



CORROSION CONTROL

Technical Datasheet

TRANSFORMER RECTIFIER

VARIAC, OIL COOLED UNIT FOR OUTDOOR PLINTH MOUNTING

General Arrangement

The transformer rectifier is housed inside an oil tank and control box with the control and indication mounted on an internal hinged door.

The power transformer, variable transformer, shunt, and diode assembly are mounted inside the oil tank. The DC Voltmeter, DC Ammeter, AC 'on' lamp, voltmeter fuses and door-interlocked isolator are mounted on the internal door.

Electrical Circuit

The AC input is supplied to the transformer via the AC isolator, EMC filter and MCB with thermal trip. The transformer steps down the voltage and steps up the current to that required for the maximum DC output. This reduced voltage is then applied across the diode assembly, which provides full wave rectification. To control the DC output a manually operated variable transformer is used.

For the control and indication of the rectifier the voltmeter is feed directly from the DC output terminals and the signal for the ammeter is from a brass-ended shunt, which is accurate to 1%. The AC 'ON' lamp is fed direct from the single-phase power supply.

Protection against high transient voltages on the AC side of the circuit is provided by fitting an RC network. On the DC side of the circuit a surge arrestor is used.

Standards and Directives

The rectifier is built with all the necessary components to enable the unit to comply with EMC, low voltage and machinery directives. All components used where applicable are CE marked.

Standards complied with:	Directives complied with:
BS EN 61000	73/23/EEC
BS EN 61000	89/336/EEC
BS EN 60204	

Specification

Supply Voltage	400/440 Volts 3 phase 50 Hz
Type	Outdoor, plinth mounting, non-hazardous area
Ambient Storage Temperature	0 – 50 °C
Control	0–100% DC output by manually operated variable transformer
Max. Operating Temperature	55 °C maximum shade temperature
Cooling	ONAN (oil immersed, natural convection air cooled) BS 184

Protection

The equipment is provided with the following devices for protection against over voltage and over current conditions.

1. AC input thermal / magnetic circuit breaker
2. Three pole primary MCB
3. Semi conductor fuse in AC line to diode assembly
4. Transient over voltage surge suppression on AC and DC sides of rectifier
5. Fuses for the voltmeter, DC output and control circuit (1 Amp Fuse)

Power Transformer

The rectifier transformers are designed and built to BSEN 60076. The transformer has high conductivity copper windings on low loss steel core and is varnish impregnated under vacuum after assembly.



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Rectification

Silicon diodes mounted on an aluminium heatsink and bridge connected for full wave rectification. Diodes have a reverse voltage of 1200V.

The maximum temperature of the diode assembly on full load will be less than 80% of its maximum allowable operating temperature at maximum ambient temperature.

Enclosure

- 3.0 mm thick sheet steel oil tank and 2.0 mm dry control box
- The enclosure is rated to an ingress protection rating of IP65

Oil Tank	Control Box
• Shot Blast to SA 2.5	• Shot Blast to SA 2.5
• Hot dipped Galvanised	• Zinc metal spray – 100µm nominal thickness
• Zinc Phosphate primer	• Zinc phosphate primer - 30µm min d.f.t.
• Polyurethane Top Coat	• Micaceous iron oxide undercoat - 30µm d.f.t.
	• Polyurethane topcoat - 40µm min d.f.t.

Cable Entry

The unit is fitted with a gland plate located at the bottom of the enclosure. Cable access should come from the bottom of the unit.

DC Ripple

Less than 5% from 0 to 100% of DC output

Meters

The equipment is fitted with a DC Voltmeter and Ammeter. Meters are DIN 72 type, moving coil to IEC 51, BS89 class 1.5.

Accessories

The equipment is supplied complete with the following:

1. Combined Oil sight glass and temperature gauge
2. Oil drain valve with protective kick plate
3. Oil Filler socket
4. Silica – gel breather
5. Rolled steel channel base for plinth mounting
6. Lifting lugs
7. Sunshade
8. External earthing terminal
9. Rating plate
10. Operation/maintenance manual with circuit and outline drawings
11. Test and inspection reports
12. Certificate of conformity

Tests

- Insulation resistance test
- No load tests
- Load tests conducted DC output voltage and current.
- Full load input watts and current
- Efficiency
- Function tests

Optional Extras

The following items can be supplied as optional extras:

- Current Interrupter
- Remote monitoring by 4-20 mA converters for connection to SCADA systems or SMS