

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



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. 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 $\leq 48\text{VDC}$ to ensure 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, 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 and enclosed shunts in 100 Watt and 200 Watt 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 ensure protection of the motor when power is not applied or e-stop relay contacts are open.

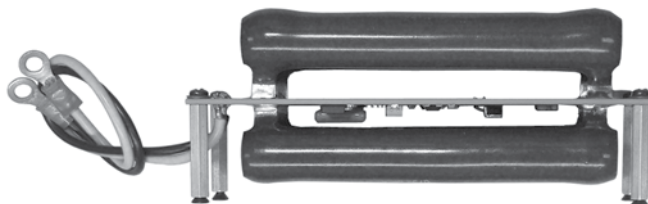
Open Frame Shunts

SHUNT42V100WOF and SHUNT42V200WOF

- Can be used with power supplies that have an output of 48 VDC or less
- Automatically gate on when voltage exceeds 49.5 VDC
- 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	49.5 VDC Rising	48.5 VDC Falling	4 AMPS	100W	12.5 OHMS
SHUNT42V200WOF	49.5 VDC Rising	48.5 VDC Falling	8 AMPS	200W	6.25 OHMS

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



Part Number	Trigger Voltage	Drop Out Voltage	Current Draw When Gated On	Watts	Effective Bus Load
SHUNT42V100W	49.5 VDC Rising	48.5 VDC Falling	4 AMPS	100W	12.5 OHMS
SHUNT42V200W	49.5 VDC Rising	48.5 VDC Falling	8 AMPS	200W	6.25 OHMS

NOTE: When 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 overvoltage!

Power Supply Cables



CBLDC1

Part Number	Connection	Cable Type	Connector Type(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)

Specification and information are subject to change without prior notice. Refer to the website, www.animatics.com, for the latest information.

Moog Animatics and the Moog Animatics logo, SmartMotor and the SmartMotor logo, Combitronic and the Combitronic logo, and SMI are all trademarks of Moog Inc., Animatics. Other trademarks are the property of their respective owners.