

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

<b>1. Regulator_mode</b>	Setting mode for speed regulator. Data type: 32 bit integer. Valid for: only switching ON PID type speed regulation Regulator_mode =0 + High accuracy speed regulation. Regulator_mode =1 + High accuracy speed regulation by looping.
Regulator_mode =0	
Regulator_mode =1	
Regulator_mode =2	
<b>2. Axis_address</b>	Does not used currently. It is reserved for further development.
<b>3. Speed_inverse</b>	Does not used currently. It is reserved for further development.
<b>4. Tacho_inverse</b>	Does not used currently. It is reserved for further development.
<b>5. Rep_Enc_Err</b>	Does not used currently. It is reserved for further development.
<b>6. Rep_Hall_Err</b>	Does not used currently. It is reserved for further development.
<b>7. Servo_RDY_type</b>	Does not used currently. It is reserved for further development.
<b>8. N_equ_Ns</b>	Does not used currently. It is reserved for further development.
<b>9. N_equ_0</b>	Does not used currently. It is reserved for further development.
<b>10. DC_Bus_min</b>	Does not used currently. It is reserved for further development.
<b>11. Jog_Feed</b>	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.
<b>12. ptc_resistance</b>	Does not used currently. It is reserved for further development.
<b>13. therm_protection</b>	Does not used currently. It is reserved for further development.
<b>14. -</b>	Does not used currently. It is reserved for further development.
<b>15. -</b>	Does not used currently. It is reserved for further development.
<b>16. -</b>	Does not used currently. It is reserved for further development.
<b>17. -</b>	Does not used currently. It is reserved for further development.
<b>18. Offset</b>	Does not used currently. It is reserved for further development.
<b>19. -</b>	Does not used currently. It is reserved for further development.
<b>20. Rep_Fol_Err</b>	Does not used currently. It is reserved for further development.
<b>21. switch_freque</b>	Does not used currently. It is reserved for further development.
<b>22. DC_Voltage</b>	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>
<b>23. I_hexa</b>	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>
<b>24. I_extmax</b>	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.
<b>42. Accel/Decel mode</b>	Does not used currently. It is reserved for further development.
<b>43. adaptlimit</b>	Does not used currently. It is reserved for further development.
<b>44. Interfer_Test</b>	Does not used currently. It is reserved for further development.
<b>45. Interfer_adjust</b>	Does not used currently. It is reserved for further development.
<b>46. -</b>	Does not used currently. It is reserved for further development.
...	
<b>62.-</b>	Does not used currently. It is reserved for further development.
<b>63. gain</b>	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.
<b>64. IntTime</b>	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.
<b>65. i_s1q_max</b>	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.
<b>66. i_s1q_max</b>	D way current. Its value must be equal to 0 always.
<b>67. PreLoad [%]</b>	Does not used currently. It is reserved for further development.
<b>68. -</b>	Does not used currently. It is reserved for further development.
...	
<b>86.-</b>	Does not used currently. It is reserved for further development.
<b>87. pole_pair</b>	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.
<b>88. nominal_speed</b>	Does not used currently.
<b>89. max_field_speed</b>	Does not used currently.
<b>90. max_speed</b>	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).
<b>91. motor_therm_const</b>	Does not used currently.
<b>92. motor_Back_EMF</b>	Electromotive force (EMF). [V/1000rpm] Data type: 32 bit float.
<b>93. motor_nom_voltage</b>	Does not used currently.
<b>94. motor_nom_power</b>	Does not used currently.
<b>95. motor_nom_current</b>	Rated current of electric motor [A]. Data type: 32 bit float. Valid for: only switching ON
<b>96. motor_nom_frequency</b>	Does not used currently.

<b>97. motor_stator_res</b>	Resistance of stator of electric motor [ohm]. Data type: 32 bit float. Valid for: only switching ON
<b>98. motor_cos_fi</b>	Does not used currently.
<b>99. motorStrayRel</b>	Does not used currently.
<b>100. motor_Ts_d</b>	Does not used currently.
<b>101. TqPerTd</b>	Does not used currently.
<b>102. PsiMaxPerPsi</b>	Does not used currently.
<b>103. motor_min_current</b>	Does not used currently.
<b>104. Pole_Pair_lenght</b>	Distance between pole pairs in case of linear motors [mm]. Data type: 32 bit float. Valid for: only switching ON
<b>105. Max. temperature</b>	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.
<b>106. line_count</b>	Constant. Its value is equal to 4096. Data type: 32 bit integer. Valid for: only switching ON
<b>107. direction</b>	Does not used currently.
<b>108. BitNumber</b>	Constant. Its value is equal to 37. Efficient bits amount for EnDat encoder. Data type: 32 bit integer. Valid for: only switching ON
<b>109. TurnNumber</b>	Constant. Its value is equal to 4096. Distinguished revolutions amount of EnDat encoder. Data type: 32 bit integer. Valid for: only switching ON
<b>110. PositionSet</b>	Does not used currently.
<b>111. Lin_Mot_Offset</b>	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.
<b>112. Mot_Pos_Setup</b>	Does not used currently.
<b>113. -</b>	Does not used currently. It is reserved for further development.
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<b>119.-</b>	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:  $I\_VL \cdot 125\mu s$ .

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:  $I\_L \cdot 125\mu s$ .

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:  $I\_M \cdot 125\mu s$ .

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:  $I\_H \cdot 125\mu s$ .

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.

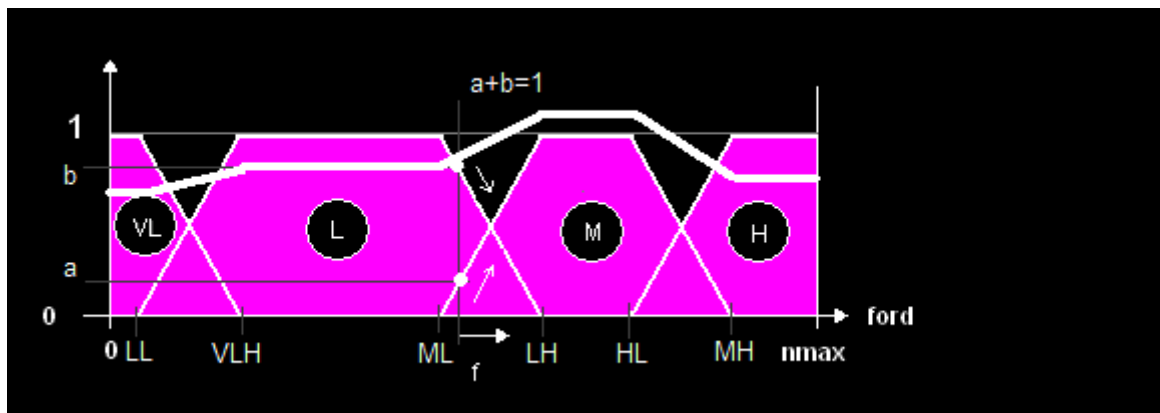
### 130. D\_M

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.