

# Motor and Pump Protection Relays

## 77C Series

Single-Phase Current & Voltage Monitor



### 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

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

### Applications

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

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### Specifications

#### Functional Characteristics

<b>Frequency</b>	50/60 Hz
<b>TC- Overcurrent Trip Class</b> (77C, 777 non-Plus Series units)	5, 10, 15, 20, 30 (J prefix enables jam protection feature)

#### Output Characteristics

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

#### General Characteristics

<b>Ambient Temperature Range</b>	
<b>Operating</b>	-20 °C to 70 °C (-4 °F to 158 °F)
<b>Storage</b>	-40 °C to 80 °C (-40 °F to 176 °F)
<b>Accuracy</b>	
<b>Voltage</b>	±1 %
<b>Current</b>	±3 % (<100 amps direct)
<b>GF Current</b>	±15 %

<b>Timing</b> (77C, 777 non-Plus Series units)	5 % +1 second
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<b>Repeatability</b>	
<b>Voltage</b>	±0.5 % of nominal voltage
<b>Current</b>	±1 % (<100 amps direct)
<b>Maximum Input Power</b>	10 W
<b>Pollution Degree</b>	3
<b>Class of Protection</b>	IP20
<b>Relative Humidity</b>	10-95 %, non-condensing per IEC 68-2-3
<b>Terminal Torque</b>	7 in.-lbs.

#### Standards Passed

<b>Electrostatic Discharge (ESD)</b>	IEC 61000-4-2, Level 3, 6 kV contact, 8 kV air
<b>Radio Frequency Immunity (RFI)</b>	
<b>Conducted</b>	IEC 61000-4-6, Level 3 10 V/m
<b>Radiated</b>	IEC 61000-4-3, Level 3 10 V/m
<b>Fast Transient Burst</b>	IEC 61000-4-4, Level 3, 3.5 kV input power
<b>Short Circuit</b>	100 kA
<b>Surge</b>	
<b>IEC</b>	61000-4-5, Level 3, 2 kV line-to-line; Level 4, 4 kV line-to-ground
<b>ANSI/IEEE</b>	C62.41 Surge and Ring Wave Compliance to a level of 6 kV line-to-line
<b>Hi-potential Test</b>	Meets UL 508 (2 x rated V +1000V for 1 minute)
<b>Vibration</b>	IEC 68-2-6, 10-55 Hz, 1 mm peak-to-peak, 2 hours, 3 axis
<b>Shock</b>	IEC 68-2-27, 30 g, 3 axis, 11 ms duration, half-sine pulse
<b>Maximum Conductor Size</b> (with insulation) through 77C	0.65"
<b>Dimensions</b>	<b>H</b> 77.47 mm (3.05"); <b>W</b> 97.79 mm (3.85"); <b>D</b> 128.27 mm (5.05")
<b>Weight</b>	1.56 lbs. (24.96 oz., 707.6 g)
<b>Mounting Method</b>	Surface mount (4 - #8 screws) or DIN rail mount

### Certification & Compliance

<b>UL</b>	UL 508, UL 1053 (File #E68520)
<b>CE</b>	IEC 60947-1, IEC 60947-5-1
<b>CSA</b>	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.

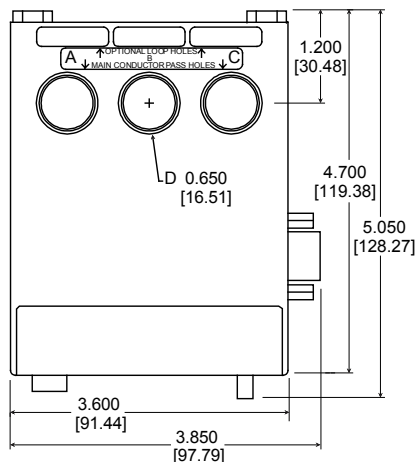
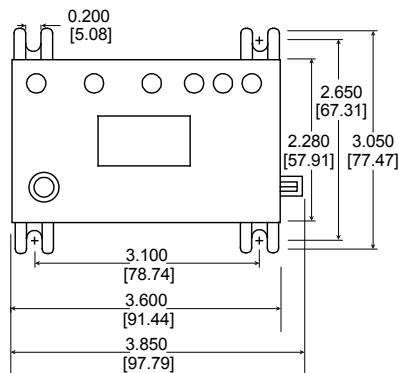
#### OL-RESET Manual Remote Reset Kit

Allows the 777 line of MotorSaver® and PumpSaver® products to be manually reset without opening the panel door.

### Ordering Information

MODEL	LINE VOLTAGE	MOTOR FULL AMP RANGE	DESCRIPTION
77C	100-240 V ac	2-800A (external CTs required above 90A)	Provides 480VA @ 240 V ac output SPDT relay contacts
77C-LR	100-240 V ac	1-9A only	Provides 480VA @ 240 V ac output SPDT relay contacts
777-HVR-SP	340-480 V ac	2-800A (external CTs required above 90A)	Provides 470VA @ 600 V ac output SPDT relay contacts. For systems with no control power transformer

### Dimensions Inches (mm)

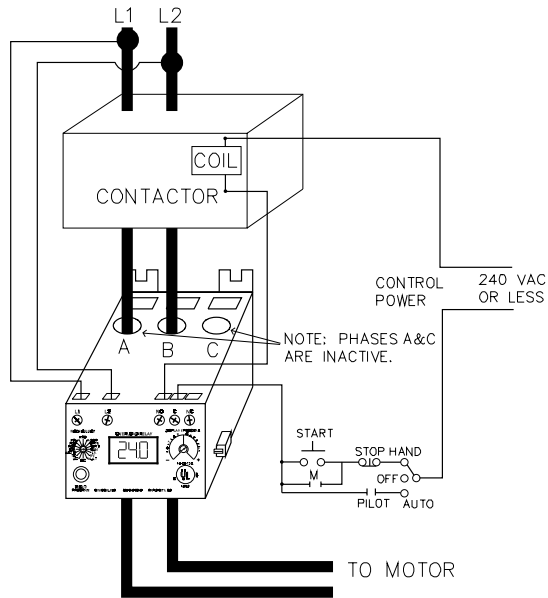


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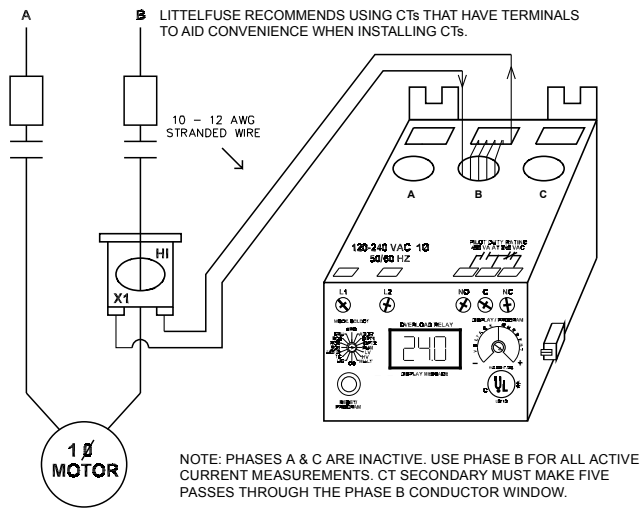
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### Simplified Wiring Diagram

TYPICAL WIRING DIAGRAM FOR MODEL 77C WITH MOTOR CONTROL



TYPICAL WIRING DIAGRAM FOR MODEL 77C WITH EXTERNAL CT



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