Farnell
POWER

TRC0800 Range of Telecom Rectifiers

TRC0800 Range

Introduction

This range of convection cooled a.c./d.c. converters (rectifiers) provide output powers up to 800 watts for battery charging or for applications where high quality regulated DC power is required .

All models have sine wave corrected input current and comply with the requirements of IEC 555. The TW range operates over a wide input voltage range of 88 to 264V where as the TR range operates over an input voltage range of 176V to 264V.

A full signal and alarms package is provided.

Table 1.

Models Available

Model Number	V_{NOM}	I_{MAX}	I_{LIM}
T*C 0800 B 54	54.9V	14A	<16.1A
T*C 0800 B 27	27.4V	28A	<31A

Features

- Power factor corrected - sinusoidal input current to IEC 555
- Output current of 14A at 54V or 28A at 27V
- Convection cooled
- Inbuilt series output diode
- Universal input version available
- Compact design
- Comprehensive signals and alarm facilities

Specification

All parameters are as defined in Farnell Power document "Definition of Terms". All values are specified with an input voltage of 240V a.c. 50Hz and in an ambient temperature of 25°C unless otherwise stated.

Input Specification

Voltage Range

TRC models
176 – 264V a.c.

TWC models
88 – 264V a.c. universal input.

r.m.s. Current

4.5A maximum at 230V input.

Peak Inrush Current

Less than the normal running peak of 6.4A maximum at 230V input.

Frequency

45 to 66Hz

Supply Type

Single phase TN-S system (as defined in IEC 364). i.e. systems with a separate earth conductor which is directly connected to the neutral conductor at the source.

Power

970W maximum at 825W output power

Phase Angle

Less than 5°.

Apparent Power Factor

Greater than 0.9, typically 0.99.

Efficiency

Greater than 85% for output loads in excess of 50% I_{MAX}. Typically 87%.

Harmonic Distortion

Complies with the requirements of IEC555.

Output Specification

Nominal Voltage

The output voltage is factory set with the output loaded I_{MAX}, to the voltage, V_{NOM}, shown in the table of models (±0.5%). The nominal voltage may be reduced to a second preset voltage by shorting V_{LINK} to +SENSE on the 'D' connector. Alternative output voltage settings are possible up to 58V on 'B54' models and up to 29V on 'B27' models. Please contact the factory to discuss your requirement.

Current

Continuous output current is available up to the current limit point I_{LIM}. For test purposes, measurements are made at the I_{MAX} point.

Combined Regulation

A worst case combination of input voltage variation between 176 to 264V and output load variation between zero and I_{MAX} results in an output voltage change of less than 0.2% nominal.

Optional output droop: This is available to assist current sharing when rectifiers are connected in parallel in a passive sharing system.

Dynamic Regulation

A load change of 10% to 90% I_{MAX} or 90% to 10% I_{MAX} results in an overshoot of 1V maximum, recovering to within 1% of the final value within 2ms.

Quiescent Leakage Current

The current into the output of a non-energised rectifier from a voltage source equal to its nominal output voltage will not exceed 5mA.

Temperature Coefficient

±0.015%/°C maximum over the operating temperature range of the units.

Ripple and Noise

The wideband differential output noise over the frequency range 10Hz – 100MHz does not exceed 50mV r.m.s. individual harmonics do not exceed 2mV r.m.s. (typically 200µV). The psophometrically weighted noise, in accordance with C.C.I.T.T. No 1, does not exceed 2mV r.m.s. The rectifiers output meet "equipment noise limits" of BTR2511 Issue 3.

Protection

Input Fuse

Units are fitted with a front panel input fuse rated at 10A T 250V (15A T 250V on TWC version).

Output Current Limit

These rectifiers are designed to be able to operate continuously in current limit, current limit point is given in table 1. The current limit characteristic is approximately constant current down to less than 75% of nominal output voltage, below which the current folds back to the short circuit current (I_{SC}) shown in table 2. It is possible to provide a current limit characteristic which is approximately constant current down to short circuit for those applications which require this.

Series Output Diode

Standard units are supplied with an output diode fitted internally in series with the positive output.

Output Overvoltage

An output voltage in excess of the trip point shown in table 2 will cause the rectifier to latch into a shutdown condition. The rectifier is reset by interrupting the mains input.

Parallel Voltage

The rectifier can withstand voltages of up to 63V on 54V models and up to 35V on 27V models applied to the output terminals when it is inoperative.

Thermal Overload

A thermal sensor is fitted to the main heatsink which, under thermal overload conditions, will cause the unit to inhibit until the temperature has reduced to an acceptable level.

Table 2.

Current Limit and Overvoltage Values

Model Number	I_{LIM}	I_{SC}	V_{OVP}
T*C0800B54	<16.1A	<5A	63V ± 0.5V
T*C0800B27	<31A	<10A	31.5V ± 0.5V

Turn On and Turn Off Characteristics

Turn on Delay — The output will attain final voltage within 3s from application of power to the power supply input.

Hold Up Time — With the output loaded to 800W, a hold up time of at least 20ms is available when operating at any input within the specified range.

Auxiliary Functions

Remote Sense — Available as an option to allow for compensation of up to 500mV total voltage drop in the power leads. Units are internally linked for local sense as standard. Please contact the factory to discuss your requirement.

Parallel Operation — Units may be operated with outputs connected in parallel without limitation.

Forced Current Share — A current share facility is provided which will enable up to 10 units to share the total load current to within 10% of full load current of one rectifier.

Remote On/Off — An isolated TTL compatible input is provided to allow for remote switching of the rectifier. Input current ≤5mA at 5V. Logic low or open circuit turns the rectifier on.

Voltage Trim — An optional facility is available to allow external adjustment of the output voltage to suit battery environment. Referenced to –SENSE.

Output Healthy Relay — Isolated change-over relay contacts. The normally open contact being made when the output voltage is within the 'output healthy range' shown in table 3. Contact rating 50V at 1A d.c.

Current Signal — Analogue output with a voltage linearly proportional to output current. 3.8V ±0.3V at I_{MAX}. Linearity ±10% from 10% to 100% full load. Output impedance 5.1kΩ ±2%.

The following four outputs are provided by opto coupler outputs with a common emitter and open collector. These four outputs are floating with respect to the power output and other signal interfaces. A maximum working voltage of 100V between signal ports and power output is permissible. Maximum applied voltage, 30V. Output capability; I_{OL} = –5.4mA @ V_{OL} ≤0.5V. Each output is also mimiced by a front panel indicator.

Input Healthy — Active low when the mai… input is within specification. Yellow LED indicator.

Output Healthy — Active low when the output voltage is greater than $V_{HEALTHY}$ LOW and less than $V_{HEALTHY}$ HIGH, both shown in table 1. This output is unaffected by parallel connected units provided that the system voltage is less than the overvoltage limit. Green LED indicator.

Current Limit — Active low when current limit circuitry is operative. Red LED indicator.

Overvoltage Trip — Active low when the overvoltage protection circui… has been triggered. This output stays low until the mains supply is interrupted. Red LED indicator.

Table 3.

Output Healthy Range

Model Number	$V_{HEALTHY}$
T*C0800B54	40V – 60V
T*C0800B27	20V – 30V

Electrical Isolation

Primary to Earth	Units are tested to 1.5kV a.c. r.m.s. from input to earth with both input lines connected together.
Secondary to Earth	Units are tested to 500V a.c. r.m.s. from output to earth, with all outputs and secondary ports (signals) connected together.
Primary to Secondary	Input to output isolation barriers, including layout and wiring, are specified to 4kV a.c. r.m.s. for one minute. This is tested prior to assembly by applying an input to earth isolation test voltage of 2.5kV a.c. r.m.s. simultaneously and in phase with a 1.5kV a.c. r.m.s. output to earth test voltage.
Earth Leakage Current	The earth leakage current meets the requirements of EN60950. It is measured as the voltage across a 1.5kΩ resistor in parallel with a 1.5nF capacitor, inserted in series with the earth line.

Electromagnetic Compatibility

Exported Noise	Units have been tested to and found to comply with the requirements of VDE 0871 Curve B, FCC Rules part 15 subpart J Class B, BS6527 Class B.
Susceptibility	Outputs will remain within specification for 1500V, 5ns rise time, 100ns duration common mode disturbances with a repetition rate of 10Hz.

Environmental Conditions

Ambient Temperature	–5°C to +55°C operating. –40°C to +85°C non-operating. Wider temperature ranges are available. Contact the sales office to discuss your requirements.
Humidity	0 to 85% R.H. non-condensing operating 0 to 95% R.H. non-condensing, non-operating.
Altitude	0 to 3,000m (0 to 10,000ft) operating 0 to 10,000m (0 to 30,000ft) non-operating.
Vibration	To IEC 68-2.6 and BS2011 Part 2.1 Fc 1983. 1g or 1mm maximum displacement over the range 5Hz to 150Hz.
Pollution	These power supplies are designed to operate in office type environments. i.e. pollution degree 2 environments, as defined in EN60950.

International Safety Approvals

All units are designed in accordance with the requirements of EN41003, BS6301, BS6484 IEC 950/ EN 60950 and UL1950.

Guarantee

All Farnell Power products are guaranteed against faulty manufacture and faulty components for a period of twelve months from the date of despatch. See conditions of sale for full details.

Ordering information

To order simply specify the model number. If any optional features are required it is advisable to contact your local representative or the factory in the first instance. Optional features must be clearly shown on the order.

Mechanical Specification

Dimensions

External dimensions are:-

TRC models

244 (9.65) high x 80 (3.15) wide x 350 (13.8) deep.

TWC models

245 (9.65) high x 112 (4.4) wide x 350 (13.8) deep.

Alternative mechanical formats are available contact the sales office to discuss your requirements.

Fixings

Optional 'DZUS' fastener at bottom of front panel for rack mounting applications.

Connectors

The following connectors are required for connection to the rectifier:

Input

IEC 320 10A female connector.

Output and Signals

Units require a Golden "D" connector "C" shell size, 21WA4 female connector with two power receptacles for the main power connection. These are available as an accessory kit part number 14F2905AK1.

Mounting Orientation

The units are designed to operate with the front panel and the cooling fins vertical.

Ventilation and Cooling

Units require vertical air flow for cooling. Both top and bottom faces are ventilated and the left hand side of the unit is fitted with a heatsink. The top and bottom ventilated panels must not be obstructed.

Finish

The front panel is finished in semi-gloss black powder coat, all other metalwork is finished in gold coloured chemical etch.

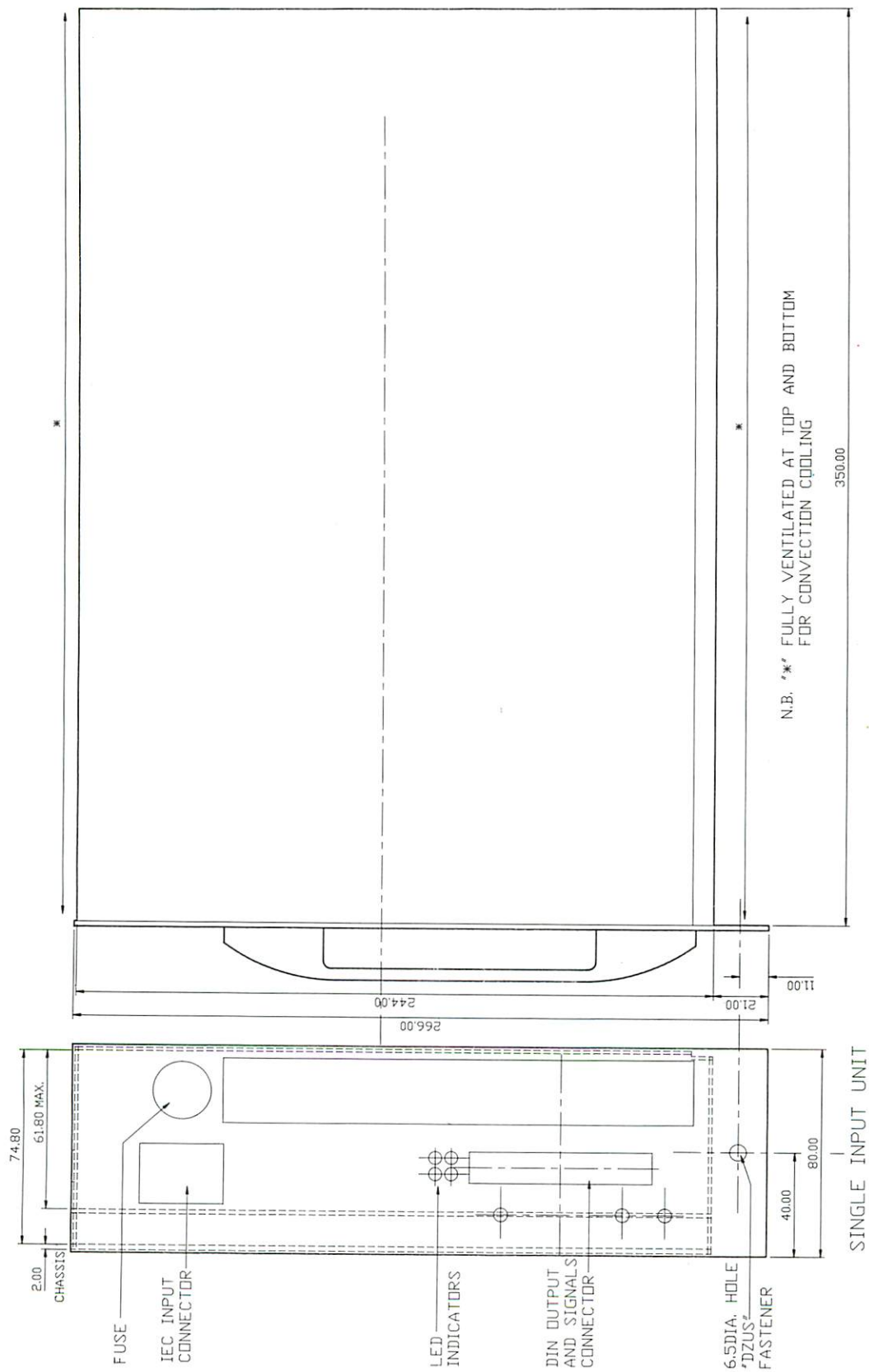
Table 4

Output Connector Pin-outs

Pin	Function
A1	Positive Output
A4	Negative Output
1	Positive Sense
2	Voltage Change Link
3	Opto Common Emitter
4	Opto Input Healthy
5	Opto Output Healthy
6	Opto Current Limit
7	Opto Overvoltage
8	Voltage Trim (Option)
9	Negative Sense
10	Current Signal
11	Remote Shutdown Positive
12	Remote Shutdown Negative
13	Forced Current Share Port
14	Relay N/O contact
15	Relay Common Contact
16	Relay N/C Contact
17	Spare

Outline Drawing

All dimensions are nominal and are in mm (inches)



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