Introduction

Your Eagle-Signal brand B506 1/16 DIN timer is a unique instrument specifically designed for handling repetitive cyclical operations. This unit is highly flexible and can be field configured to operate in a number of different fashions. Unique features include the ability to set two separate times for On and Off operations, which can even be in different time bases, or input a time base with a percentage value. A batch count function keeps track of the number of completed cycles and can stop operation after the preset has been reached.

Inside this manual you will find complete information on the Control mode, which deals with viewing and changing the available setpoints, and Program Mode which is used to configure the basic operation of the timer, as well as set a variety of other useful features.

Also found in this manual are detailed timing diagrams and descriptions of the available operating functions to aid you in determining how to properly configure the unit to solve your application.

Additionally included are key product specifications, warranty procedures and ordering information should you require additional units or accessories.

Should you require any additional assistance with the installation and operation of this product, please call our toll free application support line at 1-800-234-8731.

Eagle Signal brand
B506
Repeat Cycle
LED Timer

Features

- Repeat Cycle functionality with completely independent settings for On and Off times

- Batch Count function can trigger an output and stop the cycle

- Settings can be input as absolute time values or as a time base and percentage

- Simple button per digit interface

- Timing resolution down to 1 ms

- Programmable security levels prevent unauthorized setpoint or program changes

- Timed or latched batch output

- Programmable to begin with an On or an Off operation

- IEC IP65 rated front panel

- Highly visible 8 mm dual line LED display with 8 annunciator lights
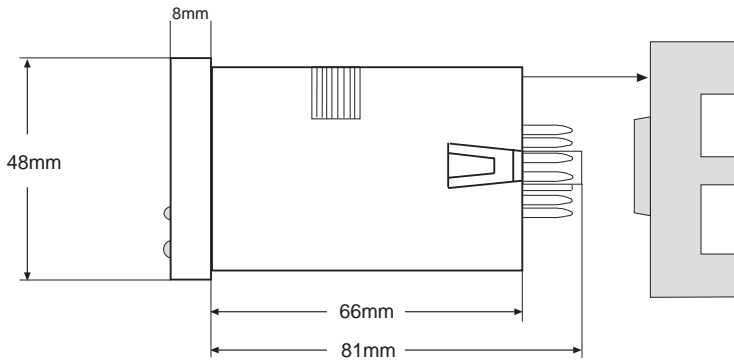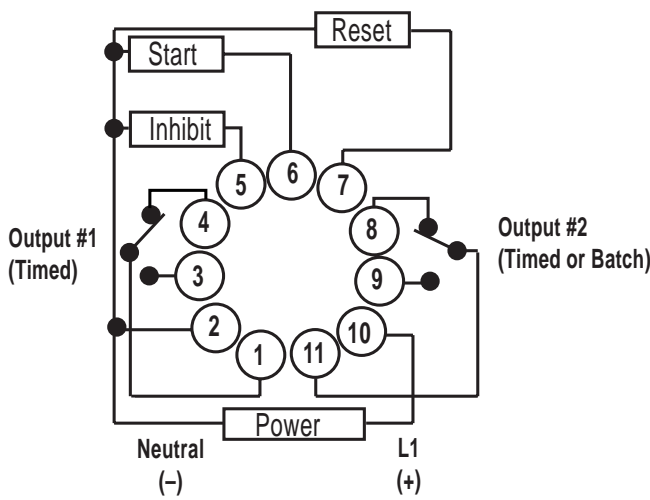
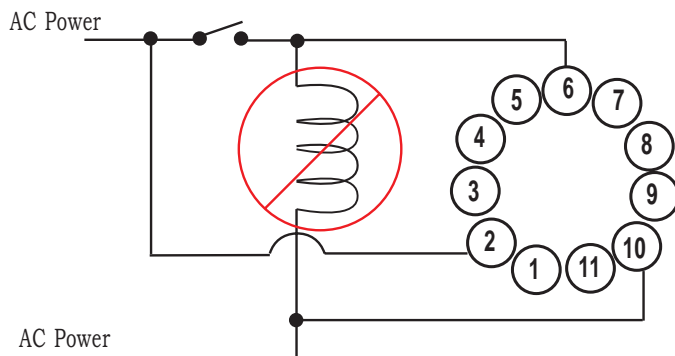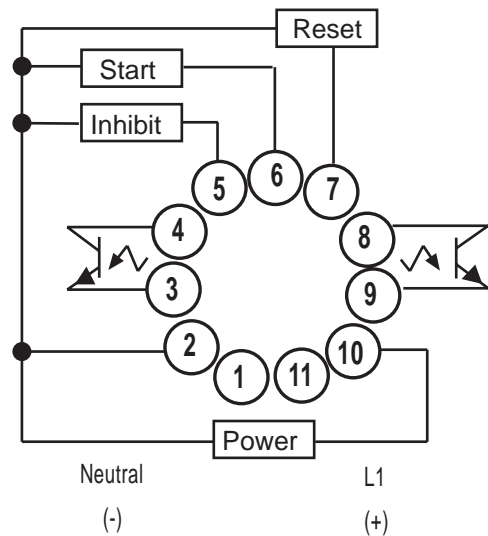## Index

INSTALLATION

8mm

48mm

66mm

81mm

To wire the unit, an 11 pin socket is required. The unit can either be DIN rail mounted or panel mounted using the supplied mounting bracket. For panel mounting, place the unit in the cutout, then slide the bracket forward over the rear of the unit so that the tabs catch in the grooves on the housing and the bracket is as far forward as possible. Tighten the panel mount screws until there is a snug fit against the panel. Do not overtighten.

WIRING

B506-7001/2

Reset

Start

Inhibit

Output #1
(Timed)

Output #2
(Timed or Batch)

5 6 7
4 8
3 9
2 10
1 11

Power

Neutral
(−)

L1
(+)

B506-7051/2

Reset

Start

Inhibit

5 6 7
4 8
3 9
2 10
1 11

Power

Neutral
(-)

L1
(+)

AC Power

5 6 7
4 8
3 9
2 10
1 11

AC Power

Warning: Do Not connect a coil in parallel with the start signal for the B506, as pictured at left. Such a connection will cause the start signal to be continuously active. This situation also applies to the Reset and Inhibit inputs.

O P E R A T I O N

FRONT PANEL OPERATION

Primary Display

In Control Mode: Displays the current time value associated with the displayed preset or the batch value (if configured).

In Program Mode: Displays the Parameter Description.

Time Range Indicator

Illuminates to show the time base: H for hours, M for minutes, S for seconds. Multiple indicators will be illuminated when the time base is Hours:Minutes or Minutes:Seconds. During timing operation the illuminated LED will flash.

I/O Status Indicators

Illuminates to display when an input or output is active: "IN" for the start input, "O1" and "O2" for the timed outputs.

Preset 2 Indicator

Illuminates to indicate that the Preset 2 is being shown on the lower display.

Batch Indicator

Illuminates to indicate that the Batch Count Value and Batch Preset are being displayed.

Set Value

In Control Mode: Displays the settable value used to trigger the timed output(s) and the batch count (if configured).

*In Program Mode:* Displays the current selection for the chosen parameter.

Numeric Keys

Each of the number keys is used to increment the value of the corresponding digit of the preset or a parameter value.

Edit Key

In Control Mode: With "P" key, resets the displayed value.

In Program Mode: Scrolls between the applicable choices for the currently displayed parameter.

Program Key

In Control Mode: Depressing the key will scroll the display among the preset and batch displays. Holding the key down for 3 seconds will shift the unit into Program Mode.

In Program Mode: Depressing the key will scroll the display from one parameter to the next. Holding the key down for 3 seconds will shift the unit back to Control Mode.

CONTROL MODE

Preset 1 Display
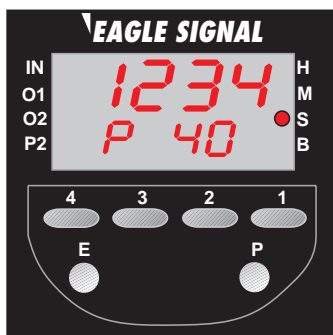
The lower display will indicate the value for Preset 1 in one of two manners:

In Standard Mode: Will display the time interval for the 1st operation of the cycle.

In Percentage Mode: Will display the % of the total time base (P2) applied to the 1st operation of the cycle.
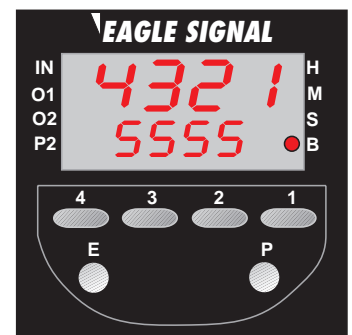
Preset 2 Display

The lower display will indicate the value for Preset 2 in one of two manners:

In Standard Mode: Will display the time interval for the 2nd operation of the cycle.

In Percentage Mode: Will display the total time base for the cycle.

Batch Display

The upper display will indicate the current Batch Count Value, while the lower display will indicate the Batch Preset. A setting of "0" will disable output 2.

Note: The Batch Display will not appear if "int" is chosen as the function for Output 2 in Program Mode.

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PROGRAM MODE

• Enter the Program Mode by holding down the "P" key for 3 seconds
• Press the "P" key to move the top display from one parameter to the next
• Press the "E" key to scroll the bottom display through the available choices for that parameter
• While in Program Mode, the unit will halt operation. Changes will only become effective after re turning to Control Mode by holding down the "P" key for 3 seconds

P
◯ For 3 Seconds

```
 F u n c
  P E r C
```

P
◯

Operating Function: Determines how the time periods for the repeat cycle will be set. Choices are:

• Percentage (PErC): Preset one is input as a percentage of the total time base which is set in Preset 2.

• Standard (Std): Preset one represents the amount of time that output 1 will be "On" during the cycle. Output 2 represents the "Off" time in the cycle. The time range for each output is independently settable.

Note: The following parameter will not appear if "Standard" is chosen as the Operating Function. In that instance, Output 2 will default to "Batch Count".

```
 o u t 2
   I n t
```

P
◯

Output 2 Operation: Determines the functionality of the 2nd output. Choices are:

• Interval (int): Output 2 parallels the operation of Output 1.

• Batch Count (bC): Output 2 will be activated after a preset amount of Cycles is completed. The preset value is input in the Batch Count screen in Control Mode.

Note: The following parameter will not appear if "Percentage" and "Interval" are chosen for the first two settings.

```
 b F n C
   S t o P
```

P
◯

Batch Function: Determines how the time cycle will be affected when the Batch Count Preset is reached. Choices are:

• Stop (StoP): The timing cycle will halt after the number of cycles set for the Batch Count is completed. To activate another cycle, it is necessary to reset the unit and provide a start signal.

• Continue (Cont): The timing cycle will continue until a reset signal is received.

Note: The following parameter will not appear if "Percentage" and "Interval" are chosen for the first two settings.

```
 b c t
   0 0 0 0
```

Batch Count Output: Sets the duration of Output 2, within a range from 1 second to 9999 seconds. A setting of 0000 will latch the output until a reset signal is received.

P

```
 1 5 t
    0 n
```

P

1st Operation: Determines whether the time cycle will start with an "On" operation (Output 1 active) or an "Off" operation (Output 1 inactive). Please note that since preset 1 and preset 2 apply to Operation 1 and Operation 2 respectively, changing this parameter will also affect the function of each preset (ie: Preset 1 will change from the On time to the Off time, if "Off" is chosen for this parameter).

```
 t r n 1
```

P

Time Range 1 : Sets the unit of measure for the time values that will be used for Preset 1. Choices are:

- Seconds
- Minutes
- Hours
- Minutes:Seconds
- Hours:Minutes

Note: The following parameter will not appear if "Minutes:Seconds" or "Hours:Minutes" is chosen for Time Range 1.

```
 d E C 1
```

Decimal Position for Time Range 1: Determines the resolution of the selected time range. Settable from 0000 to 0.000

P

Note: The following parameter will not appear if "Percentage" is chosen as the Operating Function.

```
 t r n 2
```

Time Range 2 : Sets the unit of measure for the time values that will be used for Preset 2. Choices are:

- Seconds
- Minutes
- Hours
- Minutes:Seconds
- Hours:Minutes

P

Note: The following parameter will not appear if "Minutes:Seconds" or "Hours:Minutes" is chosen for Time Range 2.

```
 d E C 2
     u P
```

Decimal Position for Time Range 2: Determines the resolution of the selected time range. Settable from 0000 to 0.000
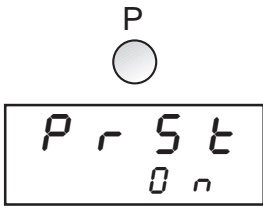
P

```
 t d i r
     u P
```

Timing Direction: Determines whether the time values for Preset 1 and 2 will increment from zero and change the state of the output at the set value (uP) or decrement from the set value and change the state of the output at zero (dn).

P

$$P \ r \ 5 \ t$$
$$0 \ n$$

Power Reset Enable: After a loss of power, the unit can be programmed to either reset upon reapplication of power (*On*) or continue from the point of power interruption (*OFF*).

P

$$F \ r \ 5 \ t$$
$$0 \ n$$
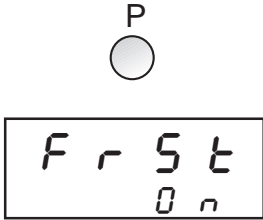
Front Panel Reset Enable: When active (*On*), the timing operation can be reset in Control Mode by simultaneously pressing the "E" and "P" keys. If inactive (*OFF*), the timing operation can only be reset through the remote input.

P

$$5 \ L \ u \ L$$
$$0$$
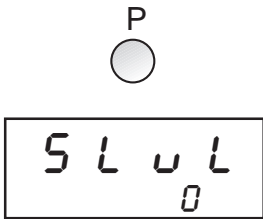
Security Level: 4 different levels of security are available:

>   0 = Full Access
>
>   1 = SP Locked Out
>
>   2 = Access to Program Mode only by holding the "P" key for 10 seconds
>
>   3 = SP Locked Out and access to Program Mode only by holding the "P" key for 10 seconds

Program Mode Overview
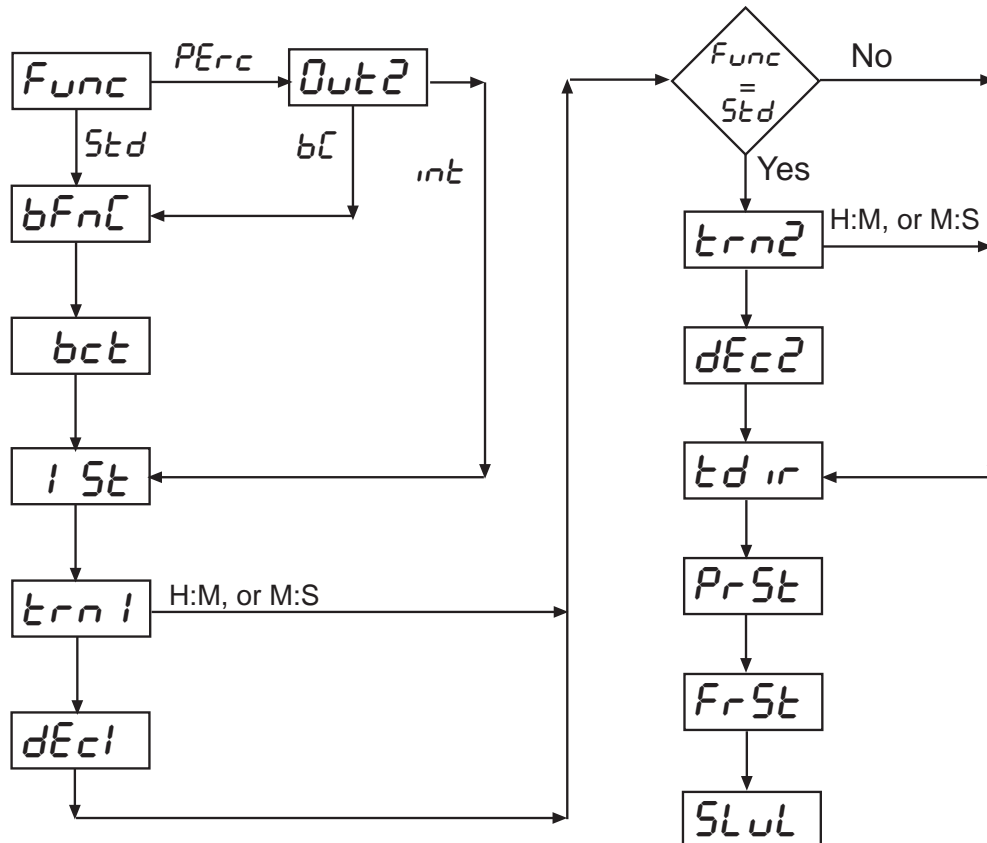
TIMING DIAGRAMS

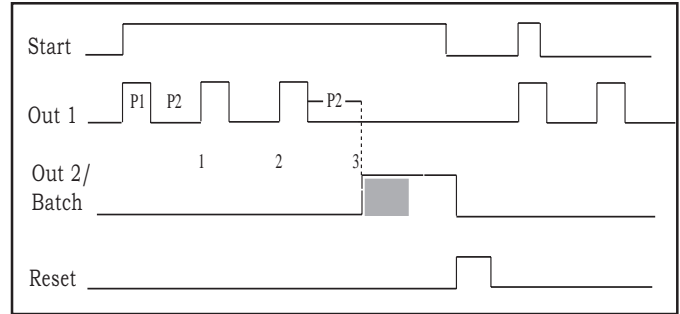### Repeat Cycle - Batch/Continue

	Activates	Deactivates
Cycle Timing	On leading edge of start signal	On deassertion of the Start Signal or Reset
Batch Count	Accumulates after each complete cycle	On reaching the Batch Count Preset Value or Reset
Output 1	On leading edge of start signal or after completion of P1 - based on programming	On completion of P1 or Reset
Output 2	When the Batch Count Value equals the Batch Preset	On completion of the Batch Count Time or Reset

The inhibit input will halt the timing functions while asserted, but leave the outputs in their current state. Setting the Batch Count Preset to zero will disable output 2.

Repeat Cycle - Batch/Stop

	Activates	Deactivates
Cycle Timing	On leading edge of start signal	On completion of the Batch Count Value, deassertion of the Start Signal or Reset
Batch Count	Accumulates after each complete cycle	On reaching the Batch Count Preset Value or Reset
Output 1	On leading edge of start signal or after completion of P1 - based on programming	On completion of P1 or Reset
Output 2	When the Batch Count Value equals the Batch Preset	On completion of the Batch Count Time or Reset

The inhibit input will halt the timing functions while asserted, but leave the outputs in their current state. Setting the Batch Count Preset to zero will disable output 2.

Repeat Cycle - Interval
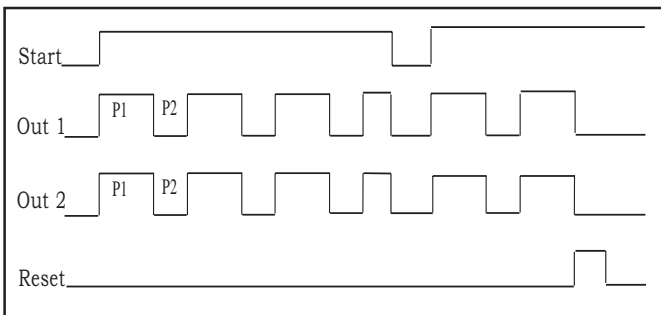
	Activates	Deactivates
Cycle Timing	On leading edge of start signal	On deassertion of the Start Signal or Reset
Output 1	On leading edge of start signal or after completion of P1 - based on programming	On completion of P1 or Reset
Output 2	Mirrors output 1	Mirrors output 1

The inhibit input will halt the timing functions while asserted, but leave the outputs in their current state.

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SPECIFICATIONS

Inputs

Start:	NPN or Dry Contact
Reset:	NPN or Dry Contact
Inhibit:	NPN or Dry Contact
Activation Time:	4 ms (B506-7XX2), 21 ms (B506-7XX1)
Impedance:	10 KΩ

Outputs

Relay (B506-700X):	2 SPDT (5 amp) - 15 ms latency
Transistor (B506-705X):	NPN Open Collector - 30 VDC, 30 mA max

Physical

Dimensions:	48mm x 48mm, 85mm deep
Mounting:	Panel Mounting 45mm x 45mm cutout or DIN rail
Wiring Connection:	Via 11 pin plug in socket
Weight:	100 grams (3.5 ounces)

Operation

Supply Voltage:	85 - 264 VAC 50/60Hz, or 24 VAC/VDC
Power Consumption:	< 10 VA max @ 240 VAC, 200 mA @ 24 VDC
Time Ranges:	Hours, Minutes, Seconds, Hours:Minutes, Minutes:Seconds
Resolution:	Settable for XXXX or XX.XX for Hours, Minutes and Seconds ranges
Operating Modes:	Repeat Cycle
Repeat Accuracy:	± 0.01%
Display:	Dual line, 4 digit, 7 segment LED - 8mm high
Memory:	EEPROM retains settings when power is disengaged
Electrical Service Life:	100,000 cycles at full load
Mechanical Service Life:	10 million cycles at min. load

Environmental

Front Panel Rating:	IEC IP65
Operating Temperature:	0° to 55° C (32° to 131° F)
Storage Temperature:	-40° to 90° C (-40° to 194° F)
Humidity:	5% to 95% RH non-condensing
Approvals:	UL, CUL recognized - File #97337, CE certified

ORDERING INFORMATION

Description	Model #
Repeat Cycle Timer, Relay Out, 90-240 VAC	B506-7001
Repeat Cycle Timer, Relay Out, 24 VDC	B506-7002
Repeat Cycle Timer, NPN trans Out, 90-240 VAC	B506-7051
Repeat Cycle Timer, NPN trans Out, 24 VAC/DC	B506-7052

Description	Model #
11 Pin Socket - DIN Rail Mount	60SR2P06
11 Pin Socket - Outward facing terminals	PBT-03172

WARRANTY

Danaher Controls