407B 1/ 16 DI N Multi-Mode Timer


Downloadable Files:
407B Series

- Selectable On-Delay/Off-Delay/Interval Timing Modes
- Separate Start Input
- Output Contacts rated 10A at 120/240 VAC and 30 VDC
- Six Timing Ranges in a single unit: 1 and 10 sec., min., and hours 5 and $50 \mathrm{sec} ., \mathrm{min}$., and hours
- Universal Power Supply; 24-240 VAC and 24 VDC
- $48 \mathrm{~mm}^{2}$ DIN Standard housing
- Large and easy to read dial shows decimal points
- Round (octal) socket mount or mount in panel cutout
- Watertight when panel mounted
- Range and Mode select are tamper proof when panel mounted
- Unique flashing cycle progress indication


## cinus <br> 

Product Detail:
Multiple Timing Modes: The 407B is available with selectable On-Delay, Off-Delay or Interval timing modes. These timing modes energize a set of DPDT output contacts. When in the On-Delay mode, the 407B begins timing when the timer is energized. In On-Delay mode, the contacts transfer at time out. When in the Off-Delay mode, the 407B begins timing when the Start input is de-energized. In Off-Delay mode, the contacts transfer at time out. When in the Interval mode, the contacts transfer when the timer is energized. In Interval mode, the contacts release at time out.
Universal Power Supply: All 407B timers can be powered using 24-240
VAC or 24 VDC power, greatly simplifying ordering and inventory management of replacement units.
High Accuracy: The 407B's timing circuit is not a simple RC circuit. It utilizes the sophistication of a proprietary integrated circuit that includes counting technology along with a stable oscillator to provide repeatable time delays.
1/ $\mathbf{1 6}$ DIN Housing: The $48 \mathrm{~mm}^{2}$ ( $1 / 16$ DIN) housing is compact and is watertight when panel mounted. The 407B is mounted in an 11-pin round socket. With an optional mounting clip, the 407B can be panel mounted. The Dial on the 407B is extra large and is easy to read. When fractional ranges are selected, decimal points are clearly indicated.
The Mode select and Range select switches are located on the side of the unit, so that when panel mounted, these switches are not accessible to the operator. This tamper proof feature prevents unauthorized or hazardous changes to the timing mode and range from being made. Cycle Progress Indication: The 407B LED indicator provides a unique and effective method of cycle progress indication. Off before timing, the LED blinks at an ever increasing rate as the cycle progresses; once every $3-1 / 2$ seconds during the first $10 \%$ of the cycle, twice during the second $10 \%$, and so on. At time out, the LED pulses at a high rate. (In the 1, 5, 10 and 50 second ranges, the LED is Off before timing, steady On during timing, and pulsing On after time-out).

## Part Numbers:

Purchase Details:

|  |
| :---: |
| Product Contact: |
| Sales Contact $\quad$ Technical Contact |

Specifications:

| Models | 407B100F3X | On Delay, Off Delay, Interval Timing with (1) DPDT relay (1 or 10 SEC/MIN/ HRS |
| :---: | :---: | :---: |
|  | 407B500F3X | On Delay, Off Delay, Interval Timing with (1) DPDT relay ( 5 or 50 SEC/MIN/ HRS) |
|  | Both models available in 6 ranges from 1 sec. to 10 hrs. or 5 sec . to 50 hrs . |  |
|  | Rated 10 AMPS resistive at 30 VDC or 250 VAC (or less) 1/8 HP @120 VAC 1/4 HP @ 240 VAC, 240 VA @ 240 VAC |  |
| Rating | LIFE: 10 million operation with no load 100,000 operations with: 10 AMPS at 30 VDC (or less) or 10 AMPS at 250 VAC (or less) |  |
| Contact Material | Silver Cadmium Oxide |  |
| Temperature Rating | 0 to $122^{\circ} \mathrm{F}\left(-18^{\circ}\right.$ to $\left.50^{\circ} \mathrm{C}\right)$ |  |
| Noise I mmunity | In addition, the 407B will withstand a voltage surge of 4500 volts for $50 \mu \mathrm{sec}$. without damage. |  |
|  | Plug-in 11-Pin round base |  |
| Mounting | Options: Surface mounting socket DIN rail mounting socket Panel-mounting adapter kit Plug-on socket kit |  |
|  | Universal power supply reverse polarity protected Unit will accept power from 24 to 240 VAC, 50 or $60 \mathrm{~Hz},(+10 \%,-20 \%) 24$ VDC ( $+20 \%,-20 \%$ ) |  |
|  | AC | Inrush - 1.5 <br> Amps <br> Power <br> required - <br> 1.2 watts |
| Power <br> Requirements |  |  |



[^0]Multiple Timing Modes: The 407B is available with selectable ON-Delay, OFF-Delay or Interval timing modes. These timing modes energize a set of DPDT output contacts. When in the ON-Delay mode, the 407B begins timing when the timer is energized. In ON-Delay mode, the contacts transfer at time out. When in the OFF-Delay mode, the 407B begins timing when the Start input is de-energized. In OFF-Delay mode, the contacts transfer at time out. When in the Interval mode, the contacts transfer when the timer is energized. In Interval mode, the contacts release at time out.
Universal Power Supply: All 407B timers can be powered using 24-240 VAC or 24 VDC power, greatly simplifying ordering and inventory management of replacement units.
High Accuracy: The 407B's timing circuit is not a simple RC circuit. It utilizes the sophistication of a proprietary integrated circuit that includes counting technology along with a stable oscillator to provide repeatable time delays.

1/16 DIN Housing: The $48 \mathrm{~mm}^{2}$ ( $1 / 16$ DIN) housing is compact and is watertight when panel mounted. The 407B is mounted in an 11-pin round socket. With an optional mounting clip, the 407B can be panel mounted.

The Dial on the 407B is extra large and is easy to read. When fractional ranges are selected, decimal points are clearly indicated.

The Mode select and Range select switches are located on the side of the unit, so that when panel mounted, these switches are not accessible to the operator. This tamper proof feature prevents unauthorized or hazardous changes to the timing mode and range from being made.

Cycle Progress Indication: The 407B LED indicator provides a unique and effective method of cycle progress indication. Off before timing, the LED blinks at an ever increasing rate as the cycle progresses; once every $3-1 / 2$ seconds during the first $10 \%$ of the cycle, twice during the second $10 \%$, and so on. At time out, the LED pulses at a high rate. (In the 1,5, 10 and 50 second ranges, the LED is OFF before timing, steady ON during timing, and pulsing ON after time-out).

## OPERATION

Timing begins when the start switch is closed (ON-delay and INT modes) or opened (OFF-delay mode). This starts an oscillator which runs at a frequency determined by the time setting. A fixed number of counts from the oscillator determines the end of the timing cycle. The time required to accomplish this depends upon the oscillator frequency. During timing, An LED located on the dial face blinks. For the first 10\% of the cycle, the LED repeatedly blinks once followed by a pause. For the second $10 \%$, it blinks twice and so on indicating the cycle progress. The LED flashes rapidly and continuously after time out.
ON-DELAY MODE: At time out, the DPDT relay transfers its contacts. These contacts remain transferred until the start switch is opened or power is removed by some other means.
INTERVAL MODE: When the start switch is closed, the DPDT relay transfers its contacts. The contacts remain transferred until time out. The timer will not start again until the start switch is opened or power is removed by some other means. The 407B then resets and is ready for another cycle.

OFF-DELAY MODE: Power must be applied to the timer before and during timing (terminals \#10 \& 2). Upon closure of the start switch, the DPDT relay transfers its contacts. The timing begins when the start switch is opened. The relay remains energized during timing. At time out, the relay de-energizes.

- Selectable ON-Delay/OFF-Delay/Interval Timing Modes
- Separate Start Input
- Output Contacts rated 10A at 120/240 VAC and 30 VDC
- Six Timing Ranges in a single unit
- 1 and 10 SEC, MIN, and hours 5 and 50 SEC, MIN, and hours
- Universal Power Supply; 24-240 VAC and 24 VDC
- $48 \mathrm{~mm}^{2}$ DIN Standard housing
- Large and easy to read dial shows decimal points
- Round (octal) socket mount or mount in panel cutout
- Watertight when panel mounted
- Range and Mode select are tamper proof when panel mounted
- Unique flashing cycle progress indication

The 407B Directly Replaces 407A.

Special note for Off-Delay operation: When operated from AC, the start switch must be of a dry contact type such as a relay contact or mechanical switch. When operated from DC, the start switch can be a dry contact type such as a relay contact or mechanical switch. In addition, a solid-state device may be used as long as its saturation voltage drop is less than 1.5 VDC at 50 mA .

SPECIFICATIONS

| MODELS | 407B100F3X | ON-Delay, OFF-Delay, Interval Timing with (1) DPDT relay (1 or 10 SEC/MIN/HRS |
| :---: | :---: | :---: |
|  | 407B500F3X | ON-Delay, OFF-Delay, Interval Timing with (1) DPDT relay (5 or 50 SEC/MIN/HRS) |
|  | Both models available in 6 ranges from 1 SEC to 10 HRS or 5 SEC to 50 HRS |  |
| CONTACT <br> RATING | Rated 10 AMPS resistive at 30 VDC or 250 VAC (or less) $1 / 8$ HP @120 VAC $1 / 4$ HP @ 240 VAC, 240 VA @ 240 VAC |  |
|  | LIFE: 10 million operation with no load 100,000 operations with: 10 AMPS at 30 VDC (or less) or 10 AMPS at 250 VAC (or less) |  |
| CONTACT MATERIAL | Silver Cadmium Oxide |  |
| TEMPERATURE RATING | $0^{\circ} \mathrm{F}-122^{\circ} \mathrm{F}\left(-18^{\circ} \mathrm{C}\right.$ to $\left.50^{\circ} \mathrm{C}\right)$ |  |
| NOISE IMMUNITY | Showering ARC per NEMA ICS 2-230 In addition, the 407B will withstand a voltage surge of 4500 volts for $50 \mu \mathrm{sec}$. without damage. |  |
|  | Plug-in 11-Pin round base |  |
| MOUNTING | Options: Surface mounting socket DIN rail mounting socket Panel-mounting adapter kit Plug-on socket kit |  |

Universal power supply - reverse polarity protected
Unit will accept power from 24 to 240 VAC, 50 or $60 \mathrm{~Hz},(+10 \%,-20 \%) 24 \mathrm{VDC}(+20 \%,-20 \%)$

| POWER | AC | Inrush - 1.5 Amps Power required - 1.2 watts |
| :---: | :---: | :---: |
| REQUIREMENTS | DC | Maximum ripple @ 100Hz-5\% <br> Current required -50 mA <br> Power required - 1.2 watts <br> "F" option - Peak inrush current <br> = 2 AMPS @ 24 VDC <br> " N " option - Peak inrush current <br> $=150 \mathrm{~mA}$ @ 24 VDC |

REPEAT
ACCURACY

Any voltage (constant temperature): $\pm 0.5 \%$ *
Any voltage ( $32^{\circ} \mathrm{F}$ to $140^{\circ} \mathrm{F}$ ): $\pm 1.5 \%^{*}$
Any voltage ( $0^{\circ} \mathrm{F}$ to $140^{\circ} \mathrm{F}$ ): $\pm 2.0 \%^{*}$
*Variation from average actual time.

| MINIMUM <br> SETTING | $2 \%$ of range, with the exception of 50 mSEC on <br> the 1 second range |  |
| :--- | :---: | :--- |
| SETTING <br> ACCURACY | $\pm 5 \%$ of range |  |
| RESET | a | 0 to 20 mSEC power interruption: <br> guaranteed no reset. |
|  | b | 20 to 65 mSEC ; it may reset (40 <br> mSEC typical reset). |
|  | c | Over 65 mSEC guaranteed to reset. |
|  |  |  | The TDR will reset properly and not start timing when subjected to an open start switch leakage of 1.5 mA or less. (Prox switch \& Triac drive applications)


| TERMINAL \#6 <br> (Start switch <br> requirements- | DC | Minimum Current Rating - 50mA <br> Maximum saturated voltage drop - <br> 1.5 VDC |
| :--- | :--- | :--- |
| Off-Delay) | AC | Minimum Current Rating - 1.5 A |
| WEIGHT | 5 oz. $(140 \mathrm{~g})$ |  |



## WIRING

MODEL 407B...F3X

## N.C. N.C.



TERMINAL WIRING CAUTION!: Do NOT connect terminal 6 to L1 (AC Hot or DC+). Damage to unit will result. Terminal 6 is a dry contact only!

## DIMENSIONS (INCHES/MILLIMETERS)



PANEL MOUNTING (UP TO . 18 BB THICK)
Optional 11-Pin Socket
Part Number 0000-825-86-00

## TYPICAL CIRCUITS

ON-DELAY (Mode Switch in ON-DELAY POSITION)


INTERVAL (Mode Switch in INTERVAL POSITION)


## OFF-DELAY (Mode Switch in OFF-DELAY POSITION)


*in off-delay mode, start switch must be isolated.
Do NOT connect any load in parallel



[^0]:    - Bellofram Precision Controls • Marsh Instruments • BelGAS • Bellofram Diaphragm • Diversified Electronics • DigiTec Division • Thermo-Couple Products

