

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

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

*RSF, RSG, TSF & TSG Models

STANDARD MODELS

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

MAX. OUTPUT POWER	OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT VOLTAGE	MODEL NUMBER
650W	54.4VDC	11.9A	85-264VAC	RSJ48/12
450W	13.6VDC	33.0A	85-264VAC	RSG12/33
500W	27.2VDC	18.4A	85-264VAC	RSG24/18
550W	54.4VDC	10.1A	85-264VAC	RSG48/10
300W	13.6VDC	22.1A	85-264VAC	RSF12/22
350W	27.2VDC	12.9A	85-264VAC	RSF24/13
400W	54.4VDC	7.4A	85-264VAC	RSF48/7
650W	48VDC	13.5A	85-264VAC	TSJ7000
450W	12VDC	37.5A	85-264VAC	TSG3000
500W	24VDC	20.8A	85-264VAC	TSG5000
550W	48VDC	11.5A	85-264VAC	TSG7000

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 Gravitas 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 Regulation¹, 2.0%
 Total Regulation, Standby Supply 5.0%
 Ripple & Noise, Pk-Pk² 1%
 Holdup Time 10mS
 Dynamic Response³ 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

Efficiency⁴ 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

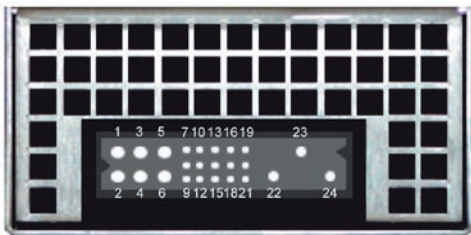
Operating Temperature -20°C to 70°C Ambient
 Derating 2.5% / °C, 50°C to 70°C
 Storage Temperature -40°C to +85°C
 Cooling Integral Ball Bearing Fan

PHYSICAL SPECIFICATIONS

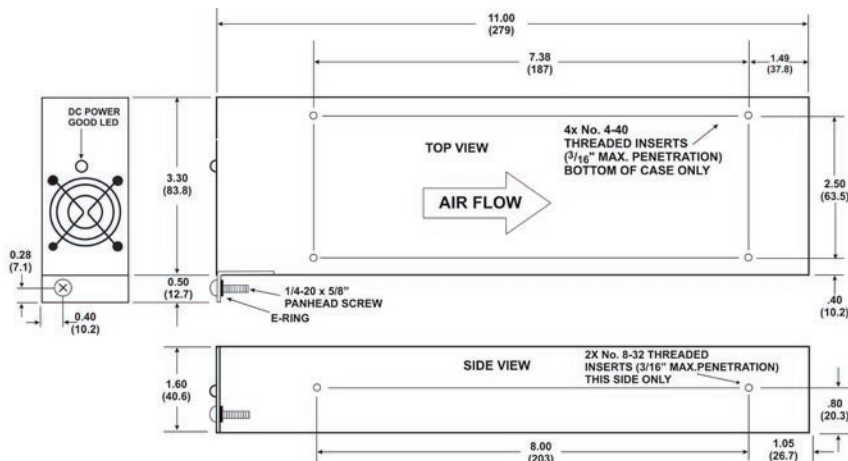
Case Material Aluminum
 Dimensions, Inches(mm) 1.6 H x 3.3 W x 11.0 D
 (40.6 x 83.8 x 279.4)
 Weight 2.10 lbs. (0.95 kg.)

- 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 and SG 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

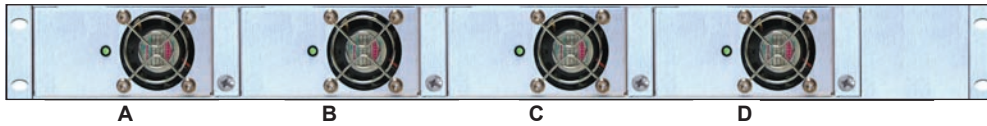
NOTES: For unit to operate, pin 7 must be at logic LO or shorted to pin 6. For proper operation the following pins must be connected together: + V Out pins (1&2); -V Out pins (3&4). Pins 8, 9, 11, 12 & 14 are I²C signals when that option is present. The +5V standby return is to -Sense (pin 6). All signals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

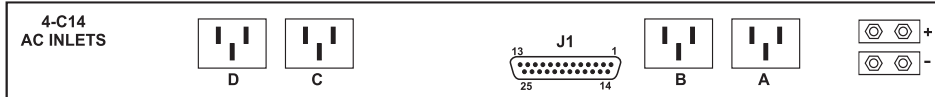
MATING INTERFACE BOARD

Order Kit Number
 009-3901-0000

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

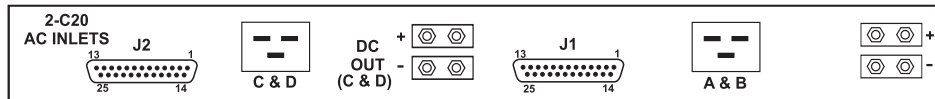
SPECIFICATIONS, TSGR1U4 RACKS/SHELVES, 19-INCH


FRONT VIEW

 SINGLE BUS
DC OUT
DUAL A/B AC IN

**TSGR1U4A
BACK VIEW**

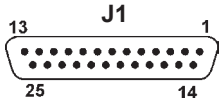
 SINGLE BUS
DC OUT
DUAL A/B AC IN

**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		

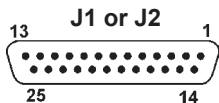
MAXIMUM RATED OUTPUT FOR 4 MODULES

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 @ 47.6A 2200W	54.4VDC @ 35.7A 1650W
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 2200W	48.0VDC @ 40.5A 1650W

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.