FRAMELESS TORQUE MOTOR

FTM-R105-W01

Mechanical reference and winding selection

CONFIGURATION REFERENCE - not an approved production or order drawing

FTM-R105-W01 is a 60 mm frameless motor reference with a 35 mm rotor bore and 20 mm iron stack. Its 35 rpm/V winding documents 0.72 N.m at 2.04 A RMS under the 55 deg C winding-rise condition. Use the references to discuss your winding, housing and duty cycle.

Stator outside diameter	60 mm
0 / -0.07 mm	
Stator inside diameter	43 mm
0 / -0.06 mm	
Rotor outside diameter	42.4 mm
±0.05 mm	
Rotor bore	35 mm
+0.03 / 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-R105 STEP and CAD views describe a shared mechanical reference, not winding internals or verified surface finishes. The CAD including modeled leads spans approximately 52.65 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: 0.72 N.m; current 2.04 A RMS.

At 105 deg C winding rise: 1.19 N.m; current 3.41 A RMS.

For 10 seconds: 3.1 N.m; current 9.13 A RMS.

For 2 seconds: 5 N.m; current 18.26 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	12-48 V
Typical voltage 48 V; drive matching requires review	
Rated output power	150 W
±10%; documented typical 48 V basis	
Speed coefficient	35 rpm/V
±10%; documented unit	
No-load speed	1540 rpm
±10%; not a loaded operating point	
Listed loaded speed	1250 rpm
±10%; load/drive/thermal point requires confirmation	
Line resistance	1.73 ohm
±10%; measurement temperature not specified	
Line inductance	1.85 mH
±10%; measurement frequency not specified	
Torque constant	0.24 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	0.28 V.s/rad
±10%; electrical convention requires confirmation	
Winding connection	Y star
Documented connection	
Slots / rotor poles	18 / 20
Documented arrangement	
Mass	243 g
±10%; documented value	
Rotor inertia	24 kg.mm^2
±10%; documented value	
Electrical time constant	1.31 ms
±10%; documented value	
Motor constant	0.251 N.m/sqrtW
±10%; documented value	

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