

Protection panels for photovoltaic systems

series ECO-DC

toscano

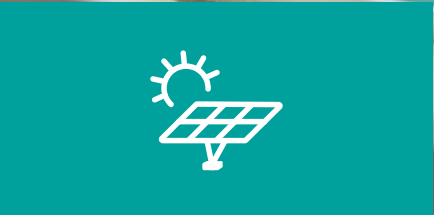


vigivolt.

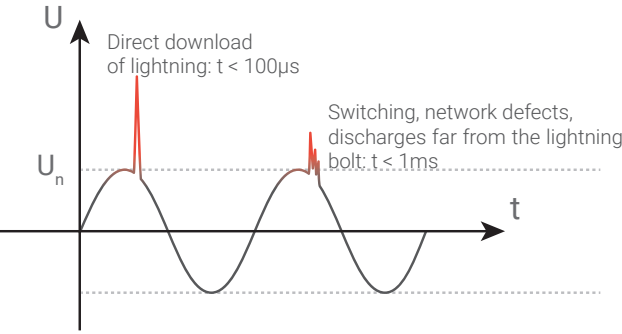


Why should I protect a photovoltaic installation?

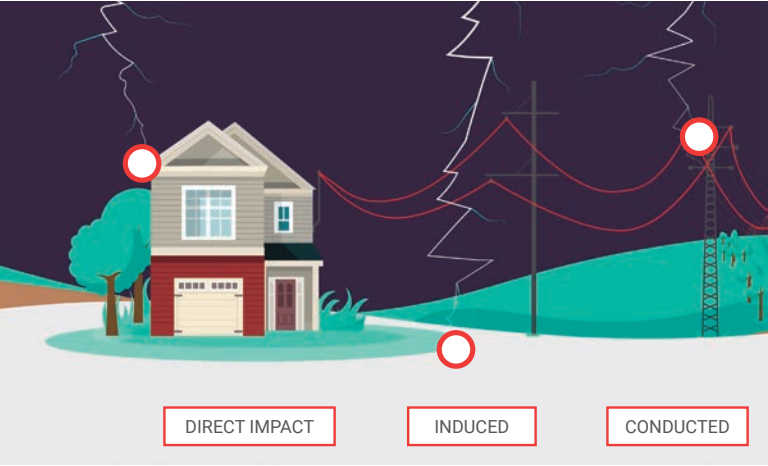
Photovoltaic installations usually consist of metal structures located on the roofs of buildings. This makes them very susceptible to lightning strikes. It is also possible that even if the structure is not directly struck by lightning, electric current from the lightning bolt could reach the installation due to electrical induction or conduction through the power line. In other cases, overvoltage can be caused by network switching. It is therefore important to protect the installation against transient overvoltages on both the DC and AC sides.



An overvoltage could lead to serious damage and destruction of equipment, malfunctioning and a reduction of its useful life, as well as interruption of service to users.



All these problems can be minimised by reducing this strong impulse with **transient surge protection devices**.



Transient overvoltages are defined as a rapid (μs) and high increase of voltage in a network, which can reach several kV.





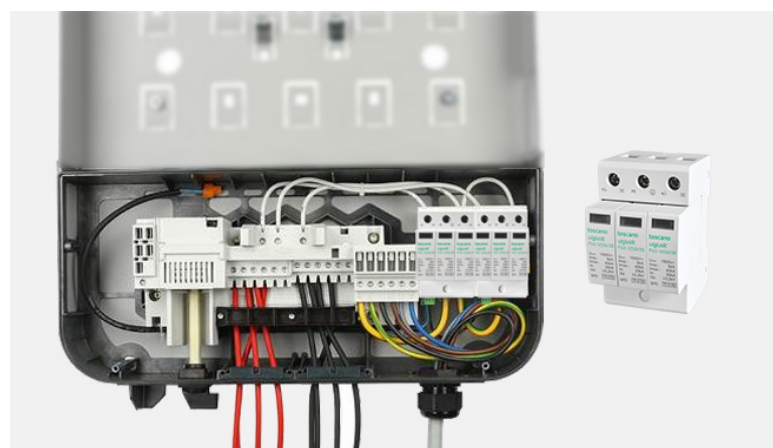
Regulations for photovoltaic installations



In order to properly protect a photovoltaic system, instructions of the relevant regulations must be observed.

The reference standard is **HD-60364-7-712**, which regulates how a solar photovoltaic installation should be carried out.

Another of the standards very relevant for photovoltaic installations is **HD-61643-31**, which indicates the requirements and test methods for transient surge protectors (SPD) in this type of installation.



Inverter with internal surge arresters according to HD 60365-7-712

HD 60364-7-712

February 2017

Low voltage electrical installations.

Part 7-712: Requirements for special installations or sites.

Solar photovoltaic (PV) power supply system.

Section: 712.534.102

The surge protection devices (...) of the photovoltaic installation shall comply with the regulation EN-50539-11^(*).

When the inverter incorporates protective devices (...) they are only considered to fulfil the overvoltage protection function if the inverter manufacturer specifies their intended use. (...) If this is not the case, you must ensure there is protection from external surge protection devices.

NOTE: Varistors included in the inverter are not considered to be surge protection devices.

The inverter manufacturer shall (...) provide the voltage level required for the selection of external surge protection devices.

^(*) EN-50539-11 was repealed and replaced by EN 61643-31 in March 2021.



My inverter already has built-in protections, are external protections necessary?



Some inverters on the market incorporate internal varistors for protection, however the transient surge protection devices in a PV installation must comply with EN 61643-31.

HD 61643-31

March 2021

Low voltage surge protection devices.

Part 31: Requirements and test methods for SPDs for photovoltaic installations.

6.1.1.2 Markings

Mandatory in the body, or permanently attached to the body, of the SPD

6.2.5.5 Status indicators

The manufacturer must provide information about the function of the indicator and the actions to be taken after the change of status indication.

6.2.5.3 Thermal protection

SPDs must be protected against overheating due to degradation or overloads.

Examples of SPD requirements for photovoltaic installations

In addition, manufacturers must provide all the technical information on the surge protector, as well as the tests that they were subjected to in order to corroborate their correct operation and compliance with the specific regulations.

On the other hand, at the end of the useful life of the arrester, which is indicated on the status indicator, the arrester must be replaced. For ease of replacement, easy-to-replace plug-in cartridges are recommended.





How do I protect a photovoltaic installation?



ECO-DC protection panels include the necessary protections according to the installation type thanks to their multiple models.

The ECO-DC series is the perfect solution to comply with all relevant regulations. In addition, they have all the certifications required for this type of equipment.



DC disconnect



DC overcurrent
Fuses or magnets



DC overvoltages



MC4 connectors



AC overvoltages



AC overcurrent



Differential switch
TYPE A



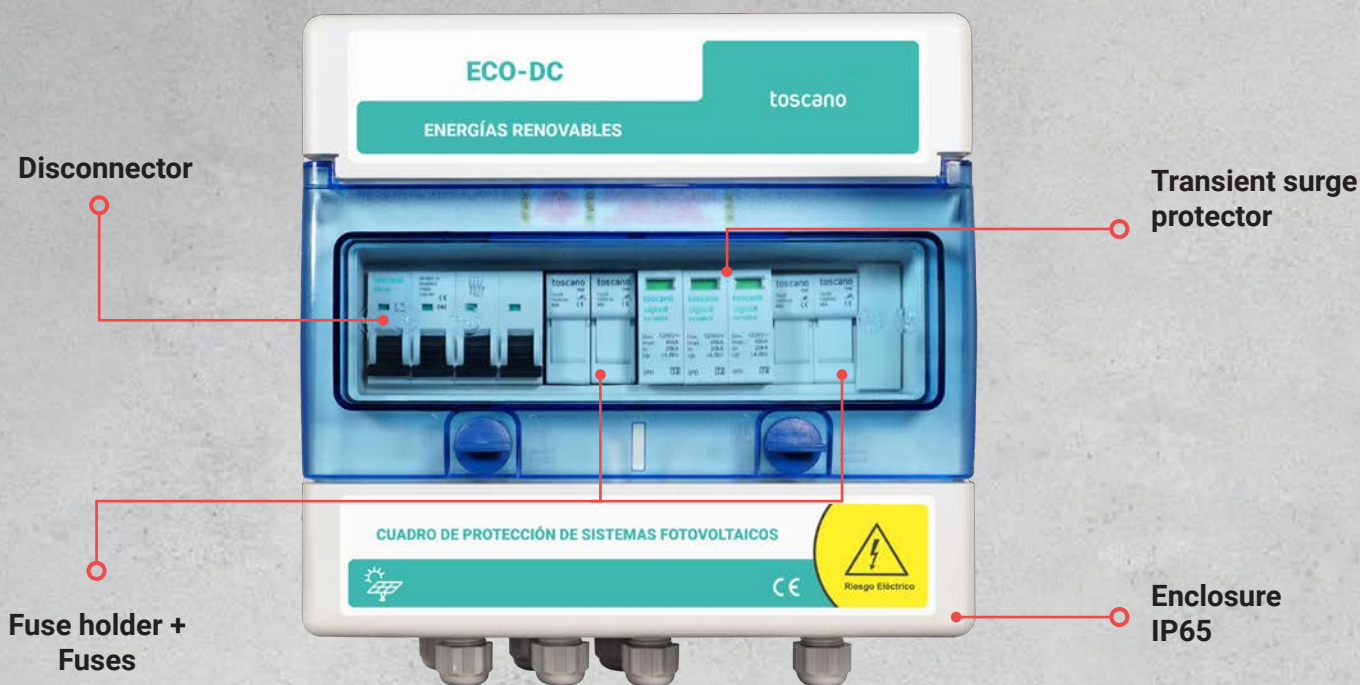
IP65



All our equipment is 100% tested in our facilities and certified by external laboratories.

ECO-DC-XI1

The ECO-DC-XI1 protection panels for photovoltaic systems incorporate DC 40kA Type 2 transient surge protection, fuse holder + fuses per string (optional circuit breaker), maximum 600/1000 VDC and cut-off switch at the output, MC4 connection or direct connection to terminals with cable glands. These are panels where the different strings of an installation are unified in a single MPPT.



DC TRANSIENT OVERVOLTAGES



WITH DISCONNECTOR



**VARIOUS STRINGS
ONLY ONE MPPT**



**PROTECTION
DC OVERCURRENT
FUSES OR MAGNETS**

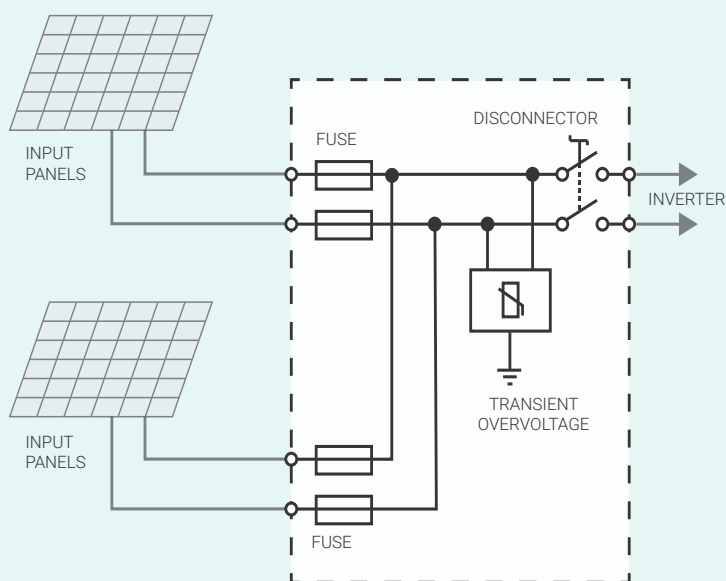


Diagram type - 2 strings / 1 MPPT

ECO-AC

ECO-AC panels only incorporate AC protection. They are designed to be installed at the output of the inverters and where it is desired to have separate AC and DC protections.

It consists of a differential switch 30mA type A (optional 300mA) and an IGA with integrated transient overvoltage protection and optional permanent overvoltage protection.



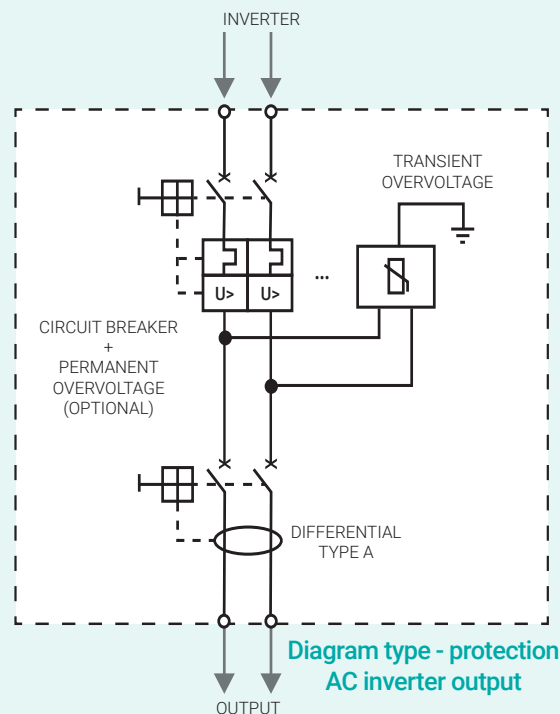
**TRANSIENT AC
OVERVOLTAGES
(PERMANENT OPTIONAL)**



DIFFERENTIAL PROTECTION



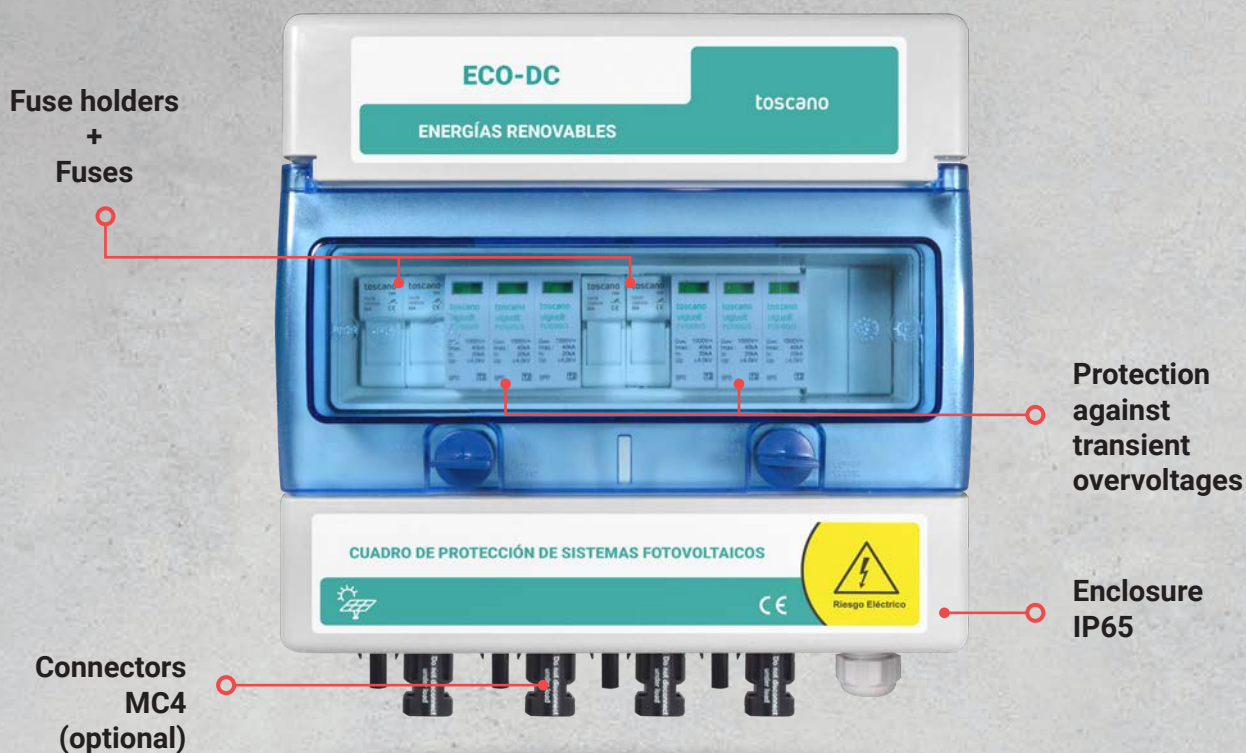
**PROTECTION
AC OVERCURRENT**



ECO-DC-XIX

The ECO-DC-XIX protection panels for photovoltaic systems have the same number of strings as the MPPT. Each string is protected with DC 40kA Type 2 transient surge protection, fuse holders + fuses per string (optional circuit breaker), maximum 600/1000 VDC.

Inputs and outputs are made with MC4 connectors or directly to terminals with cable glands. It is intended for inverters with multi-MPPT management with different string inputs.



**DC TRANSIENT
OVERVOLTAGES**



**WITH DISCONNECTOR
(OPTIONAL)**



**SAME NUMBER OF STRINGS
WHAT ABOUT MPPT**



**PROTECTION
DC OVERCURRENT
FUSES OR MAGNETS**

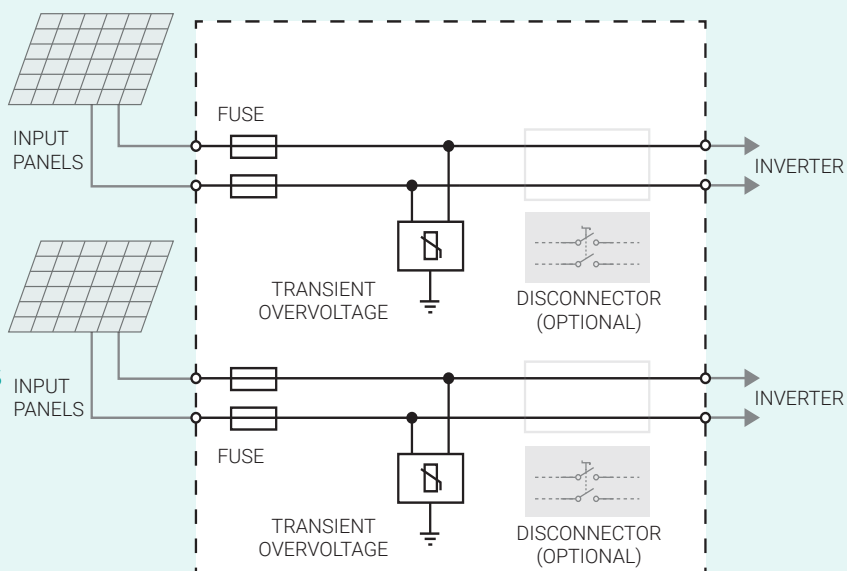


Diagram type - 2 String / 2 MPPT

ECO-DC-XIY

The ECO-DC-XIY protection panels for photovoltaic systems share the same main features as ECO-DC-XIX. The only difference is that this model unifies strings and has dual outputs for inverters that require it.



DC TRANSIENT OVERVOLTAGES



**WITH DISCONNECTOR
(OPTIONAL)**



**VARIOUS STRINGS
VARIOUS DUAL MPPT**



**PROTECTION
DC OVERCURRENT
FUSES OR MAGNETS**

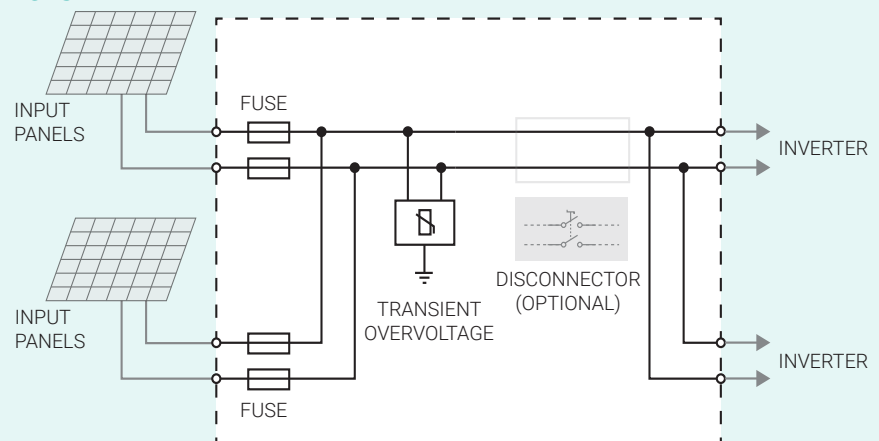


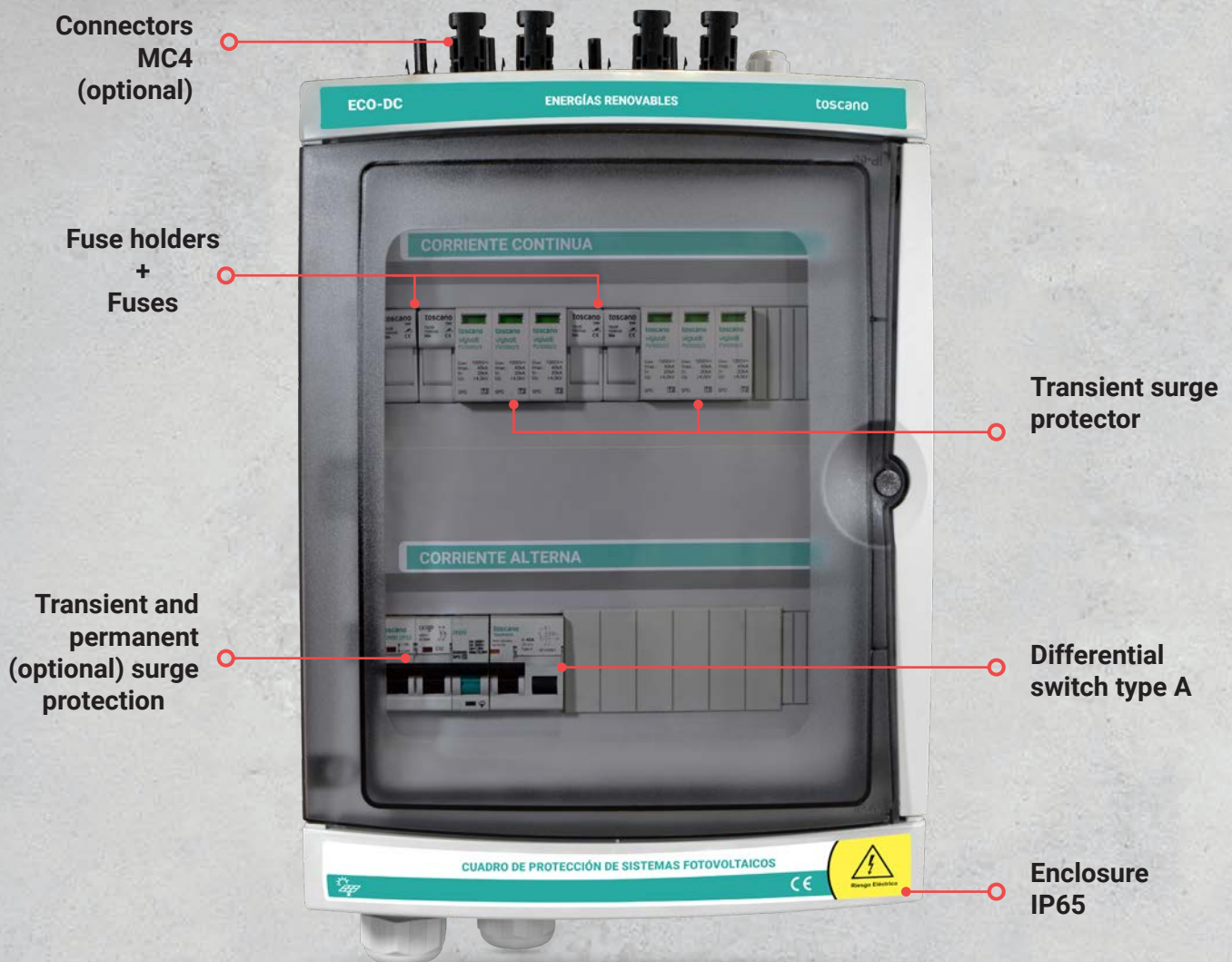
Diagram type - 2 String / 1 MPPT dual output

ECO-DC-XIX-AC

ECO-DC-XIX-AC are panels for photovoltaic systems that incorporate both DC and AC protection. They keep the same number of strings as the MPPT. Each string is protected with DC 40kA Type 2 transient surge protection, fuse holders + fuses per string (optional circuit breaker), maximum 600/1000 VDC.

Inputs and outputs are made with MC4 connectors or directly to terminals with cable glands. It is intended for inverters with multi-MPPT management with different string inputs.

In addition, we protect the AC side with a differential switch 30mA Type A (optional Type A 300mA) and an IGA with integrated transient surge protection and optional permanent surge protection.





DC TRANSIENT OVERVOLTAGES



PROTECTION
DC OVERCURRENT
FUSES OR MAGNETS



WITH MC4 CONNECTORS
(OPTIONAL)



SAME NUMBER OF STRINGS
WHAT ABOUT MPPT



DIFFERENTIAL PROTECTION



TRANSIENT AC
OVERVOLTAGES
(PERMANENT OPTIONAL)



PROTECTION
AC OVERCURRENT

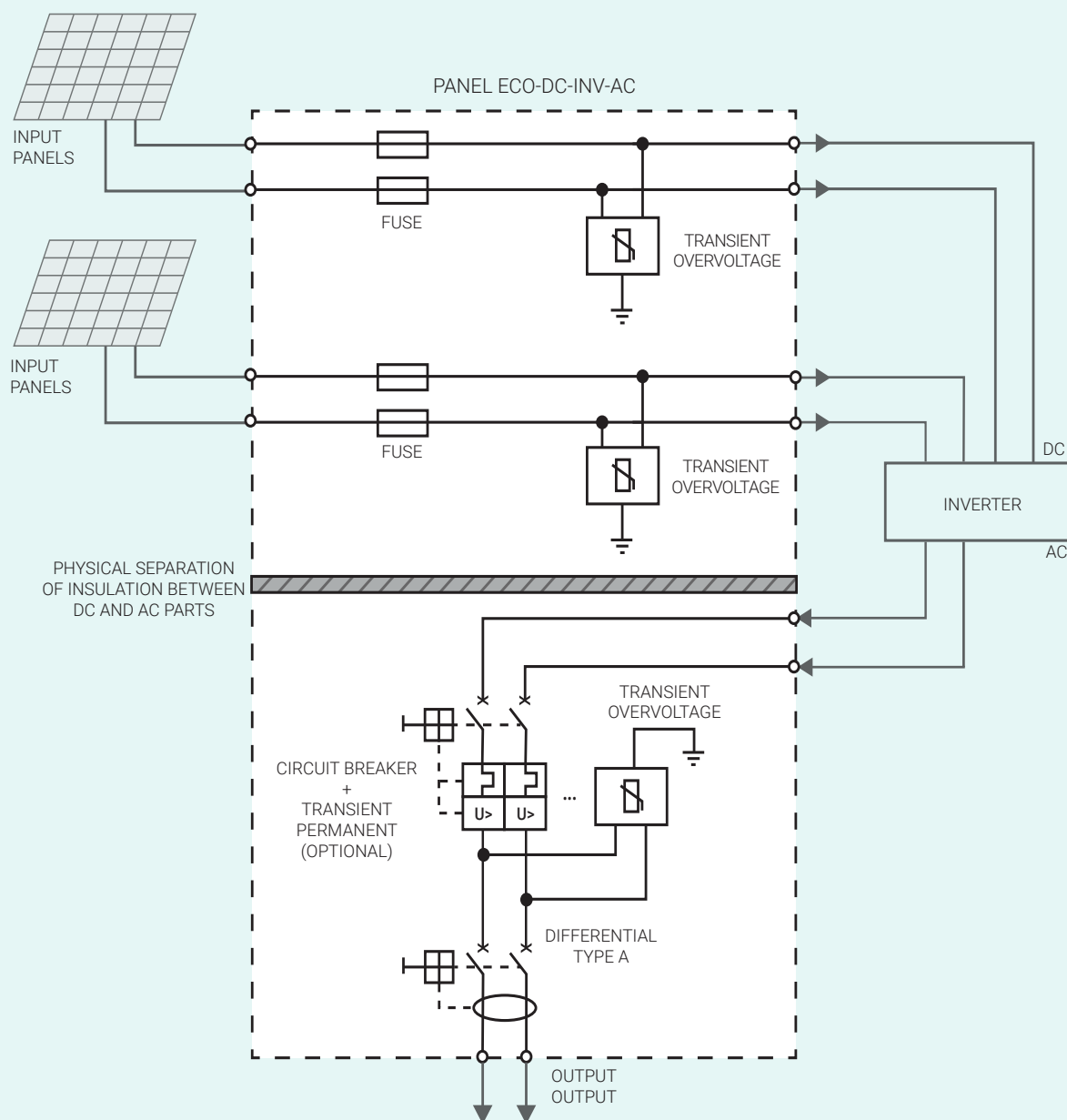


Diagram type - 2 strings + AC

PROTECTION
DC, AC and DC+AC

ECO-DC

ECO-AC

ECO-DC + AC

Nº de strings
1, 2, 3, 4, 6, 8, 10, 12, 16, 20

Nº de MPPT
1, 2, 3, 4, 6, 8, 10, 12, 16, 20

Sobreintensidad
F15 - Fusibles 15A
M16 - Magnetotérmico 16A

Seccionador DC
X - Sin seccionador
S63 - Seccionador 63A
S100 - Seccionador 100A
S160 - Seccionador 160A
S250 - Seccionador 250A
S400 - Seccionador 400A

Transitorias DC
FV6 - Tipo 2 - 600 VDC
FV10 - Tipo 2 - 1000 VDC

Conexión salidas
M - Conectores MC4
P - Prensas

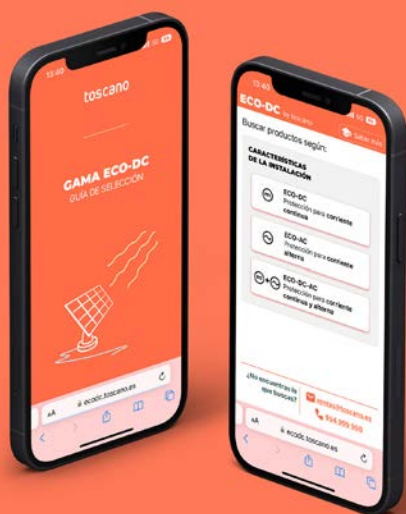
Envoltorio
S - Standard
A - ABS
M - Metálico
D - Doméstico IP40

Transitoria AC
T15 - Tipo 2 - 15 kA

Diferencial
A30 - Tipo A 30 mA
A300 - Tipo A 300 mA

Amperaje
16, 20, 25, 32, 40, 50, 63

Protección AC
1N - Monofásico
3N - Trifásico



- Depending on the characteristics of the installation
- More than 900 combinations
- Completely free of charge

