FM-2 DCL

FILTERMASTER SERIES

OPERATION MANUAL

ALEX-TRONIX CONTROLS

0214018

FM-2 DCL Operation Manual

Thank you for purchasing the Alex-Tronix FM-2 DCL battery powered filter controller manufactured in the U.S. Within our new Filtermaster series product line, the FM-2 DCL is made for remote operation when A/C power is not available, nor practical. Batteries are included with this unit.

OPERATING CHARACTERISTICS

MODES OF OPERATION

By configuring a hardware jumper on the back of the circuit board, the FM-2 DCL can have its control re-configured for three different output characteristics. The controller can be configured as a single station, or a single station with a master output, or a two station. The unit is factory set as a two station. This FM-2 DCL can initiate cycles based on periodic time interval, PD switch gauge, or the Alex-Tronix Digital Sensor (Both optional). The unit is designed to drive two wire 12VDCL (Latching solenoids) only. Please review the 'Solenoid compatibility List' at the end of this booklet to ensure system compatibility.

INSTALLING THE FM-2 DCL

PARTS LIST: Before installing the FM-2 DCL, please make note of the following parts included with the unit. You may or may not use all of the included parts:

☑ 2- #10 x1" mounting wood screws.
☑ 4-AA Lithium batteries.

MOUNTING THE CONTROLLER: The FM-2 DCL can be installed indoor or outdoors. The most convenient place to install the unit is in near vicinity of the solenoids and PD/sensor. **Do not mount in a manner that exposes the unit to vibration caused by pumps or engines.**

1) Open door, and remove the 5 screws on the front panel, then note the original position of the harness connector. Unplug the connector from the harness and remove the panel from the enclosure. Now using the enclosure as a template, hold it against the mounting surface in an area near the solenoids. Using a punch or pencil, mark the surface through the rear plate holes.

2) Fasten the enclosure using two #10x1" provided screws through the holes into the structure securing the enclosure. There may be other preferred ways to mount the enclosure to any given structure. If you prefer another method as to what was suggested above, additional hardware may be purchased separately.

SENSOR/PD GAUGE LOCATION (OPTIONAL): *Note: It is not necessary to install the optional pressure differential sensor or gauge if you will be operating the FM-2 DCL by periodic time only.* Sensor or Murphy Gauge is not included with the FM- 2DCL.

SENSOR MOUNTING: If the Alex-Tronix digital sensor is used, it should be

mounted in a vibration free location in close proximity to the controller or bottom of the plastic enclosure. Use two #8x1 machine screws/w nuts as needed. Plumb the differential pressure lines as instructed by the filter manufacturer.

MURPHY GAUGE MOUNTING: If using the traditional murphy PD switch gauge, an optional support bracket (purchased separately) may be required. This bracket has an expanded slot, allowing you to mount it using two screws. Once the bracket is mounted, use the clamp included with the gauge to fasten it to the bracket. Plumb the differential pressure lines as instructed by the filter manufacturer.

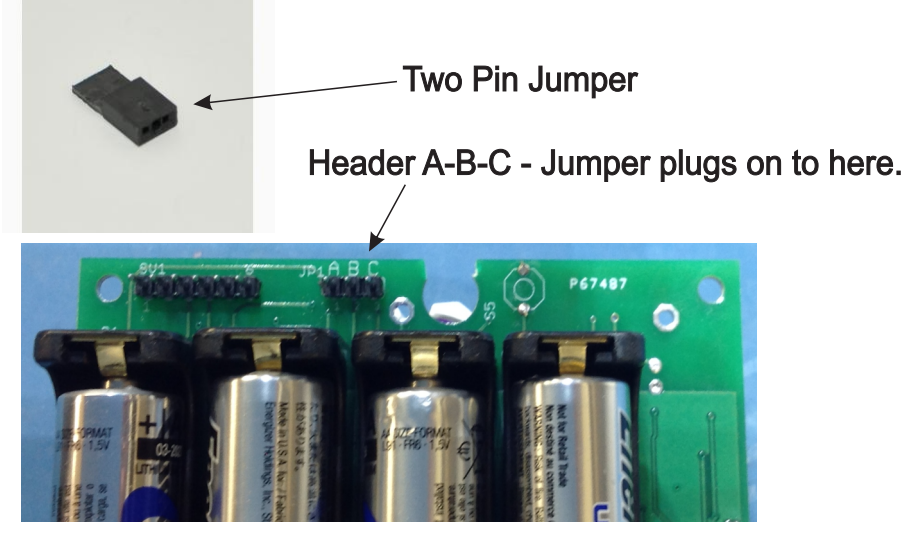
HEADER SETTINGS:

Referring to figure 1 below, the controller can be configured in one of three ways depending on jumper settings:

NO JUMPER: Single tank configuration without master valve.
JUMPER A-B: Single tank configuration and a master valve.
JUMPER B-C: Two tank configuration without master valve. (Factory setting)

As the last step, you *must* press 'RESET' from the front panel to activate the jumper change. Use a blunt tool such as a thin screwdriver to press the reset button recessed under the front panel.

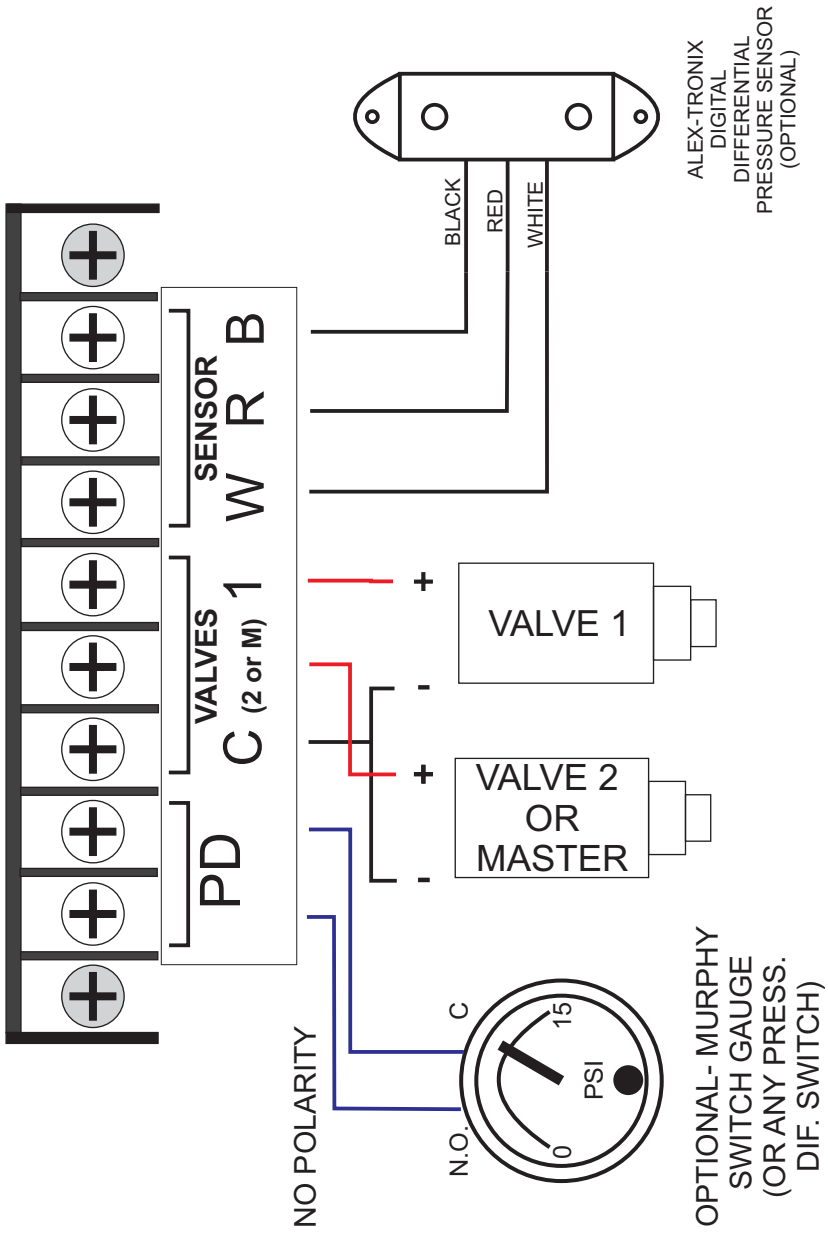
Figure 1- Configuration Setting



REAR VIEW FIG. 1 -Jumper position dictates station output configuration.

WIRING: Purchased separately and required will be appropriately sized wire nuts or butt crimp connectors, electrical tape, fasteners and any wire dressing hardware such as wire ties or clamps. Complete all electrical connections according to **Figure 2**. Use electrical tape to seal any exposed wire and

FIGURE 2 -Wiring for 1 or 2 Solenoid Valves.



See ‘Header Settings’ to configure solenoids.

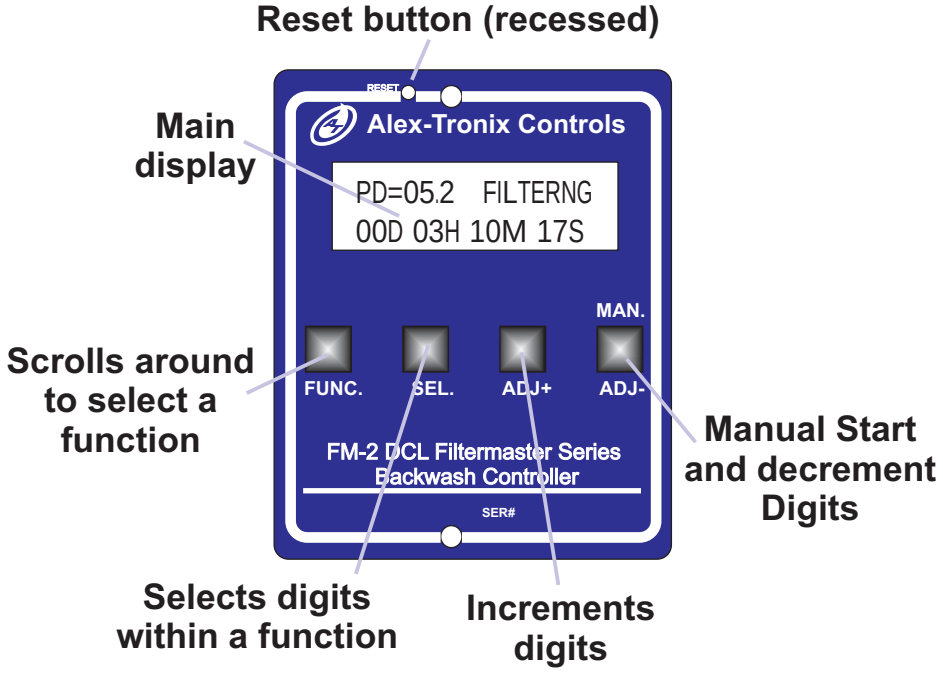
connections from the environment.

Note that unlike A/C non-latching solenoids, latching solenoids have a polarity; therefore it is critical that wire polarity is noted. The FM-2 DCL is only compatible to *two-wire type latching solenoids*. Typically a solenoid's red wire denotes "+" and the black wire denotes "-". You must verify from the manufacturer which wire is "+" or "-" if the colors differ. Ensure all connections are correct and are according to the wiring diagrams presented in this manual.

FRONT PANEL CONTROLS - Refer to Fig. 3

The FM-2 DCL has 4 push buttons and a reset button recessed beneath the front panel. Awaken the controller by pressing any button, until the display illuminates. *The unit always awakes in filtering mode.* if there is no push-button activity for 1-1/2 minutes, the display turns off. The controller fully operates with the display off. See **Figure 3** below:

FIGURE 3: FM1-2 DCL Front



PROGRAMMING

Prior to operating the FM-2 DCL, the controller must be programmed. Press and release any button for at least 1 second and let off to awaken unit. Note the following pushbuttons used to program controller settings:

FUNC.: Repeatedly pressing this button allows you to loop around to view each function display. The unit will begin with the STATUS display. Certain

features/functions may or may not appear depending on what mode the FM-2 DCL is set to via jumper setting. When in a 'programmable' function, you may review, or edit settings. Pressing **FUNC.** after editing data, enters the value and moves the display to the next function.

SEL. Select allows you to select the field or digit you wish to change. A flashing cursor appears when in select mode.

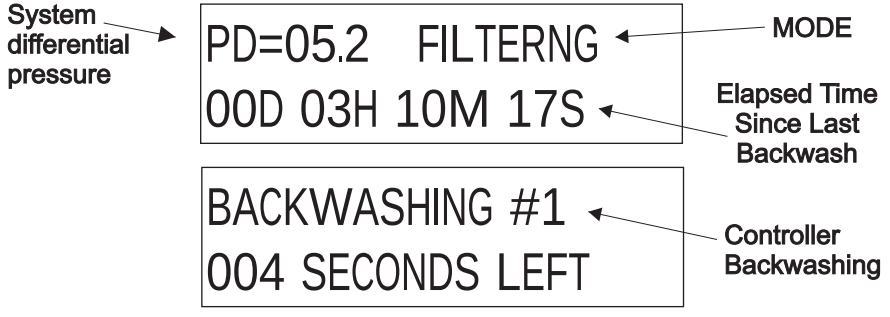
ADJ +. Adjust allows you to up-count a digit to a specific desired value.

MAN./ADJ. - This pushbutton can do two tasks. First, pressing this button while in filtering mode starts a manual backwash. Second, pressing this button while in a programmable function allows you to down-count a digit to a specific desired value.

RESET: This recessed button clears all program memory in the FM-2 DCL. The unit must be completely reprogrammed. You may use a blunt, thin tool such as a screwdriver or ink pen to press this button.

FUNCTIONS

STATUS: (Non Programmable-informational only) This display shows how much time has elapsed since the last backwash started its cycle shown in days, hours, minutes, and seconds. When a backwash cycle starts, the periodic's time clock is set to zero and begins up-counting until the next periodic backwash starts. NOTE: Elapsed time is not available when there is no set periodic time:



SENSOR SET POINT: Use this setting to set the trigger point for the digital sensor gauge based on the PD GAUGE/SENSOR function. If the function is set for '*PD GAUGE'* then this display will show: '*SET DIFFERENTIAL PSI ON GAUGE'* and no adjustable parameter is available on the display. Instead, the differential pressure will be set manually on the switch gauge itself.

If the PD GAUGE/SENSOR function is set for *"SENSOR"*, then a differential trigger setting will be available for adjustment. To program the differential pressure point you wish to initiate a backwash at, press SEL., and then use the ADJ.+, or MAN./ADJ- push-buttons to set the trigger point. Differential pressure

range is from 1.0 to 30.0 PSI in increments of 0.2 PSI. 7 PSI is the default setting when 'SENSOR' is selected. Press FUNC. when finished:

Displayed when PD/Gauge Set to 'SENSOR' (Default)

NOTE: In sensor mode, maximum differential pressure displayed: 39.7 PSI.

Displayed when PD/Gauge Set to 'GAUGE'

PRE-DWELL TIME: Only available when outputs are designated as a single station/w master valve.

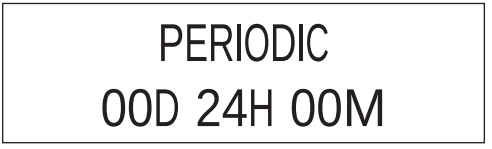
This is a delay time used to build system pressure before the unit goes into backwash mode in orchestration with the pressure sustaining master valve, in order to ensure valves open and close on systems with smaller pumps. Press SELECT, +, and MAN/ADJ./- to set the pre-dwell time (up to 255 seconds):

BACKWASH TIME: This sets the cleaning duration for each filter tank. Press SELECT, ADJ+, and MAN./ADJ- to set the backwash time (up to 255 seconds) per tank. Press FUNC. when finished:

DWELL TIME: (Only available when configured as a two tank unit.) This sets idling time between tank backwashes in order to maintain system pressure, and allow valves enough time to open and close as backwashing progresses. Press SELECT, ADJ+, and MAN./ADJ- to set the dwell time (up to 99 seconds). Press FUNC. when finished:

PERIODIC TIME: This sets backwashing *cycle intervals*. It is independent from PD gauge/sensor initiation; however, if the gauge/sensor triggers a backwash cycle before periodic interval starts on its own, the periodic's internal timer will reset to zero, and begin timing up again. Once a cycle is complete, the controller reverts back into filtering mode, the periodic time resets to zero, and periodic timing begins again.

To set periodic time interval, Press SEL., ADJ+, and MAN.ADJ.- to set the periodic time interval. (up to 98 days 'D', 23 hours 'H', and 59 minutes 'M'):



PD DELAY TIME: Intermittent surge pressures in a filter system can occur which could trigger a backwash cycle unnecessarily. Adding PD delay time alleviates unnessessary backwashing, and allows 'gauge bouncing' to stabilize before a legitimate pressure reading is taken. Press SEL., ADJ+, and MAN.ADJ.- to set the delay time (up to 255 seconds). Refer to filter manufacturer for correct setting:

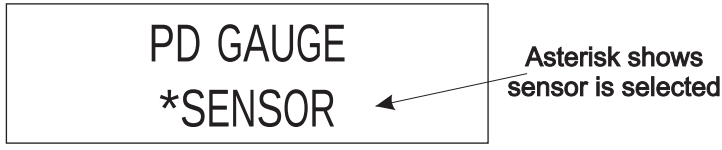
SYSTEM CONFIGURATION/BACKWASH CYCLE COUNT: This function shows how the system is configured (via jumper setting) on the top line, and displays how many backwashes have occurred since last cleared on the bottom line. To clear the count to zero, press SEL., then SEL. again to move the cursor to 'Y', followed by MAN/ADJ.- to clear the count.

Displayed when no jumper installed (Default)

Displayed when Jumper across A-B is installed

Displayed when Jumper across B-C is installed

PD GAUGE/SENSOR: To select between the traditional Murphy switch gauge and the newer Alex-Tronix digital sensor, press SEL. to either one, and press FUNC:



BATTERY REPLACEMENT

Under typical operating conditions, the FM-2 DCL's battery will actuate a latching solenoid about 10,000 times given several conditions the unit may be operating under. Temperature, environment, battery type all play a factor in battery longevity. It is recommended batteries be replaced annually, and 'Energizer L91-FRG' lithium type be used. Name brand quality alkaline batteries may also be used at a reduced cycle count.

To replace batteries, remove the 5 screws on the front panel, and note the original position of the harness connector. Unplug the connector from the harness and remove the panel from the enclosure. Using a screwdriver, gently remove pry out old batteries, and inspect terminal contacts for any residue or battery acid leakage. Gently polish/clean with a soft cloth if necessary. Do not touch components on circuit board. Note polarity marking within the battery holders, and replace cells accordingly. Once batteries are installed, using a thin object such as a small screwdriver, press RESET through the front panel, and reprogram unit as necessary.

NOTE: Changing batteries or pressing the reset button will clear the backwash cycle count.

SETTINGS/NOTES:

JUMPER SETTING: _____

PRE-DWELL TIME: _____

BACKWASH TIME: _____

DWELL TIME:_____

PERIODIC TIME: _____

PD DELAY TIME:_____

PD TYPE:_____

PRESSURE DIFFERENTIAL SETTING:_____

WARRANTY

Suppliers and end users of this product agree to the following terms, conditions and limitations of warranty and liability coverage:

Alex-Tronix warrants the FM-2 DCL to be free from original defects for two years from the date of original sale. The manufacturer shall replace, free of charge any part found defective under normal use and service within the guarantee period, provided the product is installed, used, and maintained in accordance with any applicable instructions or limitations issued by Alex-Tronix. Components supplied replacement parts are warranted for 90 days from the date of shipment. The manufacturer assumes no liability for incidental or consequential damage sustained in the adoption or use of our engineering data, service, or products. Liability is therefore limited to the repair of the product manufactured by Alex-Tronix. No agent or representative of Alex-Tronix has the authority to waive or add to this agreement. Altered products, or use of products in a manner not intended shall void this warranty. For warranty service, ship unit pre-paid to the address below. Controllers damaged in transit due to improper packaging are not covered by warranty.

For warranty repair, send defective product freight pre-paid to:

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