

oil cooled transformer/rectifiers

Datasheet DS 003
Rev.00

The heart of an Impressed Current Cathodic Protection (ICCP) System is the Transformer/Rectifier unit, which draws electric power from the main distribution line and delivers the rectified current to the anode's 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 and desert's sand storms.

For all these situations, Tecnoseal Industry 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 vary from 5 to 500 A.

Our T/R units are certified up to IEC 60529 IP 67 rating and are produced in compliance with EN 55011, EN 61000 (electromagnetic compatibility) and ASTM D4169 (vibrational tests).

Mineral oil cooling allow 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.

Our T/R are equipped with silica-gel breather and internal anti-condensation heater.

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

Output parameters (Voltage and Current) can be modified both by manual operation (multi-step or potentiometers) and by automatic mode. In automatic mode, the T/R will set by itself the output current to maintain the structures at the appropriate protection potential via microprocessor control. The structure's potential will be measured by the T/R via a proper reference electrode.

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

Our T/Rs are available both in single-channel or multi-channel option, where multiple fully-independent units are integrated in a single cabinet.

Our T/R's are available for single or three-phase input, and output control can be performed via multi-tap transformer, VARIAC or high efficiency – low noise Thyristor-controlled full wave rectifier.

Each component is properly oversized to withstand the most difficult operating conditions.

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) can be protected via high-speed fuses, varistors or integrated surge diverters according to customer's requirements.

Our T/R 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, Tecnoseal Industry offers a wide complete range of On-Off cyclic current interrupters.



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Technical characteristics:

Electrical characteristics:

Input voltage	220 V single-phase or 380-400 V three-phase
Input voltage allowed fluctuations	± 15%
Input protection	Circuit breaker and overvoltage protection
Signaling devices	Phase-presence lamp, LED indicators for power-on, operating mode, over-temperature, ON-OFF insertion, alarms, etc.
Maximum output voltage	50 V DC (up to 150V available on request)
Maximum output current	500 A DC
Output parameters stability	± 2% Max.
Output voltage ripple	< 1% (or 5 mV peak to peak)
Output protection	High-speed fuses and overvoltage protection
Panel instruments	Class 1.5 Voltmeters and ampere-meters, fully tropicalized. ø 4 mm sockets for direct measurements.

Mechanical characteristics:

Standard temperature range	-10 ; +55°C. Other ranges available on request.
Casing	Galvanized & painted carbon steel or stainless steel 304 or 316, thickness 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.
Nameplate	Manufacturer name and address, manufacturer's serial number, input and output ratings, oil type and capacity. Further information according customer's requirements.

Functional characteristics:

Manual type:	Output adjustment via 63-steps multi tap transformer
Automatic type	Standard SCR controlled rectifier, multi-turns potentiometers to adjust output current or protection potential

