

Description of DS xx/yyEE synchronous servo drive parameters (V1.02)

1. Regulator_mode	Setting mode for speed regulator. Data type: 32 bit integer. Valid for: only switching ON Regulator_mode =0 PID type speed regulation Regulator_mode =1 Regulator_mode =0 + High accuracy speed regulation. Regulator_mode =2 Regulator_mode =1 + High accuracy speed regulation by looping.
2. Axis_address	Does not used currently. It is reserved for further development.
3. Speed_inverse	Does not used currently. It is reserved for further development.
4. Tacho_inverse	Does not used currently. It is reserved for further development.
5. Rep_Enc_Err	Does not used currently. It is reserved for further development.
6. Rep_Hall_Err	Does not used currently. It is reserved for further development.
7. Servo_RDY_type	Does not used currently. It is reserved for further development.
8. N_equ_Ns	Does not used currently. It is reserved for further development.
9. N_equ_0	Does not used currently. It is reserved for further development.
10. DC_Bus_min	Does not used currently. It is reserved for further development.
11. Jog_Feed	Setting speed reference signal that is proportional to motor speed of revolution in case of “Brake” mode. Data type: 32 bit integer. Valid for: switching ON Servo drive uses this reference signal as internal reference signal if servo drive is forced into “Brake” mode by control (written in the description of NC-Servo communication: „EMGON”). “b” (brake) character is appeared in the 7-segment readout of servo drive and motor starts rotating at speed that proportional to signed value defined in Jog_Feed parameter at the same time. This “Brake” mode is valid until the servo drive is enabled.
12. ptc_resistance	Does not used currently. It is reserved for further development.
13. therm_protection	Does not used currently. It is reserved for further development.
14. -	Does not used currently. It is reserved for further development.
15. -	Does not used currently. It is reserved for further development.
16. -	Does not used currently. It is reserved for further development.
17. -	Does not used currently. It is reserved for further development.
18. Offset	Does not used currently. It is reserved for further development.
19. -	Does not used currently. It is reserved for further development.
20. Rep_Fol_Err	Does not used currently. It is reserved for further development.
21. switch_frequ	Does not used currently. It is reserved for further development.
22. DC_Voltage	Value of DC bus direct voltage [V] Data type: 32 bit float. Valid for: only switching ON Its value must be equal to 540. <i>If not the above value is written in servo drive then it causes malfunction!</i>
23. I_hexa	Numerical value that corresponds to maximal value of current (I_extmax). Data type: 32 unsigned integer. Valid for: only switching ON Its value must be equal to 32760. <i>If not the above value is written in servo drive then it causes malfunction!</i>
24. I_extmax	Current measuring range of servo drive [A]. Data type: 32 bit float.

Valid for: only switching ON
 Its value must be equal to the following value in accordance the correspond servo drive:

DS6/12EE type servo drive:	26,67
DS12/24EE type servo drive:	80,0
DS18/36EE type servo drive:	80,0
DS24/48EE type servo drive:	200,0
DS36/72EE type servo drive:	200,0
DS100/150EE type servo drive:	400,0

If not the corresponding value is written in servo drive then it causes malfunction!

- 25. U_hexa** Numerical value that corresponds to maximal value of voltage (U_extmax).
 Data type: 32 unsigned integer.
 Valid for: only switching ON
 Its value must be equal to 32760.
If not the above value is written in servo drive then it causes malfunction!
- 26. U_extmax** Voltage measuring range of servo drive [V].
 Data type: 32 bit float.
 Valid for: only switching ON
 Its value must be equal to 1000.
If not the above value is written in servo drive then it causes malfunction!
- 27. U_max** Does not used currently.
- 28. U_threshold** Voltage constant.
 Data type: 32 unsigned integer.
 Valid for: only switching ON
 Its value must be equal to 720.
If not the above value is written in servo drive then it causes malfunction!
- 29. U_peak** Maximal value of servo drive bus voltage [V].
 Data type: 32 bit float.
 Valid for: only switching ON
 Maximal value: 750.
 If bus voltage of servo drive exceeds this value then servo drive loses its ready state and switch off from motor by error message (E05).
- 30. I_peak** Maximal value of servo drive motor current [A].
 Data type: 32 bit float.
 Valid for: only switching ON
 Maximal value: 750.
 If motor current of servo drive exceeds this value then servo drive loses its ready state and switch off from motor by error message (E06).
- 31. AphaseOffset** Does not used currently. It is reserved for further development.
- 32. BphaseOffset** Does not used currently. It is reserved for further development.
- 33. VABOffset** Does not used currently. It is reserved for further development.
- 34. VCBOffset** Does not used currently. It is reserved for further development.
- 35. PWMmin** Does not used currently. It is reserved for further development.
- 36. -** Does not used currently. It is reserved for further development.
- 37. -** Does not used currently. It is reserved for further development.
- 38. -** Does not used currently. It is reserved for further development.
- 39. -** Does not used currently. It is reserved for further development.
- 40. -** Does not used currently. It is reserved for further development.
- 41. Accel/Decel** Limiting for gradient of speed reference signal. (Limiting for acceleration of motor) [incr/125us]. Servo drive does not allow higher speed variation per regulating loop than this value.
 Data type: 32 unsigned integer.

	Valid for: switching ON and downloading parameter. Nominal value: 500.
42. Accel/Decel mode	Does not used currently. It is reserved for further development.
43. adaptlimit	Does not used currently. It is reserved for further development.
44. Interfer_Test	Does not used currently. It is reserved for further development.
45. Interfer_adjust	Does not used currently. It is reserved for further development.
46. -	Does not used currently. It is reserved for further development.
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62.-	Does not used currently. It is reserved for further development.
63. gain	Gain of P element of current regulator. Data type: 32 bit float. Valid for: only switching ON Its value must be a positive floating-point number except zero.
64. IntTime	Time constant of I element of current regulator [ms]. Data type: 32 bit float. Valid for: only switching ON Its value must be a positive floating-point number except zero.
65. i_s1q_max	Maximal value of torque generating current (Q way current) [A]. Data type: 32 bit float. Valid for: only switching ON Its value must be a positive floating-point number except zero. The regulator limits the current of motor into this value.
66. i_s1q_max	D way current. Its value must be equal to 0 always.
67. PreLoad [%]	Does not used currently. It is reserved for further development.
68. -	Does not used currently. It is reserved for further development.
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86.-	Does not used currently. It is reserved for further development.
87. pole_pair	The number of pole pairs of electric motor. In case of linear motor is pole_pair=1. Data type: 32 bit integer. Valid for: only switching ON Its value must be a positive integer number except zero.
88. nominal_speed	Does not used currently.
89. max_field_speed	Does not used currently.
90. max_speed	Permitted maximal speed of electric motor. Data type: 32 bit float. Valid for: only switching ON Its value must be a positive floating-point number except zero. If speed of motor exceeds this value then servo drive stops by error message E11 (Overspeed).
91. motor_therm_const	Does not used currently.
92. motor_Back_EMF	Electromotive force (EMF). [V/1000rpm] Data type: 32 bit float.
93. motor_nom_voltage	Does not used currently.
94. motor_nom_power	Does not used currently.
95. motor_nom_current	Rated current of electric motor [A]. Data type: 32 bit float. Valid for: only switching ON
96. motor_nom_frequency	Does not used currently.

97. motor_stator_res	Resistance of stator of electric motor [ohm]. Data type: 32 bit float. Valid for: only switching ON
98. motor_cos_fi	Does not used currently.
99. motorStrayRel	Does not used currently.
100. motor_Ts_d	Does not used currently.
101. TqPerTd	Does not used currently.
102. PsiMaxPerPsi	Does not used currently.
103. motor_min_current	Does not used currently.
104. Pole_Pair_lenght	Distance between pole pairs in case of linear motors [mm]. Data type: 32 bit float. Valid for: only switching ON
105. Max. temperature	Permitted maximal temperature measured by encoder of motor [Celsius]. Data type: 32 bit float. Valid for: only switching ON If servo drive measures higher temperature than defined value of parameter then servo drive stops by error message E19.
106. line_count	Constant. Its value is equal to 4096. Data type: 32 bit integer. Valid for: only switching ON
107. direction	Does not used currently.
108. BitNumber	Constant. Its value is equal to 37. Efficient bits amount for EnDat encoder. Data type: 32 bit integer. Valid for: only switching ON
109. TurnNumber	Constant. Its value is equal to 4096. Distinguished revolutions amount of EnDat encoder. Data type: 32 bit integer. Valid for: only switching ON
110. PositionSet	Does not used currently.
111. Lin_Mot_Offset	This parameter is used for setting commuting point of linear motor. Its value is between from 0 to 65535 that correspond for setting of angular position from 0 to 360 degrees. It is written in part: Setting linear motor. Data type: 32 bit integer. Valid for: switching ON and downloading parameter.
112. Mot_Pos_Setup	Does not used currently.
113. -	Does not used currently. It is reserved for further development.
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119.-	Does not used currently. It is reserved for further development.

- 120. P_VL** Part of P element of speed regulator valid for “Very Low” speed.
Data type: 32 bit float.
Valid for: switching ON and downloading parameter.
- 121. P_L** Part of P element of speed regulator valid for “Low” speed.
Data type: 32 bit float.
Valid for: switching ON and downloading parameter.
- 122. P_M** Part of P element of speed regulator valid for “Medium” speed.
Data type: 32 bit float.
Valid for: switching ON and downloading parameter.
- 123. P_H** Part of P element of speed regulator valid for “High” speed.
Data type: 32 bit float.
Valid for: switching ON and downloading parameter.

124. I_VL

Part of I element of speed regulator valid for “Very Low” speed.
Its unit is: $I_VL * 125\mu s$.
It works as a multiplier element:
Low setting value → slow regulation.
High setting value → fast regulation.
Data type: 32 bit float.
Valid for: switching ON and downloading parameter.

125. I_L

Part of I element of speed regulator valid for “Low” speed.
Its unit is: $I_L * 125\mu s$.
It works as a multiplier element:
Low setting value → slow regulation.
High setting value → fast regulation.
Data type: 32 bit float.
Valid for: switching ON and downloading parameter.

126. I_M

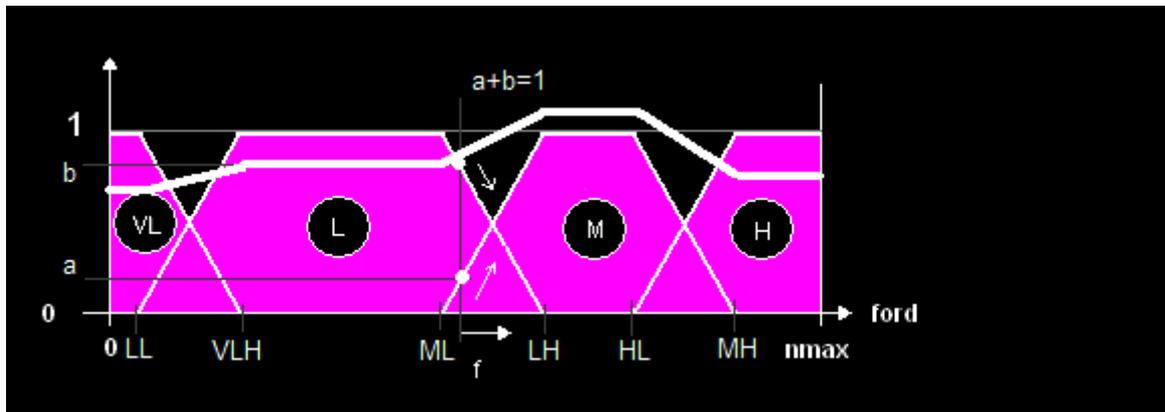
Part of I element of speed regulator valid for “Medium” speed.
Its unit is: $I_M * 125\mu s$.
It works as a multiplier element:
Low setting value → slow regulation.
High setting value → fast regulation.
Data type: 32 bit float.
Valid for: switching ON and downloading parameter.

127. I_H

Part of I element of speed regulator valid for “High” speed.
Its unit is: $I_H * 125\mu s$.
It works as a multiplier element:
Low setting value → slow regulation.
High setting value → fast regulation.
Data type: 32 bit float.
Valid for: switching ON and downloading parameter.

- 128. D_VL** Part of D (derivative) element of speed regulator valid for “Very Low” speed. It works as a multiplier element:
Data type: 32 bit float.
Valid for: switching ON and downloading parameter.
- 129. D_L** Part of D (derivative) element of speed regulator valid for “Low” speed. It works as a multiplier element:
Data type: 32 bit float.
Valid for: switching ON and downloading parameter.
- 130. D_M** Part of D (derivative) element of speed regulator valid for “Medium” speed. It works as a multiplier element:
Data type: 32 bit float.
Valid for: switching ON and downloading parameter.
- 131. D_H** Part of D (derivative) element of speed regulator valid for “High” speed. It works as a multiplier element:
Data type: 32 bit float.
Valid for: switching ON and downloading parameter.

Explanation of speed ranges:



„Very Low” speed range:	VL function	→	0-VLH
„Low” speed range:	L function	→	LL-LH
„Medium” speed range:	M function	→	ML-MH
„High” speed range:	H function	→	HL-Max

Setting range limits: nmax=speed defined in Speed_max parameter (123 Speed_max). This speed value means 100% of speed. Taking this into account:

LL	→	1%
VLH	→	5%
ML	→	10%
LH	→	20%
HL	→	40%
MH	→	60%

- 132. AW_Gain** Gain of AntiWindup regulator of speed regulator.
This regulating circuit prevents the “saturation” of speed regulator so it cannot be in non-linear zone.

Recommended setting value: 0.05
Data type: 32 bit float.
Valid for: switching ON and downloading parameter.

- 133. Ref_in_Gain_0** Gain of speed reference input.
Speed corresponding for reference signal is set by this parameter in speed regulating mode. Lag (gain of position regulating loop) is set also by this parameter in case of an external position regulating circuit.
Data type: 32 bit float.
Valid for: switching ON and downloading parameter.
- 134. Speed_max** Maximal speed of electric motor in a specific application. It is not the catalogue data for maximal speed of electric motor, value of speed defined in this parameter is function of application. Servo drive uses this speed value for setting speed ranges.
Data type: 32 bit float.
Valid for: switching ON and downloading parameter.
- 135. Ref_in_Gain_1** Gain of secondary reference signal (Reference input Gain). This parameter is efficient only in case of Regulator_mode =1 or Regulator_mode =2. Default setting value: Ref_in_Gain_1=Ref_in_Gain_0/20
Data type: 32 bit float.
Valid for: switching ON and downloading parameter.
- 136. Speed_Precont_Gain** Value of speed precontrol gain. This parameter is efficient only in case of Regulator_mode =2. Setting:0-0,9
Default setting value: 0,5
Data type: 32 bit float.
Valid for: switching ON and downloading parameter.
- 137. Accel_Precont_Gain** Does not used currently. It is reserved for further development.
- 138. Tandem_Speed_Lim** Does not used currently. It is reserved for further development.
- 139. Tandem_Accel_Lim** Does not used currently. It is reserved for further development.