H.VIR®
By SOREM

INFRARED WINDOWS H.VIR Type 20/21/22

WHY CHOOSE H.VIR ?

Interior of electrical equipment is often inaccessible for carrying out checks. With H.VIR windows, it will be possible to perform maintenance by infrared thermography under representative load conditions. H.VIR is the only infrared window on the market to be equipped with a Wide-Band crystal (Bands I, II and III), this makes it possible to cover the field of use for the whole cameras on the market. (0,3 µm to 13 µm). Thermograph technicians and operators will have real protection against electric arcs. In addition, the properties of our windows are no longer to be proven, Because of approval of the largest electrical equipment manufacturers in the world, along with the large number of tests and certifications attributed to it.

ADVANTAGES OF USE :

- H.VIR is designed to be installed on new equipment as well on equipment already in operation (retrofit).
- It is suitable for viewing all the connections of electrical equipments : cable heads, circuits breaker, fuses, motors, transformers, …
- It's no longer necessary to turn off power when inspecting electrical equipment.
- After installed, window has no fixed life limit.
- Checking your electrical equipment will no longer require having several electricians / technicians and engineers to perform preventive maintenance. It will save you time and money.
- IR windows are installed in strategic places on inspected the cells. You'll be able to use the time saved to perform in-depth maintenance.

CHARACTERISTICS :

- Use from 0,3 µm to 13 µm
- UV sensitivity : none
- Optical component quality :
  Parallelism : < 3 µm
  flatness : 5(2)
  Surface condition : P4 (S/D : 20/40)
- Operating temperature -40°C + 70°C
- Electric insulation of the frame :
  Resistivity ▶ 4 x 10^{15} ohms cm2/m at 20°C
  ▶ 8 x 10^{15} ohms cm2/m at 100°C

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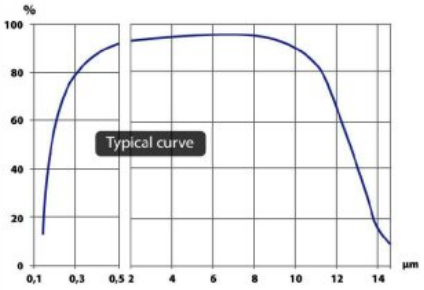
NOMENCLATURE KIT :

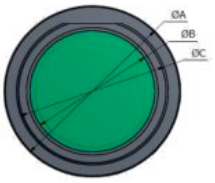
1) Tightened protection cover, equipped with self-adhesive gasket and magnet
2) Frame
3) Optical window
4) Gasket
5) Self-adhesive gasket
6) Nut

TRANSMISSION CURVE :



PRODUCT SPECIFICATION :

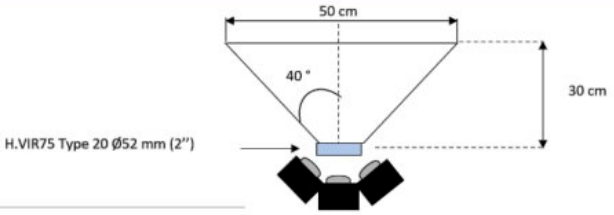
Model	H.VIR 75 type 20	H.VIR 85 type 21	H.VIR 105 type 22
Window size			
Ø A	79 mm	99 mm	133 mm
Ø B visée	52 mm	71 mm	95 mm
Ø C	M68 x 1,5	M88 x 2	M113 x 3
D	14 mm	14 mm	14 mm
Installation informations			
Standard E <= 4mm	F = 10 mm	F = 15 mm	F = 15 mm
L1 E > 4 mm <= 8 mm	F = 15 mm	F = 15 mm	F = 15 mm
L2 E > 8 mm <= 12 mm	F= 20 mm	F = 20 mm	F = 20 mm
Tightening couple Min	**25 Nm or 2,5 Kg**	**30 Nm or 3,0 Kg**	**40 nm or 4,0 Kg**

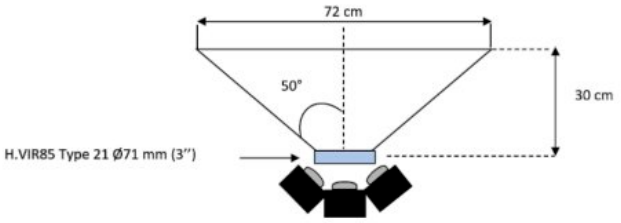


E = Plate thickness

VIEWING ANGLES FOR THE DIFFERENT WINDOWS TYPES :

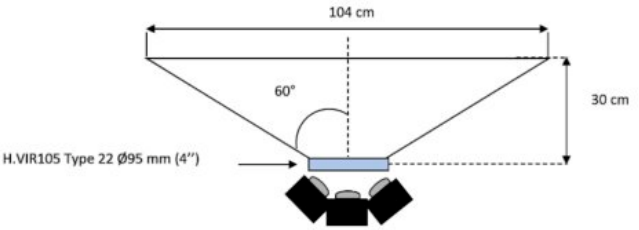
drawing of viewing angle for H.VIR 75 type 20.





drawing of viewing angle for H.VIR 85 type 21.

drawing of viewing angle for H.VIR 105 type 22.



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PRODUCTS CERTIFICATIONS AND MANUFACTURERS TESTS :

Windows H.VIR are compliants to :

- CEI 60529 standard (Water and dust penetration) :
  - IP 67 code : **LCIE** (2008)
- To CEI 62262 standard (mechanical impact) :
  - IK07 code : **LCIE** (2008)

IP 67 Qualification

- CEI 60255-21-1 & CEI 60255-21-3 standards
  - Vibration and seism categories (severity class : 1) : **CETIM** (2008)
- To NEMKO (Norway) standards :
  - NEK – EN 60439-3 & NEK 511 (18b-18 c)
- **UL Certification** (2008) :
  - USR & CNR recognized

- **Internal pressure behaviour** (with cover open) :
  - SOREM internal tests
  - Square D tests

  Guaranteed behaviour of the windows (standard versions) is :
  - H.VIR 75 = **4 bars**
  - H.VIR 85 = **3 bars**
  - H.VIR 105 = **2 bars**
- **Internal Arc fault Behaviour :**

High Voltage Tests :

- EFFACEC (2014) : 31,5 kA/1s (17,5 kV)
- KEMA (1998) : 135 kA/0,12s (11,5 kV)
- ABB (1998) : 20 kA/1s (6,5 kV)
- AREVA (2008) : 16 kA/1s

Low Voltage Test :

- NATA (1997) : 50 kA-63 kA/0,1s (457V)

EXAMPLES OF SETTING UP:

H.VIR Windows on SM6 and Vercor cells.

H.VIR implanted on Pix cells.

H.VIR implanted on LV switchboards.

Portholes placed on Alstom cells.

© Credit photo to TEC Contrôles

H.VIR 85 on oil transformer.

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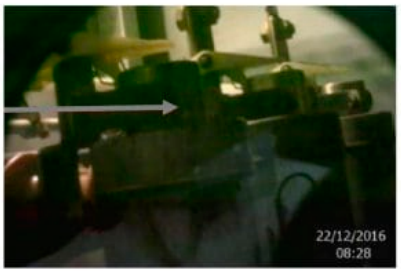
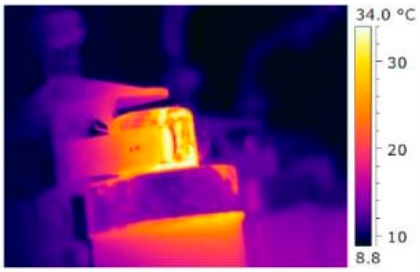
EXAMPLES OF APPLICATIONS :

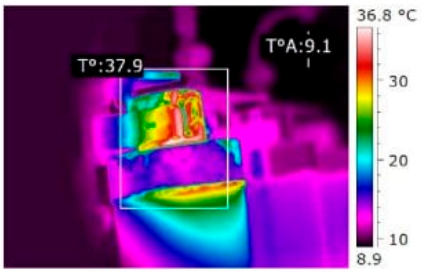
5 KV Motor cells :



Through a window H.VIR



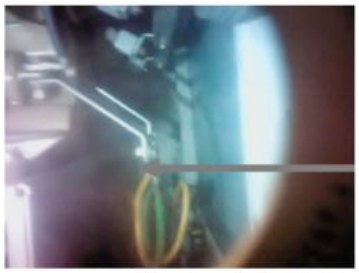
Detection thermography



Measurement thermography

Thermographer verdict : An abnormal heating of the fuse is observed at the contacts level. It is advisable to clean and revise the fuse contacts. In addition it's necessary to check connection and contacts fixing..

High voltage cell :



Through a window H.VIR

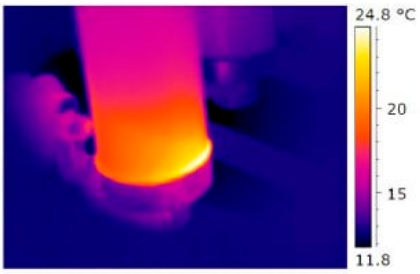
Detection thermography

Measurement thermography

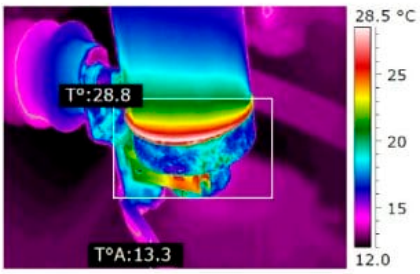
Thermographer verdict : There is an abnormal heating in the end of the cable. The hot spot is located at the crimping of the terminal. The thermograph recommends replacing the terminal and checking the connection area where it's connected.

5 kV Motor cells :

Through a window H.VIR



Detection thermography



Measurement thermography

Thermographer verdict : There is a slight heating of the fuse at the pliers which receive it. It is recommended by the thermographer to clean and revise the fuse contacts, as well as to check the contacts fixing.

INSTALLATION GUIDE FOR H.VIR WINDOWS :

With E. Robur drilling tool, drill a hole of Ø 10 mm.

Enlarge the hole with cup shape drilling tool Ø 28.3 mm.

Hole Ø 28 mm.

Put Axis Ø 28 mm in.

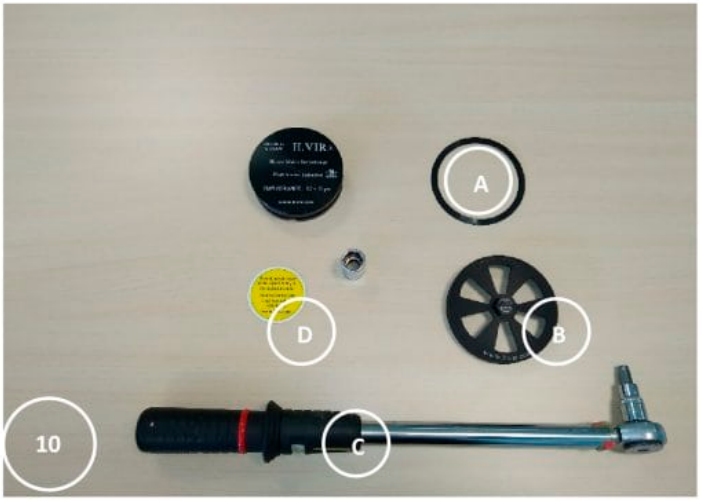
Mount the cup shape drilling tool and counter cup shape on both sides of the sheet metal on axis Ø 28 mm.

Screw axi Ø 28 mm on the piston.

Connect the pump to the piston.

Operate the pump to cut the sheet metal.

Take off the tools after cutting.



Check that you have:

A. The self-adhesive gasket

B. The appropriate key install tool with H.VIR model

C. The Torque wrench

D. Yellow magnet support for cover with instructions.

Stick the gasket on the inner side of the cell.

Put the window in the drilling, engraved cover on the outer side of the cell.

Then, put the nut on the thread and tighten with hand.

Next, torque with the appropriate key install tool and torque wrench (torque value given on DC).

Check the good rotary position, marking must be aligned horizontally

Stick of self-adhesive supports of cover with instructions next to each porthole.

Electrical equipment ready for inspection.