

**FLUKE®**



# Fluke IR Windows

Easier NFPA 70E compliance without compromising on product performance.



Outdoor/indoor any voltage, arc-tested



Indoor medium voltage



Indoor low voltage

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## IR windows engineered to live up to the Fluke name

Fluke Infrared (IR) Windows make it easier to comply with the NFPA 70E safety standard. Their arc-resistant crystal optics are engineered and tested to withstand the extreme pressures and temperatures of an electric arc-fault event up to 50 kA. Their unique Kwik Twist magnetic security cover further protects the viewing pane from accidental external impact, and is locked in place with a security access key. For added convenience, the Kwik Twist cover magnetically sticks to the metal panel.

Even more remarkable is their AutoGround™ feature, exclusive to Fluke, that automatically grounds the Fluke IR Window upon installation, without any additional steps or testing. The Auto-Ground feature enhances worker safety and eliminates the need to separately ground each metal component of the window.

## The clear advantage for thermal imaging

Fluke offers three IR windows, all of which are UL and CSA certified. The CLKT is certified for use both outdoor and indoor. CLKTO and CLV are certified for indoor use. All models feature the exclusive Fluke ClirVu® coating that seals the entire crystal optic—including the edges—making it impervious to moisture and vibration and protecting it from the aging effects of UV exposure. ClirVu optics are insoluble and guaranteed never to degrade even when exposed to mild acids or alkalis. Of the thousands of Fluke CLKT IR Windows installed—many in very challenging environments—not one has been returned due to moisture or transmission degradation.

The antistatic properties of the ClirVu coating also help repel dust and grime to keep both sides of the window clean for better IR transmission. As a result, Fluke IR Windows transmit up to 96 percent of the energy emitted, producing a more detailed image.

Not only do Fluke IR Windows deliver a clearer view of the equipment being inspected, they also present a larger viewing area than other windows on the market. Since the entire area of the crystal optic is available for infrared transmission, it provides optimum repeatable results. It also provides a better view for visible light inspections.



Industrial, mechanical, electro-mechanical and general building maintenance.

Process, refractory insulation, tank and vessel levels, steam systems and traps, pipes and valves, etc.

Electrical, unbalanced loads, overloaded systems, wiring mistakes—or component failure, etc.

## Maximum inspection flexibility

Fluke is the only IR Window with Quadraband™ multispectral optics that support most popular camera brands and IR, UV, and visual inspection modes. That means you can change your camera without having to change your IR Windows. Quadraband optics transmit electromagnetic radiation in:

- Longwave infrared
- Midwave infrared
- Visual
- UVA and UVB ultraviolet

So whether you use longwave thermal imagers, midwave thermal imagers, corona/UV cameras, or traditional visual cameras, you can take full advantage of the state-of-the-art Fluke IR Window features.

## Backed by the first name in preventive maintenance

With Fluke IR Windows you get more than a premium quality product guaranteed for the life of the equipment. You also get a strong support network to work with you before, during, and after the sale. Whether you need help starting an IR inspection program, planning your IR Window installation, or installing your IR windows, Fluke expertise is just a phone call away.

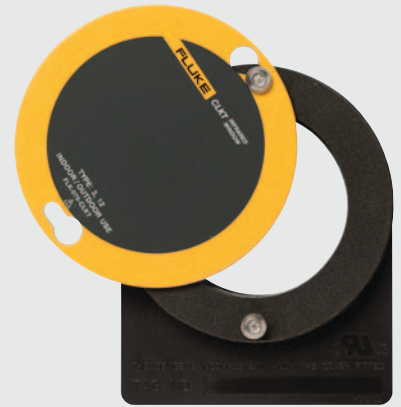
## Increased efficiency, decreased costs

Fluke IR Windows can save costs every step of the way. It takes just one person about 10 minutes to install a Fluke IR Window. This helps to minimize installation labor costs and system downtime. Just power down, remove the panel cover, position the window using the included template, drill the hole, and affix the window with three self-tapping screws. Because all the mounting hardware attaches to the outside of the panel there are no parts inside that can work loose and cause a short.

Once installed, Fluke IR Windows increase efficiency because maintenance professionals can perform inspections quickly without requiring electricians to reduce the power and remove the panel cover. Inspections through IR Windows are conducted at full power, so you don't lose any production time. The decreased arc-flash risk provided by Fluke arc-resistant, ClirVu® coated optics also may reduce insurance costs.



## Enhance the indoors and



Fluke CLKT IR Window for outdoor/indoor applications—50 ka arc-tested



Fluke CLKTO IR Window for indoor medium voltage applications up to 38 kV



Fluke CLV IR Window for indoor low voltage applications up to 600 V

# safety and speed of IR inspections— outdoors

## Fluke CLKT IR Windows for outdoor/indoor high voltage applications

Whether your electrical inspection program takes you to the temperature extremes of a northern Canadian winter or the California desert, the corrosive conditions of offshore oil rigs, or anywhere in between, you can count on Fluke CLKT IR Windows to stand up to the challenge. With their heavy-duty aluminum housing and arc-flash resistant design you'll find they perform their best under even the worst conditions to increase the speed and safety of your IR inspections. Here's why:

- Engineered and tested to withstand an electric-arc up to 50 kA for 30 cycles.
- Certified by UL and CSA for Type 3/12 outdoor environments in North America
- Certified by SIRA IP65 for outdoor environments in Europe
- Tested to withstand long term aging effects of UV exposure
- Available in 2, 3, or 4 inch diameters
- Equipped with an identification plate to provide unique onsite numbering for rapid location and faster repairs.
- Includes a security access key, installation instructions, and self-adhesive drilling template

## Fluke CLKTO IR Windows for indoor medium voltage applications

The Fluke CLKTO IR Window was designed specifically for installation on indoor equipment. It includes the exclusive Fluke ClirVu® coating, Quadraband optic technology, and AutoGround installation of our outdoor IR Window, along with specific features appropriate for indoor applications.

- Features a 3 inch diameter impact-resistant viewing pane that complies to ANSI C37.20.2 for indoor switchgear up to 38 kV
- Holds environmental certification that meets and exceeds UL50/NEMA Type 1 certification for use in indoor environments in North America
- Tested to withstand the long term aging effects of UV exposure
- Includes an identification plate for unique, onsite numbering for rapid location and faster repairs
- Comes complete with a security access key, installation instructions, and self-adhesive drilling template.

## Fluke CLV IR Windows for indoor low voltage applications

- For equipment up to 600 V
- Industry's first IR Window tested to UL1558 Standard for Low Voltage Switchgear
- Available in 3 in diameter
- Certified by UL and CSA for Type 1 – indoor use only



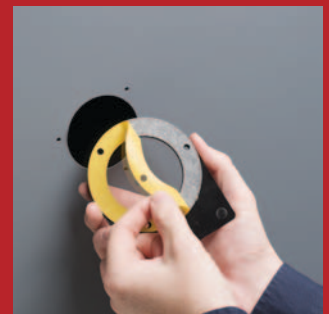
## Quick installation



Position with template



Drill hole



Peel to expose self adhesive



Affix the window

For detailed installation see the UL validated installation instructions supplied



## Why open enclosures and expose yourself to arc flash hazards when you don't have to?

Infrared (IR) thermography is a critical technology in successful preventive maintenance programs for electrical systems. By measuring the amount of heat emitted from electrical components, maintenance professionals can detect malfunctions before they cause a major failure. However, by inspecting live equipment, technicians expose themselves to the potential danger of an "arc flash", electric shock, or explosion every time they open a panel cover.

To address that hazard, in 2012 the NFPA 70E Standard for Electrical Safety in the Workplace, (the leading internationally recognized workplace standard) was revised by the National Fire Protection Association (NFPA) to reduce the risk to workers in arc-flash hazard zones. Installing properly certified IR windows to inspect switchgear and motors can make it easier for companies to comply with NFPA 70E because IR windows allow a technician to inspect the equipment without removing the panel cover reducing the exposure risk. This reduced exposure risk may also reduce the amount of personal protective equipment (PPE) that the inspector must wear. Please consult PPE regulations to obtain accurate requirements for your environment.



### Make the safer choice with Fluke IR Windows

Before choosing an IR Window you need to consider several factors: where it will be installed; what conditions it will be exposed to; how many people are required to install it; and any certifications it holds. When you choose a Fluke IR Window you're making a safer choice related to all of those concerns. For more than 60 years Fluke has led the way in engineering durable, reliable, and accurate tools for industrial troubleshooting and preventive maintenance.

In 2009 Fluke extended that commitment to IR windows when it acquired Hawk IR International—the world leader in infrared windows and other safety products. Hawk IR Windows set the standard for safety, performance, and dependability with several innovations, including, the first supplier to offer a 50 kA arc-resistant IR Window. Fluke is still the only supplier that offers:

- UL- and CSA-recognized window with ClirVu® technology
- Totally insoluble ClirVu® crystal optic IR window
- Revolutionary AutoGround™ safety system

Now part of the Fluke family, these IR Windows provide a clear view of motors and switchgear through infrared, ultraviolet (UV), and visible light inspections. You'll find Fluke IR Windows in a broad range of applications—from industrial plants to commercial buildings, from hospitals to electric and water utilities. These windows provide a combination of exclusive features that deliver a higher level of safety, performance, and efficiency than any IR Window on the market.



## General specifications

		Outdoor/indoor, any voltage, arc tested			Indoor, medium voltage	Indoor, low voltage
		FLK-50-CLKT	FLK-075-CLKT	FLK-100-CLKT	FLK-075-CLKTO	FLK-075-CLV
Crystal insert diameter		50 mm (1.97 in)	75 mm (2.96 in)	100 mm (3.94 in)	75 mm (2.96 in)	
Viewing aperture diameter		43 mm (1.7 in)	68 mm (2.7 in)	89 mm (3.5 in)	68 mm (2.7 in)	
Viewing aperture area		1452 mm <sup>2</sup> (2.25 sq in)	3632 mm <sup>2</sup> (5.63 sq in)	6322 mm <sup>2</sup> (9.79 sq in)	3632 mm <sup>2</sup> (5.63 sq in)	
Thickness		2 mm (0.08 in)		4 mm (.16 in)	2 mm (0.08 in)	
ClirVu® Coating		Yes				
Arc-tested		50 ka for 30 cycles @ 60Hz (IEEE C37.20.7)			—	
Voltage limit		Any			38 kv	600 V
Shortwave IR, Midwave IR, Longwave IR, Ultraviolet (UV) capable		Yes				
Visual and fusion capable		Yes				
Maximum Temperature	Gaskets	250 °C (482 °F)				
	Body	659 °C (1218 °F)				200 °C (392 °F)
	Optic	1400 °C (2552 °F)				
	Viewing pane	—			150 °C (392 °F)	—
UL rating	UL 50 environmental	Type 3/12			Type 1	
	UL746C	N/A polymer free			Yes	
	UL94	N/A polymer free			Yes	
	UL1558	—			Yes	
CSA rating	Environmental	Type 3/12			Type 1	
IP Rating		IP65				
Lloyd's Register		Up to 11 kV marine switchgear, indoor or outdoor (offshore only)			—	
Pull out strength		Up to 1388 lb (630 kg)				
Warranty		Lifetime replacement against manufacturing defects				

For more detailed specifications download datasheets at [www.fluke.com/irwindows](http://www.fluke.com/irwindows)

## Frequently asked questions about IR windows

**Q.** Aren't IR windows that are made of polymeric materials more durable than those made of crystal?

**A.** No. Polymer IR Windows can't withstand the high temperatures and pressure of an arc-flash and therefore could become a molten projectile. In addition, polymeric materials can degrade over time due to UV exposure, making them brittle and easily broken. Fluke IR Windows feature arc-resistant crystal optics designed to withstand an electric arc flash up to 50 kA for 30 cycles.

**Q.** Won't a crystal optic absorb moisture and degrade over time?

**A.** Not if the crystal optic is protected. Fluke ClirVu® coating seals the entire optic—even the edges—making it insoluble and guaranteeing it never to degrade from moisture, or exposure to mild acids, alkalis, or UV rays.

**Q.** Why do I need an IR window for my low voltage equipment?

**A.** Arc-flash is not based only on the voltage level of your equipment. After conducting an arc-flash hazard analysis, as called for by the NFPA 70E safety standard, you may find that the available fault current on your low-voltage equipment is as high, or higher, than on your medium and high-voltage equipment.

**Q.** If all IR windows meet safety standards why shouldn't I pick the one with the lowest cost?

**A.** All IR windows do not have the same certification, which means that they offer different levels of risk reduction. Some are certified for indoor use only and so do not offer the same degree of risk reduction for outdoor applications. One of the most widely accepted testing laboratories for electrical equipment is Underwriters Laboratories (UL), which has standards and codes that apply to all types of electrical components, including IR windows. All Fluke IR Windows hold the UL50 environmental rating—CLKTO and CLV meet the UL50 Type 1 rating (indoor) and the CLKT has the UL50 Type 3/12 rating (outdoor). These ratings recognize Fluke IR Windows for maintaining their integrity in the environment for which they are designed.

**Q.** Will installing an IR window in my electrical panel derate the environmental integrity of my equipment?

**A.** As long as you match the NEMA/UL50 rating of the equipment with the NEMA/UL50 rating of the IR window and install according to the instructions included with the product, you will not "derate" the environmental integrity of the cabinet. Fluke IR Windows are UL Recognized for installation in indoor (CLKTO and CLV) and indoor and outdoor (CLKT) equipment.

**Q.** Where do I install IR windows in a panel?

**A.** The IR window's field of view varies based on window size and distance to target. For detailed information on field of view, please visit, [www.fluke.com/irwfov](http://www.fluke.com/irwfov)

**Fluke. Not just infrared. Infrared you can use.™**

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