

Rectifier

KONRECT 2000A-6P

The rectifier is an integral component of the 660 V DC power distribution system in rectifier stations for public electric urban transport. Its primary function is to supply traction voltage in rectifier stations, ensuring reliable operation of electric traction vehicles.

KEY FEATURES:

- Maximum power supply reliability
- Flexible busbar and cable connection options (top, bottom, or side) based on installation requirements
- Available in standard or compact dimensions to accommodate smaller substations
- Robust, non-controlled six-pulse diode rectifier requiring minimal maintenance
- Parallel operation of two rectifiers enables 12-pulse rectification
- Natural convection cooling for enhanced reliability and efficiency

The rectifier is enclosed in a self-standing metal cabinet with front access to all components. Depending on substation size, the rectifier cabinet is available in standard or compact dimensions.

Depending on substation configuration, the rectifier transformer feeder busbar connection can be positioned at the top or bottom of the rectifier.

Connection to the return panel and switch blocks can be achieved via side-mounted busbars on the left or right side of the rectifier, and/or cable connections from the lower left or lower right section of the rectifier cabinet.

For maintenance and servicing, access to the diode branches and output damping elements is provided by opening the rectifier door. A perforated steel plate is positioned at the top of the cabinet to improve cooling efficiency.

The rectifier consists of two parallel-connected diode bridges, each containing 12 diodes mounted on dedicated heat sinks. Each diode is protected by a series-connected fuse, which includes a



blown-fuse indicator. The DC output circuit is equipped with a damping assembly and protective fuses to ensure safe operation.

The parallel operation of two six-pulse rectifiers results in 12-pulse rectification at the output. The two rectifiers are powered via feeder busbars from two three-phase, double-winding rectifier transformers with different phase shift groups. The input voltages are phase-shifted by 30° electrical degrees.

The rectifier cabinets must be isolated from ground and protected against ground faults. The rectifier is switched on by closing the medium-voltage (MV) circuit breaker, which supplies power to the rectifier transformers. The output voltage is then fed to the contact network of the public transport system by closing the rectifier and return disconnectors in the return panel, followed by closing the disconnectors and circuit breakers in the feeder (positive) panels.

The MV switchgear circuit breakers protect the rectifiers from overload conditions, while the circuit breakers in the feeder panels provide protection against faults caused by short circuits or overloads in the contact network. The return panel houses monitoring equipment for the rectifier output voltage and total current, as well as fuse status monitoring for diode branches and damping elements.

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TECHNICAL SPECIFICATIONS	
KONRECT 2000A-6P Rectifier	
Input	
Voltage	3 x 518 VAC
Permissible voltage tolerance	±10%
Nominal frequency	50 Hz
Nominal current	1630 A
Output	
Nominal voltage	660 VDC
Minimum voltage (at full load)	600 VDC
Maximum voltage (no-load condition)	750 VDC
Nominal power	1300 kW
Nominal current	2000 A
Load class	V (1.5 x IN / 2 h; 2 x IN / 1 min)
Overload current (2 h)	3000 A / 2 h
Overload current (1 min)	4000 A / 1 min
Diode fuse type	1100 A, 1000 VAC
Overvoltage protection	Unique RC protection against AC and DC overvoltage, connected to DC busbars
General data	
Remote communication	Voltage measurement and fuse monitoring for diode branches and damping elements in the return panel, transmitted via 1.5 mm ² wiring and terminal blocks
Cooling method	Natural convection cooling (AN)
Storage temperature	20 do+70°C
Operating temperature	0°C to +40°C
Maximum operating altitude	Up to 1000 m
Humidity (non-condensing)	Up to 90% at 30°C
Compliance with international standards	HRN EN 60146, HRN EN 62590
Mechanical protection rating	Front & rear protection IP20, side panel protection IP30
Colour	Light gray front surface, RAL 7035
Dimensions (width x depth x height)	Standard version: 1300 x 1500 x 2200 mm
Compact version: 1600 x 850 x 2200 mm	1300 kg
Weight	1300 kg