

# Bear SSR3<sup>MK2</sup>

## Solid-State Actuator Controller

The Bear SSR3 is a solid state 1/4 turn actuator controller that is designed to be used with Bear Actuators. Capable of driving 12 or 24 volts DC motors at 15 amps continuous with position feedback, it optimizes interfacing and control for your RTU.

### Features:

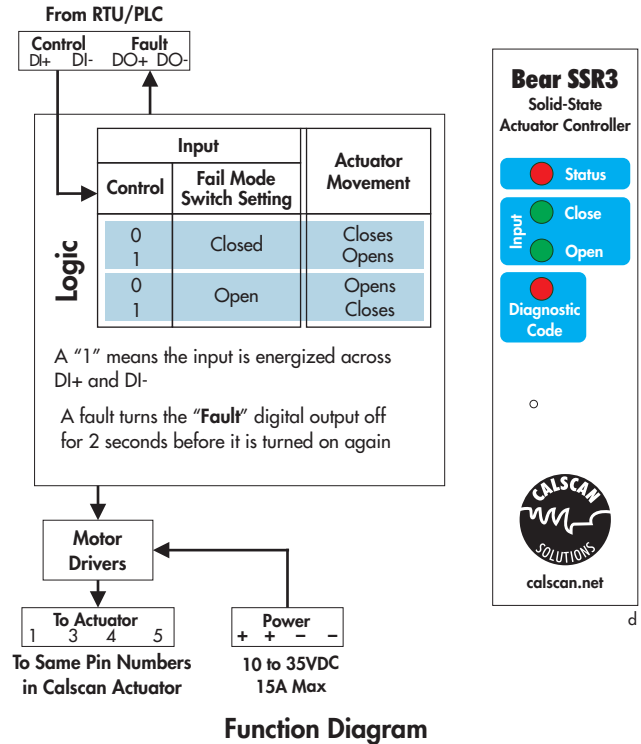
- Class I Div2 Certified
- Up to 15 Amps continuous drive capability
- Switchable to be Fail Open or Close
- Actuator Fault feedback
- Designed to work with the Bear FSC and UPS to provide true power fail safe operation
- Optional Close current limit for linear applications
- Low quiescent current for solar powered operation
- Wide 10 to 35 VDC Operating Range
- Positive or negative logic inputs and outputs
- Mounts on a 35mm DIN-rail

### Typical Applications

- Separator Dump Valve control
- Pipeline



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## Pin Function Description

### Power Pins

#### Actuator 1,3,4,5

Connect these pins to the same numbers inside the Bear Actuator. They provide power for the motor as well as feedback to the SSR3.

#### Power (+ & -)

This is 12 to 24 AWG power supply connection. Each pin can handle up to the full 15amps. Two connections are provided for both the positive and negative pins. This can be used to reduce the wire resistance in the cases where there is excessive voltage drop from a long wire run.



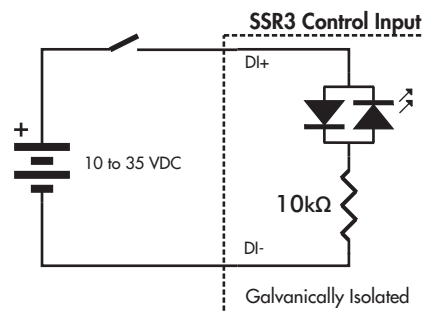
**Reverse voltage connection on the Power terminals without installing a external fuse will permanently damage the Bear SSR3**

### Control Pins

#### Control DI+ and DI-

A non-energized connection will move the actuator to the failsafe position as set on the internal DIP switch.

A energized connection will move the actuator to the non failsafe position.



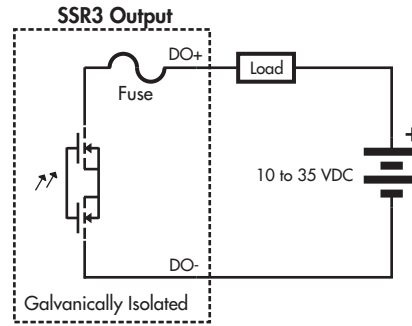
The Bear SSR3 uses galvanically isolated bidirectional optocouplers to facilitate interfacing to a separator control system.

## Fault Pins

### Fault DO+ and DO-

These two pins provide a feedback connection to the RTU/PLC when the valve is faulted open or closed. When there is a fault the DO+ and DO- will become turned off for 2 seconds and then back on.

The DO circuitry is optically coupled to isolate the output signal from the rest of the SSR3 circuitry. The discrete output channel is a normally-open, bidirectional solid state switch. It is protected with a automatic reset fuse with a maximum current of 50mA.



## Configuration Dip Switches



Inside the SSR3 case is a Dip Switch that is configured at the factory to match selected electric actuator and valve type.

<b>C</b>	1	<input type="checkbox"/>	<b>O</b>	Pin 1: Fail Closed (C) or Fail Open (O)
<b>L</b>	2	<input type="checkbox"/>	<b>B</b>	Pin 2: Linear (L) or Ball (B) Valve
<b>D</b>	3	<input type="checkbox"/>	<b>T</b>	Pin 3: Dump (D) or Throttling (T) valve with 2-Wire Control fail in-position
	4	<input type="checkbox"/>		Pin 4: Reserved set to Off

## Nominal Ratings

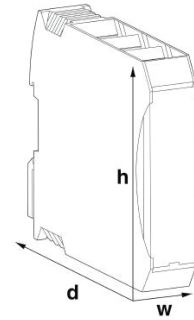
Recommended Operating Conditions	Min	Max	Unit
DC Supply Voltage	10	35	V
Operating and Storage Temperature	-40	50	°C

Module	Min	Max	Unit
Motor Drive Current		15	A
Quicent Current	Supply = 12 V Supply = 24 V	12 8	mA

Output Signal	Min	Max	Unit
Voltage Range	0	35	V
Sinking or Sourcing Current	0	50	mA

Input Signal	Min	Max	Unit
Voltage Range Energized	10	35	V
Voltage Range Off	-0.5	0.5	V
Input Drive Current	Supply = 12 V Supply = 24 V	1 2	mA mA
		2 3	

## Mechanical



22mm wide x 99mm high x 11.5mm deep  
35mm DIN-rail Connection  
Wire Size 12 to 24 AWG and 90°C Minimum

## Maintenance and Service

No serviceable parts inside the module or any module within the Bear Fail Safe System. Consult Calscan

## Decoding Led's Indicators



Status

Solid Red: Operating correctly.  
Off: The SSR3 is currently in fault, which one is indicated by the blinking Diagnostic Code LED



Close



Open

Blinking Green: Actuator is moving to the Open or Close position  
Solid Green: Actuator is at the Open or Close position



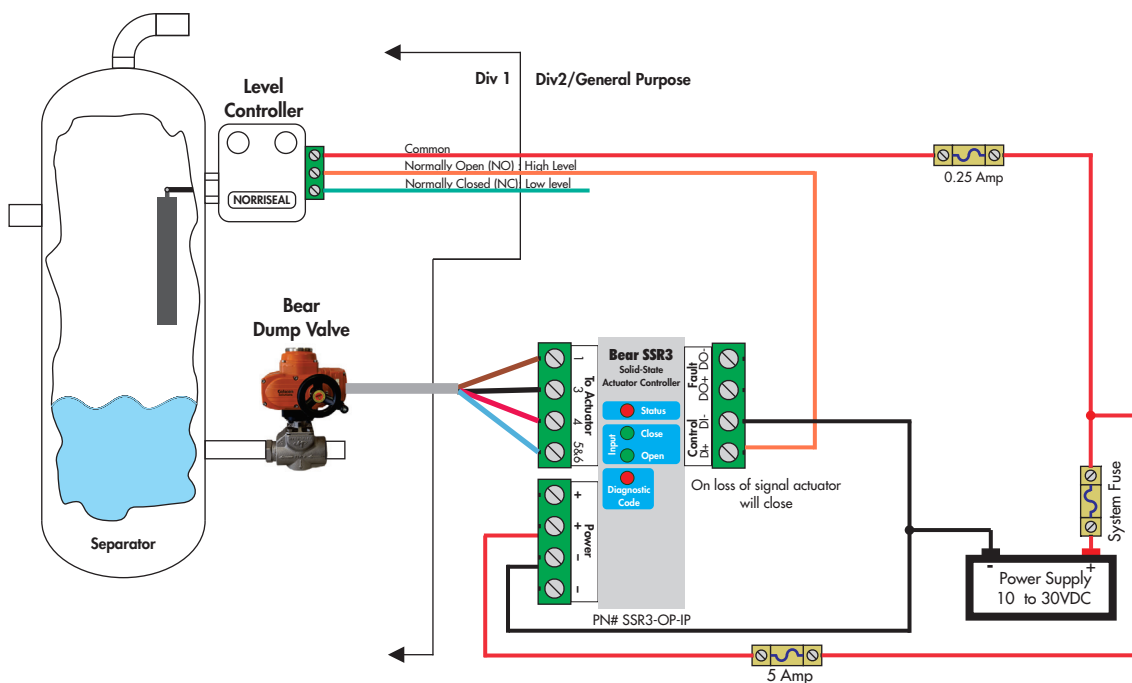
Diagnostic Code

Blink		Description
Long	Short	
1	1	Close Timeout, exceeds 30sec
1	2	Close Stall, current trips before limit reached
1	3	Tight-Shutoff Timeout, exceeds 3sec after close limit reached
2	1	Open Timeout, exceeds 30sec
2	2	Open Stall, current trip

If Status indicator is Solid Red, the Diagnostic code is the last fault. If Status indicator off, the code is the current fault  
It takes 2 successful actuator open/close cycles for the fault to clear

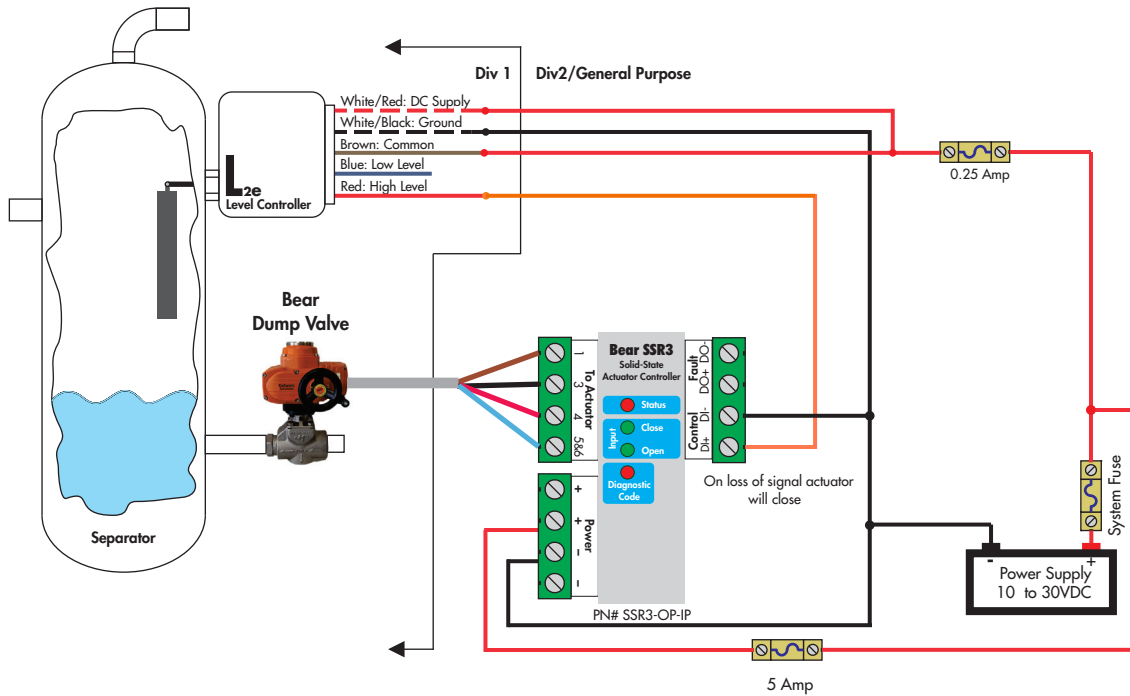
## Wiring Example 1

### Bear SSR3 Interfaced Directly To Norriseal Level Controller

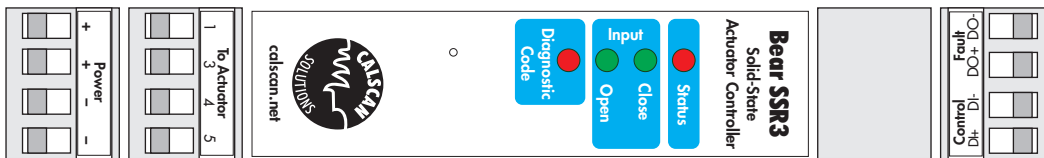


## Wiring Example 2

### Bear SSR3 Interfaced Directly To Ficher L2E Level Controller



## Terminal Block Placement



## Certification

Class I, Division 2, Groups C&D T3C  
 Class I Zone 2 Group IIB T3C  
 Ambient Temperature:  $-40^{\circ}\text{C} \leq T_a \leq 50^{\circ}\text{C}$

Certified to CAN/CSA Std. C22.2 No. 213, 61010-1 and 61010-2-201  
 Conforms to UL Std. 121201, 61010-1 and 61010-2-201

This module shall be installed and DIN railed inside an approved outdoor rated enclosure



## Ordering Information

SSR3 -	CLOSE CURRENT LIMIT
	- "XX" 00 = None xx = Current in Deciams Factory Set Option

**Calscan Solutions**  
 4188 93 St NW  
 Edmonton, Alberta, Canada  
 T6E 5P5  
 Ph:780-944-1377  
 www.calscan.net