

Load Sensors

SymCom's load sensors are designed to be adaptable to many different applications. They utilize a CT (current transformer) inside the unit to read the current of the equipment being monitored. The Model LSR-0 is a self-powered unit used as a proof relay. The LSRX and LSRX-C units are also self-powered proof relays with either 0.25" fast-on connectors (LSRX) or depluggable connectors (LSRX-C) for use in OEM equipment. The LSR-24, 115 and 230 load sensors require external power and are ideally used to help determine feed rates, tool wear, loss of prime on pumps, mixer viscosity and all types of overload and underload conditions. LSRU load sensors come in many different configurations, such as overcurrent and undercurrent or either overcurrent or undercurrent with variable trip, restart or extended restart delay settings. All LSRU models require 115VAC external power source, except for the LSRU-24-AL-2 and LSRU-24-AL-3, which require 24VAC.

Product Selection Matrix

MODEL	Adjustable Overcurrent	Fixed Undercurrent	Adjustable Undercurrent (Proof Relay)	Manual Reset Selection	Variable Trip Point	Variable Restart Delay	Extended Restart Delay	Variable Restart Delay (Minutes)	10 Amp Relay	Self-Powered	Alarm Logic (Latching)	Motor Control Logic (Momentary Trip)
LSR-0		•								•		
LSR-24	•		•		•					•	•	
LSR-115	•		•		•					•	•	
LSR-230	•		•		•					•	•	
LSRU-24-AL-2	•		•		•					•	•	
LSRU-24-AL-3	•		•		•					•	•	
LSRU-115-AL-1.5	•		•		•					•	•	
LSRU-115-AL-2	•		•		•					•	•	
LSRU-115-AL-3	•		•		•					•	•	
LSRU-115-FC-1.5	•		•		•					•	•	
LSRU-115-OT-1.5	•		•		•		•	•		•	•	•
LSRU-115-OT-2	•		•		•		•	•		•	•	•
LSRU-115-OT-3	•		•		•		•	•		•	•	•
LSRU-115-OR-1.5	•		•	•	•	•				•	•	
LSRU-115-OR-2	•		•	•	•	•				•	•	
LSRU-115-UE-2			•	•	•	•	•					•
LSRU-115-UT-2			•	•	•	•	•					•
LSRU-115-UT-3			•	•	•	•	•					•
LSRU-115-UR-2			•	•	•	•	•					•
LSRU-115-UR-3			•	•	•	•	•					•
LSRU-115-OU-1.5	•		•		•					•		•
LSRU-115-OU-2	•		•		•					•		•
LSRU-115-OU-3	•		•		•					•		•
LSRX		•								•		
LSRX-C		•								•		



The Model LSR-0

is a self-powered load sensor intended for use as a proof relay. It is used to verify that current is flowing as intended. It has a guaranteed 15A pull-in current and 2.5A drop-out current. Proof relays are typically used to interlock fans, compressors, motors, heating elements and other devices. The LSR-0 is self-powered, that is, it draws its power from the wire being monitored so it does not require separate control power wiring.

For more information see:

See Appendix A, page 70, Figure 14 for dimensional drawing.

See Appendix B, page 81, Figure 50 for typical wiring diagrams.

Features:

- Self-powered
- Low cost proof relay
- Can monitor up to 135A loads

Approvals:  

Available Models:

LSR-0

Specifications

Max Current Ratings.....	135A continuous
Functional Characteristics	
Turn-on Threshold.....	Fixed, 15A (max.)*
Turn-off Threshold.....	2.5A (min.)
Power.....	Induced from conductor
Isolation.....	600VAC rms
Output Characteristics	
Relay Output Rating	
Pilot Duty.....	480VA @ 240VAC
General Purpose.....	10A
General Characteristics	
Temperature Range.....	-20° to 70°C (-4° to 158°F)
Wire Size.....	#12-24AWG
Hole Size.....	0.725" diameter
Terminal Torque.....	7 in.-lbs.
Safety Marks	
CSA, CSA-NRTL/C.....	(File #46510)
CE	
Dimensions.....	1.67" H x 2.3" W x 3.56" D (42.42 x 58.42 x 90.43 mm)
Weight.....	0.35 lb. (5.6 oz., 158.76 g)
Mounting Method.....	Four #6 screws 3/4" in length

*Conductors may be looped for smaller motor applications.

Caution: This product should not be relied upon solely for safety of life or safety applications.

Load Sensor

load sensor, Form C contacts to switch alarm circuits, contactors or any resistive or inductive load

Model LSR-24



The Model LSR-XXX

load sensors use current levels to determine feed rates, tool wear, loss of prime on pumps, mixer viscosity and all types of overload and underload conditions. They may also be used to stage pump motors, chillers and other machinery. These devices combine a current transformer (CT) with Form C (SPDT) relay contacts to switch alarm circuits, contactors or any resistive or inductive load. One simple screwdriver adjustment will calibrate the sensor for all single-phase or 3-phase applications up to 100hp.



For more information see:

See Appendix A, page 70, Figure 14 for dimensional drawing.

See Appendix B, page 80, Figure 48 for typical wiring diagrams.

Features:

- Can monitor current of motors up to 100Hp
- Fine adjustment with 20-turn pot
- Status LEDs

Approvals:  

Available Models:

LSR-24
LSR-115
LSR-230

Specifications

Functional Characteristics	
Isolation	600VAC rms
Current Adjustment Range (Typical)	2-100A
Current Adjustment Range (Min-Max)	0.5-135A
Trip Setpoint	Adjustable to $\pm 1\%$ range
Input Characteristics	
Control Power	
LSR-24	24VAC
LSR-115	115VAC
LSR-230	230VAC
Max Current Ratings	135A max. continuous
Output Characteristics	
Output Contact Rating (SPDT)	
Pilot Duty	480VA @ 240VAC
General Purpose	10A
General Characteristics	
Temperature Range	-20° to 70°C (-4° to 158°F)
Wire Size	#12-24AWG
Hole Size	0.725" diameter
Terminal Torque	7 in.-lbs.
Safety Marks	
CSA, CSA-NRTL/C	(File #46510)
CE	IEC 60947
Dimensions	1.67" H x 2.3" W x 3.56" D (42.42 x 58.42 x 90.43 mm)
Weight	0.4 lb. (6.4 oz., 181.44 g)
Mounting Method	Four #6 screws 3/4" in length

Caution: This product should not be relied upon solely for safety of life or safety applications.



The Model LSRU

is a microcontroller-based family of load sensors. The LSRU family of products employ three basic types of control logic: motor control logic, alarm logic and feed control logic.

Motor Control Logic

Several combinations of functions are available in the LSRU, including overcurrent and undercurrent or either overcurrent or undercurrent with variable trip, restart or extended restart delay settings. These various versions of the LSRU trip on the respective fault and then automatically reset after the restart delay expires, in preparation for the next motor start. LSRUs do not trip on undercurrent when the load turns off, this is recognized as a normal condition.

Alarm Logic

The LSRU-AL simply indicates whether the current is between the setpoints or outside of the setpoints. This product is best used with a PLC or other controller where status indication is desired.

Feed Control

The LSRU-FC is a load monitor intended to control feeder mechanisms in a variety of applications. It stops the feeder when the grinder, chipper, saw, auger, etc. nears overload. When the load is reduced to a preset level, the feeder is restarted.


For more information see:

See Appendix A, page 70, Figure 14 for dimensional drawing.

See Appendix B, page 80, Figure 49 for typical wiring diagrams.

Features:

- Alarm logic available in 24VAC or 115VAC
- Choice of multiple functions for motor control logic
- Motor control logic functions available in multiple current ranges
- Status LED

Approvals: 

Available Models:

- LSRU-24-AL-2
- LSRU-24-AL-3
- LSRU-115-AL-1.5
- LSRU-115-AL-2
- LSRU-115-AL-3
- LSRU-115-FC-1.5
- LSRU-115-OT-1.5
- LSRU-115-OT-2
- LSRU-115-OT-3
- LSRU-115-OR-1.5
- LSRU-115-OR-2
- LSRU-115-UE-2
- LSRU-115-UT-2
- LSRU-115-UT-3
- LSRU-115-UR-2
- LSRU-115-UR-3
- LSRU-115-OU-1.5
- LSRU-115-OU-2
- LSRU-115-OU-3

Specifications

Functional Characteristics	
Isolation	600VAC rms
Power	.2 Watts
Motor Acceleration Time	.2 seconds
When not selected as an option:	
Fixed Trip Delay	.05 second
(-AL, -FC)	.1 second
Fixed Restart Delay	.1 second
(-AL only)	as soon as current is within limits
(-FC only)	.05 second
Input Characteristics	
Control Power	.24VAC or 115VAC
Output Characteristics	
Output Contact Rating (SPDT)	
Pilot Duty	.480VA @ 240VAC
General Purpose	.10A

General Characteristics	
Temperature Range	-40° to 70°C (-40° to 158°F)
Wire Size	#12-24AWG
Hole Size	.0725" diameter
Terminal Torque	.7 in.-lbs.
Safety Marks	
CSA, CSA-NRTL/C	(File #46510)
CE	
Dimensions	1.67" H x 2.3" W x 3.56" D (42.42 x 58.42 x 90.43 mm)
Weight	.05 lb. (8 oz., 226.8 g)
Mounting Method	Four #6 screws 3/4" in length

Caution: This product should not be relied upon solely for safety of life or safety applications.

- O - Overcurrent Trip
- U - Undercurrent Trip
- T - Adj. Trip Delay (0.5-60 seconds)
- R - Adj. Restart Delay (0.5-300 seconds, Manual)
- E - Adj. Extended Restart Delay (2-300 minutes, Manual)

- 1.5 - 0-10 Amps
- 2 - 5-25 Amps
- 3 - 25-100 Amps



The Model LSRX


is an AC current sensor designed to energize the output contact whenever 4.5 Amps or greater is present. The LSRX is used commonly as an AC current proof relay to indicate if a motor is operating. It can also be used to interlock fans, compressors and motors; to indicate equipment status such as feed rates, tool wear, loss of prime on pumps, mixer viscosity and all types of current sensing conditions or to stage pump motors, chillers, or other machinery.

This device combines a current transformer (CT), transducer and high current output relay together to switch alarm circuits, contactors and most resistive or inductive loads. The LSRX can perform the function of an auxiliary contact, yet has the advantages of universal application and isolation.

For more information see:
See Appendix A, page 70, Figure 15 for dimensional drawing.

Features:

- Self-powered
- Low cost proof relay
- Can monitor up to 200A loads
- Fast-on terminals or optional depluggable screw terminals (LSRX-C)
- LED status indicator
- Optional header for remote fiber optic panel indicator

Approvals:  

Available Models:

- LSRX
- LSRX-C
- LSRX-OEM (10 pack)
- LSRX-C-OEM (10 pack)

Specifications

Input Characteristics	
Operating Current	5-200A Continuous
Minimum Pull-in Current	4.5A (typical), 7.0A (max)*
Power	Induced from AC conductor
Output Characteristics	
Relay Output Rating (SPST - Form A)	
Pilot Duty	480VA @ 240VAC, B300
General Purpose	5A @ 240VAC
Electrical Life	1x10 ⁶
Mechanical Life	1x10 ⁷
Maximum Conductor Diameter	0.7 in.
Output Terminals	
LSRX	0.25" quick-connect fast-ons
LSRX-C	depluggable screw terminals
Torque Rating	4.5 in.-lbs.
General Characteristics	
Temperature Range	
Operating	-20° to 70°C (-4° to 158°F)
Storage	-40° to 80°C (-40° to 176°F)
Hole Size	0.72" diameter
Wire Size	12-26 AWG

Output Relay Status Indicator	LED
Relative Humidity	10-95%, non-condensing per IEC 68-2-3
Standards Passed	
Electrostatic Discharge (ESD)	IEC 61000-4-2, Level 2, 4kV contact, 4kV air
Fast Transient Burst	IEC 61000-4-4, Level 3, 2kV power, 1kV input/output
Surge	
IEC	61000-4-5, Level 3, 2kV line-to-line; 2kV line-to-ground
Safety Marks	
UL	UL508 Recognized (File #E68520)
CE	IEC 60947
Dimensions	2.7"H x 1.13"W x 2.5"D (68.58 x 28.7 x 63.5mm)
Weight	0.3 lb. (4.8 oz., 136.08 g)
Mounting Method	Surface Mount

*Conductors may be looped for smaller motor applications.