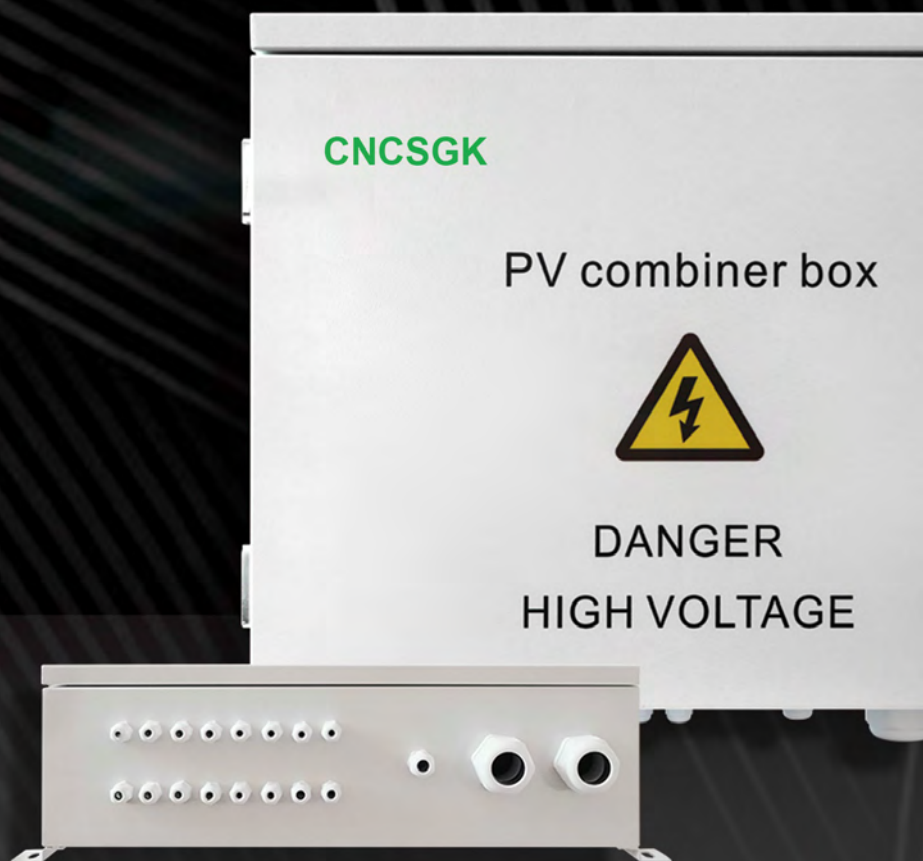
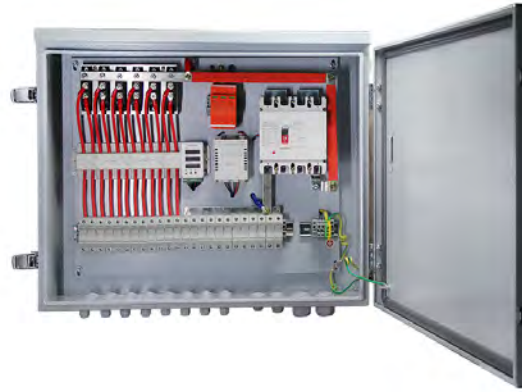


# COMBINER BOX

[www.cncspv.com](http://www.cncspv.com)





## Overview

Combiner Boxes take multiple source circuits and combine them in a single output. They are usually found between the modules and the inverter.

CNCSGK Combiner Boxes are known for its clean and well thought-out design. Available options include Arc Fault Detection and Circuit Interruption, disconnect switches or contactors, surge arrestors, various enclosure NEMA or IP ratings, and other features.

CNCSGK CSPVB Series Combiner Boxes can accommodate up to 36 input circuits at 600 VDC, 1000 VDC, or 1500 VDC. Each channel is with a fuse. The output side is equipped with lightning protection and a circuit breaker. It greatly simplifies the input wiring of the DC power distribution cabinet and inverter. Realize lightning protection, short circuit protection, and grounding protection.

PV combiner box divided into two types: intelligent box and non-intelligent box. The intelligent PV combiner box is equipped with a monitoring unit, then detect input current of each string, detect inside temperature, detect lightning protection status, detect circuit breaker status and summarize output voltage, and so on.

The product adopts outdoor wall-mounted type, which adapts to the harsh environment. In addition to the core components, the other can be customized by user requirements.

## Description

- High reliability

With DC FUSE

With DC Surge Protection Device

With DC circuit breaker or DC load isolation switch.

- Strong adaptability

IP65 design, waterproof, anti-dust, and anti-ultraviolet.

Used widely, Strict test for high and low temperature.

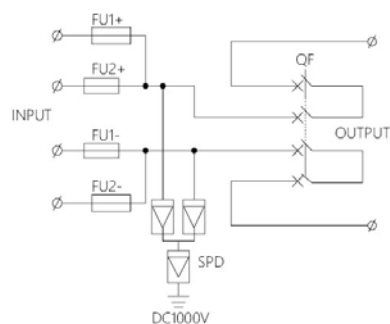
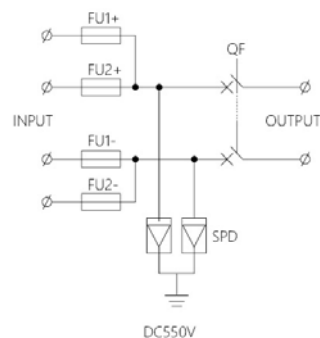
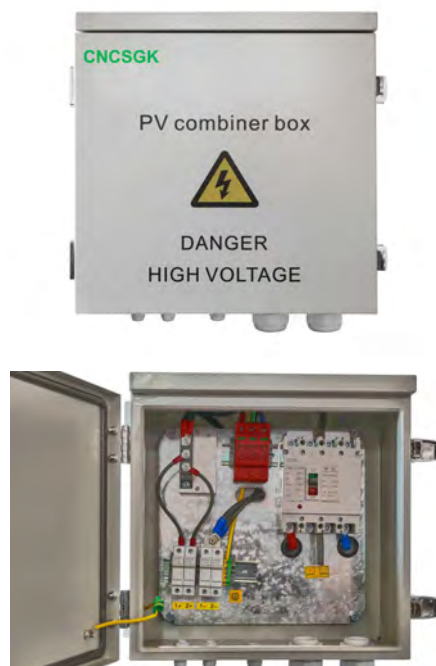
The simple installation, the simplified system wiring, the convenient wiring.

The box body is made of cold-rolled steel and other metal materials.

- Flexible configuration

Used for single crystal silicon solar modules, polycrystalline silicon solar modules, thin-film solar modules. The current rating of the photovoltaic fuse, circuit breaker, load isolation switch is modified.

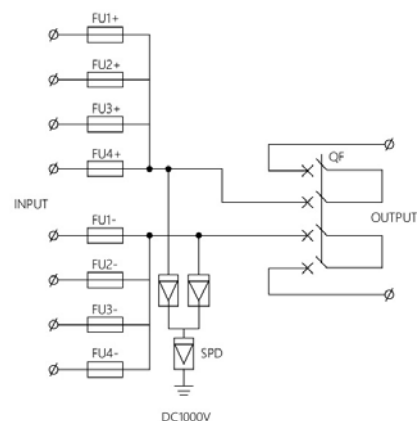
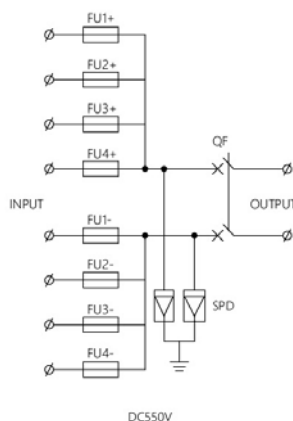
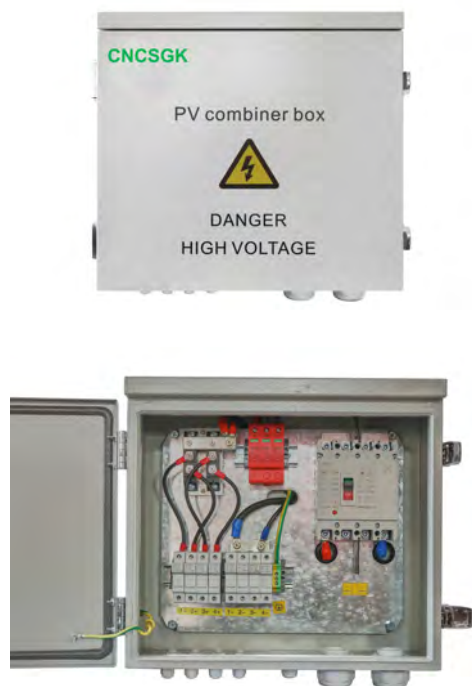
# CSPVB/2-1 DC COMBINER BOX



## Technical Parameters

| Model                                   | CSPVB/2-1              |       |
|-----------------------------------------|------------------------|-------|
| Electric parameter                      |                        |       |
| System maximum DC voltage               | 550                    | 1000  |
| Maximum input current for each string   | 15A                    |       |
| Maximum input strings                   | 2                      |       |
| Maximum output switch current           | 20A/32A                |       |
| Maximum inverter MPPT                   | 1                      |       |
| Number of Output strings                | 1                      |       |
| Lightning protection                    |                        |       |
| Category of test                        | Grade 2 protection     |       |
| Nominal discharge current               | 20kA                   |       |
| Maximum discharge current               | 40 kA                  |       |
| Voltage protection level                | 2.8kV                  | 3.8kV |
| Maximum continuous operating voltage Uc | 630V                   | 1050V |
| Poles                                   | 2P                     | 3P    |
| Structure characteristic                | Plug-push module       |       |
| System                                  |                        |       |
| Protection grade                        | IP65                   |       |
| Output switch                           | DC circuit breaker     |       |
| MC4R Waterproof Connectors              | Standard               |       |
| PV DC fuse                              | Standard               |       |
| PV surge protector                      | Standard               |       |
| Box material                            | Engineering plastics   |       |
| Installation method                     | Wall mounting type     |       |
| Operating Temperature                   | -25℃ ~ + 55℃           |       |
| Altitude                                | 2km                    |       |
| Permissible relative humidity           | 0-95%, no condensation |       |
| Mechanical parameter                    |                        |       |
| Width x High x Depth (mm)               | 400x400x180            |       |

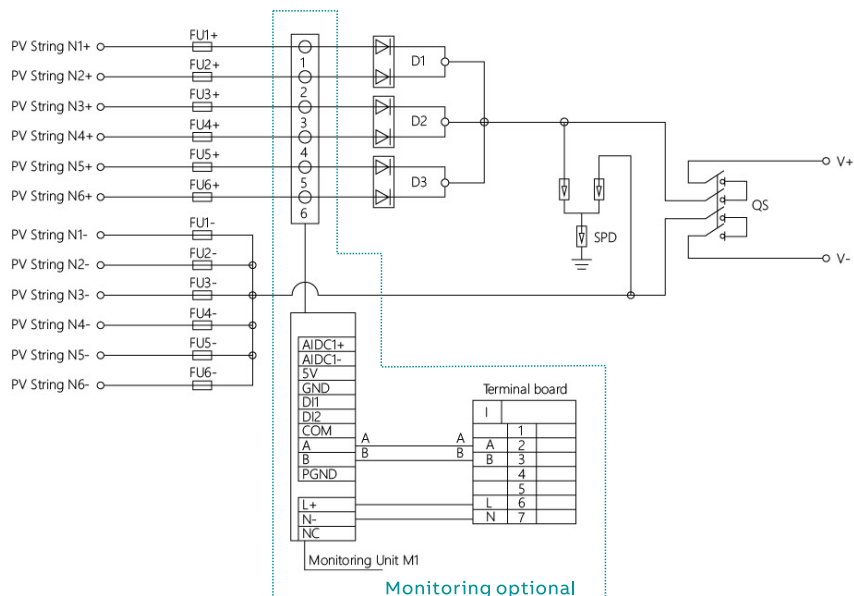
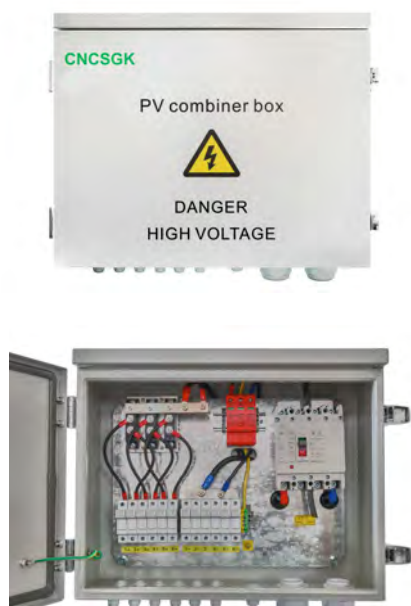
# CSPVB/4-1 DC COMBINER BOX



## Technical Parameters

| Model                                   | CSPVB/4-1              |       |
|-----------------------------------------|------------------------|-------|
| Electric parameter                      |                        |       |
| System maximum DC voltage               | 550                    | 1000  |
| Maximum input current for each string   | 15A                    |       |
| Maximum input strings                   | 4                      |       |
| Maximum output switch current           | 50A/63A                |       |
| Maximum inverter MPPT                   | 1                      |       |
| Number of Output strings                | 1                      |       |
| Lightning protection                    |                        |       |
| Category of test                        | Grade 2 protection     |       |
| Nominal discharge current               | 20kA                   |       |
| Maximum discharge current               | 40 kA                  |       |
| Voltage protection level                | 2.8kV                  | 3.8kV |
| Maximum continuous operating voltage Uc | 630V                   | 1050V |
| Poles                                   | 2P                     | 3P    |
| Structure characteristic                | Plug-push module       |       |
| System                                  |                        |       |
| Protection grade                        | IP65                   |       |
| Output switch                           | DC circuit breaker     |       |
| MC4R Waterproof Connectors              | Standard               |       |
| PV DC fuse                              | Standard               |       |
| PV surge protector                      | Standard               |       |
| Box material                            | Engineering plastics   |       |
| Installation method                     | Wall mounting type     |       |
| Operating Temperature                   | -25℃ ~ + 55℃           |       |
| Altitude                                | 2km                    |       |
| Permissible relative humidity           | 0-95%, no condensation |       |
| Mechanical parameter                    |                        |       |
| Width x High x Depth (mm)               | 440x400x180            |       |

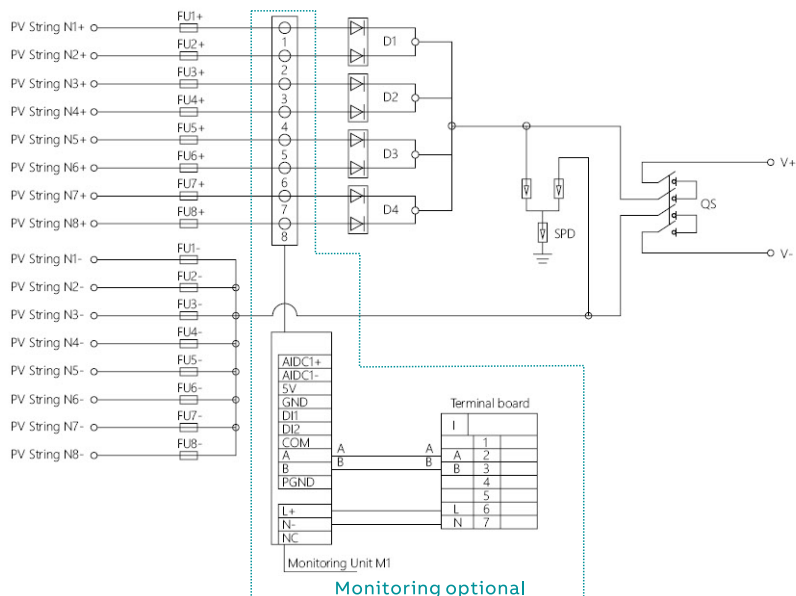
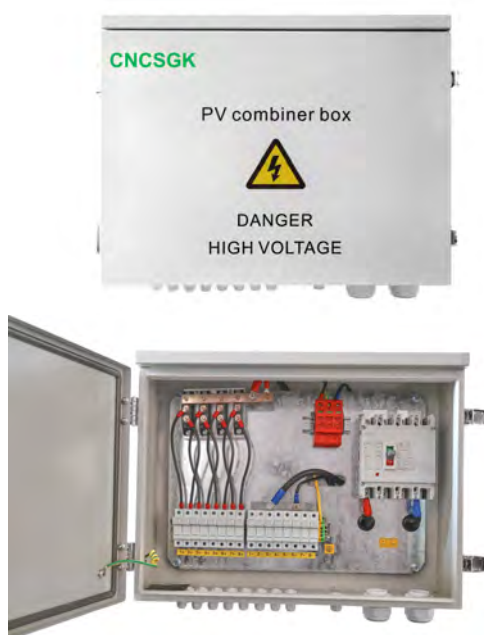
# CSPVB/6-1 DC COMBINER BOX



## Technical Parameters

| Model                                   | CSPVB/6-1                                                               |
|-----------------------------------------|-------------------------------------------------------------------------|
| Electric parameter                      |                                                                         |
| System maximum DC voltage               | 1000                                                                    |
| Maximum input current for each string   | 15A                                                                     |
| Maximum input strings                   | 6                                                                       |
| Maximum output switch current           | 90A                                                                     |
| Maximum inverter MPPT                   | 1                                                                       |
| Number of Output strings                | 1                                                                       |
| Lightning protection                    |                                                                         |
| Category of test                        | Grade 2 protection                                                      |
| Nominal discharge current               | 20kA                                                                    |
| Maximum discharge current               | 40 kA                                                                   |
| Voltage protection level                | 3.8kV                                                                   |
| Maximum continuous operating voltage Uc | 1050V                                                                   |
| Poles                                   | 3P                                                                      |
| Structure characteristic                | Plug-push module                                                        |
| System                                  |                                                                         |
| Protection grade                        | IP65                                                                    |
| Output switch                           | DC circuit breaker                                                      |
| MC4R Waterproof Connectors              | Standard                                                                |
| PV DC fuse                              | Standard                                                                |
| PV surge protector                      | Standard                                                                |
| Prevent-reverse function (optional)     | Can be equipped with modularized and encapsulated prevent-reverse diode |
| Box material                            | Hot galvanized steel/stainless steel/cold rolled sheet                  |
| Installation method                     | Wall mounting type                                                      |
| Operating Temperature                   | -25℃ ~ + 55℃                                                            |
| Altitude                                | 2km                                                                     |
| Permissible relative humidity           | 0-95%, no condensation no corrosive gas                                 |
| Mechanical parameter                    |                                                                         |
| Width x High x Depth (mm)               | 500x400x180                                                             |

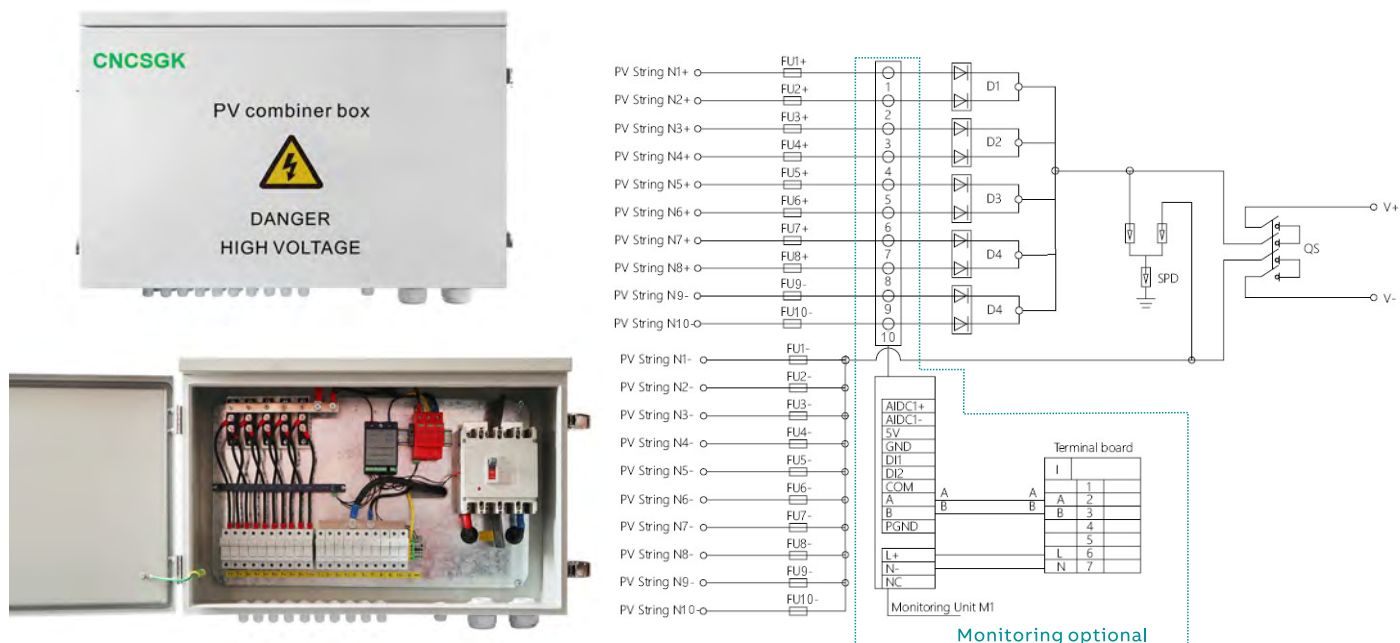
# CSPVB/8-1 DC COMBINER BOX



## Technical Parameters

| Model                                      | CSPVB/8-1                                                                                                       |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| <b>Electric parameter</b>                  |                                                                                                                 |
| System maximum DC voltage                  | 1000                                                                                                            |
| Maximum input current for each string      | 15 A                                                                                                            |
| Maximum input strings                      | 8                                                                                                               |
| Maximum output switch current              | 125 A                                                                                                           |
| Maximum inverter MPPT                      | 1                                                                                                               |
| Number of Output strings                   | 1                                                                                                               |
| <b>Lightning protection</b>                |                                                                                                                 |
| Category of test                           | Grade 2 protection                                                                                              |
| Nominal discharge current                  | 20kA                                                                                                            |
| Maximum discharge current                  | 40 kA                                                                                                           |
| Voltage protection level                   | 3.8kV                                                                                                           |
| Maximum continuous operating voltage $U_c$ | 1050V                                                                                                           |
| Poles                                      | 3P                                                                                                              |
| Structure characteristic                   | Plug-push module                                                                                                |
| <b>System</b>                              |                                                                                                                 |
| Protection grade                           | IP65                                                                                                            |
| Size of the input waterproof terminal      | PG9/PG11                                                                                                        |
| Size of the output waterproof terminal     | PG13~PG19                                                                                                       |
| Output switch                              | DC circuit breaker (standard)/ DC isolation switch (optional)                                                   |
| MC4R Waterproof Connectors                 | Standard                                                                                                        |
| PV DC fuse                                 | Standard                                                                                                        |
| PV surge protector                         | Standard                                                                                                        |
| Monitoring module(optional)                | Detect current of each channel, bus voltage, status of circuit breaker and lightning protector, box temperature |
| Auxiliary power supply                     | Auxiliary power supply: AC85V~265V /DC24V( $\pm 10\%$ )/DC200V~1000V                                            |
| Communication mode/protocol(optional)      | RS485 bus/standard MODBUS-RTU protocol                                                                          |
| Prevent-reverse function (optional)        | Can be equipped with modularized and encapsulated prevent-reverse diode                                         |
| Box material                               | Hot galvanized steel/stainless steel/cold rolled sheet                                                          |
| Installation method                        | Wall mounting type                                                                                              |
| Operating Temperature                      | -40°C ~ + 85°C                                                                                                  |
| Altitude                                   | 4km                                                                                                             |
| Permissible relative humidity              | 0-95%, no condensation no corrosive gas                                                                         |
| <b>Mechanical parameter</b>                |                                                                                                                 |
| Width x High x Depth (mm)                  | 600x460x180                                                                                                     |

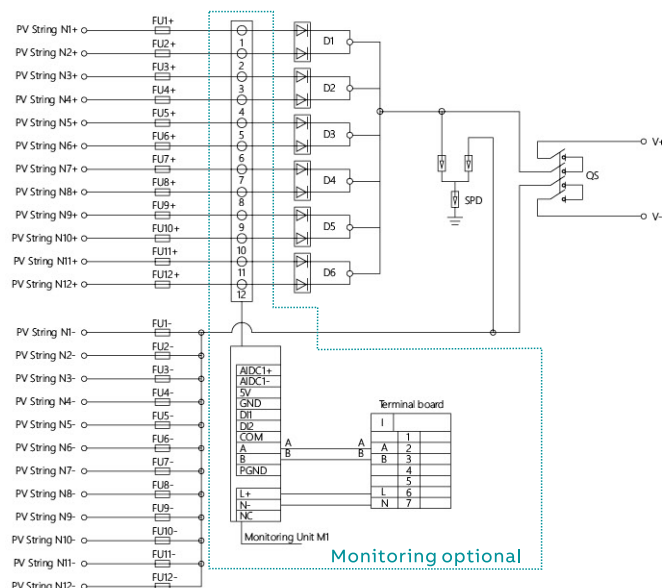
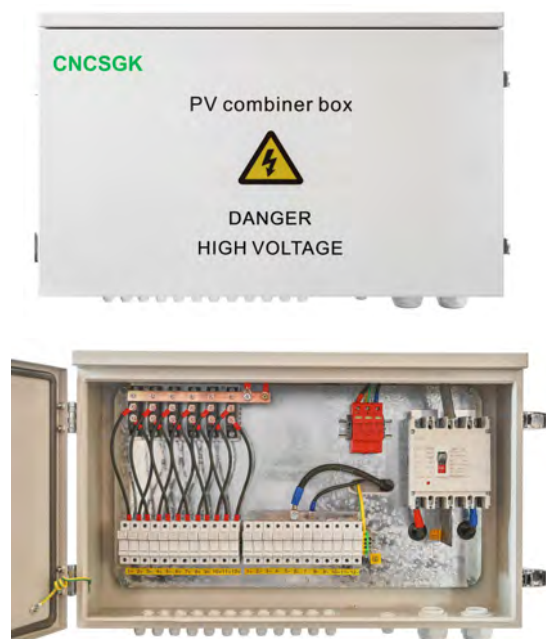
# CSPVB/10-1 DC COMBINER BOX



## Technical Parameters

| Model                                   | CSPVB/10-1                                                                                                      |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| <b>Electric parameter</b>               |                                                                                                                 |
| System maximum DC voltage               | 1000                                                                                                            |
| Maximum input current for each string   | 15 A                                                                                                            |
| Maximum input strings                   | 10                                                                                                              |
| Maximum output switch current           | 150A                                                                                                            |
| Maximum inverter MPPT                   | 1                                                                                                               |
| Number of Output strings                | 1                                                                                                               |
| <b>Lightning protection</b>             |                                                                                                                 |
| Category of test                        | Grade 2 protection                                                                                              |
| Nominal discharge current               | 20kA                                                                                                            |
| Maximum discharge current               | 40 kA                                                                                                           |
| Voltage protection level                | 3.8kV                                                                                                           |
| Maximum continuous operating voltage Uc | 1050V                                                                                                           |
| Poles                                   | 3P                                                                                                              |
| Structure characteristic                | Plug-push module                                                                                                |
| <b>System</b>                           |                                                                                                                 |
| Protection grade                        | IP65                                                                                                            |
| Size of the input waterproof terminal   | PG9/PG11                                                                                                        |
| Size of the output waterproof terminal  | PG13~PG19                                                                                                       |
| Output switch                           | DC circuit breaker (standard)/ DC isolation switch (optional)                                                   |
| MC4R Waterproof Connectors              | Standard                                                                                                        |
| PV DC fuse                              | Standard                                                                                                        |
| PV surge protector                      | Standard                                                                                                        |
| Monitoring module(optional)             | Detect current of each channel, bus voltage, status of circuit breaker and lightning protector, box temperature |
| Auxiliary power supply                  | Auxiliary power supply: AC85V~265V /DC24V(±10%)/DC200V~1000V                                                    |
| Communication mode/protocol(optional)   | RS485 bus/standard MODBUS-RTU protocol                                                                          |
| Prevent-reverse function (optional)     | Can be equipped with modularized and encapsulated prevent-reverse diode                                         |
| Box material                            | Hot galvanized steel/stainless steel/cold rolled sheet                                                          |
| Installation method                     | Wall mounting type                                                                                              |
| Operating Temperature                   | -40°C ~ + 85°C                                                                                                  |
| Altitude                                | 4km                                                                                                             |
| Permissible relative humidity           | 0-95%, no condensation no corrosive gas                                                                         |
| <b>Mechanical parameter</b>             |                                                                                                                 |
| Width x High x Depth (mm)               | 700x460x180                                                                                                     |

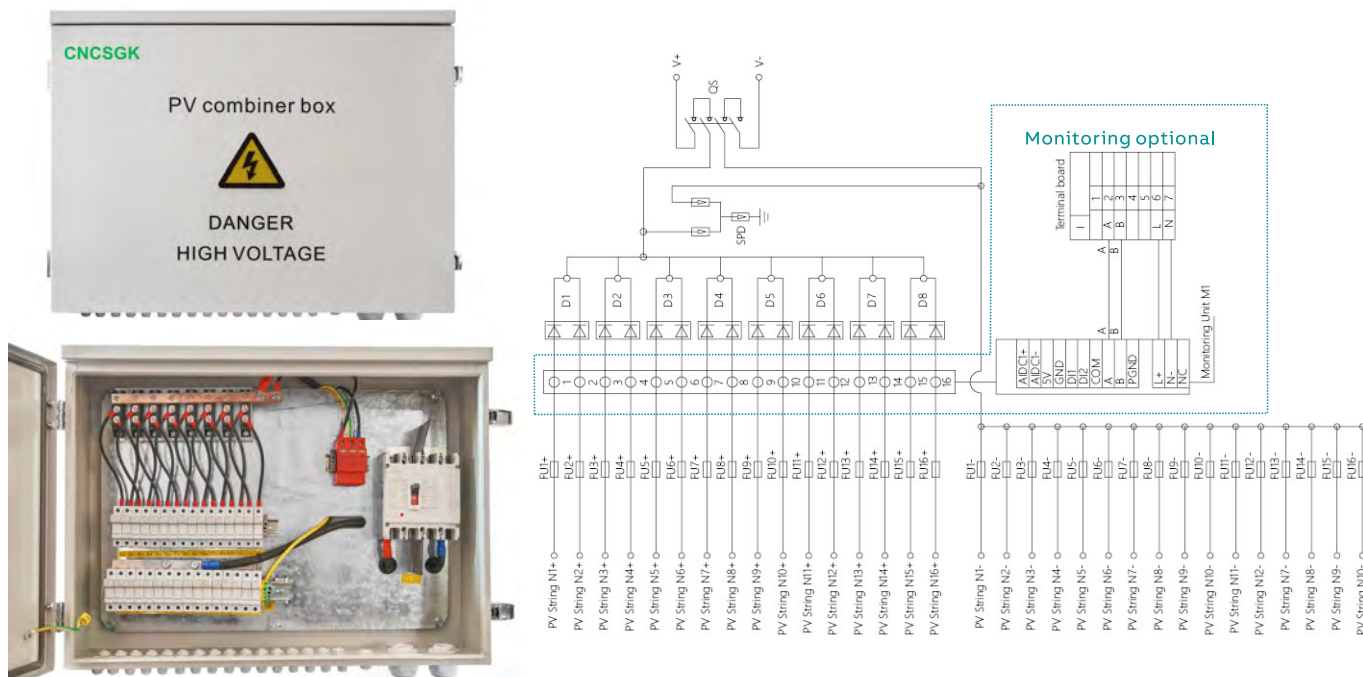
# CSPVB/12-1 DC COMBINER BOX



## Technical Parameters

| Model                                      | CSPVB/12-1                                                                                                                                                                                 |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Electric parameter                         |                                                                                                                                                                                            |
| System maximum DC voltage                  | 1000                                                                                                                                                                                       |
| Maximum input current for each string      | 15A                                                                                                                                                                                        |
| Maximum input strings                      | 12                                                                                                                                                                                         |
| Maximum output switch current              | 180A                                                                                                                                                                                       |
| Maximum inverter MPPT                      | 1                                                                                                                                                                                          |
| Number of Output strings                   | 1                                                                                                                                                                                          |
| Lightning protection                       |                                                                                                                                                                                            |
| Category of test                           | Grade 2 protection                                                                                                                                                                         |
| Nominal discharge current                  | 20kA                                                                                                                                                                                       |
| Maximum discharge current                  | 40kA                                                                                                                                                                                       |
| Voltage protection level                   | 3.8kV                                                                                                                                                                                      |
| Maximum continuous operating voltage $U_c$ | 1050V                                                                                                                                                                                      |
| Poles                                      | 3P                                                                                                                                                                                         |
| Structure characteristic                   | Plug-push module                                                                                                                                                                           |
| System                                     |                                                                                                                                                                                            |
| Protection grade                           | IP65                                                                                                                                                                                       |
| Size of the input waterproof terminal      | PG9/PG11                                                                                                                                                                                   |
| Size of the output waterproof terminal     | PG13~PG19                                                                                                                                                                                  |
| Output switch                              | DC circuit breaker (standard)/ DC isolation switch (optional)                                                                                                                              |
| MC4R Waterproof Connectors                 | Standard                                                                                                                                                                                   |
| PV DC fuse                                 | Standard                                                                                                                                                                                   |
| PV surge protector                         | Standard                                                                                                                                                                                   |
| Monitoring module(optional)                | Detect current of each channel, bus voltage, status of circuit breaker and lightning protector, box temperature<br>Auxiliary power supply: AC85V~265V<br>/DC24V( $\pm 10\%$ )/DC200V~1000V |
| Auxiliary power supply                     |                                                                                                                                                                                            |
| Communication mode/protocol(optional)      | RS485 bus/standard MODBUS-RTU protocol                                                                                                                                                     |
| Prevent-reverse function (optional)        | Can be equipped with modularized and encapsulated prevent-reverse diode                                                                                                                    |
| Box material                               | Hot galvanized steel/stainless steel/cold rolled sheet                                                                                                                                     |
| Installation method                        | Wall mounting type                                                                                                                                                                         |
| Operating Temperature                      | -40°C ~ + 85°C                                                                                                                                                                             |
| Altitude                                   | 4km                                                                                                                                                                                        |
| Permissible relative humidity              | 0-95%, no condensation no corrosive gas                                                                                                                                                    |
| Mechanical parameter                       |                                                                                                                                                                                            |
| Width x High x Depth (mm)                  | 750x460x180                                                                                                                                                                                |

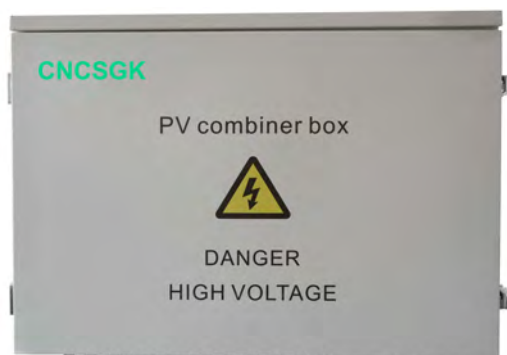
# CSPVB/16-1 DC COMBINER BOX



## Technical Parameters

| Model                                      | CSPVB/16-1                                                                                              |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------|
| <b>Electric parameter</b>                  |                                                                                                         |
| System maximum DC voltage                  | 1000                                                                                                    |
| Maximum input current for each string      | 15A                                                                                                     |
| Maximum input strings                      | 16                                                                                                      |
| Maximum output switch current              | 240A                                                                                                    |
| Maximum inverter MPPT                      | 1                                                                                                       |
| Number of Output strings                   | 1                                                                                                       |
| <b>Lightning protection</b>                |                                                                                                         |
| Category of test                           | Grade 2 protection                                                                                      |
| Nominal discharge current                  | 20kA                                                                                                    |
| Maximum discharge current                  | 40kA                                                                                                    |
| Voltage protection level                   | 3.8kV                                                                                                   |
| Maximum continuous operating voltage $U_c$ | 1050V                                                                                                   |
| Poles                                      | 3P                                                                                                      |
| Structure characteristic                   | Plug-push module                                                                                        |
| <b>System</b>                              |                                                                                                         |
| Protection grade                           | IP65                                                                                                    |
| Size of the input waterproof terminal      | PG9/PG11                                                                                                |
| Size of the output waterproof terminal     | PG13~PG19                                                                                               |
| Output switch                              | DC circuit breaker (standard)/ DC isolation switch (optional)                                           |
| MC4R Waterproof Connectors                 | Standard                                                                                                |
| PV DC fuse                                 | Standard                                                                                                |
| PV surge protector                         | Standard                                                                                                |
| Monitoring module(optional)                | Detect current of each channel, bus voltage, status of circuit and lightning protector, box temperature |
| Auxiliary power supply                     | Auxiliary power supply: AC85V~265V /DC24V( $\pm 10\%$ )/DC200V~1000V                                    |
| Communication mode/protocol(optional)      | RS485 bus/standard MODBUS-RTU protocol                                                                  |
| Prevent-reverse function (optional)        | Can be equipped with modularized and encapsulated prevent reverse diode                                 |
| Box material                               | Hot galvanized steel/stainless steel/cold rolled sheet                                                  |
| Installation method                        | Wall mounting type                                                                                      |
| Operating Temperature                      | -40°C ~ + 85°C                                                                                          |
| Altitude                                   | 4km                                                                                                     |
| Permissible relative humidity              | 0-95%, no condensation no corrosive gas                                                                 |
| <b>Mechanical parameter</b>                |                                                                                                         |
| Width x High x Depth (mm)                  | 750x560x200                                                                                             |

# CSPVB/24-1 DC COMBINER BOX

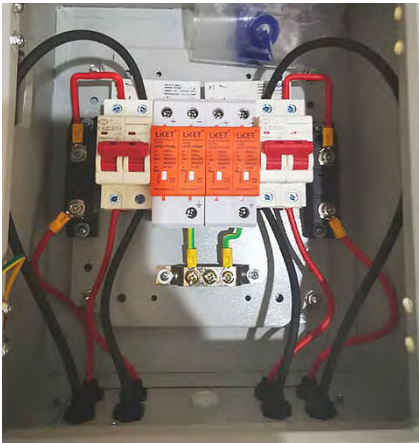


## Technical Parameters

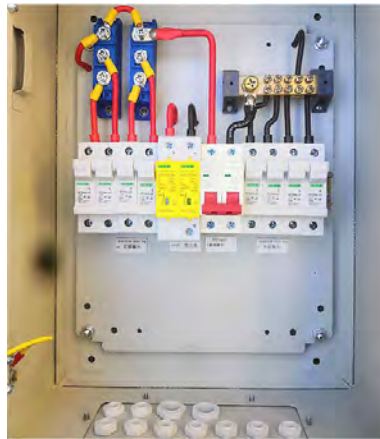
| Model                                   | CSPVB/24-1                                                                                                      |  |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------|--|
| Electric parameter                      |                                                                                                                 |  |
| System maximum DC voltage               | 1000                                                                                                            |  |
| Maximum input current for each string   | 15A                                                                                                             |  |
| Maximum input strings                   | 24                                                                                                              |  |
| Maximum output switch current           | 360A                                                                                                            |  |
| Maximum inverter MPPT                   | 1                                                                                                               |  |
| Number of Output strings                | 1                                                                                                               |  |
| Lightning protection                    |                                                                                                                 |  |
| Category of test                        | Grade 2 protection                                                                                              |  |
| Nominal discharge current               | 20kA                                                                                                            |  |
| Maximum discharge current               | 40kA                                                                                                            |  |
| Voltage protection level                | 3.8kV                                                                                                           |  |
| Maximum continuous operating voltage Uc | 1050V                                                                                                           |  |
| Poles                                   | 3P                                                                                                              |  |
| Structure characteristic                | Plug-push module                                                                                                |  |
| System                                  |                                                                                                                 |  |
| Protection grade                        | IP65                                                                                                            |  |
| Size of the input waterproof terminal   | PG9/PG11                                                                                                        |  |
| Size of the output waterproof terminal  | PG13~PG19                                                                                                       |  |
| Output switch                           | DC circuit breaker (standard)/ DC isolation switch (optional)                                                   |  |
| MC4R Waterproof Connectors              | Standard                                                                                                        |  |
| PV DC fuse                              | Standard                                                                                                        |  |
| PV surge protector                      | Standard                                                                                                        |  |
| Monitoring module(optional)             | Detect current of each channel, bus voltage, status of circuit breaker and lightning protector, box temperature |  |
| Auxiliary power supply                  | Auxiliary power supply: AC85V~265V<br>/DC24V(±10%)/DC200V~1000V                                                 |  |
| Communication mode/protocol(optional)   | RS485 bus/standard MODBUS-RTU protocol                                                                          |  |
| Prevent-reverse function (optional)     | Can be equipped with modularized and encapsulated prevent-reverse diode                                         |  |
| Box material                            | Hot galvanized steel/stainless steel/cold rolled sheet                                                          |  |
| Installation method                     | Wall mounting type                                                                                              |  |
| Operating Temperature                   | -40℃ ~ + 85℃                                                                                                    |  |
| Altitude                                | 4km                                                                                                             |  |
| Permissible relative humidity           | 0-95%, no condensation no corrosive gas                                                                         |  |
| Mechanical parameter                    |                                                                                                                 |  |
| Width x High x Depth (mm)               | 800x560x200                                                                                                     |  |

# Internal Custom Combiner Boxes

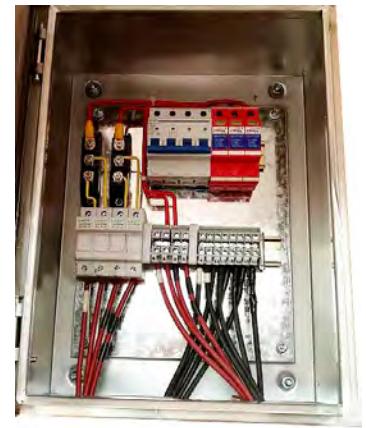
CNCSGK



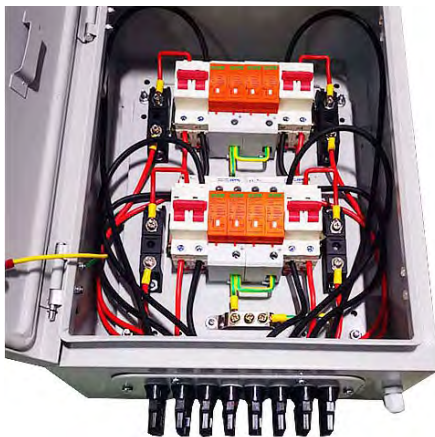
2 in 2 out



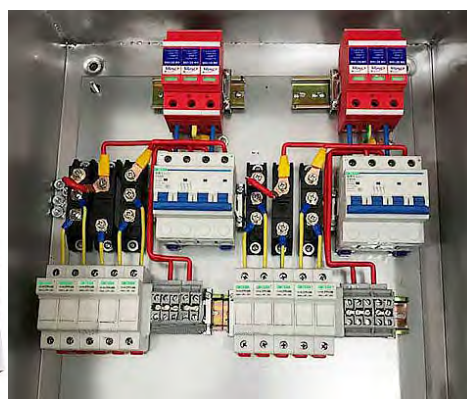
4 in 1 out 500V



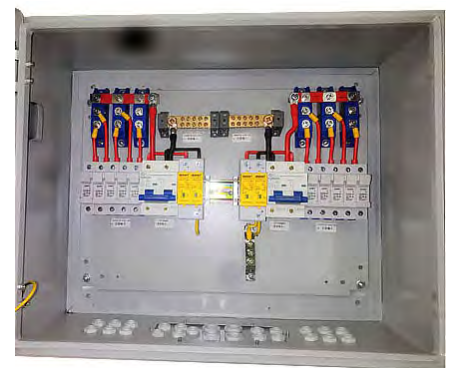
4 in 1 out anode fuse



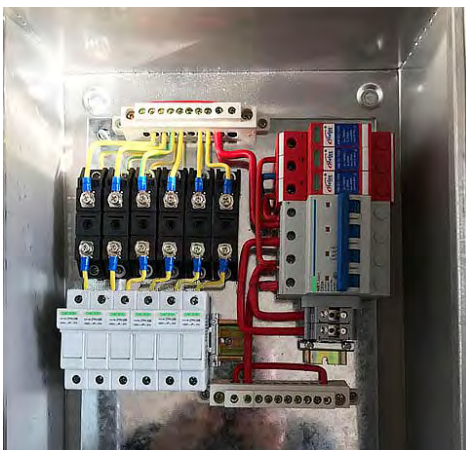
4 in 4 out



5 in 1 out Double



5 in 1 out Double-2



6 in 1 out compact layout-1



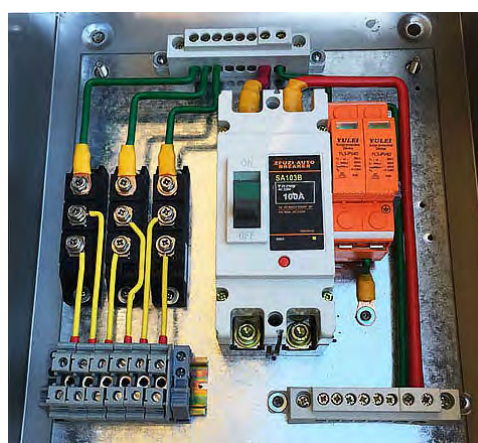
6 in 1 out compact layout-2



6 in 1 out compact layout-3



6 in 1 out compact layout



6 in 1 out no fuse  
10 / 11

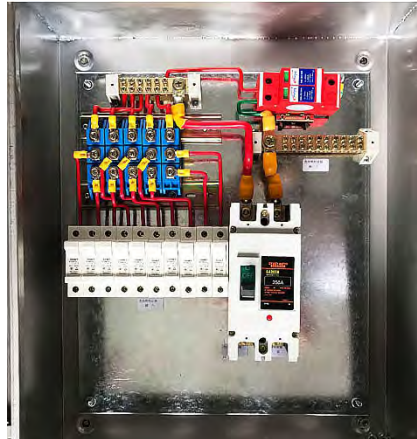


6 in N out

# Internal Custom Combiner Boxes



8 in 1 out



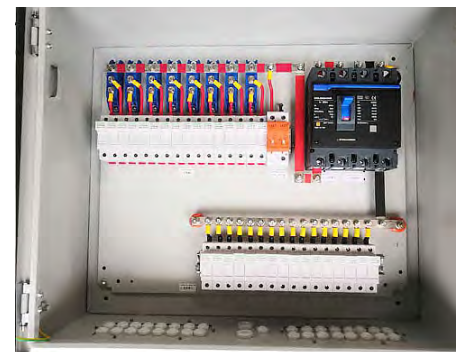
8 in 1out -2



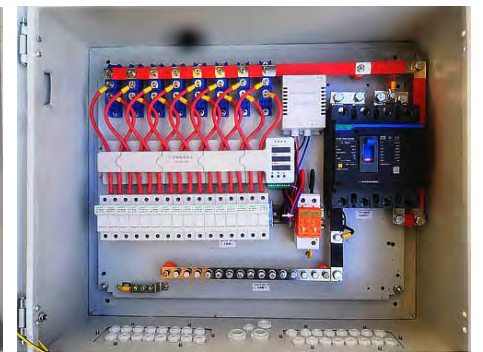
9 in 1 out anode fuse



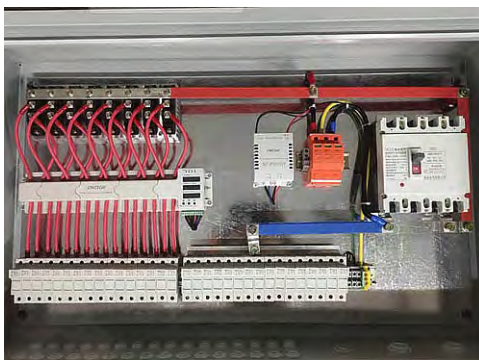
14 in 14 out



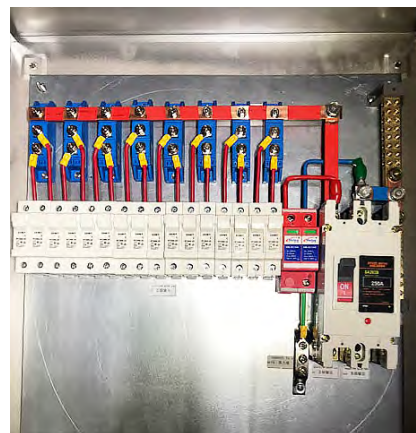
16 in 1 out Compact layout



16 in 1 out with monitoring



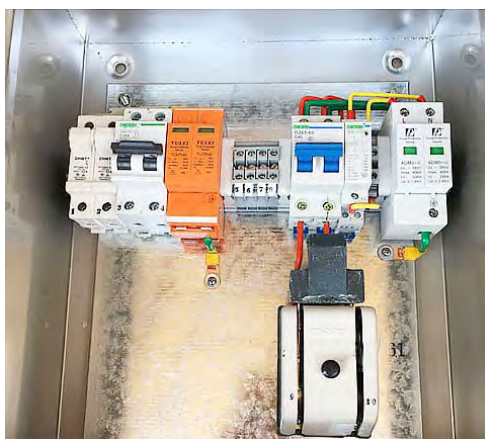
16 in 1 out with monitoring



16 in 1 out



Special requirements



Special requirements-2



vertical arrangement