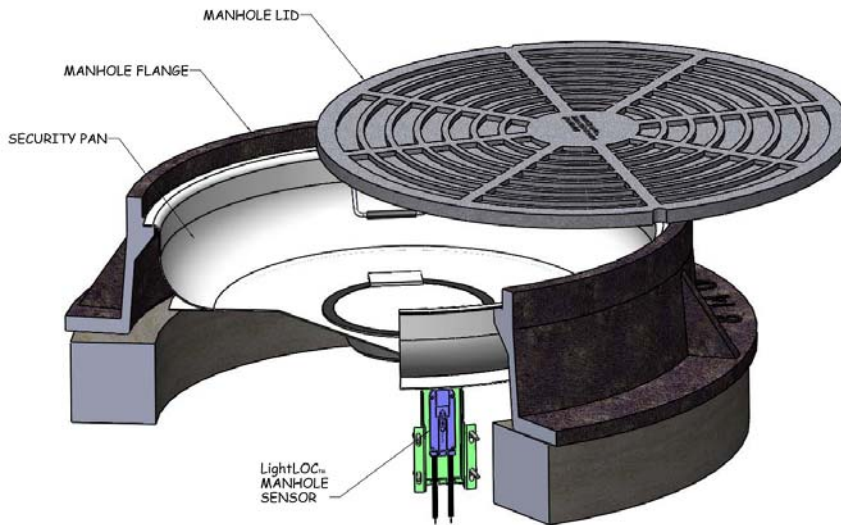


LIGHTLOC®



SmartSwitch

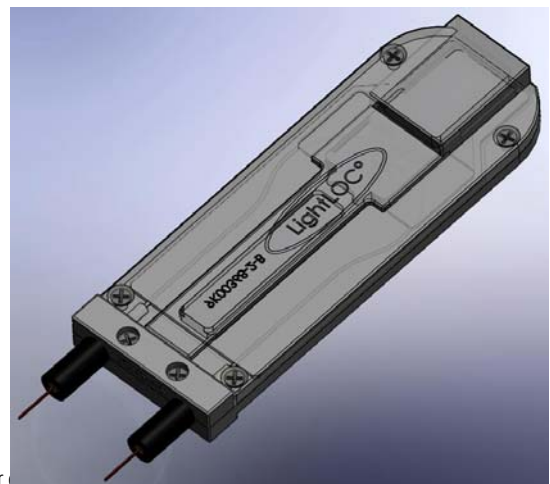
SmartSwitch is a non-electrical, non-contact sensor in the LightLOC family designed for monitoring manholes and handholes. In addition, this highly adaptable sensor offers a host of other monitoring solutions such as cabinet doors, junction boxes, and anywhere else movement of a barrier is necessary to gain access to an asset. It was developed to overcome the

distance limits of copper-based contact switches and is capable of being monitored from up to 25km away. Monitoring devices include the LightLOC Network or Express Systems. With the Network System, up to 25 sensors per line and up to eight lines are currently supported under a single software platform depending on the configuration.

Like all the LightLOC sensors and monitoring systems, SmartSwitch was designed to be a zero-false-alarm solution. It is extremely tamper-resistant, rugged, and sealed for use in damp or even submerged environments. It is fiber-optic based and, thus, immune to EMI and RFI transmissions as well. No electrical power is needed at the location of the sensor allowing it to be installed where there is no power available or where power cannot safely be delivered.

Sensor Functionality

Inside the sensor there is a loop of singlemode fiber positioned between a powerful magnet and a spring/damper unit. When the target is present, the fiber is unaffected. The magnetic force overcomes the opposing force applied by the spring-damper unit. When the ferrous target is removed, the magnetic force goes to zero, allowing the spring-damper unit to pull the fiber loop creating a harmless macrobend in the fiber. It is this



For additional information on the LightLOC® system, please contact Doug Piper at 864.963-5131 or doug@lightloc.com. Specifications are subject to change.

macrobend that is detected by the monitoring system located up to 25km away in a secure location. The damper holds the fiber in the tripped position to allow time for detection to occur, even if the target or a ferrous slug is immediately placed on the sensor in an attempt to defeat it. The built-in sensor reset delay ensures detection of incidents like an intruder lifting the lid only long enough to jump in or drop an explosive device.

The force of the magnet is strong enough to permit placement of the sensor up to 1/8” from the ferrous target. This is enough space to mechanically isolate the sensor from movements in the lid from passing traffic and removes the possibility of false alarms simply from vibration. For additional mechanical protection in demanding environments, the mounting shroud for the sensor is heavy-gauge stainless steel.

Technical Details

Minimum Movement Detected	½ inch
Sensor Dimensions (without shroud)	1 ¾” W, 4” H, 7/8” Thick
Maximum Sensors per Line	25 for Network System
Fiber Type	Singlemode
Monitored Wavelength	1550nm
Operating Temperature	-32C to 50C
Humidity	Immune/Submersible
Sensor Life	>10,000 Trips

Installation

LightLOC SmartSwitches are installed by splicing them in to a standard, communications-grade fiber optic cable routed to each sensor location and mounting the sensor. Splices are stored in sealed splice enclosures, which are pre-loaded and included with each sensor. Typically, there are only four splices at each sensor location.

LightLOC can provide certified LightLOC installers to perform the installation or if a site’s preferred installers are not certified, training may be provided. Splicing standards are very strict to allow optimal system performance.

Sensors are mounted using the provided mounting bracket. The bracket is customizable for unique applications, and standoffs of various sizes are used as needed for correct positioning.

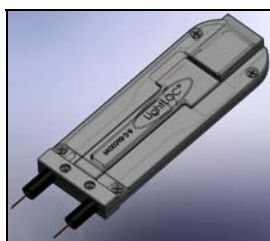
The most common application for the SmartSwitch sensor is for monitoring communication manholes and handholes. For these cases, it is recommended to install the sensor in conjunction with a locking type pan as a deterrent to unauthorized entry. This combination provides both delay and detection. The sensor is then mounted beneath the pan inside each hole typically 0.10” to flush with the bottom of the pan. LightLOC can provide locking pans for manhole and handhole installations for both round and rectangular openings.

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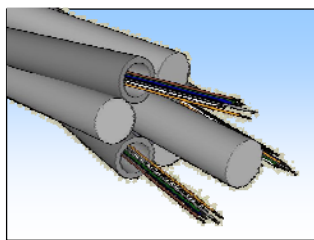
Installation Photographs



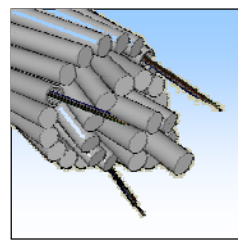
The family of LightLOC sensors is continuously growing! Current sensing products include:



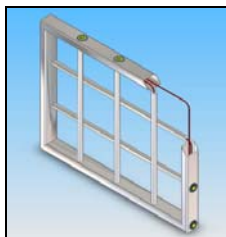
Manhole Lid Sensors



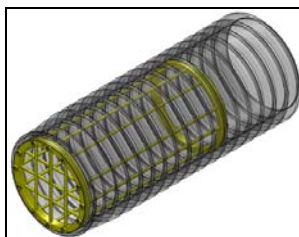
Vehicle Detection Cable (3/8")



Vehicle Denial Cable (1")



Smart Grate



CageGrate



SmartGate

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