

## 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.



## 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

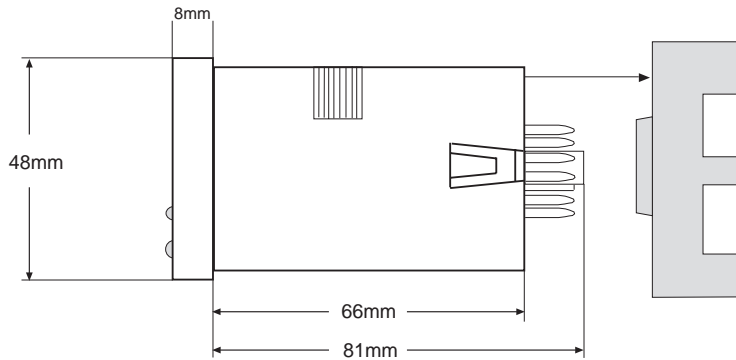
Overview	
Panel Mounting	page 2
Wiring Connections	page 2
Operation	
Front Panel	page 3
Control Mode	page 3
Configuration	
Program Mode	page 4 - 6
Timing Diagrams	page 7
General	
Specifications	page 8
Ordering Information	page 8
Warranty	page 8

**Technical Manual**  
**702120-0001**

**Eagle Signal brand**  
**B506**  
**Repeat Cycle**  
**LED Timer**

# O V E R V I E W

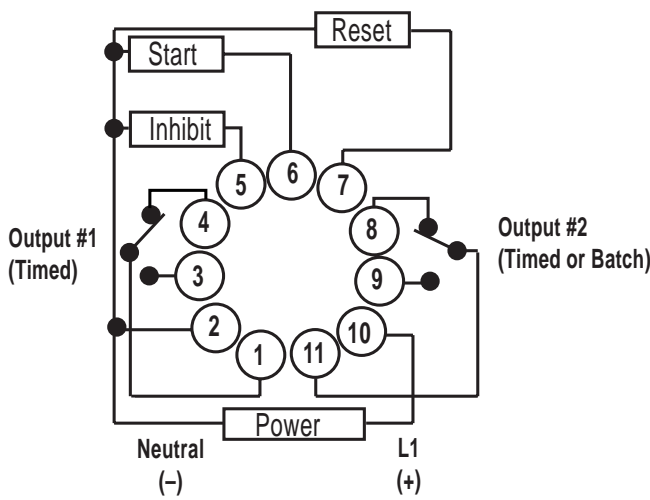
## INSTALLATION



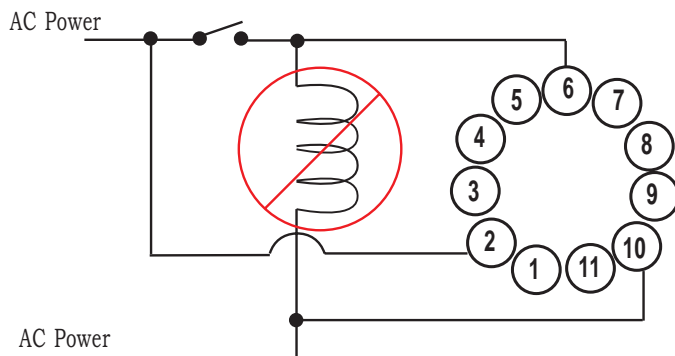
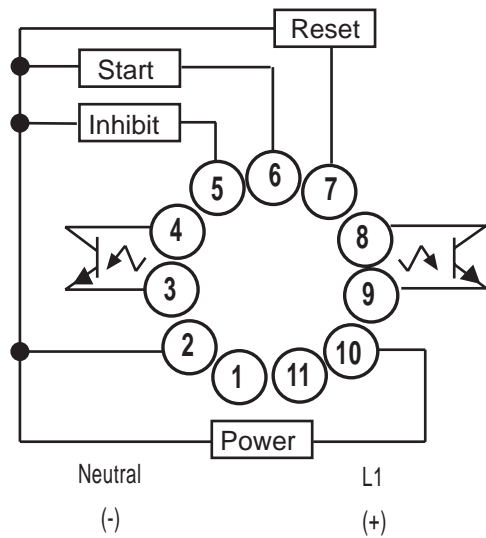
To wire the unit, an 11 pin socket is required. The unit can either be DIN rail mounted or panel mounted using the supplied mounting bracket. For panel mounting, place the unit in the cutout, then slide the bracket forward over the rear of the unit so that the tabs catch in the grooves on the housing 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



B506-7051/2



**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.

# OPERATION

## FRONT PANEL OPERATION

### 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.

### 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.

### 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.

### 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.



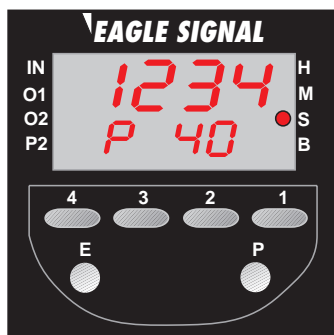
### Program Key

*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

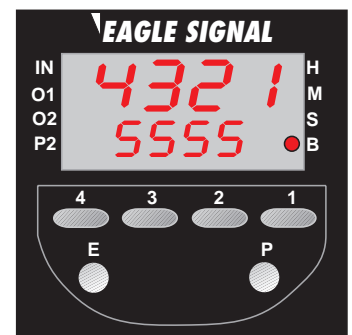


The lower display will indicate the value for Preset 2 in one of two manners:

*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.

# CONFIGURATION

## 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

Func  
Perc

**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.

P  
○

**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".**

out 2  
int

**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.

P  
○

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

batch  
stop

**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.

P  
○

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

bc  
0000

**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.

# CONFIGURATION

P



1 5 t  
0 n

**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).

P



t r n 1

**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

P



d E C 1

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

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

P



t r n 2

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

**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



d E C 2  
u P

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

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

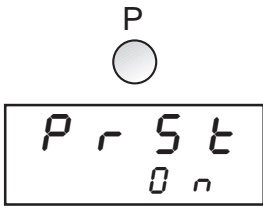
P



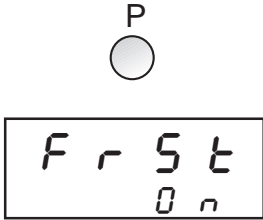
t d , r  
u P

**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).

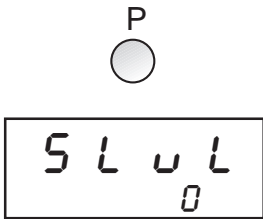
# CONFIGURATION



**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*).



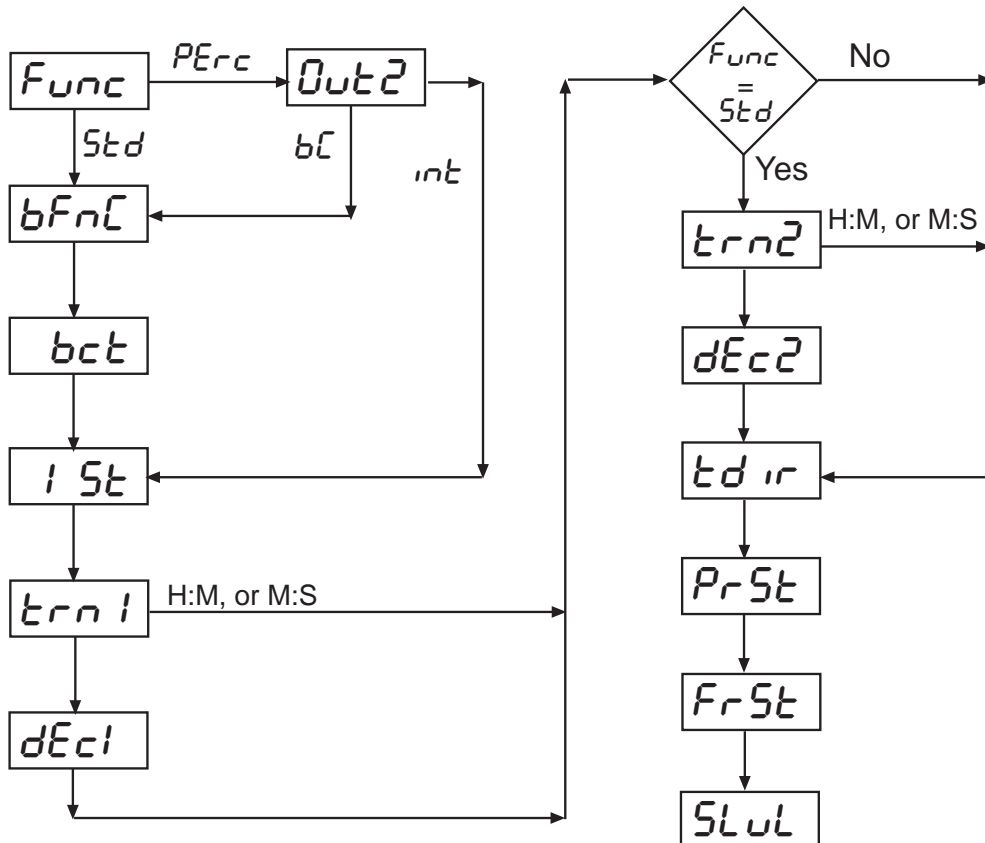
**Front Panel Reset Enable:** When active (*On*), the timing operation can be reset in Control Mode by simultaneously pressing the "E" and "P" keys. If inactive (*Off*), the timing operation can only be reset through the remote input.



**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

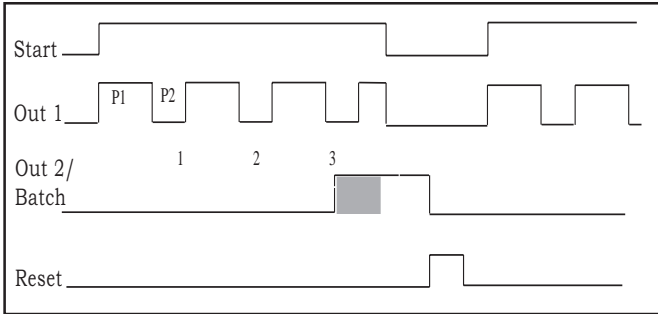
## Program Mode Overview



# CONFIGURATION

## TIMING DIAGRAMS

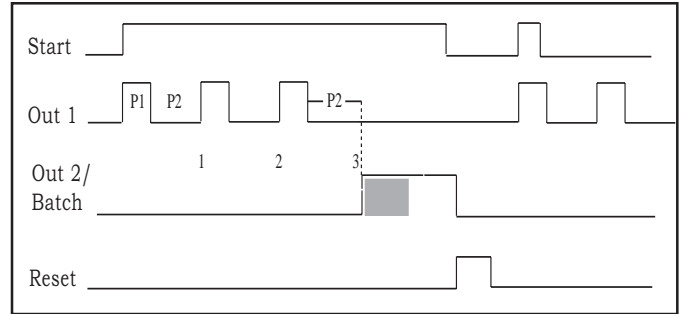
### Repeat Cycle - Batch/Continue



	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.

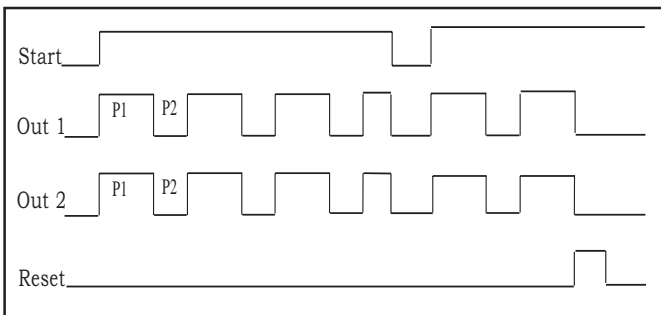
### Repeat Cycle - Batch/Stop



	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.

# GENERAL

## 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 K $\Omega$

### 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)

## ORDERING INFORMATION

### Description

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

## WARRANTY

Standard B506 products manufactured by the Company are warranted to be free from defects in workmanship and material for a period of two years from the date of shipment, and products which are defective in workmanship or material will be repaired or replaced, at the option of the Company, at no charge to the Buyer. Final determination as to whether a product is actually defective rests with the Company. The obligation of the Company hereunder shall be limited solely to repair and replacement of products that fall within the foregoing limitations, and shall be conditioned upon receipt by the Company of written notice of any alleged defects or deficiency promptly after discovery within the warranty period, and in the case of components or units purchased by the Company, the obligation of the Company shall not exceed the settlement that the Company is able to obtain from the supplier thereof. No products shall be returned to the Company without its prior consent.

Printed in U.S.A.  
#702120-0001  
Sept 1997  
Revision none

### 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:	$\pm$ 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

### Description

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

Products which the Company consents to have returned shall be shipped F.O.B. the Company's factory. The Company cannot assume responsibility or accept invoices for unauthorized repairs to its components, even though defective. The life of the products of the Company depends, to a large extent, upon the type of usage thereof, and THE COMPANY MAKES NO WARRANTY AS TO FITNESS OF ITS PRODUCTS FOR SPECIFIC APPLICATIONS BY THE BUYER NOR AS TO PERIOD OF SERVICE UNLESS THE COMPANY SPECIFICALLY AGREES OTHERWISE IN WRITING AFTER THE PROPOSED USAGE HAS BEEN MADE KNOWN TO IT.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.



1675 Delany Road  
Gurnee, IL 60031-1282  
Phone: 847.662.2666  
Fax: 847.662.6633