

# MODEL 23

## 3-Phase Monitor with Adjustable Trip & Restart Delays

- Monitors for Phase Loss, Phase Reversal, Over/Under Voltage and Voltage Unbalance
- Three Voltage Options
- LED Status Indicators
- 2 Contacts ( 1 SPDT, 1 N.O. SPST)
- 8-Pin Socket Mount

### DESCRIPTION

The Model 23 is a microcontroller-based universal 3-phase monitor for protecting 3-phase motors from abnormal power conditions. It can detect under voltage, over voltage, voltage unbalance, reverse phase, and single-phasing even when regenerated voltage is present. The Model 23 includes adjustable trip and restart delays to prevent nuisance tripping during power fluctuations and short cycling in compressor applications. The LED status indicators and adjustment pots for Voltage Adjustment, % Unbalance, Restart Delay and Trip Delay are mounted on the front of the unit for easy access.

The Model 23 has 2 contacts (1 SPDT, 1 Normally Open SPST). It can be used on either Wye or Delta systems and does not require a neutral connection.

All versions of the Model 23 are available with optional gold flashed silver contacts for low current applications.

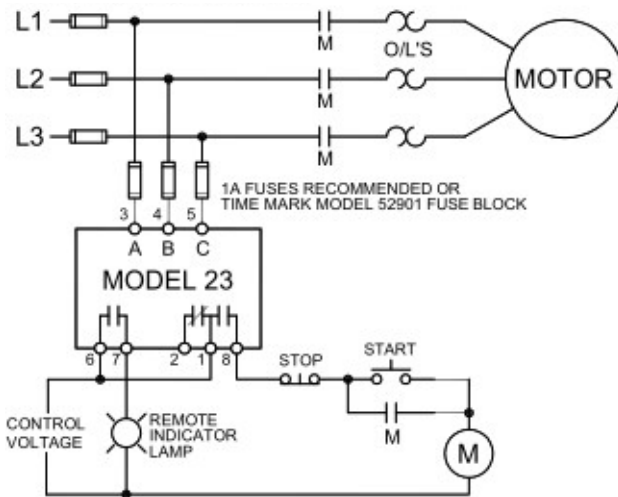


### SPECIFICATIONS

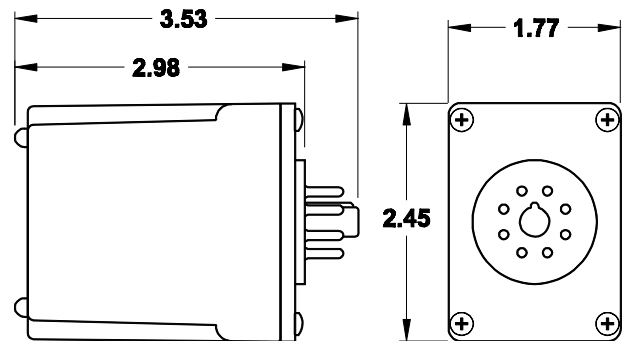
Auto Reset Models	23	23-L	23-H
Operating Voltage	190-480 VAC	95-120 VAC	475-600 VAC
Power Consumption	3.7W at 480V	3.7W at 120V	4.5W at 600V
Auto Ranges	Yes	No	
Frequency	50/60Hz		
Type of Measurement	RMS		
Under Voltage Trip Reset	(% of setpoint) 90% ±1% 93% ±1%		
Over Voltage Trip Reset	(% of setpoint) 110% ±1% 107% ±1%		
Voltage Unbalance Trip Reset	(conforms to NEMA) 2-8%, adjustable Trip setting minus 0.7%		
Trip Delay Time Over, Under, & Unbalanced Single-Phasing Faults Unbalance > 15%	1-30 sec., adjustable 1 sec., fixed 1 sec., fixed		
Restart Delay	1-500 sec., adjustable		
Reset Type	Automatic		
Output Contacts	1 SPDT 1 SPST (N.O.) 8A at 240VAC resistive		
Operating Temp	- 20° to +140° F		
Humidity Tolerance	0-97% w/o condensation		
Enclosure	Noryl plastic		
Mounting	8-Pin Socket (**sold separately)		
Weight	9.5 oz.		
Low Current Options	Models ordered with suffix "SG" have silver with gold flash contacts		

\*\*Order 8-pin socket number 51x120

### TYPICAL APPLICATION



### DIMENSIONS



Telephone: Main - (918) 438-1220  
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# MODEL 23

# Universal 3-Phase Monitor

READ ALL INSTRUCTIONS BEFORE INSTALLING, OPERATING OR SERVICING THIS DEVICE.  
KEEP THIS DATA SHEET FOR FUTURE REFERENCE.

## GENERAL SAFETY

POTENTIALLY HAZARDOUS VOLTAGES ARE PRESENT AT THE TERMINALS OF THE MODEL 23.  
ALL ELECTRICAL POWER SHOULD BE REMOVED WHEN CONNECTING OR DISCONNECTING WIRING.  
THIS DEVICE SHOULD BE INSTALLED AND SERVICED BY QUALIFIED PERSONNEL.

## Installation Instructions

### WARNING

IN APPLICATIONS WHERE VOLTAGES IN EXCESS OF 300VAC ARE TO BE MONITORED, BE CERTAIN TO USE THE TIME MARK MODEL 51X120 8-PIN SOCKET, OR AN EQUIVALENT 600VAC RATED SOCKET.

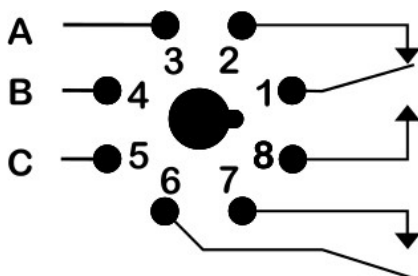
### INSTALLATION

Mount the 8-pin socket in a suitable enclosure. A NEMA-1 rated enclosure, designed for socket-mounted relays is available from Time Mark Corporation.

Connect 3-phase power to terminals 3, 4, and 5 on the socket. Connect the load control wiring to the appropriate terminals on the socket.

**NOTE:** When installing the Model 23 monitor in areas of high humidity or contamination, it is recommended that the base area and all exposed metal parts of the socket be coated liberally with a good quality silicone grease, such as Dow Corning DC-4 or DC-4X. Insert the unit into the socket and wipe off excess grease around the base. This will prevent the entrance of moisture and other contaminants into the base and socket areas.

### PIN DIAGRAM



### OPERATION

Set the VOLTAGE adjustment to the nominal operating voltage. Model 23 will auto-range to either the 190-240VAC or 380-480VAC scale. Set the UNBALANCE, RESTART, and TRIP adjustments as required for the application.

### OPERATION (cont'd)

The relay contacts will transfer after applying correct voltage and phase rotation for the length of the restart delay. The green LED will blink during the restart delay and will then remain on indicating the relay contacts have transferred.

#### LED STATUS

UNDER	ON CONTINUOUSLY	RED
OVER		
UNBAL / SINGLE PH		
REVERSE PHASE		
RUN	ON CONTINUOUSLY	GREEN
RESTART DELAY		

The status of the 3-phase system is indicated by the red and green LEDs as shown in the LED Status chart:

### TROUBLESHOOTING

Should the Model 23 Monitor fail to operate properly, check that all three voltages are present, and are of the correct voltage level and phase rotation (a Model 188 Phase Sequence Detector could be used to verify phase rotation). Check all fuses and verify that all wiring connections are correct. If problems persist, contact your local Time Mark Distributor or the factory for assistance (Monday-Friday, 8 a.m. to 5 p.m. CST)

### WARRANTY

This product is warranted to be free from defects in materials and workmanship, and is covered by our exclusive **5-year Unconditional Warranty**. Should this device fail to operate for any reason, we will repair it for five years from the date of manufacture. For complete warranty details, see the *Terms and Conditions of Sales* page in the front section of the Time Mark catalog or contact Time Mark at 1-800-862-2875.

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