FRAMELESS TORQUE MOTOR

FTM-R112-W02

Mechanical reference and winding selection

CONFIGURATION REFERENCE - not an approved production or order drawing

FTM-R112-W02 is a 104 mm frameless motor reference with a 72 mm rotor bore and 20 mm iron stack. Its 20 rpm/V winding documents 3.4 N.m at 5.72 A RMS under the 55 deg C winding-rise condition. Use the references to discuss your winding, housing and duty cycle.

Stator outside diameter	104 mm
0 / -0.10 mm	
Stator inside diameter	81.4 mm
0 / -0.08 mm	
Rotor outside diameter	80.7 mm
±0.05 mm	
Rotor bore	72 mm
+0.04 / 0 mm	
Iron stack length	20 mm
±0.20 mm	
Rotor axial length	20 mm
±0.05 mm	
Motor body axial envelope	<=30 mm
Drawing reference only; final configured envelope and tolerances must be specified before installation.	
Power lead length	200 mm
Drawing reference; customization available for review	

The FTM-R112 STEP and CAD views describe a shared mechanical reference, not winding internals or verified surface finishes. The CAD including modeled leads spans approximately 53.25 mm axially. The 200 mm lead-length reference is separate from that modeled envelope. 20 mm is the iron stack. The 30 mm body entry is a drawing reference, not an agreed installation limit. Budget the final body, leads, shaft retention and feedback before freezing the housing.

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Temperature rise, timed peaks and configuration scope

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At 55 deg C winding rise: 3.4 N.m; current 5.72 A RMS.

At 105 deg C winding rise: 5.6 N.m; current 9.46 A RMS.

For 10 seconds: 14.4 N.m; current 25.52 A RMS.

For 2 seconds: 21.6 N.m; current 51.15 A RMS.

Documented performance and electrical entries are generally ±10%. Temperature rise is relative to ambient, not the absolute winding temperature. The source documentation does not fully define the housing heat sink, ambient temperature or repeated-peak recovery cycle. These ratings require application review; they are not independently measured results. Reference publication does not establish a configured production rating.

Axial dimensions are documentation references for configuration discussion. The final body envelope, tolerances and lead exit must be specified on the configuration drawing; these references do not establish installation fit.

Customization: submit the loaded torque-speed point, bus and current conventions, complete housing/bore/lead space, cooling and ambient, peak/recovery cycle, sensor needs and quantities. Final dimensions, supplied components and delivery terms are agreed for the reviewed configuration.

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Winding reference values and unknown entries

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Drive voltage range	12-80 V
Typical voltage 48 V; drive matching requires review	
Rated output power	430 W
±10%; documented typical 48 V basis	
Speed coefficient	20 rpm/V
±10%; documented unit	
No-load speed	946 rpm
±10%; not a loaded operating point	
Listed loaded speed	803 rpm
±10%; load/drive/thermal point requires confirmation	
Line resistance	0.598 ohm
±10%; measurement temperature not specified	
Line inductance	1.098 mH
±10%; measurement frequency not specified	
Torque constant	0.414 N.m/A
±10%; current convention must be checked with the drive	

These are documentation references, not independent measurements or an approved drive setup. Unknown or withheld entries are not zero. No-load speed, temperature rise and peak duration retain separate meanings.

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Winding reference values and unknown entries

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Back EMF constant	0.477 V.s/rad
±10%; electrical convention requires confirmation	
Winding connection	Y star
Documented connection	
Rotor poles	28
28 rotor poles; slot count is not specified in the reviewed drawing	
Mass	601 g
±10%; documented value	
Rotor inertia	218 kg.mm^2
±10%; documented value	
Electrical time constant	2.24 ms
±10%; documented value	
Motor constant	0.72 N.m/sqrtW
±10%; documented value	

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