Elwood High Performance Motors

SX Series: Data for Kinetix300 Servo Drives

The following table lists data required for creating a third party motor file for a Rockwell Automation Kinetix300 (K300) servo drive. Elwood High Performance Motors maintains a data sheet for each motor produced. The data below required for commissioning a third party motor on a Kinetix300 servo drive. Please contact Elwood High Performance Motors with any questions.

Motor Wiring

Select one of the following connection instructions based on the type of feedback included in the SX-Series motor.

Elwood motor with an Incremental Encoder.

Elwood motor with an Absolute Encoder.

Motor Winding Parameters

Parameter (MotionView)	Unit (MotionView)	Value (use values from Elwood's motor datasheet or Installation Manual)
Torque Constant (Kt)	Nm/A(0-pk)	<= Elwood Parameter "Torque Constant @ 25°C" <= unit conversion required! Nm/A(0-pk) = Nm/Arms * 0.707
Back EMF Constant (Ke)	V(0-pk)/kRPM	<= Elwood Parameter "BEMF Constant @ 25°C" <= Unit conversion required! V(0-pk)/kRPM = Vrms/kRPM * 1.414
Winding Inductance (Lm)	mH (L-L)	<= Elwood Parameter "Stator Inductance @ 25°C"
Winding Resistance (Rm)	Ohms (L-L)	<= Elwood Parameter "Stator Resistance @ 25°C"
Phase Current	Arms	<= Elwood Parameter "Continuous Current (Stall)"
Intermittent Current	Arms	<= Calculation Required <= Phase Current * 3
Nominal Bus Voltage	VDC	<= Elwood Parameter "Rated Voltabe" <= unit conversion required! VDC = Vrms * 1.414
Number of Poles	(no unit)	<= Elwood Parameter "Number of Motor Poles"
Rotor (Jm)	Kgm^2	<= Elwood Parameter "Rotor Inertia"
Max Velocity	RPM	<= Elwood Parameter "Speed @ Maximum Power"

Parameters for SX-Series Incremental Encoder Based Motors

Parameter	Value	SX-Series Incremental Encoder Designation
PPR Before Quad:	Varies depending on model number. i.e.: M431-NXXX-XGXX	
Halls Order:	3	E = 1000ppr (pre-quad)
Inverted:	Yes (box checked)	F = 1024ppr (pre-quad)
B leads A for CCW:	No (box not checked)	G = 2000ppr (pre-quad)
		H = 2048ppr (pre-quad)
		M = 4096ppr (pre-quad)

**NOTE: Use the feedback parameters as specified above by default for setup. Verify phasing using the Kinetix300's "Autophasing" routine. The drive prompts to run the phasing check after a motor file is loaded.

Parameters for Thermal Response

	Thermal Resistance, Rt (˚C/W)	Thermal Time Constant, Ct (s)
M431-XXXX-XXXX	1.47	1400
M432-XXXX-XXXX	1.28	1600
M433-XXXX-XXXX	1.02	1800
M442-XXXX-XXXX	1.25	2400
M443-XXXX-XXXX	0.87	2800
M444-XXXX-XXXX	0.88	3200
M462-XXXX-XXXX	0.63	8000
M463-XXXX-XXXX	0.57	12000
M464-XXXX-XXXX	0.51	18000
Note: "X" in the model number is a place holder for options that do not effect the characteristics listed.		

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N Series: Custom Motor Data for Kinetix300 Setup

Parameter	Units	N-2302-1-F0XXX	N-2304-1-F0XXX	N-3406-2-H0XXX	N-3412-2H0XXX	N-4214-2H0XXX
Kt	Nm/A(0-pk)	0.08	0.18	0.17	0.33	0.4
Ke	V(0-pk)/KRPM	11	22	21	41	46
Lm	mH	4.1	8.1	6.1	8.6	11.0
Rm	Ohms	3.2	4.9	2.2	2.7	2.8
Phase Current	Arms	1.9	2.3	3.4	3.7	4.2
Intermittent Current	Arms	5.7	6.9	10.2	11.1	12.6
Nominal Bus Voltage	Vdc	320	320	320	320	320
Number of Poles	(no unit)	4	4	4	4	4
Jm	Kgm^2	0.000009	0.00002	0.00008	0.00015	0.00024
Max Velocity	RPM	6000	6000	6000	5500	4500
PPR (Pre-Quad)	(no unit)	1000	1000	2000	2000	2000
Halls Order	(no unit)	3	3	3	3	3
Inverted	(no unit)	Yes (box checked)	Yes (box checked)	Yes (box checked)	Yes (box checked)	Yes (box checked)
B leads A for CCW	(no unit)	No (box not checked)	No (box not checked)	No (box not checked)	No (box not checked)	No (box not checked)
Thermal Constant (Rth)	°C/W	3	2.2	1.6	1.2	1.1
Thermal Constant (Cth)	W-s/°C	140	327	525	975	1255

Parameter	Units	N-4220-2H0XXX	N-5630-2-H0XXX	N-5637-2-H0XXX	N-5647-2-H0XXX
Kt	Nm/A(0-pk)	0.28	0.38	0.5	0.63
Ke	V(0-pk)/KRPM	34	47	60	77
Lm	mH	2.9	4.3	5.2	7.0
Rm	Ohms	0.8	0.9	1.0	1.2
Phase Current	Arms	7.8	8.3	8.3	7.4
Intermittent Current	Arms	23.4	24.9	24.9	22.2
Nominal Bus Voltage	Vdc	320	320	320	320
Number of Poles	(no unit)	4	4	4	4
Jm	Kgm^2	0.00035	0.00090	0.00113	0.00147
Max Velocity	RPM	5000	4000	4000	3000
PPR (Pre-Quad)	(no unit)	2000	2000	2000	2000
Halls Order	(no unit)	3	3	3	3
Inverted	(no unit)	Yes (box checked)	Yes (box checked)	Yes (box checked)	Yes (box checked)
B leads A for CCW	(no unit)	No (box not checked)	No (box not checked)	No (box not checked)	No (box not checked)
Thermal Constant (Rth)	°C/W	0.83	0.81	0.76	0.7
Thermal Constant (Cth)	W-s/°C	1916	1778	2250	3086

**NOTE: Use the feedback parameters as specified above by default for setup. Verify phasing using the Kinetix300's "Autophasing" routine. The drive prompts to run the phasing check after a motor file is loaded.

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H Series: Custom Motor Data for Kinetix300 Setup

Parameter	Units	H-3007-N-H0XXX	H-3016-N-H0XXX	H-4030-P-H0XXX	H-4030-M-H0XXX	H-4050-P-H0XXX
Kt	Nm/A(0-pk)	0.28	0.28	0.50	0.25	0.5
Ke	V(0-pk)/KRPM	38	38	60	30	60
Lm	mH	12.0	3.4	9.0	1.9	3.3
Rm	Ohms	6.60	1.30	2.00	0.50	0.69
Phase Current	Arms	1.8	4.8	4.0	8.5	8.5
Intermittent Current	Arms	5.3	14.4	12.0	25.5	25.5
Nominal Bus Voltage	Vdc	325	325	325	325	325
Number of Poles	(no unit)	6	6	6	6	6
Jm	Kgm^2	0.00003	0.00008	0.00025	0.00025	0.00046
Max Velocity	RPM	5000	5000	4000	4000	4000
PPR (Pre-Quad)	(no unit)	2000	2000	2000	2000	2000
Halls Order	(no unit)	3	3	3	3	3
Inverted	(no unit)	Yes (box checked)	Yes (box checked)	Yes (box checked)	Yes (box checked)	Yes (box checked)
B leads A for CCW	(no unit)	No (box not checked)	No (box not checked)	No (box not checked)	No (box not checked)	No (box not checked)
Thermal Constant (Rth)	°C/W	1.2	0.89	0.79	0.79	0.57
Thermal Constant (Cth)	W-s/°C	500	1483	3646	3646	5053

Parameter	Units	H-4075-R-H0XXX	H-6100-Q-H0XXX	H-6200-Q-H0XXX	H-6300-Q-H0XXX
Kt	Nm/A(0-pk)	0.74	0.68	0.66	0.7
Ke	V(0-pk)/KRPM	90	82	80	85
Lm	mH	5.4	4.4	2.2	1.2
Rm	Ohms	0.9	0.49	0.2	0.12
Phase Current	Arms	8.5	12	22.6	32.5
Intermittent Current	Arms	25.5	36	67.8	97.5
Nominal Bus Voltage	Vdc	325	325	325	325
Number of Poles	(no unit)	6	8	8	8
Jm	Kgm^2	0.00068	0.00140	0.0024	0.0034
Max Velocity	RPM	3000	3000	3000	3000
PPR (Pre-Quad)	(no unit)	2000	2000	2000	2000
Halls Order	(no unit)	3	3	3	3
Inverted	(no unit)	Yes (box checked)	Yes (box checked)	Yes (box checked)	Yes (box checked)
B leads A for CCW	(no unit)	No (box not checked)	No (box not checked)	No (box not checked)	No (box not checked)
Thermal Constant (Rth)	°C/W	0.48	0.34	0.31	0.24
Thermal Constant (Cth)	W-s/°C	4750	8824	11613	22500

**NOTE: Use the feedback parameters as specified above by default for setup. Verify phasing using the Kinetix300's “Autophasing” routine. The drive prompts to run the phasing check after a motor file is loaded.

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F Series: Custom Motor Data for Kinetix300 Setup

Parameter	Units	F-4030-Q-H0XXX	F-4050-Q-H0XXX	F-4075-R-H0XXX	F-6100-R-H0XXX	F-6200-R-H0XXX
Kt	Nm/A(0-pk)	0.54	0.54	0.73	0.71	0.7
Ke	V(0-pk)/KRPM	66	66	89	86	85
Lm	mH	6.8	3.3	3.4	3.3	1.7
Rm	Ohms	2.24	0.89	0.98	0.51	0.26
Phase Current	Arms	5.7	11.2	11.2	16.1	25.0
Intermittent Current	Arms	17.7	24.8	24.8	38.9	49.5
Nominal Bus Voltage	Vdc	325	325	325	325	325
Number of Poles	(no unit)	8	8	8	8	8
Jm	Kgm^2	0.0010	0.0021	0.0032	0.0064	0.0100
Max Velocity	RPM	4000	4000	3000	3000	4000
PPR (Pre-Quad)	(no unit)	2000	2000	2000	2000	2000
Halls Order	(no unit)	3	3	3	3	3
Inverted	(no unit)	Yes (box checked)	Yes (box checked)	Yes (box checked)	Yes (box checked)	Yes (box checked)
B leads A for CCW	(no unit)	No (box not checked)	No (box not checked)	No (box not checked)	No (box not checked)	No (box not checked)
Thermal Constant (Rth)	°C/W	0.63	0.48	0.4	0.45	0.31
Thermal Constant (Cth)	W-s/°C	4286	7250	9300	9067	11613

Parameter	Units	F-6300-R-H0XXX
Kt	Nm/A(0-pk)	0.73
Ke	V(0-pk)/KRPM	89
Lm	mH	1.1
Rm	Ohms	0.16
Phase Current	Arms	33.2
Intermittent Current	Arms	67.2
Nominal Bus Voltage	Vdc	325
Number of Poles	(no unit)	8
Jm	Kgm^2	0.0162
Max Velocity	RPM	3000
PPR (Pre-Quad)	(no unit)	2000
Halls Order	(no unit)	3
Inverted	(no unit)	Yes (box checked)
B leads A for CCW	(no unit)	No (box not checked)
Thermal Constant (Rth)	°C/W	0.3
Thermal Constant (Cth)	W-s/°C	19000

**NOTE: Use the feedback parameters as specified above by default for setup. Verify phasing using the Kinetix300's “Autophasing” routine. The drive prompts to run the phasing check after a motor file is loaded.

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1326AS Series: Custom Motor Data for Kinetix300 Setup

Parameter	Units	1326AS-B330H-21-Y-AD	1326AS-B420G-21-Y-AD	1326AS-B440G-21-Y-AD
Kt	Nm/A(0-pk)	0.71	0.87	0.84
Ke	V(0-pk)/KRPM	89	107.5	107.5
Lm	mH	24	27	12
Rm	Ohms	10.2	6.9	2.5
Phase Current	Arms	2.1	2.6	5.4
Intermittent Current	Arms	6.0	7.8	16.2
Nominal Bus Voltage	Vdc	650	650	650
Number of Poles	(no unit)	6	6	6
Jm	Kgm^2	0.00009	0.0003	0.0005
Max Velocity	RPM	6500	5250	5250
PPR (Pre-Quad)	(no unit)	5000	5000	5000
Halls Order	(no unit)	3	3	3
Inverted	(no unit)	Yes (box checked)	Yes (box checked)	Yes (box checked)
B leads A for CCW	(no unit)	No (box not checked)	No (box not checked)	No (box not checked)

**NOTE: Use the feedback parameters as specified above by default for setup. Verify phasing using the Kinetix300's “Autophasing” routine. The drive prompts to run the phasing check after a motor file is loaded.