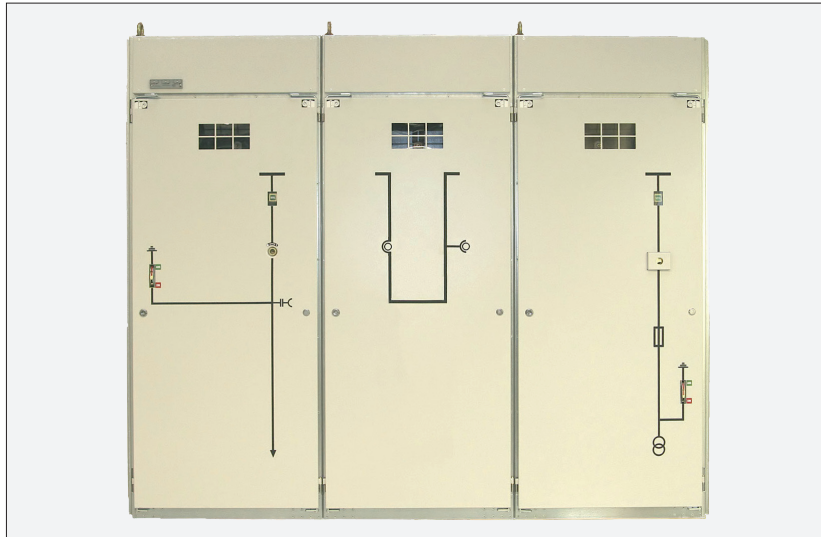


Air-insulated Medium voltage switchgear Type MSA-L to 24 kV



Front view MSA-L-24-630



Front view MSA-L-24-630-T

Description

The metal-enclosed, air-insulated switchgears of the type MSA-L can be used universally in energy supply systems, even for industrial applications.

The term “MSA” stands for the German word “Mittelspannungsanlage” (medium voltage switchgear) and the extension “L” stands for “luftisoliert” (air-insulated). The installation of the switchgears is carried out on the base frame at the front side of the panel and it therefore also ensures an easy and safe assembly. All switchgears can be operated when the panel door is closed.

The switchgear MSA-L is type-tested in compliance with the valid standard DIN EN 62271-200 and therefore meets the requirements for a safe and reliable operation. In compliance with IAC-AFL 16 kA; 1s, the arc fault resistance of the switchboard sections was successfully proven in a certified test panel. The switchgear has been developed and constructed for the use under normal operating conditions in internal spaces in compliance with DIN EN 60694. The used switchgears are designed and type-tested in compliance with the corresponding switchgear standards.

Due to the modular design, it is possible to realise delivery in individual panels or as switchgear, with the possibility to specifically select the equipments, the panel order etc.

Technical data

Rated voltage	U_r	12 kV	24 kV
Rated short-duration power frequency withstand voltage	U_d	42 kV	50 kV
Rated lightning impulse withstand voltage	U_p	75 kV	125 kV
Rated frequency	f_r	50 Hz	50 Hz
Rated current	I_r	630 A	630 A
Rated short-time withstand current (1s)	I_k	20 kA	20 kA
Rated peak withstand current	I_{ma}	50 kA	50 kA
Ambient temperature	$T_{AMBIENT}$	-5 °C bis +40 °C*	-5 °C bis +40 °C*
Arc qualification IAC AFL; 1s	$I_{AC AFL}$	20 kA	16 kA
Degree of protection		IP 2XC	IP 2XC

* Optionally with supplementary equipment up to -25 °C

Ausstattung und Aufbau

The panels consist of a steel sheet construction in modular design with switchgears permanently mounted at the front. The individual housing elements are connected via steel rivets.

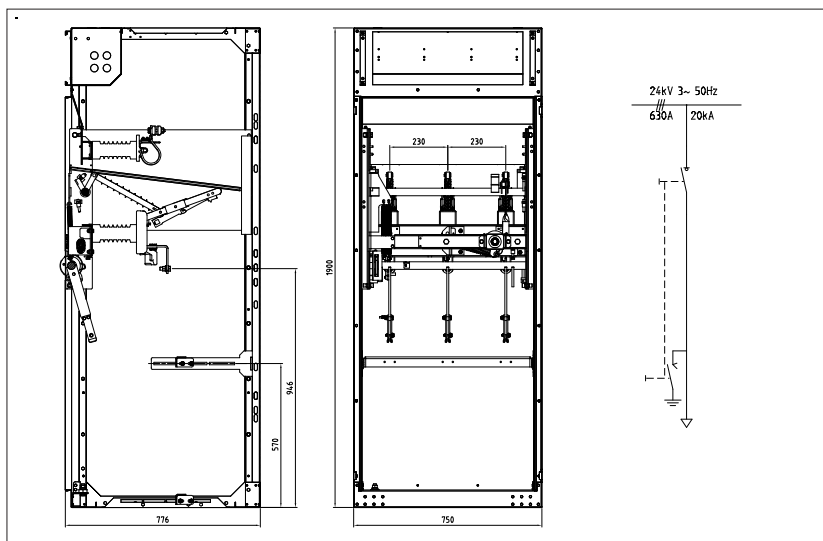
A pressure-resistant steel sheet door with an optional right or left-side door hinge constitutes the frontal panel closure. The panel door is equipped with inspection glasses and therefore enables the monitoring and checking of the switchgears and switch positions.

A plastic wall with feed-through separates two adjacent panels, the rear walls consist of steel sheet.

The busbars consist of copper rod and are designed partially insulated.

Cables to be connected are guided into the switching panels from the bottom and there, they can safely be mounted via variable cable holding irons.

Switchboard sections

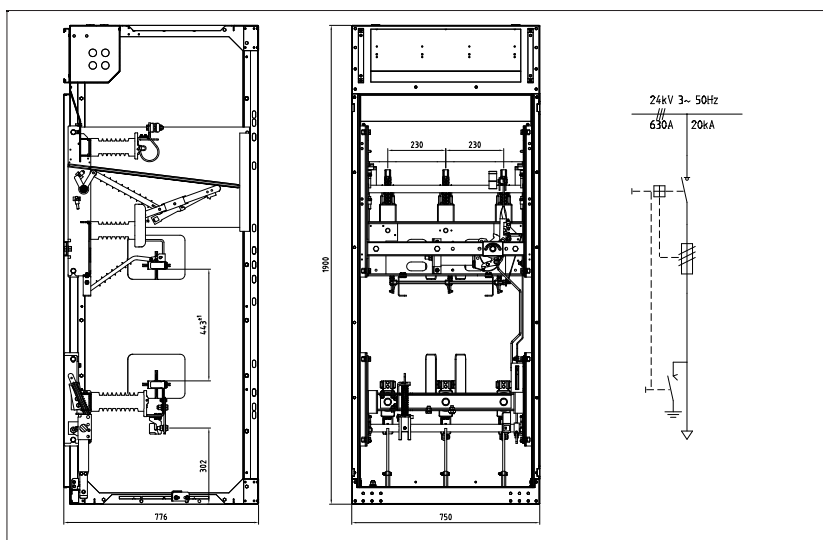


Switchboard sections type MSA-L-12/24-630-K Ring cable panels - load break switch

The load break switchboard sections are equipped with load break switches of type KLS and optionally with integrated and locked grounding switches of type -EUKS-E1.

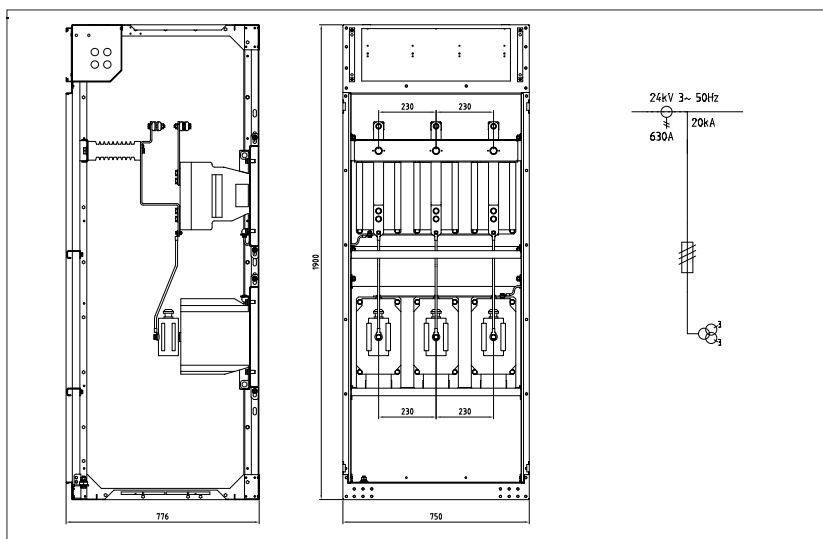
The additional installation of surge arrestors is also possible without any problems due to the construction.

Additional equipment options are available on request.



Switchboard sections type MSA-L-12/24-630-T Outgoing transformer panel - load break switch

The load break switchboard sections are equipped with load break switches of type KLFS. The switch is equipped with an accumulator supply which is coupled with a tripping device which effects an automatic switch-off of the switchboard section via a control coil and / or bouncing pin of the installed fuses. Additionally, an extension with make-proof grounding switches type EUKFS-E1 is possible. If required, an optional locking prevents faulty operation between the two switching devices.



Switchboard sections type MSA-L-12/24-630-M Measuring fields

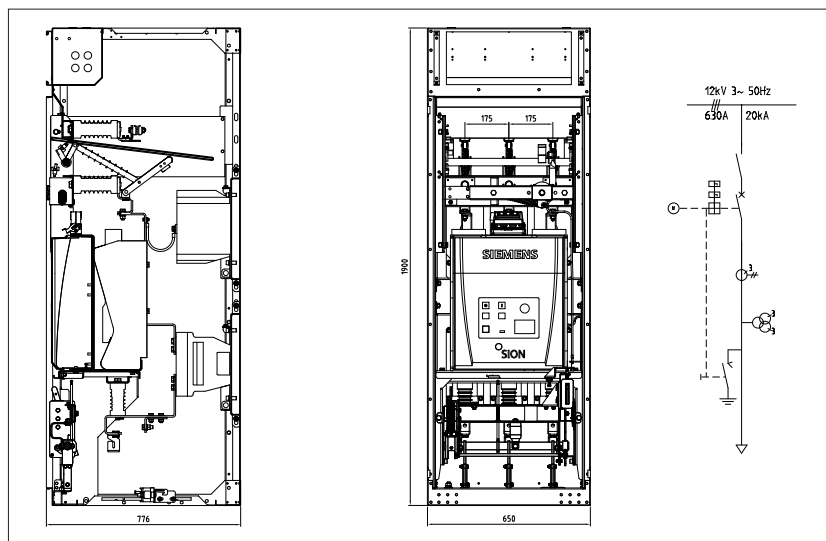
The switchboard section range type MSA-L offers a number of switching options for the installation of standardised current and voltage transformers.

Optional supplementary equipment for all panel types

Amongst others: capacitive voltage indicators, specific locking capability of the panel doors, panel illumination, installation of measuring devices and control elements in a separate equipment compartment.

Additional switching / equipment options are available on request.

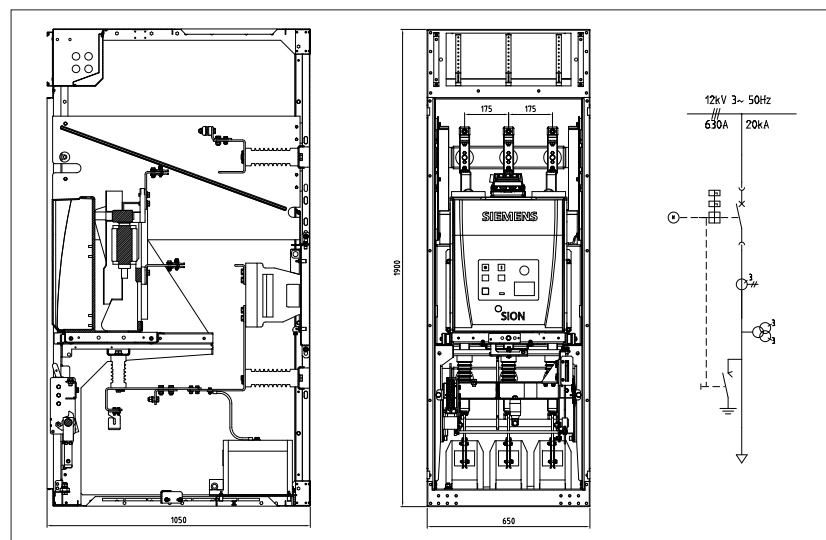
Switchboard sections



Switchboard sections type MSA-L-12-630-LS (F) circuit breaker panels (permanently mounted)

The panels are equipped with circuit breakers type SION (Siemens) in connection with a serially connected disconnect and optionally with an integrated and locked grounding switch type EULS-E1. Alternatively, it is possible to use fixed ball points for the purpose of grounding and shorting. The installation of current and voltage transformers is provided due to the construction (narrow design in compliance with DIN 42600 T8/T9).

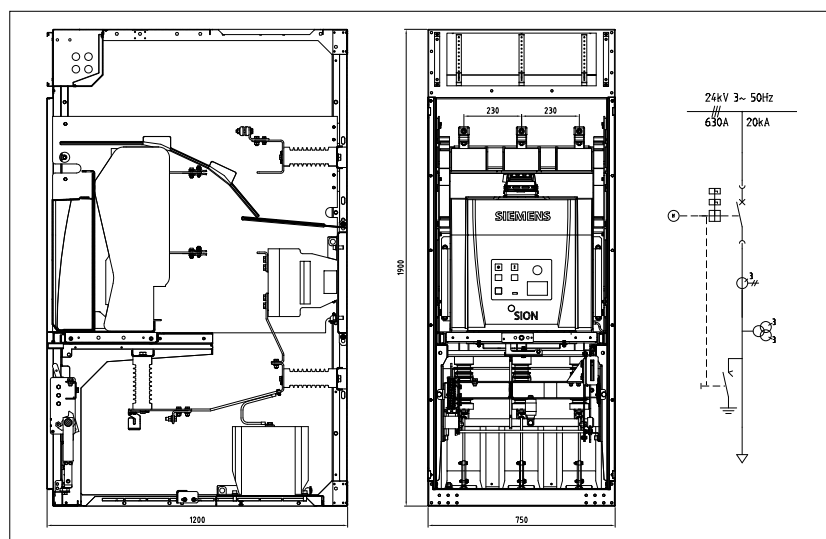
In the isolated low voltage equipment room opposite the medium voltage room, it is possible to install various protective and control devices as required by the customer.



Switchboard sections type MSA-L-12-630-LS (E) circuit breaker panels (withdrawable-unit design)

The panels are equipped with circuit breakers type SION (Siemens) in connection with a serially connected disconnect and optionally with an integrated and locked grounding switch type EULS-E1. Alternatively, it is possible to use fixed ball points for the purpose of grounding and shorting. The installation of current and voltage transformers is provided due to the construction (narrow design in compliance with DIN 42600 T8/T9).

In the isolated low voltage equipment room opposite the medium voltage room, it is possible to install various protective and control devices as required by the customer.



Switchboard sections type MSA-L-24-630-LS (E) circuit breaker panels (withdrawable-unit design)

The panels are equipped with circuit breakers type SION (Siemens) in connection with a serially connected disconnect and optionally with an integrated and locked grounding switch type EULS-E1. Alternatively, it is possible to use fixed ball points for the purpose of grounding and shorting. The installation of current and voltage transformers is provided due to the construction (narrow design in compliance with DIN 42600 T8/T9).

In the isolated low voltage equipment room opposite the medium voltage room, it is possible to install various protective and control devices as required by the customer.