

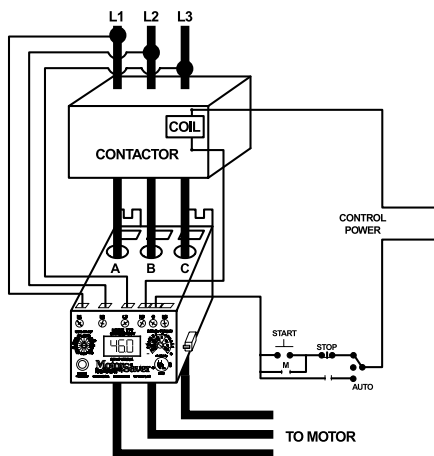
777 SERIES

3-Phase Current & Voltage Monitor

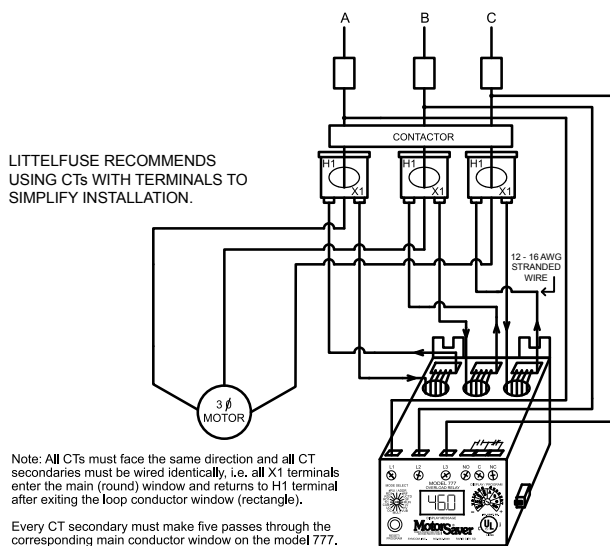


Wiring Diagram

TYPICAL WIRING DIAGRAM FOR MODEL 777 (2 to 90 amps)



CURRENT TRANSFORMER WIRING DIAGRAM FOR MODEL 777 (80 to 800 amps)



LITTELFUSE RECOMMENDS USING CTs WITH TERMINALS TO SIMPLIFY INSTALLATION.

Note: All CTs must face the same direction and all CT secondaries must be wired identically, i.e. all X1 terminals enter the main (round) window and returns to H1 terminal after exiting the loop conductor window (rectangle).

Every CT secondary must make five passes through the corresponding main conductor window on the model 777.

Every CT secondary must make a single pass through the corresponding main conductor window on the LR versions of the 777 Plus Series.

Description

The 777 is a fully programmable electronic overload relay designed to protect any motor drawing 2-800 full load amps (external CTs are required above 90 amps). The 777 (family of products) is for 3-phase 200-480VAC applications, with several specialized units for other voltage ranges and unique applications. Common applications include conveyor systems, HVAC equipment, saws and grinders, fan motors, and almost any pumping application. Some unique applications include use with a Subtrol® equipped Franklin submersible motor to detect high motor temperatures and applications where a fast linear trip is required.

All of the overload relays provide unsurpassed protection by combining overload, voltage, phase loss and reversal, voltage and current unbalance, power monitoring, and underload based on current in one package. For standalone applications, the units incorporate a 3-digit LED display that is used for programming, providing real-time operational information and displaying diagnostic codes to aid in troubleshooting a fault condition. The units also feature a communications port that can be used with communication modules listed in the 777 accessories section to form a Modbus, DeviceNet™, Profibus, or Ethernet network. Up to 99 units can be remotely monitored and controlled from a PC, PLC, or SCADA system, and data logging through a PC with the optional Solutions software. This capability allows for a simple, cost-effective way to meet new requirements for arc-flash safety.

Features & Benefits

FEATURES	BENEFITS
Built-in display	Visual indication for programming, viewing real-time voltage or current, and last fault code
Programmable voltage and current settings	Allows usage on wide range of systems
3 selectable restart options	Choose from automatic, semi-automatic, or manual to best meet individual application needs
3 programmable restart delay timers	Program separate restart delay time for rapid cycle protection, motor cool down, and dry-well recovery
Remote display compatibility	Increases safety through remote display of real-time data and fault history, without the need to open the cabinet. Aids with arc flash safety regulations
Flexible reset	Reset can be done through pushbutton on relay or remotely with optional 777-MRSW or OL-RESET remote reset kit
Network communications capability	Compatible with Modbus, DeviceNet™, Profibus, or Ethernet using optional communications module

Ordering Information

See next page.

777 SERIES

Accessories



RS485MS-2W Communication Module
Required to enable the Modbus communications function on Model 77X-type products.



CIO-MB/CIO-120-MB Communication Module
Modbus-RTU interfaces capable of providing discrete control and monitoring of an overload relay over a Modbus network.



CIO-DN-P/CIO-120-DN-P Communication Module
DeviceNet™ interfaces capable of providing discrete control and monitoring of motor starters, drives and other devices over a DeviceNet™ network.



CIO-777-PR Communication Module
Profibus interface capable of providing discrete control and monitoring of motor starters, drives and other devices over a Profibus network.



CIO-EN (non-POE) Communication Module
Modbus-TCP and Modbus-RTU interface capable of providing discrete control and monitoring of an overload relay over a Modbus network.



Communication Adapters
• RS485-RS232–Converter with cable & plug
• RS485-USB–Converter with cable & plug
• RS232-USB–Converter
Specifications match industry standard.



RM1000 Remote Monitor
The RM1000/777 motor management system combines unsurpassed electronic motor protection and critical, user-friendly, motor monitoring for up to 16 devices.



RM2000 Remote Monitor
The RM2000/777 motor management system combines unsurpassed electronic motor protection and critical, user-friendly, motor monitoring with event storage and real-time clock for date and time stamp.



Solutions Software: Solutions-M
Software features include data logging, real-time data monitoring and fault and event monitoring.



777-MRSW Manual Remote Reset Kit
Allows the 777 line of MotorSaver® and PumpSaver® products to be manually reset without opening the panel door.



OL-RESET Manual Remote Reset Kit
Allows the 777 line of MotorSaver® and PumpSaver® products to be manually reset without opening the panel door.

Specifications

Functional Characteristics

Frequency	50/60Hz
TC- Overcurrent Trip Class (777 Plus Series units)	02-60, J02-J60, L00-L60 or Off
TC- Overcurrent Trip Class (77C, 777 non-Plus Series units)	5, 10, 15, 20, 30 (J prefix enables jam protection feature)

Output Characteristics

Output Contact Rating (SPDT - Form C)	
Pilot duty rating	480VA @ 240VAC, B300
General purpose	10A @ 240VAC
Pilot duty rating for HVR models	470VA @ 600VAC, B600

General Characteristics

Ambient Temperature Range	
Operating	-20° to 70°C (-4° to 158°F)
Storage	-40° to 80°C (-40° to 176°F)
Accuracy	
Voltage	±1%
Current	±3% (<100 amps direct)
GF Current	±15%
Timing (777 Plus Series units)	±0.5 second
Timing (77C, 777 non-Plus Series units)	5% +1 second
Repeatability	
Voltage	±0.5% of nominal voltage
Current	±1% (<100 amps direct)
Maximum Input Power	10 W
Pollution Degree	3
Class of Protection	IP20
Relative Humidity	10-95%, non-condensing per IEC 68-2-3
Terminal Torque	7 in.-lbs.

Standards Passed

Electrostatic Discharge (ESD)	IEC 61000-4-2, Level 3, 6kV contact, 8kV air
Radio Frequency Immunity (RFI), Conducted	IEC 61000-4-6, Level 3 10V/m
Radio Frequency Immunity (RFI), Radiated	IEC 61000-4-3, Level 3 10V/m
Fast Transient Burst	IEC 61000-4-4, Level 3, 3.5kV input power
Short Circuit	100kA
Surge	
IEC	61000-4-5, Level 3, 2kV line-to-line; Level 4, 4kV line-to-ground
ANSI/IEEE	C62.41 Surge and Ring Wave Compliance to a level of 6kV line-to-line
Hi-potential Test	Meets UL508 (2 x rated V +1000V for 1 minute)
Vibration	IEC 68-2-6, 10-55Hz, 1mm peak-to-peak, 2 hours, 3 axis
Shock	IEC 68-2-27, 30g, 3 axis, 11ms duration, half-sine pulse

777 SERIES

Safety Marks

UL	UL508, UL1053 (File #E68520)
CE	IEC 60947-1, IEC 60947-5-1
CSA	C22.2 No. 14

Maximum Conductor Size (with insulation) through 777/77C

0.65"

Dimensions

H 77.47 mm (3.05"); **W** 97.79 mm (3.85");

D 128.27 mm (5.05")









Weight

1.56 lbs. (24.96 oz., 707.6 g)

Mounting Method

Surface mount (4 - #8 screws) or DIN rail mount

REMOTE INDICATION & MONITORING

REMOTE INDICATORS & MONITORS		
Product	Features	Accessory For
RM1000 RM1000-3R RM1000 NEMA 4 Motor-monitoring Device 	Motor-monitoring device to be used in conjunction with the 777 family of products (excluding the P1 Series), 77C family of products, and the 601 voltage monitors, via Modbus protocol with a communications module. The RM1000/777 motor management system combines unsurpassed electronic motor protection and critical, user-friendly, motor monitoring. For full datasheet, see pg. 246	777 Series 77C Series 601 Series
RM2000 RM2000CBM+ RM2000-RTDW Motor-monitoring Device 	Motor-monitoring device to be used in conjunction with the 777 family of products (excluding the P1 Series), 77C family of products and the Model 601 voltage monitors, via Modbus protocol with a communications module. The RM2000/777 motor management system combines unsurpassed electronic motor protection and critical, user-friendly, motor monitoring. For full datasheet, see pg. 248	777 Series 77C Series 601 Series
INFORMER Remote diagnostic tool 	Hand-held diagnostic tool designed for use with single-phase pump relays. The Informer uses an infrared receiver to access information sent from the relay which can be helpful for troubleshooting the system. Comes with IR Kit-12 (12" long). For full datasheet, see pg. 250	111P 111P-ENCL 232-Insider 233P-ENCL 234-P 235P-ENCL 111-Insider-P 231-Insider-P 233P-1.5 233P-1.5-ENCL 235P
IR Kit-36 (36" long) Informer Fiber Optic Kit 	Use with the Informer. Simply attaches to the face of the unit to provide remote diagnostics without opening the panel.	LSRX1 LSRX-C 111-Insider-P 231-Insider-P 455
INFORMER-MS Remote diagnostic tool 	Hand-held diagnostic tool designed for use with the Littelfuse 455 Series. The Informer-MS uses an infrared receiver to read valuable information transmitted from the 455, which can be helpful for troubleshooting the system For full datasheet, see pg. 252	455 Series
OL-RESET Remote Reset Module 	Allows the 777 line of motor and pump relay products to be manually reset without opening the panel door. Simply connect the module to the 777 communication port, connect a wire to each of the two applicable pins on the OL-RESET and to a normally-open push-button switch (sold separately). Mount the push-button switch in a convenient location.	777 Series
777-MRSW Manual Remote Reset Kit (24" long) 	Allows the 777 line of motor and pump relay products to be manually reset without opening the panel door. Simply connect the 9-pin adapter to the 777 communication port and mount the push-button switch in a convenient location.	777 Series
M500 Electronic Megohmmeter 	Automatic, portable, battery-powered insulation tester. This unit is specifically designed as an inexpensive alternative to costly swing needle megohmmeters. The M500 measures insulation resistance values of motors, generators and transformers up to 1000 megohms at 500VAC, indicating the condition of insulation on the zone scale. Its compact design and ease of use makes the M500 a great diagnostic tool for motor rewind shops, electrical maintenance personnel and pump installers.	

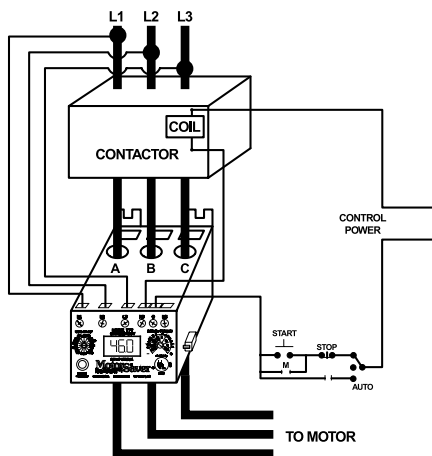
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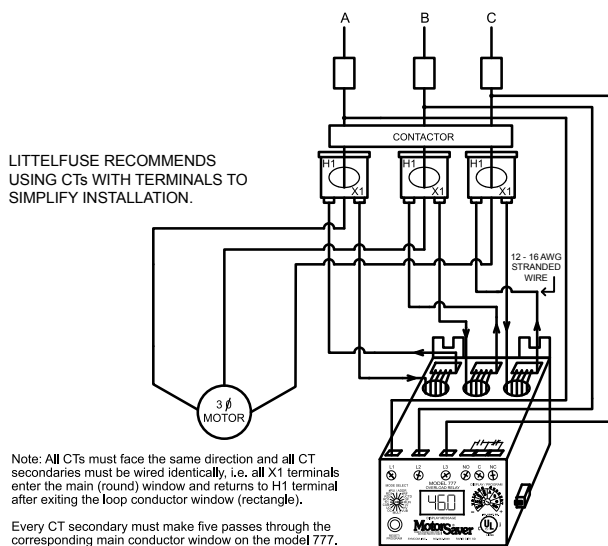


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Features & Benefits

FEATURES	BENEFITS
Built-in display	Visual indication for programming, viewing real-time voltage or current, and last fault code
Programmable voltage and current settings	Allows usage on wide range of systems
3 selectable restart options	Choose from automatic, semi-automatic, or manual to best meet individual application needs
3 programmable restart delay timers	Program separate restart delay time for rapid cycle protection, motor cool down, and dry-well recovery
Remote display compatibility	Increases safety through remote display of real-time data and fault history, without the need to open the cabinet. Aids with arc flash safety regulations
Flexible reset	Reset can be done through pushbutton on relay or remotely with optional 777-MRSW or OL-RESET remote reset kit
Network communications capability	Compatible with Modbus, DeviceNet™, Profibus, or Ethernet using optional communications module

Ordering Information

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777 SERIES

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DeviceNet™ interfaces capable of providing discrete control and monitoring of motor starters, drives and other devices over a DeviceNet™ network.



CIO-777-PR Communication Module
Profibus interface capable of providing discrete control and monitoring of motor starters, drives and other devices over a Profibus network.



CIO-EN (non-POE) Communication Module
Modbus-TCP and Modbus-RTU interface capable of providing discrete control and monitoring of an overload relay over a Modbus network.



Communication Adapters
• RS485-RS232–Converter with cable & plug
• RS485-USB–Converter with cable & plug
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Specifications match industry standard.



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Frequency	50/60Hz
TC- Overcurrent Trip Class (777 Plus Series units)	02-60, J02-J60, L00-L60 or Off
TC- Overcurrent Trip Class (77C, 777 non-Plus Series units)	5, 10, 15, 20, 30 (J prefix enables jam protection feature)

Output Characteristics

Output Contact Rating (SPDT - Form C)	
Pilot duty rating	480VA @ 240VAC, B300
General purpose	10A @ 240VAC
Pilot duty rating for HVR models	470VA @ 600VAC, B600

General Characteristics

Ambient Temperature Range	
Operating	-20° to 70°C (-4° to 158°F)
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Current	±3% (<100 amps direct)
GF Current	±15%
Timing (777 Plus Series units)	±0.5 second
Timing (77C, 777 non-Plus Series units)	5% +1 second
Repeatability	
Voltage	±0.5% of nominal voltage
Current	±1% (<100 amps direct)
Maximum Input Power	10 W
Pollution Degree	3
Class of Protection	IP20
Relative Humidity	10-95%, non-condensing per IEC 68-2-3
Terminal Torque	7 in.-lbs.

Standards Passed

Electrostatic Discharge (ESD)	IEC 61000-4-2, Level 3, 6kV contact, 8kV air
Radio Frequency Immunity (RFI), Conducted	IEC 61000-4-6, Level 3 10V/m
Radio Frequency Immunity (RFI), Radiated	IEC 61000-4-3, Level 3 10V/m
Fast Transient Burst	IEC 61000-4-4, Level 3, 3.5kV input power
Short Circuit	100kA
Surge	
IEC	61000-4-5, Level 3, 2kV line-to-line; Level 4, 4kV line-to-ground
ANSI/IEEE	C62.41 Surge and Ring Wave Compliance to a level of 6kV line-to-line
Hi-potential Test	Meets UL508 (2 x rated V +1000V for 1 minute)
Vibration	IEC 68-2-6, 10-55Hz, 1mm peak-to-peak, 2 hours, 3 axis
Shock	IEC 68-2-27, 30g, 3 axis, 11ms duration, half-sine pulse

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UL	UL508, UL1053 (File #E68520)
CE	IEC 60947-1, IEC 60947-5-1
CSA	C22.2 No. 14

Maximum Conductor Size (with insulation) through 777/77C

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