



3kV-380 220V HIGH INPUT VOLTAGE INVERTER

Solid state converter for testing passenger coaches.

The purpose of the converter is to provide an alternating sinusoidal stabilized voltage with a low harmonic distortion, at 400Vac 50Hz.

The converter is composed by a three phase IGBT inverter fed directly by the 3kVdc voltage.





## 3kV-380 220V HIGHT INPUT VOLTAGE INVERTER

### 1. DESCRIPTION

Main components:

1) Input filter. It has the following functions:

- Reducing the input surge at the converter;
- Reducing the input voltage harmonic distortion in order not to disturb the signalling circuits;

The input contactor, with the relative ground equipment, has to be installed outside.

2) 24Vdc auxiliary battery voltage power supply;

It provides two stabilized voltage to +12 –12Vdc to supply the control logic and a alternating voltage 70V-40kHz to supply inverter driver cards.

3) Control logic:

It provides the control signals to the inverter driver cards, in order to supply a three phase alternating sinusoidal and stabilized voltage in all conditions, with load variations and with voltage sags. The control logic assures all operations regarding the start up and shutdown procedures and protection of the apparatus against input overvoltage and output overload.

4) Inverter bridge:

It is composed by a IGBT Greatz bridge type with PWM three-phase regulation with a frequency modulation of 600Hz: this value optimise the invert losses and meanwhile it gets a good output waveform. The insulation between the control logic and the drivers is obtained with optical cables.

5) Transformer and filter capacitor:

The output voltage of the bridge is an PWM alternating voltage at three steps. The transformer fits the value of the bridge output voltage at the value of the converter output voltage creates the input/output insulation and realizes the inductive part of the output filter. The output filter reduces the harmonic content of the output and limits voltage deviations under step load conditions.

6) Output converter unit:

The converter is configured for both three phase and single phase outputs. To protect the users, two output circuit breakers are configured. The converter is provided by a by-pass switch which allows to feed the output from an external mains at 400Vac 50Hz (service point) when the coach is in maintenance.





