Moog Animatics offers several shunt options for use with DC input servo motors. Shunts are needed to protect the servo controller and drive stages from overvoltage.

Overvoltage 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
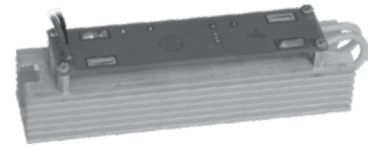
OPEN FRAME SHUNT (300W)

When voltage exceeds the trigger level, the shunts automatically add an additional load to the DC bus by connecting large load resistors across the bus. Trigger voltage is typically 49.5 VDC.

NOTE: Shunts start loading the bus at 49.5 VDC and rising, and will be fully loaded at 53 VDC.

⚠ **WARNING: If the shunt is connected to an adjustable power supply, the output voltage must be set at or below 48 VDC. If the output voltage is sustained above the trip point of the shunt, overheating and damage may result.**

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.

ENCLOSED SHUNT 42V

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

We offer both open frame (100, 200 and 300 Watt) and enclosed (100 and 200 Watt) shunts. 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.

NOTE: Shunt PWM control allows load sharing. Multiple shunts may be connected in parallel to handle increased load.

⚠ **WARNING: Shunts should always be placed between the motor input and any disconnect or e-stop relay to ensure protection of the motor when power is not applied or e-stop relay contacts are open.**
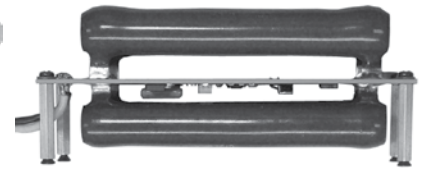
Open Frame Shunts

- Can be used with power supplies that have an output of 48 VDC or less
- Automatically Gate-On when voltage exceeds trigger voltage
- Easy direct parallel connection to power supply
- SHUNT42V300WOF model offers up to 700W overload capacity for up to 5 sec, and includes a DIN rail adapter for mounting
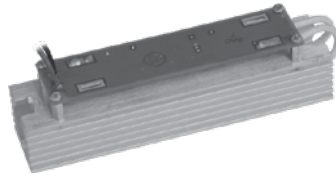
SHUNT42V300WOF   SHUNT42V200WOF

Part Number	Trigger Voltage	Drop Out Voltage	Watts	Effective Bus Load
SHUNT42V100WOF	49.5 VDC Rising	48.5 VDC Falling	100 W	12.5 OHMS
SHUNT42V200WOF	49.5 VDC Rising	48.5 VDC Falling	200 W	6.25 OHMS
SHUNT42V300WOF*	49.5 VDC Rising	48.5 VDC Falling	300 W	4.7 OHMS

*Available with a convenient DIN rail adapter

Enclosed Shunts

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

SHUNT42V

Part Number	Trigger Voltage	Drop Out Voltage	Watts	Effective Bus Load
SHUNT42V100W	49.5 VDC Rising	48.5 VDC Falling	100 W	12.5 OHMS
SHUNT42V200W	49.5 VDC Rising	48.5 VDC Falling	200 W	6.25 OHMS

CBLDC1

Power Supply Cables

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

Overview

Software

C5 D-Style

C5 M-Style

C6 M-Style

C6 Low-Cost

Cables, Etc.

Actuators

Gearheads

Power Supplies