

INDELAC

CONTROLS, INC.

Safe & Secure Series Electric Actuator with Internal Battery Back-up Installation, Operation & Maintenance Manual

*For Use with:
SNS20 & SNS28 Models (R1)*

Additional supplements may be needed for selected optional equipment including, but not limited to models with: modulating controls, timers, speed controllers & remote/off/local controls.

REVISED: FEB 2021

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For a digital copy of this manual, access to training videos, access to 3D product renderings,
or to request additional support
VISIT OUR WEBSITE AT WWW.INDELAC.COM

INTRODUCTION:

Thank you for selecting Indelac Controls, Inc. (ICI) for your valve or damper automation requirement. We at ICI are proud of our products and feel confident they will meet or exceed your expectations of quality and reliability.

Every precaution has been taken to insure that your equipment will arrive undamaged; however, accidents do occur. Therefore, the first thing you must do upon receipt of your package is to inspect it for damage. If the box is damaged there is a possibility that the equipment inside the box may be damaged as well. If this is the case **YOU MUST FILE A CLAIM** with the delivering **CARRIER**. All shipments are **F.O.B.** our factory and it is **YOUR RESPONSIBILITY** to file a claim for damages.

STORAGE:

If the actuators are scheduled for installation at a later date:

1. Store off the floor.
2. Store in a climate controlled building.
3. Store in a clean and dry area.

FOR FUTURE REFERENCE RECORD:

1. Actuator model number _____
2. Actuator enclosure type NEMA 4__, NEMA 4X__, NEMA 7__, NEMA 4 & 7__
3. Actuator output torque _____ LB-IN
4. Motor characteristics, Voltage _____ Hertz _____ Phase _____
5. Actuator serial number _____
6. Date of installation _____ Put into operation _____
7. Valve Data:
 - 7a. Manufacturer _____
 - 7b. Style & fig. No. _____
 - 7c. Size _____
 - 7d. End connection _____
 - 7e. Material of construction, Body _____ Stem & ball _____
 - 7f. Brake away torque _____ LB-IN @ _____ PSI
 - 7g. Other helpful data _____

MEDIA:

1. System media _____
2. Temperature, _____ (deg. F.) Maximum, _____. Minimum, _____.
3. Pressure _____ PSI

*As this information is listed it is important to pay attention to all of the actuator specifications relative to the valve specifications and system requirements. If the actuator is not properly sized for the valve and application the life will be shortened or it may not work at all.

TOOLS REQUIRED:

ADDITIONAL TOOLS WILL BE REQUIRED FOR THE SCREWS TO MOUNT THE VALVE TO THE ACTUATOR.

SNS20C & SNS28C SERIES

Cover Screws	7/16" Socket
Terminal Strip Screws	3/16" Wide Flat Head Screwdriver
Cam Set Screw	5/64" Allen Wrench
Mounting Pad Screws	9/16" Socket

SUGGESTED MAXIMUM TORQUE VALUES FOR FASTENERS (IN-LBS.)

SCREW SIZE	LOW CARBON STEEL	18-8 SS	316 SS	ALUMINUM
2-56	2.2	2.5	2.6	1.4
4-40	4.7	5.2	5.5	2.9
6-32	9	10	10	5
8-32	18	20	21	10
10-24	21	23	24	13
10-32	30	32	33	19
1/4-20	65	75	79	45
5/16-18	129	132	138	80
3/8-16	212	236	247	143
1/2-13	465	517	542	313
5/8-11	1000	1110	1160	715



PRODUCT DESCRIPTION:

The SNS20 – 28C Safe & Secure Series Actuator is a quarter turn Open/Close Actuator with Battery Backup Power – **ALL IN ONE!** No more mounting a separate Fail Safe Unit to provide power in case of external power failure. The actuator's internal battery will provide power to the motor in the event of an external power failure. The actuator can be configured in the field for FAIL OPEN or FAIL CLOSE.

This new series of actuator can operate loads from 2000 in/lbs. to 2800 in/lbs. These actuators can be ordered to operate on input voltages of 115vac/230vac, 24vac/24vdc or 12vdc and are enclosed in a SINGLE standard "L" series NEMA 7 style housing.

Switching from external power to battery power is seamless – when the external power source fails, the internal transfer circuit switches to battery power automatically without any operator intervention. Depending on the fail position setting that the operator has pre-selected for the actuator, the actuator will drive the valve to that position. Once the external power is restored, the actuator will automatically switch back to external power, and the battery will begin to re-charge automatically! The actuator will then return to its last position before the power had failed.

This unit is available as a Standard OPEN/CLOSE Actuator or with the Modulating Option for precise valve position control using 4-20mA, 0-10V or 1-5V external input signal. Position feedback is available for both the standard and the modulating models.

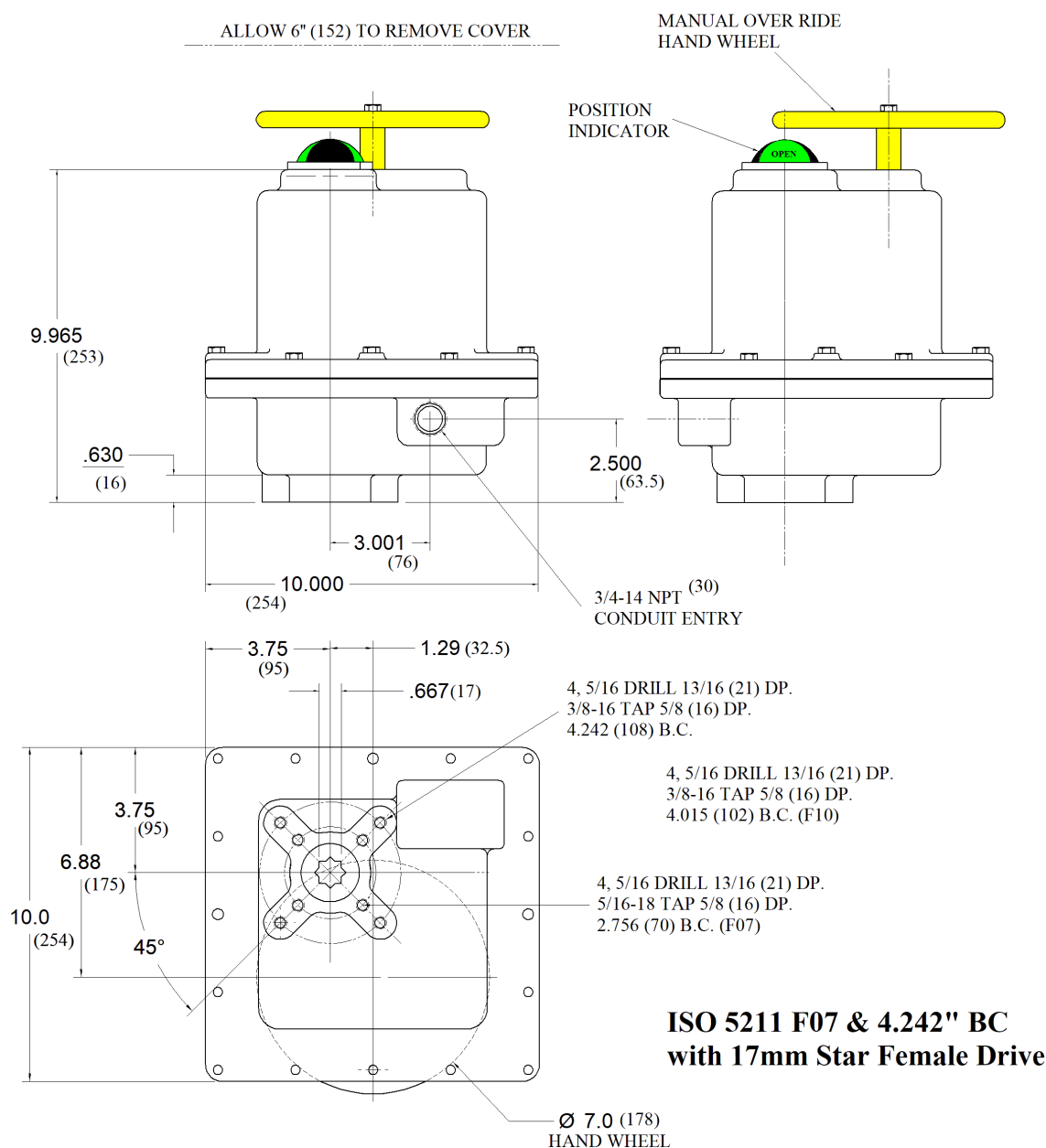
A variety of other optional features are available for these actuators including but not limited to: Aux. Limit Switches, Motor Brakes, Additional Conduit Entries, Mechanical Stops, Temperature and Condensation Controls. Speed Controls & Timers are available mounted in a separate enclosure.

UNIT SPECIFICATIONS:

Enclosure rating:	NEMA 4 Standard; NEMA 4X & NEMA 7 also available
Motor Duty Cycle:	100% Standard
Weight:	40 Lbs.
Mounting Pad:	ISO 5211 F10 BC 4.015"
Operating Voltages:	115vac/230vac, 24vac/24vdc, 12vdc
Incoming Power Fuse:	TR5 Pico Fuse, 250V / 10A
Motor Fuse:	10A Glass Cartridge, Slow Blow 5x20mm
Power:	120 Watts Max. / add 20 Watts for optional heater
Position Indication:	Dome Style Visual Indicator
Battery:	12vdc, 1.4AHr
Battery Recharge Time:	Approximately 8-10 Hours
Battery Life on Trickle Charge:	4-5 years
Auxiliary Switch Rating:	Dry Contact, 15 Amps @ 250vac
Input Signal Contact Rating:	Internally Generated – (12vdc @ 1A)
Temperature Range:	-40°F to 150°F Heater and Thermostat required below 0°F

MECHANICAL MOUNTING:

The Safe & Secure Actuator can be direct mounted to any valve using the standard ISO 5211 F10 Output. See the drawing below for the actuator output mounting dimensions for valves requiring mounting hardware.



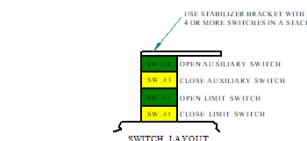
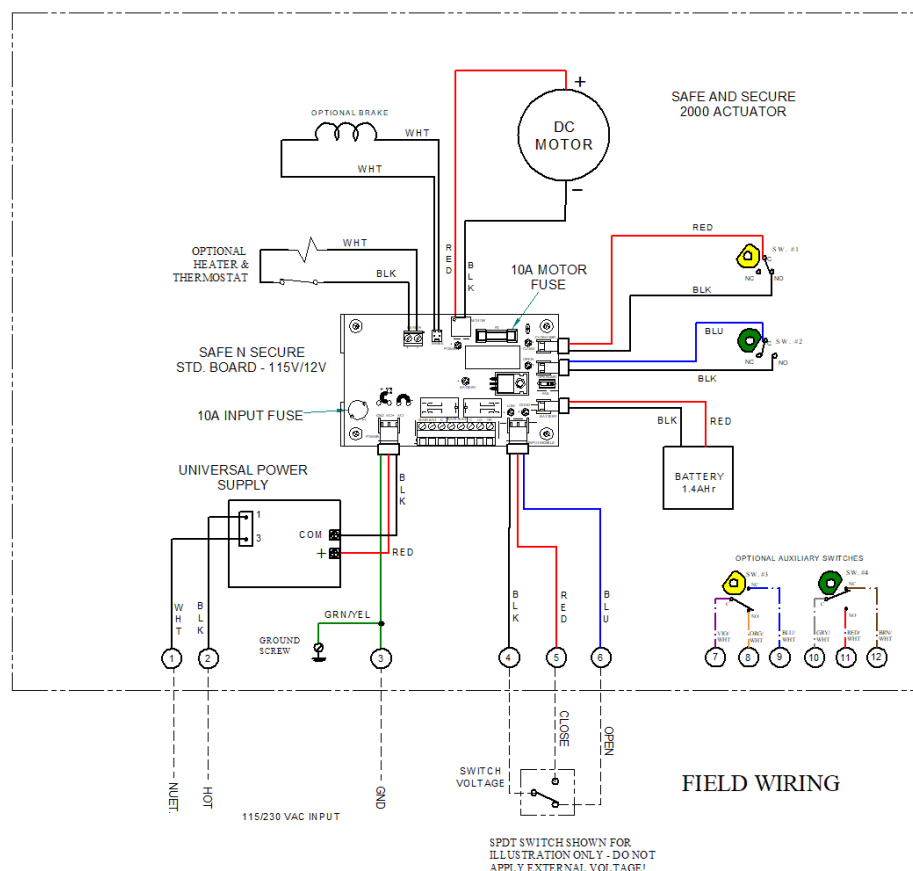
CUSTOMER ELECTRICAL CONNECTIONS FOR STANDARD OPEN/CLOSE:

All customer electrical connections are done per the below wiring diagrams. Incoming power should be wired using 12awg minimum for DC and 18awg for AC. Control signal wiring may be 22awg or larger for direction control. All wiring is to be completed through the conduit opening using the appropriate conduit – **Refer to your local electrical codes**. Remove the actuator cover by loosening the cover screws and pulling straight up on the cover to complete the wiring and set-up. Connect the Main Power to the actuator per the appropriate wiring diagram below. Assure that the power wires are DE-ENERGIZED!

! WARNING!

PAY CLOSE ATTENTION TO THE WIRING DIAGRAMS WHEN CONNECTING THE INPUT POWER TO THE ACTUATOR. IMPROPER POWER CONNECTION CAN RESULT IN DAMAGE TO THE ACTUATOR OR SERIOUS INJURY TO THE INSTALLER.

WIRING DIAGRAM: W200708
DESCRIPTION: 115VAC/230VAC SNS2000 ACTUATOR STANDARD OPEN/CLOSE
OPTIONS SHOWN: 2 AUXILIARY SWITCHES
 MOTOR BRAKE
 HEATER AND THERMOSTAT



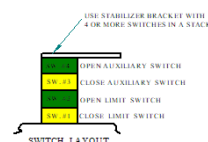
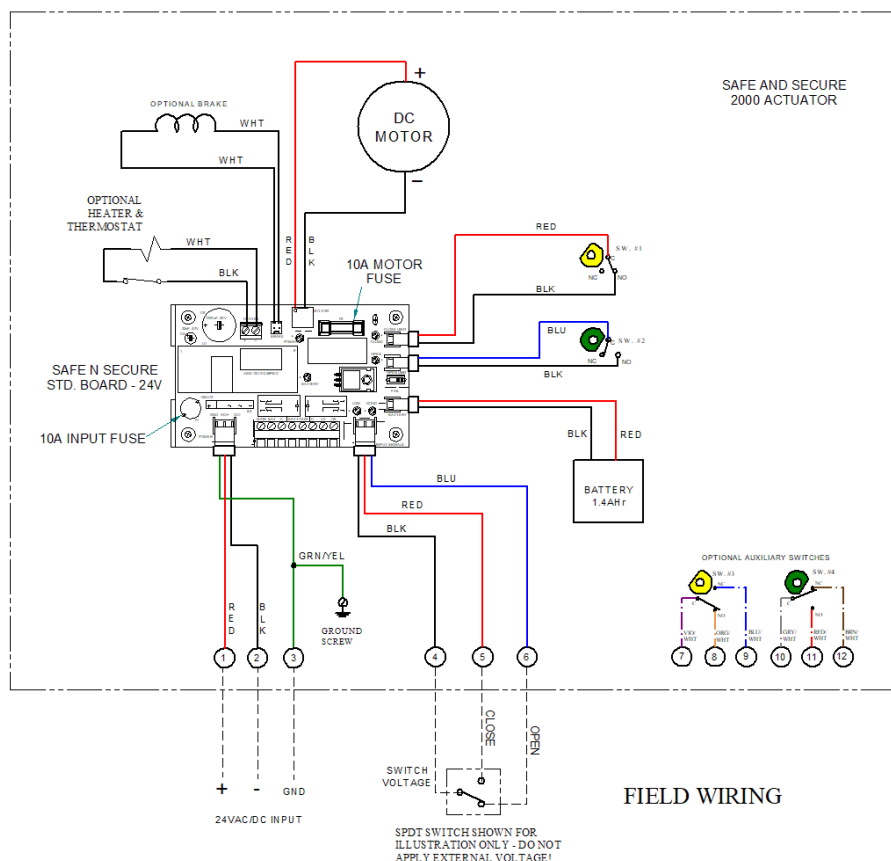
ACTUATOR SHOWN IN OPEN POSITION

- NOTES:**
- 1) INPUT POWER SOURCE TO BE 115/230VAC @ 2.0A MINIMUM.
 - 2) FUSE ON SNS BOARD IS SLOW BLOW, TR5 PLUG IN 10.0A, 250V.
 - 3) UNIT IS SHIPPED WITHOUT THE BATTERY PLUGGED IN. AFTER INSTALLING UNIT AND CONNECTING INCOMING POWER, PLUG THE 2 PIN BATTERY CONNECTOR INTO THE 2 PIN HEADER ON THE BOARD (J2).
 - 4) CAMS FOR LIMIT SWITCHES ARE PRESET AT THE FACTORY. TO INCREASE OR DECREASE VALVE MOTION, SLIGHTLY ADJUST THE OPEN AND CLOSE CAMS.
 - 5) THE 'FAIL' CONDITION IS SET PER THE SLIDE SWITCH ON THE SNS BOARD FOR FAIL OPEN OR FAIL CLOSE. USER IS TO SET THE 'FAIL' POSITION SWITCH PRIOR TO APPLYING POWER TO THE UNIT.
 - 6) WHEN INCOMING POWER IS PRESENT, BLUE LED WILL BE LIT AND ACTUATOR RUNS OFF OF INCOMING POWER. WHEN INCOMING POWER FAILS, BLUE LED WILL TURN OFF AND THE YELLOW BATTERY LED WILL LIGHT - ACTUATOR WILL MOVE TO THE 'FAIL' POSITION 1 TIME AND STAY THERE UNTIL POWER IS RESTORED.
 - 7) RED LED WILL LIGHT WHEN BATTERY VOLTAGE GETS TOO LOW. GREEN LED WILL LIGHT WHEN BATTERY VOLTAGE IS ABOVE 10.5VDC.
 - 8) DRY CONTACTS ARE PROVIDED TO INDICATE BATTERY STATUS AND INCOMING POWER STATUS. BATTERY STATUS CAN BE CHECKED WITH THE INCOMING POWER ON BY SHORTING THE 2 BATT TEST POINTS J7-2 & J10-1 MOMENTARILY.
 - 9) CONTROL SIGNAL IS TO BE A DRY CONTACT SWITCH OR RELAY CONTACT ONLY! DO NOT APPLY VOLTAGE TO TERMINALS #4, #5 & #6!

W200708

CUSTOMER ELECTRICAL CONNECTIONS FOR STANDARD OPEN/CLOSE:

WIRING DIAGRAM: W200628
DESCRIPTION: 24VAC & 24VDC SNS2000 ACTUATOR STANDARD OPEN/CLOSE
OPTIONS SHOWN: 2 AUXILIARY SWITCHES
 MOTOR BRAKE
 HEATER AND THERMOSTAT



ACTUATOR SHOWN IN OPEN POSITION

- NOTES:**
- 1) INPUT POWER SOURCE TO BE 24VAC OR 24VDC @ 9.0A MINIMUM.
 - 2) FUSE ON SNS BOARD IS SLOW BLOW, TR-5 PLUG IN 10.0A, 250V.
 - 3) UNIT IS SHIPPED WITHOUT THE BATTERY PLUGGED IN. AFTER INSTALLING UNIT AND CONNECTING INCOMING POWER, PLUG THE 2 PIN BATTERY CONNECTOR INTO THE 2 PIN HEADER ON THE BOARD (J2).
 - 4) CAMS FOR LIMIT SWITCHES ARE PRESET AT THE FACTORY. TO INCREASE OR DECREASE VALVE MOTION, SLIGHTLY ADJUST THE OPEN AND CLOSE CAMS.
 - 5) THE "FAIL" CONDITION IS SET PER THE SLIDE SWITCH ON THE SNS BOARD FOR FAIL OPEN OR FAIL CLOSE. USER IS TO SET THE "FAIL" POSITION SWITCH PRIOR TO APPLYING POWER TO THE UNIT.
 - 6) WHEN INCOMING POWER IS PRESENT, BLUE LED WILL BE LIT AND ACTUATOR RUNS OFF OF INCOMING POWER. WHEN INCOMING POWER FAILS, BLUE LED WILL TURN OFF AND THE YELLOW BATTERY LED WILL LIGHT - ACTUATOR WILL MOVE TO THE "FAIL" POSITION 1 TIME AND STAY THERE UNTIL POWER IS RESTORED.
 - 7) RED LED WILL LIGHT WHEN BATTERY VOLTAGE GETS TOO LOW. GREEN LED WILL LIGHT WHEN BATTERY VOLTAGE IS ABOVE 10.5VDC.
 - 8) DRY CONTACTS ARE PROVIDED TO INDICATE BATTERY STATUS AND INCOMING POWER STATUS. BATTERY STATUS CAN BE CHECKED WITH THE INCOMING POWER ON BY SHORTING THE 2 BATT TEST POINTS J7-2 & J10-1 MOMENTARILY.
 - 9) CONTROL SIGNAL IS TO BE A DRY CONTACT SWITCH OR RELAY CONTACT ONLY! DO NOT APPLY VOLTAGE TO TERMINALS #4, #5 & #6!

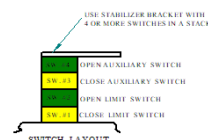
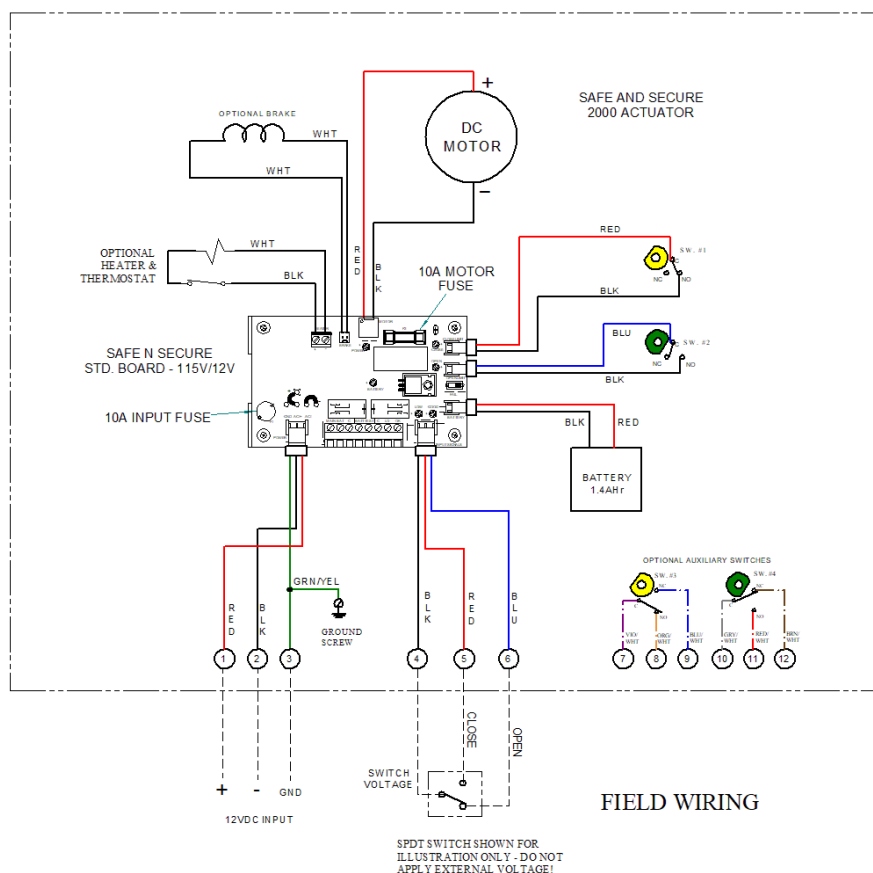
FIELD WIRING

W200628

NOTE: For all wiring, make sure the connectors and wires are fully seated after making all wiring connections.

CUSTOMER ELECTRICAL CONNECTIONS FOR STANDARD OPEN/CLOSE:

WIRING DIAGRAM: W200707
DESCRIPTION: 12VDC SNS2000 ACTUATOR STANDARD OPEN/CLOSE
OPTIONS SHOWN: 2 AUXILIARY SWITCHES
 MOTOR BRAKE
 HEATER AND THERMOSTAT



ACTUATOR SHOWN IN OPEN POSITION

- NOTES:**
- 1) INPUT POWER SOURCE TO BE 12VDC @ 10.0A MINIMUM.
 - 2) FUSE ON SNS BOARD IS SLOW BLOW, TR3 PLUG IN 10.0A, 250V.
 - 3) UNIT IS SHIPPED WITHOUT THE BATTERY PLUGGED IN. AFTER INSTALLING UNIT AND CONNECTING INCOMING POWER, PLUG THE 2 PIN BATTERY CONNECTOR INTO THE 2 PIN HEADER ON THE BOARD (J2).
 - 4) CAMS FOR LIMIT SWITCHES ARE PRESET AT THE FACTORY. TO INCREASE OR DECREASE VALVE MOTION, SLIGHTLY ADJUST THE OPEN AND CLOSE CAMS.
 - 5) THE "FAIL" CONDITION IS SET PER THE SLIDE SWITCH ON THE SNS BOARD FOR FAIL OPEN OR FAIL CLOSE. USER IS TO SET THE "FAIL" POSITION SWITCH PRIOR TO APPLYING POWER TO THE UNIT.
 - 6) WHEN INCOMING POWER IS PRESENT, BLUE LED WILL BE LIT AND ACTUATOR RUNS OFF OF INCOMING POWER. WHEN INCOMING POWER FAILS, BLUE LED WILL TURN OFF AND THE YELLOW BATTERY LED WILL LIGHT - ACTUATOR WILL MOVE TO THE "FAIL" POSITION 1 TIME AND STAY THERE UNTIL POWER IS RESTORED.
 - 7) RED LED WILL LIGHT WHEN BATTERY VOLTAGE GETS TOO LOW. GREEN LED WILL LIGHT WHEN BATTERY VOLTAGE IS ABOVE 10.5VDC.
 - 8) DRY CONTACTS ARE PROVIDED TO INDICATE BATTERY STATUS AND INCOMING POWER STATUS. BATTERY STATUS CAN BE CHECKED WITH THE INCOMING POWER ON BY SHORTING THE 2 BATT TEST POINTS J7-2 & J10-1 MOMENTARILY.
 - 9) CONTROL SIGNAL IS TO BE A DRY CONTACT SWITCH OR RELAY CONTACT ONLY! DO NOT APPLY VOLTAGE TO TERMINALS #4, #5 & #6!

W200707



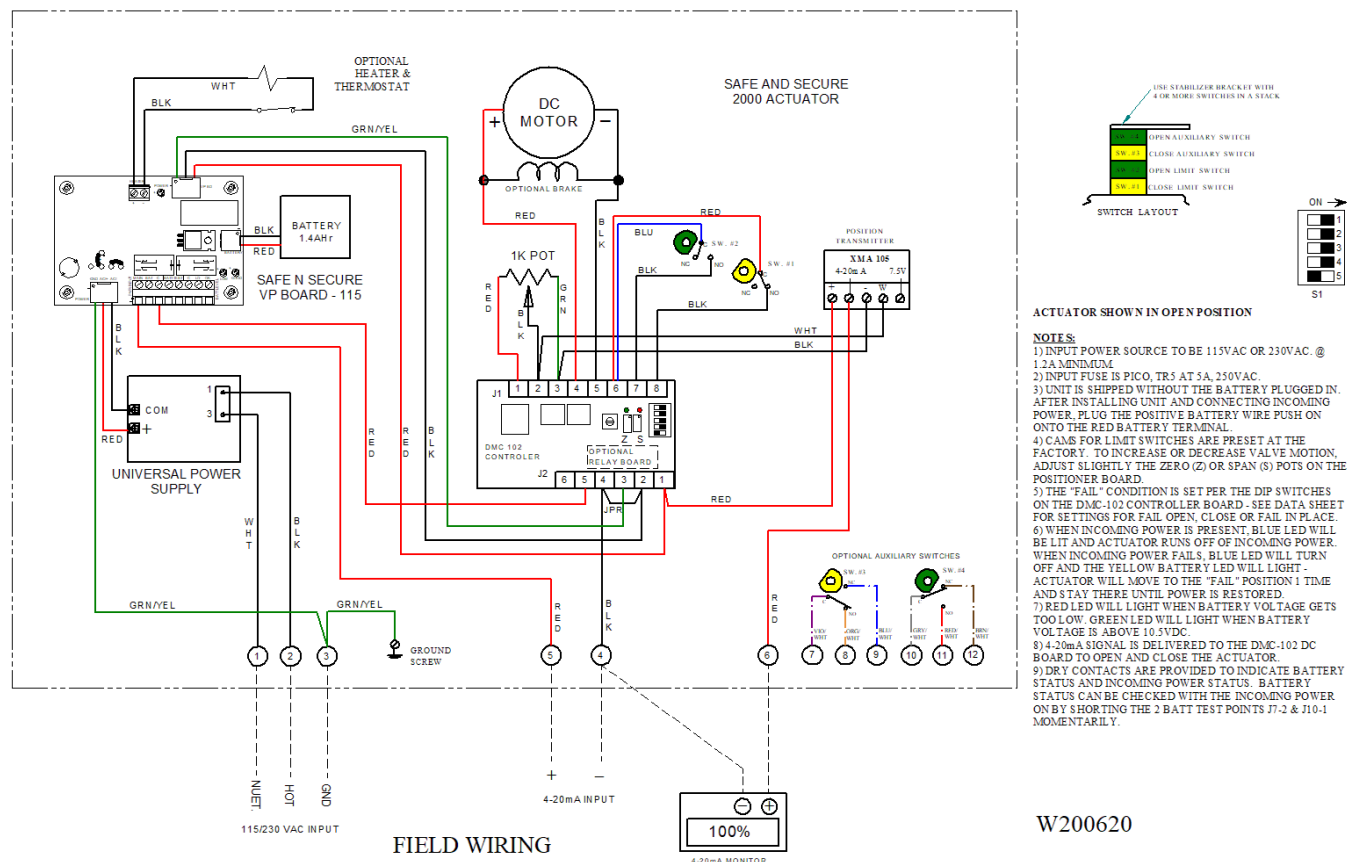
Extra Connections
– Relays and Status

Power & Signal Connections –
AC/DC Inputs & Open/Close

Customer Connections, Board Connector View

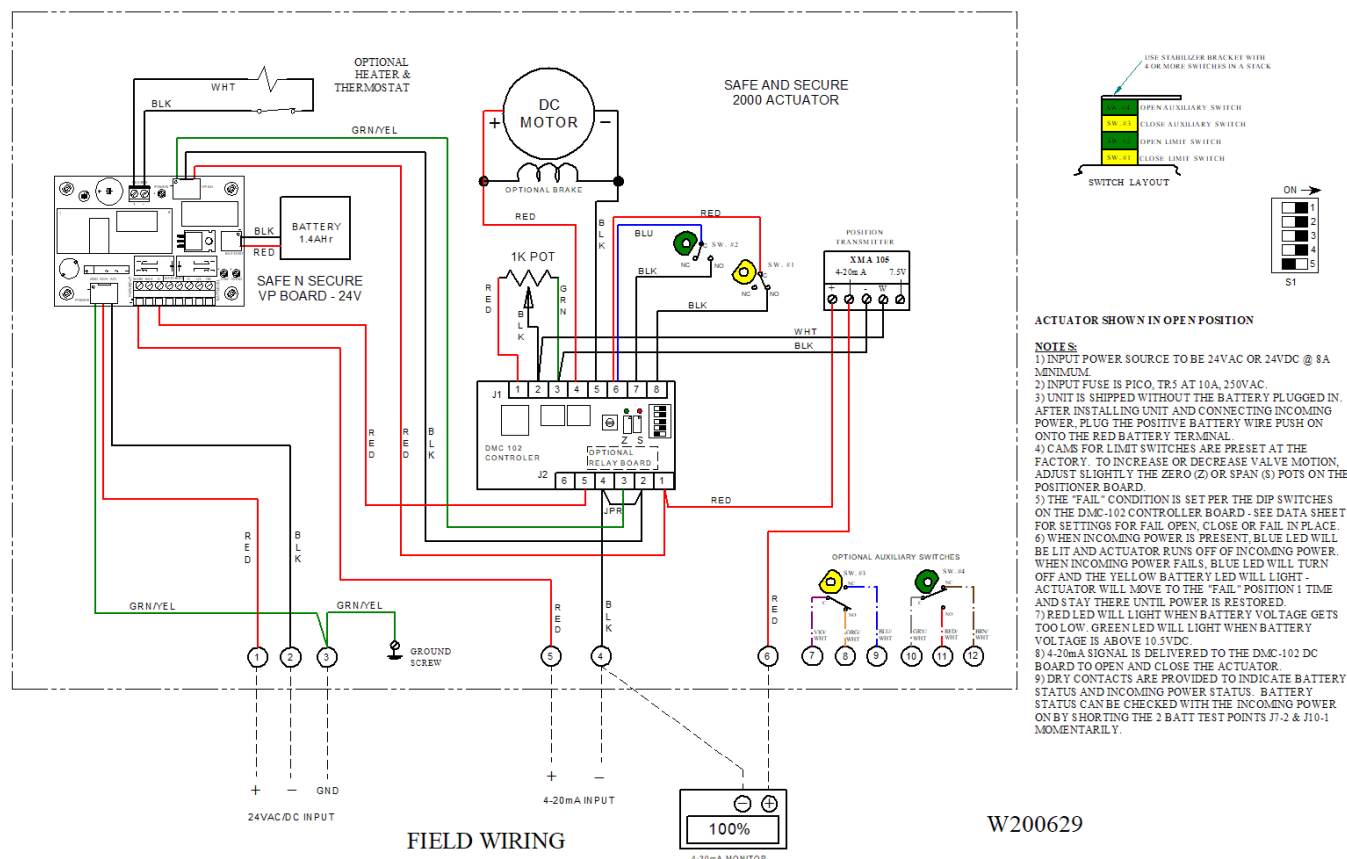
CUSTOMER ELECTRICAL CONNECTIONS FOR MODULATING OPTION:

WIRING DIAGRAM: W200620
DESCRIPTION: 115/230VAC ACTUATOR WITH MODULATING CONTROL
OPTIONS SHOWN: 2 AUXILIARY SWITCHES
 MOTOR BRAKE
 HEATER AND THERMOSTAT



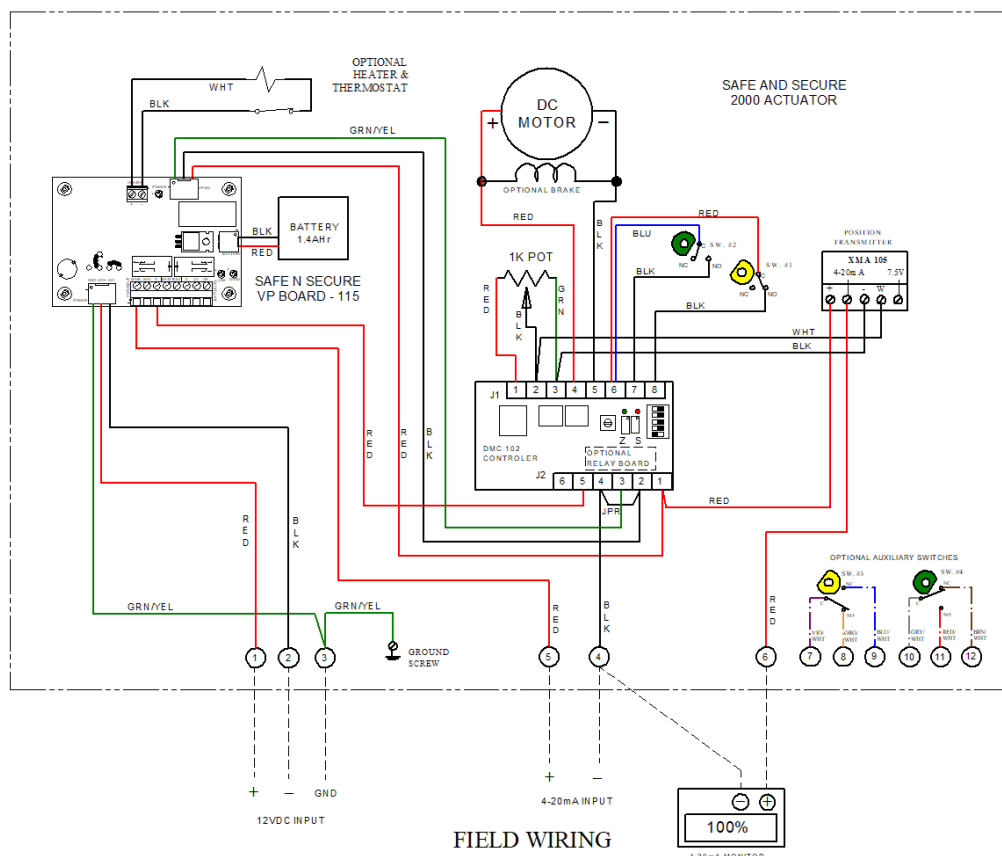
CUSTOMER ELECTRICAL CONNECTIONS FOR MODULATING OPTION:

WIRING DIAGRAM: W200629
DESCRIPTION: 24VAC & 24VDC ACTUATOR WITH MODULATING CONTROL
OPTIONS SHOWN: 2 AUXILIARY SWITCHES
 MOTOR BRAKE
 HEATER AND THERMOSTAT



CUSTOMER ELECTRICAL CONNECTIONS FOR MODULATING OPTION:

WIRING DIAGRAM: W200630
DESCRIPTION: 12VDC ACTUATOR WITH MODULATING CONTROL
OPTIONS SHOWN: 2 AUXILIARY SWITCHES
 MOTOR BRAKE
 HEATER AND THERMOSTAT



ACTUATOR SHOWN IN OPEN POSITION

NOTES:

- 1) INPUT POWER SOURCE TO BE 12VDC @ 10A MINIMUM.
- 2) INPUT FUSE IS PICO, TRJ AT 10A, 250VAC.
- 3) UNIT IS SHIPPED WITHOUT THE BATTERY PLUGGED IN. AFTER INSTALLING UNIT AND CONNECTING INCOMING POWER, PLUG THE POSITIVE BATTERY WIRE PUSH ON ONTO THE RED BATTERY TERMINAL.
- 4) CAMS FOR LIMIT SWITCHES ARE PRESET AT THE FACTORY. TO INCREASE OR DECREASE VALVE MOTION, ADJUST SLIGHTLY THE ZERO (Z) OR SPAN (S) POTS ON THE POSITIONER BOARD.
- 5) THE "FAIL" CONDITION IS SET PER THE DIP SWITCHES ON THE DMC-102 CONTROLLER BOARD - SEE DATA SHEET FOR SETTINGS FOR FAIL OPEN, CLOSE OR FAIL IN PLACE.
- 6) WHEN INCOMING POWER IS PRESENT, BLUE LED WILL BE LIT AND ACTUATOR RUNS OFF OF INCOMING POWER. WHEN INCOMING POWER FAILS, BLUE LED WILL TURN OFF AND THE YELLOW BATTERY LED WILL LIGHT - ACTUATOR WILL MOVE TO THE "FAIL" POSITION 1 TIME AND STAY THERE UNTIL POWER IS RESTORED.
- 7) RED LED WILL LIGHT WHEN BATTERY VOLTAGE GETS TOO LOW. GREEN LED WILL LIGHT WHEN BATTERY VOLTAGE IS ABOVE 10.5VDC.
- 8) 4-20mA SIGNAL IS DELIVERED TO THE DMC-102 DC BOARD TO OPEN AND CLOSE THE ACTUATOR.
- 9) DRY CONTACTS ARE PROVIDED TO INDICATE BATTERY STATUS AND INCOMING POWER STATUS. BATTERY STATUS CAN BE CHECKED WITH THE INCOMING POWER ON BY SHORTING THE 2 BATT TEST POINTS J1-2 & J10-1 MOMENTARILY.

W200630

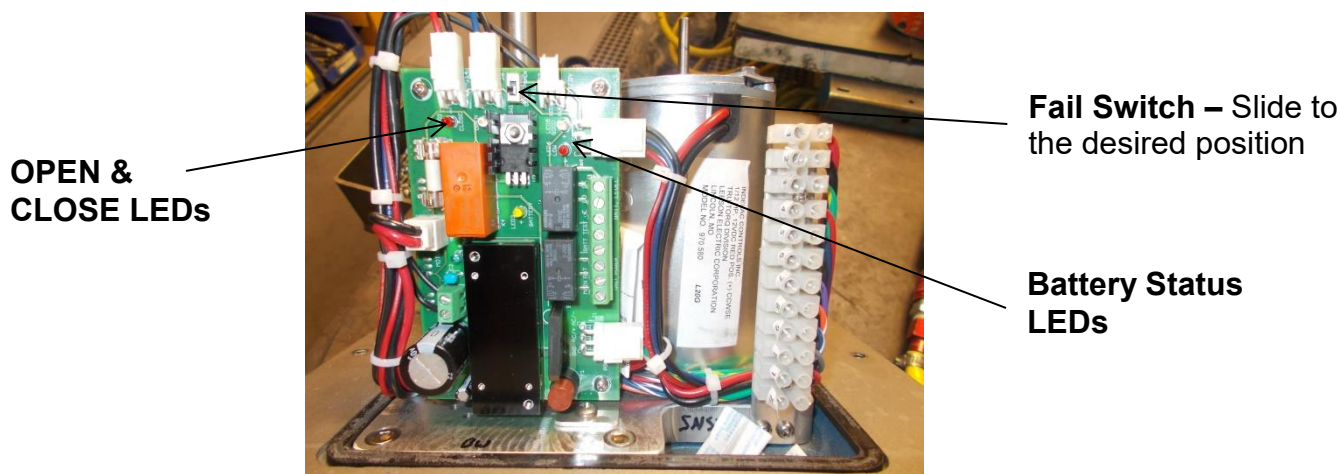
ACTUATOR SET-UP FOR STANDARD OPEN/CLOSE ACTUATOR:

After the actuator is mounted mechanically to the valve and the external electrical wiring is complete, the actuator is ready for set up. The actuator cover will need to be removed, if not already done so.

- 1) On the circuit board, move the “Fail Switch” to the desired “FAIL” position. The description of the 2 positions are as follows:

OPEN = ACTUATOR WILL MOVE TO THE OPEN POSITION WHEN POWER FAILS.

CLOSE = ACTUATOR WILL MOVE TO THE CLOSE POSITION WHEN POWER FAILS.

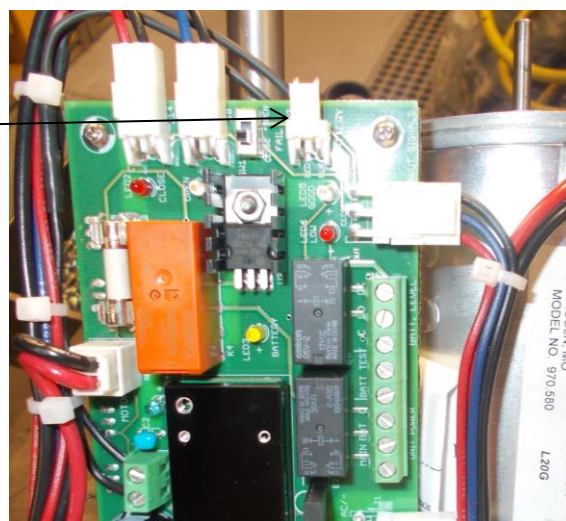


WARNING: DO NOT switch the FAIL switch while the actuator is moving or while the battery is plugged into the SNS board. Turn OFF power before moving switch!

- 2) Plug the battery connector into the 2 pin BATTERY header on the SNS Board.

NOTE: If the “Fail Switch” was moved to the “CLOSE” position, the actuator will begin to move to the Close location since the actuator is shipped in the OPEN Position.

Battery Connector –
 Plug the battery connector into the 2 pin BATTERY header on the board.



- 3) Turn on the Main external power to the actuator.
- 4) Using the external direction control signal, run the actuator open and closed to verify that the valve is opening and closing fully. If not, the Open and Close CAMs may be adjusted to allow more or less motion in both directions. The CAM set screw needs to be loosened to rotate the CAM. Re-tighten the set screw when the desired valve position is achieved.



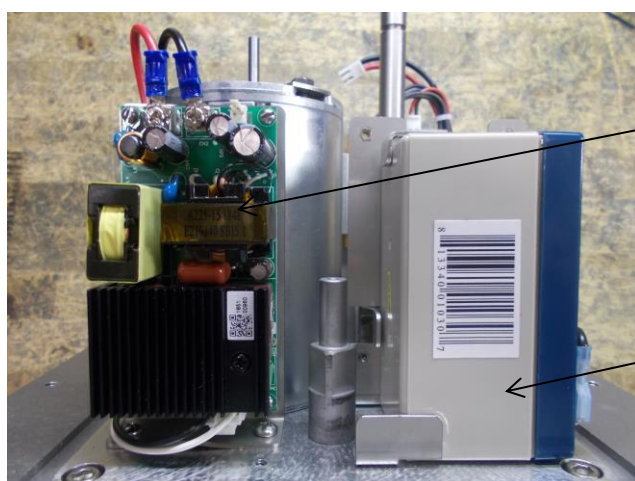
Battery Mounting

**Auxiliary Switches
(if installed)**

Limit Switch CAMs
 (Bottom = Close;
 Top = Open) – Loosen
 the set screw to rotate for
 adjustment.

NOTE: If control signal is provided by a PLC relay, program needs to incorporate a delay between the OPEN & CLOSE signal.

The external control signal is done using a dry contact switch or relay. DO NOT APPLY a voltage to the OPEN or CLOSED control signal pins. The voltage is provided on terminal #4 via the SNS control board.



**115/230vac Power
Supply**

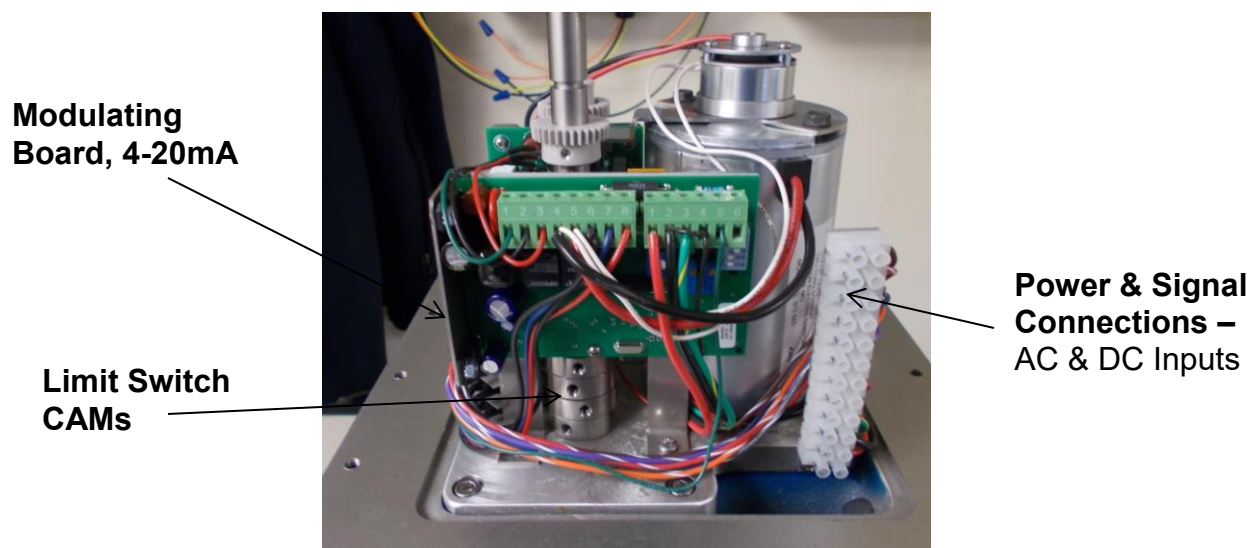
Battery, 1.4AHr

Standard Actuator View of Power Supply

ACTUATOR SET-UP FOR MODULATING OPTION ACTUATOR:

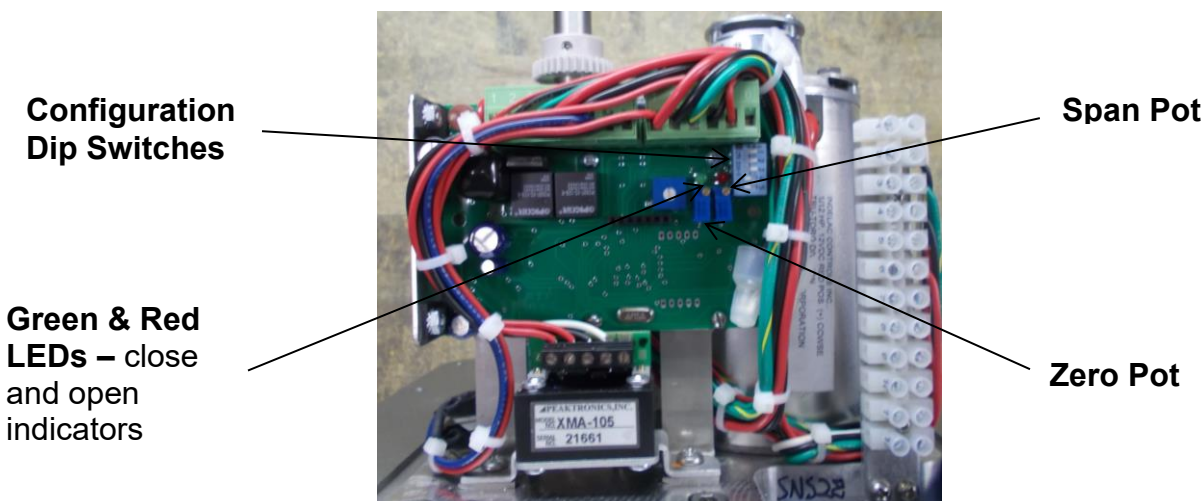
After the actuator is mounted mechanically to the valve and the external electrical wiring is complete, the actuator is ready for set up. The actuator cover will need to be removed, if not already done.

- 1) The Safe & Secure board will supply power to the Modulating Controller Board. When the incoming power to the unit fails, the battery will supply power to the Controller Board and run the motor to the selected FAIL position.



- 2) Set the DIP Switch #3 to ON (right) & #4 to OFF (left) on the DMC 102 Controller Board. This will run the actuator to the CLOSED position in the event of a **loss of input control signal**. If it is desired to have the actuator go to the OPEN position when the input signal is lost, then DIP Switch #3 is set to OFF (left) & #4 is set to ON (right).

****DO NOT CHANGE THESE SWITCH SETTINGS WITH THE POWER ON!!**



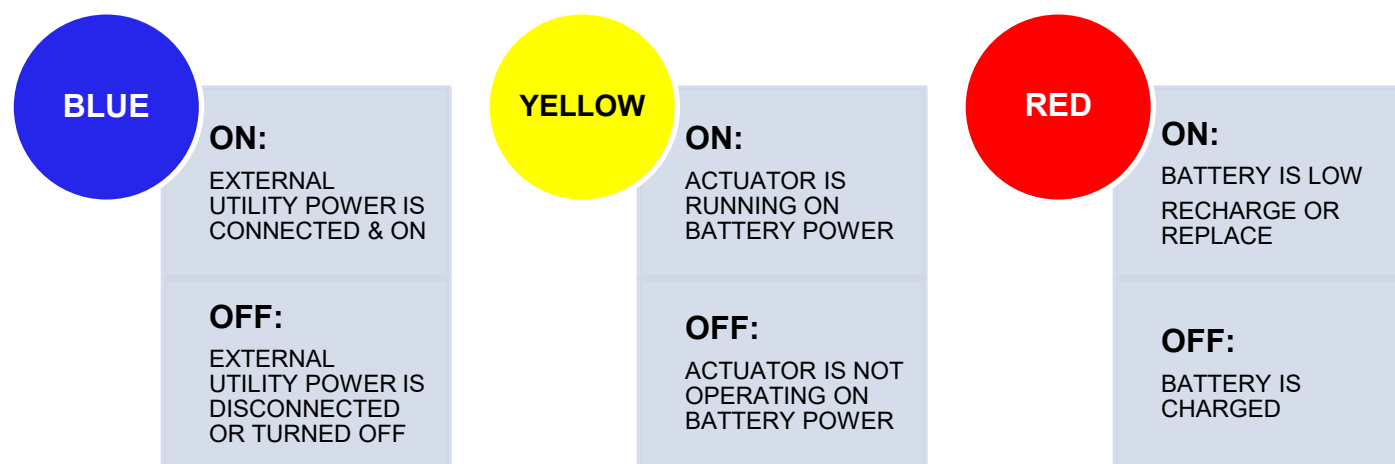
- 3) Plug the battery connector onto the 2 pin BATTERY Header on the SNS Board.



- 4) Turn on the Main external power to the actuator.
- 5) Apply the input signal (4-20mA, 0-10v, etc.) to run the actuator open and closed to verify that the valve is opening and closing fully. If not, the ZERO and SPAN pots on the Modulating Controller Board may be adjusted to allow more or less motion in both directions.

OPERATION:

Upon applying external supply power to the actuator, the Blue LED on the Safe & Secure Board should illuminate indicating that the power from the external source is on. When the external power fails, the Blue LED will turn off and the Yellow Battery LED will illuminate indicating that the actuator is now running on battery power. When this occurs, the actuator will move to the desired position (OPEN or CLOSED), as selected by the operator during set-up.



For example, if the actuator is moving towards the Open position with the Fail Switch on the SNS Board set for CLOSED, the actuator will STOP, and move to the Closed position if the external power should fail.

**WARNING: DO NOT CHANGE THE FAIL SWITCH SETTING WITH THE POWER ON!!
POWER OFF FIRST!**

On the Modulating version, the actuator operates the same as the standard version, except the FAIL position is set by the DIP Switches on the Modulating Control Board.

**WARNING: DO NOT CHANGE THE DIP SWITCH SETTING WITH THE POWER ON!!
POWER OFF FIRST!**

On the standard version, when the incoming power fails, the Blue LED on the SNS Board will turn OFF and the Yellow Battery LED will turn on. Also, the battery status LED (Green or Red) will illuminate to show the charge level of the battery. If the Green LED is on, the battery is at full power, but if the Red LED is illuminated, the battery power is low and will need to be charged. If neither the Green or Red LED is lit under battery power, the battery is completely dead and will need to be replaced. In this instance, the Yellow LED will not light either.

On the Modulating version, when the incoming power fails, the Blue LED on the SNS Board will turn OFF and one of the battery status lights will turn ON (Green or Red). There is no Yellow LED on the Modulating SNS Board.

There is a battery charge circuit built into the Safe & Secure actuator that will charge the battery when the external power is on. After a full 8-10 hour full charge, the Green battery status LED will illuminate. If after 8-10 hours of "on board" charging, the Red LED remains on, then the battery needs to be replaced. **If the battery is too low, the actuator will FAIL in place.**

The Standard SNS unit will indicate direction of operation (OPEN or CLOSE) by lighting the OPEN (Green) or CLOSE (Red) LED. If, for instance, an OPEN signal is delivered to the actuator, the OPEN Green LED should turn on and the actuator should move to the OPEN position. If that Green LED turns on and the motor does not move, then the Motor Fuse has blown.

The Modulating version SNS will indicate OPEN and CLOSE motion by lighting the Red (OPEN) and Green (CLOSE) LEDs on the Modulating Control Board, DMC-102.

If the Optional Heater and Thermostat have been installed, the Heater will operate when the external power supply is on. If the external power supply should fail and the actuator runs on battery power, the Heater will **NOT** be operational.

Please see the photos in the previous pages of this manual for the locations of the above mentioned boards and LED locations.

DUTY CYCLE:

All SNS 2000 Series actuators are rated 100% duty cycle at ambient temperature at rated torque.

MOTOR THERMAL OVER LOAD:

The Safe and Secure series actuator motors are internally fused with a 250v, 10A, 5x20mm glass cartridge slow blow fuse. When the motor current rises to an overload level, the on-board fuse will blow and will need to be replaced. The fuse must be replaced with an equivalent fuse to keep from damaging the system. It is the responsibility of the operator to check the entire system and clear any jams or valve binding prior to restarting the system.

MECHANICAL OVER LOAD:

Indelac actuators are all designed to withstand stall conditions. It is not recommended to subject the unit to repeated stall conditions. However, should it occur the actuator would not experience gear damage.

ORDERING PARTS:

When ordering parts please specify:

Actuator Model Number, Actuator Serial Number, Part Number & Part Description.

RECOMMENDED SPARE PARTS:

#24000-VC	CLOSE Switch with wires
#24000-VO	OPEN Switch with wires
#32016	Battery, 1.4AHr, 12VDC
#46045	Fuse, 10A, 250V TR5 Round Plug In (Incoming Power)
#46039	Fuse, 10A, 250V 5x20mm Glass Cartridge (Motor Fuse)

AUXILIARY SWITCH CONTACT RATINGS:

The Snap Action Auxiliary Switches are SPDT & the contacts are rated for **15 Amps @ 250 VAC**.

NEMA 7 ENCLOSURE, GENERAL:

In general, operation and maintenance of a NEMA 7 electric actuator is no different than that of a NEMA 4 electric actuator. However, there are some precautions that must be followed.

1. **DO NOT** install in ambient temperatures that exceed **140 degrees F**.
2. **DO NOT** under any circumstances **remove the actuator cover** while in a hazardous location when the contacts are still live, this could cause ignition of hazardous atmospheres.
3. **DO NOT** under any circumstances **use a NEMA 7 electric actuator in a hazardous location that does not meet the specifications for which the actuator was designed**. The actuator is clearly tagged with the NEMA classification it was designed for.
4. **DO NOT** mount, test and calibrate actuator on valve in non-hazardous location.
5. When removing the cover care must be taken not to scratch, scar or deform the flame path of the cover or base of the actuator, this will negate the NEMA 7 rating of the enclosure.
6. When replacing the cover on actuators rated NEMA 4 and 7 take care that the gasket is in place to assure the proper clearance after the cover is secured. After securing the cover screws check the clearance between the cover and the base - a .002" thick by 1/2" wide feeler gauge may not enter between the two mating faces more than .125".
7. All electrical connections must be to state and local codes and in accordance with the specifications for which the unit is being used.
8. After de-energizing the NEMA 7 actuator, wait at least 45 minutes before removing the cover to allow the heater to cool.

**After proper installation the actuator will require little or no maintenance. In the event maintenance is required remove it from the hazardous location before attempting to work on it. If the actuator is in a critical application and down time is not permitted it is advisable to have a spare actuator in stock.*

MANUAL REVISIONS

JUNE 22, 2018	CHANGED EXTERNAL INDICATOR WIRING CONNECTIONS SECTION – CURRENT LOAD USED TO BE 5A. NEW RELAYS ON BOARD ARE 2A @ 30VDC AND 0.5A @ 125VAC.
MAY 13, 2020	ADDED ELECTRICAL SPECIFICATIONS FOR AUXILIARY SWITCHES/CONTACT CURRENT; UPDATED INDELAC LOGO.
FEB 3, 2021	“R1” – NEWLY RE-DESIGNED SNS2000 SERIES W/SMALLER BOARDS AND BATTERY. NEW BRACKET DESIGNS AND LAYOUT TO FIT ALL INTO SINGLE “L” ACTUATOR ENCLSOURE.

TROUBLESHOOTING AND FAQ'S

SYMPTOM	PROBLEM	SOLUTION
ACTUATOR DOES NOT RESPOND TO CONTROL SIGNAL.	Power not on Actuator wired incorrectly Wrong voltage Thermal overload activated Actuator and valve in opposite positions when actuator was mounted. Input Power Fuse Blown Input signal wires not tight in terminals Bad Brake Modulating Signal Not Present	Turn on power Check wiring diagram & rewire Check power supply & make appropriate changes Check and replace 10A Motor Fuse – see Part Numbers Remove actuator and rotate 90 degrees & remount Replace with proper value fuse Tighten terminal block screws Remove brake hub & try to run Connect 4-20mA or 0-10vdc Signal to Actuator
ACTUATOR WILL NOT OPEN OR CLOSE COMPLETELY.	Travel limits set wrong Valve torque too high for actuator Mechanical stops not removed Modulating Actuator Set Points Adj.	Reset cams. Install correct size actuator Remove stops, CAUTION: Do not remove any part required for proper operation Adjust the SPAN or ZERO pots On the Modulating Board
VALVE OSCILLATES.	Valve torque too high for actuator Actuator without brake installed on butterfly valve Motor brake out of adjustment. Set screw loose in brake disc	Install correct size actuator. Install brake Adjust brake Adjust brake and tighten set-screw
MOTOR RUNS BUT OUTPUT SHAFT DOES NOT ROTATE.	Gear damage or sheared pin/key	Contact ICI or nearest distributor

Battery Condition Test

- 1) Turn the power to the actuator Off.
- 2) Install a switch or jumper wire into J12 terminals 4 & 5.
- 3) Turn the actuator power back On.
- 4) If using a switch, close the Test Switch.
- 5) If the Battery Red LED on the Safe and Secure Board illuminates, the battery is low.
- 6) Turn the power back Off.
- 7) Remove the jumper or turn off the Test Switch.
- 8) Apply external power to the actuator and verify that the Blue LED illuminates.
- 9) Wait 8-10 hours for the battery to fully charge and close the Test Switch again.
- 10) If the Battery Green LED on the Safe and Secure Board illuminates, the battery is good and is charged.
- 11) If the Red LED is comes back on, or is OFF, the battery is bad and needs to be replaced.

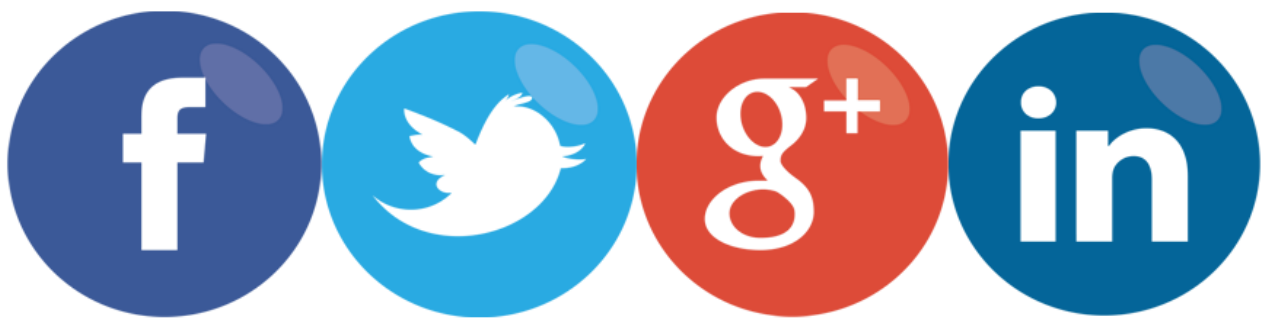
Power Test

- 1) Apply external power to the actuator. The Blue LED should illuminate.
- 2) If there is no Blue LED, check that the incoming power is connected properly to the actuator & the breaker is on.
- 3) Next, verify that the wires are tight in the input connector.
- 4) If still no Blue LED, check the on board fuse (TR5 style – round) in the Safe & Secure Board.
- 5) If the Power Input Fuse is blown, replace the fuse.
- 6) If the fuse is good, the circuit board is bad and needs to be replaced.
- 7) On modulating versions, a control input signal (4-20mA or 0-10vdc) needs to be present to run the actuator.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

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