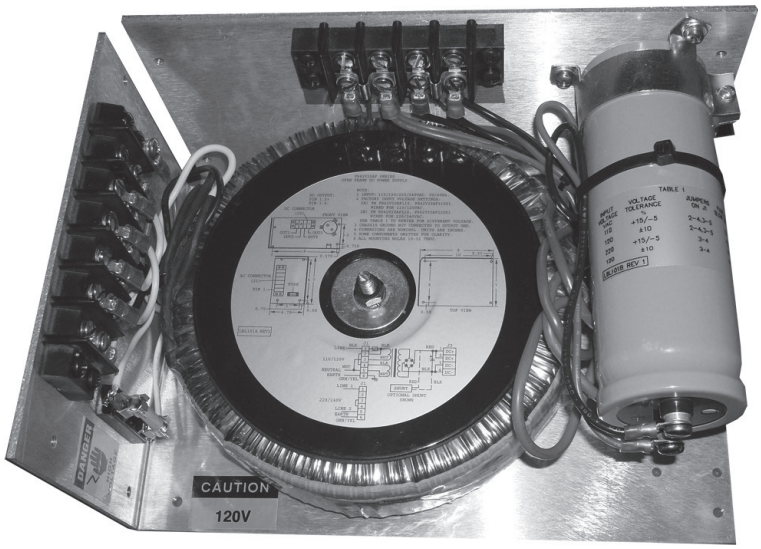
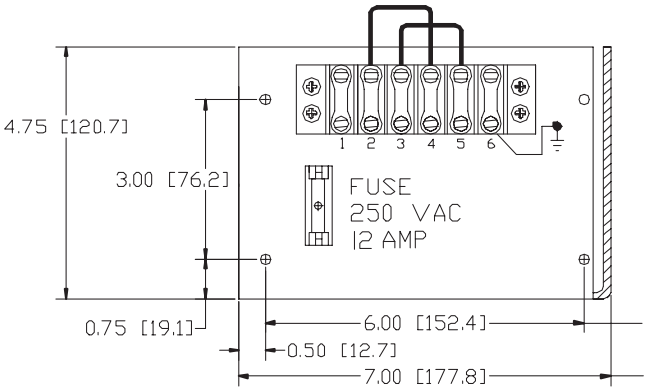
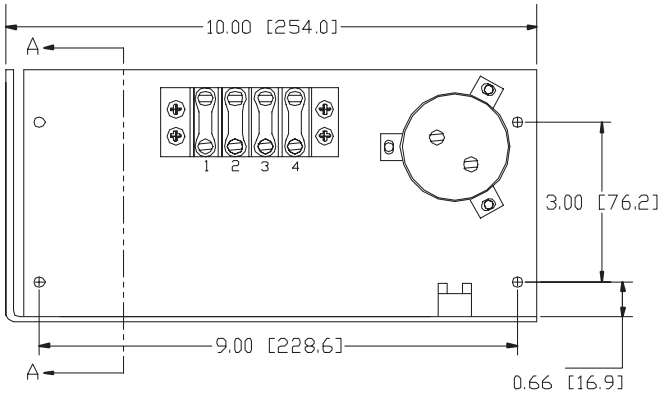
Power Supplies:

- Linear Unregulated
- AC Input, DC output
- Screw Terminal Access
- Toroid Transformer for lower EMI



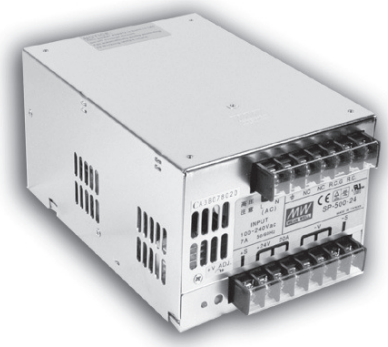




All sizes are given in inches, sizes in brackets are in mm

Part Number	Input Voltage and Frequency	No Load Output Voltage	Full Load Output		Nominal Wattage	Shunt	Weight(Nom.)
			Voltage	Current			
PS42V20AF110	120VAC 50/60Hz	44VDC	35VDC	20 Amps	680 W		16.5 lbs (7.5kg)
PS42V20AF220	240VAC 50/60Hz	44VDC	35VDC	20 Amps	680 W		16.5 lbs (7.5kg)
PS42V20AF110-S1	120VAC 50/60Hz	44VDC	35VDC	20 Amps	680 W	100 W	17 lbs (7.7kg)
PS42V20AF220-S1	240VAC 50/60Hz	44VDC	35VDC	20 Amps	680 W	100 W	17 lbs (7.7kg)
PS42V20AF110-S2	120VAC 50/60Hz	44VDC	35VDC	20 Amps	680 W	200 W	17 lbs (7.7kg)
PS42V20AF220-S2	240VAC 50/60Hz	44VDC	35VDC	20 Amps	680 W	200 W	17 lbs (7.7kg)

⚠ Warning: Improper Power Supply Sizing may result it Motor Position Error Faults, Motor Resets, and Machine Faults ⚠



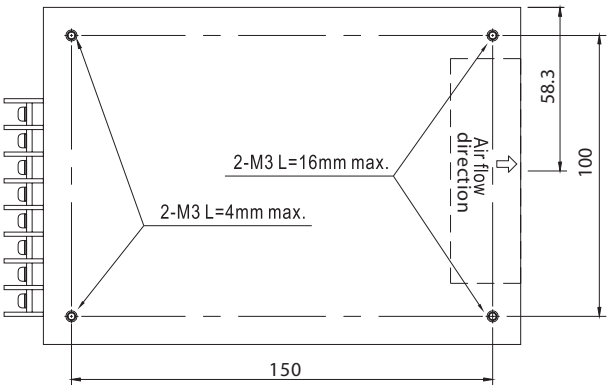
PFC500W-48 Features

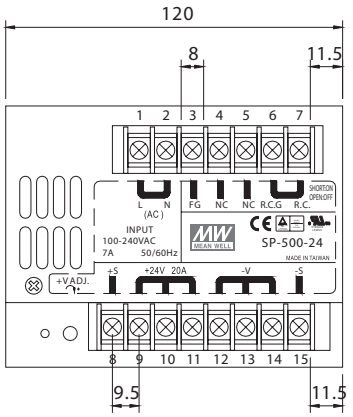
- Universal AC input / Full range
- Built-in active PFC function, PF>0.95
- Protections: Short circuit / Overload/ Over voltage / Over temperature
- Forced air cooling by built-in DC fan
- Built-in cooling Fan ON-OFF control
- Built-in remote ON-OFF control
- Built-in remote sense function
- Fixed switching frequency at 110KHz
- 2 years warranty

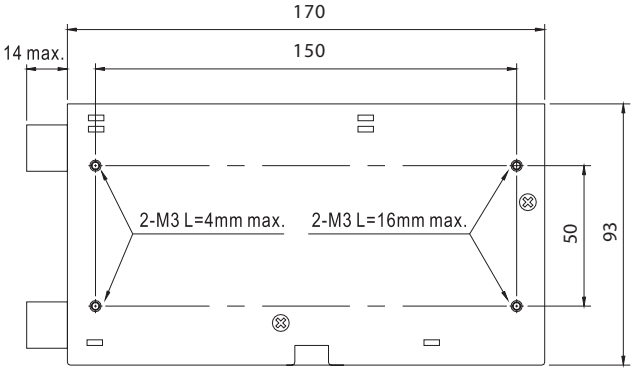
OUTPUT	DC VOLTAGE	48V
	RATED CURRENT	10A
	CURRENT RANGE	0 ~ 10A
	RATED POWER	480W
	RIPPLE & NOISE (max) Note.2	3--mVp-p
	VOLTAGE ADJ. RANGE	41 ~ 56V
	VOLTAGE TOLERANCE Note.3	± 1.0%
	LINE REGULATION	± 0.5%
	LOAD REGULATION	± 0.5%
	SETUP, RISE TIME	1500 ms, 50 ms at full load
	HOLD UP TIME (Typ.)	24 ms at full load
INPUT	VOLTAGE RANGE Note.5	88 ~ 264VAC 124 ~ 370VDC
	FREQUENCY RANGE	47 ~ 63Hz
	POWER FACTOR (Typ.)	PF>0.95/230VAC PF>0.95/115VAC at full load
	EFFICIENCY(Typ.)	87%
	AC CURRENT (Typ.)	7A/115VAC 3.5A/230VAC
	INRUSH CURRENT (Typ.)	18A/115VAC 36A/230VAC
PROTECTION	OVER VOLTAGE	57.6 ~ 67.2V
FUNCTION	REMOTE CONTROL	RC+/RC-: Short = power on ; Open = power off
	WORKING TEMP.	-10 ~ +50°C (Refer to output load derating curve)
	WORKING HUMIDITY	20 ~ 90% RH non-condensing
ENVIRONMENT	STORAGE TEMP., HUMIDITY	-20 ~ +85°C, 10 ~ 95% RH
SAFETY & EMC (Note 4)	SAFETY STANDARDS	UL60950-1, TUV EN60950-1 approved
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms/500VDC
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22) Class B
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, light industry level, criteria A
OTHERS	MTBF	133.4K hrs min. MIL-HDBK-217F (25°C)
	DIMENSION	170*120*93mm (L*W*H)
NOTE	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance: includes set up tolerance, line regulation and load regulation. 4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. 5. Derating may be needed under low input voltages. Please check the derating curve for more details.	

⚠ Warning: Improper Power Supply Sizing may result it Motor Position Error Faults, Motor Resets, and Machine Faults ⚠

Mechanical Specifications



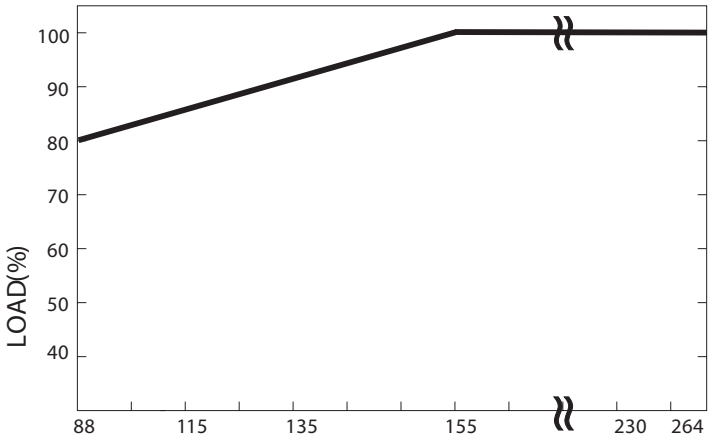




Terminal Pin No. Assignment

Pin No.	Assignment	Pin No.	Assignment
1	AC/L	7	R.C.
2	AC/N	8	+S
3	FG ⏚	9~11	DC OUTPUT +V
4,5	NC	12~14	DC OUTPUT -V
6	R.C.G	15	-S

Output Derating vs. Input Voltage



⚠ WARNING

The switcher supplies have an adjustable output trim pot. The output voltage MUST BE adjusted to <=48VDC.

⚠ Warning: Improper Power Supply Sizing may result it Motor Position Error Faults, Motor Resets, and Machine Faults ⚠

Enclosed Switch Mode DC Power Supply PFC1500W-48

PFC1500W-48 Features:

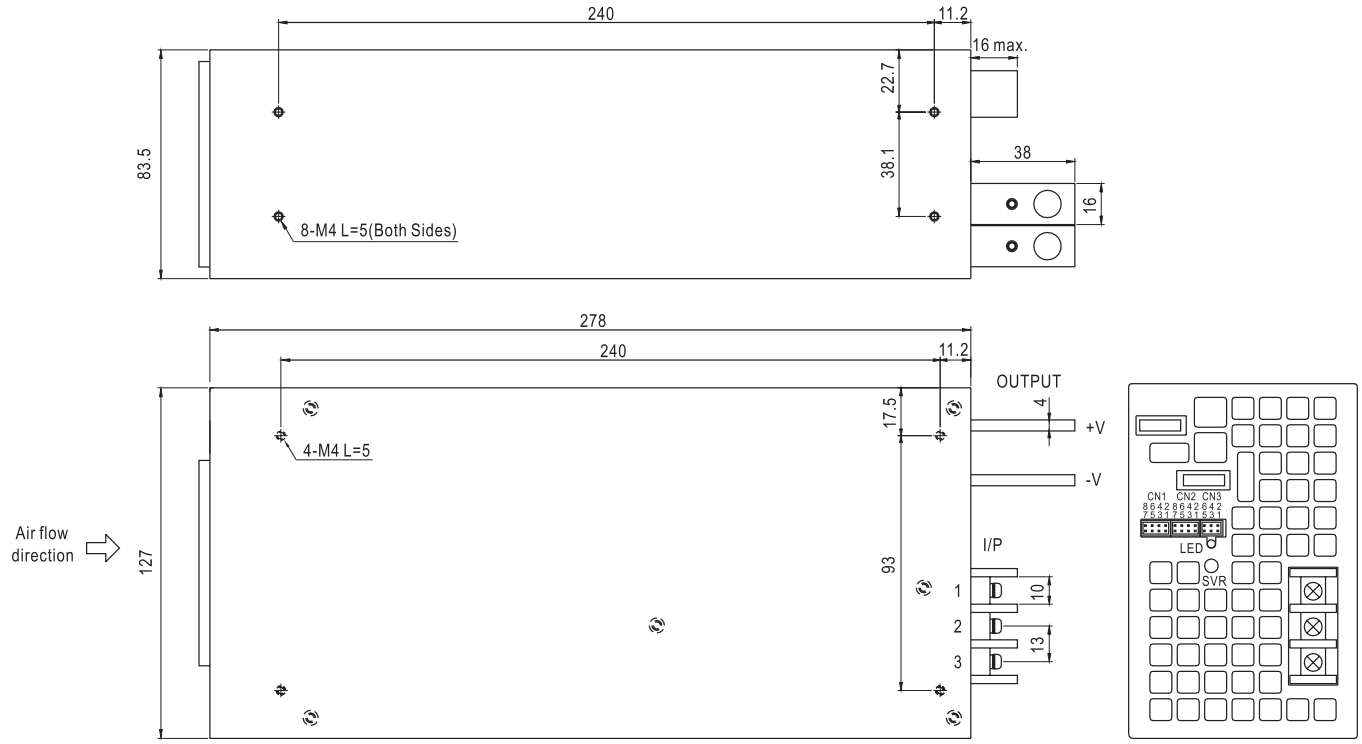
- Universal AC input / Full range
- AC input active surge current limiting
- Built-in active PFC function, PF>0.95
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Forced air cooling by built-in DC fan
- Built-in cooling fan ON-OFF control
- Built-in remote ON-OFF control
- Built-in remote sense function
- 2 year warranty

NOTE: Multiple units may be paralleled for additional power

OUTPUT	DC VOLTAGE	48V
	RATED CURRENT	32A
	CURRENT RANGE	0 ~ 32A
	RATED POWER	1536W
	RIPPLE & NOISE (max) Note.2	200mVp-p
	VOLTAGE ADJ. RANGE	43 ~ 56V
	VOLTAGE TOLERANCE Note.3	± 1.0%
	LINE REGULATION	± 0.5%
	LOAD REGULATION	± 0.5%
	SETUP, RISE TIME	1500ms, 100ms at full load
	HOLD UP TIME (Typ.)	16 ms at full load
INPUT	VOLTAGE RANGE Note.5	88 ~ 264VAC 124 ~ 370VDC
	FREQUENCY RANGE	47 ~ 63Hz
	POWER FACTOR (Typ.)	0.95/230VAC 0.98/115VAC at full load
	EFFICIENCY(Typ.)	91%
	AC CURRENT (Typ.)	17A/115VAC 8A/230VAC
	INRUSH CURRENT (Typ.)	30A/115VAC 60A/230VAC
	LEAKAGE CURRENT	<2.0mA/240VAC
PROTECTION	OVERLOAD Note.5	105 ~ 135% rated output power
		Protection type: Constant current limiting unit will shut down o/p voltage after 5 sec. Re-power to recover
	OVER VOLTAGE	57.6 ~ 67.2V
		Protection type: Shut down o/p voltage, recover automatically after temperature goes down
	OVER TEMPERATURE	95°C ± °5C detect on heatsink of power transistor
		Protection type: Shut down o/p voltage, recovers automatically after temperature goes down
FUNCTION	AUXILIARY POWER (AUX)	12V@0.1A (Only for Remote ON/OFF control)
	REMOTE CONTROL	RC+/RC-: Short = power on ; Open = power off
	WORKING TEMP.	-10 ~ +50°C (Refer to output load derating curve)
	WORKING HUMIDITY	20 ~ 90% RH non-condensing
ENVIRON-MENT	WORKING TEMP.	-20 ~ +70°C (Refer to output load derating curve)
	WORKING HUMIDITY	20 ~ 90% RH non-condensing
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH
	TEMP. COEFFICIENT	± 0.5%/°C (0 ~ 50 °C)
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X,Y,Z axis
SAFETY & EMC (Note 4)	SAFETY STANDARDS	UL60950-1, TUV EN60950-1 approved
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms/500VDC
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22)
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, light industry level, criteria A
OTHERS	MTBF	62.6K hrs min. MIL-HDBK-217F (25°C)
	DIMENSION	278*127*83.5mm (L*W*H)
	PACKING	2.6Kg: 6PCS/16.6Kg/1.54CUFT
NOTE	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance: includes set up tolerance, line regulation and load regulation. 4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. 5. Derating may be needed under low input voltages. Please check the derating curve for more details.	

⚠ Warning: Improper Power Supply Sizing may result it Motor Position Error Faults, Motor Resets, and Machine Faults ⚠

Mechanical Specifications



AC Input Terminal Pin No. Assignment

Pin No.	Assignment
1	FG ⏚
2	AC/N
3	AC/L

Control Pin No. Assignment(CN1,CN2) : HRS DF11-8DP-2DS or equivalent

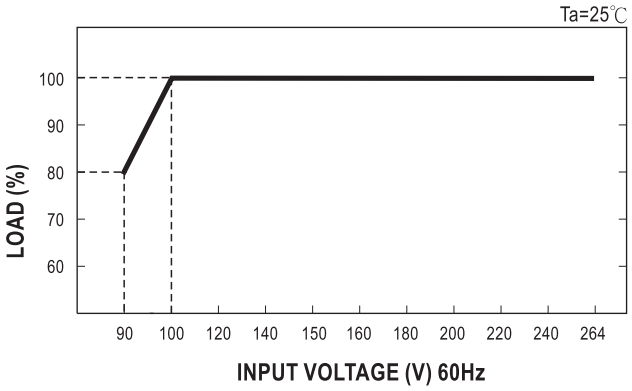
Pin No.	Assignment	Pin No.	Assignment	Mating Housing	Terminal
1	RCG	4	TRIM	HRS DF11-8DS or equivalent	HRS DF11-**SC or equivalent
2	RC2	6	LS(Current Share)		
3,5,7	-S	8	+S		

RCG: Remote ON/OFF Ground
RC2: Remote ON/OFF
-S : -Remote Sensing
TRIM: Adjustment of Output Voltage
LS: Load Share
+S: +Remote Sensing

Control Pin No. Assignment(CN3) : HRS DF11-6DP-2DS or equivalent

Pin No.	Assignment	Pin No.	Assignment	Mating Housing	Terminal
1	P OK GND	4	AUXG	HRS DF11-6DS or equivalent	HRS DF11-**SC or equivalent
2	P OK	5	RC1		
3	RCG	6	AUX		

P OK GND: Power OK Ground
P OK: Power OK Signal
RCG: Remote ON/OFF Ground
AUXG: Auxiliary Ground
RC1: Remote ON/OFF
AUX: Auxiliary Output



⚠ WARNING

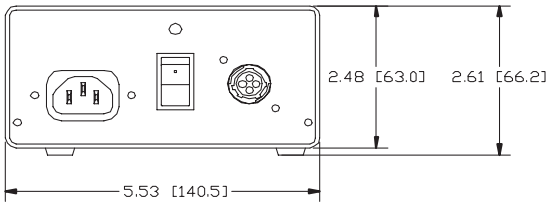
The switcher supplies have an adjustable output trim pot. The output voltage MUST BE adjusted to <=48VDC.

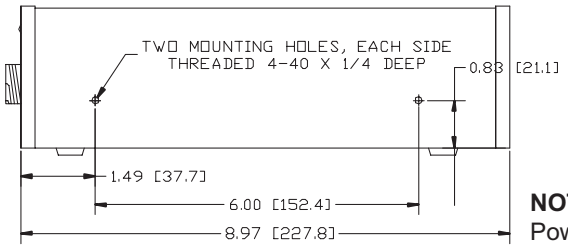
Enclosed DC Power Supplies

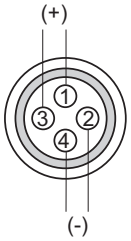
- Enclosed linear unregulated power supplies
- PC-type AC power cord
- 4 pin AMP connector on output
- Internally fused on both primary and secondary side
- Toroid transformer for minimal voltage drop and minimal EMI

Includes AC Power Cord and KITDC1 connector kit

Part Number	Input Voltage	Hz AC	No Load Voltage	Full Load		Nominal Wattage	Weight (Nom.)
				Voltage	Current		
PS24V8AG-110	110VAC	60	25 VDC	19 VDC	8 Amps	152 W	6.5 lbs (3 kg)
PS42V6AG-110	110VAC	60	46 VDC	38.7 VDC	6.5 Amps	251 W	7 lbs (3.2 kg)
PS42V6A-220CE	220 VAC	50-60	46 VDC	38.7 VDC	6.5 Amps	251 W	7 lbs (3.2 kg)







NOTE: Either pair of Power Pins can handle full load rating

* All sizes are given in inches, sizes in brackets are in mm

PWR116V

Enclosed Laptop Type Power Supply

This Power Supply connects directly to:

- CBLSM1-DEMO
- SmartBox™
- SmartBox BCD™

It is ideal for desktop testing of the SmartMotor™ and will easily run an unloaded SmartMotor for programming and evaluation testing.

Input:	100-240VAC 50/60Hz
Output:	24VDC, 2.5Amps, 60 Watts
Connector Type:	2.1x5mm coax DC Power Connector
Cable Length:	~1meter

RoHS/CE Certified

CBLAC1

AC Power Cable for PWR116V Power Supply above.

Standard 3 prong US AC plug

~1 Meter length

⚠ Warning: Improper Power Supply Sizing may result it Motor Position Error Faults, Motor Resets, and Machine Faults ⚠

Introduction to Shunts

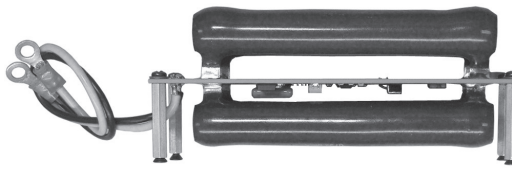
Animatics offers several shunt options for use with DC input servo motors.

Shunts are needed to protect the servo controller and drive stages from over voltage.

Over voltage sources originate from the following:

- Back EMF due to back driving the motors
- Sudden or hard decelerations
- Hard stop crashes (immediate deceleration to zero speed)
- Vertical load drops

The shunts actually add an additional load to the DC bus automatically when voltage exceeds the trigger level by connecting large load resistors across the bus. Trigger voltage is typically 49.5VDC. As a result, the shunts will work with any of the supplies we offer.



⚠ WARNING

The switcher supplies have an adjustable output trim pot. If used with our shunts, the output voltage MUST BE adjusted to <=48VDC to insure the shunts do not stay gated on.

The Real story about Back EMF:

Generally speaking, Back EMF is the voltage generated in a motor when it spins. This voltage is typically proportional to speed. However, this is a general rule. The truth is that the Back EMF voltage is proportional to the rate of change of magnetic flux in the windings of the stator. As a result, constant speeds produce constant and predictable voltages. However, sudden changes due to decelerations or hard stop crashes cause an immediate change in magnetic flux or even a total instantaneous collapse. As a result, voltages can go 5 to 10 times higher than spinning the motor at its maximum speed.

For this reason alone it is highly recommended to use a shunt in all vertical load applications or any case where the motors could be stopped quickly or back driven suddenly.

We offer both open frame and enclosed shunts in 100Watt and 200Watt capacities. The shunts are all automatic and get their power from the DC bus they are attached to. They simply need to be placed in parallel with the DC bus.

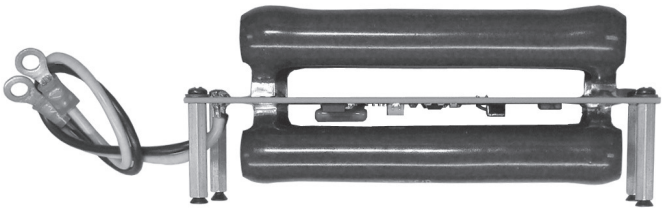
⚠ WARNING

1. **Shunts cannot be placed in parallel with each other to increase capacity. The shunt with the slightly lower trigger voltage will trigger first while the other shunt never triggers at all. Please consult factory for information on how to deal with larger shunt requirements.**
2. **Shunts should always be placed between the motor input and any disconnect or e-stop relay to insure protection of the motor when power is not applied or e-stop relay contacts are open.**

SHUNT42V100WOF and SHUNT42V200WOF

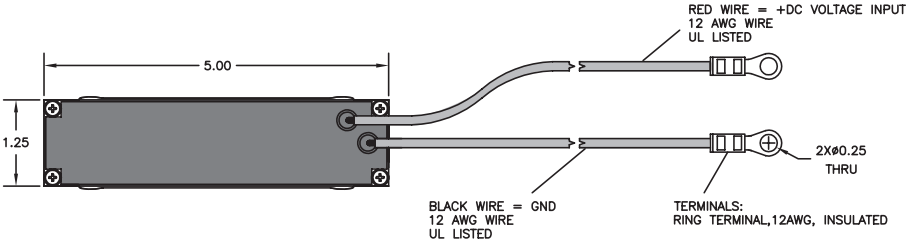
- Can be used with Power supplies that have an output of 48VDC or less
- Automatic Gate-On when Voltage Exceeds 49.5VDC
- Easy direct parallel connection to power supply

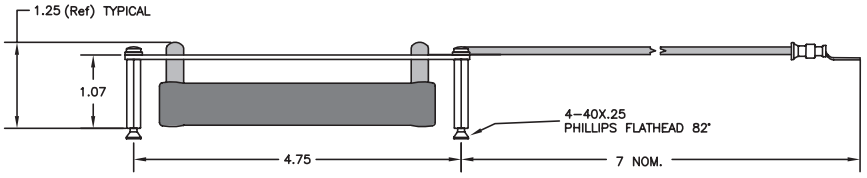
SHUNT42V100W-OF

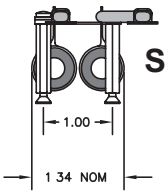


SHUNT42V200W-OF

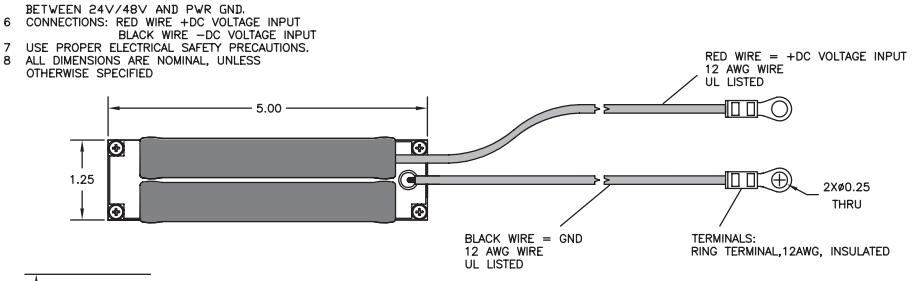
Part Number	TRIGGER VOLTAGE	DROP OUT VOLTAGE	CURRENT DRAW WHEN GATED ON	WATTS	EFFECTIVE BUS LOAD
SHUNT42V100WOF	49.5VDC RISING	48.5VDC FALLING	4 AMPS	100W	12.5 OHMS
SHUNT42V200WOF	49.5VDC RISING	48.5VDC FALLING	8 AMPS	200W	6.25 OHMS

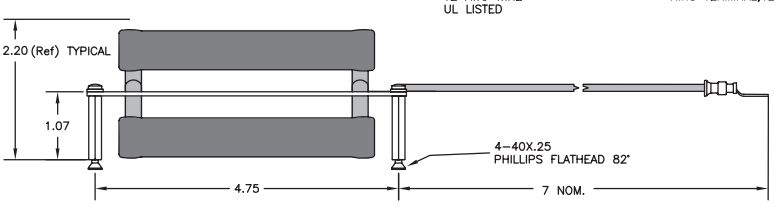


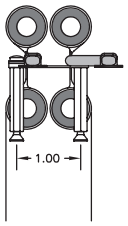




SHUNT42V100WOF







SHUNT42V200WOF

Note: **Any time an E-Stop switch is placed on the DC power line to the motor, a Shunt MUST BE installed between the E-Stop switch and the motor connector to ensure protection against over voltage!**

Warning ! If the shunt is connected to an adjustable power supply, the output voltage MUST BE set at or below 48VDC. If the output voltage is sustained above the trip point of the shunt, over heating and damage may result.

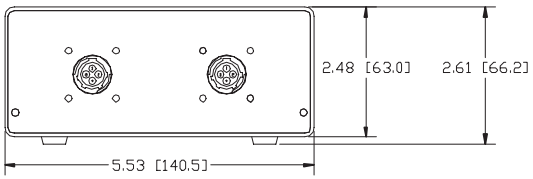
Enclosed Shunts

- Enclosed Shunt
- Matching 4 pin AMP connector to enclosed power supply.
- Automatically gate on at >=49.5VDC
- Powered from DC bus
- May be connected in parallel with any supply <=48VDC.

Part Number	TRIGGER VOLTAGE	DROP OUT VOLTAGE	CURRENT DRAW WHEN GATED ON	WATTS	EFFECTIVE BUS LOAD
SHUNT42V100W	49.5VDC RISING	48.5VDC FALLING	4 AMPS	100W	12.5 OHMS
SHUNT42V200W	49.5VDC RISING	48.5VDC FALLING	8 AMPS	200W	6.25 OHMS

Includes connector kits

Use with cable CBLDC1 below



* All sizes are given in inches, sizes in brackets are in mm

Note: Any time an E-Stop switch is placed on the DC power line to the motor, a Shunt MUST BE installed between the E-Stop switch and the motor connector to ensure protection against over voltage!

CBLDC1

Power Supply Cables

Part Number	Connection	Cable Type	Connector Type(s)	Length(s)
CBLAC1	AC Line Cord for power supply	Power	N/A	6 ft (1.8m)
CBLDC1	DC Cable for Enclosed Shunt	DC	4-Pin AMP	1.5ft (0.45M)
CBLSMYPWR-T	Multiple SM - power supply	Y	4 Pin AMP	2 ft (0.61m)