



4980

Configurable On/Off Cycling Controller Users Manual

The 4980 configurable controller provides a level of flexibility previously unavailable with products in it's class. This devices allows the OEM to configure the product to suit numerous applications by providing the ability to configure many operating parameters including: time range, user's adjustability within the time range, power conservation, and recovery from power loss during timing, all in one controller.

Ver 1.1

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Section 1 – Configuration Notes

Access to the controller configuration is by pressing and holding both the [OFF TIME] and [RUN] buttons down and applying power to the controller. This should display **rA:00** and the LED above the display should be on, if so release the [RUN] button and then the [OFF TIME] button.

Pressing and releasing the [RUN] button advances the controller through its list of configurations, any time a configuration item is changed the controller automatically saves the change. Once the controller has been configured turn the controller off and back on again for normal operation.

Here are the available configuration items:

ON TIME: Timing range, timing value limiting or fixed value, and timing increment.

OFF TIME: Timing range, timing value limiting or fixed value, and timing increment.

OPERATION: Recover from power interruption, starting in the ON or OFF cycle, LED display dimming in the IDLE mode

CHECK CODE: After displaying all the configuration code the controller displays a four digit check code which is calculated from the entire configuration, can be used to confirm proper configuration

NOTE: When the configuration values for the ON time are displayed the LED above the four digit display is on. When displaying the OFF time parameters the LED above the display is off.

Factory Defaults - A 4980 from the factory is configured as follows:

Code	Description	LED
rA:00	ON time in minutes:seconds	●
CA:00	ON time adjustable over full range	●
tl:01	ON time adjustable in 1 sec increments	●
----	No ON time limiting or fixed timing	●
----	No ON time limiting	●
rA:00	OFF time in minutes:seconds	○
CA:00	OFF time adjustable over full range	○
tl:01	OFF time adjustable in 1 sec increments	○
----	No OFF time limiting or fixed timing	○
----	No OFF time limiting	○
Pr:04	Goes to IDLE mode on power interruption	○
St:00	Starts with ON cycle	○
LP:00	LED display on continuously	○

*NOTE: As the 4980 is generally used in applications where the unit starts running immediately when power is applied, we suggest that you change the power recovery option last (**Pr** code). This way you can change the timing parameters easily by stopping the controller (using the [PAUSE/STOP] button) to put the controller into IDLE mode. When the controller is running the ON and OFF cycles the cycle timing values can not be changed.*



Section 2 - Timing Configuration

Timing Cycle Range Options – ON and OFF Times

This is the primary option to be configured for any application. Use the [RUN] button to display the **rA** option code for either the ON or OFF time. Use the Up and Down buttons to set the timing range to **rA:00** for minutes and seconds up to 99:59 (default), **rA:01** for hours and minutes up to 99:59, **rA:02** for seconds up to 9999, **rA:03** for seconds up to 99.99, **rA:04** for minutes up to 9999, or **rA:05** for hours up to 9999.

Cycle Time Adjustment – ON and OFF Times

If you need your users to have the ability to set any time within the full timing range you configured above, leave this value at **CA:00** (default). With this value configured the following time values will display as **----** indicating that they are not available for this configuration.

If your application requires limiting the users time range, use the Up or Down button to set this option to **CA:01**, the press [RUN] to access the first time value. Use the Up and Down buttons to set this to the minimum time, then press [RUN] again and use the Up and Down buttons to set the next value to the maximum time. Note: Be sure to set the first time less than second time.

Finally, you can prevent any time adjustments by the operator by setting this option to **CA:02**. With this option the first time is set for the fixed cycle time value, the second time value will display as **----** indicating that it is not used.

Timing Increment

This value is the amount that the time displayed changes when using the Up and Down arrows. The default value is **tl:01** and can be set to any value up to **tl:99**. Setting the value to **tl:15** will cause the time to change in 15 second increments. The controller will always round off the current value to increments of this value, for example if the lower limit is set to 1:10 by using the CA codes and the time increment is 15, the will not allow times lower than 1:15 to be set.

REMEMBER: When setting any of these parameters the LED above the display is on for ON time and off for the OFF time

Timing Cycle Range	
rA:00	Minutes:Seconds, 00:01 to 99:59
rA:01	Hours:Minutes, 00:01 to 99:59
rA:02	Seconds 1 to 9999
rA:03	Seconds 0.01 to 99.99
rA:04	Minutes 1 to 9999
rA:05	Hours 1 to 9999

Time Adjustment Value	
tl:01	1 – 99, 1 = default

Lower Limit or Fixed Time	
----	Disabled by code CA:00
XXXX	Displays Lower Time Limit for CA:01
XXXX	Displays Fixed Time for CA:02

Cycle Time Adjustment	
CA:00	Full time range available
CA:01	Adjustable between limits
CA:02	Timing fixed

Upper Limit Time	
----	Disabled by code CA:00 or CA:02
XXXX	Displays Upper Time Limit for CA:01



Section 3 – Operation Configuration

Recovery From Power Interruption

When power is lost during a timing cycle, proper operation of the controller upon restoration of power can be critical to many applications. The code for this option is **Pr:00** which enables the controller to immediately return to the point in the timing cycle when power was lost. The time on the display when the power was lost is restored and the output relay is set according to whether it was running an ON or OFF cycle.

The next option is to have the controller recover to its state when power was removed but in the paused mode, requiring the operator to press the [PAUSE/STOP] continue the operation. This option is code **Pr:03**.

Finally you can configure the controller to recover to a particular state regardless of what the controller was doing when power was removed, these options are:

Pr:01 = Recovers to the ON cycle and starts running

Pr:02 = Recovers to the OFF cycle and starts running

Pr:04 = Recovers to the IDLE state, waiting for the [RUN] button to be pressed

LED Display Power

This option changes the operation of the LED display when the controller is left idle. Setting this to **LP:00** leaves the display energized continuously as long as the controller has power applied (*default*). If this option is changed to **LP:01** the controller dims the display after 1 minute of no button activity when in the IDLE state. The display will stay at full brightness when either actively running a timing cycle or when paused during a timing cycle. It is only when the timing cycle is stopped does the 1 minute countdown start. Once the display dims pressing any button restores the display to full brightness and resets the 1 minute countdown.

Setting this option to **LP:02** will cause the display to *turn off completely* instead of dimming after the 1 minute countdown. This can provide significant power savings when the unit is powered by 12V DC thereby extend the life of battery and solar powered systems.

Cycle Start Mode

This parameter determines which cycle is run first when the [RUN] button is pressed. Setting this to **St:00** will cause the controller to start with the ON cycle first, **St:01** causes the controller to start with the OFF mode first

Recovery from Power Interruption	
Pr:00	Return to power loss state, continue timing
Pr:01	Return to new ON cycle
Pr:02	Return to new OFF cycle
Pr:03	Return to power loss state, in hold mode
Pr:04	Return to IDLE state, ready to run

LED Display Power	
LP:00	LED display always on
LP:01	Display dims after 1 minute in idle mode
LP:02	Display OFF after 1 minute in idle mode

Cycle Start Mode	
St:00	Starts in ON cycle
St:01	Starts in OFF cycle



Section 4 – Configuration Example

For this example, here are the parameters required by the application:

- ON Time – Fixed at 1 minutes and 15 seconds
- OFF Time – Adjustable from 3 to 12 hours in 15 minutes increments
- Power Recovery – Recovers to running a new OFF cycle
- Display Power – Display on continuously
- Cycle Start – [RUN] button starts the OFF cycle

Here is the configuration for the above parameters:

Code	Description	LED
rA:00	ON time in minutes:seconds	●
CA:02	ON time not adjustable	●
tl:01	Ignored ...	●
01:15	ON time fixed at 1:15 min:sec	●
----	Ignored ...	●
rA:01	OFF time in hours:minutes	○
CA:02	OFF time adjustable within limits	○
tl:15	OFF time adjustable in 15 min increments	○
03:00	OFF time minimum	○
12:00	OFF time maximum	○
Pr:02	Starts new OFF cycle on power recovery	○
St:01	Starts with OFF cycle	○
LP:00	LED display on continuously	○

The next page is a configuration table to aid you in determining your application needs

Timing Cycle Range – ON Time		✓	Value
rA00	Minutes:Seconds, 00:01 to 99:59 (default)		
rA01	Hours:Minutes, 00:01 to 99:59		
rA02	Seconds 1 to 9999		
rA03	Seconds 0.01 to 99.99		
rA04	Minutes 1 to 9999		
rA05	Hours 1 to 9999		
Cycle Time Adjustment – ON Time			
CA00	Full time range available (default)		
CA01	Adjustable from Time Value 2 to Time Value 3		
CA02	Timing fixed at Time Value 2		
Timing Increment – ON Time			
tIXX	Timing change increment, tI01 (default)		
Lower Limit or Fixed Time – ON Time			
----	Not used (default)		
XXXX	Lower Time Limit for CA01 or Fixed Time for CA02		
Upper Limit – ON Time			
----	Not used (default)		
XXXX	Upper Time Limit for CA01		
Timing Cycle Range – OFF Time			
rA00	Minutes:Seconds, 00:01 to 99:59 (default)		
rA01	Hours:Minutes, 00:01 to 99:59		
rA02	Seconds 1 to 9999		
rA03	Seconds 0.01 to 99.99		
rA04	Minutes 1 to 9999		
rA05	Hours 1 to 9999		
Cycle Time Adjustment – OFF Time			
CA00	Full time range available (default)		
CA01	Adjustable from Time Value 2 to Time Value 3		
CA02	Timing fixed at Time Value 2		
Timing Increment – OFF Time			
tIXX	Timing change increment, tI01 (default)		
Lower Limit or Fixed Time – OFF Time			
----	Not used (default)		
XXXX	Lower Time Limit for CA01 or Fixed Time for CA02		
Upper Limit – OFF Time			
----	Not used (default)		
XXXX	Upper Time Limit for CA01		
LED Display Power			
LP00	LED display always on (default)		
LP01	Display dims after 1 minute in idle mode		
LP02	Display OFF after 1 minute in idle mode		
Recovery from Power Interruption			
Pr00	Return to last time (ON or OFF), continue running		
Pr01	Return to last time (ON or OFF), in pause mode		
Pr02	Return to new ON time cycle, running		
Pr03	Return to new OFF cycle, running		
Pr04	Return to IDLE mode (default)		
Cycle Start Mode			
St00	Starts in ON cycle (default)		
St01	Starts in OFF cycle		
Check Code			
XXXX	Displayed after final configuration		



Section 5 – Controller Operation

When power is applied to the controller in its default configuration (**Pr:04**) it starts in the IDLE mode. Other configurations will cause the controller to start in the ON cycle (**Pr:01**), OFF cycle (**Pr:02**), HOLD mode (**Pr:03**), or start operating from where it was when power is removed (**Pr:00**).

IDLE Mode:

In this mode the controller displays **rdY** and is ready to start running or adjust the ON or OFF times.

– To adjust the ON time press and hold the [ON TIME] button, the controller displays the current ON time and the LED above the display is turned on. Pressing the UP or DOWN buttons will cause the time value to change, holding either of those buttons will cause the time to change continuously and change faster the longer the button is held down.

– Adjusting the OFF time works in the same way, press and hold the [OFF TIME] button and the OFF time is displayed and can be adjusted, the LED above the display is off.

Releasing the [ON TIME] or [OFF TIME] buttons puts the controller back into the IDLE mode displaying **rdY**.

IDLE mode is the only mode where the timing values can be adjusted.

If the controller was configured to dim or turn the LED display off (**LP:01** or **LP:02**), when the controller stays in the IDLE mode for more than 60 seconds the display will dim or turn off. Pressing any button will turn the display back on and the controller is ready to run timing cycles or change the cycle times.

Running Mode:

Pressing the [RUN] button will cause the controller to start timing, either in the ON cycle (**St:00**) or in the OFF cycle (**St:01**). During the ON cycle the controller will turn the output relay and LED above the display on, the LED and output relay are off during the OFF cycle. The controller always displays the time left in the cycle, and if the time range is in minutes:seconds (**rA:00**) or hours:minutes (**rA:02**) the colon will flash on and off indicating that the controller is running. Once the cycle is complete the controller switches to the other cycle and continues to run and will continue to run ON and OFF cycles until it is paused, stopped, or power is removed.

HOLD Mode:

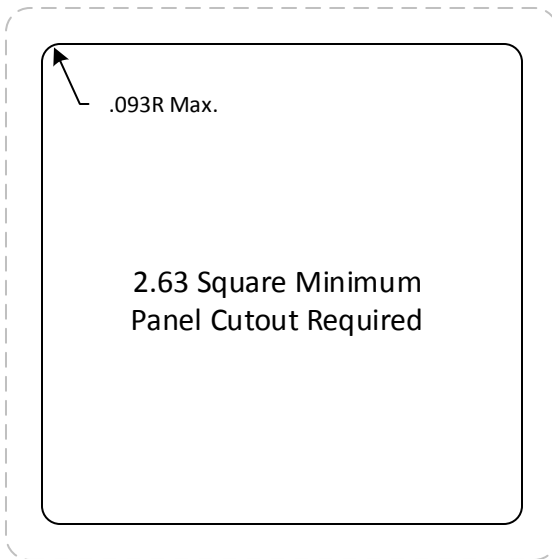
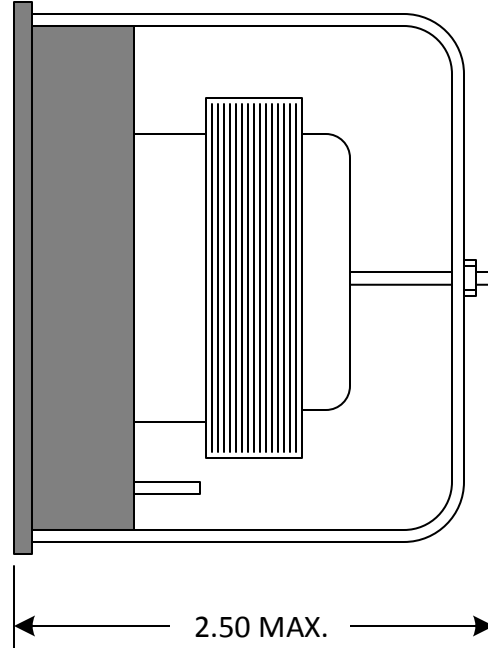
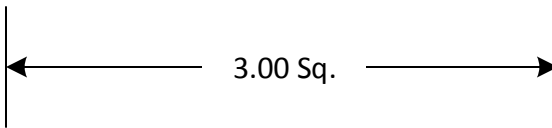
Pressing the [PAUSE/STOP] button while the controller is running will stop the current cycle time from counting down, turn the output relay off if it is on, and the display flashes to indicate that the controller is paused.

– To continue the timing cycle from where it was paused simply press the [PAUSE/STOP] button again and the controller continues running, turning the output relay back on if it was paused during an ON cycle.

– To stop the timing cycles press and hold the [PAUSE/STOP] for two seconds until you hear a double chirp then release the button and the controller is back in IDLE mode.



Section 6 – Installation





Section 7 – Wiring

