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Sitras ASG25

1- and 2-pole air-insulated switchgear
for AC traction power supply

[siemens.com/rail-electrification](https://www.siemens.com/rail-electrification)

The Sitras ASG25[®] air-insulated switchgear is intended for use in 1- and 2-pole AC traction power supply systems. It is a type-tested, metal-enclosed switchgear for indoor installation.

The general concept of the Sitras ASG25 is based on a proven technology offering high reliability and availability. It provides long lifetime, high number of operating cycles, long lasting insulation properties and low life-cycle costs

Features

- High personnel safety
- High fire safety
- Environment-friendly: minimum use of materials listed in directives 67/548/EEC and 2001/59/EC
- Low life-cycle costs
- High availability
- Fast and easy replacement of the vacuum circuit-breaker by use of tulip contacts

Design

Mechanical design

Frame

- The base frame, door and outer walls are made of screw / rivet connected steel sheets with 2 mm thickness
- Hinged plates (pressure relief flaps) are installed on top for pressure relief in case of internal arc faults
- Doors and side walls are painted; galvanized steel sheets are used for all other parts

Busbars

- Busbars are supported by standard cast-resin post insulators and bushings
- Busbars can be easily connected by links after cubicle arrangement on site
- Partitioning of busbar compartment by insulating plate and bushing
- Busbars can be earthed (see option 9 on page 6)

High voltage compartment

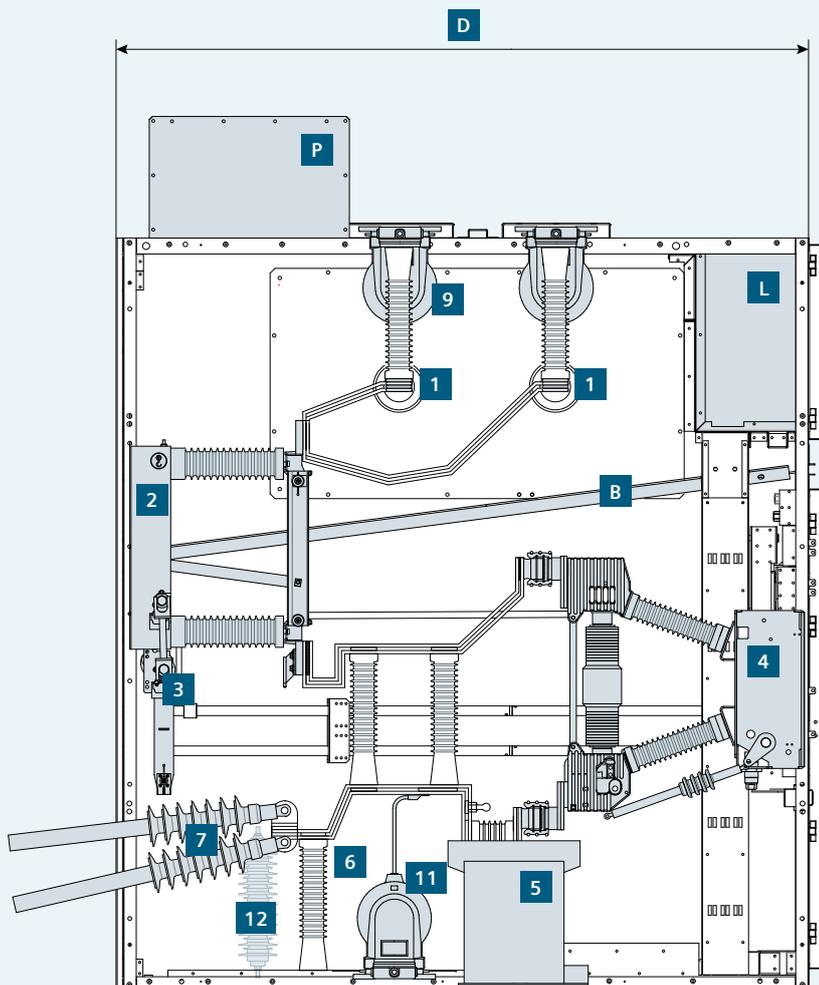
- Pressure resistant inspection windows for
 - visible position of disconnector and earthing switch
 - status indication of vacuum circuit-breaker (ON/OFF, proven spring charging technology, operation counter)
- Insulating protection plate for safe maintenance while busbar is energized

Low voltage compartment

Control cables for external connections are led from the bottom to the low voltage compartment via cable duct or through flange plate at the top.
All wirings may be provided in non-halogen variants on request.

Service truck

Thanks to the plug-in / plug-out technology with tulip contacts, the vacuum circuit-breaker can be fast and conveniently replaced using the easy to handle service truck.



- 1 Busbar
- 2 Disconnecter
- 3 Earthing switch
- 4 Vacuum circuit-breaker
- 5 Current transformer
- 6 Capacitive voltage detection system
- 7 Cable sealing end from rear (Option)
- 9 Busbar voltage transformer (Option)
- 11 Voltage transformer (Option)
- 12 Surge arrester (Option)

- L Low voltage compartment
- P Pressure relief channel
- B Bearing for insulating protection plate

- D Depth
- H1 Height switchgear
- H2 Height pressure relief channel
- W1 Width 1-pole version
- W2 Width 2-pole version

Schematic layout of Sitras ASG25 (shown example: 2-pole version with option cable sealing end from rear)

Electrical design

Cable connections

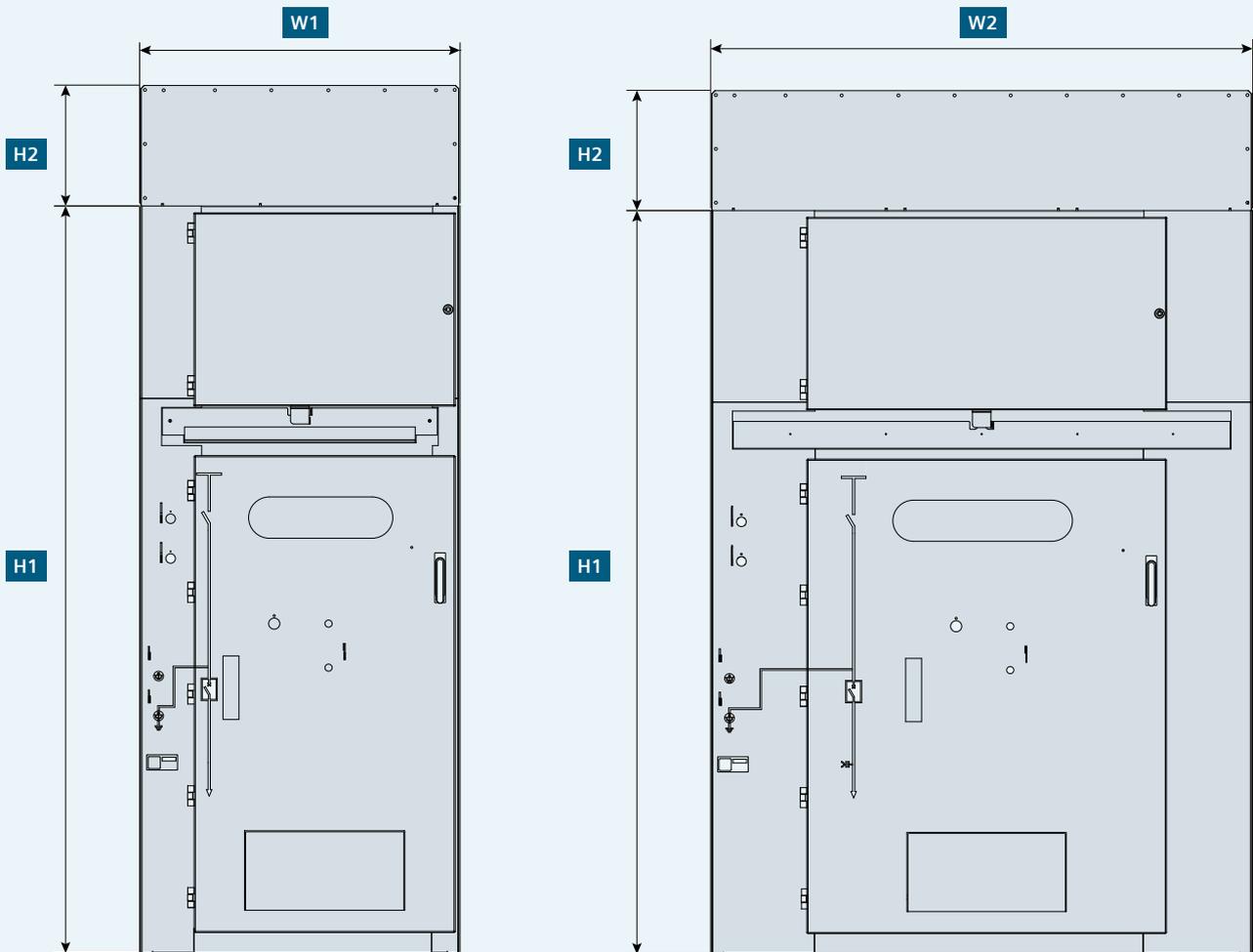
- Cable connections from bottom up to 4 x 500 mm² per feeder
- Cable connections from rear available as an option
- Surge arrester available as an option

High voltage compartment

- Switching devices
 - vacuum circuit-breaker, motor operated
 - disconnector and earthing switch, manual or motor operated
 - manual emergency operation possible for all switching devices
- Interlocking between vacuum circuit-breaker, disconnector and earthing switch
- Measurement transformers for control and protection

Low voltage compartment

- Protection relay and user interface are installed in the door of the low voltage compartment
- Miniature circuit-breakers and auxiliary relays are located inside the low voltage compartment
- Connection between the vacuum circuit-breaker and the low voltage compartment is made via a 64-pin plug and-socket arrangement



Front view of Sitras ASG25: 1-pole version (left) and 2-pole version (right)

Main components

Vacuum circuit-breaker, type 3AH47

Switching capacity

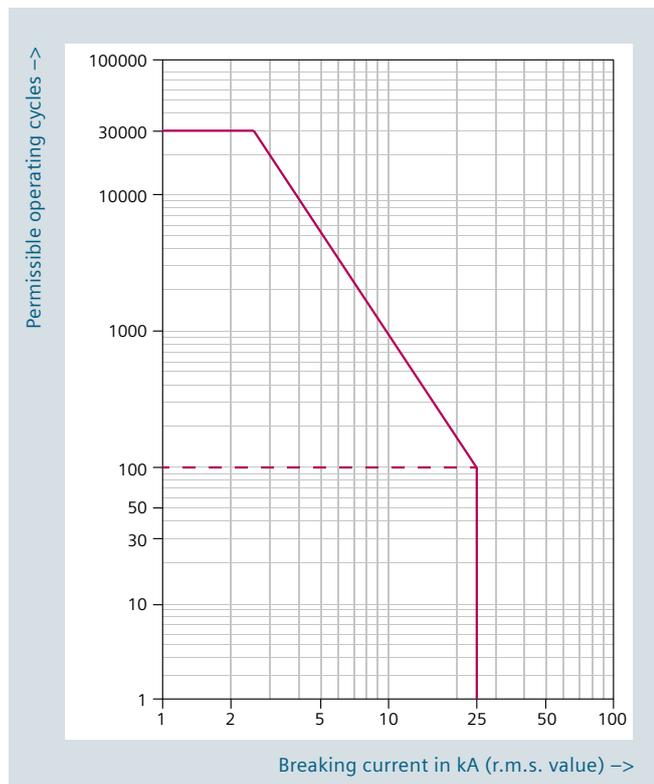
- Switching sequence:
O - 0.3 s - CO - 3 min - CO (other values on request, multiple auto-reclosing possible)
- Rated short-circuit breaking-current 25 kA with DC component < 36 %

Operating mechanism

- Service life of 60,000 operating cycles (maintenance-free up to 10,000 operating cycles, without time limitation under normal operating conditions)

Vacuum interrupter

- Mechanical service life of 30,000 operating cycles (maintenance-free)
- Electrical service life dependent on breaking current (see diagram below)



Electrical service life of vacuum interrupter

Disconnecter, type 3DA11 / 3DB11

- Service life of 10,000 operating cycles
- Integrated earthing switch, service life of 10,000 operating cycles
- Manual operating mechanism with mechanical interlock between disconnector and earthing switch and electromagnetic interlock
- Motor-operated mechanism with electrical interlock (option)

Function

- CLOSED: Main circuit closed between busbar and circuit-breaker
- OPEN: Main circuit open between busbar and circuit-breaker
- READY-TO-EARTH: Upper contact of circuit-breaker earthed; earthing of cable by closing the circuit-breaker

Current and voltage transformer

- Cast resin type for indoor installation
- Service life \geq 30 years
- Maintenance-free



Sitras ASG25 2-pole version with vacuum circuit-breaker on a service truck

Technical data

Electrical data

Variant		1-pole	2-pole
Nominal voltage acc. to IEC 60850, EN 50163	[kV]	25	25
Rated insulation voltage acc. to EN 50124-1	[kV]	27.5	27.5
Rated frequency	[Hz]	50 / 60	50 / 60
Rated short duration power frequency withstand voltage to earth and across open contacts across isolating distance	[kV] [kV]	95 110	95 110
Rated lightning impulse withstand voltage to earth and across open contacts across isolating distance	[kV] [kV]	200 220	200 220
Rated short-circuit breaking current	[kA]	25	25
Rated short-time withstand current, 1 s	[kA]	25	25
Rated short-circuit making current	[kA]	63	63
Rated normal current	[A]	1,250 / 2,000	1,250 / 2,000
Internal arc classification acc. to IEC 62271-200		IAC A FL I _{Ae} 25 kA 1 s	IAC A FL I _{Ae} 25 kA 1 s
LSC category / partition class		LSC 2A / PI	LSC 2A / PI
other values on request			

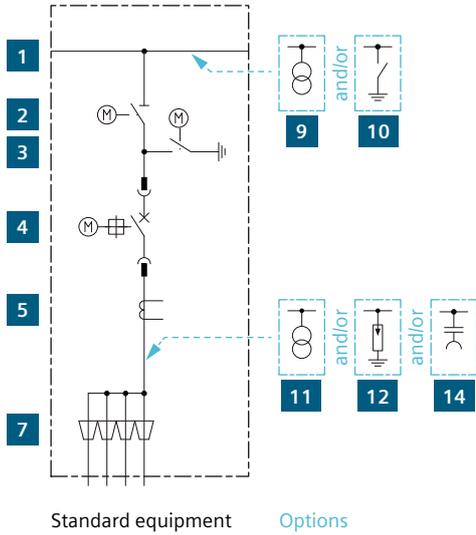
Mechanical data

Variant		1-pole	2-pole
Dimensions approx.			
Height switchgear panel H1	[mm]	2,350	2,350
Height pressure relief channel H2	[mm]	380	380
Width W1 / W2	[mm]	1,000	1,700
Depth D	[mm]	2,150	2,150
Weight per panel	[kg]	approx. 1,100	approx. 1,600
Degree of protection		IP4X	IP4X
Permissible ambient temperature	[°C]	-5...+40	-5...+40
Relative humidity (non condensing)		< 85 %	< 85 %
General standards		IEC 62271-1; IEC 62271-200	IEC 62271-1; IEC 62271-200
Standards for railway applications		EN 50124; EN 50152	EN 50124; EN 50152
other values on request			

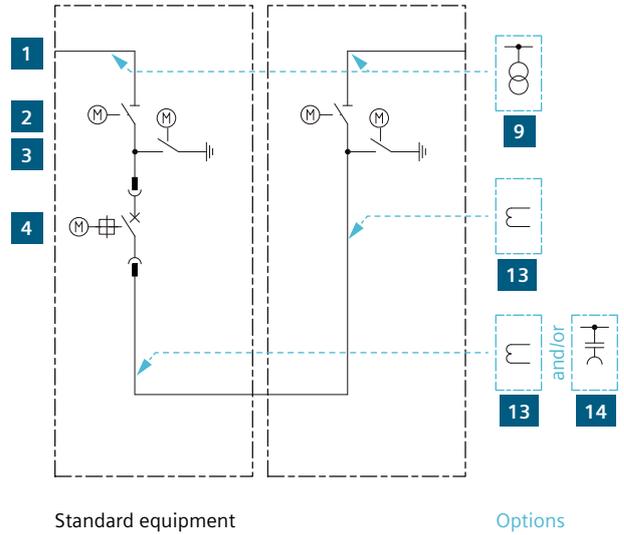
Application

Application examples for 1-pole version*

Section feeder panel



Bus coupler panel



Standard equipment

- 1 Busbar
- 2 Disconnector
- 3 Earthing switch
- 4 Vacuum circuit-breaker
- 5 Current transformer
- 6 Capacitive voltage detection system
- 7 Cable sealing end
- 8 Voltage transformer

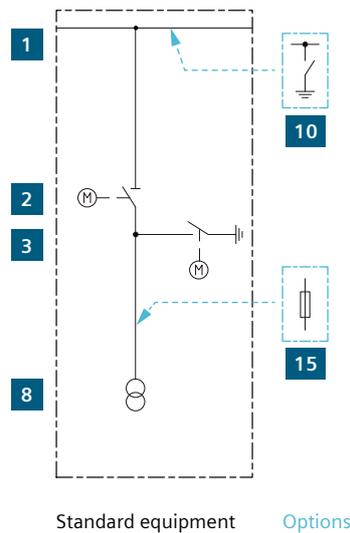
Optional busbar fittings

- 9 Busbar voltage transformer
- 10 Earthing switch

Optional connection fittings

- 11 Voltage transformer
- 12 Surge arrester
- 13 Current transformer
- 14 Capacitive voltage detection system
- 15 High-voltage fuse

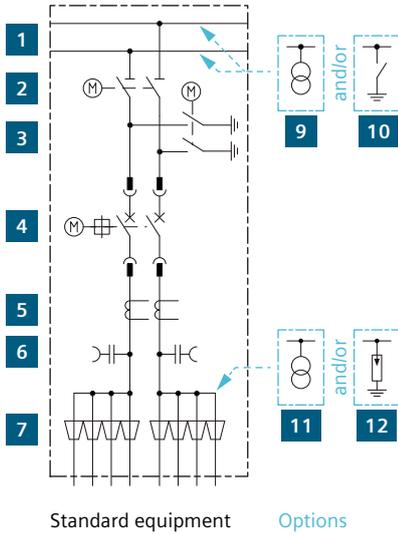
Metering panel



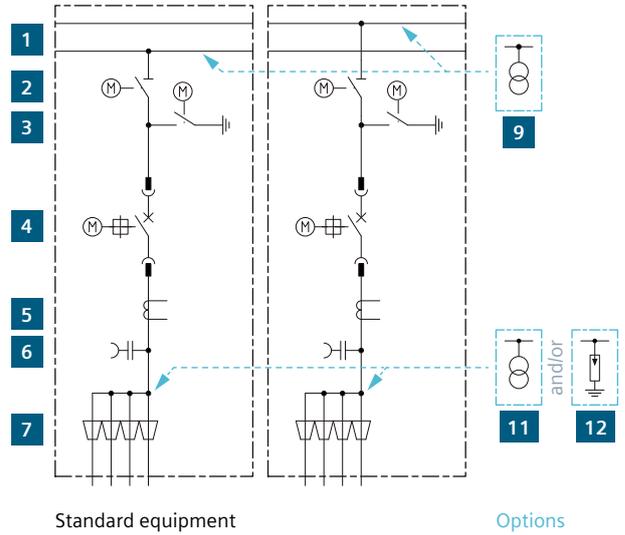
* other panel types on request

Application examples for 2-pole version*

Incoming & section feeder panel / Autotransformer panel

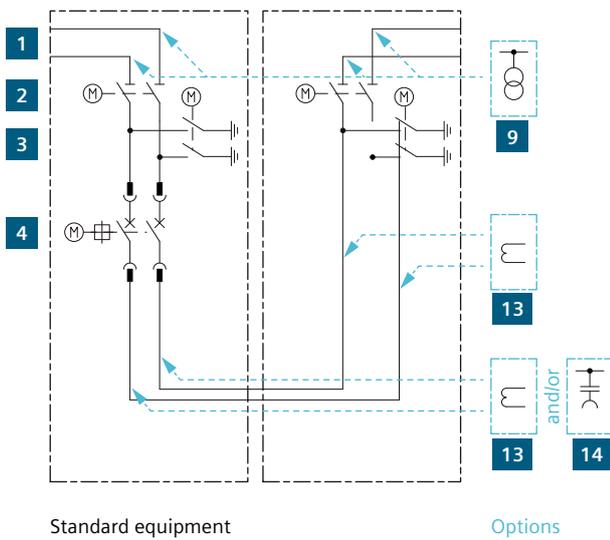


Section feeder panel

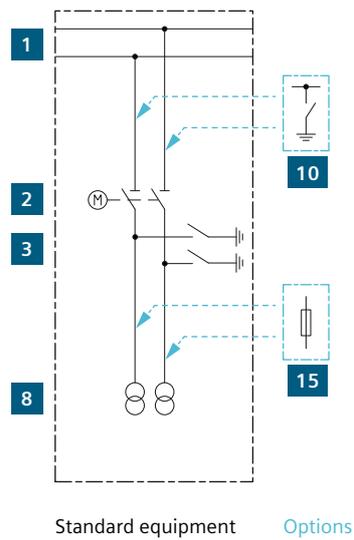


Options 11, 12 only for incoming and section feeder panel

Bus coupler panel



Metering panel



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Sitras ASG25 / Product information
No. A6Z08110273695 / Version 2.0.3

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