



COLOFON

This document was created by manufacturer Vello Elektro, located in Duiven (NL).

This document serves as the installation and user manual voor the given product series. This information is essential for the users of the product and therefore available in accordance with NEN-EN-IEC 61439.

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1. GENERAL INFORMATION

It is important to read this manual and installation guide carefully before using the electrical distribution box.

With some products additional instruction leaflets apply. Please consult the instruction leaflets as supplied by Vello Elektro.

Furthermore take in account that there has to be adequate knowledge of the specific product information given by the manufacturer of the assembled components.

All products for which this manual applies are manufactured according to NEN-EN-IEC 61439 (specific part can be found on product tag; see chpt. 9.1). Take care for correct use and take into account the law and regulations in the country of use.

This user manual is also available as download at www.vello.nl or via the qr-code below:



1.1 Contact information

Vello Elektro B.V.
Typograaf 14
NL-6921 VB Duiven

www.vello.nl
Tel. +31 (0)316251500

1.2 Product types

The instructions described in this user manual apply on all product types within the "RUBBER" series. The product type can be found on the nameplate of the product. The product types belonging to this series are:

Producttype	Artikelnummer
Powercubes-80	V46.80.(5.)XXXX
Powercubes-100	V46.100.(5.)XXXX
Powerbox-11	V91.80.1.XXXX
Powerbox-12	V91.80.XXXX
Powerbox-13	V91.80.3.XXXX
Powerbox-21	V92.80.1.XXXX
Powerbox-22	V92.80.XXXX
Powerbox-23	V92.80.3.XXXX
Powerbox-43	V94.80.XXXX

(XXXX = volgnummer)

2. SAFETY PRECAUTIONS

It is important to read this manual and installation guide carefully before using the electrical distribution box.

Vello products meet the requirements and regulations which apply at the moment of delivery.

2.1 Safe use

The user of the distribution box carries responsibility for correct use of the product.

If the distribution box shows signs of defects, make sure the box is voltage free and let a qualified person inspect it.

Maintenance on the installation can only be executed by a qualified person.

Every user has to follow local laws and regulations concerning the use and maintenance of electrical installations.

Make sure that during installation or maintenance the distribution box is voltage free by switching or disconnecting the power supply.

Prevent switching the power supply by locking the main switch in the 0-position.

Only use the correct tools, in the way they are supposed to be used.

Apply installation material according to the instructions of the manufacturer.

Power distribution boxes which are adjusted should not be used.

In case of a defect material or part, the power distribution box should not be used.

Before using the distribution box make sure that it's suited for the intended environment.

Prevent faulty usage of the power distribution box.

Vello Elektro will not take any responsibility in case the user does not live up to the precautions. The warranty and responsibility of the manufacturer expires.

2.2 The user

The power distribution box can be used by instructed persons or by ordinary persons. This depends on the field of application which can be derived from the norm to which it complies:

- NEN-EN-IEC 61439-2: instructed persons
- NEN-EN-IEC 61439-4: ordinary persons

The initial user of the distribution box is responsible for correct use of the box and has the following obligations:

- Read, document and live up to the user instructions carefully
- Give instructions to people using the distribution box
- Recognize risks and prevent hazardous situations
- Make sure that other users have adequate knowledge of the user manual
- Protect persons who are incapable to recognize the risks of using the distribution box.

3.1 Storage

To guarantee an interference free use in the future, take the following measures:

- Store the distribution box in a dust-free and dry environment with a temperature between 0 °C and 40 °C.
- Cover the distribution box to prevent unnecessary aging and wear.

3.2 Vehicle transport

- No other objects may be placed upon the distribution box during transport.
- Make sure that the distribution box is stabilized and fixed during transport.
- Boxes which are stacked during transport have to be linked and fixed to each other.

3.3 Hoist construction

- Handles: when the distribution box is equipped with more than 1 handle, always use at least 2 handles to lift the box.
- Do not use handles as a hoist construction.
- Hoist construction for fork-lifting: make sure that the lifting fork is inserted completely in the intended hole. Take into account the stability of the box, make sure it doesn't tilt.

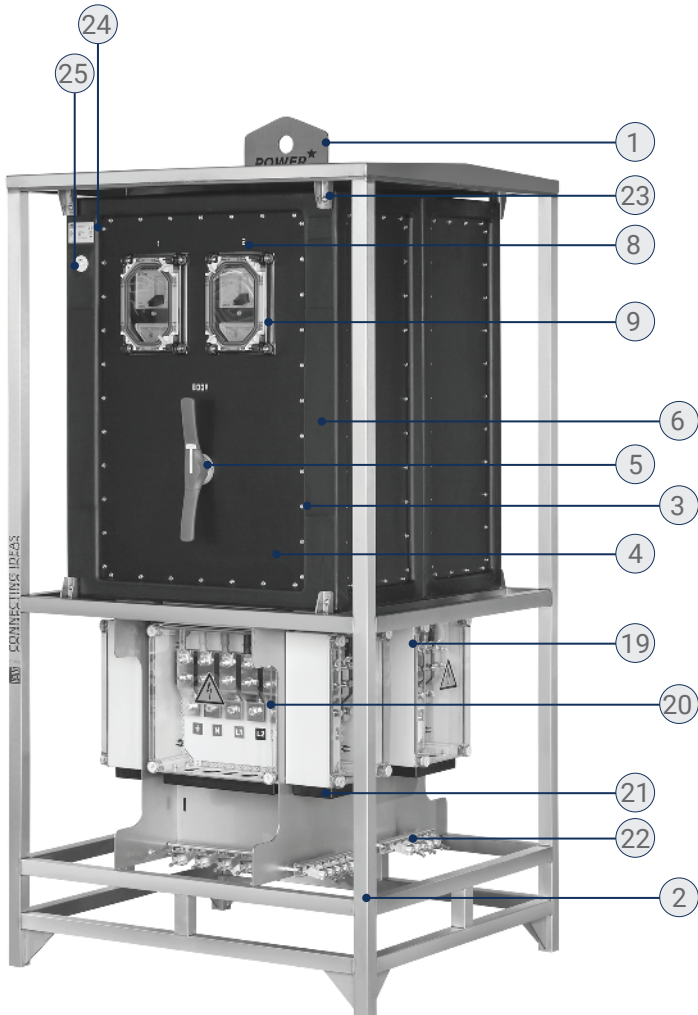
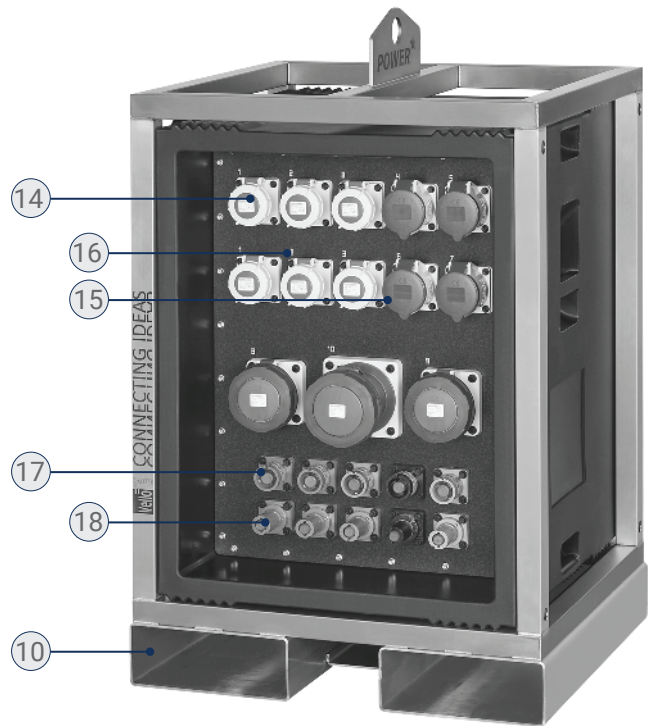
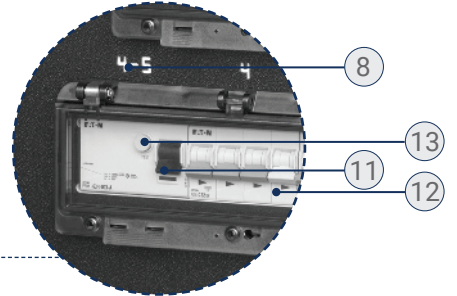
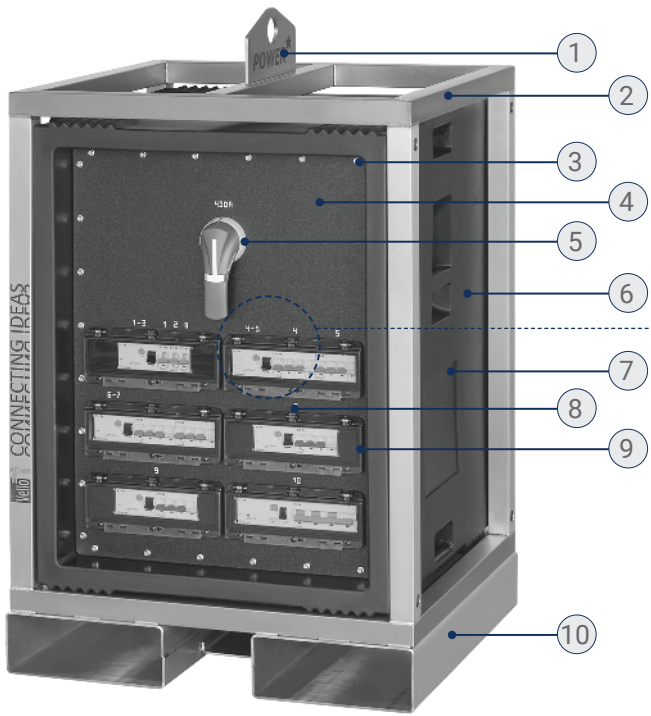
3.4 Moving the distribution box

- Do not drag the box over the ground to prevent unnecessary wear and damage.
- Use the intended lifting construction for lifting.
- Mind the weight of the box when you move it. The weight is mentioned on the nameplate of the box.
- Do not attach objects to the box or the frame when it's being lifted. This is to prevent an increase of the total load the hoist construction has to carry.



The displayed distribution box is a representative for the series, but the specific product what this manual is consulted for may differ in terms of functionality, technique or looks.

Nr.	Omschrijving
1	lifting eye
2	frame
3	M5 stainless steel screw
4	HDPE bi-color mounting plate
5	main switch
6	LDPE housing
7	sticker surface
8	circuit id
9	hinged window
10	fork lifting construction
11	RCD
12	MCB
13	test button
14	Outlet Cee (IP67)
15	Outlet Cee (IP44)
16	circuit id
17	unprotected link (power connectors)
18	power input (power connectors)
19	junction box
20	copper bar
21	cable entry
22	cable tension relief
23	M8 stainless steel screw
24	nameplate
25	test sticker



5. INSTALLATION AND COMMISSIONING



Installation and commissioning the distribution box may only be done by a qualified electro-technician. This person has the obligation to follow the safety precautions from chapter 2.

Risks:

- Commissioning of the distribution box by an unqualified person can lead to injury or death.
- The person responsible for the installation has to make sure that the power supply is protected and limited at the maximum operating current (I_n) of the distribution box. This is mentioned on the nameplate of the box. Ignoring this might lead to fire or injury.

5.1 Preparation

- Make sure the distribution box is not affected or damaged in any way.
- Check whether the protection degree is high enough to meet the requirements given by the user environment.
- Try to avoid direct exposure to the sun, this could lead to unexpected temperature rise.

5.2 Positioning the distribution box

- Always position the box on a flat, horizontal and stable surface.
- Position the box with space surrounding it, do not place objects against, on top of- or below the box.

5.3 Connect incoming power

Precautions:

- Make sure the incoming power supply is voltage free by switching or disconnecting it.
- Prevent switching the power supply by locking the main switch in the 0-position.
- Check if the specifications of the power supply match with the specifications of the distribution box, being: voltage (U_n), current (I_n) and frequency (f_n).

Go to:

- Cable power supply; → Chapter 5.3.1
- Pluggable power supply; → Chapter 5.3.6

5.3.1 Opening the cable entry



5.3.1.A junction box

Open the junction box by turning the plastic screws in the corners 90° counter clockwise. Use a wide flat-head screwdriver.



5.3.1.B Wall fixed box

To open the lid, unscrew it from the box. Be careful: from the Fix-18 till the Fix-90 custom screws are applied. Do not try to remove them from the lid. Once they turn free without resistance you can turn the lid downwards.



5.3.1.C Hinged panel

- Use the supplied triangular 8mm key to unlock the panel.
- Turn both handles a quarter turn clockwise to release the lid.
- Open the lid by turning it upwards.

5.3.2 Inserting the incoming cable



5.3.2.B HDPE cable entry

- Measure the cable diameter of the incoming cable(s).
- Remove the round insert by pressing it from the inside.
- Enter the cable in the suited hole in the cable entry. Check if the cable is properly sealed.



5.3.2.A Cable gland

- Turn the cable gland to open up the cable entrance and remove the blind caps. Save them in case the setup is a temporary installation.
- Make sure the diameter of the incoming cable fits within the clamping range of the cable gland. See the table below.

Gland	clamping range (mm)
M20	7 - 14
M25	9 - 18
M32	14 - 25
M40	18 - 32
M50	24 - 39
M63	34 - 44

5.3.3 Connecting the incoming cables



5.3.3.A Connecting lugs to copper bars

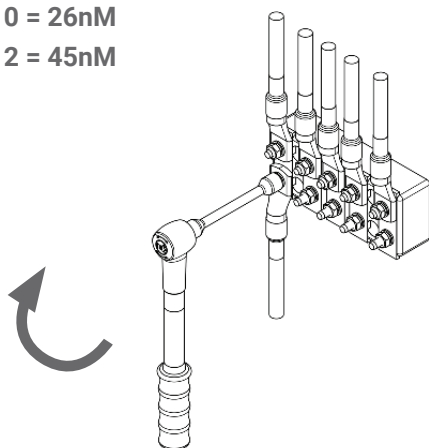
- Remove the steel nut and the washers from the bolt.
- Put the eye of the lug over the bolt.
- Make sure that the flat part of the lug rests on the copper bar completely.
- Place the washers and the nut back on the bolt and tighten it with the given torque.
- Tighten the cable tension relief and make sure the cable is clamped firmly.



5.3.3.B Copper conductor in cable clamp

- Remove the conductor's isolation to the length given in the table.
- Put the conductor in the cable entry and tighten it with the torque given on the clamp and the datasheet.

M10 = 26nM
M12 = 45nM



- Make sure the cable is not clamped on the isolation, but on the conductive core.
- Tighten the cable tension relief and make sure the cable is clamped firmly.

5.3.4 Closing the junction box

- Close the lid and retighten the (metal or plastic) screws.

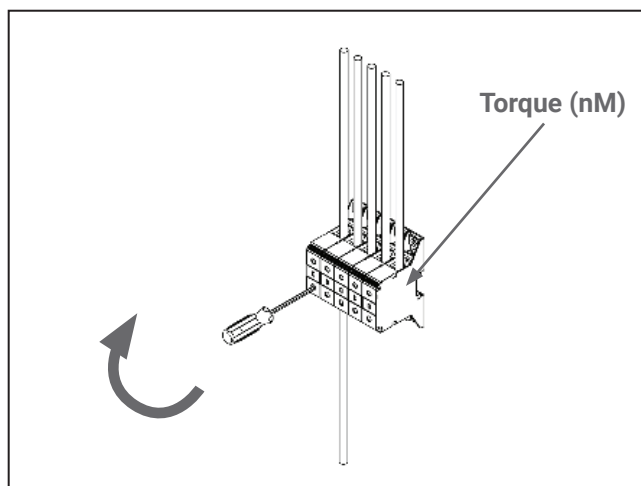
5.3.5 Voltage check

- Check if the rotating field is correct on the outputs.

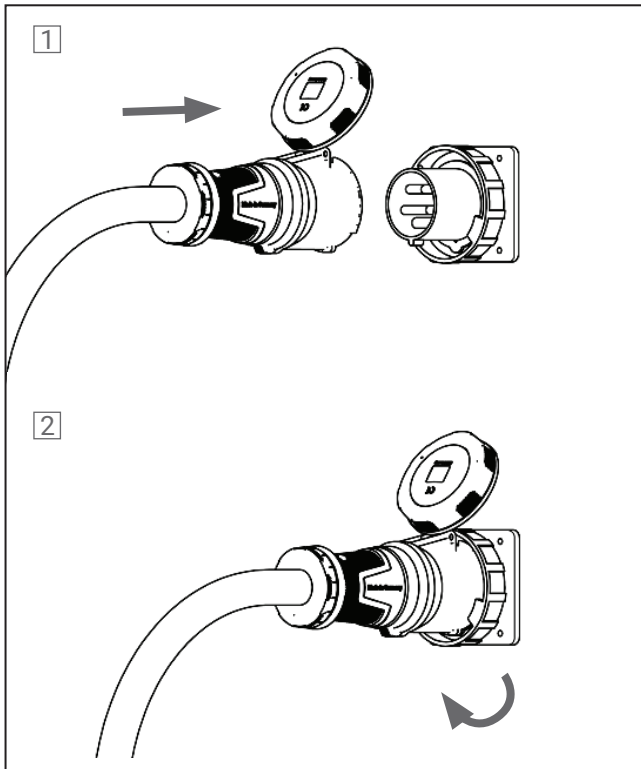
5.3.6. Connecting a pluggable power supply

- Before plugging in, make sure that the main switch is in the OFF position.
- Press the female plug over the male plug, until it reaches the limit. In case of an IP67 plug connection the bayonet ring must be fully turned clockwise to reach the IP67 connection.

Cable (mm ²)	Clamp type	Stripping length (mm)
2,5 - 25	A / B	19
16 - 35	C / D	22
35 - 50	RKA50	16
70 - 95	RKA95	26
120 - 185	RKA185	29



6. USER INSTRUCTIONS



6.1 Preparation

- Check if the distribution box has any damages or flaws. If this is the case, do not use the distribution box and call for a qualified electro technician to inspect it.
- Prevent faulty usage of the power distribution box. Use the box according to the given specifications and respect the RDF and the protection degree.

6.2 Connecting and disconnecting plugs



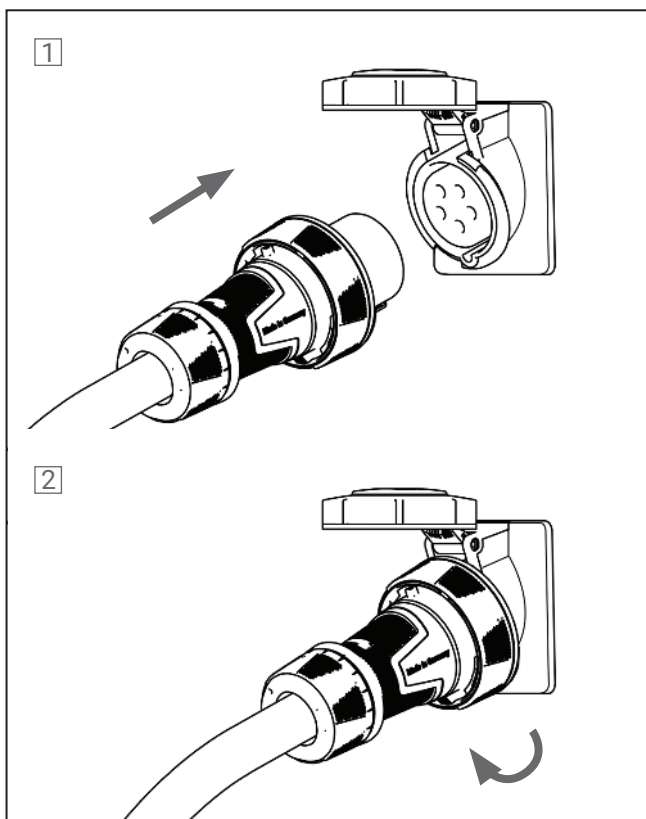
6.2.A IP44

- Before inserting the male plug into the socket, make sure the piece of equipment is switched OFF.
- Open the lid of the socket and insert the male plug completely.
- The equipment is ready for use and can be switched ON.
- Before removing the plug after usage, switch OFF the equipment first.
- Lift the lid of the socket and remove the plug by pulling its grip firmly.



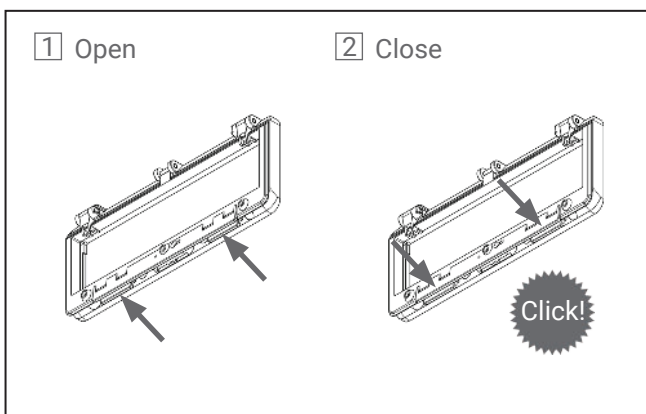
6.2.B IP67

- Before inserting the male plug into the socket, make sure the piece of equipment is switched OFF.
- Open the lid of the socket and insert the male plug completely.
- The bayonet ring must be fully turned clockwise to reach the IP67 connection. Schakel de gebruiker in.
- Before removing the plug after usage, switch OFF the equipment first.
- Loosen the bayonet ring by turning it counter clockwise.
- Lift the lid of the socket and remove the plug by pulling its grip firmly.



6.3 Opening and closing the hinged window

- Open the lid by pulling the lips on the bottom of the window.
- Make sure that the lids are always closed fully by pressing on the points where the lips are positioned. Press them firmly until a clear “CLICK” is noticed.
- When the box is executed with hinged windows with a screwed closure, the screws must be tightened hand-tight to secure the sealing.



6.4 Controlling protection devices

- Call for a qualified electro technician in case of malfunction or failure.
- Earth leakage and short circuit protection devices are safety components in the first place. Using them as a switch frequently will affect the lifespan of these components.
- If a circuit breaker detects faults and switches frequently, always check the circuit behind this component for any faults.
- If the earth leakage protection switches off, then the source of the leakage has to be found and repaired before switching the device back in.
- Fuses have to be maintained and replaced (if necessary) by a qualified electro technician.

7. MAINTENANCE

7.1 Cleaning



7.1.A Dry cleaning

- Vello Elektro advises to dry clean the distribution box regularly. Before doing this, make sure the box is disconnected from the power supply.



7.1.B Liquid cleaning

- If considered necessary, the distribution can be cleaned with a clean, wet cloth. Before doing this, make sure the box is disconnected from the power supply.
- Keep the protection degree in mind when cleaning the box with liquid. Do not use extensive amounts of liquid that might harm the distribution box.
- Always check with Vello Elektro if the cleaning fluid you want to use is allowed. An unsuitable cleaning fluid might damage the product.

7.2 Inspection

- Check if the earth leakage protections work properly by pressing the TEST button.
- The owner of the distribution box has the responsibility to let a qualified person do a (first) periodical inspection according to NEN1010. The frequency for periodical inspections will be determined by the electro technician. Defects have to be resolved by a qualified person, before the box is used again.

8. DECOMMISSIONING

8.1 Decommissioning

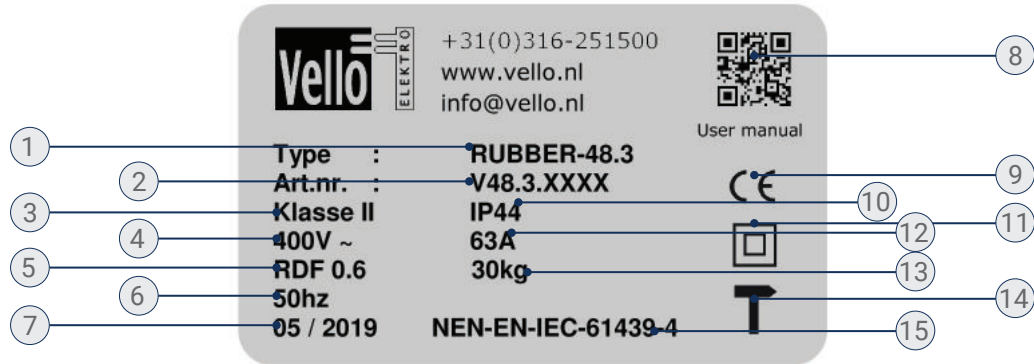
- Let a qualified electro technician decommission the distribution box.
- Make sure the power supply is switched OFF and the disconnect plugged in connectors before decommissioning the distribution box.

8.2 Removal

- Removing the electrical installation must comply with the law and regulations in the country of use.

9. TECHNICAL INFORMATION

9.1 Typeplaatje

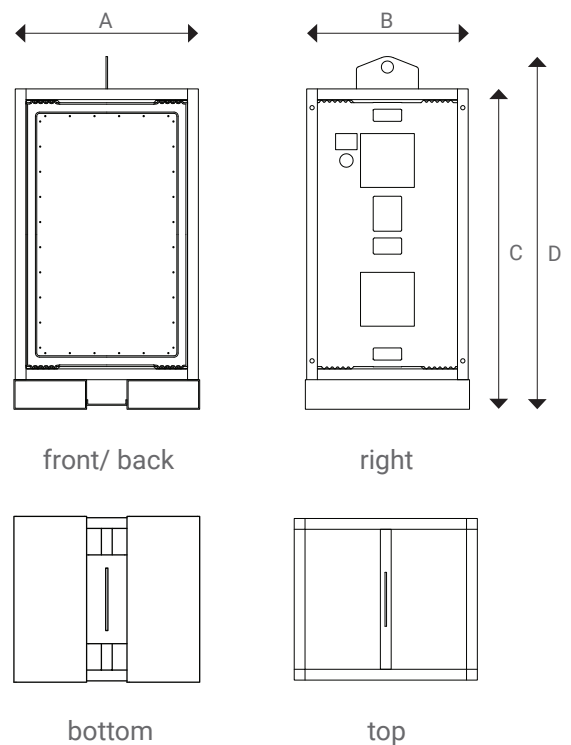


Nr.	Omschrijving
1	producttype
2	article number
3	appliance class
4	voltage
5	RDF
6	frequency
7	date of production
8	qr-code

Nr.	Omschrijving
9	CE marking
10	protection degree
11	appliance class symbol
12	current
13	weight
14	impact resistance symbol
15	standardization

9.2 Dimensions

Art. nr.	A	B	C	D
Powercubes-80	680	600	1170	1310
Powercubes-100	680	600	1370	1510
Powerbox-11	1050	800	-	2140
Powerbox-12	1050	600	-	1740
Powerbox-13	1050	600	-	1490
Powerbox-21	1050	950	-	2160
Powerbox-22	1050	950	-	1740
Powerbox-23	1050	950	-	1490
Powerbox-43	1850	950	-	1740



9.3 Technische specificaties behuizing

	Powercubes-80	Powercubes-100	Powerbox-11	Powerbox-12
Material housing	Poly ethylene (LDPE)	Poly ethylene (LDPE)	Poly ethylene (LDPE)	Poly ethylene (LDPE)
Material frame	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Wall thickness (mm)	7mm (double wall)	7mm (double wall)	7mm	7mm
Material mounting plates	Poly ethylene (HDPE) bi-color	Poly ethylene (HDPE) bi-color	Poly ethylene (HDPE) bi-color	Poly ethylene (HDPE) bi-color
Mounting plate thickness (mm)	10mm	10mm	10mm	10mm
Inserts in housing	56 M5 Brass inserts 8 M8 Brass inserts	64 M5 Brass inserts 8 M8 Brass inserts	8 M8 Brass inserts	8 M8 Brass inserts
Weight (kg)	70	80	120	84
Dimensions (w x d x h)(mm)	680x600x1310	680x600x1510	1050x800x2140	1050x600x1740
Positioning	indoor / outdoor	indoor / outdoor	indoor / outdoor	indoor / outdoor
Corrosion resistance	resistant to acids and bases	resistant to acids and bases	resistant to acids and bases	resistant to acids and bases
UV-resistance	high	high	high	high
Heat resistance	up to 80°C for 100 hour	up to 80°C for 100 hour	up to 80°C for 100 hour	up to 80°C for 100 hour
Slagvastheid	IK10	IK10	IK10	IK10
Protection degree (housing only)	IP67	IP67	IP67	IP67
Appliance class	II (double insulation)	II (double insulation)	II (double insulation)	II (double insulation)
Pollution degree	3: industrial	3: industrial	3: industrial	3: industrial
Normal operating temperature- lower limit	-25°C	-25°C	-25°C	-25°C
Normal operating temperature- upper limit	40°C	40°C	40°C	40°C
Normal operating temperature- maximum day average	35°C	35°C	35°C	35°C
Max. capacity (In)	400A	800A	800A	800A
Mobility	mobile	mobile	mobile	mobile
Handles	yes	yes	yes	yes
Hoist construction	lifting eye / fork lifting	lifting eye / fork lifting	lifting eye / fork lifting	lifting eye / fork lifting
Mounting	56 M5 stainless steel hex bolts	64 M5 stainless steel hex bolts	185 M5 stainless steel hex bolts	185 M5 stainless steel hex bolts
Logo	yes	yes	yes	yes

Powerbox-13	Powerbox-21	Powerbox-22	Powerbox-23	Powerbox-43
Poly ethylene (LDPE)	Poly ethylene (LDPE)	Poly ethylene (LDPE)	Poly ethylene (LDPE)	Poly ethylene (LDPE)
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
7mm	7mm	7mm	7mm	7mm
Poly ethylene (HDPE) bi-color	Poly ethylene (HDPE) bi-color	Poly ethylene (HDPE) bi-color	Poly ethylene (HDPE) bi-color	Poly ethylene (HDPE) bi-color
10mm	10mm	10mm	10mm	10mm
8 M8 Brass inserts	8 M8 Brass inserts	8 M8 Brass inserts	8 M8 Brass inserts	8 M8 Brass inserts
80	193	161	150	271
1050x600x1490	1050x950x2160	1050x950x1740	1050x950x1490	1850x950x1740
indoor / outdoor	indoor / outdoor	indoor / outdoor	indoor / outdoor	indoor / outdoor
resistant to acids and bases	resistant to acids and bases	resistant to acids and bases	resistant to acids and bases	resistant to acids and bases
high	high	high	high	high
up to 80°C for 100 hour	up to 80°C for 100 hour	up to 80°C for 100 hour	up to 80°C for 100 hour	up to 80°C for 100 hour
IK10	IK10	IK10	IK10	IK10
IP67	IP67	IP67	IP67	IP67
II (double insulation)	II (double insulation)	II (double insulation)	II (double insulation)	II (double insulation)
3: industrial	3: industrial	3: industrial	3: industrial	3: industrial
-25°C	-25°C	-25°C	-25°C	-25°C
40°C	40°C	40°C	40°C	40°C
35°C	35°C	35°C	35°C	35°C
800A	2000A	2000A	2000A	2000A
mobile	mobile	mobile	mobile	mobile
yes	yes	yes	yes	yes
lifting eye / fork lifting	lifting eye / fork lifting	lifting eye / fork lifting	lifting eye / fork lifting	lifting eye / fork lifting
185 M5 stainless steel hex bolts	244 M5 stainless steel hex bolts	244 M5 stainless steel hex bolts	244 M5 stainless steel hex bolts	368 M5 stainless steel hex bolts
yes	yes	yes	yes	yes

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