B&R 8LSA Series Service Manual

8LSA43.ee030ffgg-4

1. Description

8LSA three-phase synchronous servo motor (self-cooled, slim & elongated design). Permanent-magnet, electronically commutated synchronous motor for applications requiring high dynamics, positioning precision, compact size and reduced weight. Universally usable thanks to a large overload capacity, with reduced cogging, optimized torque rippling for good controllability, an embedded parameter chip for automatic drive identification, and encoders for functional safety available.

2. Technical Parameters

Parameter	Value
Nominal speed nN [rpm]	3000
Number of pole pairs	5
Nominal torque Mn [Nm]	4.0
Nominal power PN [W]	1257
Nominal current IN [A]	2.5
Stall torque M0 [Nm]	4.7
Stall current I0 [A]	2.9
Maximum torque Mmax [Nm]	15.2
Maximum current Imax [A]	14.6
Maximum speed nmax [rpm]	6600
Torque constant KT [Nm/A]	1.63
Voltage constant KE [V/1000rpm]	98.44
Stator resistance R2ph [Ohm]	7.00
Stator inductance L2ph [mH]	42.0
Electrical time constant tel [ms]	7.2
Thermal time constant ttherm [min]	24
Moment of inertia J [kg·cm2]	2.0
Mass m (without brake) [kg]	4.51
Holding torque of brake MBr [Nm]	8
Brake mass [kg]	1.000
Moment of inertia of brake JBr [kg·cm2]	0.69
Cable cross-section [mm2]	0.75
Connector size/type	1
Recommended servo drive (ACOPOS)	4X5X

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3. Product Information

Order number: 8LSA43.ee030ffgg-4

Additional information from the manufacturer's manual:

Compliance: UL/C-UR-US listed, UL file E360421; conforms to Low Voltage Directive 2014/35/EU, EMC Directive 2014/30/EU and RoHS Directive 2011/65/EU; standards EN 60034-1/7/11/14, UL 1004-1 & UL 1004-6, CSA C22.2 no. 100-14. Life-cycle status not stated in the manual.

Rating & cooling: EN 60034-1 S1 continuous; insulation class IEC 60085 F; cooling self-cooled, free-circulation surface cooling IC4A0A0; thermal protection KTY83-110 (up to rev C7) / AM-PTC1000 (rev C8/C9), max winding temp 155 degC (limited via ACOPOS to 110 degC with EnDat, 130 degC with resolver); vibration severity A1 per EN 60034-14; bearing life per DIN ISO 281; coating water-based RAL 9005.

Mounting per EN 60034-7 (IM): IM 3001 horizontal / IM 3011 vertical attached / IM 3031 vertical standing. Flange DIN 42948 Form A; shaft end DIN 748 Form E; oil seal DIN 3760 Form A; key/keyway DIN 6885-1 Form A; balancing DIN ISO 8821; runout DIN 42955 tolerance R.

Environment: operating -15..+40 degC (max +55 degC); derate 10% per 10 K above 40 degC and 5% per 1000 m above 1000 m; max. elevation 2000 m; max. flange temp 65 degC; IP64 per EN 60034-5 (IP65 with optional oil seal DIN 3760); storage/transport -20..+60 degC, humidity max. 90% non-condensing.

Shaft loads: permissible radial/axial forces are speed-dependent (Fr/Fa diagrams per model in the Technical data chapter); optional 'Reinforced A-side bearing' (sizes 4-8) increases allowable Fr/Fa. Noise: no motor-body sound level given; fan noise is only specified for fan-cooled variants (8LSC).

Feedback: resolver (R0/R2) or EnDat encoder - inductive (D8,D9,DA,DB,EA,EB,S8,S9,SA,SB) / optical (D0,D1,D4,D5,E0,E1,E4,E5,S0,S1,S4,S5); 32-line single-turn or multi-turn; encoders for functional safety available. Built-in plug-in (incl. swivel/SpeedTec-type) connectors; single-cable (hybrid) solution available.

Safety: motor encoders support functional safety (safety-related position measurement); STO is implemented by the connected ACOPOS servo drive (not a motor-embedded function in this manual).

Generation note (8LS...-4): general data as above, with these -4 generation updates - center hole DIN 332 Form D; no eye bolts; power/encoder via speedtec (923)/itec/ytec/htec (723) systems; elevation limit 2000 m with speedtec or 4000 m with ytec connectors; protection IP64 (IP65 with oil seal); fan noise N/A (self-cooled).

Current-loop note: the manual's printed electrical time constant tel=7.2 ms differs from the L2ph/R2ph ratio (6.00 ms) by +20.0%; tel is the published measured value. Allow ~10% margin in current-loop time-constant tuning.