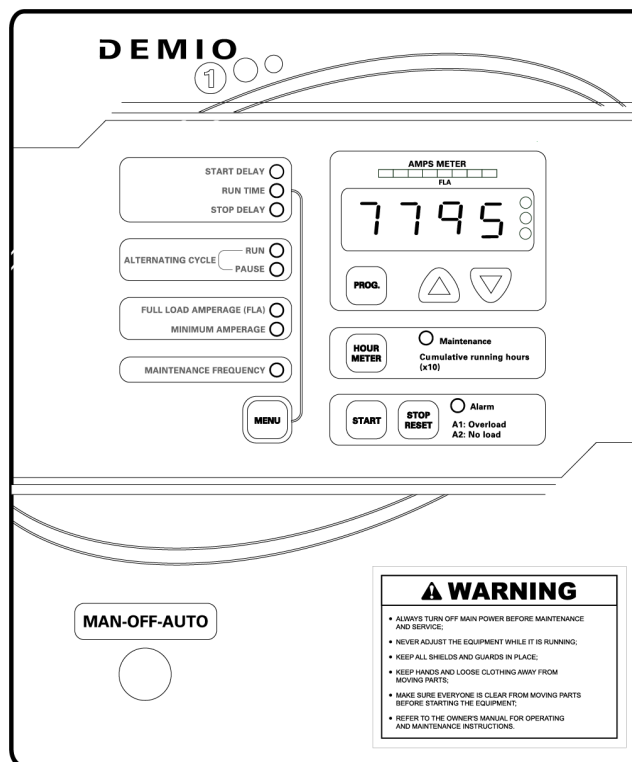


# DEMIO 1 CONTROL PANEL

## OPERATOR'S MANUAL – October 2006



[WWW.JPSELECTRONIQUE.COM](http://WWW.JPSELECTRONIQUE.COM)





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## DEMIO overview

The DEMIO 1 is an easy to program flexible starter panel designed to control one motor. The DEMIO features are:

- Three independent programmable timers; START DELAY, RUN TIME and STOP DELAY, each with modifiable units (seconds, minutes or hours),
- Programmable alternating RUN/PAUSE cycle function,
- Hour meter,
- Programmable maintenance indicator,
- Digital and graphical amps meter with maximum, minimum and no-load detection,
- Exterior one wire and two wire START/STOP inputs,
- Alarm output.

## Functions of the DEMIO Control Panel

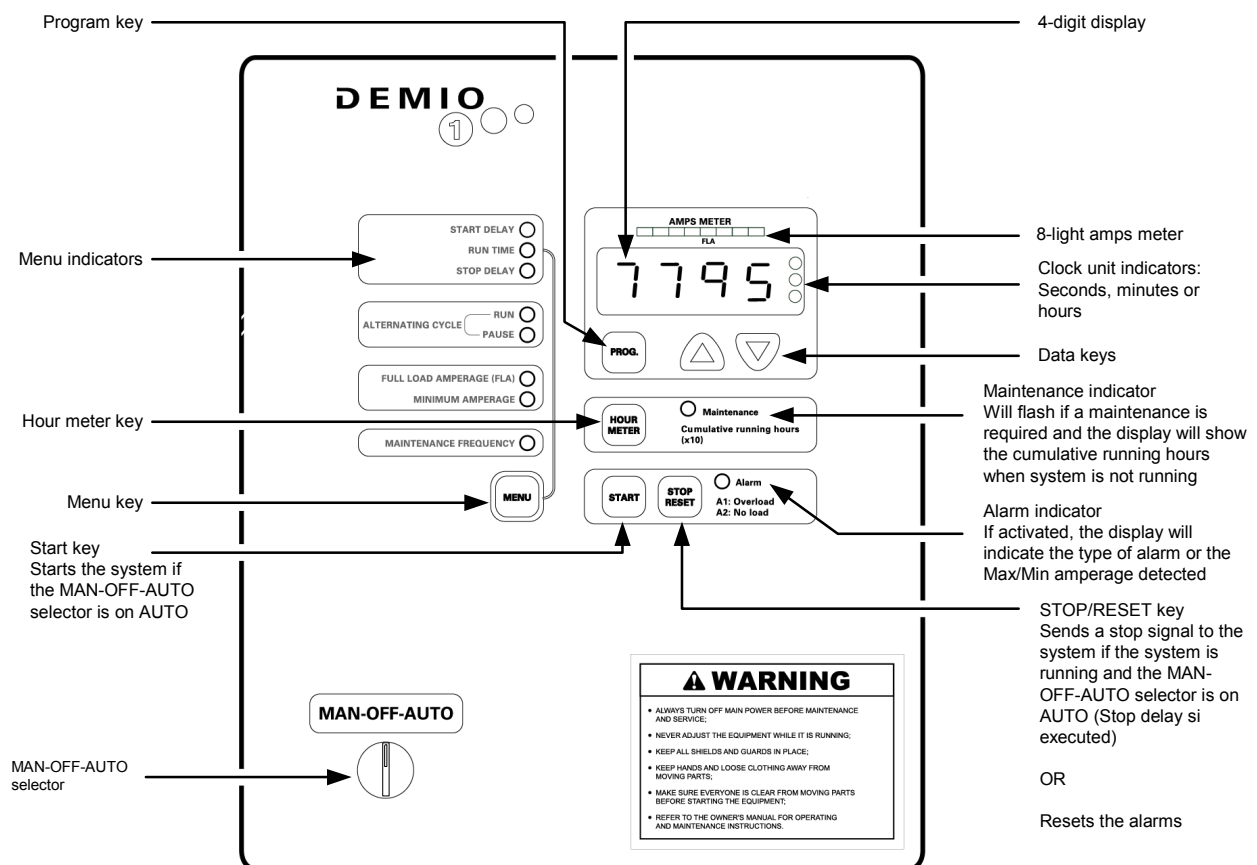


Figure 1: DEMIO control panel

## Operation of the panel (AUTO mode)

### Start/Stop signals

In automatic mode, the DEMIO control panel starts running when a start signal is received and stops running (or executes the STOP DELAY) when a stop signal is received or when the RUN TIME is reached. There are 3 possible start signals and 3 possible stop signals. No matter which START and STOP signals are used they all have the same effect.

#### **Start signals:**

- Start key (Front of panel, see Figure 1).
- Start signal (Two wire START/STOP signal): A start signal is received when this input is activated (ON). If this input is deactivated (OFF), it is not considered as a Stop signal. This signal is usually used with the Stop signal and/or a run time.
- Control signal (One wire START/STOP signal): A start signal is received when this input transitions to ON. When this input is transitioned from ON to OFF, a stop signal is received.

#### **Stop signals:**

- Stop key (Front of panel, see Figure 1).
- Stop signal (Two wire START/STOP signal): A stop signal is received when this input is activated (ON).
- Control signal (One wire START/STOP signal): A stop signal is received when this input transitions from ON to OFF.

### Timer definitions

Up to three timers can be programmed to run in the following order: Start delay, Run time and Stop delay. A timer is deactivated when it is set to 0 (“--:--” will be displayed). See *example of operation* below. Only one timer is activated at a time.

**Start delay:** The start delay is active when any of 3 start signals is received. The output will be turned ON only after the start delay is reached.

**Run time:** The run timer is active after the start delay (or with a start signal, if no start delay is programmed). It is the time for which the output of the panel will be active (ON) if no Stop Signal is received. If any three Stop Signals is received before the end of the run time, the timer is deactivated.

**Stop time:** The stop timer is active after receiving one of three Stop Signals: Stop signal, Control signal (ON to OFF transition) or Stop key, or when a RUN TIME has reached its set time.

### Alternating cycle

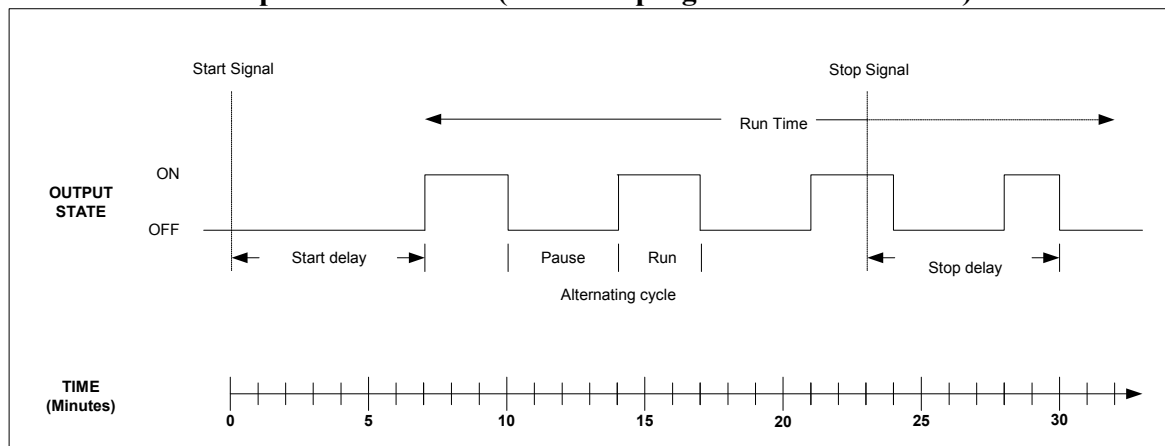
An alternating cycle executes a pause after every ALTERNATING CYCLE RUN period. If a RUN TIME is programmed, it will continue counting during an ALTERNATING CYCLE PAUSE. Both RUN and PAUSE timers must be programmed for this function to be active. See *example of operation* below.

### Example of operation

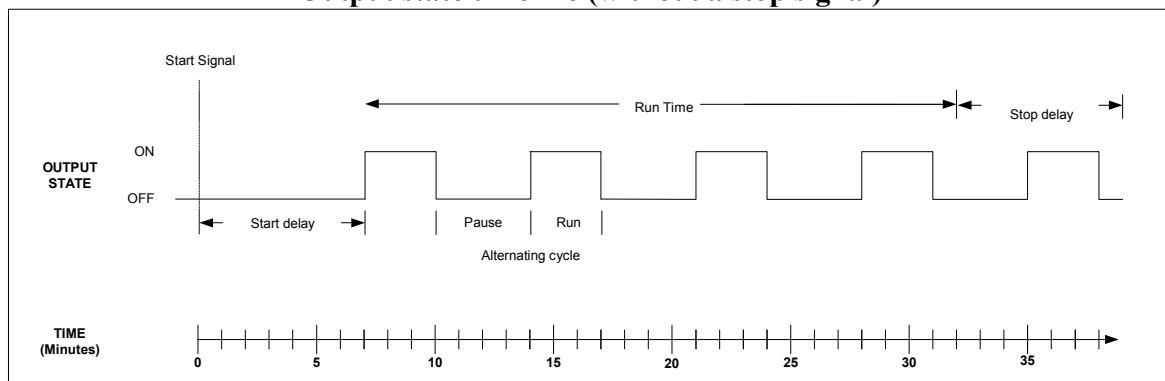
The following example illustrates the use of every timer. In the first diagram (with a stop signal), the RUN TIME has no effect since a STOP SIGNAL was received before the end of the RUN TIME. The following parameters are used for this example.

TIMER	SETTING (Minutes)
Start delay	7
Run time	25
Stop delay	7
Alternating cycle Run time	3
Alternating cycle Pause time	4

### **Output state timeline (with a stop signal after 23 minutes)**

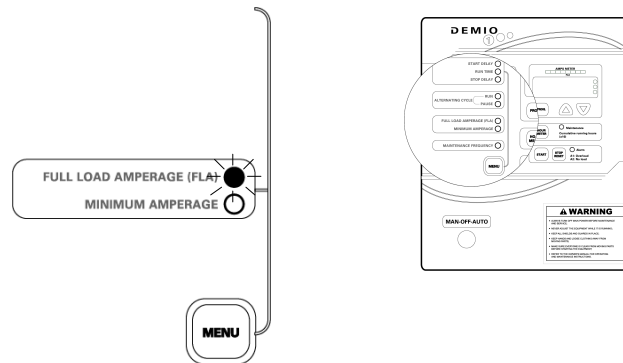


### **Output state timeline (without a stop signal)**



## Alarms

When the system is stopped due to an alarm, the Alarm indicator will flash and the alarm code (A1 or A2) will be displayed OR the detected amps will be displayed and the corresponding parameter's indicator will flash (see the figure below for a FULL LOAD alarm).



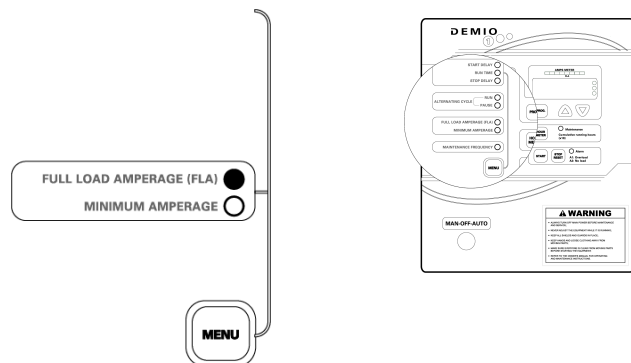
There are four different types of alarms:

1. A1, Overload: This alarm is due to the electro-mechanical overload protection inside the panel. The code A1 will be displayed.
2. A2, No load: This alarm is due to the current sensor not detecting any current from the motor for more than 10 seconds. This is probably due to an electric failure.
3. Maximum load: The full load amperage functions as an electro-mechanical overload yet with a much better precision and sensitivity. A maximum load alarm will halt the system due to amperage exceeding 1.3 times the FULL LOAD AMPERAGE (FLA) parameter for more the 5 minutes or 2 times the FLA for more than 10 seconds. If the amperage is below 1.3 times (130%) the FLA, there will not be any alarm. Motors can normally withstand for a long period of time amperages below this 1.3x limit (this is indicated by the *service factor* on the name plate of the motor). To cause an alarm when the amperage exceeds the FLA (100%) configure the maximum amperage delay (page 15).
4. Minimum load: This is an electronic protection for the motor. A minimum load is due to amperage below the MINIMUM AMPERAGE for more than 10 seconds. This is probably due to a mechanical failure. The detected amperage will be displayed and the MINIMUM AMPERAGE indicator will flash.

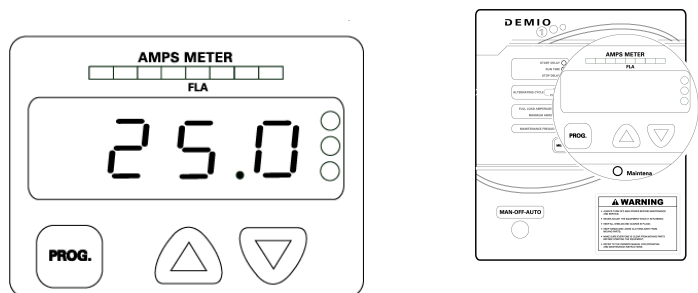
## Setting the full load amperage

The full load amperage functions as an electro-mechanical overload yet with a much better precision and sensitivity. A maximum load alarm will halt the system due to amperage exceeding 1.3 times the FULL LOAD AMPERAGE (FLA) parameter for more the 5 minutes or 2 times the FLA for more than 10 seconds. If the amperage is below 1.3 times (130%) the FLA, there will not be any alarm. Motors can normally withstand for a long period of time amperages below this 1.3x limit (this is indicated by the *service factor* on the name plate of the motor).

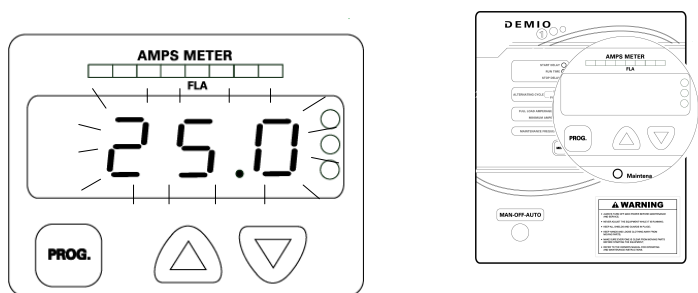
1. Press the MENU key to enter the menu on the left of the panel. The indicators on the right of the menu indicate which menu is active. Press the MENU key to scroll down to the FULL LOAD AMPERAGE (FLA) parameter.



2. While in the menu, the value of the FLA is displayed. The default value is 25 Amps.



3. To modify this value press the PROG key and use the arrow keys to increment or decrement this value. Holding an arrow will rapidly change the value. Enter the full load (in amps) corresponding to the motor (see the motors nameplate). Press PROG to exit or MENU to jump to the next parameter.

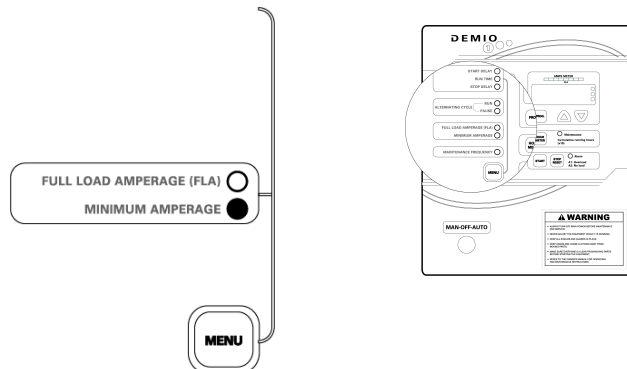


4. To exit the menu, scroll down to the last parameter of the menu (by pressing MENU) and press MENU once more to exit. The menu will automatically exit after 30 seconds.

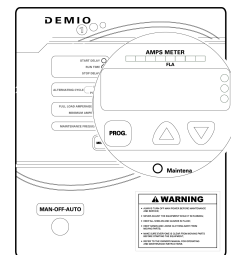
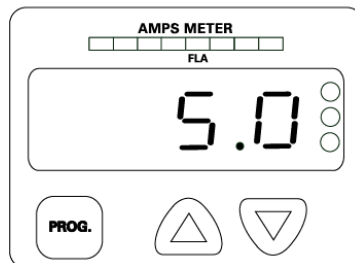


## Setting the minimum amperage

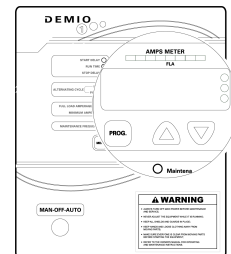
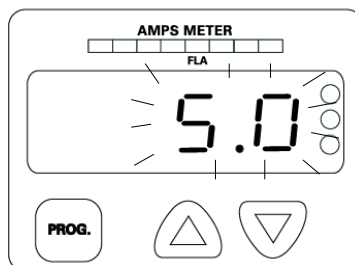
1. Press the MENU key to enter the menu on the left of the panel. The indicators on the right of the menu indicate which menu is active. Press the MENU key to scroll down to the MINIMUM AMPERAGE parameter.



2. While in the menu, the value of the MINIMUM AMPERAGE is displayed. The default value is 5 Amps.



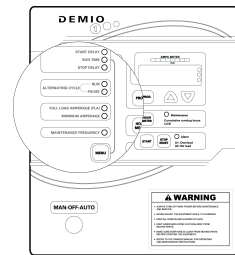
3. To modify this value press the PROG key and use the arrow keys to increment or decrement this value. Holding an arrow will rapidly change the value. Press PROG to exit or MENU to jump to the next parameter.



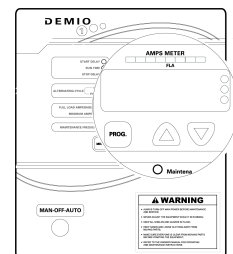
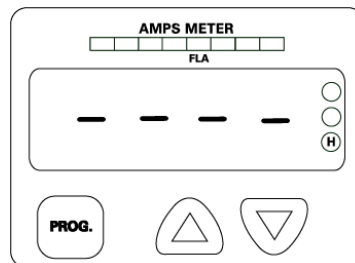
4. To exit the menu, scroll down to the last parameter of the menu (by pressing MENU) and press MENU once more to exit. The menu will automatically exit after 30 seconds.

## Programming the timers

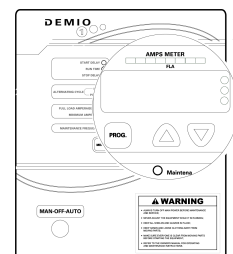
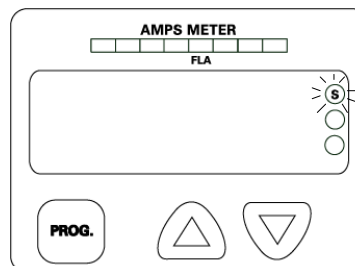
1. Press the MENU key to enter the menu on the left of the panel. The indicators on the right of the menu indicate which menu is active. Pressing the MENU key again will scroll down the menu.



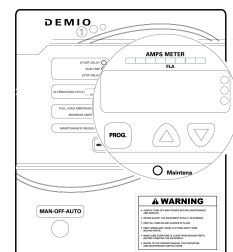
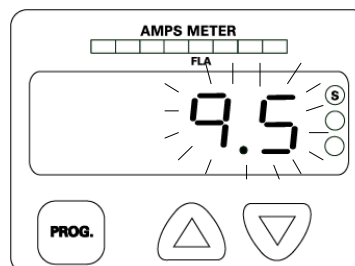
2. While in the menu, the value of the timer is displayed, and the unit indicator will display S (seconds), M (minutes) or H (hours). "----" indicates that the timer is deactivated. The digit after the comma indicates the tenth of the active unit (ex. 0.5M = 30 seconds).



3. To modify this value press the PROG key. The unit indicator will flash. Use the arrows to choose the time unit.



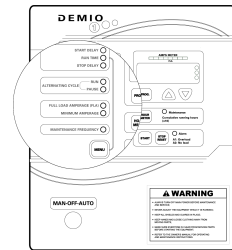
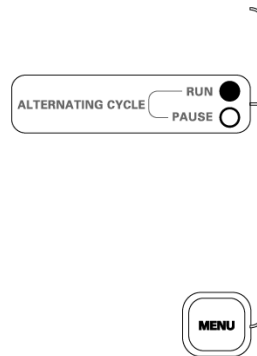
4. Press PROG a second time, the value of the timer will flash. Use the arrows to increment or decrement this value. Holding an arrow will rapidly change the value. Press PROG to exit or MENU to jump to the next parameter.



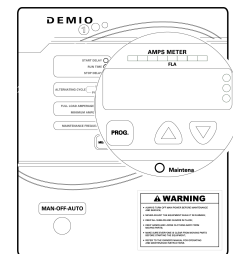
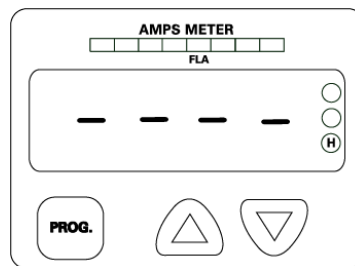
5. To exit the menu, scroll down to the last parameter of the menu (by pressing MENU) and press MENU once more to exit. The menu will automatically exit after 30 seconds.

## Programming an alternating cycle

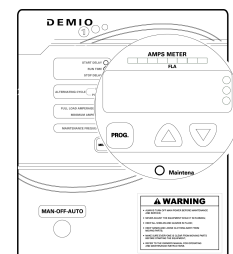
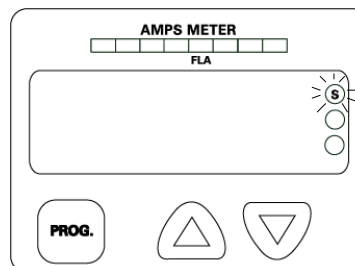
1. Press the MENU key to enter the menu on the left of the panel. The indicators on the right of the menu indicate which menu is active. Press the MENU key again to scroll down to the ALTERNATING CYCLE, RUN parameter.



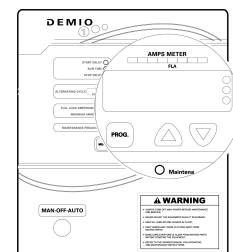
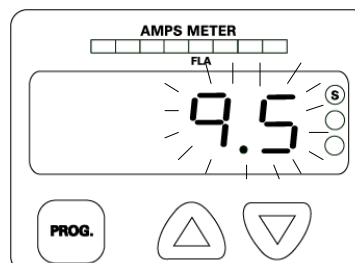
2. The value of the RUN parameter is displayed, and the unit indicator will display S (seconds), M (minutes) or H (hours). "----" indicates that the RUN timer is deactivated. The digit after the comma indicates the tenth of the active unit (ex. 0.5M = 30 seconds).



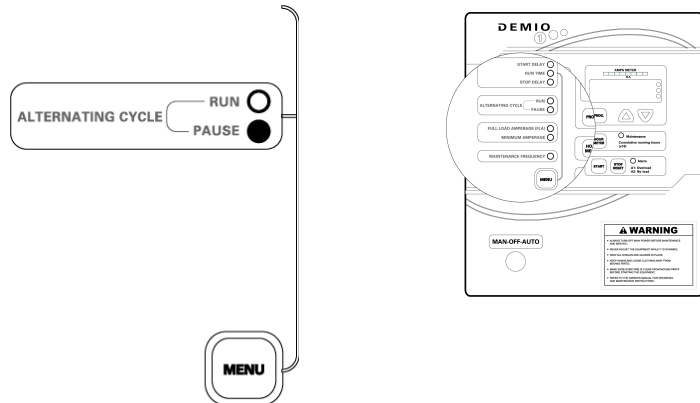
3. To modify this value press the PROG key. The unit indicator will flash. Use the arrows to choose the time unit.



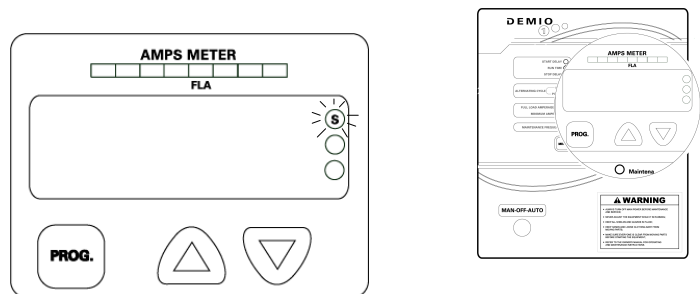
4. Press PROG a second time, the value of the RUN timer will flash. Use the arrows to increment or decrement this value. Holding an arrow will rapidly change the value.



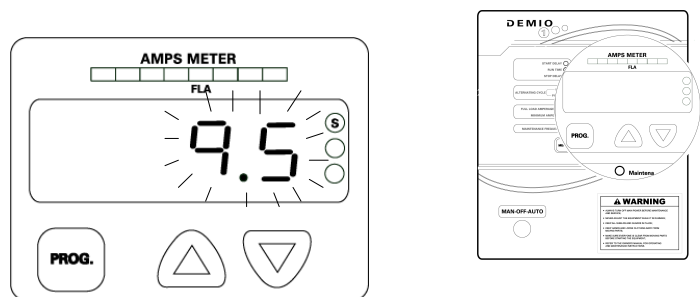
5. Press MENU to jump to the PAUSE parameter.



6. To modify this parameter, press the PROG Key. The unit indicator will flash. Use the arrows to choose the time unit.



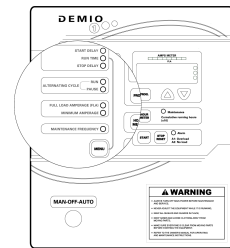
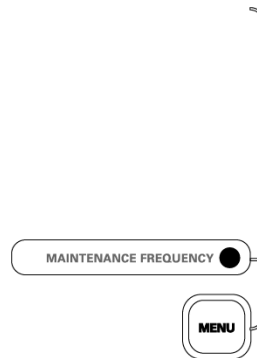
7. Press PROG a second time. The value of the PAUSE timer will flash. Use the arrows to increment or decrement this value. Holding an arrow will rapidly change the value. Press PROG to exit or MENU to jump to the next parameter.



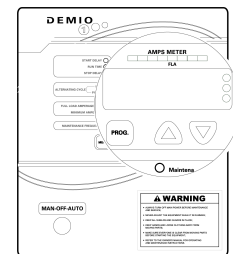
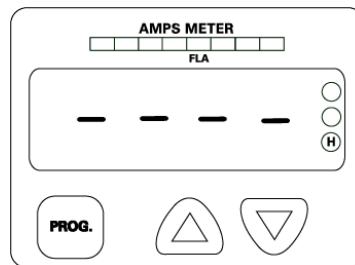
8. To exit the menu, scroll down to the last parameter of the menu (by pressing MENU) and press MENU once more to exit. The menu will automatically exit after 30 seconds.

## Programming the maintenance frequency

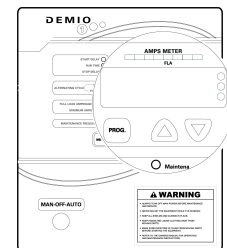
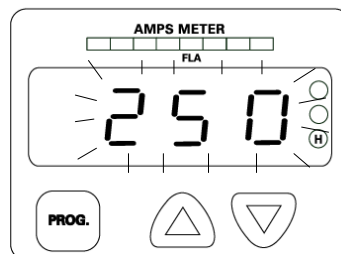
1. Press the MENU key to enter the menu on the left of the panel. The indicators on the right of the menu indicate which menu is active. Press the MENU key to scroll down to the MAINTENANCE FREQUENCY parameter.



2. The value of the maintenance frequency is displayed. "----" indicates that the maintenance frequency timer is deactivated.



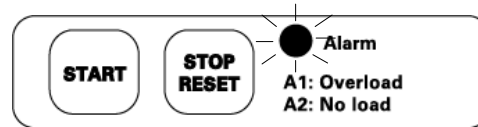
3. To modify this value press the PROG key and use the arrow keys to increment or decrement this value. Holding an arrow will rapidly change the value. Press PROG to exit or MENU to exit the menu.



4. To exit the menu press MENU. The menu will automatically exit after 30 seconds.

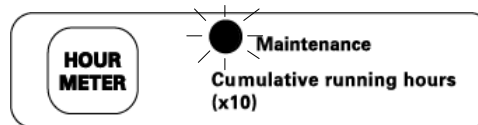
## How to reset an alarm

To reset an alarm simply press the STOP/RESET key.



## How to reset a maintenance warning

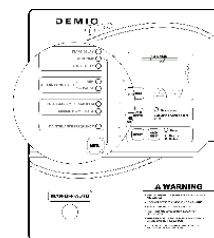
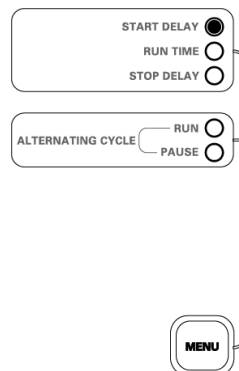
To reset a maintenance warning, simply press the HOUR METER key. Press and hold the HOUR METER to view the cumulative running hours.



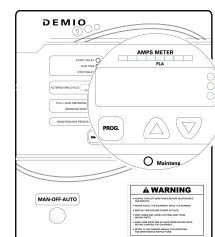
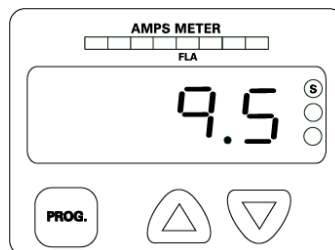
## How to view an active timer

While the system is running, the indicators of the working timers will flash. It is possible to view an active timer by following these steps:

1. While the system is running, press the MENU key to enter the menu on the left of the panel. The indicators on the right of the menu indicate which menu is active. Pressing the MENU key again will scroll down the menu.



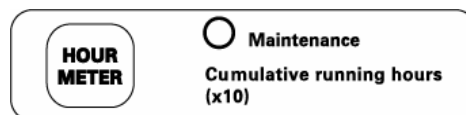
2. After choosing the timer, press on the UP and DOWN arrows under the display simultaneously. The remaining time of the timer will be displayed, a timer always decrements. If the timer is not active, “----” will be displayed.



## How to view the cumulative running hours

The HOUR METER displays the total cumulative running hours of the motor. The displayed time is divided by 10 (ex. 12 displayed = 120 hours).

Press and hold the HOUR METER key to view the cumulative running hours.



## How to read the graphical amps meter

Unlike electro-mechanical amp meters, the DEMIO graphical amps meter is adapted to the motor's actual full load. The FULL LOAD AMPERAGE (FLA) parameter must be programmed for the amps meter to work properly. The following diagram indicates at what proportion of the FLA an indicator will be lit. If the amps meter is in the yellow zone (100-140%), the motor's current is above its full load and a maximum load alarm may occur if the motor stays in this zone for a too long period of time. The graphical amps meter can be useful to determine if a motor is over or under used.

### AMPS METER

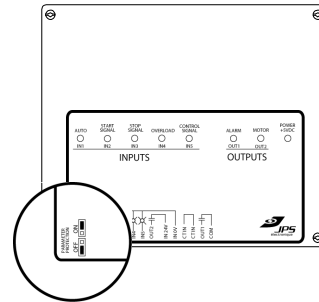
0-20 %	20-40%	40-60%	60-80%	80-100%	100-120%	120-140%	+140%
--------	--------	--------	--------	---------	----------	----------	-------

**FLA**

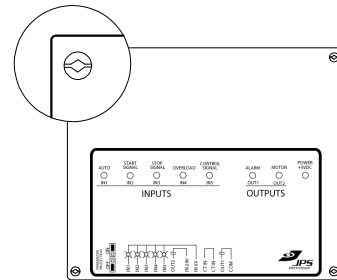
## How to lock the configuration

If the panel is installed in an area where inexperienced users may have access to the panel, it is recommended to lock the panel's parameters from modification. The following procedure will lock the PROG key.

1. Once the panel is fully configured and its functionality has been tested, turn the power off and open the panel. Find the **PARAMETER PROTECTION** illustration inside the panel door.



2. The parameter protection switch is underneath the metal casing, directly beneath the parameter protection illustration. Remove the four screws to gain access to the electronic board.



3. The switch is made up of three pins (identified as P4 on the board) and a jumper connecting two of the pins together. The default position, as illustrated, is OFF (not protected).



4. Carefully remove the jumper (using long nose pliers is recommended) and replace the jumper as to connect the two upper pins together as illustrated. NOTE: If the jumper is not installed, the default value of the parameter protection is OFF (not protected).



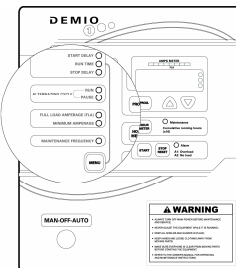


## Advanced function 1: Max amperage delay

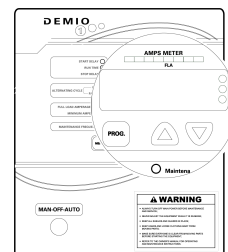
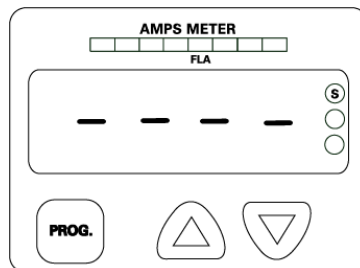
The full load amperage (page 6) functions as an electro-mechanical overload yet with a much better precision and sensitivity. A maximum load alarm will halt the system due to amperage exceeding 1.3 times the FULL LOAD AMPERAGE (FLA) parameter for more the 5 minutes or 2 times the FLA for more than 10 seconds. If the amperage is below 1.3 times (130%) the FLA, there will not be any alarm. Motors can normally withstand for a long period of time amperages below this 1.3x limit (this is indicated by the *service factor* on the name plate of the motor).

The advanced function 1, maximum amperage delay, adds a second protection when it is desired that the FLA also behaves as a maximum load. This will cause an alarm if the amperage exceeds the FLA during the configured delay. Note: The maximum amperage delay does not override the previous overload function. If the overload conditions enumerated in the previous paragraph are met, a FLA alarm will halt the system in the manner described.

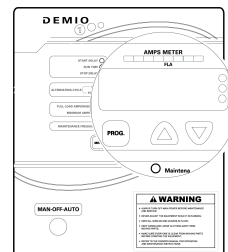
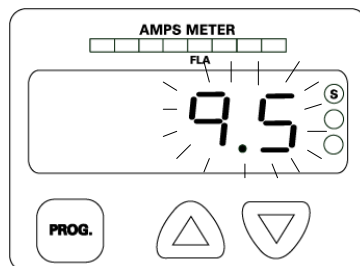
1. Press and hold the MENU key for 5 seconds to enter the advanced menu. "F1" will be displayed.



2. Press the PROG key to view and configure the parameter. By default, the MAX AMPERAGE DELAY is deactivated (----).



3. Use the arrow keys to increment or decrement this value. Holding an arrow will rapidly change the value. Enter the desired delay (in seconds). Exceeding the FULL LOAD AMPERAGE during the programmed amount of time will cause a FLA alarm.

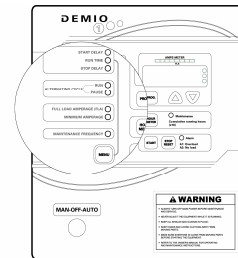


4. Press MENU twice to exit. The menu will automatically exit after 30 seconds.

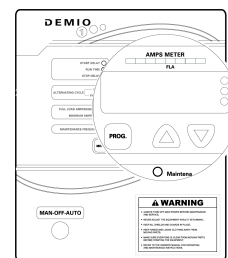
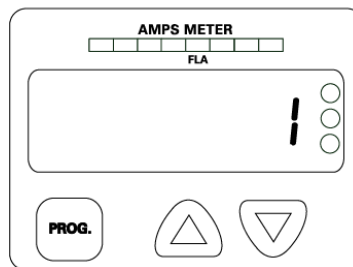
## Advanced function 2: Number of wounds (current transformer)

The advanced function 2, number of wounds, is normally factory set and should only be modified if recommended by the manufacturer or dealer or when replacing the electronic circuit board. This parameter configures the amperage meter to function with the proper electric configuration of the control panel and depends on the maximum amperage value of the panel. The value programmed here is the number of wounds of the cable on the current transformer.

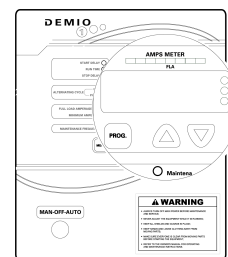
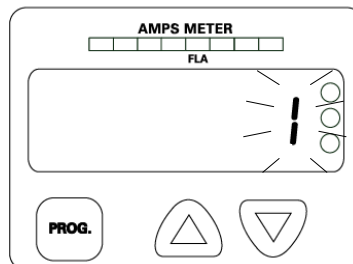
1. Press and hold the MENU key for 5 seconds to enter the advanced menu. "F1" will be displayed. Press the MENU key again; "F2" will be displayed.



2. Press the PROG key to view and configure the parameter.



3. Use the arrow keys to increment or decrement this value.



4. Press MENU to exit. The menu will automatically exit after 30 seconds.



2070, Joseph St-Cyr · Drummondville, QC, Canada · J2C 8V6 · Telephone: (819) 474-4635 · Fax: (819) 474-5013 · [www.jpselectronique.com](http://www.jpselectronique.com)