

HRS Series On/Off & Proportional Electric Actuators

OVERVIEW

HRS SERIES ELECTRIC ACTUATORS



Non-Declutchable
Manual Override System
Suitable for use with overhead
chain-wheel installations

Powder Coated Aluminum Alloy
NEMA 4/4X/IP67 Enclosure

Raised Position Indicator

(2) Conduit Entry
Ports, Cable or
Conduit Compliant



Self Locking Epicyclic Transmission and
Low Pull-Force Worm Override Design



Local Control Station Options
Featuring Key Lockout, LCD
Display and LED Indicator Display



SAFE
Fail-Safe Battery
Backup Options



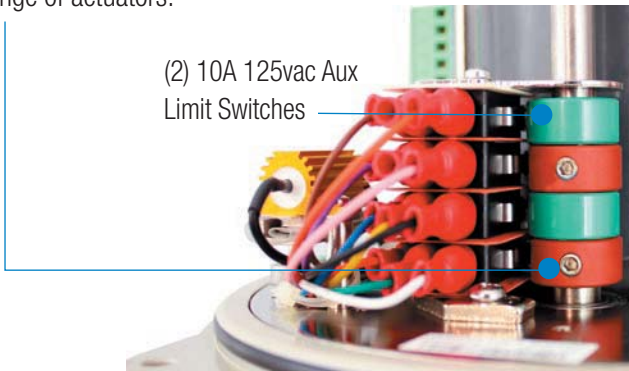
OVERVIEW

Hayward's HRS Series electric actuators are designed and produced to provide years of service in demanding industrial environments such as chemical processing, waste and water treatment, power generation, oil & gas, marine, mining and building services. These quarter-turn units drive dampers, ball valves, butterfly valves or inlet guide vanes that require torque ranges from 300 lbf-in up through 177,000 lbf-in. The HR Series housings are designed to meet NEMA 4X environmental demands, with ISO5211 compliant mounting that readily mounts up to most valves in the industries served. Featuring an epicyclic transmission system, the HR Series provides highly efficient multiplication of motor power to produce uniquely compact torque ranges compared to other technologies. A clutch-free manual override system provides full-time override capabilities during powered or un-powered events, and allows for simple adaptation for overhead chain-wheel drive installations.

UNDER THE HOOD

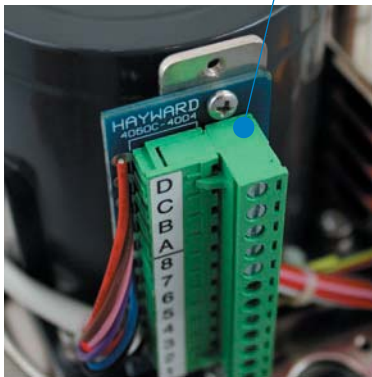
COLOR CODED CAM SYSTEM

Easily accessible travel and auxiliary switch cams are color coded to provide instant recognition of the CW or CCW cams when making stroke adjustments. Cam positions are easily changed by utilizing 2.5mm setscrews across the entire HRS range of actuators.

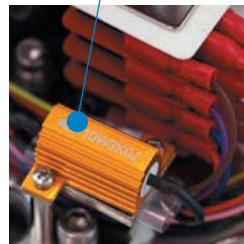


PLUG & PLAY WIRING

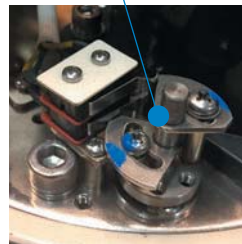
Clean, Easily Accessible Internal Wiring Layout, Removable Wire Receiver for Ease of Install



STANDARD ANTI-CONDENSATE HEATER



TORQUE SWITCH



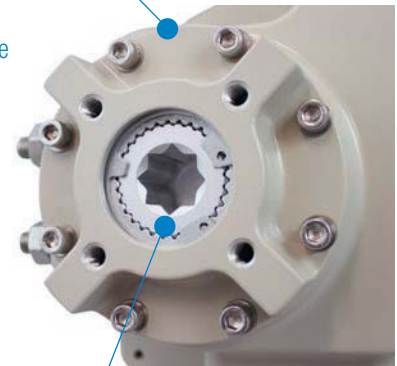
Pre Calibrated Torque Switch, Factory Set and not for field adjustment. Provides the utmost in over torque protection for the most sensitive of applications. All Torque forces are measured mechanically directly from the gear train.

ISO VERSATILITY

Following ISO principle, the Hayward HRS Series line of actuation offers complete versatility with a wide range of ISO compliant flanges and interchangeable drive sockets.

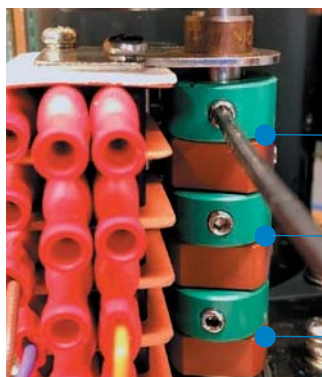
ISO 5211 MOUNTING FLANGE

- Double Square
- Square
- Double D
- Rounded Key



INTERCHANGEABLE BUSHING

Externally Accessible Adjustable Mechanical Stops



- (2) Optional AUX Switches
(Dry Contact Close / Dry Contact Open)
- (2) STANDARD AUX SWITCHES
(Dry Contact Close / Dry Contact Open)
- (2) Motor Close / Motor Open

DIGITAL/ANALOG TIMER KIT

The 7-day timer offers two channels with daily and weekly programming functionality. High accuracy of timing, user-friendly interface and clear LCD display offers convenience and reliability for timing/scheduled applications.





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HRSN4A~4D Series On/Off & Proportional Electric Actuators

FOR BALL AND BUTTERFLY
 VALVES UP TO 14"

KEY FEATURES

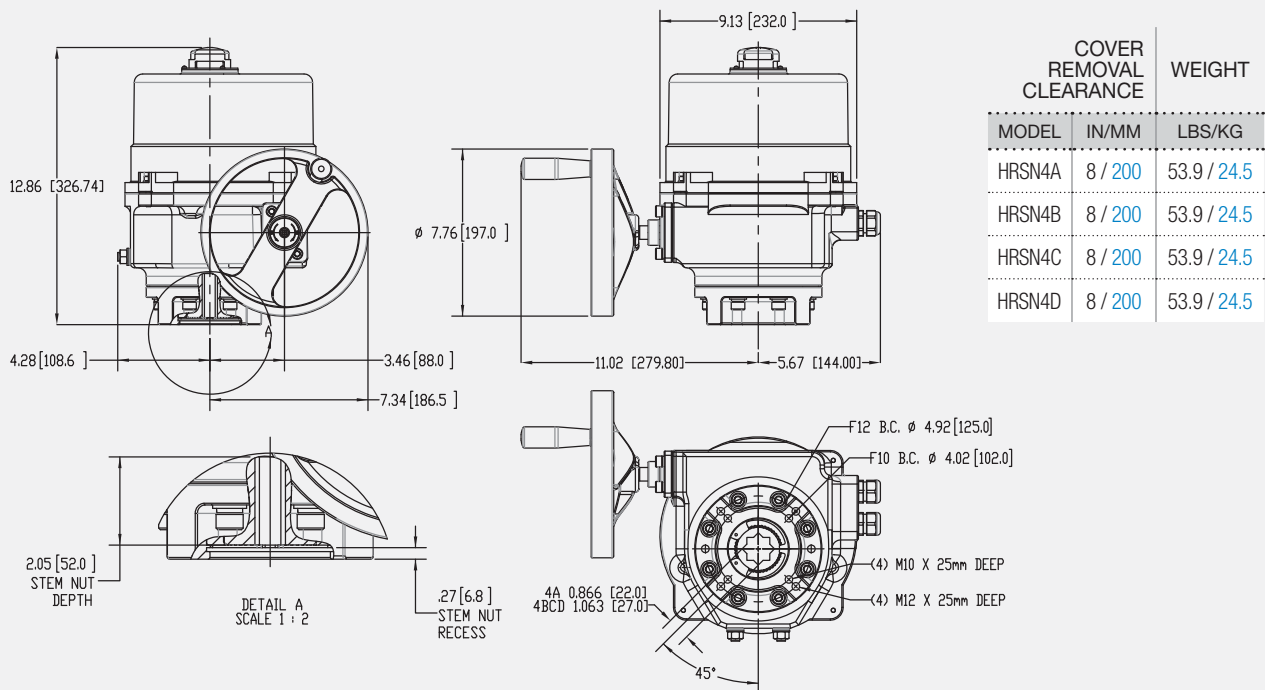
- Units are equipped with two (2) volt-free Form A Auxiliary switches
- ISO5211 compliant mounting with removable double square female drives and inserts
- 120VAC operation standard, with 24VAC/VDC, 230VAC and 3 Phase options available
- Raised visual position indicator
- NEMA 4X/IP67 compliant
- Two (2) 3/4" EMT ports for ease of field wiring

OPTIONS

- Local Control Stations
- IP68 Submersion
- Battery Backup
- Interchangeable ISO5211 Flange & Drives
- Torque Switches

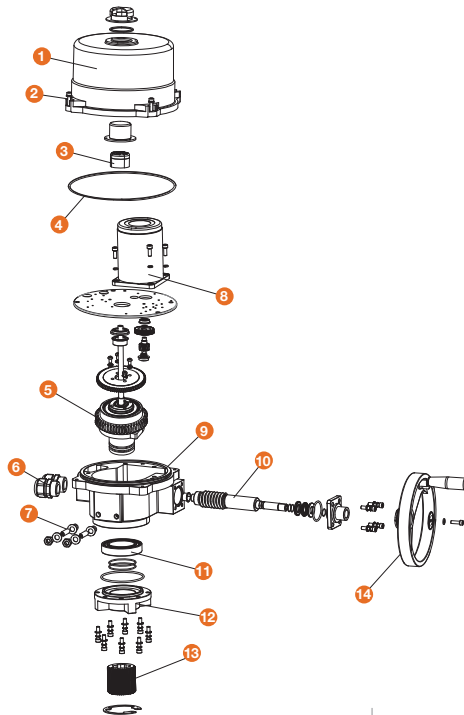
HRSN2
 HRSN3
HRSN4
 HRSN5

TECHNICAL INFORMATION



HRSN4A~4D Series On/Off & Proportional Electric Actuators

FOR BALL AND BUTTERFLY VALVES UP TO 14"



PARTS LIST

1. Cast Aluminum Cover
2. Captured Cover Screws
3. High Visibility Position Indicator
4. Cover O-Ring Seal
5. Epicyclic Transmission Set
6. EMT Glands
7. External Mechanical Stops
8. Drive Motor
9. Cast Aluminum Housing
10. Worm Override Shaft
11. Heavy Final Drive Bearing
12. ISO5211 Flange
13. Splined Drive Insert
14. Handwheel w/Collapsible Knob

ACTUATOR SPECIFICATIONS

		HRSN4A	HRSN4B	HRSN4C	HRSN4D
12VAC*	Supply				
	Torque Output (in-lb / Nm)	3540 / 400	5310 / 600	7080 / 800	8850 / 1000
	Current Draw (Start / Run / LRA)	11.4A/9.4A/24.4A	11.4A/9.4A/24.4A	11.4A/9.4A/24.4A	-
	Speed (90°) DC-60Hz/50Hz, seconds	21 / 21	28 / 28	34 / 34	-
12VDC*	Motor - 12V DC Perm Magnet 2 Pole Brush	40W	40W	40W	-
	On/Off / Proportional	Duty Cycle (IEC60034)		75% (S2-15 min) / 75% (S4-75%)	-
		Motor Protection, Temp / Class		All - 130°C / Class B	-
		Motor Starts, per hour, Max		All - 600	-
24VAC	Current Draw (Start / Run / LRA)	7.0A / 5.8A / 15A	7.0A / 5.8A / 15A	7.0A / 5.8A / 15A	10.5A / 7.8A / 22A
	Speed (90°) DC-60Hz/50Hz, seconds	21 / 21	28 / 28	34 / 34	34 / 34
	Motor - 24V DC Perm Magnet 2 Pole Brush	40W	40W	40W	90W
	24VDC	On/Off / Proportional	Duty Cycle (IEC60034)		75% (S2-15 min) / 75% (S4-75%)
Motor Protection, Temp / Class				All - 130°C / Class B	-
Motor Starts, per hour, Max				All - 600	-
120VAC	Current Draw (Start / Run / LRA)	3.0A / 1.8A / 3.5A	3.0A / 1.8A / 3.5A	3.0A / 1.8A / 3.5A	3.8A / 2.3A / 4.8A
	Speed (90°) 60Hz / 50Hz, seconds	24 / 29	33 / 39	39 / 47	39 / 47
	Motor - 120V Capacitor Run TENV	90W	90W	90W	120W
	On/Off - Std Duty / On/Off - Ext Duty & Proportional	Duty Cycle (IEC60034)		25% (S2-15 min) / 75% (S4-75%)	-
Motor Protection, Temp / Class			155°C / Class F / 180°C / Class H	-	
Motor Starts, per hour, Max			600 / 1200	-	
230VAC	Current Draw (Start / Run / LRA)	1.7A / 0.9A / 1.9A	1.7A / 0.9A / 1.9A	1.7A / 0.9A / 1.9A	2.2A / 1.1A / 2.4A
	Speed (90°) 60Hz / 50Hz, seconds	24 / 29	33 / 39	39 / 47	39 / 47
	Motor - 230V Capacitor Run TENV	90W	90W	90W	120W
	On/Off - Std Duty / On/Off - Ext Duty & Proportional	Duty Cycle (IEC60034)		25% (S2-15 min) / 75% (S4-75%)	-
Motor Protection, Temp / Class			155°C / Class F / 180°C / Class H	-	
Motor Starts, per hour, Max			600 / 1200	-	
All	Environmental Rating		NEMA 4/4X & IP67		
	Electrical Entry (2)		3/4" EMT or Polyamide gland		
	Control		On/Off, Proportional, 2 Pos RO, RC & 3 Position		
	Auxiliary Switch - End of Travel		(2) Form A Volt-Free, Rated 10A @ 250vac		
	Ambient Operating Range		-22°F to +158°F (-30°C to +70°C)		
	Humidity Range		0-95% RH		
	Altitude Limit		9850 ft / 3000 m		



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HRSN4A~4D Series Electronic Fail-Safe Actuator Battery Backup



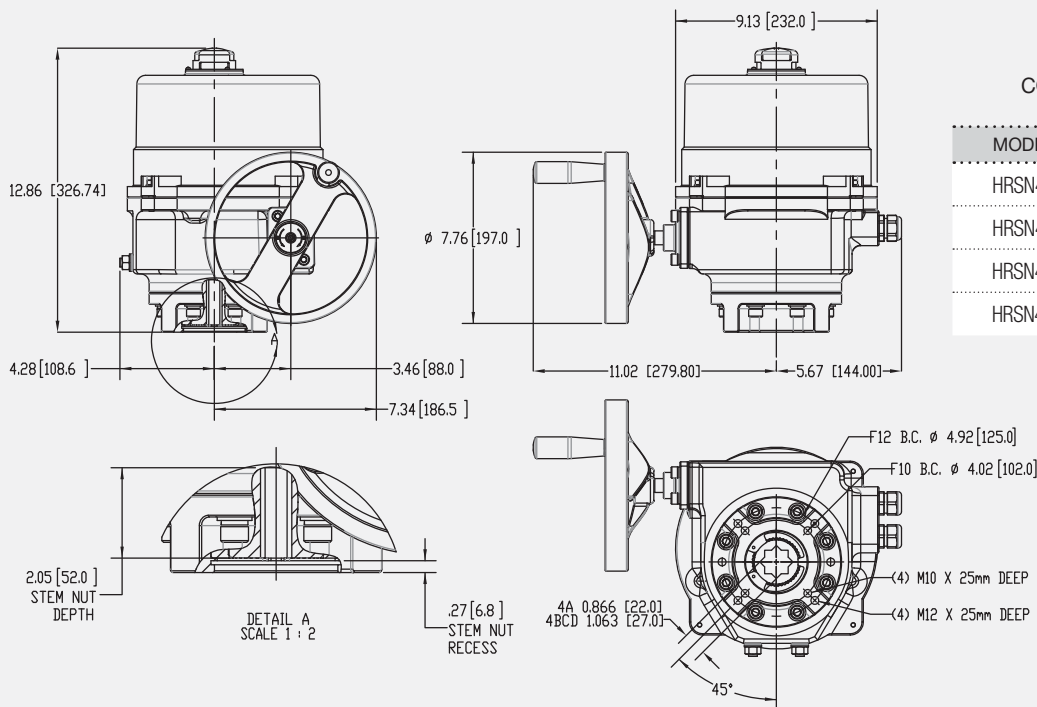
KEY FEATURES

- Stored Energy System provides positive valve positioning upon loss of mains power
- Up to 8850"lbs torque for butterfly valves up to 14"
- 24VAC/VDC operation standard, with 120vac and 230vac transformer options available
- Field selectable fail CW or CCW operation for complete flexibility
- Self-Contained charge and discharge control of the Lithium-Ion Battery provides maximum life from the reserve energy system
- Battery Pack is field replaceable to minimize down-time
- Stored Energy status indicators show system health
- Fault-Out contact is standard and allows remote monitoring of the stored energy system performance.
- ISO5211 Mechanical mount with removable double-square female drive socket
- Two (2) 3/4" EMT ports for ease of field wiring
- NEMA 4/4X & IP67 compliant
- Optional Torque Switches

HRS Series Electronic Fail-Safe Actuators are intended to provide positive positioning in power-fail conditions.

HRSN2
 HRSN3
 HRSN4
 HRSN5

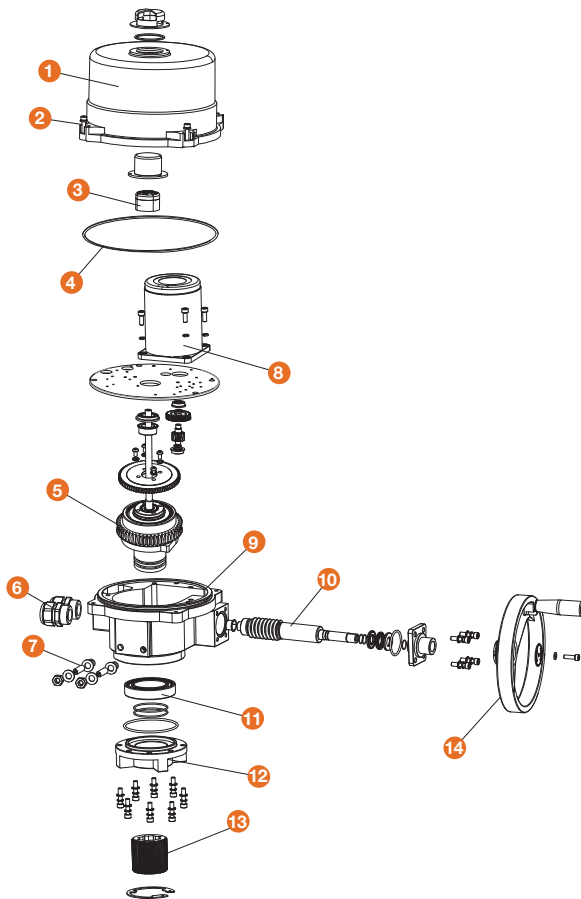
TECHNICAL INFORMATION



MODEL	COVER REMOVAL CLEARANCE	WEIGHT
	IN/MM	LBS/KG
HRSN4A	8 / 200	57.2 / 26
HRSN4B	8 / 200	57.2 / 26
HRSN4C	8 / 200	57.2 / 26
HRSN4D	8 / 200	57.2 / 26

HRSN4A~4D Series Electronic Fail-Safe Actuator Battery Backup

FOR BALL AND BUTTERFLY VALVES UP TO 14"



PARTS LIST

1. Cast Aluminum Cover
2. Captured Cover Screws
3. High Visibility Position Indicator
4. Cover O-Ring Seal
5. Epicyclic Transmission Set
6. EMT Glands
7. External Mechanical Stops
8. Drive Motor
9. Cast Aluminum Housing
10. Worm Override Shaft
11. Heavy Final Drive Bearing
12. ISO5211 Flange
13. Splined Drive Insert
14. Handwheel w/Collapsible Knob

ACTUATOR SPECIFICATIONS

		HRSN4A..20	HRSN4B..20	HRSN4C..20	HRSN4D..20
Supply	Torque Output (in-lbs / Nm)	3540 / 400	5310 / 600	7080 / 800	8850 / 1000
	Current Draw (Start / Run / LRA)	7.0A / 5.8A / 15A	7.0A / 5.8A / 15A	7.0A / 5.8A / 15A	10.5A / 7.8A / 22A
24VAC	Speed (90°) DC-60Hz/50Hz, seconds	21 / 21	28 / 28	34 / 34	34 / 34
	Motor - 24V DC Perm Magnet 2 Pole Brush	40W	40W	40W	90W
24VDC	On/Off / Proportional	Duty Cycle (IEC60034)	75% (S2-15 min) / 75% (S4-75%)		
		Motor Protection, Temp / Class	All - 130°C / Class B		
	Motor Starts, per hour, Max	All - 600			
120VAC	Requires 120:24 Transformer Pack, 500VA	HRSBBC120-500	HRSBBC120-500	HRSBBC120-500	HRSBBC120-500
230VAC	Requires 230:24 Transformer Pack, 500VA	HRSBBC230-500	HRSBBC230-500	HRSBBC230-500	HRSBBC230-500
All	Manual Override	Clutchless Handwheel	Clutchless Handwheel	Clutchless Handwheel	Clutchless Handwheel
	Environmental Rating	NEMA 4/4X & IP67			
	Electrical Entry (2)	3/4" EMT or Polyamide gland			
	Control	On/Off, Proportional			
	Auxiliary Switch - End of Travel	(2) Form A Volt-Free, Rated 10A @ 250vac			
	Ambient Operating Range	-22°F to +158°F / -30°C to +70°C			
	Humidity Range	0-95% RH			
	Altitude Limit	9850 ft / 3000 m			
	BATTERY SPECIFICATIONS	HRSN4A~4D (20 SERIES)			
	Type	22.2V Lithium-Ion pack with charge / discharge control			



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HRSN4E & HRSN4F Series On/Off & Proportional Electric Actuators



FOR BALL AND BUTTERFLY VALVES UP TO 20"

KEY FEATURES

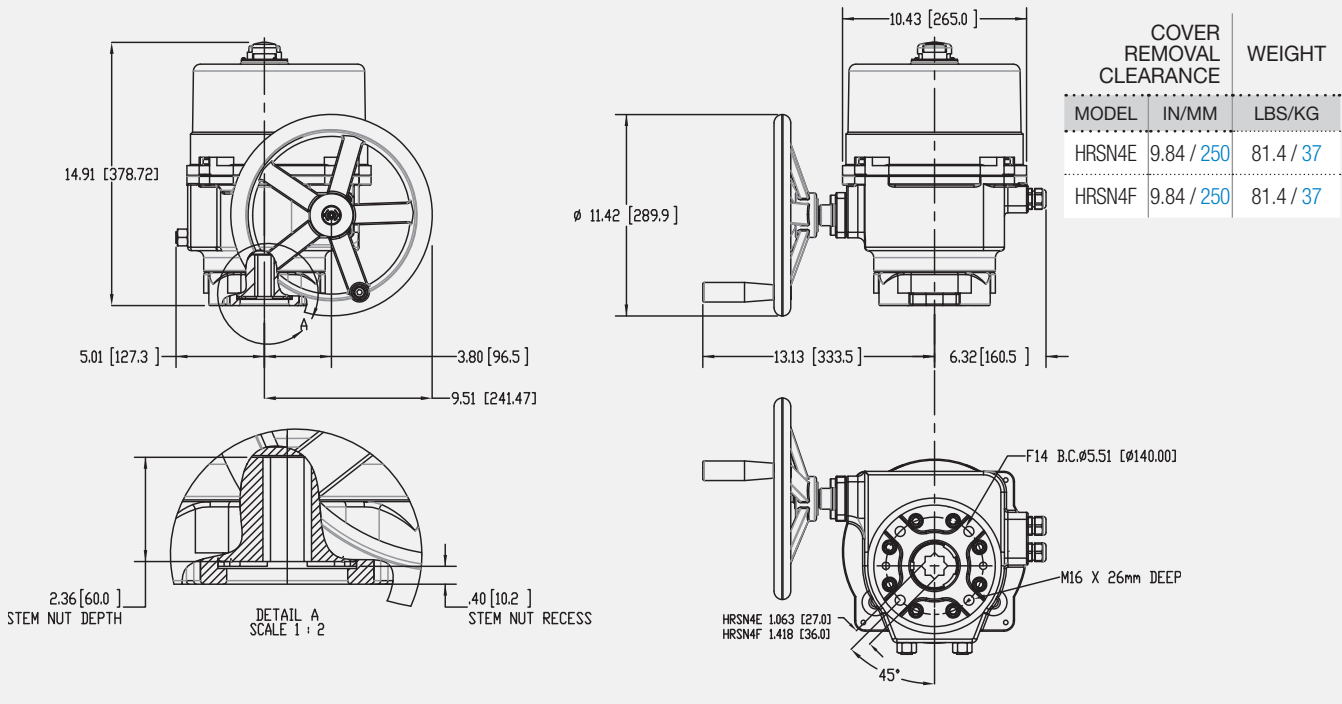
- Units are equipped with two (2) volt-free Form A Auxiliary switches
- ISO5211 compliant mounting with double square female drives and inserts
- 120VAC operation standard, with 24VAC/VDC, 230VAC and 3 Phase options available
- Raised visual position indicator
- NEMA 4X/IP67 compliant
- Two (2) EMT entry ports with sealed cable glands

OPTIONS

- Local Control Stations
- IP68 Submersion
- Interchangeable ISO5211 Flange & Drives
- Torque Switches

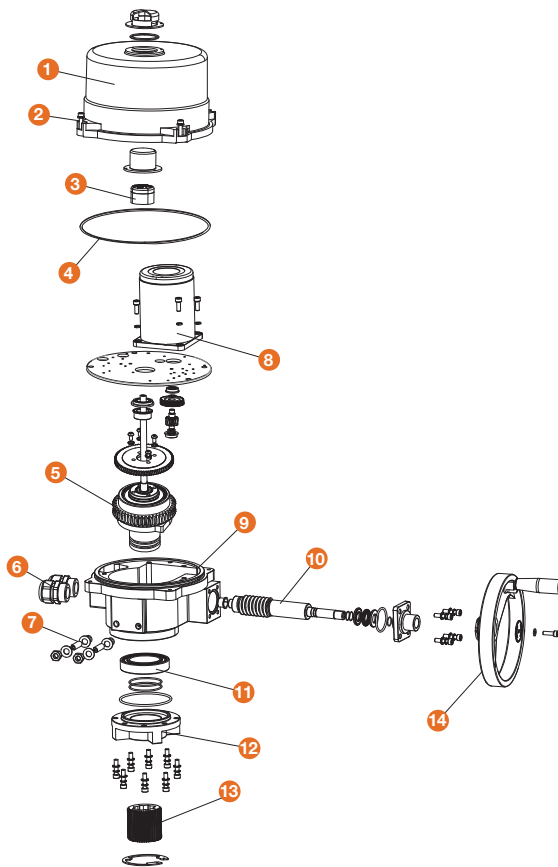
HRSN2
 HRSN3
HRSN4
 HRSN5

TECHNICAL INFORMATION



HRSNE & HRSNF Series On/Off & Proportional Electric Actuators

FOR BALL AND BUTTERFLY VALVES UP TO 20"



PARTS LIST

1. Cast Aluminum Cover
2. Captured Cover Screws
3. High Visibility Position Indicator
4. Cover O-Ring Seal
5. Epicyclic Transmission Set
6. EMT Glands
7. External Mechanical Stops
8. Drive Motor
9. Cast Aluminum Housing
10. Worm Override Shaft
11. Heavy Final Drive Bearing
12. ISO5211 Flange
13. Splined Drive Insert
14. Handwheel w/Collapsible Knob

ACTUATOR SPECIFICATIONS

		HRSN4E	HRSN4F
Supply	Torque Output (in-lb / Nm)	15,040 / 1700	20,350 / 2300
	Current Draw (Start / Run / LRA)	10.5A / 7.8A / 22A	-
24VAC	Speed (90°) DC-60Hz/50Hz, seconds	25 / 25	-
	Motor - 24V DC Perm Magnet 2 Pole Brush	90W	-
24VDC	Duty Cycle (IEC60034)	50% / 50%	-
	Motor Protection, Temp / Class	All - 130°C / Class B	-
	Motor Starts, per hour, Max	All - 600	-
	Current Draw (Start / Run / LRA)	7.2A / 4.5A / 9.4A	7.2A / 4.5A / 9.4A
120VAC	Speed (90°) 60Hz / 50Hz, seconds	28 / 34	39 / 47
	Motor - 120V Capacitor Run TENV	200W	200W
On/Off - Std Duty / On/Off - Ext Duty & Proportional	Duty Cycle (IEC60034)	25% (S2-15 min) / 50% (S4-50%)	
	Motor Protection, Temp / Class	155°C / Class F / 180°C / Class H	
	Motor Starts, per hour, Max	600 / 1200	
	Current Draw (Start / Run / LRA)	4.1A / 2.2A / 4.5A	4.1A / 2.2A / 4.5A
230VAC	Speed (90°) 60Hz / 50Hz, seconds	28 / 34	39 / 47
	Motor - 230V Capacitor Run TENV	200W	200W
On/Off - Std Duty / On/Off - Ext Duty & Proportional	Duty Cycle (IEC60034)	25% (S2-15 min) / 50% (S4-50%)	
	Motor Protection, Temp / Class	155°C / Class F / 180°C / Class H	
	Motor Starts, per hour, Max	600 / 1200	
	Environmental Rating	NEMA 4/4X & IP67	
All	Electrical Entry (2)	3/4" EMT or Polyamide gland	
	Control	On/Off, Proportional, 2 Pos RO, RC & 3 Position	
	Auxiliary Switch - End of Travel	(2) Form A Volt-Free, Rated 10A @ 250vac	
	Ambient Operating Range	-22°F to +158°F (-30°C to +70°C)	
	Humidity Range	0-95% RH	
	Altitude Limit	9850 ft / 3000 m	



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HRSN4 Series On/Off & Proportional Electric Actuators

FOR BALL AND BUTTERFLY VALVES UP TO 14"

3-PHASE

OPTIONS

- Basic Interface
- Phase Correction
- Fault Out
- Local Control Stations
- Complete Integral Motor Control Stations

HRSN2

HRSN3

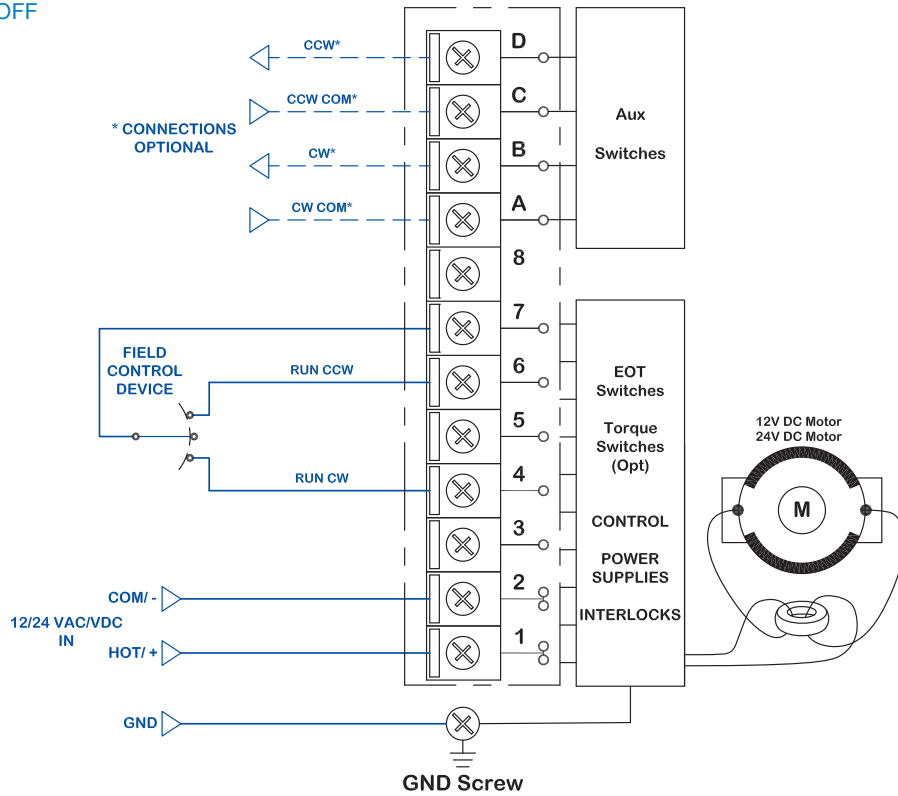
HRSN4 3-PHASE

HRSN5

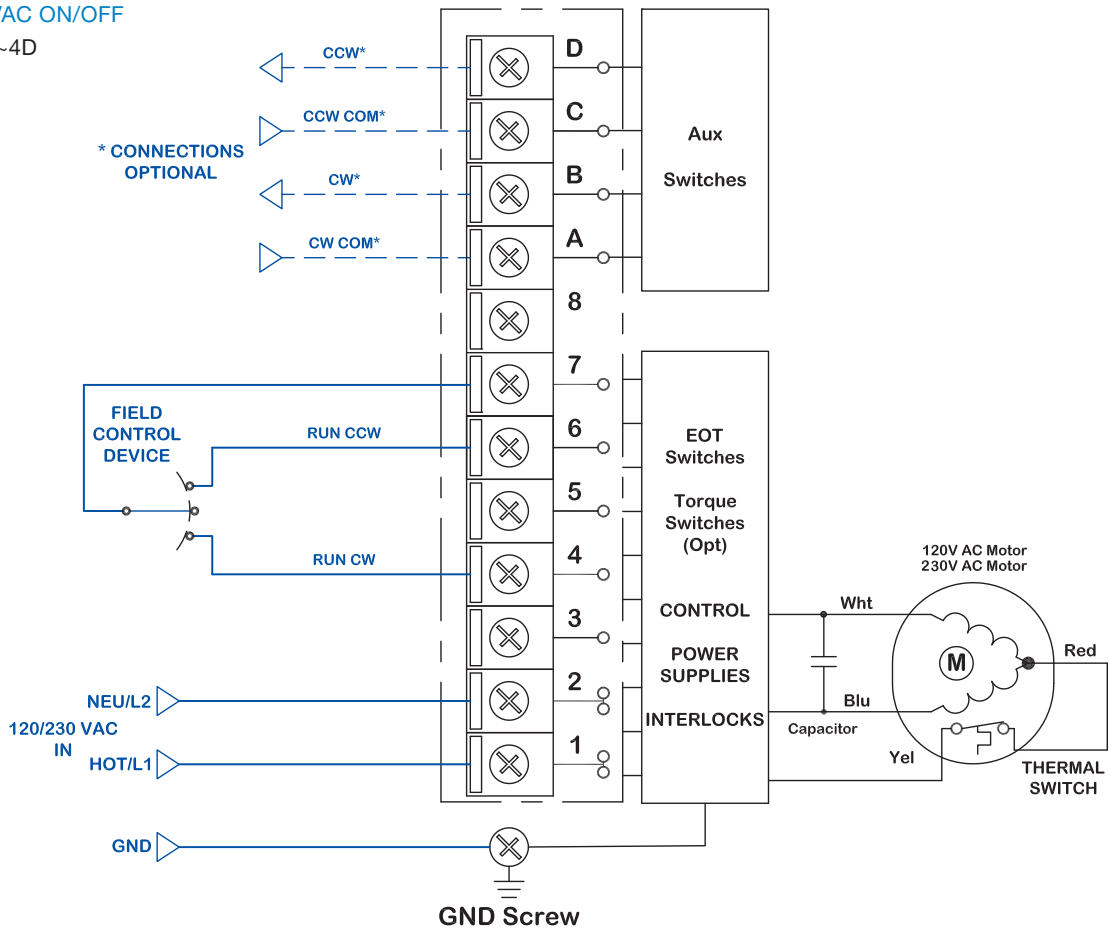
TECHNICAL INFORMATION

ACTUATOR SPECIFICATIONS		HRSN4A	HRSN4B	HRSN4C	HRSN4D	HRSN4E	HRSN4F
Supply*	Torque Output (in-lb / Nm)	3540 / 400	5310 / 600	7080 / 800	8850 / 1000	15,040 / 1700	20,350 / 2300
220/3ph	Current Draw (Start / Run / LRA)	1.8A / 1.1A / 2.4A	1.8A / 1.1A / 2.4A	1.8A / 1.1A / 2.4A	2.8A / 1.1A / 2.1A	3.6A / 1.9A / 4.5A	3.6A / 1.9A / 4.5A
	Speed (90°) 60Hz / 50Hz, seconds	24 / 29	33 / 39	39 / 47	39 / 47	28 / 34	39 / 47
	Motor - 220V polyphase TENV	90W	90W	90W	120W	200W	200W
	Duty Cycle (IEC60034)	25% (S2-15 min) / 75% (S4-75%)				25% (S2-15 min) / 50% (S4-50%)	
380/3ph	Current Draw (Start / Run / LRA)	1.1A / 0.6A / 1.4A	1.1A / 0.6A / 1.4A	1.1A / 0.6A / 1.4A	1.6A / 0.8A / 1.9A	2.1A / 1.1A / 2.6A	2.1A / 1.1A / 2.6A
	Speed (90°) 60Hz / 50Hz, seconds	24 / 29	33 / 39	39 / 47	39 / 47	28 / 34	39 / 47
	Motor - 380V polyphase TENV	90W	90W	90W	120W	200W	200W
	Duty Cycle (IEC60034)	25% (S2-15 min) / 75% (S4-75%)				25% (S2-15 min) / 50% (S4-50%)	
480/3ph	Current Draw (Start / Run / LRA)	0.7A / 0.4A / 1.0A	0.7A / 0.4A / 1.0A	0.7A / 0.4A / 1.0A	0.9A / 0.5A / 1.1A	1.2A / 0.9A / 2.1A	1.2A / 0.9A / 2.1A
	Speed (90°) 60Hz / 50Hz, seconds	24 / 29	33 / 39	39 / 47	39 / 47	28 / 34	39 / 47
	Motor - 480V polyphase TENV	90W	90W	90W	120W	200W	200W
	Duty Cycle (IEC60034)	25% (S2-15 min) / 75% (S4-75%)				25% (S2-15 min) / 50% (S4-50%)	
575/3ph	575/3 On/Off - Basic Only**						
	Current Draw (Start / Run / LRA)	0.4A / 0.3A / 0.8A	0.4A / 0.3A / 0.8A	0.4A / 0.3A / 0.8A	0.8A / 0.4A / 0.9A	1.0A / 0.7A / 1.9A	1.0A / 0.7A / 1.9A
	Speed (90°) 60Hz / 50Hz, seconds	24 / 29	33 / 39	39 / 47	39 / 47	28 / 34	39 / 47
	Motor - 575V polyphase TENV	90W	90W	90W	120W	200W	200W
LCS	On/Off - Basic	25% (S2-15 min)		75% (S4-75%)		25% (S2-15 min)	
	Duty Cycle (IEC60034)						
	Motor Protection, Temp / Class	155°C / Class F					
	Motor Starts, per hour, Max	600					
All	Environmental Rating	HRSN Series: NEMA 4/4X & IP67 (optional IP68) HRSC Series: NEMA 4/4X & IP65 HRSCB Series: NEMA 4/4X & IP67 HRSCD Series: NEMA 4/4X & IP67 (optional IP68) HRSCD Series: NEMA 4/4X & IP67 (optional IP68)					
	Electrical Entry (2)	3/4" EMT or Polyamide gland					
	Control (220/3 ~ 480/3)	On/Off, Proportional, in six levels of control and protection (some limited applications)					
	Control (575/3)	On/Off - Basic (follow On/Off - Std Duty performance data)					
All	Auxiliary Switch - End of Travel	(2) Form A Volt-Free, Rated 10A @ 250vac					
	Ambient Operating Range	-22°F to +158°F (-30°C to +70°C)					
	Humidity Range	0-95% RH					
	Altitude Limit	9850 ft / 3000 m					

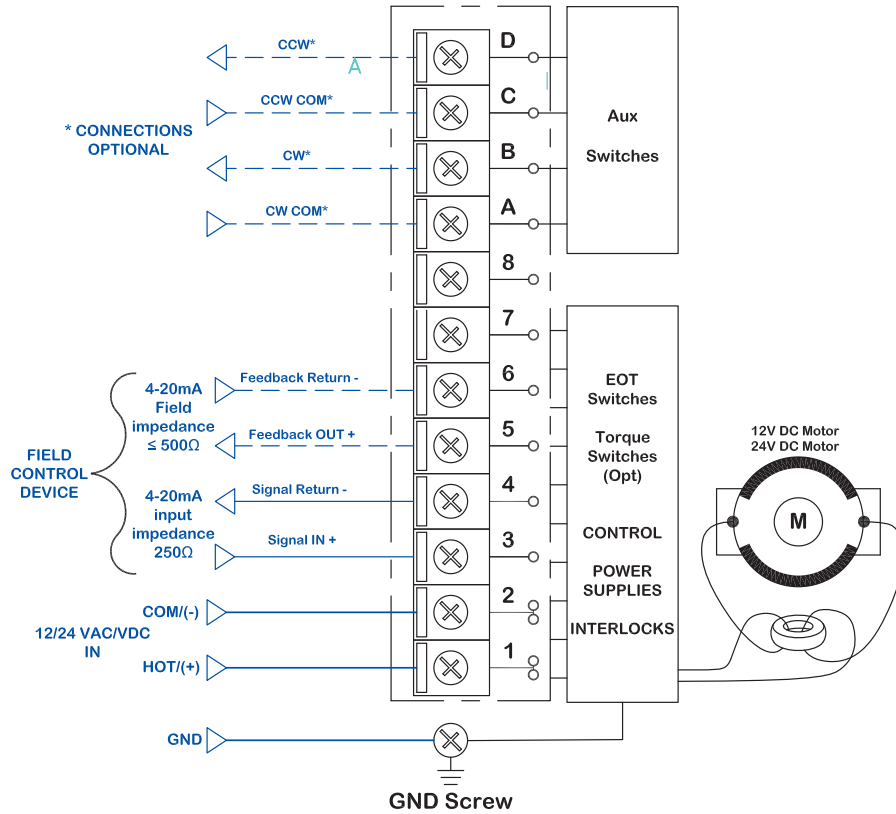
12/24VAC/VDC ON/OFF
HRSN3A~4D



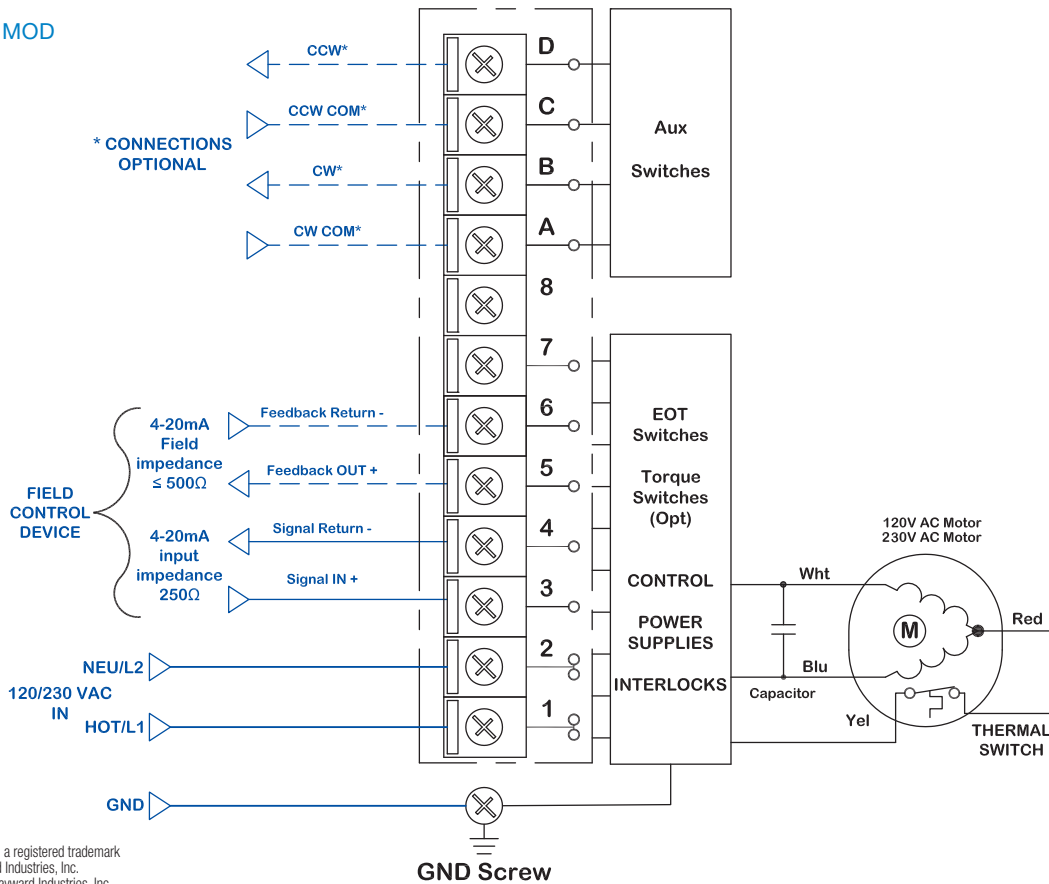
120/230VAC ON/OFF
HRSN3A~4D



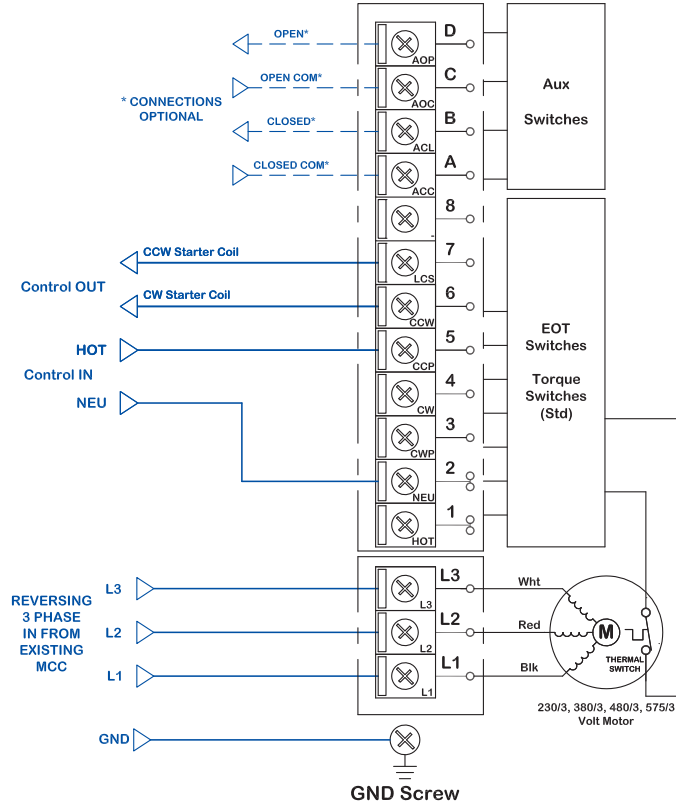
12/24VAC/VDC MOD
HRSN3A-4D



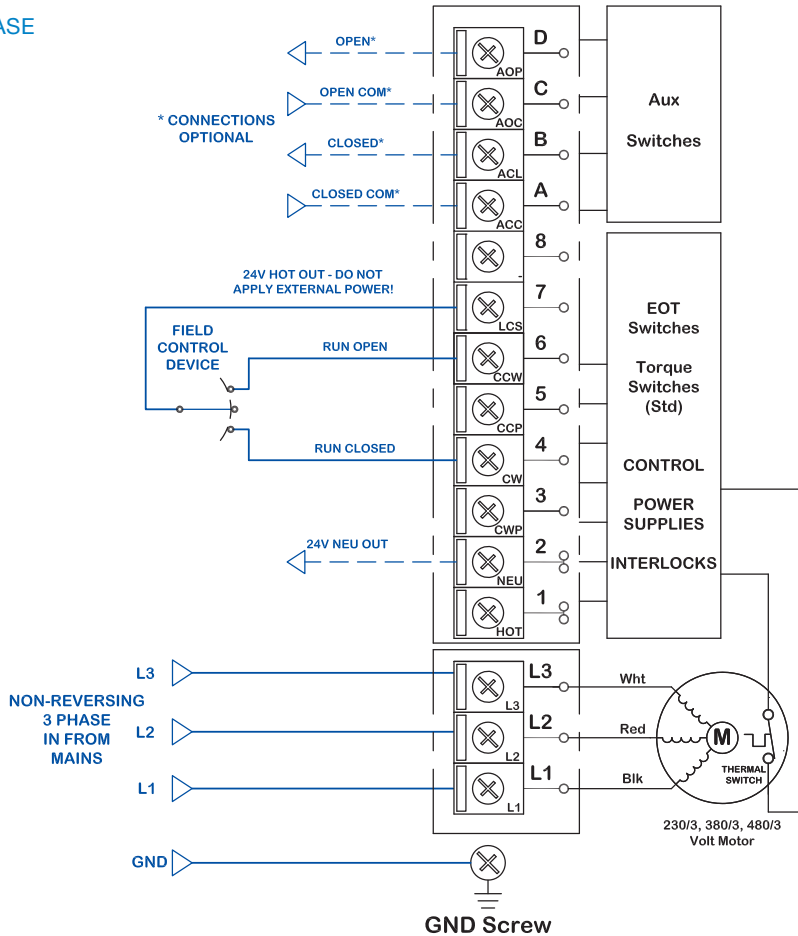
120/230VAC MOD
HRSN3A-4D



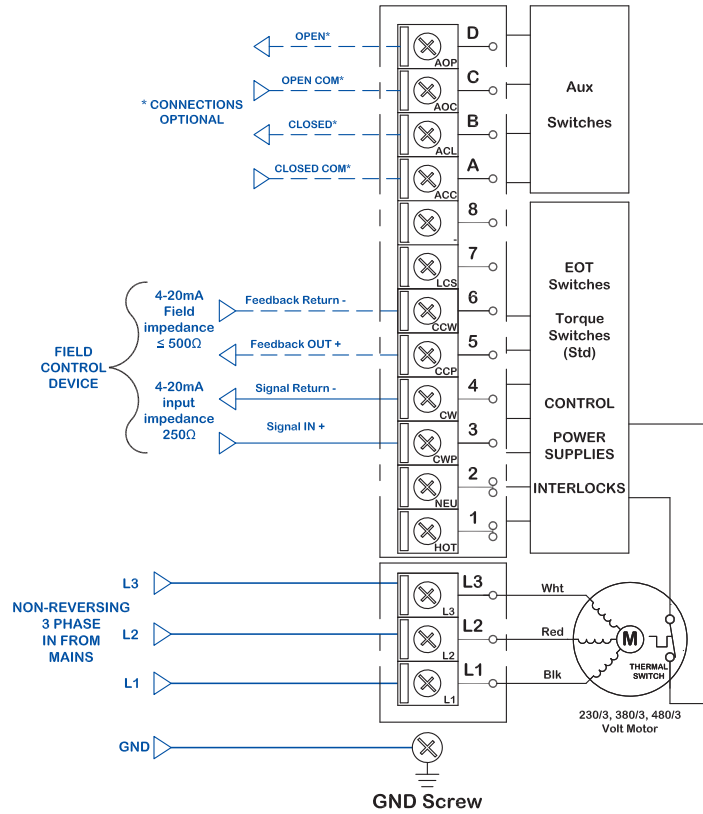
230-575/3 BASIC 3-PHASE
(NO MOTOR CONTROL)
HRSN3A~4D



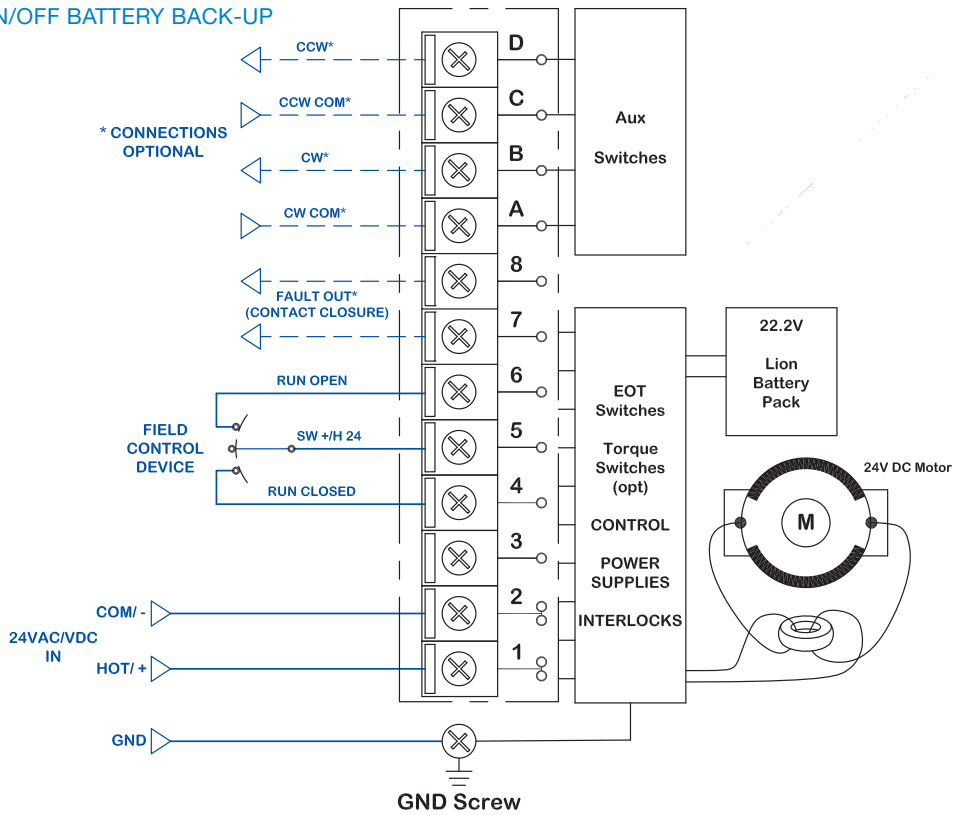
230-480/3 ON/OFF 3-PHASE
(NON-LCS)
HRSN3A~4D



230-480/3 MOD 3-PHASE
(NON-LCS)
HRSN3A--4D



24 VAC/VDC ON/OFF BATTERY BACK-UP
HRSN3A-4D



24 VAC/VDC MOD BATTERY BACK-UP
HRSN3A-4D

