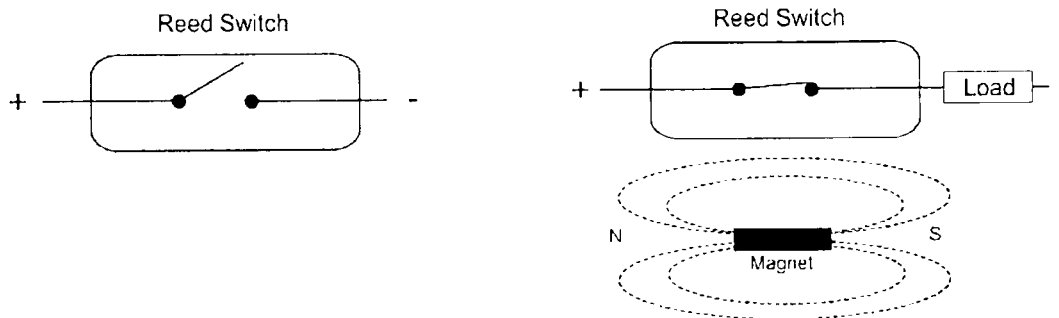


# ARS302 REED SWITCH TECHNICAL BULLETIN

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## 1. REED SENSOR WORKING PRINCIPLE

Aurora reed switch sensors contain hermetically sealed reed elements (mechanical contacts) which are open in their normal state. When the magnet on the cylinder piston moves within proximity of the switch magnetism is induced into the leads and forces the contacts to close.



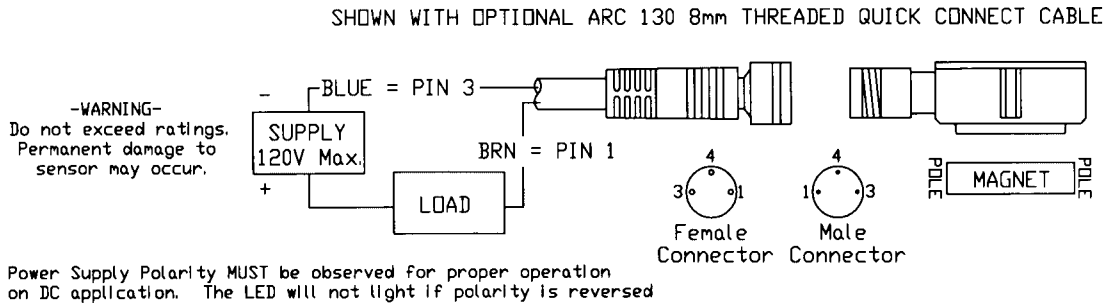
## 2. WHEN SHOULD REED SENSORS BE USED

Reed switch sensors are the lowest cost yet the most versatile. The ARS302 switch will operate from 5 to 120 volts AC or DC.

This switch is ideal when used with PLCs and other logic devices due to a built-in series current limiting circuit. The built-in current limiting provides protection against current surges common to PLCs and/or long wire runs.

Large inrush surge currents and transients common to inductive loads (relays, coils, and solenoids) will severely limit switch life expectancy. ARS302 reed switches do not have built in surge protection – protection must be provided by the load or by surge suppression connectors.

### 3. APPLICATION NOTES



Switch Type	Function	Switching Voltage	Switching Current	Switching Power	Voltage Drop
Reed Switch w/ LED for PLC's	Normally Open	5 - 120 VDC/VAC 50/60 Hz	.03 Amp Max 0.001 Amp Min.	4 watts Max.	3.5 Volts

Current and voltage demands of the load must NOT exceed the current and voltage ratings of the switch (shown on the diagram above). Failure to do so will ruin the switch. For DC voltage always observe polarity. Voltage must be 5 – 120 VAC/VDC and current must be 4 watts maximum.

Reed switches cannot be connected directly across the power supply without a series load. Failure to use a series load will damage the switch and possibly the power supply.

Never test a switch with a filament light bulb. Severe inrush currents will impair the switch or cause premature failure.

There are three types of loads: Resistive (PC or PLC), Capacitive (long wire runs), and Inductive (solenoids).

Always keep the area around the switch clean and free from potentially magnetic field carrying debris. The switches actuate on magnetic fields produced from the magnet on the cylinder piston. Stray magnetism can give unwanted switch actuation or change the switch activation point.

Reed switches do not have built in surge suppression. When using the switch to actuate a solenoid or any inductive load, always use a surge suppression version of solenoid and/or surge suppression connectors. Without these precautions large inductive spikes can severely limit switch life expectancy.

Use the switch to signal end of stroke only. Do not rely on the switch alone to stop the piston in mid stroke.

Reed switches are equipped with indicator lights. The light always depicts an output voltage from the switch. A minimum current of .005 amps is required.

ARS302 switches are NEMA 4 rated.

#### 4. TROUBLESHOOTING COMMON PROBLEMS

PROBLEM: LED lights but no output

Cause – Piston speed is too quick for PLC to respond quickly enough to detect sensor output.

Solution – Slow down cylinder speed if possible.

Cause – Bad connection, loose wiring.

Solution – Check wire connections.

PROBLEM: Inconsistent switching.

Cause – Weak or damaged magnet.

Solution – Replace the magnet.

Cause – Piston speed is too quick for sensor to respond or PLC cannot react quickly enough.

Solution – Slow down cylinder speed if possible.

PROBLEM: The switch is sticking in the ON position.

Cause – Load requires more current or voltage than the switch is rated for.

Solution – Replace the switch with one which has a greater current and/or voltage rating. ARS302 has a voltage rating of 5 – 120VAC/VDC and maximum current rating of 4 watts.

Cause – Voltage spikes from poor supply or other high energy devices such as motors, welders, coils, solenoids, etc.

Solution – Add transient suppression to the device causing the spike. In general diodes are recommended for DC loads and MOV's (metal oxide varistors) for AC loads.