

# Unimotor fm 142 mm Frame Ratings

Highlights indicate Express Availability.



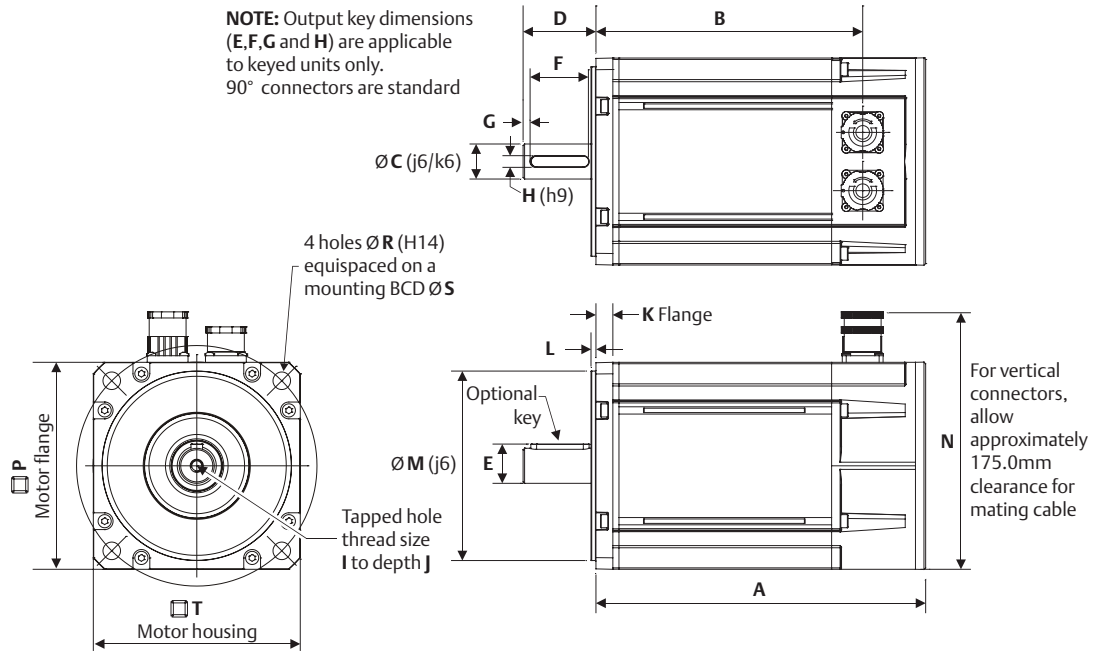
UNIMOTOR FM

Motor Frame Size (mm)	142E3					142U3				
Voltage (Vrms)	230					460				
Frame Length	A	B	C	D	E	A	B	C	D	E
Continuous Stall Torque (lb-in)	55.0	97.0	139.0	181.0	221.0	55.0	<b>97.0</b>	<b>139.0</b>	<b>181.0</b>	<b>221.0</b>
Continuous Stall Torque (Nm)	6.2	11.0	15.7	20.5	25.0	6.2	<b>11.0</b>	<b>15.7</b>	<b>20.5</b>	<b>25.0</b>
Standard (3) Peak Torque Max (lb-in)	165.0	292.0	417.0	544.0	664.0	165.0	<b>292.0</b>	<b>417.0</b>	<b>544.0</b>	<b>664.0</b>
Standard (3) Peak Torque Max (Nm)	18.6	33.0	47.1	61.5	75.0	18.6	<b>33.0</b>	<b>47.1</b>	<b>61.5</b>	<b>75.0</b>
Standard Inertia (lb-in-sec <sup>2</sup> )	0.00903	0.01496	0.0208	0.02673	0.03266	0.00903	<b>0.01496</b>	<b>0.0208</b>	<b>0.02673</b>	<b>0.03266</b>
Standard Inertia (kgm <sup>2</sup> )	0.00102	0.00169	0.00235	0.00302	0.00369	0.00102	<b>0.00169</b>	<b>0.00235</b>	<b>0.00302</b>	<b>0.00369</b>
High Inertia Option (lb-in-sec <sup>2</sup> )	0.02053	0.02638	0.03231	0.03815	0.04408	0.02053	<b>0.02638</b>	<b>0.03231</b>	<b>0.03815</b>	<b>0.04408</b>
High Inertia Option (kgm <sup>2</sup> )	0.00232	0.00298	0.00365	0.00431	0.00498	0.00232	<b>0.00298</b>	<b>0.00365</b>	<b>0.00431</b>	<b>0.00498</b>
Winding Thermal Time Const. (s)	145	148	188	206	249	145	<b>148</b>	<b>188</b>	<b>206</b>	<b>249</b>
Motor Weight (lbs)	18.3	25.1	31.9	38.7	45.5	18.3	<b>25.1</b>	<b>31.9</b>	<b>38.7</b>	<b>45.5</b>
Motor Weight (kg)	8.3	11.4	14.5	17.6	20.7	8.3	<b>11.4</b>	<b>14.5</b>	<b>17.6</b>	<b>20.7</b>
Shaft Diameter (mm)	24	24	24	24	24	24	<b>24</b>	<b>24</b>	<b>24</b>	<b>24</b>
Shaft Length (mm)	50	50	50	50	50	50	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>
2000 rpm	Kt (lb-in/A) =	12.4				21.2				
	Kt (Nm/A) =	1.4				2.4				
	Ke (V/k rpm) =	85.5				147.0				
Rated Torque (lb-in)	52.2	92.0	130.1	163.7	190.3	52.2	92.0	130.1	163.7	190.3
Rated Torque (Nm)	5.9	10.4	14.7	18.5	21.5	5.9	10.4	14.7	18.5	21.5
Stall Current (A)	4.4	7.9	11.2	14.6	17.9	2.6	4.6	6.5	8.5	10.4
Rated Power (kW)	1.23	2.18	3.08	3.87	4.49	1.23	2.18	3.08	3.87	4.49
R (ph-ph) (Ohms)	5.56	1.54	0.80	0.51	0.40	14.64	4.71	2.38	1.60	1.11
L (ph-ph) (mH)	35.43	14.25	8.99	6.35	5.25	98.76	42.15	26.32	19.46	15.08
3000 rpm	Kt (lb-in/A) =	8.23				14.2				
	Kt (Nm/A) =	0.93				1.6				
	Ke (V/k rpm) =	57.0				98.0				
Rated Torque (lb-in)	48.7	84.1	113.3	141.6		48.7	<b>84.1</b>	<b>113.3</b>	<b>141.6</b>	<b>161.1</b>
Rated Torque (Nm)	5.5	9.5	12.8	16.0		5.5	<b>9.5</b>	<b>12.8</b>	<b>16.0</b>	<b>18.2</b>
Stall Current (A)	6.67	11.83	16.88	22.04		3.9	<b>6.9</b>	<b>9.8</b>	<b>12.8</b>	<b>15.6</b>
Rated Power (kW)	1.73	2.98	4.02	5.03		1.73	<b>2.98</b>	<b>4.02</b>	<b>5.03</b>	<b>5.7</b>
R (ph-ph) (Ohms)	2.25	0.68	0.35	0.23		6.2	<b>2.12</b>	<b>1.08</b>	<b>0.70</b>	<b>0.50</b>
L (ph-ph) (mH)	14.68	6.33	3.89	3.66		42.97	<b>19.11</b>	<b>12.06</b>	<b>8.91</b>	<b>6.7</b>
4000 rpm	Kt (lb-in/A) =	6.2				10.6				
	Kt (Nm/A) =	0.7				1.2				
	Ke (V/k rpm) =	42.75				73.5				
Rated Torque (lb-in)	36.3	71.7	90.3			36.3	71.7	90.3	108	123.9
Rated Torque (Nm)	4.1	8.1	10.2			4.1	8.1	10.2	12.2	14.0
Stall Current (A)	8.86	15.71	22.43			5.2	9.2	13.1	17.1	20.8
Rated Power (kW)	1.72	3.37	4.27			1.72	3.37	4.27	5.11	5.86
R (ph-ph) (Ohms)	1.29	0.38	0.23			3.64	1.18	0.61	0.41	0.29
L (ph-ph) (mH)	8.39	3.44	2.49			24.44	10.54	6.78	5.06	3.97
6000 rpm	Kt (lb-in/A) =	4.2				0.7				
	Kt (Nm/A) =	0.47				0.08				
	Ke (V/k rpm) =	28.5				49.0				
Rated Torque (lb-in)	28.3				28.3		46.0			
Rated Torque (Nm)	3.2				3.2		5.2			
Stall Current (A)	13.19				7.8		13.8			
Rated Power (kW)	2.01				2.01		3.27			
R (ph-ph) (Ohms)	0.56				1.63		0.53			
L (ph-ph) (mH)	3.67				11.08		4.78			

**NOTES:**

- Δt = 212 °F (100 °C) winding 104 °F (40 °C) maximum ambient
- All data subject to ±10% tolerance
- Stall torque, rated torque and power relate to maximum continuous operation tested in a 68 °F (20 °C) ambient at 12 kHz drive switching frequency
- Emerson has an ongoing process of development and reserves the right to change the specification without notice
- All other figures relate to a 68 °F (20 °C) motor temperature; maximum intermittent winding temperature is 284 °F (140 °C)

# Unimotor fm 142 mm Frame Dimensions



Motor Dimensions	Frame Length										
	A		B		C		D		E		
	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	
Unbraked Length	<b>A</b>	7.59	192.8	8.77	222.8	9.95	252.8	11.13	282.8	12.31	312.8
	<b>B</b>	6.22	158	7.4	188	8.58	218	9.76	248	10.94	278
Braked Length	<b>A</b>	9.95	252.8	11.13	282.8	12.31	312.8	13.5	342.8	14.68	372.8
	<b>B</b>	8.58	218	9.76	248	10.94	278	12.13	308	13.31	338

BCD 149 motor lengths differ from the above, refer to draw for motor details

Connector Type	Connector Height		
	(in)	(mm)	
"A"	N	6.93	176.0
"B"		7.22	183.5
"C"		7.22	183.5
"V"		6.93	176.0

Flange Dimensions		BCD Code			
		Standard		Optional	
		165		149 <sup>1</sup>	
		(in)	(mm)	(in)	(mm)
Flange Thickness	<b>K</b>	0.55	14.0	0.45	11.5
Pilot Thickness	<b>L</b>	0.13	3.4	0.13	3.4
Pilot Diameter (j6)	<b>M</b>	5.12	130	4.5	114.3
Flange Square	<b>P</b>	5.59	142	5.51	140
Mounting Hole Dia. (H14)	<b>R</b>	0.47	12.0	0.47	12
Mounting Hole BCD	<b>S</b>	6.5	165	5.88	149.23
Motor Housing	<b>T</b>	5.59	142	5.59	142
Mounting Bolts		M10		M10	

<sup>1</sup>NEMA 56 flange option; shaft diameter 0.945 in (24 mm)

Shaft Dimensions		24.0 mm Frame A-E		32.0 mm Opt.	
		(in)	(mm)	(in)	(mm)
Shaft Diameter (j6)	<b>C</b>	0.94	24.0	1.26	32.0
Shaft Length	<b>D</b> <sup>1</sup>	1.97	50.0	3.15	80.0
Key Height	<b>E</b> <sup>2</sup>	1.06	27.0	1.38	35.0
Key Length	<b>F</b> <sup>3</sup>	1.57	40.0	2.76	70.0
Key-to-Shaft End	<b>G</b> <sup>4</sup>	0.18	4.6	0.18	4.6
Key Width (H9)	<b>H</b>	0.31	8.0	0.39	10.0
Tapped Hole Thread Size	<b>I</b>	M8 x 1.25		M12 x 1.75	
Tapped Hole Depth	<b>J</b> <sup>5</sup>	0.79	20.0	1.14	29.0

<sup>1</sup>±0.45 mm, <sup>2</sup>To IEC 72-1, <sup>3</sup>±0.25 mm, <sup>4</sup>±1.1 mm, <sup>5</sup>±0.4 mm