

Mikron ViewPorts

- *Most cost-effective infrared scanning technology*
- *Improve worker safety*
- *No down-time for circuit inspections*
- *Suitable for low and high voltage applications*
- *Increased accuracy and easy installation*



Introduction

Infrared testing has emerged as a powerful and highly accurate diagnostic tool for uncovering potentially dangerous faults in electrical distribution systems. Until recently, infrared testing was usually performed by opening panel doors, leading to possible production downtime and requiring multiple service personnel working on the job. As with any type of maintenance testing, factors

such as cost, time and safety play an important role in deciding to purchase such services. With the introduction of Mikron's Infrared SpyGlass Lens and ViewPort system, hotspots in closed electrical cabinets can be more accurately pinpointed while circuits are energized and underload—minimizing the need for shutdown time. Utilizing the ViewPort system also

eliminates the need for multiple testing personnel, reducing the cost and time spent on the project. ViewPorts are economically priced and are easy to install and virtually maintenance free. The ViewPort is a revolutionary solution for modern day infrared testing.

Characteristics and Options

The ViewPort is a circular disk that is strategically placed on a panel door once an opening has been measured and cut to specifications. Once in place, the ViewPort uses only a 0.5 inch keyhole like aperture which the SpyGlass lens attaches to in order to scan the equipment inside. Due to the unique design of the ViewPort, the integrity and safety rating of the cabinet is never compromised. ViewPorts have no metal screen barrier to interfere with test readings and are unaffected by moisture, dirt, UV and corrosive environments. And unlike infrared windows, ViewPorts never need cleaning or glass replacement. There are three ViewPort models available, the standard model, the lockable model and the lockable model with window. All three styles are UL and CSA approved and comply with IEEE Std C37.20.2-1999.

The Standard ViewPort model contains two o-rings which maintain complete immunity to

dust and water penetration to the inside of the cabinet. The Lockable ViewPort model contains three o-rings which maintain complete immunity to dust, water and oil penetration to the inside of the cabinet and also has a keyed locking feature preventing unauthorized openings of the ViewPort protective cover. The third model, the Lockable ViewPort with Window, includes an infrared window and four o-rings that maintain complete immunity to dust, water and oil penetration to the inside of the cabinet. This model also includes the keyed locking feature.

ViewPorts can be installed in both indoor and outdoor environments and on high or low voltage applications that have an expansive and unobstructed view behind the desired panel including mechanical rooms, motor control centers, transformer terminal boxes, air circuit breakers, motor lead boxes and a wide range of mechanical equipment.

The SpyGlass Lens and ViewPort system is similar to a ball and joint socket with the ViewPort designed to dock the cone-shaped tip of the lens barrel enabling the camera to view at many different angles. The plastic-tipped barrel protects the lens elements from contact with the port or cabinet and provides a layer of insulation

that eliminates “path to ground” hazards. The SpyGlass Lens is a “fisheye lens” with its wide field of view (53° horizontal by 40° vertical, or 66° diagonal) allowing for easy scanning of the interior while providing a temperature reading accuracy of $\pm 3^{\circ}\text{C}$. With a minimum focus range of three inches and large depth of field, the SpyGlass lens reduces the need to re-focus for different electrical cabinet depths.

Accuracy

Recent studies conducted to test the accuracy of infrared readings concluded that the Mikron SpyGlass Lens and ViewPort inspection combination produced more accurate temperature readings than IR and Mesh Windows. These recent findings are especially important when looking at switchgear. Since most switchgear is usually oversized for the load and tends to run cool, the IR camera must be able to detect subtle temperature differences and anything that attenuates the energy reaching the camera’s detector would compromise results.

Cost-Effectiveness

ViewPorts prove to be a more economical purchase than its counterpart the infrared window with a cost of 15-30% of the price of windows. ViewPorts are very easy to install and require only

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one person for the installation. With ViewPorts, testing can take place more frequently allowing for problems to be caught and corrected earlier— minimizing unplanned shutdowns. With ViewPorts it only takes one qualified thermographer to execute the testing instead of multiple testing personnel and a company representative. And, less time is needed because the doors do not need to be opened and no downtime is required to de-energize the circuits for inspection.

Safety

Safety is always an important factor when working with electrical equipment. With the installation of the ViewPorts, worker safety increases because the panel doors are left closed. The need for bulky PPE is reduced to a hardhat, safety glasses and ear plugs. The typical blast suit, heavy gloves, hood and face shield are not required.

Performed by Professionals

The installation of ViewPorts provides a more accurate and safer method to perform infrared inspections. There are, however, two additional factors that can significantly alter the accuracy of an infrared survey: 1) the testing equipment and 2) the thermographer performing the test. Camera technology varies

widely and plays a critical role in the accuracy of the survey. Selecting the most advanced and capable IR technology means more consistent results and tests that can be administered more safely than in the past. Thermal images are only as good as the personnel available to interpret them. Therefore, only a qualified thermographer, one that has undergone the appropriate training and performs thermographic inspections on a regular basis, should perform the work.

For these reasons, it is important

to choose a reputable company with the necessary qualifications, equipment and experience to perform an accurate infrared inspection. Emerson's Electrical Reliability Services has been performing infrared inspections for more than 30 years. All infrared inspections are conducted according to NPFA 70E and follow the guidelines of NFPA 70B for thermographic inspections of electrical equipment. With more than 30 years of testing experience, Emerson is equipped to provide single point solutions for every area associated with infrared inspections



including electrical testing, maintenance and engineering services.

Report of Findings

As a critical part of a complete predictive or condition-based maintenance program, infrared inspection findings are carefully documented in a comprehensive electronic and/or paper report that includes:

- *High resolution color digitized photographs and thermogram images*
- *Recommendations for correction or repair*
- *Timely delivery of results prior to scheduled maintenance shutdown*

Benefits

The benefits of installing Mikron's Infrared ViewPort system include:

- *Cost-effective*
- *No downtime required to de-energize circuits for inspection*
- *Increased accuracy compared to alternative products*
- *Easy installation and virtually maintenance free*
- *A safer, easier way to inspect electrical cabinets - with doors closed*
- *Mikron ViewPorts comply with IEEE Std. C37.20.2-1999*
- *UL & CSA Approved*
- *Suitable for both low-and high-voltage applications (480V and up)*

Summary

Trust the experienced professionals at Emerson's Electrical Reliability Services to install Mikron ViewPorts on your distribution system. From installation to operation, only Emerson has the knowledge and experience to seamlessly integrate all the essential services to deliver improved system performance required by today's critical facilities. Our highly trained and certified thermographers utilize the latest in IR technology and will provide the most accurate and responsive infrared testing available today while maintaining the cost-effectiveness of your testing programs. For more information on Emerson's Electrical Reliability Services and service capabilities, contact your local service center.

Emerson—Your Partner in Reliability

From installation to operation, only Emerson has the knowledge and experience to seamlessly integrate all the essential services to deliver "high nines" reliability required by today's critical facilities. Look to us as your partner. We'll be with you every step of the way with the right combination of technology, people, and services. Contact Emerson to realize the true potential of your assets.

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