MOOG

DS2000XP-Power Generation
High Performance Servodrives

Customizable Integrated Axis Motion Control for Brushless Servomotors and Actuators within the Power Generation Industry

DS2000XP
Power Generation

HALF A CENTURY OF EXCELLENCE IN MOTION CONTROL

Moog has provided superior motion control solutions for the industrial marketplace for over 50 years. A leading designer and manufacturer of electric control products for over 20 years, Moog Electro-Mechanical Actuators, Servomotors, and Servodrives are known for reliability and accurate control. The Servodrive product line is a proven option for customers that need high dynamic performance and control accuracy. Moog Servodrives are user-friendly for easy installation and maintenance, and reliable for use in heavy-duty applications.

THE DS2000XP-POWER GENERATION SERVODRIVE CONTROL SOLUTION

The DS2000XP-Power Generation Servodrive is a self-contained, fully digital stand-alone motion control drive for control of brushless servomotors and actuators in high performance closed-loop applications. It is specially designed for the power generation industry.

This Servodrive has a high performance 32-bit floating-point Motorola MPC555 RISC CPU on board to provide strong embedded real-time motion control capability. This servodrive has a unique cold plate heat dissipation design, which allows the servodrive to be installed into an explosion-proof enclosure and mounted in a high ambient temperature hazardous environment. The maximum ambient temperature could be as high as 60°C (140°F).

The DS2000XP-Power Generation Servodrive accepts a wider range of AC or DC power supply. The bus voltage could be from 60 Vdc to 300 Vdc. No auxiliary power supply is needed. A 3000 uF internal capacitor helps maintain a stable bus voltage.

The DS2000XP-Power Generation Servodrive can operate a broad range of brushless servomotors and Electro-Mechanical Actuators with resolver or encoder feedback devices. An easy access terminal strip is provided to give a quick and reliable connection to customer's host controller.

THE MOOG DS2000XP-POWER GENERATION SERVODRIVE DESIGN

The DS2000XP-Power Generation Servodrive has flexible motion control capabilities, very high performance, high resolution, absolute position feedback and built-in motion template for ease of use. It is highly customizable. This high performance servodrive is ideal on applications that require high bandwidth and very smooth motion. The DS2000XP-Power Generation features axis motion control, flexible control architecture, easy to use motion template for Electro-Mechanical Actuators and very high performance SERCOS interfaces.

- **ADVANCED CONTROL DESIGN**
  The DS2000XP-Power Generation Servodrive has a state-of-the-art control design. The typical three-loops basic control algorithm provides excellent torque, speed and position loop closure. In addition, Application Engineers can use the widely recognized industrial simulation and control software Simulink™/Stateflow™ (Mathworks Co.) to generate sophisticated application control model and motion sequences. These sequences are developed, tested and debugged offline on a PC. The working model is then automatically converted to real-time code and downloaded to the DS2000XP-Power Generation Servodrive. This allows for added convenience, more uptime and rapid prototyping of advanced control algorithms.

- **FLEXIBLE CONTROL MODEL TEMPLATE**
  Moog has developed model-based control templates to meet specific customer and market needs. Application parameters such as stroke length, homing method, motion limits and motion profile are used to customize a template to a specific application requirement. Some of the available template features are:
  - Closed-loop position and velocity control loops up to 5KHz sampling rate
  - Real-time trajectory control of position, velocity and acceleration limits
  - Acceleration limiting
  - Home sequencing with stroke limit verification
  - Emergency stop sequencing
  - IT current motor torque limiting
  - Position following error detection
  - Digital I/O handling
  - Common units for application definition (ex: inches, mm, rpm, volts)
  - Application input error checking (range, polarity)
  - Special control functions

- **GRAPHICAL USER INTERFACE (GUI)**
  A Windows-based GUI is available to help customer access the DS2000XP-Power Generation Servodrive over the RS232 port. GUI functions include:
  - Control model downloading
  - System configuration parameters downloading and uploading
  - Application parameters downloading and uploading
  - System tuning and diagnostics
  - Servodrive status and fault status monitoring
  - Graphical display of data logged variables

- **DIAGNOSTICS AND TUNING**
  The local LCD display on the servodrive provides basic servodrive status and possible fault occurrence. It has the following functions:
  - Motor automatic phasing
  - Error detecting
  - Basic parameter access and monitoring

- **FIELDBUS**
  High-speed serial bus interfaces provide a fully digital link for receiving motion commands, providing feedback of status and initializing controller parameters.

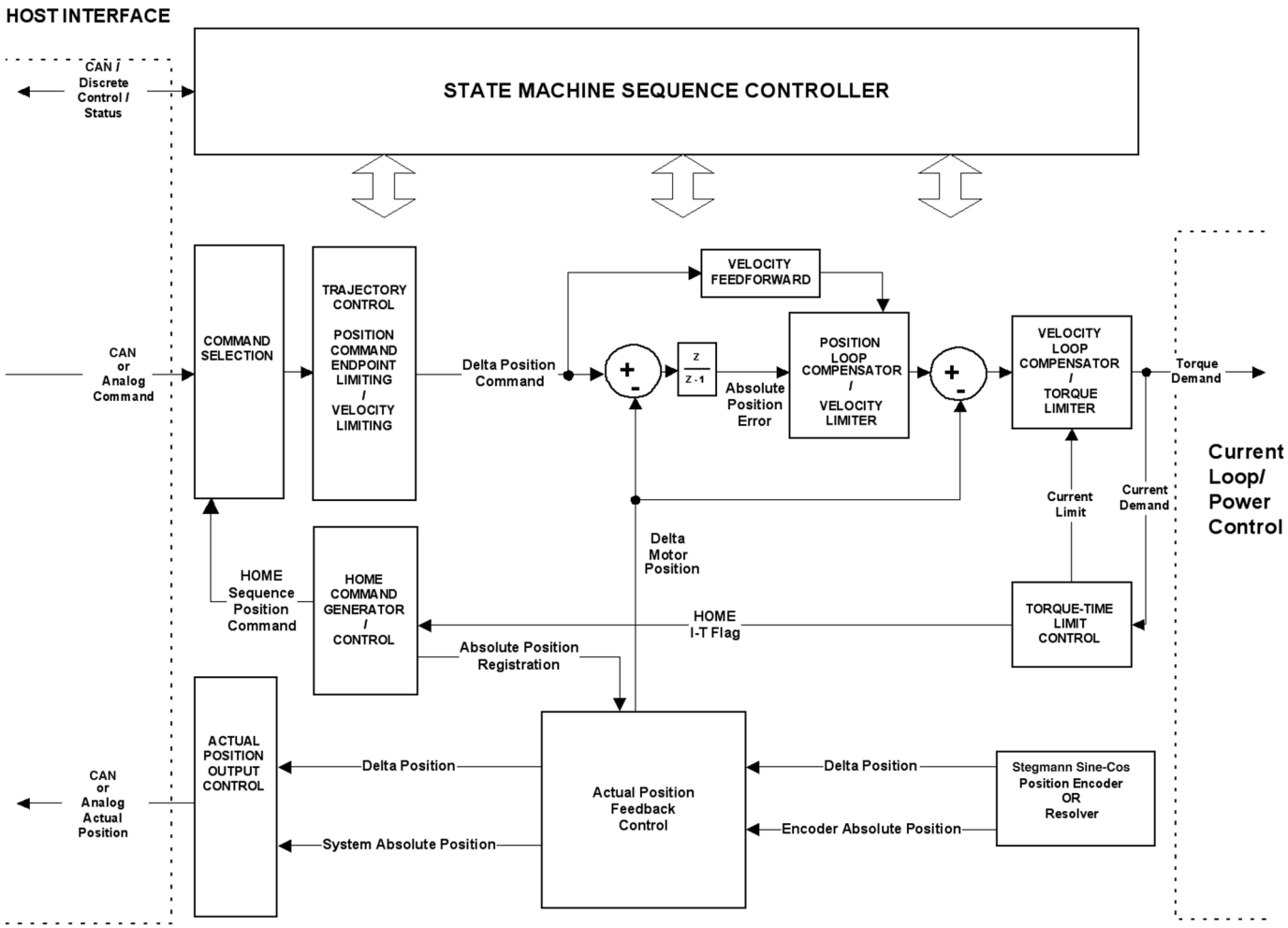
PERFORMANCE SPECIFICATIONS

ELECTRICAL CHARACTERISTICS	
Bus Voltage Range	60 Vdc to 300 Vdc
Auxiliary Power Supply	24 Vdc (optional)
Internal Capacitor	3000 µF
Internal Brake Resistor	20 Ohm/50 W (external brake resistor 33 Ohm/250 W optional)
PWM Frequency	10 kHz
Continuous Peak Output Current	14A to 42A (see chart below)
ENVIRONMENTAL DATA	
Operating Ambient Temperature	0 to 60°C
Storage Temperature	-10 to +70°C
Thermal Protection	70°C to de-rating the drive
I/O INTERFACES	2 analog inputs 0-20 mA current, 14 bit DAC (0-10 V optional) 2 analog outputs 0-20 mA current, 14 bit DAC (0-10 V optional) 2 basic monitoring output (1 velocity, 1 programmable) 5 digital input, isolated 24 Vdc 3 digital output, isolated 24 Vdc 1 relay output (COM, NO, NC) 1 simulation encoder output
FIELDBUS	CANopen; SERCOS; RS485 - Modbus
MOTOR POLE RANGE	2 to 24 poles
SINUSOIDAL ENCODER RANGE	up to 24-bit resolution

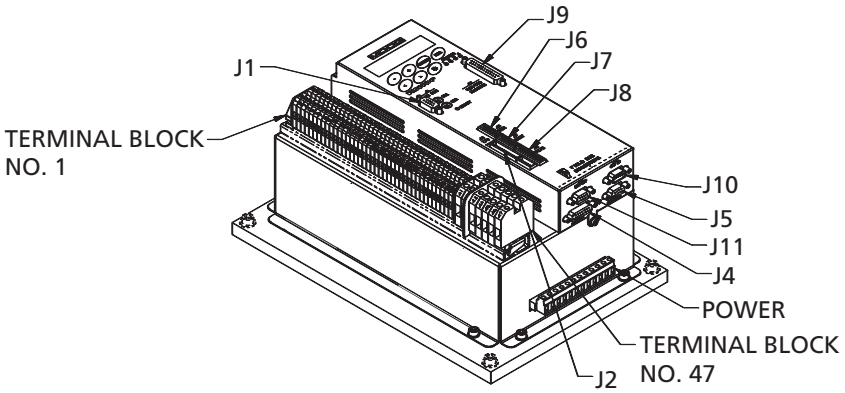
Model		Output Currents			
Code	Type	Nominal (Arms)	Max (Arms)	Peak (A)	Weight lb (kg)
G366-X 014	14/42	14	29.7	42	13.2 (6.0)
Customized models are also available with different rating					

Note: Please refer to ordering code on page 7 for complete order numbers.

FUNCTIONAL BLOCK DIAGRAM FOR TEMPLATE CONTROL SYSTEM

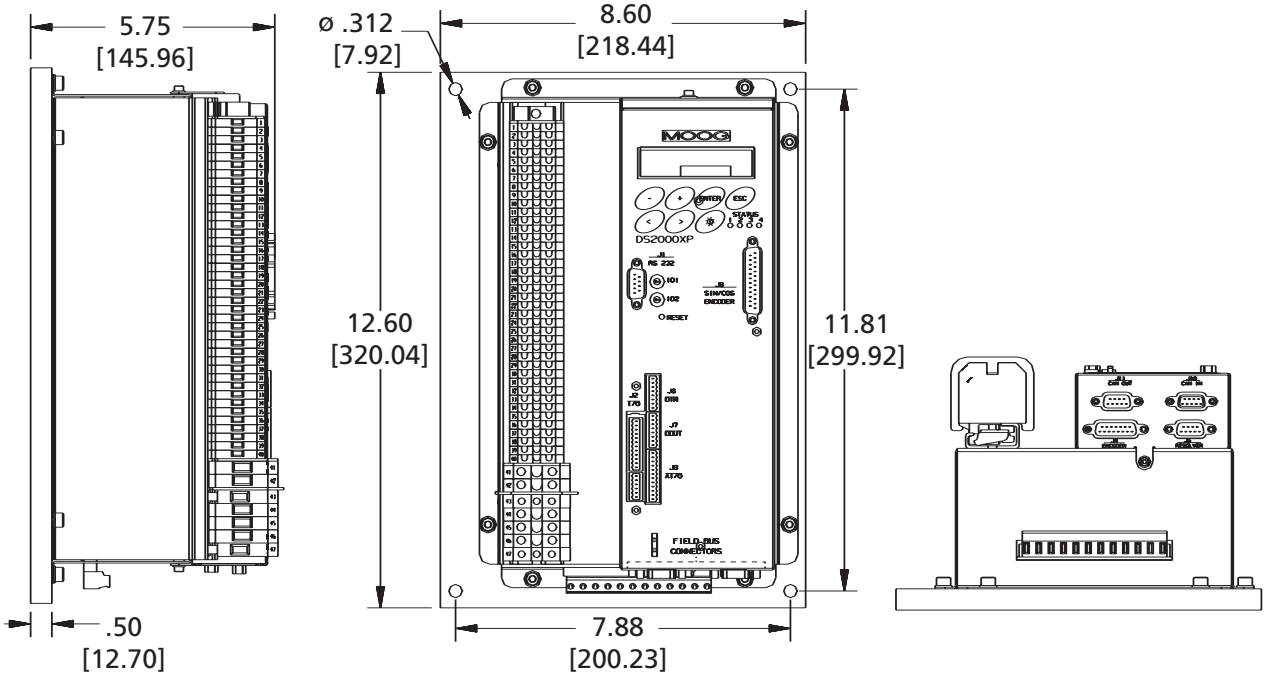


DS2000XP-POWER GENERATION CONNECTORS AND DESCRIPTION



J1	RS232 Communication
J2	Servodrive Enable and monitoring
J4	Motor Encoder feedback
J5	Motor Resolver feedback
J6	Digital Input
J7	Digital Output
J9	Sin/Cos Encoder feedback (optional)
J10	CAN in (or SERCOS/FireWire)
J11	CAN out (or SERCOS/FireWire)
POWER	AC or DC power supply and motor connection
TERMINALS	Wiring interface to user's host controller. *Internal cables from terminals to J1 to POWER connectors are not shown. Internal cables are subject to change per different applications.

DIMENSIONS



ORDERING INFORMATION

Alpha/Numeric
Alpha
Numeric
Numeric
Alpha
Alpha/Numeric

G366 E 014 - XXX A XXX

Model Series Designator

Current Model Design Status

Letter
E (Prototype)
– (Standard)

Drive Current Rating

No.	Power Stage Rating (Acont/Apk)
014	14/42

Drive Control Stage

No.	Control Stage Part Number	Control Stage Description
111	C27345-111	SERCOS Communications ±10 V Analog I/O
122	C27345-122	SERCOS Communications 0-20 mA Analog I/O
133	C27345-133	SERCOS Communications ±10 V & 0-20 mA Analog I/O
211	C27345-211	CANopen Communications ±10 V Analog I/O
222	C27345-222	CANopen Communications 0-20 mA Analog I/O
233	C27345-233	CANopen Communications ±10 V & 0-20 mA Analog I/O

Current Hardware Revision

Letter
A

Customer Identifier

No.	Customer software version and revision
000	Generic customer configuration
XXX	Specific customer configuration

Argentina
Australia
Austria
Brazil
China
Finland
France
Germany
India
Ireland

Italy
Japan
Korea
Luxembourg
Norway
Russia
Singapore
South Africa
Spain
Sweden
United Kingdom
USA

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