TRANSMOTEC

SYNCHRONOUS ACTUATOR CONTROL BOXES | 1 - 8 actuators

DD SERIES

We offer a broad range of high quality control boxes and hand controls in standard and customized configurations. Our customer-centric approach makes us the ideal supplier for your project, especially to instrument and apparatus builders. In addition, we offer immediate delivery, thanks to always having a high number of motors in stock.

Customizations include:

- ✓ Customized harness
- ✓ Winding configuration
- ✓ Shaft configuration
- ✓ And more...

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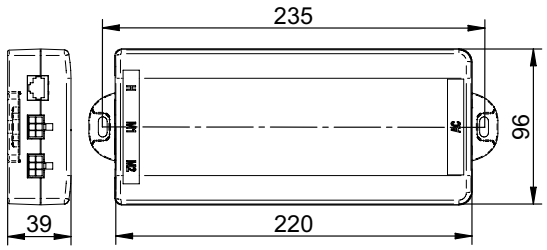
DDLS-2 | SYNCHRONOUS ACTUATOR CONTROL BOX

DRAWING (mm)



PHOTO

MODEL NO. DESIGNATION

DDLS	-	NUMBER OF ACTUATORS

Example: DDLS-2

ACCESSORIES

● C = customizations are offered on demand even for smaller quantities. Typical customizations are indicated with a green dot at column end. Please contact us for any customization request.

ACTUATOR CONTROL BOX DATA			C
Mode		Synchronous	
Number of actuators		2	
Compatible controller[1]		HDL-DDLS-2	
Compatible actuators[2]		Transmotec DLA series and DLB series.	
Output voltage	V	24	
Output current	A	2.4	
Overload protection current	A	-	
Duty cycle[3]	%	10	
Input voltage range	V	100 to 240	
Input power frequency	Hz	50 | 60	
Power cable[4]		IEC C7	
Power cable length	m	3	
CE label		Yes	
Operating temperature	°C	5 to 40	
IP rating		IP20	
Weight	kg	0.81	
Actuator port		Molex 45732-0001	
Controller port		10P10C (RJ50)	
Body materials		Fireproof ABS (FR-ABS)	
Color		Black	

OPERATION GUIDANCE SYNCHRONOUS ACTUATOR CONTROL BOXES

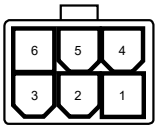
1. Connect all actuators adapter cables between the control box and the actuator.
2. All actuators must be connected to the control box for functional operation.
3. Press and hold down both hand control buttons 3 seconds to start automatic calibration process.
4. Press and continuously hold down the M button on the hand control for actuators operation.
5. Actuators will have a few mm stopping distance.
6. The actuators will stop automatically by its internal limit switches at end position.

NOTES

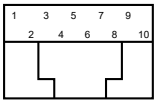
1. Sold separately. See www.transmotec.com.
2. Standard actuators are sold with flying wires but adapter cable is included. Actuators with connectors are sold on demand.
3. Max. 2 min. continuous operation in 20 min.
4. Plugs EU CEE 7/7 and US NEMA 5/15.

PIN LAYOUT

MOLEX 45732-0001 Jack



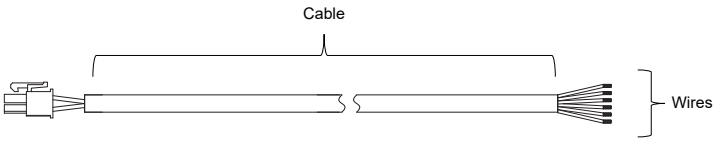
10P10C (RJ50) Jack



PIN CONFIGURATION MOLEX 45732-0001	
Pin	Function
1	GND
2	Vin
3	M-
4	Hall 2
5	Hall 1
6	M+

PIN CONFIGURATION 10P10C (RJ50)	
Pin	Function
1	-
2	5 V
3	-
4	-
5	1 Up M1
6	-
7	-
8	1 Down M1
9	-
10	-

ACTUATOR ADAPTER CABLE LAYOUT



ACTUATOR ADAPTER CABLE DATA			C
Cable length	mm	150	
Cable diameter	mm	7.2	
Wires		AWG20 | AWG24	

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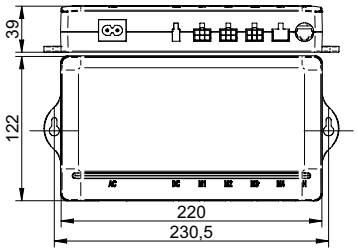
DDLS-3 | SYNCHRONOUS ACTUATOR CONTROL BOX

DRAWING (mm)



PHOTO

MODEL NO. DESIGNATION

DDLS	-	NUMBER OF ACTUATORS

Example: DDLS-3

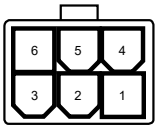
ACCESSORIES

● C = customizations are offered on demand even for smaller quantities. Typical customizations are indicated with a green dot at column end. Please contact us for any customization request.

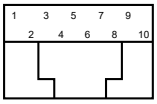
ACTUATOR CONTROL BOX DATA			C
Mode		Synchronous	
Number of actuators		3	
Compatible controller[1]		HDL-DDLS-3	
Compatible actuators[2]		Transmotec DLA series and DLB series.	
Output voltage	V	24	
Output current	A	2.4	
Overload protection current	A	-	
Duty cycle[3]	%	10	
Input voltage range	V	100 to 240	
Input power frequency	Hz	50 | 60	
Power cable[4]		IEC C7	
Power cable length	m	3	
CE label		Yes	
Operating temperature	°C	5 to 40	
IP rating		IP20	
Weight	kg	0.93	
Actuator port		Molex 45732-0001	
Controller port		10P10C (RJ50)	
Body materials		Fireproof ABS (FR-ABS)	
Color		Black	

PIN LAYOUT

MOLEX 45732-0001 Jack



10P10C (RJ50) Jack



PIN CONFIGURATION MOLEX 45732-0001	
Pin	Function
1	GND
2	Vin
3	M-
4	Hall 2
5	Hall 1
6	M+

PIN CONFIGURATION 10P10C (RJ50)	
Pin	Function
1	-
2	5 V
3	-
4	-
5	1 Up M1
6	-
7	-
8	1 Down M1
9	-
10	-

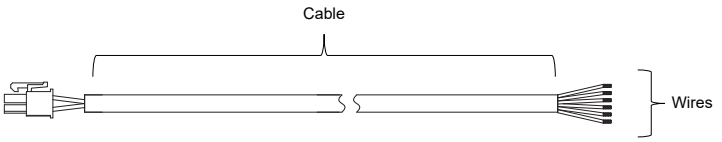
OPERATION GUIDANCE SYNCHRONOUS ACTUATOR CONTROL BOXES

1. Connect all actuators adapter cables between the control box and the actuator.
2. All actuators must be connected to the control box for functional operation.
3. Press and hold down both hand control buttons 3 seconds to start automatic calibration process.
4. Press and continuously hold down the M button on the hand control for actuators operation.
5. Actuators will have a few mm stopping distance.
6. The actuators will stop automatically by its internal limit switches at end position.

NOTES

1. Sold separately. See www.transmotec.com.
2. Standard actuators are sold with flying wires but adapter cable is included. Actuators with connectors are sold on demand.
3. Max. 2 min. continuous operation in 20 min.
4. Plugs EU CEE 7/7 and US NEMA 5/15.

ACTUATOR ADAPTER CABLE LAYOUT



ACTUATOR ADAPTER CABLE DATA			C
Cable length	mm	150	
Cable diameter	mm	7.2	
Wires		AWG20 | AWG24	

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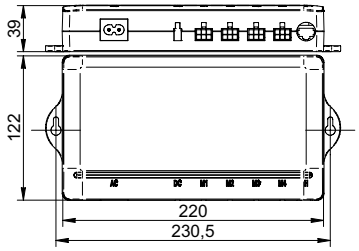
DDLS-4 | SYNCHRONOUS ACTUATOR CONTROL BOX

DRAWING (mm)



PHOTO

MODEL NO. DESIGNATION

DDLS - NUMBER OF ACTUATORS

Example: DDLS-4

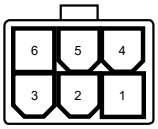
ACCESSORIES

● C = customizations are offered on demand even for smaller quantities. Typical customizations are indicated with a green dot at column end. Please contact us for any customization request.

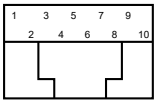
ACTUATOR CONTROL BOX DATA			C
Mode		Synchronous	
Number of actuators		4	
Compatible controller[1]		HDL-DDLS-4	
Compatible actuators[2]		Transmotec DLA series and DLB series.	
Output voltage	V	24	
Output current	A	2.4	
Overload protection current	A	-	
Duty cycle[3]	%	10	
Input voltage range	V	100 to 240	
Input power frequency	Hz	50 | 60	
Power cable[4]		IEC C7	
Power cable length	m	3	
CE label		Yes	
Operating temperature	°C	5 to 40	
IP rating		IP20	
Weight	kg	0.93	
Actuator port		Molex 45732-0001	
Controller port		10P10C (RJ50)	
Body materials		Fireproof ABS (FR-ABS)	
Color		Black	

PIN LAYOUT

MOLEX 45732-0001 Jack



10P10C (RJ50) Jack



PIN CONFIGURATION MOLEX 45732-0001	
Pin	Function
1	GND
2	Vin
3	M-
4	Hall 2
5	Hall 1
6	M+

PIN CONFIGURATION 10P10C (RJ50)	
Pin	Function
1	-
2	5 V
3	-
4	-
5	1 Up M1
6	-
7	-
8	1 Down M1
9	-
10	-

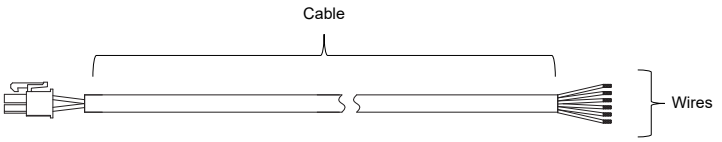
OPERATION GUIDANCE SYNCHRONOUS ACTUATOR CONTROL BOXES

1. Connect all actuators adapter cables between the control box and the actuator.
2. All actuators must be connected to the control box for functional operation.
3. Press and hold down both hand control buttons 3 seconds to start automatic calibration process.
4. Press and continuously hold down the M button on the hand control for actuators operation.
5. Actuators will have a few mm stopping distance.
6. The actuators will stop automatically by its internal limit switches at end position.

NOTES

1. Sold separately. See www.transmotec.com.
2. Standard actuators are sold with flying wires but adapter cable is included. Actuators with connectors are sold on demand.
3. Max. 2 min. continuous operation in 20 min.
4. Plugs EU CEE 7/7 and US NEMA 5/15.

ACTUATOR ADAPTER CABLE LAYOUT



ACTUATOR ADAPTER CABLE DATA			C
Cable length	mm	150	
Cable diameter	mm	7.2	
Wires		AWG20 | AWG24	

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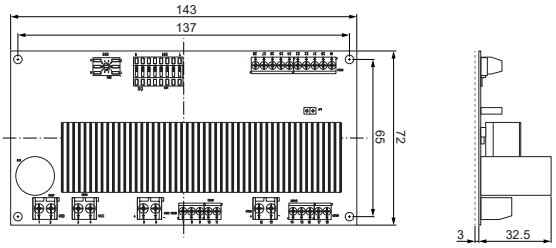
DDMS-2 | SYNCHRONOUS ACTUATOR CONTROL BOX

DRAWING (mm)



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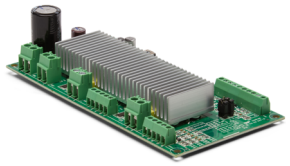

MODEL NO. DESIGNATION

DDMS	–	NUMBER OF ACTUATORS

Example: DDMS-2

ACCESSORIES

● C = customizations are offered on demand even for smaller quantities. Typical customizations are indicated with a green dot at column end. Please contact us for any customization request.

ACTUATOR CONTROL BOX DATA			C
Mode[1]		Synchronous and asynchronous	
Number of actuators		2	
Compatible controller[2]		HDL-DDMS-2	
Compatible actuators[3]		Transmotec DLA series, DLB series, and DMA series.	
Output voltage	V	12 | 24	
Output current[4]	A	25	
Overload protection current[5]	A	2 to 25	
Duty cycle[6]	%	15 | 40	
Input voltage range[7]	V	12 | 24	
Power cable[8]		Not included	
Power cable length[8]	m	Not included	
CE label		Yes	
EMC		EMC Directive 2014/30/EU	
Operating temperature	°C	-20 to 55	
Weight	g	150	

OPERATION GUIDANCE

Control the actuator to extend and retract by swapping the DC input polarity.

To prevent voltage drop issues, use a power cord with a large cross-sectional area. Keep the wire length from the power supply to the control board and from the control board to the actuator motor as short as possible, ideally under 1 meter.

It is strongly recommended to install a max. 50 A slow-blow fuse between DDHS-1 and the power supply.

If the actuators have no positioning sensor, they must have limit switches that can cut off the power and stop by themselves, otherwise there is a high risk of damage to DDHS-1.

The speed of actuators controlled by DDHS-1 will be lower than the typical values stated in the actuator's data sheet. The maximum speed loss is up to 25%.

NOTES

1. Synchronous control requires the actuator to have a positioning function of Potentiometer, single Hall or Dual Hall. If the actuators have no positioning function, they must have the stroke limit switches at both ends to stop by themselves.
2. Sold separately. See www.transmotec.com.
3. 12 V DC or 24 V DC motor, and the speed can be adjusted by input voltage.
4. Max. current limit for each actuator.
5. Ten levels adjustable overcurrent protection setting.
6. 2x20 A at 15% duty cycle, max. 40 seconds continuous operation in 4.5 min. 2x10 A at 40% duty cycle, max. 2 min. continuous operation in 5 min.
7. Nominal voltage range 12 V or 24 V.
8. Cables not included. Recommended specification for use is AWG10 or AWG12, length 1 m.

DIP SWITCH

DIP SWITCH SETTINGS

Definition	Number	Setting
No soft start/stop.	1, 2	00
0.5 second soft start/stop.	1, 2	01
1 second soft start/stop.	1, 2	10
2 second soft start/stop.	1, 2	11
If Hall effect sensor connected, sets the limit position at 40 pulses before both mechanical limits. If potentiometer connected, sets the limit position at 2% of the full stroke before both mechanical limits.	3, 4	00
If Hall effect sensor connected, sets the limit position at 20 pulses before both mechanical limits. If potentiometer connected, sets the limit position at 1% of the full stroke before both mechanical limits.	3, 4	01
If Hall effect sensor connected, sets the limit position at 10 pulses before both mechanical limits. If potentiometer connected, sets the limit position at 0.5% of the full stroke before both mechanical limits.	3, 4	10
No software limit. Only selectable under the actuator with physical limit switch.	3, 4	11
Dual Hall effect sensors.	5, 6	00
Single Hall effect sensors.	5, 6	01
Potentiometer	5, 6	10
No positioning sensor.	5, 6	11
2 connected actuators.	7	0
1 connected actuator.	7	1
Switch control mode.	8	0
Position input mode.	8	1

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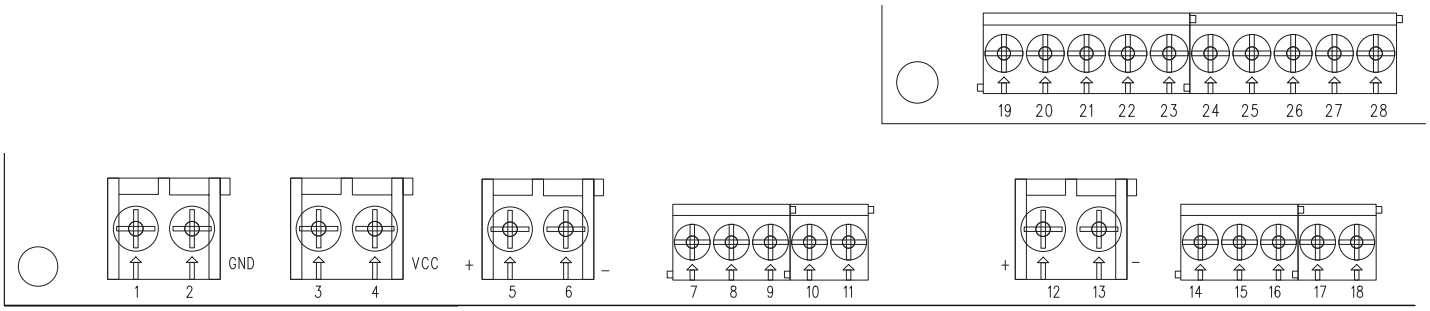
DDMS-2 | SYNCHRONOUS ACTUATOR CONTROL BOX

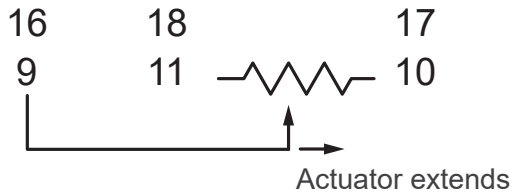
FRONT AND REAR TERMINALS



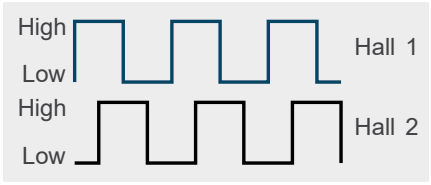
FRONT AND REAR TERMINAL CONFIGURATION

Terminal[1]	Definition	Description	Recommended wire gauge
1 and 2	V-	Ground.	AWG14 | AWG12[2]
3 and 4	V+	Nominal 12 V or 24 V (acceptable input voltage range 9 V ~ 32 V).	AWG14 | AWG12[2]
5 and 12	M+	12 V or 24 V DC output. When controlling the actuator to extend, M+ and M- are VDC+ and VDC-, respectively. When retracting the actuator, the polarity is reversed.	AWG20 ~ AWG12
6 and 13	M-		
7 and 14[3]	H1 | Hall 1 input	Hall signal 1 input.	AWG24 ~ AWG18
8 and 15	H2 | Hall 2 input	Hall signal 2 input.	AWG24 ~ AWG18
9 and 16	POT	Voltage input from potentiometer. Wiring according to “POTENTIOMETER WIRING”.	AWG24 ~ AWG18
10 and 17	Vout	5 V power output, for the actuator’s Hall module or Potentiometer, depending on which is present.	AWG24 ~ AWG18
11 and 18	GND	Ground.	AWG24 ~ AWG18
19	5 V out	5 V output to the switch.	AWG24 ~ AWG18
20	RET	Retraction signal input. Can use 5 V of terminal 19 or external 5 V power source. Actuator retracts when switch on.	
21	EXT	Extension signal input. Can use 5 V of terminal or external 5 V power source. Actuator extends when switch on.	
22	Learning	Learning signal input. Can use 5 V of terminal 19 or external 5 V power source. Triggered after switching on for more than 2 seconds, the system will automatically learn the stroke of the actuators.	
23	Fault out	Error signal output. Outputs a 5 V signal when reaching overcurrent, or when the feedback signal of the actuator is lost.	
24	EMS	Input signal for emergency stop switch (Normally Closed). For customer to install emergency stop switch between terminals 19 and 24. To use this function, the JP1 jumper must be removed.	
25	Analog position in	Analog signal (0 ~ 5 V) to run the actuator to the specified position. The control signal can be generated using an external power source or using the 5 V at pin 27 via a potentiometer. It is forbidden to input PWM signal.	
26	Position OK	In-position signal output. When using the position input mode, the actuator will output a signal (5 V) after reaching the specified position (according to input from terminal 25).	
27	5 V out	5 V power supply to the position input mode of control circuit.	
28	GND	Ground. When using the position input mode, the GND of the power source must be connected here.	

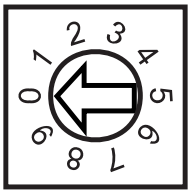
POTENTIOMETER WIRING



HALL SIGNAL DATA



OVERCURRENT PROTECTION



OVERCURRENT PROTECTION SETTINGS

Rotary switch setting		0	1	2	3	4	5	6	7	8	9
Max. current	A	2	3	4	6	8	10	13	15	20	25

NOTES

1. When controlling a single actuator, only use terminals 5, 6, 7, 8, 9, 10, 11.
2. For load currents under 30A, use a single AWG12 wire. For load currents between 30 A and 50 A, use two AWG14 wires or larger in parallel.
3. When controlling a single Hall sensor actuator, only use terminals 7 and 14.

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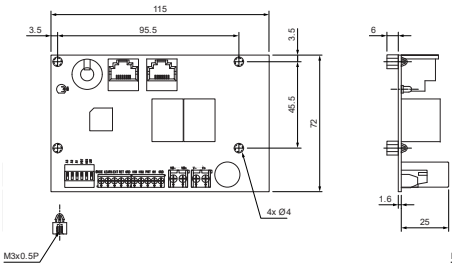
DDHS-1 | SYNCHRONOUS ACTUATOR CONTROL BOX

DRAWING (mm)



PHOTO

MODEL NO. DESIGNATION

DDHS	-	NUMBER OF ACTUATORS

Example: DDHS-1

ACCESSORIES

● C = customizations are offered on demand even for smaller quantities. Typical customizations are indicated with a green dot at column end. Please contact us for any customization request.

ACTUATOR CONTROL BOX DATA			C
Mode		Synchronous	
Number of actuators[1]		1	
Compatible controller		HDL-DDHS-1	
Compatible actuators[2]		Transmotec DLA series, DLB series, and DMA series.	
Output voltage	V	12 | 24	
Output current[3]	A	10	
Duty cycle[4]	%	15	
Input voltage range	V	12 | 24	
Power cable[5]		AWG18	
Power cable length[5]	m	2	
CE label		Yes	
EMC		EMC Directive 2014/30/EU	
Operating temperature	°C	-20 to 55	
Weight	g	90	
Controller terminal		7-pin DIN socket	

OPERATION GUIDANCE

Before installation, ensure that all actuators in the system are fully retracted.

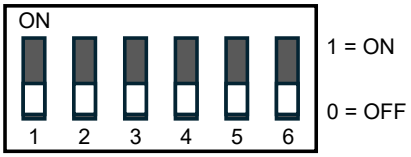
For synchronization of multiple actuators, all actuators must be of the same model and dimensions to ensure desired operation.

Note that the exact wiring configuration of the actuators depends on several conditions, including the type of actuators connected.

NOTES

1. Up to 8 sets of DDHS-1 can be connected to achieve synchronous control of 8 actuators.
2. With Hall sensor feedback-NPN type or Potentiometer positioning feedback.
3. Max. current limit for each actuator. 16 A at 12 V or 10 A at 24 V.
4. Max. 2 min continuous operation.
5. No cables included. Recommended specification for use AWG 18, length 2 m.

DIP SWITCH

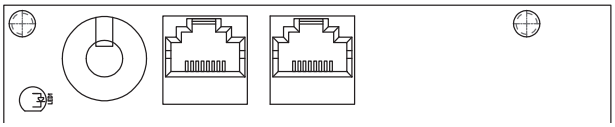


DIP SWITCH SETTINGS

Definition	Number	Setting
Preset limit switches	1	0
No limit switches	1	1
Dual Hall effect sensors	1, 2	00
Single Hall effect sensors	1, 2	10
Potentiometer	1, 2	01

Please note that when connecting multiple actuators, the main control box must have DIP switches 4, 5, and 6 set to “000”. The remaining control boxes must have unique settings on DIP switches 4, 5, and 6.

SYNCHRONOUS COMMUNICATION PORTS



SYNCHRONOUS COMMUNICATION CONFIGURATION

Use an RJ45 ethernet cable that meets CAT 5 or above specification.

When connecting four DDHS-1 in synchronous connection, ensure that the vacant ports have a terminal resistor attached.

After the synchronous communication cable is connected first, insert it into the vacant RJ45 socket. There is no distinction between the left and right positions.

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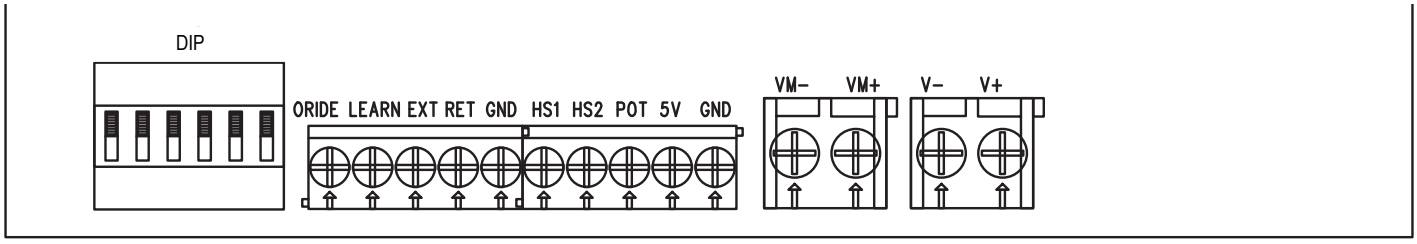
DDHS-1 | SYNCHRONOUS ACTUATOR CONTROL BOX

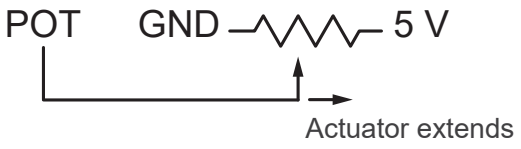
FRONT TERMINALS



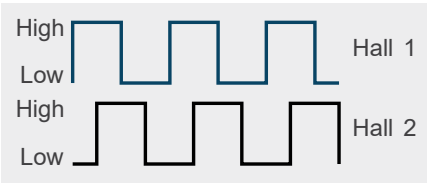
TERMINAL CONFIGURATION

Terminal	Description
DIP	DIP switch. See “DIP SWITCH SETTINGS”.
ORIDE	Offline or connection switching.[1]
LEARN	Triggered after switching on for more than 2 seconds. The system will automatically learn the stroke of the actuators.
EXT	Actuator extends when switch on.
RET	Actuator retracts when switch on.
GND	Ground.
HS1	Hall signal 1 input.[2]
HS2	Hall signal 2 input.
POT	Voltage input from potentiometer. Wiring according to “POTENTIOMETER WIRING”.
5V	5 V power output, for the actuator’s Hall module or Potentiometer, depending on which is present.
GND	Ground.
VM-	24 V output, maximum 10 A. When controlling the actuator to extend, VM+ and VM- are VDC+ and VDC-, respectively. When retracting the actuator, the polarity is reversed.
VM+	
V-	Ground.
V+	Nominal 24 V (voltage range 20 V ~ 32 V).[3]

POTENTIOMETER WIRING



HALL SIGNAL DATA



NOTES

1. For terminals GND, RET, EXT, LEARN, ORIDE, the recommended wire gauge is AWG24.
2. When controlling a single Hall sensor actuator, only use terminal HS1.
3. A 2-wire AWG18 power cord is recommended for nominal loads.

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