

Standard-conforming rating of distribution boards

The IEC 61439 - the standard for the construction of switchgear assemblies - brings changes that affect the planning of a switchgear assembly. In addition, new tasks and responsibilities are awaiting the manufacturer of a switchgear assembly.

Decisive for the optimal functioning of a switchgear assembly under operating conditions is the correct rating of the interface characteristics of the assembly. For this purpose, the assembly is considered as **BLACK-BOX** with four interface characteristics which shall ensure compatibility with the ratings of the circuits to which it is connected and the installation conditions and shall be declared by the assembly manufacturer using the criteria identified below.

Assembly considered as BLACK BOX with the four interface characteristics according to IEC 61439-2, -3



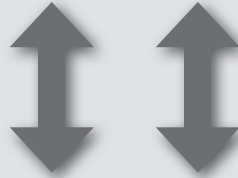
Installation and ambient conditions

- For protected outdoor installation
- Degree of protection IP 66
- Combinable enclosure system, extendable in all directions
- 4 enclosure sizes in grid of 90 mm
- EMC compliant busbar system
- Wall-mounting



Operation and maintenance

- Distribution board up to 250 A intended to be operated by ordinary persons in accordance with IEC 61439-3
- Protection class II up to rated current of 250 A
- Flexible through standardised and tested kits
- Spacious connection areas
- Fulfill the requirements for operation by ordinary persons (DBO)



BLACK BOX with 4 interfaces

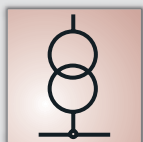
ENYSTAR Distribution Board



Combinable enclosure system, insulation-enclosed, total insulated, degree of protection IP 66,
for the assembly of ENYSTAR distribution boards up to 250 A intended to be operated by ordinary persons (DBO) in accordance with IEC 61439-3

The requirements for all installed electrical functions within the assembly have been proved compliance with the applicable requirements of IEC 61439-3.

I_{nc} and RDF must be specified in the documentation.



Connection to the electrical network

- Electric circuit / final circuit
- Circuit-breaker up to 250 A
- Switch disconnector up to 250 A
- Fuse switch disconnector up to 250 A
- Bus-mounted fuse base up to 63 A
- Cable connection from top / from bottom
- Connection: conductors from copper / aluminum
- Optional connection of CEE sockets according to EN 60309 and sockets with earthing contact according to DIN 49440-1



Circuits and consumers

- Rated voltage $U_N = 690$ V a.c. / 1000 V d.c.
- Rated current I_N up to 250 A
- Circuit-breaker up to 250 A
- Switch disconnector up to 250 A
- Fuse switch disconnector up to 250 A
- 5-conductor systems
- Cable connection from top / from bottom



Changes facing the manufacturer of a switchgear assembly (Panel builder)

IEC 61439 - the standard for the assembly of switchgear assemblies and distribution boards - determines the safety requirements for electrical equipment for the compliance of protection objectives for people and facilities. Requirements for products are more clearly defined and a new terminology is introduced.

BLACK BOX Specification

The designer specifies a switchgear assembly by defining the interface parameters as BLACK BOX.

Based on these interface specifications the manufacturer of a switchgear assembly has to rate and define the structure of the switchgear assembly.

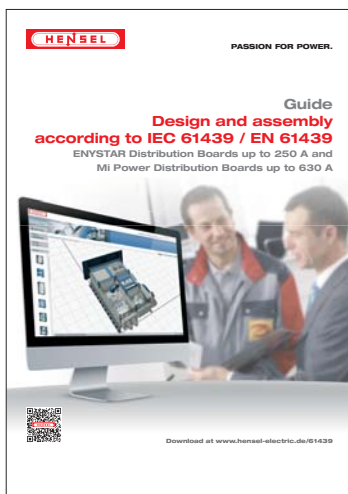
Product presentation in media changed significantly

The standard has an effect as well on the documentation of products. Additional information, such as the rated current of circuits and the number of circuits, are now listed for each product as they are now required by designers and manufacturers for the construction of switchgear assemblies.

The international catalogue presents ENYSTAR empty and circuit breaker boxes.

ENYGUIDE**Planning tool Configurator ENYGUIDE
at www.enyguide.eu**

Free planning software ENYGUIDE: allows the quick and easy configuration of distribution boards.



Further enclosures with electrical functions for the assembly of ENYSTAR distribution boards up to 250 A, for example, with built-in busbars, circuit breakers, etc., see at: www.hensel-electric.de

For design and assembly according IEC 61439 / EN 61439 with ENYSTAR Distribution Boards up to 250 A please refer to the guide at www.hensel-electric.de/61439.

The guide to design and assemble in accordance with EN 61439 for ENYSTAR distribution boards up to 250 A and Mi Power distribution boards up to 630 A can be downloaded:



www.hensel-electric.de/en



- Dimensional drawings and parts lists are automatically created by ENYGUIDE.
- Representation of the distribution board as a detailed 3D-image or a 2D-drawing.
- Various view planes show the equipment, covers and doors.
- ENYGUIDE determines the necessary accessories such as the number of wall separators independently.
- No time-consuming program installation is needed.

www.enyguide.eu

Distribution boards up to 250 A with door

combinable enclosure system, insulation-enclosed, degree of protection IP 66, made from polycarbonate, for the assembly of distribution boards up to 250 A, intended to be operated by ordinary persons in accordance with IEC 61439-3

- for indoor and protected outdoor installation
- dust-proof and protected against water (IP 66)
- protection class II 
- colour: grey, RAL 7035

Material: Polycarbonate

- Burning behaviour: Glow wire test according to IEC 60695-2-11, self-extinguishing, flame-retardant
- UV resistant according to IEC 61439-1, Section 10.2.4: The material is examined for UV resistance
- Toxic behaviour: silicone- and halogen-free
- Chemical resistance: Resistant against acid 10 % and alkaline 10 %, petrol and mineral oil



Combinable enclosure system with doors



Easy operation of the devices behind a door with protection against accidental contact.



Quick assembly



Assembling ENYSTAR distribution boards according to IEC 61439-3

Doors

- all enclosure sizes with door
- transparent and opaque
- door hinge changeable
- sealable
- locking facilities: lockable, door fasteners for tool and hand operation
- operation of the devices behind the door protected with covers
- no overhangig handles

Quick Assembly

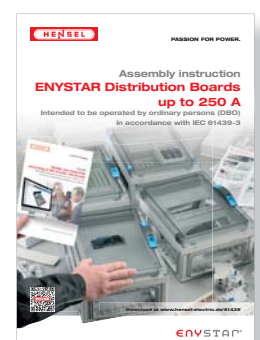
- closed or open enclosure walls, which can fast and easily be closed with closing plate sets
- integrated gaskets
- safe connectors

Pre-assembled enclosures with electrical functions

- Protection covers in enclosures with electrical functions
- Connection Box for the installation of devices that must be operated externally, such as plug devices, push buttons and switches
- Cable entry via flanges up to cable diameter of 72 mm

Assembly instruction

Please request or download information:
www.hensel-electric.de/en -> Downloads



Dependent on the system

Electrical parameters



Electrical parameters

rated voltage: max. 690 V a.c.
rated insulation voltage: 690 V a.c., 1000 V d.c.
rated current: max. 250 A
rated short-time withstand current: max. 13 kA

The design values are possibly reduced by the installed equipment technology, please refer to technical data of the product or index technical data.

System properties



Environmental conditions

Ambient temperature
- for distribution boards in accordance with IEC 61439-3: -5 °C up to 35 °C, max. + 40 °C
Relative humidity: 50% at 40 °C, 100% at 25 °C
- for empty enclosures: - 25 °C up to + 70 °C
The climatic influences and effects on the equipment are to be considered, see technical details / operating and ambient conditions



Application area

The enclosures are suitable for outdoor installation, protected against weather influences.
However, pay attention to the climatic effects on the installed equipment, see operating and ambient conditions in index technical data.



Insulation

insulated enclosures (protection class II)



Impact strength

degree of protection against mechanical load IK 08 (5 Joule) in accordance with IEC 62262



Protection against foreign solid objects and direct contact

dust-proof
degree of protection IP 66



Protection against ingress of water with harmful effects

protected against water
degree of protection IP 66

Dependent on material

Material properties: polycarbonate



Burning behaviour

glow wire test 960 °C
in accordance with IEC 60695-2-11
flame-retardant, self-extinguishing



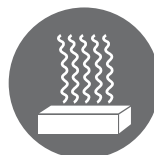
UV resistance

UV resistance according to IEC 61439-1, Section 10.2.4:
the material is examined for UV resistance



Chemical resistance

resistance against acid 10% and alkaline 10%, petrol and mineral oil



Toxic behaviour

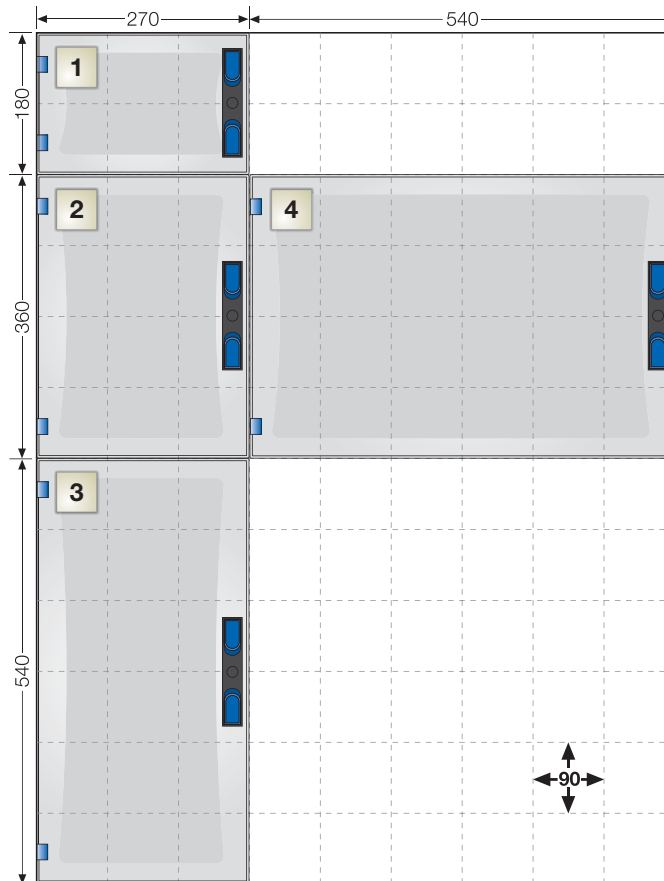
silicone- and halogen-free

Distribution board with door

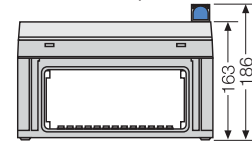
- combinable
- modular structure of enclosures in grid of 90 mm
- 4 enclosure sizes:
270 x 180 mm,
270 x 360 mm,
270 x 540 mm and
540 x 360 mm
- for the assembly of distribution boards up to 250 A
- all enclosures can also be used as single enclosures

Combinable enclosures with door and closing plates

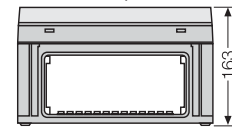
- 4 box sizes:
276 x 186 mm,
276 x 366 mm,
276 x 546 mm and
546 x 366 mm



Enclosure depth with hand operation

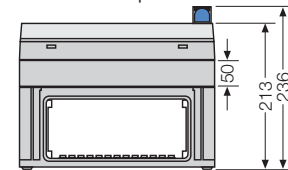


with tool operation

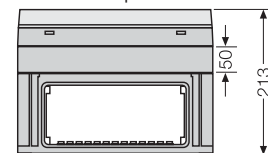


Extension frame

for extending installation depths by 50 mm with hand operation



with tool operation



ENYSTAR distributors are highly adaptable in confined spaces and therefore well suited for industrial and commercial buildings:

- modular,
- with high degree of protection,
- expandable in all directions (vertical and horizontal).

Extension frames allow the installation of devices with different installation heights.



Transparent covers:

All electrical functions at a glance. Errors can be instantly localized. The current course is always visible from the outside in the event of a fault or for retrofitting.

Flexible and expandable

even in case of retrofitting additional circuits. Depending on the number of additional required circuits matching enclosure sizes are available. They can be combined horizontally or vertically on each enclosure wall.

Electrical safety, dimensional stability

In an impact or any other mechanical stress ENYSTAR enclosures gradually buffer and spring immediately back to the original shape. A temporarily contact with live parts does not cause a short-circuit. The protection against electric shock is maintained.

Combinable distribution boards with door



Empty enclosures
door locking
with **hand operation**
**Operation and access
also by unskilled persons**



Empty enclosures
door locking
with **tool operation**
**Access and operation
only by skilled persons**



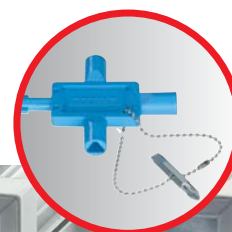
Circuit breaker boxes



- Hand-operated locking facilities in areas, where electrotechnical unskilled persons operate equipment



- Locking option with key prevents unauthorized access



- Multikey for door locking systems: Standard locking system for tool-operation with slot screwdriver and triangle 8 mm, optional square lock 8 mm and double-bit.

Combinable enclosures with door and closing plates

Empty enclosures and circuit breaker boxes additionally with closing plate sets for closing enclosure walls



Enclosure walls
closed via closing plates



Flanges to be
ordered separately



Can be combined and extended in all directions

Because of the increasing requirements, flexibility is essential in the electrical installation.

ENYSTAR enclosures can be combined and arranged freely in

order to adapt the system flexibly to the individual requirements in site:

Combination next to each other or one above the other.

Large doors for all box sizes allow a simple accessibility of the electrical functions.



Combination of enclosures in **vertical** direction.



Combination of enclosures in **horizontal** direction.



Distribution boards intended to be operated by ordinary persons

Example 1:
Distribution board with 72 modules (6 x 12 x 18 mm) built-up of 2 x FP 1318 with closing plates

Example 2:
Distribution board with 125 A feeding, 36 modules (3 x 12 x 18 mm) and a terminal box for PE and N



ENYSTAR® Connection Box

The ENYSTAR Connection Box allows a simple and fast installation of devices that must be operated externally. Such as plug devices, pushbuttons, switches or also touch panels.

The new Connection Box is installed via safe plug connectors.

The ENYSTAR Connection Box is available in different designs and standard equipments.

