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General information

Velocity limitations are implemented in the drive, which allow the velocity command value to be limited to a freely defined absolute value or to different positive and negative values.

- Velocity limitation
 - motor and/or actuator-side velocity limit values
 - axis-side velocity limit values

Relevance for the user

Velocity limit values are always relevant and must be adapted to the conditions of the machine.

Commissioning

The following dialog is available for parameterizing the velocity limitation in ctrlX DRIVE Engineering:

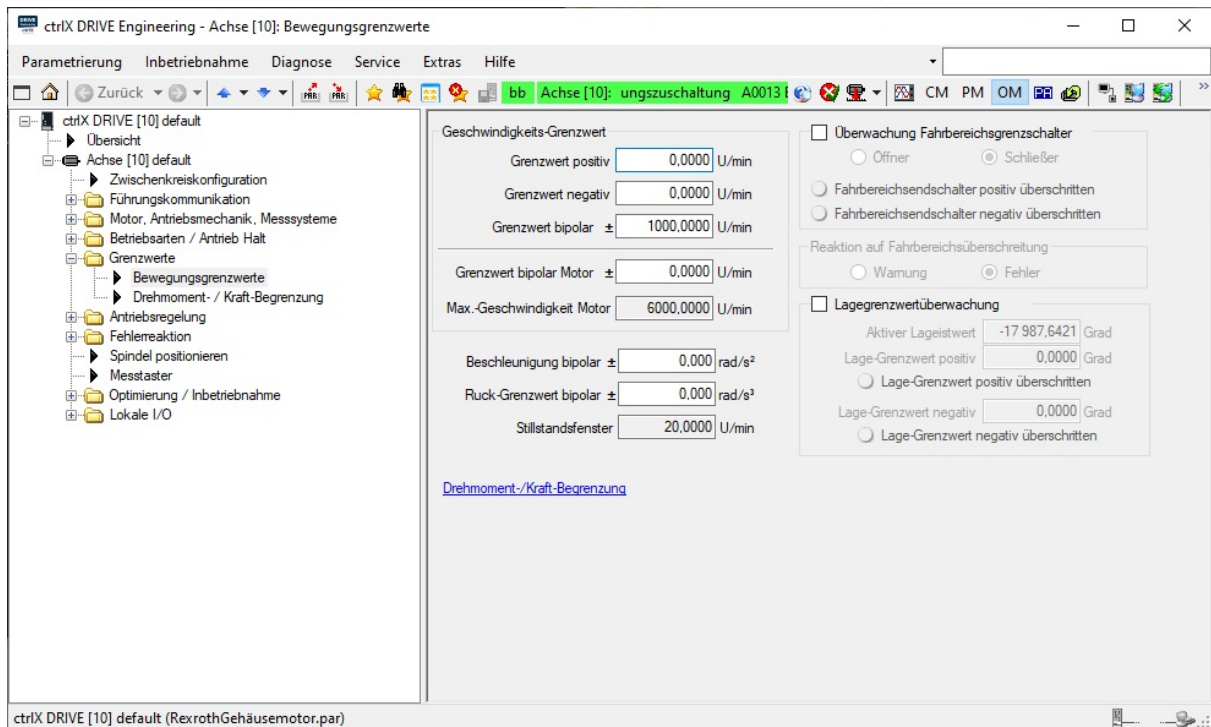


Fig. 287: Velocity limitation

For further information about the commissioning process "How-to", "All about ctrlX AUTOMATION - FAQs, Examples, Technotes and How-tos" please follow this link:

https://developer.community.boschrexroth.com/t5/Rexroth-Developer-Community/bg-p/dcdev_community-dev-blog/label-name/rex_c_How-to
 (https://developer.community.boschrexroth.com/t5/Rexroth-Developer-Community/bg-p/dcdev_community-dev-blog/label-name/rex_c_How-to)

The effective limit for the maximum allowed positive and negative velocities is determined by means of the minimum values of the following parameters:

- lower (negative) limit → derived from the maximum value of
 - S-0-0091, Bipolar velocity limit value (negated)
 - S-0-0039, Negative velocity limit value
- upper (positive) limit → derived from the minimum value of
 - S-0-0091, Bipolar velocity limit value
 - S-0-0038, Positive velocity limit value
- in addition, the following motor-related limit values take effect (scaled in rpm or mm/min)

- P-0-0113, Bipolar velocity limit value of motor (property of machine)
- S-0-0113, Maximum motor velocity (property of the motor)



The electrical rotational frequency of the motor must not exceed 590 Hz!



The limits have to be adjusted to the mechanical properties! When setting the limits, take into account that all velocity command values are thereby limited to this value.

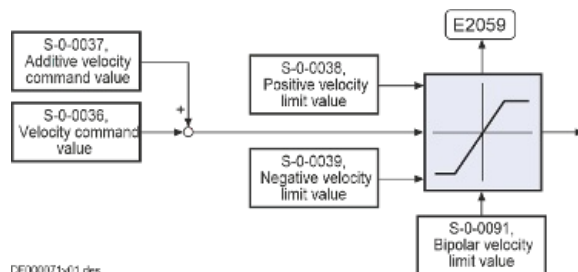
This has to be taken into consideration when defining the travel profiles (target position, velocity and acceleration), because an inadmissible lag can possibly occur due to the limitation that is taking effect.



The default value for S-0-0038, S-0-0039 and P-0-0113 is "0". These parameters are thereby switched off. In this case, "S-0-0091, Bipolar velocity limit value" and "S-0-0113, Maximum motor velocity" take effect.

Additional information and details

The figure below illustrates the functional principle of velocity limitation:



DF000071v01.des

Fig. 288: Functional principle of velocity limitation

E2059 Velocity command value limitation active

- Unipolar velocity limit values (S-0-0038, S-0-0039), scaled, with reference to load where applicable
- Cyclically configurable, bipolar velocity limit value (S-0-0091), scaled, with reference to load where applicable
- Bipolar velocity limit value (P-0-0113) of the motor, unscaled, with reference to the motor only

Command value limitation

The input of command value preprocessing is "P-0-0563, Velocity command value input for adjustment". In command value preprocessing, the additive velocity command values S-0-0037 and P-0-0690 are also added.

The output of command value preprocessing is limited and displayed in P-0-0048. When the limitation takes effect, the drive generates the message "E2059 Velocity command value limit active".

Velocity monitoring

The value of the parameter S-0-0535 is monitored as soon as it is outside of the standstill window S-0-0124. If it exceeds the 1.125-fold of the values parameterized in S-0-0091, S-0-0113 and P-0-0113, the drive generates the error message "F8079 Velocity limit value exceeded" and switches off with the preset error reaction.

Parameters and diagnostics involved

Parameters involved

- S-0-0036, Velocity command value
- S-0-0037, Additive velocity command value
- S-0-0038, Positive velocity limit value
- S-0-0039, Negative velocity limit value
- S-0-0091, Bipolar velocity limit value
- S-0-0113, Maximum motor velocity
- P-0-0113, Bipolar velocity limit value of motor

Diagnostics involved

- E2059 Velocity command value limitation active
- E2063 Velocity command value > limit value
- F8079 Velocity limit value exceeded