Nidec

All for dreams

Commissioning guide

Dynec+ *with Unidrive M700, M701, M702 without position feedback*

Reference: 6069 en - 2023.06 / d

LEROY-SOMER™

1 - INTRODUCTION

Before setting up the drive, please follow the safety and installation instructions for Dyneo+ motors and Unidrive M70x drives described in their respective manuals.

Dyneo+ motors:
http://www.leroy-somer.com/documentation_pdf/5411_en.pdf

Unidrive M70x drive:
See the Getting Started Guide and associated Power Installation Guide (available from the Control Techniques website).

⚠	• **The installation and commissioning must be carried out by qualified, competent and authorised personnel.**

Then proceed with the quick commissioning described in 2 from the factory setting.

Requirements:

- Ensure the drive has a firmware version equal or higher than V01.20.00.00.
- Do not enable the autotune procedure.
- Parameters shown in motor data tables from the annex are only applicablefor the Unidrive M70x drive rating indicated for each data line. If a drive with a different rating is used, then Current Controller Kp Gain (**Pr 04.013**) and Current Controller Ki Gain (**Pr 04.014**) must be scaled as detailed below:

  New value = Annex value x (KC New drive / KC Annex drive)

  Values for KC can be found in the Parameter Reference Guide, in the Current Ratings section or in the online help of Control Techniques Connect Software.

2 - COMMISSIONING WITH UNIDRIVE M70x WITHOUT POSITION FEEDBACK

RFC-S mode for interchangeable Dyneo⁺ permanent magnet motors without position feedback (sensorless)

Action	Description
Before power-up	Ensure: • The drive enable signal is not given (terminal 31 on Unidrive M700/M701 and terminals 11 & 13 on Unidrive M702) • The Run signal is not given • Motor is connected
Power-up the drive	If Open Loop or RFC-A mode is displayed when the drive is powered up: • Set **Pr 00.048** = RFC-S (3). • If the frequency of the mains supply is 60Hz, set **Pr 00.000** = 1254, otherwise if the frequency of the mains is 50Hz, set **Pr 00.000** = 1253. If RFC-S mode is displayed when the drive is powered up: • If the frequency of the mains supply is 60Hz, set **Pr 00.000** = 1244, otherwise if the frequency of the mains is 50Hz, set **Pr 00.000** = 1233. Press the red Reset button or toggle the Reset logic input. These actions will leave the drive in RFC-S mode with defaulted parameters. The drive will be in a tripped state, but the associated trips are addressed by settings within this procedure.
Advanced menu access from the keypad	To access all menus required for commissioning, set **Pr 00.0049** = All Menus (1). Reminder: Select the menus using the left and right arrows. The parameters are selected using the up and down arrows.
Set maximum speed	Set the maximum speed in **Pr 01.006** (rpm).
Set acceleration and deceleration rates	Set: • Acceleration rate in **Pr 02.011** (s up to **Pr 01.006**) - A value of 20s suites most applications. • Deceleration rate in **Pr 02.021** (s up to **Pr 01.006**) - A value of 20s suites most applications. • Ramp Rate Units **Pr 02.039** = On (1) If a braking resistor is installed, set **Pr 02.004** = Fast (0). Also ensure **Pr 10.030**, **Pr 10.031** and **Pr 10.061** are set correctly, otherwise permature 'Brake R Too Hot' trips may be seen.
Motor thermistor set-up	The motor PTC thermistor must be connected to the drive: • M700/M701: Connect thermistor to analogue input 3 (terminals 8 and 11). • M702 (with date code 1710 or later): Connect thermistor to digital input 5 / analogue input 3 (terminals 8 and 10). For the drive to manage the thermistor: • Set Analogue Input 3 Mode **Pr 07.015** = Therm short Cct (7). If connection of the thermistor leaves insufficient inputs, then it may be necessary to fit an SI-I/O module.

<table>
<tr><th>Action</th><th>Description</th></tr>
<tr><td>Enter motor nameplate details</td><td>
Refer to the Dyneo+ motors tables located in the Appendix. Select the table corresponding to the motor speed range (1500 or 3000 rpm). Then depending on the motor type and its power, select the line that corresponds to the voltage, the supply frequency and the rated speed of the application. From this line, set in the drive the values of all the parameters listed in the table.
If the load is a high inertia, Pr 03.010 may need to be increased.

NOTE : If the motor type does not appear in the table, then it is from the Compact range. In this case, please contact Control Techniques Technical Support.

Example:
For the 1500 range motor, LSHRM 160MR1 - 11 kW 400V - 50Hz with a rated speed of 1500 rpm, parameter values to set in the drive are the ones of the green line as indicated below:

<table>
<tr><th colspan="20">GAMME 1500 min-1</th></tr>
<tr><th rowspan="3">Type MOTEUR</th><th rowspan="3">kW</th><th>VARIATEUR</th><th rowspan="3">Couplage</th><th rowspan="3">Hz</th><th colspan="15">PARAMETRES</th></tr>
<tr><th rowspan="2">M700</th><th>#03.010</th><th>#03.011</th><th>#04.013</th><th>#04.014</th><th>#04.015</th><th>#05.007</th><th>#05.008</th><th>#05.009</th><th>#05.017</th><th>#05.024</th><th>#05.033</th><th>#05.069</th><th>#05.072</th><th>#05.075</th><th>#05.078</th><th>#05.082</th><th>#05.084</th><th>#05.087</th></tr>
<tr><th>Gain Vitesse Kp</th><th>Gain Vitesse Ki</th><th>Gain Courant Kp</th><th>Gain Courant Ki</th><th>Constante thermique (s)</th><th>Courant nominal (A)</th><th>Vitesse (min-1)</th><th>Tension (V)</th><th>Resistance Stator (Ω)</th><th>Ld (mH)</th><th>BEMF (V/ kmin-1)</th><th>Courant de défaut (%)</th><th>Lq @0A (mH)</th><th>Iq (%)</th><th>Lq @ Iq (mH)</th><th>Id (%)</th><th>Lq @ Id (mH)</th><th>Angle de couple (°)</th></tr>
<tr><td rowspan="4">LSHRM 160 MR1</td><td>11</td><td>44-00172</td><td>Y</td><td>50</td><td>0,005</td><td>0,05</td><td>152</td><td>269</td><td>800</td><td>21,0</td><td>1500</td><td>400</td><td>0,31582</td><td>7,626</td><td>72,1</td><td>236</td><td>68,540</td><td>73</td><td>44,845</td><td>-108</td><td>68,540</td><td>56</td></tr>
<tr><td>11</td><td>44-00172</td><td>Y</td><td>60</td><td>0,005</td><td>0,05</td><td>152</td><td>269</td><td>800</td><td>20,3</td><td>1800</td><td>400</td><td>0,31582</td><td>7,626</td><td>72,1</td><td>244</td><td>68,540</td><td>73</td><td>44,845</td><td>-108</td><td>68,540</td><td>56</td></tr>
<tr><td>12,7</td><td>44-00172</td><td>Y</td><td>60</td><td>0,005</td><td>0,05</td><td>152</td><td>269</td><td>800</td><td>21,2</td><td>1800</td><td>460</td><td>0,31582</td><td>7,626</td><td>72,1</td><td>233</td><td>68,540</td><td>73</td><td>44,845</td><td>-108</td><td>68,540</td><td>56</td></tr>
<tr><td>19,1</td><td>64-00420</td><td>D</td><td>87</td><td>0,005</td><td>0,05</td><td>124</td><td>219</td><td>800</td><td>38,2</td><td>2600</td><td>400</td><td>0,10527</td><td>2,542</td><td>41,6</td><td>218</td><td>22,847</td><td>73</td><td>14,948</td><td>-108</td><td>22,850</td><td>56</td></tr>
</table>

NOTE: When setting Pr 05.069, it may be necessary to increase the value entered, to ensure that the actual trip level displayed in Pr 05.068 is close to (but not greater than) the required value.
</td></tr>
<tr><td>Additional settings</td><td>
Set :
• RFC Feedback Mode (Pr 03.024) = Sensorless
• P1 Error Dectection Level (Pr 03.040) = 0
• P1 Thermistor Fault Detection (Pr 03.123) = None (0)
• Motoring Current Limit (Pr 04.005) = 120% max
• Regenerating Current Limit (Pr 04.006) = 120% max
• Symmetrical Current Limit (Pr 04.007) = 120% max
• Current Reference Filter 1 Time Constant (Pr 04.012) = 1 ms [May need to increase this value to counteract ripple from low resolution estimated feedback]
• Thermal Protection Mode (Pr 04.016) = Disabled (4)
• User Current Maximum Scaling (Pr 04.024) = 120% max
• Number of motor pole pairs (Pr 05.011) = 2
• Maximum Switching Frequency (Pr 05.018) = 3kHz (1)
• Enable High Speed Mode (Pr 05.022) = Enable (2)
• Flux Control Gain (Pr 05.027) = 0.1
• Minimum Switching Frequency (Pr 05.038) = 3kHz (1)
• Voltage Headroom Pr 05.041 = 5%. [Do not set a lower value. Increase this value to 10%, if the motor is unstable in the field weakening area]
• RFC Low Speed Mode (Pr 05.064) = Injection
• Saliency Torque Control Select Pr 05.065 = Auto (3) [Ensure that Pr 05.066 = High (2) otherwise check the value entered for Pr 05.087 from the table]
• Inverted Saturation Characteristic (Pr 05.070) = On (1)
• Low Speed Sensorless Mode Current (Pr 05.071) = 60% [Note: This forces a reduced current limit between zero speed and 20% of motor rated speed]
• Stop Mode (Pr 06.001) = Ramp (1)
• Hold Zero Speed (Pr 06.008) = Disabled (0)
</td></tr>
<tr><td>Save parameters</td><td>Select «Save Parameters» in Pr mm.000 and press the red reset button or toggle the reset digital input.</td></tr>
<tr><td>Start-up</td><td>Drive is ready to start-up.</td></tr>
</table>

INTERCHANGEABLE RANGE 1500 rpm																							
MOTOR	kW	Drive M70x	Coupling	Hz	PARAMETERS																		
					#03.010	#03.011	#04.013	#04.014	#04.015	#05.007	#05.008	#05.009	#05.017	#05.024	#05.033	#05.069	#05.072	#05.075	#05.078	#05.082	#05.084	#05.087
					Speed Gain Kp	Speed Gain Ki	Current Gain Kp	Current Gain Ki	Thermal Constant (s)	Rated Current (A)	Rated Speed (min-1)	Rated Voltage (V)	Stator Resistance (Ω)	Ld (mH)	BEMF (V/kmin-1)	Trip Current (%)	Lq @0A (mH)	Iq (%)	Lq @ Iq (mH)	Id (%)	Lq @ Id (mH)	orque angle (°)
	11	44-00172	Y	50	0,005	0,05	152	254	800	21,0	1500	400	0,29780	7,626	72,1	236	68,540	73	44,845	-108	68,540	56
LSHRM 160 MR1	11	44-00172	Y	60	0,005	0,05	152	254	800	20,3	1800	400	0,29780	7,626	72,1	244	68,540	73	44,845	-108	68,540	56
	12,7	44-00172	Y	60	0,005	0,05	152	254	800	21,2	1800	460	0,29780	7,626	72,1	233	68,540	73	44,845	-108	68,540	56
	19,1	64-00420	D	87	0,005	0,05	124	207	800	38,2	2600	400	0,09927	2,542	41,6	218	22,847	73	14,948	-108	22,850	56
	15	54-00300	Y	50	0,005	0,05	304	460	800	27,5	1500	400	0,26540	7,478	78,7	199	67,889	69	40,485	-110	67,890	58
LSHRM 160 LR1	15	54-00270	Y	60	0,005	0,05	234	355	800	26,8	1800	400	0,26540	7,478	78,7	204	67,889	69	40,485	-110	67,890	58
	17,3	54-00270	Y	60	0,005	0,05	234	355	800	26,7	1800	460	0,26540	7,478	78,7	204	67,889	69	40,485	-110	67,890	58
	26,0	64-00470	D	87	0,005	0,05	136	206	800	48,6	2600	400	0,08847	2,493	45,4	189	22,630	69	13,495	-110	22,630	58
	18,5	64-00420	Y	50	0,03	0,1	277	397	1000	35,9	1500	400	0,19100	5,676	73,1	181	43,301	71	31,534	-109	43,300	57
LSHRM 180 M1	18,5	64-00420	Y	60	0,03	0,1	277	331	1000	35,1	1800	400	0,19100	5,676	73,1	185	43,301	71	31,534	-109	43,300	57
	21,3	64-00420	Y	60	0,03	0,1	277	397	1000	35,5	1800	460	0,19100	5,676	73,1	183	43,301	71	31,534	-109	43,300	57
	32,1	74-00660	D	87	0,03	0,1	145	208	1000	62,9	2600	400	0,06367	1,892	42,2	174	14,434	71	10,511	-109	14,430	57
	22	64-00420	Y	50	0,03	0,1	207	273	1000	42,2	1500	400	0,13100	4,253	71,6	196	33,058	73	25,019	-108	33,060	56
LSHRM 180 L1	22	64-00420	Y	60	0,03	0,1	207	273	1000	40,1	1800	400	0,13100	4,253	71,6	207	33,058	73	25,019	-108	33,060	56
	25,4	64-00420	Y	60	0,03	0,1	207	273	1000	41,1	1800	460	0,13100	4,253	71,6	202	33,058	73	25,019	-108	33,060	56
	38,1	74-00770	D	87	0,03	0,1	127	167	1000	73,5	2600	400	0,04367	1,418	41,3	189	11,019	73	8,340	-108	11,020	56
	30	64-00470	Y	50	0,03	0,1	190	233	1000	57,0	1500	400	0,10000	3,492	71,6	174	27,497	69	19,675	-110	27,500	58
LSHRM 200 LQ1	30	64-00470	Y	60	0,03	0,1	190	233	1000	54,9	1800	400	0,10000	3,492	71,6	181	27,497	69	19,675	-110	27,500	58
	34,6	64-00470	Y	60	0,03	0,1	190	233	1000	56,1	1800	460	0,10000	3,492	71,6	177	27,497	69	19,675	-110	27,500	58
	52	74-01000	D	87	0,03	0,1	135	165	1000	99,3	2600	400	0,03333	1,164	41,3	168	9,166	69	6,558	-110	9,170	58
	37	74-00660	Y	50	0,03	0,1	232	265	1000	70,1	1500	400	0,08100	3,028	72,3	164	24,063	69	16,697	-110	24,060	58
LSHRM 225 SZ1	37	74-00660	Y	60	0,03	0,1	232	265	1000	68,4	1800	400	0,08100	3,028	72,3	168	24,063	69	16,697	-110	24,060	58
	42,7	74-00660	Y	60	0,03	0,1	232	265	1000	69,2	1800	460	0,08100	3,028	72,3	166	24,063	69	16,697	-110	24,060	58
	64,2	84-01340	D	87	0,03	0,1	157	179	1000	122	2600	400	0,02700	1,009	41,8	157	8,021	69	5,566	-110	8,020	58
	45	74-00770	Y	50	0,005	0,1	220	163	1200	82,1	1500	400	0,04270	2,467	76,6	201	23,645	67	13,172	-111	23,640	59
LSHRM 225 MG	45	74-00770	Y	60	0,005	0,1	220	163	1200	79,6	1800	400	0,04270	2,467	76,6	207	23,645	67	13,172	-111	23,640	59
	54,3	74-00770	Y	60	0,005	0,1	220	163	1200	83,1	1800	460	0,04270	2,467	76,6	198	23,645	67	13,172	-111	23,640	59
	79,2	84-01570	D	87	0,005	0,1	150	111	1200	142	2600	400	0,01423	0,822	44,2	195	7,882	67	4,391	-111	7,880	59
	55	74-01000	Y	50	0,005	0,1	234	159	1200	99,4	1500	400	0,03210	2,015	76,6	199	19,664	67	10,923	-111	19,660	59
LSHRM 250 ME	55	74-01000	Y	60	0,005	0,1	234	159	1200	94,7	1800	400	0,03210	2,015	76,6	208	19,664	67	10,923	-111	19,660	59
	64	74-01000	Y	60	0,005	0,1	234	159	1200	97,8	1800	460	0,03210	2,015	76,6	202	19,664	67	10,923	-111	19,660	59
	95	94-02000	D	87	0,005	0,1	136	93	1200	176	2600	400	0,01070	0,672	44,2	189	6,555	67	3,641	-111	6,550	59
	75	84-01340	Y	50	0,005	0,1	261	159	1200	134	1500	400	0,02400	1,677	81,7	185	16,736	63	8,988	-114	16,740	61
LSHRM 280 SD	75	84-01340	Y	60	0,005	0,1	261	159	1200	130	1800	400	0,02400	1,677	81,7	190	16,736	63	8,988	-114	16,740	61
	86,4	84-01340	Y	60	0,005	0,1	261	159	1200	131	1800	460	0,02400	1,677	81,7	189	16,736	63	8,988	-114	16,740	61
	131	94-02240	D	87	0,005	0,1	127	78	1200	231	2600	400	0,00800	0,559	47,2	180	5,579	63	2,996	-114	5,580	61
	90	84-01570	Y	50	0,005	0,1	261	149	1200	163	1500	400	0,01920	1,432	80,4	174	14,403	63	7,519	-114	14,400	61
LSHRM 280 MD	90	84-01570	Y	60	0,005	0,1	261	149	1200	158	1800	400	0,01920	1,432	80,4	179	14,403	63	7,519	-114	14,400	61
	104	84-01570	Y	60	0,005	0,1	261	149	1200	155	1800	460	0,01920	1,432	80,4	182	14,403	63	7,519	-114	14,400	61
	156	104-02700	D	87	0,005	0,1	149	86	1200	279	2600	400	0,00640	0,477	46,4	171	4,801	63	2,506	-114	4,800	61
	110	94-02000	Y	50	0,005	0,1	236	129	1200	199	1500	400	0,01490	1,161	76,6	165	11,750	61	6,646	-115	11,750	62
LSHRM 315 SN1	110	94-02000	Y	60	0,005	0,1	236	129	1200	195	1800	400	0,01490	1,161	76,6	168	11,750	61	6,646	-115	11,750	62
	132	94-02240	Y	60	0,005	0,1	264	145	1200	202	1800	460	0,01490	1,161	76,6	163	11,750	61	6,646	-115	11,750	62
	192	114-04170	D	87	0,005	0,1	164	90	1200	342	2600	400	0,00497	0,387	44,2	161	3,917	61	2,215	-115	3,920	62
	132	94-02240	Y	50	0,005	0,1	240	92	1400	235	1500	400	0,00950	1,057	86	194	9,591	59	5,620	-116	9,590	63
LSHRM 315 MP	132	94-02240	Y	60	0,005	0,1	240	92	1400	234	1800	400	0,00950	1,057	86	195	9,591	59	5,620	-116	9,590	63
	152	94-02240	Y	60	0,005	0,1	240	92	1400	233	1800	460	0,00950	1,057	86	196	9,591	59	5,620	-116	9,590	63
	229	114-04170	D	87	0,005	0,1	149	57	1400	415	2600	400	0,00317	0,352	49,6	186	3,197	59	1,873	-116	3,200	63
LSHRM 315 MP	160	114-03770	Y	50	0,005	0,1	264	99	1400	304	1500	400	0,00625	0,712	75,2	192	6,520	59	3,800	-116	6,520	63
	160	104-02700	Y	60	0,005	0,1	223	84	1400	280	1800	400	0,00625	0,712	75,2	209	6,520	59	3,800	-116	6,520	63
	184	114-03770	Y	60	0,005	0,1	264	99	1400	294	1800	460	0,00625	0,712	75,2	198	6,520	59	3,800	-116	6,520	63
LSHRM 315 MR	200	114-04170	D	50	0,005	0,1	247	80	1400	377	1500	400	0,00443	0,583	75,8	188	5,413	59	3,096	-116	5,410	63
	200	114-04170	D	60	0,005	0,1	247	80	1400	319	1800	400	0,00443	0,583	75,8	203	5,413	59	3,096	-116	5,410	63
	230	114-04170	D	60	0,005	0,1	247	80	1400	366	1800	460	0,00443	0,583	75,8	193	5,413	59	3,096	-116	5,410	63
	75	84-01340	Y	50	0,005	0,1	261	163	1400	134	1500	400	0,02461	1,677	81,7	185	16,736	63	8,988	-114	16,740	61
FLSHRM 280 SB	75	84-01340	Y	60	0,005	0,1	261	163	1400	130	1800	400	0,02461	1,677	81,7	190	16,736	63	8,988	-114	16,740	61
	86,4	84-01340	Y	60	0,005	0,1	261	163	1400	131	1800	460	0,02461	1,677	81,7	189	16,736	63	8,988	-114	16,740	61
	131	94-02240	D	87	0,005	0,1	127	80	1400	231	2600	400	0,00820	0,559	47,2	180	5,579	63	2,996	-114	5,580	61
	90	84-01570	Y	50	0,005	0,1	261	154	1500	163	1500	400	0,01982	1,432	80,4	174	14,403	63	7,519	-114	14,400	61
FLSHRM 280 MD	90	84-01570	Y	60	0,005	0,1	261	154	1500	158	1800	400	0,01982	1,432	80,4	179	14,403	63	7,519	-114	14,400	61
	104	84-01570	Y	60	0,005	0,1	261	154	1500	155	1800	460	0,01982	1,432	80,4	182	14,403	63	7,519	-114	14,400	61
	156	104-02700	D	87	0,005	0,1	149	177	1500	279	2600	400	0,01321	0,477	46,4	171	4,801	63	2,506	-114	4,800	61
	110	94-02000	Y	50	0,005	0,1	236	133	1500	199	1500	400	0,01534	1,161	76,6	165	11,750	61	6,646	-115	11,750	62
FLSHRM 315 STB	110	94-02000	Y	60	0,005	0,1	236	133	1500	195	1800	400	0,01534	1,161	76,6	168	11,750	61	6,646	-115	11,750	62
	132	94-02240	Y	60	0,005	0,1	264	149	1500	202	1800	460	0,01534	1,161	76,6	163	11,750	61	6,646	-115	11,750	62
	192	114-04170	D	87	0,005	0,1	164	92	1500	342	2600	400	0,00511	0,387	44,2	161	3,917	61	2,215	-115	3,920	62
	132	94-02240	Y	50	0,005	0,1	240	92	1600	236	1500	400	0,00952	1,057	86	194	9,591	59	5,620	-116	9,590	63
FLSHRM 315 M	132	94-02240	Y	60	0,005	0,1	240	92	1600	234	1800	400	0,00952	1,057	86	195	9,591	59	5,620	-116	9,590	63
	152	94-02240	Y	60	0,005	0,1	240	92	1600	233	1800	460	0,00952	1,057	86	196	9,591	59	5,620	-116	9,590	63
	229	114-04170	D	87	0,005	0,1	149	57	1600	415	2600	400	0,00317	0,352	49,6	186	3,197	59	1,873	-116	3,200	63
FLSHRM 315 LA	160	114-03770	Y	50	0,005	0,1	264	96	1600	304	1500	400	0,00604	0,712	75,2	192	6,520	59	3,800	-116	6,520	63
	160	104-02700	Y	60	0,005	0,1	223	81	1600	280	1800	400	0,00604	0,712	75,2	209	6,520	59	3,800	-116	6,520	63
	184	114-03770	Y	60	0,005	0,1	264	96	1600	294	1800	460	0,00604	0,712	75,2	198	6,520	59	3,800	-116	6,520	63
FLSHRM 315 LB	200	114-04170	D	50	0,005	0,1	247	82	1600	377	1500	400	0,00454	0,583	75,8	188	5,413	59	3,096	-116	5,410	63
	200	114-04170	D	60	0,005	0,1	247	82	1600	349	1800	400	0,00454	0,583	75,8	203	5,413	59	3,096	-116	5,410	63
	230	114-04170	D	60	0,005	0,1	247	82	1600	366	1800	460	0,00454	0,583	75,8	193	5,413	59	3,096	-116	5,410	63
FLSHRM 315 LC	240	114-04170	D	50	0,005	0,1	241	79	1600	457	1500	400	0,00393	0,512	74,5	172	4,780	59	2,550	-116	4,780	63
	240	114-04170	D	60	0,005	0,1	217	71	1600	429	1800	400	0,00393	0,512	74,5	183	4,780	59	2,550	-116	4,780	63
	276	114-04170	D	60	0,005	0,1	241	79	1600	443	1800	460	0,00393	0,512	74,5	177	4,780	59	2,550	-116	4,780	63

INTERCHANGEABLE RANGE 3000 rpm																							
MOTOR	kW	Drive M70x	Coupling	Hz	PARAMETERS																		
					#03.010	#03.011	#04.013	#04.014	#04.015	#05.007	#05.008	#05.009	#05.017	#05.024	#05.033	#05.069	#05.072	#05.075	#05.078	#05.082	#05.084	#05.087
					Speed Gain Kp	Speed Gain Ki	Current Gain Kp	Current Gain Ki	Thermal Constant (s)	Rated Current (A)	Rated Speed (min^{-1})	Rated Voltage (V)	Stator Resistance (Ω)	Ld (mH)	BEMF ($V/kmin^{-1}$)	Trip Current (%)	Lq @0A (mH)	Iq (%)	Lq @ Iq (mH)	Id (%)	Lq @ Id (mH)	orque angle (°)
LSHRM 160 MR1	11	44-00172	Y	100	0,005	0,05	95	198	800	20,3	3000	400	0,23200	4,781	43,3	238	41,329	73	27,751	-108	41,329	56
	11	44-00172	Y	120	0,005	0,05	95	198	800	19,8	3600	400	0,23200	4,781	43,3	244	41,329	73	27,751	-108	41,329	56
	12,7	44-00172	Y	120	0,005	0,05	95	198	800	19,9	3600	460	0,23200	4,781	43,3	243	41,329	73	27,751	-108	41,329	56
	19,1	64-00420	D	173	0,005	0,05	78	161	800	35,8	5200	400	0,07733	1,594	25	223	13,776	73	9,25	-108	13,776	56
LSHRM 160 MR1	15	54-00300	Y	100	0,005	0,05	117	210	800	27,7	3000	400	0,12100	2,884	39,3	254	25,538	75	17,72	-106	25,538	55
	15	54-00270	Y	120	0,005	0,05	90	162	800	27,1	3600	400	0,12100	2,884	39,3	259	25,538	75	17,72	-106	25,538	55
	17,3	64-00350	Y	120	0,005	0,05	117	210	800	28,2	3600	460	0,12100	2,884	39,3	249	25,538	75	17,72	-106	25,538	55
	26,0	64-00470	D	173	0,005	0,05	52	94	800	50,9	5200	400	0,04033	0,961	22,7	226	8,513	75	5,907	-106	8,513	55
LSHRM 160 LR1	18,5	64-00350	Y	100	0,005	0,05	117	210	800	33,7	3000	400	0,12100	2,884	39,3	209	25,538	71	17,009	-109	25,538	57
	18,5	64-00350	Y	120	0,005	0,05	117	210	800	32,9	3600	400	0,12100	2,884	39,3	214	25,538	71	17,009	-109	25,538	57
	21,3	64-00350	Y	120	0,005	0,05	117	210	800	33,1	3600	460	0,12100	2,884	39,3	212	25,538	71	17,009	-109	25,538	57
	32,1	74-00660	D	173	0,005	0,05	74	132	800	61,8	5200	400	0,04033	0,961	22,7	186	8,513	71	5,70	-109	8,513	57
LSHRM 180 M1	22	64-00420	Y	100	0,03	0,1	104	174	800	41,8	3000	400	0,08340	2,134	38,2	216	15,79	76	12,578	-105	15,79	54
	22	64-00420	Y	120	0,03	0,1	104	174	800	40,2	3600	400	0,08340	2,134	38,2	224	15,79	76	12,578	-105	15,79	54
	25,5	64-00420	Y	120	0,03	0,1	104	174	800	41,4	3600	460	0,08340	2,134	38,2	218	15,79	76	12,578	-105	15,79	54
	38,1	74-00770	D	173	0,03	0,1	64	106	800	73,6	5200	400	0,02780	0,711	22	200	5,263	76	4,20	-105	5,263	54
LSHRM 200 LQ1	30	64-00470	Y	100	0,03	0,1	116	194	800	56,7	3000	400	0,08340	2,134	38,2	159	15,79	69	11,032	-110	15,79	58
	30	64-00470	Y	120	0,03	0,1	116	194	800	57,1	3600	400	0,08340	2,134	38,2	158	15,79	69	11,032	-110	15,79	58
	34,7	64-00470	Y	120	0,03	0,1	116	194	800	56,5	3600	460	0,08340	2,134	38,2	160	15,79	69	11,032	-110	15,79	58
LSHRM 200 LQ1	37	74-00660	Y	100	0,03	0,1	109	157	800	69,9	3000	400	0,04800	1,419	36,6	178	10,825	71	7,982	-109	10,825	57
	37	74-00660	Y	120	0,03	0,1	109	157	800	68,8	3600	400	0,04800	1,419	36,6	181	10,825	71	7,982	-109	10,825	57
	42,9	74-00660	Y	120	0,03	0,1	109	157	800	69	3600	460	0,04800	1,419	36,6	181	10,825	71	7,982	-109	10,825	57
LSHRM 225 MY1	45	74-00770	Y	100	0,03	0,1	106	138	800	84,1	3000	400	0,03630	1,185	37,8	180	9,208	71	6,802	-109	9,208	57
	45	74-00770	Y	120	0,03	0,1	106	138	800	82	3600	400	0,03630	1,185	37,8	184	9,208	71	6,802	-109	9,208	57
	52	74-00770	Y	120	0,03	0,1	106	138	800	83,4	3600	460	0,03630	1,185	37,8	181	9,208	71	6,802	-109	9,208	57
LSHRM 250 ME	55	74-01000	Y	100	0,005	0,1	118	100	1100	100	3000	400	0,02010	1,019	43,4	226	9,52	71	5,657	-109	9,52	57
	55	74-01000	Y	120	0,005	0,1	118	100	1100	101	3600	400	0,02010	1,019	43,4	225	9,52	71	5,657	-109	9,52	57
	63,7	74-01000	Y	120	0,005	0,1	118	100	1100	100	3600	460	0,02010	1,019	43,4	226	9,52	71	5,657	-109	9,52	57
LSHRM 280 SC	75	84-01340	Y	100	0,005	0,1	123	104	1100	138	3000	400	0,01570	0,794	38,3	185	7,412	65	4,063	-113	7,412	60
	75	84-01340	Y	120	0,005	0,1	123	104	1100	136	3600	400	0,01570	0,794	38,3	187	7,412	65	4,063	-113	7,412	60
	86,3	84-01340	Y	120	0,005	0,1	123	104	1100	135	3600	460	0,01570	0,794	38,3	189	7,412	65	4,063	-113	7,412	60
LSHRM 280 MC	90	84-01570	Y	100	0,005	0,1	112	85	1100	167	3000	400	0,01090	0,617	38,3	190	5,911	65	3,648	-113	5,911	60
	90	84-01570	Y	120	0,005	0,1	112	85	1100	160	3600	400	0,01090	0,617	38,3	198	5,911	65	3,648	-113	5,911	60
	104	94-02000	Y	120	0,005	0,1	125	94	1100	168	3600	460	0,01090	0,617	38,3	189	5,911	65	3,648	-113	5,911	60
LSHRM 315 SN1	110	94-02000	Y	100	0,005	0,1	102	71	1100	201	3000	400	0,00820	0,504	38,3	189	4,916	69	2,56	-110	4,916	58
	110	94-02000	Y	120	0,005	0,1	102	71	1100	195	3600	400	0,00820	0,504	38,3	195	4,916	69	2,56	-110	4,916	58
	127	94-02000	Y	120	0,005	0,1	102	71	1100	197	3600	460	0,00820	0,504	38,3	193	4,916	69	2,56	-110	4,916	58
LSHRM 315 MN1	132	94-02240	Y	100	0,005	0,1	107	70	1100	237	3000	400	0,00722	0,469	40,2	178	4,639	69	2,28	-110	4,639	58
	132	94-02240	Y	120	0,005	0,1	107	70	1100	234	3600	400	0,00722	0,469	40,2	181	4,639	69	2,28	-110	4,639	58
	152	94-02240	Y	120	0,005	0,1	107	70	1100	232	3600	460	0,00722	0,469	40,2	182	4,639	69	2,28	-110	4,639	58
LSHRM 315 MN1	160	104-02700	Y	100	0,005	0,1	112	68	1100	289	3000	400	0,00510	0,358	40,2	188	3,601	65	1,989	-113	3,601	60
	160	104-02700	Y	120	0,005	0,1	112	68	1100	273	3600	400	0,00510	0,358	40,2	199	3,601	65	1,989	-113	3,601	60
	184	104-02700	Y	120	0,005	0,1	112	68	1100	283	3600	460	0,00510	0,358	40,2	192	3,601	65	1,989	-113	3,601	60
LSHRM 315 MN1	200	114-04170	Y	100	0,005	0,1	123	70	1100	366	3000	400	0,00390	0,29	38,3	172	2,937	63	1,734	-114	2,937	61
	200	114-04170	Y	120	0,005	0,1	123	70	1100	365	3600	400	0,00390	0,29	38,3	173	2,937	63	1,734	-114	2,937	61
	233	114-04170	Y	120	0,005	0,1	123	70	1100	359	3600	460	0,00390	0,29	38,3	175	2,937	63	1,734	-114	2,937	61
FLSHRM 280 SA	75	84-01340	Y	100	0,005	0,1	123	109	1800	138	3000	400	0,01637	0,794	38,3	185	7,412	65	4,063	-113	7,412	60
	75	84-01340	Y	120	0,005	0,1	123	109	1800	136	3600	400	0,01637	0,794	38,3	187	7,412	65	4,063	-113	7,412	60
	86,3	84-01340	Y	120	0,005	0,1	123	109	1800	135	3600	460	0,01637	0,794	38,3	189	7,412	65	4,063	-113	7,412	60
FLSHRM 280 MA	90	84-01570	Y	100	0,005	0,1	112	88	1800	167	3000	400	0,01125	0,617	38,3	190	5,911	65	3,648	-113	5,911	60
	90	84-01570	Y	120	0,005	0,1	112	88	1800	160	3600	400	0,01125	0,617	38,3	198	5,911	65	3,648	-113	5,911	60
	108	94-02000	Y	120	0,005	0,1	125	98	1800	168	3600	460	0,01125	0,617	38,3	189	5,911	65	3,648	-113	5,911	60
FLSHRM 315 STA	110	94-02000	Y	100	0,005	0,1	102	72	1800	201	3000	400	0,00836	0,504	38,3	189	4,916	69	2,56	-110	4,916	58
	110	94-02000	Y	120	0,005	0,1	102	72	1800	195	3600	400	0,00836	0,504	38,3	195	4,916	69	2,56	-110	4,916	58
	127	94-02000	Y	120	0,005	0,1	102	72	1800	197	3600	460	0,00836	0,504	38,3	193	4,916	69	2,56	-110	4,916	58
FLSHRM 315 MT	132	94-02240	Y	100	0,005	0,1	107	70	1800	237	3000	400	0,00722	0,469	40,2	178	4,639	69	2,28	-110	4,639	58
	132	94-02240	Y	120	0,005	0,1	107	70	1800	234	3600	400	0,00722	0,469	40,2	181	4,639	69	2,28	-110	4,639	58
	152	94-02240	Y	120	0,005	0,1	107	70	1800	232	3600	460	0,00722	0,469	40,2	182	4,639	69	2,28	-110	4,639	58
FLSHRM 315 LTA	160	104-02700	Y	100	0,005	0,1	112	66	1800	289	3000	400	0,00495	0,358	40,2	188	3,601	65	2,21	-113	3,601	60
	160	104-02700	Y	120	0,005	0,1	112	66	1800	273	3600	400	0,00495	0,358	40,2	199	3,601	65	2,21	-113	3,601	60
	184	104-02700	Y	120	0,005	0,1	112	66	1800	283	3600	460	0,00495	0,358	40,2	192	3,601	65	2,21	-113	3,601	60
FLSHRM 315 LTB	200	114-04170	Y	100	0,005	0,1	123	69	1800	366	3000	400	0,00383	0,29	38,3	172	2,937	63	1,734	-114	2,937	61
	200	114-04170	Y	120	0,005	0,1	123	69	1800	365	3600	400	0,00383	0,29	38,3	173	2,937	63	1,734	-114	2,937	61
	233	114-04170	Y	120	0,005	0,1	123	69	1800	359	3600	460	0,00383	0,29	38,3	175	2,937	63	1,734	-114	2,937	61
FLSHRM 355 LTA	250	114-04170	D	100	0,005	0,1	112	40	1800	452	3000	400	0,00201	0,237	43,4	218	2,173	61	1,39	-115	2,173	62
	250	114-04170	D	120	0,005	0,1	112	40	1800	452	3600	400	0,00201	0,237	43,4	217	2,173	61	1,39	-115	2,173	62
	288	114-04170	D	120	0,005	0,1	112	40	1800	448	3600	460	0,00201	0,237	43,4	220	2,173	61	1,39	-115	2,173	62

COMPACT RANGE 1500 rpm																							
MOTOR	kW	Drive M70x	Coupling	Hz	PARAMETERS																		
					#03.010	#03.011	#04.013	#04.014	#04.015	#05.007	#05.008	#05.009	#05.017	#05.024	#05.033	#05.069	#05.072	#05.075	#05.078	#05.082	#05.084	#05.087
					Speed Gain Kp	Speed Gain Ki	Current Gain Kp	Current Gain Ki	Thermal Constant (s)	Rated Current (A)	Rated Speed (min^{-1})	Rated Voltage (V)	Stator Resistance (Ω)	Ld (mH)	BEMF ($V/kmin^{-1}$)	Trip Current (%)	Lq @0A (mH)	Iq (%)	Lq @ Iq (mH)	Id (%)	Lq @ Id (mH)	orque angle (°)
LSHRM 132 MU1	15,5	64-00350	Y	50	0,005	0,05	310	516	800	30,3	**1500**	400	0,29780	7,626	72,1	163	68,54	63	35,883	-114	68,54	61
	15,5	64-00350	Y	60	0,005	0,05	310	516	800	28,2	**1800**	400	0,29780	7,626	72,1	176	68,54	63	35,883	-114	68,54	61
	17,9	64-00350	Y	60	0,005	0,05	310	516	800	28,2	**1800**	460	0,29780	7,626	72,1	176	68,54	63	35,883	-114	68,54	61
	27	64-00470	D	87	0,005	0,05	139	231	800	52,9	**2600**	400	0,09927	2,542	41,6	157	22,847	63	11,961	-114	22,847	61
LSHRM 160 LR1	18,5	64-00420	Y	50	0,005	0,05	364	552	800	35,7	**1500**	400	0,26540	7,478	78,7	153	67,889	61	38,21	-115	67,889	62
	18,5	64-00350	Y	60	0,005	0,05	304	460	800	34	**1800**	400	0,26540	7,478	78,7	161	67,889	61	38,21	-115	67,889	62
	21,3	64-00420	Y	60	0,005	0,05	364	552	800	34,6	**1800**	460	0,26540	7,478	78,7	158	67,889	61	38,21	-115	67,889	62
	32,1	74-00660	D	87	0,005	0,05	191	289	800	62,8	**2600**	400	0,08847	2,493	45,4	146	22,63	61	12,737	-115	22,63	62
LSHRM 180 L1M	35	74-00660	Y	50	0,03	0,1	233	282	1000	69	**1500**	400	0,08620	3,042	66,8	154	23,953	68	16,17	-111	23,953	59
	35	74-00660	Y	60	0,03	0,1	233	282	1000	66	**1800**	400	0,08620	3,042	66,8	161	23,953	68	16,17	-111	23,953	59
	40	74-00660	Y	60	0,03	0,1	233	282	1000	67,1	**1800**	460	0,08620	3,042	66,8	158	23,953	68	16,17	-111	23,953	59
	61	84-01340	D	87	0,03	0,1	158	191	1000	119	**2600**	400	0,02873	1,014	38,6	149	7,984	68	5,39	-111	7,984	59
LSHRM 200 LR1	41	74-00770	Y	50	0,03	0,1	230	267	1000	80,8	**1500**	400	0,07000	2,58	66,8	153	20,503	68	13,79	-111	20,503	59
	41	74-00770	Y	60	0,03	0,1	230	267	1000	77	**1800**	400	0,07000	2,58	66,8	161	20,503	68	13,79	-111	20,503	59
	47	74-00770	Y	60	0,03	0,1	230	267	1000	78,4	**1800**	460	0,07000	2,58	66,8	158	20,503	68	13,79	-111	20,503	59
	71	84-01340	D	87	0,03	0,1	134	155	1000	139	**2600**	400	0,02333	0,86	38,6	149	6,834	68	4,597	-111	6,834	59
LSHRM 225MG1M	94	94-02000	Y	50	0,005	0,1	225	134	1200	183	**1500**	400	0,01542	1,107	66,4	165	11,049	61	6,28	-115	11,049	62
	94	94-02000	Y	60	0,005	0,1	225	134	1200	171	**1800**	400	0,01542	1,107	66,4	176	11,049	61	6,28	-115	11,049	62
	126	94-02240	Y	60	0,005	0,1	252	150	1200	203	**1800**	460	0,01542	1,107	66,4	149	11,049	61	6,28	-115	11,049	62
LSHRM 250 MF1	117	94-02240	Y	50	0,005	0,1	222	122	1200	218	**1500**	400	0,01254	0,975	70,2	164	9,873	61	5,57	-115	9,873	62
	117	94-02240	Y	60	0,005	0,1	222	122	1200	210	**1800**	400	0,01254	0,975	70,2	170	9,873	61	5,57	-115	9,873	62
	153	94-02240	Y	60	0,005	0,1	222	122	1200	239	**1800**	460	0,01254	0,975	70,2	150	9,873	61	5,57	-115	9,873	62
LSHRM 280 MU	220	114-04170	Y	50	0,005	0,1	267	92	1400	403	**1500**	400	0,00510	0,63	78,8	169	5,846	59	3,09	-116	5,846	63
	220	114-04170	Y	60	0,005	0,1	267	92	1400	393	**1800**	400	0,00510	0,63	78,8	174	5,846	59	3,09	-116	5,846	63
	253	114-04170	Y	60	0,005	0,1	267	92	1400	393	**1800**	460	0,00510	0,63	78,8	173	5,846	59	3,09	-116	5,846	63
LSHRM 315 MR	240	114-04170	D	50	0,005	0,1	241	79	1400	457	**1500**	400	0,00393	0,512	74,5	172	4,78	59	2,55	-116	4,78	63
	240	114-04170	D	60	0,005	0,1	217	71	1400	429	**1800**	400	0,00393	0,512	74,5	183	4,78	59	2,55	-116	4,78	63
	276	114-04170	D	60	0,005	0,1	241	79	1400	443	**1800**	460	0,00393	0,512	74,5	177	4,78	59	2,55	-116	4,78	63

COMPACT RANGE 1800 rpm																							
MOTOR	kW	Drive M70x	Coupling	Hz	PARAMETERS																		
					#03.010	#03.011	#04.013	#04.014	#04.015	#05.007	#05.008	#05.009	#05.017	#05.024	#05.033	#05.069	#05.072	#05.075	#05.078	#05.082	#05.084	#05.087
					Speed Gain Kp	Speed Gain Ki	Current Gain Kp	Current Gain Ki	Thermal Constant (s)	Rated Current (A)	Rated Speed (min^{-1})	Rated Voltage (V)	Stator Resistance (Ω)	Ld (mH)	BEMF ($V/kmin^{-1}$)	Trip Current (%)	Lq @0A (mH)	Iq (%)	Lq @ Iq (mH)	Id (%)	Lq @ Id (mH)	orque angle (°)
LSHRM 132 MU1	19	64-00420	D	60	0,005	0,05	296	465	800	36,8	**1800**	400	0,22367	6,071	64,3	150	54,568	61	30,46	-115	54,568	62
LSHRM 160 LR1	22	64-00420	D	60	0,005	0,05	238	354	800	42,1	**1800**	400	0,17000	4,886	63,6	159	44,354	63	25,37	-114	44,354	61
LSHRM 180 L1M	42	74-00770	Y	60	0,03	0,1	200	242	1000	82,6	**1800**	400	0,06340	2,235	57,2	149	17,598	67	11,6	-111	17,598	59
LSHRM 200 LR1	50	74-01000	Y	60	0,03	0,1	208	237	1000	98,1	**1800**	400	0,04790	1,792	55,7	150	14,238	67	9,5	-111	14,238	59
LSHRM 225MG1M	112	94-02240	Y	60	0,005	0,1	180	106	1200	216	**1800**	400	0,01094	0,793	56,2	164	7,911	61	4,498	-115	7,911	62
LSHRM 250 MF1	138	104-02700	Y	60	0,005	0,1	204	114	1200	263	**1800**	400	0,00850	0,653	57,5	164	6,609	61	3,76	-115	6,609	62
LSHRM 280 MU	250	114-04170	D	60	0,005	0,1	222	74	1400	451	**1800**	400	0,00368	0,472	68,3	174	4,384	59	2,15	-116	4,384	63

COMPACT RANGE 2600 rpm																							
MOTOR	kW	Drive M70x	Coupling	Hz	PARAMETERS																		
					#03.010	#03.011	#04.013	#04.014	#04.015	#05.007	#05.008	#05.009	#05.017	#05.024	#05.033	#05.069	#05.072	#05.075	#05.078	#05.082	#05.084	#05.087
					Speed Gain Kp	Speed Gain Ki	Current Gain Kp	Current Gain Ki	Thermal Constant (s)	Rated Current (A)	Rated Speed (min^{-1})	Rated Voltage (V)	Stator Resistance (Ω)	Ld (mH)	BEMF ($V/kmin^{-1}$)	Trip Current (%)	Lq @0A (mH)	Iq (%)	Lq @ Iq (mH)	Id (%)	Lq @ Id (mH)	orque angle (°)
LSHRM 132 MU3	27	64-00470	D	86,6	0,005	0,05	139	231	800	51,7	**2600**	400	0,09927	2,542	41,6	161	22,847	63	13,45	-114	22,847	61
LSHRM 160 LR3	32	74-00660	D	86,6	0,005	0,05	191	289	800	60,4	**2600**	400	0,08847	2,493	45,4	152	22,63	61	12,9	-115	22,63	62
LSHRM 180 L1M	60	84-01340	D	86,6	0,03	0,1	158	191	1000	118	**2600**	400	0,02873	1,014	38,6	151	7,984	68	5,43	-111	7,984	59
LSHRM 200 LR1	70	84-01340	D	86,6	0,03	0,1	134	155	1000	138	**2600**	400	0,02333	0,86	38,6	151	6,834	68	4,64	-111	6,834	59
LSHRM 225MG1M	157	114-03770	D	86,6	0,005	0,1	137	81	1200	309	**2600**	400	0,00514	0,369	38,3	163	3,683	61	2,13	-115	3,683	62
LSHRM 250 MF1	192	114-04170	D	86,6	0,005	0,1	138	76	1200	365	**2600**	400	0,00418	0,325	40,5	164	3,291	61	1,9	-115	3,291	62

COMPACT RANGE 3000 rpm

MOTOR	kW	Drive M70x	Coupling	Hz	PARAMETERS #03.010 Speed Gain Kp	#03.011 Speed Gain Ki	#04.013 Current Gain Kp	#04.014 Current Gain Ki	#04.015 Thermal Constant (s)	#05.007 Rated Current (A)	#05.008 Rated Speed (min⁻¹)	#05.009 Rated Voltage (V)	#05.017 Stator Resistance (Ω)	#05.024 Ld (mH)	#05.033 BEMF (V/kmin⁻¹)	#05.069 Trip Current (%)	#05.072 Lq @0A (mH)	#05.075 Iq (%)	#05.078 Lq @ Iq (mH)	#05.082 Id (%)	#05.084 Lq @ Id (mH)	#05.087 orque angle (°)
LSHRM 132 MU3	32	74-00660	Y	100	0,005	0,05	146	245	800	61	3000	400	0,07480	1,906	36,1	156	17,135	63	9,92	-114	17,135	61
	32	74-00660	Y	120	0,005	0,05	146	245	800	69,6	3600	400	0,07480	1,906	36,1	136	17,135	63	9,92	-114	17,135	61
	37	74-00660	Y	120	0,005	0,05	146	245	800	59,6	3600	460	0,07480	1,906	36,1	159	17,135	63	9,92	-114	17,135	61
	56	84-01340	D	173	0,005	0,05	99	165	800	110	5200	400	0,02493	0,635	20,8	140	5,712	63	3,307	-114	5,712	61
LSHRM 160 LR3	37	74-00660	Y	100	0,005	0,05	143	220	800	70,1	3000	400	0,06720	1,87	39,3	150	16,972	61	9,68	-115	16,972	62
	37	74-00660	Y	120	0,005	0,05	143	220	800	69,3	3600	400	0,06720	1,87	39,3	152	16,972	61	9,68	-115	16,972	62
	43	74-00660	Y	120	0,005	0,05	143	220	800	69,2	3600	460	0,06720	1,87	39,3	152	16,972	61	9,68	-115	16,972	62
	65	84-01340	D	173	0,005	0,05	97	149	800	123	5200	400	0,02240	0,623	22,7	140	5,657	61	3,227	-115	5,657	62
LSHRM 180 L1M	64	84-01340	Y	100	0,03	0,1	118	145	1000	126	3000	400	0,02190	0,76	33,4	160	5,988	69	4,22	-110	5,988	58
	64	84-01340	Y	120	0,03	0,1	118	145	1000	121	3600	400	0,02190	0,76	33,4	168	5,988	69	4,22	-110	5,988	58
	74	84-01340	Y	120	0,03	0,1	118	145	1000	123	3600	460	0,02190	0,76	33,4	165	5,988	69	4,22	-110	5,988	58
LSHRM 200 LR1	75	84-01570	Y	100	0,03	0,1	117	136	1000	148	3000	400	0,01750	0,645	33,4	159	5,126	69	3,6	-110	5,126	58
	75	84-01570	Y	120	0,03	0,1	117	136	1000	141	3600	400	0,01750	0,645	33,4	167	5,126	69	3,6	-110	5,126	58
	86	84-01570	Y	120	0,03	0,1	117	136	1000	145	3600	460	0,01750	0,645	33,4	162	5,126	69	3,6	-110	5,126	58
LSHRM 225MG1M	172	114-03770	Y	100	0,005	0,1	119	74	1200	327	3000	400	0,00465	0,321	35,8	165	3,203	61	1,86	-115	3,203	62
	172	114-03770	Y	120	0,005	0,1	119	74	1200	318	3600	400	0,00465	0,321	35,8	169	3,203	61	1,86	-115	3,203	62
	198	114-03770	Y	120	0,005	0,1	119	74	1200	314	3600	460	0,00465	0,321	35,8	171	3,203	61	1,86	-115	3,203	62
LSHRM 250 MF1	206	114-04170	Y	100	0,005	0,1	123	70	1200	382	3000	400	0,00390	0,29	38,3	165	2,937	61	1,7	-115	2,937	62
	206	114-04170	Y	120	0,005	0,1	123	70	1200	384	3600	400	0,00390	0,29	38,3	164	2,937	61	1,7	-115	2,937	62
	248	114-04170	Y	120	0,005	0,1	123	70	1200	388	3600	460	0,00390	0,29	38,3	163	2,937	61	1,7	-115	2,937	62

COMPACT RANGE 3600 rpm

MOTOR	kW	Drive M70x	Coupling	Hz	PARAMETERS #03.010 Speed Gain Kp	#03.011 Speed Gain Ki	#04.013 Current Gain Kp	#04.014 Current Gain Ki	#04.015 Thermal Constant (s)	#05.007 Rated Current (A)	#05.008 Rated Speed (min⁻¹)	#05.009 Rated Voltage (V)	#05.017 Stator Resistance (Ω)	#05.024 Ld (mH)	#05.033 BEMF (V/kmin⁻¹)	#05.069 Trip Current (%)	#05.072 Lq @0A (mH)	#05.075 Iq (%)	#05.078 Lq @ Iq (mH)	#05.082 Id (%)	#05.084 Lq @ Id (mH)	#05.087 orque angle (°)
LSHRM 132 MU3	38	74-00770	Y	120	0,005	0,05	114	182	800	73	3600	400	0,04780	1,276	29,5	156	11,471	63	6,75	-114	11,471	61
LSHRM 160 LR3	40	74-00770	D	120	0,005	0,05	109	167	800	75,6	3600	400	0,04367	1,221	31,8	169	11,089	85	2,3	-98	11,089	49
LSHRM 180 L1M	75	84-01570	Y	120	0,03	0,1	102	125	1000	146	3600	400	0,01610	0,559	28,6	159	4,399	70	3,11	-110	4,399	58
LSHRM 200 LR1	87	84-01570	Y	120	0,03	0,1	99	114	1000	167	3600	400	0,01460	0,542	30,6	153	4,307	68	2,98	-111	4,307	58
LSHRM 225MG1M	181	114-04170	D	120	0,005	0,1	112	66	1200	337	3600	400	0,00365	0,264	32,4	174	2,637	63	1,57	-114	2,637	61
LSHRM 250 MF1	230	114-04170	D	120	0,005	0,1	92	51	1200	430	3600	400	0,00283	0,218	33,2	167	2,203	63	1,28	-114	2,203	61

COMPACT RANGE 4500 rpm

MOTOR	kW	Drive M70x	Coupling	Hz	PARAMETERS #03.010 Speed Gain Kp	#03.011 Speed Gain Ki	#04.013 Current Gain Kp	#04.014 Current Gain Ki	#04.015 Thermal Constant (s)	#05.007 Rated Current (A)	#05.008 Rated Speed (min⁻¹)	#05.009 Rated Voltage (V)	#05.017 Stator Resistance (Ω)	#05.024 Ld (mH)	#05.033 BEMF (V/kmin⁻¹)	#05.069 Trip Current (%)	#05.072 Lq @0A (mH)	#05.075 Iq (%)	#05.078 Lq @ Iq (mH)	#05.082 Id (%)	#05.084 Lq @ Id (mH)	#05.087 orque angle (°)
LSHRM 132 MU3	48	74-01000	D	150	0,005	0,05	103	172	800	93,4	4500	400	0,03467	0,888	24,6	143	7,977	61	4,55	-115	7,977	62
LSHRM 160 LR3	50	74-01000	D	150	0,005	0,05	87	135	800	96,4	4500	400	0,02723	0,754	25	164	6,845	65	4,16	-113	6,845	60
LSHRM 180 L1M	88	94-02000	Y	150	0,03	0,1	79	99	1000	170	4500	400	0,01137	0,388	23,9	160	3,055	70	2,19	-110	3,055	58
LSHRM 200 LQ1	88	94-02000	Y	150	0,03	0,1	79	99	1000	170	4500	400	0,01137	0,388	23,9	160	3,055	70	2,19	-110	3,055	58
LSHRM 225MG1M	185	114-04170	D	150	0,005	0,1	75	46	1200	369	4500	400	0,00254	0,177	26,5	190	1,765	69	1,1	-110	1,765	58
LSHRM 250 SF1	240	114-04170	D	150	0,005	0,1	73	41	1200	441	4500	400	0,00227	0,172	29,5	181	1,741	65	1,07	-113	1,741	60

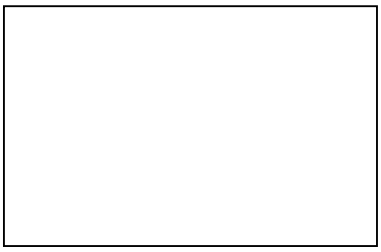
COMPACT RANGE 6000 rpm																						
MOTOR	kW	Drive M70x	Coupling	Hz	PARAMETERS																	
					#03.010	#03.011	#04.013	#04.014	#04.015	#05.007	#05.008	#05.009	#05.017	#05.024	#05.033	#05.069	#05.072	#05.075	#05.078	#05.082	#05.084	#05.087
					Speed Gain Kp	Speed Gain Ki	Current Gain Kp	Current Gain Ki	Thermal Constant (s)	Rated Current (A)	Rated Speed (min^{-1})	Rated Voltage (V)	Stator Resistance (Ω)	Ld (mH)	BEMF ($V/kmin^{-1}$)	Trip Current (%)	Lq @0A (mH)	Iq (%)	Lq @ Iq (mH)	Id (%)	Lq @ Id (mH)	orque angle (°)
LSHRM 132 MU3	**57**	**84-01340**	**D**	**200**	0,005	0,05	82	143	800	134	**6000**	400	0,02023	0,525	18,9	150	4,72	63	2,81	-114	4,72	61
LSHRM 160 LR3	**65**	**84-01340**	**D**	**200**	0,005	0,05	70	111	800	106	**6000**	400	0,01593	0,45	19,3	157	4,087	65	2,47	-113	4,087	60
LSHRM 180 L1M	**80**	**84-01570**	**Y**	**200**	0,03	0,1	71	94	1000	88	**6000**	400	0,01137	0,388	23,9	186	3,055	74	2,35	-107	3,055	56
LSHRM 200 LR1	**90**	**84-01570**	**Y**	**200**	0,03	0,1	52	66	1000	62	**6000**	400	0,00800	0,287	22,3	201	2,278	76	1,81	-105	2,278	54
LSHRM 225SG1	**185**	**114-04170**	**Y**	**200**	0,005	0,1	69	43	1200	46	**6000**	400	0,00252	0,164	25,5	213	1,634	71	1,08	-109	1,634	57
LSHRM 250 SF1S	**220**	**114-04170**	**D**	**200**	0,005	0,1	56	32	1200	32	**6000**	400	0,00177	0,132	25,8	219	1,333	71	0,89	-109	1,333	57

NOTES

Nidec

All for dreams

LEROY-SOMER™



Moteurs Leroy-Somer
Headquarter: Boulevard Marcellin Leroy - CS 10015
16915 ANGOULÊME Cedex 9

Limited company with capital of 38,679,664 €
RCS Angoulême 338 567 258

www.leroy-somer.com