DMHD – Technical Features

Standard Features

- Self-supporting column in extruded anodized aluminium with high load torque capability
- Onboard electronics with many optional functions
- 12 or 24 Vdc as standard input voltages
- Static load up to 18 kN (4050 lbf)
- Dynamic load up to 16 kN (3584 lbf)
- Stroke up to 600 mm
- Speed up to 71 mm/s (2.8 in/s)
- Protection class static IP65
- Rugged, robust and strong
- T-slot grooves along the entire profile
- Maintenance free

General Specifications

Screw type	ball
Nut type	load lock ball nut
Manual override	no
Anti-rotation	yes
Static load holding brake	yes

Safety features	Electrak monitoring package: current monitoring voltage monitoring temperature monitoring load trip point calibration internal end-of-stroke limit switches(1) end-of-stroke dynamic braking
Electrical connections	cable with flying leads
Compliances	CE

(1) Dynamic braking is included at the ends of stroke for all DMHD actuators. Dynamic braking offered throughout the entire stroke length only on low-level switching and J1939 options.

Optional Electronic Control Features

CANopen CAN bus
SAE J1939 CAN bus
Synchronization option
Low-level switching
Programmable limit switches
Signal-follower
End-of-stroke indication output
Analog position output
Digital position output

Control Option Combinations

Same as for Electrak HD - see table on page 20

Accessories

T-slot bolts

Compatible Controls

Contact customer support at www.thomsonlinear.com/cs

DMHD – Technical Specifications

Mechanical Specifications

Max. static load [1]	[kN (lbf)]	18 (4050)

Electrical Specifications

Available input voltages	[Vdc]	12, 24

[1] Max. static load at fully retracted stroke.

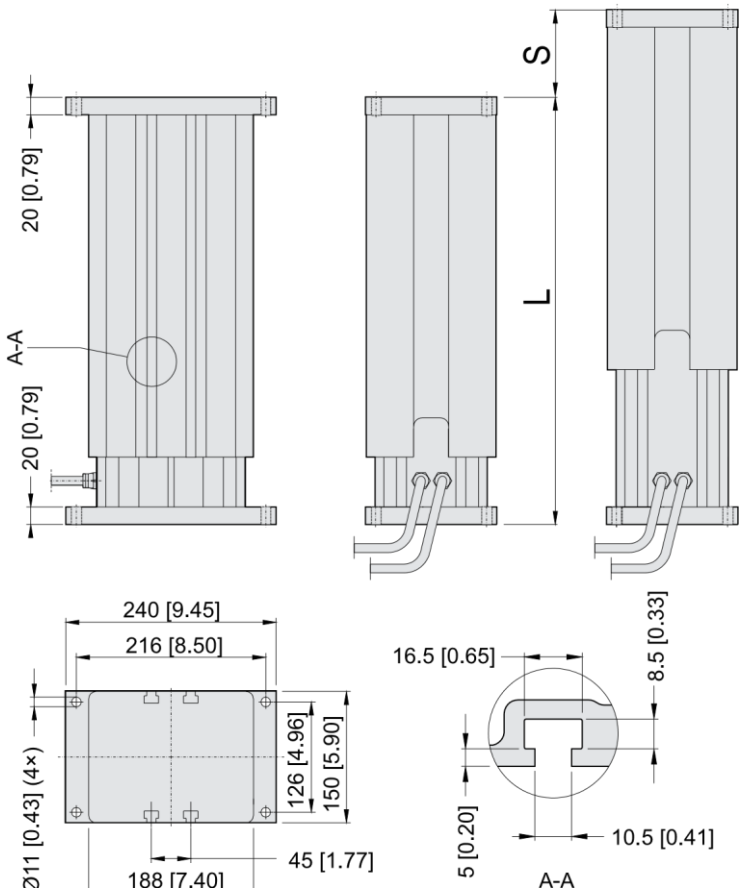
Max. dynamic load (Fx) DMHDxxB017 DMHDxxB026 DMHDxxB045 DMHDxxB068 DMHDxxB100 DMHDxxB160	[kN (lbf)]	 1.7 (382) 2.6 (585) 4.5 (1012) 6.8 (1529) 10 (2248) 16 (3584)
Max. load torque, dyn. and static (lbf-in)]	[Nm	710 (6284)
Speed @ no load/max. load [1] [m DMHDxxB017 DMHDxxB026 DMHDxxB045 DMHDxxB068 DMHDxxB100 DMHDxxB160	ı/s n/s)]	71/58 (2.8/2.28) 40/32 (1.6/1.3) 24/19 (0.94/0.75) 18/14 (0.71/0.55) 11/9 (0.43/0.35) 7/5 (0.27/0.21)
Min. ordering stroke (S) length	[mm]	100
Max. ordering stroke (S) length [23]	[mm]	600
Ordering stroke length increments	[mm]	50
Operating temperature limits	[°C (F)]	- 40 – 85 (- 40 – 185)
Full load duty cycle @ 25 °C (77 °F)	[%]	25 [4]
End play, maximum	[mm (in)]	1.2 (0.047)
Protection class - static		IP65

Input voltage tolerance DMHD12 (12 Vdc input voltage) DMHD24 (24 Vdc input voltage)	[Vdc]	 9 - 16 18 - 32
Current draw @ no load/max. load DMHD12B017 DMHD24B017 DMHD12B026 DMHD24B026 DMHD12B045 DMHD24B045 DMHD12B068 DMHD24B068 DMHD12B100 DMHD24B100 DMHD12B160 DMHD24B160	[A]	 3/18 1.5/9 3/18 1.5/9 3/18 1.5/9 3/20 1.5/10 3/18 1.5/9 3/20 1.5/10
Motor leads cross section	[mm² (AWG)]	2 (14)
Signal leads cross section	[mm² (AWG)]	0.5 (20)
Standard cable lengths	[m (in)]	1.5, 5 (59, 197)
Cable diameter	[mm (in)]	7.5 (.295)
Flying lead length	[mm (in)]	76 (3)
Stripped lead length	[mm (in)]	6 (0.25)

[1] For units with the synchronization option, the speed is 25% lower at any load.
[2] 500 mm max. for 16 kN
[3] For DMHDxx-B100 and DMHDxx-160, unidirectional load, the duty cycle is 15%.

DMHD – Dimensions

Dimensions Projection mm [inch]



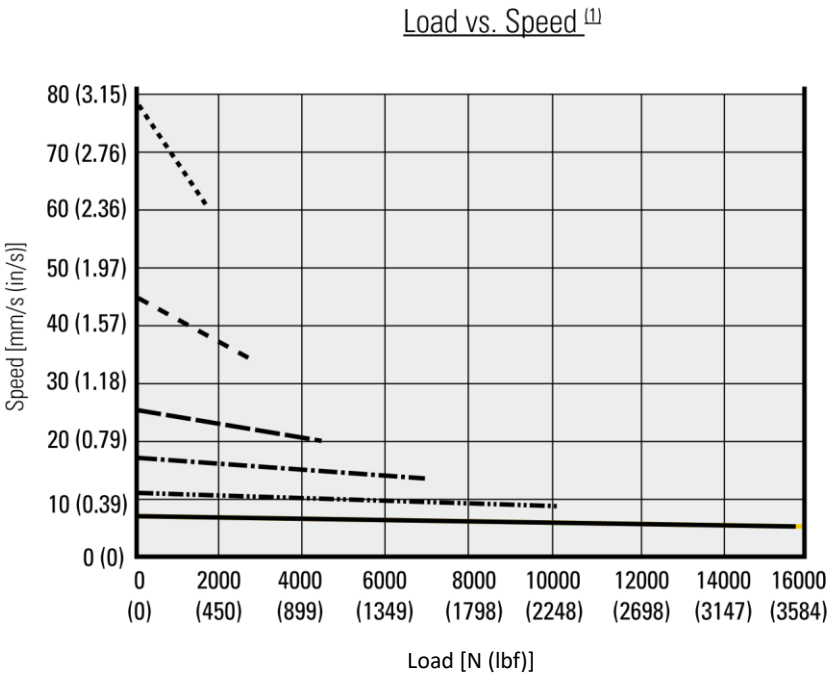
Note. All models have two cables except models with control option EXX which has one placed in the center of the profile.

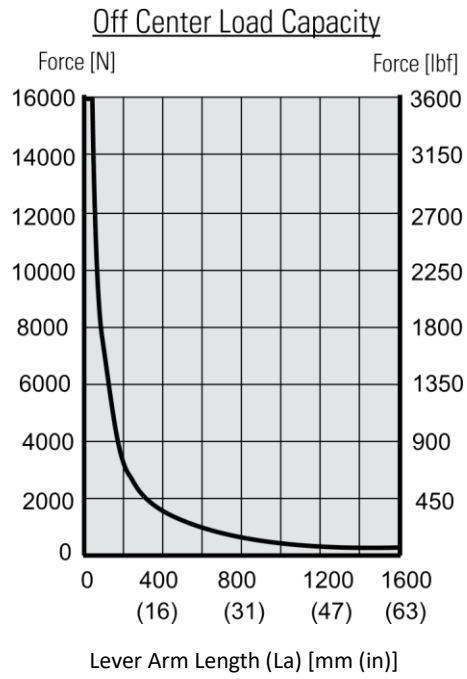
Stroke, Retracted Length and Weight Relationships

Ordering stroke (S)	[mm]	100	150	200	250	300	350	400	450	500	550	600
Retracted length (A) for DMHDxxB017(026,045,068)	[mm]	357	407	457	507	557	657	707	757	807	857	907
	[in]	14.1	16.0	18.0	20.0	21.9	25.9	27.8	29.8	31.8	33.7	35.7
Weight for DMHDxxB017(026,045,068)	[kg]	21.8	23.3	24.9	26.4	28.0	30.8	32.3	33.8	35.5	37.0	38.5
	[lbf]	48.0	51.3	54.8	58.1	61.6	67.8	71.1	74.4	78.1	81.4	84.7
Retracted length (A) for DMHDxxB100	[mm]	407	457	507	557	607	657	707	757	807	857	907
	[in]	16.0	18.0	20.0	21.9	23.9	23.9	27.8	29.8	31.8	33.7	35.7
Weight for DMHDxxB100	[kg]	22.0	23.6	25.1	26.7	28.2	31.1	32.5	34.7	36.4	38.0	39.5
	[lbf]	48.4	51.9	55.2	58.7	62.0	68.4	71.5	76.3	80.1	83.6	
Retracted length (A) for DMHDxxB160 *	[mm]	407	457	507	557	607	657	707	757	807	-	86.9
	[in]	16.0	18.0	20.0	21.9	23.9	23.9	27.8	29.8	31.8	-	-
Weight for DMHDxxB160 *	[kg]	22.3	23.9	25.4	27.0	28.5	31.4	32.5	34.7	36.4	-	-
	[lbf]	49.1	52.6	55.9	59.4	62.7	69.1	71.5	76.3	80.1	-	-

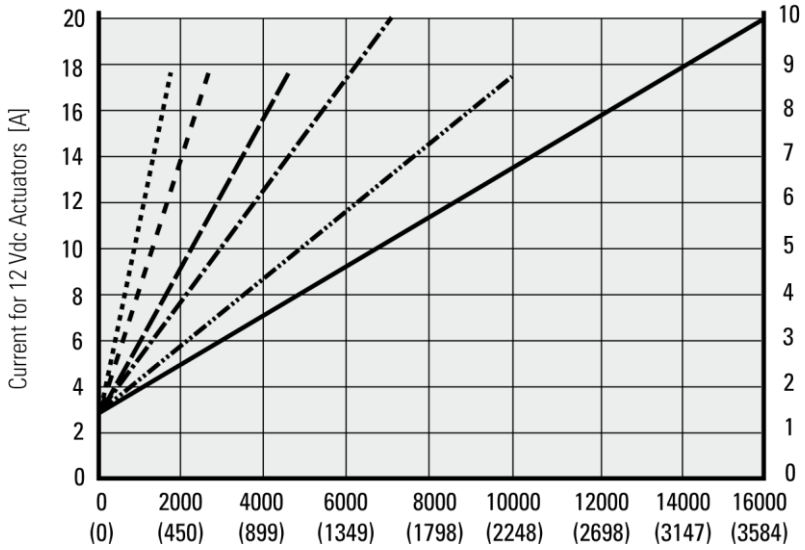
* Max. stroke for DMHDxxB160 (16 kN (3584 lbf)) is 500 mm.

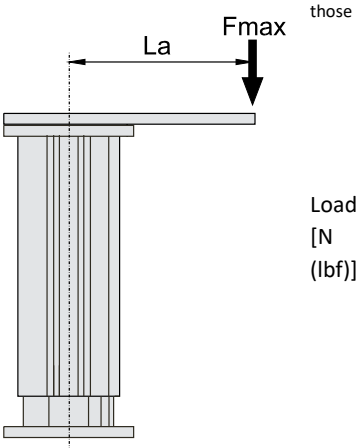
DMHD – Performance Diagrams





[1] Curves valid for all units except those with the synchronization option, where the speed at any load is 25% lower than for those without.





DMHDxxB017 (1.7 kN (382 lbf))DMHDxxB045 (4.5 kN (1012 lbf))DMHDxxB100 (10 kN (2248 lbf))

DMHDxxB026 (2.6 kN (585 lbf))

DMHDxxB068 (6.8 kN (1529 lbf))

DMHDxxB160 (16 kN (3584 lbf))

Note! Curves were generated at an ambient temperature of 21°C (70°F). Different ambient temperature and individual actuator characteristics can produce slightly different values.

DMHD – Ordering Key

Ordering Key

1	2	3	4	5
DMHD12-	**B026-**	**0300**	**LXX**	**5**

1. Model and input voltage

DMHD12- = lifting column type DMHD, 12 Vdc

DMHD24- = lifting column type DMHD, 24 Vdc

2. Screw type, dynamic load capacity

B017- = ball screw, 1.7 kN (382 lbf)

B026- = ball screw, 2.6 kN (585 lbf)

B045- = ball screw, 4.5 kN (1012 lbf)

B068- = ball screw, 6.8 kN (1529 lbf)

B100- = ball screw, 10 kN (2248 lbf)

B160- = ball screw, 16 kN (3584 lbf)

3. Ordering stroke length [(1) (2)]

0100 = 100 mm

0150 = 150 mm

0200 = 200 mm

0250 = 250 mm

0300 = 300 mm

0350 = 350 mm

0400 = 400 mm

0450 = 450 mm

0500 = 500 mm

0550 = 550 mm

0600 = 600 mm

4. Electrak Modular Control System options

EXX = Electronic Monitoring Package only

ELX = EXX + end-of-stroke indication output

EXP = EXX + analog (potentiometer) position output

EXD = EXX + digital position output

ELP = ELX + analog (potentiometer) position output

ELD = ELX + digital position output

LXX = EXX + low-level signal motor switching

LLX = EXX + LXX + end-of-stroke indication output

LXP = EXX + LXX +analog (potentiometer) position output

LPS = EXX + LXX + programmable limit switches + signal-follower

CNO = SAE J1939 CAN bus + open-loop speed control

COO = CANopen CAN bus + open-loop speed control

SYN = LXX + Synchronization option

5. Cable length and connection type

1 = 1.5 m long cable with flying leads

2 = 5.0 m long cable with flying leads

(1) Other stroke lengths available upon request. Contact customer support

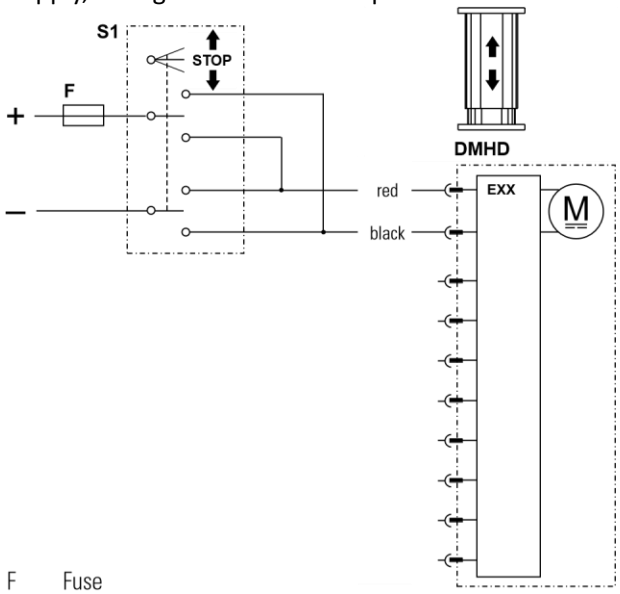
(2) Max. stroke for DMHDxxB160 (16 kN (3584 lbf)) is 500 mm.

DMHD – Electrical Connections

Option Type EXX

Actuator supply voltage DMHD12 DMHD24	[Vdc]	 12 24

Control option EXX contains Electrak Monitoring Package features, guaranteeing safe operation of the actuator and equipment. With control option EXX, the polarity of the motor voltage is switched by a customer-supplied switch (switch, relay, etc.) to make the actuator extend or retract. The switch, power supply, wiring and all other components must be able



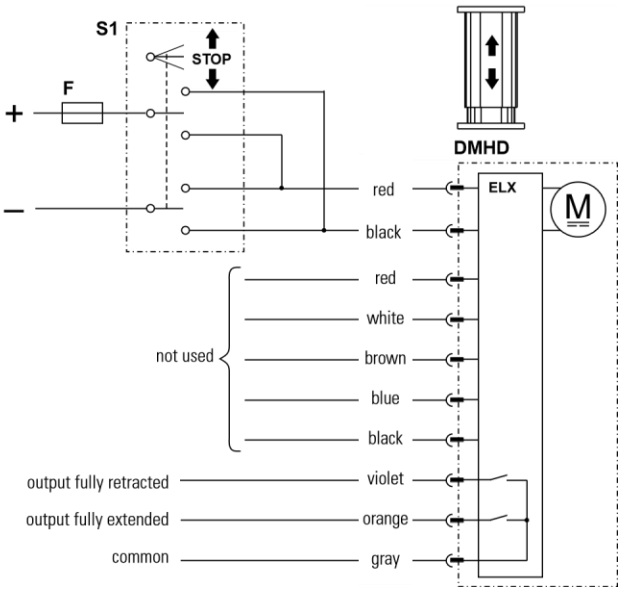
F Fuse
S1 Double pole double throw switch

to handle the motor current for the actuator model and load being used, as well as the inrush current (up to three times the max. continuous current for the max. load being used for up to 150 milliseconds).

F Fuse
S1 Double pole double throw switch

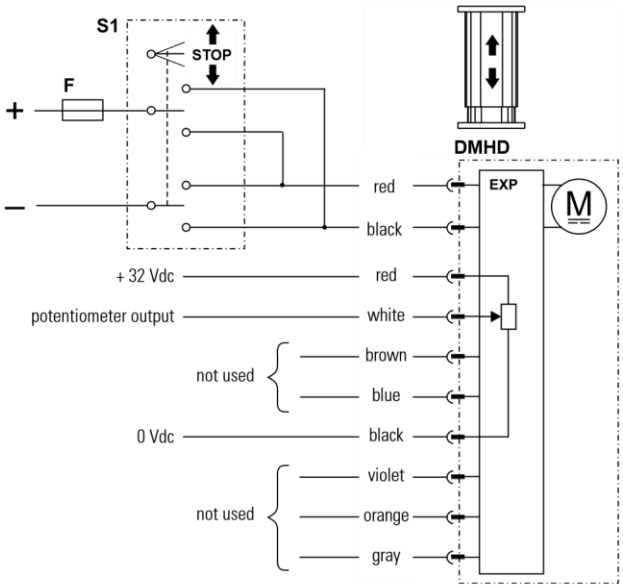
Option Type ELX

Actuator supply voltage DMHD12 DMHD24	[Vdc]	 12 24
Output contact type		potential free
Limit switch max. switch voltage	[Vdc]	140
Limit switch max. switch current	[mA]	350
Limit switch max. switch power	[W]	5

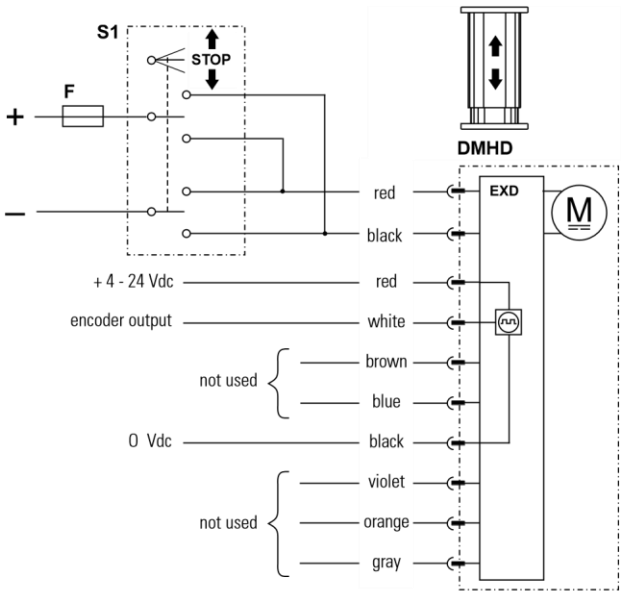


Control option ELX works as option EXX but also has two outputs that indicate when the extension tube is in its fully extended or retracted position.

DMHD – Electrical Connections



F Fuse
S1 Double pole double throw switch



Option Type EXP		
Actuator supply voltage DMHD12 DMHD24	[Vdc]	 9 - 16 18 - 32
Potentiometer type		wire-wound
Potentiometer max. input voltage	[Vdc]	32
Potentiometer max. power	[W]	1
Potentiometer linearity	[%]	± 0.25
Potentiometer output resolution 50 - 100 mm stroke 150 - 250 mm stroke 300 - 500 mm stroke 550 - 600 mm stroke	[ohm/mm]	 65.6 32.8 19.7 9.8

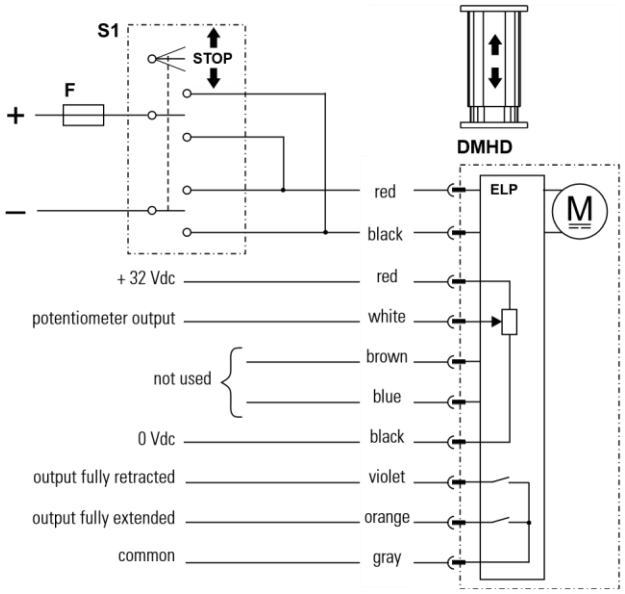
Option Type EXD		
Actuator supply voltage DMHD12 DMHD24	[Vdc]	 9 - 16 18 - 32
Encoder type		hall effect
Encoder input voltage	[Vdc]	4 - 24
Encoder output voltage levels low (logical zero), typical / max.	[Vdc]	0.1 / 0.25
Encoder resolution DMHDxx-B017 DMHDxx-B026 DMHDxx-B045 DMHDxx-B068 DMHDxx-B100 DMHDxx-B160	[mm/pulse]	 0.28 0.15 0.09 0.07 0.04 0.03

Control option EXP works as option EXX but also has an analog (potentiometer) output that will provide feedback on the extension tube position.

F Fuse
S1 Double pole double throw switch

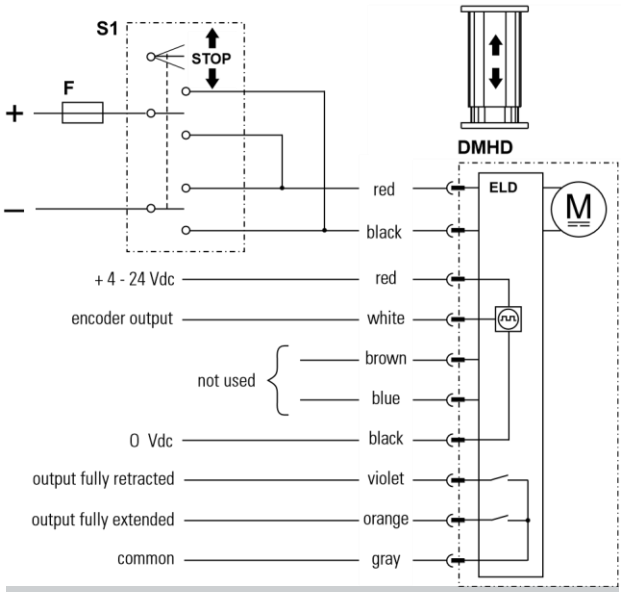
Control option EXD works as option EXX but also has a single-channel encoder output that will provide feedback on the extension tube position.

DMHD – Electrical Connections



F Fuse
S1 Double pole double throw switch

Control option ELP works as option EXP but also has two outputs that indicate when the extension tube is in its fully extended or retracted position.



Option Type ELD

Actuator supply voltage DMHD12 DMHD24	[Vdc]	 9 - 16 18 - 32
Output contact type		potential free
Max. output voltage	[Vdc]	140
Max. output current	[mA]	350
Max. output power	[W]	5
Encoder type		hall effect
Encoder input voltage	[Vdc]	4 - 24
Encoder output voltage levels low (logical zero), typical / max.	[Vdc]	0.1 / 0.25
Encoder resolution DMHDxx-B017 DMHDxx-B026 DMHDxx-B045 DMHDxx-B068 DMHDxx-B100 DMHDxx-B160	[mm/pulse]	 0.28 0.15 0.09 0.07 0.04 0.03

DMHD – Electrical Connections

Option Type ELP

Actuator supply voltage DM HD12 DMHD24	[Vdc]	 9 - 16 18 - 32
Output contact type		potential free
Max. output voltage	[Vdc]	140
Max. output current	[mA]	350
Max. output power	[W]	5
Potentiometer type		wire-wound
Potentiometer max. input voltage	[Vdc]	32
Potentiometer max. power	[W]	1
Potentiometer linearity	[%]	± 0.25
Potentiometer output resolution 50 - 100 mm stroke 150 - 250 mm stroke 300 - 500 mm stroke 550 - 600 mm stroke	[ohm/mm]	 65.6 32.8 19.7 9.8

F Fuse

S1 Double pole double throw switch

Control option ELD works as option EXD but also has two outputs that indicate when the extension tube is in its fully extended or retracted position.

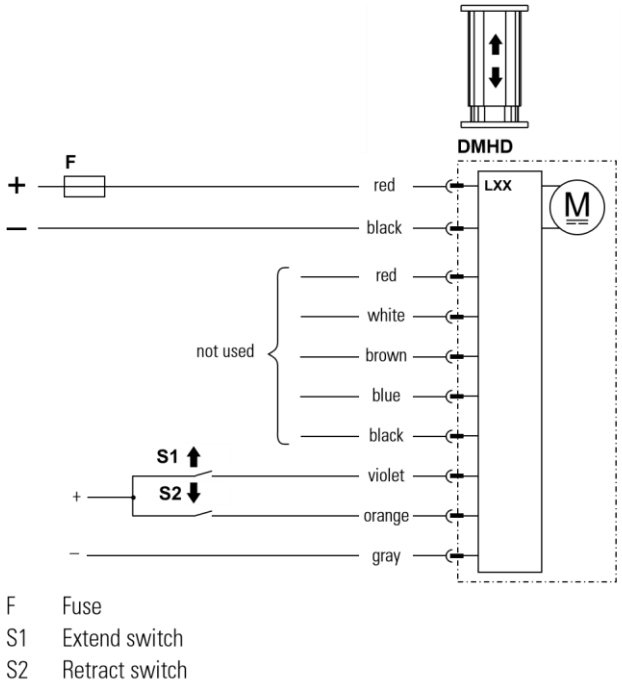
Option Type LLX

Actuator supply voltage DMHD12 DMHD24	[Vdc]	 9 - 16 18 - 32
Output contact type		potential free
Max. switched output voltage	[Vdc]	140
Max. output current	[mA]	350
Max. output power	[W]	5
Extend / retract input voltage	[Vdc]	9 - 32
Extend / retract input current	[mA]	6 - 22

Option Type LXX

Actuator supply voltage DMHD12 DMHD24	[Vdc]	 9 - 16 18 - 32
Extend / retract input voltage	[Vdc]	9 - 32
Extend / retract input current	[mA]	6 - 22

DMHD – Electrical Connections



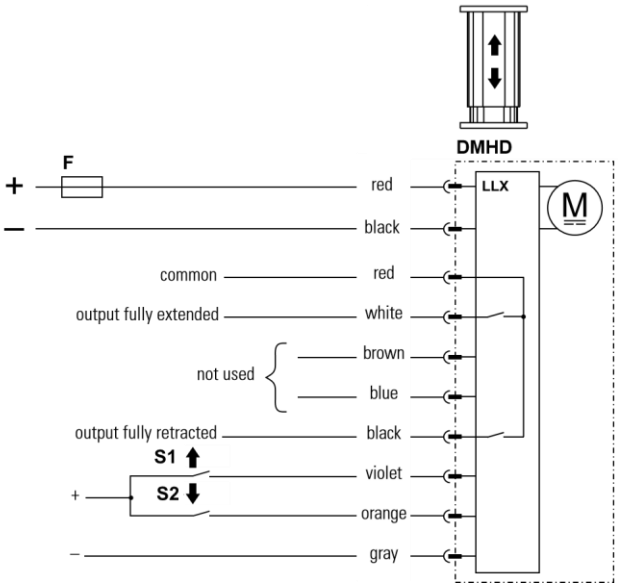
F Fuse
S1 Extend switch
S2 Retract switch

Control option LXX has all the basic Electrak Monitoring Package features included in control option EXX, but the polarity of the motor voltage is switched by the onboard electronics instead. The customer-supplied switches used to command the actuator to extend or retract only need to handle low-level signals. However, the power supply and wiring that supply the actuator must be able to handle the motor current for the actuator model and load being used, as well as the inrush current (up to one and a half times the max. continuous current for the max. load being used for up to 150 milliseconds).

F Fuse
S1 Extend switch
S2 Retract switch

Control option LLX works as option LXX but also has two outputs that indicate when the extension tube is in its fully extended or retracted position.

S2 Retract switch

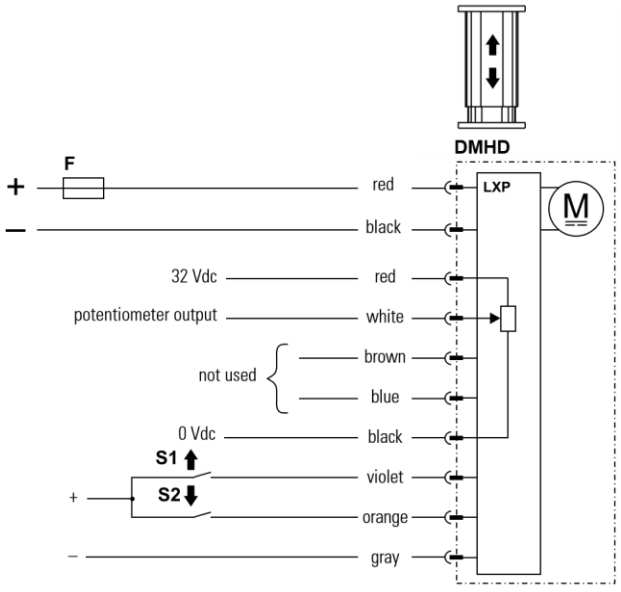


Control option LXP works as option LXX but also has an analog (potentiometer) output that will provide feedback on the extension tube position.

DMHD – Electrical Connections

Option Type LXP

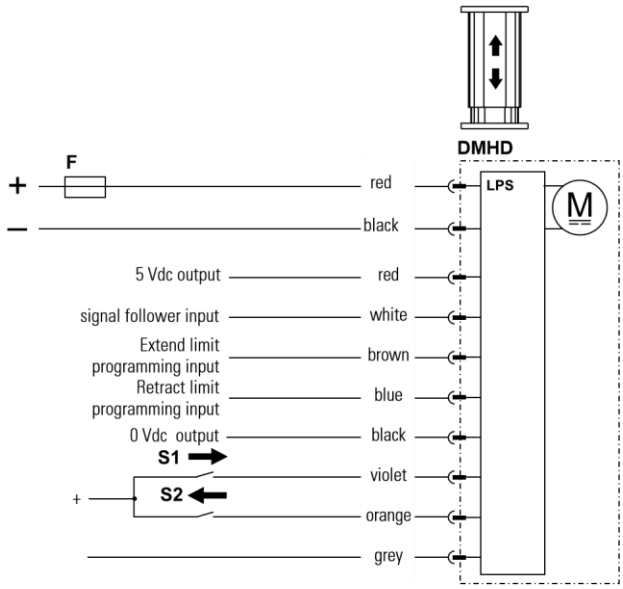
Actuator supply voltage DMHD12 DMHD24	[Vdc]	 9 - 16 18 - 32
Potentiometer type		wire-wound
Potentiometer max. input voltage	[Vdc]	32
Potentiometer max. power	[W]	1
Potentiometer linearity	[%]	± 0.25
Potentiometer output resolution 50 - 100 mm stroke 150 - 250 mm stroke 300 - 500 mm stroke 550 - 600 mm stroke	[ohm/mm]	 65.6 32.8 19.7 9.8
Extend / retract input voltage	[Vdc]	9 - 32
Extend / retract input current	[mA]	6 - 22



F Fuse
S1 Extend switch

Option Type LPS

Actuator supply voltage DMHD12 DMHD24	[Vdc]	 9 - 16 18 - 32
Signal-follower input voltage	[Vdc]	0.5 - 4.5
Signal-follower max. current	[A]	
Signal-follower input resolution	[Vdc]	
Signal-follower movement	[mm/Vdc]	
Signal-follower repeatability	[± mm]	
Extend / retract input voltage	[Vdc]	9 - 32
Extend / retract input current	[mA]	6 - 22



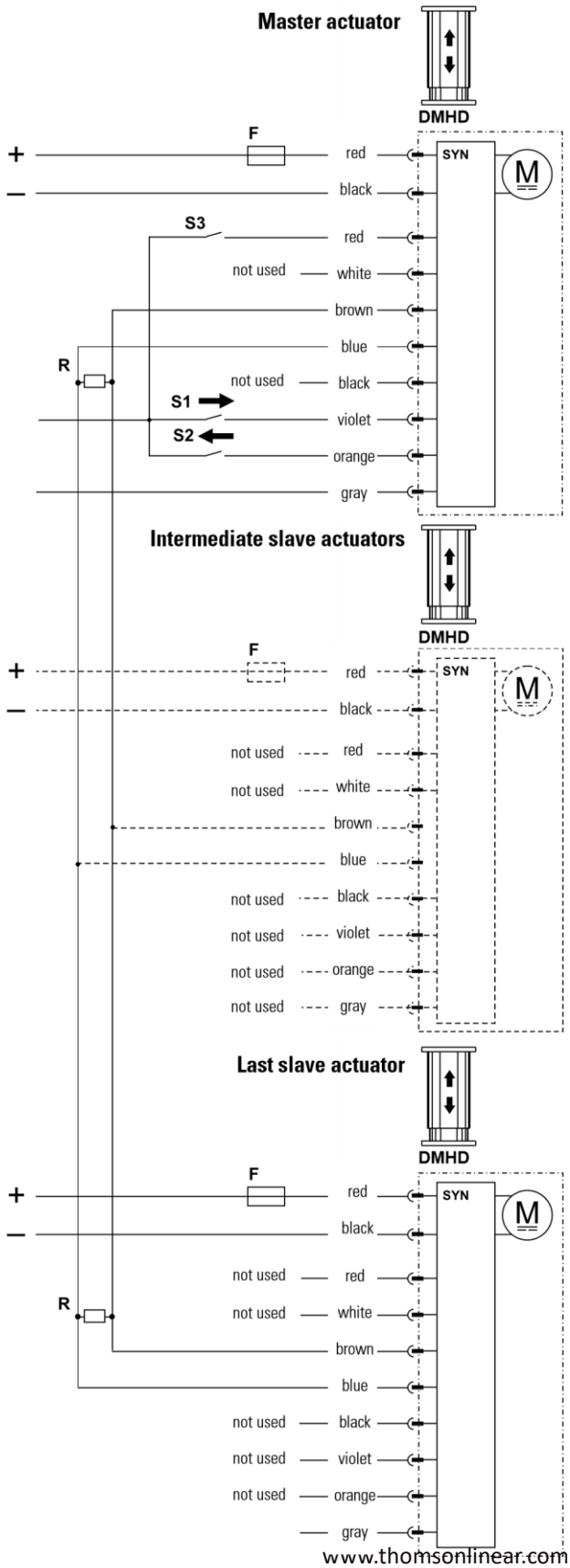
F Fuse
S1 Extend switch
S2 Retract switch

DMHD – Electrical Connections

Control option LPS works as option LXX but also has programmable mid stroke software extend and retract limits as well as a signal-follower input that allow the extension tube position to be controlled from a potentiometer or another voltage control.

DMHD – Electrical Connections

Control option SYN works as option LXX but also has a



DMHD – Electrical Connections

Option Type SYN		
Actuator supply voltage DMHD12 DMHD24	[Vdc]	 9 - 16 18 - 32
Extend / retract input voltage	[Vdc]	9 - 32
Extend / retract input current	[mA]	6 - 22
Number of synchronized actuators		2 +
Max. actuator speed difference	[%]	25

synchronization feature, allowing two or more actuators having the SYN option to run in integrated motion.

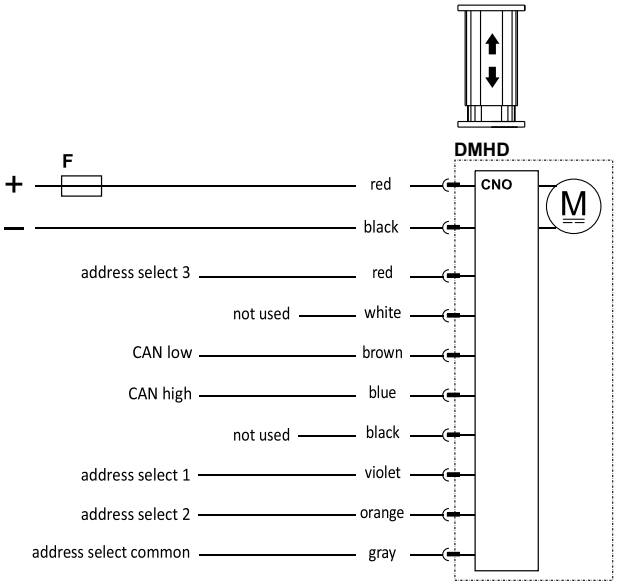
When using the low-level extend and retract inputs on the master actuator, the slave(s) will follow. If there is a need to run an actuator individually, it is possible to put it into an override state by closing a switch (S3) connected to the red lead as shown in the wiring diagram.

Important design notes:

- Ensure that supply voltage to each actuator is within ±1.0 V.
- Uneven loading between the actuators is not recommended, but the synchronization option can withstand its effects up to a 25% speed loss.
- For units with the synchronization option, the speed at a given load is 25% lower than for those without. This is true irrespective of the unit being in synchronization or override mode, or simply run individually.
- If one actuator encounters an overload condition, it will trip the overload protection and send a signal to each actuator on the network to stop. The units can be immediately reversed (unless they bind up the system), or they can continue in the same direction after a power reset.
- If power is lost at any time to any actuator, the actuators still powered will continue their last commanded move until told to stop, either by an individual current overload trip, or a stop signal sent from the master actuator.
- If communication is lost (i.e. brown/blue wires cut), the slaves will continue their last commanded move until they reach end of stroke or trip current overload. The master will continue its last commanded move unless commanded to stop with the switching leads, reaching end of stroke, or tripping current overload.
- After a large number of mid-stroke movements, the time difference between each unit receiving a signal to move (master vs. slave) will add to small variances in when the units start and stop. Since they are designed to run at the same speed, these small differences amount to a variance of position over time – even when load is applied. To address this concern, Thomson suggests running the units either to a fully extended or fully retracted position each cycle to re-align the units with each other to take out these added variances.
- In order to give the master and slave(s) enough time to communicate there must be at least 250 ms between each start and stop command.

Option Type CNO and COO		
Actuator supply voltage DM HD12 DMHD24	[Vdc]	 9 - 16 18 - 32
Command data includes: • position • speed • current		
Feedback data includes: • position • speed • current • other diagnostic information		

DMHD – Electrical Connections



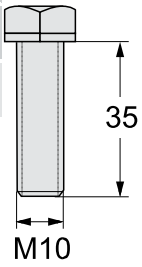
Dimensions
mm

F Fuse

Control option CNO has an SAE J1939 CAN bus control interface/COO has a CANopen control interface that controls and monitors the actuator. Extend and retract commands are sent via CAN messages on the CAN low and CAN high pins. Address select 1, 2 and 3 pins can be used as a BCD encoded adder to the default address. This can be used when multiple actuators are located on a single bus.

DMHD – Accessories

T-slot Bolt	
Designation	Part Number
M10 T-slot bolt	D800041



The T-slot bolt fits in to the T-slot running along the outer profile of the lifting column. The T-slot bolts can be used to mount the unit instead of using the upper mounting plate, or/and for attaching other components to the profile.