The TSI is designed according to the golden rules of True Redundant Systems. One of the most important features is the disconnection capability. A TSI converter has at least 3 disconnecting levels in series (i.e. a relay, a fuse...) on each power port as well as an optical isolation on the double communication bus. The AC grid port is specifically designed to clean up the surges, bursts and all of the well-known disturbances met on a power network. As designed, the AC grid input has four (4) disconnecting devices in series in order to insure a higher MTBF of the DC/AC converter inside the TSI. The AC-to-AC conversion chain isolates the AC output from the AC input and features a double filtering function. Consequently, the voltage supplied to the critical load is a pure sine despite all the disturbances (harmonics, surges, glitches ...) usually carried by the grid and the input current remains sinusoidal even when the load is not linear.

Pure sine wave at the output and ideal power factor at the input are achieved without pumping any energy from the DC source.

With the TSI concept the filtering of current and voltage is similar to a rectifier combined with an inverter (on-line mode) but with a significantly better efficiency. Compared to a UPS operating in off-line mode, the efficiency is in the same range but the rejection of grid disturbances is much higher. Furthermore, the transfer between energy input sources is disturbance free and can be considered as a "soft-switching" operation. It is so wise to consider this functioning mode as the normal operating mode and we will name it "Enhanced Power Conversion" (EPC) mode.

The AC-to-AC efficiency, which ranges to 93% up is a significant improvement compared to less than 85% overall efficiency given by the rectifier-battery-inverter chain usually in use when similar reliability performances have to be achieved. So losses are divided by 3.

The TSI is able to supply 10 times its nominal output current for a time longer than 20ms in case of downstream short-circuit in the AC distribution. Nominal performances are kept and clean AC power supply is guaranteed to any other load connected in parallel.

This short-circuit current is also controlled in magnitude to prevent tripping of the upstream breaker. Full segregation is so ensured and is an additional guaranty that loads are kept free of disturbances even after failure occurrence.

The internal switch as well as the inverter of the TSI can be paralleled up to 32 units. The "synchronization communication bus" is redundant too. The communication is therefore fault-tolerant, each bus being self-sufficient to handle synchronization, load sharing and data communication.

With the TSI, the manual bypass is no longer needed to allow the replacement of the static switch. It is just limited to cabinet maintenance purposes bearing in mind that the TSI module is hot plug and redundant.

When designing a customized system with, it is very convenient to have modules integrating inverter and switch functions to get a simplified wiring system in such a way that stacked modules are easily interconnected by means of just three (3) vertical bus bars: one for the AC input, one for the AC output and one for the DC input. Initial cabling as well as further extensions capabilities is dramatically improved.

With TSI one can talk of TOTAL MODULARITY since the static switch has not to be sized according to the eventual capacity of the AC power system, the evolution of the load consumption being likely unpredictable. With the TSI the available AC power can be gradually increased to closely follow the load requirements.
## Specifications

**AC Output Specifications**
- Nominal voltage (AC): 230 V
- Voltage range (AC) (adjustable): 200 – 240 V
- Voltage accuracy: 2 %
- Frequency: 50 - 60 Hz
- Frequency accuracy: 0.03 %
- Total harmonic distortion (resistive load): <1.5 %
- Load impact recovery time: 0.4 ms
- Turn on delay: 30 s
- Nominal current: 3.25 A
- Crest factor at nominal power: 2.5 In
- With short circuit management and protection
- Short circuit clear up capacity: 9 \times I_n for 20 msec
- Available while Mains is available at AC input port
- With magnitude control and management
- Short circuit current after clear up capacity: 1.89 In
- Short circuit current after 15 second: 1.41 In

**Transfer Performance**
- Maximum voltage interruption: 0 s
- Total transient voltage duration (max): 0 s

**Environment**
- Altitude above sea without derating: <1500 m
- Derating slope upper than 1500 m: 0.8 by 100 m
- 750 VA from -20 to 40 °C
- 675 VA from 40 to 50 °C
- Derating up to 65 °C
- Storage temperature: -40 to 70 °C
- Relative humidity: 95%, non condensing

**Signaling & Supervision**
- Display: Synoptic LED
- Alarms output: Dry contacts on shelf
- Supervision: Use optional devices

**Weight & Dimensions**
- Weight: 2.1 Kg
- Material (casing): Coated steel

(*) Operation within lower voltage networks leads to derating of power performances.

### General
- **EMC (immunity)**: EN 61000-4
- **EMC (emission)**: EN 55022 (Class A)
- **Safety**: IEC 60950
- **Cooling**: Forced
- **Isolation**: Doubled
- **MTBF**: 200 000 hrs
- **Efficiency (Typical)**
  - Enhanced Power Conversion: 93%
  - On Line: 89%
- **Dielectric strength DC/AC**: 4300 Vdc
- **True Redundant Systems**: Compliant
  - 3 disconnection levels on AC_out and DC_in power ports
  - 4 disconnection levels on AC_in port
- **RoHS**: Compliant
- **Connection I/O**: Terminal block
- **Protected against inversion of polarity**: Self adaptive to wide operating conditions and comprehensive table of troubleshooting codes

### AC Output Power
- **Nominal Output power**: 750 VA
- **Output power (resistive load)**: 525 W
- **Overload capacity**: 135% 15 sec

### DC Input Specifications
- **Nominal voltage (DC)**: 48 V
- **Voltage range (DC)**: 40 - 60 V
- **Nominal current (at 40Vdc)**: 14 A
- **Maximum input current (for 15 second)**: 22 A
- **Voltage ripple**: < 2 mV

### AC Input Specifications
- **Nominal voltage (AC)**: 230 V
- **Voltage range (AC)**: 150 – 265 V
- **Brownout**: 150 to 185 V
  - 438 W @ 150V
- **Conformity range**: Adjustable
- **Power Factor**: >99%
- **Frequency range (selectable)**: 50 - 60 Hz
- **Synchronization range**: 47 – 53 Hz

###環境
- **海拔（無降伏）**: <1500 m
  - 750 VA 从 -20 到 40 °C
- **温度（設計温度）**: 675 VA 从 40 到 50 °C
  - 65 °C
- **储存温度**: -40 到 70 °C
- **湿度**: 95%，非凝结

### Show & Supervision
- **显示**: 合成 LED 显示器
- **报警**: 架子上的干式接点
- **监控**: 使用可选设备

### 重量及尺寸
- **重量**: 2.1 Kg
- **材料（外壳）**: 镀锌钢

---

Specifications can change without notice. New data will be updated on our Web site: [www.cet.be](http://www.cet.be).

The present equipment is protected by several international patents, trademarks and copyrights.