

# T5 series

Programmable double conversion on line

The transformerless double conversion three-phase UPS of the T5 series by Converter Industry®, ranging from 10 to 60kVA, is an uninterrupted power supply system that sums up all the main innovative features that make this product unique in its category.

- Transformerless double conversion type ●
- DSP digital control system ●
- Sinusoidal absorption ●
- Maximum versatility: it can be set up as three/three, three/mono, mono/mono (redundancy or power) ●
- Colour display with touch-screen ●
- Integrated advanced communication functions ●
- Proprietary remote management software ●
- VFI - SS - 111 classification according to EN 62040-3 ●
- Modular size that can be adapted according to the required autonomy ●
- Reduced noisiness ●
- High overall efficiency ●
- 'Green mode' option ●



Made in Italy

The advanced digital technology at the service of business and environment .



The new T5 system represents the perfect mix of the typical reliability of a traditional UPS system and the modern digital DSP technology with its various advantages:



**Quality power supply and low input distortion:**

the UPS of the T5 series are VFI double conversion with filtered and stabilized output voltage. This kind of product is highly immune from power line disturbance and ensures an effective protection against loads. Furthermore, the new T5 systems have sinusoidal absorption with distortion < 4% and power factor 0.99.



**High overall efficiency:**

The UPS of the T5 series are even more efficient! They have been designed to obtain the best possible ratio between costs and the overall efficiency of the system. This leads to a reduced running cost for the users and to a higher respect for the environment, since it reduces the waste of precious energy.

**High reliability:** The UPS of the T5 series have been designed to ensure the highest availability of power and the maximum reliability in time thanks to the DSP digital control and to the SMT technology.

**Protected batteries:** the T5 digital systems have a voltage compensation system of the accumulators according to the ambient temperature, in order to optimize the charge level and the life of the device, avoiding destructive charges. The T5 systems can also be used as Ni-Cd accumulators.

**Scalability and expandability:** The UPS of the T5 series have been designed according to the many different needs of the customers. These systems are parallelable in Redundancy or Power configuration, even after installation, to cope with increasing needs. It is furthermore possible to expand batteries by adding elements to the system without occupying other space.

**Easy to use, easy to maintain:** the T5 systems have an easy and user-friendly operator-machine interface. The final user can quickly get used to the system, without useless complications, increasing the level of familiarity with complex systems like a UPS. All the parts that must undergo maintenance, including accumulator batteries, are strategically located and easy to be accessed from the front.

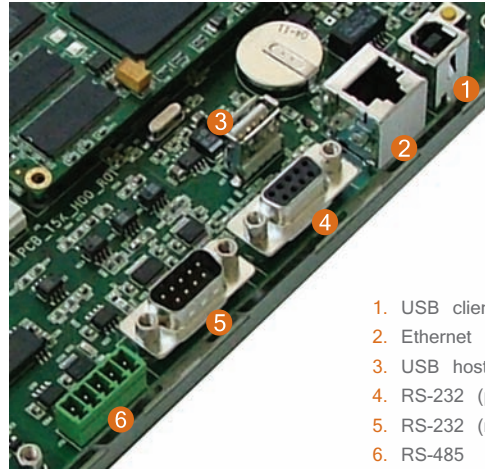


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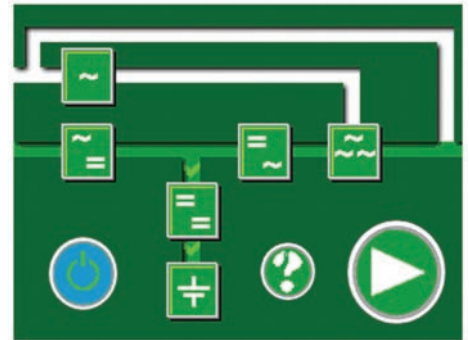
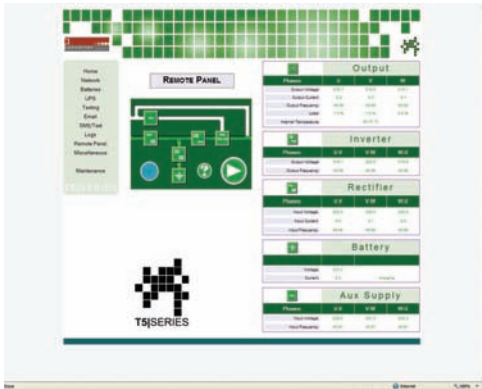
Programmable double conversion on line

**Worldwide communication:** the UPS of the T5 series have an advanced communication system with USB device, Ethernet, USB host, RS232 and RS485 interfaces. The most common protocols are compatible: SNMP, Modbus, SMTP (e-mail), HTTP e HTTPS (browser).

An evolved resident DHTML application of the UPS allows remote monitoring from any client (pc, workstation, palm, mobile phone) without any installation. Where there is no local network, it is possible to create remote connections via GPRS/GSM or telephone line. The wide colour LCD display with touch screen sums up an easy use and navigation and many innovative information opportunities in all languages!



1. USB client (high speed)
2. Ethernet 100-TX (LAN)
3. USB host (full speed)
4. RS-232 (pc)
5. RS-232 (modem)
6. RS-485



**Reduced size and weight:** thanks to the new architecture of the T5 systems, the necessary spaces are reduced, with a reduction of the installation costs of the system. The integrated batteries solve the space problem, an effective solution for all the models of the series. Another major advantage is the reduced weight. These systems are lighter because they don't have any transformer inside!

**Packaging and manuals:** all systems are packed and have their installation, use and maintenance manuals. Converter Industry uses recyclable paper and materials with a reduced environmental impact and reduces the use of plastic materials and virgin wood.

Questo simbolo sottolinea l'impegno dell'azienda al miglioramento costante del prodotto in termini di impatto ambientale e risparmio energetico.

**OUTPUT DATA**

- L-N Voltage [V]
- L-L Voltage [V]
- Output Current [A]
- Frequency [Hz]
- Temperature [°C]

**INVERTER EVENTS**

- Mon, 11-Sep-06 1 Inverter off
- Mon, 11-Sep-06 1 Inverter voltage low
- Mon, 11-Sep-06 1 Inverter frequency
- Mon, 11-Sep-06 1 Synchronization lo

**RECTIFIER HISTORY LOG**

HISTORY LOG

- 78 Mains frequency out of tolerance
- 3 Rectifier overload
  - Fri, 21-Jul-06 18:11:45 - Fri, 21-Jul-06 18:12:07
  - Fri, 21-Jul-06 17:45:16 - Fri, 21-Jul-06 17:47:15
  - Fri, 21-Jul-06 17:39:47 - Fri, 21-Jul-06 17:41:17
- 19 Rectifier high temperature
- 13 PFC not operating
- 11 DC-link voltage low

Homologations:

## GENERAL

| Models  | 10KVA  | 15KVA      | 20KVA | 30KVA | 40KVA  | 50KVA  | 60KVA  |
|---|--|------------|-------|-------|--------|--------|--------|
| Overall efficiency at 100% load               | 92.5%  | 92.7%      | 92.7% | 92.8% | 92.9%  | 93%    | 93%    |
| Overall efficiency at 50% load                | 90.1%  | 90.1%      | 90.6% | 90.7% | 90.8%  | 90.8%  | 90.8%  |
| Dissipation with 100% load 0.8 PF (Kw/Btu/Hr) | 648.7/ 2.214                                   | 944/ 3.222 | 5.715 | 8.096 | 10.160 | 12.700 | 14.859 |
| Cooling air (77OF-86OF/25OC-30OC) (CMF)       | 135  | 135        | 301   | 361   | 482    | 720    | 760    |
| Noisiness dB(A)                               | 52   | 52         | 54    | 54    | 57     | 57     | 59     |
| Maximum interruptible failure current (KA)    | 25   |            |       |       |        |        |        |
| Working temperature (UPS)                     | 32°F-104°F(0°C-40°C)                           |            |       |       |        |        |        |
| Working temperature (Battery)                 | 68°F-77°F(20°C-25°C)                           |            |       |       |        |        |        |
| Relative humidity                             | 0-95% without condensate                       |            |       |       |        |        |        |
| Maximum working height (without downgrading)  | 1000 meters                                    |            |       |       |        |        |        |
| Maximum working height (with downgrading)     | 1500mt/-5% 2000mt/-9% 2000mt/-14% 3000mt/-18%  |            |       |       |        |        |        |
| Rack (type)                                   | IP20 from inside                               |            |       |       |        |        |        |
| Rack (Safety)                                 | With internal second access door               |            |       |       |        |        |        |
| Cooling                                       | Downside up forced ventilation                 |            |       |       |        |        |        |
| Rack colour                                   | Black (ral 9015) or white on demand (ral 7035) |            |       |       |        |        |        |
| Installation and maintenance                  | From the front                                 |            |       |       |        |        |        |
| Cable input                                   | Standard from the bottom                       |            |       |       |        |        |        |
| Reference regulations                         | UL1778, IEC62040, ISO9001,EN50091              |            |       |       |        |        |        |
| Standard configuration                        | Single UPS                                     |            |       |       |        |        |        |
| Optional configuration                        | Parallel UPS up to 4 units                     |            |       |       |        |        |        |

## INPUT RECTIFIER

|                                  |                                     |   |   |    |    |    |    |
|----------------------------------|-------------------------------------|---|---|----|----|----|----|
| Configuration                    | Vienna configuration IGBT           |   |   |    |    |    |    |
| Input voltage                    | 380-400-415 Vac, three-phase + P.E. |   |   |    |    |    |    |
| Frequency                        | 50/60Hz                             |   |   |    |    |    |    |
| Power factor                     | 0.99 inductive at 100% load         |   |   |    |    |    |    |
| Rectifier starting current       | Limited by Soft start               |   |   |    |    |    |    |
| DC output voltage tolerance      | +/- 2%                              |   |   |    |    |    |    |
| Ripple overlapping the DC        | +/- 1%                              |   |   |    |    |    |    |
| Maximum battery recharge current | 5                                   | 5 | 5 | 10 | 10 | 15 | 15 |

## BATTERY

|                                 |  |  |  |  |  |  |  |
|---------------------------------|--|--|--|--|--|--|--|
| Useful battery                  | Sealing lead batteries - NiCd,VRLA or open vase  |  |  |  |  |  |  |
| Number of cells (VRLA)          | 192 - 204  |  |  |  |  |  |  |
| Buffer voltage at 200C          | 380V - 463V                                      |  |  |  |  |  |  |
| Minimum working voltage         | 300 VCD (adjustable)                             |  |  |  |  |  |  |
| Accumulator earth failure relay | Optional   |  |  |  |  |  |  |
| Automatic/manual battery test   | Standard   |  |  |  |  |  |  |
| Internal Capability             | max 128 7Ah or 9Ah batteries , 32x40ah , 32x65Ah |  |  |  |  |  |  |

## INVERTER

|                              |   |  |  |  |  |  |  |
|------------------------------|---|--|--|--|--|--|--|
| Configuration                | IGBT - pwm to digital control DSP             |  |  |  |  |  |  |
| Rated output voltage         | 380-400-440 vac, three-phase, 4 cables + P.E. |  |  |  |  |  |  |
| Output isolation transformer | Option  |  |  |  |  |  |  |
| Output wave form             | Pure sinusoidal                               |  |  |  |  |  |  |

## TOLLERANCIES

|                                 |   |  |  |  |  |  |  |
|---------------------------------|---|--|--|--|--|--|--|
| Static Stability                | +/- 1%  |  |  |  |  |  |  |
| Charge outlet 0% - 100% - 0%    | +/-5% with retrieval within +/-1% in 2 cycles |  |  |  |  |  |  |
| Charge outlet 0% - 50% - 0%     | +/-3% with retrieval within +/-1% in 2 cycles |  |  |  |  |  |  |
| 100% unbalanced load (IEC62040) | +/-3% from the nominal value                  |  |  |  |  |  |  |

## OUTPUT TENSION DISTORTION

|  |                                  |  |  |  |  |  |  |
|--|----------------------------------|--|--|--|--|--|--|
| 100% linear charge                             | 2% THD                           |  |  |  |  |  |  |
| 100% non linear charge with F/F 3:1 (IEC62040) | 5% THD                           |  |  |  |  |  |  |
| Form factor accepted by the output current     | 3:1 with 80% of the load applied |  |  |  |  |  |  |
| Neutral conductor                              | 150%                             |  |  |  |  |  |  |

## OUTPUT PHASE RELATION

|                      |           |  |  |  |  |  |  |
|----------------------|-----------|--|--|--|--|--|--|
| 100% balanced load   | 120 +/-1% |  |  |  |  |  |  |
| 100% unbalanced load | 120 +/-2% |  |  |  |  |  |  |

## OUTPUT FREQUENCY

|  |  |       |       |       |      |       |       |
|--|--|-------|-------|-------|------|-------|-------|
| With internal oscillator               | 50/60Hz, +/- 0.02%   |       |       |       |      |       |       |
| Synchronous with the network           | +/-5% (selectable)   |       |       |       |      |       |       |
| Overload capacity (inverter)           | 125% at cosphi 0.8 for 10 minutes/ 150% at cosphi 0.8 for 60 seconds |       |       |       |      |       |       |
| Short circuit capacity (inverter)      | 160% of the rated current for 1 millisecond                          |       |       |       |      |       |       |
| Output rated current at cosphi 0.8 (A) | 14.45  | 21.68 | 28.90 | 43.35 | 57.8 | 72.25 | 86.71 |

## BYPASS CHARACTERISTICS

|                                      |  |  |  |  |  |  |  |
|--------------------------------------|--|--|--|--|--|--|--|
| Configuration                        | (Standard) input shared with the network (separated optional)      |  |  |  |  |  |  |
| Transfer limit                       | +/- 10% of the output rated voltage (adjustable)                   |  |  |  |  |  |  |
| Overload capacity (on bypass)        | 110% continuous  |  |  |  |  |  |  |
| Short circuit capacity (on bypass)   | 200% for 5 minutes / 1000% for 1/2 cycle (non repetitive)          |  |  |  |  |  |  |
| Alarm contacts (without voltage)     | As optional, 6 completely programmable relay contact are available |  |  |  |  |  |  |
| Communication and sw interconnection | Ethernet 100base-TX, USB Host + USB Device, RS232, RS485           |  |  |  |  |  |  |
| Standard                             | Epo available on connector (N.C.)                                  |  |  |  |  |  |  |
| Size                                 | 700x1000x1400  |  |  |  |  |  |  |
| Weight (approx.) (Kg)                | 150  |  |  |  |  |  |  |

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