SEMI F47 Low Voltage Ride Through Module

Minimize voltage sags and increase machine uptime

By ensuring SEMI F47 compliance of AC powered IEC contactors and relays, the Low Voltage Ride Through Modules can be used to increase the voltage sag immunity of semiconductor processing equipment. These modules make it possible for AC powered TELEMECANIQUE contactors and relays to exceed the requirements of SEMI F47, both in the magnitude and duration of a voltage sag event – even with accessories such as auxiliary contact blocks and pneumatic timers.

More and more wafer fabs are insisting that front-end wafer processing equipment comply with SEMI F47. Many of the contactors and pilot relays used on equipment, particularly in the EMO circuit, are not able to meet the standard. As a result, equipment can drop out during a voltage sag of 50% in magnitude and 200ms in duration, causing equipment shutdown.

The Low Voltage Ride Through Modules can be used with TELEMECANIQUE contactors from 9A through 80A, as well as the CAD series of control relays.

LVRT module attached to TELEMECANIQUE Contactor

Low Voltage Ride Through Module (LVRT)

Key Benefits

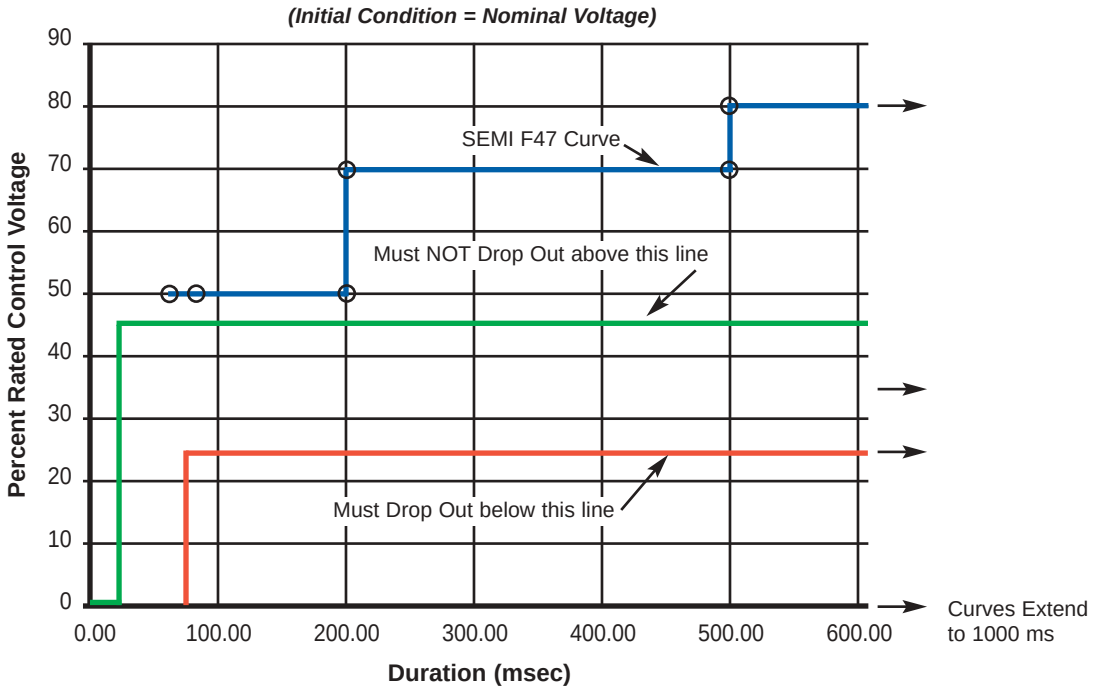
- ***Easy retrofitting.*** Modules are compatible with TELEMECANIQUE contactors 9A through 80A and TeSys CAD series control relays.
- ***Reduced inventory.*** Each module covers complete contactor amperage range.
- ***Increased flexibility.*** Available in 24VAC, 120VAC and 208 VAC versions.
- ***Unsurpassed operation and performance.*** Electronics and 8-bit micro-controller optimized to TELEMECANIQUE contactor and relay coils.
  - Overvoltage protection during coil energization
  - Surge and fast transient burst protection
  - Discerns between 20 ms micro outages and activation of EMO button for emergency shutdown.
- ***Exceeds SEMI F47 ride through standards.*** Guaranteed ride through at 45% of nominal voltage, with no restriction on voltage sag duration, must drop out at 30% of nominal range.
- ***Meets industry standards.*** Modules carry UL, IEC and CE mark and certified SEMI F47 compliant.
- ***Easy installation.*** Modules mount directly to the top of contactors – no additional wiring is required.

Merlin Gerin
Modicon
Square D
Telemecanique

Schneider Electric
Building a New Electric World

Low Voltage Ride Through Module

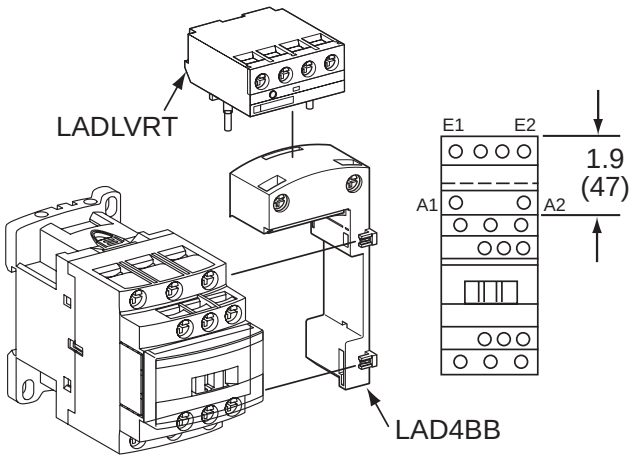
Characteristics



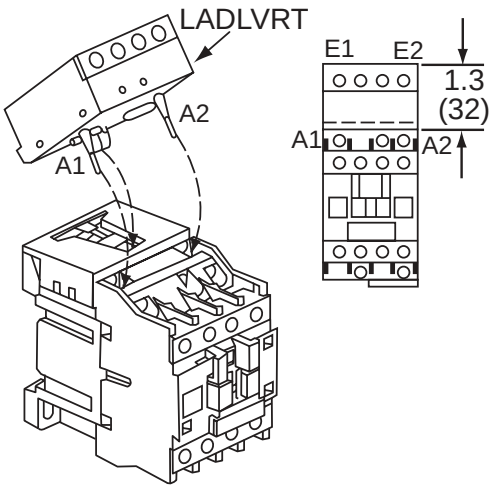
Specifications

Continuous operating voltage range and line frequency	85–110% of the rated voltage at 47–63 Hz
Max. installed accessories	1 front mount and 1 side mount auxiliary device for contactors 1 auxiliary device for TeSys CAD Control Relays
Dropout time	150 ms
Max. operation rate	20 operations/min. for LC1D09–LC1D32 and CAD Relays 30 operations/min. for LC1D40–LC1D80
Max. mechanical and electrical durability	250,000 operations
Leakage current capability	6 ma maximum as per IEC 1131
MTBF	100,000 hours
Standards	SEMI F47-0999, cUL, CE, UL 508 IEC 60947-5-1 (Control Circuit Devices and Switching Elements) IEC 60068 (Mechanical Environmental Testing) NSTA (Shipping and Handling) IEC 1000-4-2 Electrostatic Discharge IEC 1000-4-3 Electromagnetic Field IEC 1000-4-4 Fast Transient and Burst IEC 1000-4-5 Surge Immunity IEC 1000-4-6 Conducted RFI IEC 60068-2-6 Operational Vibration IEC 60068-2-27 Operational Shock
Pickup performance	per UL 508 and IEC 60947
Storage temperature	-40 to +80 °C
Operating temperature	0 to 40°C (ambient surrounding ride through module)
Relative humidity	5 to 95%, at 40°C (non-condensing)
Maximum operating altitude	3000 meters

Assembly Information

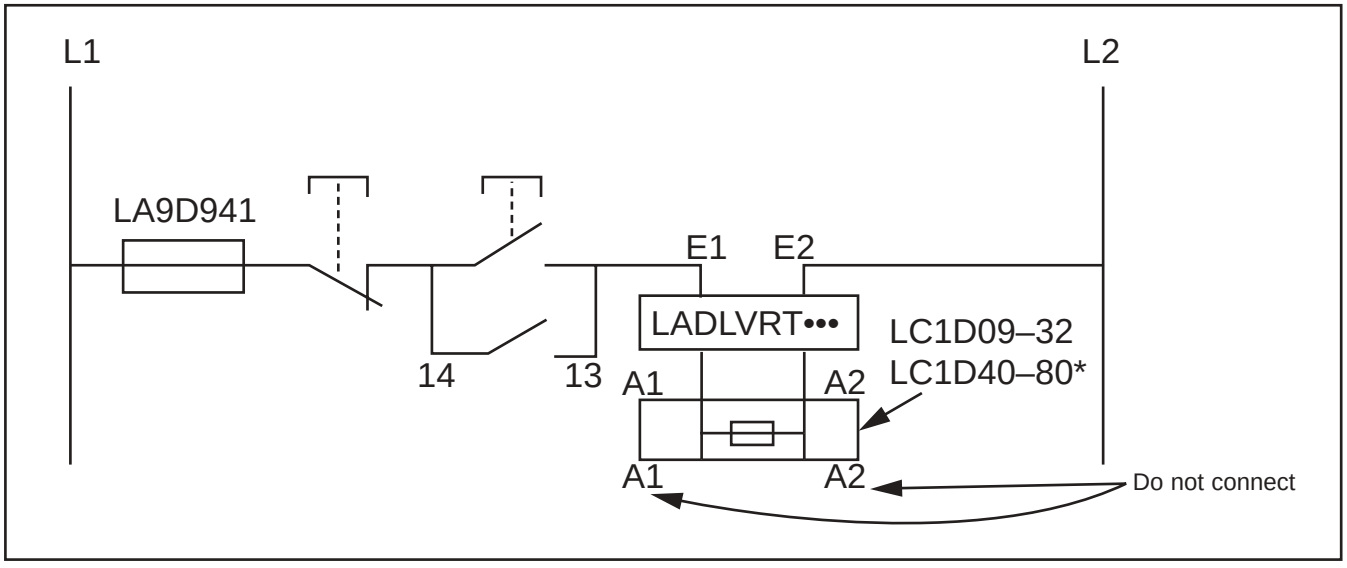


Contactors 32A and less, and TeSys CAD Control Relays



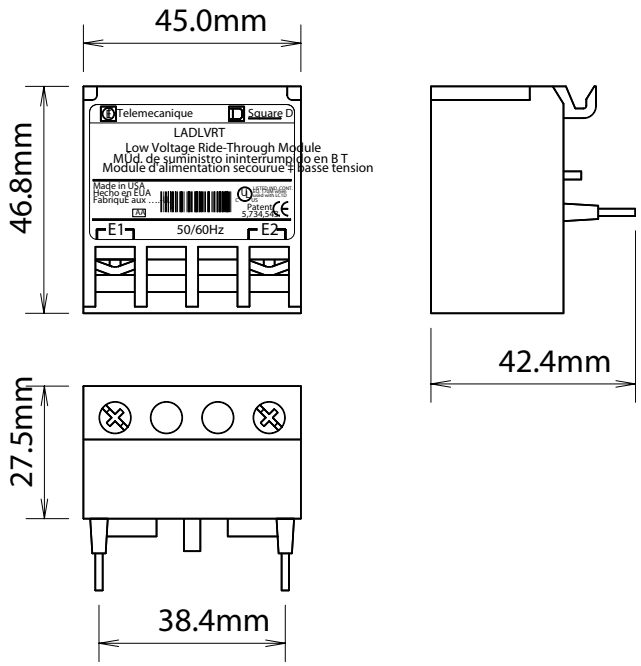
Contactors 40A – 80A

Typical Wiring Scheme for 3-Wire Control



Low Voltage Ride Through Module

Dimensions



Ordering Information

Applicable Contactor			Bracket	Fuse
LADLVRT24V	**LADLVRT120V**	**LADLVRT208V**		
LC1D09B7, LC1D12B7, LC1D18B7, LC1D25B7	LC1D09G7, LC1D12G7, LC1D18G7, LC1D25G7	LC1D09LE7, LC1D12LE7, LC1D18LE7, LC1D25LE7	LAD4BB*	LA9D941
LC1D32B7, LC1D40B7, LCD50B7, LC1D65B7	LC1D32G7, LC1D40G7, LC1D50G7, LC1D65G7	LC1D32LE7, LC1D40L7, LC1D50L7, LC1D65L7	—	
Applicable Control Relay				
CADxxxB7	CADxxxG7	CADxxxLE7	LAD4BB	

** LAD4BB must be used when the Low Voltage Ride Through Module is being used with contactors 32 A and less, and TeSys CAD Series of Control Relays.*

Square D/Schneider Electric offers a full range of voltage sag resistant SEMI F47 compliant products including:

- IEC contactors 6A–630A
- Control, phase loss and programmable relays
- Safety relays
- DC power supplies

For additional information, visit www.SquareD-SEMI.com/SEMIF47

Schneider Electric
Building a New Electric World

Document number 0106HO0204