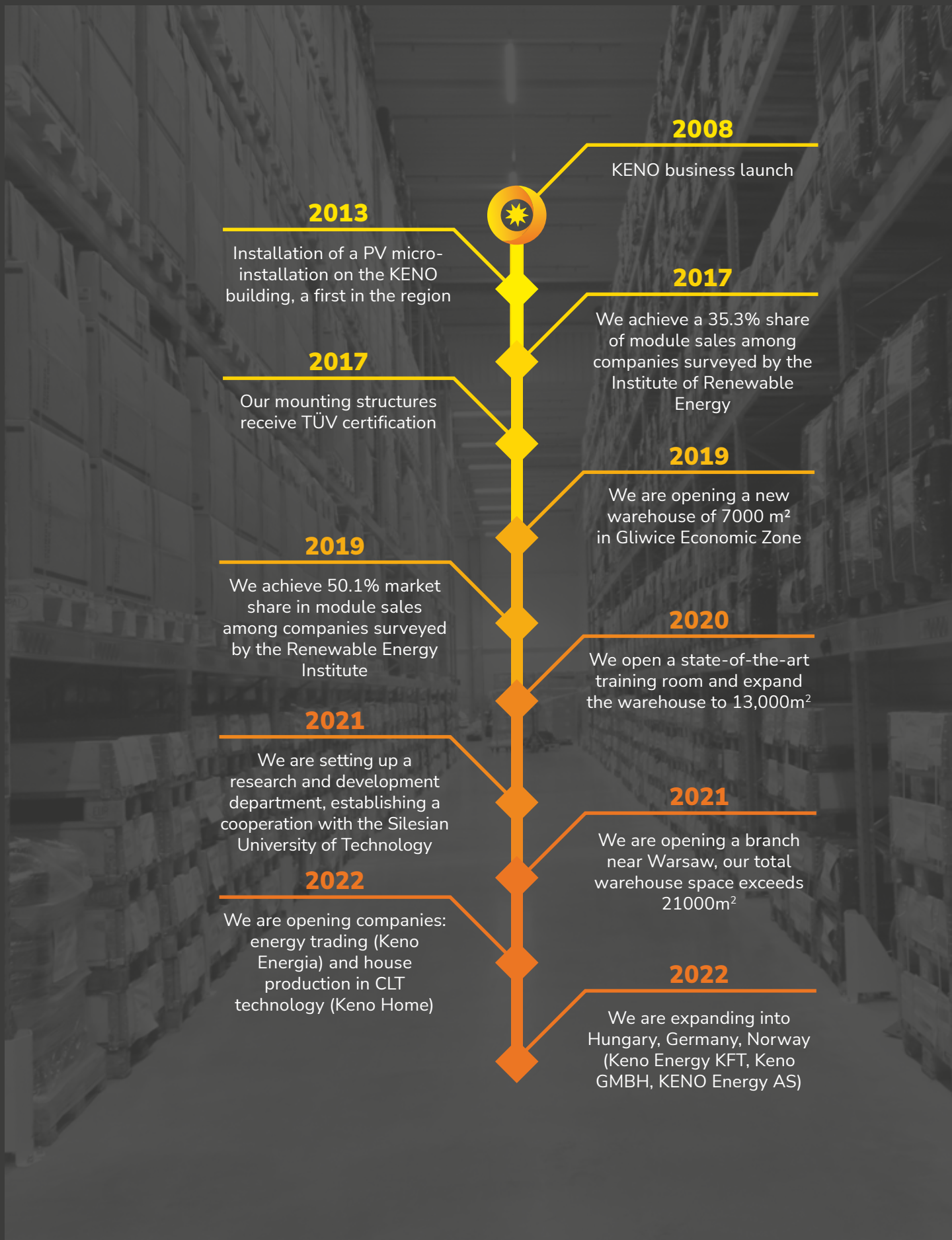




## ELECTRICAL COMBINER BOXES FOR PV INSTALLATIONS



## CONFIDENCE BUILT ON THE COMMITMENT

**KENO** operates in the renewable energy industry, specializing in providing comprehensive, reliable solutions for professionals. Years of operation in the Renewable Energy industry have given us the experience to build a strong Group and gain a high position in the industry. **We have branches in 4 European countries** – Germany, Norway, Poland and Hungary.

The newly opened branches were established as a result of the company's rapid growth and search for investment. Diversification into foreign markets is first and foremost a **pillar of financial stability for the KENO Group's business partners**. Thanks to this, we are able to even better forecast demand on the European market, thus ensuring the **best possible terms of cooperation** for our partners and the **highest possible availability of goods**, securing adequate stock levels.

Our modernized in-house production line allows us to produce over 1,000 combiner box units per day, and our modern 22300m<sup>2</sup> logistics center allows us to maintain **ensures fluidity of the supply chain**.

We influence the development of the RES market in Europe. We cooperate with a number of industry associations, and since 2021 we have been conducting product research in cooperation with Silesian University of Technology.

**Our position, experience and solutions will enable your company to grow in the direction you want.**

**410**

mIn EUR

TURNOVER FOR 2021

**837**

MW

DELIVERED PV MODULES in 2021

**808**

MW

DELIVERED INVERTERS in 2021

**829**

MW

DELIVERED MOUNTING SYSTEMS  
IN 2021

**22300**

m<sup>2</sup>

WAREHOUSE SPACE

1. KENO

2. STANDARDS

3. PRODUCTS

4. ADDITIONAL OFFER



## CONTROLLED QUALITY

The **two-stage quality control** and correctness of the prefabrication of the connection combiner box begins when the person performing the prefabrication completes it. Then it is necessary to verify whether there was a misTake or error in the prefabrication process.

The person making the combiner box has a duty to make sure that **all components** included in a given combiner box **comply with the formulation of the given combiner box**, none of the components are damaged, the connections are made correctly and in accordance with our internal quality guidelines.

Cable connections are also checked for continuity with a meter, and MC4 panel-type connectors are checked with a tester checking the correctness of terminating cable ends.

When the performer finishes checking, he passes the combiner box to a second worker for rechecking.

**Only after the second verification the combiner box can be packed and shipped to the warehouse.**

## OWN PRODUCTION

We offer ready-made models of standard combiner box as well as those made to the customer's specifications, giving the possibility to configure components and protections according to individual design.

Our products are distinguished by:

- ➔ **Polish production** thanks to which we ensure constant availability and possibility of prefabrication of combiner box **according to customer specifications** (base of more than 1000 manufactured models)
- ➔ product warranty up to **5 years** on selected models of combiner box
- ➔ **Polish technical service** and a dedicated research and development department
- ➔ production capacity of 1,000 units per day, annually up to **240,000 pieces**.
- ➔ **shorter lead time** thanks to automated production line
- ➔ **two-stage quality control** of each combiner box
- ➔ each combiner box has a nameplate with a QR code for always up-to-date documentation
- ➔ own B2B purchasing platform with advanced configurators for automatic and manual selection of combiner boxes

The full range of combiner boxes, along with their configuration options, is available on our B2B platform.

**[WWW.B2B.KENO-ENERGY.COM](http://WWW.B2B.KENO-ENERGY.COM)**



## CONVENIENCE OF SELECTION

**Do you need quick selection of the best solutions** or perhaps ordering combiner box for the specific conditions of your project? With two combiner box configurators **on our B2B platform, you choose what you need.**

Automatic selection in a few clicks will match for the selected inverter the ready-made combiner box suggested by our experts.

If you need specific solutions for your project, ordering the right combiner box will enable the manual selection configurator.

## COMPLIANCE WITH STANDARDS

From the point of view of safety, one of the most important elements in the combiner box, in addition to properly selected apparatuses, are properly made connections, which mainly translates into the correctness of prefabrication of the entire combiner box.

Taking care of the safety and security of the manufactured combiner boxes, they are manufactured in accordance with standards and comply with the provisions of European Union directives.

### ELECTRICAL COMBINER BOXES HAVE BEEN MADE IN ACCORDANCE WITH THE STANDARDS DESCRIBED BY THE FOLLOWING STANDARDS:

|                                             |                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>IEC 61439-1</b>                          | Low-voltage combiner box and controlgear, Part 1: General provisions                                                                                                                                                                                                                                                          |
| <b>IEC 61439-2</b>                          | Low-voltage combiner box and controlgear, Part 2: Combiner box and control panels for power distribution                                                                                                                                                                                                                      |
| <b>LVD Low Voltage Directive 2014/35/UE</b> | On the harmonization of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits. It is applicable to equipment operating in the voltage range of 50 – 1000V AC and 75 – 1500V DC.                                                 |
| <b>Directive 2014/30/UE – EMC</b>           | Applies to each finished device or combination of finished devices, Taking care to limit and maintain the levels of electromagnetic emissions of the devices so that they allow trouble-free cooperation.                                                                                                                     |
| <b>RoHS Directive 2011/65/UE</b>            | Defines and imposes restrictions on the use of hazardous substances in electrical and electronic equipment (EEE). The directive's provisions aim to improve the protection of human health and the environment at all stages of a product's life, including for the environmentally sound recovery and disposal of waste EEE. |

The combiner boxes have a declaration of conformity and are CE marked.

## IP SYSTEM

I P 6 6

DEGREE OF PROTECTION AGAINST  
SOLIDS

DEGREE OF PROTECTION AGAINST  
WATER

### CERTIFIED IP PROTECTION

IP is a system developed by the International Electrotechnical Commission (IEC) to define the levels of foreign body tightness of electrical equipment enclosures. The IP designation indicates how water – and dust-tight an electrical device is.

**IP 65** – completely dust-tight, protection against low-pressure water jets from all sides – all KENO combiner boxes meet IP 65

**IP 66** – completely dust-tight, protection against high-pressure water jets from all sides – due to its dimensions, the combiner box is equipped with a different casing, intended use – larger installations from 40kW

The protection measurement system is defined according to the standard EN 60529 (British BS EN 60529:1992, European IEC 60509:1989), describing how foreign bodies can enter electrical equipment.



TWO-STAGE QUALITY CONTROL AT THE PRODUCTION STAGE



NAMEPLATE WITH QR CODE FOR DOCUMENTATION



EXCLUSIVELY BRANDED COMPONENTS



SPECIAL MARKINGS OF WIRES OF ATSE COMBINER BOXES

## ELECTRIC KENO COMBINER BOXES

- On offer **DC, AC combiner boxes** as well as DCAC
- Compliance with IEC 61439-1, 61439-2 standards, certified UV resistance
- Protection classes IP65 to IP66, certified for 1500V DC and 400V AC
- Using only original MC4 (Stäubli) connectors **reduces the risk of fire** due to overheating of the connectors or the occurrence of arcing
- **Each connector is tested** for the correctness of manufacture
- Unique, ultra-flexible tinned cable, tested to 6000V, with an expected **service life of at least 25 years**
- **5 year warranty** on the entire combiner box with Phoenix or Noark components
- **Fewer cables** thanks to mounting of components on a special Noark rail
- **Error-proof and simpler installation** thanks to installation of AC side components on so-called comb strips
- Door with option to change direction of opening
- Each combiner box has a nameplate with the most important information and a QR code for full, up-to-date documentation
- Each combiner box is made **under close supervision** with a two-step verification process and has an individual serial number





QUICK AND EASY SELECTION



DOOR  
WITH THE OPTION OF  
CHANGING THE  
OPENING DIRECTION



WARRANTY UP TO 5  
YEARS



A WIDE RANGE OF SOLUTIONS  
(MORE THAN 1,000 MADE  
MODELS)

## PRACTICAL SOLUTION FOR INSTALLER AND WHOLESALER

- + **Time saving** – use of ready-made distributor reduces installation time
- + Prefabricated combiner box **eliminate the problem of incorrect selection** and execution of protection on the investment
- + The high quality of security at each investment ensures **security of the installer and the investor** in case of random events related to the PV installation
- + KENO's declaration of conformity certifies **the highest quality of workmanship** and **compliance** of use with the requirements and standards required by the country in question
- + Stickers included for marking the installation
- + Components from leading manufacturers such as **Phoenix Contact, Noark, Stäubli, Dehn**
- + Expansion of the product range to include an integral part of the installation – **the comprehensiveness of the offer**
- + Possibility to label the combiner boxes with your own logo
- + **Easy selection and fast ordering**, thanks to advanced configurators on the KENO B2B platform

## STANDARD SERIES



STANDARD connection combiner boxes are successfully used in **small and medium household and industrial installations**. A wide range of applications of the combiner box is ensured by, among others **protection class IP65**, thanks to which the combiner box can be installed not only in closed rooms, but also in open spaces.

- Standard, proven housing
- The most popular type of combiner box in the KENO portfolio
- Option to install a key lock
- Transparent door



| Type                                    | 4T                  | 8T          | 12T         | 24T         | 36T         | 48T         |
|-----------------------------------------|---------------------|-------------|-------------|-------------|-------------|-------------|
| Dimensions (without connectors) (WxHxD) | 201x128x120         | 201x202x120 | 259x319x144 | 384x319x144 | 508x319x144 | 664x319x144 |
| Number of fields in a row               | 4                   | 8           | 12          | 12          | 12          | 12          |
| Number of rows                          | 1                   | 1           | 1           | 2           | 3           | 4           |
| Expandability                           | No                  |             |             |             |             |             |
| Key lock                                | Optional            |             |             |             |             |             |
| Mounting method                         | Surface mounting    |             |             |             |             |             |
| Degree of protection                    | IP 65               |             |             |             |             |             |
| Protection class                        | II                  |             |             |             |             |             |
| Rated insulation voltage Ui             | 400 V AC, 1500 V DC |             |             |             |             |             |
| Design in accordance with               | EN 60670, EN 62208  |             |             |             |             |             |
| UV resistance                           | Yes                 |             |             |             |             |             |
| Impact resistance                       | IK 08               |             |             |             |             |             |
| Glow rod test                           | 650°C               |             |             |             |             |             |
| Operating temperature                   | -25°C – +60°C       |             |             |             |             |             |
| Recyclable plastics                     | Halogen-free        |             |             |             |             |             |

## SUGGESTED SOLUTIONS

| Installations with lightning protection |                                      |                               | Installations without lightning protection |                                     |                                |
|-----------------------------------------|--------------------------------------|-------------------------------|--------------------------------------------|-------------------------------------|--------------------------------|
| DC                                      | DCAC                                 | AC                            | DC                                         | DCAC                                | AC                             |
| 3F inverter                             |                                      |                               | 3F inverter                                |                                     |                                |
| Installation up to 5kW (inverter power) |                                      |                               |                                            |                                     |                                |
| Single-string installation              |                                      | SH-47 AC, SH-446 AC SH-163 AC | Single-string installation                 |                                     | SH-19 AC, SH-296 AC, SH-194 AC |
| SH-5 DC                                 | SH-28 DCAC, SH-78 DCAC, SH-632 DCAC  |                               | SH-1 DC                                    | SH-27 DCAC,SH-75 DCAC, SH-714 DCAC  |                                |
| Two-string installation                 |                                      |                               | Two-string installation                    |                                     |                                |
| SH-6 DC                                 | SH-53 DCAC, SH-235 DCAC, SH-386 DCAC |                               | SH-2 DC                                    | SH-30 DCAC, SH-98 DCAC, SH-183 DCAC |                                |

| Installations with lightning protection  |                                             |                                       |                                | Installations without lightning protection                 |                                      |  |  |
|------------------------------------------|---------------------------------------------|---------------------------------------|--------------------------------|------------------------------------------------------------|--------------------------------------|--|--|
| Installation up to 8kW (inverter power)  |                                             |                                       |                                |                                                            |                                      |  |  |
| Single-string installation               |                                             | SH-232 AC,<br>SH-269 AC,<br>SH-195 AC | Single-string installation     |                                                            | SH-55 AC,<br>SH-268 AC               |  |  |
| SH-5 DC                                  | SH-52 DCAC,<br>SH-90 DCAC,<br>SH-719 DCAC   |                                       | SH-1 DC                        | SH-35 DCAC,<br>SH-40 DCAC,<br>SH-297 DCAC                  |                                      |  |  |
| Two-string installation                  |                                             |                                       | Two-string installation        |                                                            |                                      |  |  |
| SH-6 DC                                  | SH-18 DCAC,<br>SH-92 DCAC,<br>SH-283 DCAC   |                                       | SH-2 DC                        | SH-45 DCAC,<br>SH-117 DCAC,<br>SH-528 DCAC,<br>SH-175 DCAC |                                      |  |  |
| Installation up to 10kW (inverter power) |                                             |                                       |                                |                                                            |                                      |  |  |
| Single-string installation               |                                             | SH-353 AC,<br>SH-307 AC               | Single-string installation     |                                                            | SH-86 AC,<br>SH-285 AC,<br>SH-131 AC |  |  |
| SH-5 DC                                  | SH-204 DCAC,<br>SH-154 DCAC                 |                                       | SH-1 DC                        | SH-205 DCAC,<br>SH-41 DCAC,<br>SH-899 DCAC                 |                                      |  |  |
| Two-string installation                  |                                             |                                       | Two-string installation        |                                                            |                                      |  |  |
| SH-6 DC                                  | SH-116 DCAC,<br>SH-214 DCAC,<br>SH-618 DCAC |                                       | SH-2 DC                        | SH-102 DCAC,<br>SH-176 DCAC,<br>SH-588 DCAC                |                                      |  |  |
| Installation up to 12kW (inverter power) |                                             |                                       |                                |                                                            |                                      |  |  |
| Single-string installation               |                                             | SH-171 AC,<br>SH-308 AC               | Single-string installation     |                                                            | SH-99 AC,<br>SH-276 AC               |  |  |
| SH-5 DC                                  |                                             |                                       | SH-1 DC                        |                                                            |                                      |  |  |
| Two-string installation                  |                                             |                                       | Two-string installation        |                                                            |                                      |  |  |
| SH-6 DC                                  |                                             |                                       | SH-2 DC                        |                                                            |                                      |  |  |
| Installation up to 15kW (inverter power) |                                             |                                       |                                |                                                            |                                      |  |  |
| Single-string installation               |                                             | SH-357 AC,<br>SH-49 AC                | Single-string installation     |                                                            | SH-111 AC,<br>SH-299 AC              |  |  |
| SH-5 DC                                  |                                             |                                       | SH-1 DC                        |                                                            |                                      |  |  |
| Two-string installation                  |                                             |                                       | Two-string installation        |                                                            |                                      |  |  |
| SH-6 DC                                  |                                             |                                       | SH-2 DC                        |                                                            |                                      |  |  |
| Installation with four strings           |                                             |                                       | Installation with four strings |                                                            |                                      |  |  |
| SH-426 DC                                |                                             |                                       | SH-103 DC                      |                                                            |                                      |  |  |

### LARGER INSTALLATIONS (DC ONLY)

|                                         | Installations with lightning protection | Installations without lightning protection |
|-----------------------------------------|-----------------------------------------|--------------------------------------------|
| Three-string installation               | SH-181 DC                               | SH-81 DC                                   |
| Four-string installation                | SH-426 DC                               | SH-103 DC                                  |
| Five-string installation                | SH-317 DC                               | SH-206 DC                                  |
| Six-string installation                 | SH-654 DC                               | SH-450 DC                                  |
| Seven-string installation               | SH-849 DC                               | SH-848 DC                                  |
| Installations with parallel connections |                                         |                                            |
| Installation 2 strings, 1 MPPT          | SH-810 DC                               | SH-774 DC                                  |
| Installation 4 strings, 2 MPPT          | SH-438 DC                               | SH-239 DC                                  |
| Installation 6 strings, 3 MPPT          | SH-586 DC                               | SH-585 DC                                  |
| Installation 8 strings, 4 MPPT          | SH-630 DC                               | SH-217 DC                                  |

## SH-1 DC



Connection combiner box z ogranicznikiem przepięć DC 1000V type 2, 1x PV string, 1x MPPT

|                           |                     |
|---------------------------|---------------------|
| Number of PV strings      | 1                   |
| Number of surge arresters | 1                   |
| Surge arrester            | Phoenix T2          |
| Protection class          | IP 65               |
| Rated insulation voltage  | 400 V AC, 1500 V DC |
| UV resistance             | Yes                 |
| Standard warranty         | 5 years             |

## SH-2 DC



Connection combiner box z ogranicznikiem przepięć DC 1000V type 2, 2x PV string, 2x MPPT

|                           |                     |
|---------------------------|---------------------|
| Number of PV strings      | 2                   |
| Number of surge arresters | 2                   |
| Surge arrester            | Phoenix T2          |
| Protection class          | IP 65               |
| Rated insulation voltage  | 400 V AC, 1500 V DC |
| UV resistance             | Yes                 |
| Standard warranty         | 5 years             |

## SH-81 DC



Connection combiner box z ogranicznikiem przepięć DC 1000V type 2, 3x PV string, 3x MPPT

|                           |                     |
|---------------------------|---------------------|
| Number of PV strings      | 3                   |
| Number of surge arresters | 3                   |
| Surge arrester            | Phoenix T2          |
| Protection class          | IP 65               |
| Rated insulation voltage  | 400 V AC, 1500 V DC |
| UV resistance             | Yes                 |
| Standard warranty         | 5 years             |

## SH-5 DC



Connection combiner box z ogranicznikiem przepięć DC 1000V type 1+2, 1x PV string, 1x MPPT

|                           |                     |
|---------------------------|---------------------|
| Number of PV strings      | 1                   |
| Number of surge arresters | 1                   |
| Surge arrester            | Phoenix T1/T2       |
| Protection class          | IP 65               |
| Rated insulation voltage  | 400 V AC, 1500 V DC |
| UV resistance             | Yes                 |
| Standard warranty         | 5 years             |

**SH-6 DC****Connection combiner box z ogranicznikiem przepięć DC 1000V type 1+2, 2x PV string, 2x MPPT**

|                      |   |
|----------------------|---|
| Number of PV strings | 2 |
|----------------------|---|

|                           |   |
|---------------------------|---|
| Number of surge arresters | 2 |
|---------------------------|---|

|                |               |
|----------------|---------------|
| Surge arrester | Phoenix T1/T2 |
|----------------|---------------|

|                  |       |
|------------------|-------|
| Protection class | IP 65 |
|------------------|-------|

|                          |                     |
|--------------------------|---------------------|
| Rated insulation voltage | 400 V AC, 1500 V DC |
|--------------------------|---------------------|

|               |     |
|---------------|-----|
| UV resistance | Yes |
|---------------|-----|

|                   |         |
|-------------------|---------|
| Standard warranty | 5 years |
|-------------------|---------|

**SH-181 DC****Connection combiner box z ogranicznikiem przepięć DC 1000V type 1+2, 3x PV string, 3x MPPT**

|                      |   |
|----------------------|---|
| Number of PV strings | 3 |
|----------------------|---|

|                           |   |
|---------------------------|---|
| Number of surge arresters | 3 |
|---------------------------|---|

|                |               |
|----------------|---------------|
| Surge arrester | Phoenix T1/T2 |
|----------------|---------------|

|                  |       |
|------------------|-------|
| Protection class | IP 65 |
|------------------|-------|

|                          |                     |
|--------------------------|---------------------|
| Rated insulation voltage | 400 V AC, 1500 V DC |
|--------------------------|---------------------|

|               |     |
|---------------|-----|
| UV resistance | Yes |
|---------------|-----|

|                   |         |
|-------------------|---------|
| Standard warranty | 5 years |
|-------------------|---------|

**AC 5 KW****SH-47 AC****Connection combiner box with AC surge arrester type 1+2, 10A 3-F**

|                |             |
|----------------|-------------|
| Surge arrester | Noark T1/T2 |
|----------------|-------------|

|                               |                |
|-------------------------------|----------------|
| Overcurrent circuit breaker 1 | Noark B 10A 3F |
|-------------------------------|----------------|

|                  |       |
|------------------|-------|
| Protection class | IP 65 |
|------------------|-------|

|                          |                     |
|--------------------------|---------------------|
| Rated insulation voltage | 400 V AC, 1500 V DC |
|--------------------------|---------------------|

|               |     |
|---------------|-----|
| UV resistance | Yes |
|---------------|-----|

|                   |         |
|-------------------|---------|
| Standard warranty | 5 years |
|-------------------|---------|

**SH-446 AC****Connection combiner box with AC surge arrester type 1+2, 10A 3-F, RCD type A 40A 300mA**

|                |             |
|----------------|-------------|
| Surge arrester | Noark T1/T2 |
|----------------|-------------|

|                               |                |
|-------------------------------|----------------|
| Overcurrent circuit breaker 1 | Noark B 10A 3F |
|-------------------------------|----------------|

|                                  |                  |
|----------------------------------|------------------|
| Residual current circuit breaker | 1 x 300mA type A |
|----------------------------------|------------------|

|                  |       |
|------------------|-------|
| Protection class | IP 65 |
|------------------|-------|

|                          |                     |
|--------------------------|---------------------|
| Rated insulation voltage | 400 V AC, 1500 V DC |
|--------------------------|---------------------|

|               |     |
|---------------|-----|
| UV resistance | Yes |
|---------------|-----|

|                   |         |
|-------------------|---------|
| Standard warranty | 5 years |
|-------------------|---------|

**SH-163 AC****Connection combiner box with AC surge arrester type 1+2, 10A 3-F, RCD type A 100mA**

|                                  |                     |
|----------------------------------|---------------------|
| Surge arrester                   | Noark T1/T2         |
| Overcurrent circuit breaker 1    | Noark B 10A 3F      |
| Residual current circuit breaker | 1 x 100mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |
| Standard warranty                | 5 years             |

**SH-19 AC****Connection combiner box with AC surge arrester type 2, 10A 3-F**

|                               |                     |
|-------------------------------|---------------------|
| Surge arrester                | Noark T2            |
| Overcurrent circuit breaker 1 | Noark B 10A 3F      |
| Protection class              | IP 65               |
| Rated insulation voltage      | 400 V AC, 1500 V DC |
| UV resistance                 | Yes                 |
| Standard warranty             | 5 years             |

**SH-296 AC****Connection combiner box with AC surge arrester type 2, 10A 3-F, RCD type A 40A 300mA**

|                                  |                     |
|----------------------------------|---------------------|
| Surge arrester                   | Noark T2            |
| Overcurrent circuit breaker 1    | Noark B 10A 3F      |
| Residual current circuit breaker | 1 x 300mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |

**SH-194 AC****Connection combiner box with AC surge arrester type 2, 10A 3-F, RCD type A 40A 100mA**

|                                  |                     |
|----------------------------------|---------------------|
| Surge arrester                   | Noark T2            |
| Overcurrent circuit breaker 1    | Noark B 10A 3F      |
| Residual current circuit breaker | 1 x 100mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |
| Standard warranty                | 5 years             |

## □ AC 8KW

### SH-232 AC



#### Connection combiner box with AC surge arrester type 1+2, 16A 3-F

|                               |                     |
|-------------------------------|---------------------|
| Surge arrester                | Noark T1/T2         |
| Overcurrent circuit breaker 1 | Noark B 16A 3F      |
| Protection class              | IP 65               |
| Rated insulation voltage      | 400 V AC, 1500 V DC |
| UV resistance                 | Yes                 |
| Standard warranty             | 5 years             |

### SH-195 AC



#### Connection combiner box with AC surge arrester type 1+2, 16A 3-F, RCD type 40A 100mA

|                                  |                     |
|----------------------------------|---------------------|
| Surge arrester                   | Noark T1/T2         |
| Overcurrent circuit breaker 1    | Noark B 16A 3F      |
| Residual current circuit breaker | 1 x 100mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |
| Standard warranty                | 5 years             |

### SH-269 AC



#### Connection combiner box with AC surge arrester type 1+2, 16A 3-F, RCD type A 40A 300mA

|                                  |                     |
|----------------------------------|---------------------|
| Surge arrester                   | Noark T1/T2         |
| Overcurrent circuit breaker 1    | Noark B 16A 3F      |
| Residual current circuit breaker | 1 x 300mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |

### SH-55 AC



#### Connection combiner box with AC surge arrester type 2, 16A 3-F

|                               |                     |
|-------------------------------|---------------------|
| Surge arrester                | Noark T2            |
| Overcurrent circuit breaker 1 | Noark B 16A 3F      |
| Protection class              | IP 65               |
| Rated insulation voltage      | 400 V AC, 1500 V DC |
| UV resistance                 | Yes                 |
| Standard warranty             | 5 years             |

**SH-812 AC****Connection combiner box with AC surge arrester type 2, 16A 3-F, RCD type 40A 100mA**

|                                  |                     |
|----------------------------------|---------------------|
| Surge arrester                   | Noark T2            |
| Overcurrent circuit breaker 1    | Noark B 16A 3F      |
| Residual current circuit breaker | 1 x 100mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |
| Standard warranty                | 5 years             |

**SH-268 AC****Connection combiner box with AC surge arrester type 2, 16A 3-F, RCD type A 40A 300mA**

|                                  |                     |
|----------------------------------|---------------------|
| Surge arrester                   | Noark T2            |
| Overcurrent circuit breaker 1    | Noark B 16A 3F      |
| Residual current circuit breaker | 1 x 300mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |

**AC 10KW** **SH-353 AC****Connection combiner box with AC surge arrester type 1+2, 20A 3-F**

|                               |                     |
|-------------------------------|---------------------|
| Surge arrester                | Noark T1/T2         |
| Overcurrent circuit breaker 1 | Noark B 20A 3F      |
| Protection class              | IP 65               |
| Rated insulation voltage      | 400 V AC, 1500 V DC |
| UV resistance                 | Yes                 |
| Standard warranty             | 5 years             |

**SH-307 AC****Connection combiner box with AC surge arrester type 1+2, 20A 3-F, RCD type A 40A 300mA**

|                                  |                     |
|----------------------------------|---------------------|
| Surge arrester                   | Noark T1/T2         |
| Overcurrent circuit breaker 1    | Noark B 20A 3F      |
| Residual current circuit breaker | 1 x 300mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |

**SH-86 AC****Connection combiner box with AC surge arrester type 2, 20A 3-F**

|                               |                     |
|-------------------------------|---------------------|
| Surge arrester                | Noark T2            |
| Overcurrent circuit breaker 1 | Noark B 20A 3F      |
| Protection class              | IP 65               |
| Rated insulation voltage      | 400 V AC, 1500 V DC |
| UV resistance                 | Yes                 |
| Standard warranty             | 5 years             |

**SH-285 AC****Connection combiner box with AC surge arrester type 2, 20A 3-F, RCD type A 40A 300mA**

|                                  |                     |
|----------------------------------|---------------------|
| Surge arrester                   | Noark T2            |
| Overcurrent circuit breaker 1    | Noark B 20A 3F      |
| Residual current circuit breaker | 1 x 300mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |

**□ AC 12KW****SH-171 AC****Connection combiner box with AC surge arrester type 1+2, 40A 3-F**

|                               |                     |
|-------------------------------|---------------------|
| Surge arrester                | Noark T1/T2         |
| Overcurrent circuit breaker 1 | Noark B 40A 3F      |
| Protection class              | IP 65               |
| Rated insulation voltage      | 400 V AC, 1500 V DC |
| UV resistance                 | Yes                 |
| Standard warranty             | 5 years             |

**SH-308 AC****Connection combiner box with AC surge arrester type 1+2, 40A 3-F, RCD type A 40A 300mA**

|                                  |                     |
|----------------------------------|---------------------|
| Surge arrester                   | Noark T1/T2         |
| Overcurrent circuit breaker 1    | Noark B 40A 3F      |
| Residual current circuit breaker | 1 x 300mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |

**SH-99 AC****Connection combiner box with AC surge arrester type 2, 40A 3-F**

|                               |                     |
|-------------------------------|---------------------|
| Surge arrester                | Noark T2            |
| Overcurrent circuit breaker 1 | Noark B 40A 3F      |
| Protection class              | IP 65               |
| Rated insulation voltage      | 400 V AC, 1500 V DC |
| UV resistance                 | Yes                 |
| Standard warranty             | 5 years             |

**SH-276 AC****Connection combiner box with AC surge arrester type 2, 40A 3-F, RCD type A 40A 300mA**

|                                  |                     |
|----------------------------------|---------------------|
| Surge arrester                   | Noark T2            |
| Overcurrent circuit breaker 1    | Noark B 40A 3F      |
| Residual current circuit breaker | 1 x 300mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |

**AC 15KW** **SH-49 AC****Connection combiner box with AC surge arrester type 1+2, 32A 3-F**

|                               |                     |
|-------------------------------|---------------------|
| Surge arrester                | Noark T1/T2         |
| Overcurrent circuit breaker 1 | Noark B 32A 3F      |
| Protection class              | IP 65               |
| Rated insulation voltage      | 400 V AC, 1500 V DC |
| UV resistance                 | Yes                 |
| Standard warranty             | 5 years             |

**SH-357 AC****Connection combiner box with AC surge arrester type 1+2, 32A 3-F, RCD type A 40A 300mA**

|                                  |                     |
|----------------------------------|---------------------|
| Surge arrester                   | Noark T1/T2         |
| Overcurrent circuit breaker 1    | Noark B 32A 3F      |
| Residual current circuit breaker | 1 x 300mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |
| Standard warranty                | 5 years             |

**SH-111 AC****Connection combiner box with AC surge arrester type 2, 32A 3-F**

|                               |                     |
|-------------------------------|---------------------|
| Surge arrester                | Noark T2            |
| Overcurrent circuit breaker 1 | Noark B 32A 3F      |
| Protection class              | IP 65               |
| Rated insulation voltage      | 400 V AC, 1500 V DC |
| UV resistance                 | Yes                 |
| Standard warranty             | 5 years             |

**SH-299 AC****Connection combiner box with AC surge arrester type 2, 32A 3-F, RCD type A 40A 300mA**

|                                  |                     |
|----------------------------------|---------------------|
| Surge arrester                   | Noark T2            |
| Overcurrent circuit breaker 1    | Noark B 32A 3F      |
| Residual current circuit breaker | 1 x 300mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |

**DCAC 5KW****SH-78 DCAC****DC+AC connection combiner box with 1000V surge arrester type 1+2, 1 x PV string, 1 x MPPT // Surge arrester AC type 1+2, 10A 3-F**

|                             |                     |
|-----------------------------|---------------------|
| Number of PV strings        | 1                   |
| Number of surge arresters   | 1                   |
| Surge arrester DC           | Phoenix T1/T2       |
| Surge arrester AC           | Noark T1/T2         |
| Overcurrent circuit breaker | Noark B 10A 3F      |
| Protection class            | IP 65               |
| Rated insulation voltage    | 400 V AC, 1500 V DC |
| UV resistance               | Yes                 |
| Standard warranty           | 5 years             |

**SH-632 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 1+2, 1 x PV string, 1 x MPPT // surge arrester AC type 1+2, 10A 3-F, RCD type A 100mA 40A**

|                                  |                     |
|----------------------------------|---------------------|
| Number of PV strings             | 1                   |
| Number of surge arresters        | 1                   |
| Surge arrester DC                | Phoenix T1/T2       |
| Surge arrester AC                | Noark T1/T2         |
| Overcurrent circuit breaker      | Noark B 10A 3F      |
| Residual current circuit breaker | 1 x 100mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |

**SH-1101 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 1+2, 1 x PV string, 1 x MPPT // surge arrester AC type 1+2, 10A 3-F, RCD type A 40A 300mA**

|                                  |                     |
|----------------------------------|---------------------|
| Number of PV strings             | 1                   |
| Number of surge arresters        | 1                   |
| Surge arrester DC                | Phoenix T1/T2       |
| Surge arrester AC                | Noark T1/T2         |
| Overcurrent circuit breaker      | Noark B 10A 3F      |
| Residual current circuit breaker | 1 x 300mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |
| Standard warranty                | 5 years             |

**SH-75 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 2, 1 x PV string, 1 x MPPT // surge arrester AC type 2, 10A 3-F**

|                             |                     |
|-----------------------------|---------------------|
| Number of PV strings        | 1                   |
| Number of surge arresters   | 1                   |
| Surge arrester DC           | Phoenix T2          |
| Surge arrester AC           | Noark T2            |
| Overcurrent circuit breaker | Noark B 10A 3F      |
| Protection class            | IP 65               |
| Rated insulation voltage    | 400 V AC, 1500 V DC |
| UV resistance               | Yes                 |
| Standard warranty           | 5 years             |

**SH-279 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 2, 1 x PV string, 1 x MPPT // surge arrester AC type 2, 10A 3-F, RCD type A 100mA**



|                                  |                     |
|----------------------------------|---------------------|
| Number of PV strings             | 1                   |
| Number of surge arresters        | 1                   |
| Surge arrester DC                | Phoenix T2          |
| Surge arrester AC                | Noark T2            |
| Overcurrent circuit breaker      | Noark B 10A 3F      |
| Residual current circuit breaker | 1 x 100mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |

**SH-714 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 2, 1 x PV string, 1 x MPPT // surge arrester AC type 2, 10A 3-F, RCD type A300mA**



|                                  |                     |
|----------------------------------|---------------------|
| Number of PV strings             | 1                   |
| Number of surge arresters        | 1                   |
| Surge arrester DC                | Phoenix T2          |
| Surge arrester AC                | Noark T2            |
| Overcurrent circuit breaker      | Noark B 10A 3F      |
| Residual current circuit breaker | 1 x 300mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |

## **DCAC 8KW**

**SH-90 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 1+2, 1x PV string, 1x MPPT // surge arrester AC type 1+2, 16A 3-F**



|                             |                     |
|-----------------------------|---------------------|
| Number of PV strings        | 1                   |
| Number of surge arresters   | 1                   |
| Surge arrester DC           | Phoenix T1/T2       |
| Surge arrester AC           | Noark T1/T2         |
| Overcurrent circuit breaker | Noark B 16A 3F      |
| Protection class            | IP 65               |
| Rated insulation voltage    | 400 V AC, 1500 V DC |
| UV resistance               | Yes                 |
| Standard warranty           | 5                   |

**SH-1016 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 1+2, 1 x PV string, 1 x MPPT // surge arrester AC type 1+2, 16A 3-F, RCD type A 100mA 40A**

|                                  |                     |
|----------------------------------|---------------------|
| Number of PV strings             | 1                   |
| Number of surge arresters        | 1                   |
| Surge arrester DC                | Phoenix T1/T2       |
| Surge arrester AC                | Noark T1/T2         |
| Overcurrent circuit breaker      | Noark B 16A 3F      |
| Residual current circuit breaker | 1 x 100mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |

**SH-719 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 1+2, 1 x PV string, 1 x MPPT // surge arrester AC type 1+2, 16A 3-F, RCD type A 40A 300mA 40A**

|                                  |                     |
|----------------------------------|---------------------|
| Number of PV strings             | 1                   |
| Number of surge arresters        | 1                   |
| Surge arrester DC                | Phoenix T1/T2       |
| Surge arrester AC                | Noark T1/T2         |
| Overcurrent circuit breaker      | Noark B 16A 3F      |
| Residual current circuit breaker | 1 x 300mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |

**SH-40 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 2, 1 x PV string, 1 x MPPT // surge arrester AC type 2, 16A 3-F**

|                             |                     |
|-----------------------------|---------------------|
| Number of PV strings        | 1                   |
| Number of surge arresters   | 1                   |
| Surge arrester DC           | Phoenix T2          |
| Surge arrester AC           | Noark T2            |
| Overcurrent circuit breaker | Noark B 16A 3F      |
| Protection class            | IP 65               |
| Rated insulation voltage    | 400 V AC, 1500 V DC |
| UV resistance               | Yes                 |
| Standard warranty           | 5 years             |

**SH-297 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 2, 1 x PV string, 1 x MPPT // surge arrester AC type 2, 16A 3-F, RCD type A 100mA 40A**



|                                  |                     |
|----------------------------------|---------------------|
| Number of PV strings             | 1                   |
| Number of surge arresters        | 1                   |
| Surge arrester DC                | Phoenix T2          |
| Surge arrester AC                | Noark T2            |
| Overcurrent circuit breaker      | Noark B 16A 3F      |
| Residual current circuit breaker | 1 x 100mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |

**SH-1100 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 2, 1 x PV string, 1 x MPPT // surge arrester AC type 2, 16A 3-F, RCD type A 40A 300mA**



|                                  |                     |
|----------------------------------|---------------------|
| Number of PV strings             | 1                   |
| Number of surge arresters        | 1                   |
| Surge arrester DC                | Phoenix T2          |
| Surge arrester AC                | Noark T2            |
| Overcurrent circuit breaker      | Noark B 16A 3F      |
| Residual current circuit breaker | 1 x 300mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |
| Standard warranty                | 5 years             |

## ▣ DCAC 8KW TWO STRINGS

**SH-92 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 1+2, 2 x PV string, 2 x MPPT // surge arrester AC type 1+2, 16A 3-F**



|                             |                     |
|-----------------------------|---------------------|
| Number of PV strings        | 2                   |
| Number of surge arresters   | 2                   |
| Surge arrester DC           | Phoenix T1/T2       |
| Surge arrester AC           | Noark T1/T2         |
| Overcurrent circuit breaker | Noark B 16A 3F      |
| Protection class            | IP 65               |
| Rated insulation voltage    | 400 V AC, 1500 V DC |
| UV resistance               | Yes                 |
| Standard warranty           | 5 years             |

**SH-283 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 1+2, 2 x PV string, 2 x MPPT // surge arrester AC type 1+2, 16A 3-F, RCD type A 100mA 40A**

|                                  |                     |
|----------------------------------|---------------------|
| Number of PV strings             | 2                   |
| Number of surge arresters        | 2                   |
| Surge arrester DC                | Phoenix T1/T2       |
| Surge arrester AC                | Noark T1/T2         |
| Overcurrent circuit breaker      | Noark B 16A 3F      |
| Residual current circuit breaker | 1 x 100mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |
| Standard warranty                | 5 years             |

**SH-117 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 2, 2 x PV string, 2 x MPPT // surge arrester AC type 2, 16A 3-F**

|                             |                     |
|-----------------------------|---------------------|
| Number of PV strings        | 2                   |
| Number of surge arresters   | 2                   |
| Surge arrester DC           | Phoenix T2          |
| Surge arrester AC           | Noark T2            |
| Overcurrent circuit breaker | Noark B 16A 3F      |
| Protection class            | IP 65               |
| Rated insulation voltage    | 400 V AC, 1500 V DC |
| UV resistance               | Yes                 |
| Standard warranty           | 5 years             |

**SH-175 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 2, 2 x PV string, 2 x MPPT // surge arrester AC type 2, 16A 3-F, RCD type A 100mA 40A**

|                                  |                     |
|----------------------------------|---------------------|
| Number of PV strings             | 2                   |
| Number of surge arresters        | 2                   |
| Surge arrester DC                | Phoenix T2          |
| Surge arrester AC                | Noark T2            |
| Overcurrent circuit breaker      | Noark B 16A 3F      |
| Residual current circuit breaker | 1 x 100mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |

**SH-528 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 2, 2 x PV string, 2 x MPPT // surge arrester AC type 2, 16A 3-F, RCD type A 300mA 40A**



|                                  |                     |
|----------------------------------|---------------------|
| Number of PV strings             | 2                   |
| Number of surge arresters        | 2                   |
| Surge arrester DC                | Phoenix T2          |
| Surge arrester AC                | Noark T2            |
| Overcurrent circuit breaker      | Noark B 16A 3F      |
| Residual current circuit breaker | 1 x 300mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |

## **DCAC 10KW**

**SH-214 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 1+2, 2 x PV string, 2 x MPPT // surge arrester AC type 1+2, 20A 3-F**



|                             |                     |
|-----------------------------|---------------------|
| Number of PV strings        | 2                   |
| Number of surge arresters   | 2                   |
| Surge arrester DC           | Phoenix T1/T2       |
| Surge arrester AC           | Noark T1/T2         |
| Overcurrent circuit breaker | Noark B 20A 3F      |
| Protection class            | IP 65               |
| Rated insulation voltage    | 400 V AC, 1500 V DC |
| UV resistance               | Yes                 |
| Standard warranty           | 5 years             |

**SH-618 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 1+2, 2 x PV string, 2 x MPPT // surge arrester AC type 1+2, 20A 3-F, RCD type A 40A 300mA**



|                                  |                     |
|----------------------------------|---------------------|
| Number of PV strings             | 2                   |
| Number of surge arresters        | 2                   |
| Surge arrester DC                | Phoenix T1/T2       |
| Surge arrester AC                | Noark T1/T2         |
| Overcurrent circuit breaker      | Noark B 20A 3F      |
| Residual current circuit breaker | 1 x 300mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |

**SH-102 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 2, 2 x PV string, 2 x MPPT // surge arrester AC type 2, 20A 3-F**

|                             |                     |
|-----------------------------|---------------------|
| Number of PV strings        | 2                   |
| Number of surge arresters   | 2                   |
| Surge arrester DC           | Phoenix T2          |
| Surge arrester AC           | Noark T2            |
| Overcurrent circuit breaker | Noark B 20A 3F      |
| Protection class            | IP 65               |
| Rated insulation voltage    | 400 V AC, 1500 V DC |
| UV resistance               | Yes                 |
| Standard warranty           | 5 years             |

**SH-176 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 2, 2 x PV string, 2 x MPPT // surge arrester AC type 2, 20A 3-F, RCD type A 100mA 40A**

|                                  |                     |
|----------------------------------|---------------------|
| Number of PV strings             | 2                   |
| Number of surge arresters        | 2                   |
| Surge arrester DC                | Phoenix T2          |
| Surge arrester AC                | Noark T2            |
| Overcurrent circuit breaker      | Noark B 20A 3F      |
| Residual current circuit breaker | 1 x 100mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |
| Standard warranty                | 5 years             |

**SH-588 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 2, 2 x PV string, 2 x MPPT // surge arrester AC type 2, 20A 3-F, RCD type A 300mA 40A**

|                                  |                     |
|----------------------------------|---------------------|
| Number of PV strings             | 2                   |
| Number of surge arresters        | 2                   |
| Surge arrester DC                | Phoenix T2          |
| Surge arrester AC                | Noark T2            |
| Overcurrent circuit breaker      | Noark B 20A 3F      |
| Residual current circuit breaker | 1 x 300mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |

## □ DCAC 12KW TWO STRINGS

### SH-286 DCAC



**DC+AC connection combiner box with 1000V surge arrester type 1+2, 2 x PV string, 2 x MPPT / surge arrester AC type 1+2, 40A 3-F**

|                             |                     |
|-----------------------------|---------------------|
| Number of PV strings        | 2                   |
| Number of surge arresters   | 2                   |
| Surge arrester DC           | Phoenix T1/T2       |
| Surge arrester AC           | Noark T1/T2         |
| Overcurrent circuit breaker | Noark B 40A 3F      |
| Protection class            | IP 65               |
| Rated insulation voltage    | 400 V AC, 1500 V DC |
| UV resistance               | Yes                 |
| Standard warranty           | 5 years             |

### SH-129 DCAC



**DC+AC connection combiner box with 1000V surge arrester type 2, 2 x PV string, 2 x MPPT// surge arrester AC type 2, 40A 3-F**

|                             |                     |
|-----------------------------|---------------------|
| Number of PV strings        | 2                   |
| Number of surge arresters   | 2                   |
| Surge arrester DC           | Phoenix T2          |
| Surge arrester AC           | Noark T2            |
| Overcurrent circuit breaker | Noark B 40A 3F      |
| Protection class            | IP 65               |
| Rated insulation voltage    | 400 V AC, 1500 V DC |
| UV resistance               | Yes                 |
| Standard warranty           | 5 years             |

## □ DCAC 15KW TWO STRINGS

### SH-260 DCAC



**DC+AC connection combiner box with 1000V surge arrester type 1+2, 2 x PV string, 2 x MPPT // surge arrester AC type 1+2, 32A 3-F**

|                             |                     |
|-----------------------------|---------------------|
| Number of PV strings        | 2                   |
| Number of surge arresters   | 2                   |
| Surge arrester DC           | Phoenix T1/T2       |
| Surge arrester AC           | Noark T1/T2         |
| Overcurrent circuit breaker | Noark B 32A 3F      |
| Protection class            | IP 65               |
| Rated insulation voltage    | 400 V AC, 1500 V DC |
| UV resistance               | Yes                 |
| Standard warranty           | 5 years             |

**SH-1048 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 1+2, 2 x PV string, 2 x MPPT // surge arrester AC type 1+2, 32A 3-F, RCD type A 40A 300mA**

|                                  |                     |
|----------------------------------|---------------------|
| Number of PV strings             | 2                   |
| Number of surge arresters        | 2                   |
| Surge arrester DC                | Phoenix T2          |
| Surge arrester AC                | Noark T2            |
| Overcurrent circuit breaker      | Noark B 32A 3F      |
| Residual current circuit breaker | 1 x 300mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |
| Standard warranty                | 5 years             |

**SH-118 DCAC**

**DC+AC connection combiner box with 1000V surge arrester type 2, 2 x PV string, 2 x MPPT // surge arrester AC type 2, 32A 3-F**

|                                  |                     |
|----------------------------------|---------------------|
| Number of PV strings             | 2                   |
| Number of surge arresters        | 2                   |
| Surge arrester DC                | Phoenix T1/T2       |
| Surge arrester AC                | Noark T1/T2         |
| Overcurrent circuit breaker      | Noark 32A 3F        |
| Residual current circuit breaker | 1 x 300mA type A    |
| Protection class                 | IP 65               |
| Rated insulation voltage         | 400 V AC, 1500 V DC |
| UV resistance                    | Yes                 |
| Standard warranty                | 5 years             |



## ALLVIEW SERIES



**ALLVIEW** connection combiner boxes with success can be used in small and medium-sized domestic and industrial installations.

A wide range of applications of the combiner box is ensured by: protection class IP 65, **increased resistance to high and low temperatures, increased resistance to fire.**

The new series of combiner box is characterized not only by a wide range of applications, but also by a modern design.

- Modern, designer housing
- The mounting holes have been located outside the gasket, so the installation does not affect the leakage class
- Certified for 1500V DC voltage and 1000V AC
- Enhanced housing strength class IK08
- Enhanced fire resistance – UL94 fire resistance class 5VA
- At the bottom of the combiner box there is a pressure equalization plug, which significantly prevents the formation of condensate



| Type                                       | 6T                   | 8T         | 12T         | 24T         |
|--------------------------------------------|----------------------|------------|-------------|-------------|
| Dimensions (without connectors)<br>(WxHxD) | 187x122x90           | 201x163x98 | 240x191x107 | 344x289x117 |
| Number of fields in a row                  | 6                    | 8          | 12          | 12          |
| Number of rows                             | 1                    | 1          | 1           | 2           |
| Expandability                              | No                   |            |             |             |
| Mounting method                            | Surface mounting     |            |             |             |
| Degree of protection                       | IP 65                |            |             |             |
| Protection class                           | II                   |            |             |             |
| Rated insulation voltage Ui                | 1000 V AC, 1500 V DC |            |             |             |
| Design in accordance with                  | EN 62208:2011:2011   |            |             |             |
| UV resistance                              | Yes                  |            |             |             |
| Impact resistance                          | IK 07 / IK 08        |            |             |             |
| Glow rod test                              | 960°C                |            |             |             |
| Flammability class                         | UL 94-5VA / UL 94-V0 |            |             |             |
| Recyclable plastics                        | Halogen-free         |            |             |             |
| Material                                   | Polycarbonate        |            |             |             |
| Gasket material                            | Polyurethane         |            |             |             |
| NEMA standard                              | NEMA 1, 4, 4X, 12    |            |             |             |
| Temp °C (continuous operation)             | -40 ... 80 °C        |            |             |             |
| Temp °C (short term)                       | -40 ... 120 °C       |            |             |             |

## MODEL EQUIVALENTS

| STANDARD  | ALLVIEW   |
|-----------|-----------|
| SH-1 DC   | AV-1 DC   |
| SH-2 DC   | AV-2 DC   |
| SH-81 DC  | AV-81 DC  |
| SH-103 DC | AV-103 DC |
| SH-5 DC   | AV-5 DC   |
| SH-6 DC   | AV-6 DC   |
| SH-181 DC | AV-181 DC |
| SH-426 DC | AV-426 DC |

### AV-1 DC



**ALLVIEW connection combiner box with DC 1000V surge arrester type 2, 1x PV string, 1x MPPT**

|                           |                     |
|---------------------------|---------------------|
| Number of PV strings      | 1                   |
| Number of surge arresters | 1                   |
| Surge arrester            | Phoenix T2          |
| Protection class          | IP 65               |
| Rated insulation voltage  | 400 V AC, 1500 V DC |
| UV resistance             | Yes                 |
| Standard warranty         | 5 years             |

### AV-2 DC



**ALLVIEW connection combiner box with DC 1000V surge arrester type 2, 2x PV string, 2x MPPT**

|                           |                     |
|---------------------------|---------------------|
| Number of PV strings      | 2                   |
| Number of surge arresters | 2                   |
| Surge arrester            | Phoenix T2          |
| Protection class          | IP 65               |
| Rated insulation voltage  | 400 V AC, 1500 V DC |
| UV resistance             | Yes                 |
| Standard warranty         | 5 years             |

### AV-81 DC



**Rozdzielnica przyłączeniowa ALLVIEW z ogranicznikiem przepięć DC 1000V type 2, 3x PV string, 3x MPPT**

|                           |                     |
|---------------------------|---------------------|
| Number of PV strings      | 3                   |
| Number of surge arresters | 3                   |
| Surge arrester            | Phoenix T2          |
| Protection class          | IP 65               |
| Rated insulation voltage  | 400 V AC, 1500 V DC |
| UV resistance             | Yes                 |
| Standard warranty         | 5 years             |

### AV-103 DC



**ALLVIEW connection combiner box with DC 1000V surge arrester type 2, 4x PV string, 4x MPPT**

|                           |                     |
|---------------------------|---------------------|
| Number of PV strings      | 4                   |
| Number of surge arresters | 4                   |
| Surge arrester            | Phoenix T2          |
| Protection class          | IP 65               |
| Rated insulation voltage  | 400 V AC, 1500 V DC |
| UV resistance             | Yes                 |
| Standard warranty         | 5 years             |

**AV-5 DC**

**ALLVIEW connection combiner box with DC 12.5kA 1000V surge arrester 1000V type 1+2, 1x PV string, 1x MPPT**

|                           |                     |
|---------------------------|---------------------|
| Number of PV strings      | 1                   |
| Number of surge arresters | 1                   |
| Surge arrester            | Phoenix T1/T2       |
| Protection class          | IP 65               |
| Rated insulation voltage  | 400 V AC, 1500 V DC |
| UV resistance             | Yes                 |
| Standard warranty         | 5 years             |

**AV-6 DC**

**ALLVIEW connection combiner box with DC 12.5kA 1000V surge arrester 1000V type 1+2, 2x PV string, 2x MPPT**

|                           |                     |
|---------------------------|---------------------|
| Number of PV strings      | 2                   |
| Number of surge arresters | 2                   |
| Surge arrester            | Phoenix T1/T2       |
| Protection class          | IP 65               |
| Rated insulation voltage  | 400 V AC, 1500 V DC |
| UV resistance             | Yes                 |
| Standard warranty         | 5 years             |

**AV-181 DC**

**ALLVIEW connection combiner box with DC 12.5kA 1000V surge arrester 1000V type 1+2, 3x PV string, 3x MPPT**

|                           |                     |
|---------------------------|---------------------|
| Number of PV strings      | 3                   |
| Number of surge arresters | 3                   |
| Surge arrester            | Phoenix T1/T2       |
| Protection class          | IP 65               |
| Rated insulation voltage  | 400 V AC, 1500 V DC |
| UV resistance             | Yes                 |
| Standard warranty         | 5 years             |

**AV-426 DC**

**ALLVIEW connection combiner box with DC 12.5kA 1000V surge arrester 1000V type 1+2, 4x PV string, 4x MPPT**

|                           |                     |
|---------------------------|---------------------|
| Number of PV strings      | 4                   |
| Number of surge arresters | 4                   |
| Surge arrester            | Phoenix T1/T2       |
| Protection class          | IP 65               |
| Rated insulation voltage  | 400 V AC, 1500 V DC |
| UV resistance             | Yes                 |
| Standard warranty         | 5 years             |

## SECURE SERIES



Polycarbonate cabinets for use in harsh environments. **SECURE** connection combiner boxes are designed for use in **large industrial installations** where harsh environmental conditions may occur.

A wide range of applications of the combiner box is ensured by a robust design, a material with high mechanical resistance that does not corrode and is suitable for use in harsh environments – the **good protection and preservation of properties over a long period of time.**

- Increased fire resistance, mechanical durability and resistance to low and high temperatures
- Good resistance to chemicals
- IP66 rated for dust and water tightness
- Excellent mechanical resistance – IK 10
- Hinge system that allows the door to open wide (120°)
- IP66 combiner box has two pressure equalization regulators – prevents condensation inside the combiner box



|                                |                                                                                                                                                                             |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type                           | TPC 48T                                                                                                                                                                     |
| Dimensions (WxHxD)             | 500x400x210                                                                                                                                                                 |
| Number of fields in a row      | 16                                                                                                                                                                          |
| Number of rows                 | 3                                                                                                                                                                           |
| Expandability                  | No                                                                                                                                                                          |
| Lock                           | 2-point lock                                                                                                                                                                |
| Mounting method                | Surface mounting                                                                                                                                                            |
| Degree of protection           | IP66                                                                                                                                                                        |
| Protection class               | II                                                                                                                                                                          |
| Rated insulation voltage Ui    | 1000 V AC, 1500 V DC                                                                                                                                                        |
| Design in accordance with      | EN 62208:2011, IEC 62208:2011<br>EN 61439-1:2011, relevant parts<br>IEC 61439-1:2011, relevant parts<br>EN 61439-4:2013, relevant parts<br>IEC 61439-4:2012, relevant parts |
| UV resistance                  | UL 508                                                                                                                                                                      |
| Impact resistance              | IK10 +35°C /IK09 – 25°C                                                                                                                                                     |
| Glow rod test                  | 960°C                                                                                                                                                                       |
| Flammability class             | UL 94 5VA                                                                                                                                                                   |
| Recyclable plastics            | Halogen-free                                                                                                                                                                |
| Material                       | Polycarbonate                                                                                                                                                               |
| Gasket material                | Polyurethane                                                                                                                                                                |
| Standard NEMA                  | NEMA 4, 4X, 12, 13                                                                                                                                                          |
| Temp °C (continuous operation) | -40 ... 80 °C                                                                                                                                                               |
| Temp °C (short term)           | -40 ... 120 °C                                                                                                                                                              |

### SH-1014 DC



**DC combiner box IP66 with 1000V surge arrester type 1+2, 8x PV string, 8x MPPT**

|                           |                      |
|---------------------------|----------------------|
| Number of PV strings      | 8                    |
| Number of surge arresters | 8                    |
| Surge arrester            | Phoenix T1/T2        |
| Protection class          | IP 66                |
| Rated insulation voltage  | 1000 V AC, 1500 V DC |
| UV resistance             | Yes                  |

### SH-967 DC



**DC combiner box IP66 with 1000V surge arrester type 1+2, 9 x PV string, 9 x MPPT**

|                           |                      |
|---------------------------|----------------------|
| Number of PV strings      | 9                    |
| Number of surge arresters | 9                    |
| Surge arrester            | Phoenix T1/T2        |
| Protection class          | IP 66                |
| Rated insulation voltage  | 1000 V AC, 1500 V DC |
| UV resistance             | Yes                  |

### SH-1037 DC



**DC combiner box IP66 with 1000V surge arrester type 1+2, 10x PV string, 10x MPPT**

|                           |                      |
|---------------------------|----------------------|
| Number of PV strings      | 10                   |
| Number of surge arresters | 10                   |
| Surge arrester            | Phoenix T1/T2        |
| Protection class          | IP 66                |
| Rated insulation voltage  | 1000 V AC, 1500 V DC |
| UV resistance             | Yes                  |

### SH-1041 DC



**DC combiner box IP66 with 1000V surge arrester type 1+2, 12x PV string, 12x MPPT**

|                           |                      |
|---------------------------|----------------------|
| Number of PV strings      | 12                   |
| Number of surge arresters | 12                   |
| Surge arrester            | Phoenix T1/T2        |
| Protection class          | IP 66                |
| Rated insulation voltage  | 1000 V AC, 1500 V DC |
| UV resistance             | Yes                  |

## □ AC 50 KW

### SH-680 AC



**AC connection combiner box, IP66 with AC surge arrester type 1+2, 100A 3-F, FR 100A, phase sig. (GoodWe 50kW, Core-1 50kW, Huawei SUN2000 50-60KTL 50-60kW)**

|                               |                      |
|-------------------------------|----------------------|
| Surge arrester                | Noark T1/T2          |
| Overcurrent circuit breaker 1 | Noark B 100A 3F      |
| FR isolating disconnect       | 100A                 |
| Phase signaling               | Yes                  |
| Protection class              | IP 66                |
| Rated insulation voltage      | 1000 V AC, 1500 V DC |
| UV resistance                 | Yes                  |
| Standard warranty             | 5 years              |

### SH-807 AC



**AC connection combiner box, IP66 with AC surge arrester type 2, 100A 3-F, FR 100A, phase sig. (GoodWe 50kW, Core-1 50kW, Huawei SUN2000 50-60KTL 50-60kW)**

|                               |                      |
|-------------------------------|----------------------|
| Surge arrester                | Noark T2             |
| Overcurrent circuit breaker 1 | Noark B 100A 3F      |
| FR isolating disconnect       | 100A                 |
| Phase signaling               | Yes                  |
| Protection class              | IP 66                |
| Rated insulation voltage      | 1000 V AC, 1500 V DC |
| UV resistance                 | Yes                  |
| Standard warranty             | 5 years              |

## □ DCAC DO 50 KW

### SH-855 DCAC



**DC+AC connection combiner box IP66 with 1000V surge arrester type 1+2, 4 x PV string, 4 x MPPT // surge arrester AC type 1+2, 100A 3-F, FR 100A, phase sig. + socket (SE 50kW)**

|                             |                      |
|-----------------------------|----------------------|
| Number of PV strings        | 4                    |
| Number of surge arresters   | 4                    |
| Surge arrester DC           | Phoenix T1/T2        |
| Surge arrester AC           | Noark T1/T2          |
| FR isolating disconnect     | 100A                 |
| Phase signaling             | Yes                  |
| 1F service socket           | Yes                  |
| Overcurrent circuit breaker | Noark B 100A 3F      |
| Protection class            | IP 66                |
| Rated insulation voltage    | 1000 V AC, 1500 V DC |
| UV resistance               | Yes                  |
| Standard warranty           | 5 years              |

**SH-854 DCAC**

**DC+AC connection combiner box IP66 with 1000V surge arrester type 1+2, 5 x PV string, 5 x MPPT // surge arrester AC type 1+2, 100A 3-F, FR 100A, phase sig. + socket (SE 50kW )**



|                             |                      |
|-----------------------------|----------------------|
| Number of PV strings        | 5                    |
| Number of surge arresters   | 5                    |
| Surge arrester DC           | Phoenix T1/T2        |
| Surge arrester AC           | Noark T1/T2          |
| FR isolating disconnect     | 100A                 |
| Phase signaling             | Yes                  |
| 1F service socket           | Yes                  |
| Overcurrent circuit breaker | Noark B 100A 3F      |
| Protection class            | IP 66                |
| Rated insulation voltage    | 1000 V AC, 1500 V DC |
| UV resistance               | Yes                  |
| Standard warranty           | 5 years              |

**SH-1096 DCAC**

**DC+AC connection combiner box IP66 with 1000V surge arrester type 1+2, 6x PV string, 6x MPPT // surge arrester AC type 1+2, 100A 3-F, FR 100A, phase sig. + socket (SE 50kW )**



|                             |                      |
|-----------------------------|----------------------|
| Number of PV strings        | 6                    |
| Number of surge arresters   | 6                    |
| Surge arrester DC           | Phoenix T1/T2        |
| Surge arrester AC           | Noark T1/T2          |
| FR isolating disconnect     | 100A                 |
| Phase signaling             | Yes                  |
| 1F service socket           | Yes                  |
| Overcurrent circuit breaker | Noark B 100A 3F      |
| Protection class            | IP 66                |
| Rated insulation voltage    | 1000 V AC, 1500 V DC |
| UV resistance               | Yes                  |
| Standard warranty           | 5 years              |

**SH-1008 DCAC**

**DC+AC connection combiner box IP66 with 1000V surge arrester type 2, 4 x PV string, 4 x MPPT // surge arrester AC type 2, 100A 3-F, FR 100A, phase sig. + socket (SE 50kW )**



|                           |            |
|---------------------------|------------|
| Number of PV strings      | 4          |
| Number of surge arresters | 4          |
| Surge arrester DC         | Phoenix T2 |
| Surge arrester AC         | Noark T2   |
| FR isolating disconnect   | 100A       |
| Phase signaling           | Yes        |
| 1F service socket         | Yes        |

**SH-1008 DCAC**

**DC+AC connection combiner box IP66 with 1000V surge arrester type 2, 4 x PV string, 4 x MPPT // surge arrester AC type 2, 100A 3-F, FR 100A, phase sig. + socket (SE 50kW )**

|                             |                      |
|-----------------------------|----------------------|
| Overcurrent circuit breaker | Noark B 100A 3F      |
| Protection class            | IP 66                |
| Rated insulation voltage    | 1000 V AC, 1500 V DC |
| UV resistance               | Yes                  |
| Standard warranty           | 5 years              |

**SH-1007 DCAC**

**DC+AC connection combiner box IP66 with 1000V surge arrester type 2, 5x PV string, 5x MPPT // surge arrester AC type 2, 100A 3-F, FR 100A, phase sig. + socket (SE 50kW )**



|                             |                      |
|-----------------------------|----------------------|
| Number of PV strings        | 5                    |
| Number of surge arresters   | 5                    |
| Surge arrester DC           | Phoenix T2           |
| Surge arrester AC           | Noark T2             |
| FR isolating disconnect     | 100A                 |
| Phase signaling             | Yes                  |
| 1F service socket           | Yes                  |
| Overcurrent circuit breaker | Noark B 100A 3F      |
| Protection class            | IP 66                |
| Rated insulation voltage    | 1000 V AC, 1500 V DC |
| UV resistance               | Yes                  |
| Standard warranty           | 5 years              |

**SH-1009 DCAC**

**DC+AC connection combiner box IP66 with 1000V surge arrester type 2, 6x PV string, 6x MPPT // surge arrester AC type 2, 100A 3-F, FR 100A, phase sig. + socket (SE 50kW )**



|                             |                      |
|-----------------------------|----------------------|
| Number of PV strings        | 6                    |
| Number of surge arresters   | 6                    |
| Surge arrester DC           | Phoenix T2           |
| Surge arrester AC           | Noark T2             |
| Phase signaling             | Yes                  |
| 1F service socket           | Yes                  |
| Overcurrent circuit breaker | None                 |
| Protection class            | IP 66                |
| Rated insulation voltage    | 1000 V AC, 1500 V DC |
| UV resistance               | Yes                  |
| Standard warranty           | 5 years              |

## ATSE SERIES



ATSE combiner boxes allow **automatic reserve switching in hybrid installations.**

It is thanks to the use of the ATSE combiner box, hybrid inverter and energy storage that the system automatically switches to emergency power supply in case of power failure from the operator (grid failure or planned modernization) giving the **possibility of using electricity** in the building.

- Each manufactured ATSE combiner box is tested by plugging into an inverter
- Separate normal and emergency circuits
- Built-in overcurrent circuit breaker and AC surge arrester
- Designed to work with leading hybrid inverters, including GoodWe, Huawei, Fronius, FoxESS
- Emergency power source – energy storage or PV generator



| Type                                    | 12T                | 24T         | 36T         | 48T         |
|-----------------------------------------|--------------------|-------------|-------------|-------------|
| Dimensions (without connectors) (WxHxD) | 259x319x144        | 384x319x144 | 508x319x144 | 664x319x144 |
| Number of fields in a row               | 12                 | 12          | 12          | 12          |
| Number of rows                          | 1                  | 2           | 3           | 4           |
| Expandability                           | No                 |             |             |             |
| Key lock                                | Optional           |             |             |             |
| Mounting method                         | Surface mounting   |             |             |             |
| Degree of protection                    | IP 65              |             |             |             |
| Protection class                        | II                 |             |             |             |
| Rated insulation voltage Ui             | 400 V AC           |             |             |             |
| Design in accordance with               | EN 60670, EN 62208 |             |             |             |
| UV resistance                           | Yes                |             |             |             |
| Impact resistance                       | IK 08              |             |             |             |
| Glow rod test                           | 650°C              |             |             |             |
| Operating temperature                   | -20°C / 40°C       |             |             |             |
| Recyclable plastics                     | Halogen-free       |             |             |             |

## AVAILABLE MODELS

|              |                                                                          |
|--------------|--------------------------------------------------------------------------|
| SH-AIO3H-SZR | ATSE connection combiner box for FoxESS AIO inverter                     |
| SH-GEN24-SZR | ATSE connection combiner box for Fronius GEN24 inverter                  |
| SH-GEN24-PP  | ATSE connection combiner box with Smart Meter for Fronius GEN24 inverter |
| SH-GWET-SZR  | ATSE connection combiner box for GoodWe ET inverter                      |
| SH-HWL1-SZR  | ATSE connection combiner box for Huawei L1 inverter                      |
| SH-HWM1-SZR  | ATSE connection combiner box for Huawei M1 inverter                      |

## SH-GWET-SZR

### ATSE connection combiner box for GoodWe ET inverter



|                                              |                               |
|----------------------------------------------|-------------------------------|
| Compatibility                                | GoodWe Serii ET               |
| Number of phases supplied by emergency power | 3F                            |
| Emergency power source                       | Energy storage / PV generator |
| Energy meter                                 | None – space for a meter      |
| Double disconnection of emergency operation  | Yes                           |
| AC protection                                | Yes                           |
| Switching time (sec.)                        | 0,5 > t                       |
| Warranty                                     | 2 years                       |

## SH-GEN24-SZR

### ATSE connection combiner box with Smart Meter for Fronius GEN24 inverter



|                                              |                                  |
|----------------------------------------------|----------------------------------|
| Compatibility                                | Fronius Symo GEN24 / Symo Hybrid |
| Number of phases supplied by emergency power | 3F                               |
| Emergency power source                       | Energy storage                   |
| Energy meter                                 | Yes                              |
| Control                                      | Realized by the inverter         |
| Double disconnection of emergency operation  | Yes                              |
| AC protection                                | Yes                              |
| Switching time (sec.)                        | ≈ 60                             |
| Warranty                                     | 2 years                          |

## SH-GEN24-PP

### Single-phase combiner box with automatic switching to PV-POINT power supply for GEN24 inverter



|                                              |                               |
|----------------------------------------------|-------------------------------|
| Compatibility                                | Fronius Symo GEN24            |
| Number of phases supplied by emergency power | 1F                            |
| Emergency power source                       | Energy storage / PV generator |
| Double disconnection of emergency operation  | Yes                           |
| Switching time (sec.)                        | < 90                          |
| Warranty                                     | 2 years                       |

**SH-HWM1-SZR****ATSE connection combiner box for Huawei M1 inverter**

|                                              |                     |
|----------------------------------------------|---------------------|
| Compatibility                                | SUN2000 3-10 KTL M1 |
| Number of phases supplied by emergency power | 1F                  |
| Emergency power source                       | Energy storage      |
| Double disconnection of emergency operation  | Yes                 |
| Switching time (sec.)                        | ≈ 2                 |
| Warranty                                     | 2 years             |

**SH-HWL1-SZR****ATSE connection combiner box for Huawei L1 inverter**

|                                              |                       |
|----------------------------------------------|-----------------------|
| Compatibility                                | SUN2000 2-3,68 KTL L1 |
| Number of phases supplied by emergency power | 1F                    |
| Emergency power source                       | Energy storage        |
| Double disconnection of emergency operation  | Yes                   |
| Switching time (sec.)                        | ≈ 2                   |
| Warranty                                     | 2 years               |

**SH-AIO3H-SZR****ATSE connection combiner box for FoxEss AIO inverter**

|                                              |                              |
|----------------------------------------------|------------------------------|
| Compatibility                                | FoxEss AIO 3H 5.0-E – 10.0-E |
| Number of phases supplied by emergency power | 3F                           |
| Emergency power source                       | Energy storage               |
| Energy meter                                 | None – space for a meter     |
| Switching time (sec.)                        | 0,2                          |
| Warranty                                     | 2 years                      |

## TRAINING OFFER

### TRAINING COURSES PREPARING TO TAKE THE EXAM FORA CERTIFIED RES INSTALLER

We operate Accredited Training Center of the Office of Technical Inspection (UDT) in the field of training for Certified RES Installer. By Taking part in the training, you will learn about general photovoltaics and acquire the theoretical basics of PV systems operation. You will become familiar with sizing rules and connection systems to the power grid, you will learn how to install and adjust them. Finally, we will familiarize you with the principles of upgrading and maintaining systems.

For organized groups of more than 15 people, we offer the possibility of organizing closed-door training.

For more information, visit the UDT website:

[WWW.UDT.GOV.PL](http://WWW.UDT.GOV.PL)

### WEBINARS

We periodically conduct remote training sessions (webinars) with manufacturers to keep our customers and employees up to date with current technologies and news from the PV market.

If you are interested in this form of education, we warmly invite you to like and follow our social media profiles:



### TRAINING COURSES TO RENEW INSTALLER'S LICENSES

If you have already taken the Certified RES Installer training and earned your certification, remember that it has a validity of 5 years. In order not to lose them, the Office of Technical Inspection requires attendance at a training course to renew installation authorizations, which can be taken at KENO headquarters.

In order to renew your licenses you must:

- + Meet the conditions for the issuance of the certificate set forth in Article 136, paragraph 3 of the Act on Renewable Energy Sources (Journal of Laws of 2015, item 478, as amended),
- + Complete refresher training within the 12 months preceding the expiration date of the certificate,
- + Install, upgrade or maintain in good technical condition min. 5 microinstallations, small installations or RES installations with a total installed thermal power of not more than 600kW.

**REMEMBER!** The renewal application must be submitted no later than 30 days before the expiration of the certificate!

### PRODUCT TRAINING

We organize certified product training courses conducted by specialists and representatives of manufacturers of photovoltaic systems from our offer. They allow you to increase your knowledge, learn about the latest technology and solutions used in their equipment.

Dates of upcoming trainings and registration in the TRAININGS tab on:

[WWW.B2B.KENO-ENERGY.COM](http://WWW.B2B.KENO-ENERGY.COM)

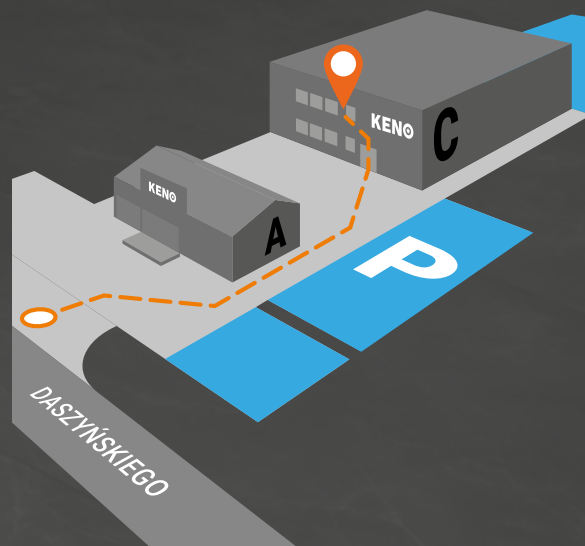


## ACCESS

KENO is located in Gliwice (Ostropa), at ul. Daszyńskiego 609 A, close to the exit from the A4 highway. The distance from the city center is 7 km.

Training sessions are held in **Building C** located directly behind the building on Daszyńskiego Street. The modern training room is located on the second floor.

Ample free parking is available for trainees on the company's premises in front of and behind **Building C**.



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## **WARSAW WAREHOUSE**

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