

## 3-PHASE MONITOR RELAYS

Time Mark has a variety of 3-phase relays that can offer protection against phase loss, phase reversal, phase unbalance and under/over voltage. Phase-angle and voltage sensing circuits are used to detect phase loss even when regenerative loads cause little measurable voltage reduction between phases. All models feature automatic reset.

NEW!

| MODEL    | PHASE |      | VOLTAGE |      |      | DELAY |         | MAN. RESET | NOM. AC VOLTAGES                      |         |     |     |     | CONTACTS    | MOUNT       | UL or CSA* |
|----------|-------|------|---------|------|------|-------|---------|------------|---------------------------------------|---------|-----|-----|-----|-------------|-------------|------------|
|          | LOSS  | SEQ. | LOW     | HIGH | BAL. | TRIP  | RESTART |            | 120                                   | 208/240 | 380 | 480 | 575 |             |             |            |
| 15       |       | X    |         |      |      |       |         |            |                                       | X       |     | X   |     | Special (2) | Surface     |            |
| 158B(R)  | X     | X    | X       |      |      |       | (Fixed) |            | X                                     | X       | X   | X   |     | SPDT        | Surface/DIN |            |
| 18       | X     | X    | X       |      |      | X     | X       |            | X                                     | X       | X   | X   |     | SPDT        | Surface/DIN |            |
| 19       | X     | X    | X       |      |      | X     | X       |            | X                                     | X       | X   | X   |     | SPDT        | 8-Pin       |            |
| 20       | X     | X    | X       | X    | X    | X     | X       | X          | X                                     | X       | X   | X   | X   | SPDT        | Surface/DIN | X          |
| 200      |       |      |         |      | X    | X     |         |            | X                                     | X       | X   | X   | X   | DPDT        | Surface     | X          |
| 2002Y    |       |      |         |      | X    | X     |         |            | X                                     | X       | X   | X   | X   | DPDT        | Surface     |            |
| 21       | X     | X    | X       | X    | X    | X     | X       | X          | X                                     | X       | X   | X   | X   | SPDT        | 8-Pin       | X          |
| 246      | X     | X    | X       | X    |      |       |         |            | X                                     | X       | X   |     |     | SPDT        | 8-Pin       | X          |
| 25       | X     | X    | X       | X    | X    | X     | X       | X          | 24V DC Powered;<br>AC Range: 80V-550V |         |     |     |     | DPDT        | DIN         | X          |
| 2500/01  | X     | X    | X       |      | X    | X     |         |            | X                                     | X       | X   | X   | X   | SPDT        | Surface     | X          |
| 2500/01D | X     | X    | X       |      | X    | X     |         |            | X                                     | X       | X   | X   | X   | DPDT        | Surface     | X          |
| 252      | X     | X    | X       |      |      |       |         |            | X                                     | X       | X   | X   |     | SPDT, SPST  | 8-Pin       | X          |
| 2522     | X     | X    | X       |      |      |       |         | X          | X                                     | X       |     |     |     | DPDT        | 11-Pin      | X          |
| 253      |       | X    |         |      |      |       |         |            |                                       | X       | X   | X   |     | SPDT        | 8-Pin       | X          |
| 2532     |       | X    |         |      |      |       |         |            |                                       | X       | X   | X   |     | SPDT        | Surface     | X          |
| 257/258  | X     | X    | X       |      |      |       |         | X          | X                                     | X       | X   | X   |     | SPDT        | 8-Pin       | X          |
| 259      | X     | X    | X       |      |      | X     | X       |            | X                                     | X       | X   | X   | X   | DPDT        | Surface     |            |
| 2594     | X     | X    | X       |      |      |       |         |            | X                                     | X       | X   | X   | X   | DPDT        | Surface     |            |
| 263      | X     | X    | X       |      |      |       |         | X          | X                                     | X       | X   | X   | X   | SPDT        | Surface     | X          |
| 264      | X     | X    | X       |      |      | X     |         |            | X                                     | X       | X   | X   | X   | SPST(2)     | Surface     |            |
| 2642     | X     | X    | X       |      |      | X     |         | X          | X                                     | X       | X   | X   | X   | DPDT        | Surface     | X          |
| 2644(R)  | X     | X    | X       |      |      | X     | (Fixed) | X          | X                                     | X       | X   | X   | X   | DPDT        | Surface     | X          |
| 265      | X     | X    | X       |      |      |       | X       |            | X                                     | X       | X   | X   | X   | SPDT        | Surface     | X          |
| 2652     | X     | X    | X       |      |      | X     | X       | X          | X                                     | X       | X   | X   | X   | DPDT        | Surface     | X          |
| 269(R)   | X     | X    | X       | X    |      | X     | (Fixed) |            | X                                     | X       | X   | X   |     | SPDT        | Surface     | X          |



## TRANSFORMERS & TRANSDUCERS

Our current transformers are available in a variety of amp ranges for single phase and 3-phase.

Our AC transducers are designed to accept 0-5 amp AC current input and provide proportional DC current or voltage output.

| MODEL  | DESCRIPTION   | UL or CSA* |
|--------|---|------------|
| 276A   | Open frame type CT with ratios of 10:5 amps to 40:5 amps      | x          |
| 276B   | Ring type CT with ratios of 50:5 amps to 1200:5 amps          | x          |
| 276B-3 | 3-phase CT with ratios 50:5 to 1200:5 amps; isolated outputs  | x          |
| 278    | AC current transducer; 115VAC or 230VAC; 4-20mA output; 8-Pin | x          |
| 2780   | AC current transducer; 0-5 amp input; 0-10 VDC output; 8-Pin  | x          |

\* See individual data sheets for any special conditions or requirements on the UL or CSA Certified models.



## ALTERNATING RELAYS

Alternating Relays are used to equalize or optimize the run time of multiple pumps or compressors. Options are available for 1, 2, 3 or 4 motor/pump configurations.



| MODEL     | CONTACTS | 12V   | 24V   | 120V  | 240V  | MOUNT   | UL or CSA* |
|-----------|----------|-------|-------|-------|-------|---------|------------|
| 261D (T)  | DPDT     | AC/DC | AC/DC | AC/DC | AC/DC | 11-Pin  | x          |
| 261DX (T) | DPDX     | AC/DC | AC/DC | AC/DC | AC/DC | 8-Pin   | x          |
| 261S (T)  | SPDT     | AC/DC | AC/DC | AC/DC | AC/DC | 8-Pin   | x          |
| 2611      | DPST     |       | AC/DC | AC/DC |       | 8-Pin   | x          |
| 271       | SPST     |       |       | AC    |       | Surface |            |
| 441       | SPST     |       |       | AC    | AC    | Surface |            |
| 442       | SPST     |       |       | AC    | AC    | Surface |            |
| 471       | SPST     | AC/DC | AC/DC | AC/DC | AC/DC | Surface |            |

## VOLTAGE & FREQUENCY MONITORS

Time Mark Voltage Monitors detect voltage levels above or below the selected set point. Voltage Band Monitors energize relays between set points.



| MODEL    | FUNCTION             | VOLTAGE RANGE                         | MOUNT  | CONTACTS | UL or CSA* |
|----------|----------------------|---------------------------------------|--|----------|------------|
| 16-1-L   | Over & Under         | 12-30V AC/DC                          | Model 16:<br>8-Pin = SPDT(2)<br>Surface = SPDT |          |            |
| 16-1-H   | Over & Under         | 30-277V AC/DC                         |  |          |            |
| 16-3-L   | Pick Up/Drop Out     | 12-30V AC/DC                          |  |          |            |
| 16-3-H   | Pick Up/Drop Out     | 30-277V AC/DC                         |  |          |            |
| 160B (R) | Under or Over        | 120/240/480 VAC                       | Surface  | SPDT     |            |
| 26       | Over & Under         | 24V DC Powered;<br>AC Range: 80V-550V | DIN  | SPDT(2)  | x          |
| 260      | Under or Over        | Multiple VAC & VDC Options            | 8-Pin  | SPDT     | x          |
| 2601     | Under or Over        | Multiple VAC & VDC Options            | 8-Pin  | SPDT     |            |
| 2602     | Under/Quick Drop Out | 120VAC                                | Surface  | DPDT     |            |
| 2621     | Pick Up/Drop Out     | Multiple VAC & VDC Options            | 8-Pin  | SPDT     |            |
| 2628     | Under or Over        | 15-260V AC/DC                         | 8-Pin  | SPDT     |            |
| 2629     | Under or Over        | 15-260V AC/DC                         | 8-Pin  | DPDT     |            |
| 268      | Over & Under         | 90-140 VAC                            | 8-Pin  | SPDT     |            |
| 2681     | Over & Under         | Multiple VAC & VDC Options            | 8-Pin  | SPDT     |            |
| 29       | Frequency Monitor    | 24V DC Powered;<br>AC Range: 80V-550V | DIN  | SPDT(2)  | x          |

## ACCESSORIES & INSTRUMENTATION



| MODEL     | DESCRIPTION   | UL or CSA* |
|-----------|---|------------|
| Sockets   | 8-Pin: 10A@600VAC 11-Pin: 10A@300VAC 12-Pin: 10A@600VAC           | x          |
| 108A      | Line voltage & phase sequence detector                            |            |
| 108C      | Motor rotation indicator  |            |
| 2480      | Extend the trip range of our 480V 3-phase monitors to 528VAC      |            |
| 2481      | Extends voltage range of Model 252B 3-Phase Monitor to 635VAC     |            |
| 280 & 281 | AC/DC General Purpose Relays: 280=DPDT; 8-Pin 281=3PDT; 11-Pin    | x          |
| 680       | Voltage/Current Simulator: Outputs 4-20 mA, 0-20mA, 0-5V or 0-10V |            |
| HDC-1     | Hold Down Clamp: Secures socket mounted relays from vibration     |            |

## CURRENT MONITORS

Current Monitors detect over-current, under-current or current unbalance on single-phase or 3-phase lines. Current transformers are used when current exceeds 5 amps. Models available for socket, surface or DIN rail mounting.

| MODEL | PH. | FUNCTION              | MOUNT       | DELAY |       | VOLTAGE           |      |      |      |      | RANGE(S)             | UL or CSA* |
|-------|-----|-----------------------|-------------|-------|-------|-------------------|------|------|------|------|----------------------|------------|
|       |     |                       |             | TRIP  | START | 24V               | 120V | 208V | 220V | 240V |                      |            |
| 171   | 1   | Under Current Only    | 8-Pin       | X     | X     |                   | AC   |      |      |      | 0.1 - 1A             |            |
| 173   | 1   | Under or Over Current | Surface/DIN |       |       |                   | AC   |      |      | AC   | 1 - 5A/5-25A         |            |
| 1732  | 1   | Under or Over Current | Surface/DIN |       |       | No Power Required |      |      |      |      | 25 -150A             |            |
| 27    | 1   | Under & Over Current  | DIN         | X     | X     | DC                |      |      |      |      | 0 - 5A               | x          |
| 272   | 3   | Current Unbal. 2-25%  | Surface     | X     |       | AC                | AC   |      |      |      | 1 - 5A               |            |
| 2722  | 3   | Current Unbal. 2-25%  | Surface     | X     |       | AC                | AC   | AC   | AC   | AC   | 1 - 5A               | x          |
| 273   | 1   | Under or Over Current | 8-Pin       |       |       | AC                | AC   |      |      |      | 0.5 - 5A             | x          |
| 2732  | 1   | Under or Over Current | Surface     | X     |       | AC                | AC   | AC   | AC   | AC   | 1 - 5A               |            |
| 2734  | 1   | Over Current Only     | Surface     | X     |       | AC                | AC   |      |      |      | 2 - 20A,1-10A,0.5-5A |            |
| 274   | 3   | Over Current Only     | Surface     | X     |       | AC                | AC   | AC   | AC   | AC   | 1 - 5A               |            |
| 2742  | 3   | Under or Over Current | Surface     | X     |       | AC                | AC   | AC   | AC   | AC   | 1 - 5A               |            |
| 2744  | 3   | Over Current Only     | Surface     |       | X     | AC                | AC   | AC   | AC   | AC   | 1 - 5A               |            |
| 275   | 1   | Over Current Only     | Surface     | X     |       | AC                | AC   |      |      |      | 1 - 5A               |            |
| 279   | 1   | DC Current Monitor    | 8 or 11 Pin | X     |       | AC                | AC   |      |      |      | 1 - 10A DC           |            |
| 2730  | 1   | Under & Over Current  | Surface     | X     | X     | AC                | AC   | AC   | AC   | AC   | 1 - 5A               |            |



## PUMP & LIQUID LEVEL CONTROLS

Pump and Liquid Level Controls protect pumps and provide liquid level control for pumping systems. Controllers monitor levels using transducers, float switches and bubbler-type sensors. Different versions and combinations can provide alternation, HOA controls, run time meters and alarm outputs. Select versions have communications capability.

| MODEL   | DESCRIPTION  | UL or CSA* |
|---------|--|------------|
| 403     | Duplex level controller; Provides alternation of pumps   |            |
| 4042    | Liquid level controller with 4 set points  | x          |
| 4052    | Pump-Down controller for duplex alternation; Built-in communications   | x          |
| 4062    | Pump-Up controller for duplex alternation; Built-in communications   | x          |
| 4082    | Liquid level controller with 8 set points  | x          |
| 409D    | Liquid level controller; 11-Pin socket mounted   |            |
| 422     | Detects motor over/under load; Trip & restart delays; Use with 1 or 3-phase pumps  | x          |
| TMC-430 | Controls 2 or 3 pumps with a 4-20mA input or 2 pumps with a 4-20mA input and backup floats; Graphic display shows current depth, set-points, date/time and alarm status; Built-in Communications |            |
| 450     | Pressure transducer; 0-15 psi input; 4-20 mA output  | x          |
| 460D    | Switch-to-Loop Converter; Less expensive than a transducer & works with float switches; LED Loop Output Indicator (4-20mA)   |            |
| 4000    | Surface Mount Kit: Enclosures for Models 403, 404, 4042, 4052, 4062 and 408  |            |

\* See individual data sheets for any special conditions or requirements on the UL or CSA Certified models.



## SPECIAL CONTROLS

Time Mark manufactures many types of specialized devices. These include Capacitor Trip Devices, Motor Load Monitors and Two-Hand Control Modules.

| MODEL | DESCRIPTION   | UL or CSA* |
|-------|---|------------|
| 295   | Capacitor Trip Device; Operates shunt trip breakers; 120VAC or 240VAC   |            |
| 410   | Auto-Charged Capacitor Trip Device with Battery; 120VAC or 240VAC   | x          |
| 412   | Automatic Reverse Controller; Up to 5 forward-reverse cycles; Push-button simulator/tester                                |            |
| 421   | Over/Under Motor Load Monitor; Monitors true power (Voltage x Current x Power Factor); Adjustable trip and restart delays | x          |
| 553   | Re-Acceleration Relay for Undervoltage Control; Allows momentary power outage without causing reset condition             |            |
| 850   | Two-Hand Control Module; AC or DC versions; 11-Pin; Installs into existing control panel                                  |            |



## TIME DELAY RELAYS

Time Mark Corporation offers a wide variety of single and multi-function industrial timers under our "Signaline" brand to help you manage and protect your valuable equipment.



| MODEL   | FUNCTION                  | VOLTAGE  | TIMING RANGE  | MOUNT   | CONTACTS    | UL or CSA* |
|---------|---------------------------|--|---|---------|-------------|------------|
| 30      | High Voltage Timer        | 240/480VAC                                     | 4 ranges (0.1 Sec. - 1023 Hr.)  | Surface | DPDT (600V) |            |
| 300     | Programmable Timer        | L = 10-28V AC/DC<br>H = 40-260V AC/DC          | 4 ranges (0.15 Sec. - 64 Min.)  | 8-Pin   | SPDT        | x          |
| 301     | Programmable Timer        |  | 4 ranges (0.15 Sec. - 64 Min.)  | 11-Pin  | DPDT        | x          |
| 303     | On Delay/Interval Timer   |  | 8 ranges (1-900 Sec.)   | 8-Pin   | DPDT        | x          |
| 330/360 | Operate Delay Timer       |  | 33X, 39X:<br>1 - 10 Sec.<br>1 - 60 Sec.<br>1 - 180 Sec.<br>1 - 300 Sec.<br><br>36X: 38X<br>0.1-102.3 Sec.<br>1-1023 Sec.<br>1-1023 Min. | 8-Pin   | DPDT        | x          |
| 331/361 | Release Delay Timer       |  |   | 11-Pin  | DPDT        | x          |
| 332/362 | Interval Timer            |  |   | 8-Pin   | DPDT        | x          |
| 333/363 | Instant & Operate Delay   |  |   | 8-Pin   | SPDT(2)     | x          |
| 334/364 | Delayed One-Shot Timer    |  |   | 8-Pin   | DPDT        | x          |
| 335/365 | Retriggerable One-Shot    |  |   | 11-Pin  | DPDT        | x          |
| 338/368 | Recycle Timer - Off First |  |   | 8-Pin   | DPDT        | x          |
| 358/388 | Recycle Timer - On First  |  |   | 8-Pin   | DPDT        | x          |
| 392     | Interval/Lockout Timer    |  |   | 8-Pin   | SPDT        | x          |
| 310     | Programmable Timer        | 20-28VAC & 20-32 VDC or 105-130VAC & 95-125VDC | 4 ranges (0.15 Sec. - 64 Min.)  | 11-Pin  | SPDT        |            |
| 339     | On/Off Delay Relay        | 3 options (20-255 VAC/VDC)                     | 4 options (10-300 Sec.)   | 8-Pin   | DPDT        |            |

\* See individual data sheets for any special conditions or requirements on the UL or CSA Certified models.