



Oil cooled Transformer/Rectifiers

Datasheet DS 003

Rev.02

Transformer/Rectifier units are the heart of any Impressed Current Cathodic Protection (ICCP) System.

A good Transformer/Rectifier for ICCP Systems need to be **stable, reliable and rugged enough** to withstand even the harshest condition, including humid tropical climate, corrosive marine atmosphere, cold climate and desert sand storms.



For all these situations, **TECNOCORR SRL** proposes a **wide range of oil-cooled transformer rectifiers** suitable for **outdoor installation** and **continuous** operating service. Output voltage is usually limited to 50V for safety reasons, while output DC current may vary from 5 to 500 A. Our T/R units are entirely **made in Italy**, produced in our facilities with only high-grade industrial components and **self-built transformers**. As a proof of quality, our oil-cooled units are certified for compliance with **Electromagnetic Compatibility Standards** (for emissions and immunity) and for **Vibrational Compatibility** according ASTM D4169.

Each T/R is **factory tested** to ensure safety and full functionality.

Mineral **oil cooling** allows an efficient **heat dissipation** without the risk of dust or humidity ingress. In case of extremely hot climate, a **sunshade** can be installed to protect the T/R from direct sun heating. To prevent condensation of humidity, our T/R are equipped with silica-gel breather and internal anti-condensation heater with thermostat control.



T/R's are designed for plinth installation and the external enclosure is available in both galvanized & epoxy painted carbon steel and **AISI 304 or 316L stainless steel**, with thickness up to 3mm.

Our Transformer/Rectifier are available in both **manual mode** and **automatic mode**.

- In manual mode, output parameters can be adjusted by the user acting on a multi-step selector or a potentiometer to regulate output voltage (constant voltage operation, CV) or output current (constant current mode, CC).
- In automatic mode, the T/R will read the actual structure-to-soil potential using an **external reference electrode** (Cu/CuSO₄, Zinc or even MMO Titanium) and automatically regulate output current to maintain the structures at the appropriate protection potential via microprocessor control.

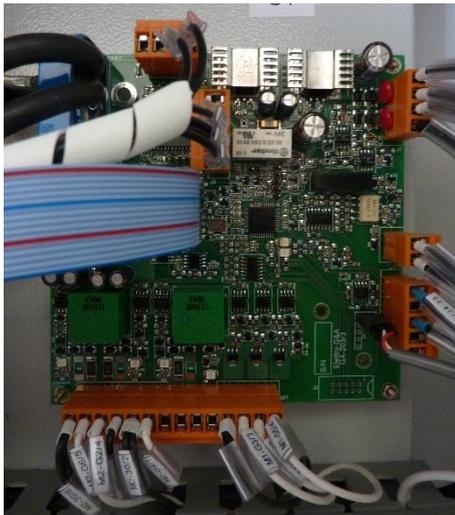


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Automatic control allows our T/R to compensate for any changes in soil or water resistivity, structure's insulation and protection current requirement **without the need of an operator.**



Control and adjust of output values can be performed via multi-tap transformers or VARIAC (only for fully-manual T/R) or using high efficiency – low noise **Thyristor-controlled full wave rectifier** with microprocessor control (for both manual and automatic T/R's).

Our T/R's are available both in single-channel or **multi-channel** option, where multiple and fully independent units are integrated in a single cabinet.



The T/R's front panel will house control devices and analogic/digital **measuring instruments**, which can be delivered in standard version or fully **tropicalized**.



Input and output lines (electrode and anodes) are protected by high-speed fuses, varistors or **integrated surge diverters** according to customer's requirements. Our T/R's are fully compatible with our **remote monitoring and control system**, which allows the user to operate on the T/R from a remote control room and keep under control output parameters and **alarm signals** like faults and over-temperature.

Optional dry contacts for alarm signaling, as well as **4-20 mA** interfaces for output parameters remote reading are available on request.

To perform instant-off potential measures, TECNOCORR SRL offers a wide range of **ON-OFF** cyclic current interrupters.

Please find typical technical characteristics on the following table, and feel free to contact our technical office for further information about our product range.



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Technical Characteristics	
Electrical characteristics:	
Input voltage	220 V single-phase or 380-400 V three-phase.
Input voltage allowed fluctuations	Up to $\pm 15\%$.
Input protection	EMI filter, high-speed fuses, circuit breaker and overvoltage protection.
Signaling devices	Phase-presence lamps (one per phase), LED indicators for power-on, operating mode, over-temperature, ON-OFF insertion, alarms, etc.
Maximum output voltage	50 V DC (75V, 100V, 150V or higher voltages available on request).
Maximum output current	500 A DC. (Typ).
Output parameters stability	$\pm 2\%$ Max.
Output voltage ripple	$< 5\%$ (standard). Up to $< 2\%$ with upgraded output filter.
Output protection	High-speed fuses and overvoltage protection.
Panel instruments	Class 1.5 voltmeters and ammeters. $\varnothing 4$ mm sockets for direct measurements. Digital instruments available on request.
Mechanical characteristics:	
Standard temperature range	$-10 \div +55^{\circ}\text{C}$. Other ranges available on request.
Casing	Galvanized & epoxy painted carbon steel or stainless steel AISI 304 or AISI316L, thickness up to 3mm.
IP rating	IP 54 Min. – IP 67 Max (on request)
Cooling	Mineral oil – natural circulation
Construction features:	Plinth mounting, lifting eyebolts, refillable silica-gel breather, anti-condensation heater, optional panel window.
INOX Nameplate	Manufacturer name and address, manufacturer's serial number, input and output ratings. Further information according customer's requirements.
Functional characteristics:	
Fully Manual type:	Output adjustment via VARIAC, multi taps transformer or SCR microprocessor-controlled rectifier.
Manual/Automatic type	Standard SCR microprocessor-controlled rectifier, multi-turns potentiometers to adjust output current or protection potential.
Compliance with EMC and Vibrational resistance standards:	
EMC	EN 55011 EN 61000-3-3 EN 61000-6-1 IEC 61000-4-4 EN 61000-6-1 IEC 61000-4-6 EN 61000-6-2 IEC 61000-4-4 EN 61000-6-2 IEC 61000-4-2 EN 61000-6-2 IEC 61000-4-5
Vibrational resistance	ASTM 4169 Profile truck, Distribution cycle 5 schedule E, random test, Assurance level II
Main Optional features:	
<ul style="list-style-type: none"> • ON-OFF programmable current interrupters – stand-alone or GPS synchronized. • 4-20 mA current transducer for output voltage, current and Cathodic Potential. • Dry contacts for alarms. • Datalogger. 	
Standard factory tests:	
<ul style="list-style-type: none"> • Visual & dimensional check. • AC and DC isolation of main transformer and equipment. • Functional test, light load test and simulation with dummy load. • Power efficiency test. • Long run test – 24 h at full rated power. 	

