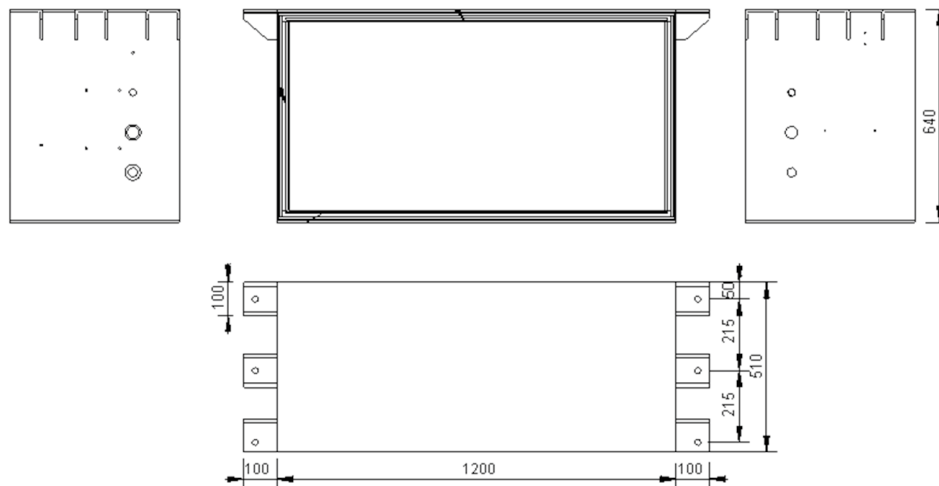


UWOe-1-2 Selective Switch Panel

Product Data Sheet



APPLICATION

The UWOe-1-2 selective switch panel provides power supply to ventilation heating systems in new and retrofitted passenger rail cars. The selective switch panel controls the power supply of onboard ventilation heating lines and protects these circuits against overloads. The UWOe-1-2 also features a duty control contactor which operates a static converter. The UWOe-4 optional version is available without the static converter duty control contactor.

SPECIFICATIONS

| | |
|--|---|
| Rated HV voltage | 3000 V _{DC} 1500 V _{DC} 1500 V _{DC} - 50 Hz 1000 V _{DC} - 50 Hz 1000 V _{DC} - 16⅔ Hz |
| Online heating circuit rated power | 2 x 25 kW |
| Auxiliary power supply rated voltage, U _N | 24 V _{DC} |
| Ambient operating temperature | -40°C to +35°C |
| Installation | wagon frame underneath the box floor |
| Size [L x H x W] | 1400 x 640 x 530 mm |
| Weight | 180 ± 10 kg |
| Enclosure protection rating | IP55 |

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DESIGN

The device frame is an aluminium enclosure box with a tilt-open steel cover for interior access.

The enclosure houses the following:

- 4 x HV circuit breakers (1 x common, 2 x for both controlled heating lines, 1 x for the converter line),
- 3 high-power contactors (2 x for isolation of the heating switching circuits from the onboard system, 1 x for converter control),
- 2 x 5 power contactors for reconfiguration of the heating lines according to the contact system voltage + Hall effect voltage and current sensors,
- Microprocessor control & diagnostic circuit.

Features of the applied microprocessor control and diagnostic system:

- real-time measurement of internal voltage and current values,
- status monitoring and emergency trip detection of the contactor gear,
- real-time operating status diagnostics of the device,
- actual device status indication on the display panel (for easy servicing),
- advanced device operation algorithms for protection of controlled heating lines against damage in transient states (during contact system voltage variations) and emergency states.

The heavy-current circuits feature high-quality contactors and breakers for long and trouble-free service life of the device. This solution eliminates any need for mechanical moving gears, such as motors, transmission gears or cams which wear out during operation of the rail wagon and require periodic servicing. The device features an integrated earth busbar disconnecter. When the device enclosure is opened, the disconnecter isolates the onboard heating lines from the main HV supply line and connects the heating lines to earth (for safe servicing).

OPERATION

Depending on the specific version, the device supports air supply heating lines or convector ventilation heating. The device has no electromechanical selector gear. The gear has been replaced with the electronic controller and a system of auxiliary contactors. When the device enclosure box is opened, the internal circuits are isolated from the 24 V_{DC} auxiliary voltage, which immediately breaks the main contactors, followed by breaking the auxiliary contactors. At the same time, the enclosure box illumination goes on. The device is turned on for operation when its 24 V_{DC} auxiliary control voltage is on and the contact system supply voltage is present at the HV input. Depending on the HV value of the rail wagon installation, the device microprocessor controller will make the appropriate heating line contactors and then make the contact system HV supply connection to power on the heating systems.

UWOe-1-2 selective switch panel functionalities:

- adaptation of onboard heating line connections to the actual HV supply value according to UIC 550 and UIC 600,
- generation and relay of diagnostic output data to the onboard systems,
- monitoring of the 24 V_{DC} auxiliary supply voltage,
- proper contactor gear switching sequence,
- control and elimination of high switching frequency of the contactor gear (bypassing of transient and interference states),
- contactor gear making and breaking control with real-time contactor status diagnostics,
- heating line fault (shorting / break) detection,
- RS 232 and CAN based data communication with onboard controls (optional).