

## Introduction

Within the Danaher Controls A103 family you'll find a product to meet nearly every requirement for panel mounted control and indication. Housed in a DIN standard 36mm x 72mm case, the A103-007 is an ideal choice for event counting operations which require a preset. An internal solid state relay provides a logic signal that can be sent to another control device or to an external relay.

The 8 digit supertwist LCD display provides easy viewing at a glance. For conditions where ambient light is poor, the display can be backlit by connecting an external DC (10-28 Volt) power supply. A single unit can accept NPN & dry contact inputs for low speed (30Hz) counting and PNP or square wave signals for high speed applications up to 10 kHz.

Powered by either one or two replaceable 3V Lithium batteries, this unique design allows for a new battery to be installed before removing the old one, thereby retaining count total and program data. A low battery indicator appears on the screen to provide a warning several weeks before the end of battery life. If two batteries are used simultaneously, the individual expected life doubles to 10 years.

Setup is quick and simple as the two front panel keys are used to scroll through 4 menu choices. A NEMA 4X front panel and noise immunity tested to IEC 801 level 3 makes this unit suitable for harsh environments. Several option modules are available, including a 5 amp relay which would enable the unit to directly drive a load.



## Features

- Large, easy to read 8-digit supertwist LCD with backlighting capability
- Display can be toggled between count and preset value
- Powered by an internal 3 Volt lithium battery
- Accepts low speed (30 Hz) NPN & dry contact inputs, and high speed (10 kHz) PNP signals or square wave signals
- 0.1 Amp SSR output
- Option Modules provide added functionality and convenience
- Simple menu-driven setup
- NEMA 4X rated front panel for use in washdown environments

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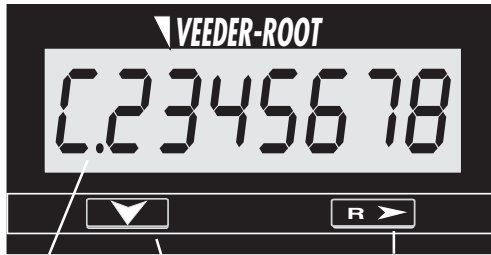
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**Technical Manual**  
**701954-0008**

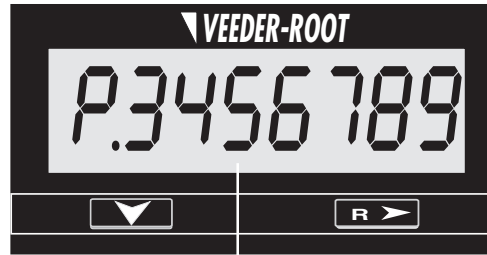
**Veeder-Root brand**  
**A103-007**  
**Preset**  
**Counter**

# O V E R V I E W

## OPERATION



- 1. Total Display
- 2. Down Key
- 3. Next/Reset Key

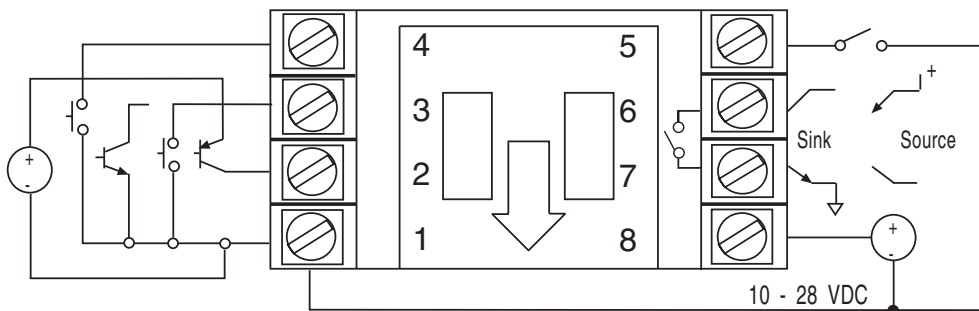


- 4. Preset Value

- 1. Total Display:** Indicates the present count value, which is equal to the number of pulses received since the last reset
- 2. Down Key:** Toggles the unit between the total and preset displays when in Operation Mode. When the program input is active this key is used to scroll through the menu items. After a menu item has been chosen for editing, the down key is used to set the value for the currently selected (flashing) digit.

- 3. Next/Reset Key:** When in Operation Mode, depressing the key will reset the count value to 0, if Front Panel Reset has been enabled in Programming Mode. When the program input is active this key is used to select a menu item for editing (left most digit will begin to flash) and then move to the desired digit to be changed.
- 4. Preset Value:** Indicates the number at which the output will be activated (for Up counting) or the reset value (for Down counting)

## REAR TERMINAL CONNECTIONS

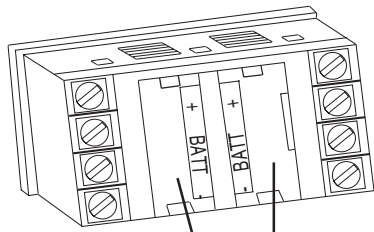


- 1. Common**
- 2. High Speed Input A - PNP or square signals up to 10 kHz\* for incrementing the count value**
- 3. Low Speed Input A - NPN or dry contact inputs up to 30 Hz for incrementing the count value**
- 4. Remote Reset - Resets count value when switched to common**
- 5. Front Panel Program Enable - Allows access to program mode when switched to common**
- 6. & 7. - Form A SSR Output**
- 8. DC Supply Input - For backlighting**

\* For high speed current sinking devices, provide a pull-up resistor from terminal 2 to a DC source

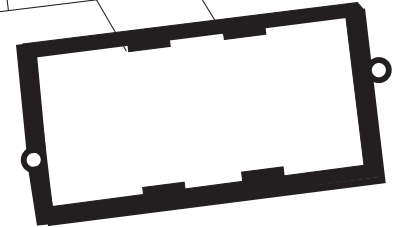
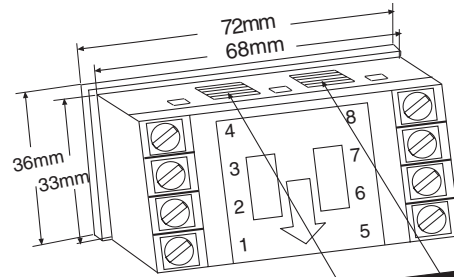
# SETUP

## INSTALLATION



**Battery Slots**

**Battery Installation** - The unit is shipped with two battery, which are not installed. Remove the battery cover by pushing inward and down. Install the batteries in the two slots. The two batteries are capable of sustaining the output for 6 months at 50% duty cycle (To extend the battery life to 5 years utilize an external DC supply or the AC option module for powering the output). Once the battery is in place the unit will go into a self test mode, and all the segments on the LCD display will be illuminated. The self test mode is exited by depressing the Next key, which will then display the model number (7). Depress the Next key again to ready the unit for operation.



**Front Panel Installation** - Place the unit in the panel through the 33mm x 68mm cutout. Slide the included gasket over the rear of the unit, then slide the panel mount bracket into place so that the 4 tabs catch in the groves on the top and the bottom of the unit (the bracket should be oriented so that the tabs are on the side nearest the panel). Use the provided panel mount screws to tighten the bracket until there is a secure seal against the gasket.

## PROGRAMMING

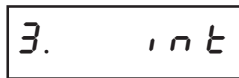
Programming parameters can be accessed, when the Program Enable input is active, by pressing the Down key. To edit a parameter use the Down key to scroll until the desired parameter appears on the screen. Pressing the Next key will cause the leftmost digit of that value to begin to flash. Use the Next and Down keys in combination to choose individual digits and change their value.



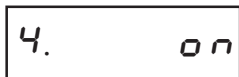
**Count Direction:** Determines if the count value will increment from zero and change the state of the output at the preset (Up), or decrement from the Preset and change the state of the output at zero (Down).



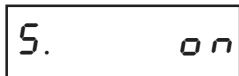
**Preset Lock:** When enabled the preset value can not be changed through the front panel.



**Output Mode** - Determines whether the output will activate prior to reaching the preset (or zero for down counting) and then release when that value is achieved (Interval), or will be Off prior to reaching the preset (or zero for down counting) and then activate when that value is achieved (On-Delay).



**Front Panel Reset Enable:** When active (ON) the count value, when being displayed, can be reset by pressing the Next/Reset key. If set to OFF, the total value can only be reset through the remote input.



**Output Enable:** When active (on), the SSR output will activate as described above in **Output Mode**. If set to off, the output will not activate. (Use the "off" setting to conserve battery life if not using the output)

## SPECIFICATIONS

### High Speed Input (Terminal 2)

Type: PNP Signal or square wave pulse  
Count Speed: 10 kHz max (50% duty cycle),  
Logic: Low < 1.0 VDC, High > 2.0 VDC  
Minimum Pulse Width: 45  $\mu$ second  
Maximum Input: 28VDC  
Impedence: 15 K $\Omega$  to common

### Low Speed Input (Terminal 3)

Type: NPN Signal, Contact Closure  
Count Speed: 30 Hz max (50% duty cycle)  
Logic: Low < 1.0 VDC, High > 2.0 VDC  
Minimum Pulse Width: 12 ms  
Maximum Input 28VDC  
Impedence: 1 M $\Omega$  to battery

### Front Panel Enable Input (Terminal 5)

Type: NPN Signal, Contact Closure; level sensitive  
Maximum Input: 28 VDC

### Remote Reset Input (Terminal 4)

Type: NPN Signal, Contact Closure; edge sensitive  
Frequency Response: 30 Hz (50% duty cycle)  
Maximum input: 28 VDC

### Output (Terminals 6 & 7)

Type: Isolated Photomos Relay  
Load Rating: 0.1 Amp @ 30 VAC/VDC  
Transistion Time: < 5ms

### Power Source:

Type: Single or dual 3V Lithium battery  
Expected Life: 5 years typical-single battery if using AC power supply option module or external DC supply.  
6 months if used alone with 50% duty cycle output. No reduction in battery life if output is programmed to "off"  
Low Power Indicator: "Low Bat" flashes on display approx. 2 weeks prior to end of battery life

### Display:

Type: Supertwist LCD for use with or without backlighting  
Number: 8 digits  
Height: 12mm  
Backlighting: Green Illumination over whole viewable area with a 10 to 28 VDC supply (Terminal 8)

### Physical:

Dimensions: 36mm x 72mm, 38mm deep  
Mounting: Panel Mount (mounting bracket supplied)  
33mm x 68mm (+ 0.3mm) panel cutout  
Connections: Up to 8 screw terminals  
Weight: Approximately 2.25 ounces

## 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.