

AC INDUCTION MOTOR DATA SHEET

General Specification

Model number	M800006
Outline dimension drawing	see figure 4
Nameplate data (1)	See figure 5
Rated frequency	50 Hz
Motor Location	Indoor
Altitude	Less than 1000 meters
Relative humidity	Less than 90%
Ambient Temp	40 degrees C (Max)
Duty Type	Continuous
Weight (approx.)	1.68 Kg
Inertia (approx.)	0.0766 mNm/Rad/sec ²
Friction torque (approx.)	8 mNm
Coupling method	Direct (2)
Terminal connection	Three phase cable (color coded)

Performance Data (1)

Rated Output	13.6 W
Number of poles	4
Rotor type	Squirrel Cage
Rated Voltage (line to line)	14.7 RMS
Maximum continuous phase current	0.91 RMS
Peak phase current : full load	1.83 A
Peak phase current: locked rotor	3.31 A
Efficiency: 50 % load	66 %
Efficiency :75 % load	61 %
Efficiency 100% load	49 %
Power factor (p.u) : 50 % load	0.60
Power factor (p.u) : 75 % load	0.75
Power factor (p.u) : 100 % load	0.82
Speed at full load	1121 RPM
Torque: full load	116 mNm
Torque : locked rotor	109 mNm

- (1) Based on a linear four parameter model with measured parameters and connected to a 14.7V RMS/50Hz AC supply
- (2) Adaptor plate can be used to connect to the www.ti.com/tool/2MTR-DYNO see figure 3

Performance data based on measured parameters of a typical machine are given in figure 1

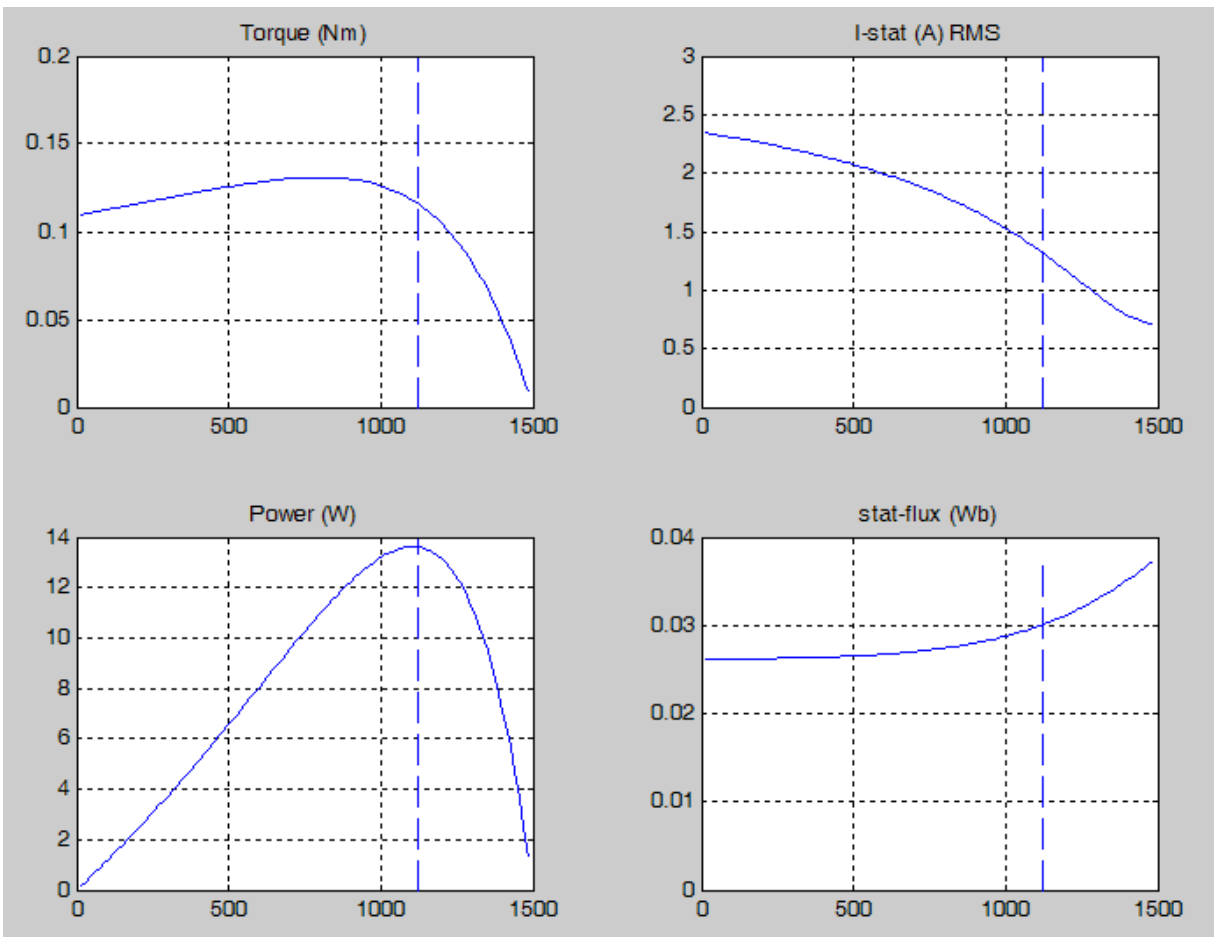


Figure 1 Steady state performance data (1) at nominal voltage

Operation under FOC

When operating the machine with a three phase converter the following limits (3) are typically used

Minimum DC bus voltage	21 V
Nominal DC bus voltage	24 V
Maximum DC bus voltage	27 V

(3) Theoretical value based on the use of SVM and rated voltage

A typical magnetization curve showing the rotor flux (4) as function of the direct axis current is given in figure 3. The linear function is used to provide an estimate for the magnetizing inductance. This is used to calculate the performance data shown above.

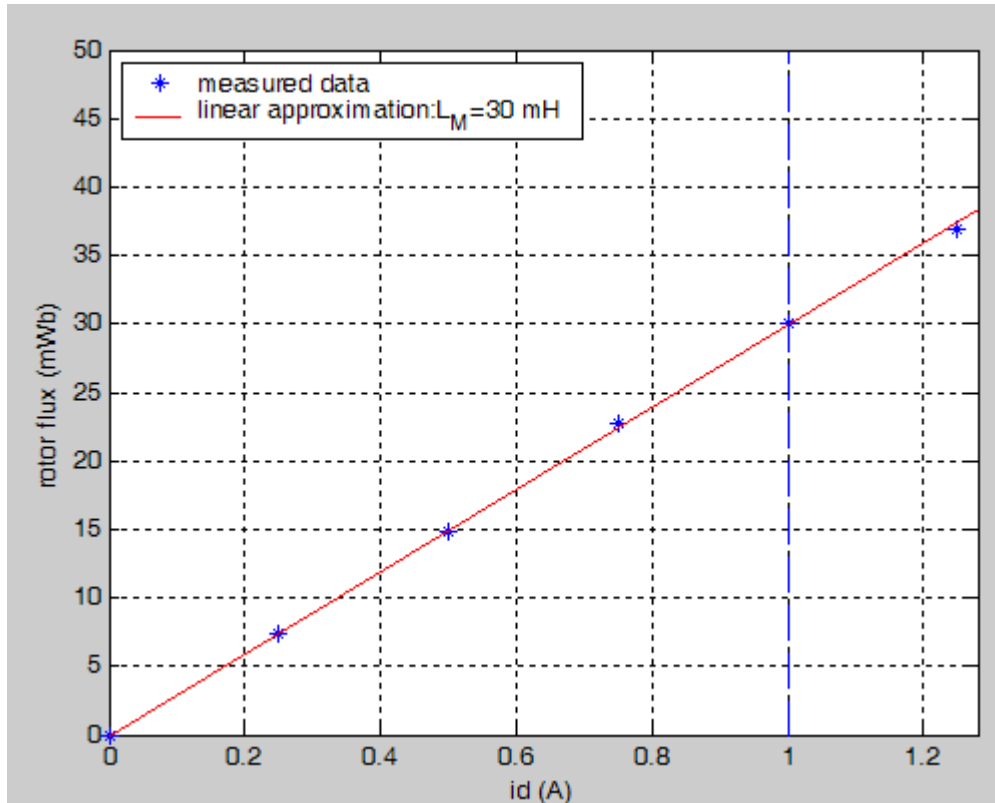


Figure 2 Typical magnetization curve, measured under field oriented control conditions at a speed of 300 RPM

(4) Rotor flux value based on the use of a four parameter model.

When operating the machine under FOC the following limits are typically used

Maximum RMS phase current	1.3 A
Nominal Direct axis current (Id)	1.08 A
Maximum Direct axis current (Id_max)	1.83 A (quadrature current zero)

USER_MOTOR for MotorWare user.h

```
#elif (USER_MOTOR == LVACIMTR)
#define USER_MOTOR_TYPE          MOTOR_Type_Induction
#define USER_MOTOR_NUM_POLE_PAIRS    (2)
#define USER_MOTOR_Rr              (1.05)
#define USER_MOTOR_Rs              (1.79)
```

```
#define USER_MOTOR_Ls_d      (0.00681)
#define USER_MOTOR_Ls_q      (USER_MOTOR_Ls_d)
#define USER_MOTOR_RATED_FLUX  (0.24) //(0.8165*14.7/50.0) = 0.24 V/Hz
#define USER_MOTOR_MAGNETIZING_CURRENT (1.08)
#define USER_MOTOR_RES_EST_CURRENT  (0.3)
#define USER_MOTOR_IND_EST_CURRENT  (NULL)
#define USER_MOTOR_MAX_CURRENT      (1.83)
#define USER_MOTOR_FLUX_EST_FREQ_Hz (10.0)
```

Adaptor plate

An adaptor plate is used to mechanically connect the machine to one axis of the www.ti.com/tool/2MTR-DYNO via the mounting frame



Outline of Dimensions

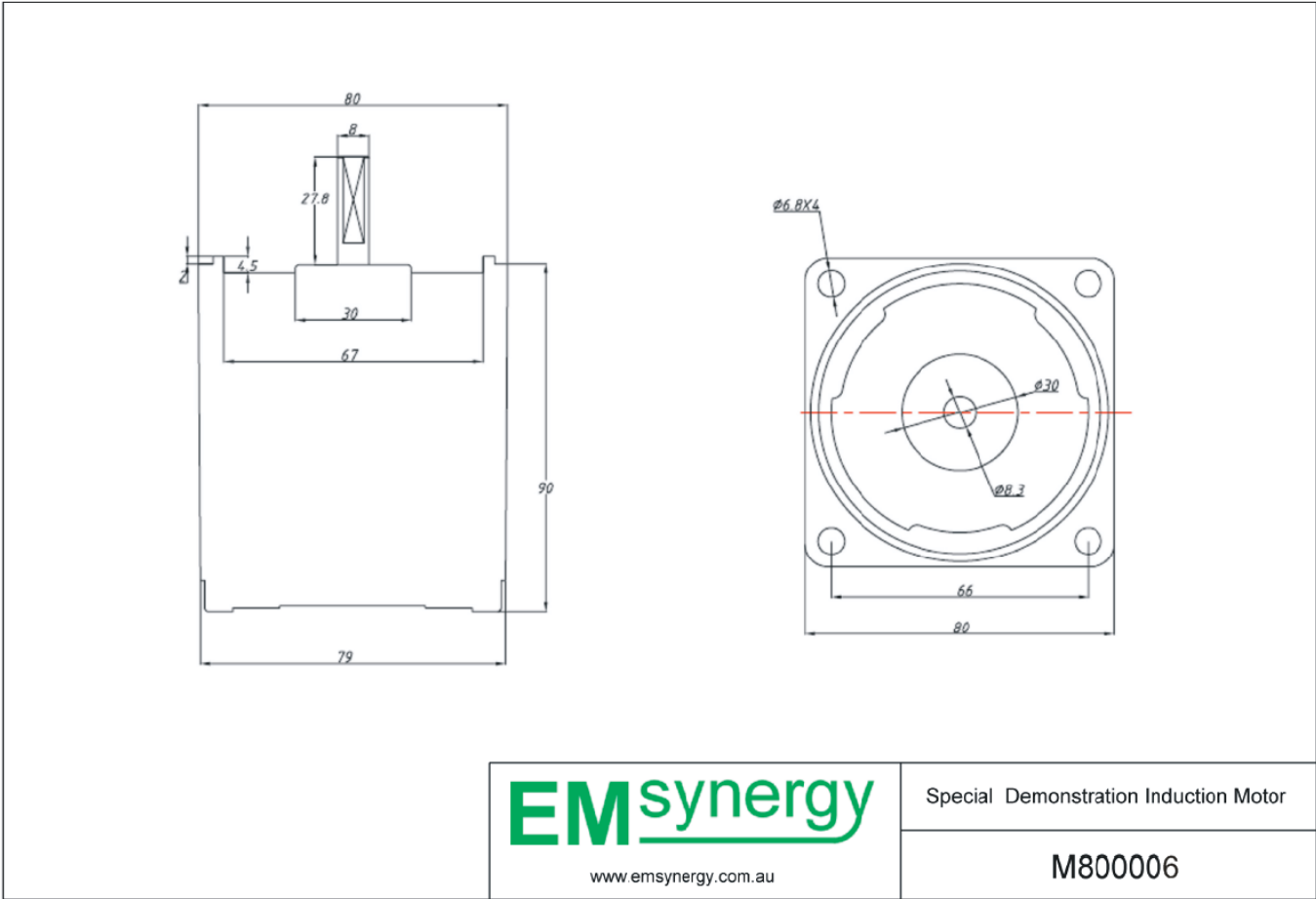


Figure 3 Outline Dimensional Drawing



Figure 43 Nameplate data

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, enhancements, improvements and other changes to its semiconductor products and services per JESD46, latest issue, and to discontinue any product or service per JESD48, latest issue. Buyers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All semiconductor products (also referred to herein as "components") are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its components to the specifications applicable at the time of sale, in accordance with the warranty in TI's terms and conditions of sale of semiconductor products. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by applicable law, testing of all parameters of each component is not necessarily performed.

TI assumes no liability for applications assistance or the design of Buyers' products. Buyers are responsible for their products and applications using TI components. To minimize the risks associated with Buyers' products and applications, Buyers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right relating to any combination, machine, or process in which TI components or services are used. Information published by TI regarding third-party products or services does not constitute a license to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of significant portions of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI components or services with statements different from or beyond the parameters stated by TI for that component or service voids all express and any implied warranties for the associated TI component or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Buyer acknowledges and agrees that it is solely responsible for compliance with all legal, regulatory and safety-related requirements concerning its products, and any use of TI components in its applications, notwithstanding any applications-related information or support that may be provided by TI. Buyer represents and agrees that it has all the necessary expertise to create and implement safeguards which anticipate dangerous consequences of failures, monitor failures and their consequences, lessen the likelihood of failures that might cause harm and take appropriate remedial actions. Buyer will fully indemnify TI and its representatives against any damages arising out of the use of any TI components in safety-critical applications.

In some cases, TI components may be promoted specifically to facilitate safety-related applications. With such components, TI's goal is to help enable customers to design and create their own end-product solutions that meet applicable functional safety standards and requirements. Nonetheless, such components are subject to these terms.

No TI components are authorized for use in FDA Class III (or similar life-critical medical equipment) unless authorized officers of the parties have executed a special agreement specifically governing such use.

Only those TI components which TI has specifically designated as military grade or "enhanced plastic" are designed and intended for use in military/aerospace applications or environments. Buyer acknowledges and agrees that any military or aerospace use of TI components which have **not** been so designated is solely at the Buyer's risk, and that Buyer is solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI has specifically designated certain components as meeting ISO/TS16949 requirements, mainly for automotive use. In any case of use of non-designated products, TI will not be responsible for any failure to meet ISO/TS16949.

Products

Audio	www.ti.com/audio
Amplifiers	amplifier.ti.com
Data Converters	dataconverter.ti.com
DLP® Products	www.dlp.com
DSP	dsp.ti.com
Clocks and Timers	www.ti.com/clocks
Interface	interface.ti.com
Logic	logic.ti.com
Power Mgmt	power.ti.com
Microcontrollers	microcontroller.ti.com
RFID	www.ti-rfid.com
OMAP Applications Processors	www.ti.com/omap
Wireless Connectivity	www.ti.com/wirelessconnectivity

Applications

Automotive and Transportation	www.ti.com/automotive
Communications and Telecom	www.ti.com/communications
Computers and Peripherals	www.ti.com/computers
Consumer Electronics	www.ti.com/consumer-apps
Energy and Lighting	www.ti.com/energy
Industrial	www.ti.com/industrial
Medical	www.ti.com/medical
Security	www.ti.com/security
Space, Avionics and Defense	www.ti.com/space-avionics-defense
Video and Imaging	www.ti.com/video

TI E2E Community

e2e.ti.com