CATHODIC PROTECTION
TRANSFORMER RECTIFIERS

Air and oil cooled types

Manual and automatic control options

Custom Built – to meet the most demanding specifications
**CATHODIC PROTECTION TRANSFORMER RECTIFIERS**

**Introduction**

Cathodic protection T/R’s from DP Energy Services Ltd offer numerous advantages. First, there is no need to compromise on the specification. We will design and build the T/R to meet all your requirements. Second, since we have gained a reputation for manufacturing robust, high quality products, you can rest assured that your structure will be adequately protected from the environment. The unit will operate reliably, require minimal maintenance and will not be prone to spuriously tripping out. Third, there is full technical back-up, from design to after sales service. This leaflet should provide a good overview of the equipment we can supply. Please contact our Power Supplies Sales Department for technical advice and prices.

**Typical Applications**

Onshore pipelines, concrete rebar protection, storage tanks, offshore structures, ships, jetties, loading bays and outfalls.

**Electrical Input**

All single and three phase input voltages can be specified. Frequencies 50 or 60 Hz.

**Electrical Output**

We build T/R’s to provide whatever output is required. Where structures can be more efficiently protected with multiple T/R’s we will be pleased to advise on the most economic unit ratings.

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**Selection Guide Terminology**

**Low Power**
Typically < 100 amps d.c. output.

**High Power**
Typically > 100 amps d.c. output.

**Non Tropical Conditions**
Typically < 35°C ambient, normal humidity.

**Clean Environment**
Free from dust, sand, salt and other airborne contaminants.

**Tropical Conditions**
Typically > 35°C ambient, high humidity.

**Aggressive Environment**
Dusty, sandy, salt laden air and/or any other airborne contaminants.
**Control Options Terminology**

**Manual**
Output control settings adjusted manually.

**Automatic**
Choice of either:
(A) Constant Current Control – this maintains the manual settings by compensating for variations in load resistance and/or input supply voltage.
(B) Constant Potential Control – this maintains a preset level by monitoring a signal from a permanent reference electrode.

**Bolted Links**
Output set manually via tapping links; typically a choice of 6 or 15 steps.

**Rotary Tapping Links**
Output set manually via rotary switches; typically 6, 15 or 63 steps.

**Regulator**
Output set manually via stepless variable regulator. Control range 0 – 100%.

**Motorised Regulator**
Output maintained automatically via motorised stepless variable regulator. Control range 0 – 100%.

**Electronic Regulator**
Output maintained automatically via transistor controlled stabilised regulator. Control range 0 – 100%.

**Thyristor**
Output maintained automatically via thyristor controlled regulator. Control range 0 – 100%.

**Switch Mode**
Output maintained automatically via switch mode technology. Control range 0 – 100%.

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**I P Rating – protection against the ingress of dust and liquids**

The degree of protection offered by the cabinet as defined in EN 60.529/IEC 529 is indicated by a three digit number. However, since in most cases it is only the first two digits that are of concern, we have limited our specifications to these. For reference the ratings are:

1st digit – protection against solid objects

0 = no protection
1 = protection against solid objects >50mm (e.g. accidental touch by hand)
2 = protection against solid objects >12mm (e.g. fingers)
3 = protection against solid objects >2.5mm (e.g. tools and wire)
4 = protection against solid objects >1mm (e.g. tools and small wires)
5 = protection against dust, limited ingress permitted, but no harmful deposits
6 = totally protected against dust
7 = protection against dust, limited ingress permitted
8 = protected against submersion
9 = special protection

2nd digit – protection against liquids

0 = no protection
1 = protected against vertical falling drops of water (e.g. condensation)
2 = protected against dripping water up to 15° from the vertical
3 = protected against dripping water up to 60° from the vertical
4 = protected against splashing water (limited ingress permitted)
5 = protected against water jets
6 = protected against heavy seas
7 = protected against immersion
8 = protected against submersion
9 = special protection
**Standard Specification**

**Mounting**
Free standing, plinth, wall or pole.

**Weather Protection**
Air cooled – up to IP65.
Oil cooled – up to IP66.
Sun shields where specified.

**Transformers**
Transformers are manufactured and routinely tested in accordance with BS171 (IEC76). A safety earth screen is provided between the primary and secondary windings.

**Rectifiers**
Three basic methods of rectification are used, silicon diode, thyristor and switch mode. Clients may specify their preferred method of rectification, or, leave the choice to us in which case we will select the most cost effective option.

**Meters**
Moving coil meters to BS89 class 1.5 are fitted as standard. On request, other types of meter can be fitted including hermetically sealed, dual range and digital types.

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### Single Phase

<table>
<thead>
<tr>
<th>Output current</th>
<th>Output voltage</th>
<th>Input current at 240V</th>
<th>Size (mm)</th>
<th>Weight (kg)</th>
<th>Output current</th>
<th>Output voltage</th>
<th>Input current at 240V</th>
<th>Size (mm)</th>
<th>Weight (kg)</th>
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<tbody>
<tr>
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<td>25V</td>
<td>1.4A</td>
<td>620x460x820</td>
<td>70</td>
<td>700x600x900</td>
<td>75A</td>
<td>25V</td>
<td>3.6A</td>
<td>195</td>
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<td>25A</td>
<td>25V</td>
<td>7.2A</td>
<td>620x460x820</td>
<td>95</td>
<td>700x600x900</td>
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<td>50V</td>
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<td>280</td>
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<tr>
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<td>25V</td>
<td>10.8A</td>
<td>620x460x820</td>
<td>150</td>
<td>800x700x1000</td>
<td>50A</td>
<td>50V</td>
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<td>350</td>
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<tr>
<td>75A</td>
<td>50V</td>
<td>20.4A</td>
<td>620x560x1020</td>
<td>220</td>
<td>1000x700x1150</td>
<td>75A</td>
<td>50V</td>
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<th>Output voltage</th>
<th>Input current at 415V</th>
<th>Size (mm)</th>
<th>Weight (kg)</th>
<th>Output current</th>
<th>Output voltage</th>
<th>Input current at 415V</th>
<th>Size (mm)</th>
<th>Weight (kg)</th>
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<td>25V</td>
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<tr>
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<td>25V</td>
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### Protection
Input protection, depending upon size and type:
(i) Switchfuse
(ii) Moulded case circuit breaker
(iii) Miniature circuit breaker
(iv) RCD (earth leakage)

Rectifier
Thyristor and Silicon Diode Rectifiers are protected by high speed semiconductor fuses. In all cases, transient voltage surges are eliminated by use of metal oxide suppressors. Output circuits are protected with lightening arresters.

**Enclosures – Oil Cooled T/R’s**
The oil tank and control housing are fabricated in steel. Controls, terminals, meters and fuses are accessed through a hinged door. Meters are viewed through sealed windows. Fittings will normally include: oil drain, oil sight gauge, oil filler, thermometer, silica gel breather and lifting lugs.

**Enclosures – Air Cooled T/R’s**
Fabricated in steel, GRP (glass reinforced plastic), or stainless steel as appropriate.

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**Information required for quotation**

8. Application
9. Location – indoor or outdoor
10. Input voltage
11. Output current and voltage
12. Air or Oil Cooled
13. Ambient working temperature
14. Weather protection / IP rating

1. Specification compliance requirements (if any)
2. Mounting option
3. Control option – see guide
4. Rectifier preference (if any)
5. Special meters (if any)
6. Quantity

*The company reserves the right to make changes to any of the information shown on these leaflets in the interests of product development and improvement.*