

Introduction

The Veeder-Root brand C346 family offers a new level of performance in a 1/16 DIN instrument. Fully programmable to operate as a preset counter, a rate meter (with outputs) or an elapsed time counter. Enhanced functionality provides operating modes for batching, background totalizing, and operation as dual counters with master sum. When used as an elapsed time counter, the C346 offers unique functionality for measurement of pulse widths or time between pulses. The C346 is available with an LCD display or the industry's only 6 digit LED display for a 48mm x 48mm product.

A wide variety of features are present that enable use in even the most demanding applications. Inputs can be accepted from both NPN or PNP sensors, dry contacts or encoders, and the input scaling function enables rate and count inputs to be displayed in engineering units. Single and dual preset models are available and each preset offers both a transistor output, which can interface to an external SSR or PLC, and a relay output for directly driving a load. The outputs can be programmed for latching or timed operation.

Even with a high level of functionality, simplicity of operation is still maintained. Important parameters such as the preset and prescale values can be called up quickly with direct access keys while an intuitive button per digit interface enables those values to be changed easily.

The C346 has a NEMA 4 rated faceplate is CE approved, and UL and CUL listed.



Features

- Choice of 6 digit LED or LCD Display
- Button Per-Digit setting and direct access keys for easy operation
- Field programmable for operation as a preset counter, batch counter, rate meter or elapsed time meter, all with outputs
- Input scale function for display in engineering units
- Add/Subtract, Add/Add and quadrature input modes
- Background count value keeps track of production totals
- 12 - 24 VDC sensor power supply
- Accepts either NPN or PNP inputs
- Relay and transistor outputs for each preset
- Reset via front panel, remote input or automatically
- NEMA 4 rated front panel

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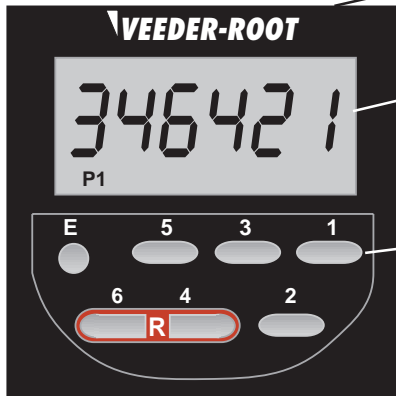
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Technical Manual
701996-0000

Veeder-Root brand
C346
Preset Counter
Rate Meter
Time Counter

O V E R V I E W

CONSTRUCTION



Compact Design

Standard 1/16 DIN (48mm x 48mm) faceplate

Main Display

Can be toggled quickly between count value, set value and prescale value. LCD and LED display models available.

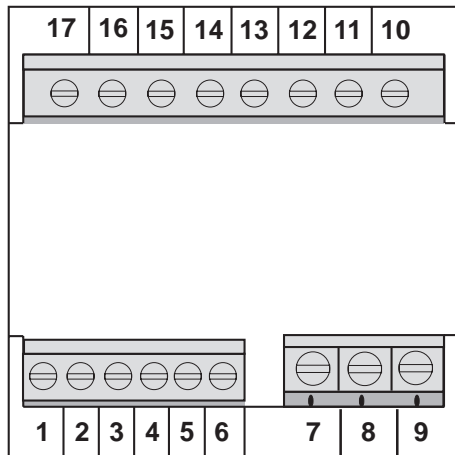
Simple Button per Digit Programming

A dedicated button for each of the 6 decades available in the Preset value enables quick changes. The Edit key allows quick access to important parameters.

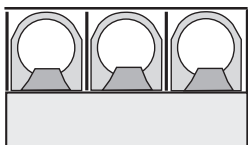
Front Panel Seal

NEMA 4/IEC IP65 front panel for use in washdown environments

REAR TERMINAL CONNECTIONS



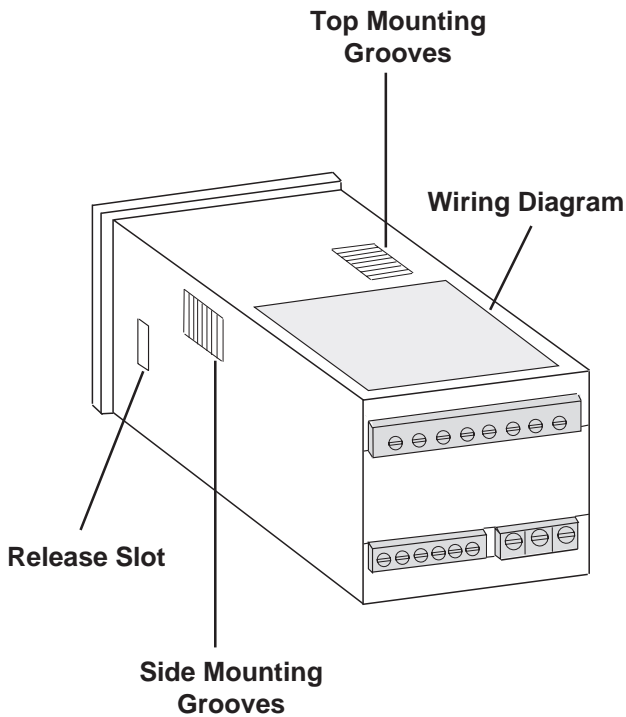
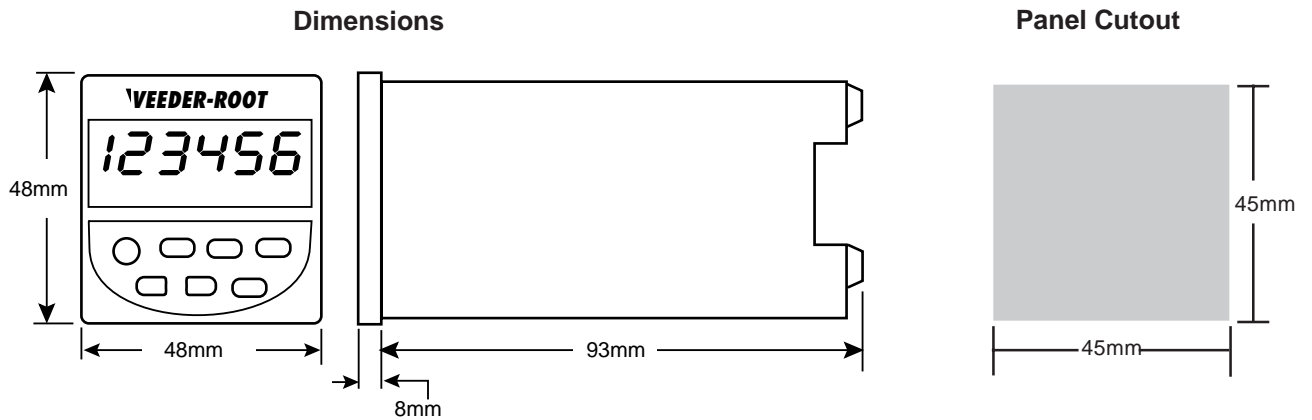
Top View of Terminals



Insert wire into opening and turn the screw to tighten the wire clamp.

1. Sensor Power Supply - Provides 12 -24 VDC for powering of external sensors up to 50 ma.
Note: For DC powered version, this terminal is used for the positive input of the DC supply
2. Common - For use with sensor power supply, Inputs A, B, & C, and transistor outputs 1 and 2
3. Input A- Programmable as the primary count input or channel A for an encoder input
4. Input B - Programmable to be a directional input, an inhibit input, a decrementing input, an incrementing input, or channel B of an encoder input
5. Input C - Programmable for use as a reset input or an inhibit input
6. Transistor Output 1 - Provides a PNP open collector output signal when Preset 1 is activated
7. Relay Output 1 - Normally closed contact
8. Relay Output 1 - Normally open contact
9. Relay Output 1 - Common
10. AC Power Input - Neutral (Not connected for DC powered units)
11. AC Power Input - Line (Not connected for DC powered units)
12. **Do Not Connect**
13. Transistor Output 2 - Provides a PNP open collector output signal when Preset 2 is activated
14. **Do Not Connect**
15. Relay Output 2 - Normally closed contact
16. Relay Output 2 - Normally open contact
17. Relay Output 2 - Common

PANEL MOUNTING



Make cutout(s) based on the recommended panel opening illustrated in the drawing above.

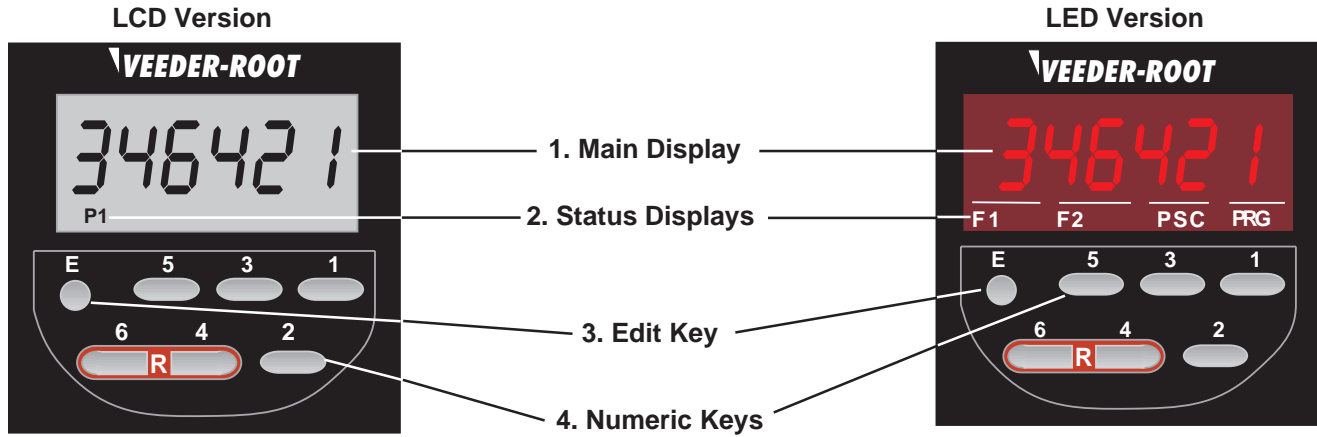
Place the unit in the panel and slide the included gasket over the rear of the unit. Make sure the unit is positioned squarely against the panel and the gasket is not distorted. Orient the bracket so that the tabs are pointing away from the panel. Slide the bracket over the unit so that the tabs catch in the grooves on the housing, and the bracket is as far forward as possible. Use the panel mount screws to tighten the bracket until there is a secure seal against the gasket.

Please note that there are 4 sets of grooves on the housing so that the bracket can be positioned with the screws on the top or the side.

The electronic components of the instrument can be removed from the housing. To do so the bracket must be loosened and slid back until the release slot on each side is showing. Place a small screw driver in the release slot and gently push forward. Repeat the procedure on the release slot on the other side. The front panel and PCBs should then be able to be pulled forward out of the housing.

OPERATION

FRONT PANEL



1. Main Display: In Operating mode indicates the present count, rate or time value. Can also be quickly toggled through use of the Edit key to indicate the Preset Value or the Prescale Value. In Program mode, this display indicates the parameter code on the left side of the display, and the present parameter value on the right side.

2. Status Displays: Indicates Preset 1 (F1), Preset 2 (F2), Prescale, (PSC) and Program (PRG). In Operating mode, F1 and F2 illuminate to indicate the active output(s). In Program Mode, PRG is illuminated, and either F1, F2 or PSC is lit to indicate which value is being displayed.

3. Edit Key: Can be used with the Numeric Keys 1, 2 and 3 in Operation Mode to display Preset 1, Preset 2, and Prescale value respectively. To Enter the Program Mode, depress the Edit key during power-up and continue to hold for 5 secs. Once in Program Mode, the Edit key is used to advance from one parameter to the next.

4. Numeric Keys: Each of the numeric keys is used to increment the value of the respective digit of the Preset(s) or Prescale Value. When pressed simultaneously, the "6" and "4" keys serve as a front panel reset.

SETUP/OPERATION OVERVIEW

Mode Decision: Your Series C346 is a powerful control instrument that can be setup to operate in one of 5 modes:

- Carefully review the following mode descriptions and choose the **Basic Functionality** that best suits the application per the procedure on page 8.
- Once the mode is selected, it can be customized per the **Setup** procedure on the page designated by the table below.

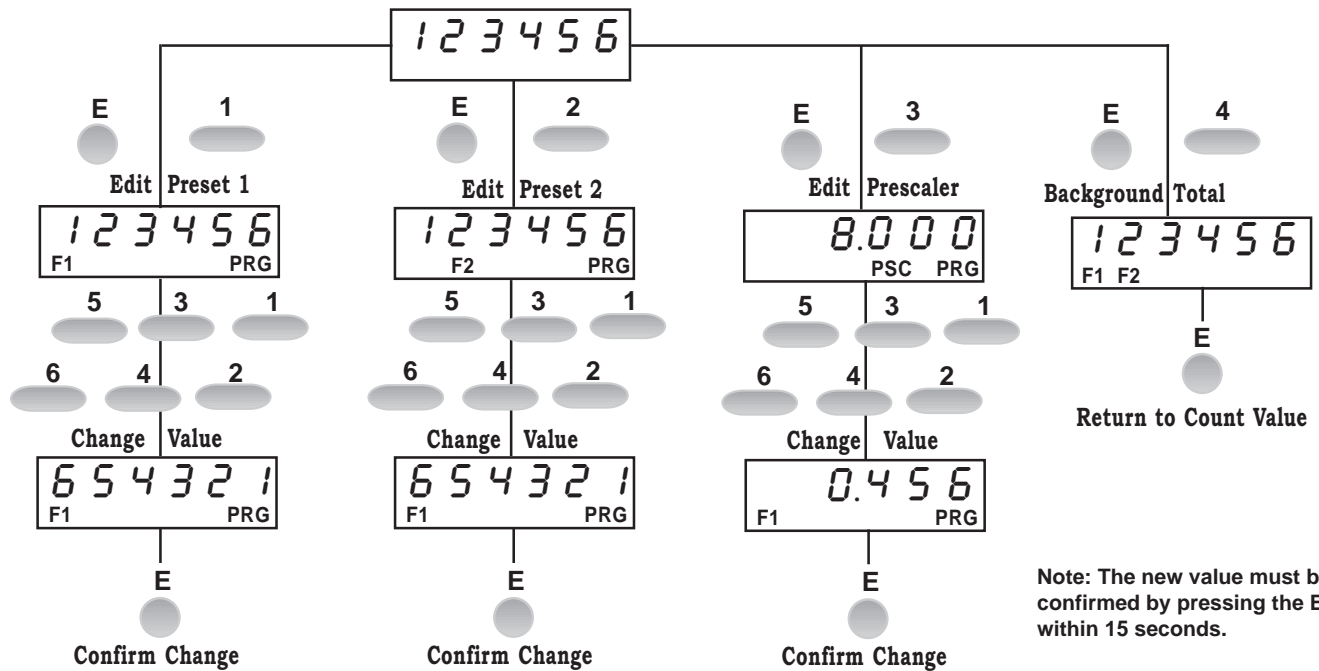
3. Since each mode programs and operates in a manner that is specific to its function, the table below lists the appropriate **Operation** page number.

Mode:	Count	Rate	Time	Dual Register	Batch
Functionality Follow procedure on page 8	1 or 2 preset counter. Background totalizer feature	Rate indicator with 2 alarm limits	1 or 2 preset timer	Two separate totalizing counters (A, B) with third counter providing sum (A+B)	Preset counter with presettable batch counter. Batch total display
Setup Page Number:	8	11	13	16	17
Operation Page Number:	3	5	6	6	7

OPERATION

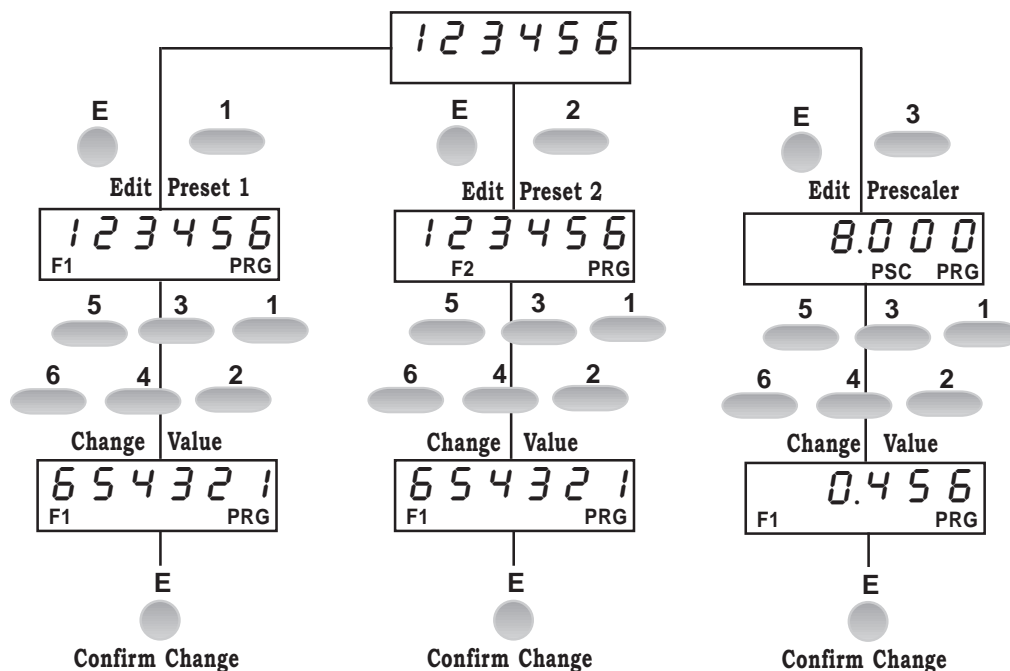
COUNT MODE OPERATION

In Operation Mode, the default display is the Count Value. The Presets and Prescale Value can be accessed by simultaneously pressing the Edit key and the appropriate Numeric key. The Numeric keys are then used to alter the value. It is necessary to then press the Edit key to confirm the change and return to the Count Value display



Note: The new value must be confirmed by pressing the Edit key within 15 seconds.

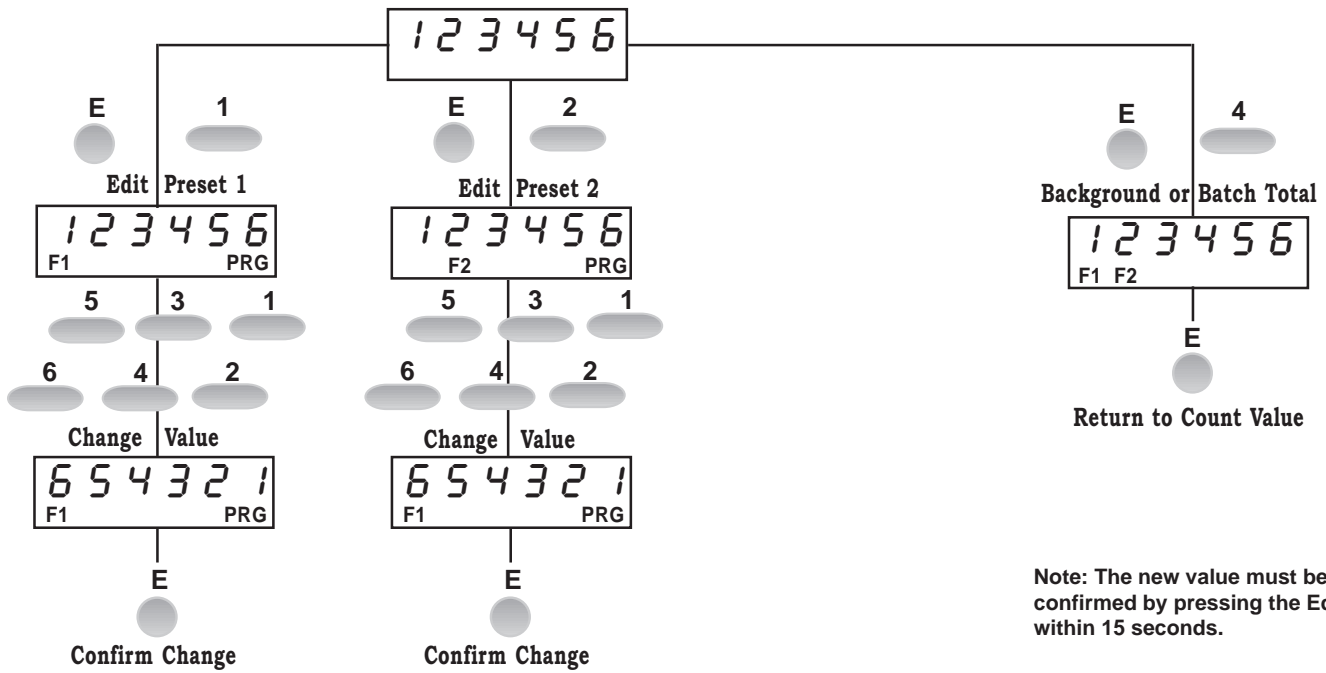
RATE MODE OPERATION



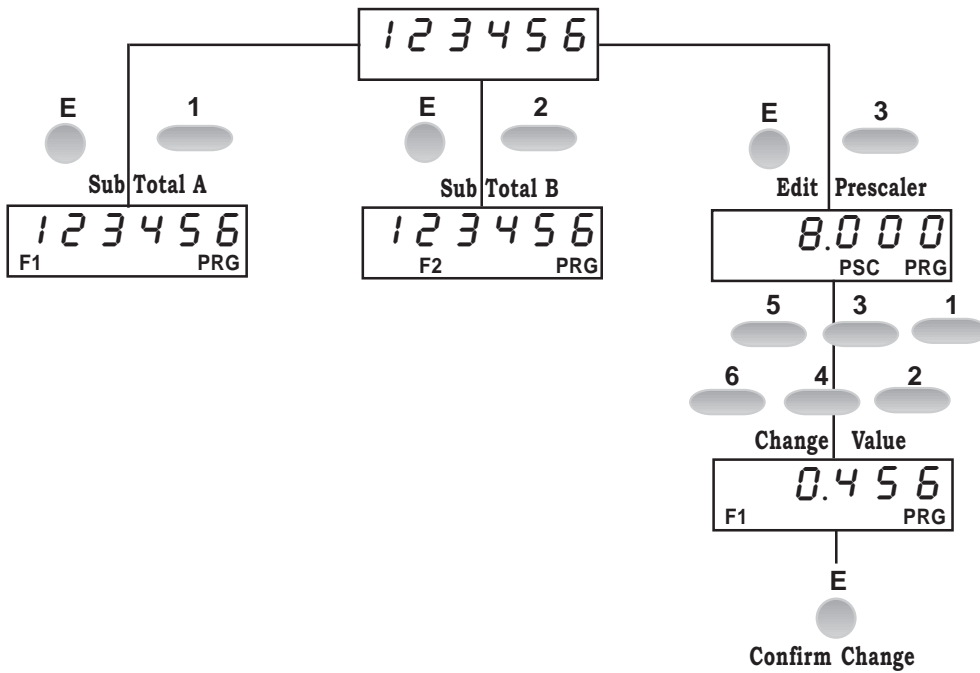
Note: The new value must be confirmed by pressing the Edit key within 15 seconds.

OPERATION

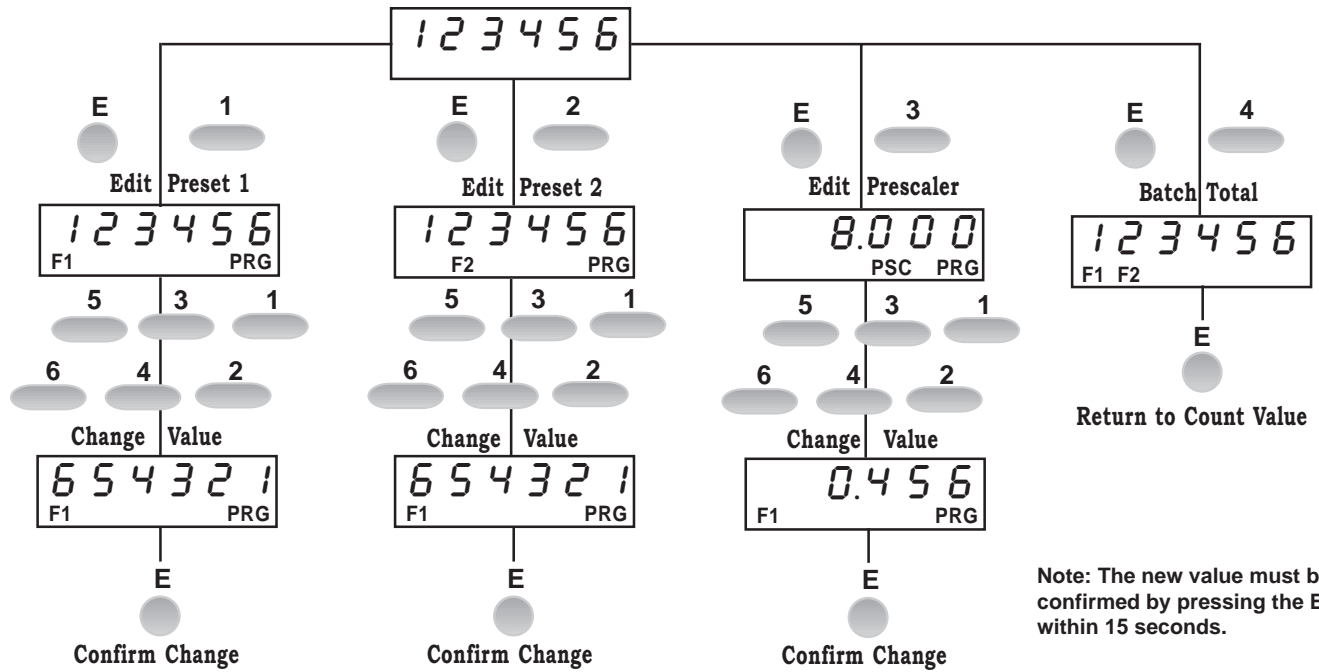
TIME MODE OPERATION



DUAL REGISTER MODE OPERATION



BATCH MODE OPERATION



RESET OPERATION

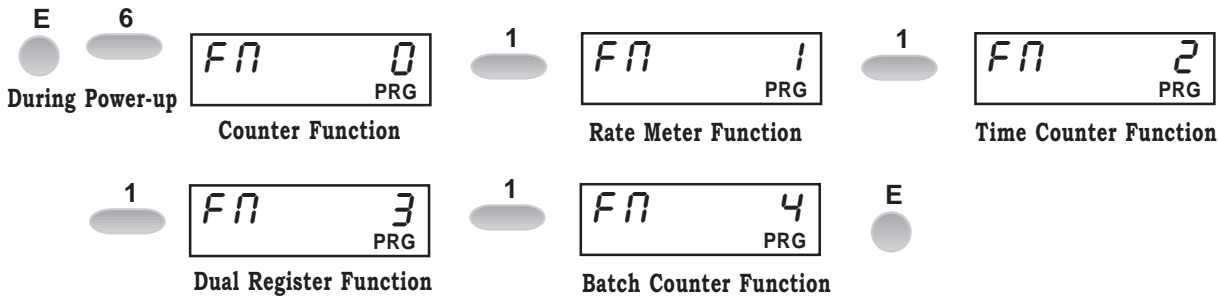
Reset operation (panel reset and remote input) is dependent on the operating mode setup of the C346. The following table describes reset operation of the instrument's 5 operating modes.

Mode:	Count	Rate	Time	Dual Register	Batch
Panel Reset 6 4	Resets count value if displayed	No reset function	Resets time value if displayed	Resets Sub Total A or Sub Total B if displayed	Resets count or batch value if displayed
Remote Reset (Input C)	Resets count at any time	No reset function	Resets time at any time	Resets both Sub Totals and Primary counts	Resets count value (not batch count)

PROGRAMMING

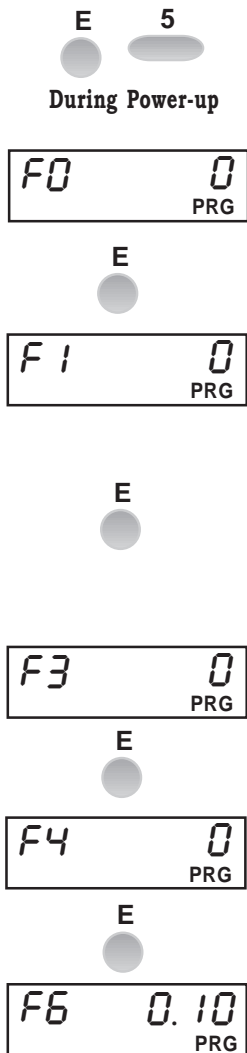
BASIC FUNCTIONALITY

The C346 can be programmed in the field to operate as a Preset Counter, a Rate Meter, Elapsed Time Counter, Dual Register or Batch Counter. The default is Preset Counter. To change the function hold down the both the Edit key and the "6" key during power-up. Use the "1" key to scroll through the 5 choices as shown below.



COUNTER PROGRAMMING MODE

If the functionality has been set to FN0, then the unit will operate as a preset counter. To enter the Program mode, hold down the Edit key and the "5" key during power-up. Use the Edit Key to move from one parameter to the next, and the "1" key to scroll through the parameter choices. Holding down the Edit key for 5 seconds will return the unit to Operation mode.



F0 Default Settings: Changing this value from 0 to 1 will set all parameters back to their default values. A setting of 0 has no effect on the other parameters.

F1 Count Mode: Defines the functionality of the 3 inputs. The choices are:

Code	Input A	Input B	Input C
0	Count Input	Inhibit	Reset
1	Count Input	Direction (U/D)	Reset
2	Count Input	Direction (U/D)	Inhibit
3	Incrementing	Decrementing	Reset
4	Incrementing	Decrementing	Inhibit
5	Incrementing	Incrementing	Reset
6	Channel A	Channel B	Reset
7	Channel A	Channel B	Inhibit

F3 Display Decimal Point: Defines the number of digits displayed to the right of the decimal point for the Count and Preset values. Settable in a range from 0 to 3.

F4 Reset Operation: Defines how the count value will behave when the preset is reached. Choices are:

0	Reset to "0", no Autoreset
1	Reset to "0", Autoreset
2	Reset to Preset, no Autoreset
3	Reset to Preset, Autoreset

F6 Output 1 Time: Sets the amount of time Output 1 will be active once the Preset is reached. Choices are:

Off	No output
On	Latching output (for dual presets, output 2 will deactivate output 1)
0.02	20 ms
0.05	50 ms
0.10	100 ms
0.50	500 ms
1.00	1 sec.

F7 0
PRG



F7 Output 2 Time: Sets the amount of time Output 2 will be active after the Preset is reached. Choices are the same as Output 1

F9 10
PRG



F9 Output on Reset: When set to ON (1), the primary output (Output 2 on dual preset version) will activate when the unit is reset.

F10 1
PRG



F10 Input Type: Enables the unit to be programmed to work with either sinking or sourcing inputs. Choices are NPN (0), and PNP (1)

F11 1
PRG



F11 Count Speed: Enables the unit to be set for full speed of 5 kHz (1) or to 30 Hz (0) to provide debounce filtering for contact inputs.

F12 0
PRG



F12 Static/Dynamic Reset: When set to static reset (0) counting stops on the leading edge of the reset input and does not resume until the trailing edge. When set to dynamic reset (1) the Count Value is immediately reset on the leading edge of the reset signal, and will accumulate while the reset signal is still active.

F14 0
PRG



F14 Output Signal Memory: Determines if after power interruption the outputs will resume their state prior to the loss of power (1) or if the output will be reset (0)

F15 0
PRG



F15 Background Totalizer: Setting this parameter to ON (1) will activate the totalizer function.

F20 0
PRG



F20 Front Panel Reset Enable: When active (0), the count value and output(s) can be reset by simultaneously pressing the "6" and "4" keys. If set to Off (1), reset can only take place through the remote input, or through the front panel by holding the "6" and "4" keys for 10 seconds (see F29).

PROGRAMMING

F21 0
PRG

E



F21 Preset 1 Access Enable: When active (0), the Preset 1 value can be accessed by simultaneously holding down the Edit key and the "1" key. If set to inactive (1), Preset 1 can not be accessed, or only accessed by holding down the Edit key and the "1" key for 10 seconds (see F29)

F22 0
PRG

E



F22 Preset 2 Access Enable: When active (0), the Preset 2 value can be accessed by simultaneously holding down the Edit key and the "2" key. If set to inactive (1), Preset 2 can not be accessed, or only accessed by holding down the Edit key and the "2" key for 10 seconds (see F29)

F23 0
PRG

E



F23 Prescale Access Enable: When active (0), the Prescale value can be accessed by simultaneously holding down the Edit key and the "3" key. If set to inactive (1), Prescale can not be accessed, or only accessed by holding down the Edit key and the "3" key for 10 seconds (see F29)

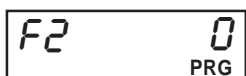
F29 0
PRG

F29 Lockout Mode: If parameters F21, F22 and F23 are set to inactive, Preset 1 & 2 and the Prescale value can still be accessed by holding down the respective keys for 10 seconds if this parameter is set to active (0). If set to inactive (1), those values can not be accessed.

RATE METER PROGRAMMING



During Power-up



If the functionality has been set to FN1, then the unit will operate as a programmable rate meter utilizing a time interval (1/Tau) method. To enter the Program mode, hold down the Edit key and the "5" key during power-up. Use the Edit key to move from one parameter to the next, and the "1" key to scroll through the parameter choices. Holding down the Edit key for 5 seconds will return the unit to Operation mode.

F0 Default Settings: Changing this value from 0 to 1 will set all parameters back to their default values. A setting of 0 has no effect on the other parameters.

F1 Rate Mode: Defines the functionality of the 3 inputs. The choices are:

Code	Input A	Input B	Input C
0	Count Input	---	Hold
1	Count Input	Direction (U/D)	Hold
2	Same as F1 = 1	---	---
3	Incrementing	Decrementing	Hold
4	Same as F1 = 3	---	---
5	Incrementing	Incrementing	Hold
6	Channel A	Channel B	Hold
7	Same as F1 = 6	---	---

F3 Display Decimal Point: Defines the number of digits displayed to the right of the decimal point for the Rate and Preset values. Settable in a range from 0 to 3.

F5 Minimum Input Frequency: Sets the frequency level under which the rate display will read zero. Choices are 1 Hz or 0.125 Hz (1 pulse in 8 seconds).

Output 1 Time: Output 1 will be active when the rate value is below Preset 1. Setting this parameter to "On" enables this function to operate while a setting of "Off" will disable the function.

Output 2 Time: Output 2 will be active when the rate value is above Preset 2. Setting this parameter to "On" enables this function to operate while a setting of "Off" will disable the function.

Note: It is necessary to have a Dual Preset version to utilize either of the outputs in Rate Meter mode. Single Preset units will operate as a rate meter with no outputs.

PROGRAMMING

F10 1
PRG



F10 Input Type: Enables the unit to be programmed to work with either sinking or sourcing inputs. Choices are NPN (0), and PNP (1).

F11 1
PRG



F11 Count Speed: Enables the unit to be set for full speed of 5 kHz (1) or to 30 Hz (0) to provide debounce filtering for contact inputs.

F13 0
PRG



F13 Start-up Suppression: When active (1), an output can not be On until the Off conditions have been satisfied. For example, a rate value on start-up below Preset 1 will not trigger output 1; Output 1 will only be activated after the rate value has risen above Preset 1 and then fallen back below.

F21 0
PRG



F21 Preset 1 Access Enable: When active (0), the Preset 1 value can be accessed by simultaneously holding down the Edit key and the "1" key. If set to inactive (1), Preset 1 can not be accessed, or only accessed by holding down the Edit key and the "1" key for 10 seconds (see F29).

F22 0
PRG



F22 Preset 2 Access Enable: When active (0), the Preset 2 value can be accessed by simultaneously holding down the Edit key and the "2" key. If set to inactive (1), Preset 2 can not be accessed, or only accessed by holding down the Edit key and the "2" key for 10 seconds (see F29).

F23 0
PRG



F23 Prescale Enable: When active (0), the Prescale value can be accessed by simultaneously holding down the Edit key and the "3" key. If set to inactive (1), Prescale can not be accessed, or only accessed by holding down the Edit key and the "3" key for 10 seconds (see F29).

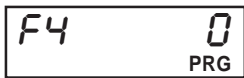
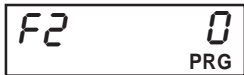
F29 0
PRG

F29 Lockout Mode: If parameters F21, F22 and F23 are set to inactive, Preset 1 & 2 and the Prescale value can still be accessed by holding down the respective keys for 10 seconds if this parameter is set to active (0). If set to inactive (1), those values can not be accessed.

ELAPSED TIME MODE



During Power-up



If the functionality has been set to FN2, then the unit will operate as an elapsed time counter, in one of 3 programmable operation modes. To enter the Program mode, hold down the Edit key and the "5" key during power-up. Use the edit key to move from one parameter to the next, and the "1" key to scroll through the parameter choices. Holding down the Edit key for 5 seconds will return the unit to Operation mode.

F0 Default Settings: Changing this value from 0 to 1 will set all parameters back to their default values. A setting of 0 has no effect on the other parameters.

F2 Time Format: Sets the units in which will be used for the timing display. Choices are seconds (0), minutes (1) and hours (2).

F3 Display Decimal Point: Defines the number of digits displayed to the right of the decimal point for the Time and Preset values. Settable in a range from 0 to 3.

F4 Reset Operation: Defines how the time value will behave when the preset is reached. Choices are:

Code	
0	Reset to "0", no Autoreset
1	Reset to "0", Autoreset
2	Reset to Preset, no Autoreset
3	Reset to Preset, Autoreset

F6 Output 1 Time: Sets the amount of time Output 1 will be active once the Preset is reached. Choices are:

Code	
Off	No output
On	Latching output (for dual presets, output 2 will deactivate output 1)
0.02	20 ms
0.05	50 ms
0.10	100 ms
0.50	500 ms
1.00	1 sec.

F7 Output 2 Time: Sets the amount of time Output 2 will be active once Preset 1 is reached. Choices are the same as for Output 1.

F8 Timing Operation: The unit can be programmed to operate in one of 4 modes:

Code	
0	Cumulative pulse width measurement
1	Cumulative period measurement
2	Singular Pulse width measurement
3	Singular Period measurement

Note: Timing diagrams for each mode are included at the end of this section

PROGRAMMING

F9 .10
PRG



F9 Output on Reset: When set to ON (1), the primary output (Output 2 on dual preset version) will activate when the unit is reset.

F10 .10
PRG



F10 Input Type: Enables the unit to be programmed to work with either sinking or sourcing inputs. Choices are NPN (0), and PNP (1)

F11 1
PRG



F11 Count Speed: Enables the unit to be set for full speed of 5 kHz (1) or to 30 Hz (0) to provide debounce filtering for contact inputs.

F12 0
PRG



F12 Static/Dynamic Reset: When set to static reset (0) counting stops on the leading edge of the reset input and can not resume until the trailing edge. When set to dynamic reset (1) the Count Value is immediately reset on the leading edge of the reset signal, and can accumulate while the reset signal is still active.

F14 0
PRG



F14 Output Signal Memory: Determines if after power interruption the outputs will resume their state prior to the loss of power (1) or if the output will be reset (0)

F15 0
PRG



F15 Background Totalizer: Setting this parameter to ON (1) will activate the totalizer function.

F20 0
PRG

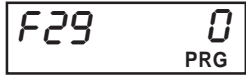


F20 Front Panel Reset Enable: When active (0), the count value and output(s) can be reset by simultaneously pressing the "6" and "4" keys. If set to Off (1), reset can only take place through the remote input, or through the front panel by holding the "6" and "4" keys for 10 seconds (see F29).

F21 0
PRG



F21 Preset 1 Enable: When active (0), the Preset 1 value can be accessed by simultaneously holding down the Edit key and the "1" key. If set to inactive (1), Preset 1 can not be accessed, or only accessed by holding down the Edit key and the "1" key for 10 seconds (see F29)



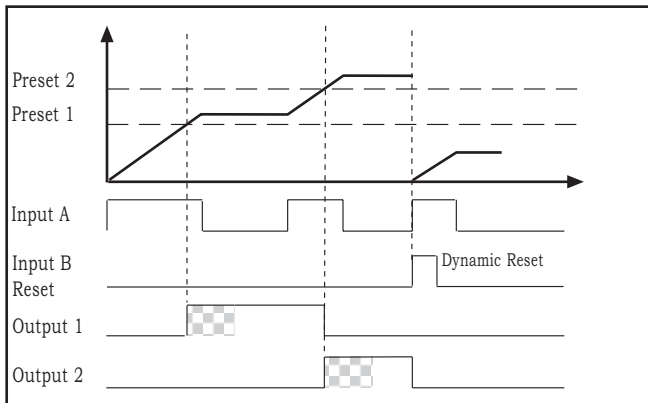
F22 Preset 2 Enable: When active (0), the Preset 2 value can be accessed by simultaneously holding down the Edit key and the "2" key. If set to inactive (1), Preset 2 can not be accessed, or only accessed by holding down the Edit key and the "2" key for 10 seconds (see F29)

F29 Lockout Mode: If parameters F21, F22 and F23 are set to inactive, Preset 1 & 2 and the Prescale value can still be accessed by holding down the respective keys for 10 seconds if this parameter is set to active (0). If set to inactive (1), those values can not be accessed.

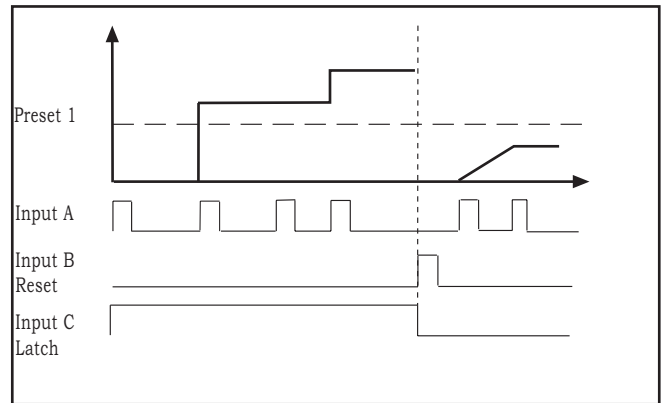
Note: The function of the 3 inputs are not programmable in this mode. They are preassigned as follows:

- Input A: Start/Stop Pulse**
- Input B: Reset**
- Input C: Latch (When active, timing is not visible on the display, the new period/pulse width value will be displayed at the end of the start/stop cycle)**

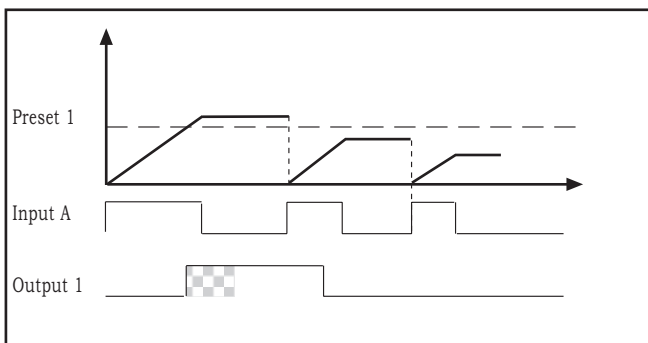
Cumulative Pulse Width Measurement, F8 = 0



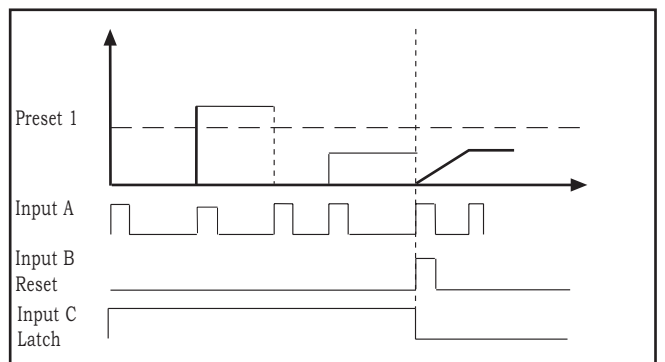
Cumulative Period Measurement F8 = 1



Singular Pulse Width Measurement, F8 = 2

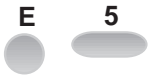


Singular Period Measurement, F8 = 3

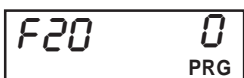
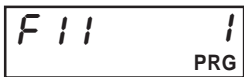
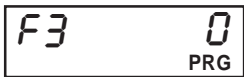


PROGRAMMING

DUAL REGISTER MODE



During Power-up



If the functionality has been set to FN3, then the unit will operate as a totalizer with separate subtotal registers for input A and input B. To enter the Program mode, hold down the Edit key and the "5" key during power-up. Use the Edit key to move from one parameter to the next, and the "1" key to scroll through the parameter choices. Holding down the Edit key for 5 seconds will return the unit to Operation mode.

F0 Default Settings: Changing this value from 0 to 1 will set all parameters back to their default values. A setting of 0 has no effect on the other parameters.

F1 Register Mode: Determines the count direction of the dual registers.

Code	Input A	Input B	Input C
0	Adding	Adding	Reset
1	Adding	Subtracting	Reset

F3 Display Decimal Point: Defines the number of digits displayed to the right of the decimal point for both registers. Settable in a range from 0 to 3.

F10 Input Type: Enables the unit to be programmed to work with either sinking or sourcing inputs. Choices are NPN (0), and PNP (1)

F11 Count Speed: Enables the unit to be set for full speed of 5 kHz (1) or to 30 Hz (0) to provide debounce filtering for contact inputs.

F12 Static/Dynamic Reset: When set to static reset (0) counting stops on the leading edge of the reset input and does not resume until the trailing edge. When set to dynamic reset (1) the Count Value is immediately reset on the leading edge of the reset signal, and will accumulate while the reset signal is still active.

F20 Front Panel Reset Enable: When active (0), the count value and output(s) can be reset by simultaneously pressing the "6" and "4" keys. If set to Off (1), reset can only take place through the remote input, or through the front panel by holding the "6" and "4" keys for 10 seconds (see F29).

F21 0
PRG

E



F22 0
PRG

E



F23 0
PRG

E



F29 0
PRG

E



F21 Reserved

F22 Reserved

F23 Prescale Access Enable: When active (0), the Prescale value can be accessed by simultaneously holding down the Edit key and the "3" key. If set to inactive (1), Prescale can not be accessed, or only accessed by holding down the Edit key and the "3" key for 10 seconds (see F29)

F29 Lockout Mode: If parameter F23 is set to inactive, the Prescale value can still be accessed by holding down the respective keys for 10 seconds if this parameter is set to active (0). If set to inactive (1), those values can not be accessed.

BATCH COUNTER MODE



During Power-up

If the functionality has been set to FN4, the unit will operate as a Batch Counter with 2 separate control functions. Preset 2 is for the primary count value (6 pcs. per box) while preset 1 is for the batch value (24 boxes per pallet). To enter the Program mode, hold down the Edit key and the "5" key during power-up. Use the Edit key to move from one parameter to the next, and the "1" key to scroll through the parameter choices. Holding down the Edit key for 5 seconds will return the unit to Operation mode.

F0 0
PRG

E



F1 0
PRG

E



F0 Default Settings: Changing this value from 0 to 1 will set all parameters back to their default values. A setting of 0 has no effect on the other parameters.

F1 Count Mode: Defines the functionality of the 3 inputs. The choices are:

Code	Input A	Input B	Input C
0	Count Input	Inhibit	Reset
1	Count Input	Direction (U/D)	Reset
2	Count Input	Direction (U/D)	Inhibit
3	Incrementing	Decrementing	Reset
4	Incrementing	Decrementing	Inhibit
5	Incrementing	Incrementing	Reset
6	Channel A*	Channel B*	Reset
7	Channel A*	Channel B*	Inhibit

* Quadrature counting for encoders

F3 0
PRG

E



F3 Display Decimal Point: Defines the number of digits displayed to the right of the decimal point for both registers. Settable in a range from 0 to 3.

PROGRAMMING

F4 0
PRG

E



F4 Reset Operation: Defines how the count value will behave when the preset is reached. Choices are:

- 0 Reset to "0", no Autoreset
- 1 Reset to "0", Autoreset
- 2 Reset to Preset, no Autoreset
- 3 Reset to Preset, Autoreset

F6 0.10
PRG

E



F6 Output 1 Time: Sets the amount of time Output 1 will be active once the Preset is reached. Choices are:

- Off No output
- On Latching output (for dual presets, output 2 will deactivate output 1)
- 0.02 20 ms
- 0.05 50 ms
- 0.10 100 ms
- 0.50 500 ms
- 1.00 1 sec.

F7 0.10
PRG

E



F7 Output 2 Time: Sets the amount of time Output 2 will be active after the Preset is reached. Choices are the same as Output 1

F9 0
PRG

E



F9 Output on Reset: When set to ON (1), the primary output (Output 2 on dual preset version) will activate when the unit is reset.

F10 1
PRG

E



F10 Input Type: Enables the unit to be programmed to work with either sinking or sourcing inputs. Choices are NPN (0), and PNP (1)

F11 1
PRG

E



F11 Count Speed: Enables the unit to be set for full speed of 5 kHz (1) or to 30 Hz (0) to provide debounce filtering for contact inputs.

F12 0
PRG

E



F12 Static/Dynamic Reset: When set to static reset (0) counting stops on the leading edge of the reset input and does not resume until the trailing edge. When set to dynamic reset (1) the Count Value is immediately reset on the leading edge of the reset signal, and will accumulate while the reset signal is still active.

F14 0
PRG

E



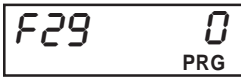
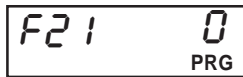
F14 Output Signal Memory: Determines if after power interruption the outputs will resume their state prior to the loss of power (1) or if the output will be reset (0)

F20 0
PRG

E



F20 Front Panel Reset Enable: When active (0), the count value and output(s) can be reset by simultaneously pressing the "6" and "4" keys. If set to Off (1), reset can only take place through the remote input, or through the front panel by holding the "6" and "4" keys for 10 seconds (see F29).



F21 Preset 1 Enable: When active (0), the Preset 1 value can be accessed by simultaneously holding down the Edit key and the "1" key. If set to inactive (1), Preset 1 can not be accessed, or only accessed by holding down the Edit key and the "1" key for 10 seconds (see F29)

F22 Preset 2 Access Enable: When active (0), the Preset 2 value can be accessed by simultaneously holding down the Edit key and the "2" key. If set to inactive (1), Preset 2 can not be accessed, or only accessed by holding down the Edit key and the "2" key for 10 seconds (see F29).

F23 Prescale Enable: When active (0), the Prescale value can be accessed by simultaneously holding down the Edit key and the "3" key. If set to inactive (1), Prescale can not be accessed, or only accessed by holding down the Edit key and the "3" key for 10 seconds (see F29).

F29 Lockout Mode: If parameters F21, F22 and F23 are set to inactive, Preset 1 & 2 and the Prescale value can still be accessed by holding down the respective keys for 10 seconds if this parameter is set to active (0). If set to inactive (1), those values can not be accessed.

SPECIFICATIONS

Count Operation:

Count Modes: Add/Subtract Add/Add, Directional input or Quadrature
 Count Speed: 30 Hz (17ms min. pulse width), or 5 kHz (100µs min. pulse width) field selectable (2 kHz in quadrature)
 Presets: 6 digit, Single (C346-0_1), Dual (C346-0_2)
 Reset: Front panel (selectable enable), remote input or automatic
 Calibrator: 0.001 to 9.999 multiplier common to inputs A and B
 Decimal Point: Selectable from XXXX to X.XXX

Rate Meter Operation:

Mode of Operation: Time interval (1/Tau)
 Update Time: 500ms for each input if frequency is >2Hz
 Alarms: Upper and Lower absolute value
 Calibrator: 0.001 to 9.999 multiplier common to inputs A and B

Elapsed Time Operation:

Timing Modes: Pulse Width Measurement (cumulative or singular), Period Measurement (cumulative or singular)
 Time Ranges: Selectable for Seconds, Minutes, Hours
 Resolution: Selectable from XXXX to X.XXX

Physical:

Dimensions: 48mm x 48mm, 93.5mm deep
 Mounting: Panel mount (mounting bracket supplied), 45mm x 45mm cutout
 Terminals: Screw Type
 Display: Single line seven segment LED, 7.6mm high or Single line LCD, 9mm high

General:

Supply Voltage: 115 VAC, 230 VAC 50/60Hz, 12 - 24 VDC
 Current Consumption: DC < 150 mA, AC < 50 mA
 Accessory Power: 12 to 24 VDC, 0 - 50mA
 Ambient Temperature - Operating: 0 to 50° C, 32 to 122° F
 Ambient Temperature - Storage: -20 to 60° C -4 to 140° F
 Front Panel Rating: NEMA 4/IP65
 Approvals: CE, UL, CUL

Inputs:

Count Inputs: Contact Closure, Sourcing, Sinking, low < 2.0 VDC, high > 8.0 VDC, 40VDC Max.
 Control Inputs: Remote Reset and Program Enable; low < 2.0 VDC, high > 8.0 VDC, 40VDC Max.
 Input Resistance: approx. 5KΩ
 Minimum Pulse Width: 17 ms (30 Hz), 100 µs (5 kHz)
 Maximum Voltage: 40 VDC

Outputs:

Number: 1 relay and 1 transistor per preset
 Relay(s): SPDT 1A resistive @ 250 VAC
 Transistor: PNP open collector, 24 VDC max, 10 mA max

ORDERING INFORMATION

<u>Description</u>	<u>Model #</u>
LCD/Single Preset/AC115	C346-0411
LCD/Single Preset/AC230	C346-0413
LCD/Single Preset/DC 12-24	C346-0412
LCD/Dual Preset/AC115	C346-0421
LCD/Dual Preset/AC230	C346-0423
LCD Dual Preset/DC 12-24	C346-0422
LED/Single Preset/AC115	C346-0511
LED/Single Preset/AC230	C346-0513
LED/Single Preset/DC 12-24	C346-0512
LED/Dual Preset/AC115	C346-0521
LED/Dual Preset/AC230	C346-0523
LED/Dual Preset/DC 12-24	C346-0522

WARRANTY

Standard products manufactured by the Company are warranted to be free from defects in workmanship and material for a period of one year 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. 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.