Design fast, simply, more clever

PASSION FOR POWER.

Combinable enclosure system
Degree of protection IP 66
Protection class II
Made from polycarbonate

NEW
Degree of protection
IP 66

Product information As at: 7/2014

ENYSSTAR®
Distribution Boards up to 250 A with Door According to IEC 61 439-3
„Distribution Boards Intended to be Operated by Ordinary Persons (DBO)“

- Combinable enclosure system
- Degree of protection IP 66
- Protection class II
- Made from polycarbonate

Design fast, simply, more clever
www.ENYGUIDE.eu
**ENYSTAR**

**Interfaces according to IEC 61439-3**
- For protected outdoor installation
- Degree of protection IP 66
- Combinable enclosure system, extendible in all directions
- 4 enclosure sizes in grid of 90 mm
- EMC compliant busbar system
- Wall- or floor-mounted
- Distribution board up to 250 A intended to be operated by ordinary persons (DBO) according to IEC 61439-3
- Protection class II up to a 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 the 4 interfaces for the rating of power switchgear assemblies**

**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.

**Further technical information can be found on the Internet**
www.hensel-electric.de -> Products

**Example: Product presentation in accordance with IEC 61439**

**FP 3226**
1 x fuse switch disconnector 125 A, HRC 001, 3-pole
Rated current of busbars 250 A
- incoming terminals 10-70 mm², Cu, round conductors
- outgoing terminals: 1.5-50 mm², Cu, round connectors per PE and N terminals 1 x 4-35 mm², Cu, round connectors
- N conductor with the same current carrying capacity as the phase conductors
- cable connection from the top, changeable to bottom connection
- with transparent door
- door fastener with tool operation
- door locking sealable
- box size 2
- connector; 6 items
- order closing plate sets, single closing plates and flanges separately
- rated voltage: Uₐ = 690 V a.c.
- rated current of a circuit Lₐ = 100 A
- number of circuits
- busbar system - polarity 5
- busbar thickness L₁-L₃, N, PE: 5 mm
- centreline spacing of busbars 60 mm
- tightening torque for terminal 4 Nm terminal

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**IEC 61439 causes new product presentation**
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.

- **Connect 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
  - Connection with cable from above / from below
  - Connection: conductors from copper / aluminium
  - Optional connection of CEE sockets according to EN 60309 and sockets with earthing contact according to DIN 49440-1

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

- **Connection to the electrical network**
  - Rated voltage Uₐ = 690 V a.c. / 1000 V d.c.
  - Rated current Iₐ 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
  - Connection with cable from above / from below

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**Further technical information can be found on the Internet**
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ENYSTAR
System Description

Distribution Boards with Door up to 250 A

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

Distribution Boards up to 250 A with Door

- For indoor and protected outdoor installation
- Dust-proof and protected against water (IP 66)
- Protection class II
- Colour: grey, RAL 7035

Doors

- All enclosure sizes with door
- Transparent and opaque
- Door hinge changeable
- Sealable
- Locking facilities: lockable, door fasteners for tool or hand operation
- Operation of the devices behind the door protected with covers, no overhanging 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

- Electrical functions in enclosures with protection covers
- Connection Box for installation of devices that must be operated externally, such as plug devices, pushbuttons and switches
- EMC compliant busbar system
- N conductors with the same current carrying capacity as the phase conductors
- Bus-mounted fusegear
- Cable entry via flanges up to 72 mm cable diameter

As standard busbar system EMC-compliant with N/PEN conductor in the area of phase conductors and with the same current carrying capacity as the phase conductors.

Material: 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
  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
- Corrosion resistance: Resistant to weather influences such as humidity, temperature, wind

Environmental conditions

- Ambient temperature
  - for distribution boards in accordance with IEC 60439-3:
    - -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 ambient temperature for distribution boards is reduced by the installed equipment technology!

Application area

- The enclosures are suitable for the protected outdoor installation - harsh environment and / or protected outdoor.
  However the climatic influences and effects on the equipment are to be considered, see Technical Details: Operating and Ambient Conditions

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

Electrical parameters

- Rated current: 250 A
- Rated insulation voltage: AC 690 V, DC 1000 V, IEC 60664
  *the rated insulation voltage is possibly reduced by the installed equipment technology
Enclosures with electrical functions

- Empty enclosures
- Combinable distribution boards with door
  - 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
  - To assemble fast and simply, to larger combinations
  - Order closing plate sets, single closing plates and flanges separately.

- Combinable enclosures with door and closing plates
  - Empty enclosures with closing plates
  - Order flanges separately

- Circuit breaker boxes with closing plates
  - Order flanges separately

- KWH meter boxes

- HRC fuse boxes with fuse switch disconnectors

- Busbar boxes

- Enclosure walls closed via closing plates
  - Enclosure depth
    - With hand operation
    - With tool operation

- Extension frame for extending installation depths by 50 mm with hand operation
  - Flanges to be ordered separately

- Isolator boxes with built-in switch disconnectors and MCCB circuit-breaker boxes

- Combinable distribution boards with door
  - 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
  - To assemble fast and simply, to larger combinations
  - Order closing plate sets, single closing plates and flanges separately.

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

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

- Locking option with key mit Schlüssel prevents unauthorized access
ENYSTAR
System Description
Assembly Examples

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.

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.

ENYSTAR Assembly Examples

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 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.
Extendable

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
Requirements for Distribution Boards in Industry, in Buildings and in Commercial Applications

General requirements concerning distribution boards:
1. Clear separation between operation area and distribution area
For areas in distribution boards to which unskilled persons have access, standards require special protective measures:
- Life parts are to be protected against accidental contact by a cover.
- Devices, which may be operated only by an electrical skilled person, are to be arranged in a separate area, which is to be opened only with tool.
2. Fast and safe operating of the intended devices, e.g. series built-in equipment and switching devices
3. No removable covers or parts so that electrotechnical unskilled persons can easily operate.

Additional specific requirements when used in commercial and industrial applications:
1. High degree of protection IP 66 dust-proof and waterproof
2. Robust material for use in rough environments high-quality thermoplastic material for high mechanical loads.
3. Corrosion resistance Material resistant to corrosion by atmospheric humidity or industrial processes.

Distribution boards are usually used in working place proximity. Their application is various. Here the demands and requirements that result from the installation site must be adhered to.

Additional specific requirements when used in commercial and industrial applications:
1. High degree of protection IP 66 dust-proof and waterproof
2. Robust material for use in rough environments high-quality thermoplastic material for high mechanical loads.
3. Corrosion resistance Material resistant to corrosion by atmospheric humidity or industrial processes.

Distribution boards up to 250 A According to IEC 61439-3 „Distribution Boards Indended to be Operated by Ordinary Persons“

ENYSTAR
Modular distribution boards for special requirements in commercial and industrial applications ...

- and with clearly separated functional areas!
- Modular design for clear separation of access and operation areas for electrical skilled persons and unskilled persons.
- Large, transparent doors for a quick control and convenient operation of the built-in equipment
- Fast opening and closing of the doors in a single operation
- At any time an expandable, modular system

Requirements in accordance with IEC 61439-3:
1. Only installation equipment, like series built-in equipment, fuses up to 63 A, circuit-breakers and IT-components are permitted. For the access a tool-operated door locking facility is NOT necessary.
2. Other switching devices must be installed behind separate lids or doors, which can only be opened using a tool: protection against direct contact with hazardous live parts IP XXC.

Optionally, the door lock can also be used key-lockable.

To the following areas only an electrical skilled person may have access:
- feeding-in
- back-up fuse
- outgoing terminals.

Therefore access is possible only with appropriate tools. Electrotechnical unskilled persons have no access here.
Built-in equipment must be suitable for operation by electrotechnical attachments in the bottom or on DIN rails or mounting plates. Empty boxes for the installation of different electrical devices either directly or with transparencies with hand operation

Circuit breaker boxes for devices up to 63 A with PE and N terminals

Circuit breaker boxes for devices up to 63 A without PE and N terminals

Circuit breaker boxes for devices up to 100 A without PE and N terminals

KWH meter boxes

Busbar boxes with device equipping (fuse elements 63 A, Neozed)

Isolator boxes

Removable DIN rail rack for e.g. earth connection (British Standard)

ENYSTAR Overview Product Range

Operation and Access even by Unskilled Persons

Operation and Access even by Unskilled Persons

Overview Product Range

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Operation and Access even by Unskilled Persons

Overview Product Range

ENYSTAR
**ENYSTAR**

**Overview Product Range**
Access and Operation only by Skilled Persons

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### Empty enclosures with transparent door with tool operation
- **FP 0100** Mounting dimensions: 220x130x140 mm
- **FP 0101** Mounting dimensions: 220x130x140 mm with closing plates
- **FP 0210** Mounting dimensions: 220x310x140 mm
- **FP 0211** Mounting dimensions: 220x310x140 mm with closing plates
- **FP 0310** Mounting dimensions: 220x490x140 mm
- **FP 0311** Mounting dimensions: 220x490x140 mm with closing plates
- **FP 0400** Mounting dimensions: 490x310x140 mm
- **FP 0401** Mounting dimensions: 490x310x140 mm with closing plates
- **FP 0410** Mounting dimensions: 490x310x140 mm with closing plates
- **FP 0411** Mounting dimensions: 490x310x140 mm with closing plates

### Empty enclosures with opaque door with tool operation
- **FP 0120** Mounting dimensions: 220x130x140 mm
- **FP 0121** Mounting dimensions: 220x130x140 mm with closing plates
- **FP 0230** Mounting dimensions: 220x310x140 mm
- **FP 0231** Mounting dimensions: 220x310x140 mm with closing plates
- **FP 0330** Mounting dimensions: 220x490x140 mm
- **FP 0331** Mounting dimensions: 220x490x140 mm with closing plates
- **FP 0430** Mounting dimensions: 490x310x140 mm
- **FP 0431** Mounting dimensions: 490x310x140 mm with closing plates

### KWH meter boxes
- **FP 0211** with support for 1 KWH meter or 1 meter + 1 DIN rail
- **FP 0231** with support for 2 KWH meters or 1 meter + 1 DIN rail
- **FP 0331** with support for 3 KWH meters or 1 meter + 2 DIN rails
- **FP 0431** with support for 4 KWH meters or 1 meter + 3 DIN rails

### Busbar boxes
- **FP 3212** 250 A, 5-pole
- **FP 3212** 250 A, 5-pole + HRC 00C with terminals
- **FP 3426** 250 A, 5-pole
- **FP 3426** 250 A, 5-pole + HRC 00C with terminals

### Busbar boxes with device equipping (fuse switch disconnectors)
- **FP 3226** 250 A, 5-pole + HRC 00C
- **FP 3426** 250 A, 5-pole + HRC 00C

### HRC fuse boxes
- **FP 4211** 1xHRC 00C, 125 A
- **FP 4212** 2xHRC 00C, 125 A

### MCCB circuit-breaker boxes
- **FP 5216** 160 A
- **FP 5325** 250 A

---

Empty boxes for the installation of different electrical devices either directly over attachments in the bottom or on DIN rails or mounting plates.

As standard EMC compliant busbar system: with N/PEN conductor in the area of phase conductors and with the same current carrying capacity as the phase conductors.

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**As standard** EMC compliant busbar system: with N/PEN conductor in the area of phase conductors and with the same current carrying capacity as the phase conductors.

HRC fuse boxes with fuse switch disconnectors in accordance with IEC 60 947-3

MCCB circuit-breaker boxes with circuit-breaker in accordance with IEC 60 947-2, MCCB with overload and short-circuit release.
Mounting depth for device installation in covers

ENYSSTAR distribution boards with door lockings for hand operation

FP 0140
FP 0150
FP 0340
FP 0350
FP 0440
FP 0450

ENYSSTAR distribution boards with door lockings for hand operation and closing plates

FP 0141
FP 0151
FP 0341
FP 0351
FP 0441
FP 0451

ENYSSTAR distribution boards with door lockings for tool-operation

FP 0100
FP 0120
FP 0210
FP 0230
FP 0310
FP 0330

ENYSSTAR distribution boards with door lockings for tool-operation and closing plates

FP 0101
FP 0121
FP 0211
FP 0231
FP 0311
FP 0331

Detail Dimensions in mm

FP 0330
FP 0421
FP 0401
FP 0411
FP 0400
FP 0230
Basis are the data for equipment assembly, technical data such as rated voltage and rated current as well as requirements to the system. These are to be determined in site or for project engineering technical specifications respectively tender documents are available.

Technical specifications
Insulation-enclosed box-type low-voltage switchgear assembly as distribution board in accordance with IEC 61 439 Part 3 built-up of combinable enclosures with door as wall-mounted assembly.

- largest permissible dimensions: H/W/D in mm: 1200x1500x500
- Enclosure bases with door made of thermoplastic.
- Burning behaviour according to IEC 60 695-2-11 Glow wire test 960°C, halogenfree
- Colour: grey, RAL 7035
- transparent, lockable doors
- Incoming cables from the floor ...

The CONFIGURATOR is a professional planning aid, with which the electrical specialist can provide himself fast and easily layouts and parts lists without any time-consuming program installation at the computer.

The professional planning aid plots the distribution board as precise 3-dimensional image for final customers and/or the user or as 2-dimensional drawing for the assembler. The user can choose via several layers between the projection of assemblies, covers and doors.

ENYGUIDE figures out independently the necessary accessories like the number of wall separators or closing plates for enclosure walls.

Start directly with the project of ENYSTAR distribution boards or use the advantages of registration:
- personal project management
- user administration
- on demand the Hensel specialist can examine your project or take over your project data for the further processing.

A test function determines the required accessories with the configurator independently such as the number of wall separators and closing plates for enclosure walls.

ENYGUIDE
Comfortable project engineering of ENYSTAR distribution boards with the configurator ENYGUIDE
Selection of the enclosures with electrical functions and equipment
Selection of accessories for installation and wiring
Specification of accessory
Connection of enclosures and closing of the remaining enclosure walls

Simply and fast positioning of the enclosures and components on the drawing page
ENYSTAR
Design and project engineering

Creating a layout
- as 3-dimensional image for acquisition at your customer or
- as 2-dimensional drawing of the layers enclosures with equipment, covers and doors for the assembler.

Automatically creating of parts list and order list according to the layout.

ENYGUIDE
Comfortable project engineering fast and easily with the planning tool configurator ENYGUIDE

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