SM23165DT

Specifications

Continuous Torque	4.61 74 0.52 7.40 118 0.84 204 5,200 5.074 210 9.08	in-lb oz-in N-m in-lb oz-in N-m Watt RPM Amps Watts
Peak Torque Nominal Continuous Power No Load Speed 5 Max. Continuous Current* @ 3800 RPM 5 Peak Power @ 3400 RPM Voltage Constant Inductance	0.52 7.40 118 0.84 204 5,200 5.074 210	N-m in-lb oz-in N-m Watt RPM Amps
Peak Torque	7.40 118 0.84 204 5,200 5.074 210	in-lb oz-in N-m Watt RPM Amps
Peak Torque Nominal Continuous Power No Load Speed 5 Max. Continuous Current* @ 3800 RPM 5 Peak Power @ 3400 RPM Voltage Constant Inductance	118 0.84 204 5,200 5.074 210	oz-in N-m Watt RPM Amps
Nominal Continuous Power No Load Speed 5 Max. Continuous Current* @ 3800 RPM 5 Peak Power @ 3400 RPM Voltage Constant Inductance	0.84 204 5,200 5.074 210	N-m Watt RPM Amps
Nominal Continuous PowerNo Load Speed5Max. Continuous Current* @ 3800 RPM5Peak Power @ 3400 RPMVoltage ConstantInductance	204 5,200 5.074 210	Watt RPM Amps
No Load Speed 5 Max. Continuous Current* @ 3800 RPM 5 Peak Power @ 3400 RPM 5 Voltage Constant 1 Inductance 5	5,200 5.074 210	RPM Amps
Max. Continuous Current* @ 3800 RPM 5 Peak Power @ 3400 RPM 5 Voltage Constant 1 Inductance 5	5.074 210	Amps
Peak Power @ 3400 RPM Voltage Constant Inductance	210	
Voltage Constant Inductance		Watts
Inductance	9.08	
		V/kRPM
Encoder Resolution 4	1.31	mH
	4,000	Counts/Rev
Rotor Inertia	0.001	oz-in-sec ²
Rotor mertia 0	0.706	10⁻⁵ Kg-m²
Weight	1.3	lb
Weight	0.59	kg
Shaft Diameter 0	0.250	in
	6.35	mm
Shaft, Radial Load	7	lb
	3.18	kg
Shoft Avial Thrust Load	3	lb
Shaft, Axial Thrust Load	1.36	kg
DeviceNet Available	Yes	
PROFIBUS Available	Ye	es
CANopen Available	es	



Operating temperature range: 0°C–85°C Storage temperature range: -10°C–85°C, noncondensing

NOTE: Motor specifications are subject to changes without notice. Consult website and factory for latest data.



*Default voltage is 48V. See graphs for additional voltages.

Moog Animatics SmartMotor™ SM23165DT (No Options) CAD Drawing



SM23165DT



SM23165DT at 48 VDC at rise to 85°C







SM23165DT at 24 VDC at rise to 85°C

All torque curves based on 25°C ambient.

Motors were operated using MDT (Trapezoidal Drive Mode) Commutation.

For ambient temperatures above 25°C, Continuous Torque must be linearly derated to 0% at 85°C.



Class 5 D-Style Connector Pinouts

This table shows the pinouts for the connectors on the Class 5 D-style SmartMotors.

PIN	MAIN POWER	Specifications:	Notes:	P1
L	I/O - 6 GP, Index Input or "G" Command ; For -CDS7, CAN-L only	25 mAmp Sink or Source 10 Bit 0-5 VDC A/D	Redundant connection on I/O connector	7W2 Combo
-	+5 VDC Out; For -CDS7, CAN-H only	50 mAmps Max (total)		D-Sub Connector
3	RS-232 Transmit	Com ch. 0	115.2 KBaud Max	D-Sub connector
1	RS-232 Receive	Com cn. o	115.2 KDauu Max	
5	Common Ground (typ. SIG Ground)			$\bigcirc A1_{345}^{12}A2 \bigcirc$
41	Main Power	+24-48 VDC	See NOTE	345
A2	Common Ground (req'd. POWER Ground)		Must be Main Power Ground	
PIN	I/O CONNECTOR (5V TTL I/O)	Specifications:	Notes:	P2
1	I/O – O GP or Encoder A or Step Input		1.5 MHz Max as Encoder or Step Input	
2	I/O – 1 GP or Encoder B or Direction Input		1.5 MHz Max as Encoder or Direction Input	
3	I/O - 2 Positive Over Travel or GP	25 mAmp Sink or Source		
4	I/O - 3 Negative Over Travel or GP	10 Bit 0-5 VDC A/D		P2 DB-15 D-Sub Connector
5	I/O – 4 GP, IIC (SDA) or RS-485 A (Com ch. 1)		115.2 KBaud Max	8 7 6 5 4 3 2 1
6	I/O - 5 GP, IIC (SCL) or RS-485 B (Com ch.1)			
7	I/O - 6 GP, Index Input or "G" Command		Redundant connection on Main Power Connector	15 14 13 12 11 10 9
В	Phase A Encoder Output	24 mAmp Sink or Source		
9	Phase B Encoder Output			
10	RS-232 Transmit; For -CDS/7, CAN-L only	Com ch. 0	115.2 KBaud Max	
11	RS-232 Receive; For -CDS/7, CAN-H only		115.2 (Coadd Max	
12	+5 VDC Out	50 mAmp Max (total)		
13	Common Ground (typ. SIG Ground)			
14	Common Ground			
15	Main Power: +20-48 VDC	If DE Option, Control Power separate from Main Power		
		· · · ·		
) ports input impedance = 5 kohm (5 kohm pull-	A second s		
PIN	CAN bus	Connection:	Notes:	P3
PIN 1		A second s	Notes:	P3 M12 5-Pin
	CAN bus	Connection:	Notes: Input current < 10 mA	
1 2	CAN bus NC +V	Connection: NC NC except DeviceNet	Input current < 10 mA	M125-Pin
1 2 3	CAN bus NC +V -V (ground, not common)	Connection: NC NC except DeviceNet CAN Ground		M125-Pin Female
1 2 3 4	CAN bus NC +V -V (ground, not common) CAN-H	Connection: NC NC except DeviceNet CAN Ground 1 MBaud Max	Input current < 10 mA	M125-Pin
1 2 3	CAN bus NC +V -V (ground, not common)	Connection: NC NC except DeviceNet CAN Ground	Input current < 10 mA	M125-Pin Female
1 2 3 4	CAN bus NC +V -V (ground, not common) CAN-H CAN-L	Connection: NC NC except DeviceNet CAN Ground 1 MBaud Max 1 MBaud Max	Input current < 10 mA Isolated	M125-Pin Female
1 2 3 4 5	CAN bus NC +V -V (ground, not common) CAN-H	Connection: NC NC except DeviceNet CAN Ground 1 MBaud Max	Input current < 10 mA	M125-Pin Female
1 2 3 4 5 PIN	CAN bus NC +V -V (ground, not common) CAN-H CAN-L Isolated 24 VDC I/O Connector	Connection: NC NC except DeviceNet CAN Ground 1 MBaud Max 1 MBaud Max Max Load (sourcing)	Input current < 10 mA Isolated	M12 5-Pin Female 4 3 2 5 74
1 2 3 4 5 PIN 1	CAN bus NC +V -V (ground, not common) CAN-H CAN-L Isolated 24 VDC I/O Connector I/O - 16 GP	Connection: NC NC except DeviceNet CAN Ground 1 MBaud Max 1 MBaud Max	Input current < 10 mA Isolated	M12 5-Pin Female 4 3 2 5 P4 M12 12-Pin
1 2 3 4 5 PIN 1 2	CAN bus NC +V -V (ground, not common) CAN-H CAN-L Isolated 24 VDC I/O Connector I/O - 16 GP I/O - 17 GP	Connection: NC NC except DeviceNet CAN Ground 1 MBaud Max 1 MBaud Max Max Load (sourcing)	Input current < 10 mA Isolated	M12 5-Pin Female 4 3 2 5 74
1 2 3 4 5 PIN 1 2 3	CAN bus NC +V -V (ground, not common) CAN-H CAN-L Isolated 24 VDC I/O Connector I/O - 16 GP I/O - 17 GP I/O - 18 GP	Connection: NC NC except DeviceNet CAN Ground 1 MBaud Max 1 MBaud Max Max Load (sourcing)	Input current < 10 mA Isolated Notes: These I/O ports also	M12 5-Pin Female 4 3 2 5 P4 M12 12-Pin
1 2 3 4 5 5 PIN 1 2 2 3 4 5	CAN bus NC +V -V (ground, not common) CAN-H CAN-L Isolated 24 VDC I/O Connector I/O - 16 GP I/O - 17 GP I/O - 18 GP I/O - 19 GP	Connection: NC NC except DeviceNet CAN Ground 1 MBaud Max 1 MBaud Max Max Load (sourcing)	Input current < 10 mA Isolated	M12 5-Pin Female 3 2 2 P4 M12 12-Pin
1 2 3 4 5 5 PIN 1 2 2 3 4	CAN bus NC +V -V (ground, not common) CAN-H CAN-L Isolated 24 VDC I/O Connector I/O - 16 GP I/O - 17 GP I/O - 19 GP I/O - 20 GP	Connection: NC NC except DeviceNet CAN Ground 1 MBaud Max 1 MBaud Max Max Load (sourcing) 150 mAmps	Input current < 10 mA Isolated Notes: These I/O ports also	M12 5-Pin Female 3 2 2 P4 M12 12-Pin
1 2 3 4 5 5 PIN 1 2 2 3 4 5 6	CAN bus NC +V -V (ground, not common) CAN-H CAN-L Isolated 24 VDC I/O Connector I/O - 16 GP I/O - 17 GP I/O - 18 GP I/O - 19 GP I/O - 20 GP I/O - 21 GP	Connection: NC NC except DeviceNet CAN Ground 1 MBaud Max 1 MBaud Max Max Load (sourcing)	Input current < 10 mA Isolated Notes: These I/O ports also	M12 5-Pin Female 3 2 2 P4 M12 12-Pin
1 2 3 4 5 7 1 2 2 3 4 5 5 6 6 7 8	CAN bus NC +V -V (ground, not common) CAN-H CAN-L Isolated 24 VDC I/O Connector I/O - 16 GP I/O - 17 GP I/O - 18 GP I/O - 20 GP I/O - 21 GP I/O - 22 GP	Connection: NC NC except DeviceNet CAN Ground 1 MBaud Max 1 MBaud Max Max Load (sourcing) 150 mAmps	Input current < 10 mA Isolated Notes: These I/O ports also	M12 5-Pin Female 3 2 2 P4 M12 12-Pin
1 2 3 4 5 5 PIN 1 2 3 3 4 5 5 6 7	CAN bus NC +V -V (ground, not common) CAN-H CAN-L Isolated 24 VDC I/O Connector I/O - 16 GP I/O - 17 GP I/O - 18 GP I/O - 20 GP I/O - 21 GP I/O - 22 GP I/O - 23 GP	Connection: NC NC except DeviceNet CAN Ground 1 MBaud Max 1 MBaud Max Max Load (sourcing) 150 mAmps	Input current < 10 mA Isolated Notes: These I/O ports also	M12 5-Pin Female 3 2 2 P4 M12 12-Pin
1 2 3 3 4 5 5 7 8 9	CAN bus NC +V -V (ground, not common) CAN-H CAN-L Isolated 24 VDC I/O Connector I/O - 16 GP I/O - 17 GP I/O - 19 GP I/O - 20 GP I/O - 21 GP I/O - 23 GP I/O - 24 GP	Connection: NC NC except DeviceNet CAN Ground 1 MBaud Max 1 MBaud Max Max Load (sourcing) 150 mAmps	Input current < 10 mA Isolated Notes: These I/O ports also	M12 5-Pin Female 4 3 2 5 P4 M12 12-Pin

NOTE: These motors can operate on power down to +20 VDC, but it is not recommended due to greatly reduced performance — optimum performance is achieved at 48 VDC.

NOTE: All specifications are subject to change without notice. Consult the factory for the latest information.



CAUTION: Pins 14 and 15 are intended for use with DE series motors for control power only. Attempting to power a non-DE motor through those pins, as main servo-drive power, may result in immediate damage to the electronics, which will void the warranty.

CAUTION: Connectors P3 and P4 must be finger tightened only! D0 NOT use a tool. Doing so can cause overtightening of the connection, which may damage the connector and will void the warranty.