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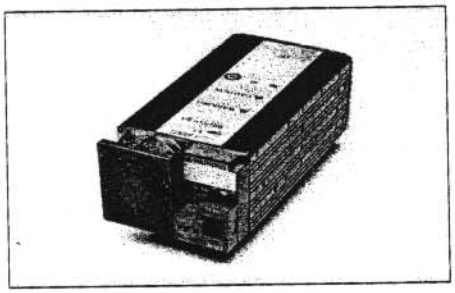
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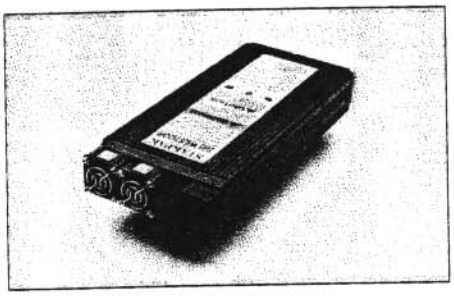
Find the *Vicor / Westcor ST4-1515* at our website: *Click HERE*

STAKPAC™
&
MINI STAKPAC™

HANDBOOK



StakPAC



Mini StakPAC

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Section Two—Mini StakPAC

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MINI STAKPAC

This supplement gives installation and operation directions for the Mini StakPAC (600 watts). It shall be used in conjunction with Section One.

1.0 SAFETY SUMMARY

See pages 5, 6 and 7.

2.0 DESCRIPTION

The Mini StakPAC is a single or multiple output switcher capable of providing 600 Watts of output power and is designed to operate over wide input voltage and output load conditions. Capitalizing on the Westcor modular technology the Mini StakPAC sources 1 to 5 isolated and fully regulated outputs using VI-200 and VI-J00 Megahertz DC-to-DC converters.

The Mini StakPAC has the same basic architecture as used in our StakPAC (See pages 7, 8 and 9). The cooling system uses two low profile fans allowing the unit to provide full output power at 40°C ambient temperature.

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3.0 SPECIFICATIONS

Input power	Nominal International Input (Range) • Single phase 110 (90 to 132) or 208/220 (180 to 264) VAC, field selectable (47-63 Hz). For 47-400 Hz. operation, contact factory • Brown-out down to 80/160 VAC for 10 minutes
Inrush Current	Less than 60A peak from cold start for units that have been off at least one-half hour
Efficiency	80% typical to 85% maximum depending on output voltages and loading
Acoustic Noise	45dBa (max.) at 3 feet
Safety Agency Approvals	UL, CSA, TUV (VDE). Approval not available for units with outputs greater than 48 VDC
EMI Filter	VDE 0871 and FCC 20780 Class A
Hold-Up Time	At least 20 msec, from nominal line
DC Output(s)	
Load Regulation	0.1% (typ.)
Line Regulation	0.1% (typ.)
Ripple and Noise (Pk-Pk)	All outputs: 1% or 50 millivolts, which ever is greater (20 MHz B.W.L.) at full load
OVP	115 to 135% Vnom. Recycle power to restart
Current Limit	105 - 125% Inom. Foldback current limit on 2 to 5 VDC output (active below 2 VDC). Straight line standard on all other output voltages. Output comes up at nominal when over-current condition is removed
Thermal Regulation	0.02% per °C over operating range
Operating Temperature	-20°C to 40°C, no load to full load -40°C to 40°C (Industrial version)
Storage Temperature	-40°C to 85°C
Humidity	5 to 95% non-condensing
Dynamic Response	±25% load step from 75% of rated maximum current will cause a 3% deviation (typ.). Output will recover to 1% of nominal within 200 µsec. (typ.)
Turn-on delay for logic enable	10 msec. (typ.)
Weight	5.6 lbs. (max.)

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Standard Features

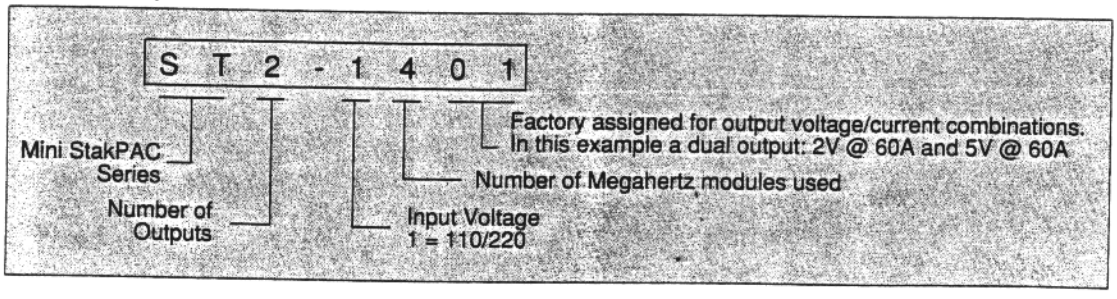
Remote Sense Compensation	All outputs: 0.5 Vmax. (.25V per leg)
Power Good Signal	DC (ok) TTL Logic high for main output within from 90% to 120% (nom.). Not available on 48 volt output
Power Fail Warning	(AC Fail) TTL Signal 5 msec. typical, 2 msec. min. before loss of output regulation
Logic Enable/Disable	TTL high (standard) enable for all outputs. For Five Output StakPak II, outputs 3, 4 and 5 can be controlled only with a single Enable/Disable signal. Contact factory for different ways to configure the Enable/Disable capability for these outputs

Options

Special Factory set output voltages	Between 2-95 VDC. Contact factory
High temperature operation	Contact factory for operation above 40°C ambient
Adjustable outputs	±10% and 40-110% adjustability are available
Local Sense	Factory hard-wired local sense
Thermal Shutdown	In the event of over temperature condition, unit automatically shuts down
General Shut-down (GSD)	Closed contacts or "0" TTL will shut-down all outputs. Open contact or "1" TTL will enable all outputs

Note: Every attempt has been made for accuracy. However, all specifications are subject to change without notice.

Model Example



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Standard 600 Watt Mini StakPAC Models

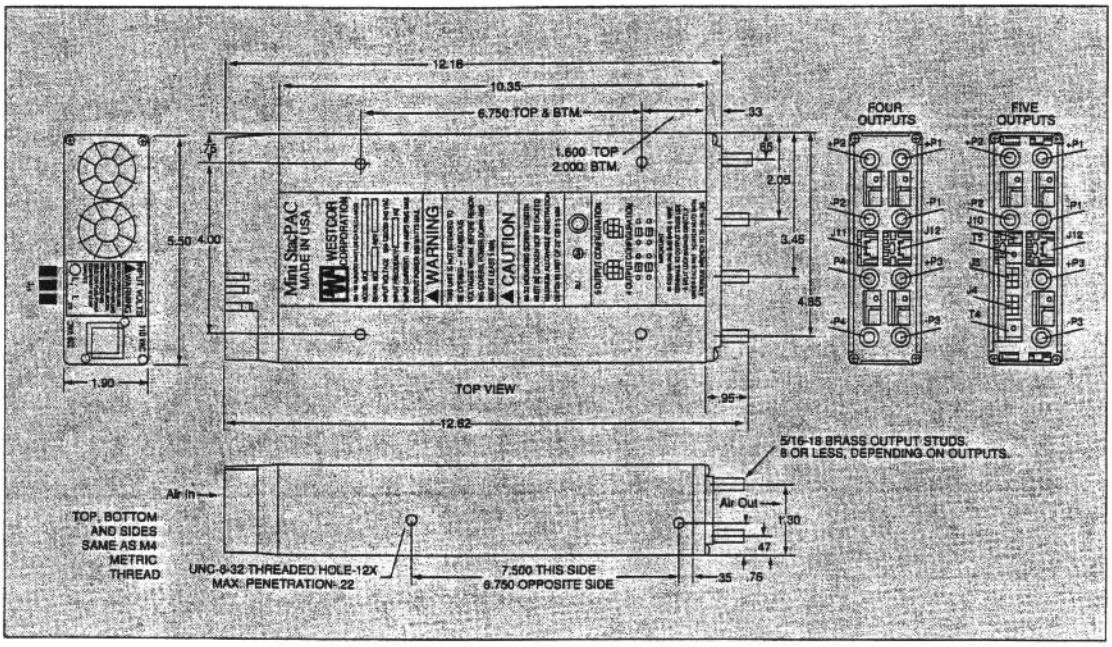
Model	Output Voltage (VDC) and Maximum Current (amperes) per Channel				
	#1	#2	#3	#4	#5
Single Output					
ST1-1401	2 @ 120				
ST1-1402	5 @ 120				
ST1-1301	12 @ 50				
ST1-1302	15 @ 40				
ST1-1303	24 @ 25				
ST1-1304	28 @ 21.4				
ST1-1305	48 @ 12.5				
Dual Output					
ST2-1401	2 @ 60	5 @ 60			
ST2-1402	5 @ 60	5 @ 60			
ST2-1403	5 @ 60	12 @ 33.3			
ST2-1404	12 @ 33.3	12 @ 33.3			
ST2-1405	15 @ 26.7	15 @ 26.7			
Triple Output					
ST3-1401	5 @ 60	12 @ 16.7	12 @ 16.7		
ST3-1402	5 @ 60	15 @ 13.3	15 @ 13.3		
ST3-1501	5 @ 90	12 @ 8.3	12 @ 8.3		
Quad Output					
ST4-1401	5 @ 30	12 @ 16.7	12 @ 16.7	5 @ 30	
ST4-1402	5 @ 30	15 @ 13.3	15 @ 13.3	5 @ 30	
ST4-1403	5 @ 30	12 @ 16.7	12 @ 16.7	24 @ 8.3	
ST4-1501	5 @ 30	15 @ 13.3	15 @ 13.3	24 @ 8.3	
ST4-1502	5 @ 60	12 @ 16.7	12 @ 8.3	5 @ 15	
ST4-1503	5 @ 60	15 @ 13.3	15 @ 6.6	5 @ 15	
ST4-1504	5 @ 60	12 @ 16.7	12 @ 8.3	24 @ 4.2	
ST4-1505	5 @ 60	15 @ 13.3	15 @ 6.6	24 @ 4.2	
Five Output					
ST5-1501	5 @ 30	12 @ 16.7	12 @ 16.7	5 @ 15	24 @ 4.2
ST5-1502	5 @ 30	15 @ 13.3	15 @ 13.3	5 @ 15	24 @ 4.2

Total output power may not exceed 600 watts for any model, single or multiple output. Lower power Mini StakPAC models are available. Please contact the factory.

Contact factory for availability of STX-15XX series product.

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Mechanical and Connector Drawings (see next page for 5 output version)

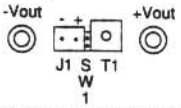


INPUT CONNECTORS
J13 (uses 10 or 12AWG Wire)



PIN	Functions
1	AC Neutral (L2/N)
2	AC Hot (L1)
3	Earth Ground

OUTPUT CONNECTORS
Clustered Connectors (Example for Position 1 (P1)

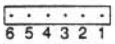


J1 - Remote Sense uses Molex #705-53-0001 (mates with #50-57-9402)
SW1-Control Defeat Jumper
T1-Vout adj.

J12 Motherboard Connector (bottom level)

Uses Molex #705-53-0005 (mates with # 50-57-9406)

J12



PIN	
1	Power Fail
2	Power Good
3	Enable/Disable P1
4	Return
5	Vcc (GSD)
6	Enable/Disable P3

Uses Molex #705-53-0002 (mates with #50-57-9403)

J11

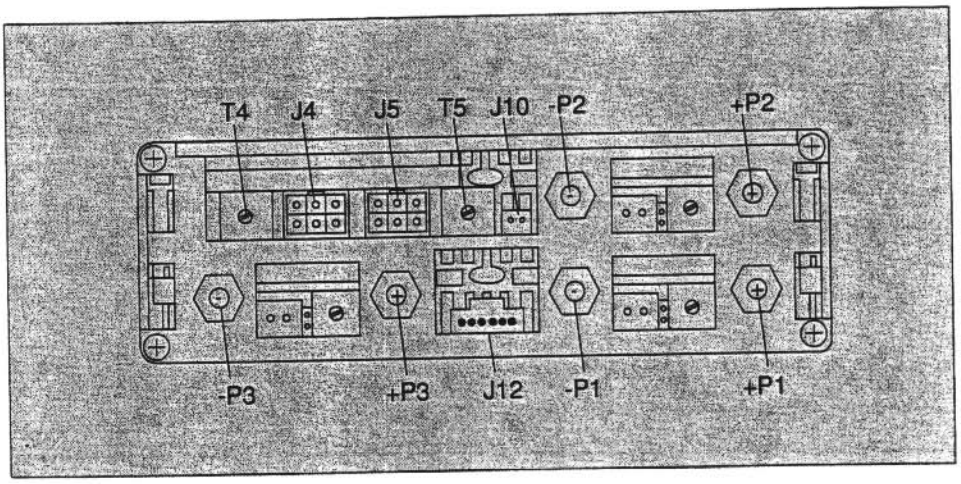


PIN	
1	Enable/Disable P2
2	Return
3	Enable/Disable P4

Notes:
1. Output stud, connector and pin-out configuration will vary from those pictured depending on model.

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Five Output Mini StakPAC

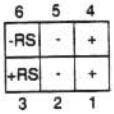


J10 Daughter board Connector uses Molex #705-53-0001 (mates with #50-57-9402)

J10 

PIN	
1	Enable/Disable P2 and/or J4 and/or J5
2	Return

J4, J5-Output/Remote Sense Connector for 4th and 5th outputs use Molex #39-30-1060 (mates with #39-01-2060)



PIN	
1, 4	+Vout
2, 5	-Vout
3	+Remont Sense
6	-Remote Sense

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4.0 INSTALLATION

4.1 Input Connections

See page 14.

4.2 Output Connections

The Four Output Mini StakPAC output connections are made through up to 4 pairs of 5/16-18 UNC-2B brass studs. Figure 13 shows a typical output configuration seen from the output end.

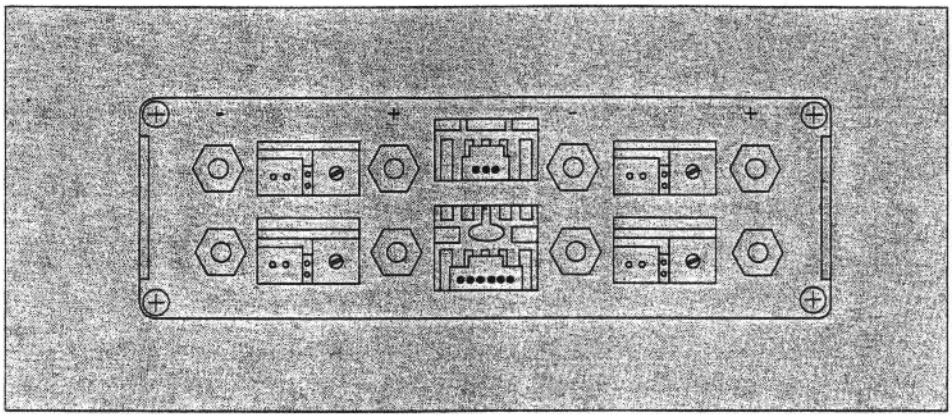


Figure 13—Output Stud Configuration (Four Output Mini StakPAC)

The top of the unit is the side with the labels. On each level there are up to 2 outputs (2 pairs of studs), two studs on left for one output and two studs on right for the other output. The right stud of a pair is the positive output and the left one is the negative output.

Each pair of studs can provide maximum 200w output power. For higher power applications the output studs are factory paralleled using bus bars. Bussed stud configurations can provide 600 watts.

The Five Output Mini StakPAC uses the same type of studs for three of its outputs (two on mother board and one on daughter board). For the other two outputs a Molex high current connector is used (See Figure 14). Each pair of studs can provide maximum 200W output power. Each Molex connector can provide maximum 100W output power. For higher power applications the output studs are factory paralleled using bus bars.

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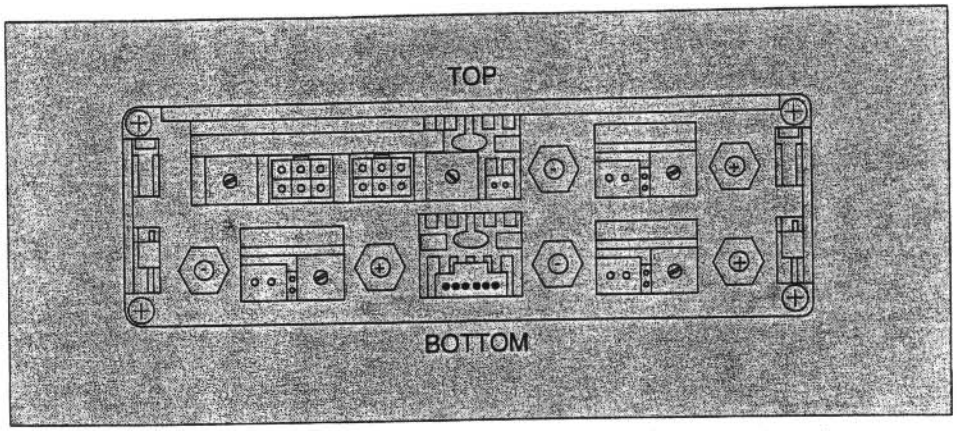


Figure 14—Output Configuration (Five Output Mini StakPAC)

On each output the right stud or the right column of pins (for Molex connector) is the positive output.

4.3 Remote Sense Connections

For Four Output Mini StakPAC see page 15.
For output #4 and #5 of Five Output Mini StakPAC see J4, J5 description, see page 27.

4.4 Enable/Disable Connections

Each output channel of the Four Output Mini StakPAC can be enabled or disabled using a TTL positive logic signal. The enable/disable connectors, from top to bottom, are J11 and J12 (see Figure 15).

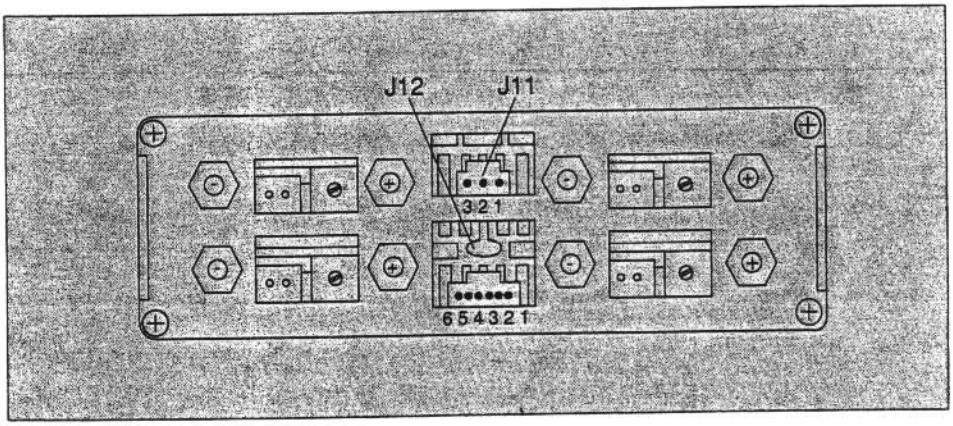


Figure 15—Enable/Disable Connections/Four Output Mini StakPAC.

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Each connector services one to two channels on the same level. Pin 2 of J11 is the common return, pin 1 is used for right channel and pin 3 is used for left channel. For J12, pin 4 is the common return, pin 3 is used for right channel and pin 6 is used for right channel and pin 6 is used for left channel. The TTL signal can be standard or open collector with a minimum 3.3 mA of sink capability. A TTL HIGH or an open circuit will enable the channel, while a TTL LOW or a short circuit will disable the channel.

For Five Output Mini StakPAC the enable/disable function for bottom level is done in the same way through J12 connector (see Figure 16).

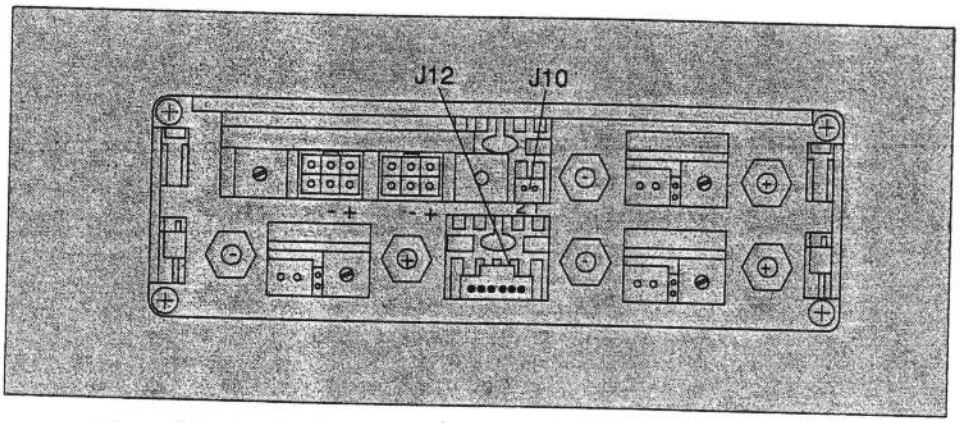


Figure 16—Enable/Disable Connections (Five Output Mini StakPAC).

The upper level uses J10 connector. Pin 2 is common return and pin 1 is used to enable/disable all three channels.

⚠ CAUTION

CONTROL CIRCUITS CAPABLE OF SOURCING MORE THAN 20MA SHOULD NOT BE USED. DAMAGE TO THE MINI STAKPAC CONTROL CIRCUITS MAY OCCUR.

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4.5 "Power Good" Connections

See page 17 where the lower right corner channel is P1.

4.6 "Power Fail" Connections

See page 18.

4.7 ADJUSTABILITY

See page 18.

5.0 OPERATION

See page 18 and 19.

6.0 MAINTENANCE

See page 20.

7.0 SAFETY AGENCY APPROVALS

See page 20.

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