Motor and Pump Protection Relays
77C Series

Description
The single-phase 77C unit is a fully-programmable, electronic overload relay designed to protect any motor drawing 2-800 full load A (external CTs are required above 90 A). Common applications include conveyor systems, HVAC equipment, saws and grinders, fan motors, and almost any pumping application. The 77C and 777-HVR-SP (family of products) are for single-phase 100-240 V ac applications.

All of the overload relays provide unsurpassed protection by combining overload, underload, and voltage in one unit. 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. These units also feature a communications network 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.

*Subtrol and DeviceNet are trademarks of their respective owners.

Features & Benefits

<table>
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<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
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<tbody>
<tr>
<td>Built-in display</td>
<td>Visual indication for programming, viewing real-time voltage or current, and last fault code</td>
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<tr>
<td>Programmable voltage and current settings</td>
<td>Allows usage on a wide range of systems</td>
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<tr>
<td>3 selectable restart options</td>
<td>Choose from automatic, semi-automatic, or manual to best meet individual application needs</td>
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<td>3 programmable restart delay timers</td>
<td>Program separate restart delay time for rapid cycle protection, motor cool down, and dry-well recovery</td>
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<tr>
<td>Remote display compatibility</td>
<td>Increases safety through remote display of real-time data and fault history. Aids with arc-flash safety regulations</td>
</tr>
<tr>
<td>Flexible reset</td>
<td>Reset can be done through pushbutton on relay or remotely with optional 777-MRSW or OL-Reset remote reset kit</td>
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</table>

Applications
- Conveyor systems
- HVAC equipment
- Saws and grinders
- Fan motors
Specifications

Motor and Pump Protection Relays
77C Series

Functional Characteristics

Frequency
50/60 Hz

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
  480 VA @ 240 V ac, B300
- General purpose
  10 A @ 240 V ac
- Pilot duty rating for HVR models
  470 VA @ 600 V ac, B600

General Characteristics

Ambient Temperature Range

- Operating
  -20 °C to 70 °C (-4 °F to 158 °F)
- Storage
  -40 °C to 80 °C (-40 °F to 176 °F)

Accuracy

- Voltage
  ±1 %
- Current
  ±3 % (<100 amps direct)
- GF Current
  ±15 %

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, 6 kV contact, 8 kV air

Radio Frequency Immunity (RFI)

- Conducted
  IEC 61000-4-6, Level 3 10 V/m
- Radiated
  IEC 61000-4-3, Level 3 10 V/m

Fast Transient Burst
IEC 61000-4-4, Level 3, 3.5 kV input power

Short Circuit
100 kA

Surge

IEC 61000-4-5, Level 3, 2 kV line-to-line; Level 4, 4 kV line-to-ground

ANSI/IEEE
C62.41 Surge and Ring Wave Compliance to a level of 6 kV line-to-line

Hi-potential Test
Meets UL 508 (2 x rated V +1000V for 1 minute)

Vibration
IEC 68-2-6, 10-55 Hz, 1 mm peak-to-peak, 2 hours, 3 axis

Shock
IEC 68-2-27, 30 g, 3 axis, 11 ms duration, half-sine pulse

Maximum Conductor Size
(with insulation) through 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

Certification & Compliance

UL
UL 508, UL 1053 (File #E68520)

CE
IEC 60947-1, IEC 60947-5-1

CSA
C22.2
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Accessories

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

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.

Ordering Information

<table>
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<tr>
<th>MODEL</th>
<th>LINE VOLTAGE</th>
<th>MOTOR FULL AMP RANGE</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>77C</td>
<td>100-240 V ac</td>
<td>2-800A (external CTs required above 90A)</td>
<td>Provides 480VA @ 240 V ac output SPDT relay contacts</td>
</tr>
<tr>
<td>77C-LR</td>
<td>100-240 V ac</td>
<td>1-9A only</td>
<td>Provides 480VA @ 240 V ac output SPDT relay contacts</td>
</tr>
<tr>
<td>777-HVR-SP</td>
<td>340-480 V ac</td>
<td>2-800A (external CTs required above 90A)</td>
<td>Provides 470VA @ 800 V ac output SPDT relay contacts. For systems with no control power transformer</td>
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Dimensions Inches (mm)

![Dimensions Diagram]
Simplified Wiring Diagram

TYPICAL WIRING DIAGRAM FOR MODEL 77C WITH MOTOR CONTROL

LITTELFUSE RECOMMENDS USING CTs THAT HAVE TERMINALS TO AID CONVENIENCE WHEN INSTALLING CTs.

NOTE: PHASES A & C ARE INACTIVE. USE PHASE B FOR ALL ACTIVE CURRENT MEASUREMENTS. CT SECONDARY MUST MAKE FIVE PASSES THROUGH THE PHASE B CONDUCTOR WINDOW.

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