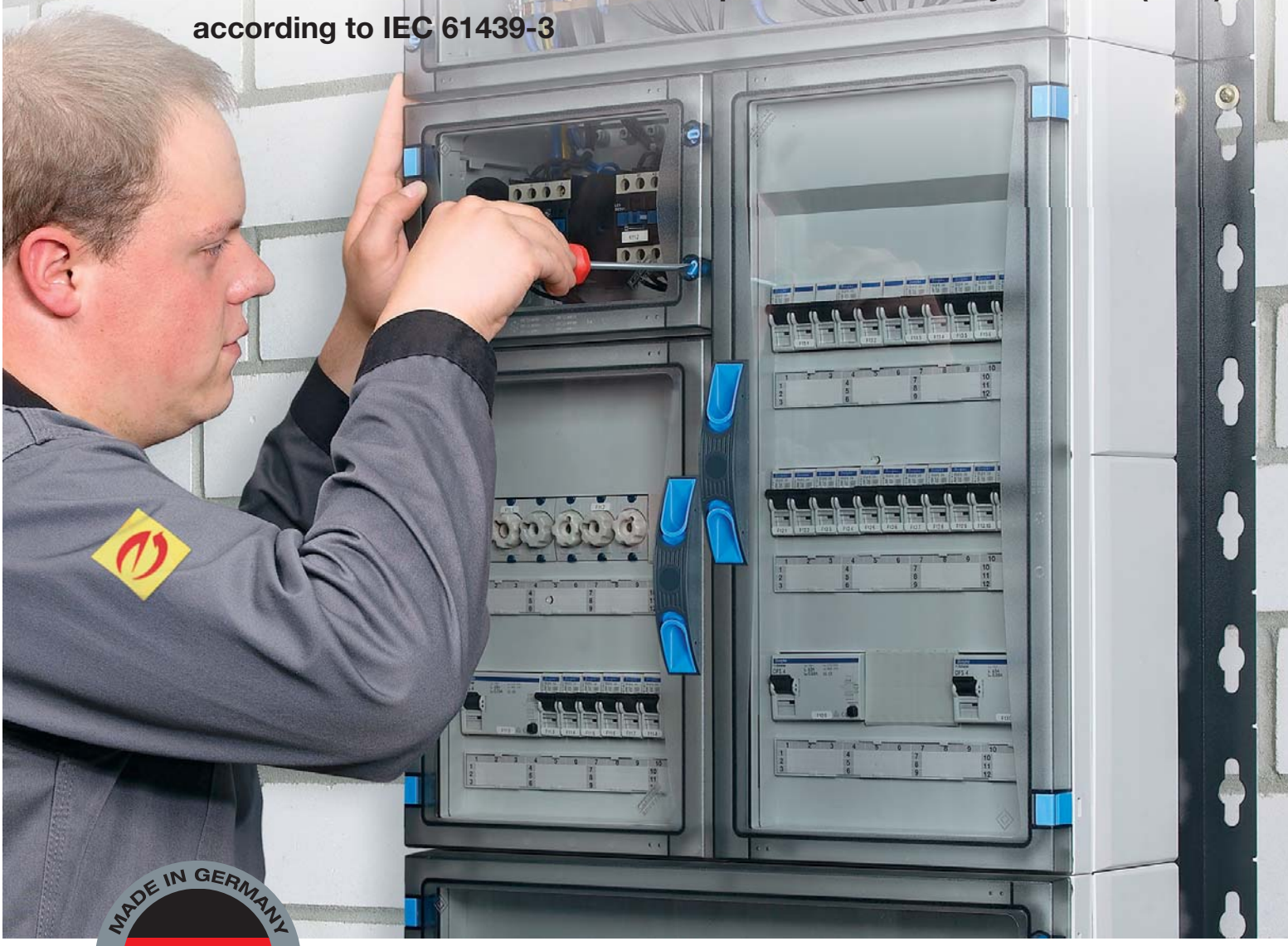
HENSEL

PASSION FOR POWER.

TECHNICAL INFORMATION

Assembly of ENYSTAR Distribution Boards up to 250 A

Distribution Boards Intended to be Operated by Ordinary Persons (DBO) according to IEC 61439-3



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

Distribution Boards up to 250 A

according to IEC 61439-3

- combinable enclosure system
- with doors
- degree of protection IP 66
- made from polycarbonate
- protection class II, ⧈

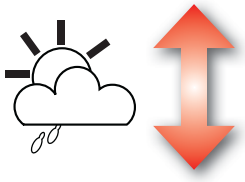
Assembly Video

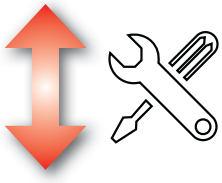
Info **Hensel specialist consultant on-site at www.hensel-electric.de**

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 complient busbar system
- Wall-mounting
- Distribution board up to 250 A
- 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)

Installation and ambient conditions





Operation and maintenance

BLACK BOX

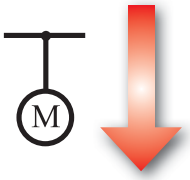
with the 4 interfaces for the rating of power switchgear assemblies

ENYSTAR Distribution Board

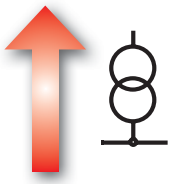
Combinable enclosure system, insulation-enclosed, totally insulated, IP 66, **for the assembly of distribution boards up to 250 A intended to be operated by ordinary persons (DBO) according to IEC 61439-3**

Electrical functions are compliant with the requirements of IEC 61439-3.

Electrical circuits and consumers



- 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



Connection to the electrical network

- 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

ENYSTAR
Distribution Boards
Intended to be Operated by Ordinary Persons (DBO) according to IEC 61439-3

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 easyly 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.

Operation also by electrotechnical unskilled persons

- Operating areas for **unskilled persons** can be reached quickly and easily via door locking with hand operation

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**.

Access and operation only by electrical skilled persons

- Devices which must only be operated by **skilled persons**, must be installed in a separate area which can only be opened using a tool

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.** The access can be prevented by optionally lockable doors. Electrotechnical unskilled persons have no access here.

ENYSTAR
Installation and Ambient Conditions
Installation Areas and Degrees of Protection

Country-specific requirements have to be observed!

Requirements of German standard DIN VDE 0100 Part 737 for compliance with IP degree of protection

1. Requirement
Protection against ingress of water for all electrical equipment (devices) with the appropriate encapsulation (2nd characteristic numeral)

1.1. Minimum requirement for electrical equipment:

Note for outdoor installation:

„Protected outdoors“
Electrical equipment has to be protected from precipitation (like rain, snow or hail) as well as from direct sunlight.

„Non-protected outdoors“
Electrical equipment can be exposed to precipitation or direct sunlight.
With both assembly sites the climatic effects on the installed equipment must be observed, for example, high or low ambient temperatures or condensation.

1.2. Minimum requirements for electrical equipment, that must withstand higher environmental stresses:

degree of protection IP X 4
with **non-direct** jets of water within occasional cleaning procedures, e.g. agriculture

degree of protection IP X 5
with **non-direct** jets of water within operational cleaning procedures, e.g. carwash

degree of protection IP X 5 and additional consultation with the manufacturer:

with **direct** jets of water within occasional cleaning procedures of enclosures, e.g. butcher's shop

Country-specific requirements have to be observed!

2. Requirement of German Standard DIN VDE 0100 Part 737

4.1 Electrical equipment must be selected taking into account the external influences to which they may be exposed. Proper operation and the effectiveness of the required degrees of protection must be assured.

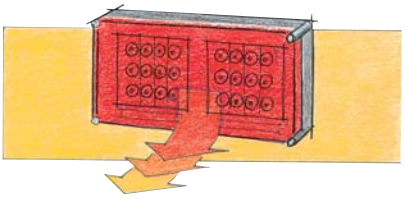
Note: Data from the manufacturer!

ENYSTAR
Formation of Condensed Water

How does condensed water occur in enclosures with a high degree of protection?

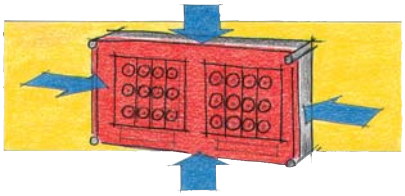
Condensed water only forms in enclosures with a higher degree of protection than IP 54 due to temperature difference from inside to outside. Humidity can not evaporate because of the high degree of protection of the enclosure.

System switched on.



The internal temperature is higher than the external temperature due to the power dissipation of the built-in devices.

System switched on.



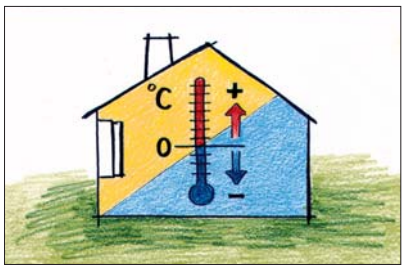
The warm air inside the enclosure attempts to accumulate moisture. This comes from outside through the seal as the enclosures are not gas-tight.

System switched off.

The internal temperature is reduced by cooling down the system e.g. by switching off the loads. The cooler air emits moisture which is collected as condensed water on the cooling inner surfaces.

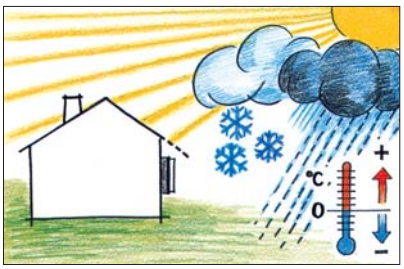
How does condensed water occur in enclosures with a high degree of protection?

Formation of condensed water for **indoor installations:**



In areas where high levels of air humidity and large temperature fluctuations are expected e.g. in laundry rooms, kitchens, car washes etc.

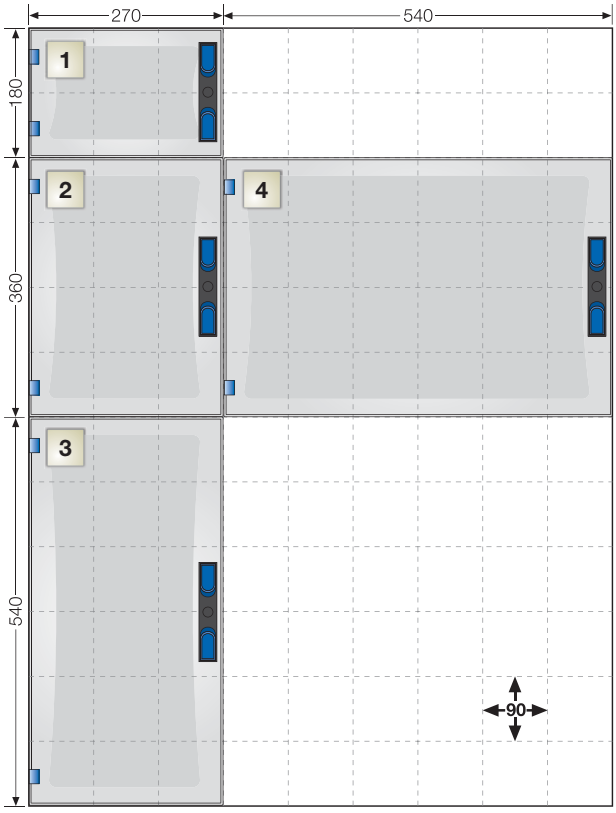
Formation of condensed water in **protected outdoor installations** (protected against weather influences) **or unprotected outdoor** installations:



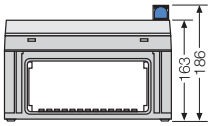
Here condensed water can be formed dependent on the weather, high air humidity, direct sunlight and temperature differences compared to the wall.

The modular structure of enclosures in grid of 90 mm allows a free configuration of the outer form.
Combinable in all directions to follow given requirements on site.

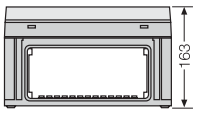
Different enclosure depths allow the installation of equipment of different heights. With an extension frame the depth of the enclosure sizes 3 and 4 can be extended by 50 mm.



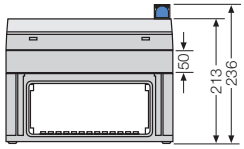
Enclosure depth
with hand operation



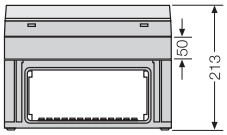
with tool operation



Extension frame
for extending installation depths by 50 mm with hand operation



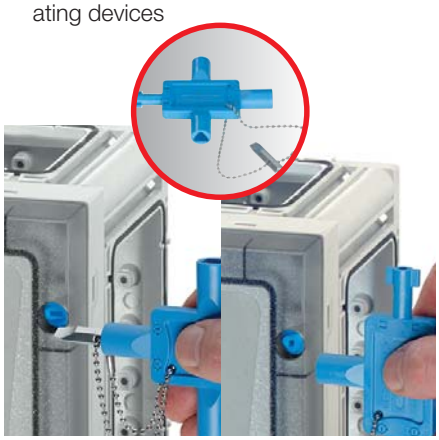
with tool operation



Operation
Clear separation of the operation areas for unskilled persons and access/operation areas for skilled persons (electricians).

- Hand operated doors in areas to which unskilled persons have access for operating devices

- Locking facilities with keys prevent the unauthorized opening of doors



- Standard tool operation for slotted screwdrivers and triangle (option square, double bit)

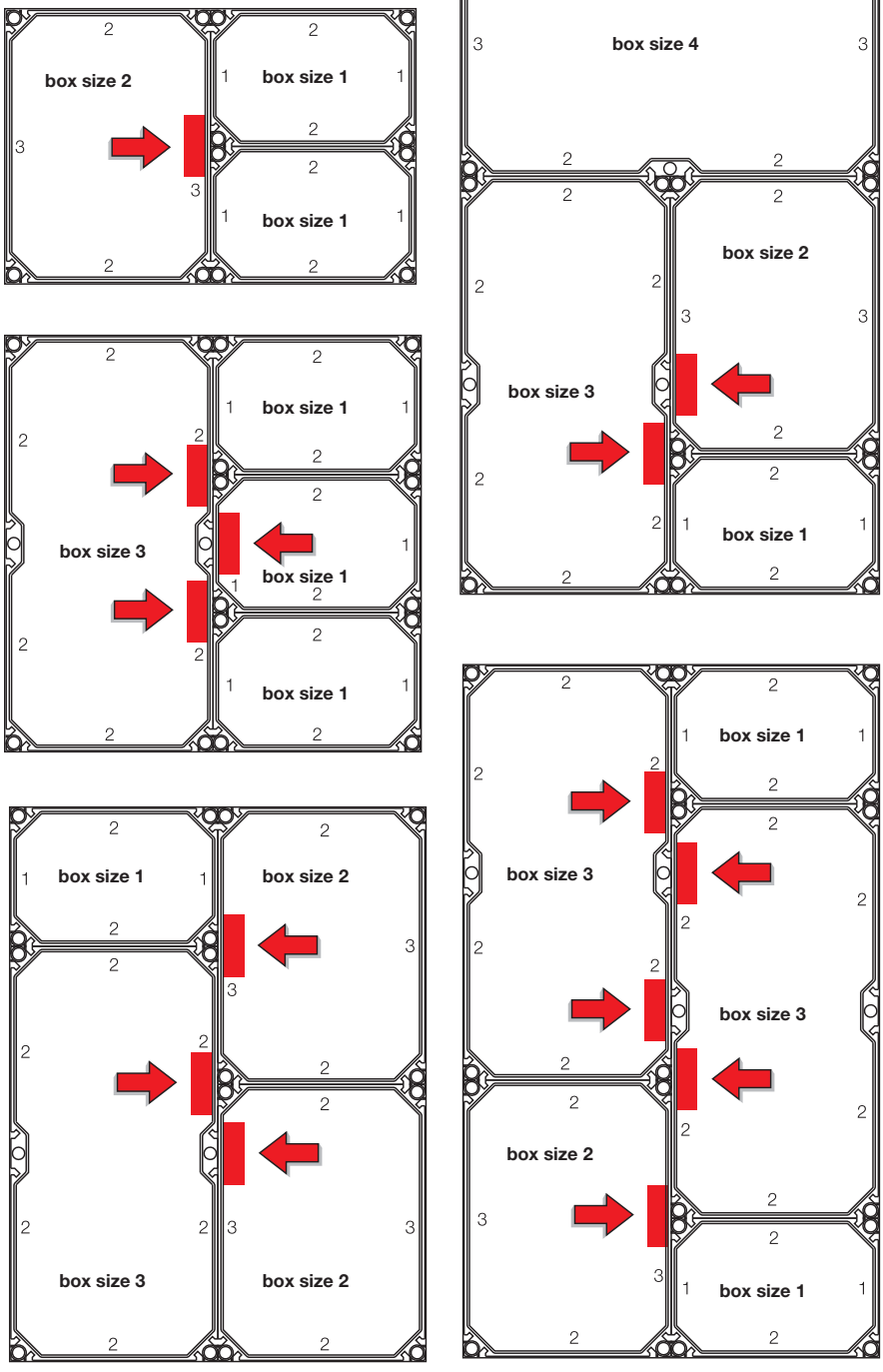
Positioning of enclosures
Assembly of enclosures according to layout

Removal of the frames with door

Unscrew and remove the frame from the bottom part together with the door.

Combination of enclosures with connectors and wall separators

At this point a wall separator is necessary for the enclosure combination.



Fast assembly and mounting

All necessary gaskets are integral part of the enclosures. The enclosures are interconnected among themselves by easily pushing-in of connectors. No tools are necessary.

Connectors are attached to the enclosures in sufficient number. For reconstruction or extensions of existing distribution boards connectors FP GV 10 (set consists of 10 pieces) can be supplemented.

The connection of enclosures is not only co-ordinated with enclosures of the same size.
By means of wall separators also different sized enclosures can be combined.

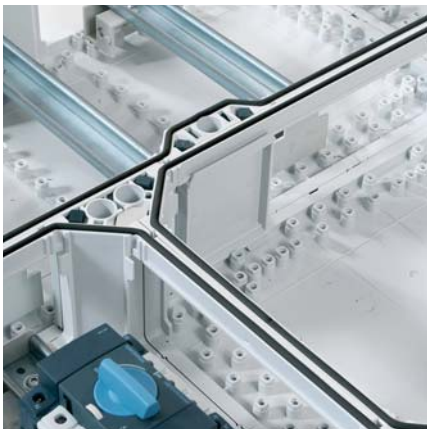
Wall separators provide for high rigidity and tightness at the connection points of the enclosures, degree of protection IP 66.

Connection of enclosures

Assemble enclosues by push-ing-in enclosed connectors.

Inserting wall separators

Use wall separators to connect different sized enclosure walls.



Closing walls via closing plates

Insert closing plates into openings of outer walls of the distribution board and fix them with enclosure connectors.

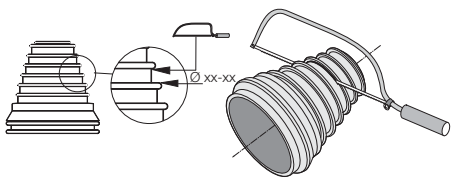
Closing of enclosure walls with flanges for cable entry

Insert flanges for cable entry into open outer walls of the distribution board and fix them with enclosure connectors. A wide range of flanges for the cable entry is available.

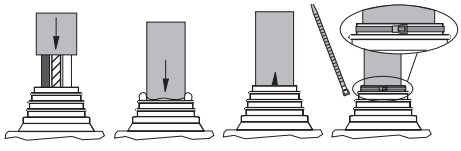
Installation of cable inserts

Saw the box fin.
Afterwards the cable insert is mounted and fixed via enclosure connectors and the rubber entries can be inserted.

Adjust stepped grommet on the cable diameter.



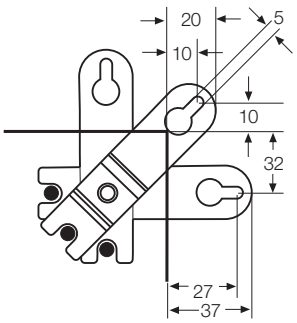
Insert cable and fix it with the cable ties.

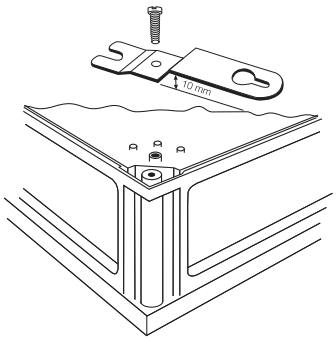


Insert the cable into the box from the front.

External brackets made from stainless steel
for external box fixing

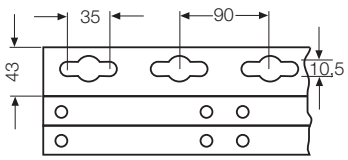
FP AL 40 (4 pieces)

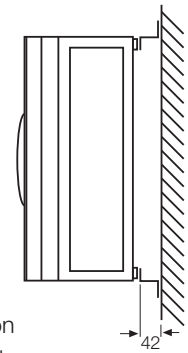




Mounting profile
for wall-mounting of ENYSTAR distribution boards, steel profile,
length 1980 mm
FP MS 1

Fixing matrix of mounting profile





Note:
Please fix mounting profile in vertical position as possible in order to give occation to cable routing behind the assembly.

For cutting to the required length fix mounting profile for example with a clamp to a desk.

Transport
Regarding transportation it is recommendable to protect the assembly against deflection. For that please screw the assembly to a solid timber.

Ventilation flange FP BF 36

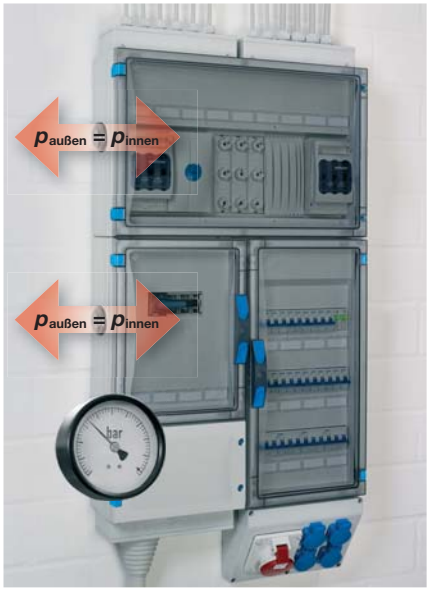
for ventilation of ENYSTAR distribution boards in the event of extremely high internal temperatures or a risk of water condensation.

For vertical installation on box walls, degree of protection IP 44

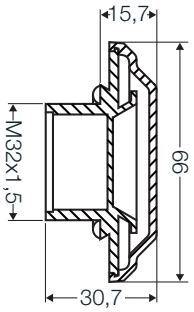
FP BF 36

Pressure compensation element BM 32

for the reduction of condensation by pressure compensation in power distribution systems



BM 32



Combi climate glands KBM / KBS ... for reduction of condensation by pressure compensation

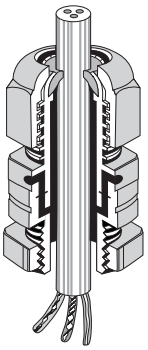
Via an inserted climate membrane they ensure pressure compensation between enclosure interior and ambient air.

Ingress of water through the calbe gland is prevented.

The degree of protection of the enclosure is obtained!

KBM ...

KBS ...



ENYSTAR
Installation
Canopy

Canopy for the unprotected installation outdoors

Mount the flange with pre-assembled canopy on upper housing wall.

In case of box assembly connect trusses with stop plate.

Mount canopy and/or canopy end plate

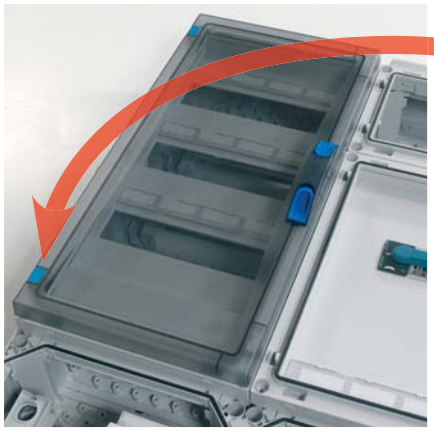
Hint:
Insert canopy end plate under the canopy until it hits back-stop.

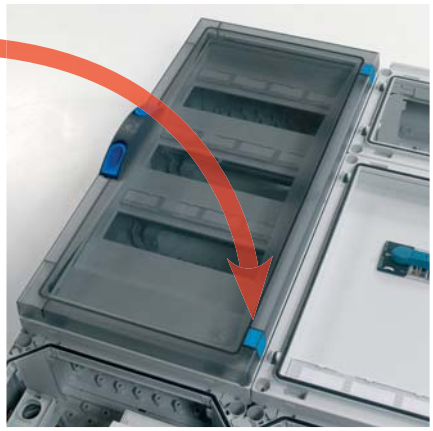
FP DB 27

FP DB 36

Mi DB 01

Changing door hinges





Remove door hinge from the door frame.
Then remove interlocking device for the door lock from the frame.

Insert interlocking device and door hinge on the other side in the frame.

Hint:
When changing the door stop in circuit-breaker boxes the protection cover must be turned around.

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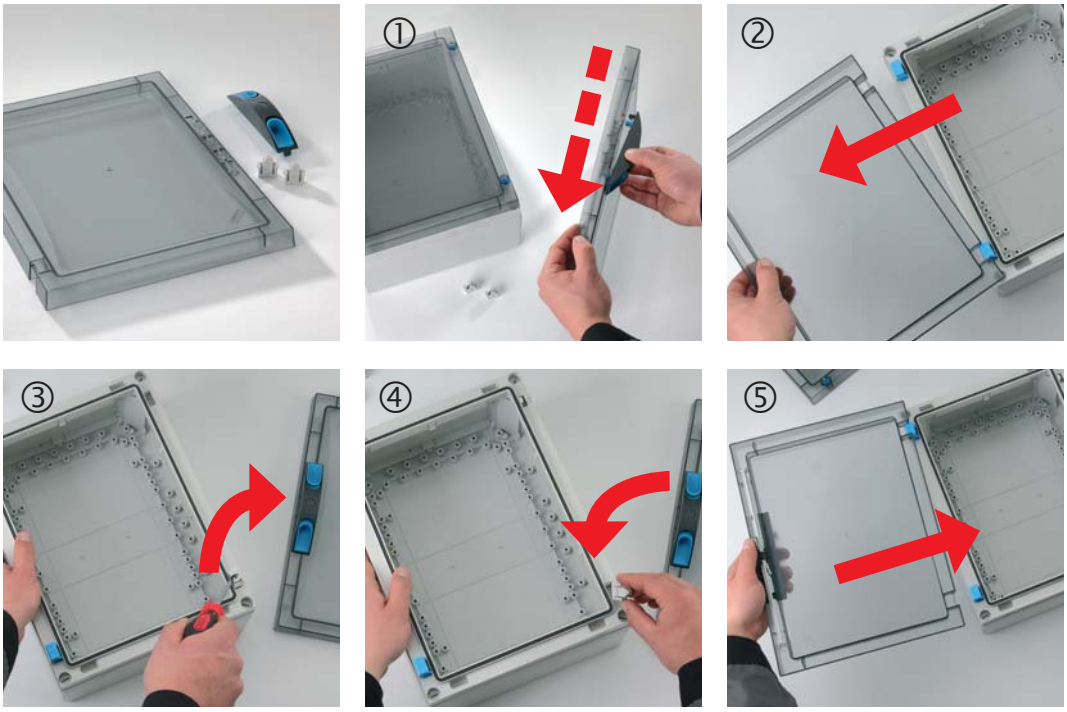
Convertion of tool-operated to hand-operated door locks

1. Insert hand-operated door lock onto the door
2. Drag the door from the hinges
3. Remove interlockings from the frame
4. Insert the new interlockings
5. Snap door back into door hinge



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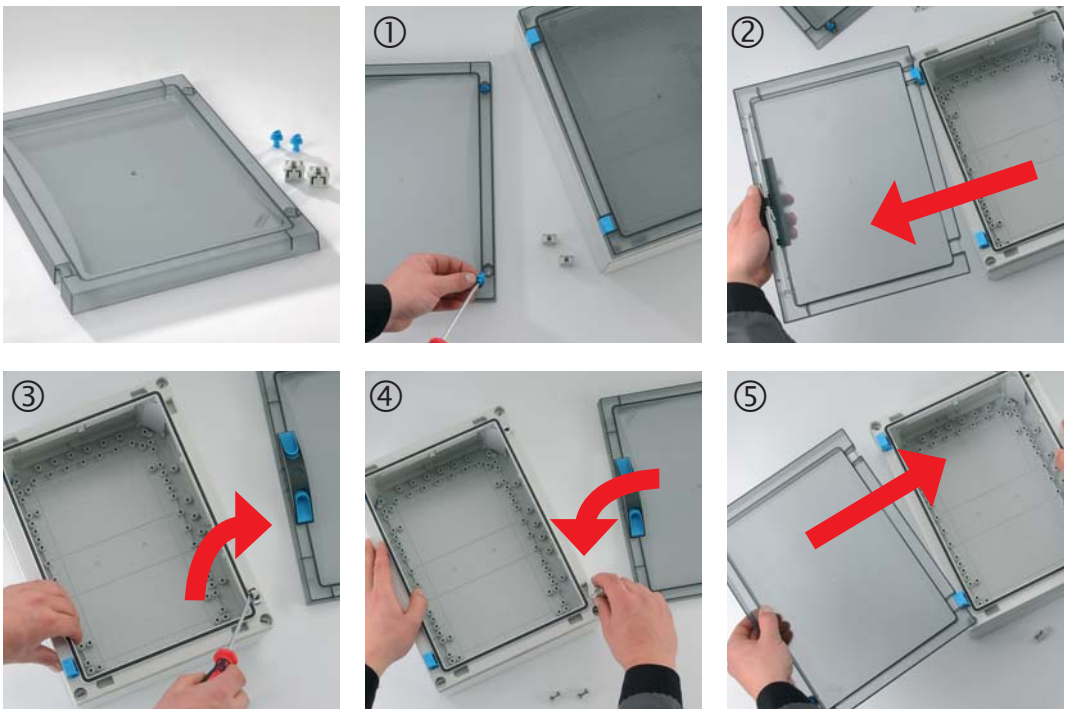


ENYSTAR
Device Installation
Box Fin, Mounting Plates, DIN Rails

Box fin
provides an easier wiring across two boxes.

Saw out fin in box wall.

Insert box fin and fix via fixing wedges.

Device installation on mounting plates or DIN rails

Fasten installation devices on mounting plates with self-threading screws.

Screw mounting plate onto base of box.

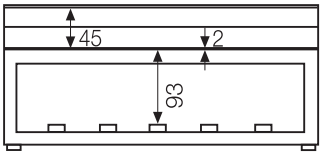
Mount DIN rails direktly onto base of boxes or on spacers FP DS 02 in heights of 29.5 mm or 53.5 mm.

Device installation into covers

Pre-drill the cut-outs at the corners and saw them out of the cover.

Use a piercing saw with coarse toothed saw blade for plastics. Install device.

Snap cover into door frame from the rear.
Afterwards, screw door-frame with door and cover onto base of enclosure.



Installation depth for equipment installation in covers

Sealing

For installation in all enclosures except circuit breaker boxes.

Sealing device is screwed on enclosure bottom.

Open pre-moulded opening for sealing device (drill Ø 5 mm) and screw the cover with frame.

Then screw the frame with door and cover onto base of enclosure.
Seal the cover.

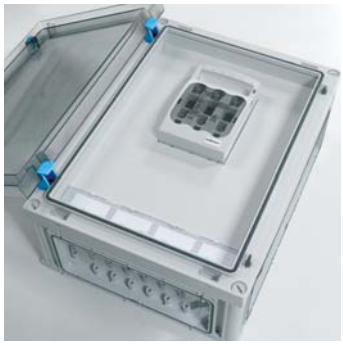
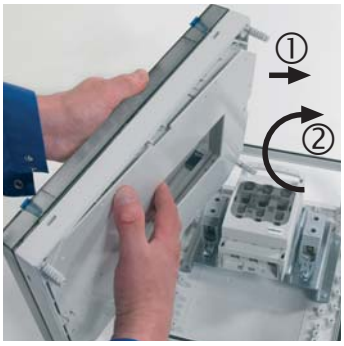
Changing direction of cable connection
HRC fuse switch disconnector HRC 00C and HRC 1

Remove cover from frame ① and and rotate cover ②

Snap cover back into the frame ③.

Unscrew device support.

Replace device and screw on again.



Changing direction of cable connection
Isolator box and circuit breaker box

Unscrew device support.

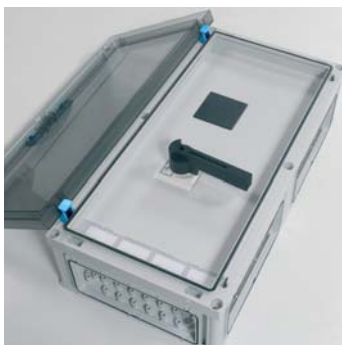
Replace device and screw on again.

Remove blanking strip from the cover.

Replace blanking strip in the new position within cover.

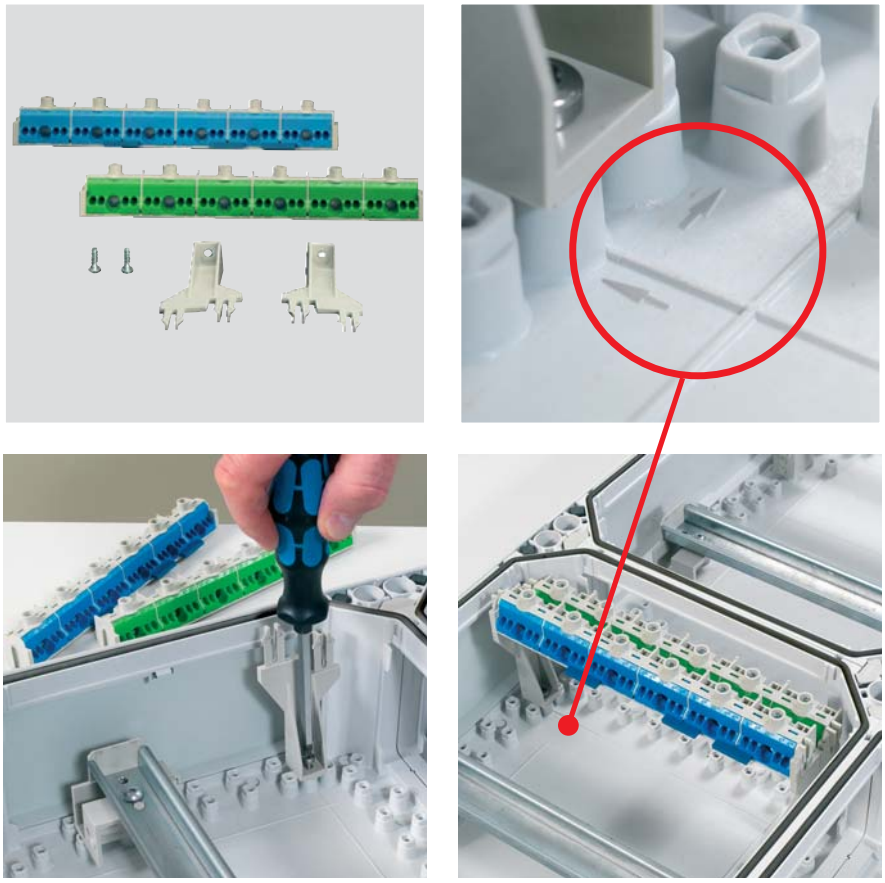




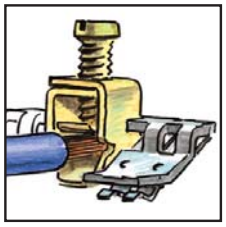
ENYSTAR
Device Installation
PE and N Terminals

Installation of PE and N terminals in FIXCONNECT® plug-in technology
Arrow marks in the enclosure bottoms indicate the fixing position of the terminal support.



PE and N FIXCONNECT® terminal

Rated connecting capacity of PE and N terminals

Clamping unit	Corresponding cross-sections/copper				
	max. number	from - to max.		max. number	from - to max.
Screw-type terminal 25 mm²					
	1	25 mm², s		1	25 mm², f
	1	16 mm², s		1	16 mm², f
	1	10 mm², sol		1	10 mm², f
	3	6 mm², sol	Tested as connecting terminal for several conductors of the same cross-sections for using in one circuit	1	6 mm², f
	3	4 mm², sol		1	4 mm², f
	4	2.5 mm², sol		1	2.5 mm², f
	4	1.5 mm², sol		1	1.5 mm², f
Plug-in terminal 4 mm²	1	1.5 - 4 mm², sol		1	1.5 - 4 mm², f Without end ferrule; clamping unit has to be opened with a tool when conductor is inserted
					

Current carrying capacity of the connecting device: 80 A
All terminals are secured against self loosening.

EMV gerechte Sammelschienensysteme

EMC compliant busbar system
As standard with N/PEN conductors:
- with the same current carrying capacity as phase conductors
- most favourable for EMC comliance in the area of phase conductors

Rated values for voltages

rated voltage	U_n = 690 V a.c.
rated insulation voltage	U_i = 690 V a.c., 1000 V d.c.

Rated values of currents

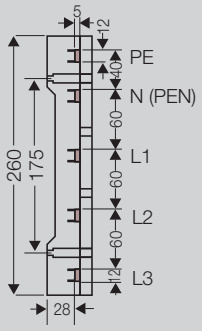
Busbars	250 A
rated busbar current	250 A
rated short-time withstand current	I_{cw} = 13 kA / 1 s
rated peak withstand current resistance	I_{PK} = 26 kA

Power dissipation of busbar system

busbar system 5-pole length: 1 meter	42,7 W/m

Position of busbars

For containing short-circuit resistance the distance between busbar supports must not exceed 300 mm.



Equipment for busbar supports

	FP ST 25
L1, L2, L3	12x5 mm
N	12x5 mm
PE	12x5 mm

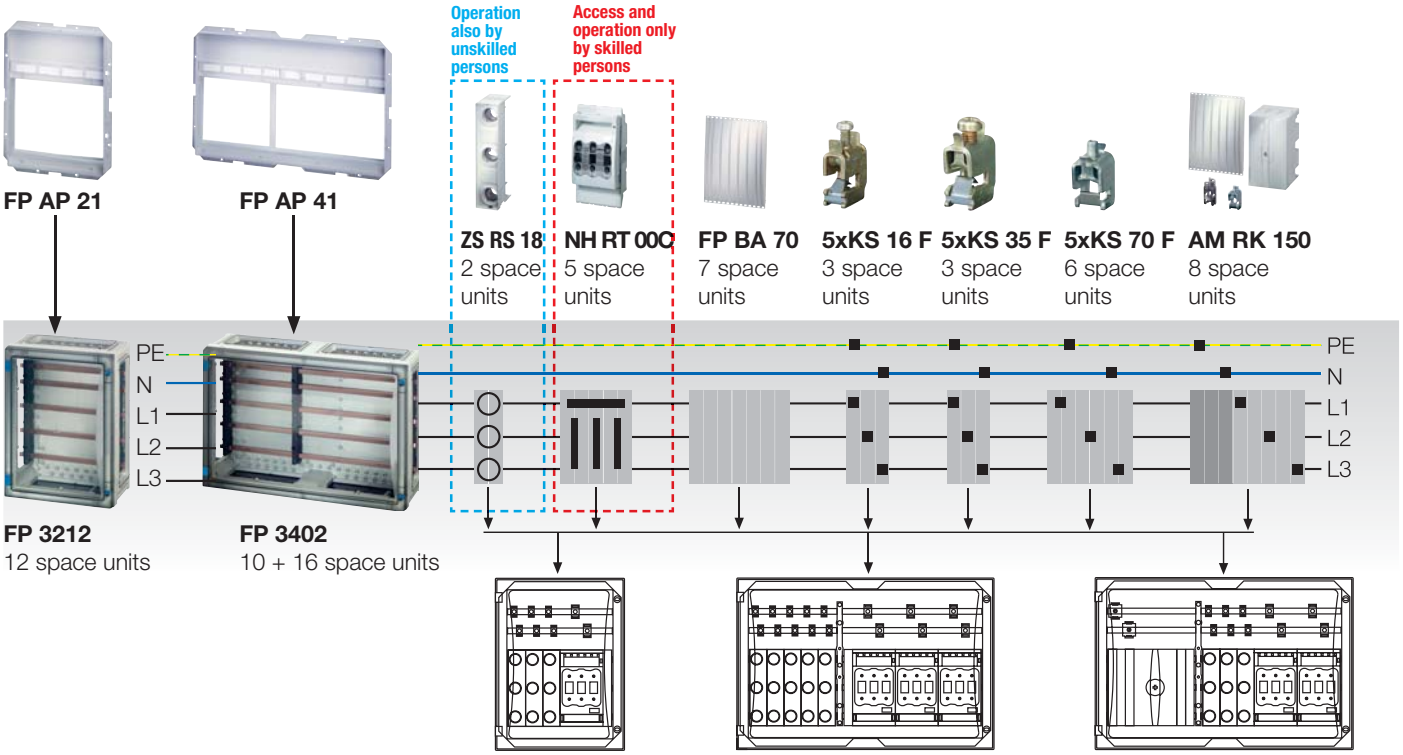
Busbar connector

Busbar systems 250 A can be connected via busbar connector FP SV 25.

Application Possibilities of Busbar Boxes

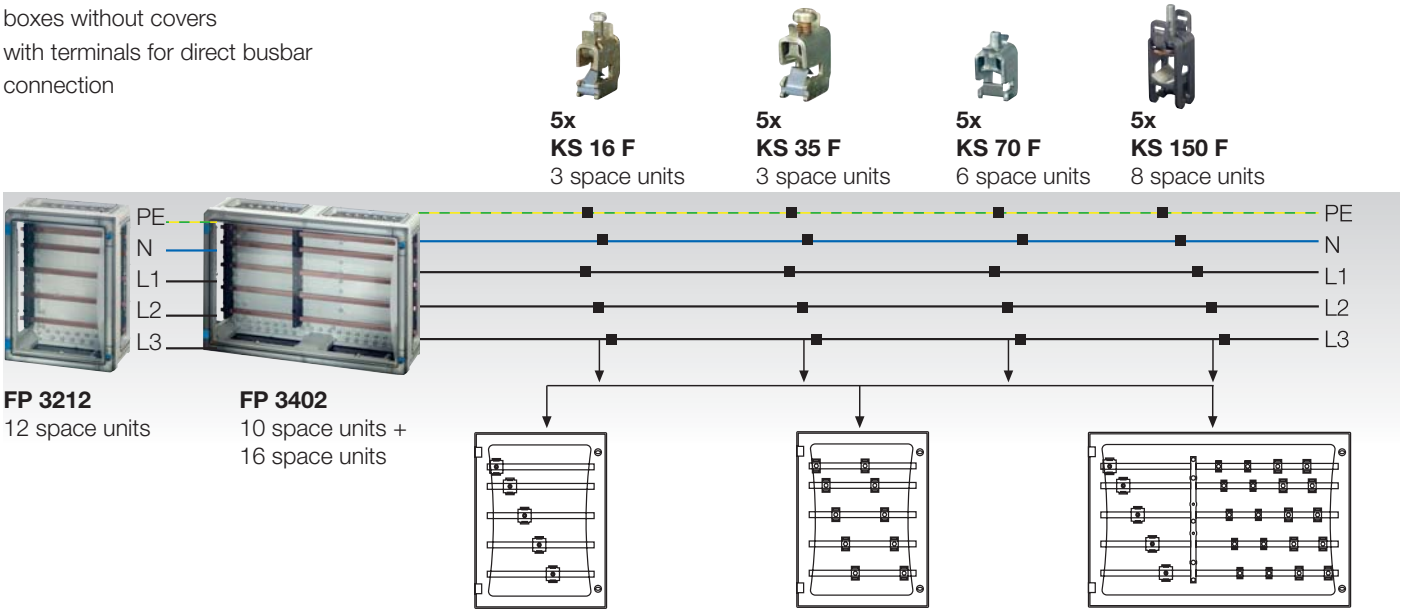
Application possibilities of busbar boxes with covers for bus-mounted fusegear and terminals for direct busbar connection

Fusegear and terminals for direct busbar connection



Application possibilities of busbar boxes without covers with terminals for direct busbar connection

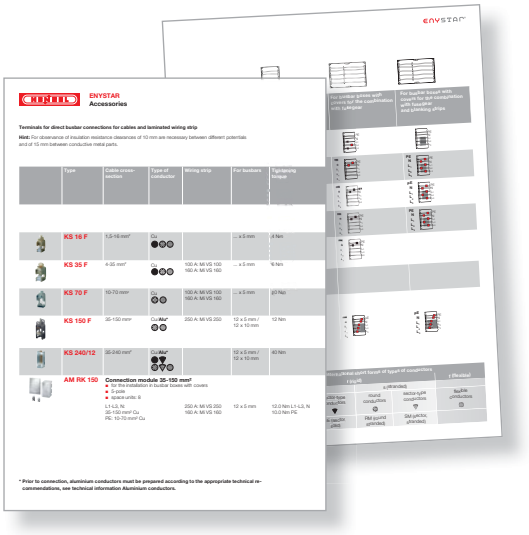
Terminals for direct busbar connection



ENYSTAR Wiring Terminals

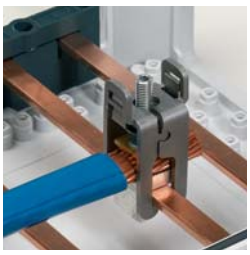
Direct connection of conductors to busbars

Capacity of terminals for direct busbar connection see Hensel Catalogue.



Direct connection of copper conductor with terminal KS 150

or connection module AM RK 150 to busbar.



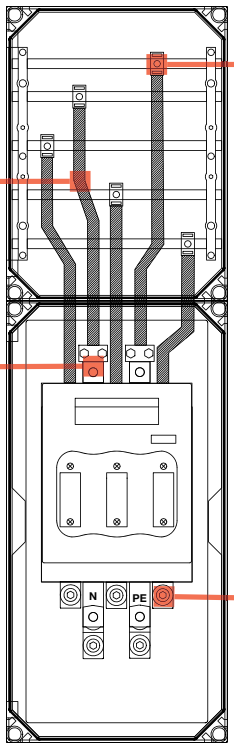
Wiring

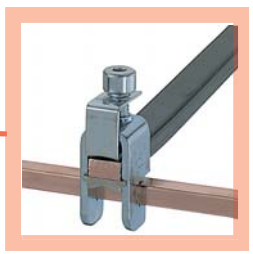
Assignment of terminals for direct busbar connection to cross sections and enclosures with electrical functions

Electrical connections 100 A up to 250 A from busbars to electrical equipment

Wiring strip Mi VS ...

Connection of wiring strip Mi VS ... with terminal for direct busbar connection KS ...

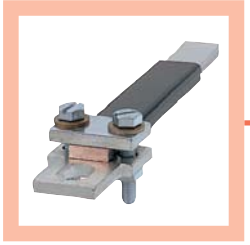


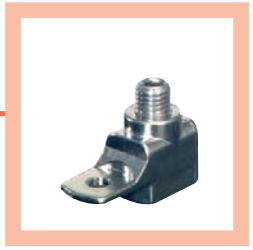


Terminals for direct connection on busbars

Direct connection of wiring strip Mi VS ... to electrical equipment with flat contact M 10 with wiring terminal VA 400

Terminal for connection of wiring strips Mi VA ...





Connection of cables to devices with flat contact M 10 with terminal for direct connection DA 185

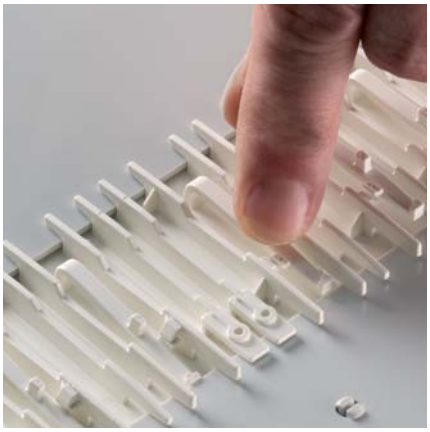
Terminal for direct connection DA 185

Example:
Wiring with wiring strip Mi VS 250, terminals for direct connection on busbars and strip-connection terminals VA 400.

Sealing of unused DIN rail openings in enclosures for DIN rail equipment with attached blanking strip

Cover unused equipment openings with blanking strips to prevent accidental contact.

Locking of the cover with enclosures with miniature circuit breaker (MCB).

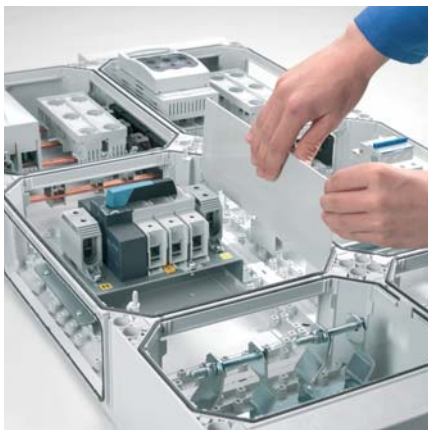


Covers

Cover unused openings and terminals for direct busbar connection with blanking cover FP BA 70.

Partition

for insertion between enclosures allowing a protection against accidental contact between two installation areas.



Connnection of aluminum conductors

I. Chemical basics

The special conducting characteristics of aluminum can be seen in the fact that the surface of an aluminum conductor is immediately covered in a **non-conducting oxide layer** upon exposure to oxygen.

This characteristic leads to an increase in the temporary resistance between the aluminum conductors and the terminal body.

This can lead to terminal overheating and in the worst case fire.

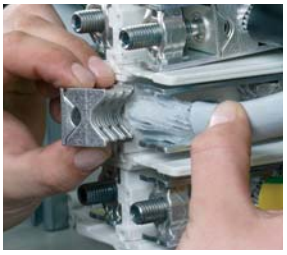
Despite these special conditions, aluminum conductors can be connected if the terminal used is appropriate and the following conditions are taken into consideration when connecting.

II. Special terminal requirements for the connection of aluminum conductors

The suitability of terminal for connections with aluminum conductors needs to be evaluated and confirmed by the terminal manufacturer.

1. These terminals will thus meet the requirements for an aligned **electrochemical voltage sequence**. A disintegration of the base material (aluminum) will be prevented.
2. The terminal has an appropriate shape and surface to penetrate the grease layer or a very thin oxide layer on the aluminum conductor upon connection.

III. Appropriate preparation and handling of aluminum conductors



The non-insulated conductor ends need to have the oxide layer carefully scraped clean using a knife for example. In doing so no files, sand paper or brushes may be used.

Immediately after removing the oxide layer, the conductor end needs to be rubbed with an acid and alkali free grease such as technical vaseline and then immediately connected to the terminal. This in turn prevents oxygen from forming a non-conducting oxide layer.

Due to the flow tendency in aluminum the terminals need to be tightened before start up and after the first **200 operating hours** (note the appropriate torque).

The steps listed above need to be repeated if the conductor is removed and re-connected. I.e. the conductor has to be scraped again, greased and immediately connected, because it will be connected at a different position.

Routine Tests for power switchgear and controlgear assemblies
Routine Verification / Inspection

Routine test protocol in accordance with IEC 61439-1

Serial No.	Type of testing*	Content of routine test	IEC 61439 Section	Result of routine test	Test engineer
1	S	Degree of protection of cabinets /enclosures (sealings, protection covers)	11.2	i. O.	

The manufacturer must specify measures that must be implemented to maintain the designated degree of protection.

Check that seals and covers were installed according to the manufacturer's instructions.

Serial No.	Type of testing*	Content of routine test	IEC 61439 Section	Result of routine test	Test engineer
4	S	Incorporation of built-in components	11.5	i. O.	
7	P	Mechanical operation (actuating elements lockings)	11.8	i. O.	

The effectiveness of mechanical actuating elements, interlocks and locks including those associated with removable parts shall be checked.

Serial No.	Type of testing*	Content of routine test	IEC 61439 Section	Result of routine test	Test engineer
2	S/P	Creepage and clearance distances	11.3	i. O.	
5	S/P	Internal electrical circuits and connections	11.6	i. O.	
6	S	Terminals for external conductors	11.7	i. O.	
8	P	Dielectric properties	11.9	>200 MΩ	

The clearances between different potentials should be greater than the values in Table 1 of the standard. We recommend a minimum distance of 10 mm.

Conductors must be checked for consistency with circuit diagrams and bolted connections have to be checked at random.

Distribution boards intended to be operated by ordinary persons up to 250 A have to be tested at a voltage of 500 V d.c.
All distribution boards over 250A a power-frequency withstand test shall be performed.

Serial No.	Type of testing*	Content of routine test	IEC 61439 Section	Result of routine test	Test engineer
3	S/P	Protection against electric shock and integrity of protective circuits	11.4	i. O.	
9	P	Wiring, operational performance and function	11.10	i. O.	

The protective circuits shall be subjected to a test for integrity of electrical connection.

***Type of testing S:** visual inspection
Type of testing P: testing with mechanical or electrical test equipment

Marking

It is to provide for a manufacturer‘s label.
This must be easily legible in the assembly connected.
Example: Germany

Elektro Strom
Musterstraße 123, 58765 Musterhausen

Baujahr: 2013

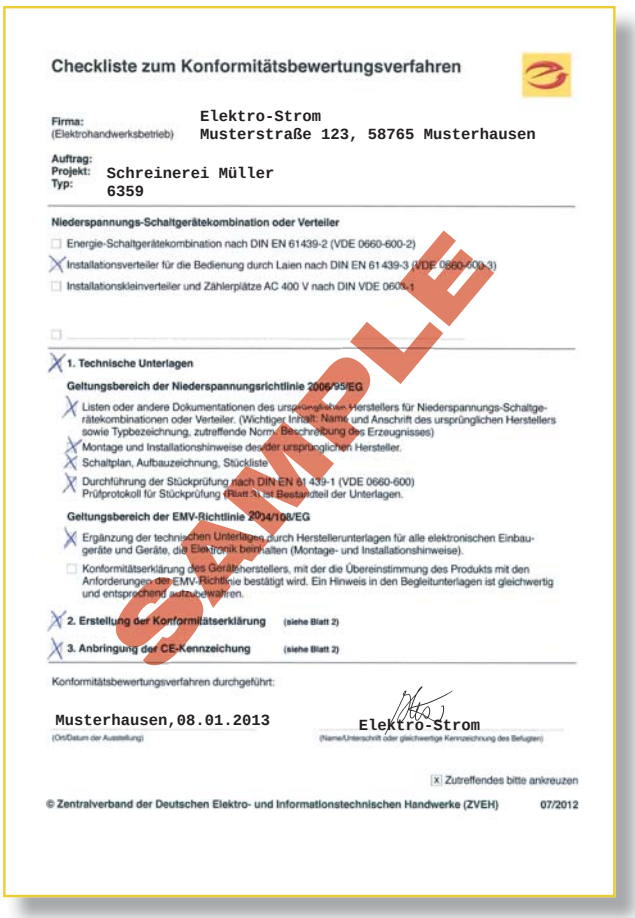
Schaltgerätekombination nach DIN EN 61439-3
Bemessungsspannung: 230/400 V
Bemessungsstrom: 125 A
Schutzart: IP 65 **Schutzklasse:** ⧈

CE

The CE marking shall be made on the basis of European legislation.

Check list for the conformity assessment procedure

Example: Germany



Checkliste zum Konformitätsbewertungsverfahren

Firma: (Elektrohandwerksbetrieb) Elektro-Strom Musterstraße 123, 58765 Musterhausen

Auftrag: Projekt: Typ: Schreinerei Müller 6359

Niederspannungs-Schaltgerätekombination oder Verteiler

- ☐ Energie-Schaltgerätekombination nach DIN EN 61439-2 (VDE 0660-600-2)
- ☒ Installationsverteiler für die Bedienung durch Laien nach DIN EN 61439-3 (VDE 0660-600-3)
- ☐ Installationskleinverteiler und Zählerplätze AC 400 V nach DIN VDE 0603-1

☒ **1. Technische Unterlagen**

Geltungsbereich der Niederspannungsrichtlinie 2006/95/EG

- ☒ Listen oder andere Dokumentationen des ursprünglichen Herstellers für Niederspannungs-Schaltgerätekombinationen oder Verteiler. (Wichtiger Inhalt: Name und Anschrift des ursprünglichen Herstellers sowie Typbezeichnung, zutreffende Norm, Beschreibung des Erzeugnisses)
- ☒ Montage und Installationshinweise des/der ursprünglichen Hersteller.
- ☒ Schaltplan, Aufbauzeichnung, Stückliste
- ☒ Durchführung der Stückprüfung nach DIN EN 61439-1 (VDE 0660-600) Prüfprotokoll für Stückprüfung (Blatt 3) ist Bestandteil der Unterlagen.

Geltungsbereich der EMV-Richtlinie 2004/108/EG

- ☒ Ergänzung der technischen Unterlagen durch Herstellerunterlagen für alle elektronischen Einbaugeräte und Geräte, die Elektronik beinhalten (Montage- und Installationshinweise).
- ☐ Konformitätserklärung des Geräteherstellers, mit der die Übereinstimmung des Produkts mit den Anforderungen der EMV-Richtlinie bestätigt wird. Ein Hinweis in den Begleitunterlagen ist gleichwertig und entsprechend aufzubewahren.

☒ **2. Erstellung der Konformitätserklärung** (siehe Blatt 2)

☒ **3. Anbringung der CE-Kennzeichnung** (siehe Blatt 2)

Konformitätsbewertungsverfahren durchgeführt:

Musterhausen, 08.01.2013 (Ort/Datum der Ausstellung)

Elektro-Strom (Name/Unterschrift oder gleichwertige Kennzeichnung des Befugten)

☒ Zutreffendes bitte ankreuzen

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SAMPLE

Konformitätserklärung

Wir
(Anschrift des Elektrohandwerksbetriebs)
Elektro-Strom
Musterstraße 123
58765 Musterhausen
erklären in alleiniger Verantwortung, dass das Produkt

- ☐ Zählerplatz ☐ Installationskleinverteiler
- ☐ Energie-Schaltgerätekombinationen
- ☒ Installationsverteiler für die Bedienung durch Laien

(Bezeichnung, Typ, Katalog- oder Auftrags-Nr.)
ENYSTAR
auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) übereinstimmt und gebaut ist.

Niederspannungs-Schaltgerätekombination oder Verteiler

- ☐ Energie-Schaltgerätekombination nach DIN EN 61439-2 (VDE 0660-600-2)
- ☒ Installationsverteiler für die Bedienung durch Laien nach DIN EN 61439-3 (VDE 0660-600-3)
- ☐ Installationskleinverteiler und Zählerplätze AC 400 V nach DIN VDE 0603-1

Das bezeichnete Produkt entspricht damit den Bestimmungen folgender Europäischer Richtlinien:
Niederspannungsrichtlinie 2006/95/EG

- ☒ EMV-Richtlinie 2004/108/EG (z. B. bei elektronischen Betriebsmitteln, eingebaut in Schaltgerätekombination oder Verteiler nach der Reihe DIN EN 61439-1 (VDE 0660-600))

Anbringung der CE-Kennzeichnung: Elektro-Strom (Datum) 08.01.2013

Musterhausen, 08.01.2013 (Ort und Datum der Ausstellung)

Elektro-Strom (Name und Unterschrift oder gleichwertige Kennzeichnung des Befugten)

Mit dieser Konformitätserklärung versichert der Hersteller die Übereinstimmung mit den genannten Richtlinien und Normen.

Diese Konformitätserklärung entspricht DIN EN 17050-1 „Allgemeine Kriterien für Konformitätserklärungen von Anbietern".
*) In Verbindung mit der Herstellerkennzeichnung sichtbar auf der Niederspannungs-Schaltgerätekombination oder dem Verteiler angebracht, ggf. auch erst nach dem Öffnen der Tür lesbar.

☒ Zutreffendes bitte ankreuzen

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SAMPLE

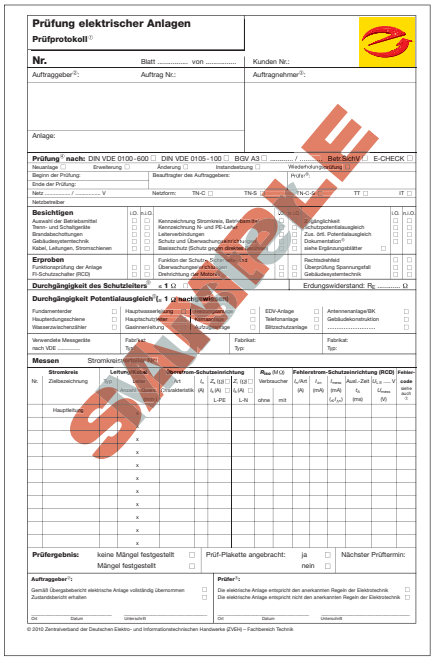
Country-specific requirements have to be observed!

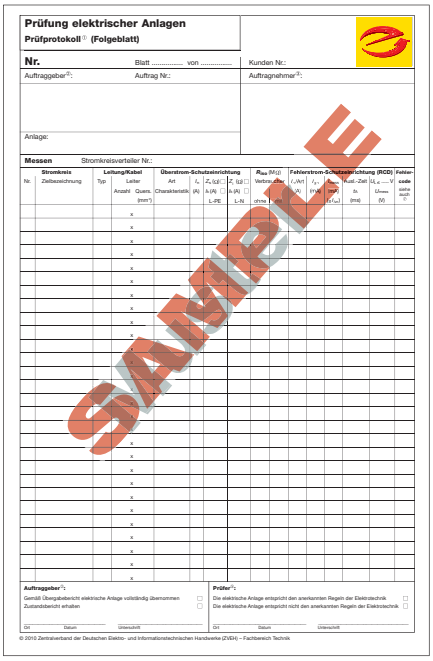
Initial Inspection before Putting Installation into Operation and Inspection Periods

Initial inspection before putting installation into operation according to DIN VDE 0100 Part 600

Country-specific requirements have to be observed!

A test report about the tests carried out has to hand over to the operator.


Prüfung elektrischer Anlagen
Prüfprotokoll


Prüfung elektrischer Anlagen
Prüfprotokoll (Folgeblatt)

Inspection periods German Standard

Country-specific requirements have to be observed!

Obligatory testing of electrical equipment

Accident prevention regulation (BGV A3)

Type and routine tests carried out by the manufacturer before initial operation do not relieve the user of electrical plants from later retests.

The length of time between periodic checks shall be so set that any system faults likely to arise are found promptly UVV-BGV A3.

This requirement applies to normal operating and environmental conditions to be met if the system is constantly monitored by a qualified electrician or if the following inspection intervals are observed.

Test terms for electrical installations and equipment according to German Standard BGV A3

Country-specific requirements have to be observed!

Extract: Type of electrical equipment	Test terms
Electrical and stationary operational systems	- At least every 4 years
Non-stationary operational systems, e.g. extension and connecting cables	- Guideline: 6 months - On construction sites: 3 months
Residual current circuit breaker with - Stationary systems - Non-stationary systems (temporary buildings, etc.)	- 6 months - Working day

Protocol for Routine Verification (Routine Test Certificate)

Power switchgear and controlgear assembly (PSC),
Verification according to IEC 61439-1/-2 ☐

Distribution boards intended to be operated by ordinary persons (DBO),
Verification according to IEC 61439-1/-3 ☐

Customer: ..... Order number: .....

Project: ..... Workshop: .....

Testing performed:

No.	Type of testing*	Content of routine test	IEC 61439 Section	Result of routine test	Test engineer
1	S	Degree of protection of cabinets /enclosures (sealings, protection covers)	11.2		
2	S/P	Creepage and clearance distances	11.3		
3	S/P	Protection against electric shock and integrity of protective circuits	11.4		
4	S	Incorporation of built-in components	11.5		
5	S/P	Internal electrical circuits and connections	11.6		
6	S	Terminals for external conductors	11.7		
7	P	Mechanical operation (actuating elements, lockings)	11.8		
8	P	Dielectric properties	11.9	MΩ	
		A power-frequency withstand test shall be performed on all circuits in accordance with IEC 61439-1 Section 10.9.2 for a duration of 1 s. The test voltage for power switchgear and controlgear assemblies with a rated insulation voltage between 300-690 V a.c. is 1,890 V. The test values for different rated insulation voltages are given in Table 8 of IEC 61439-1.		Test voltage values V a.c.	
		Alternatively, for switchgear assemblies with a protective device in the power supply and a rated current up to 250 A applies: Measurement of the insulation resistance with an insulation tester at a voltage of at least 500 V d.c. The test is passed with an insulation resistance of at least 1000 Ω / V.		Insulation resistance Ω/V	
9	P	Wiring, operational performance and function	11.10		

S - Visual inspection

P - Testing with mechanical or electrical test equipment

Installer: ..... Test engineer: .....

Date: ..... Date: .....

Erklärung
der EG-Konformität
Declaration of EC Conformity

Nr./No. **ENY 2009a**

Das Produkt,
The product

Typ / *Type:*	**ENYSTAR** **Typ / *type:* FP ....**
Hersteller: *Manufacturer.*	**Gustav Hensel GmbH & Co. KG** **Gustav-Hensel-Straße 6** **57368 Lennestadt**
Beschreibung: *Description:*	**Installationsverteiler bis 250A "DBO"** **Distribution boards up to 250A "DBO"**

auf das sich diese Erklärung bezieht, stimmt mit folgenden Normen oder normativen Dokumenten überein:
to which this declaration relates is in conformity with the following standard(s) or normative document(s):

Norm / *Standard:*	**DIN EN 61439-3** **EN 61439-3** **IEC 61439-3**

und entspricht den Bestimmungen der folgenden EG-Richtlinie(n):
and is in accordance with the provisions of the following EC-directive(s)

Niederspannungs-Richtlinie 2006/95/EG
Low voltage directive 2006/95/EC

Diese Konformitätserklärung entspricht der Europäischen Norm EN 17050-1 „Allgemeine Anforderungen für Konformitätserklärungen von Anbietern". Das Unternehmen Gustav Hensel GmbH & Co. KG ist Mitglied von ALPHA, Gesellschaft zur Prüfung und Zertifizierung von Niederspannungsgeräten e.V.. Diese Erklärung gilt weltweit als Erklärung des Herstellers zur Übereinstimmung mit den oben genannten internationalen und nationalen Normen.

This Declaration of Conformity is suitable to the European Standard EN 17050-1 "General requirements for supplier's declaration of conformity". The company Gustav Hensel GmbH & Co. KG is member of ALPHA, Association for testing and certification of low voltage equipment. The declaration is world-wide valid as the manufacturer's declaration of compliance with the requirements of the a.m. national and international standards.

Jahr der Anbringung der
CE-Kennzeichnung: **2013**
Year of affixing CE-Marking

Ausstellungsdatum: **01.03.2014**
Date of issue:

Gustav Hensel GmbH & Co. KG

R. Cater
- Technische Geschäftsleitung -
- *Technical Managing Director* -

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