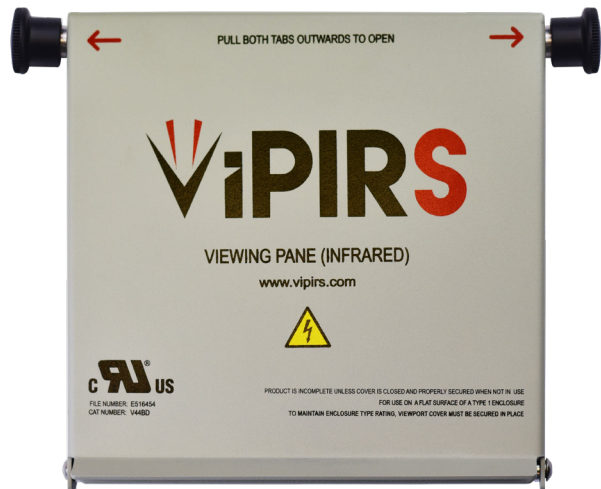


T H E  
**ViPIRS**  
S E R I E S



**INFRARED VIEWING PANES**

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# ViPIRS



BLASTDOWN™  
Arc-Protection System



Composite safety optic –  
Impact and load tested for  
global compliance.



Underwriters Laboratories  
(UL) Certified



Unconditional lifetime warranty



Designed for all  
infrared cameras



Easy to clean optic design

The ViPIRS brand of infrared windows sets new standards in electrical safety. ViPIRS (**V**iewing **P**ane **I**nfra**R**ed) product line, is an entirely new approach to infrared window/viewing pane design incorporating groundbreaking technologies including the unique composite polymer optic and embedded pressure relief system known as *BLASTDOWN™*.

Unlike traditional polymer IR Viewing panes which have mesh on one or both sides of an infrared transmitting polymer, ViPIRS utilise a composite optic incorporating safety mesh embedded within the polymer itself. This key breakthrough in composite optic design has several key advantages including increased resistance to harsh environments and superior thermal image quality.

Designed specifically for use with today's modern, longwave infrared cameras, the large scale ViPIRS composite polymer optic enables virtually infinite viewing angles. As well, the infrared transmission properties that will not degrade over time.

Certified by Underwriters Laboratories (UL) and suitable for electrical equipment operating at Low, Medium or High voltage, the ViPIRS infrared window with *BLASTDOWN™* is the ultimate infrared window technology.



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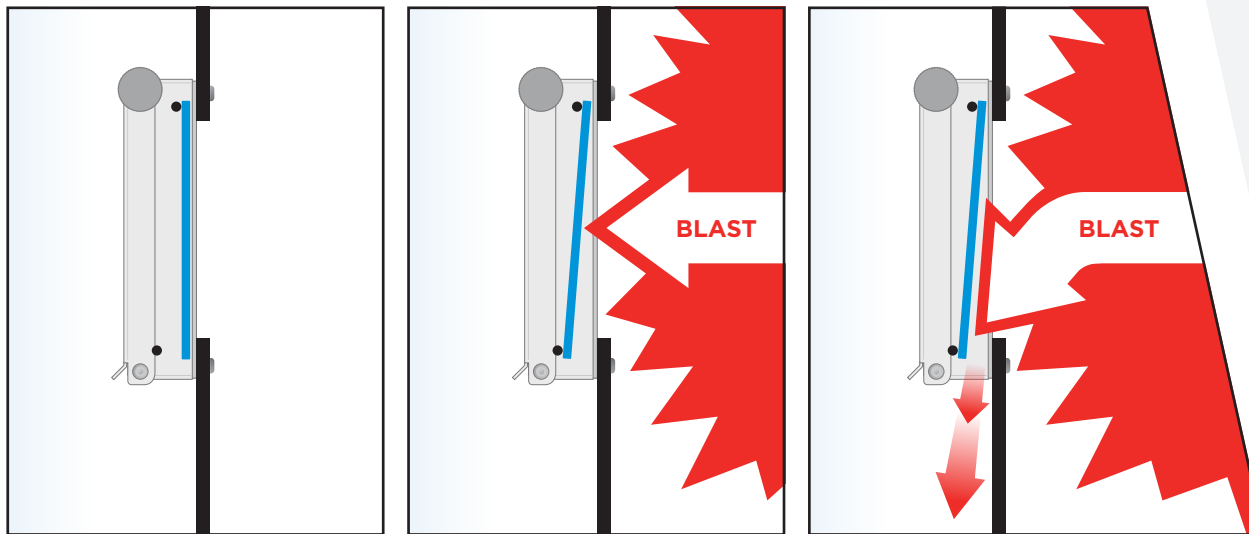
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ViPIRS utilise an optic with a safety mesh embedded within the polymer itself. This key breakthrough in composite optic design technology has several key advantages;

> **Safety with BLASTDOWN™ technology**

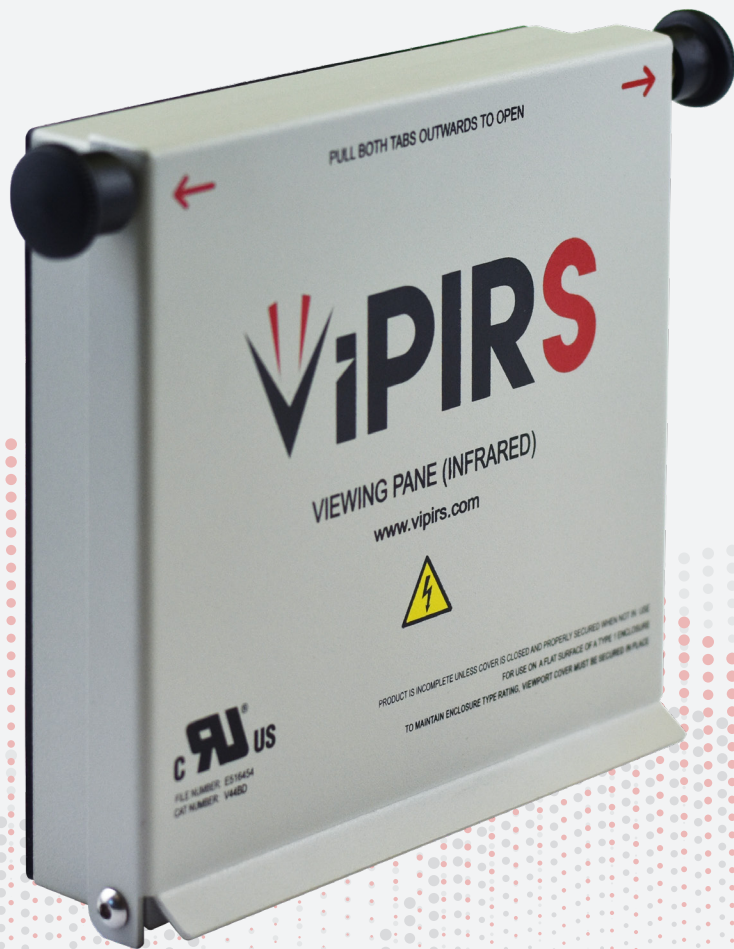
The new ViPIRS line of IR Viewing Panes comes with an innovative, distinctive and unique patent pending pressure relief system making them the world's most unique IR Viewing Panes utilizing the new revolutionary *BLASTDOWN™* technology. These new viewing panes, incorporating the unique groundbreaking *BLASTDOWN™* system technology, divert a portion of the pressure wave associated with an internal arcing event. These viewing panels are uniquely designed to deflect and redirect a portion of the arc gases, associated with an arcing event, through a unique patent pending diversion system.



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### > **Protection for Thermographers**

Should an internal arc flash event ever occur, with the ViPIRS Pane's cover in the closed position, the *BLASTDOWN™* system redirects a portion of the pressure wave downwards away from the thermographer relieving a portion of the overpressure near the ViPIRS Pane.

In the case of an arc-flash occurring while the cover of the ViPIRS Pane is open, the *BLASTDOWN™* system not only diverts and vents a portion of the pressure wave away from the thermographer, it also reuses this same energy to automatically close the latching cover, again providing maximum protection of the thermographer and anyone else in the vicinity of the event.

### > **Maximizing image quality by minimising vignette effect**

Traditional infrared viewing panes, which utilise two mesh grids separated by a polymer, have to be carefully aligned during production to prevent the two grids overlapping and subsequent field of view restrictions when in use. The two grids can cause image problems if the thermographer attempts to view at an angle not perfectly perpendicular to the mesh. Using a single mesh embedded within the polymer removes these problems entirely.



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> **Maximizing resistance to corrosion**

Metallic mesh parts are subject to corrosion over time. Using a mesh embedded within the polymer seals the supporting mesh entirely, meaning it is completely protected from corrosion; once by anti-corrosion coatings and twice by the polymer encapsulation.

> **Maximizing durability and ruggedness**

Manufactured from a combination, of aluminium, steel and stainless steel, the ViPIRS range of infrared viewing panes offer unparalleled flexibility and usability. The revolutionary polymer composite optic is impervious to mandatory load and impact test requirements specified by UL, CSA and IEEE standards and guides.

> **Maximizing your investment with an unconditional lifetime warranty**

Not only can the ViPIRS infrared viewing panes be installed, removed and reinstalled without voiding the certification, the entire product, including the composite optic is covered by an unconditional lifetime warranty.





# INTRODUCTION TO **BLASTDOWN™** TECHNOLOGY



Bottom View  
(showing pressure  
relief vents)

All “arc-resistant” switchgear and motor-control gear are designed to relieve the immense over-pressure caused by an electric arc. This is typically through the use of vents and plenum systems.

Traditionally, IR Windows and Viewing Panes have had the ability to withstand high levels of electric arc-faults, but only with their protective cover closed, prompting the question “what if a arc-flash occurring during an infrared inspection?”.

The simple answer is, nothing good. There is an increased risk to any thermographer!

Whilst IR windows/viewing panes will always be a risk reduction device, with the ViPIRS product this fundamental question was the driving force behind the entire design requirement for creating a product with the most advanced safety features in its class.



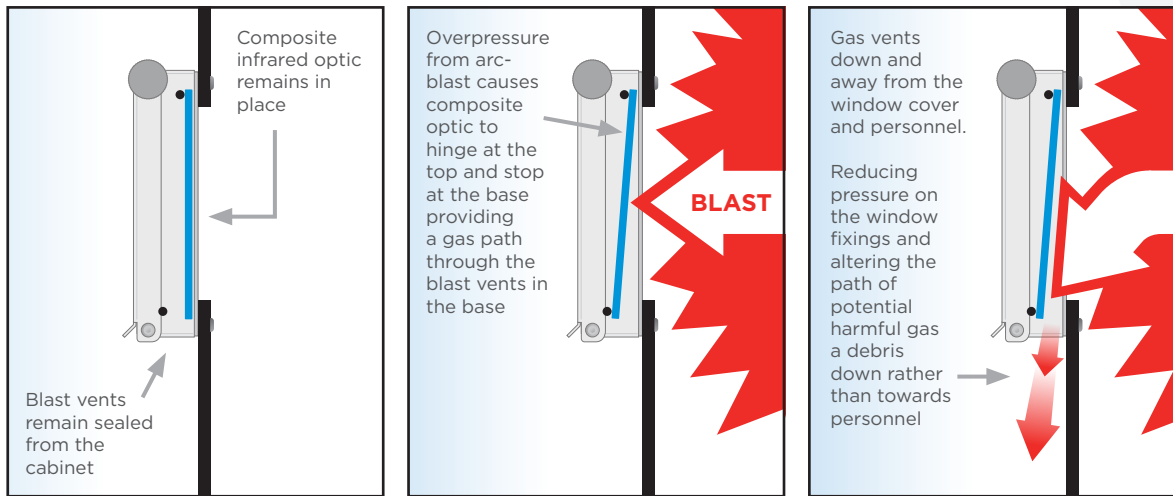
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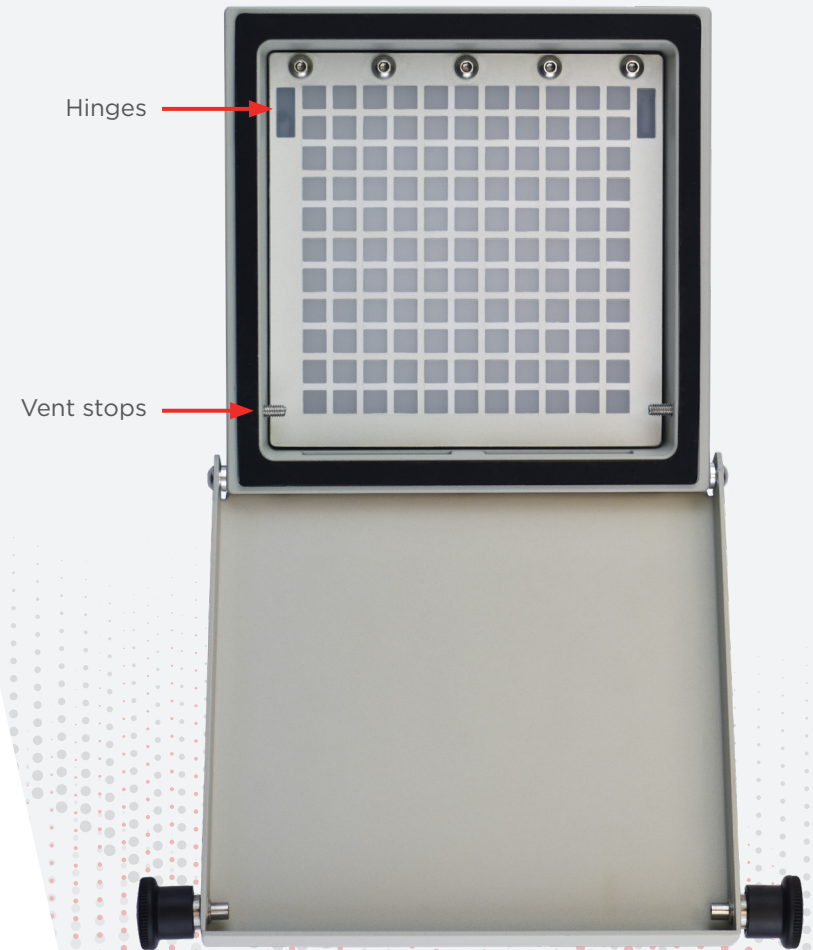
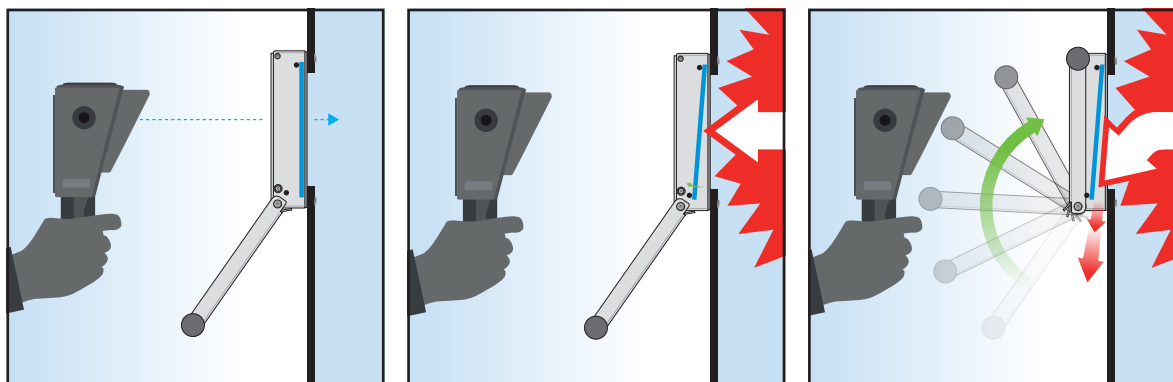
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The key to *BLASTDOWN™* is the one piece composite optic which is hinged to create a pressure relief diverter in the event of an arc-flash.

For the first time, an infrared viewing pane has been designed to protect the thermographer should an arc-flash occur during an inspection using the ViPIRS *BLASTDOWN™* system.



In the Closed Position, arc-blast overpressure is reduced and controlled. The ViPIRS BD range uses its flexible optic to vent overpressure down and out of base vents.



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# FEATURES & BENEFITS

## **BLASTDOWN ARC-PROTECTION SYSTEM**

Reduces and controls overpressure on the ViPIRS should an arc-flash occur by venting gas down through blast vents in the base of the frame. Personnel protection is maximized from the potential of flying debris and the ViPIRS product remains firmly attached to the panel.

## **COMPOSITE SAFETY OPTIC**

The ViPIRS Infrared View Panes incorporate the unique, composite infrared safety optic made from metallic mesh embedded within infrared transmitting polymer, unlike traditional polymer/mesh infrared windows. This provides unparalleled resistance to corrosion as the polymer seals and protects both sides of the embedded safety mesh while also providing the rigidity and strength to pass global load and impact test requirements.

## **UNCONDITIONAL LIFETIME WARRANTY**

The ViPIRS unconditional lifetime warranty not only applies to the workmanship of the IR viewing pane and its assembly, but also to the durability and stability of the optic in the specified environments.

## **EASY CLEAN OPTIC DESIGN**

Accurate infrared energy cannot pass through dirt or grime, it is important to clean the surface whenever possible to prevent thermal image degradation and error to measurements. Unlike traditional infrared viewing panes which have mesh on one or both sides of a polymer sheet and can be difficult to clean due to dirt within the mesh itself, the ViPIRS composite safety optic is smooth on both sides, allowing simple and effective cleaning of the viewing pane when needed, ensuring the highest quality infrared images always!.

## **UNDERWRITERS LABORATORIES (UL) CERTIFIED**

Certified to the latest revision of the IR Viewport standard, UL50V, the ViPIRS product line has also been tested to meet and exceed the required load, impact, flammability and environmental of UL94, UL746C & UL50. The ViPIRS product line also holds cUL certification for Canadian installations.

## **ANTI-CORROSIVE HARDWARE**

The viewing pane metal housing and cover are assembled using 316 stainless steel hardware, as are the supplied fixing hardware.





# TYPICAL APPLICATIONS

## CLOSE COUPLED PACKAGE SUBSTATIONS

Package substations, similar to the one shown, are ideal applications for implementation of our ViPIRS products. With the wide field of view associated with their available form factor configurations, fewer IR windows are needed to cover a larger area, reducing the installed cost per unit and maximizing your return on investment.



## HIGH VOLTAGE TRANSFORMERS

Transformers and their associated tap changers are critical and often overlooked application areas. Should a tap-changer or a connection point fail, then will catastrophic and severe damage could occur. Correctly positioning ViPIRS can enable infrared inspection not only on the primary and secondary cable connections, but also the all important tap changer.



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# TYPICAL APPLICATIONS

## LOW VOLTAGE PANEL BOARDS

Low voltage panel boards can be more dangerous than their higher voltage cousins, when it comes to arc-flash energies. The higher current, greater clearing times coupled with regenerative loads, typically found in LV panel boards, mean that the incident energy levels can often be higher than the medium/high voltage systems feeding them. Installing ViPIRS into critical areas such as cable compartments and busbar tunnels can provide a safe means of detecting high energy faults before they become critical.



## MEDIUM VOLTAGE SWITCHGEAR LINEUPS

Medium voltage air insulated switchgear are often deemed critical with respect to plant operations. With today's segregated tiers and bus-tunnels, the primary target for an infrared inspection lies at the cable compartment.

Often located at the rear of the lineup, the cable compartment consists of three cable landing points, one per phase, which, depending on the system could be single or parallel fed per phase.

With their ultra-wide viewing area, the ViPIRS infrared viewing panes are perfectly suited to MV switchgear cable compartment installations. Fully compliant with all load and impact requirements for viewing panes in metal-clad switchgear coupled with BLASTDOWN arc-protection system, the ViPIRS are your best choice.



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# INSTALLATION STEPS



## 1 Getting started – safety first

- a) Ensure that the equipment you are working on is safety de-energised and locked-out, tagged-out prior to commencing installation.
- b) Always comply with local codes and best practices, wear properly selected personal protective equipment (PPE)
- c) The ViPIRS product line is Underwriters Laboratories (UL) approved for installation into electrical equipment in the vertical plane, do not install into the horizontal plane.

## 2 Check your equipment.

### A ViPIRS Installation kit is available for V44BD units.

Installation of the ViPIRS infrared viewing panes is straightforward with the correct hand tools, we recommend;

- a) Electric drilling machine, if battery operated with a spare battery and charger.
- b) Nibbler/grinder
- c) 4.5mm diameter HSS metal drill bit,
- d) Centre punch
- e) De-burring tool
- f) PZ2 Pozi-drive screwdriver
- g) Corrosion protection treatment

## 3 Check what's in the box

### Verify your ViPIRS Kit contents contain;

- a) ViPIRS infrared viewing pane
- b) Installation instruction sheet
- c) Fitting hardware (supplied attached to the ViPIRS)

## 4 Install the ViPIRS

- a) Mount the self adhesive drilling template into position on the panel,
- b) Center punch the holes indicated on the drilling template,
- c) Using the 4.5mm HSS bit, drill the fixing holes labelled on the drilling template,
- d) Cut the centre hole using your chosen tool, this guide assumes a grinder or nibbler will be used, for a hydraulic press tool supplied with the ViPIRS installation kit, please refer to the ViPIRS installation kit documentation supplied with the installation kit.
- e) Once the viewing hole is cut, de-burr the edges and apply corrosion protection treatment.
- f) Remove the remaining drilling template and discard responsibly
- g) Align the body of the ViPIRS with the and fasten using the fixing hardware provided.

**Your ViPIRS infrared viewing pane is installed and ready to provide years of trouble free service.**





# SPECIFICATIONS

MODEL	V44BD	V46BD	V48BD	V412BD	V420BD
<b>GENERAL SPECIFICATION</b>					
UL Recognised	E516454				
IP Rating	IP54				
NEMA Rating (UL250)	Type 4/12				
Body Material	Powder coated aluminium				
Cover Material	Powder coated steel				
Gaskets	Silicone rubber; UL746C, UL94, IEC60695-11-10 compliant				
Mounting Hardware	M4 Stainless steel bolts & star washers				
Overall Temperature Range	-10 to +50C (14 to 122F)				
<b>DIMENSION AND OPTIC SPECIFICATIONS</b>					
Optic Material	UL746C compliant IR transmissive polymer composite with embedded mesh				
UV Stable	Yes				
Anti-fogging	Yes				
Optic Reinforcing Grill Material	Stainless steel				
Viewing Aperture Dimensions	H = 4" (100mm) × L = 4" (100mm)	H = 4" (100mm) × L = 6" (150mm)	H = 4" (100mm) × L = 8" (200mm)	H = 4" (100mm) × L = 12" (300mm)	H = 4" (100mm) × W = 20" (500mm)
Overall Dimensions <i>Custom sizes are available, contact us for more information</i>	H = 6" (150mm) × W = 7" (179mm) × D = 1.6" (41mm)	H = 6" (150mm) × W = 9" (229mm) × D = 1.6" (41mm)	H = 6" (150mm) × W = 11" (280mm) × D = 1.6" (41mm)	H = 6" (150mm) × W = 15" (380mm) × D = 1.6" (41mm)	H = 6" (150mm) × W = 23" (585mm) × D = 1.6" (41mm)
<b>APPLICATIONS AND COMPATIBILITY</b>					
Low/Medium/High Voltage	Any				
Outdoor Applications	Yes				
Infrared Cameras	All				
Grounding	Automatically grounds all exposed metallic parts to the host equipment during installation				



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