Table of Contents

1600/1700 Series Delay On Operate Timers

Product Facts

- **AC/DC input delay on operate timer offered in fixed (1600) and adjustable (1700) types**
- **Up to 10A loads**
- **CMOS digital design**
- **Hermetic package**
- **Built to MIL-R-83726 environmentals**
- **Many customizing options**
  - **Extended timing ranges**
  - **Tighter timing tolerances**
  - **Header and mounting**

KILOVAC 1600/1700 series delay on operate timers combine solid state timing circuits with electromechanical output relays in robust hermetically sealed enclosures. The 1600 types are fixed timers, while the 1700 models are adjustable via an external resistor. Numerous output options include 4A rated contacts in 1-4 form C (SPDT - 4PDT) arrangements and 10A rated contacts in 1-2 form C (SPDT-DPDT) arrangements.

Electrical Specifications

Timing Range —
1600 series (fixed) — 50 ms to 600 s
1700 series (adjustable) — 50 ms to 240 s

Tolerance — ±10% or 10 ms, whichever is greater

Recycle Time — 10 ms (DC input), 50ms (AC input)

Recovery Time — 10 ms (DC input), 50ms (AC input)

Input Voltage — 18 to 31Vdc, 105 to 125Vac, 400 Hz

Current Drain (at 25°C, 28Vdc) —
DC Coil, 10A contacts —
1- and 2-pole — 135mA maximum

AC or DC Coil, 4A contacts —
1-pole — 100mA maximum
2-pole — 150mA maximum
3- and 4-pole — 200mA maximum

Contact Ratings —
DC Coil, 10A contacts —
10A resistive @ 30Vdc
5A inductive @ 30Vdc
5A resistive @ 115 Vrms, 400 Hz
3A inductive @ 115 Vrms, 400 Hz

AC or DC Coil, 4A contacts —
4A resistive @ 30Vdc
1A inductive @ 30Vdc
2A resistive @ 115 Vrms, 400 Hz
1A inductive @ 115 Vrms, 400 Hz

Environmental Specifications

Temperature Range —
-55°C to +85°C or -55°C to +125°C

Vibration — 20 G's, 10 - 2,000 Hz

Shock — 50 G's, 11 ± 1ms duration

Insulation Resistance — 1,000 megohms, min., at 500Vdc, all terminals to case

Dielectric Strength — 1,000Vrms, 60 Hz., at sea level, all terminals to case

Sealing — Hermetic, 1.3 in. (33.0mm) of mercury

Life — 100,000 operations, min.

Weight —
4A units — 4.5 oz (127.6g) max.
10A units — 8.5 oz (240g) max.

Specifications by Model Number – 4 Amp Contact Versions

Fixed Timer Model Number	Adjustable Timer Model Number	Input Voltage	Temperature Range	Housing Length (Dim. "A")	Contact Arrangement
1601	1701	DC	-55°C to +85°C	1.656 [42.06]	1 Form C (SPDT)
1602	1702	DC	-55°C to +85°C	1.656 [42.06]	2 Form C (DPDT)
1603	1703	DC	-55°C to +85°C	2.0 [50.8]	3 Form C (3PDT)
1604	1704	DC	-55°C to +85°C	2.0 [50.8]	4 Form C (4PDT)
1621	1721	DC	-55°C to +125°C	1.656 [42.06]	1 Form C (SPDT)
1622	1722	DC	-55°C to +125°C	1.656 [42.06]	2 Form C (DPDT)
1623	1723	DC	-55°C to +125°C	2.0 [50.8]	3 Form C (3PDT)
1624	1724	DC	-55°C to +125°C	2.0 [50.8]	4 Form C (4PDT)
1651	1751	AC	-55°C to +85°C	2.0 [50.8]	1 Form C (SPDT)
1652	1752	AC	-55°C to +85°C	2.0 [50.8]	2 Form C (DPDT)
1653	1753	AC	-55°C to +85°C	2.375 [60.33]	3 Form C (3PDT)
1654	1754	AC	-55°C to +85°C	2.375 [60.33]	4 Form C (4PDT)
1671	1771	AC	-55°C to +125°C	2.0 [50.8]	1 Form C (SPDT)
1672	1772	AC	-55°C to +125°C	2.0 [50.8]	2 Form C (DPDT)
1673	1773	AC	-55°C to +125°C	2.375 [60.33]	3 Form C (3PDT)
1674	1774	AC	-55°C to +125°C	2.375 [60.33]	4 Form C (4PDT)

Specifications by Model Number – 10 Amp Contact Versions

Fixed Timer Model Number	Adjustable Timer Model Number	Input Voltage	Temperature Range	Housing Length (Dim. "A")	Contact Arrangement
1610	1710	DC	-55°C to +85°C	2.419 [61.44]	1 Form C (SPDT)
1620	1720	DC	-55°C to +85°C	2.419 [61.44]	2 Form C (DPDT)

Adjustable Timing Formula (1700 types)

The resistance required to obtain timing within this range is determined by using the formula:

Rx = 400K (T/Tmax.) – 40K, where

Rx = External Resistance in Ohms,
T = Desired Time in Seconds, and
Tmax. = Maximum Time (Code).

A high quality deposited carbon ±1%, 0.1W (min.) resistor is recommended for external resistance.

Part Numbering System

Typical Part Number	1722	–C	– 1102

Model Number:
Four digit code from table above.

Mounting (see outline dimension drawings):
A = Studs on bottom B = Studs on top C = Studs on side

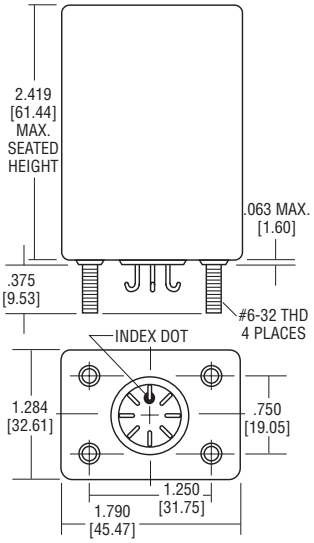
Timing Code:
Four-digit code for any value between 50ms.

A typical part number for an adjustable timer would be 1722–C–1102. This is a DC unit in the -55°C to +125°C temperature range with a 2 form C (DPDT) contact arrangement in a style "C" mounting, with a maximum time delay of 11s.

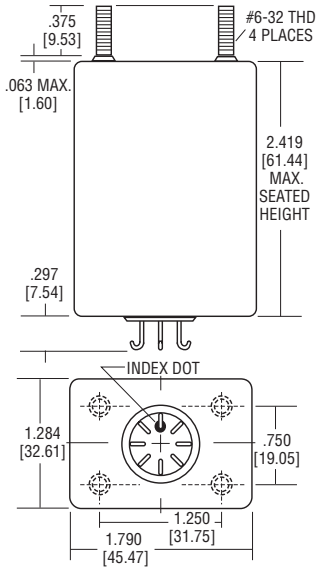
1600/1700 Series Delay On Operate Timers (Continued)

Outline Dimensions

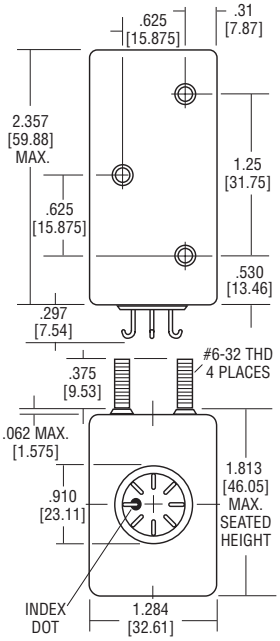
10 Amp Units



Mounting Option A

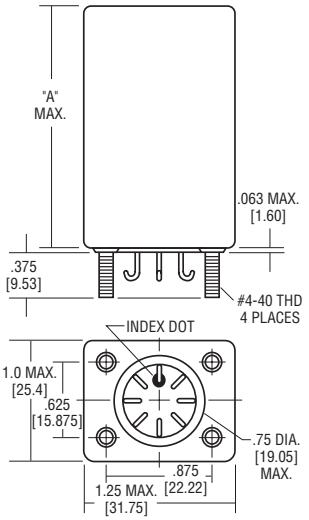


Mounting Option B

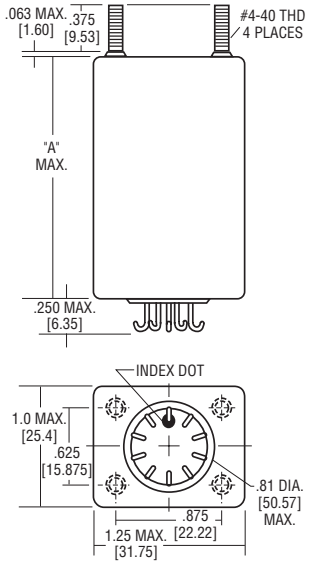


Mounting Option C

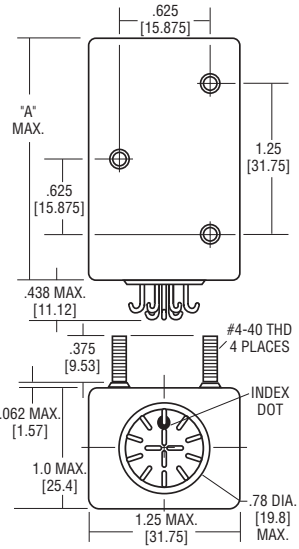
4 Amp Units



Mounting Option A



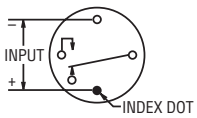
Mounting Option B



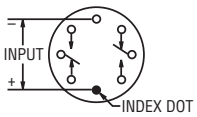
Mounting Option C

Wiring Diagrams

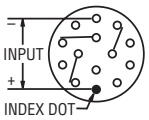
1600 Series (Fixed)



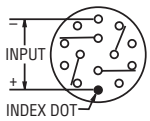
1 Form C



2 Form C

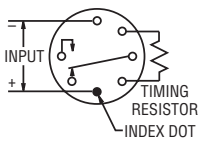


3 Form C

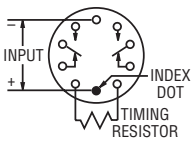


4 Form C

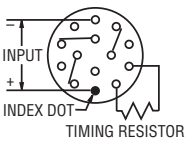
1700 Series (Adjustable)



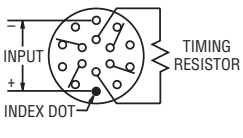
1 Form C



2 Form C



3 Form C



4 Form C

2400 Series Delay On Operate Timer, Fixed Timing, Relay Output

Product Facts

- **DC input fixed delay on operate timer**
- **2 Form C (DPDT), 2A output**
- **CMOS digital design**
- **Reverse polarity protection**
- **Hermetic package**
- **Built to MIL-R-83726 environmentals**
- **Customizing options include**
  - **Tighter timing tolerances**
  - **Header and mounting**
  - **Different input voltages**

KILOVAC 2400 series delay on operate timers combine solid state timing circuits with relay outputs in robust hermetically sealed enclosures. They are fixed timers. The 2 Form C (DPDT) output relay is rated 2A.

Electrical Specifications

Timing Range — 50 ms to 600 s

Tolerance — ±10% or 10 ms, whichever is greater

Recycle Time — 10 ms

Recovery Time — 20 ms

Input Data —

Input Voltage — 18 to 31Vdc

Current Drain — 85mA @ 31Vdc, 25°C

Output Data —

Output Form — 2 Form C (DPDT).

Output Rating —
2A resistive at 30Vdc;
125mA resistive at 115Vac, 400 Hz

Transient Protection — 80Vdc for 50ms

Environmental Specifications

Temperature Range —
-55°C to +85°C or -55°C to +125°C

Vibration — 20 G's, 10 - 2,000 Hz

Shock — 50 G's, 11 ± 1ms duration

Insulation Resistance — 1,000 megohms, min., at 500Vdc, all terminals to case

Dielectric Strength — 500Vrms, 60 Hz., at sea level, all terminals to case

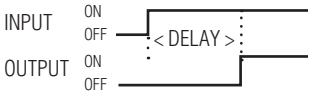
Sealing — Hermetic, 1.3 in. (33.0mm) of mercury

Life — 100,000 operations, min.

Weight — 1.2 oz (30g) max.

Plug-in sockets are available for header option 2

Timing Diagram



Part Numbering System

Typical Part Number	2401	–1	A	– 1102

Model Number:
2401 = Fixed timer, -55°C to +85°C
2402 = Fixed timer, -55°C to +125°C

Header Style (see Header Options drawings):
1 = Hook terminals 2 = Straight terminals, short
3 = Straight terminals, long

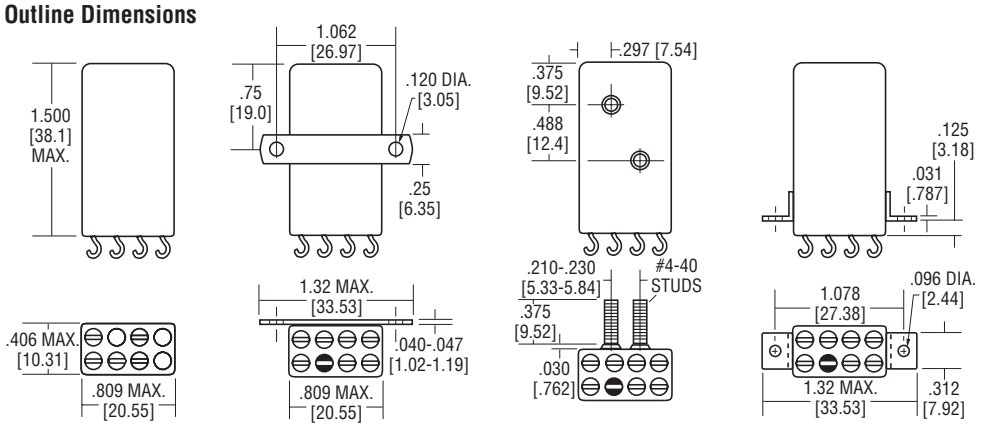
Mounting (see outline dimension drawings):
A = Plain case B = Bracket B D = Studs on side E = Bracket E

Timing Code:
Four-digit code for any value between 50ms and 600s.

The timing code consists of four digits and gives the time in ms. The first three digits are the significant figures and the last digit is the number of zeros following the significant figures; thus 50 ms would be coded 0500, 1.1 s would read 1101, and 1 m (60 s) would be 6002.

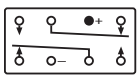
A typical part number would be 2401–1A–1102. This fixed timer operates at -55°C to +85°C, has hook terminals, style "A" mounting, and a time delay of 11s.

Outline Dimensions

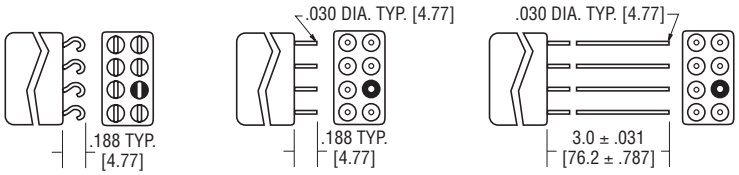


Mounting Option A **Mounting Option B** **Mounting Option D** **Mounting Option E**

Wiring Diagram



Header Options



TERMINAL SPACING IS 0.2 [5.08] FOR ALL HEADERS

Header Option 1 **Header Option 2** **Header Option 3**

5600/5700 Series Delay On Release Timers

Product Facts

- DC input delay on release timer offered in fixed (5600) and adjustable (5700) types
- Up to 10A loads
- Reverse polarity protection
- CMOS digital design
- Built to MIL-R-83726 environmentals
- Many customizing options
  - Extended timing ranges
  - Tighter timing tolerances
  - Header and mounting
  - Different Aux. voltages
  - Different control line voltages
  - Input either 115Vac, 60 Hz

KILOVAC 5600/6700 series delay on release timers combine solid state timing circuits with electromechanical output relays in robust hermetically sealed enclosures. The 5600 types are fixed timers, while the 5700 models are adjustable via an external resistor. Numerous output options include 2A, 5A and 10A rated contacts in 1, and 2 form C (SPDT and DPDT) arrangements.

Electrical Specifications

Timing Range —
5600 series (fixed) — 50 ms to 600 s
5700 series (adjustable) — 50 ms to 240 s

Tolerance — ±10% or ±15ms, whichever is less

Recycle Time — 10 ms

Reset Time — 20 ms

Operate Time (Max.) — 10 ms (2A and 5A models), 20ms (10A models)

Input Voltage — 18 to 31Vdc

Control Voltage — 10 to 31Vdc. Ground common to aux. power line. 10Vdc minimum must be applied for a minimum duration of 20ms to energize output and initiate the timing circuit.

Current Drain (at 25°C, 28Vdc) —
Control Line — 15mA typ., 25mA max.
Input Line De-energized (after completion of delay period) — 125 mA
Input Line Energized —
1-pole, 2 & 5A models — 100mA
1-pole, 10A models — 150mA
2-pole, 2 & 5A models — 150mA
2-pole,10A models — 240mA

Contact Ratings —
10A contacts —
10A resistive @ 30Vdc
5A inductive @ 30Vdc
5A resistive @ 115 Vrms, 400 Hz
3A inductive @ 115 Vrms, 400 Hz

5A contacts —
5A resistive @ 30Vdc
1.5A inductive @ 30Vdc
3A resistive @ 115 Vrms, 400 Hz
1A inductive @ 115 Vrms, 400 Hz

2A contacts —
2A resistive @ 30Vdc
1A inductive @ 30Vdc
1A resistive @ 115 Vrms, 400 Hz
0.3A inductive @ 115 Vrms, 400 Hz

Specifications by Model Number

Fixed Timer Model Number	Adjustable Timer Model Number	Input Voltage	Temperature Range	Contact Rating	Contact Arrangement	Available Enclosures
5601 5602	5701 5702	DC DC	-55°C to +85°C -55°C to +85°C	2 Amp 2 Amp	1 Form C (SPDT) 2 Form C (DPDT)	A - C - D - E A - C - D - E
5605 5606	5705 5706	DC DC	-55°C to +85°C -55°C to +85°C	5 Amp 5 Amp	1 Form C (SPDT) 2 Form C (DPDT)	D - E D - E
5610 5611	5710 5711	DC DC	-55°C to +85°C -55°C to +85°C	10 Amp 10 Amp	1 Form C (SPDT) 2 Form C (DPDT)	D - E D - E
5621 5622	5721 5722	DC DC	-55°C to +125°C -55°C to +125°C	2 Amp 2 Amp	1 Form C (SPDT) 2 Form C (DPDT)	A - C - D - E A - C - D - E
5625 5626	5725 5726	DC DC	-55°C to +125°C -55°C to +125°C	5 Amp 5 Amp	1 Form C (SPDT) 2 Form C (DPDT)	D - E D - E

See next page for complete ordering information and outline dimensions for the available enclosures.

Environmental Specifications

Temperature Range —
-55°C to +85°C or -55°C to +125°C

Vibration — 20 G's, 10 - 2,000 Hz

Shock — 50 G's, 11 ± 1ms duration

Insulation Resistance —
1,000 megohms, min., at 500Vdc

Dielectric Strength — 1,000Vrms, 60 Hz., at sea level, all terminals to case

Sealing — Hermetic, 1.3 in. (33.0mm) of mercury

Life — 100,000 operations, min. (2A and 5A models); 50,000 operations, min. (10A models)

Weight — 8.5 oz (240g) max.

Adjustable Timing Formula (4700 types)

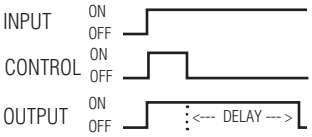
The resistance required to obtain timing within this range is determined by using the formula:

Rx = 400K (T/Tmax.) – 40K, where

Rx = External Resistance in Ohms,
T - Desired Time in Seconds, and
Tmax. = Maximum Time (Code).

A high quality deposited carbon ±1%, 0.1W (min.) resistor is recommended for external resistance.

Timing Diagram



Apply input power. Upon application of control power, the output will energize. Remove control power and initiate delay period.

Special Notes

10Vdc minimum must be applied for a minimum duration of 20ms to energize output and initiate timing.

Units rated 10A have a minimum time delay of 100ms.

5600/5700 Series Delay On Release Timers (Continued)

Part Numbering System

Typical Part Number	5722	–C	– 1102

Model Number:
Four digit code from table on the previous page.

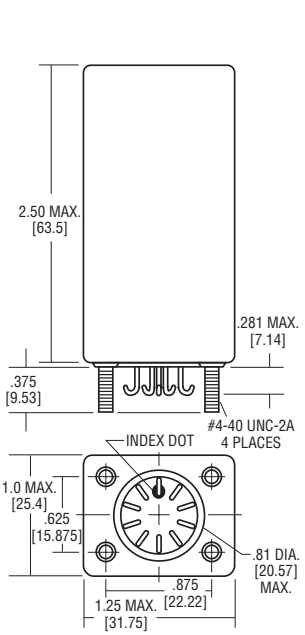
Mounting (see outline dimension drawings):
A = Studs on bottom of 2.5 in tall case
C = Studs on side of 2.5 in. tall case
D = Studs on bottom of 1.812 in. tall case
E = Bracket on side of 1.812 in. tall case

Timing Code:
Four-digit code for any value between 50ms.

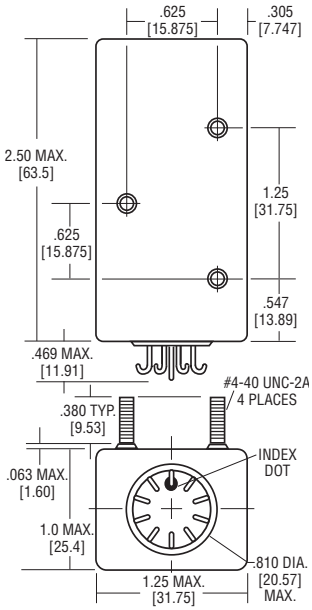
Note: Units with 10A contacts have a minimum time delay of 100ms.

A typical part number for an adjustable timer would be 5722–C–1102. This DC unit is in the -55°C to +125°C temperature range with a 2 amp contacts in a 2 form C (DPDT) arrangement, enclosed in case with a style "C" mounting, with a maximum time delay of 11s.

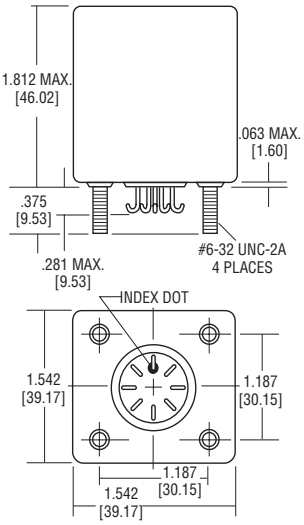
Outline Dimensions



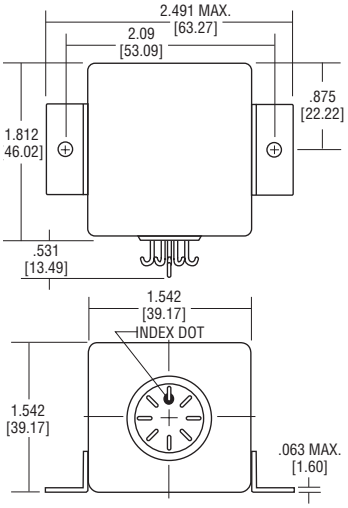
Mounting Option A



Mounting Option C



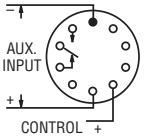
Mounting Option D



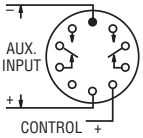
Mounting Option E

Wiring Diagrams

5600 Series (Fixed)

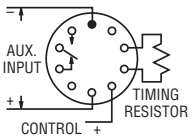


1 Form C

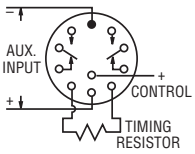


2 Form C

5700 Series (Adjustable)



1 Form C



2 Form C

1800/1900 Series Delay On Operate Digital Timing Modules

Product Facts

- **DC input delay on operate timer offered in fixed (1800) and adjustable (1900) types**
- **300mA output**
- **CMOS digital design**
- **Reverse polarity protection**
- **Hermetic package**
- **Built to MIL-R-83726 environmentals**
- **Customizing options include**
  - **Tighter timing tolerances**
  - **Header and mounting**

Electrical Specifications

Timing Range —
1800 series (fixed) — 50 ms to 600 s
1900 series (adjustable) — 50 ms to 240 s

Tolerance — ±10% or 10 ms, whichever is greater

Repeatability — ±0.1%

Recycle Time — 10 ms

Recovery Time — 20 ms

Input Data —

Input Voltage — 18 to 31Vdc

Current Drain (at 25°C, 28Vdc) — 10mA, plus load current

Output Data —

Output Form — 1 Form A (SPST-NO) solid state switch closure to ground

Output Rating — 300mA @ 25°C, 100mA @ 125°C

Minimum Load — 10mA

Saturation Voltage — 2.5Vdc, max.

Leakage — 1µA @ 25°C, 10µA @ 125°C

Environmental Specifications

Temperature Range —
-55°C to +85°C or -55°C to +125°C

Vibration — 20 G's, 10 - 2,000 Hz

Shock — 50 G's, 11 ± 1ms duration

Insulation Resistance — 1,000 megohms, min., at 500Vdc, all terminals to case

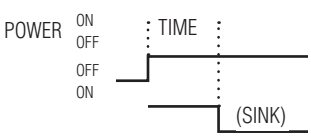
Dielectric Strength — 500Vrms, 60 Hz., at sea level, all terminals to case

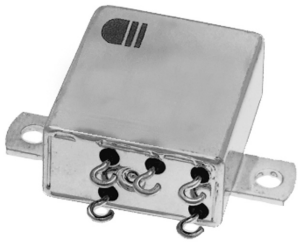
Sealing — Hermetic, 1.3 in. (33.0mm) of mercury

Life — 100,000 operations, min.

Weight — 1 oz (28.3g) max

Timing Diagram





KILOVAC 1800/1900 series delay on operate timer modules combine solid state timing circuits with solid state switch outputs in robust hermetically sealed enclosures. The 1800 types are fixed timers, while the 1900 models are adjustable via an external resistor. The 1 Form A (SPST-NO) switch is rated 300mA.

Adjustable Timing Formula (1900 types)

The resistance required to obtain timing within this range is determined by using the formula:

Rx = 400K (T/Tmax.) – 40K, where

Rx = External Resistance in Ohms,
T - Desired Time in Seconds, and
Tmax. = Maximum Time (Code).

A high quality deposited carbon ±1%, 0.1W (min.) resistor is recommended for external resistance.

Part Numbering System

Typical Part Number	1811	–1	A	– 1002

Model Number:
1811 = Fixed timer, -55°C to +85°C
1821 = Fixed timer, -55°C to +125°C
1911 = Adjustable timer, -55°C to +85°C
1921 = Adjustable timer, -55°C to +125°C

Header Style (see Header Options drawings):
1 = Hook terminals 2 = Straight terminals

Mounting (see outline dimension drawings):
A = Plain case B = Bracket B C = Studs on side E = Bracket E

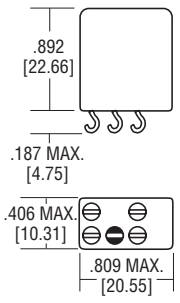
Timing Code:
Four-digit code for any value between 50ms and 600s for fixed (1800) timers, and 50ms and 240s for adjustable (1900) timers.

The timing code consists of four digits and gives the time in ms. The first three digits are the significant figures and the last digit is the number of zeros following the significant figures; thus 50 ms would be coded 0500, 1.1 s would read 1101, and 1 m (60 s) would be 6002.

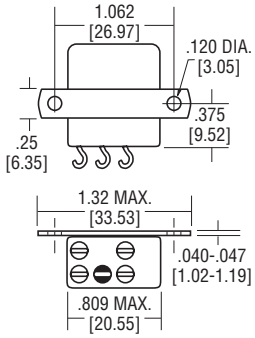
Adjustable timers cover one decade, e.g., 62 ms to 620 ms. The upper decade limit is Tmax. in the timing formula and is the the value defined by the timing code in the part number.

A typical part number would be 1811–1A–1002. This fixed timing module operates at -55°C to +85°C, has hook terminals, style "A" mounting, and a time delay of 10s.

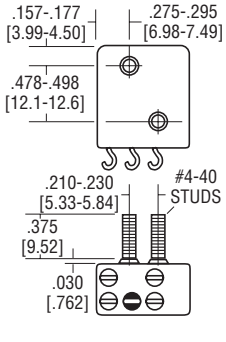
Outline Dimensions



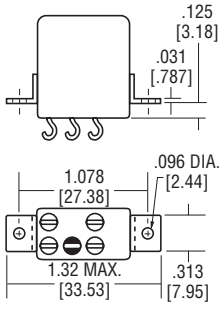
Mounting Option A



Mounting Option B

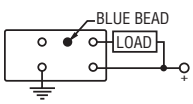


Mounting Option D

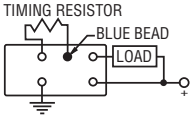


Mounting Option E

Wiring Diagrams



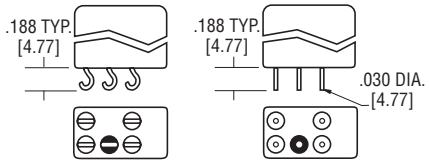
1800 Series (Fixed)



1900 Series (Adjustable)

Note: The blank pin on 1800 series types is active and must not be connected.

Header Options



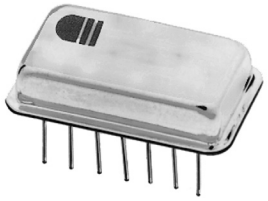
TERMINAL SPACING IS 0.2 in [5.08]

Header Option 1 **Header Option 2**

6001 Series Delay On Operate Digital Timing Module

Product Facts

- Fixed delay on operate timer
- 300mA output
- CMOS digital design
- Voltage surge protection
- Qualified to MIL-R-83726/13



Electrical Specifications

Timing Range — 50 ms to 600 s.

Timing Accuracy — ±10% of nominal timing under all conditions of input voltage and environmental extremes

Recycle Characteristics —

Before Time Out — A power interruption occurring after the start but before completion of the timing cycle shall be for a duration of 0.5% of the nominal time delay or 10ms, whichever is greater, to ensure a loss in timing of no greater than 10%

After Time Out — A power interruption of 0.5% of the nominal time delay or 10ms, whichever is greater, will initiate a new timing cycle with a loss in timing of no greater than 5%

Input Data —

Input Voltage — 28Vdc, nominal; range 18 to 31Vdc

Current Drain (at 25°C, 28Vdc) — 10mA (max.), plus load current

Reverse Polarity Protection — The timer will not be damaged or operate when input voltage polarity is reversed

Output Data —

Configuration — 1 Form A (SPST-NO) solid state switch closure to ground

Load Ratings —

Resistive — 300mA @ +25°C, derated to 100mA @ +125°C

Inductive — Three MIL-R-5757/9 relays (any relay with 26.5Vdc coil)

Lamp Load — Two MS25237-327 lamps per MIL-L-6363

Load Suppression — Suppression for inductive loads for output protection is provided within the unit

Voltage Drop — 2.5Vdc, max. @ -55°C and +25°C; 2.0 Vdc, max., @ +125°C

Leakage Current — 1µA, max. @ +25°C, 10µA, max. @ +125°C

Insulation Resistance — 1,000 megohms, min., @ 500Vdc, measured between all terminals tied together to the case

Dielectric Strength — 500Vrms, 60 Hz., at sea level, measured between all terminals tied together to the case

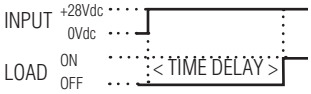
Transients —

Voltage Surge — Per MIL-STD-704A, figure 9, limit 1, for category B equipment

Self-generated Spikes — ±10V

KILOVAC 6001 series delay on operate timer modules are miniature devices combining solid state timing circuits with solid state switch outputs in robust hermetically sealed DIP enclosures. The 1 Form A (SPST-NO) switch is rated 300mA.

Timing Diagram



Environmental Specifications

Temperature Range — -55°C to +125°C

Altitude — 80,000 ft.

Shock — 150 G's, 11 ± 1ms half-sine wave

Vibration (sinusoidal) — 10 -80 Hz. at 0.06 inch DA; 80 - 3,000 Hz. at 20 G's

Sealing — MIL-STD-202, method 112, condition C

Materials:
Cover — Nickel
Header — Kovar® Alloy
Pins — Kovar® Alloy, gold plated

Marking — Per MIL-R-83726

Weight — 0.42 oz (12g) max.

KOVAR is a trademark of Carpenter Technology Corporation.

Part Numbering System

Typical Part Number	6001	–6002	C

Model Number:
6001 = Fixed timer, -55°C to +125°C

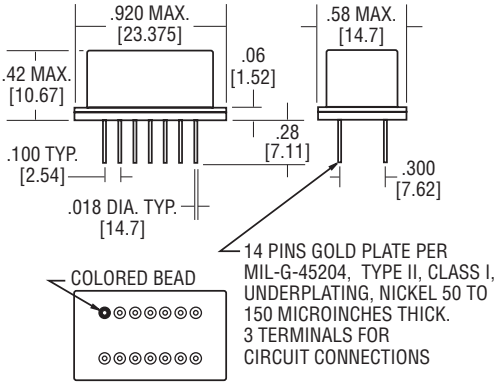
Timing Code:
Four-digit code for any value between 50ms and 600s.

The timing code consists of four digits and gives the time in ms. The first three digits are the significant figures and the last digit is the number of zeros following the significant figures; thus 50 ms would be coded 0500, 1.1 s would read 1101, and 1 m (60 s) would be 6002.

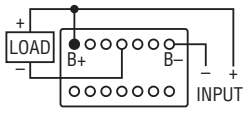
Optional Suffix:
C = Commercial version equivalent to M83726/13.

A typical part number would be 6001–6002C. This solid state output timing module has a time delay of 60s at 28Vdc and is the commercial equivalent to M83726/13.

Outline Dimensions



Wiring Diagram



PIN 10 IS ACTIVE. DO NOT CONNECT.

Special Notes:

- Load is connected between B+ and terminal designated. Delay begins upon application of power to terminals (B+ and B–).
- Always consult latest military specification for changes and additional information.

2600 Series Flasher/Repeat-Cycle, Timer-Fixed, Solid State Output

Product Facts

- **All solid-state**
- **Digital timing**
- **Reverse polarity protection**
- **Transient/surge protection**

Electrical Specifications

Timing Range —
"On Time" (.05 to 600 SEC)
"Off Time" (.05 to 600 SEC)

Duty Cycle — D.C. = $\frac{\text{T on}}{\text{T on \& T off}}$

Frequency — f = $\frac{1}{\text{T on \& T off}}$
(Flash rate)

Tolerance — ±10%

Repeatability — ±0.1%

Input Data —
Input Voltage — 18 to 31 V dc
Current Drain — 30 ma @ 28 V dc

Output Data —
Output — 28 V dc
Vin (dc) — 1.5 V dc @ 100 ma
Load — 30 ma max.

Environmental Specifications

Operature Temperature —
-55°C to +125°C

Vibration — 20 G's, 10 - 2,000 Hz

Shock — 50 G's, 11 ± 1 milliseconds duration

Insulation Resistance — 1,000 megohms at 500 Vdc

Dielectric Strength — 1,000 Vms, 60 Hz, at sea level. All terminals tied together to case.

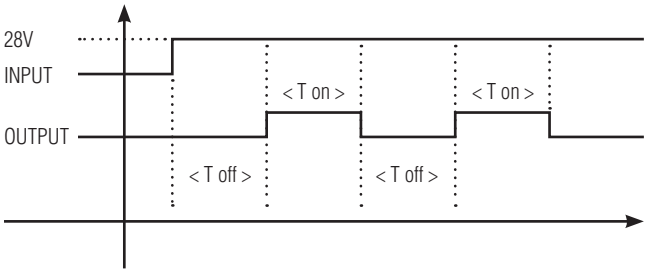
Sealing — Hermetic, 1.3 in. (33.0mm) mercury

Life — over 1,000,000 operations

Weight — 8 oz. (200g) max.

Applications

The Hi-G Series 2600 Flasher can be used wherever warning or indicating lights, navigation or position lights, panel or control lights must be operated with a maximum of reliability in severe environments. The Series 2600 can also be used to interrupt Tone Generations or other Signaling Devices at a predetermined frequency.



- Higher output rating
- Output sink to ground
- Control line
- AC Operation
- Adj. "on" and "off" time
- Relay output to 10 amps
- Alternate packaging
- Initial cycle "on"
- Extended timing ranges

How to Order

Series	Initial Timing Cycle
2601	Off
2602	On

The part number consists of four elements. The series number, a letter signifying mounting style and the timing code numbers. The first timing is the "ON" time and the second is "OFF" time. The timing code number consists of four digits and gives the time in milliseconds. The first three digits are the significant figures and the last digit is the number of zeros following the significant figures, thus, 50 milliseconds would be coded 0500. 1.1 seconds would read 1101, and 1 minute (60 seconds) would be 6002.

Example: HI-G Part Number

2601 — A — 2001 — 1001

- 1001 — "OFF" time in milliseconds
- 2001 — "ON" time in milliseconds
- A — Mounting style
- 2601 — Series

4600/4700 Series Interval Timers

Product Facts

- **AC/DC input interval timer offered in fixed (4600) and adjustable (4700) types**
- **Up to 10A loads**
- **Reverse polarity protection**
- **Hermetic package**
- **Built to MIL-R-83726 environmentals**
- **Many customizing options**
  - **Extended timing ranges**
  - **Tighter timing tolerances**
  - **Header and mounting**
  - **115Vac, 60 Hz. input types**

Electrical Specifications

Timing Range —
4600 series (fixed) — 100 ms to 600 s
4700 series (adjustable) — 100 ms to 240 s

Tolerance — ±10%

Recycle Time — 10 ms (DC input), 50ms (AC input)

Operate Time (Max.) — 10 ms (4A models), 20ms (10A models)

Input Voltage — 18 to 31Vdc, 105 to 125Vac, 400 Hz

Current Drain (at 25°C, 28Vdc) —
DC Coil, 10A contacts —
1- and 2-pole — 135mA maximum

AC or DC Coil, 4A contacts —
1-pole — 100mA maximum
2-pole — 150mA maximum
3- and 4-pole — 200mA maximum

Contact Ratings —
DC Coil, 10A contacts —
10A resistive @ 30Vdc
5A inductive @ 30Vdc
5A resistive @ 115 Vrms, 400 Hz
3A inductive @ 115 Vrms, 400 Hz

AC or DC Coil, 4A contacts —
4A resistive @ 30Vdc
1A inductive @ 30Vdc
2A resistive @ 115 Vrms, 400 Hz
1A inductive @ 115 Vrms, 400 Hz

Environmental Specifications

Temperature Range —
-55°C to +125°C

Vibration — 20 G's, 10 - 2,000 Hz

Shock — 50 G's, 11 ± 1ms duration

Insulation Resistance — 1,000 megohms, min., at 500Vdc

Dielectric Strength — 1,000Vrms, 60 Hz., at sea level, all terminals to case

Sealing — Hermetic, 1.3 in. (33.0mm) of mercury

Life — 100,000 operations, min. (4A models); 50,000 operations, min. (10A models);

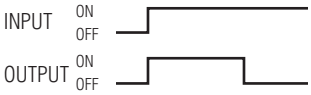
Weight —
4A units — 4.5 oz (127.6g) max.
10A units — 8.5 oz (240g) max.

KILOVAC 4600/4700 series interval timers combine solid state timing circuits with electromechanical output relays in robust hermetically sealed enclosures. The 4600 types are fixed timers, while the 4700 models are adjustable via an external resistor. Numerous output options include 4A rated contacts in 1, 2 and 4 form C (SPDT, DPDT and 4PDT) arrangements and 10A rated contacts in 1-2 form C (SPDT-DPDT) arrangements.

Specifications by Model Number – 4 Amp Contact Versions

Fixed Timer Model Number	Adjustable Timer Model Number	Input Voltage	Temperature Range	Contact Rating	Contact Arrangement
4610	4710	DC	-55°C to +125°C	10 Amp	1 Form C (SPDT)
4611	4711	DC	-55°C to +125°C	10 Amp	2 Form C (DPDT)
4621	4721	DC	-55°C to +125°C	4 Amp	1 Form C (1PDT)
4622	4722	DC	-55°C to +125°C	4 Amp	2 Form C (DPDT)
4624	4724	DC	-55°C to +125°C	4 Amp	4 Form C (4PDT)
4671	4771	AC	-55°C to +125°C	4 Amp	1 Form C (SPDT)
4672	4772	AC	-55°C to +125°C	4 Amp	2 Form C (DPDT)
4674	4774	AC	-55°C to +125°C	4 Amp	4 Form C (4PDT)

Timing Diagram



Apply power and the output will energize. After time-out, the output will revert to de-energized state. Remove and reapply input to cycle.

Adjustable Timing Formula (4700 types)

The resistance required to obtain timing within this range is determined by using the formula:

Rx = 400K (T/Tmax.) – 40K, where

Rx = External Resistance in Ohms,
T - Desired Time in Seconds, and
Tmax. = Maximum Time (Code).

A high quality deposited carbon ±1%, 0.1W (min.) resistor is recommended for external resistance.

Part Numbering System

Typical Part Number	4722	–C	– 1102

Model Number:
Four digit code from table above.

Mounting (see outline dimension drawings):
A = Studs on bottom B = Studs on top C = Studs on side

Timing Code:
Four-digit code for any value between 100ms and 600s for fixed (4600) timers, and 100ms and 240s for adjustable (4700) timers.

The timing code consists of four digits and gives the time in ms. The first three digits are the significant figures and the last digit is the number of zeros following the significant figures; thus 50 ms would be coded 0500, 1.1 s would read 1101, and 1 m (60 s) would be 6002.

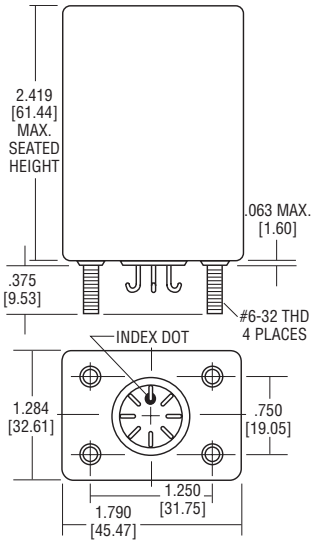
Adjustable timers cover one decade, e.g., 62 ms to 620 ms. The upper decade limit is Tmax. in the timing formula and is the the value defined by the timing code in the part number.

A typical part number for an adjustable timer would be 4722–C–1102. This is a DC unit in the -55°C to +125°C temperature range with a 2 form C (DPDT) contact arrangement in a style "C" mounting, with a maximum time delay of 11s.

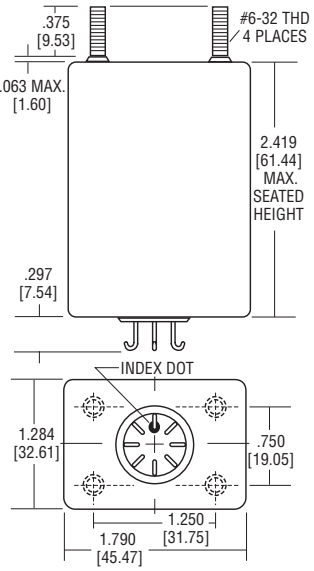
4600/4700 Series Interval Timers (Continued)

Outline Dimensions

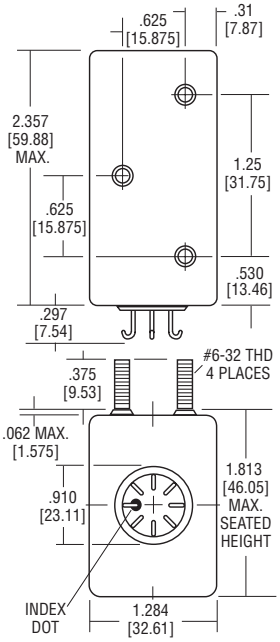
10 Amp Units



Mounting Option A

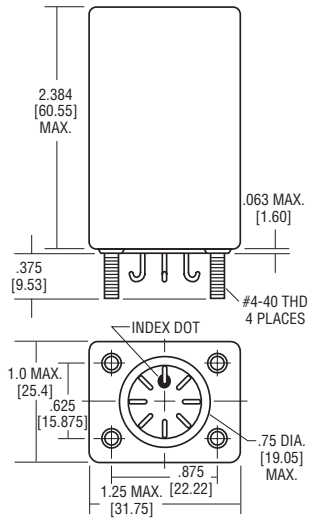


Mounting Option B

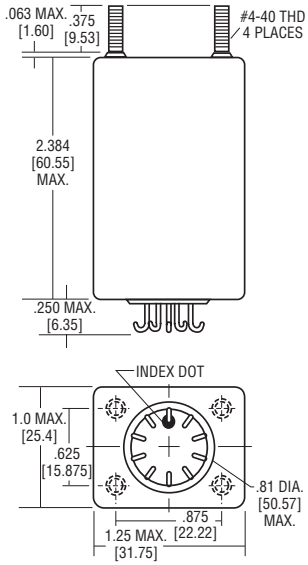


Mounting Option C

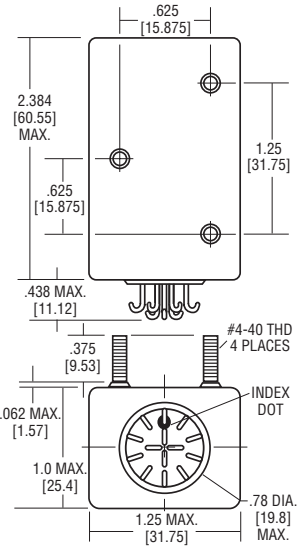
4 Amp Units



Mounting Option A



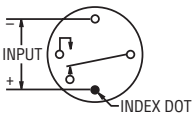
Mounting Option B



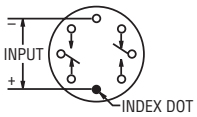
Mounting Option C

Wiring Diagrams

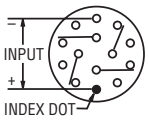
4600 Series (Fixed)



1 Form C

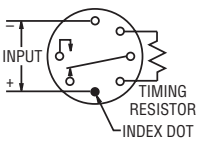


2 Form C

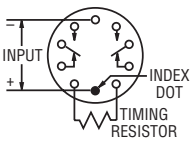


3 Form C

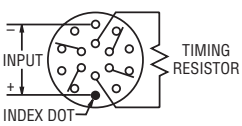
4700 Series (Adjustable)



1 Form C



2 Form C



3 Form C

4800 Series Interval Timer, Fixed Timing, Solid State Output

Product Facts

- DC input fixed delay interval timer
- 1 Form A (SPST-NO), 500mA output
- CMOS digital design
- Reverse polarity protection
- Hermetic package
- Built to MIL-R-83726 environmentals
- Customizing options include
  - Adjustable timing
  - Tighter timing tolerances
  - Header and mounting
  - Relay output
  - AC input

Electrical Specifications

Timing Range: 100 s. to 600 s.

Tolerance: ±10%.

Repeatability: ±2%.

Recycle Time: 0.5% of Max. Delay.

Input Data:

Input Voltage: 18 to 31Vdc.

Current Drain: 40mA. max.

Output Data:

Output Form: 1 Form A (SPST-NO).

Output Rating:
500mA @ +25°C;
200mA @ +125°C.

Saturation Voltage:
1.0V, 500mA (25°C).

Leakage:
10µA (125°C).

Environmental Specifications

Temperature Range:
-55°C to +85°C or -55°C to +125°C.

Vibration: 20 G's, 10 - 2,000 Hz.

Shock: 50 G's, 11 ± 1ms duration.

Insulation Resistance: 1,000 megohms, min., at 500Vdc.

Dielectric Strength: 500Vrms, 60 Hz., at sea level, all terminals to case.

Sealing: Hermetic, 1.3 in. (33.0mm) of mercury.

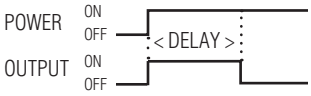
Life: Over 1 million operations.

Weight: 2 oz (50g) max.

Plug-in sockets are available

KILOVAC 4800 series interval timers combine solid state timing circuits with solid state outputs in robust hermetically sealed enclosures. They are fixed timers. The 1 Form A (SPST-NO) output switch is rated 500mA.

Timing Diagram



Apply power and the output will energize After time-out, the output will revert to de-energized state. Remove and reapply power to recycle.

Part Numbering System

Typical Part Number	4801	–1	A	– 1102

Model Number:
4801 = Fixed timer, -55°C to +85°C
4851 = Fixed timer, -55°C to +125°C

Header Style (see Header Options drawings):
1 = Hook terminals 2 = Straight terminals, short
3 = Straight terminals, long

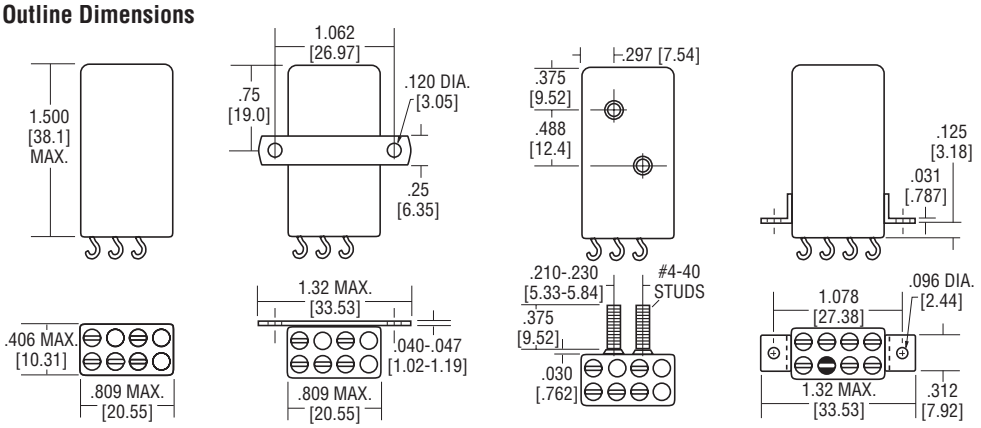
Mounting (see outline dimension drawings):
A = Plain case B = Bracket B C = Studs on side E = Bracket E

Timing Code:
Four-digit code for any value between 50ms and 600s.

The timing code consists of four digits and gives the time in ms. The first three digits are the significant figures and the last digit is the number of zeros following the significant figures; thus 50 ms would be coded 0500, 1.1 s would read 1101, and 1 m (60 s) would be 6002.

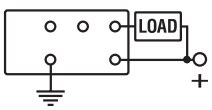
A typical part number would be 4801–1A–1102. This fixed timer operates at -55°C to +85°C, has hook terminals, style "A" mounting, and a time delay of 11s.

Outline Dimensions

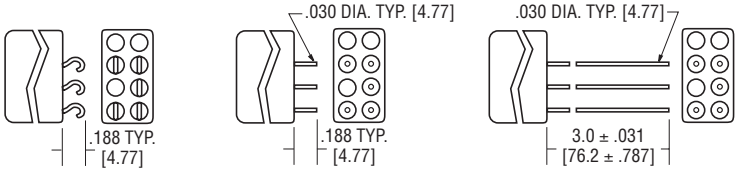


Mounting Option A **Mounting Option B** **Mounting Option D** **Mounting Option E**

Wiring Diagram



Header Options



TERMINAL SPACING IS 0.2 [5.08] FOR ALL HEADERS

Header Option 1 **Header Option 2** **Header Option 3**