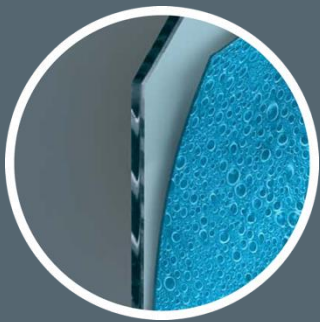


INNOPTEC

INNOVATIVE OPTICAL TECHNOLOGIES

Adheasy® FILM



Self-adhesive
liquid crystal - smart film

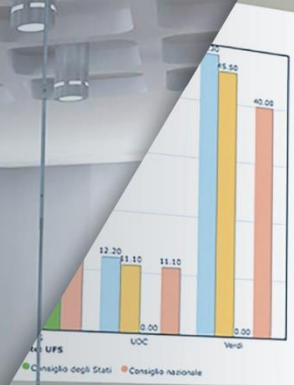
ENGLISH

Self-adhesive film [General specifications - V. R7]

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■ Chapter 1

Construction Parameters

The film consists of a PDLC switchable film having one side **capable of dry adhesion on glass** or to other transparent substrates.

The adhesive Film is removable without leaving residues on surfaces.

 Total Thickness
580 (+/-10) μm

 Dimensions	
Maximum Width of the active area	1800 mm *
Length of the active area	as standard from 1000 to 3500 mm

* 1800mm film is available in limited stock and only for the white color. For large projects, longer processing times will be required.

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■ Chapter 2

Electro-optical Properties (20 °C) – Average values

Off-state	
Total transmission	55 % (+/- 5%) (Grey version: 30%)
Direct transmission (1° collecting angle)	< 1 %
Lab*	85/0.5/3.9 (Grey version: 63/-1.7/-5)

On-state (45 VAC, 50 Hz, sine wave)	
Total transmission	85% (Grey version: 50%)
Haze	4%
Off-axis haze (45°)	13%
Lab*	89/0.7/3.9 (Grey version: 68/-1.2/-2.6)
Power Consumption	3 W/m ²



Response Times

< 0,1 sec

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■ Chapter 3

Operative ranges



Operating Voltage

45Vac (NK version)

(50 Hz, sine wave)

Max: 45Vac (50Hz, sine wave)



Use Temperature Range

from -20° to +60 °C

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■ Chapter 4

Electrical bus bar application

Standard application

Electrical bus bars are usually placed on one edge of the sheets.

Alternative bus bars positioning are possible.

Serisolar will propose you the most appropriate set up in terms of effectiveness and safety.

Technical and overall specs

Innoptec manufactures a self adhesive electro-optical film to be used in the architectural field. Every film supplied by Innoptec has been electrically tested beforehand.

■ 1_Product supply conditions

Dimensions

Innoptec self-Adhesive Film is supplied as "ready to apply sheets", cut on customer requested dimensions. Innoptec carries sufficient inventory for quick deliveries.

Quality release limits

Inspection conditions:

- **Distance** = 1 m - perpendicular view
- **Lighting**: 300 – 500 Lux / white light (400-700 nm)
- **Inspection time**: 10 seconds per sqm.

Single spots smaller than 1 mm are considered acceptable.

Other optical non uniformities are not considered defective if they result invisible at above inspecting conditions.

Electrical connections

The connection of the sheet contacts to the line needs to be made by a professional electrician. Sheets cut to particular rectangular or other shapes can also be supplied on request, at a case by case pricing.

Voltage Drivers/Transformers

The Innoptec self-Adhesive film works at 45Vac/50Hz. We can supply different types of transformers (to be referred to EU area, made according European standards (CE) and to be used where the voltage line is 220-230 Vac-50Hz sine wave). Different driving solutions are also available on request (remote control – dimming - etc.).



Note

- Voltage Stabilizer (UPS systems): In cases when there is risk of line voltage peaks it is advisable to place an UPS system upstream the transformer.
- The voltage input to voltage systems must have a DC component lower than 1 Volt
- No switches have to be connected on the wires that join the film to the secondary output of the transformer.
- Although our stress test indicates that the film can tolerate long periods in on-state without any problem, we recommend to keep the film in off-state for half an hour, after 8 hours of continuous on-state operating.

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⚠ Note!

Do not use water to clean the film or glass. We strictly recommend to use isopropyl alcohol.

R_ES release film removal – Before silicone drying, carefully remove the R_ES masking film. During this release film removal, pay attention to avoid to be contaminated by silicone residues.

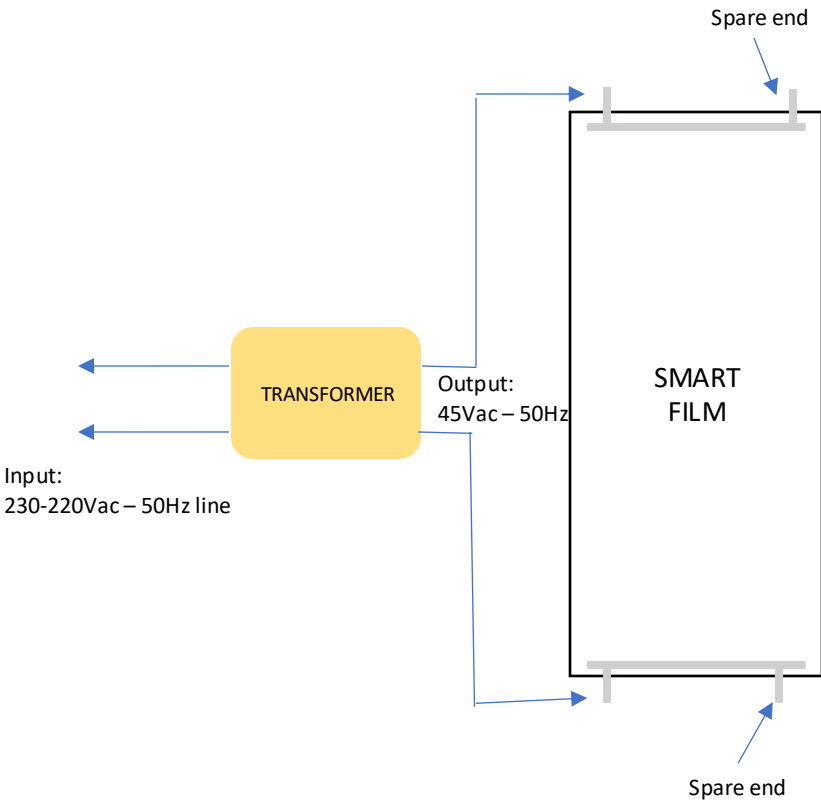
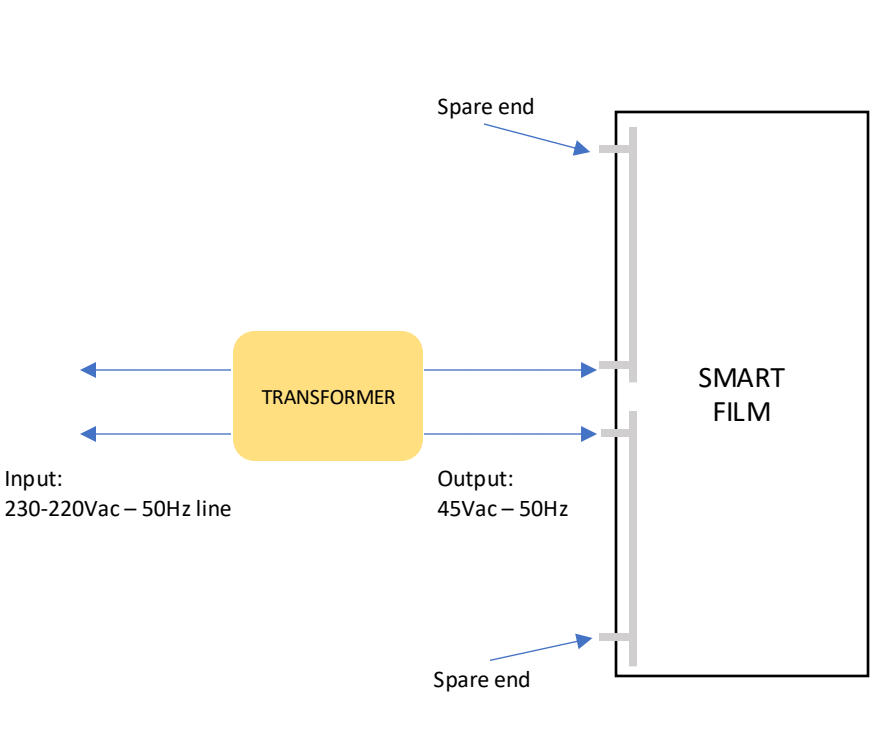
Electrical contact – Now film is ready to be electrically connected by soldering of wires to bus-bar ends and complete connection to electrical transformer.

⚠ Warnings!

- All electrical connections of self-adhesive film to electrical voltage driver and this driver to 220Vac line must be performed according the local regulations and by qualified personnel. Innoptec cannot take responsibility for material and/or personal damages suffered by LPF film user employees, and/or customers and/or any third party (including application patent holders) involved in the use of our product. Innoptec will be kept harmless of any liability and possible request of indemnification claimed against the LPF film user parties as above specified.
- For cleaning the surface of the film, before and after its installation, we recommend the use of a very lightly wiped scratch-resistant cloth.



Wiring diagram examples

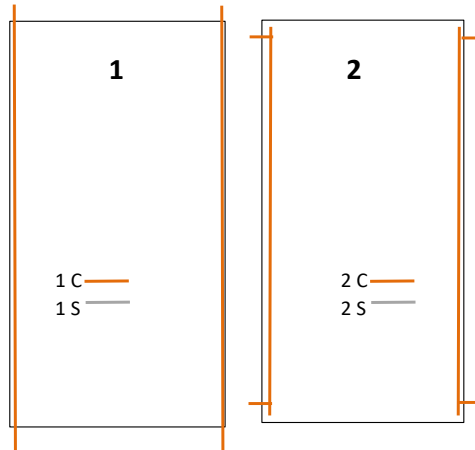


NOTE: Each busbar has two ends. Wire can be joined on only one of them. The other one end is a spare end.

Busbar sketch list 1/3

Busbars can be realized in two different tape colors

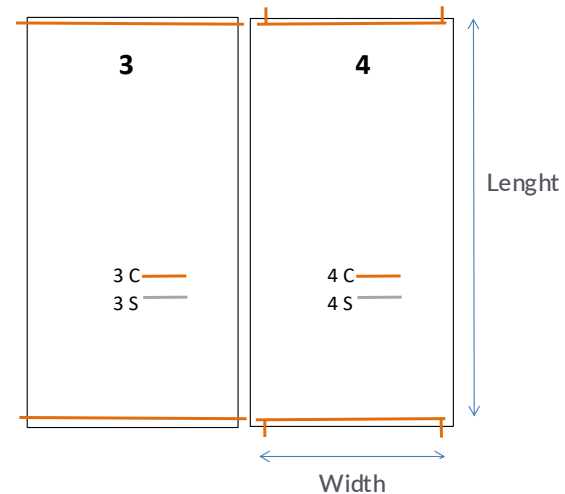
On both long edges
Max lenght =
5000 mm



Copper — (orange line)

On both short
edges
Max lenght =
3200 mm

— (grey line) or Tinned copper



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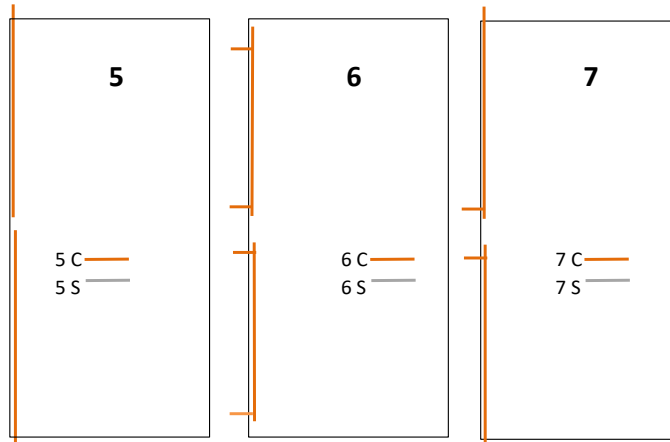
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Busbar sketch list 2/3

On one long edge
Max lenght =
2700 mm



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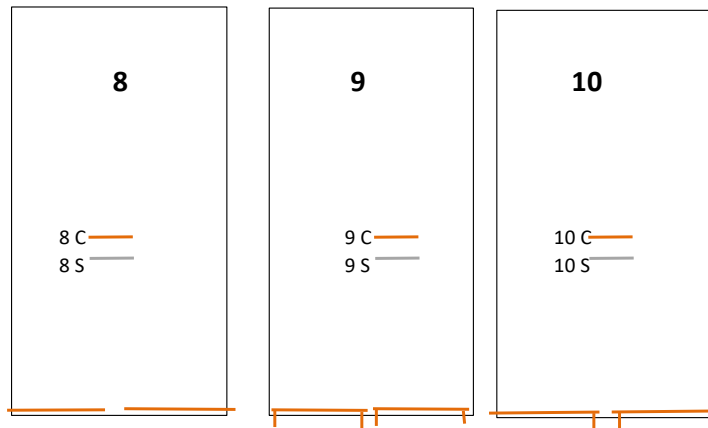
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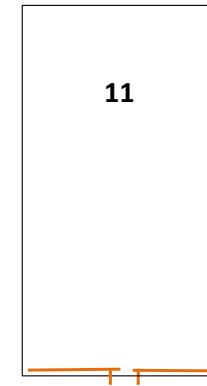
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Busbar sketch list 3/3

On one short edge
Max lenght =
2700 mm



For A3/A4
samples



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■ Safety Information

 **IMPORTANT:** Please read these instructions fully before installing or operating

 **IMPORTANT:** Installation must be made by qualified personnel.

 **IMPORTANT:** Innoptec liquid crystal film must be driven with CE marked transformers with a maximum output voltage of 45Vac.
All Innoptec transformers have the following safety features:



- Short-circuit and Overload protection



- Insulation **Class II**



- **CE Mark**



- 2006/95/CE – (LVD) LOW VOLTAGE DIRECTIVE of 12/12/2006
- 2004/108/CE – (EMC) ELECTRO MAGNETIC COMPATIBILITY
- 2006/42/CE – MACHINE SAFETY

Furthermore, they comply with the following directives:

- EN 61558-1 Safety of transformers, reactors, power supply units and combinations.
- EN 61558-2-4 Particular requirements and tests for isolating transformers and power supply units incorporating isolating transformers for general applications.
- Wiring and electrical connections must be made by qualified personnel according the local regulations.
- Periodically check the good condition of the cables and connections.
- After installation electrical connections and perimeter of film must be sealed to prevent any type of short circuits.
- Use only neutral silicone sealants.
- Keep a safety distance of 2-3mm from the edge of the film to the frame of the installation surface specially with metal frames.
- Do not use water or liquids with solvent on the liquid crystal film.
- Before cleaning, unplug main power of transformer. Only use a soft, dry cloth while cleaning.
- We recommend placing the electrical connections on the upper side of the glass.
- Be sure that the INPUT voltage correspond exactly to the specifications given on the supplied power supply units.
- Provide appropriate ventilation to power supply units.

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Warranty

Within five* years after installation of the product on interior partitions not directly affected by sunlight or on perimeter glazing exposed to the sun (only if protected by solar protection exterior film guaranteed > 5 years), if a malfunction of the film is proven to be attributable solely to the product, Serisolar may award compensation for the value of the supplied film alone based on the malfunctioning surface area. 'Black spots' (caused by local short circuits) occurring at the first electrical connection will not be regarded by Innoptec as attributable to the product as every film supplied by Innoptec is 100% electrically pre-tested prior to each installation.

Serisolar emphasises to the customer the importance of avoiding adhesives and sealants containing migrating or low molecular weight components (such as plasticisers, liquid stabilisers, monomer residues) as these will in certain circumstances damage the liquid crystalline dispersion after sealing. If you are uncertain, please contact us so that we can give you the best advice.

Oily wooden frames should be protected by suitable layers of paint (polyurethane or epoxy) to prevent oils or resins from migrating from the edge of the film to its inner layer.

Usable neutral sealant

Among neutral sealants Innoptec customers experienced good results by using:

- Alcosil by Zucchini
- 791T by Dow Corning

Sealant for insulating glass unit: Dow Corning Erisil S Black



ALCOSIL (Marke Zucchini) - 791T (Marke Dow Corning)

Low modulus neutral silicone sealants. High movement accomodation and good adhesion onto most of building materials, glass, metals, painted surfaces, marble, clean concrete. Excellent weather resistance as well as to sunlight in a wide temperature range.

- **Applications:** Suitable for glazing windows, skylights, curtainwalls, for perimeter joints of door and window frames made of metal, PVC and wood
- **Specification compliance:** ISO 11600 F+G 25 LM
- **Packaging:** Cartridge 310 ml
- **Colours:** Translucent - White



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Warnings and general disclaimer

The LPF film from **Innoptec** supplied to you benefits from years of experience and more than satisfactory application testing. The electrical functionality of the LPF film is checked on 100% of the surface area produced. If our product is put into service and correctly powered according to our specification and exposed in a suitable position or assembly (e.g. protected from direct sunlight), it will maintain its efficient function for many years.

However, within two/five* years of the date of sale, once the transport and installation checks have been carried out, the appearance after installation of an occasional short-circuit stain or electro-optical malfunction phenomena (transparent-opaque alternation) may be recognised as a defect in our product; where sporadic means a defect occurring on no more than 5% of the parts or surface supplied.

If a defect in its product is recognised, Innoptec undertakes to replace the damaged or malfunctioning LPF film surface.

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Order request example

Client

Date

Total Nr. films

- Glass size
- **Film size**

Nr. Transformers Rif.

Nr. Receivers

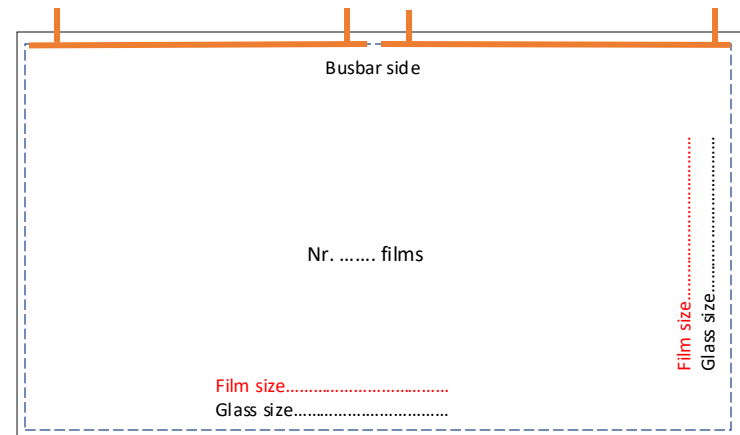
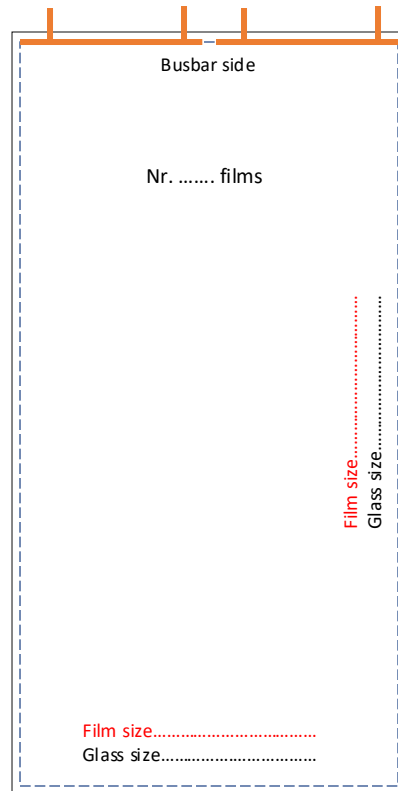
Nr. Transmitters

Film Color White/Grey

Busbar type

NOTE:

APPLICATION SIDE/VIEW



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