

**INTERNATIONAL**

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Issue 70 • June 2017

# **FIRE PROTECTION**

**THE GLOBAL VOICE FOR PASSIVE AND ACTIVE FIRE PROTECTION**





# TLX Technologies

## Addressing thermal requirements in fire protection applications

**P**roducts designed for complex environments are required to meet increasing market and regulatory demands for improved performance, greater efficiency, and increased safety. This provides opportunity for design collaboration between product and system design teams and component suppliers to achieve intelligent, innovative solutions for fire protection applications. Whether developing new technologies or enhancing current applications, smart actuation components are engineered to address the challenges of these unique, complex environments.

Operational environments have many factors that vary depending on the application and function. These each need to be considered during the development of a solenoid or valve. One such factor is operating temperature. With the increased use of connected devices as well as advances in technologies, controlling temperatures and developing components that consistently operate in these unique conditions is vital for optimal performance. Extremely high or low temperatures present unique challenges for engineering design teams that can be addressed through special attention to design geometry, material selection, duty cycle, and control strategy of the solenoid or valve. Utilization of latching technology in solenoid and valve design provides additional opportunity to significantly reduce power consumption resulting in no heat production.

Latching solenoids utilize the electrical current pulse or internal permanent magnet material to maintain a set position without the constant application of an electrical current. While the principal of operation is similar to all linear solenoids, latching solenoids and valves are different in that the electrical polarity is important to obtain proper operation. As the current flows in one direction energizing the coil field in the solenoid, it adds to the pull

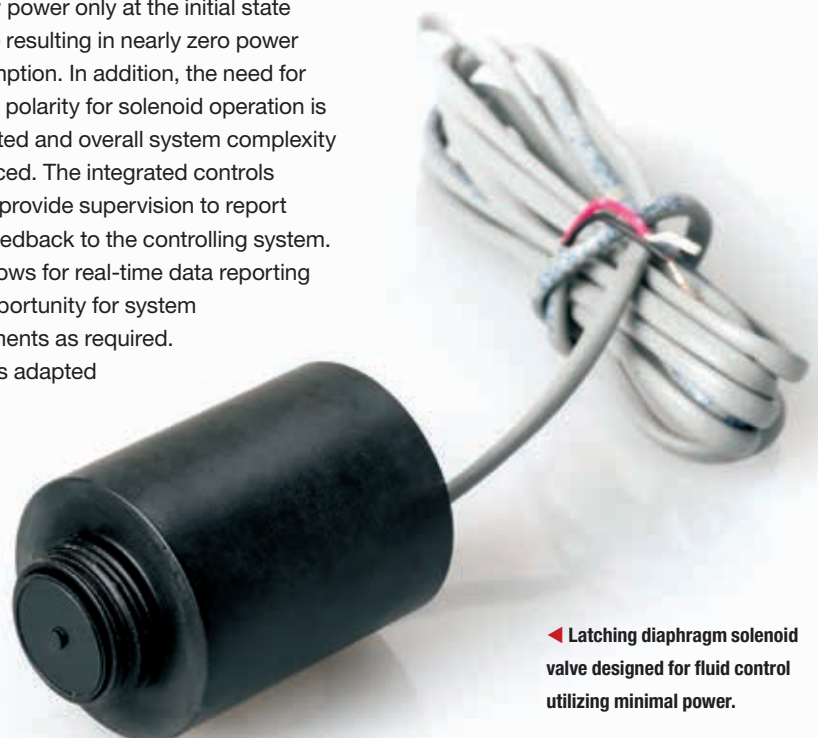
of the permanent magnet. The armature is attracted to the stationary pole within the solenoid body. Once the armature has moved full travel and is in contact with the pole, it will remain in this position without any further electrical power input. The armature is held in this position by the permanent magnet. To release the solenoid from this hold position, the “holding” magnet’s attraction needs to be cancelled by sending a current back through the coil field in the opposite direction. Latching solenoids are most efficient when the pulse time is very short compared to the hold time. While a latching solenoid can be used in both short and long stroke applications, the solenoid stroke should be minimized to improve efficiency. In addition, the distinctive magnetic features allow latching solenoids to have equivalent forces in smaller package sizes.

Further efficiency can be realized through the addition of integrated controls to the latching solenoid or valve. This addition allows the component to draw power only at the initial state change resulting in nearly zero power consumption. In addition, the need for reverse polarity for solenoid operation is eliminated and overall system complexity is reduced. The integrated controls further provide supervision to report state feedback to the controlling system. This allows for real-time data reporting and opportunity for system adjustments as required. TLX has adapted

latching technology for use in a host of applications including combining latching technology with proportional fluid control, which allows valves for air, hydraulic, water and coolant control to be used in entirely new and different ways.

For over 15 years, TLX Technologies has partnered with manufacturers to develop and manufacture customized actuation devices for fire suppression systems. Choosing a TLX designed actuator, solenoid, or valve for your fire protection application ensures a solution optimized for your application and expertly tailored to your exact needs.

 For more information, go to [www.tlxtech.com](http://www.tlxtech.com)



◀ Latching diaphragm solenoid valve designed for fluid control utilizing minimal power.

Image courtesy of TLX Technologies