



# Gustav Hensel GmbH & Co. KG

## Industrial Electrical Power Distribution Systems

24.11.20



## The Brand Hensel

### Electrical products in highest quality

for a reliable and standardized distribution of electrical energy in the low-voltage range.

Everywhere, where dusty and humid conditions need high requirements to the installation technology.

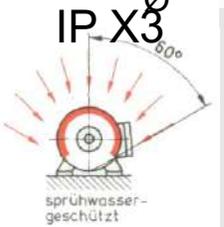




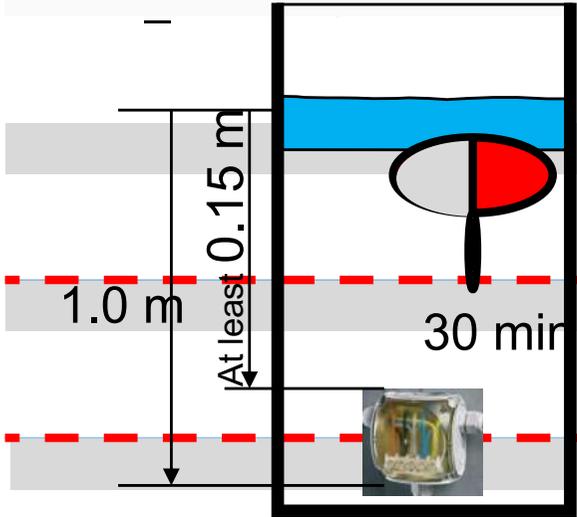
## IP ratings in accordance with IEC 60529

| foreign objects/dust | digit                               | 1 <sup>st</sup> | 2 <sup>nd</sup> | water                          |
|----------------------|-------------------------------------|-----------------|-----------------|--------------------------------|
| non-protected        |                                     | 0               | 0               | non-protected                  |
| back of a hand       | solid foreign objects<br>≥ 50mm Ø   | 1               | 1               | dripping water                 |
| a finger             | solid foreign objects<br>≥ 12.5mm Ø | 2               | 2               | dripping water 15°             |
| a tool ≥ 2.5mm Ø     |                                     | 3               | 3               | dripping water 60°             |
| a wire ≥ 1.0mm Ø     |                                     | 4               | 4               | splashing water all directions |
| dust protected       |                                     | 5               | 5               | water jet 12.5 liter/minute    |
| dust tight           |                                     | 6               | 6               | water jet 100.0 liter/minute   |
|                      |                                     |                 | 7               |                                |
|                      |                                     |                 | 8               |                                |
|                      |                                     |                 | 9               |                                |

| IP ratings                        | digit   | 1 <sup>st</sup> | 2 <sup>nd</sup> |   |
|-----------------------------------|---|-----------------|-----------------|---|
| non-protected                     |   | 0               | 0               | non-protected   |
| back of a hand                    | solid foreign objects $\geq$ 50mm $\varnothing$   | 1               | 1               | dripping water  |
| a finger                          | solid foreign objects $\geq$ 12.5mm $\varnothing$ | 2               | 2               | dripping water 15°                                      |
| a tool $\geq$ 2.5mm $\varnothing$ |   | 3               | 3               | dripping water 60°                                      |
| a wire $\geq$ 1.0mm $\varnothing$ |   | 4               | 4               | splashing water all directions                          |
| dust protected                    |   | 5               | 5               | water jet 12.5 liter/minute                             |
| dust tight                        |   | 6               | 6               | water jets 100.0 liter/minute                           |
|                                   |   |                 | 7               | Immersion 1 m; 30min.                                   |
|                                   |   |                 | 8               | Immersion deeper and/or longer than for 7               |
|                                   |   |                 | 9               | pressure jet cleaner 100bar, 80°C, distance $\geq$ 15cm |

| IP ratings  | digit   | 1 <sup>st</sup> | 2 <sup>nd</sup> |  |
|---|---|-----------------|-----------------|--|
| non-protected   |   | 0               | 0               | non-protected  |
| back of a hand  | solid foreign objects $\geq 50\text{mm } \varnothing$ | 1               | 1               | dripping water   |
| a finger  | solid foreign objects $\geq 12.5\text{mm}$            | 2               | 2               | dripping water 15°   |
|   |   | 3               | 3               | dripping water 60°   |
|   |   | 4               | 4               | splashing water all directions                                 |
|   |   | 5               | 5               | water jet 12.5 liter/minute                                    |
|   |   | 6               | 6               | water jet 100.0 liter/minute                                   |
|    |   |                 | 7               | Immersion 1 m; 30min.  |
|   |   |                 | 8               | Immersion deeper and/or longer than for 7                      |
|   |   |                 | 9               | pressure jet cleaner 100bar, 80°C, distance $\geq 15\text{cm}$ |

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|----------------|---|-----------------|-----------------|--|
| non-protected  |   | 0               | 0               | non-protected  |
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| a finger       | solid foreign objects $\geq 12.5\text{mm}$            | 2               | 2               | dripping water 15°   |
|                |   | 3               | 3               | dripping water 60°   |
|                |   | 4               | 4               | splashing water all directions                                 |
|                |   | 5               | 5               | water jet 12.5 liter/minute                                    |
|                |   | 6               | 6               | water jet 100.0 liter/minute                                   |
|                |   |                 | 7               | Immersion 1 m; 30min.  |
|                |   |                 | 8               | Immersion deeper and/or longer than for 7                      |
|                |   |                 | 9               | pressure jet cleaner 100bar, 80°C, distance $\geq 15\text{cm}$ |



|                                       |   | Digit           |                 |                      |   |
|---------------------------------------|---|-----------------|-----------------|----------------------|---|
| foreign objects/dust                  |   | 1 <sup>st</sup> | 2 <sup>nd</sup> | water                |   |
| non-protected                         |   | 0               | 0               | non-protected        |   |
| back of a hand                        | solid foreign objects $\geq 50\text{mm } \emptyset$   | 1               | 1               | dripping water       |   |
| a finger                              | solid foreign objects $\geq 12.5\text{mm } \emptyset$ | 2               | 2               | dripping water       | 15°                                       |
| a tool $\geq 2.5\text{mm } \emptyset$ | $\emptyset$   | 3               | 3               | dripping water       | 60°                                       |
| a wire $\geq 1.0\text{mm } \emptyset$ |   | 4               | 4               | splashing water      | all directions                            |
| dust protected                        |   | 5               | 5               | water jet            | 12.5 liter/minute                         |
| dust tight                            |   | 6               | 6               | water jet            | 100.0 liter/minute                        |
|                                       |   |                 | 7               | Immersion            | 1 m; 30min.                               |
|                                       |   |                 | 8               | Immersion            | deeper and/or longer than for 7           |
|                                       |   |                 | 9               | pressure jet cleaner | 100bar, 80°C, distance $\geq 15\text{cm}$ |



# Present Hensel Product Range

enycase®



▪ **ENYCASE DK** for protected outdoor industry installation



**1.5 - 240 mm<sup>2</sup>  
grey, black**

▪ **ENYCASE KF** for unprotected outdoor installation



**1.5 - 50 mm<sup>2</sup>,  
grey and black**

▪ **ENYCASE WP** „waterproof“ with compound



**1.5 - 10 mm<sup>2</sup>,  
grey and black**

▪ **ENYCASE FK** with intrinsic fire resistance

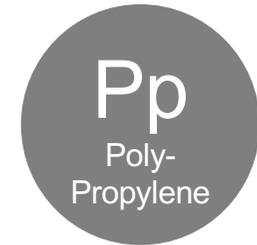
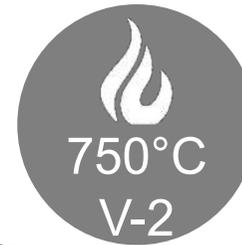


**1.5 - 50 mm<sup>2</sup>,  
E30 - E90, PH120**

**NEW**



# The All New DK Cable Junction Box



- For indoor and protected outdoor industrial installation



- Cable entry with elastic membranes up to 10 mm<sup>2</sup> – push it through and it's tight!



- Cable entry in the bottom with elastic membranes up to 10 mm<sup>2</sup>



- 8 enclosure sizes ( Grey )
  - From 2.5 mm<sup>2</sup> up to 50 mm<sup>2</sup>



- 4 enclosure sizes ( Black )
  - From 2.5 mm<sup>2</sup> up to 10 mm<sup>2</sup>





Lid fastener with a quarter turn:  
The position of the lid fastener is visible  
also from a distance in one view.

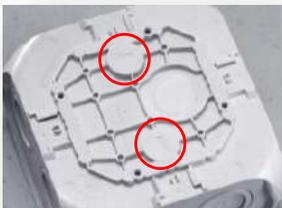


Without accessory  
sealable

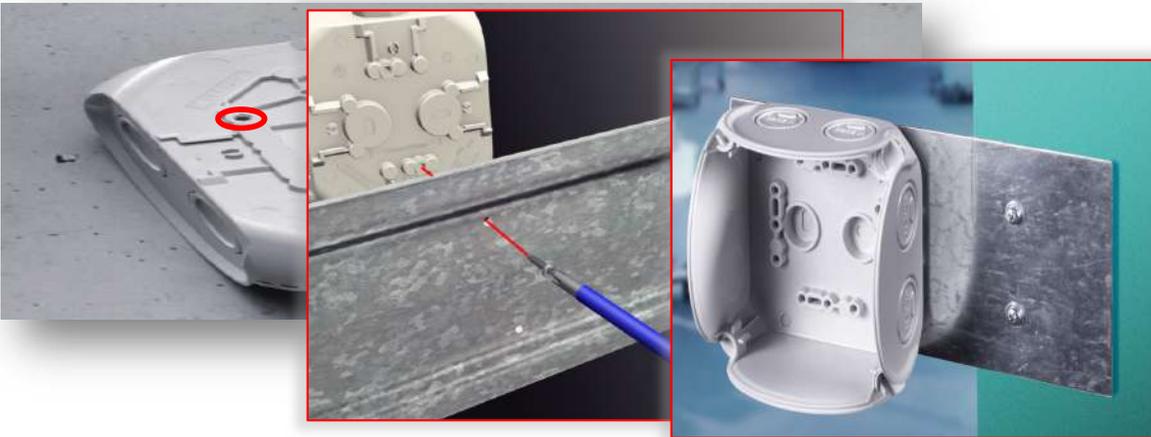


Enough space for fixation because of  
oblong holes **also** for the head of the  
screw.

# Details of the boxes



Rear fixation

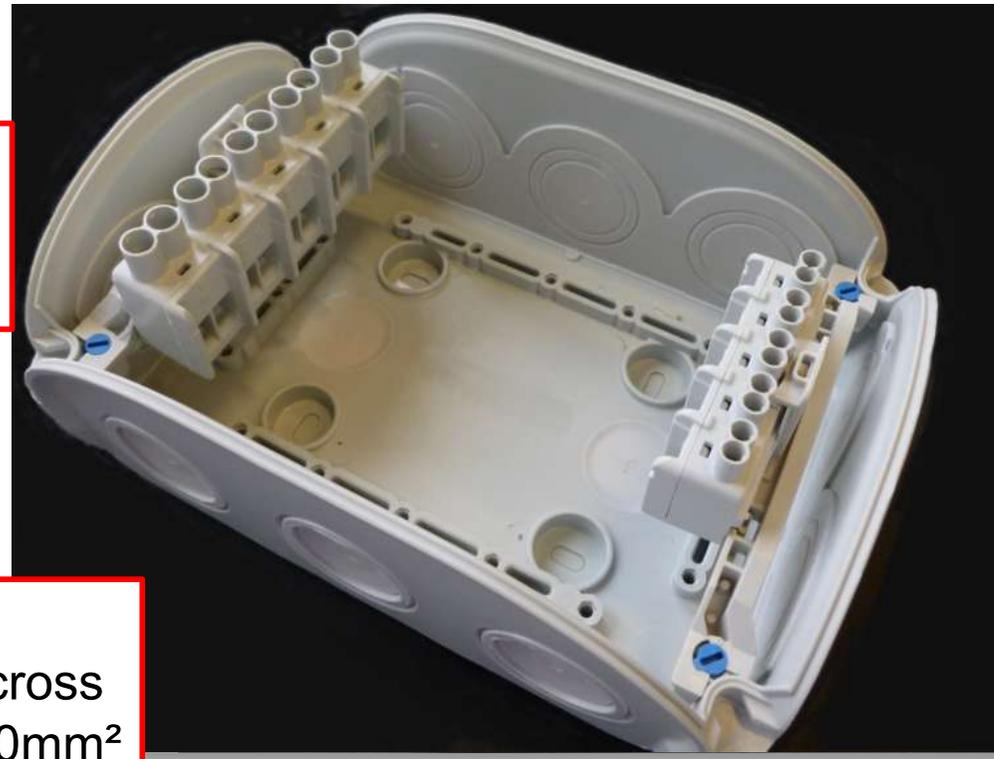


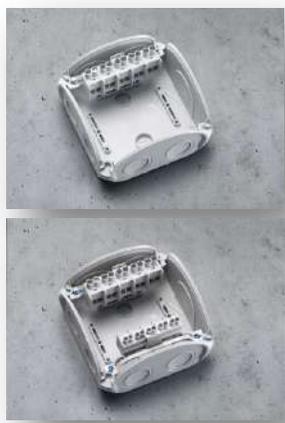
External brackets are included.



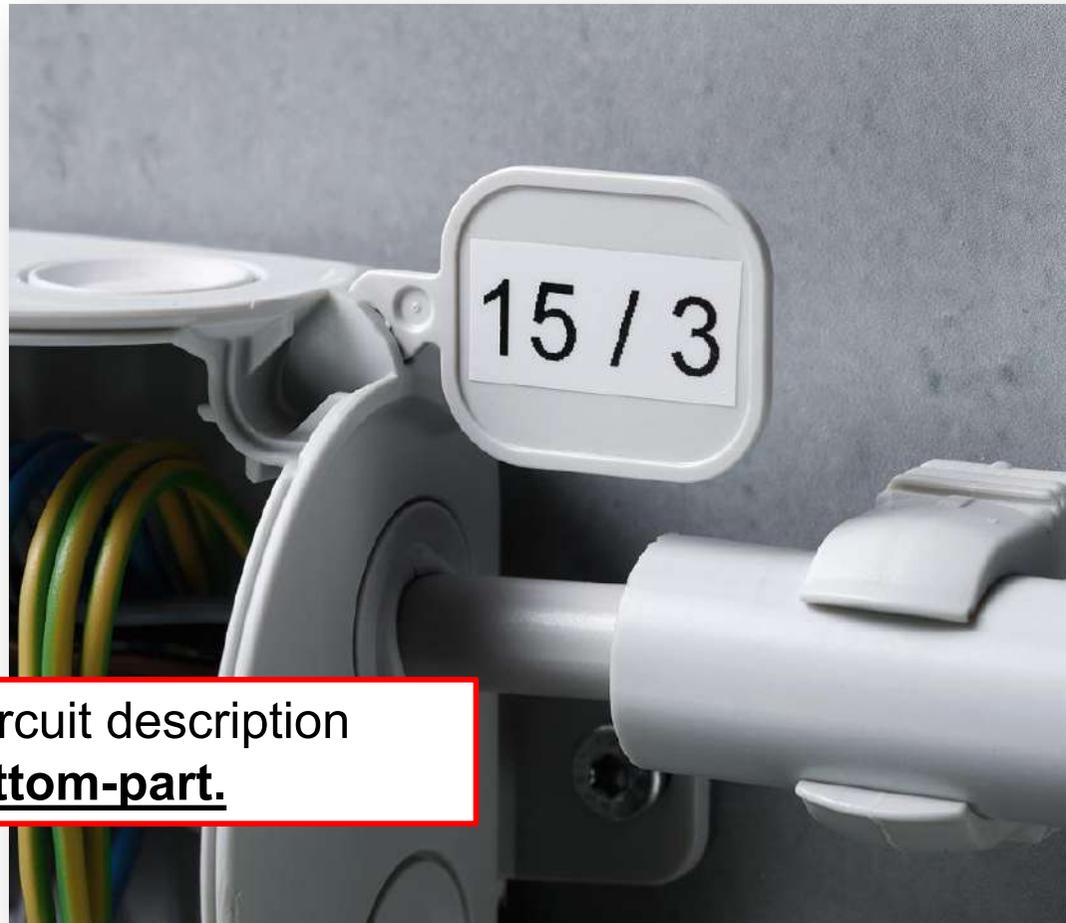
Variable combination of the terminals for the boxes.

Two terminals in one enclosure, also different cross sections at boxes up to 10mm<sup>2</sup> possible.





High position of the terminal to have more space for wiring.



Professional circuit description  
fixed at the **bottom-part.**



Cam at the bottom with fixed positions and oblong holes for internal mounting.

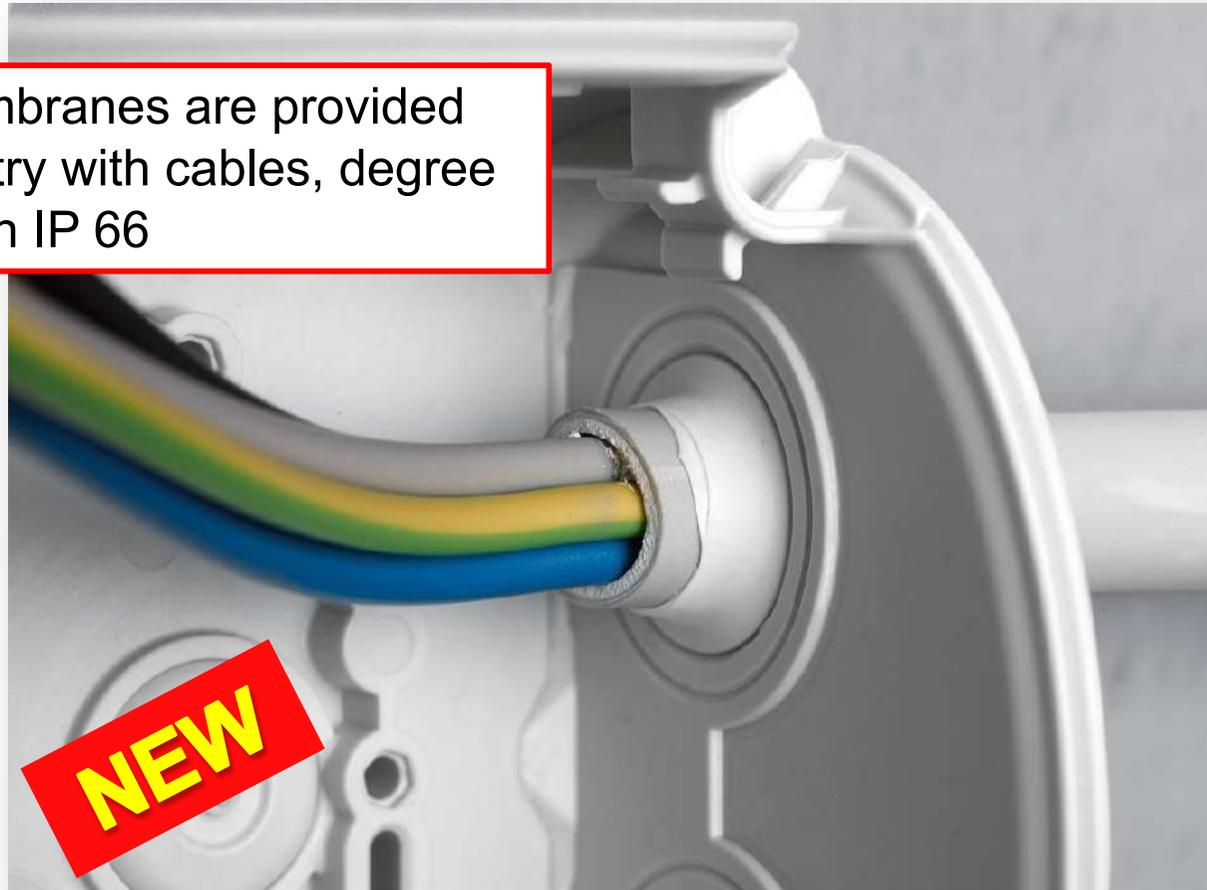




Membranes are provided to reduce condensation of water.



Elastic membranes are provided for easy entry with cables, degree of protection IP 66





The membrane can be removed ...





Stepped premoulded membranes for cable entres from M20 up to M32 (depends on the size of the box).

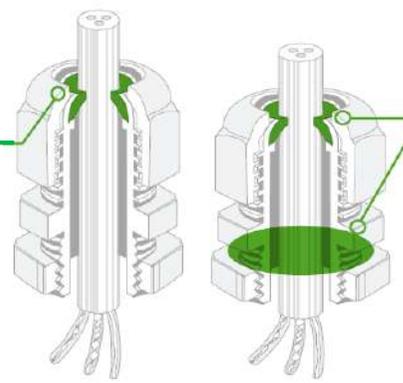


..... and a gland can be fitted.



### Test according to standard

The test according to the standard checks the sealing of inserted cable with cable gland



### System-tested

Hensel double checks both the sealing of the cable with the gland as well as the sealing of the gland with the housing

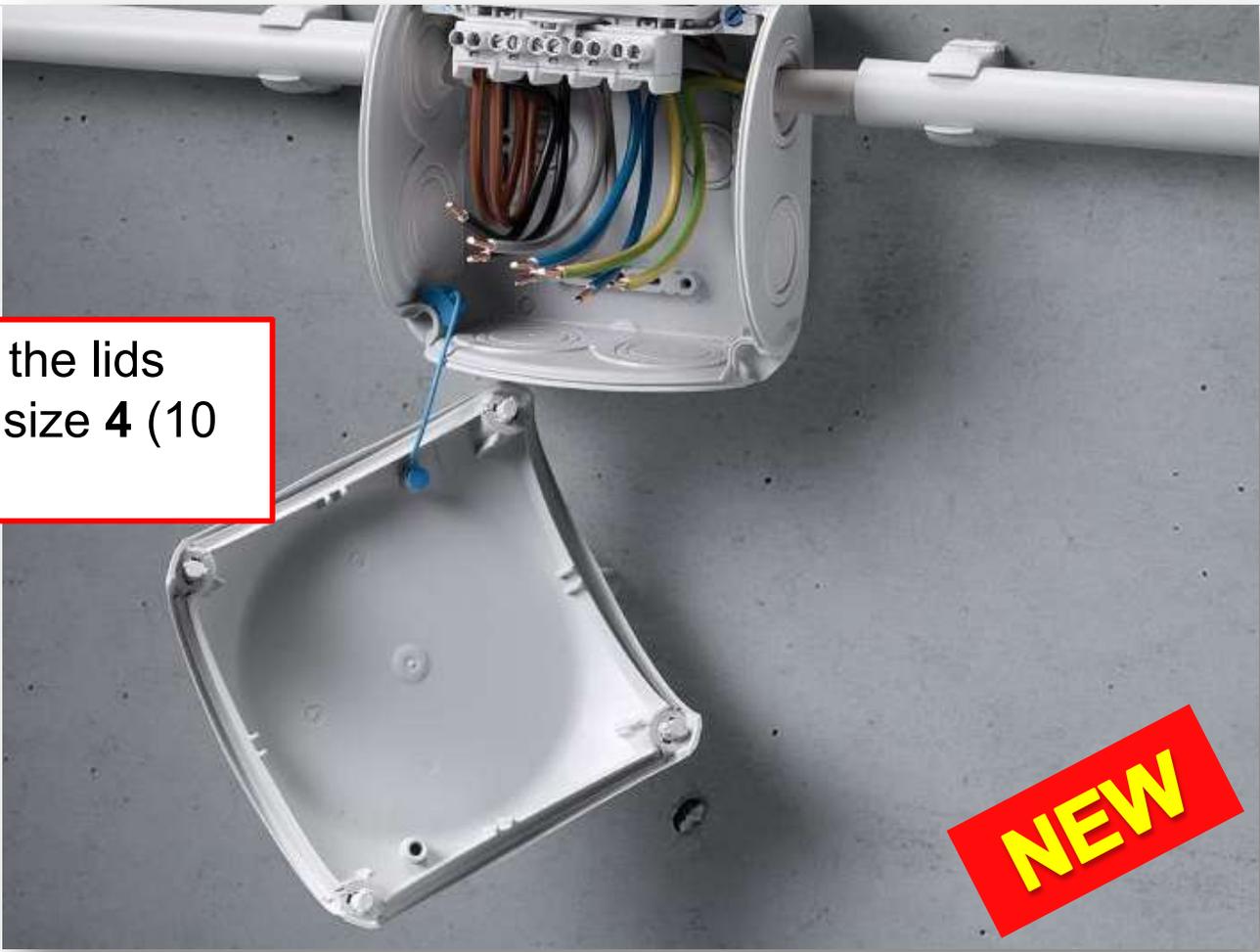


Integrated cable entry at the bottom, some having elastic membranes.

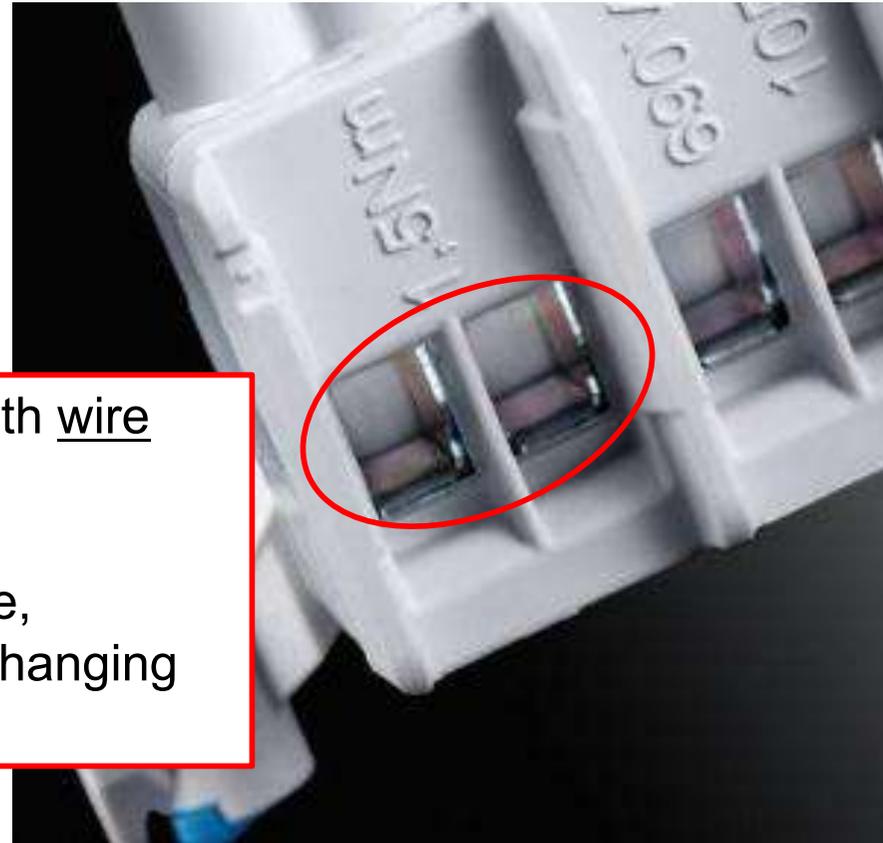
**NEW**



Tether for the lids  
up to box size 4 (10  
mm<sup>2</sup>)



## The terminals

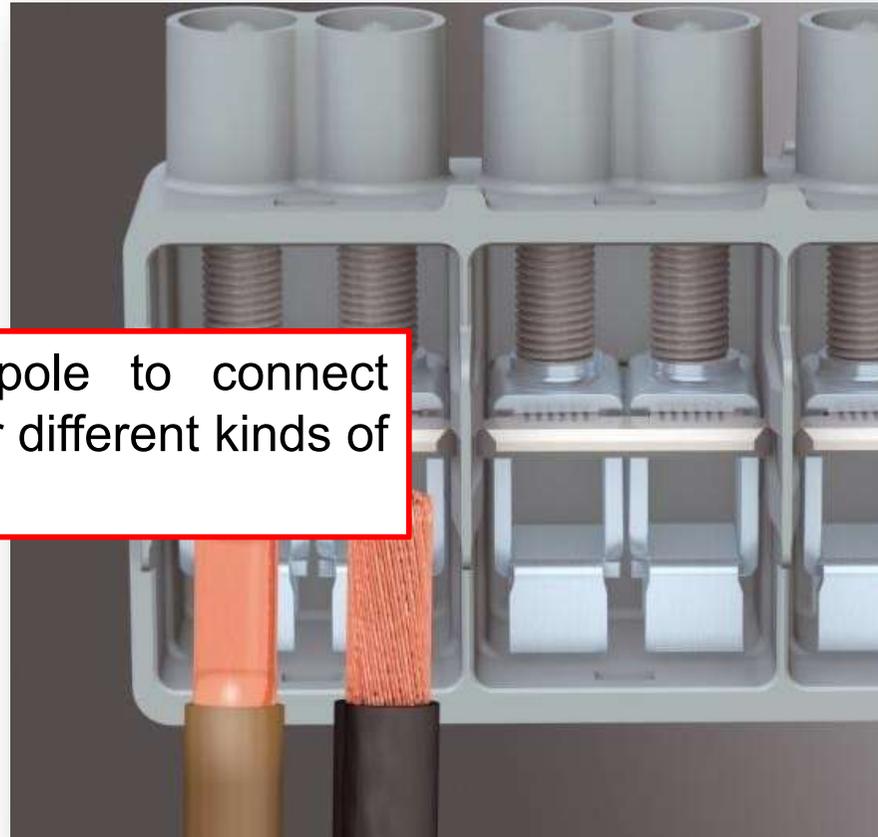


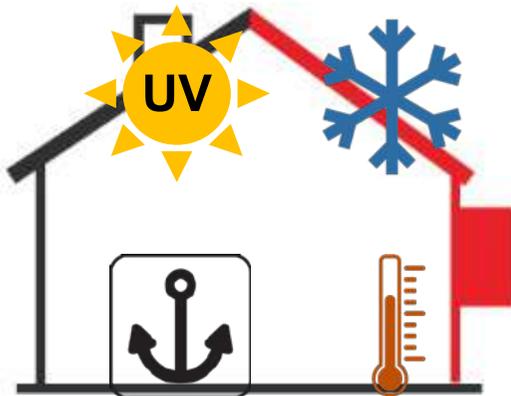
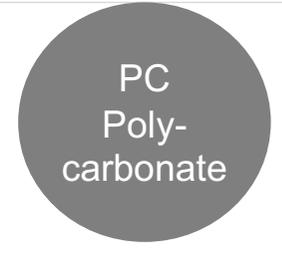
Screw type terminals with wire protection

2 clamping units per pole,  
because of that simply changing  
of the wiring is possible.



2 clamping units per pole to connect different cross sections or different kinds of conductors.





- For unprotected outdoor installation



- Cable entry via metric knockouts



- Also available in black



**ENYCASE®**

**Extra high degree of protection  
for unprotected outdoor installation**

**Robust shape with  
lots of space for  
wiring**





## A firework of innovation!

- Tested product solutions from the market leader
- Safe products with a long useful life
- Innovative application with many installation advantages

## WP “Waterproof Box” for encapsulating

- Degree of protection IP 68



## Influence of Condensation on IP Rated Boxes

- Damage to the electrical Installations inside the enclosure.
- Device / electrical equipment can malfunction.
- Ventilation measures defeat the purpose of IP as the installation are prone to flooding or close to water bodies.

Examples of Installation areas :

Landscape lighting JBs

Runway Lightings JBs

Water Pumps / Pump Shafts

Waterbodies / Fountains

Unprotected outdoor installations which are in close proximity to the ground.



### ISO – Fill BRW Gel ( Resin)

- Re-enterable cold curing, 2 component non –urethane encapsulating gel.
- Free of Iso-cyanites, Silicones.
- No hazardous substances.
- Excellent Hydrophobic properties.
- Medium Viscosity. Good adhesion to Metals, materials & many plastics.



## The Sealing Compound Benefits



- Fast setting, permanently elastic compound which excludes the formation of condensation.
- Outstanding Insulation Properties
- Transparent & Soft for easy visuals & testing.
- Self Sealing
- Easily removable for subsequent installations or changes to installations.



The Gel comes in two versions :

1. Pre-filled two component packs in small volumes up to 1.2 Litres
2. Larger packs of 2 litres, 5 litres and 10 Litres where the two components are packed in stainless steel drums and PET bottles.

Mixing Ratio for the Resin : Hardener and softener is 1 : 1

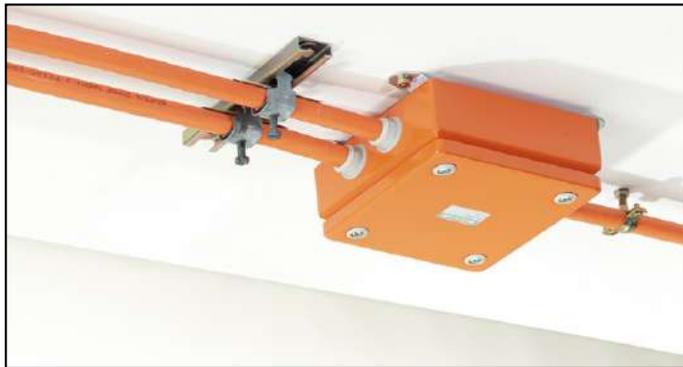
Dielectric Strength : 10 KV/mm, while liquid > 5 KV/mm

Temperature resistance : 100<sup>0</sup> C for long time and 140<sup>0</sup> C for short time.

The 2 litres, 5 litres & 10 litres packs can be used in smaller quantities depending on the requirement and can be store for 24 months at temperature of up to +50 deg C. The gel can be disposed off with normal waste.



## ENYCASE DK- Cable junction boxes Type FK, functional integrity



**Objective of functional integrity:**  
In public areas like malls, department stores, airports, railways, office towers, hospitals and as well as in tunnels and power stations some special precautionary measures are taken to ensure all safety related system ( smoke detectors, fire alarming system, corridor emergency lighting system etc. ) must be continued to function for 30 minutes , 60 minutes or 90 minutes and so that people can leave the place and rescue operation can be done in the event of fire. In addition of these requirements the electrical installation system must fulfill all electrical parameters with all components.

To ensure the continuous operation in case of fire in public areas generally two different standards and testing methods have established.

## Insulation Integrity ( PH120 )

- This testing carried out for cable or cable with junction box for use in emergency circuit in accordance with BS EN 50200 at temperature  $>842^{\circ}\text{C}$
- Under this test for a certain period of time mechanically unloaded cable should retain minimum insulation ability in the event of fire exposure.
- This test will be passed, if during the testing period of 120 minutes the current still flowing and no short circuit or no cable insulation break can be detected. Then the tested product achieves classification as PH120.
- Testing for insulation integrity is a hardness test, which only high quality materials can pass.

**Note: Complete cable installations system not comes under this method.**

- **Hensel products comply with PH120 classifications in accordance with BS EN 50200 .**

▪ **Insulation Integrity ( PH 120 )**

Only the cable itself or the cable junction box uses in emergency circuit is considered in the insulation integrity "PH" classification, **>842°C**



## Intrinsic fire resistance ( E30 / E60 / E90 )

- In contrast of insulation integrity, intrinsic fire resistance test is not a single product test, it's a test for whole cable system including all components.
- The testing of the intrinsic fire resistance of complete cable system is carried out in accordance with DIN 4102 Part 12.
- The classifications E30, E60, E90 indicate the period for which a complete cable system ensures functional integrity so that emergency power supply remains operational in case of fire, for example E30 = 30 minutes / E90 = 90 minutes.
- **Hensel products comply E30/60/90 classifications in accordance with DIN 4102 Part 12.**

## Intrinsic fire resistance

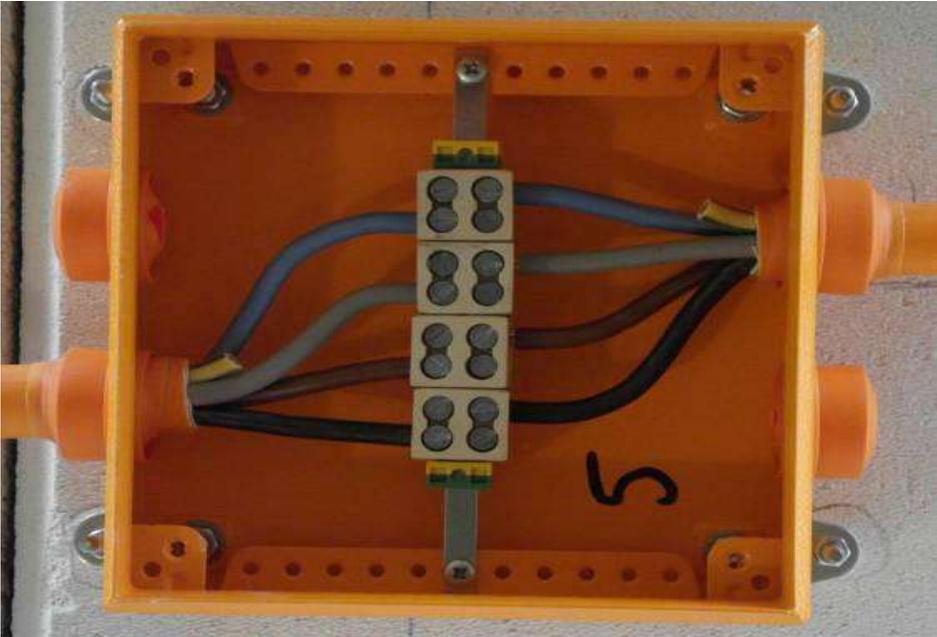


### Intrinsic fire resistance

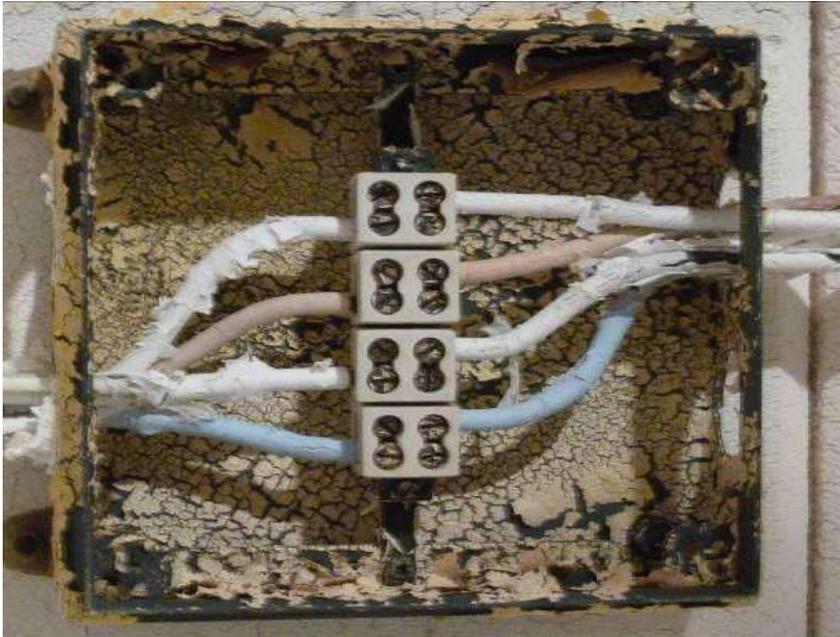
Cable junction box and fixation system like trunking system were tested and certified together by an independent lab.  
After 90 min **1000°C**

**Intrinsic fire resistance**

**Testing**



Before the fire.



After the fire.

**ENYCASE DK- Cable junction boxes**  
**Type FK, functional integrity**



- Junction box with 5-pole ceramic terminals, 1.5 to 35 mm<sup>2</sup>
- Functional integrity acc. to DIN 4102 part 12
- Sheet steel, protection class 1, class II for polycarbonate
- With assembled cable entry glands
- Degree of protection IP 65 / IP 66
- Wires keep in place and are protected after fire in case of sheet steel box



**HENSEL**

**DK90 series Cable Junction Boxes**

HENSEL  
DM 9025  
3.5" AC 600V  
IP 65 / IP 54 + G



## DK 90 series

**Good quality cable junction boxes for standard applications at reasonable prices from the premium brand !!!**

- from 1.5 up to 25 mm<sup>2</sup>
- Degree of protection IP 55 – 65
- Cable/Conduit entry via metric knockouts or box walls without knockouts



## Target market

The purpose of this range is to gain more customer segments where presently Hensel copies or other cheaper brands fulfill customer demands.

- Small contractors / Electrical contractors associations
- Builders
- Government suppliers who solely supply to any particular government department
- Retail dealers
- Small OEMs, system integrators who look for cost effective solutions
- Irrigation and water departments





## Internally embedded gasket technology

High mounted terminals



Terminal position variable



Wall mounting with elongated holes for adjustment



Pre-moulded knock-outs for cable entry



Eliminates need to drill cable entries at site

Press-in glands  
IP 55



Threaded cable glands (polyamide)  
IP 65



Adaptors can be used with conduit



- Suitable for normal environment and / or protected outdoor installation
- Degree of protection: IP 55, IP 65
- Burning behaviour: Glow wire test IEC 60 695-2-11: 750° C
- flame-retardant, self-extinguishing
- Toxic behaviour: halogene-free, silicone-free

- **DK 90**  
**IP 55 / 65**

for normal environment and / or protected outdoor installation



1.5 - 25 mm<sup>2</sup>  
grey

- **ENYCASE DK**  
**IP 66**

for protected outdoor industry installation



1,5 - 240 mm<sup>2</sup>  
grey, black

- **ENYCASE KF**  
**IP 66 / 67 / 69**

for unprotected outdoor installation



1,5 - 50 mm<sup>2</sup>,  
grey and black

- **ENYCASE WP**  
**IP 68**

„waterproof“ with compound



1,5 - 10 mm<sup>2</sup>,  
grey and black

- **ENYCASE FK** with intrinsic fire resistance  
**IP 66 / PH 120 / E 90**



1,5 - 50 mm<sup>2</sup>,  
E30 - E90, PH120

# Price Comparison – empty boxes

- **DM 9020** **R36.37** for normal environment and / or protected outdoor installation  
IP 55 / 65



1.5 – 2.5 mm<sup>2</sup>  
grey

- **DK 0200G** **R54.40** for protected outdoor industry installation  
IP 66



0.75 – 2.5 mm<sup>2</sup>  
grey

- **KF 0200G** **R113.60** for unprotected outdoor installation  
IP 66 / 67 / 69



0.75 – 2.5 mm<sup>2</sup>,  
grey

- **WP** „waterproof“ with compound  
IP 68



1,5 - 10 mm<sup>2</sup>,  
grey and black

- **FK** with intrinsic fire resistance  
IP 66 / PH 120 / E 90



1,5 - 50 mm<sup>2</sup>,  
E30 - E90, PH120

## Price Comparison – boxes with terminals

- **DM 9025 R48.05** for normal environment and / or protected outdoor installation  
IP 55 / 65



1.5 – 2.5 mm<sup>2</sup>  
grey

- **DK 0202G R74.24** for protected outdoor industry installation  
IP 66



0.75 – 2.5 mm<sup>2</sup>  
grey

- **KF 0202G R132.16** for unprotected outdoor installation  
IP 66 / 67 / 69



0.75 – 2.5 mm<sup>2</sup>,  
grey

- **WP 0202G R599.36** „waterproof“ with compound  
IP 68



0.75 – 2.5 mm<sup>2</sup>,  
grey

- **FK 0402 R925.04** with intrinsic fire resistance  
IP 66 / PH 120 / E 90



1,5 - 4 mm<sup>2</sup>,  
E30 - E90, PH120



- Pole mounting kit for pipe and post installation
- suitable for pipe/pole diameters of 60 - 150 mm
- clamps and fixing screws included
- Catalogue nos DK MB 1, DK MB 2, DK MB 3 suitable for DK, FK, WP, KV boxes
- Catalogue nos Mi MB 1 for enclosure width 150 mm and Mi MB 2 for enclosure width 300 mm suitable for K series, Mi series boxes.



# Hensel Product Range from Magnet

ENYBOARD



ENYSTAR®



ENYMOD



ENYFLEX



ENYSUN



## KV Small-type Distribution Boards up to 63 A

- 3 to 54 modules
- Degree of protection IP 54 - 65
- made from thermoplastic material
- Protection class II
- Suitable for all brands of MCBs
- in accordance with **IEC 60670-24**



## Details of the Circuit Breaker Boxes



- Wiring space for devices that do not need to be manually operated ( terminals, contactors etc.)
- With integrated elastic membranes for cable entry
- With transparent door
- With cable insertion
- With cover strips for the housing cut out
- 2- to 4-row
- 12 to 36 modules
- Protection type IP 65

**Easy, fast, secure and flexible, with more terminals and N-potentials**

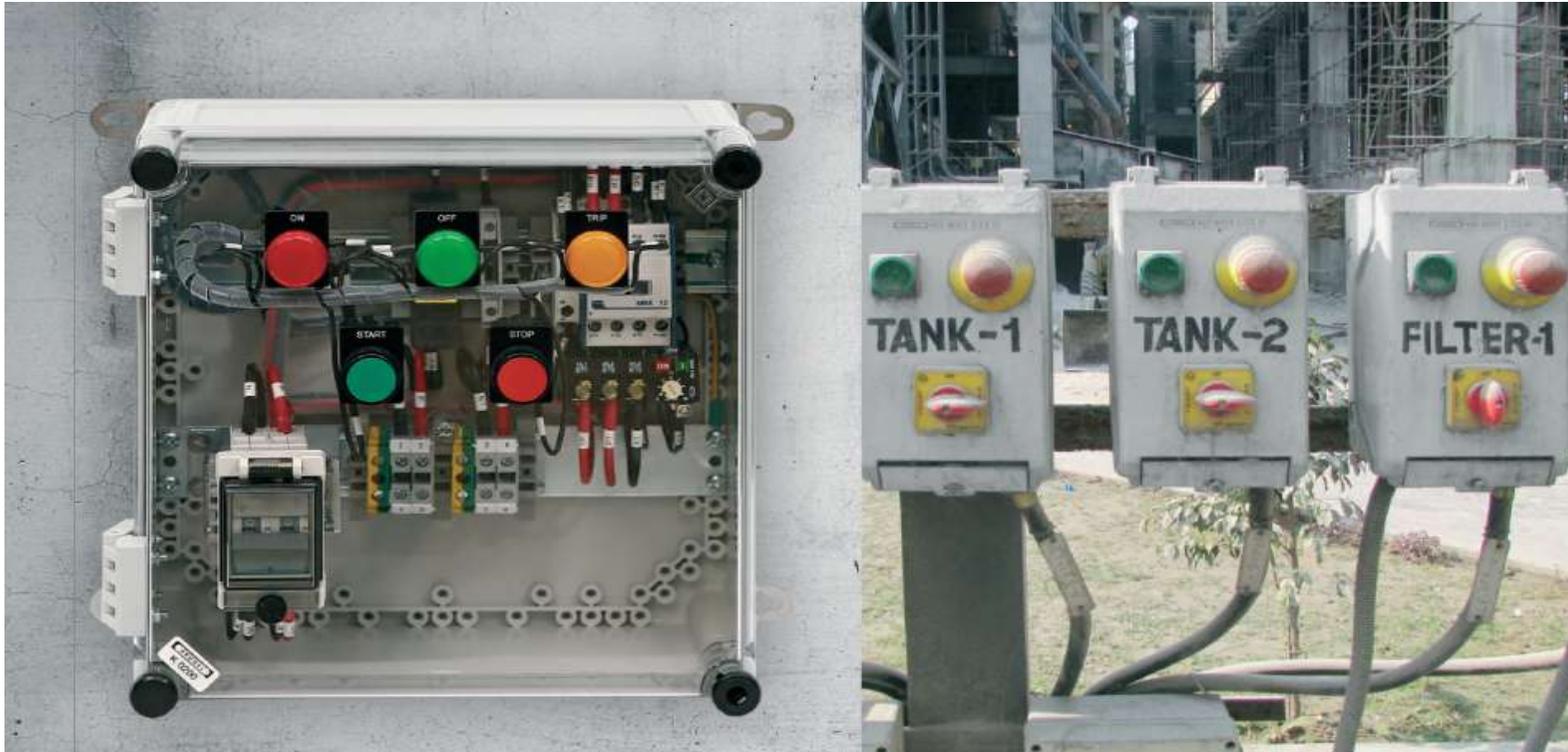
**The new solution:  
Plug-in jumper**



**Plug-in jumper:  
Several N-Potentials are  
provided and linked at  
delivery.**



**N- separation  
The N-Potential can be  
separated and re-connected via  
the plug-in jumper.**



## ENYFLEX

Empty enclosures in accordance with IEC 62208  
for customized solutions and individual applications



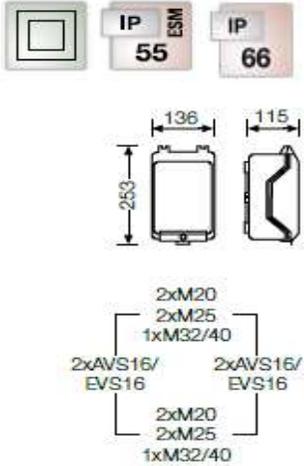
**KG 9001**

**Built-in dimensions W 101 x H 205 x D 95 mm**

- degree of protection: IP 55 (ESM), IP 66 (gland)
- for installation equipment on DIN rails or mounting plates
- max. installation depth with built-in mounting plate 95 mm, with built-in DIN rail 89 mm
- please order DIN rails or mounting plates additionally
- with transparent hinges
- fastener for tool operation
- sealable
- cable entry via metric hole
- included cable entry:
  - 2 ESM 25, sealing range 10 mm
  - 1 ESM 32, sealing range 10 mm

**KG types**  
**KG 9001 / KG 9001 IN**  
**KG 9002 / KG 9002 IN**  
**KG 9003 / KG 9003 IN**

|   |  |
|---|--|
| rated insulation voltage  | 500 V  |
| IK Code   | IK 08  |
| static load   | mounting plate or<br>DIN rail = 1.3 kg<br>lid = 1.2 kg |
| power dissipation capability<br>at $\Delta\theta = 40\text{ K}$ | $P_{de} = 16.5\text{ watts}$                           |
| relative power dissipation<br>capability in watts per K         | $p_{de} = 0.4125\text{ watts per K}$                   |





**Empty enclosure IP 66 with transparent lid**

|                |                    |
|----------------|--------------------|
| <b>KG 9001</b> | 136 x 253 x 115 mm |
| <b>KG 9002</b> | 168 x 253 x 115 mm |
| <b>KG 9003</b> | 217 x 253 x 115 mm |



**Empty enclosure IP 66 with opaque lid**

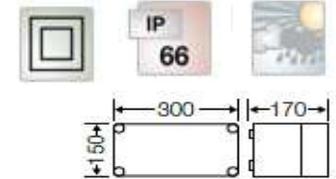
|                   |                    |
|-------------------|--------------------|
| <b>KG 9001IN</b>  | 136 x 253 x 115 mm |
| <b>KG 9002 IN</b> | 168 x 253 x 115 mm |
| <b>KG 9003 IN</b> | 217 x 253 x 115 mm |



**K 0100**

**Built-in dimensions W 275 x H 125 x D 150 mm**

- enclosure size 1 type Mi
- for installation equipment on DIN rails or mounting plates
- max. installation depth with built-in mounting plate 146 mm, with built-in DIN rail 135 mm
- please order DIN rails or mounting plates additionally
- with transparent lid
- lid fasteners for tool
- sealable
- box walls without fasteners



**K types**

**K 0100 / K 0101**

**K 0200 / K 0201**

**K 0300 / K 0301**

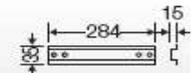
**K 0400 / K 0401**



**Mi TS 30**

**DIN rail length 284 mm**

- in accordance with VDE 0171-1
- for Mi-Empty boxes
- for equipment on DIN rails
- with fixing screws



at  $\Delta\theta = 40\text{ K}$

relative power dissipation capability in watts per K

$p_{de} = 0.6$  watts per K



**Empty enclosure IP 66 with transparent lid**

|               |                    |
|---------------|--------------------|
| <b>K 0100</b> | 300 x 150 x 170 mm |
| <b>K 0200</b> | 300 x 300 x 170 mm |
| <b>K 0300</b> | 300 x 450 x 170 mm |
| <b>K 0400</b> | 300 x 600 x 170 mm |



**Empty enclosure IP 66 with opaque lid**

|               |                    |
|---------------|--------------------|
| <b>K 0101</b> | 300 x 150 x 170 mm |
| <b>K 0201</b> | 300 x 300 x 170 mm |
| <b>K 0301</b> | 300 x 450 x 170 mm |
| <b>K 0401</b> | 300 x 600 x 170 mm |

**Note : This range is the same as the Enymod Mi empty boxes but with plain walls and not combinable.**



▪ Accessories:

- KG enclosures: DIN rails and mounting plates + PE and N terminals



- K enclosures: DIN rails, mounting plates, different lid fasteners / locks, hinges for lids, extension frame ( size 4)





## Local Control Stations IP66



### Range

- Emergency stop push button station
- Start-stop push button station
- Start-stop-reverse push button station
- On-off selector switch

|  |  |
|--|--|
| Rated operational current<br>(conforming to IEC/EN60947-5-1) | AC-15: 1.2A 600VAC to 6A 120VAC.<br>DC-13: 0.27A 250VDC to 0.55A 125VDC. |
| Rated impulse withstand voltage                              | 4 KV   |
| Rated insulation voltage                                     | 600V conforming to EN 60947-1  |
| Conforms to  | IEC 60947-5-1 & IEC 60947-5-5  |



## Isolator Boxes IP65 / IP66



### Range

- 16A upto 250A upto 690V AC
- IP 66 upto 80A
- IP 65 from 100-250A
- Higher ratings available on request



## Distribution Boards with Door up to 250 A

- Combinable enclosure system
- Degree of protection IP 66
- made from polycarbonate
- Protection class II,
- in accordance with **IEC 61439-3**
- Glow Wire Tested **960 deg. C**,  
Flame Retardant & Self Extinguishing
- UV Resistance according to **IEC 61439-1**
- Chemical Resistant
- Silicon & Halogen free



## Empty boxes IP 66 combinable to form distribution boards upto 250A



### Empty enclosure IP 66 with transparent door

|                |                    |
|----------------|--------------------|
| <b>FP 0101</b> | 216 x 126 x 140 mm |
| <b>FP 0211</b> | 216 x 306 x 140 mm |
| <b>FP 0311</b> | 216 x 486 x 140 mm |
| <b>FP 0401</b> | 486 x 306 x 140 mm |
| <b>FP 0411</b> | 306 x 486 x 140 mm |



### Empty enclosure IP 66 with opaque door

|                |                    |
|----------------|--------------------|
| <b>FP 0121</b> | 216 x 126 x 140 mm |
| <b>FP 0231</b> | 216 x 306 x 140 mm |
| <b>FP 0331</b> | 216 x 486 x 140 mm |
| <b>FP 0421</b> | 486 x 306 x 140 mm |
| <b>FP 0431</b> | 306 x 486 x 140 mm |

**Boxes with functional units IP 66 combinable to form distribution boards upto 250A**



**Circuit breaker box**



**Meter box**



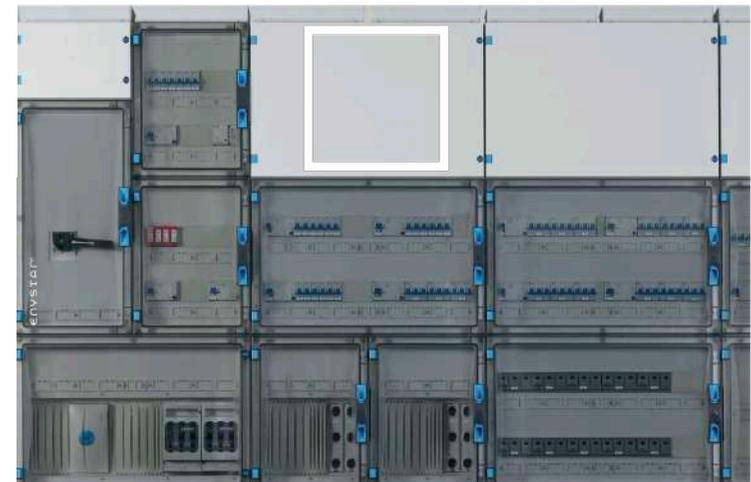
**MCCB box**



**Busbar box**



**Isolator box**



**Complete panel upto 250A**



- IP66 Modular distribution board system
- Pre-assembled with vertical busbar system
- Free for use with devices of different manufacturers and brands
  
- Electrical characteristics:
  - ❖ rated voltage: max. 690 V a.c.
  - ❖ Rated insulation voltage: 690 Vac, 1000 Vdc ,
  - ❖ Rated current: max. 250 A
  - ❖ Rated conditional short circuit current ( Icc ) : max. 40 kA
  
- According to IEC 61439-3 for Commercial and Industrial Buildings
- VTPN Distribution boards can easily be extended with CEE devices (system solution)
- Choice of extension enclosures: Enclosures for different electrical functions can be combined to any extent
- VTPN Distribution boards, e.g. additional terminal boxes for outgoing circuit
- Pre-assembled enclosures with standardized kits up to 250 A
- For DIN-rail equipment up to 100 A and terminals, contactors and switching device up to 250 A

## Mi Power Distribution Boards up to 630 A

- Combinable enclosure system
- Degree of protection IP 65
- made from polycarbonate
- Protection class II,
- in accordance with **IEC 61439-2**
- UV Resistance according to **IEC 61439-1**
- Chemical Resistant
- Silicon & Halogen free



## Empty boxes IP 65 combinable to form distribution boards upto 630A



### Empty enclosure IP 65 with transparent lid

|                |                    |
|----------------|--------------------|
| <b>Mi 0100</b> | 300 x 150 x 170 mm |
| <b>Mi 0200</b> | 300 x 300 x 170 mm |
| <b>Mi 0300</b> | 300 x 450 x 170 mm |
| <b>Mi 0400</b> | 300 x 600 x 170 mm |
| <b>Mi 0600</b> | 450 x 600 x 170 mm |
| <b>Mi 0800</b> | 600 x 600 x 170 mm |



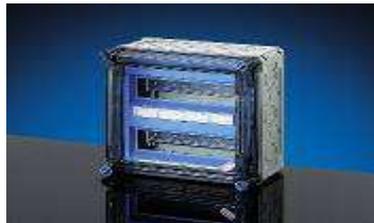
### Empty enclosure IP 65 with opaque lid

|                |                    |
|----------------|--------------------|
| <b>Mi 0101</b> | 300 x 150 x 170 mm |
| <b>Mi 0201</b> | 300 x 300 x 170 mm |
| <b>Mi 0301</b> | 300 x 450 x 170 mm |
| <b>Mi 0401</b> | 300 x 600 x 170 mm |
| <b>Mi 0601</b> | 450 x 600 x 170 mm |
| <b>Mi 0801</b> | 600 x 600 x 170 mm |



Empty boxes

- Box size 1 to 8
- Transparent and opaque lid
- With hinged lid
- With high-level lid
- Sealable lid



Miniature circuit-breaker boxes

- 12 to 84 modules
- For MCB's / RCB's
- With N / PE terminals
- For main line circuit-breaker
- With hinged flap
- With hinged lid

**Boxes with functional units IP 65 combinable to form distribution boards up to 630A**



**Circuit breaker box**



**KWH Meter box**



**MCCB box**



**Busbar box**



**Isolator box**



**MFM box**



**Complete panel up to 630A**





## Assemblies for Construction Sites (ACS)

- for temporary power distribution up to 630 A
- Degree of protection up to IP 65
- made from polycarbonate
- Insulated and shock proof
- in accordance with **IEC 61439-4**, Particular Requirements for Assemblies for Construction sites“
- IP 44 / IP 65 as per IEC / EN 60529
  
- Available from 16A up to 630A.
- Outgoing Circuits via safe CEEtyp Industrial Insulated Plugs & Sockets.
- Choice of Mounting Frames.
- 22 Standard pre – wired Combinations available as catalog Products.





## Safe solutions for Photovoltaic plants conforming to standards

- PV generator junction boxes (DC combiners)
- Battery distributor boxes
- Solar inverter collector (AC combiners)
- Double insulated boxes for on grid connection & off grid
- Connection of PV plants to the low voltage network of power supply company according to **The New Standard IEC 60364-7-712: 2017**



## PV generator junction boxes / DC combiner boxes

- Rated for upto 1500 V DC upto 630 A IP 65
- Type tested at TÜV Rheinland for compliance to IEC 61 439-2
- Tested and certified at ambient temperature of 50 deg C
- Large range from 1 in 1 out upto 32 in 1 out as standard
- Customized solutions possible
- Made from polycarbonate
- Protection class II,





## GRP Cabinets





Cabinets made of hot pressed, fibre glass reinforced Polyester suitable for outdoor installation in public areas

### Technical Details:

Glass fibre reinforced Polyester IP 54  
Color RAL 7032  
Total insulation, protection class II  
Conforms to requirements of IEC 61439-5  
Glow wire tested at 960<sup>0</sup> C  
UV resistant, Weather proof  
Halogen free and termite resistant  
Ambient temperatures - 50<sup>0</sup>C to 125<sup>0</sup> C

### Standard Features:

Color RAL 7032  
All metal parts used are made of non corrosive material  
Easy to assemble because of modular design

### Special Feature:

Degree of protection IP 54  
Color RAL 7035  
Sheet steel mounting plate







**Passive solutions for mitigation of condensation**



**Passive solutions  
for mitigation of condensation**

## What is condensation ?

Condensation occurs when moist air is cooled and causes water vapour to condense on the surface.

In general we cannot prevent the formation of water in case of condensation in an enclosure system having  $\geq$  IP54 degree of protection. It is happened due to power dissipation of the built – in devices, the internal temperature is always higher than external.

## Harmful effects of condensation

In a closed enclosure which is having  $\geq$  IP54 degree of protection, inside that enclosure condensation occurs when moist air is cooled and causes water vapour to condense on the surface.

The most harmful effect of this moisture is condensation that forms on sensitive electrical / electronic devices inside a high IP rated enclosure, causing the following problems :

- Increased electrical resistance
- Excess heat build up
- Decreased life / performance of internal components
- Corrosion of metal parts
- Increased risk of short circuits



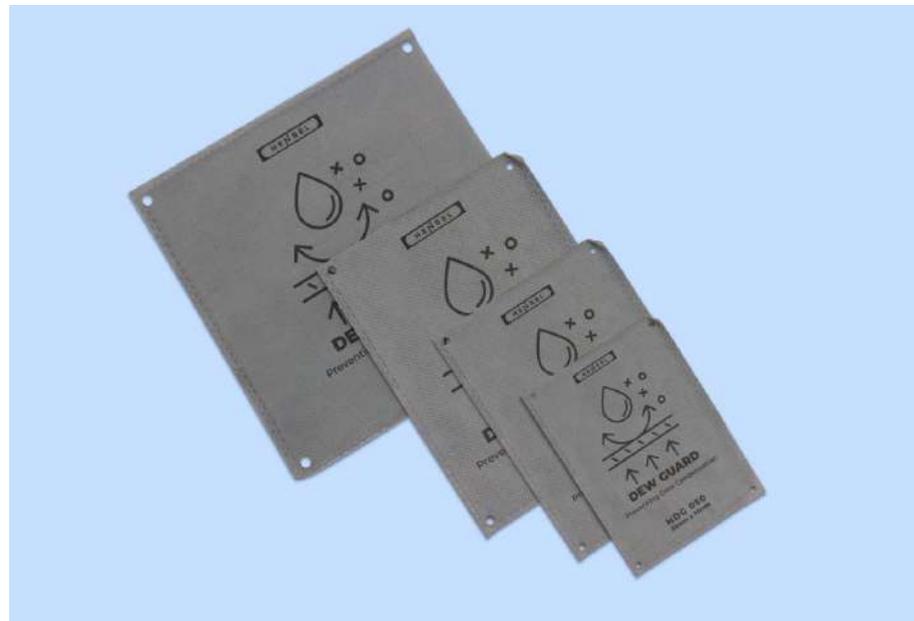
## Products for mitigation of condensation

Condensation mitigation can be divided into two topics

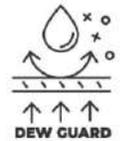
1. Passive measures – design with larger enclosure spaces and use of pressure compensation / ventilation devices.
2. Active measures – combination of heating and cooling with space heaters, fans and filters regulated by thermostats or hygrometers or a combination of both.

## Our product offer on Passive measures

### The Hensel DEW GUARD



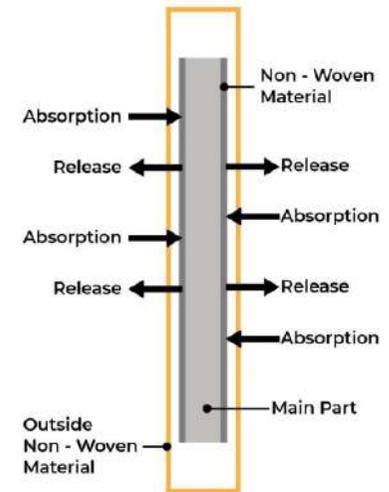
### Preventing Dew Condensation



Dew Guard is a thin sheet made from synthetic rubber and a super absorbent polymer and covered by a non woven fabric.

The polymer absorbs excess moisture to ensure that the relative humidity inside an enclosure remains between 60-70%.

When the air inside the enclosure becomes dry, Dew Guard releases humidity into the enclosure.



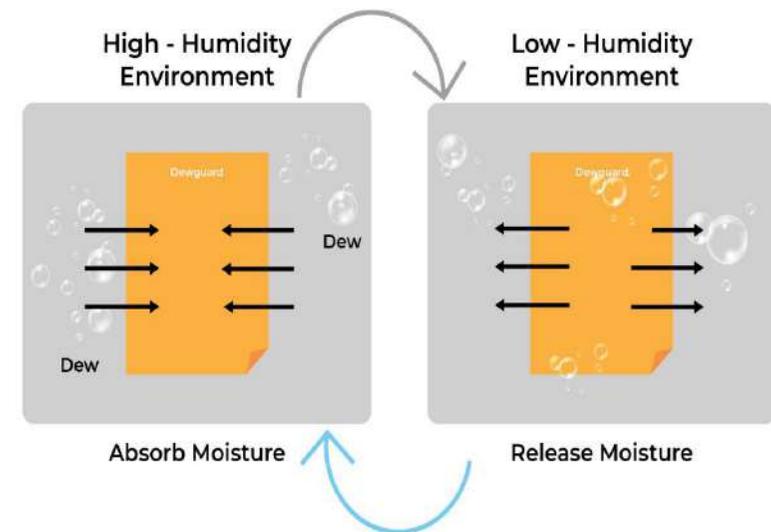
## How does Dew Guard work ?



Dew Guard absorbs moisture during high humidity and releases moisture during low humidity.

This reversibility ensures that a constant level of humidity is maintained in the enclosed space.

Due to this, the product continues to be in function over a large period of time and protects against condensation.



## Dew Guard internal tests



**Box with induced condensation**



**Passive control by Dew Guard**



Dew Guard can be installed in 2 ways;

Using an adhesive hook to hang the product anywhere in the enclosure



Using Velcro tape to affix on a wall of an enclosure



## The Hensel Ventilation Devices

In the case of negative pressure or partial vacuum, dust and humidity can enter the enclosure through the door seal.

When the air inside the enclosure cools down, condensation may occur because the humidity cannot escape the enclosure.

Even with a slight overpressure, a waterproof membrane inside the plug allows the humidity to escape whilst blocking water and dirt from entering the enclosure.

**Pressure compensation devices and glands can provide IP66 / IP67 / IP69**



**Preventing Condensation**

### Drainage Device IP66 / IP67 / IP69

The use of a drainage device allows the conveying of the condensate without losing the maximum protection type of IP66.

The water permeable membrane makes sure the drainage of the enclosure by the capillary attraction.

The construction prevents the infiltration of splash water into the enclosure. The drainage device can drain 200ml of water per hour from enclosures



# Any questions?



**HENSEL**

**Thank you for your  
attention !**

**HENSEL**

**PASSION FOR POWER.**