

ULTRA-COMPACT 1Ux2U FRONT-ENDS & RECTIFIERS

Up to 650 Watts with PFC and Integral Hot Swap Provision

FEATURES

- Front-End or Rectifier Versions
- Includes Isolated 5V, 100mA Standby Output
- Fan Speed Varies with Load & Temp.
- Low Fan Noise at Nominal Load
- Hot-Swap Operation
- Dual A/B AC Inputs
- Dual A/B DC Outputs
- 12, 24 or 48 VDC Outputs
- Class B Conducted EMI
- DC Good LED
- I²C Serial Data Bus Option
- Up to 11.2 Watts/Cubic Inch
- 1U x 2U Profile: 1.6 x 3.3 Inches
- Single, Hot-Swappable Connector
- Staged Pin Engagement
- ORing Diode on Output
- 19" Rack/Shelf Holds 4 Units*
- 19- or 23-Inch Rack Mounting
- Up to 2,200W Total Output
- Active Current Sharing
- Universal 85 to 264VAC Input
- Control & Monitoring Features

*RSF, RSG, RSJ, TSF, TSG & TSJ Models

Sigma Series



Chassis Mount

Hot-Swap

1U High, 2U Wide
1.6"H x 3.3"W x 11.0"D
(41 x 84 x 279 mm)



TSGR1U4 Rack/Shelf, 19"



LVD73/23/EEC

TWO-YEAR WARRANTY
Patent Protected

STANDARD MODELS

Delete "T" prefix to model no. for chassis mount version.

OUTPUT VOLTAGE	OUTPUT CURRENT	MAX. OUTPUT POWER	INPUT VOLTAGE	MODEL NUMBER
54.4VDC	12.0A 10.1A 7.4A	653W 550W 400W	85-264VAC	RSJ48/12 RSG48/10 RSF48/7
48VDC	13.5A 11.5A 8.3A	650W 550W 400W	85-264VAC	TSJ7000 TSG7000 TSF7000
27.2VDC	18.4A 12.9A	500W 350W	85-264VAC	RSG24/18 RSF24/13
24VDC	20.8A 14.7A	500W 350W	85-264VAC	TSG5000 TSF5000
13.6VDC	33.0A 22.1A	450W 300W	85-264VAC	RSG12/33 RSF12/22
12VDC	37.5A 25.0A	450W 300W	85-264VAC	TSG3000 TSF3000

NOTE: The table does not show the independent 5V, 100mA standby output which is standard on all models.

CODE	OPTION
-Z	I ² C Serial Data Bus

NOTES:

- Add Option Code as suffix to model no. of module.
- In the case of RSF/RSG/RSJ, only for use with DSC1000 and in Gravitax X75.

SAFETY STANDARDS

UL60950-1
CSA22.2, No. 60950-1
EN60950-1

19-INCH RACK /SHELVES

MAX. NO. MODULES	MAX. POWER	MAX. CURRENT	OUTPUT DC BUS	AC INPUTS	AC INLETS	MODEL NUMBER
4	2,200W	150A	SINGLE	DUAL A/B	4-C14	TSGR1U4A
4	2,200W	150A	SINGLE	DUAL A/B	2-C20	TSGR1U4B
4	2,200W	150A	DUAL A/B	DUAL A/B	2-C20	TSGR1U4C

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SPECIFICATIONS, 1U x 2U FRONT ENDS/RECTIFIERS

Typical at Nominal 115/230VAC Line, Full Load and 25°C Unless Otherwise Noted.

OUTPUT SPECIFICATIONS

Total Output Power, Continuous, Max	300-650 Watts
Voltage Adjustment Range, Min.	±5%
Total Regulation ¹	2.0%
Total Regulation, Standby Supply	5.0%
Ripple & Noise, Pk-Pk ²	1%
Holdup Time	10mS
Dynamic Response ³	300µS
Temperature Coefficient	±0.02%/°C
Minimum Load	0A
Overload Protection	Auto Recovery
Overvoltage Protection	Latched Shutdown
Remote Sense	Up to 0.25V Per Wire
Current Share	±10% Full Load Rating
Standby Output	+5V, 100mA
DC Power Good Signal	Logic Low
AC Power Fail Signal	Logic High
Inhibit	Logic Low
Enable	Logic Low
Overtemp. Warning	Logic High

INPUT SPECIFICATIONS

Input Voltage Range	85-264VAC
Power Factor	0.99
Input Frequency	47-63Hz
Inrush Current Limiting	30A Peak
Harmonic Distortion	EN61000-3-2
Input Protection	Internal Fuse, 10A

GENERAL SPECIFICATIONS

Efficiency ⁴	85-90% at Full Load
Switching Frequency, PFC Converter	48-110kHz
Output Converter	275kHz Nominal
Conducted EMI	EN55022 Curve B FCC20780 pt 15J Curve B
Isolation, Class I, min. ⁵	
Input-Output	3000VAC
Input-Ground	1500VAC
Output-Ground	50VDC
Input Immunity, Conducted	
Fast Transients, Line-Line	±2kV (EN61000-4-4 Level 3)
Surges, Line-Line	±2kV (EN61000-4-5 Level 3)
Surges, Line-Ground	±4kV (EN61000-4-5 Level 4)
MTBF (Bellcore)	200,000 Hours
Safety Standards	EN60950, UL160950, CSA22.2 No.60950

ENVIRONMENTAL SPECIFICATIONS

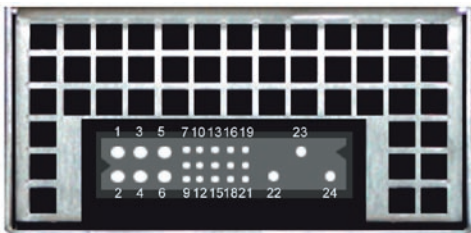
Operating Temperature	-20°C to 70°C Ambient
Derating	2.5% / °C, 50°C to 70°C
Storage Temperature	-40°C to +85°C
Cooling	Integral Ball Bearing Fan

PHYSICAL SPECIFICATIONS

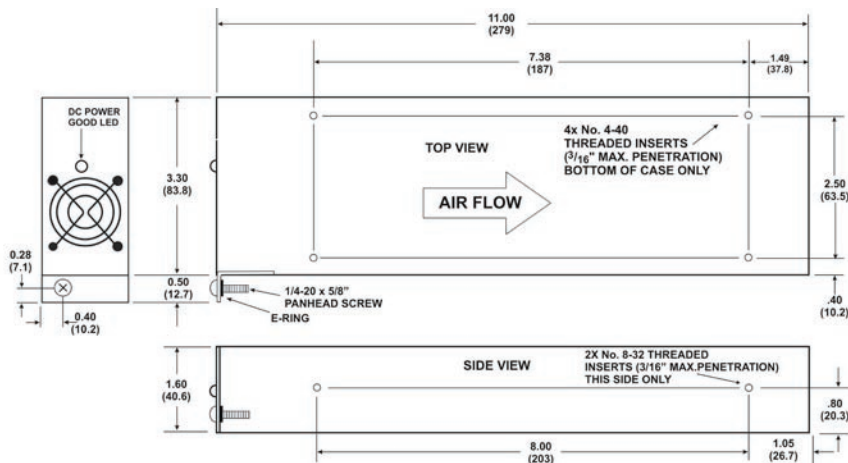
Case Material	Aluminum
Dimensions, Inches(mm)	1.6 H x 3.3 W x 11.0 D (40.6 x 83.8 x 279.4)
Weight	2.10 lbs. (0.95 kg.)

- NOTES:**
1. No load to full load, including line regulation and load regulation.
 2. 20MHz bandwidth. Measure with 0.1µF ceramic and 10µF tantalum capacitors in parallel across the output.
 3. <4% deviation recovering to within 1% for 25% load change.
 4. Typical efficiency is at low end of range for 12V output and at high end of range for 48V output.
 5. Input-output isolation figure is for isolation components only. 100% production Hipot tested.

BACK VIEW
CONNECTOR: POSITRONICS PCIB24W9M400A1
MATE: PCIB24W9F400A1



CASE OUTLINE



NOTE: SF, SG and SJ models do not have bracket and panhead screw.

PIN CONNECTIONS

PIN	FUNCTION	PIN	FUNCTION
1	+V Out	13	Module Present
2	+V Out	14	GA1
3	- V Out	15	AC Power Fail
4	- V Out	16	V Trim
5	+ Sense	17	Overtemp. Warning
6	- Sense	18	Current Share
7	Enable	19	Current Monitor
8	GA2	20	+5V Standby
9	GA0	21	DC Power Good
10	Inhibit	22	Chassis Ground
11	SDA	23	AC Line
12	SCL	24	AC Neutral

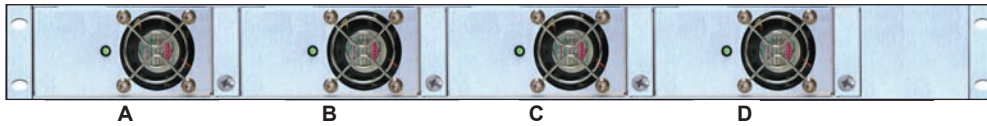
NOTES: For unit to operate, pin 7 must be at logic LO or shorted to pin 6. For proper operation the following pins must be connected together: + V Out pins (1&2); -V Out pins (3&4). Pins 8, 9, 11, 12 & 14 are I²C signals when that option is present. The +5V standby return is to -Sense (pin 6). All signals are referenced to -Sense (pin 6).

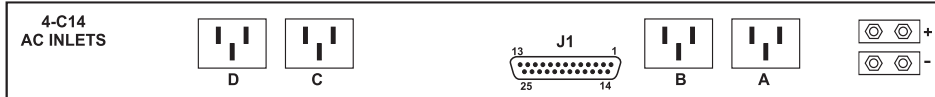
MATING INTERFACE BOARD

Order Kit Number
009-3901-0000

ALL DIMENSIONS IN INCHES (mm).
All specifications subject to change without notice.

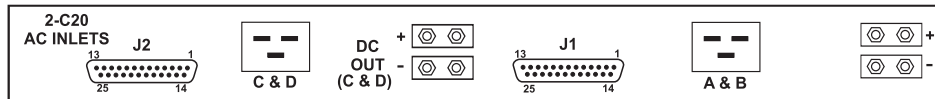
SPECIFICATIONS, TSGR1U4 RACKS/SHELVES, 19-INCH


FRONT VIEW

 SINGLE BUS
DC OUT
DUAL A/B AC IN

**TSGR1U4A
BACK VIEW**

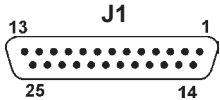
 SINGLE BUS
DC OUT
DUAL A/B AC IN

**TSGR1U4B
BACK VIEW**

 DUAL A/B BUS
DC OUT
DUAL A/B AC IN

**TSGR1U4C
BACK VIEW
(A & B)**

RACK/SHELF DEPTH IS 13.88 INCHES (353 MM). THERE ARE PLASTIC SAFETY COVERS OVER THE DC OUTPUT BUS BARS.

SINGLE DC OUTPUT BUS


 Standard 25-Pin
Subminiature D Connector

J1 SIGNAL CONNECTOR			
PIN	FUNCTION	PIN	FUNCTION
1	Inhibit	14	AC Power Fail - A
2	N.C.	15	DC Power Good - A
3	Overtemp. Warn. - A	16	AC Power Fail - B
4	Overtemp. Warn. - B	17	DC Power Good - B
5	Overtemp. Warn. - C	18	AC Power Fail - C
6	Overtemp. Warn. - D	19	DC Power Good - C
7	V Adjust - D	20	AC Power Fail - D
8	+5V Standby	21	DC Power Good - D
9	SDA	22	-Sense
10	Current Share	23	-Sense
11	+Sense	24	V Adjust - A
12	V Adjust - B	25	V Adjust - C
13	SCL		

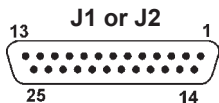
MAXIMUM RATED OUTPUT FOR 4 MODULES

MODULES	NON-REDUNDANT	3+1 REDUNDANT
RSG12/33	13.6VDC @ 132.0A 1800W	13.6VDC @ 99.0A 1350W
RSG24/18	27.2VDC @ 73.6A 2000W	27.2VDC @ 55.2A 1500W
RSJ48/12	54.4VDC @ 48.0A 2611W	54.4VDC @ 36.0A 1958W
TSG3000	12.0VDC @ 150.0A 1800W	12.0VDC @ 112.5A 1350W
TSG5000	24.0VDC @ 83.2A 2000W	24.0VDC @ 62.4A 1500W
TSJ7000	48.0VDC @ 54.0A 2611W	48.0VDC @ 40.8A 1958W

AC LINE CORDS: Order by Part No.

V/A	TSGR1U4 SUFFIX	NEMA PLUG	LENGTH FT/M	PART NO.
125/15	A	5-15	6/1.83	364-1412-0000
125/20	B, C	5-20	8/2.44	364-1416-0000
250/15	A	6-15	6/1.83	364-1414-0000
250/20	B, C	6-20	8/2.44	364-1413-0000

DUAL DC OUTPUT BUSES


 Standard 25-Pin
Subminiature D Connector

J1 or J2 SIGNAL CONNECTORS			
PIN	FUNCTION	PIN	FUNCTION
1	Inhibit	14	AC Power Fail - A or C
2	N.C.	15	DC Power Good - A or C
3	Overtemp. Warn.- A or C	16	AC Power Fail - B or D
4	Overtemp. Warn.- B or D	17	DC Power Good - B or D
5	—	18	—
6	—	19	—
7	—	20	—
8	+5V Standby	21	—
9	SDA	22	-Sense
10	Current Share	23	-Sense
11	+Sense	24	V Adjust - A or C
12	V Adjust - B or D	25	—
13	SCL		

Rack Adaptor Modules: Order by Part No.

Type	Function	PART NO.
Relay Adaptor	Converts TTL level DC Good signal to Form-C dry contact. (See separate datasheet for details.)	009-1005-0000
I ² C Adaptor	Required when using RSF/RSG Series rectifiers with DSC1000 Controller. Specify Z option for rectifier modules. (See DSC1000 Manual for full details.)	009-1001-0000

NOTES:

- All connections are made to the rear of the rack/shelf. The TSGR1U4A has one C14 AC inlet per module. The "B" and "C" rack versions have one C20 AC inlet per two modules.
- Standby return is connected to -Sense lead. Current rating of +5V standby is 100mA. All signals are referenced to -Sense lead.
- Module A is on the left and module D on the right, as seen from the front of the rack/shelf. From the rear, the rightmost AC inlet(s) go to modules A & B as shown.
- For rack/shelf "A" and "B" versions, all four module DC outputs are connected in parallel. For the "C" version, module A and B outputs are paralleled and module C and D outputs are paralleled. Module A & B signals go to J1; module C & D signals go to J2.
- All racks/shelves come with universal mounting brackets for 19- or 23-inch rack mounting.
- For details on the I²C function (option Z), contact the factory. I²C signals are on J1 & J2 pins 9 & 13.