Size: 4.6in x 2.32in x 0.51in (116.8mm x 59mm x 2.9in)

FEATURES

- 90-300VAC (190-400VDC) Input Range
- Standard Full Brick Structure
- Low Output Ripple & Noise
- High Efficiency
- Power Density
- PMBus Communication
- RoHS6 Compliant
- Input Under Voltage and Input Over Voltage Protection
- Output Over Current, Over Voltage, Over Temperature, and Short Circuit Protection
- Remote On/Off
- TUV, UL, CB, CE Certification
- UL60950-1, CSA C22.2 No. 60950-1, EN60950-1 and IEC60950-1 Compliant

APPLICATIONS

- Servers/Storage Equipment
- Routers/Switches
- Telecommunications Equipment
- Enterprise Networks

DESCRIPTION

The PSABR800-50S model of AC/DC converters offers 800 watts of output power in a 4.6” x 2.32” x 0.51” full brick package. This is a single output model with an input range of 90-300VAC (190-400VDC). Features of this model include high efficiency, remote on/off, power density, input under and over voltage protection, as well as output over current, over voltage, over temperature, and short circuit protection. This model is UL60950-1, CSA C22.2 No. 60905-1, EN60950-1, and IEC60950-1 and RoHS6 compliant and has TUV, UL, CB, and CE certification. Please contact factory for order details.

SPECIFICATIONS

All specifications are based on 25°C, Nominal Input Voltage, and Maximum Output Current unless otherwise noted.
We reserve the right to change specifications based on technological advances.

SPECIFICATION	TEST CONDITIONS		Min	Typ	Max	Unit
INPUT SPECIFICATIONS						
Operating Input Voltage Range	AC		90	110/220	300	VAC
	DC		190	270/378	400	VDC
Nominal Input Voltage			100		240	VAC
Turn-On Input Voltage			90	110/220	290	VAC
Absolute Maximum Input Voltage	AC				318	VAC
	DC				450	VDC
Input Frequency			45	50/60	66	Hz
Inrush Current	@Tc=25ºC, 220VAC, ETSI EN300 132-3				40	A
Input Current	AC, @90VAC, 100% Load				11	A
	DC, @190VDC, 100% Load				5	
Power Factor	@Tc=25ºC, 110/220VAC, 100% Load		0.95	0.99		
Total Harmonic Distortion (THD)	@Tc=25ºC, 110/220VAC, 100% Load				10	%
OUTPUT SPECIFICATIONS						
Output Voltage Setpoint	@Tc=25ºC, 220VAC, 50% Load		49.75	50	50.25	VDC
Output Voltage Adjustment Range	Adjusted by PMBus Command or Trim		42		57.6	VDC
Line Regulation			-1		+1	%
Load Regulation			-2		+2	%
Output Voltage Regulation			-2		+2	%
Output Power[1]					800	W
Output Current					16	A
Auxiliary Output Voltage			10	12	14	V
Auxiliary Output Current					0.2	A
External Capacitance	Aluminum capacitor		2820		5640	µF
Bulk Capacitance for Boost Output	THT Single Layer Ceramic Capacitor		680		820	µF
Ripple & Noise[2][3]	*See Note 2*				500	mVp-p
	See Note 3				750	
Turn-On Delay Time					8	S
Output Voltage Rise Time					200	mS
Output Voltage Overshoot					5	%
Output Transient Response	Current Change Rate: 0.1A/µs Load: 25%-50%-25%; 50%-75%-50%	Overshoot Amplitude			5	%
		Recovery Time			200	µs
	Current Change Rate: 1A/µs Tc=25ºC, load: 70-840W[4]	Undershoot Amplitude			1500	mV
		Recovery Time			300	µs
Temperature Coefficient			-0.02		+0.02	%/ºC

SPECIFICATIONS

All specifications are based on 25°C, Nominal Input Voltage, and Maximum Output Current unless otherwise noted.
We reserve the right to change specifications based on technological advances.

SPECIFICATION	TEST CONDITIONS				Min	Typ	Max	Unit
PROTECTION								
Output Short Circuit Protection						Self-Recovery		
Output Over Current Protection	Self-Recovery, 42V ≤ Vout ≤50V		Default			17.5		A
			Set Range		4		17.5	
			Error		-1		1	
Output Over Voltage Protection	Self-Recovery, can be set to latch-off mode by PMBus				58		60	V
Output Over Temperature Protection	Self-Recovery		Internal Temperature		100			ºC
			Hysteresis		5			
Input Over Voltage Protection	Self-Recovery	AC	Protection Threshold		300			VAC
			Recovery Threshold		290			
			Hysteresis		5			
		DC	Protection Threshold		415			VDC
			Recovery Threshold		405			
			Hysteresis		5			
Input Under Voltage Protection	Self-Recovery	AC	Protection Threshold				85	VAC
			Recovery Threshold				90	
			Hysteresis		5			
		DC	Protection Threshold				185	VDC
			Recovery Threshold				190	
			Hysteresis		5			
ENVIRONMENTAL SPECIFICATIONS								
Baseplate Temperature (Tc)					-40	25	100	ºC
Storage Temperature					-40	25	85	ºC
Altitude[5]					-60		5000	m
Relative Humidity					5		95	%RH
MTBF	Tc=25ºC, Telcordia SR332 Method 1 Case 3; nominal input, 80% load					1,200,000		Hours
GENERAL SPECIFICATIONS								
Efficiency	100% Load	Tc=25ºC		Vin=220VAC	91.5	93.0		%
				Vin=110VAC	88.5	90.0		
		Tc=80ºC		Vin=220VAC	90.0	91.5		
				Vin=110VAC	86.5	88.0		
Insulation Voltage	Leakage Current: <10mA	Input to Output					3000	VAC
							4242	VDC
		Input to Baseplate					1500	VAC
							2121	VDC
		Output to Baseplate					1500	VAC
							2121	VDC
Insulation Resistance	Test Voltage: 500VDC	Input to Output			10			MΩ
		Input to Baseplate			10			
		Output to Baseplate			10			
Voltage to	SCL/SDA/RST/CNT/ADDR/CB				0		3.6	V
PARALLEL OPERATION CHARACTERISTICS								
Current Share Imbalance	From 50% to 100% Load				-5		5	%
Output Voltage Adjustment Range					-0.25		0.25	V
Turn-On Output Power							800	W
PHYSICAL SPECIFICATIONS								
Weight						9.7oz (275g)		
Dimensions (L x W x H)						4.6 x 2.32 x 0.51in (116.8 x 59 x 2.9mm)		
SAFETY CHARACTERISTICS								
Safety Approvals	UL60950-1[6], CSA C 22.2 No. 60950-1, EN60950-1, IEC 60950-1							
CE	EN55022							Class B, Input Port
RE	EN55022							Class B
Harmonics	IEC61000-3-2							Class A Equipment
Voltage Changes, Fluctuations, & Flicker	IEC61000-3-3							
ESD	IEC61000-4-2	Level 3, Contact: 6kV, Air: 8kV						Criterion B
CS	IEC61000-4-6	Level 3, 10V						Criterion A
RS	IEC61000-4-3	Level 3, 10V/m						Criterion A
EFT	IEC61000-4-4	Level 3, 2kV						Criterion B
Surge	IEC61000-4-5	Input Port, CM/DM: 6kV/6kV, 2Ω, 1.2/50µs						Criterion B
Dip	IEC61000-4-11, U_T=220VAC	0%U_T, 10ms; 0%U_T, 20ms; 70%U_T, 500ms						Criterion B
		0%U_T, 5000ms						Criterion C
Impulse Current	Input Port, CM/DM: 5kA/5kA, 8/20µs							Criterion B

NOTES

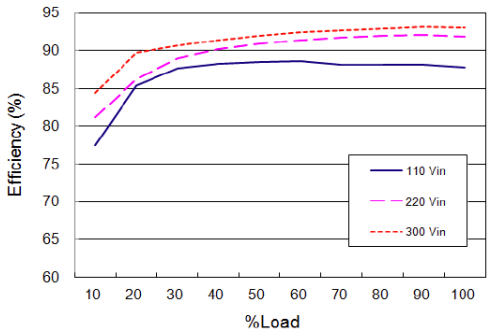
1. Output Power (peak): 950W, 7.5ms, duty cycle 0.75
2. $-5ºC \leq T_C \leq +100ºC$
   90VAC ≤ Vin ≤ 264VAC
   190VDC ≤ Vin ≤ 400VDC
   Oscilloscope Bandwidth: 20Mhz
3. $-40 \leq T_C \leq -5ºC$ or 264VAC ≤ Vin ≤ 300VAC
   Oscilloscope bandwidth: 20MHz
   $T_C < -25ºC$, twice the recommended output capacitance is needed.
4. If output undershoot ΔV > 1.5V, output response recovery time Δt ends when ΔV ≤ 1%Vout
5. From an altitude of 1800m, temperature decreases by 1ºC for every 220m increase in altitude
6. This product is Listed to applicable standards and requirements by UL.

**Due to advances in technology, specifications subject to change without notice.*

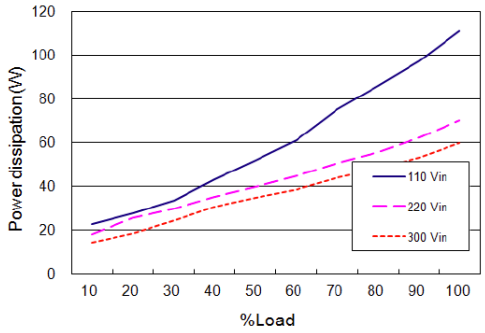
CHARACTERISTIC CURVES

Conditions: Tc=25ºC unless otherwise specified

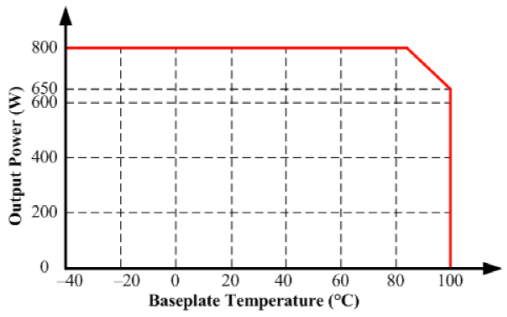
Efficiency Curve



Power Dissipation Curve

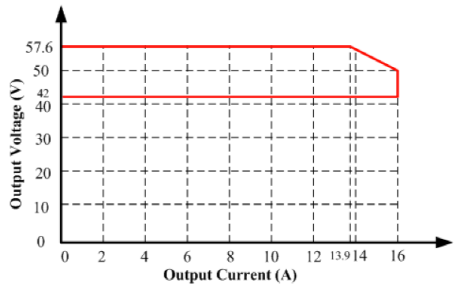


Output Power vs. Baseplate Temperature



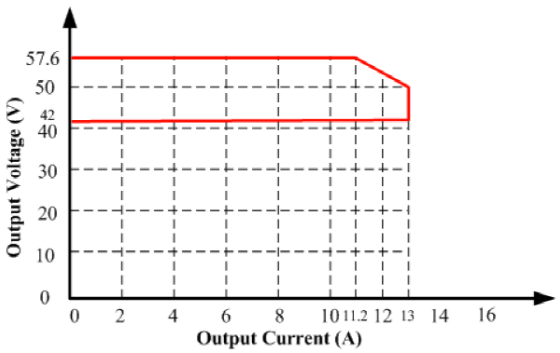
Output Voltage vs. Output Current

Tc=80ºC, Pout=800W

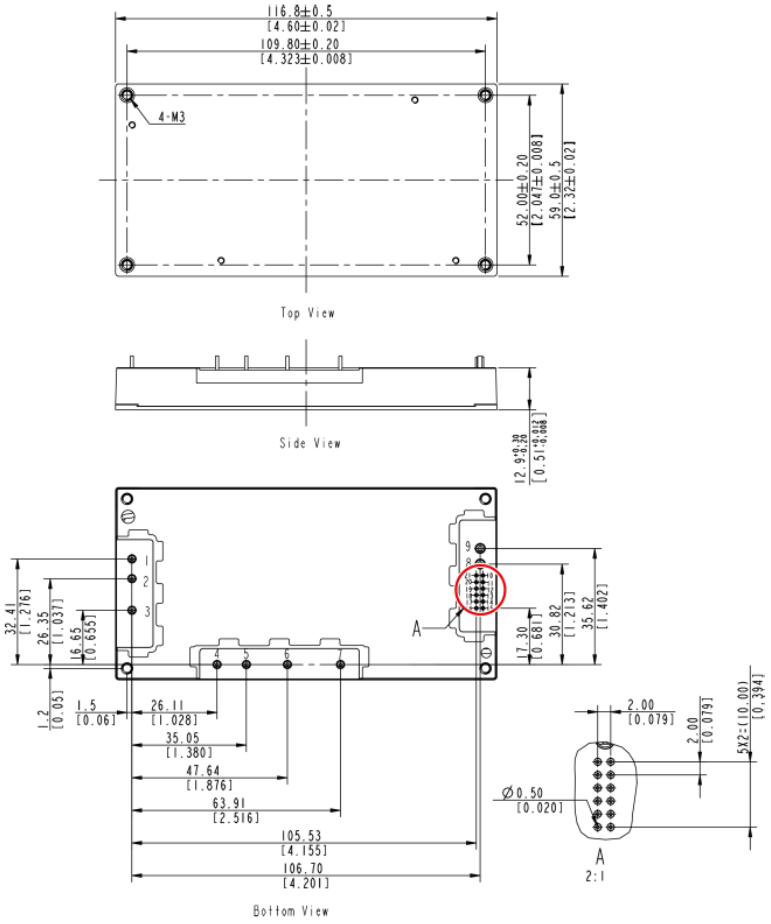


Output Voltage vs. Output Current

Tc=100ºC, Pout=650W

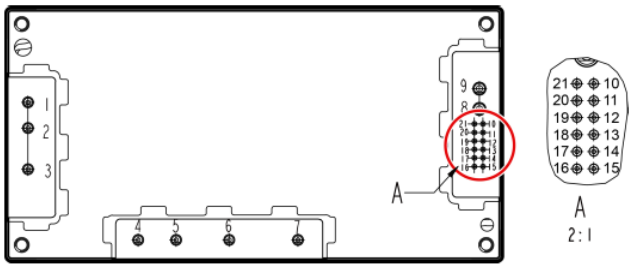


MECHANICAL DRAWINGS



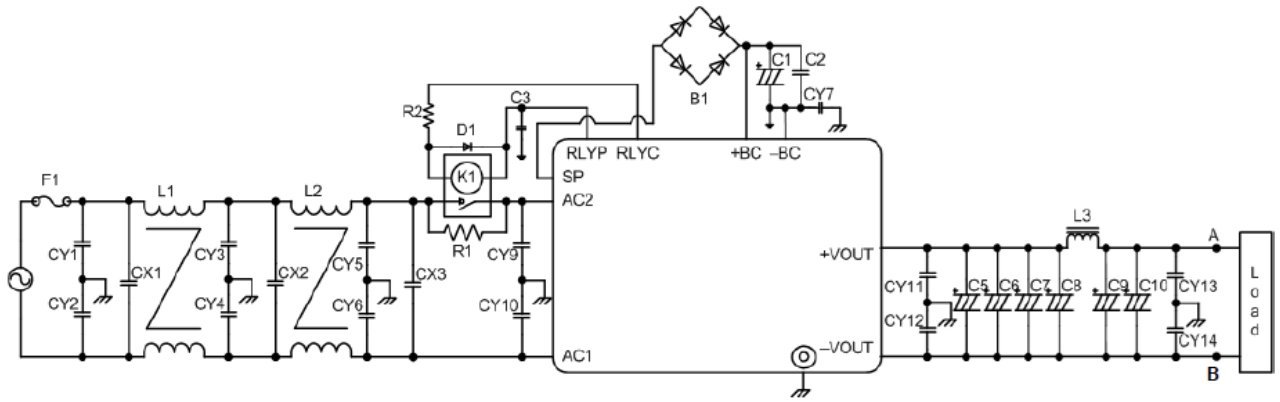
Note:
1. All dimensions in mm [in]. Tolerances: x.x±0.5mm [x.xx±0.02in], x.xx±0.25mm [x.xxx±0.010in] unless otherwise specified.
2. Pins 1-7 are 1.00±0.05mm [0.039±0.002in] diameter. Pin 8 and pin 9 are 1.5±0.05mm [0.059±0.002in] diameter.

Pin Description



Pin No.	Name	Function	Pin No.	Name	Function
1	AC1	AC Input	12	SCL	PMBus Clock
2	AC2		13	GND	Ground, connected to –VOUT internally
3	SP	Surge Protection	14	AUX	Auxiliary 12V
4	RLYP	Relay Power	15	CB	Current balance for parallel operation
5	RLYC	Relay Control	16	TRIM	Adjustment of Output Voltage
6	+BC	Bulk Capacitor (+)	17	ACF	AC Failure
7	-BC	Bulk Capacitor (-)	18	ALERT	PMBus Alert
8	+VOUT	Output Voltage (+)	19	SDA	PMBus Data
9	-VOUT	Output Voltage (-)	20	RST	PMBus Reset
10	ADDR	Module Address	21	-	-
11	CNT	Output On/Off Control			

TYPICAL WAVEFORMS



Typical Application Circuit & Test Set-Up Diagram

F1, F2: Slow-Blow Fuse, 15A, 250VAC

L1: EMI common-mode inductor, 2.7mH
L2: EMI common-mode inductor, 3.5mH
L3: High-Frequency Inductor, 0.3µH

K1: 250VAC/16A, 12V/360Ω
R1: 5W, 75Ω
R2: 47Ω
B1: 800V, 4A

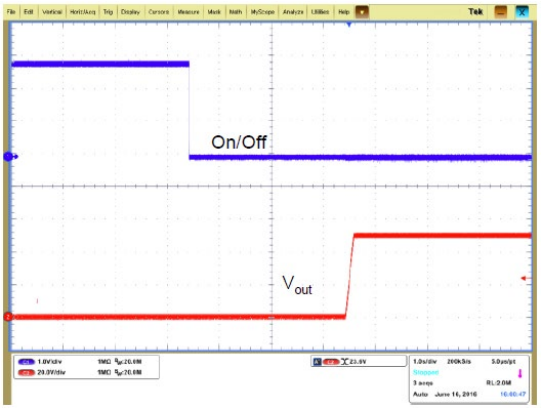
CX1, CX2, CX3: THT film capacitor, 1.5µF
CY1, CY2: THT film capacitor, 1nF
CY3, CY4, CY5, CY6: Metalized fil capacitor, 4.7nF
CY7: THT single layer ceramic capacitor, 1nF
CY9, CY10: THT film capacitor, 4.7nF
CY11, CY12, CY13, CY14: Chip multilayer ceramic capacitor, 22nF
C1: Electrolytic capacitor, 680µF, 450V
C2: THT single layer ceramic capacitor, 22nF, 1000V
C3: Chip multilayer ceramic capacitor, 1µF
C5, C6, C7, C8, C9, C10: Aluminum capacitor, 470µF, 63V

D1: 0.2A, 100V

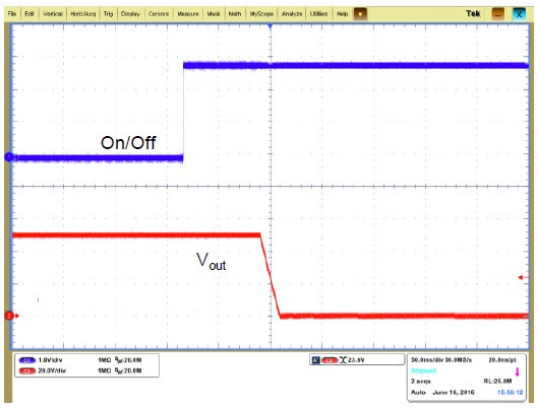
Note:
1. Points A and B are used for testing the output voltage ripple.
2. C1, C5, C6, C7, C8, C9, C10: When the temperature is lower than -25ºC, recommended capacitance should be doubled.

Conditions: Tc=25ºC unless otherwise specified

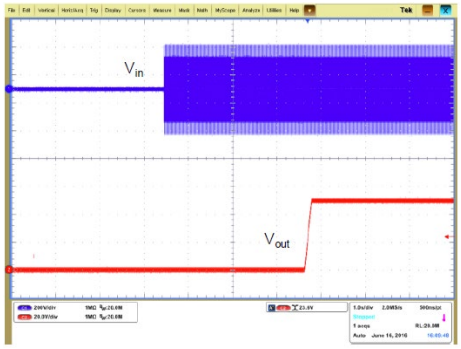
Startup from On/Off, Vin=220VAC, 100% Load



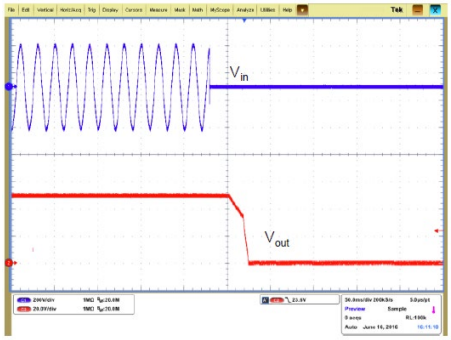
Shutdown from On/Off, Vin=220VAC, 100% Load



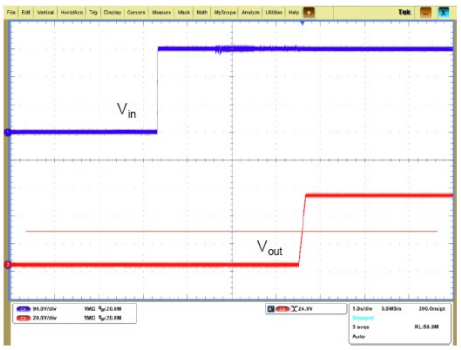
Startup by Power-On, Vin=220VAC, 100% load



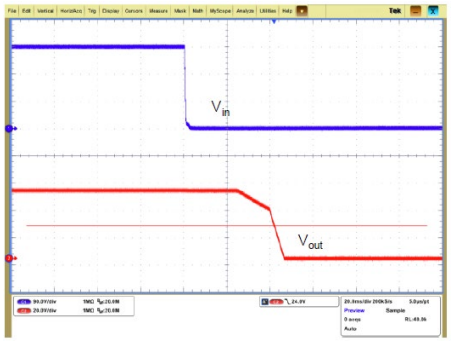
Shutdown by Power-Off, Vin=220VAC, 100% Load



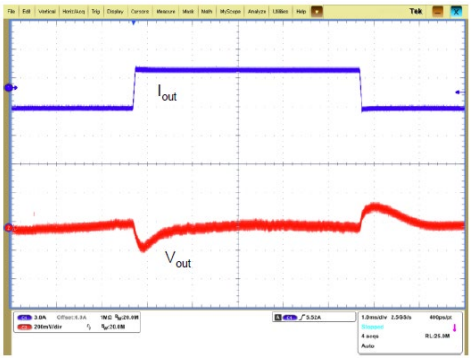
Startup by Power-On, Vin=270VDC, 100% load



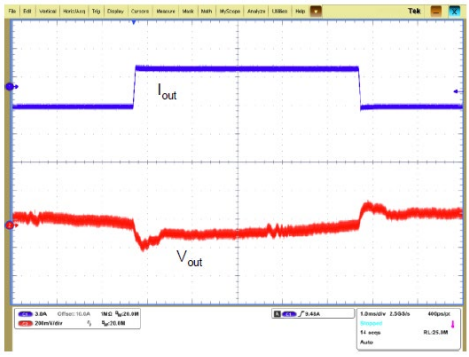
Shutdown by Power-Off Vin=270VDC, 100% Load



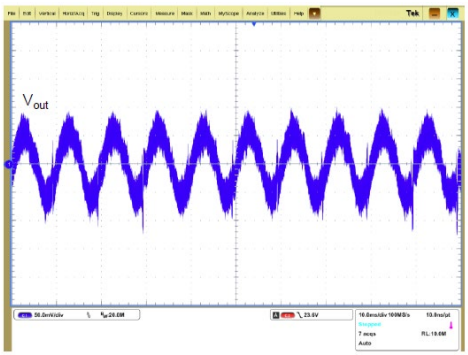
Output Voltage Dynamic Response
Vin=220VAC, Load: 25%-50%-25%, di/dt=0.1A/µs



Output Voltage Dynamic Response
Vin=220VAC, Load: 50%-75%-50%, di/dt=0.1A/µs



Output Voltage Ripple (For Points A and B in test set-up diagram) Vin=220VAC, Vout=50V, Iout=16A



OUTPUT ON/OFF CONTROL (CNT)

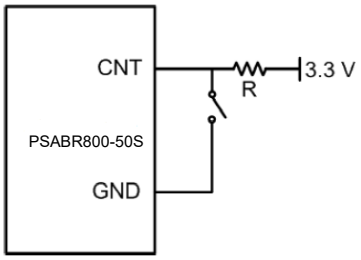
The CNT (On/Off) pin provides the remote control function without turning the input power supply on or off. When the remote control function is not required, leave the CNT open.

Logic of CNT

CNT (On/Off)	Output
Low Level (-0.3V to +0.8V)	On
High Level (2.4V to 3.6V)	Off

Parameter	Min.	Max.
Turn-Off Pulse Width	100ms	-
Turn-On Delay Time	0.5s	5s

Configuration Diagram of CNT



Configuration Diagram of CNT (On/Off) Signal

OUTPUT VOLTAGE ADJUSTMENT (TRIM)

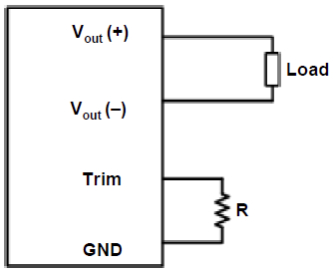
The output voltage of the module can be adjusted by a PMBus command or the Trim pin. The Trim mode takes precedence over the PMBus mode.

For adjustment by a PMBus command, speed is no less than 1V/10ms (load≥1A).
For the Trim mode, the output voltage can be adjusted by connecting an external resistor between Trim and GND.

Relationship between R and Vout:

$$R = \frac{168630}{65\text{-}V_{out}} \text{ -5110}(\Omega)$$

Configuration Diagram for Trim



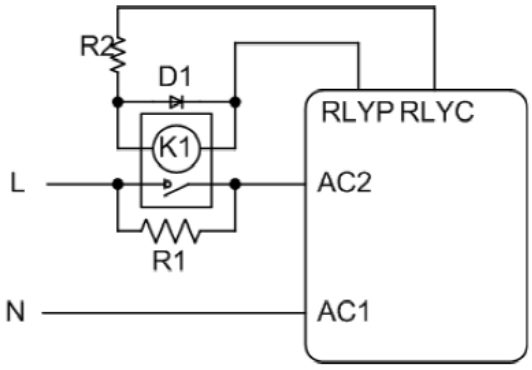
Note:
1. If the Trim pin is not used, it should be left open.
2. When output adjustment is used, ensure that the output voltage is within the required range. If the output voltage is outside the adjustment range, the Trim function will fail

INPUT SOFT-START RELAY CONTROL

The module provides RLYP and RLYC to control the external soft-start relay.
RLYC is an open collector output pin that connects to RLYP through an external relay coil resistor.
V_{RLYP} ranges from 11V to 13V.

RLYC	Relay Contact
Low Level (0V to 3V)	Closed
High Level	Open

Configuration Diagram of Input Soft-Start Relay Control

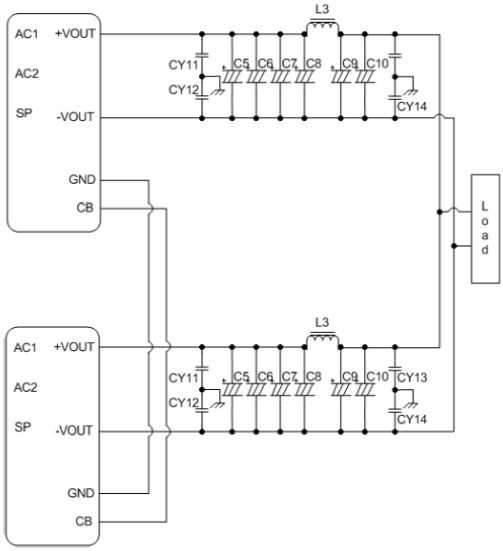


PARALLEL OPERATION (CB)

When several modules are used in parallel, an output current can be equally drawn from each module by connecting the CB pins of all modules. A maximum of two modules can be connected.

Note:
1. L3: High-frequency inductor, 0.3μH
2. For the capacitance of the capacitors, see Typical Application Circuit & Test Set-Up Diagram on Page 5

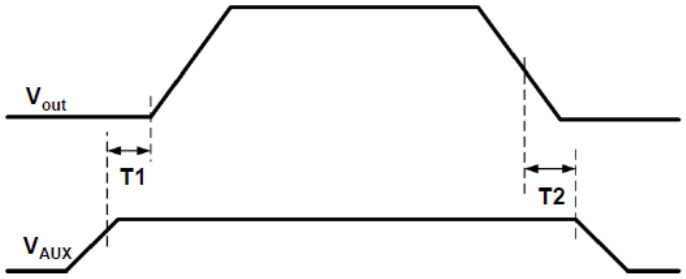
Circuit for Parallel Operation



AUXILIARY POWER SUPPLY (AUX)

The AUX pin supplies auxiliary power to an external circuit with a typical output voltage or 12V. Be careful not to short-circuit the AUX pin and other pins on the module; otherwise, the module will be damaged. Do not connect the AUX pin if power supply to an external circuit is not required.

Auxiliary Power Supply



Parameter	Description	Min.	Max.	Unit	Notes
T1	V_{AUX} ≥ 90% regulation to the time when V_{out} begins to rise	2	-	ms	I_{out} ≥ 0.1A
T2	V_{out} ≤ 12V to the time when V_{AUX} begins to fall	2	-	ms	

PMBUS COMMUNICATION

Monitoring and Fault Detection

The module communicates with the system over the PMBus. It provides the monitoring and fault detection functions.

The module monitors the following:

- Module Information
- Input Voltage
- Input Power
- Output Voltage
- Output Current
- Output Power
- Internal Temperature
- CNT (On/Off)

The module detects and reports the following:

- Input Faults
- Output Over Voltage
- Output Over Current
- Internal Over Temperature

Accuracy	Min.	Typ.	Max.	Unit	Notes & Conditions
Input Power	-5 -8 -10 -	-	5 8 10 -	%	Vin=110VAC/220VAC 500-800W 200-500W 80-200W < 80W
Input Voltage	-5	-	5	VAC	-
Output Voltage	-2	-	2	%	-
Output Current	-5 -15 -	-	5 15 -	%	8-20A 1-8A <1A
Output Power	-5 -8 -10 -	-	5 8 10 -	%	Vin=110VAC/220VAC 500-80W 200-500W 80-200W <80W
Internal Temperature	-5	-	5	ºC	-

Module Addressing

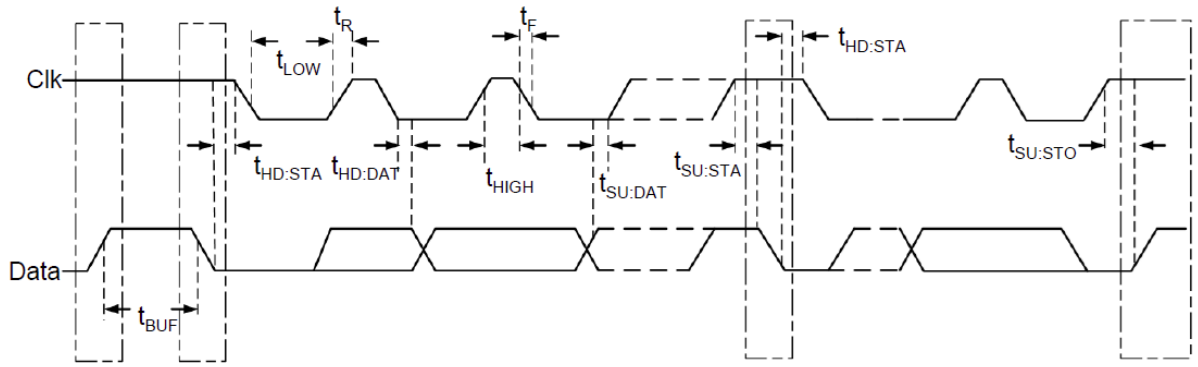
Up to eight modules can be addressed via the ADDR pin. The address of a module can be adjusted by connecting a resistor to the ADDR pin. To set the address, connect ADDR to GND with a resistor R. When the addressing function is not used, leave the ADDR pin open (0x58).

PMBus Communication

Address	Resistance (kΩ)		
	Min.	Typ.	Max.
0x58	-	NC	-
0x58	198	220	242
0x5A	108.9	121.0	133.1
0x5B	67.5	75.0	82.5
0x5C	45.9	51.0	56.1
0x5D	29.7	33.0	36.3
0x5E	18	20	22
0x5F	9	10	11

PMBus Timing

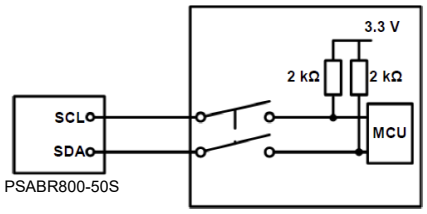
Module supports a maximum clock rate of 100kHz



Symbol	Parameter	Min	Max	Units
T_{BUF}	Bus free time between Stop and Start condition	4.7	-	µs
$T_{HD:STA}$	Hold time after (Repeated) Start condition. After this period, the first clock is generated.	4	-	µs
$T_{SU:STA}$	Repeated Start condition setup time	4.7	-	µs
$T_{SU:STO}$	Stop condition setup time	4	-	µs
$T_{HD:DAT}$	Data hold time	300	-	ns
$T_{SU:DAT}$	Data setup tim	250	-	ns
T_{LOW}	Clock low period	4.7	-	µs
T_{HIGH}	Clock high period	4	50	µs
T_F	Clock/Data fall time	-	300	ns
T_R	Clock/Data rise time	-	1000	ns

SCL and SDA

The SCL and SDA are pulled up externally to 3.3V through a 2kΩ resistor.



Connect diagram of SCL and SDA

Parameter	Min.	Typ.	Max.
Interval between data free	10ms	-	-

SCL, SDA	Min.	Max.
Logic Level Low	-0.3V	0.8V
Logic Level High	2.4V	3.6V

Alarm Reporting

The ALERT signal is open collector output signal, which is pulled up externally to 3.3V through a 4.7kΩ resistor. When AC fails, input under voltage/over voltage, or output over voltage/over current/over temperature occurs, the ALERT signal will indicate the fault, which will latch off. The signal can be cleared using the PMBus command CLEAR_FAULTS (03h).

ALERT	Status
Low Level (-0.3V to +0.8V)	Alarm
High Level (2.4V to 3.6V)	No Alarm

AC Failure Alarm and Hold-Up Time

The AFC signal is an open collector output signal, which is pulled up externally to 3.3V through a 4.7kΩ resistor. When AC failure occurs, the AFC signal will indicate the failure.

ACF	Alarm Status
Low level (-0.3V to +0.8V)	No AC Failure
High Level (2.4V to 3.6V)	AC Failure

Parameter	Min.	Max.
Alarm Delay Time	4ms	-
Alarm Hold-Up Time	21.8ms (50V/650W)	-

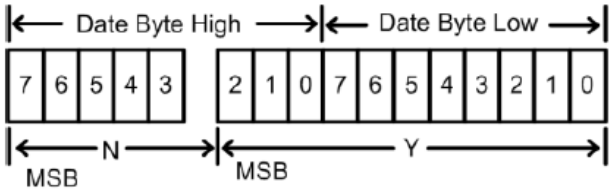
PMBus Commands

Hex Code	Command Name	Data Type	Data Byte	Data Format
Control Command				
01h	OPERATION	Read/Write Byte	1	-
Output Commands				
20h	VOUT_MODE	Read Byte	1	Linear 16
21h	VOUT_COMMAND	Read/Write Word	2	Linear 16
Alarm Commands				
03h	CLEAR_FAULTS	Sent Byte	0	-
79h	STATUS_WORD	Read Word	2	-
E9h	MFR_STATUS_WORD	Read Word	2	-
Monitoring Commands				
88h	READ_VIN	Read Word	2	Linear 11
8Bh	READ_VOUT	Read Word	2	Linear 16
8Ch	READ_IOUT	Read Word	2	Linear 11
8Eh	READ_TEMPERATURE_2	Read Word	2	Linear 11
96h	READ_POUT	Read Word	2	Linear 11
97h	READ_PIN	Read Word	2	Linear 11
98h	PMBUS_REVISION	Read Byte	1	-
99h	MFR_ID	Read Block	6	-
9Dh	MFR_DATE	Read/Write Block	10	-
DFh	PMBUS_CMD_Input_Type	Read Word	2	-

Data Format

- Linear 11 data format

The linear data format is a two byte value with an 11-bit binary signed mantissa (two's complement) and a 5-bit binary signed exponent (two's complement). Shown below.

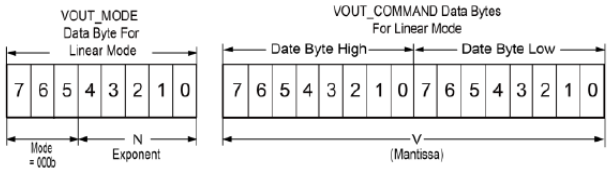


Linear 11 data format

The realationship between N, Y, and actual value X is given by the following equation: $X=Y \times 2^N$
Where: Y is the 11-bit, two's complement mantisssa.
X is the 5-bit, two's complement exponent.

- VOUT data format

Commands related to output voltage are VOUT_COMMANT, VOUT_MODE, and READ_VOUT. The data for these commands is a 16 bit unsigned integer. Shown below.



VOUT data format

The output voltage is calculated as follows: Voltage= V x 2^N
Where: Voltage is the Output Voltage Value
V is the 16-bit unsigned integer
N is the 5-bit signed integer (two's complement)

Command Descriptions

OPERATION (01h): By default, the module is turned ON as long as Enable is active-low.

The OPERATION command is used to turn the module ON or OFF via the PMBus. It uses the following data bytes.

Function	Data Byte
ON	0x80
RESET	0x00
OFF	0x55
Standby	0x40

To reset the module after it is turned OFF, wait at least 10 seconds, and then turn it ON. All alarms and shutdowns are cleared during a restart.
CLEAR_FAULTS (03h): Clears the latch fault.
VOUT_MODE (20h): Determines the data type and parameters used by a PMBus command
VOUT_COMMAND (21h): Changes the output voltage of the module.
The default value of 50V. Voltage range 42-57.6V
STATUS_WORD (79h): Indicates the module status.
The signal must be cleared by CLEAR_FAULTS.

Bit	Fault Definition
Bit 1	I2C_RST signal
Bit 2	Over Temperature
Bit 3	AC Failure
Bit 4	Overcurrent
Bit 5	Over Voltage
Bit 6	PWR_OFF
Bit 8	EEPROM fault
Bit 9	Input under voltage
Bit 10	Input over voltage
Bit 12	Remote power failure
Bit 13	PFC_FAULT

MFR_STATUS_WORD (E9h): Reports the module state and alarm information. The command will not latch off. For the command content see STATUS_WORD (79h).

PMBUS_CMD_Input_Type (DFh): Indicates the type of input power.
0: 90-290VAC Input
1: 240VDC/380VDC Input
2: 48VDC Input.
The module complies with PMBus Protocol Specification rev1.2 requirements.

INPUT OVER VOLTAGE PROTECTION

The module will shut down after the input voltage exceeds the input over voltage protection threshold. The module will start to work again after the input voltage reaches the input over voltage recovery threshold. For the hysteresis, see protection characteristics in specification table.

INPUT UNDER VOLTAGE PROTECTION

The module will shut down after the input voltage drops below the under voltage protection threshold. The module will start to work again after the input voltage reaches the input under voltage recovery threshold. For the hysteresis, see protection characteristics in specification table.

OUTPUT OVER VOLTAGE PROTECTION

Output over voltage protection can be set as self-recovery or latch-off. Default mode is self-recovery. For self-recovery mode, the converter will shut down after output voltage exceeds the over voltage protection threshold.

OUTPUT OVER CURRENT/SHORT CIRCUIT PROTECTION

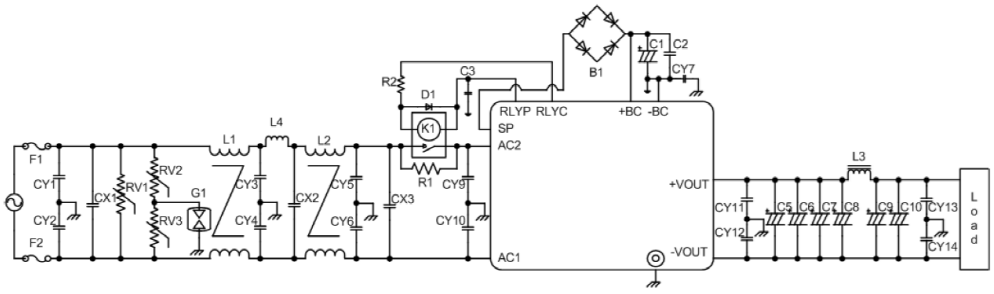
The converter equipped with current limiting circuitry can provide protection from an output overload or short circuit condition. If the output current exceeds the output over current protection threshold, the converter will shut down. When the fault condition is removed, the converter will start to work again.

OVER TEMPERATURE PROTECTION

A temperature sensor on the module senses the average temperature of the module. It protects the module from being damaged at high temperatures. When the temperature exceeds the over temperature protection threshold, the output will shut down. If the temperature drops below the over temperature protection recovery threshold for more than 5 minutes after the module shuts down, the output recovers. Note that the sensor does not sense the temperature within 5 minutes after the output shuts down so even if the temperature drops to a very low level within 4 minutes after the output shuts down, there is still no output.

EMC

EMC test set-up diagram is below. The acceptance standard must meet the requirements of the conducted emission limits of CISPR22 Class B with 6 dB margin.



EMC Test Set-Up Diagram

F1, F2: Slow-Blow Fuse, 15A, 250VAC

L1: EMI common-mode inductor, 2.7mH
L2: EMI common-mode inductor, 3.5mH
L3: High-Frequency Inductor, 0.3μH
L4: Air core inductor, 7μH

K1: 250VAC/16A, 12V/360Ω
R1: 5W, 75Ω
R2: 47Ω
B1: 800V, 4A

CX1, CX2, CX3: THT film capacitor, 1.5μF
CY1, CY2: THT film capacitor, 1nF
CY3, CY4, CY5, CY6: Metalized fil capacitor, 4.7nF
CY7: THT single layer ceramic capacitor, 1nF
CY9, CY10: THT film capacitor, 4.7nF
CY11, CY12, CY13, CY14: Chip multilayer ceramic capacitor, 22nF
C1: Electrolytic capacitor, 680μF, 450V
C2: THT single layer ceramic capacitor, 22nF, 1000V
C3: Chip multilayer ceramic capacitor, 1μF
C5, C6, C7, C8, C9, C10: Aluminum capacitor, 470μF, 63V

D1: 0.2A, 100V
RV1, RV2, RV3: 12kA, 385VAC
G1: 10kA, 1500V
Note: C1, C5, C6, C7, C8, C9, C10: When temperature is lower than -25ºC, recommended capacitance should be doubled.

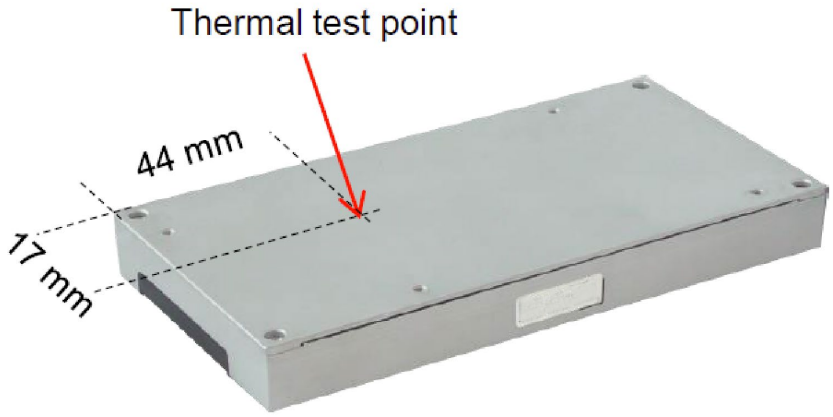
QUALIFICATION TESTING

Parameter	Units	Condition
Highly accelerated life test	3	Low temperature limit: -60ºC; high temperature limit: 110ºC; vibration limit: 40G; temperature change rate: 40ºC per minute; vibration frequency range: 10-10000Hz
Thermal Shock	32	500 temperature cycles between -40ºC and +85ºC with the temperature change rate of 20ºC per minute; lasting for 30 minutes both at -40ºC and +85ºC
Thermal Humidity Bias	32	Maximum input voltage; 85ºC; 85% TH; 500 operation hours under lowest load power
High Temperature Operation Bias	32	Rated input voltage; ambient temperature between +45ºC and +55ºC; 500 operating hours; 50% to 80% load
Power and Temperature Cycling Test	32	Rated input voltage; ambient temperature between -40ºC and +85ºC; operation hours; 50% load

THERMAL CONSIDERATION

Thermal Test Point

Sufficient airflow should be provided to ensure reliable operation of the module. Therefore, thermal components are mounted on the top surface of the module to dissipate heat to the surrounding environment by conduction, convection, and radiation. Proper airflow can be verified by measuring the temperature of thermal test point shown below.



Thermal Test Point

Power Dissipation

The module power dissipation is calculated based on efficiency. The following formula reflects the relationship between the consumed power (P_d), efficiency (η), and output power (P_o): $P_d=P_o(1-\eta)/\eta$

MECHANICAL CONSIDERATION

Installation

Although module can be mounted in any direction, free airflow must be available.

Soldering

The module supports standard wave soldering and hand soldering. Reflow soldering is not allowed.

1. For wave soldering, the temperature on the module is specified to a maximum of 260ºC for 7 seconds at most.
2. For hand soldering, the iron temperature should be maintained at 350ºC to 420ºC, and applied to the module pins for less than 10 seconds.

The module can be rinsed using the isopropyl alcohol (IPA) solvent or other suitable solvents.

COMPANY INFORMATION

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001: 2015 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

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