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PEREGRINE TWF0400

Single output switch mode
rectifier



FEATURES

- 400W continuous output power
- Power factor corrected, universal input
- Current limit and overvoltage protection
- Integral fan cooling
- Hot pluggable
- Parallel current share
- Thermal protection
- Postmate enable
- Remote shutdown
- Extensive signals
- CSA/CE compliant
- Integral series output diode

Advance

POWER

An Advance International Group Company



INTRODUCTION

The TWF0400 series of switch mode rectifiers in the Peregrine family offers a fully regulated dc output, from a universal, power factor corrected, ac input. The 400W continuous output power rating is complemented by the wide operating temperature range of -40° to +70°C. Cooling is by integral fan and thermal protection is provided for maximum reliability.

The available output voltages are ideal for the telecommunication and data communication markets.

The rectifiers have remote sense capability for accurate voltage regulation and have active current share facilities for applications requiring parallel connection with other units. Unit inhibit, postmate enable, and LED status indicators are provided as standard.

The TWF0400 complies with EN60950 being CE marked to the Low Voltage Directive and is safety approved to both UL1950 and CSA 22.2 No. 234. The unit is designed to meet current and pending International EMC Directive requirements.

If your requirements are different than those listed on this data sheet, please contact your local sales office.

AVAILABLE OUTPUTS

Table 1, Standard Rectifiers

Nominal Voltage	Adjustment Range	Output Current	Order Code	Temperature Range
27.4V	20.0 - 36.0V	14A	TWF0400H27	-40° to +50°C
54.9V	40.0 - 58.0V	7A	TWF0400H54	-40° to +60°C

INPUT SPECIFICATION**Voltage Range**

85 - 264Vac

Frequency

47 - 63 Hz

Supply Type

Single phase TN - S systems (as defined in IEC364).

Input Current

4.9A maximum at 100V input, 400W output.
2A maximum at 230V input, 400W output.

Inrush Current

10A maximum, hot or cold start.

Power

486W maximum input power when delivering 400W output power.

Power Factor

Typically 0.99. Greater than 0.95 at 400W output power, 100 to 240 input voltage.

Efficiency

Typically 82% at 230V input, 400W output.

Harmonic Distortion

Complies with the requirements of EN61000-3-2.

OUTPUT SPECIFICATION**Voltage**

Nominal output voltages and adjustment ranges are shown in Table 1. Adjustment is by means of a 20-turn potentiometer at the rear of the unit, or over a limited range via voltage program port. Output is preset to within 100mV of nominal.

Current

Recommended maximum continuous current ratings (I_{MAX}) are shown in Table 1. Current ratings are applicable up to the maximum rated temperature (see Table 1). For operation up to 70°C, derate by 2.5%/°C.

Power

400W continuous up to the maximum rated temperature. For operation up to 70°C, derate by 2.5%/°C.

Load Regulation

1% V_{NOM} maximum for an output current variation of 0 to 100% I_{MAX} .

Line Regulation

0.2% V_{NOM} maximum for an input voltage variation over the entire operating range of the unit with the output loaded to full output power.

Dynamic Regulation

A step change in output current from 50% I_{MAX} to 100% I_{MAX} results in a maximum voltage deviation of $\pm 250mV$. Recovery to within 1% of set voltage occurs within 1ms.

Temperature Coefficient

$\pm 0.02\%/^{\circ}C$ maximum over the range of 0 to 50°C.

Ripple and Noise

Psophometrically weighted noise in accordance with C.C.I.T.T. No. 1 does not exceed 2mV r.m.s.

C message weighted noise meets 25dBnC.

Wideband differential noise over 30MHz bandwidth does not exceed 150mVpk-pk.

TURN ON AND TURN OFF CHARACTERISTICS**Start-up Time**

Output is above dc OK threshold within 1.5s at 100V input, and 0.5s at 240V input.

Start-up Characteristics

Output voltage rise is monotonic and typically reaches normal output voltage in 100ms.

Hold Up

20ms minimum at 400W output power, at any input voltage within the specified range. This is sufficient energy storage to ride through a missing cycle.

PROTECTION

Input Fuse

Internally fitted fuse rated at 7A T 250V.

Output Current Limit

The units are designed to operate continuously in current limit for battery charging purposes. The characteristic is constant current and is set to 105% \pm 5% of I_{MAX}.

Output Overvoltage

Output overvoltage is adjustable 25 - 30V on 27V units, 50 - 60V on 54V units. Set at 30V \pm 1% on 27V units, 60V \pm 1% on 54V units.

The unit will shutdown in the event of an overvoltage condition. This can be reset by interrupting the input power, or by applying a pulse to the remote on/off input. The overvoltage threshold is adjustable by a multi-turn potentiometer at the rear of the unit.

Overtemperature

Under extreme conditions, the output power will be inhibited until the temperature drops to normal operating levels.

Parallel Voltage

Units will withstand a parallel voltage applied to the output terminals when turned off up to a maximum voltage of 63V on 54V units, 31V on 27V units.

AUXILIARY FUNCTIONS

Remote Sense

Units are set to local sense by default. Remote sense available as an option.

STANDARD SIGNALS

Current Share

Units may be operated in parallel without limitation. The current share facility forces up to 5 units to share load current to within 10% of total load.

Remote On/Off

Opto-isolated input. Short pulses of between 1ms and 30ms will toggle unit on and off. Pulses greater than 150ms will inhibit the unit until it is removed. Pulsing this input will also reset the power supply after a unit shutdown.

Marginate Down

By linking the Marginate input to +Sense the output voltage is reduced by 1V \pm 100mV on 27V units; 2V \pm 200mV on 54V units.

Voltage Programming

The output voltage may be programmed from an external voltage source. The programming range is 26.15 to 28.65V on 27V units; 52.5 to 57.4V on 54V units.

Input Healthy Signal

Opto-isolated, open collector output. Active low when input voltage is within specification limits.

Output Healthy Signal

Opto-isolated, open collector output. Active low when the output voltage exceeds the threshold of 20V/41V.

Enable

To allow hot plugging of this unit, operation is inhibited until after the Enable pin is connected to -Sense.

Current Limit Signal

Opto-isolated, open collector output. Active low when the output current demand exceeds I_{MAX}.

Overvoltage Trip Signal

Opto-isolated, open collector output. Active low when the unit has shut down due to an overvoltage condition.

Overtemperature Trip Signal

Opto-isolated, open collector output. Active low when the unit has shut down due to thermal overload.

Fan Fail

Opto-isolated, open collector output. Active low when fan has slowed or stopped.

Current Analog

Current analog is a voltage signal referenced to -sense, proportional to output current. 0 to 5V represents 0 to full load output current. This can be used as a current meter.

Output Healthy Relay

Change over relay contacts. Normally open contact is made when the output voltage exceeds the threshold of 20V/41V.

OPTIONAL SIGNALS

Remote Sense

Remote sense compensates for lead drops of up to 500mV on output, when specified on order.

Current Low

Opto-isolated, open collector output. Active low when output current falls below preset limits.

ISOLATION

Primary to Secondary

Barrier components are tested at 4kVac input to output for 1 minute. Input to output tested at 2.1kVdc for 1 minute.

Primary to Earth (Ground)

Units are tested 2.1kVdc from input to Earth for 1 minute.

Secondary to Earth (Ground)

Units are tested to 700Vdc from output to Earth for 1 minute.

Earth (Ground) Leakage Current

1.2mA maximum at 240V, 60Hz input.

Operating Voltages

Output to Earth: 100Vdc

Signal to Earth: 100Vdc

Signal to output: 100Vdc

ELECTROMAGNETIC COMPATIBILITY

Emission

Compliant with EN50081-1(92) with compliance to the following specific conditions:

Conducted, 0 - 2kHz: EN61000-3-2

Conducted, 0.15 - 30MHz: EN55022-B

Radiated, 0.03 - 1GHz: EN55022-B* at 10m

* Class A or Class B depending upon enclosure.

Immunity

Compliant with EN50082-1(92) with compliance to the following specific conditions:

Fast Transients: EN61000-4-4 criteria B

ESD: EN61000-4-2 criteria A

RF Field: EN61000-4-3 at 3V/m

Conducted RF: EN61000-4-6 at 3V r.m.s.

Surge: EN61000-4-5

ENVIRONMENTAL CONDITIONS

Ambient Temperature

-40°C to +70°C operating.

Above 50°C (60°C on 54V units) derate output current by 2.5%/°C.

-40°C to +85°C non-operating.

Humidity

0 - 85% R.H., non-condensing, operating.

0 - 95% R.H., non-condensing, non-operating.

Altitude

0 to 3,000m (10,000 ft) operating.

0 to 10,000m (30,000 ft) non-operating.

Pollution

These rectifiers are designed for use in office type environments, i.e. pollution degree 2 environments, as defined in EN60950.

Mechanical Shock and Vibration

Units comply with the following standards:

Vibration: BS2011 Part 2.1 Test Fc.

Drop and Topple: EN60068-2-31 Test Ec.

Bump test: EN60068-2-47 Test Eb.

Transportation: BS2011 Part 2.1 Test Fc when in original packing.

Drop Test: EN60068-2-32 Test Ed when in original packing.

RELIABILITY

MTBF in excess of 100,000 hours calculated to MIL217 Rev F at 25°C ground benign.

MTBF 400,000 hrs. calculated to HRD4.

INTERNATIONAL SAFETY APPROVALS

The units have been designed, tested, and approved to the following safety specifications:

CE marked to the low voltage directive EN60950.

Both UL1950 and C22.2 #234 by CSA under the NRTL scheme.

WARRANTY

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

MECHANICAL SPECIFICATION

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Mounting Orientation

Units may be mounted in any orientation.

Ventilation and Cooling

Units are cooled by an integral fan and require free air flow in the area of the fan inlet on the front panel and over the rear (connector end) face. Air flow direction is as shown on the outline drawing.

External Dimensions

All dimensions are nominal and are in mm (inches).

63.5 (2.5) x 127 (5.0) x 241.3 (9.5)

Mass

Typically 1.7kg (3.74lb)

Fixings

Units are designed for rack mounting and have two captive fasteners in the front panel. Fixings in the form of universal 8-32 UNC-2B / M4 threaded inserts are also provided in side and top panels.

Various 19" and 23" shelf styles are available, from Advance Power, to accept the TWF0400 rectifiers.

CONNECTORS

Input

VIA Din 41612 H3 plug.

Output

VIA Din 41612 Modular H body, 2 way plug.

Signals

VIA Din 41612 32way, 1/2 B body plug.

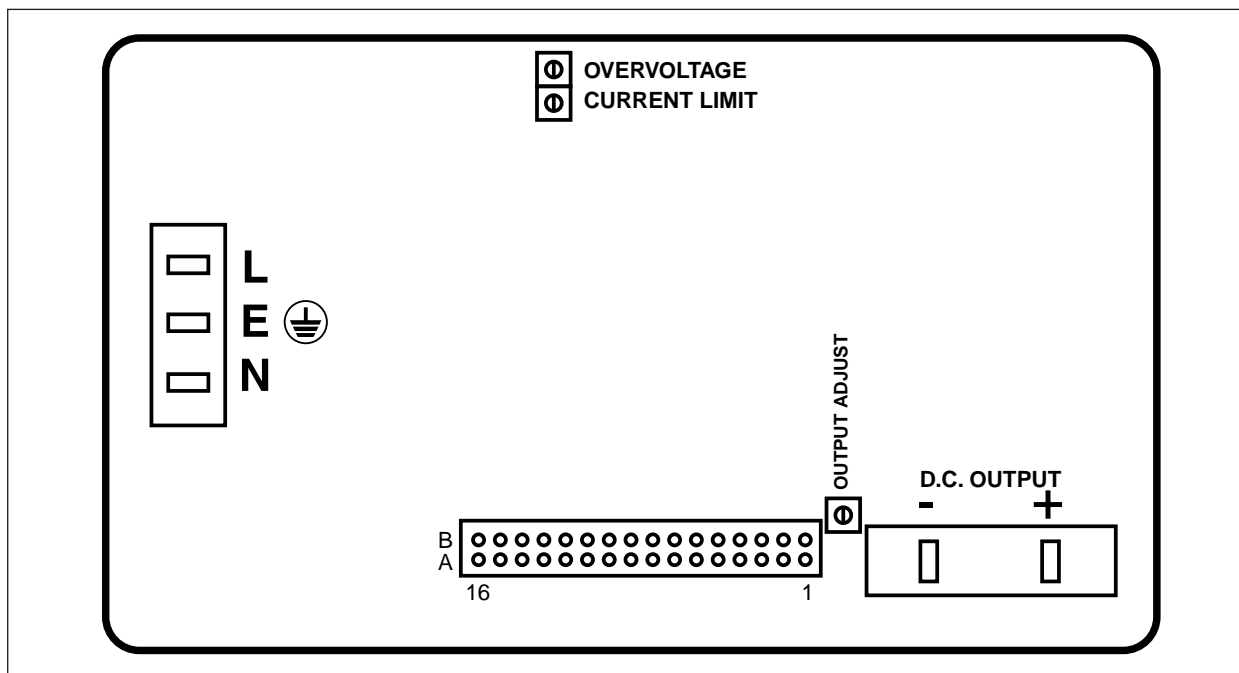
Connector Kits

ITKCO401: input, output, and signal mating connectors.

Signals Pin Out

Pin	Row "A"	Row "B"
1	Current Analogue	Voltage Program
2	N/C	DC Healthy Opto
3	Output Healthy Common	+Sense
4	Output Healthy N/C	-Sense
5	Output Healthy N/O	Marginate
6	Postmate Enable	Current Share
7	Over Temp Opto	Inhibit Opto A
8	Over Voltage Opto	Inhibit Opto K
9	Over Current Opto	Opto Common
10	Fan Fail Opto	AC Healthy Opto
11	N/C	Current Low Opto
12	N/C	Spare
13	N/C	Spare
14	N/C	Spare
15	N/C	Spare
16	N/C	Spare

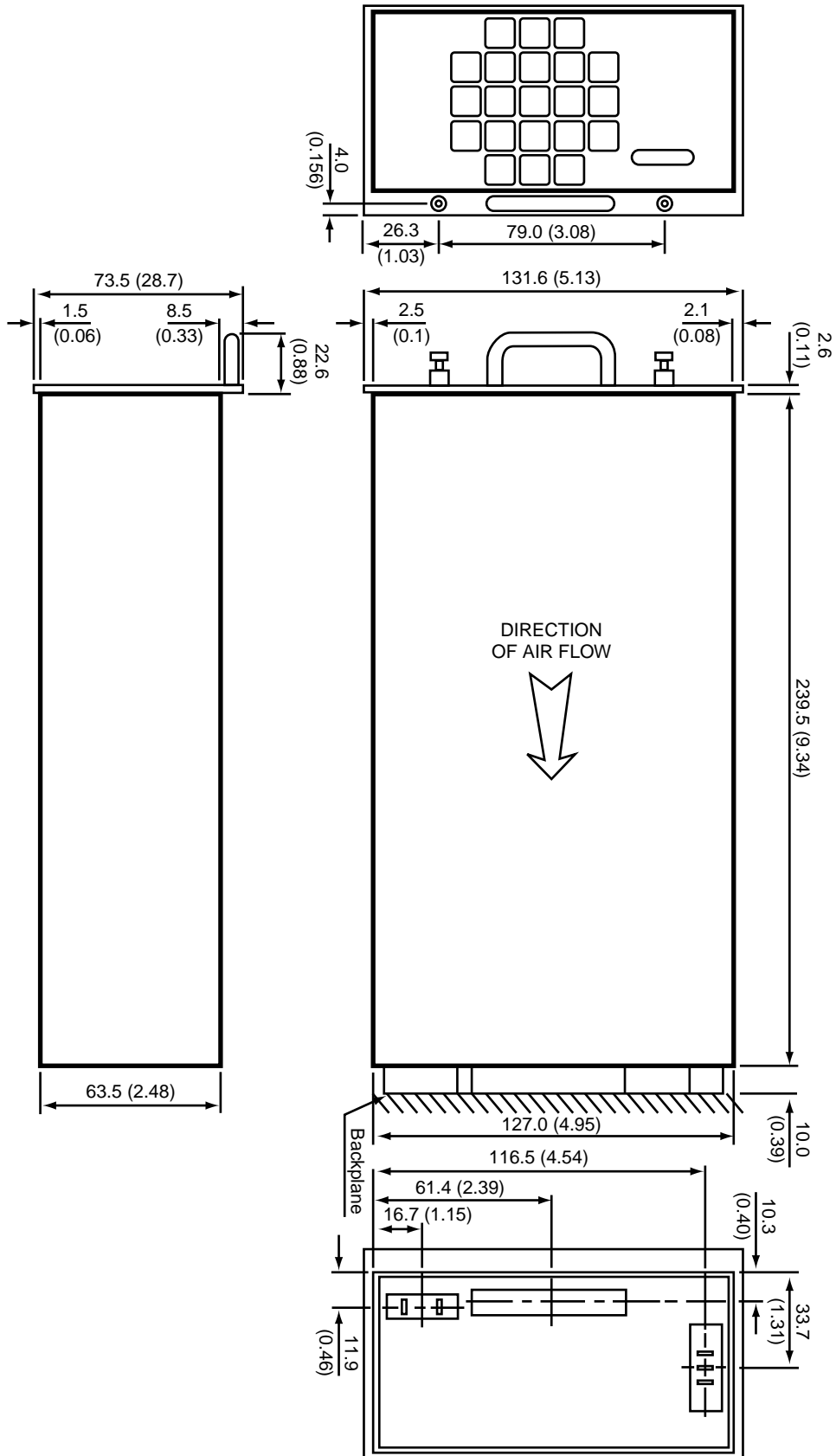
Figure 3 Connectors, controls and indicators



MECHANICAL SPECIFICATION

TWF0400 OUTLINE DRAWING

All dimensions are nominal and are in mm (inches).



ORDERING INFORMATION

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TWF0400H /

Voltage	Code	Current
27.4V	27	14A
54.9V	54	7A



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We reserve the right to amend specifications without prior notification
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