „BITARRAY\_16“ or
- „BITARRAY\_32“.

If the function parameter “VAL” programmed in the #DRIVE command is greater than 0, the bits defined in the parameter P-AXIS-00429 are set.

Accordingly, if the value of the function parameter “VAL” is 0, the bits defined in P-AXIS-00429 are deleted.

- i** Bitwise writing of drive values is only possible for bits that are not already used by the CNC. At present, only the "CYCLIC" communication type is supported (see P-AXIS-00397); for all other communication types, the error message P-ERR-70402 is output if "BITARRAY\_8", "BITARRAY\_16" or "BITARRAY\_32" is set as the data type in P-AXIS-00399.

#### NOTE

If P-AXIS-00429 contains bits that are used by the CNC, the error message P-ERR-70404 is output. If the complete telegram element is used by the CNC, e.g. in case of a command position, the output message P-ERR-70405 is output.

- i** **Specifics of SERCOS drives**  
With SERCOS drives the control word is always configured automatically and does not appear explicitly in the list of configured process data. If one of the real-time control bits is used for bitwise writing, enter the value "S-0-0134" in the (P-AXIS-00398) parameter. See Example 2 in the section Programming.

## 2.6 Use of torque scaling

By default the written values are transferred unchanged to the drive except for a parameterised limit.

If torque scaling is parameterised for an axis, it can also be used with the #DRIVE command by setting the parameter P-AXIS-00401 to the value "TORQUE\_DRIVE\_SIDE".

## 2.7 Response on program abort

If the program is interrupted (CNC reset), the values changed by drive functions are retained.

## 3 Programming

In the NC program, the drive functions are controlled by the NC command #DRIVE WR SYN. The KEY call parameter is used to select the drive function.

In NC line above, the "MOMRED" drive function is invoked with the value 437 for the X axis. ]#DRIVE WR SYN [AX=X KEY=MOMRED, VAL=437]

The transferred value can be used for parameterisation, whether

- the value is transferred to the drive unchanged
- a parameterised conversion is applied to the value
- a bit is set or reset in a bit string transferred to the drive by the programmed value

By parameterising the CNC kernel, make sure that this NC line is mapped onto the appropriate parameterisation of the drive controller depending on the drive profile used.



The value transferred to the call parameter VAL can only be converted to the drive format for torque/current values.

### 3.1 Example 1: Reducing the maximum torque

The maximum torque of a drive should be reduced in the NC program regardless of the drive profile. The value programmed in the VAL parameter should be specified in [Nm] related to the motor shaft.

The maximum permitted torque value is 6.5 Nm and the minimum permitted value is 1.0 Nm.

The torque limit of the motor is set to 4.5 Nm:

```
#DRIVE WR SYN [AX=X KEY=TORQLIMIT VAL=4.5]
```

#### Name of drive function

To permit the drive function to be addressed in the "TORQLIMIT" key in the NC program, assign the value "TORQLIMIT" to the P-AXIS-00396 parameter:

```
antr.function[0].id          TORQLIMIT          (P-AXIS-00396)
```

#### Torque scaling

The following motor data are required to parameterise torque scaling:

- Nominal torque of the motor: 7 Nm
- Maximum torque of the motor: 15 Nm
- Torque scaling of the motor: In 0.1% referred to the maximum motor torque. (This parameterisation is executed in the drive.)

Enter the nominal motor torque in P-AXIS-00392:

```
antr.acc_reference_value     7.0          (P-AXIS-00392)
```

In parameters P-AXIS-00325 and P-AXIS-00326 enter the value that must be output to the drive for the motor to achieve its nominal torque.

With the specified values:

$$\frac{P - AXIS - 00325}{P - AXIS - 00326} = \frac{7Nm}{15Nm} * 1000 = 466,667$$

The values for the following axis parameters are then:

```
antr.torque_scale_num      4667 (P-AXIS-00325)
antr.torque_scale_denom   10    (P-AXIS-00326)
```

To terminate the process, enter torque scaling in P-AXIS-00401:

```
antr.function[0].scaling_type TORQUE_DRIVE_SIDE
(P-AXIS-00401)
```

### Limitations

Set the limits in the parameters P-AXIS-00408 and P-AXIS-00409.

Since the scaling type is set to torque scaling, the limits must also be specified in [Nm].

```
antr.function[0].min_limit  1.0      (P-AXIS-00408)
antr.function[0].max_limit  6.5      (P-AXIS-00409)
```

## Parameterising the transfer

### 1. Variant:

SERCOS drive: The torque limit is set by writing the SERCOS parameter S-0-92 over the service channel.

The following axis parameters must be set in the axis parameter list:

<code>antr.function[0].commu</code>	ACYCLIC	(P-AXIS-00397)
<code>antr.function[0].wr_ident[0]</code>	S-0-92	(P-AXIS-00398)
<code>antr.function[0].data_type</code>	SGN16	(P-AXIS-00399)

### 2. Variant:

SERCOS drive: The torque limit is transferred in the cyclically transferred setpoint diagram.

The following axis parameters must be set in the axis parameter list:

<code>antr.function[0].commu</code>	CYCLIC	(P-AXIS-00397)
<code>antr.function[0].wr_ident[0]</code>	S-0-92	(P-AXIS-00398)
<code>antr.function[0].data_type</code>	SGN16	(P-AXIS-00399)

A telegram element with the name "S-0-92" and data type SGN16 must be configured in the cyclic telegram.

If cyclic communication is used, it is possible to transfer a start value at controller start-up; it must be set in axis parameter P-AXIS-00400. If the transferred value is scaled, enter the unscaled value here.

<code>antr.function[0].startup_value</code>	6.5	(P-AXIS-00400)
---	-----	----------------

### 3. Variant:

PROFIdrive drive: The torque limit is transferred in the cyclic setpoint telegram in the "MOMRED" telegram element as a signed 16-bit value.

The following axis parameters must be set in the axis parameter list:

<code>antr.function[0].commu</code>	CYCLIC	(P-AXIS-00397)
<code>antr.function[0].wr_ident[0]</code>	MOMRED	(P-AXIS-00398)
<code>antr.function[0].data_type</code>	SGN16	(P-AXIS-00399)
<code>antr.function[0].startup_value</code>	100	(P-AXIS-00400)

A telegram element with the name "MOMRED" and data type SGN16 must be configured in the cyclic telegram.

### 4th Variant:

CANopen drive: The torque limit is transferred in the cyclic setpoint telegram in the telegram element "6072\_00" as a signed 16-bit value.

The following axis parameters must be set in the axis parameter list:

<code>antr.function[0].commu</code>	CYCLIC	(P-AXIS-00397)
<code>antr.function[0].wr_ident[0]</code>	6072_00	(P-AXIS-00398)
<code>antr.function[0].data_type</code>	UNS16	(P-AXIS-00399)
<code>antr.function[0].startup_value</code>	100	(P-AXIS-00400)

A telegram element with the name "6072\_00" and data type UNS16 must be configured in the cyclic telegram.

## 3.2 Example 2: Disabling speed monitoring

Drive speed monitoring is to be disabled in the drive by controlling a bit in the control word.

This command disables speed monitoring:

```
#DRIVE WR SYN [AX=X KEY=SPEED_MON VAL=0]
```

This command re-enables speed monitoring:

```
#DRIVE WR SYN [AX=X KEY=SPEED_MON VAL=1]
```

### Parameterising the transfer

#### 1. Variant:

PROFIDRIVE drive: Speed monitoring is controlled by setting bit 8 in the control word 2 (STW2).

The following axis parameters must be set in the axis parameter list:

<code>antr.function[0].id</code>	<code>SPEED_MON</code>	(P-AXIS-00396)
<code>antr.function[0].commu</code>	<code>CYCLIC</code>	(P-AXIS-00397)
<code>antr.function[0].wr_ident[0]</code>	<code>STW2</code>	(P-AXIS-00398)
<code>antr.function[0].startup_value</code>	<code>1</code>	(P-AXIS-00400)
<code>antr.function[0].data_type</code>	<code>BITARRAY_16</code>	(P-AXIS-00399)
<code>antr.function[0].mask</code>	<code>BIT_8</code>	(P-AXIS-00429)

#### 2. Variant:

SERCOS drive: speed monitoring is set by the real-time control bit 1.

For drive start-up, assign the real-time control bit 1 with the function “Speed monitoring”. This setting must be carried out using the start-up tool of the drive manufacturer.

The following axis parameters must be set in the axis parameter list:

<code>antr.function[0].id</code>	<code>SPEED_MON</code>	(P-AXIS-00396)
<code>antr.function[0].commu</code>	<code>CYCLIC</code>	(P-AXIS-00397)
<code>antr.function[0].wr_ident[0]</code>	<code>S-0-0134</code>	(P-AXIS-00398)
<code>antr.function[0].startup_value</code>	<code>1</code>	(P-AXIS-00400)
<code>antr.function[0].data_type</code>	<code>BITARRAY_16</code>	(P-AXIS-00399)
<code>antr.function[0].mask</code>	<code>BIT_6</code>	(P-AXIS-00429)

## 4 Parameter

### 4.1 Overview

ID	Parameter	Description
P-AXIS-00325	torque_scale_num	Torque scaling numerator
P-AXIS-00325	torque_scale_num	Numerator, scaling factor, torque scaling.
P-AXIS-00326	torque_scale_denom	Torque scaling denominator
P-AXIS-00326	torque_scale_denom	Denominator, scaling factor, torque scaling.
P-AXIS-00392	acc_reference_value	Reference value for torque scaling
P-AXIS-00392	acc_reference_value	Reference value for scaling torque values to the motor format.
P-AXIS-00396	id	Name of drive functions in NC program.
P-AXIS-00397	commu	Type of communication with drive controller.
P-AXIS-00398	wr_ident[0]/wr_ident[1]	Name of the parameter or telegram element.
P-AXIS-00399	data_type	Data type of the data to be transmitted.
P-AXIS-00400	startup_value	Value of a cyclically transferred data element after controller start-up
P-AXIS-00401	scaling_type	Defines the conversion to be applied to the value VAL to convert to the drive format.
P-AXIS-00408	min_limit	Minimum permissible output value.
P-AXIS-00409	max_limit	Maximum permissible output value.
P-AXIS-00429	mask	Bitmask for bitwise writing of drive values.



## 4.2 Description

<b>P-AXIS-00325</b>	<b>Numerator scaling factor for torque</b>	
Description	Numerator of the scaling factor for the commanded torque to the drive. The factor is specified as a quotient. This quotient is the value which has to be output to the motor for reaching the nominal torque.	
Parameter	antr.torque_scale_num	
Data type	UNS32	
Data range	0 < torque_scale_num < MAX(UNS32)	
Axis types	T, R, S	
Dimension	T: ----	R,S: ----
Default value	1	
Drive types	SERCOS, Lightbus,CANopen	
Remarks		

<b>P-AXIS-00326</b>	<b>Denominator scaling factor for torque</b>	
Description	Denominator of the scaling factor for the commanded torque to the drive. The factor is specified as a quotient. This quotient is the value which has to be output to the motor for reaching the nominal torque.	
Parameter	antr.torque_scale_denom	
Data type	UNS32	
Data range	1 < torque_scale_denom < MAX(UNS32)	
Axis types	T, R, S	
Dimension	T: ----	R,S: ----
Default value	1	
Drive types	SERCOS, Lightbus,CANopen	
Remarks	If the value 0 is set for P-AXIS-00326, an error message with the ID number P-ERR-110465 is output and the internal scaling factor is set on 0. In this case no output of the additive torque command value to the drive is done.	

<b>P-AXIS-00392</b>	<b>Reference value for converting torque values to the motor format.</b>	
Description	This parameter is used for the scaling of the additive torque command if acceleration feedforward with additive command values is used. It has to be entered the stall torque of the motor.	
Parameter	antr.acc_reference_value	
Data type	REAL64	
Data range	0 ≤ acc_reference_value ≤ MAX(REAL64)	
Axis types	T, R, S	
Dimension	T: N	R,S: Nm
Default value	1	
Drive types	SERCOS, CANopen	
Remarks		

<b>P-AXIS-00396</b>	<b>Name of drive functions in NC program</b>	
Description	This parameter defines the name by which the drive function is activated via the key word KEY in the #DRIVE command in NC program ([prog]).	
Parameter	antr.function[i].id	
Data type	STRING	
Data range	Maximum of 29 characters	
Axis types	T, R, S	
Dimension	T: ----	R,S: ----
Default value	-	

Drive types	SERCOS, Profidrive, CANopen
Remarks	<p><b>Example:</b> For a drive function the ID 'TORQLIMIT' is defined.</p> <pre>antr.function[0].id          TORQLIMIT</pre> <p>In NC program this drive function then can be programmed in the way... #DRIVE WR SYN [AX=... KEY=TORQLIMIT VAL=... ] ... addressed.</p>

<b>P-AXIS-00397</b>	<b>Type of communication with drive controller</b>	
Description	This parameter defines the type of communication by which the function in the drive is addressed.	
Parameter	antr.function[i].commu	
Data type	STRING	
Data range	<p>CYCLIC: The drive function is switched by a telegram element that is configured in the cyclic drive telegram. The name of the telegram element is defined in P-AXIS-00398.</p> <p>ACYCLIC: The drive function is addressed by writing a drive parameter through the parameter channel. The name of the telegram element is defined in P-AXIS-00398.</p> <p>IGNORE: No value is transmitted to the drive.</p>	
Axis types	T, R, S	
Dimension	T: ----	R,S: ----
Default value	CYCLIC	
Drive types	SERCOS, Profidrive, CANopen	
Remarks		

<b>P-AXIS-00398</b>	<b>Name of the parameter or telegram element</b>	
Description	This parameter defines which drive parameter respectively which telegram element of the cyclic telegram is to be used for the activation of the drive function.	
Parameter	antr.function[i].wr_ident[j]	
Data type	STRING	
Data range	Maximum of 29 characters	
Axis types	T, R, S	
Dimension	T: ----	R,S: ----
Default value	-	
Drive types	SERCOS, Profidrive, CANopen	
Remarks	<p>Dependent on the drive function to be activated, maximum 2 idents (j=0/1) can be set.</p> <p>Configuration example: For a SERCOS drive the torque limit is defined by writing the parameter S-0-92:</p> <pre>antr.function[0].wr_ident[0] S-0-92</pre>	

<b>P-AXIS-00399</b>	<b>Data type of the data to be transmitted</b>	
Description	This parameter defines the data type of the drive parameter or of the telegram element of the cyclic telegram which is used for the activation of the drive function.	
Parameter	antr.function[i].data_type	
Data type	STRING	

Data range	SGN16: Signed 16 bit integer. SGN32: Signed 32 bit integer. BITARRAY_16: Bit array 16 bit. BITARRAY_32: Bit array 32 bit.	
Axis types	T, R, S	
Dimension	T: ----	R,S: ----
Default value	SGN16	
Drive types	SERCOS, Profidrive, CANopen	
Remarks		

<b>P-AXIS-00400</b>	<b>Value of data element after start-up of control</b>	
Description	This parameter defines the value of the cyclic telegram element after start-up of the control.	
Parameter	antr.function[i].startup_value	
Data type	REAL64	
Data range	If P-AXIS-00399 = 'SGN16': MIN(SGN16) ≤ startup_value ≤ MAX(SGN16)  If P-AXIS-00399 = 'SGN32': MIN(SGN32) ≤ startup_value ≤ MAX(SGN32)	
Axis types	T, R, S	
Dimension	T: ----	R,S: ----
Default value	0	
Drive types	SERCOS, Profidrive, CANopen	
Remarks	This parameter is only used if P-AXIS-00397 has the value 'CYCLIC'.	

<b>P-AXIS-00401</b>	<b>Scaling of the data to be transmitted</b>	
Description	This parameter defines the scaling of the value that has to be transmitted to the drive.	
Parameter	antr.function[i].scaling_type	
Data type	STRING	
Data range	UNSCALED:	Unscaled output of the value programmed in the NC program; scaling factor = 1 (Default).
	TORQUE_DRIVE_SIDE:	The programmed value is a torque value related to the motor shaft and is scaled to the drives torque format with the parameters P-AXIS-00325, P-AXIS-00326 and P-AXIS-00392.  The scaling factor does not change during gear change. Scaling factor f is:  $f = \frac{1}{P-AXIS-00392} * \frac{P-AXIS-00325}{P-AXIS-00326}$
Axis types	T, R, S	
Dimension	T: ----	R,S: ----
Default value	UNSCALED	
Drive types	SERCOS, Profidrive, CANopen	
Remarks		

<b>P-AXIS-00408</b>	<b>Minimum permissible output value</b>
---------------------	---

Description	<p>By this parameter the minimum permissible output value can be defined. If the programmed value of the #DRIVE command goes below the minimum value, the drive output value is set automatically to the minimum value. Thereby no error message is created.</p> <p>If parameter is greater than the greatest possible output value of the data type, defined by P-AXIS-00399, the error message P-ERR-70384 is output and the value of the parameter is corrected</p> <p>If P-AXIS-00409 is configured, P-AXIS-00409 must be greater than the value of P-AXIS-00408. If this is not the case, the warning P-ERR-70385 is output and the values are exchanged.</p> <p>If this parameter is not configured, no limitation is active.</p>
Parameter	antr.function[i].min_limit
Data type	REAL64
Data range	This is dependent on P-AXIS-00399 and P-AXIS-00401
Axis types	T, R, S
Dimension	T: ----   R,S: ----
Default value	1.000000e+199
Drive types	SERCOS, Profidrive, CANopen
Remarks	

<b>P-AXIS-00409</b>	<b>Maximum permissible output value</b>
Description	<p>By this parameter the maximum permissible output value can be defined. If the programmed value of the #DRIVE command exceeds the maximum value, the drive output value is set automatically on the maximum value. Thereby no error message is created.</p> <p>If the parameter is greater than the greatest possible output value of the data type, defined by P-AXIS-00399 the error message P-ERR-70383 is output and the value of the parameter is corrected.</p> <p>If P-AXIS-00408 is configured, P-AXIS-00408 must be smaller than this parameter. If this is not the case, the warning P-ERR-70385 is output and the minimum and maximum values are exchanged.</p> <p>If this parameter is not configured, no limitation is active.</p>
Parameter	antr.function[i].max_limit
Data type	REAL64
Data range	This is dependent on P-AXIS-00399 and P-AXIS-00401
Axis types	T, R, S
Dimension	T: ----   R,S: ----
Default value	1.000000e+199
Drive types	SERCOS, Profidrive, CANopen
Remarks	

<b>P-AXIS-00429</b>	<b>Writing of drive values by bit mask</b>
Description	<p>With this parameter the bit mask that has to be used if bitwise writing is defined.</p> <p>If the value programmed in the #DRIVE-command is greater than zero, the bits defined in the bit mask are set and for a programmed value of zero the bits are reset.</p> <p>This parameter is used if the data type set up only if P-AXIS-00399 has either the value 'BITARRAY_16' or 'BITARRAY_32'.</p> <p>The value of this parameter must be smaller than or equal to the maximum value defined by setting P-AXIS-00399, otherwise error message P-ERR-70403 is output.</p>
Parameter	antr.function[i].mask
Data type	STRING

Data range	This is dependent on P-AXIS-00399: BITARRAY_16: Bit mask 16 Bit - 0 ... MAX(UNS16) BITARRAY_32: Bit mask 32 Bit - 0 ... MAX(UNS32)	
Axis types	T, R, S	
Dimension	T: ----	R,S: ----
Default value	NOT_USED	
Drive types	SERCOS, Profidrive, CANopen	
Remarks		

## 5 Support and Service

Beckhoff and their partners around the world offer comprehensive support and service, making available fast and competent assistance with all questions related to Beckhoff products and system solutions.

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