# **Voltage Monitoring Relays** 601 Series

### 3-Phase Voltage & Frequency Monitor







### **Description**

The 601 series is a fully-programmable voltage monitor designed to protect three-phase motors from loss of any phase (single-phasing), phase reversal, low- or high-voltage, voltage unbalance, low- or high-frequency, and rapid cycling. When a harmful condition is detected, the 601's output relay is deactivated after the specified trip delay. The output relay reactivates after power line conditions return to an acceptable level for the programmed restart delay (RD2). This monitor can be used as a stand-alone product or networked with an RM-1000, RM-2000, PLC, computer, or SCADA system.

Eleven setpoints are viewable with the three-digit LED display or from a networked device:

- low voltage
- high frequency
- high voltage
- RS485 address
- voltage unbalance
- trip delay for voltage/frequency faults
- low frequency
- trip delay for single-phase faults
- rapid-cycle timer (RD1)
- restart delay after all faults (RD2)
- type of restart after all faults (manual or automatic)

Six parameters are viewable while the motor is running:

- L1-L2 voltage
- average voltage
- L2-L3 voltage
- voltage unbalance (%)
- L1-L3 voltage
- frequency

When used with the RS485MS-2W communications module, the 601 can communicate with most Modbus RTU master devices. Voltage conditions can be monitored and setpoints can be changed remotely using Solutions software, an RM1000, RM2000, or other device.

#### **Features & Benefits**

FEATURES	BENEFITS
Built-in display	Provides real-time information and diagnostics to help with troubleshooting
Programmable voltage and frequency settings	Allows usage on wide range of systems
Two programmable restart delay timers	Program separate restart delay time for rapid cycle protection and motor cool down
Two programmable trip delay timers	One trip delay specifically for phase loss/single-phase fault condition and one trip delay for all other fault conditions
Programmable restart control	Choose between an adjustable automatic or manual restart to best meet individual application needs
Flexible reset	Reset options include push-button on relay or remote reset with optional 777-MRSW or OL-RESET remote reset kit
Remote display compatibility	Increases safety through remote display of real-time data and fault history without the need to open a cabinet. Aids with arc-flash safety regulations
Network communications capability	Compatible with RS-485 Modbus communications module



# **Voltage Monitoring Relays** 601 Series

# **Applications**

- Oil rigs
- Compressors and fans
- HVAC
- · Heat, well, and sump pumps
- Small conveyer motors

#### **Specifications**

#### **Input Characteristics**

Frequency 50/60 Hz

**Functional Characteristics** 

**Programmable Operating Points** 

**LV - Low Voltage Threshold** 170 V (450 V\*) - HV Setting **HV- High Voltage Threshold** LV Setting - 528 V (660 V\*)

VUB - Voltage Unbalance Threshold2-15% or offLF - Low Frequency Threshold35 Hz - HF SettingHF - High Frequency ThresholdLF Setting - 75 Hz

TD1 - Trip Delay for Voltage/

Unbalance/Frequency Faults 1–50 seconds

TD2 - Trip Delay for Single-Phase Faults 1–50 seconds

RD1 - Rapid-Cycle Timer 0, 2–500 seconds

RD2 - Restart Delay After All Faults 2–500 seconds

#RF - Type of Restart Manual or Automatic

**ADDR - RS-485 Address** A01-A99

**Fixed Reset Points** 

Overvoltage Rese97% of HV SettingLow Voltage Reset103% of LV SettingVoltage Unbalance ResetUB Setting -1%Low Frequency ResetLF Setting +0.6 HzHigh Frequency ResetHF Setting -0.6 Hz

**Output Characteristics** 

Output Contact Rating Pilot Duty 480 VA @ 240 V ac

**General Characteristics** 

**Temperature Range** -20° to 70 °C (-4° to 158 °F)

**Accuracy** 

 $\begin{tabular}{lll} \begin{tabular}{lll} \begin{$ 

**Transient Protection (Internal)** 2500 V for 10 ms

**Dimensions H** 77.47 mm (3.05"); **W** 97.79 mm (3.85"); **D** 128.27 mm (5.05")

**Weight** 1.2 lbs. (19.2 oz., 544.31 g)

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

The 601 can be preprogrammed prior to installation by applying at least 120 V to the L1 and L2 terminals.

# Certification & Compliance

UL	UL 508 (File #E68520)
CSA	C22.2 No. 14 (File #46510)



<sup>\*575</sup> V model

# **Voltage Monitoring Relays** 601 Series

#### **Accessories**

#### **RS485MS-2W Communication Module**

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

#### **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.

#### 777-MRSW Manual Remote Reset Kit

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

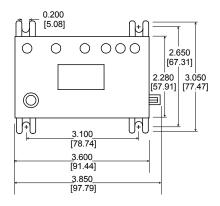
#### **OL-RESET Manual Remote Reset Kit**

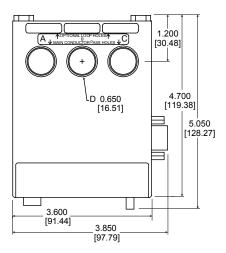
Allows the 777 line of MotorSaver® and PumpSaver® products to be manually reset without opening the panel door.

### **Ordering Information**

MODEL	LINE VOLTAGE	DESCRIPTION
601	190-480 V ac	Universal 3-Phase Voltage & Frequency Monitor
601575	500–600 V ac	Used primarily in Canada and NE USA where 575 V utility power services are common

#### **Dimensions Inches (mm)**

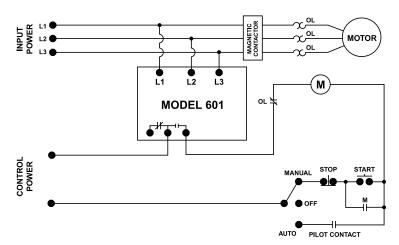




# **Voltage Monitoring Relays 601 Series**

## **Wiring Diagram**

MODEL 601 WITH MOTOR CONTROL



Disclaimer Notice — Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/product-disclaimer.

