

DISTRIBUTION SOLUTIONS

# UniSec for solar applications

Air-insulated medium-voltage secondary distribution switchgear



- Safe, tested application
- Complete, compact solution
- Can be installed in containers

---

**The ABB proposal is based on UniSec, the safe and reliable medium voltage switchgear which offers a broad variety of panels designed to meet the requirements and technical specifications of solar energy systems. The project documentation is submitted to the customer, who can issue his official approval as soon as the offer is submitted so as to speed up the plant construction process.**

**ABB is one of the major players in the solar energy industry and is actively involved in the on-going development of solutions able to efficiently convert solar energy into reliable electric power.**

---

# Index

<b>004-005</b>	<b>UniSec for solar applications General characteristics</b>
<b>006-014</b>	<b>UniSec for solar applications Pre-engineered solutions</b>
<b>015-025</b>	<b>UniSec for solar applications Solutions according to Italian CEI 0-16 standards</b>

---

# UniSec for solar applications

## General characteristics

UniSec is an Air Medium Voltage switchgear for secondary distribution.

The main electrical characteristics of the UniSec are:

- Rated voltage: up to 24 kV
- Rated current: up to 1250 A
- Short circuit breaker: up to 25 kA/3 s
- Internal arc: up to 25 kA/1 s
- Rated frequency: 50/60 Hz

The UniSec has been designed and tested according to the following standards:

- IEC 62271-1 for general application
- IEC 62271-200
- IEEE 693 seismic qualification test

The main equipment that the UniSec contains are in according to the following standards:

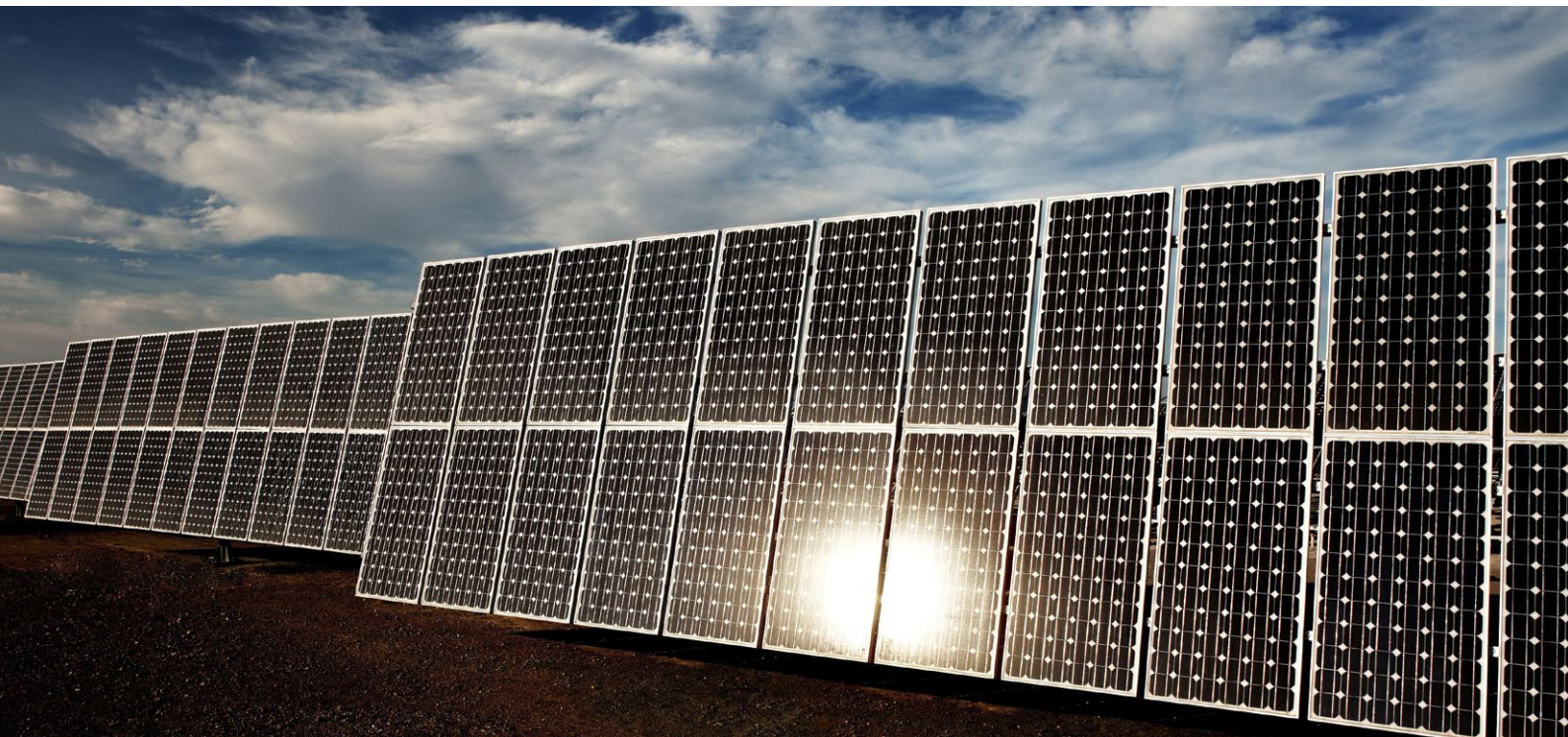
- IEC 62271-102 earthing switch
- IEC 62271-100 circuit-breaker
- IEC 62271-103 switch-disconnector
- IEC 60529 for the protection classes

The wide range of portfolio, the compact dimensions, the units with removable and withdrawable circuit breakers classified LSC2A

and LSC2B, combined with the reliability and safety make the UniSec flexible to be used for several medium voltage secondary distribution applications such as:

- medium voltage secondary power distribution, utilities
- transformer substations
- infrastructure (airports, hospitals, shopping centers, train stations, etc...)
- data centers
- small power generation and renewable energy systems
- industries
- marine applications
- residential
- SmartGrid

UniSec is the ABB solution for a fully automated power distribution network and offers a wide range of panels, making it possible to identify the most efficient solution for each application by combining the available panel types. For more information about UniSec please refer to product catalogue CA UNISEC(EN)\_1VFM2000003.



The UniSec is a switchgear with compact dimension, flexibility of configuration, easy and fast installation combined with high mechanical and electrical performance, for all these reasons it is suitable for solar application.

The UniSec switchgear solution for solar application is based on the standard switchgear design and has a range of panel types able to satisfy the solar plant requirements, thanks to both electrical characteristics and standard fitting of accessories. The technical design document is available and the customer can provide official approval of the design right from the offer stage.

As a key player in the solar industry, ABB is constantly developing solutions that can efficiently transform the sun's energy into reliable power. Our comprehensive offering for the solar market stems from our long expertise in power products.

The following are the technical characteristics of the proposed solutions for the solar application. For all other solutions please contact ABB.

#### Electrical Data

- Rated voltage: up to 24 kV
- Service voltage: up to 23 kV
- Rated frequency: 50 - 60 Hz
- Rated busbar current: 630 A
- Rated short circuit current: 16 kA, 1 s
- Rated short circuit current duration: 40 kA

#### Version

Internal Arc Classification (IAC): A-FL 12,5 kA, 1 s (2100 mm minimum height of the switchgear room)

#### Classification

- Service continuity: LSC2A
- Partitions: PM (Metal partitions)

#### Auxiliary supply

- Local control voltage: 230 V
- Auxiliary control voltage opening tripping coi: 230 V

#### Degree of protection

- Inside the switchgear: IP 2X
- On the external housing: IP 3X



# UniSec for solar applications

## Pre-engineered solutions

### Solution A1

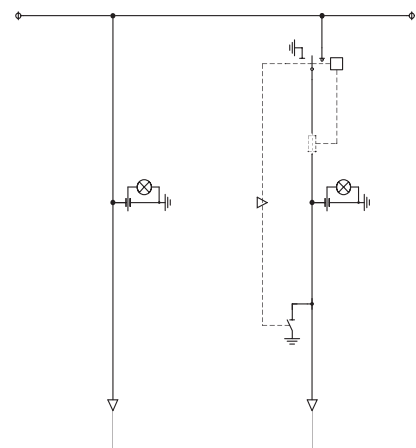
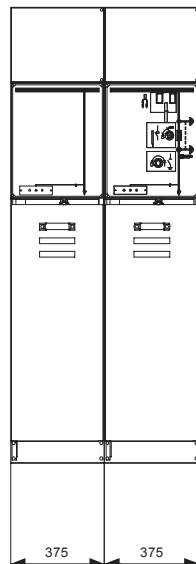
#### Radial distribution – Fuse

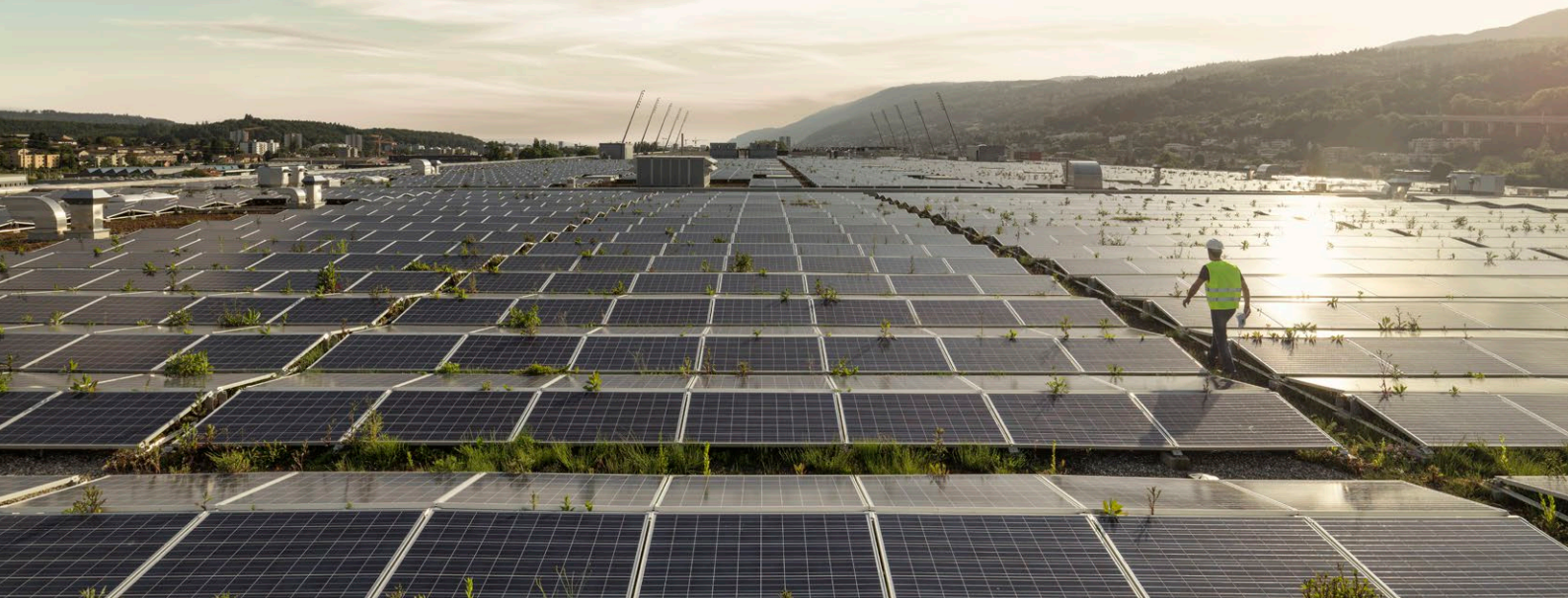
##### N° 1 Direct riser unit with cable (DRC)

- Width: 375 mm
- Cable entry for 1-phase cable up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- N° 1 Anti condensation heater for cable compartment 230 VAC
- Low voltage compartment

##### N° 1 Switch-fuse combination unit with cable (SFC)

- Width: 375 mm
- Cable entry for 1-phase cables up to 95 mm<sup>2</sup>
- Voltage present indication in cable compartment
- N° 1 Earth key free closed
- N° 1 Anti condensation heater for cable compartment 230 VAC
- Three position switch-disconnector and with earthing switch and 2-spring operating device
- Tripping coil for opening 230 VAC
- Auxiliary contacts for switch-disconnector closed
  - Set of 4 pcs change-over
- Auxiliary contacts for earthing switch
  - Set of 4 pcs change-over
- Fuse base 375 for ABB CEF fuses 442 mm
  - Mounting height for e=442 mm fuses
  - Fuse tripping
  - Fuse blow indication (1NO)
- Low voltage compartment





## Solution A2

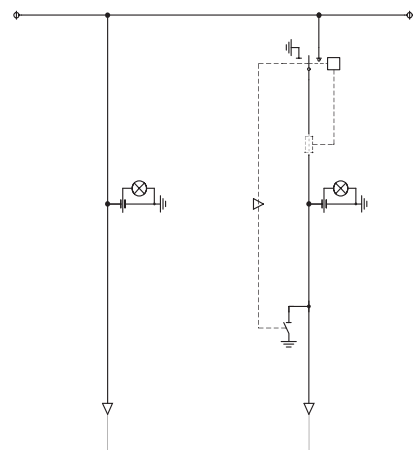
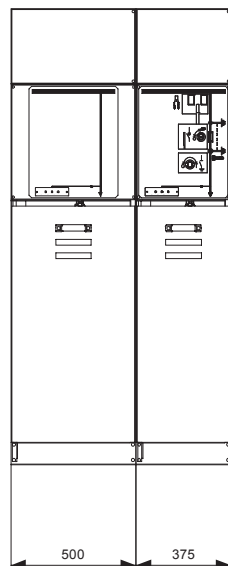
### Radial distribution – Fuse

#### N° 1 Direct riser unit with cable (DRC)

- Width: 500 mm
- Cable entry for 2-phase cable up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- N° 1 Anti condensation heater for cable compartment 230 VAC
- Low voltage compartment

#### N° 1 Switch-fuse combination unit with cable (SFC)

- Width: 375 mm
- Cable entry for 1-phase cables up to 95 mm<sup>2</sup>
- Voltage present indication in cable compartment
- N° 1 Earth key free closed
- N° 1 Anti condensation heater for cable compartment 230 VAC
- Three position switch-disconnector and with earthing switch and 2-spring operating device
- Tripping coil for opening 230 VAC
- Auxiliary contacts for switch-disconnector closed
  - Set of 4 pcs change-over
- Auxiliary contacts for earthing switch
  - Set of 4 pcs change-over
- Fuse base 375 for ABB CEF fuses 442 mm
  - Mounting height for e=442 mm fuses
  - Fuse tripping
  - Fuse blow indication (1NO)
- Low voltage compartment



# UniSec for solar applications

## Pre-engineered solutions

### Solution B

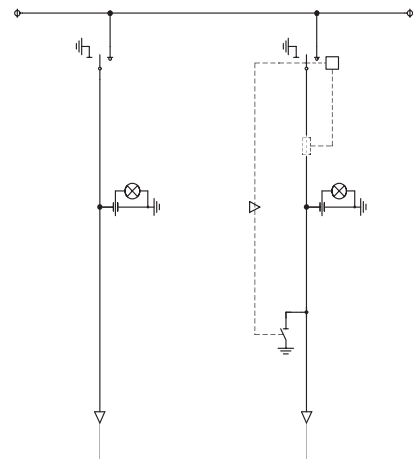
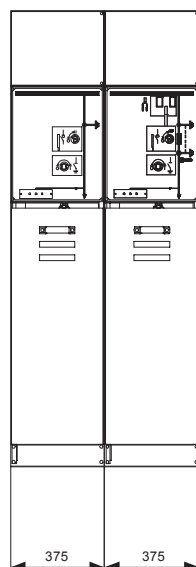
Radial distribution –  
Switch-disconnector and fuse

#### N° 1 Switch-disconnector with cable (SDC)

- Width: 375 mm
- Cable entry for 1-phase cable up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- N° 1 Earth key free open
- N° 1 Anti condensation heater for cable compartment 230 VAC
- Switch-disconnector 3 positions with earthing switch and 1-spring operating
- Auxiliary contacts for switch-disconnector closed
  - Set of 4 pcs change-over
- Auxiliary contacts for earthing switch
  - Set of 4 pcs change-over
- Low voltage compartment

#### N° 1 Switch-fuse combination unit with cable (SFC)

- Width: 375 mm
- Cable entry for 1-phase cables up to 95 mm<sup>2</sup>
- Voltage present indication in cable compartment
- N° 1 Earth key free closed
- N° 1 Anti condensation heater for cable compartment 230 VAC
- Three position switch-disconnector and with earthing switch and 2-spring operating device
- Tripping coil for opening 230 VAC
- Auxiliary contacts for switch-disconnector closed
  - Set of 4 pcs change-over
- Auxiliary contacts for earthing switch
  - Set of 4 pcs change-over
- Fuse base 375 for ABB CEF fuses 442 mm
- Mounting height for e=442 mm fuses
- Fuse tripping
- Fuse blow indication (1NO)
- Low voltage compartment





## Solution C1

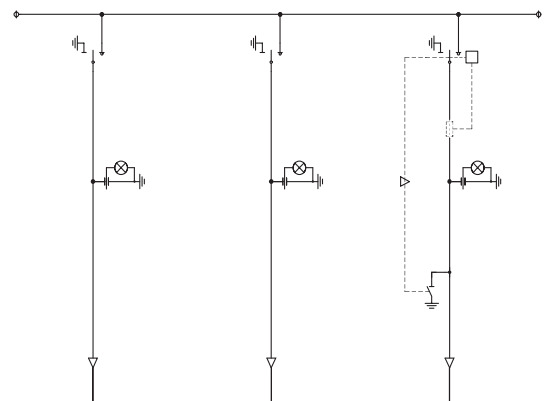
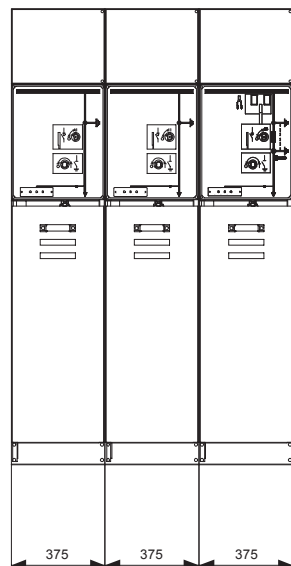
### Ring distribution – Fuse

#### N° 2 Switch-disconnector with cable (SDC)

- Width: 375 mm
- Cable entry for 1-phase cable up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- N° 1 Earth key free open
- N° 1 Anti condensation heater for cable compartment 230 VAC
- Switch-disconnector 3 positions with earthing switch and 1-spring operating  
Auxiliary contacts for switch-disconnector closed
  - Set of 4 pcs change-over
 Auxiliary contacts for earthing switch
  - Set of 4 pcs change-over
- Low voltage compartment

#### N° 1 Switch-fuse combination unit with cable (SFC)

- Width: 375 mm
- Cable entry for 1-phase cables up to 95 mm<sup>2</sup>
- Voltage present indication in cable compartment
- N° 1 Earth key free closed
- N° 1 Anti condensation heater for cable compartment 230 VAC
- Three position switch-disconnector and with earthing switch and 2-spring operating device  
Tripping coil for opening 230 VAC  
Auxiliary contacts for switch-disconnector closed
  - Set of 4 pcs change-over
 Auxiliary contacts for earthing switch
  - Set of 4 pcs change-over
- Fuse base 375 for ABB CEF fuses 442 mm
  - Mounting height for e=442 mm fuses
  - Fuse tripping
  - Fuse blow indication (1NO)
- Low voltage compartment



# UniSec for solar applications

## Pre-engineered solutions

### Solution C2

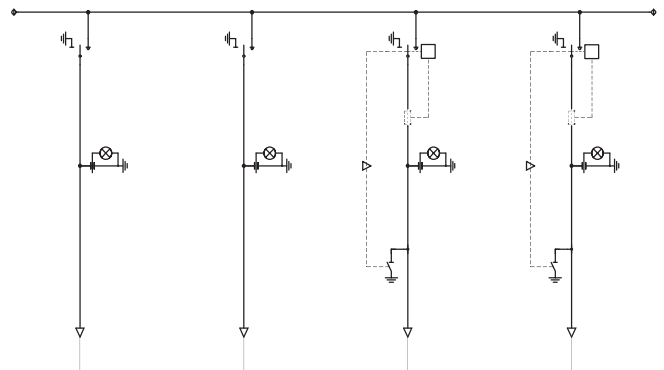
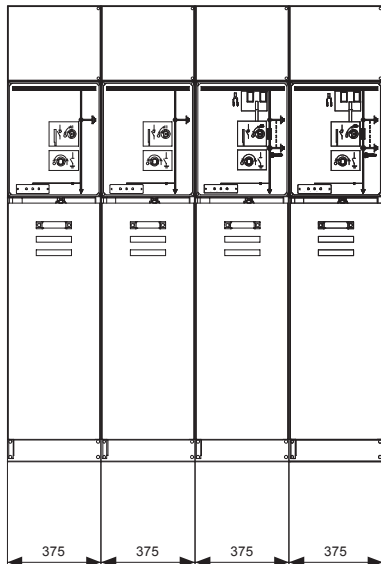
#### Ring distribution – Fuse

##### N° 2 Switch-disconnector with cable (SDC)

- Width: 375 mm
- Cable entry for 1-phase cable up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- N° 1 Earth key free open
- N° 1 Anti condensation heater for cable compartment 230 VAC
- Switch-disconnector 3 positions with earthing switch and 1-spring operating
- Auxiliary contacts for switch-disconnector closed
  - Set of 4 pcs change-over
- Auxiliary contacts for earthing switch
  - Set of 4 pcs change-over
- Low voltage compartment

##### N° 2 Switch-fuse combination unit with cable (SFC)

- Width: 375 mm
- Cable entry for 1-phase cables up to 95 mm<sup>2</sup>
- Voltage present indication in cable compartment
- N° 1 Earth key free closed
- N° 1 Anti condensation heater for cable compartment 230 VAC
- Three position switch-disconnector and with earthing switch and 2-spring operating device
- Tripping coil for opening 230 VAC
- Auxiliary contacts for switch-disconnector closed
  - Set of 4 pcs change-over
- Auxiliary contacts for earthing switch
  - Set of 4 pcs change-over
- Fuse base 375 for ABB CEF fuses 442 mm
  - Mounting height for e=442 mm fuses
  - Fuse tripping
  - Fuse blow indication (1NO)
- Low voltage compartment



## Solution D1

### Radial distribution – CB

#### Circuit-breaker with disconnecter with 3 positions integrated (HBC)

- Width: 500 mm
- Cable entry for 1-phase cable up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- Key locks:
  - line open / closed free
  - earth open / closed free
- N° 1 Anti condensation heater for cable compartment 230 VAC
- Multifunctional apparatus

#### Circuit-breaker:

- opening & closing push button
- mechanical signally device for closing springs
- operation counter
- shunt opening release 230 VAC
- auxiliary contacts
- lock push buttons

#### Disconnecter

#### Auxiliary contacts for disconnecter closed

- Set of 4 pcs change-over

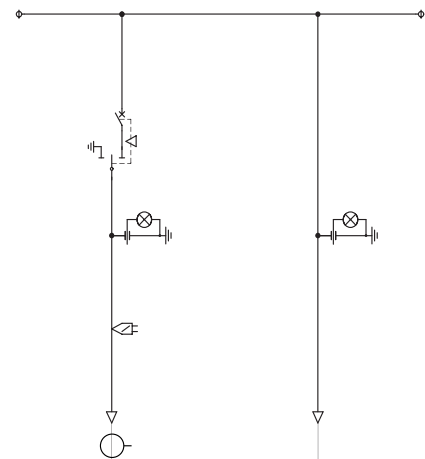
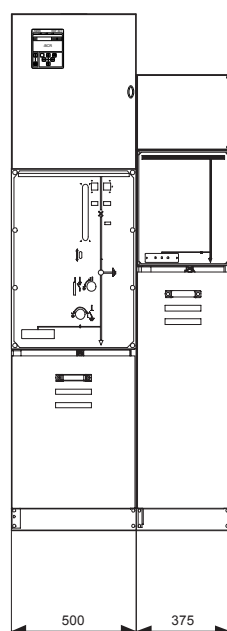
#### Auxiliary contacts for earthing switch

- Set of 4 pcs change-over

- Feeder protection relay REF 601 (50-51-50N-51N-68)
  - N° 2 current sensors KECA 250 B1
  - N° 1 homopolar toroidal 50/1
- Low voltage compartment

#### Direct riser unit with cable (DRC)

- Width: 375 mm
- Cable entry for 1-phase cables up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- N° 1 Anti condensation heater for cable compartment 230 VAC
- Low voltage compartment



# UniSec for solar applications

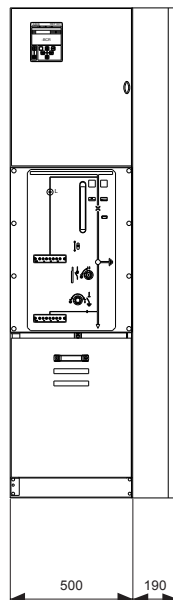
## Pre-engineered solutions

### Solution D2

#### Radial distribution – CB

##### Circuit-breaker with disconnecter with 3 positions integrated (HBC)

- Width: 500 mm
- Cable entry for 1-phase cable up to 300 mm<sup>2</sup>
- Voltage present indication in cable and busbars compartment
- Key locks:
  - line open / closed free
  - earth open / closed free
- N° 1 Anti condensation heater for cable compartment 230 VAC
- Multifunctional apparatus
  - Circuit-breaker:
    - opening & closing push button
    - mechanical signally device for closing springs
    - operation counter
    - shunt opening release 230 VAC
    - auxiliary contacts
    - lock push buttons



##### Disconnecter

Auxiliary contacts for disconnecter closed

- Set of 4 pcs change-over

Auxiliary contacts for earthing switch

- Set of 4 pcs change-over

- Feeder protection relay REF 601

(50-51-50N-51N-68)

- N° 2 current sensors KECA 250 B1

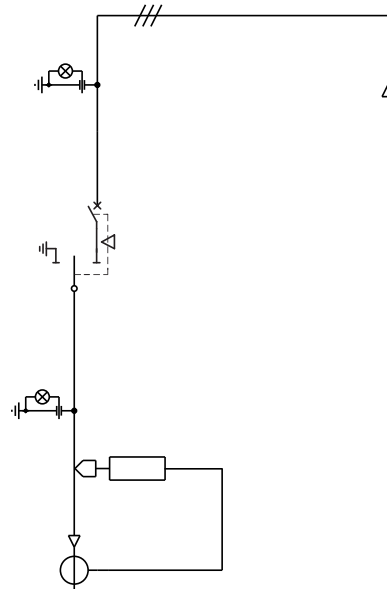
- N° 1 homopolar toroidal 50/1

- Low voltage compartment

##### Lateral cable riser (RRC)

- Width: 190 mm

- Cable entry for 1-phase cables up to 300 mm<sup>2</sup>



## Solution E

### Radial distribution – CB with switch-disconnector

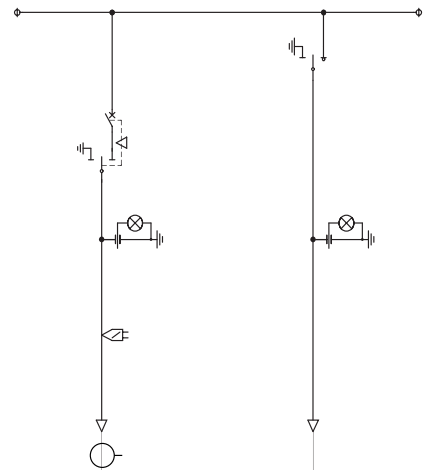
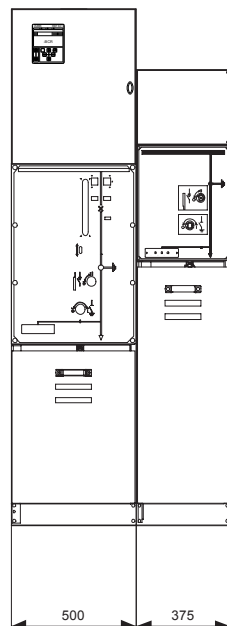
#### Circuit-breaker with disconnector with 3 positions integrated (HBC)

- Width: 500 mm
- Cable entry for 1-phase cable up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- Key locks:
  - line open / closed free
  - earth open / closed free
- N° 1 Anti condensation heater for cable compartment 230 VAC
- Multifunctional apparatus
  - Circuit-breaker:
    - opening & closing push button
    - mechanical signally device for closing springs
    - operation counter
    - shunt opening release 230 VAC
    - auxiliary contacts
    - lock push buttons
  - Disconnector

- Auxiliary contacts for disconnector closed
  - Set of 4 pcs change-over
- Auxiliary contacts for earthing switch
  - Set of 4 pcs change-over
- Feeder protection relay REF 601 (50-51-50N-51N-68)
  - N° 2 current sensors KECA 250 B1
  - N° 1 homopolar toroidal 50/1
- Low voltage compartment

#### Switch-disconnector with cable (SDC)

- Width: 375 mm
- Cable entry for 1-phase cables up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- N° 1 Earth keys open/closed free
- N° 1 Anti condensation heater for cable compartment 230 VAC
- Switch-disconnector 3 positions with earthing switch and 1-spring operating
  - Auxiliary contacts for switch-disconnector closed
    - Set of 4 pcs change-over
  - Auxiliary contacts for earthing switch
    - Set of 4 pcs change-over
- Low voltage compartment



# UniSec for solar applications

## Pre-engineered solutions

### Solution F

#### Ring distribution – CB

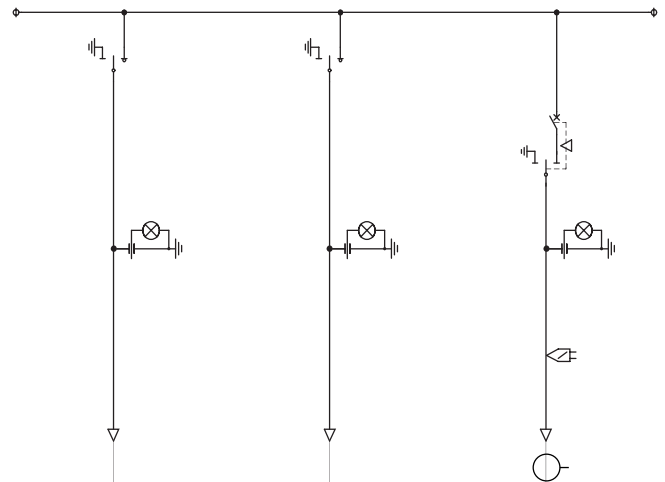
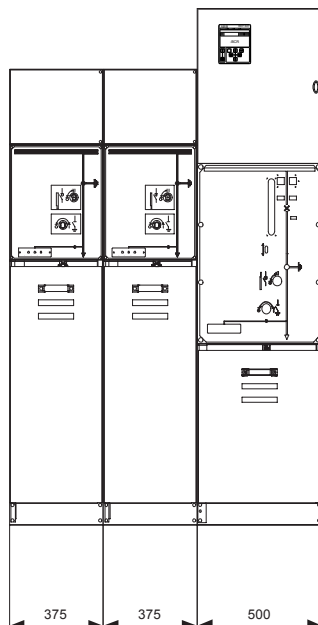
##### N° 2 Switch-disconnector with cable (SDC)

- Width: 375 mm
- Cable entry for 1-phase cable up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- N° 1 Earth key free open
- N° 1 Anti condensation heater for cable compartment 230 VAC
- Switch-disconnector 3 positions with earthing switch and 1-spring operating
- Auxiliary contacts for switch-disconnector closed
  - Set of 4 pcs change-over
- Auxiliary contacts for earthing switch
  - Set of 4 pcs change-over
- Low voltage compartment

##### Circuit-breaker with disconnector with 3 positions integrated (HBC)

- Width: 500 mm
- Cable entry for 1-phase cables up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment

- Key locks:
  - line open / closed free
  - earth open / closed free
- N° 1 Anti condensation heater for cable compartment 230 VAC
- Multifunctional apparatus
  - Circuit-breaker:
    - opening & closing push button
    - mechanical signally device for closing springs
    - operation counter
    - shunt opening release 230 VAC
    - auxiliary contacts
    - lock push buttons
  - Disconnector
    - Auxiliary contacts for disconnector closed
      - Set of 4 pcs change-over
    - Auxiliary contacts for earthing switch
      - Set of 4 pcs change-over
- Feeder protection relay REF 601 (50-51-50N-51N-68)
  - N° 2 current sensors KECA 250 B1
  - N° 1 homopolar toroidal 50/1
- Low voltage compartment



---

# UniSec for solar applications

## Solutions according to Italian CEI 0-16 standards

ABB has developed some solutions specifically for Italian market for photovoltaic application according to CEI 0-16. These solutions, called PV, are pre-configured switchgear.

The PV solutions are available with or without fiscal metering current and voltage transformer.

The technical design document is available and the customer can provide official approval of the design right from the offer stage.

### Electrical Data

- Rated voltage: 24 kV
- Service voltage: 20 or 15 kV
- Rated frequency: 50 Hz
- Rated busbar current: 630 A
- Rated short circuit current: 16 kA, 1 s
- Rated short circuit current duration: 40 kA

### Version

- Internal Arc Classification (IAC): A-F 16 kA, 1 s  
Option: A-FL 12,5 kA, 1 s  
(2100 mm minimum height of the switchgear room)

### Classification

- Service continuity: LSC2A
- Partitions: PM (Metal partitions)

### Auxiliary supply

- Local control voltage: 230 V
- Auxiliary control voltage opening tripping coil: 230 V

### Degree of protection

- Local control voltage: 230 V
- Auxiliary control voltage opening tripping coil: 230 V

# UniSec for solar applications

## Solutions according to Italian CEI 0-16 standards

### Solution PV1 / PV1 UTF

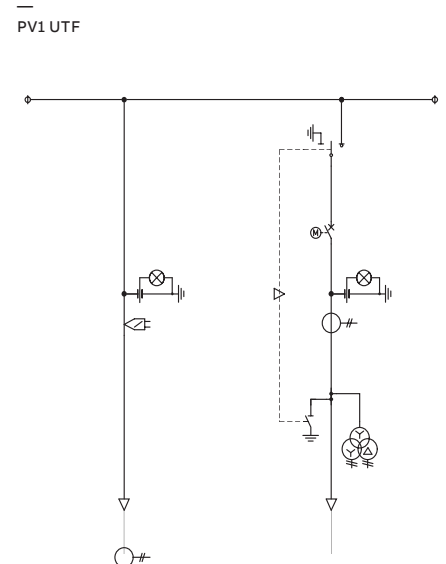
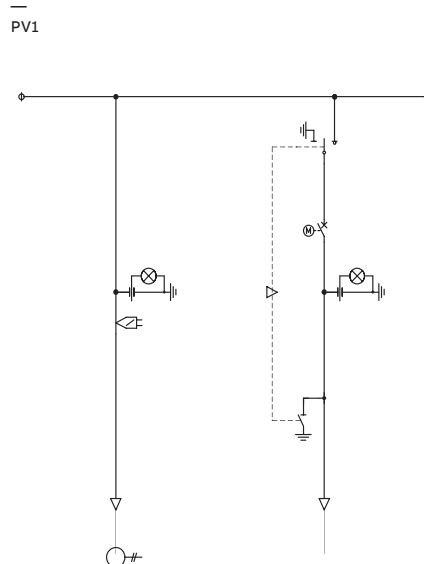
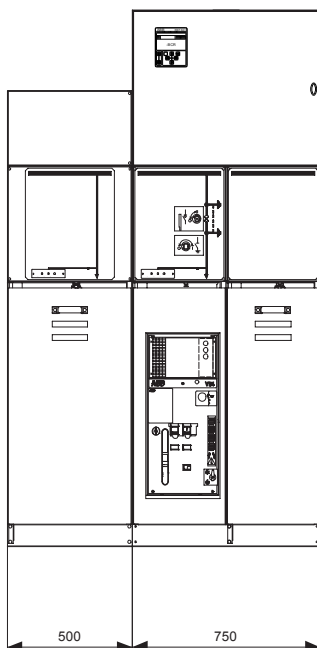
#### Direct riser unit with cable (DRC)

- Width: 500 mm
- Cable entry for 1-phase cables up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- Earthed contacts - CEI 0-16
- 3 Current and Voltage Sensor KEVCD 24 AE3
- 1 homopolar Toroid CEI 0-16 100/1A
- Low voltage compartment

#### Switch-disconnector unit with circuit-breaker with cable (SBC)

- Width: 750 mm
- Cable entry for 1-phase cables up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- Switch-disconnector 3 positions with earthing switch and 1-spring operating
- Key lock for line close / open free
- Key lock for earth close / open free
- Auxiliary contacts for switch-disconnector closed
- Set of 4 pcs change-over
- Auxiliary contacts for earthing switch
- Set of 4 pcs change-over

- Circuit-breaker:
  - opening & closing push button
  - mechanical signally device for closing springs
  - operation counter
  - opening coil 230 VAC
  - closing coil 230 VAC
  - auxiliary contacts
  - lock push buttons
  - temporary mechanical override for undervoltage release
  - spring charging motor 230 VAC
  - protection relay REF 542plus (50-51-50N-51N-67N-59-27-81U-81O-59inv-27dir-59Vo-32P-79)
- Low voltage compartment
- PV1 UTF (option):  
3 CTs and 3 VTs for fiscal metering





## Solution PV2

### Direct riser unit with cable (DRC)

- Width: 500 mm
- Cable entry for 1-phase cables up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- Earthed contacts - CEI 0-16
- 3 Current and Voltage Sensor KEVCD 24 AE3
- 1 homopolar Toroid CEI 0-16 100/1A
- Low voltage compartment

### Switch-disconnector unit with circuit-breaker bus-tie (SBS)

- Width: 750 mm
- Voltage present indication in cable compartment
- Switch-disconnector 3 positions with earthing switch and 1-spring operating  
Key lock for line close / open free  
Key lock for earth close / open free  
Auxiliary contacts for switch-disconnector closed  
- Set of 4 pcs change-over  
Auxiliary contacts for earthing switch  
- Set of 4 pcs change-over

- Circuit-breaker:
  - opening & closing push button
  - mechanical signally device for closing springs
  - operation counter
  - opening coil 230 VAC
  - closing coil 230 VAC
  - auxiliary contacts
  - lock push buttons
  - temporary mechanical override for undervoltage release
  - spring charging motor 230 VAC
  - protection relay REF 542plus (50-51-50N-51N-67N-59-27-81U-81O-59inv-27dir-59Vo-32P-79)
- Low voltage compartment



# UniSec for solar applications

## Solutions according to Italian CEI 0-16 standards

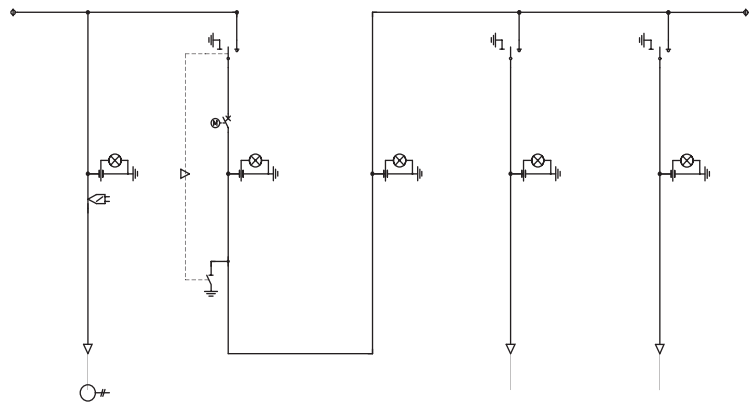
### Direct riser (DRS)

- Width: 500 mm
- Voltage present indication
- Option:
  - 3 CTs and 3 VTs for fiscal metering

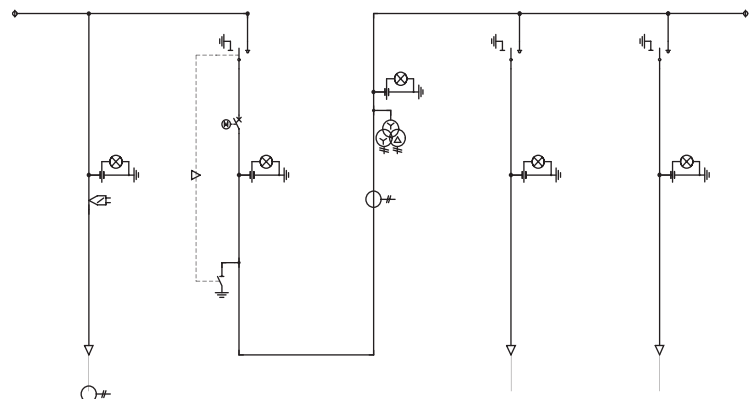
### N° 2 Switch-disconnector with cable (SDC)

- Width: 500 mm
- Cable entry for 1-phase cables up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- Switch-disconnector 3 positions with earthing switch and 1-spring operating
  - Key lock for line close / open free
  - Key lock for earth close / open free
  - Auxiliary contacts for switch-disconnector closed
    - Set of 4 pcs change-over
  - Auxiliary contacts for earthing switch
    - Set of 4 pcs change-over
- Low voltage compartment

PV2



PV2 UTF



## Solution PV3

### Direct riser unit with cable (DRC)

- Width: 500 mm
- Cable entry for 1-phase cables up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- Earthed contacts - CEI 0-16
- 3 Current and Voltage Sensor KEVCD 24 AE3
- 1 homopolar Toroid CEI 0-16 100/1A
- Low voltage compartment

### Switch-disconnector unit with circuit-breaker bus-tie (SBS)

- Width: 750 mm
- Voltage present indication in cable compartment
- Switch-disconnector 3 positions with earthing switch and 1-spring operating  
Key lock for line close / open free  
Key lock for earth close / open free  
Auxiliary contacts for switch-disconnector closed  
- Set of 4 pcs change-over  
Auxiliary contacts for earthing switch  
- Set of 4 pcs change-over

- Circuit-breaker:
  - opening & closing push button
  - mechanical signally device for closing springs
  - operation counter
  - opening coil 230 VAC
  - closing coil 230 VAC
  - auxiliary contacts
  - lock push buttons
  - temporary mechanical override for undervoltage release
  - spring charging motor 230 VAC
  - protection relay REF 542plus (50-51-50N-51N-67N-59-27-81U-81O-59inv-27dir-59Vo-32P-79)
- Low voltage compartment



# UniSec for solar applications

## Solutions according to Italian CEI 0-16 standards

### Direct riser (DRS)

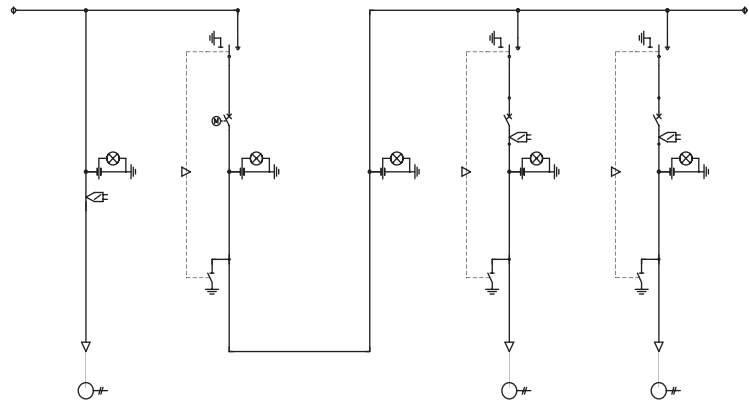
- Width: 500 mm
- Voltage present indication
- Option:
  - 3 CTs and 3 VTs for fiscal metering

### Switch-disconnector unit with circuit-breaker with cable (SBC)

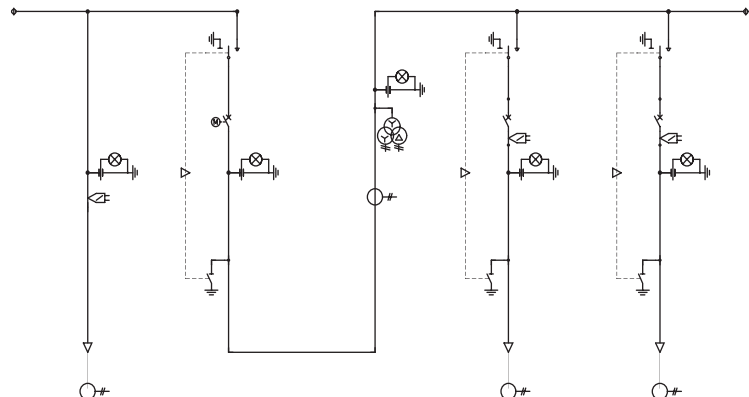
- Width: 750 mm
- Cable entry for 1-phase cables up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- Switch-disconnector 3 positions with earthing switch and 1-spring operating
  - Key lock for line close / open free
  - Key lock for earth close / open free
  - Auxiliary contacts for switch-disconnector closed
  - Set of 4 pcs change-over
- Auxiliary contacts for earthing switch
  - Set of 4 pcs change-over

- Circuit-breaker:
  - opening & closing push button
  - mechanical signally device for closing springs
  - operation counter
  - lock push buttons
  - opening coil 230 VAC
  - protection relay REF 601 (50-51-50N-51N-68)
  - 3 current sensors for REF 601 KEVCR 24 up to 630 A
  - n° 1 homopolar toroidal 50/1
- Low voltage compartment

PV3



PV3 UTF



## Solution PV4

### Direct riser unit with cable (DRC)

- Width: 500 mm
- Cable entry for 1-phase cables up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- Earthed contacts - CEI 0-16
- 3 Current and Voltage Sensor KEVCD 24 AE3
- 1 homopolar Toroid CEI 0-16 100/1A
- Low voltage compartment

### Switch-disconnector unit with circuit-breaker bus-tie (SBS)

- Width: 750 mm
- Voltage present indication in cable compartment
- Switch-disconnector 3 positions with earthing switch and 1-spring operating  
Key lock for line close / open free  
Key lock for earth close / open free  
Auxiliary contacts for switch-disconnector closed  
- Set of 4 pcs change-over  
Auxiliary contacts for earthing switch  
- Set of 4 pcs change-over

- Circuit-breaker:
  - opening & closing push button
  - mechanical signally device for closing springs
  - operation counter
  - opening coil 230 VAC
  - closing coil 230 VAC
  - auxiliary contacts
  - lock push buttons
  - temporary mechanical override for undervoltage release
  - spring charging motor 230 VAC
  - protection relay REF 542plus (50-51-50N-51N-67N-59-27-81U-81O-59inv-27dir-59Vo-32P-79)
- Low voltage compartment



# UniSec for solar applications

## Solutions according to Italian CEI 0-16 standards

### Direct riser (DRS)

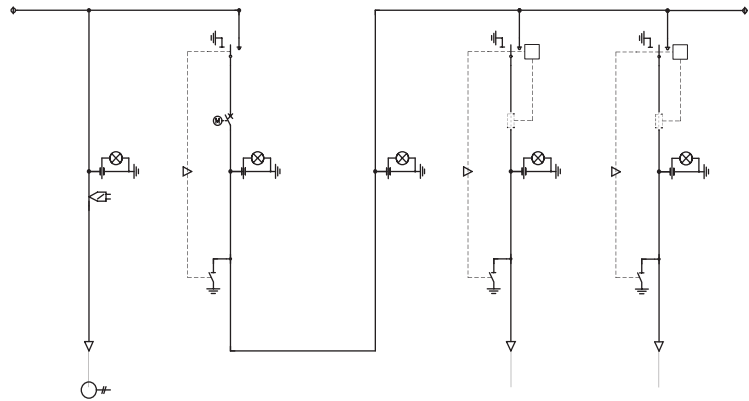
- Width: 500 mm
- Voltage present indication
- Option:
  - 3 CTs and 3 VTs for fiscal metering

### Switch-fuse combination unit with cable (SFC)

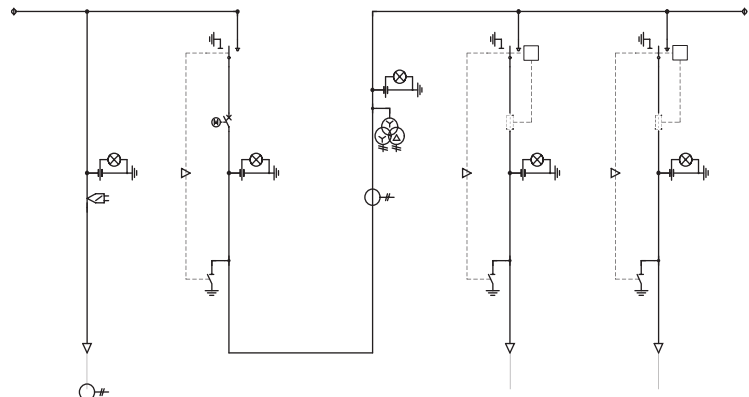
- Width: 500 mm
- Cable entry for 1-phase cables up to 95 mm<sup>2</sup>
- Voltage present indication in cable compartment
- Earth key locks closed / opened (2 locks for earthing)
- Three position switch-disconnector and with earthing switch and 2-spring operating device
- Tripping coil for opening 230 VAC
- Key lock for line close / open free

- Key lock for earth close / open free
- Auxiliary contacts for switch-disconnector closed
- - Set of 4 pcs change-over
- Auxiliary contacts for earthing switch
- - Set of 4 pcs change-over
- Fuse base 375 for ABB CEF fuses 442 mm
- Mounting height for e=442 mm fuses
- Fuse tripping
- Fuse blow indication (1NO)
- Low voltage compartment

PV4



PV4 UTF



## Solution PV5 (DG+SPG in MV and DI+SPI in LV)

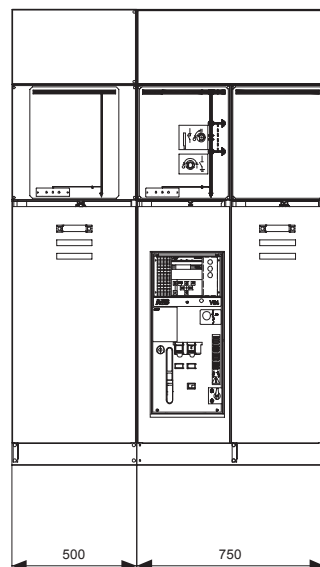
### Direct riser unit with cable (DRC)

- Width: 500 mm
- Cable entry for 1-phase cables up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- Earthed contacts - CEI 0-16
- 1 homopolar Toroid CEI 0-16 100/1A
- Low voltage compartment

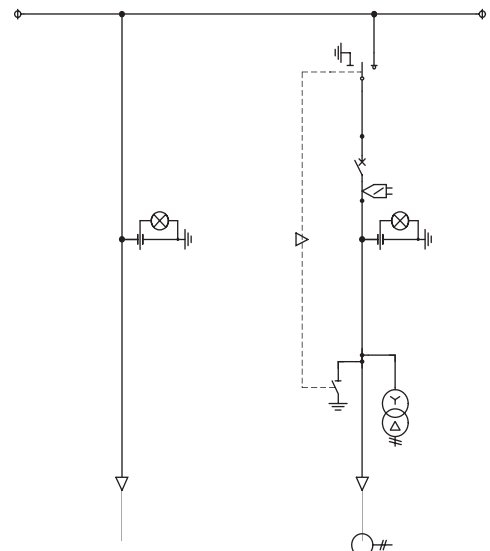
### Switch-disconnector unit with circuit-breaker with cable (SBC)

- Width: 750 mm
- Cable entry for 1-phase cables up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- Switch-disconnector 3 positions with earthing switch and 1-spring operating
- Key lock for line close / open free
- Key lock for earth close / open free
- Auxiliary contacts for switch-disconnector closed
- Set of 4 pcs change-over

- Auxiliary contacts for earthing switch
- Set of 4 pcs change-over
- Circuit-breaker:
  - opening & closing push button
  - mechanical signally device for closing springs
  - operation counter
  - opening coil 230 VAC
  - closing coil 230 VAC
  - auxiliary contacts
  - lock push buttons
  - temporary mechanical override for undervoltage release
  - protection relay REF 601 on board (50-51-50N-51N-68)
  - n° 3 current sensors on board
  - n° 3 voltage transformers open delta
- Low voltage compartment



PV5



# UniSec for solar applications

## Solutions according to Italian CEI 0-16 standards

### Solution PV6

(DG+SPG in MV and DI+SPI in LV)

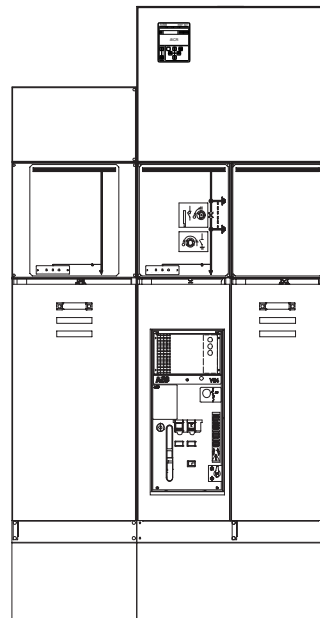
#### Direct riser unit with cable (DRC)

- Width: 500 mm
- Cable entry for 1-phase cables up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- Earthed contacts - CEI 0-16
- 3 Current and voltage sensor KEVCD 24 AE3
- 1 homopolar Toroid CEI 0-16 100/1A
- Low voltage compartment

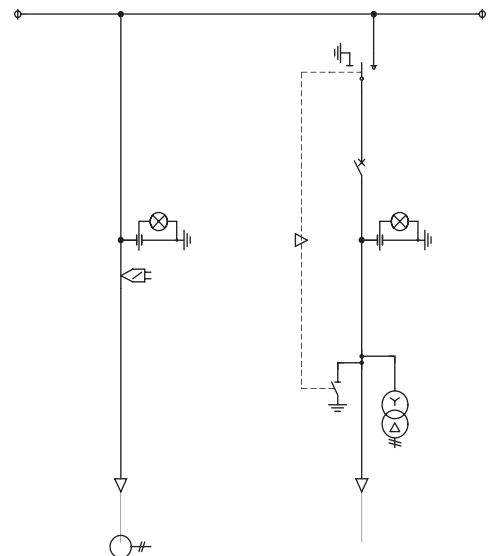
#### Switch-disconnector unit with circuit-breaker with cable (SBC)

- Width: 750 mm
- Cable entry for 1-phase cables up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- Switch-disconnector 3 positions with earthing switch and 1-spring operating
  - Key lock for line close / open free
  - Key lock for earth close / open free
- Auxiliary contacts for switch-disconnector closed
  - Set of 4 pcs change-over
- Auxiliary contacts for earthing switch
  - Set of 4 pcs change-over

- Circuit-breaker:
  - opening & closing push button
  - mechanical signally device for closing springs
  - operation counter
  - opening coil 230 VAC
  - closing coil 230 VAC
  - auxiliary contacts
  - lock push buttons
  - protection relay REF 542plus (50-51-50N-51N-67N)
  - n° 3 voltage transformers open delta
- Low voltage compartment



PV6





## Solution PV7 (DG+SPG+SPI in MV and DI in LV)

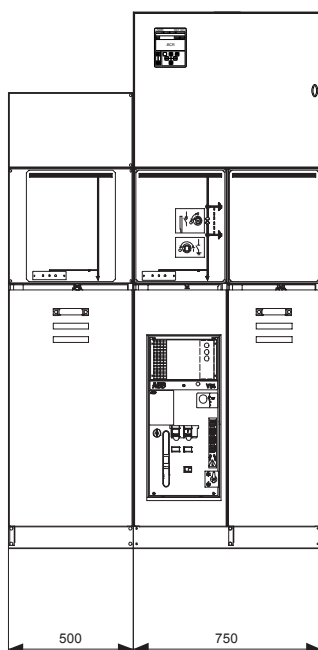
### Direct riser unit with cable (DRC)

- Width: 500 mm
- Cable entry for 1-phase cables up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- Earthed contacts - CEI 0-16
- 3 Current and Voltage Sensor KEVCD 24 AE3
- 1 homopolar Toroid CEI 0-16 100/1A
- Low voltage compartment

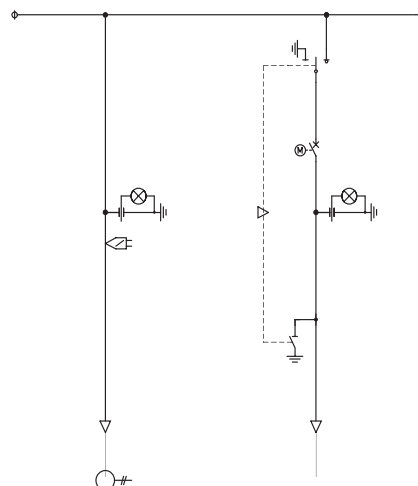
### Switch-disconnector unit with circuit-breaker with cable (SBC)

- Width: 750 mm
- Cable entry for 1-phase cables up to 300 mm<sup>2</sup>
- Voltage present indication in cable compartment
- Switch-disconnector 3 positions with earthing switch and 1-spring operating
- Key lock for line close / open free
- Key lock for earth close / open free
- Auxiliary contacts for switch-disconnector closed
- Set of 4 pcs change-over
- Auxiliary contacts for earthing switch
- Set of 4 pcs change-over

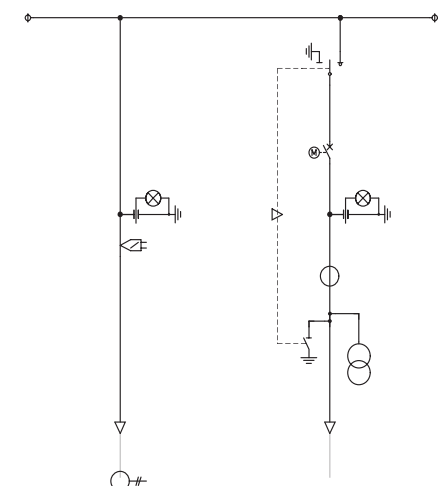
- Circuit-breaker:
  - opening & closing push button
  - mechanical signally device for closing springs
  - operation counter
  - opening coil 230 VAC
  - closing coil 230 VAC
  - auxiliary contacts
  - lock push buttons
  - temporary mechanical override for undervoltage release
  - spring charging motor 230 VAC
  - protection relay REF 542plus (50-51-50N-51N-67N-59-27-81U-81O-59inv-27dir-59Vo-32P-79)
- Low voltage compartment
- PV7 UTF (option):
  - 3 CTs and 3 VTs for fiscal metering



PV7



PV7 UTF





# Notes

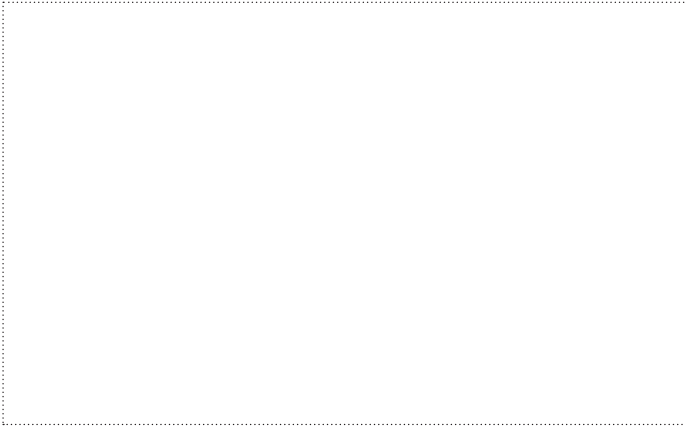
A large grid of small dots for taking notes, consisting of 25 columns and 30 rows.





---

For more information please contact:



---

More product information:

[abb.com/mediumvoltage](http://abb.com/mediumvoltage)

Your contact center:

[abb.com/contactcenters](http://abb.com/contactcenters)

More service information:

[abb.com/service](http://abb.com/service)