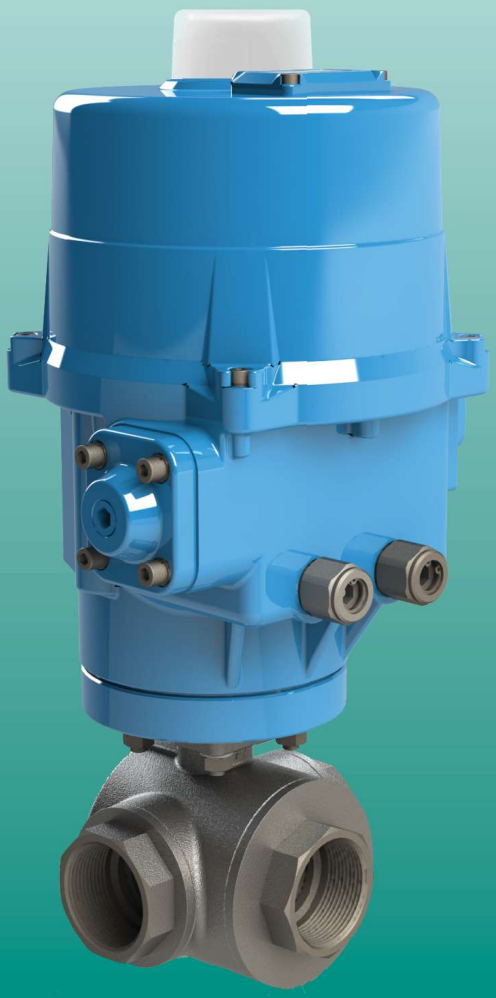
INLINE
BALLVALVE.COM
INLINE INDUSTRIES, INC.

AE-D Series

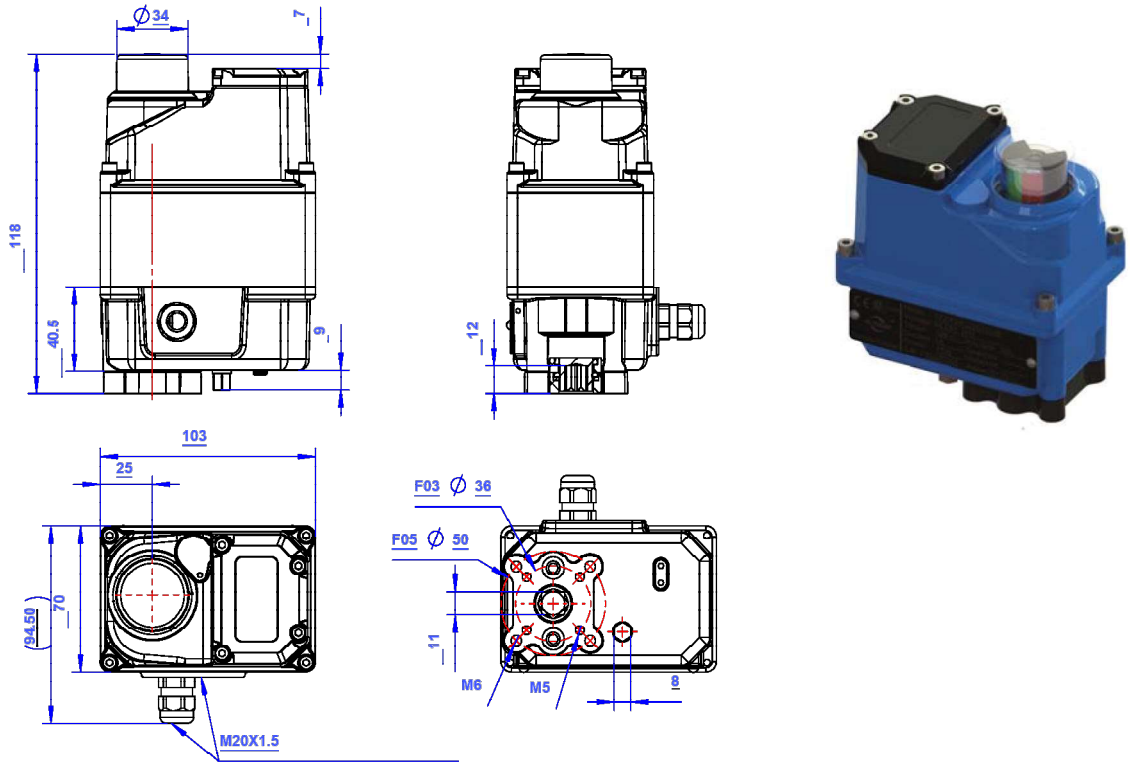
Electric Valve Actuator



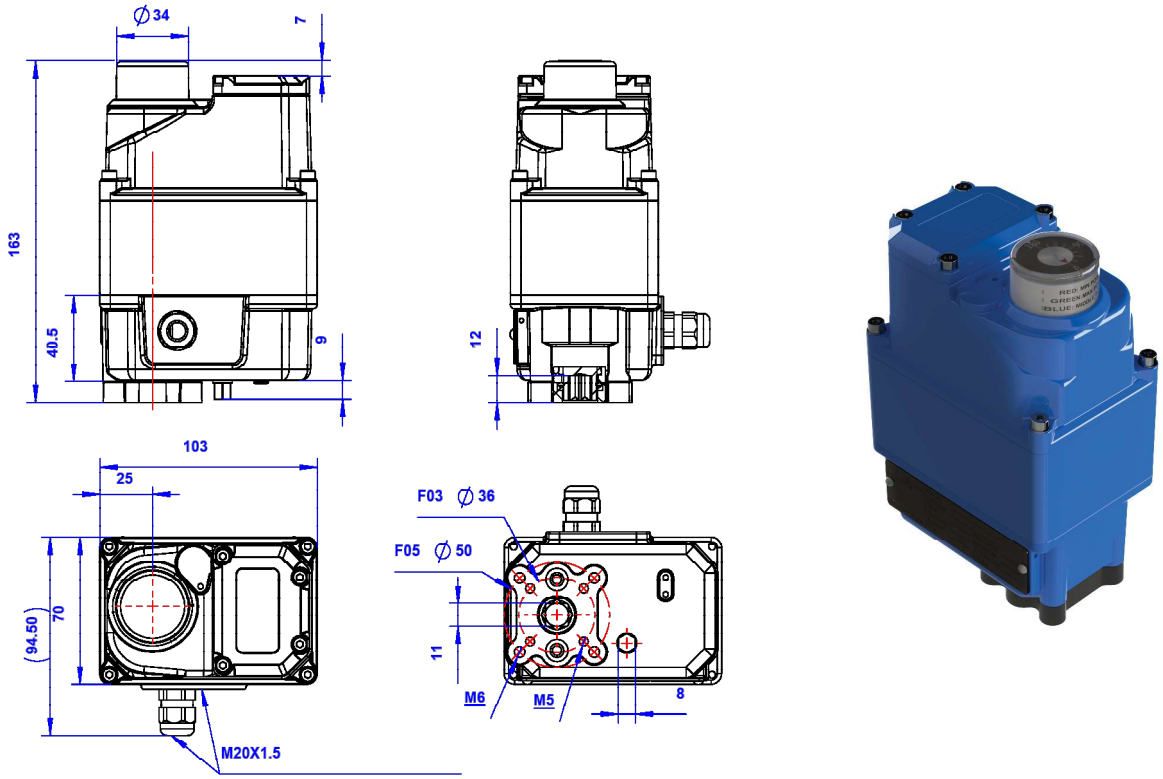
Features and Benefits

- Designed for 2-Position, 3 Position or Modulating Service from 0° to 270°
- High efficiency Brushless DC Motor for long service life
- High Resolution 4096 Step (1024/90°) Position Encoder eliminates need for cams and microswitches
- 3 Output Relays for Open, Closed, and Fault
- Heater and Thermostat standard on all units
- Operation temperature range: -13°F ~ 158°F
- Same model can use dual power source 24VDC/24VAC (F) and 110VAC/220VAC (G)
- Duty Cycle:
  - AE-D1, D2, D3 Series, S2-15 (100% @ 158°F for 15 min)
  - AE-D4 Series, S2-30 (100% @ 158°F for 30 min)
  - AE-D5 Series, S2-60 (100% @ 158°F for 60 min)
- CSA/UL certified (also meets CE, RoHS, IP/NEMA requirements)
- External user interface for local control and calibration without opening enclosure
- NEMA 4/4X/6/6P/IP67/68 C3 Powder Coated Aluminum Enclosure
- High Visibility Scaled or LED Position Indicator
- All Actuators have ± 7.5° end of travel adjustment
- Mid-position on Smart Control Actuator can be adjusted in 0.2° increments
- Manual Override Handwheel or 8mm Hex Drive
- AE-D1 Series - Single M20 Female Conduit Entry with Prewired 2M Cable
- AE-D2/D3/D4/D5 Series - Dual 1/2” FNPT Conduit Entries with Prewired 2M Cable
- Options:
  - FAIL/SAFE Super Capacitor Power Module for reliable operation at loss of power

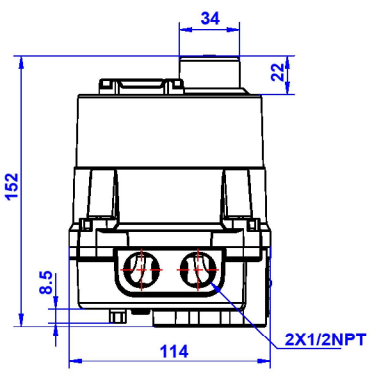
AE-D1 Series

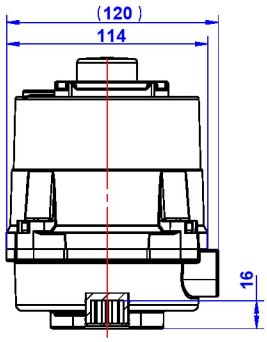


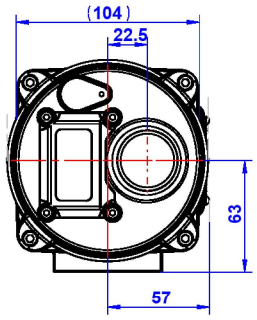
AE-D1 Series with Super Capacitor

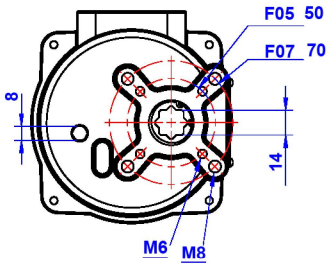


AE-D2 Series

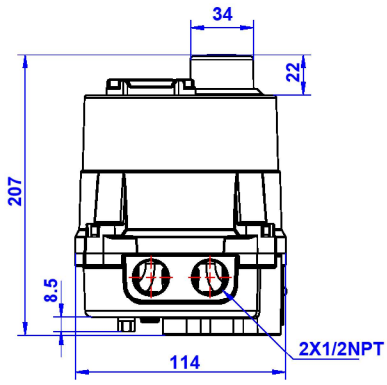


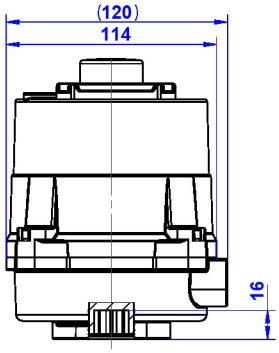


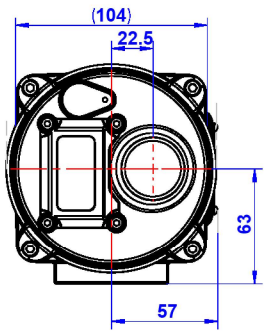


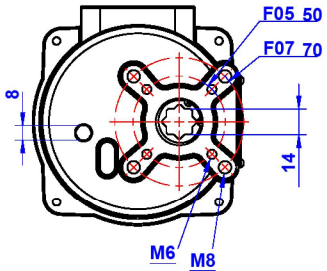


AE-D2 Series with Super Capacitor

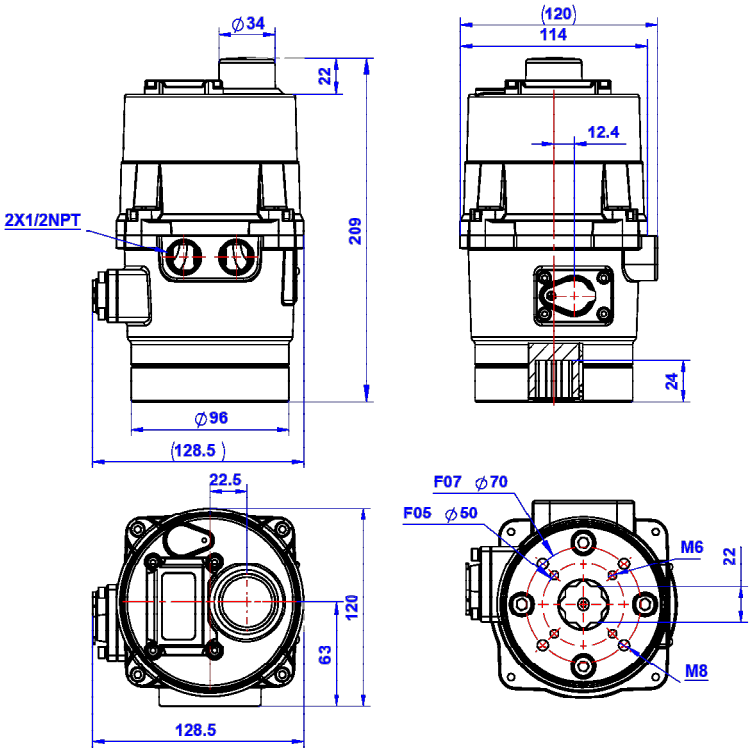




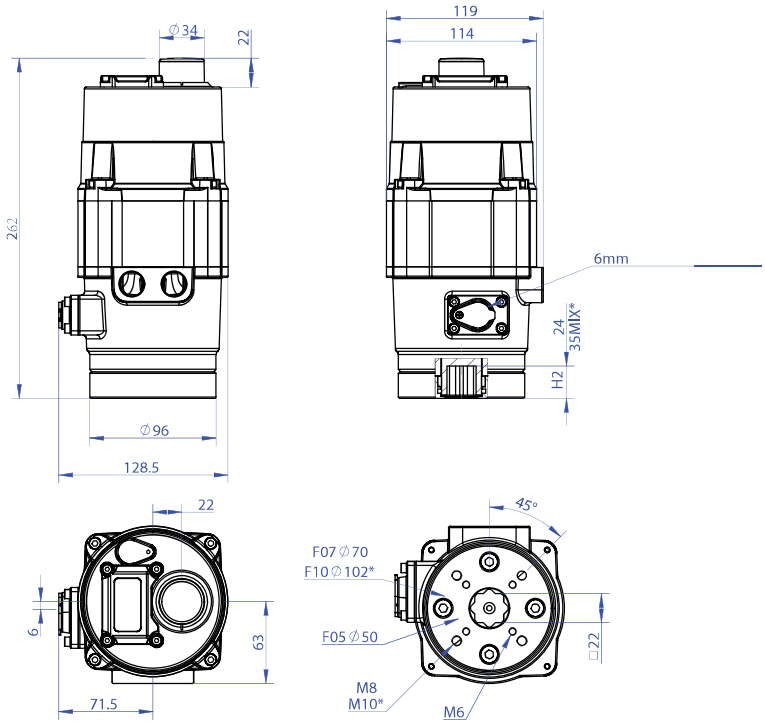




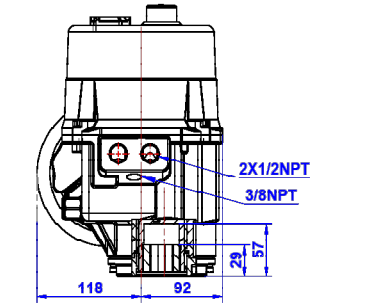
AE-D3 Series

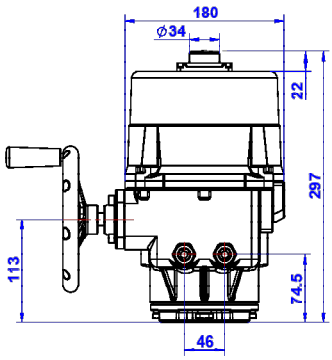


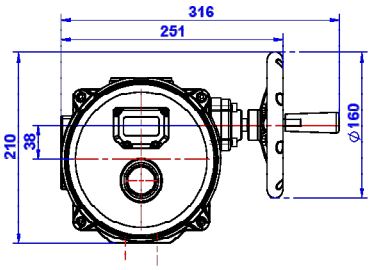
AE-D3 Series with Super Capacitor

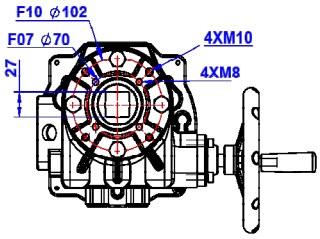


AE-D4 Series

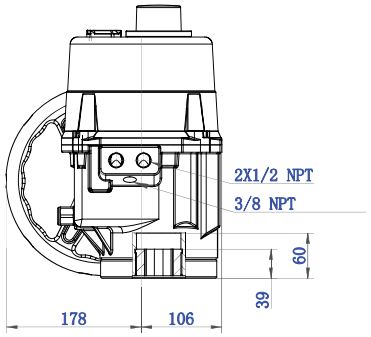


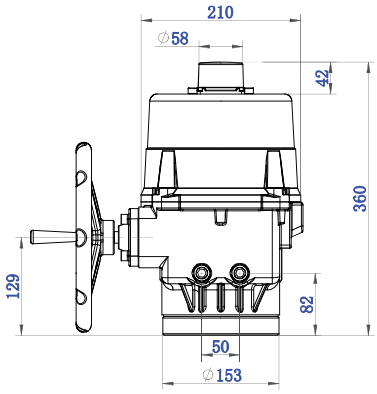


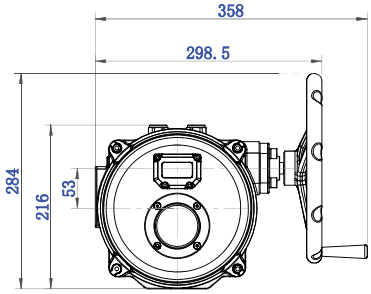


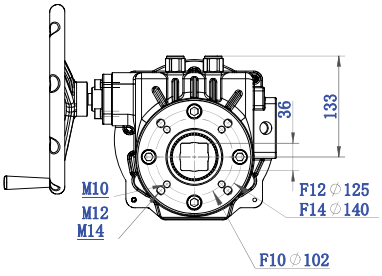


AE-D5 Series



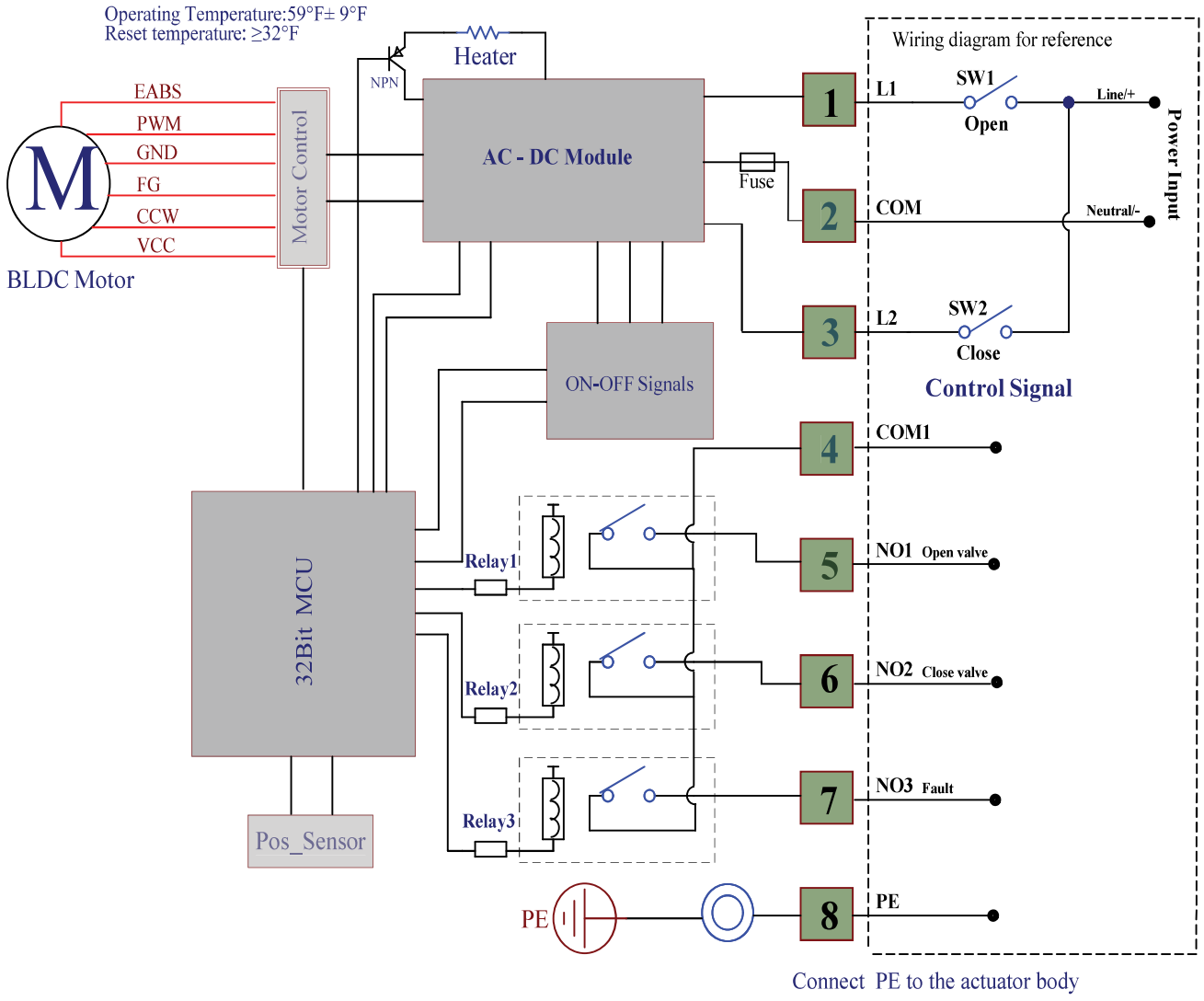






AE-D1 Series On/Off

AE-D1 On-Off Wiring Schematic



Connect PE to the actuator body

Control Explanation:

The heater is welded to the circuit board and no additional wiring is required.

SW1	SW2	Valve Position	Feedback Signal
ON	OFF	Open valve	【4】 connects to 【5】
OFF	ON	Close valve	【4】 connects to 【6】

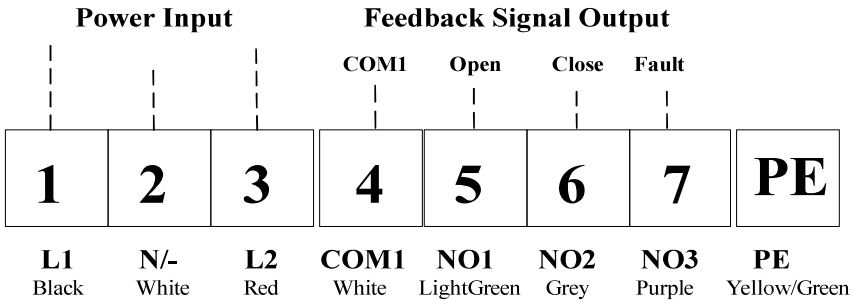
1. 【1】 & 【2】 are for power supply. Please check that polarity, voltage and amperage are correct prior to connecting wires to avoid damage.
2. When power is off, feedback signals are not available.
3. Feedback relay output signals: 0.8A /110VAC 0.5A/250VAC 1A/DC30V.

AE-D1 Series On/Off

110VAC / 220VAC

Relay Output ：0.8A/110VAC
0.5A/250VAC
1A/30VDC

AE-D1 On-Off Wiring Diagram



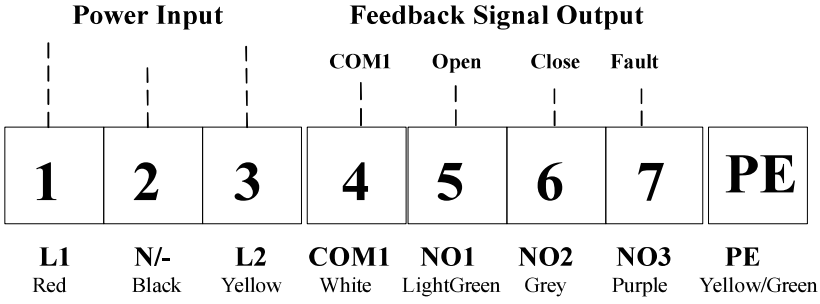
Description：

1 **Power to terminals 1 and 2 rotates actuator counter-clockwise to open. Open Relay connecting terminals 4 to 5 provides a signal when fully open.**
2 **Power to terminals 3 and 2 rotates actuator clockwise to close. Close Relay connecting terminals 4 to 6 provides a signal when fully closed.**
3 **Fault Relay connecting terminals 4 to 7 provides a signal when actuator is experiencing a problem and is unable to function properly.**

24VDC / 24VAC

Relay Output ：0.8A/110VAC
0.5A/250VAC
1A/30VDC

AE-D1 On-Off Wiring Diagram



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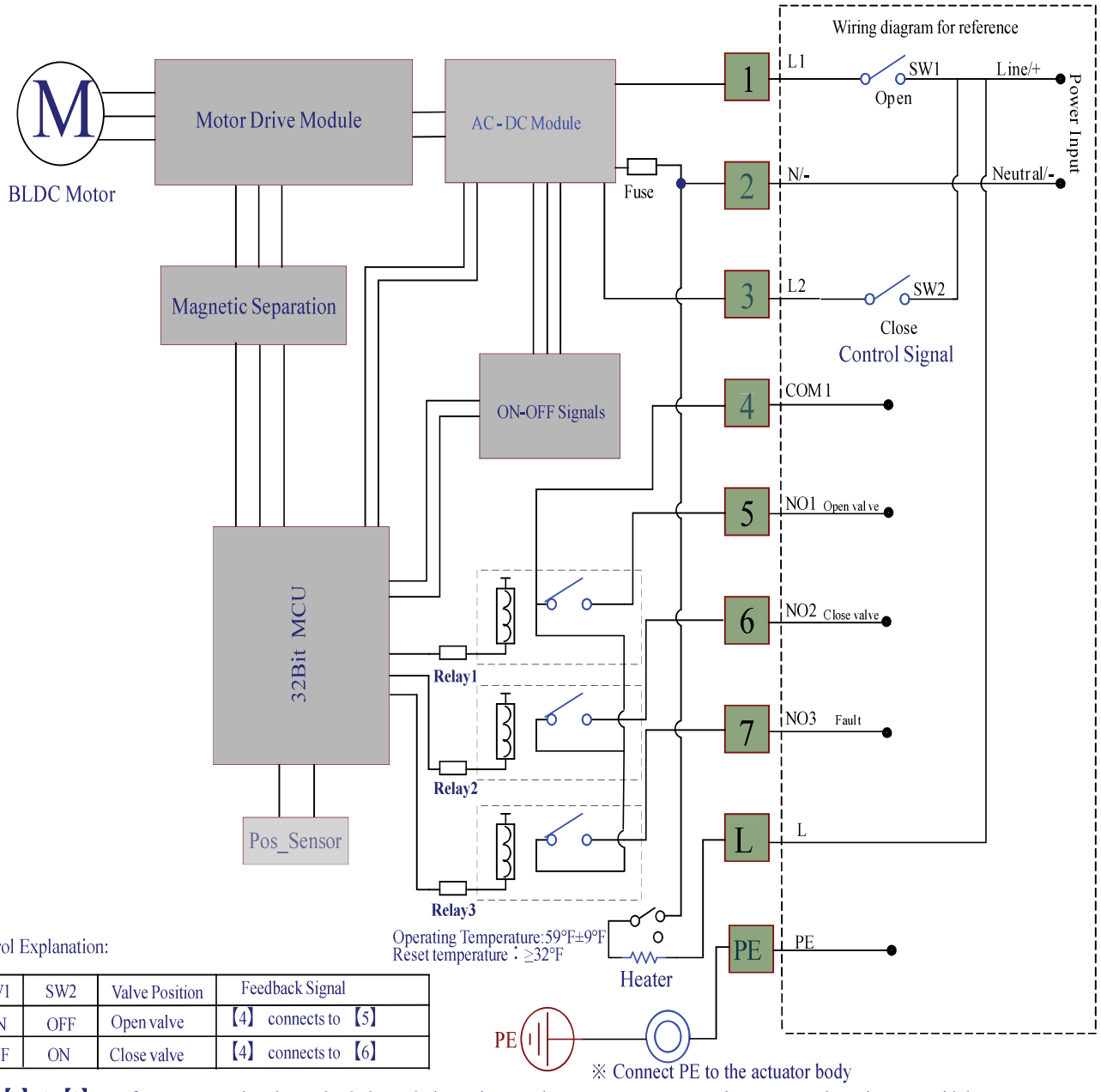
2 **Power to terminals 3 and 2 rotates actuator clockwise to close. Close Relay connecting terminals 4 to 6 provides a signal when fully closed.**
3 **Fault Relay connecting terminals 4 to 7 provides a signal when actuator is experiencing a problem and is unable to function properly.**

AE-D2/D3/D4/D5 Series On/Off

AE-D2/D3/D4/D5 Wiring Schematic



Control Explanation:

SW1	SW2	Valve Position	Feedback Signal
ON	OFF	Open valve	【4】 connects to 【5】
OFF	ON	Close valve	【4】 connects to 【6】

※1.【1】&【2】 are for power supply. Please check that polarity, voltage and amperage are correct prior to connecting wires to avoid damage.

※2. When power is off, feedback signals are not available.

※3. Feedback relay output signals: 110VAC/0.8A; 250VAC/0.5A; 30VDC/1A

AE-D2/D3/D4/D5 Series On/Off

110VAC / 220VAC

Relay Output ：0.8A/110VAC
0.5A/250VAC
1A/30VDC

AE-D2/D3/D4/D5 On-Off Wiring Diagram

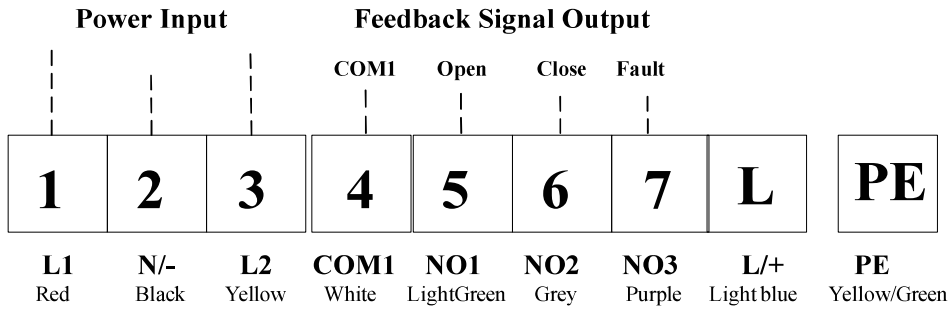
Description ：

1 **Power to terminals 1 and 2 rotates actuator counter-clockwise to open. Open Relay connecting terminals 4 to 5 provides a signal when fully open.**
2 **Power to terminals 3 and 2 rotates actuator clockwise to close. Close Relay connecting terminals 4 to 6 provides a signal when fully closed.**
3 **Fault Relay connecting terminals 4 to 7 provides a signal when actuator is experiencing a problem and is unable to function properly.**

24VDC / 24VAC

Relay Output ：0.8A/110VAC
0.5A/250VAC
1A/30VDC

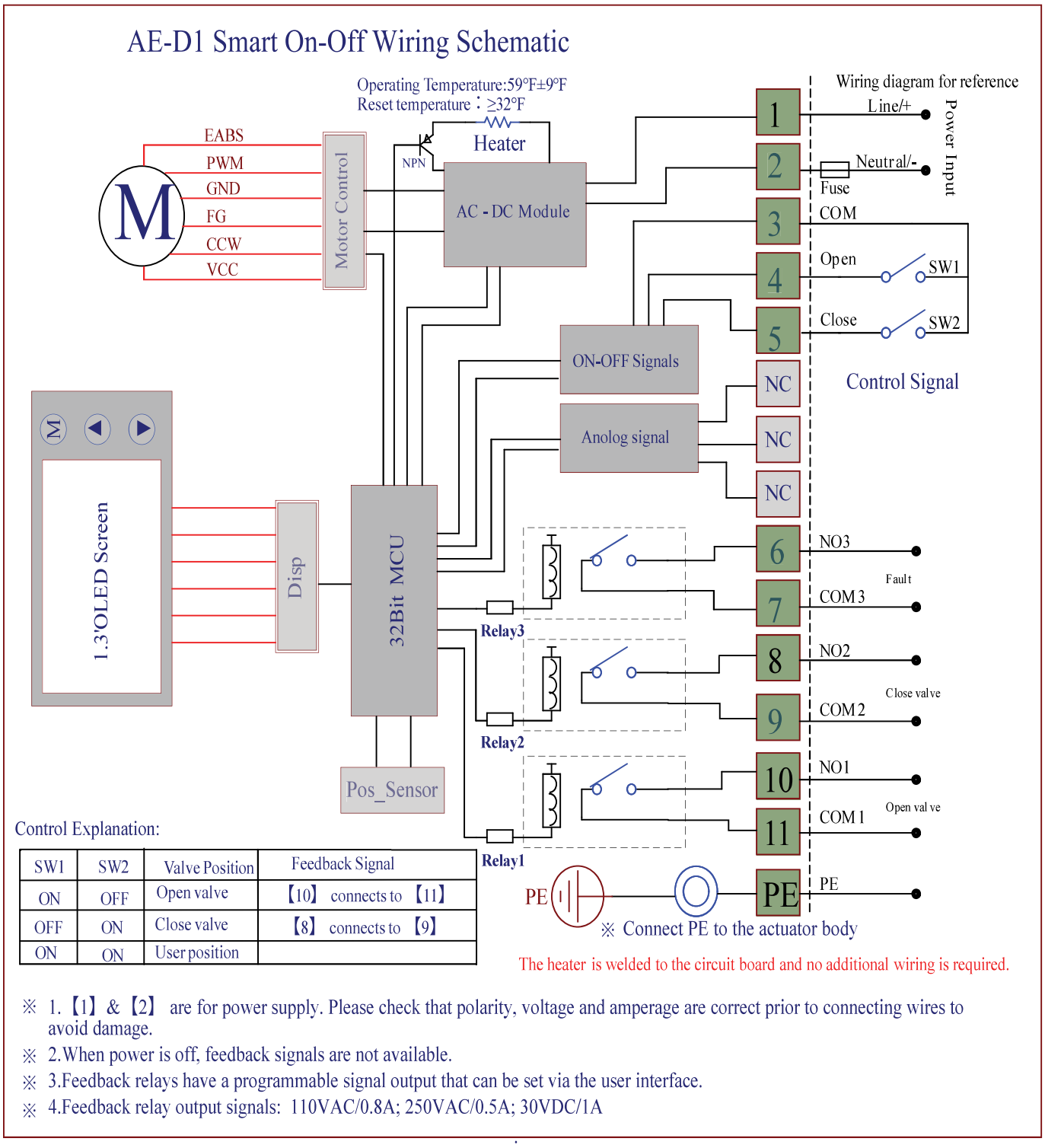
AE-D2/D3/D4/D5 On-Off Wiring Diagram



Description ：

1 **Power to terminals 1 and 2 rotates actuator counter-clockwise to open. Open Relay connecting terminals 4 to 5 provides a signal when fully open.**
2 **Power to terminals 3 and 2 rotates actuator clockwise to close. Close Relay connecting terminals 4 to 6 provides a signal when fully closed.**
3 **Fault Relay connecting terminals 4 to 7 provides a signal when actuator is experiencing a problem and is unable to function properly.**

AE-D1 Series Smart On/Off



Control Explanation:

SW1	SW2	Valve Position	Feedback Signal
ON	OFF	Open valve	【10】 connects to 【11】
OFF	ON	Close valve	【8】 connects to 【9】
ON	ON	User position	

※ 1.【1】&【2】 are for power supply. Please check that polarity, voltage and amperage are correct prior to connecting wires to avoid damage.

※ 2.When power is off, feedback signals are not available.

※ 3.Feedback relays have a programmable signal output that can be set via the user interface.

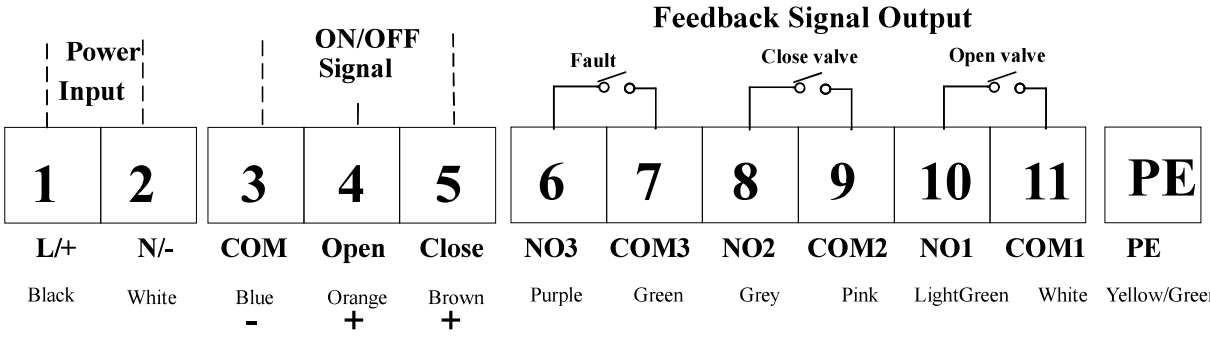
※ 4.Feedback relay output signals: 110VAC/0.8A; 250VAC/0.5A; 30VDC/1A

AE-D1 Series Smart On/Off

110VAC / 220VAC

Relay Output ：0.8A/110VAC
0.5A/250VAC
1A/30VDC

AE-D1 Smart On-Off Wiring Diagram



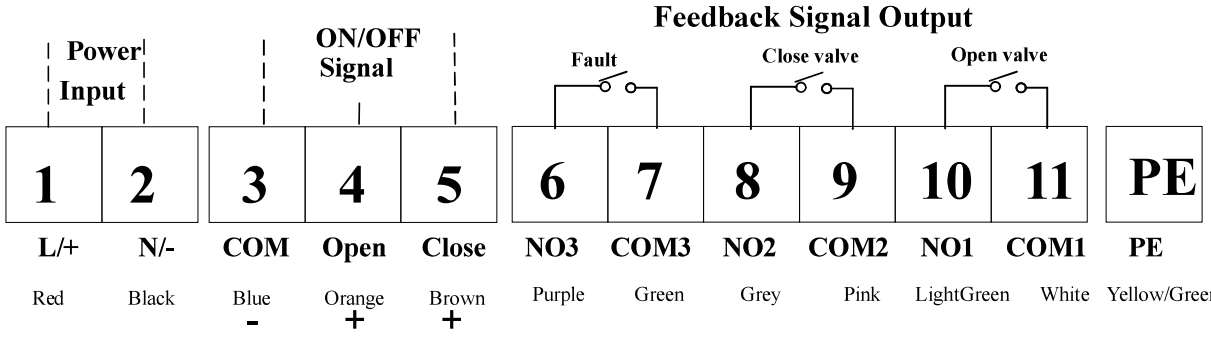
Description：

1. **Connect to 1 and 2 for power; 4 and 3 for analog output signal; 4 and 5 for analog input signal**
2. **Fault Relay (6/7) signals error; Close Relay (8/9) signals fully closed; Open Relay (10/11) signals fully open**

24VDC / 24VAC

Relay Output ：0.8A/110VAC
0.5A/250VAC
1A/30VDC

AE-D1 Smart On-Off Wiring Diagram

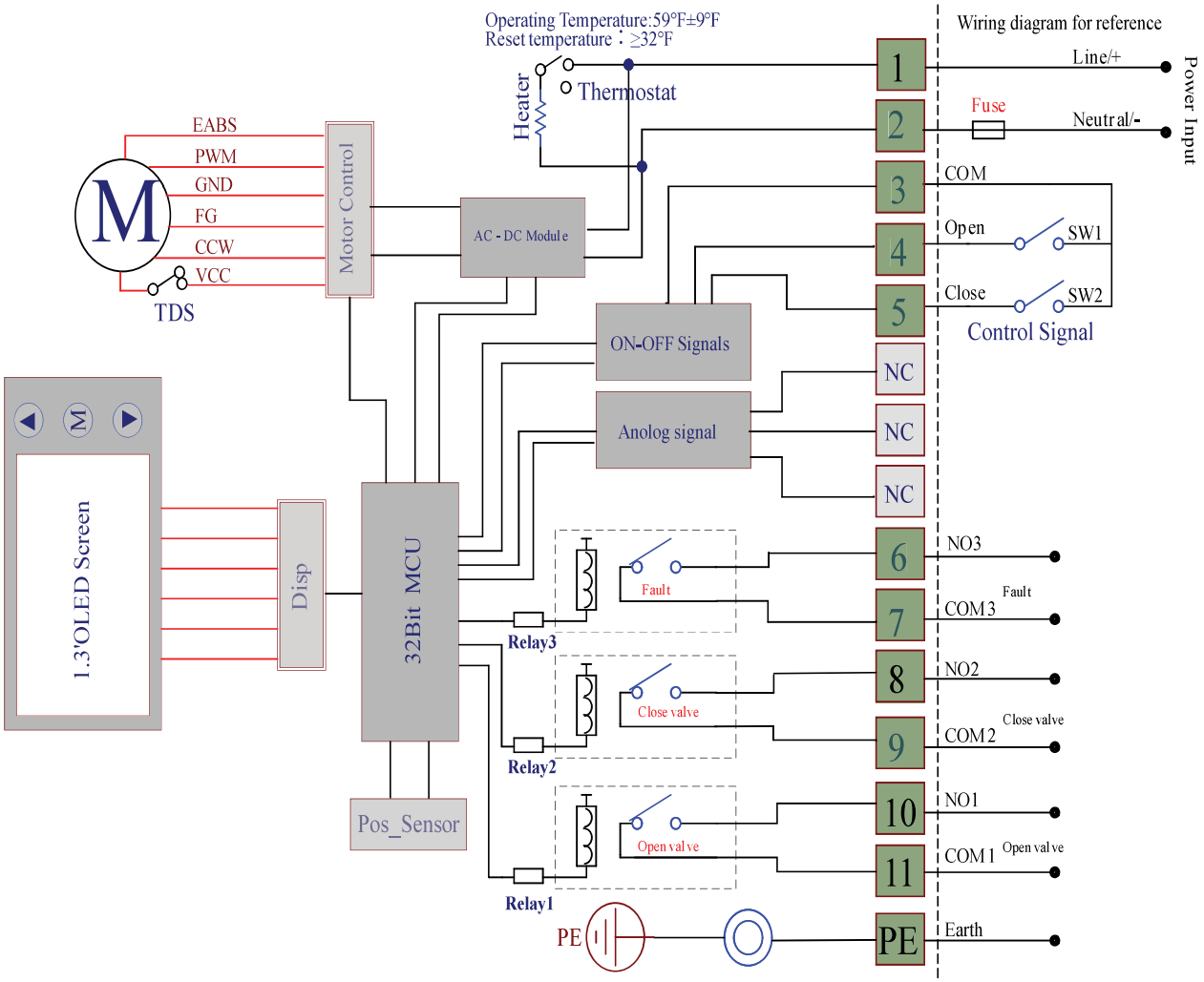


Description：

1. **Connect to 1 and 2 for power; 4 and 3 for analog output signal; 4 and 5 for analog input signal**
2. **Fault Relay (6/7) signals error; Close Relay (8/9) signals fully closed; Open Relay (10/11) signals fully open**

AE-D2/D3 Series Smart On/Off

AE-D2/D3 Smart On-Off Wiring Schematic



※ Connect PE to the actuator body

Control Explanation:

SW1	SW2	Valve Position	Feedback Signal
ON	OFF	Open valve	【10】 connects to 【11】
OFF	ON	Close valve	【8】 connects to 【9】
ON	ON	User position	

※1. 【1】 & 【2】 are for power supply. Please check that polarity, voltage and amperage are correct prior to connecting wires to avoid damage.

※2. When power is off, feedback signals are not available.

※3. Feedback relays have a programmable signal output that can be set via the user interface.

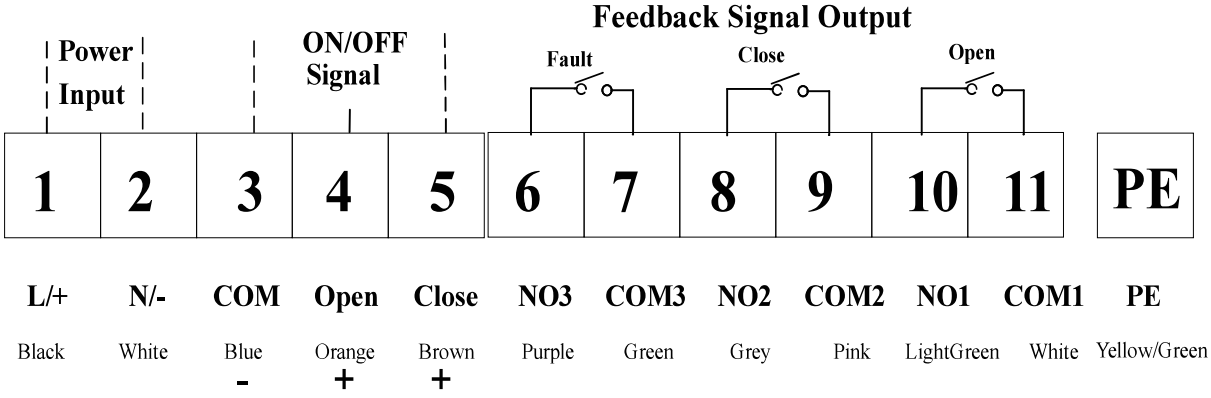
※4. Feedback relay output signals: 110VAC/0.8A; 250VAC/0.5A; 30VDC/1A

AE-D2/D3 Series Smart On/Off

110VAC / 220VAC

Relay Output： 0.8A/110VAC
0.5A/250VAC
1A/30VDC

AE-D2/D3 Smart On-Off Wiring Diagram



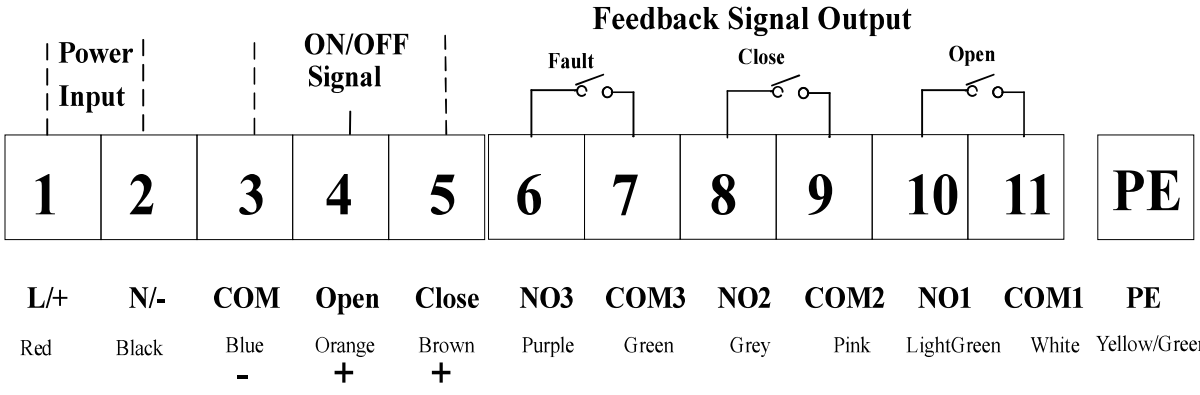
Description：

1. **Connect to 1 and 2 for power; 4 and 3 for analog output signal; 4 and 5 for analog input signal**
2. **Fault Relay (6/7) signals error; Close Relay (8/9) signals fully closed; Open Relay (10/11) signals fully open**

24VDC / 24VAC

Relay Output： 0.8A/110VAC
0.5A/250VAC
1A/30VDC

AE-D2/D3 Smart On-Off Wiring Diagram

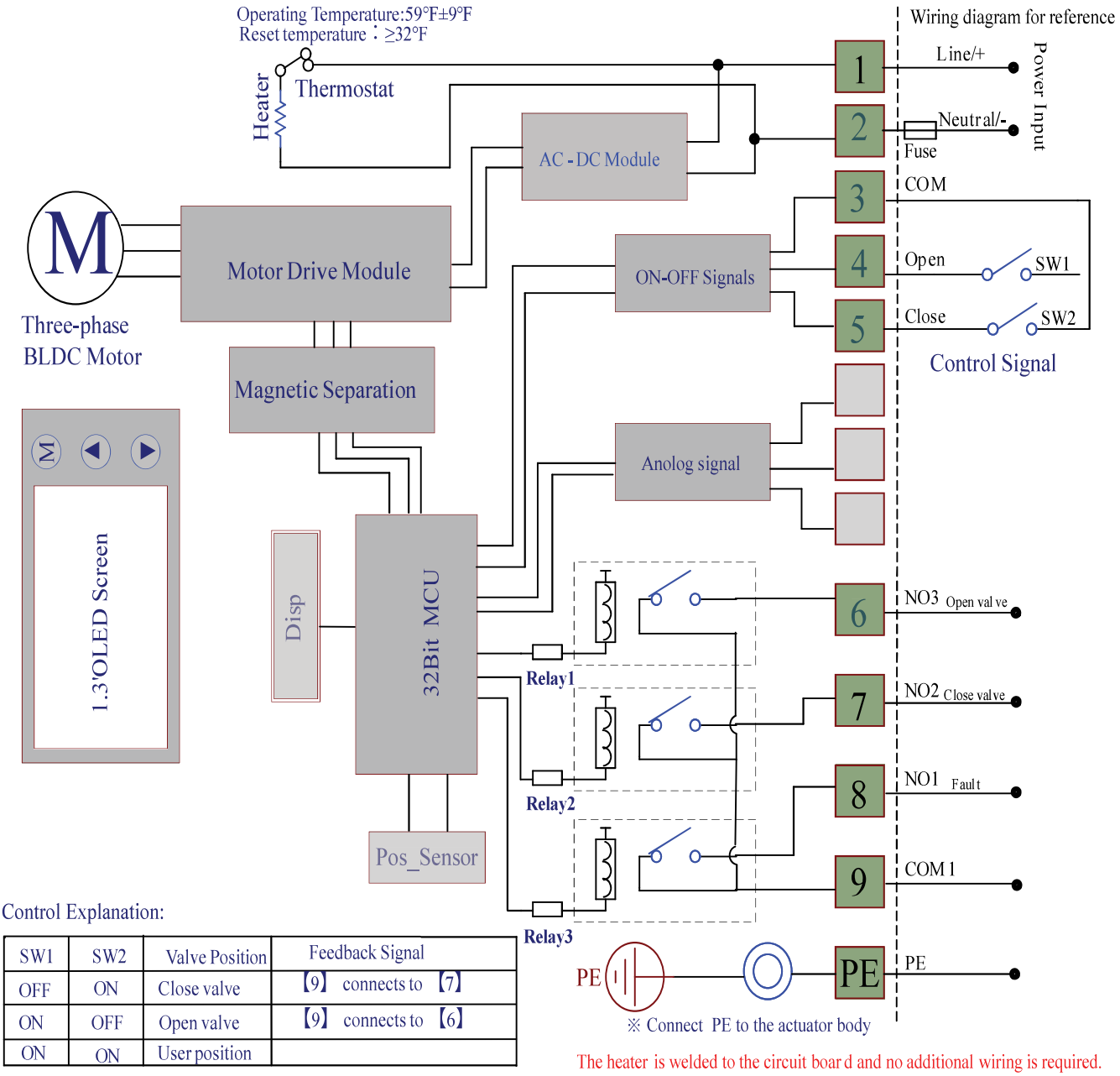


Description：

1. **Connect to 1 and 2 for power; 4 and 3 for analog output signal; 4 and 5 for analog input signal**
2. **Fault Relay (6/7) signals error; Close Relay (8/9) signals fully closed; Open Relay (10/11) signals fully open**

AE-D4/D5 Series Smart On/Off

AE-D4/D5 Smart On-Off Wiring Schematic



Control Explanation:

SW1	SW2	Valve Position	Feedback Signal
OFF	ON	Close valve	【9】 connects to 【7】
ON	OFF	Open valve	【9】 connects to 【6】
ON	ON	User position	

※ 1.【1】& 【2】 are for power supply. Please check that polarity, voltage and amperage are correct prior to connecting wires to avoid damage.

※ 2.When power is off, feedback signals are not available.

※ 3.Feedback relays have a programmable signal output that can be set via the user interface.

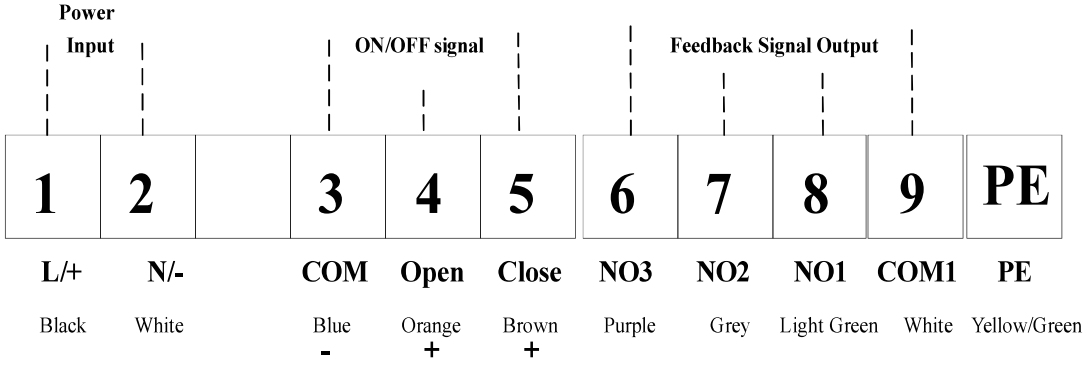
※ 4.Feedback relay output signals: 110VAC/0.8A; 250VAC/0.5A; 30VDC/1A

AE-D4/D5 Series Smart On/Off

110VAC / 220VAC

Relay Output ： 0.8A/110VAC
0.5A/250VAC

AE-D4/D5 Smart On-Off Wiring Diagram



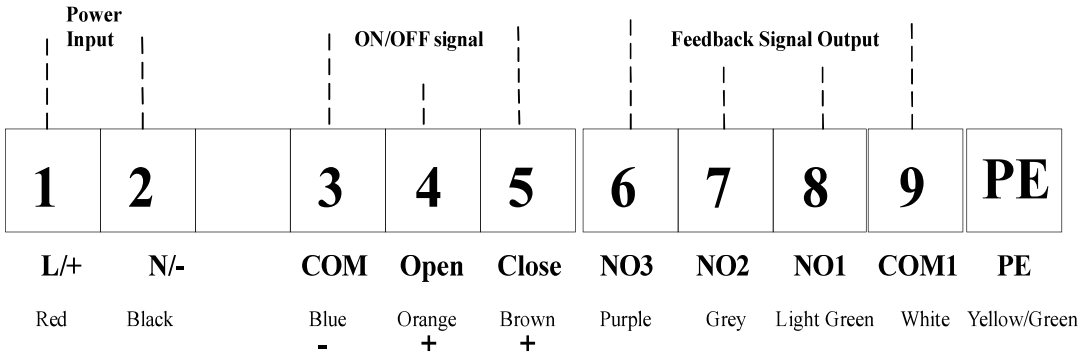
Description：

1. **Connect to 1 and 2 for power; 4 and 3 for analog output signal; 4 and 5 for analog input signal**
2. **Open Relay (6/7) signals fully open; Close Relay (8/9) signals fully closed; Fault Relay (10/11) signals error**

24VDC / 24VAC

Relay Output ： 0.8A/110VAC
0.5A/250VAC

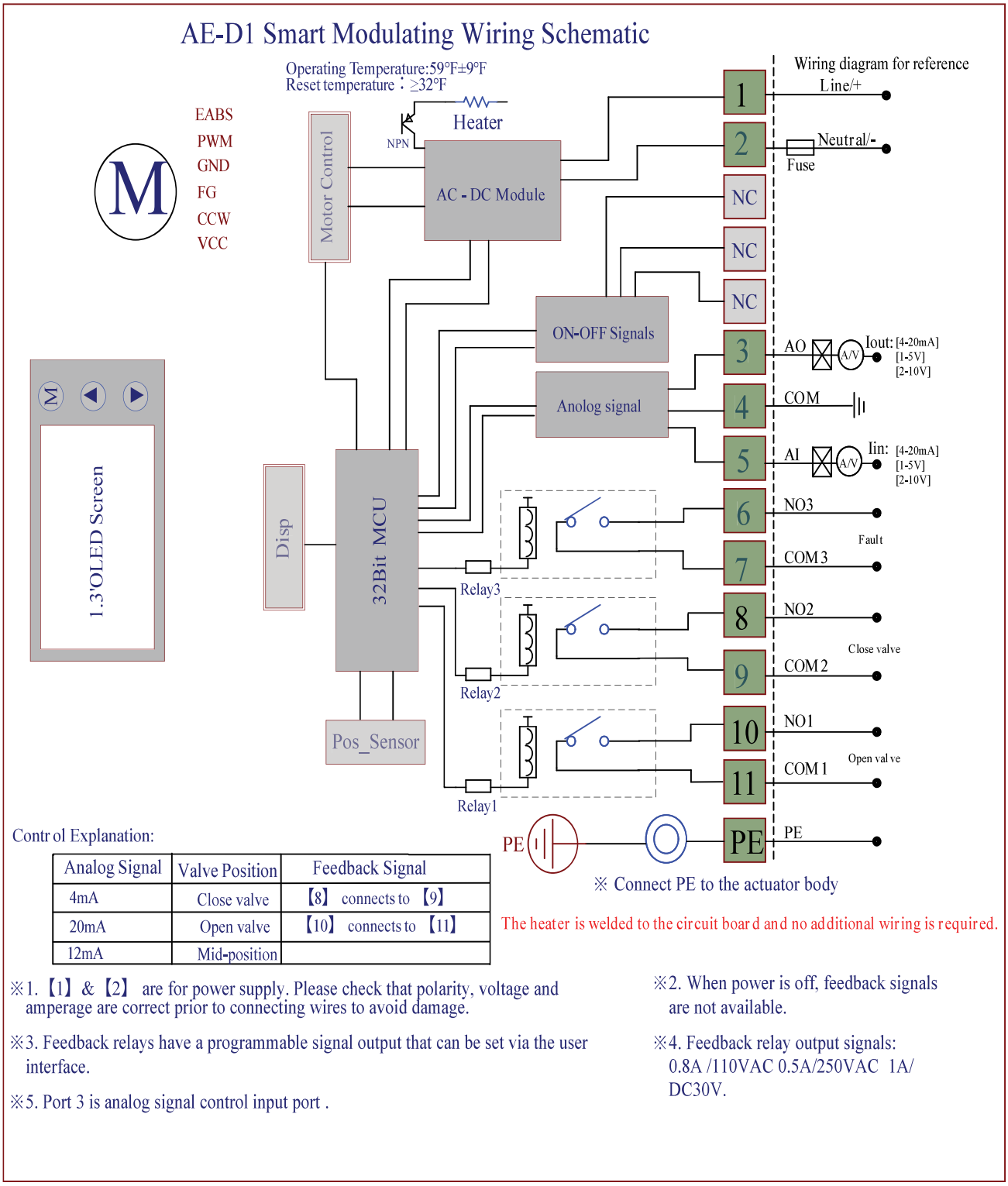
AE-D4/D5 Smart On-Off Wiring Diagram



Description：

1. **Connect to 1 and 2 for power; 4 and 3 for analog output signal; 4 and 5 for analog input signal**
2. **Open Relay (6/7) signals fully open; Close Relay (8/9) signals fully closed; Fault Relay (10/11) signals error**

AE-D1 Series Smart Modulating



Contr ol Explanation:

Analog Signal	Valve Position	Feedback Signal
4mA	Close valve	【8】 connects to 【9】
20mA	Open valve	【10】 connects to 【11】
12mA	Mid-position	

The heater is welded to the circuit board and no additional wiring is required.

※1. 【1】 & 【2】 are for power supply. Please check that polarity, voltage and amperage are correct prior to connecting wires to avoid damage.

※2. When power is off, feedback signals are not available.

※3. Feedback relays have a programmable signal output that can be set via the user interface.

※4. Feedback relay output signals: 0.8A /110VAC 0.5A/250VAC 1A/ DC30V.

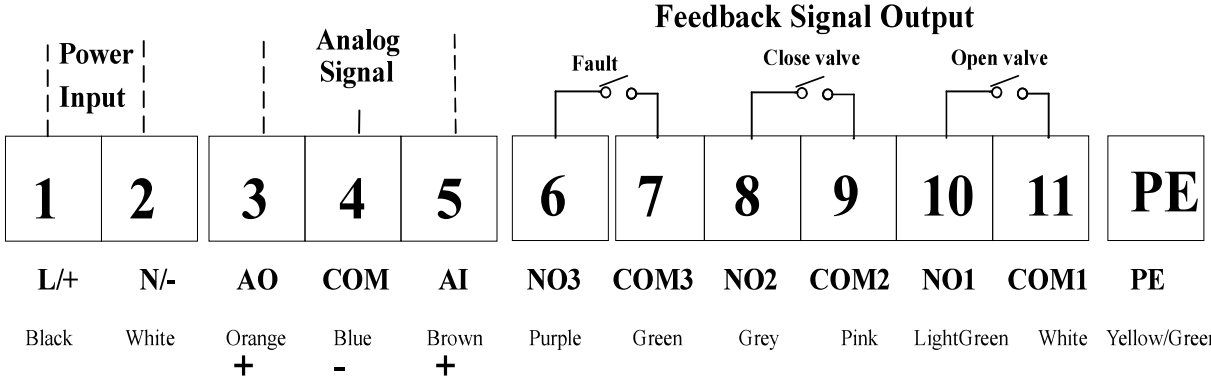
※5. Port 3 is analog signal control input port .

AE-D1 Series Smart Modulating

110VAC / 220VAC

Relay Output： 0.8A/110VAC
0.5A/250VAC
1A/30VDC

AE-D1 Smart Modulating Wiring Diagram



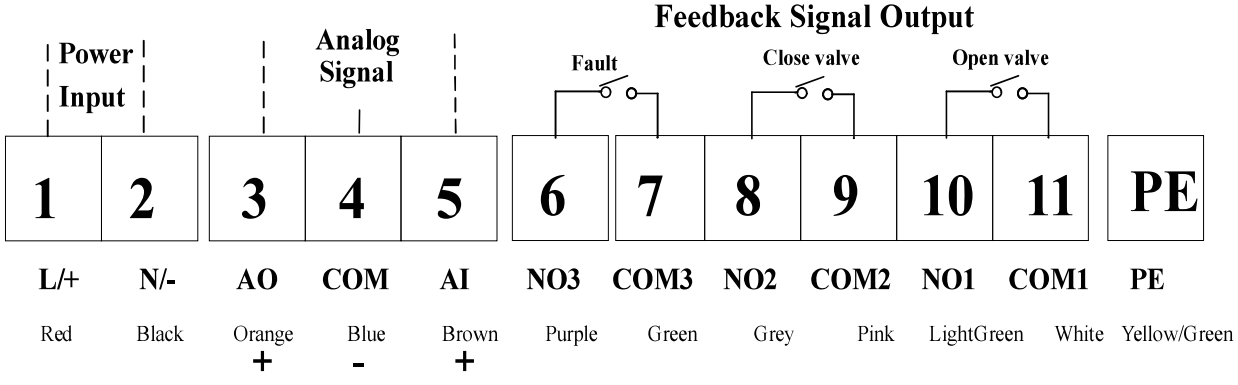
Description：

1. **Connect to 1 and 2 for power; 4 and 3 for analog output signal; 4 and 5 for analog input signal**
2. **Fault Relay (6/7) signals error; Close Relay (8/9) signals fully closed; Open Relay (10/11) signals fully open**

24VDC / 24VAC

Relay Output： 0.8A/110VAC
0.5A/250VAC
1A/30VDC

AE-D1 Smart Modulating Wiring Diagram

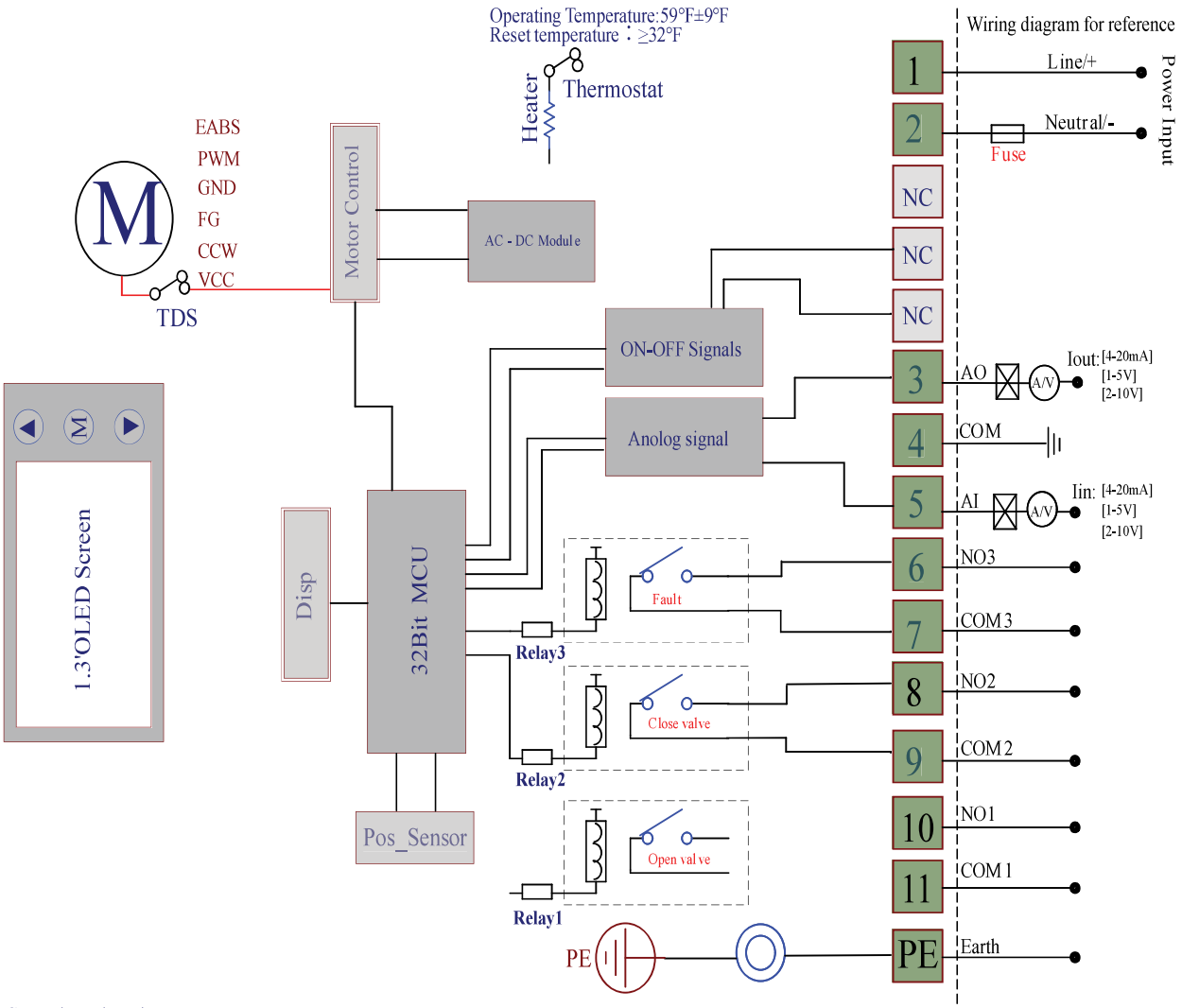


Description：

1. **Connect to 1 and 2 for power; 4 and 3 for analog output signal; 4 and 5 for analog input signal**
2. **Fault Relay (6/7) signals error; Close Relay (8/9) signals fully closed; Open Relay (10/11) signals fully open**

AE-D2, D3 Series Smart Modulating

AE-D2/D3 Smart Modulating Wiring Schematic



※ Connect PE to the actuator body

Control Explanation:

Analog Signal	Valve Position	Feedback Signal
4mA	Close valve	【8】 connects to 【9】
20mA	Open valve	【10】 connects to 【11】
12mA	Mid-position	

※1. 【1】 & 【2】 are for power supply. Please check that polarity, voltage and amperage are correct prior to connecting wires to avoid damage.

※2. When power is off, feedback signals are not available.

※3. Feedback relays have a programmable signal output that can be set via the user interface.

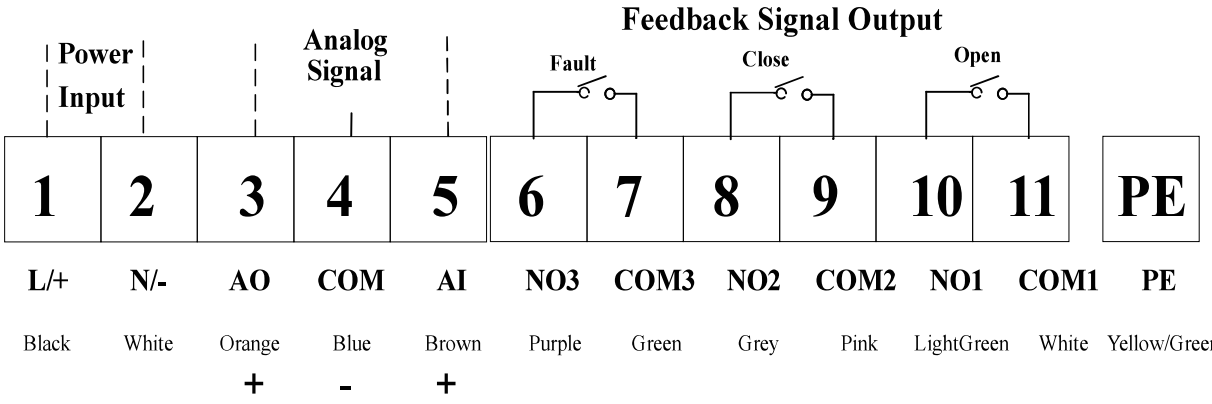
※4. Feedback relay output signals: 110VAC/0.8A; 250VAC/0.5A; 30VDC/1A

AE-D2, D3 Series Smart Modulating

110VAC / 220VAC

Relay Output： 0.8A/110VAC
0.5A/250VAC
1A/30VDC

AE-D2/D3 Smart Modulating Wiring Diagram



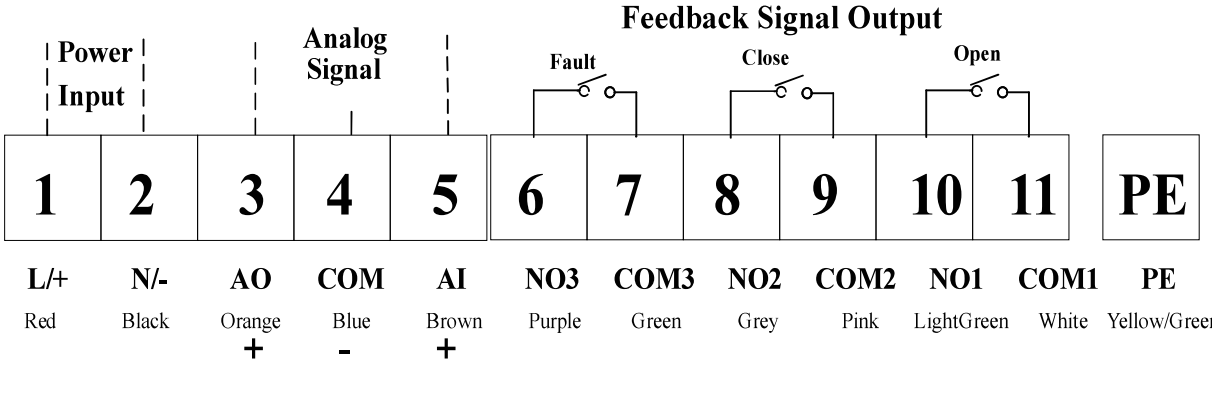
Description：

1. **Connect to 1 and 2 for power; 4 and 3 for analog output signal; 4 and 5 for analog input signal**
2. **Fault Relay (6/7) signals error; Close Relay (8/9) signals fully closed; Open Relay (10/11) signals fully open**

24VDC / 24VAC

Relay Output： 0.8A/110VAC
0.5A/250VAC
1A/30VDC

AE-D2/D3 Smart Modulating Wiring Diagram

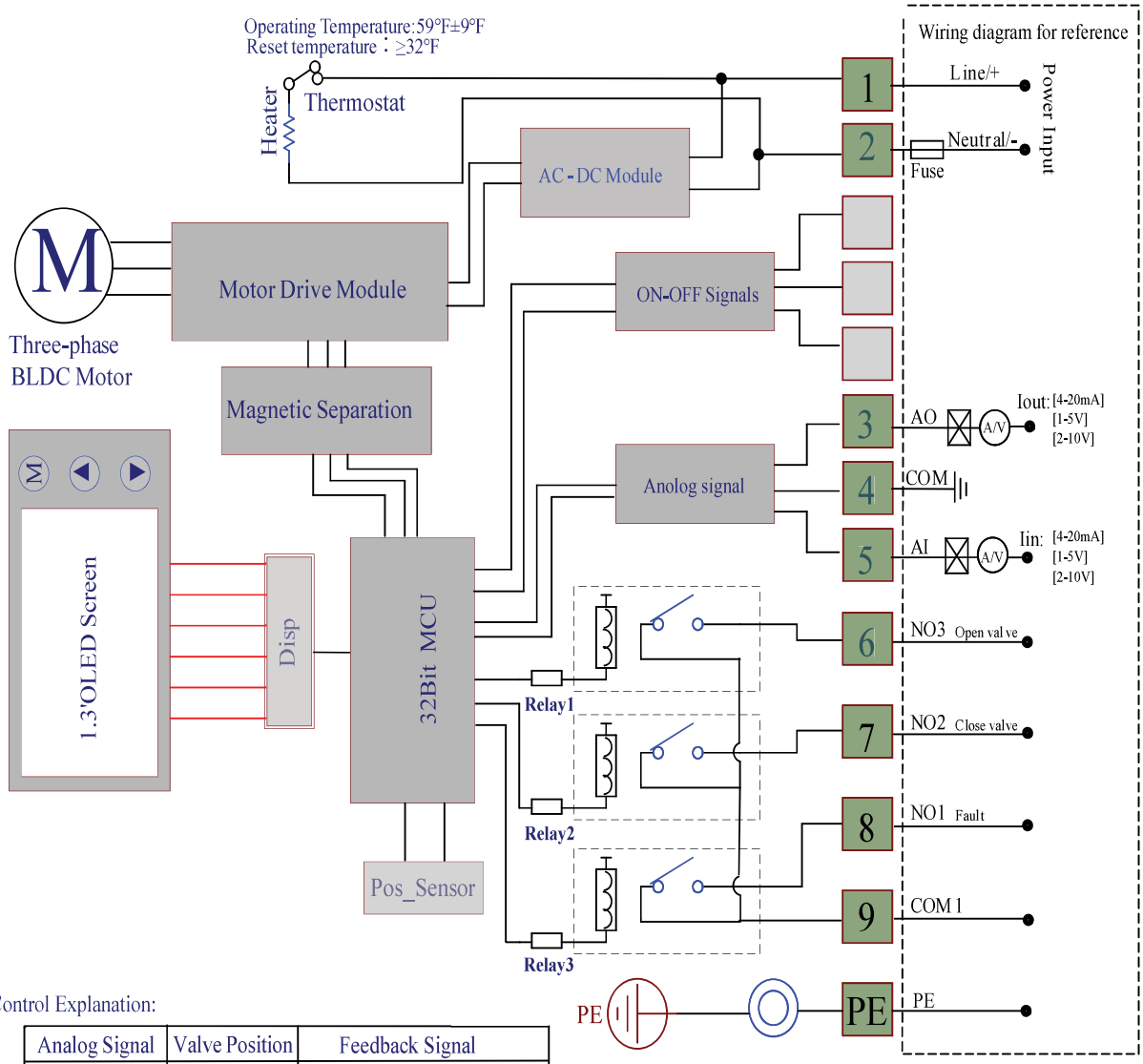


Description：

1. **Connect to 1 and 2 for power; 4 and 3 for analog output signal; 4 and 5 for analog input signal**
2. **Fault Relay (6/7) signals error; Close Relay (8/9) signals fully closed; Open Relay (10/11) signals fully open**

AE-D4, D5 Series Smart Modulating

AE-D4/D5 Smart Modulating Wiring Schematic



Control Explanation:

Analog Signal	Valve Position	Feedback Signal
4mA	Close valve	【9】 connects to 【7】
20mA	Open valve	【9】 connects to 【6】
12mA	Mid-position	

※ Connect PE to the actuator body

※ 1.【1】&【2】 are for power supply. Please check that polarity, voltage and amperage are correct prior to connecting wires to avoid damage.

※ 2. When power is off, feedback signals are not available.

※ 3. Feedback relays have a programmable signal output that can be set via the user interface.

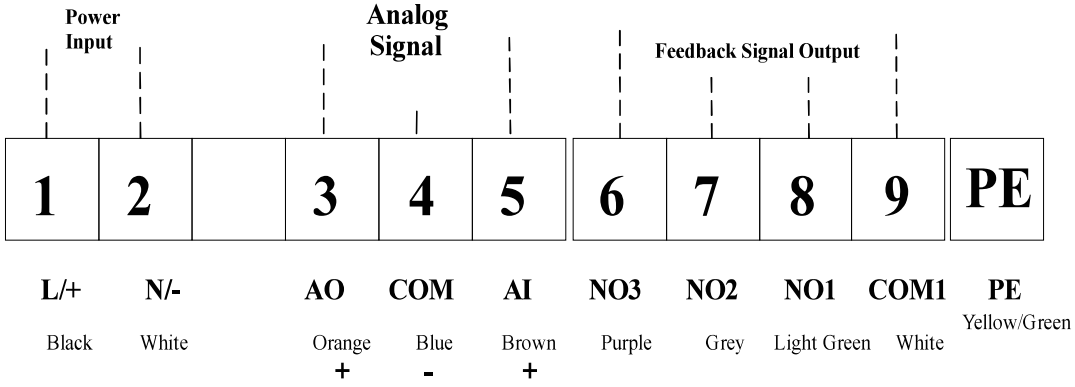
※ 4. Feedback relay output signals: 110VAC/0.8A; 250VAC/0.5A; 30VDC/1A

AE-D4, D5 Series Smart Modulating

11VAC / 220VAC

Relay Output : 0.8A/110VAC
0.5A/250VAC
1A/30VDC

AE-D4/D5 Smart Modulating Wiring Diagram



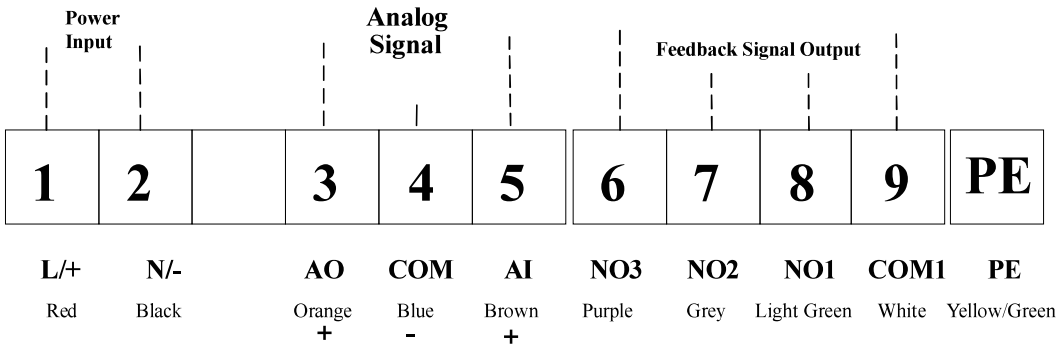
Description :

1. **Connect to 1 and 2 for power; 4 and 3 for analog output signal; 4 and 5 for analog input signal**
2. **Open Relay (6/7) signals fully open; Close Relay (8/9) signals fully closed; Fault Relay (10/11) signals error**

24VDC / 24VAC

Relay Output : 0.8A/110VAC
0.5A/250VAC
1A/30VDC

AE-D4/D5 Smart Modulating Wiring Diagram



Description :

1. **Connect to 1 and 2 for power; 4 and 3 for analog output signal; 4 and 5 for analog input signal**
2. **Open Relay (6/7) signals fully open; Close Relay (8/9) signals fully closed; Fault Relay (10/11) signals error**

AE-D Series Electric Actuator Performance Chart																	
Model Number	Torque (In-lbs)	Cycle Time Sec. 0-90		Motor Power (Watts)	Rated Current (Amps)				Run Current (Amps)				Lock Current (Amps)				ISO 5211 Patterns
		24VAC 24VDC	110VAC 220VAC		24 VAC	24 VDC	110 VAC	220 VAC	24VAC	24VDC	110 VAC	220 VAC	24VAC	24VDC	110 VAC	220 VAC	
AE-D1A	80	5	5	10	1	0.7	0.32	0.18	0.7	0.48	0.26	0.14	2.25	1.35	0.45	0.35	F03/F05-11
AE-D11	89	9	6	10	1	0.7	0.32	0.18	0.7	0.48	0.26	0.14	2.25	1.35	0.45	0.35	F03/F05-11
AE-D12	124	11	8	10	1	0.7	0.32	0.18	0.7	0.48	0.26	0.14	2.25	1.35	0.45	0.35	F03/F05-11
AE-D13	177	15	11	10	1	0.7	0.32	0.18	0.7	0.48	0.26	0.14	2.25	1.35	0.45	0.35	F03/F05-11
AE-D2A	204	5	5	15	1.9	1.4	0.65	0.45	1	0.8	0.4	0.32	3.75	3.13	1.55	0.78	F05/F07-14
AE-D21	310	11	8	15	1.9	1.4	0.65	0.45	1	0.8	0.4	0.32	3.75	3.13	1.55	0.78	F05/F07-14
AE-D22	443	14	12	15	1.9	1.4	0.65	0.45	1	0.8	0.4	0.32	3.75	3.13	1.55	0.78	F05/F07-14
AE-D3A	443	5	5	30	5	4	1.67	0.75	3.3	2.5	1.1	0.55	6.9	6.3	2	1.3	F05/F07-22
AE-D31	708	20	16	15	1.8	1.4	0.65	0.45	1.25	0.8	0.4	0.32	3.7	2.65	1.07	0.72	F05/F07-22
AE-D32	885	27	18	15	1.8	1.4	0.65	0.45	1.25	0.8	0.4	0.32	3.7	2.65	1.07	0.72	F05/F07-22
AE-D4A	708	5	5	100	1.3	1.25	1.32	0.85	1	1	1	0.6	1.95	1.88	1.98	1.28	F07/F10-27
AE-D4B	1328	***	5	100	***	***	2.2	1.2	***	***	1.9	1.1	***	***	3.3	1.8	F07/F10-27
AE-D4C	1062	5	***	80	***	4.5	***	***	***	2.5	***	***	***	6.5	***	***	F07/F10-27
AE-D41	1328	22	8	100	1.3	1.25	1.32	0.85	1	1	1	0.6	1.95	1.88	1.98	1.28	F07/F10-27
AE-D42	1770	31	10.5	100	1.3	1.25	1.32	0.85	1	1	1	0.6	1.95	1.88	1.98	1.28	F07/F10-27
AE-D43	2213	35	13	100	1.3	1.25	1.32	0.85	1	1	1	0.6	1.95	1.88	1.98	1.28	F07/F10-27
AE-D44	2655	***	15	100	***	***	2.2	1.2	***	***	1.3	0.7	***	***	3.3	1.8	F07/F10-27
AE-D45	3540	***	17	100	***	***	2.2	1.2	***	***	1.3	0.7	***	***	3.3	1.8	F07/F10-27
**AE-D51	2655	***	14	100	***	***	2.2	1.2	***	***	1.3	0.7	***	***	3.3	1.8	F12/F14-36
**AE-D52	3540	***	16	100	***	***	2.2	1.2	***	***	1.3	0.7	***	***	3.3	1.8	F12/F14-36
**AE-D53	4425	***	19	100	***	***	2.2	1.2	***	***	1.3	0.7	***	***	3.3	1.8	F12/F14-36
**AE-D54	5753	***	22	100	***	***	2.2	1.2	***	***	1.3	0.7	***	***	3.3	1.8	F12/F14-36

** Note: These Part Numbers do NOT offer the Super Capacitor Option, for Fail Safe due to loss of Power.

Ordering Information

AE - D21 F 4 - 11 - S1 2 - 0 1

Series	Model	Voltage		Enclosure		Cycle Time (seconds)	Input Signal		Indicator		Option: FAIL/SAFE		Option: Cable	
AE	D1A	F	24 VAC/DC	4	NEMA 4, 4X, 6, 6P IP67/68	05	O1	On-Off (0°~90°)	1	Scaled 0°-90°	0	None	0	None
	D11	G	110/220 VAC			06	S1	Smart (0°~45°~90°)			C	Capacitor	1	6 Feet
	D12	B*	110 VAC			08	S2	Smart (0°~90°) with Timer	2	LED			2	18 Feet
	D13	C*	220 VAC			09	S3	Smart (0°~90°~180°)					3	30 Feet
	D2A					10.5	S4	Smart (0°~180°) with Timer					X	Custom
	D21					11		Smart Modulating (0°~90°):						
	D22					12		Input / Output						
	D3A					13	V0	0~135Ω / 1~5V						
	D31					14	V1	4~20mA / 4~20mA						
	D32					16	V2	4~20mA / 1~5V						
	D4A					18	V3	4~20mA / 2~10V						
	D4B					20	V4	1~5V / 4~20mA						
	D4C					22	V5	1~5V / 1~5V						
	D41					27	V6	1~5V / 2~10V						
	D42					31	V7	2~10V / 4~20mA						
	D43					35	V8	2~10V / 1~5V						
	D44						V9	2~10V / 2~10V						
	D45							Smart Modulating (0°~180°):						
	D5A							Input / Output						
	D5B						VA	4~20mA / 4~20mA						
	D51						VB	4~20mA / 1~5V						
	D52						VC	4~20mA / 2~10V						
	D53						VD	1~5V / 4~20mA						
	D54						VE	1~5V / 1~5V						
	D55						VF	1~5V / 2~10V						
							VG	2~10V / 4~20mA						
							VH	2~10V / 1~5V						
							VI	2~10V / 2~10V						

The Super Capacitor will NOT work with models:

D5A
D5B
D51
D52
D53
D54
D55

*For D4 Series and D5 Series

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