

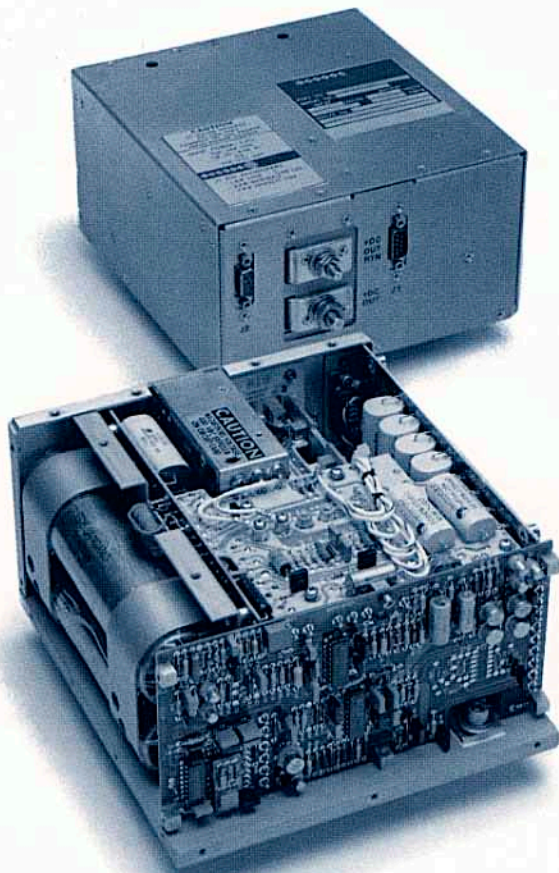
SERIES 1400/7400

**Single Output
Switching Regulated
Military Power Supplies**

750 Watt Maximum

1 ϕ , 3 ϕ and DC Input

SERIES 1400/7400



Features

- 1 ϕ and 3 ϕ models
- Up to 750 watts
- Tri-service MIL qualification
- MTBF 70,000 hrs
- Continuous range AC input
- Capable of operating from DC input
- 100 kHz switching technology
- Overvoltage protection
- Remote sense
- Remote on/off
- MIL-C-24308 type connectors & stud terminals
- High efficiency
- High power factor
- Power fail indicator
- Conduction baseplate cooled
- FULL-MIL components
- Overload protection

Description

Rantec's 1400 and 7400 series of high power military power supplies provide single output power ratings up to 750 watts in output voltages of 3.3, 5, 12, 15, 24 and 28 VDC. The units are available with a single phase continuous input power range of 100 to 264 VAC or a 100 to 220 VAC three phase input, as well as 150 to 330 VDC.

The power train has an advanced dual conversion technique utilizing two separate, yet dependent switching converters to achieve optimum density and reliability. The first converter processes the input power to maintain a minimum power factor of 0.8 (1 ϕ units) or 0.9 (3 ϕ units) at full load, 47-440 Hz input. All units have the ability to operate from a DC input line of approximately 150 to 330 VDC. The output converter uses conventional half-bridge switching technology which contributes to an output regulation of $\pm 1\%$ line and load combined with maximum p-p ripple and noise of 50 mv or 0.5% of the rated output voltage, whichever is greater.

The conduction cooled design enables high density system applications and efficient user maintainability. This same design and packaging concept is also found in Rantec's 1000 series of single output, as well as the 2000 series dual output and 3000 series triple output power supplies. See product series data sheets for details.

Rantec Series 1400 and 7400 power supplies are qualified in accordance with the following applicable military specifications.

Specifications

- MIL-E-5400, Class 2X General Equipment for Aerospace Electronics
- MIL-E-16400 General Equipment Specification for Naval Shipboard, Shore Communications and Navigational Equipment
- MIL-E-4158 General Electronic Equipment Specification
- MIL-STD-461A, Notice 3 Electro-magnetic Emission and Susceptibility Requirements for the Control of EMI
- MIL-STD-704D Aircraft Power Characteristics
- MIL-STD-1399A, Section 300 Shipboard Power Characteristics
- MIL-T-27 General Magnetics Specification
- MIL-S-19500 Screened Semiconductors
- MIL-M-38510 Integrated Circuits



Power Systems Inc.

OUTPUT RATING TABLE

VOLTAGE	CURRENT	POWER (MAX.)	1 ϕ MODEL NO.*	3 ϕ MODEL NO.*
5.0V	125.0A	625W	1401	7401
12.0V	62.5A	750W	1402	7402
15.0V	50.0A	750W	1403	7403
24.0V	31.2A	750W	1404	7404
28.0V	26.7A	750W	1405	7405

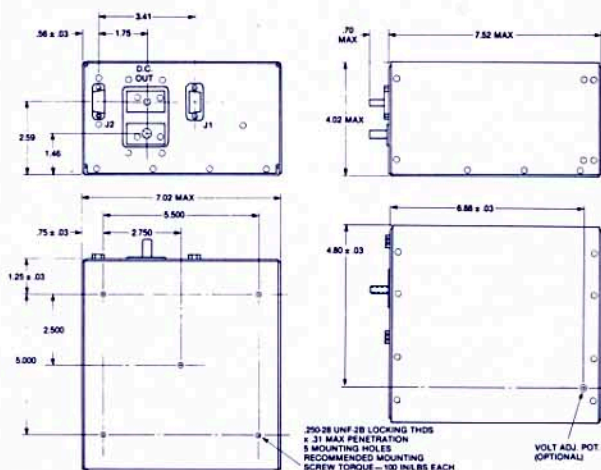
*NAVMAT option: Provides for environmental stress screening, JANTX/Level P parts and thermal shock of the magnetics. Add suffix "N," i.e. Model No. 7401N.

Recommended Mating Connector Table (MIL-C-24308)

Series	J1 (Input)	J2 (Auxiliary)	+Out	RTN
1400/7400	M24308/1-1 or /2-1	M24308/3-1 or /4-1	.312 Dia. Lug	.250 Dia. Lug

Efficiency

Output DC	Efficiency
5.0	70%
12-15	72%
24-28	75%



Notes: a) All dimensions and weights are for reference only. Contact factory for latest outline and mounting drawing.
b) Connectors & VADJ shown for reference only.

Specifications

Input

Single phase - Continuous range 100 to 264 VAC, 47-440 Hz (Jumpering not required.)
Three phase - 100 to 229 VAC L-L, 47-440 Hz.
DC input - 150 to 330 VDC

Power factor

Minimum 0.8 (1 ϕ), minimum 0.9 (3 ϕ)

Input power characteristics

MIL-STD-704A, Cat. B, MIL-STD-704D except low-line transients to 80V, MIL-STD-1399A, Section 300 (including 2500V spike) and MIL-E-4158.

Output Ratings

See output rating table for details.

Voltage adjust

± 10% from nominal output voltage

Dynamic load regulation

Maximum deviation of ± 5% for a load change from 0.75 FL to FL in either direction. Recovery within 250 μ second.

Static regulation, line and load combined

± 1.0% maximum over specified range

Remote sense

Compensates for output line loss of up to 0.2V or 2% of nominal output voltage, whichever is greater. Upper output voltage adjust range is reduced by line loss compensation.

Remote on/off

TTL compatible input referenced to negative output terminal. "LO" (0-0.8V, -0.5mA) turns output off, while "HI" (or open) turns output on within 10 msec from a standby condition.

Line Fail

Line fail output goes "LO" at least 2 msec before output goes out of regulation. (HI 2.5 to 5V, max. source 0.5 mA; LO 0 to 0.4V, max sink 5 mA)

Ripple and noise, p-p maximum (10 Hz to 20 MHz)

50mV or 0.5% of nominal output voltage, whichever is greater.

Output Overshoot

Turn-on/turn-off overshoot limited to 5% of E_o. Power supplies have in-rush current limiting protection and soft start circuitry.

Overload protection

Output is protected against overload and short circuit. Foldback circuitry limits overload to 110-130% of full rated current and folds back to 10-60% of rated current. Output recovers automatically after load fault is removed.

Overvoltage protection

Shutdown type. Trip point set at a maximum of 1.5V or 20% above nominal output voltage, whichever is greater. Reset by cycling AC input power. A remote crowbar trigger output is provided which supplies a minimum of 15V at 10 mA when the overvoltage protection circuit is tripped.

EMI

To MIL-STD-461A, Notice 3, Requirements CEO3, CSO1, CSO2, CSO6, and REO2. For compliance to other EMI specifications consult factory.

Temperature coefficient

± 0.2%/°C maximum, ± 0.01% typical

Operating temperature

-55°C to +85°C baseplate combined with ambient per MIL-E-5400, Class 2X

Storage temperature

-62°C to +95°C per MIL-E-5400, Class 2

Cooling

Conductively cooled baseplate with maximum temperature of +85°C

Humidity

MIL-STD-810C, Procedure 507.1, Method IV

Altitude

To 70,000 Feet

Shock

MIL-S-901C, Grade A, Type A, Class I, High impact shock

Vibration

MIL-E-5400, Curve IVa, 5 Hz to 2000 Hz

Salt Spray

MIL-STD-810C, Method 509, Procedure I

Sand, dust and fungus

MIL-E-4158

MTBF

70,000 hours calculated at 85°C baseplate temperature for ground fixed environment using parts stress analysis per MIL-HDBK-217D.

Mechanical specifications I/O connections

Standard MIL-C-24308 type and studs. See table for mating connectors.

Construction

Fully enclosed modularized construction. Chassis is aluminum with gold iridite finish.

Weight and Dimensions

11.5 lbs. (5.22 kgs.) maximum. 7.5 in. (19.1 cm.) length by 7.0 in. (17.8 cm.) width by 4.0 in. (10.2 cm.) height. See outline drawing for details. Optional encapsulation increases weight. Consult factory for details.

Rantec reserves the right to change design and specifications at any time without prior notice. It is Rantec's policy to improve products as new techniques and components become available.



Power Systems Inc.