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 voltage
- voltage unbalance
- low frequency
- high frequency
- RS485 address
- trip delay for voltage/frequency faults
- 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
- L2-L3 voltage
- L1-L3 voltage
- average voltage
- voltage unbalance (%)
- 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

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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 Threshold	2–15% or off
LF - Low Frequency Threshold	35 Hz - HF Setting
HF - High Frequency Threshold	LF 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 Rese	97% of HV Setting
Low Voltage Reset	103% of LV Setting
Voltage Unbalance Reset	UB Setting -1%
Low Frequency Reset	LF Setting +0.6 Hz
High Frequency Reset	HF 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	
Voltage	±1%
Timing	5% ±1 second
Repeatability Voltage	±0.5%
Maximum Input Power	5 W
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.

*575 V model

Certification & Compliance

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

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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.

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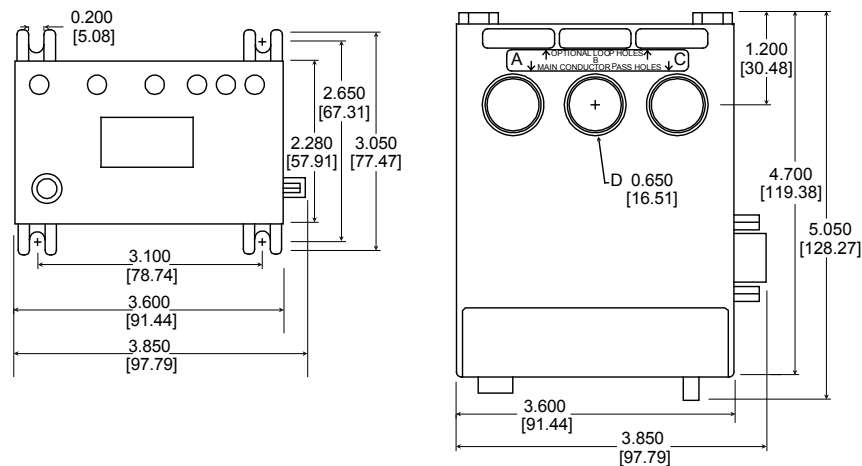
OL-RESET Manual Remote Reset Kit
Allows the 777 line of MotorSaver® and PumpSaver® products to be manually reset without opening the panel door.

Ordering Information

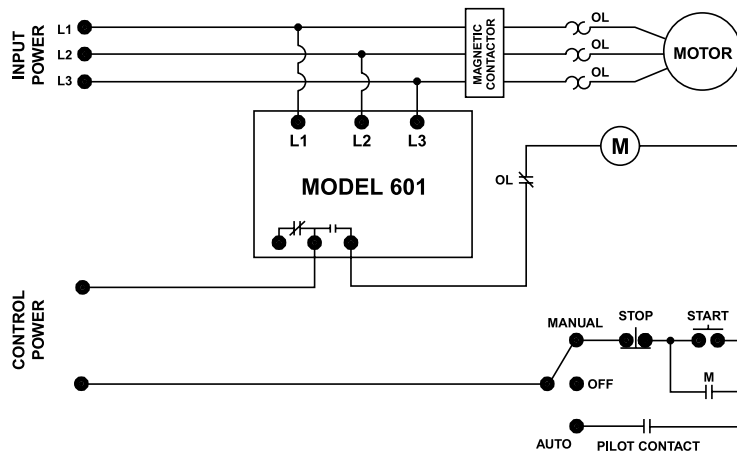| MODEL	LINE VOLTAGE	DESCRIPTION
601	190–480 V ac	Universal 3-Phase Voltage & Frequency Monitor
601575	500–600 V ac	Used primarily in Canada and NE USA where 575 V utility power services are common

Dimensions Inches (mm)

Wiring Diagram

MODEL 601 WITH MOTOR CONTROL

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Specifications are subject to change without notice.
Revised: 07/11/2023

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