

Multiplexer (MUX)

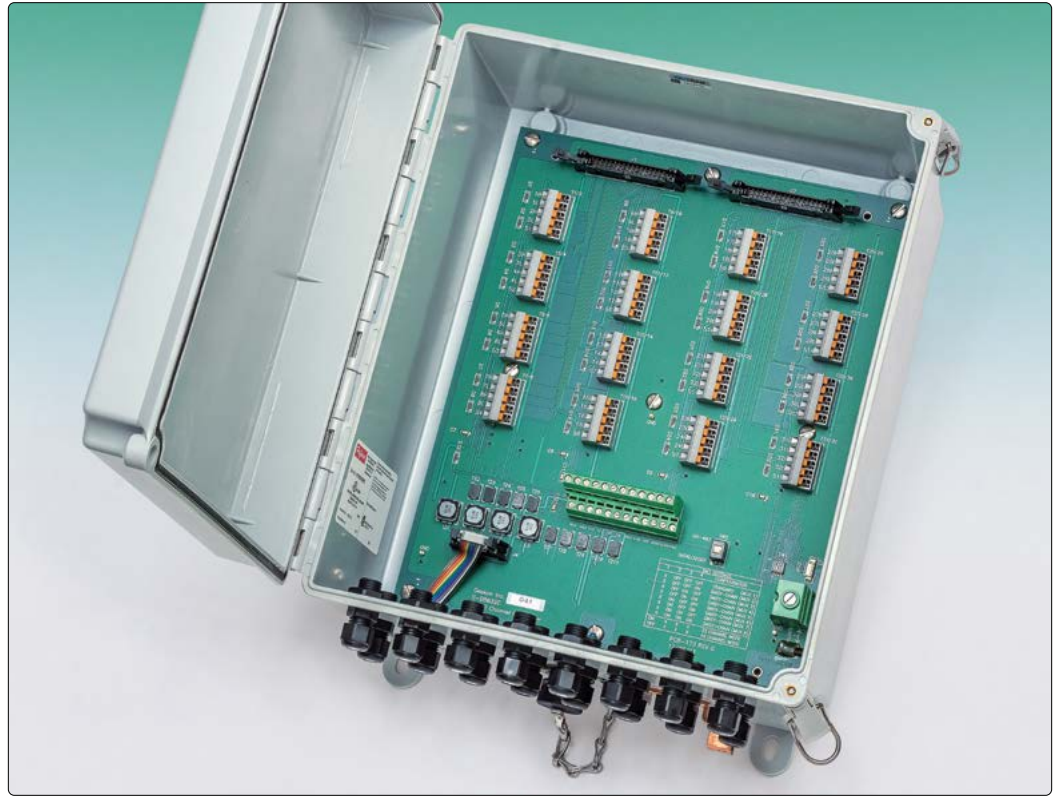
Applications

The Model 8032 Multiplexer expands the number of channels that can be read by the Model 8600-1 Datalogger or the GK-404 or GK-405 Vibrating Wire Readouts. Applications include...

- Dam monitoring
- Tunnel and underground excavation monitoring
- Structural monitoring
- Water and stream levels
- Pump tests



• Four Model 8032 Multiplexers connected to a Model 8600-1 Datalogger.



- Model 8032-16-1S 16-channel Multiplexer
- Model 8032-32-1S 32-Channel Multiplexer (not shown)
- Model 8032-32-5 32-Channel Multiplexer with daisy chain option (not shown)

Operating Principle

The Model 8032 Multiplexer consists of an integral terminal board and multiplexer board, with mechanical relays, to allow switching of the gauge connections. Two switching configurations, set by a jumper on the multiplexer board, are supported; 16 channels of 4 conductors or 32 channels of 2 conductors.

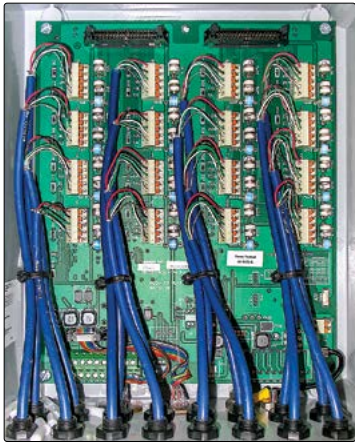
Optional manual switches may be connected to the terminal board that permit easy access to each channel of the multiplexer for taking manual measurements with a portable readout in tandem with those taken automatically with the datalogger.

To protect against lightning or EMI/RFI induced transients, each channel is protected by an integrated lightning protection system, which incorporates 230 V tripolar plasma surge arrestors, 150 V bipolar plasma surge arrestors, 10 uH inductors and 16 V transient voltage protection diodes.

Advantages and Limitations

The Multiplexer is housed in a Nema 4X weatherproof enclosure with cable entries for passing the instrument cables to the terminal board. Seals for specific cable sizes, and plastic dowels for any unused cable entries, are provided to minimize the possibility of water or other contaminants entering the box. However, additional measures are recommended to protect and ensure uninterrupted operation of the equipment. For example, the Multiplexer could be installed on a wall inside an equipment trailer or shed in typical field environments.

Up to eight 8032's may be "daisy-chained" together using a common RESET and CLOCK control line. This allows the connection of additional multiplexers if required, and there are not enough datalogger control ports available, or reduces the number of cables required to implement a large multi-channel system.



● Model 8032 16 Channel Multiplexer showing internal sensor connections.*



- Model 8032-25 16-channel Manual Switch installed on the Model 8032-16-1S Multiplexer
- Model 8032-26 32-channel version (similar, but not shown)



● Model 8600-1 Datalogger (right) and the Model 8032 16 Channel Multiplexer (left).

The 8032 Multiplexer is a low-power device that can be located at a considerable distance from a Model 8600-1 Datalogger to which it's connected. However, there are limits to the maximum distance—mostly due to the voltage dropped by the connecting cable over its length. Factors such as ambient temperature, number of multiplexers “daisy-chained” together and system battery voltage need to be considered in determining the maximum cable length. For a single 8032 Multiplexer under normal operating conditions (System Battery = 12 V, ambient temperature = 20 °C), the maximum recommended cable length from the data-logger to the multiplexer is 4588 feet (≈1400 m).

Technical Specifications

Switching Current	1 A (maximum)
Contact Resistance	0.1 Ω (maximum)
Insulation Resistance	> 1 GΩ
Switch Life	> 200,000 cycles
Enclosure	Nema 4 fiberglass
Temperature Range	-40 °C to +60 °C
L × W × H ¹	342 × 301 × 160 mm

¹Does not include mounting feet.

*Photo courtesy of GKM Consultants, Inc. (www.gkmconsultants.com).