

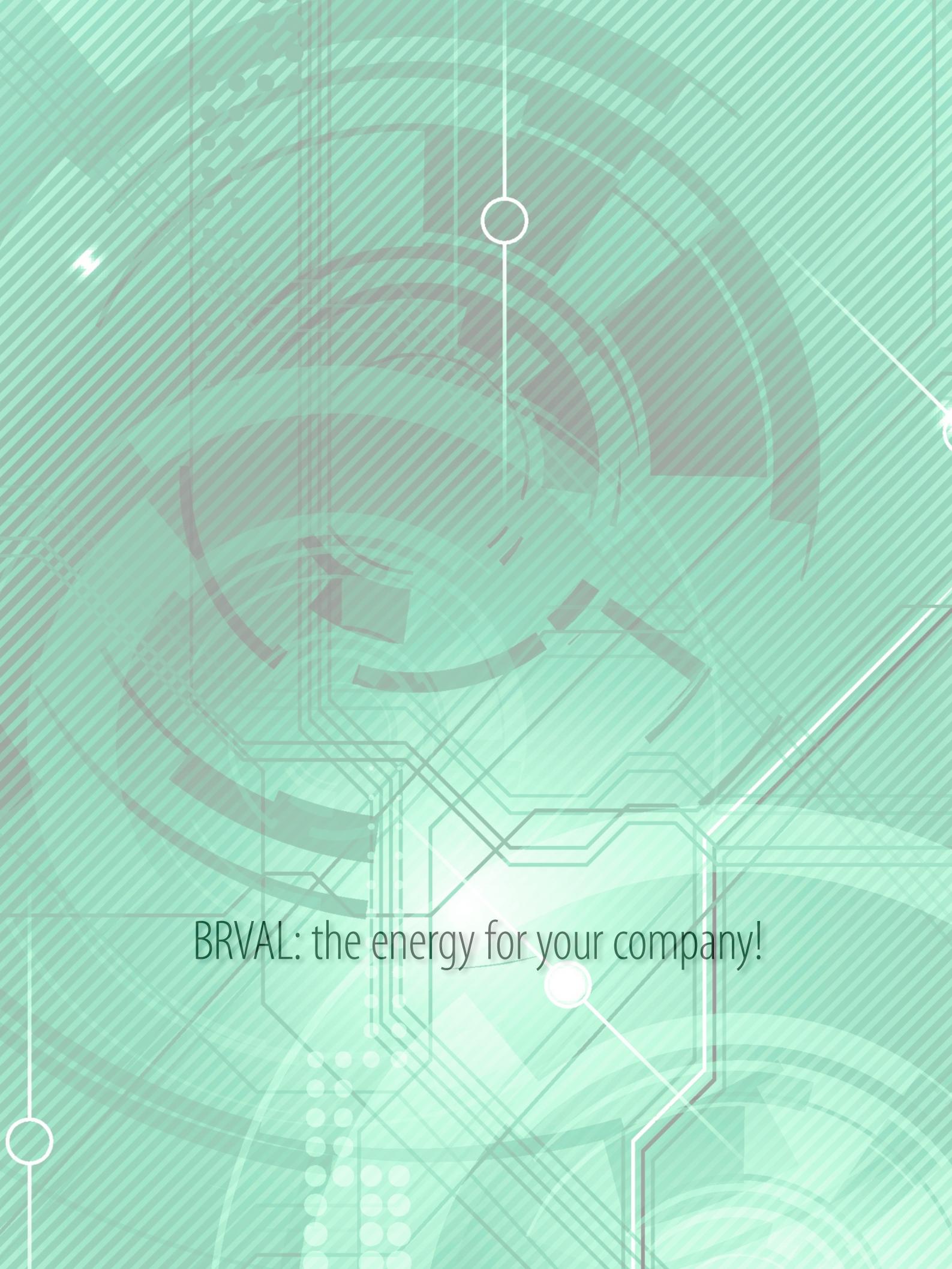
Medium Voltage
Switchgear Solutions

BR6

Compact modular cells



BR VAL
ELECTRICAL



BRVAL: the energy for your company!

About Us

BRVAL Electrical, through its board of directors, with more than 20 years of experience in the electric equipment market, has been participating in the main projects that leverage the Brazilian economy.

With important national action, it is approved and / or approved by the concessionaires Light, AES Eletropaulo, Ampla, Coelce, Celg, Coelba, Celpe, among others, to supply Medium Voltage Armored Substations.

In the industrial plant, distributed by an area of 6,000 m², performs all sheet metal processing, machining, painting, assembly and testing of products, assuring a varied portfolio with differentiated and innovative solutions.

The team, led by electrical engineers, is focused on offering the best service, from the specification to the post-sale phase, supporting customers, designers, installers, operators, technicians and engineers.



ISO 9001

BUREAU VERITAS
Certification



BRVAL
ELECTRICAL

Innovation with quality

Overcoming challenges is the motto of BRVAL. In 2005, it was requested by a client to develop an armored assembly with peculiar requirements of safe, in order to make the cost affordable to all types of company. The company bet on the idea, investing in projects and trials to bring to market its first generation of booths: the G1 Conventional Armored Substation.

In 2010, it improved the initial design and brought to market a model of armored switchgear (Substation or Armored Assembly) with reduced dimensions: the G2 SLIM.

Always innovating, it launched, in 2014, its own third generation of medium voltage switchgear sets. With modular and compact design, the BR6 was designed under SF6 technology, with several advantages over the modular products available in the market.

The search for continuous improvement in production processes BRVAL the ISO 9001: 2008 certification. This standard establishes essential requirements to promote employee training, monitoring the work environment and improving the management system, ensuring high quality standard for materials, products and services.

The BRVAL products comply with the specific technical standards ABNT and IEC for each equipment. In order to certify and improve quality, safety and reliability, the company conducts Type Tests in Accredited Laboratories by these standards.

Internal arch tests on BR6 and G2 Slim Switchgear

Products

G2 Slim

Conventional Type Medium Voltage Maneuver Set, 17.5kV, NI 95kV, 400 or 630A, 12.5kA / 1s, IAC AFL / LSC-1A, equipped with air disconnecting switch and vacuum or SF6 circuit breaker.

BR6

17.5, 24 or 36kV, 630 or 1250A, 12.5 or 20kA / 1s, IAC AFL / LSC-2A Medium Voltage Maneuver Set equipped with SF6 switches and / or circuit breakers.

Evotech

Medium Voltage Maneuve Set of the "Metalclad"Type, 17.5kV, 630 to 2500A, IAC AFLR / LSC2B, equipped with a withdrawable type vacuum circuit-breaker.

BRcenter

Integrated modular solution in an electrocenter or room pre-fabricated, with maneuver assemblies, transformers and other equipment.

BRkit

Circuit-breaker with built-in secondary protection

Prokit

Panel with relay for secondary protection

BRcharger

Charger panel / battery float charger.

IDBR-02

Defect identifier for medium voltage insulated cables

Conjuntos de Manobra de Baixa Tensão

Equipment designed and tested according to NBR IEC 60439: 1 and IEC 61439; rated current up to 6.300A, 100kA / 1s; compartmentation 2A to 4B. Internal electric arc proof models also available.

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Note

Here we present only the most common used Switchgear. However, our technical-commercial department is able to develop columns specific to each need.

1. Introduction BR6

BRVAL presents to the market its new line of Medium Voltage Ma-neuver Set BR6.

Based on the SF6 (sulfur hexafluoride) technology used in circuit breakers and disconnecting switches, the BR6 range offers several advantages: modularity, reduced size, ease of installation and safe operation / maintenance.

And there are also the differentials that only BRVAL offers:

- Facilitated Maintenance : the BR6 line allows the removal of the SF6 disconnecting switch from the front of the cell and also has a system for quick insertion of the covers and doors.
- Mechanical interlocking between circuit breakers: system, used in cabins with double feed and automatic transfer.
- Quality Guaranteed: They have the highest intensity of two thousand medium voltage inputs, a BRVAL long life accumulator and quality certified according to ISO 9001: 2008.

2. Technical Specification:

Standard Applicable	NBR IEC 62271-200 NBR IEC 60694		
Rated Voltage (Ur)	17,5kV	24kV	36kV
Atmospheric impulse withstand voltage test (Uimp)	95kV	125kV	170kV
Industrial Frequency Supported Voltage(Ud)	38kV	60kV	100kV
Rated Current (Ir)	630A / 1250A		
Current Short Term (Ik/tk)	12,5kA/1s 20kA/1s	12,5kA/1s 20kA/1s	12,5kA/1s
Valor de Crista da Corrente Suportável (Ip)	32,5kA 52kA	32,5kA 52kA	32,5kA
Internal arc classification	AFL		
Degree of Protection	IP-3X		
Loss of Continuity of Service / Class	LSC2A/PI		
Predominant color	Gray RAL 7032		
Installation Type	Sheltered		
Operating Temperature	-5°C a +40°C		

3. Main Parts



Circuit Breakers SF6



MV SF6 Switch and Disconnector



Protection Relays

Circuit breakers

The circuit-breaker used is a vacuum-insulated type or SF6 (sulfur hexafluoride), which guarantees long life and high electrical durability to the equipment.

It has exclusive mechanical interlocking system between circuit breakers, developed by BRVAL, which is used in cabins with double feed and automatic transfer.

Supplied in rated currents of 630A or 1250A and with interrupting capacities of 12.5kA or 20kA.

Estimated useful life: 10,000 operations.

MV SF6 Switch

The SF6-insulated type switch has three positions (closed, open or grounded), ensuring a natural interlock that prevents dangerous maneuvers.

Watertightness: because it has a casing molded in insulation material filled with SF6 gas, it meets the pressure system sealed for life. Unlike the solutions of cells with keys inside steel tanks, it does not require the use of manometers, because its leakage rate is 10 times smaller.

Delivered on both load and no-load models, and on 630A and 1250A chains.

Estimated useful life: 1,000 mechanical operations or 100 operations under load.

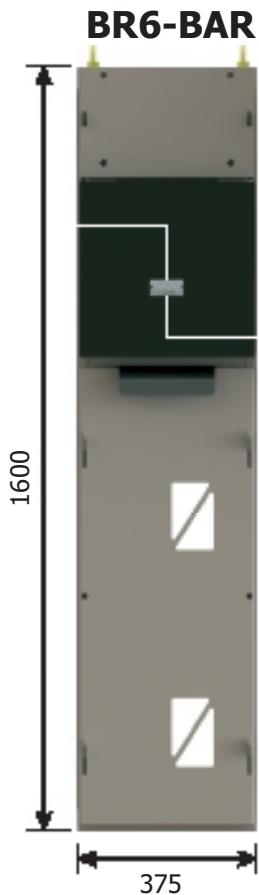
Protection relays

Microprocessed, with Electromagnetic Compatibility (EMC) guarantee between products, allowing remote control and monitoring.

They serve the most diverse ANSI functions.

4. 17,5kV/24kV Cells

4.1. Input Output Cells and Transition



Depth = 840mm (17.5kV)
Depth = 1070mm (24kV)
Input line connection cell with right or left transition.

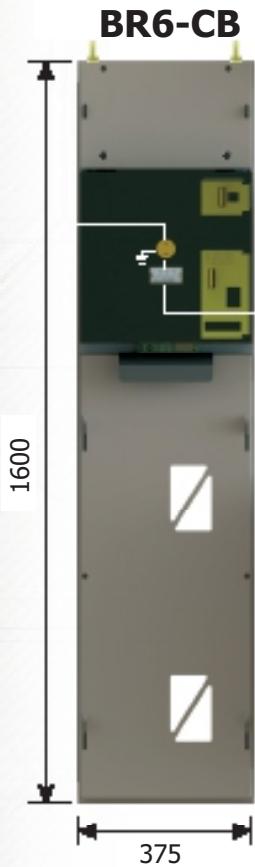
Capacitive sensor and lightning arrestors are optional.



Depth = 840mm (17.5kV)
Depth = 1070mm (24kV)
Input line connection cell or cable outlet.

4. 17,5kV/24kV Cells

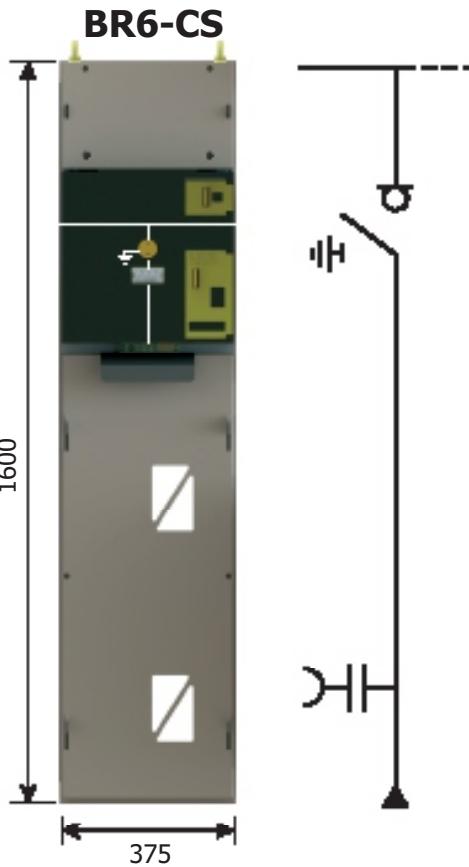
4.2. Sectioning cells



Depth = 840mm (17.5kV)

Depth = 1070mm (24kV)

Switch with or without ground switch with right or left transition.



Depth = 840mm (17.5kV)

Depth = 1070mm (24kV)

Switchgear with input or output by cables.

375

Capacitive sensor and lightning arrestors are optional.

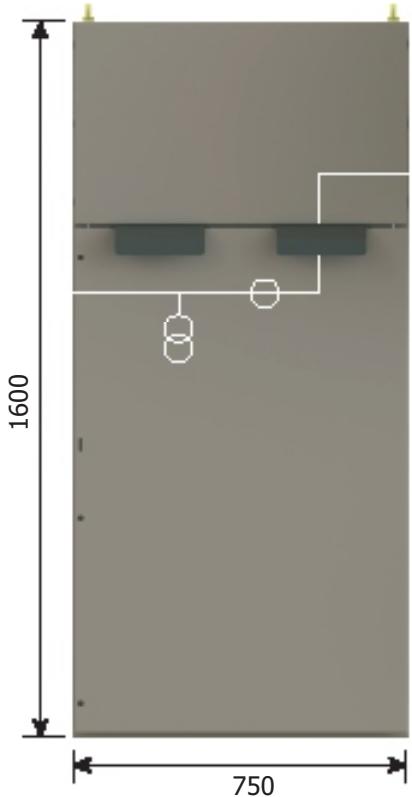
Total security:

Mechanical interlocking, which only opens the access door of the cable compartment with the key open and grounded.

4. 17,5kV/24kV Cells

4.3. Measuring Cells

BR6-M1



Depth = 840mm (17,5kV)

Depth = 1070mm (24kV)

Current and / or voltage measurements with right or left transition.

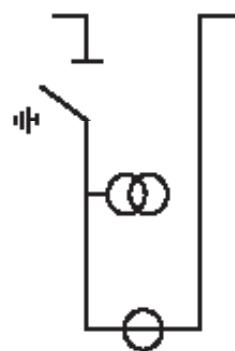
BR6-CM3.C



Profundidade = 1000mm (17,5kV)

Profundidade = 1070mm (24kV)

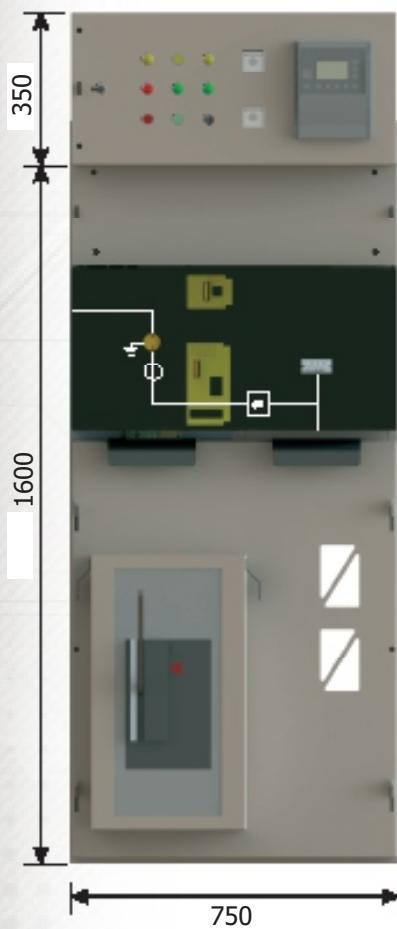
General energy measurement with right or left transition.



4. 17.5kV/24kV Cells

4.4. Circuit Breaker Cells + SF6 Switch

BR6-DC1S

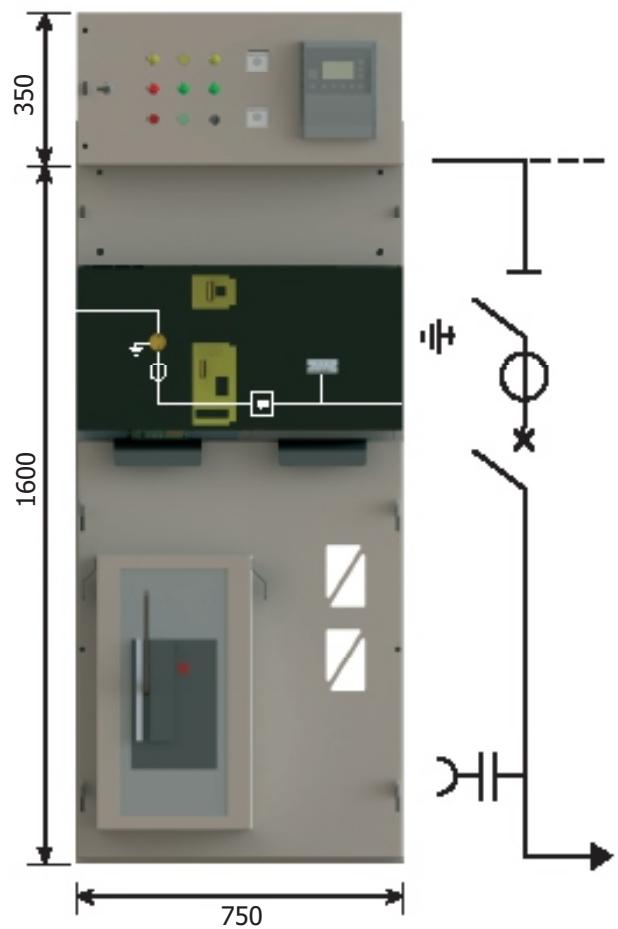


Depth = 840mm (17.5kV)

Depth = 1070mm (24kV)

Disconnectable circuit-breaker, simple disconnection with
or without ground switch and cable outlet.

BR6-DC1B



Depth = 840mm (17.5kV)

Depth = 1070mm (24kV)

Disconnect switch, simple sectioning with the
transition to the right.

Capacitive sensor and lightning arrestors are optional.

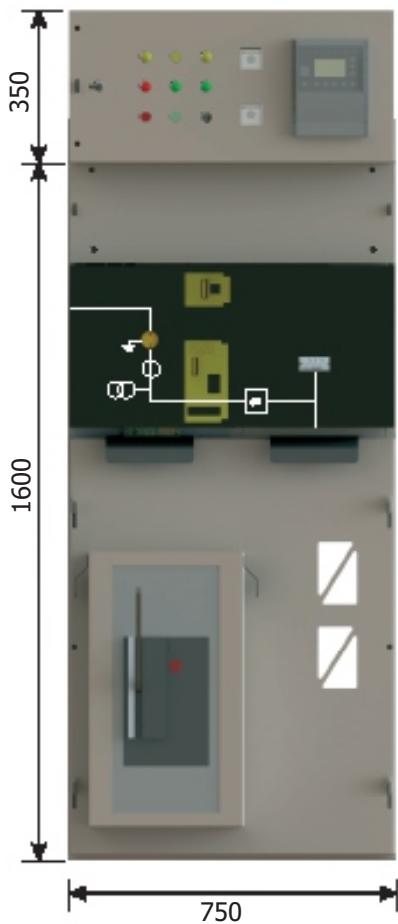
Total security:

Mechanical interlocking, which only opens the access door of the cable compartment with the key open and grounded.

4. 17,5kV/24kV Cells

4.5. Circuit Breaker Cells + SF6 Switch with Potential Transformer

BR6-DC1ST

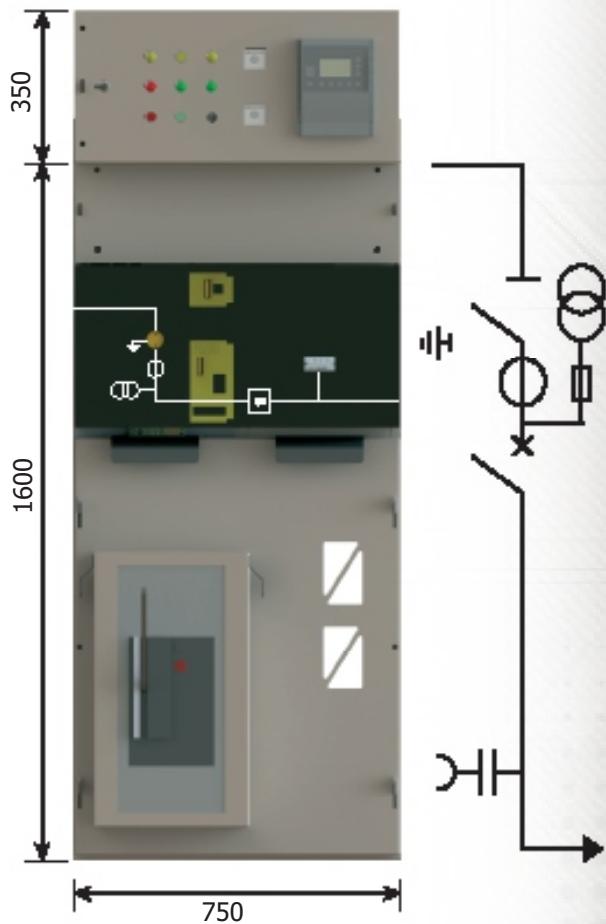


Depth = 840mm (17.5kV)

Depth = 1070mm (24kV)

Simple circuit breaker with or without ground switch, TP's (Potential transformer) and cable output.

BR6-DC1BT



Depth = 840mm (17.5kV)

Depth = 1070mm (24kV)

Simple circuit breaker, TP's (Potential transformer) and right transition.

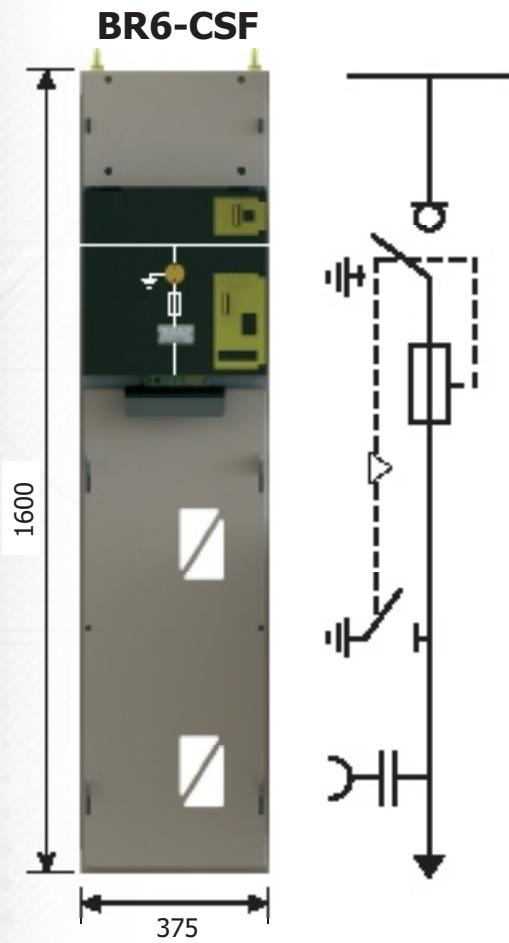
Capacitive sensor and lightning arrestors are optional.

Total security:

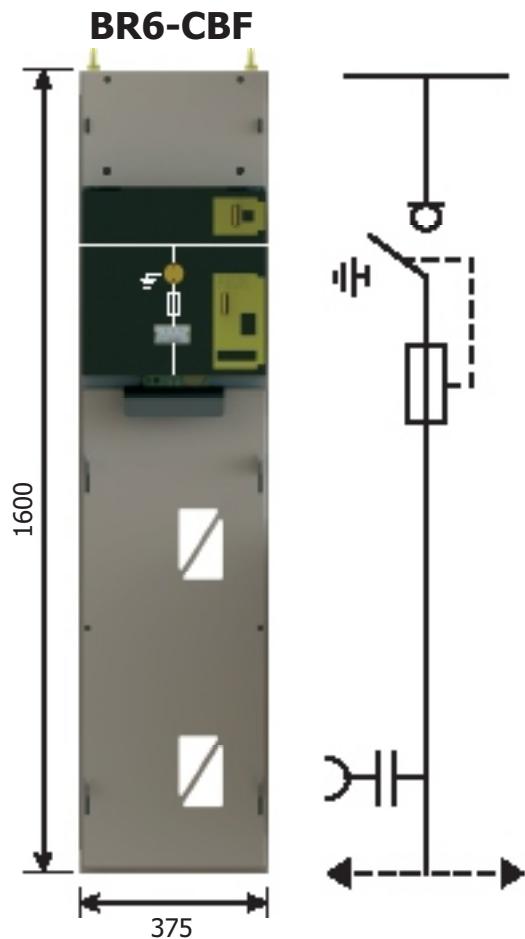
Mechanical interlocking, which only opens the access door of the cable compartment with the key open and grounded.

4. 17.5kV/24kV Cells

4.6. Fuse Base Section Cells



Depth = 840mm (17.5kV)
Depth = 1070mm (24kV)
Combination disconnector-fuses with or without
ground switch and output by cables.



Depth = 840mm (17.5kV)
Depth = 1070mm (24kV)
Combination switch-fuse with right or left

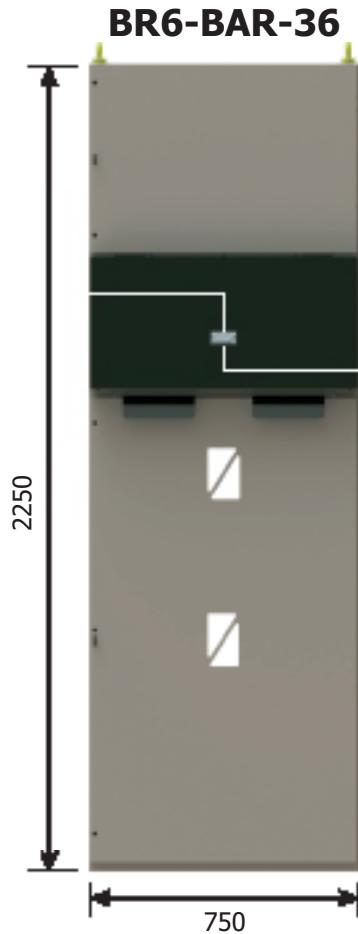
Capacitive sensor and lightning arrestors are optional.

Total security:

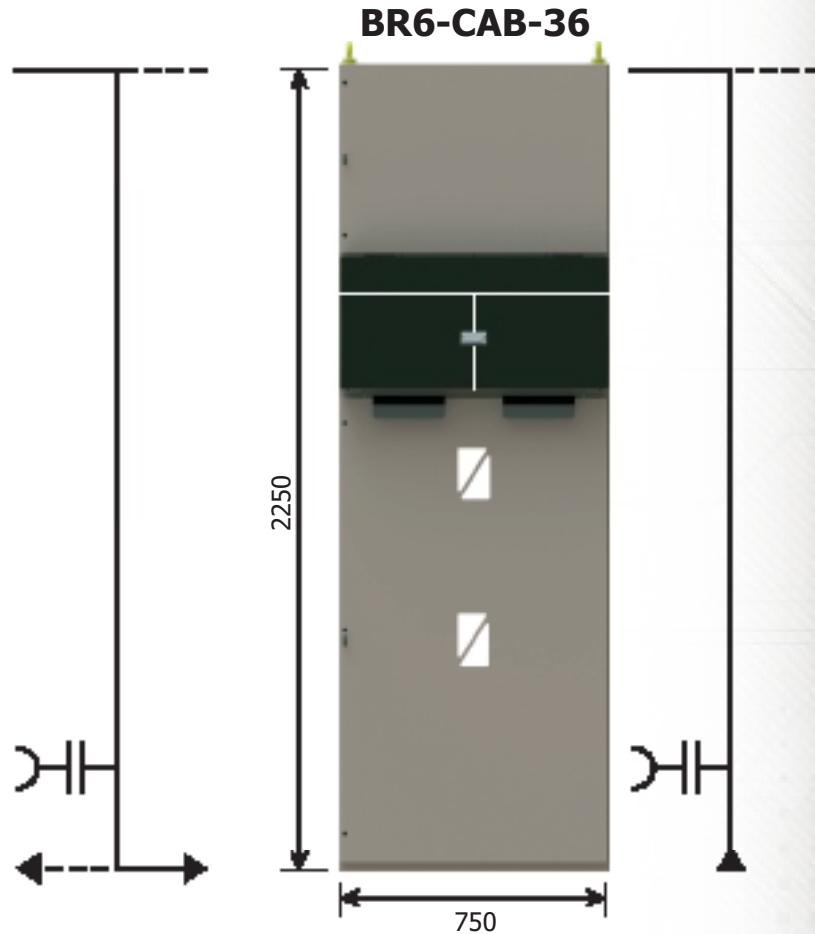
Mechanical interlocking, which only opens the access door of the cable compartment with the key open and grounded.

5. 36kV Cells

5.1. Input \ Output Cells and Transition



Depth = 1400mm
Input line connection cell with right or left transition.

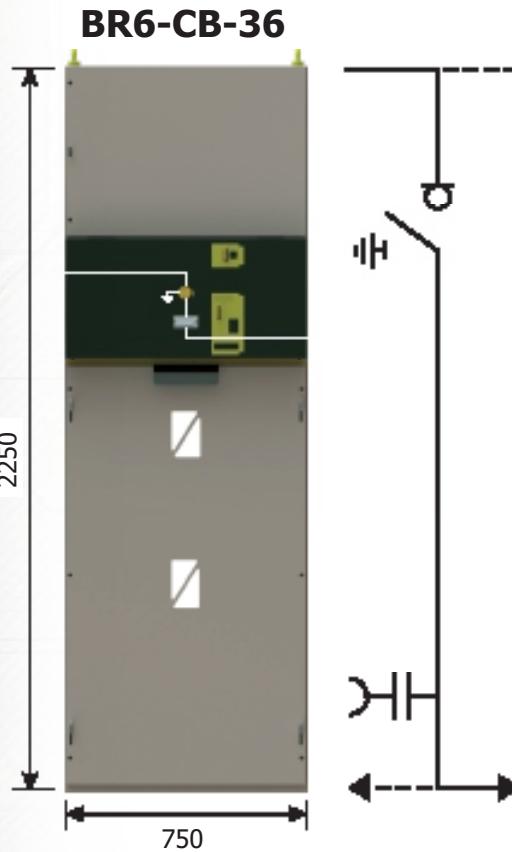


Depth = 1400mm
Connection cell for the cable entry or exit line.

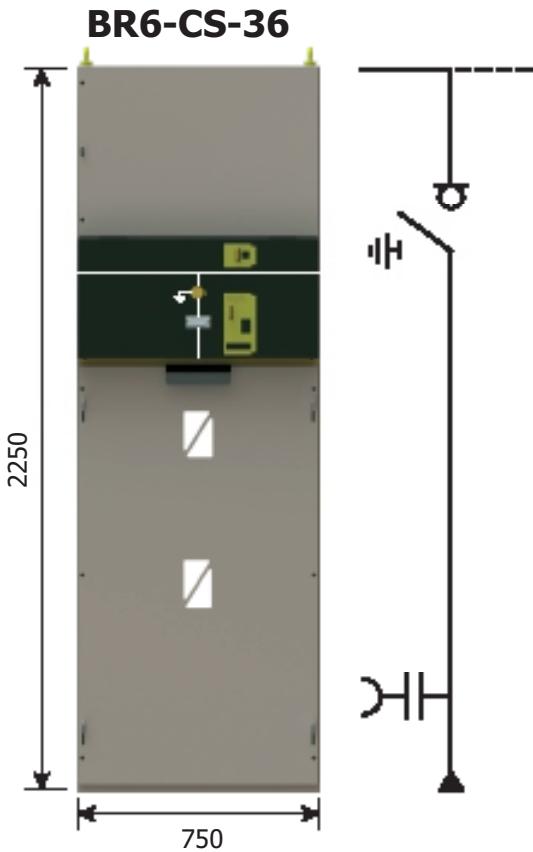
Capacitive sensor and lightning arrestors are optional.

5. Células de 36kV

5.2. Sectioning cells



Depth = 1400mm
Switch with or without ground switch with
right or left transition.



Depth = 1400mm
Switchgear with input or output by cables.

Capacitive sensor and lightning arrestors are optional.

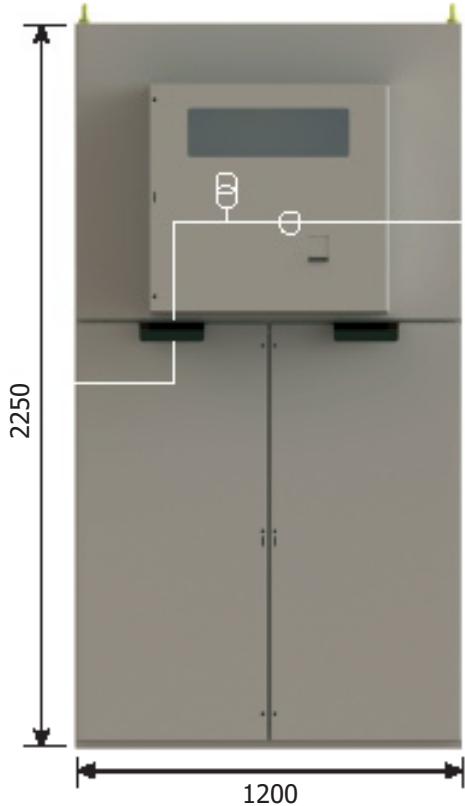
Total security:

Mechanical interlocking, which only opens the access door of the cable compartment with the key open and grounded.

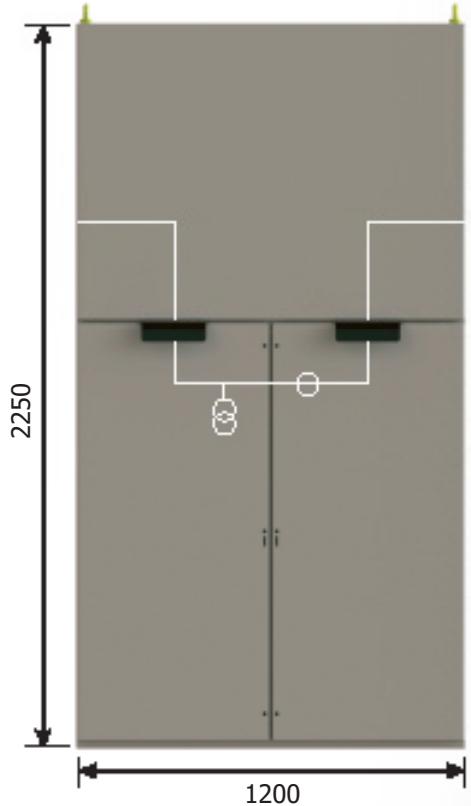
5. Células de 36kV

5.3. Measuring Cells

BR6-M1.C-36



BR6-M2-36

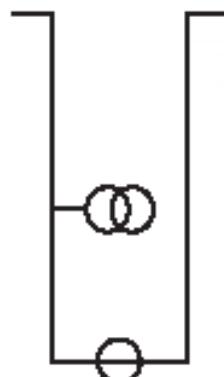
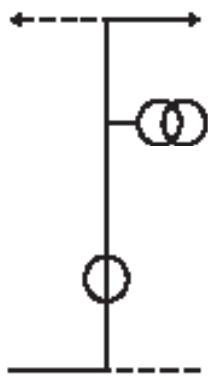


Depth = 1400mm

Current and / or voltage measurements with right or left transition.

Depth = 1400mm

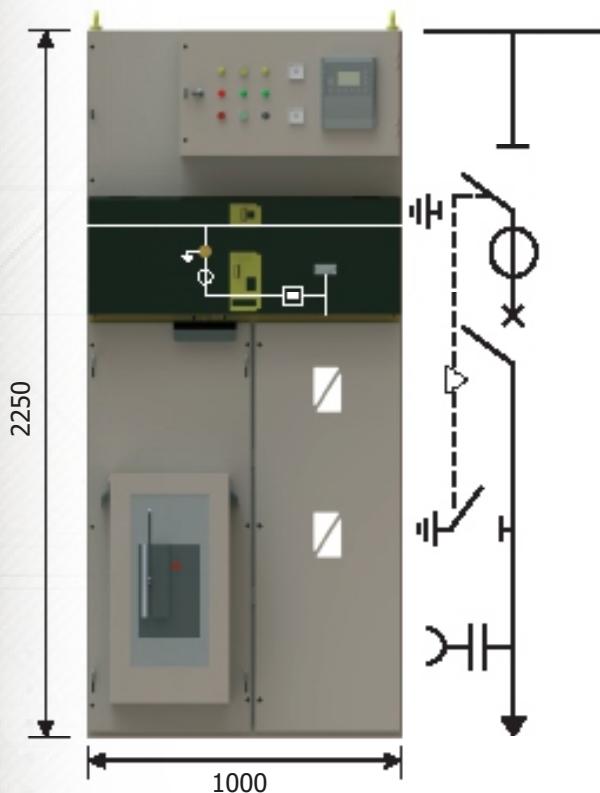
General energy measurement with right or left transition.



5. 36kV Cells

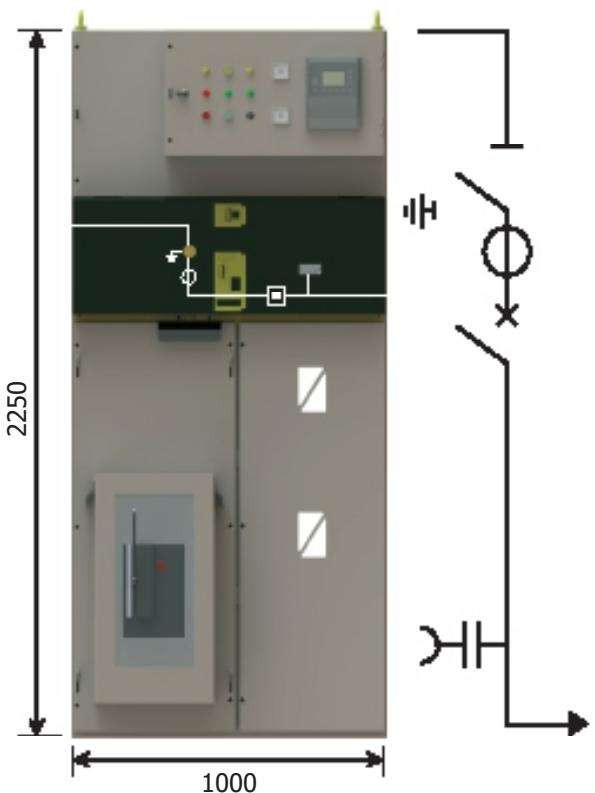
5.4. Circuit Breaker Cells + SF6 Switch

BR6-DC1S-36



Depth = 1400mm
Disconnectable circuit-breaker, simple disconnection with or without ground switch and cable outlet.

BR6-DC1B-36



Depth = 1400mm
Disconnect switch, simple sectioning with the transition to the right.

Capacitive sensor and lightning arrestors are optional.

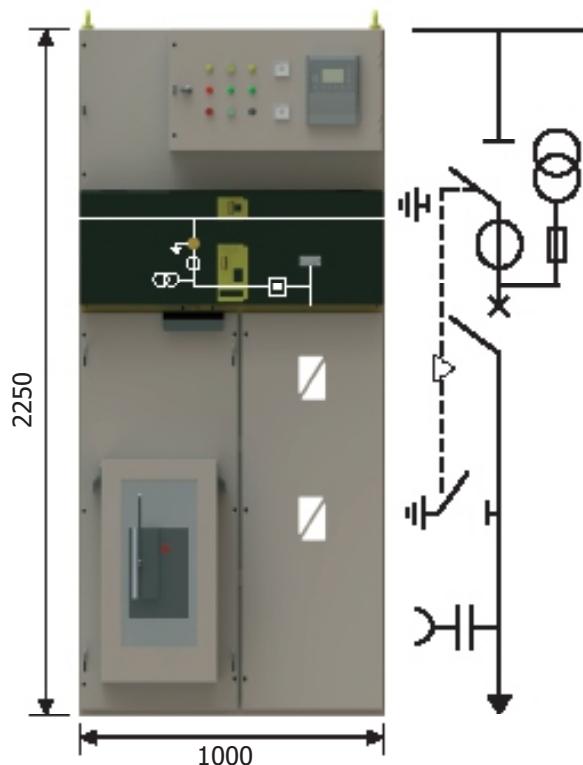
Total security:

Mechanical interlocking, which only opens the access door of the cable compartment with the key open and grounded.

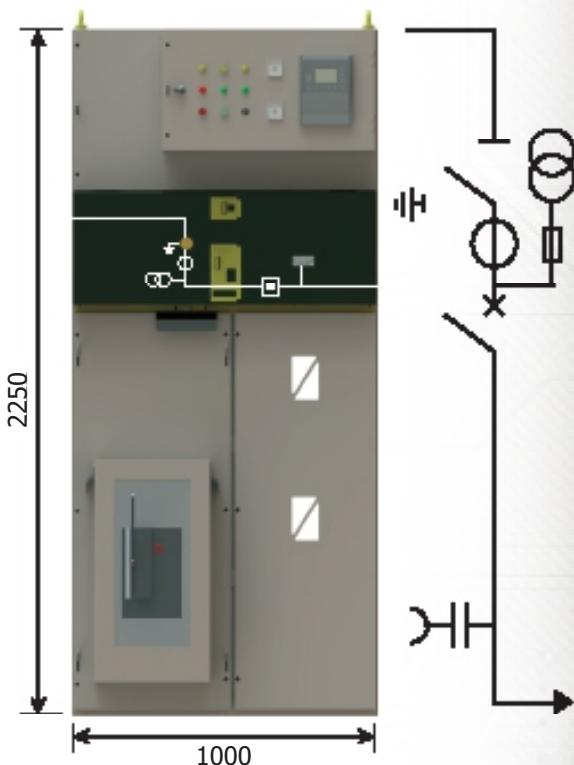
5. 36kV Cells

5.5. Circuit Breaker Cells + SF6 Switch with Potential Transformer

BR6-DC1ST-36



BR6-DC1BT-36



Depth = 1400mm

Simple circuit breaker with or without ground switch, TP's (Potential transformer) and cable output.

Depth = 1400mm

Simple circuit breaker, TP's (Potential transformer) and right transition.

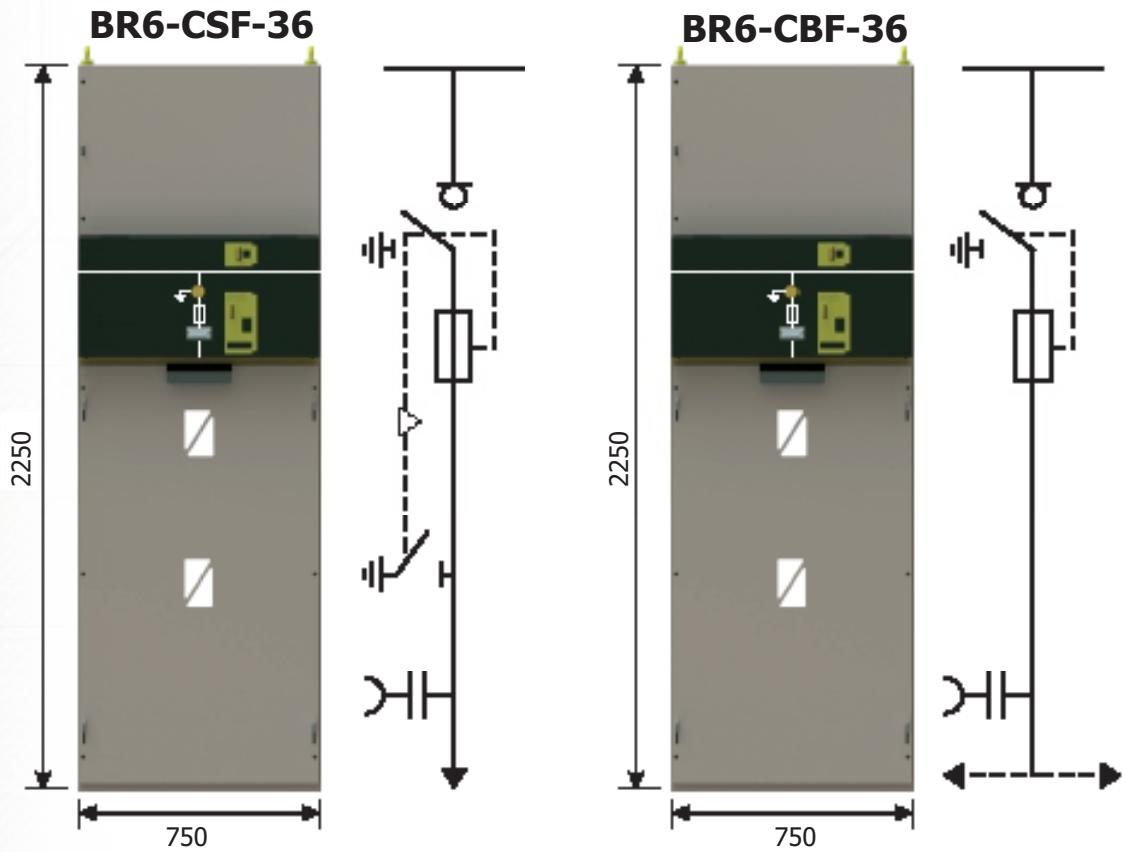
Capacitive sensor and lightning arrestors are optional.

Total security:

Mechanical interlocking, which only opens the access door of the cable compartment with the key open and grounded.

5. 36kV Cells

5.6. Fuse Base Section Cells



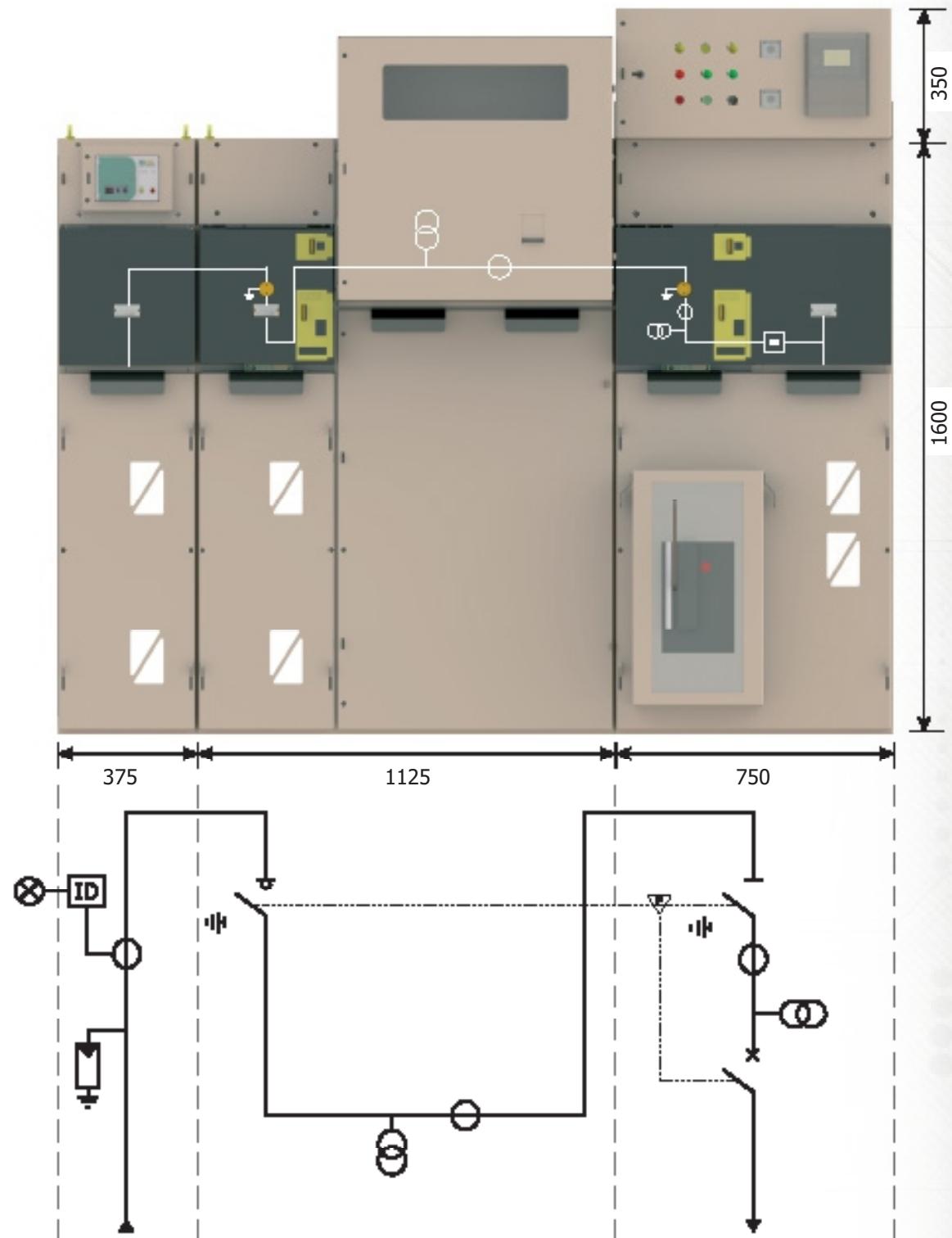
Capacitive sensor and lightning arrestors are optional.

Total security:

Mechanical interlocking, which only opens the access door of the cable compartment with the key open and grounded.

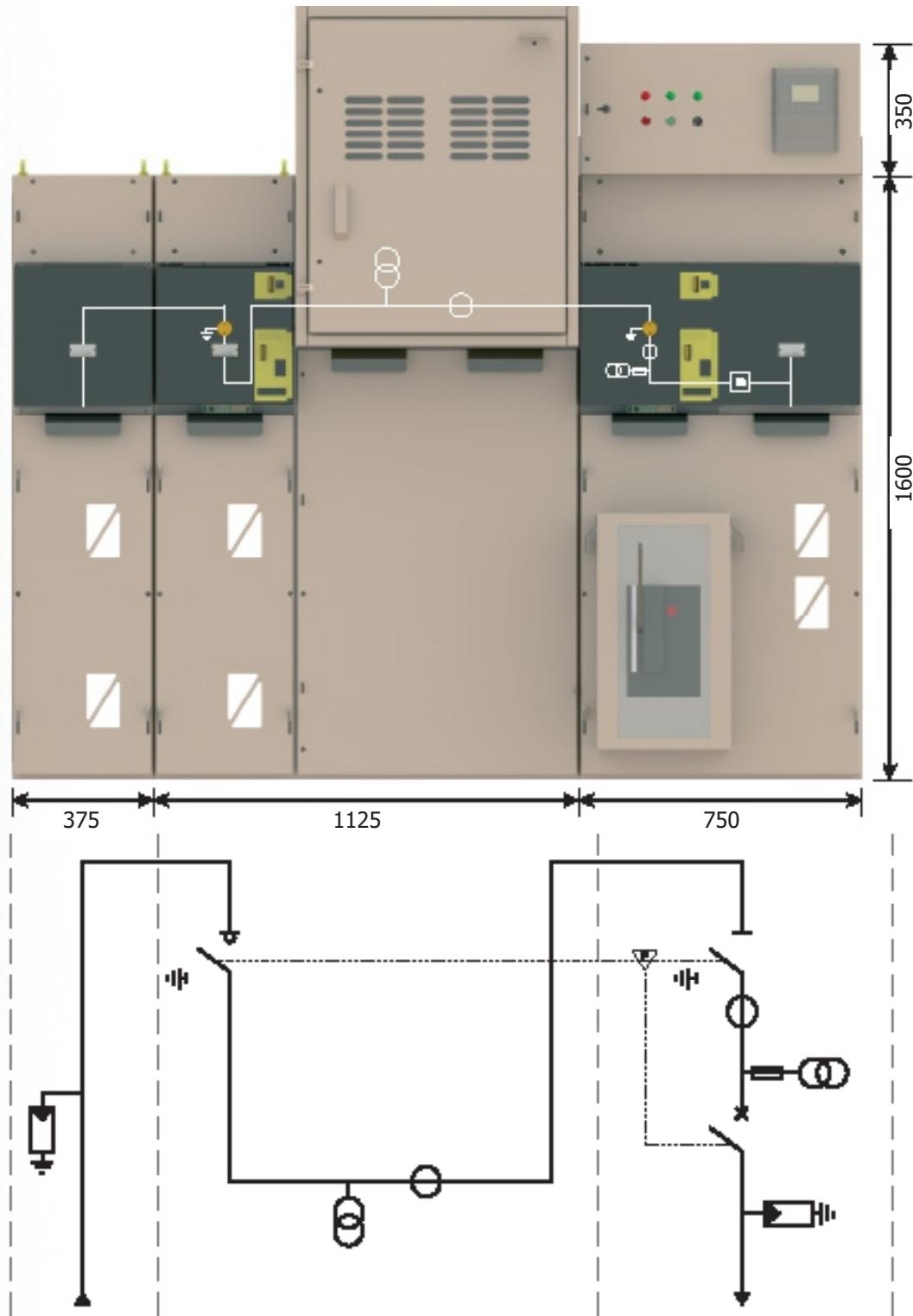
6. Application Examples

6.1. Armored Cabin SBL-01-F 17.5 kV Standard LIGHT



6. Application Examples

6.2. Armored Cabin BRVAL-07/AES-BR6 17,5kV Standard AES Eletropaulo







BR VAL ELECTRICAL

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