

SINGLE AXIS DRIVE

DS2020



L-CAS2-E-191

ULTRA-COMPACT SERVO DRIVE

WHAT MOVES YOUR WORLD

MOOG

If you need the best performance and design flexibility, look no further than Moog and its expertise. With collaboration, creativity and cutting-edge technological solutions, we can help you tackle the toughest problems and improve the performance of your machines.

CONTENTS

SYSTEM OVERVIEW.....	2
AXIS MODULE.....	3
Interface.....	3
Technical characteristics and environmental data.....	4
Dimensions.....	5
FIELDBUS.....	8
EtherCAT.....	8
CAN Bus.....	8
GRAPHIC INTERFACE (GUI).....	8
OPTIONS AND ACCESSORIES.....	8
Connectors kit option.....	8
Network filters.....	9
ORDERING.....	10

This catalogue is written for experts. To make sure all information necessary for operation and safety has been provided, the user must check the suitability of the products described. The products described are subject to change without notice. If you have any doubts, please contact Moog.

Moog is a registered trademark of Moog Inc. All registered trademarks mentioned herein are the property of Moog Inc.

©Moog Inc. 2019 All rights reserved. All changes are reserved.

SYSTEM OVERVIEW

Highly compact, modular design for top productivity

- The DS2020 is the new digital “stand-alone” servodrive, purposely designed with reduced dimensions. The current sizes of the four versions (50, 75, 85, 125 and 355 mm) range from 2 Arms to 192 Arms continuous, and from 4 Arms to 384 Arms peak.

Designed to work with different motor types and feedback devices

- The DS2020 servodrive is designed to control synchronous brushless or asynchronous motors (it is compatible with various feedback systems (Resolver standard, Encoder Stegmann single and multi-turn, incremental) as well as motors with sensorless algorithms.

User-friendly graphic user interface (GUI)

- The graphic user interface offers easy access to all the functions, simplifying the settings, initial start-up and system monitoring. Communication with the PC is via a USB or RS422 interface.

Integrated Safe Torque Off (STO) function

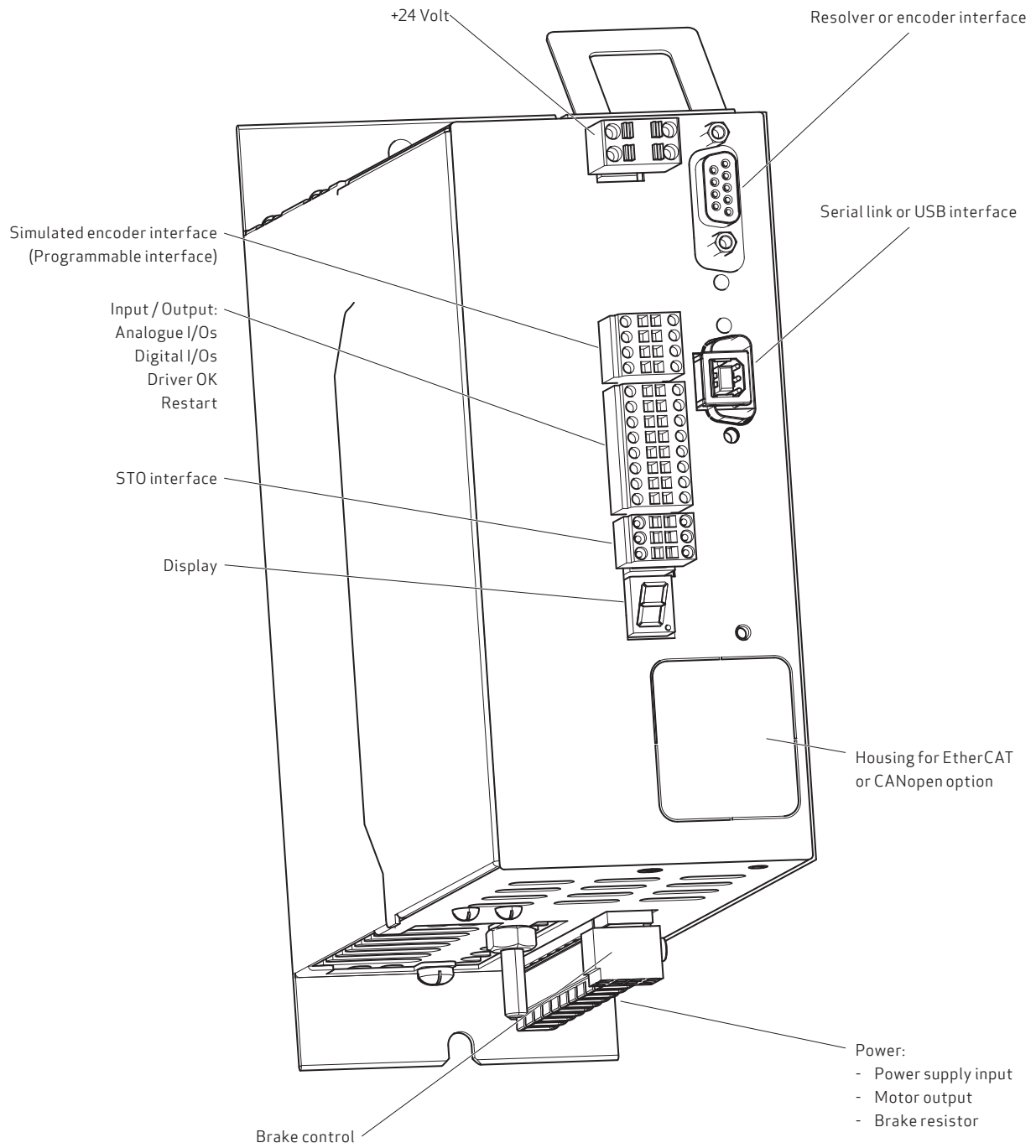
- The Safe Torque Off safety function is integrated as standard in every servodrive

Applications

- Single-axis applications in industrial automation
- Applications with high precision and top dynamics
- Applications requiring significant space saving during installation
- Applications with personalised functions and flexible configurations
- Applications requiring quick, precise movements

AXIS MODULE

Interface



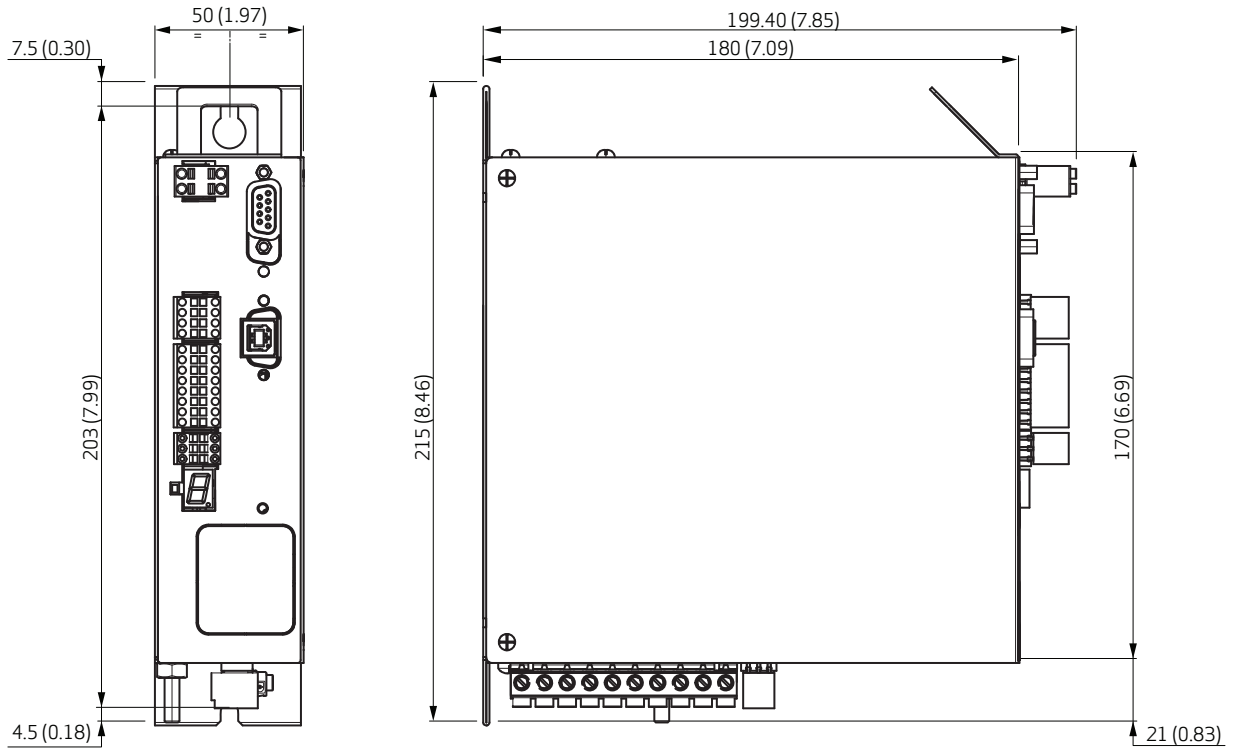
Technical characteristics and environmental data

Control functions	Implementation of Torque, Speed and Position loops
Command protocols	EtherCAT, CANopen and "Analogue"
Machine safety	STO (Safe Torque Off) SILCL3 PL"e"
AC/DC conversion	Three-phase input jumper with soft start
Power supply range	Up to 480 V AC +/- 10 %
PWM frequency	8 kHz (from 2 to 16 kHz conf. via SW)
Encoder simulation	Simulated encoder output with programmable number of pulses
Auxiliary power supply voltage	+ 24V AC +/- 10%
Analogue inputs	2 inputs +/- 10 volt, differential
Analogue outputs	2 outputs +/- 10 volt, single-ended
Digital inputs	2 opto-insulated digital inputs / 1 restart input
Digital outputs	1 opto-insulated digital output / 1 drive OK output
Communication interface for set-up	USB, RS422
Ambient operating temperature	From 0°C to 40°C; up to 55°C with an output current reduction (-2%/°C)
Storage temperature	From -25°C to +55°C
Transport temperature	From -25 °C to +55 °C (for short periods of no more than 24 hours, it is possible to reach up to +70 °C)
Humidity permitted during operation	From 5 to 85% (condensate not permitted)
Humidity permitted for storage	From 5 to 95%
Humidity permitted for transport	95% at +40 °C
Assembly height	Up to 1000m; up to 2000m with an output current reduction (-2%/100m)
Mechanical resistance in compliance with EN 60721-3-3	Vibration: 3mm for frequencies between 2 and 9 Hz Vibration: 9.8 m/s ² (1 g) for frequencies between 9 and 200 Hz Shock: 98 m/s ² (10 g) for 11 ms
Motor overtemperature protection	PTC or NTC
Motor brake command	Integrated (max. 2 Amp current) up to size L355 excluded
Brake resistor	Integrated up to size L75 included
Certification	EC
IP protection rating	IP20

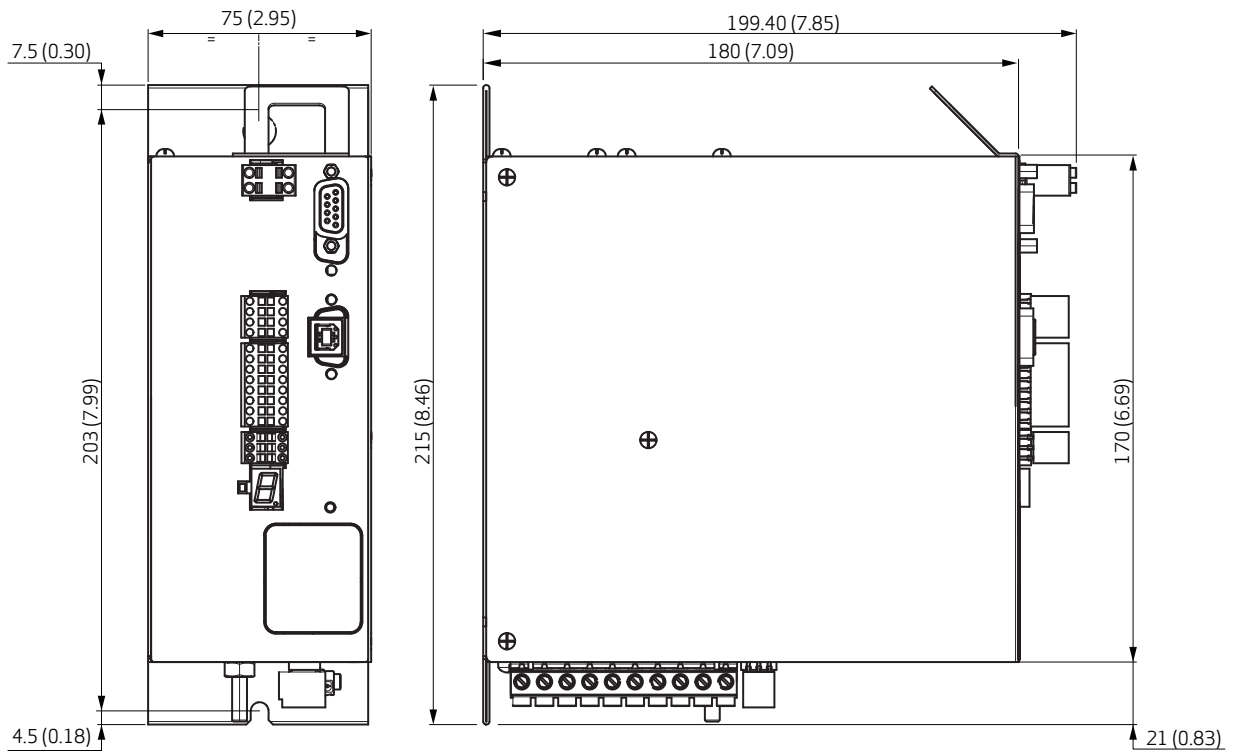
Size	L50	L75	L85	L125	L355 (VHP)
Rated currents	From 2 to 4 Arms	From 6 to 12 Arms	From 16 to 24 Arms	From 32 to 48 Arms	192 Arms
Peak currents	From 4 to 8 Arms	From 12 to 22 Arms	From 32 to 48 Arms	From 64 to 96 Arms	384 Arms

Dimensions and weight

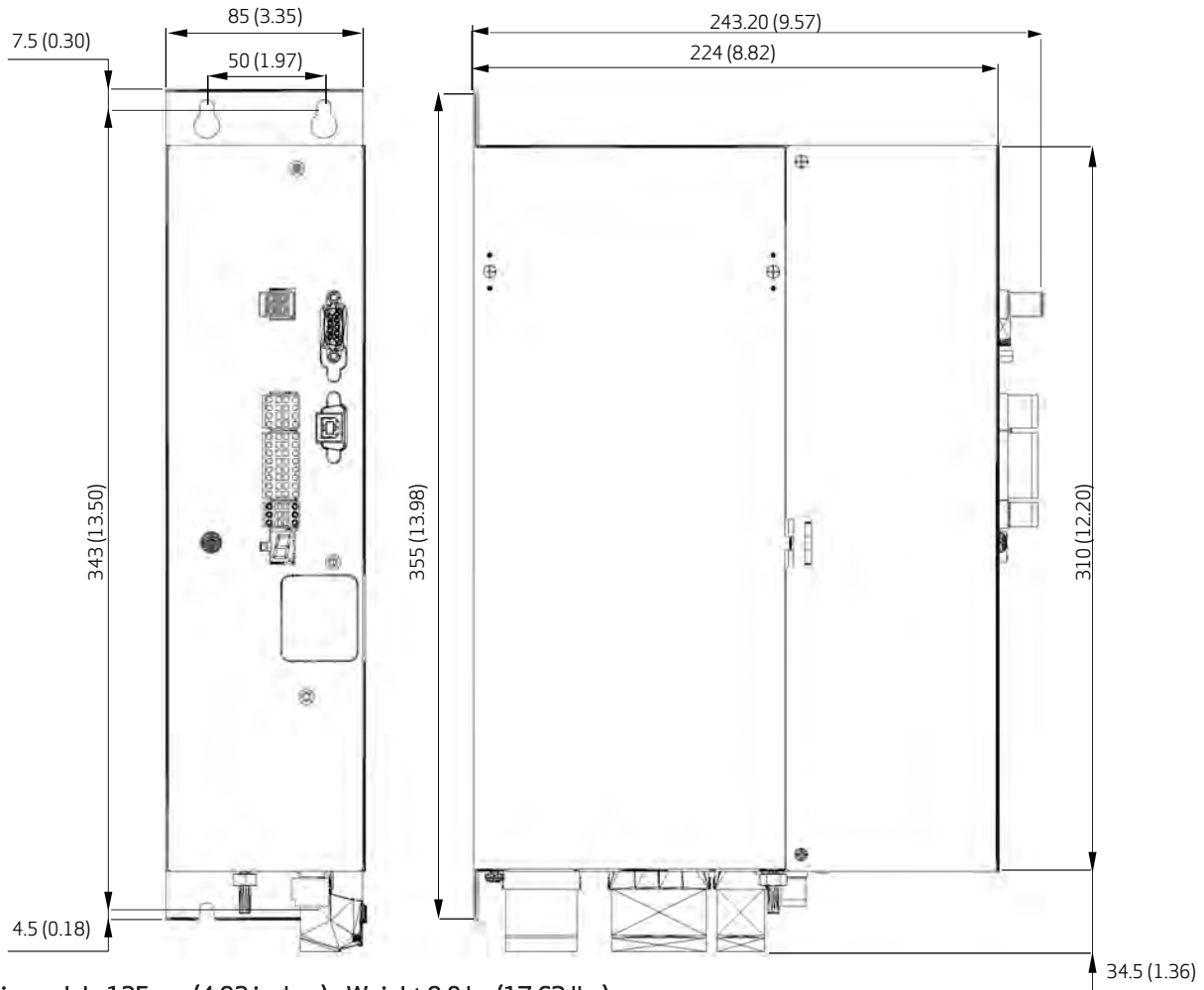
Axis module 50mm (1.97 inches) - Weight 1.2 kg (2.64 lbs)



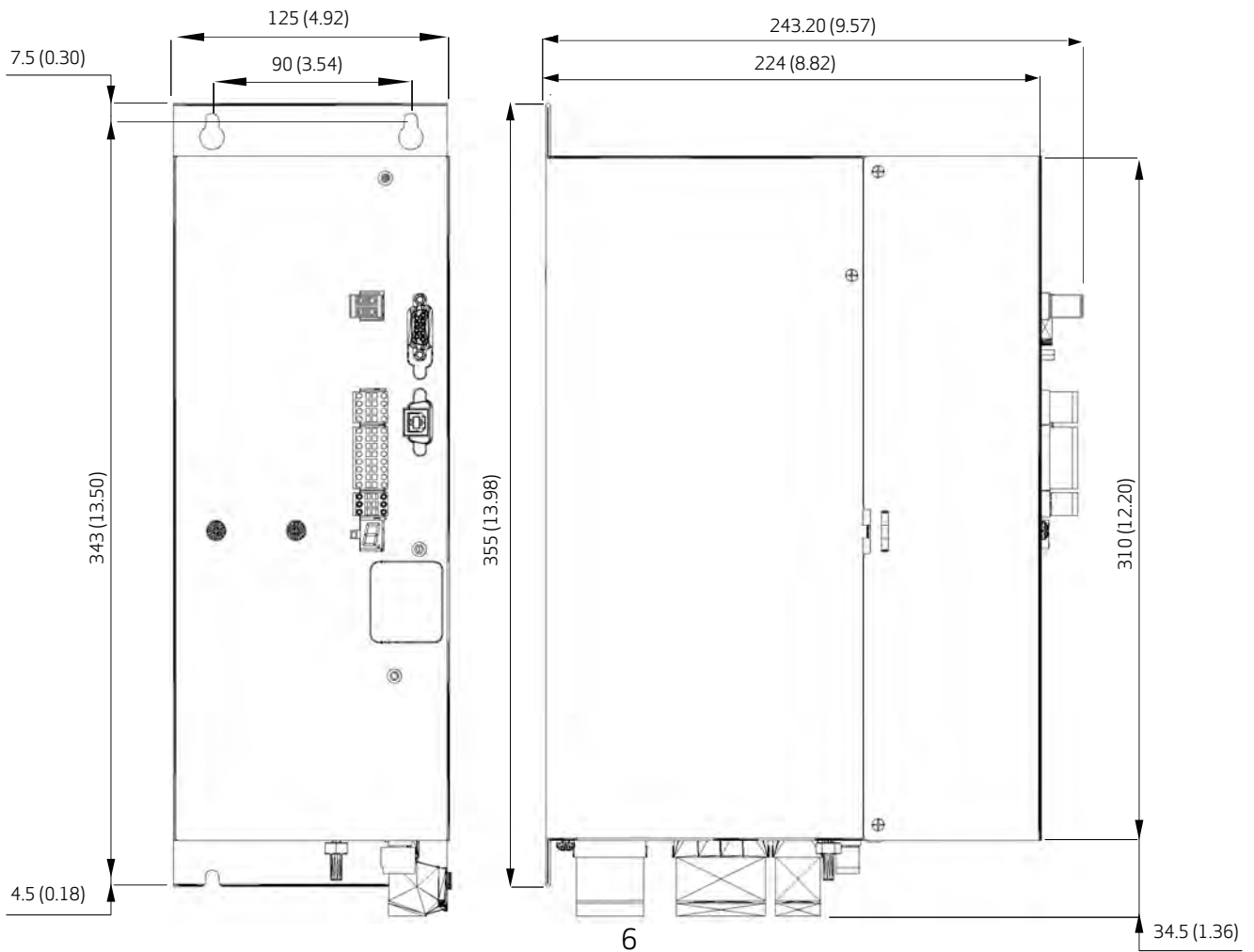
Axis module 75mm (2.95 inches) - Weight 2.3 kg (5.07 lbs)



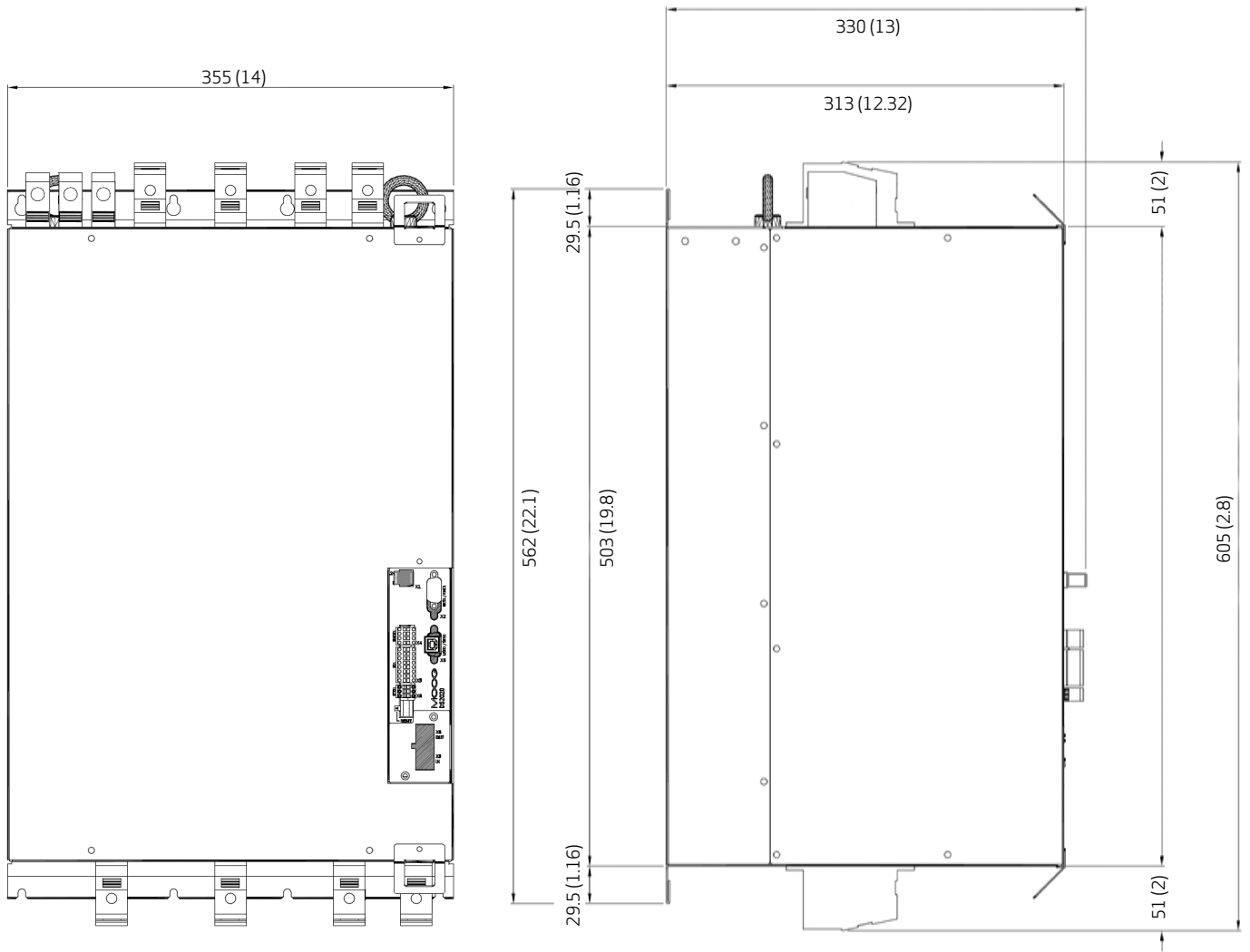
Axis module 85mm (3.35 inches) - Weight 5.5 kg (12.12 lbs)



Axis module 125mm (4.92 inches) - Weight 8.0 kg (17.63 lbs)



VHP module 355mm (13.9 inches) - Weight 47 kg (103.6 lbs)



FIELDBUS

EtherCAT

- Synchronous and real-time high-performance RT-Ethernet fieldbus
- CANopen over EtherCAT communication profile (CoE)
- CiA 402 device profile

CAN Bus

- CAN (ISO 11898, IEC/EN 61800-7) fieldbus
- 10 kb/s to 1 Mb/s baud rate
- CANopen (CiA 301) communication profile
- CiA 402 device profile

GRAPHIC INTERFACE (GUI)

The DX2020GUI graphic interface is used for:

- Basic configuration with access to the system parameters (transducers, digital and analogue I/Os, motor parameters, etc.)
- Calibration of the speed and position loops to personalise and optimise the drive response
- Direct control of the drive (jog mode, speed profile with internal generator, etc.)
- Commissioning and diagnostics
- Drive and I/O monitoring
- Registration of the centre distance sizes via internal memory support and signal visualisation on 4-track digital oscilloscope
- Firmware updating, drive parameter management (saving, backup, etc.)

Note: The DS2020 drives do not belong to the lists of "dual use" products, as defined in the framework regulation EC 428/2009, and are therefore not subject to its restrictions regarding sale and transportation.

OPTIONS AND ACCESSORIES

- Optional external braking resistors for heavy-duty applications (L50 and L75)
- Fieldbus option (EtherCAT or CANopen)
- Motor feedback interface option (Resolver (standard), sinusoidal encoder or TTL encoder)
- Communication interface option (USB or RS422 (standard))

Connectors kit option

All the connectors can be ordered by means of a separate code. These kits are necessary for the wiring of the power supply and for the spare part or repair of the wiring.

For the correct coupling between the connector kit and the module, refer to the page "TO ORDER".

Each connector kit contains:

- 3 digital part connectors
- 1 24 V connector
- 1 power connector
- 1 brake connector
- 1 transducer connector (9 poles per Resolver, 15 poles per Encoder)

Network filters

Rated voltage	3 x 480V, + 10%, 50/60 Hz, at +50°C
Overload	1.5x for 60s, repeatable every 60 minutes
Ambient temperature	From -25 °C to +100 °C, with current reduction starting from +60 °C (1.3%/°C)
Assembly height	1000 m, with current reduction of up to 4000 m (6%/1000 m)
Relative air humidity	From 15 to 85% (condensate not permitted)
Storage temperature	From -25 °C to +70 °C
IP protection rating	IP20
Acceptance test	Complies with EC
Industrial environment - EN61800-3 complies with radio shielding	Permitted drive cable length - up to 100m

	Code	Rated current at 50°C (40°C)	Drive size
EMC Filters	AT6009	7 (7.7)	2/4 4/8 6/12 8/16
	AT6010	16 (17.5)	12/22
	AT6011	30 (33)	16/32 24/48
	AT6012	42 (46)	32/64
	AT6013	55 (66)	48/96
	AT6045/AT6046	180 (197)	192/384

ORDERING

Axis module coding



Version	
1	Standard model
E	Special model

Mechanical hardware configuration			
Value	Type / Width	Rated current	Peak current
02	Single / 50mm L50	2 Arms	4 Arms
04	Single / 50mm L50	4 Arms	8 Arms
06	Single / 75mm L75	6 Arms	12 Arms
08	Single / 75mm L75	8 Arms	16 Arms
12	Single / 75mm L75	12 Arms	22 Arms
16	Single / 85mm L85	16 Arms	32 Arms
24	Single / 85mm L85	24 Arms	48 Arms
32	Single / 125mm L125	32 Arms	64 Arms
48	Single / 125mm L125	48 Arms	96 Arms
88	Single / 355mm L355 - VHP	192 Arms	384 Arms

X2 / X3 - Type of transducer and type of Serial link RS422		
Value	Type	
R ⁽¹⁾	RESOLVER	SERIAL
T	RESOLVER	USB
E	ENCODER SINCOS	SERIAL
U	ENCODER SINCOS	USB
G	TTL SINGLE ENDED	SERIAL
H	TTL FULL DIFFERENTIAL	SERIAL
L	TTL SINGLE ENDED	USB
M	TTL FULL DIFFERENTIAL	USB

Special versions	
Value	Internal coding ⁽²⁾

Special configurations	
Value	Internal coding ⁽²⁾
00	Standard

Hardware revision	
Value	Internal coding ⁽²⁾

Fieldbus configuration	
Value	Type
0	Analogue references ⁽¹⁾
1	CanBus configuration (option)
2	EtherCAT configuration (option)

⁽¹⁾ Standard version

⁽²⁾ Values assigned by Moog

To order the connectors

Drive size	Connector kit code	Type of transducer and type of connector	
L50/L75	BC8901-R	RESOLVER	SERIAL or USB
		ENCODER SINCOS	SERIAL or USB
	BC8902-R	TTL SINGLE ENDED	SERIAL or USB
		TTL FULL DIFFERENTIAL	SERIAL or USB
L85/L125	BC8921-R	RESOLVER	SERIAL or USB
	BC8922-R	ENCODER SINCOS	SERIAL or USB
		TTL SINGLE ENDED	SERIAL or USB
		TTL FULL DIFFERENTIAL	SERIAL or USB
L355 - VHP	BC8911-R	RESOLVER	SERIAL or USB
	BC8912-R	ENCODER SINCOS	SERIAL or USB
		TTL SINGLE ENDED	SERIAL or USB
		TTL FULL DIFFERENTIAL	SERIAL or USB

MORE PRODUCTS. MORE SUPPORT.

Moog designs a range of motors and motion control products to complement those featured in this document. Moog also provides service and support for all of our products. For more information, contact us.

Australia
+61 3 9561 6044
Service + 61 3 8545 2140
info.australia@moog.com
service.australia@moog.com

Brazil
+55 11 3572 0400
info.brazil@moog.com
service.brazil@moog.com

Canada
+1 716 652 2000
info.canada@moog.com

China
+86 21 2893 1600
Service +86 21 2893 1626
info.china@moog.com
service.china@moog.com

France
+33 1 4560 7000
Service +33 1 4560 7015
info.france@moog.com
service.france@moog.com

Germany
+49 7031 622 0
Service +49 7031 622 197
info.germany@moog.com
service.germany@moog.com

Hong Kong
+852 2 635 3200
info.hongkong@moog.com

India
+91 80 4057 6666
Service +91 80 4057 6604
info.india@moog.com
service.india@moog.com

Ireland
+353 21 451 9000
info.ireland@moog.com

Italy
+39 01096711
info.casella@moog.com
service.italy@moog.com

Japan
+81 46 355 3767
info.japan@moog.com
service.japan@moog.com

Korea
+82 31 764 6711
info.korea@moog.com
service.korea@moog.com

Luxembourg
+352 40 46 401
info.luxembourg@moog.com

The Netherlands
+31 252 462 000
info.thenetherlands@moog.com
service.netherlands@moog.com

Russia
+7 8 31 713 1811
Service +7 8 31 764 5540
info.russia@moog.com
service.russia@moog.com

Singapore
+65 677 36238
Service +65 651 37889
info.singapore@moog.com
service.singapore@moog.com

South Africa
+27 12 653 6768
info.southafrica@moog.com

Spain
+34 902 133 240
info.spain@moog.com

Sweden
+46 31 680 060
info.sweden@moog.com

Turkey
+90 216 663 6020
info.turkey@moog.com

United Kingdom
+44 (0) 1684 858000
Service +44 (0) 1684 278369
info.uk@moog.com
service.uk@moog.com

USA
+1 716 652 2000
info.usa@moog.com
service.usa@moog.com

For product information, visit **WWW.MOOG.COM**

Moog is a registered trademark of Moog Inc. and its subsidiaries.
All trademarks as indicated herein are the property of Moog Inc. and its subsidiaries. CANopen is a registered trademark of CAN in Automation (CIA). EtherCAT is a registered trademark of Beckhoff Automation GmbH. PROFIBUS-DP is a registered trademark of PROFIBUS Nutzerorganisation e.V.. Windows and Vista are registered trademarks of Microsoft Corporation.
©2019 Moog Inc. All rights reserved. All changes are reserved.

L-CAS2-E-191