INSTALLATION & OPERATION
INSTRUCTIONS MANUAL

VAF FILTRATION SYSTEM

MICROFLUSH CONTROLLER

MF4

Screen Filters

Jun-2026

Revision History

NOTE: Ensure printed copies of this manual are kept up to date with the latest revisions.

Revision	Date	Description
Revision 0	Aug-2018	Initial Issue
Revision 1	Jun-2023	
Revision 2	Apr-2024	Pages 36,37 & 38 image updated to increase resolution.

CONTENTS

PREFACE PAGES

DISCLAIMER STATEMENT

The operation and maintenance manual should provide complete and accurate information to meet your operating and/or service requirements based on the information available at the time of publication. The information in this manual may not cover all operating details or variations or provide for all conditions in connection with installation, operation, and maintenance. Should questions arise which are not answered specifically in this manual, contact your VAF Screen Filters support team.

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MANUAL USER'S GUIDE

This manual describes the procedures necessary to install, operate, and maintain your VAF Controller. Please read this manual carefully before installing and operating your equipment. The equipment warranty may be voided if installation or operation instructions are not followed correctly.

Warnings, cautions and notes are used to attract attention to essential or critical information in a manual. Warnings and Cautions will appear before the text associated with them, and notes can appear either before or after associated text.

WARNING	Warnings indicate a condition, practice, or procedure which must be observed to avoid personal injury or fatalities.

CAUTION	Cautions indicate a situation that may cause damage or destruction of equipment or may pose a long-term health hazard

NOTE:	Notes are used to add information, state exceptions, and point out areas that may be of greater interest or importance.

EQUIPMENT SUPPORT

VAF Screen Filters continually strives to provide safe, trouble-free equipment using the optimum technology for your application. If problems should develop, VAF Screen Filters worldwide network of technical support will be available to provide assistance. For service, sales, parts, or additional manual copies please visit website: https://vafscreenfilters.com

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WARRANTY

For additional information regarding VAF Screen Filters Warranty, please reference the Standard Terms of Sale document provided.

FOREWORD

Thank you for purchasing VAF Filtration Systems' controller for V-Series automatic backwash filter. The V-Series filter and electronic backwash controller function integrally, providing more effective, lower cost water filtration than traditional filtration systems.

Follow procedures contained in this Owner's Manual for proper installation, start-up, operation, and maintenance of the back wash controller. Failure to follow these procedures may void warranty on the product. Refer to the Product Warranty for more details.

VAF designed and built your filter controller employing the latest technologies and engineering materials. As a consequence, you own the best backwash controller available. And it is MADE in the U.S.A.

Quality at VAF Filtration Systems goes far beyond our line of products. Feel free to call our professional staff directly at headquarters in Denver, Colorado.

1.0 MICROFLUSH AT A GLANCE

- Enclosure IP65 – NEMA 3S Polycarbonate – 15 cm H x 15 cm W x 9 cm D (6”H x 6”W x 3 1/2”D)
- An industry proven dedicated filter backflush system with a rugged design to withstand harsh conditions.
- Capable of backflushing up to 4 filters
- Master valve output as standard
- English Menus with a 2 Line 16 characters LCD Display
- Easy navigation menu system with password access control
- Backflush activation modes:
    - Programmable Interval
    - External digital differential pressure switch
- Two Power options:
    - Replaceable batteries
        - Battery condition and voltage is monitored and displayed.
        - Less than 0.000020 Amp (20uA) Power consumption
    - 120VAC or 220VAC main power 50/60 Hz.
- Automatic save of setting changes and collected data
- Valve options:
    - Battery powered controller.
        - 12VDC 2 Wire latching (Valve pulse time is programmable)
    - AC powered controller
        - 24VAC
        - 12VDC
        - 12VDC 2 Wire latching
        - 24VAC motorized valve
- Current status indication.
    - When interval only is selected the time until next backflush is displayed.
    - When External DP only is selected, display shows “Waiting for Ext-DP “
- Data logging:
    - Backflush Count
        - The total number of backflushes since last data log reset.

- Interval Backflushes
  - The number of interval backflushes since last data log reset.
- Ext-DP Backflushes
  - The number of Ext-DP backflushes since last data log reset.
- Interval Backflushes Last Hour
  - The number of Interval backflushes that occurred in the last hour.
- Ext-DP Backflushes Last Hour
  - The number of Ext-DP backflushes that occurred in the last hour.
- Last Interval Backflush
  - How long since the last interval backflush occurred
- Last Ext-DP Backflush
  - How long since the last Ext-DP backflush occurred
- Total Backflush Time
  - The total time the unit has spent back flushing.
- Total On Time
  - The total time the controller has been running.
- Time since power up last.
  - The time since the power was last turned on.
- Data log Reset
  - A special item that allows the operator to reset all values in the data log.

➢ Programmable delays:

- Between master valve and first backflush valve
- Between each filter
- On initiation of a DP generated backflush sequence
- Filter Flow loss detection time
- Excess backflush flow detection time

➢ Fault detection options:

- Maximum allowable backflushes per hour.
  - If exceeded there are four
    1. Do nothing.

2. Stop backflushing. (If an output is set to activate on a Fault it will operate).
3. Warning Alarm only (If an output is set to activate on a Fault it will operate)
4. Warning Alarm and Stop backflushing. (If an output is set to activate on a Fault it will operate)

- Maximum consecutive backflush attempts initiated by differential pressure input.
  - If exceeded there are four options:
    1. Do nothing.
    2. Stop backflushing. (If an output is set to activate on a Fault it will operate)
    3. Warning Alarm only (If an output is set to activate on a Fault it will operate)
    4. Warning Alarm and Stop backflushing. (If an output is set to activate on a Fault it will operate)

➢ Manually initiated backflush sequence.
- The operator can initiate a backflush without having to wait for the time interval to expire or a DP situation to occur.
- All filters can be backflushed as per normal operation, or an individual filter can be selected to backflush.

➢ Two Programmable Inputs. Each can be figured for one of the following tasks:
- Stop backflush cycle.
- Pause backflush cycle.
- Start backflush via Ext-DP or Initiated signal (Delayed activation via programmable setting).
- Reset for any current faults.
- Loss of system flow.
- Excessive backflush flow

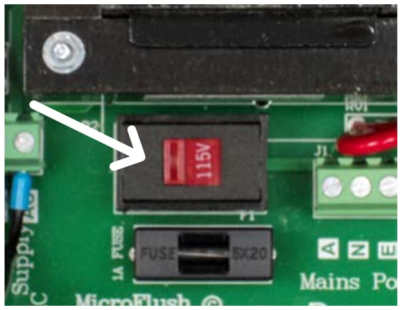
➢ User programmable outputs
- All valve outputs not required for normal valve operation are programmable. Options are:
  - Disabled
  - Any filter valve including duplicating existing filter valve outputs
  - Fault
  - No Fault

- Backflushing On
- Not Backflushing

2.0 QUICK START

1

- Check VAC switch under transformer to be sure power setting (115 or 220 VAC) is in the correct position.



2

- Connect the back flush and master valves (if required) to the output terminals as detailed in the OUTPUTS section; disable all unused outputs.
- Set Inputs to the required settings.

Always turn off the power to the unit when opening and use a qualified electrician when working with mains level voltages.

3

- Plug power lead into Power Outlet.

OR

- Place fresh batteries into the battery holder inside the case. Lithium is recommended, but alkaline are acceptable.

4

Scroll through the menus changing settings/configuration for the intended site.

Set the:

- Type of power supply
- Valve Latching pulse duration for Battery Mode
- Enable required valve

Check protection settings.

- Maximum backflushes per hour
- Maximum backflush attempt for each DP event

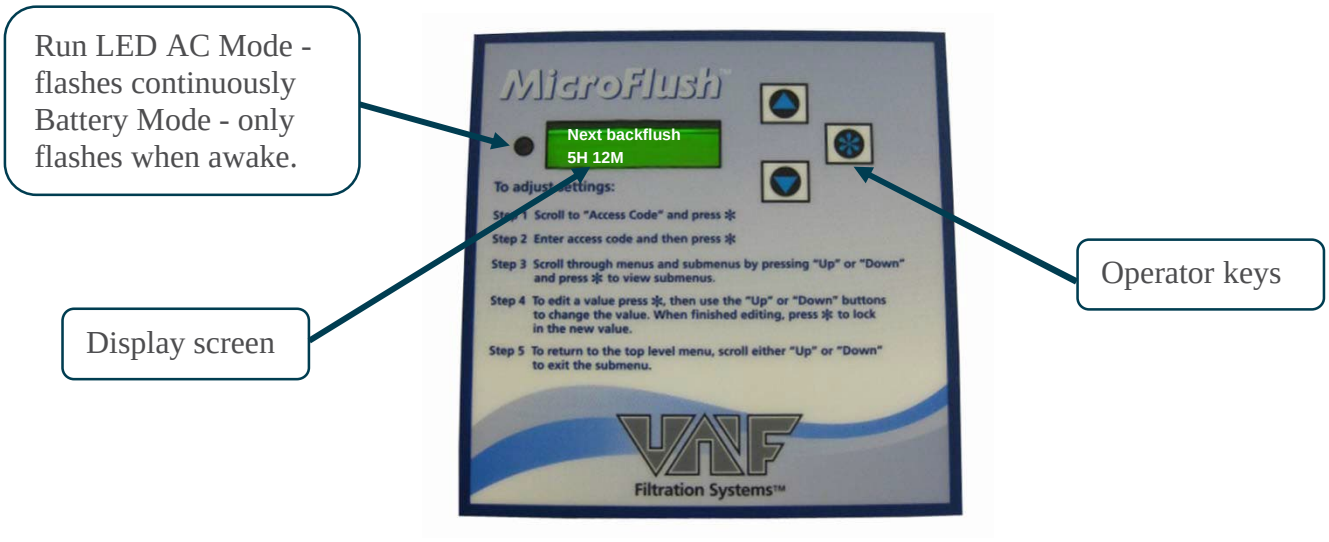
5

Set time values:

- Backflush time
- Backflush interval
- Master Valve Dwell Time
- Multi-Filter Dwell Time
- Differential Pressure Start delay.

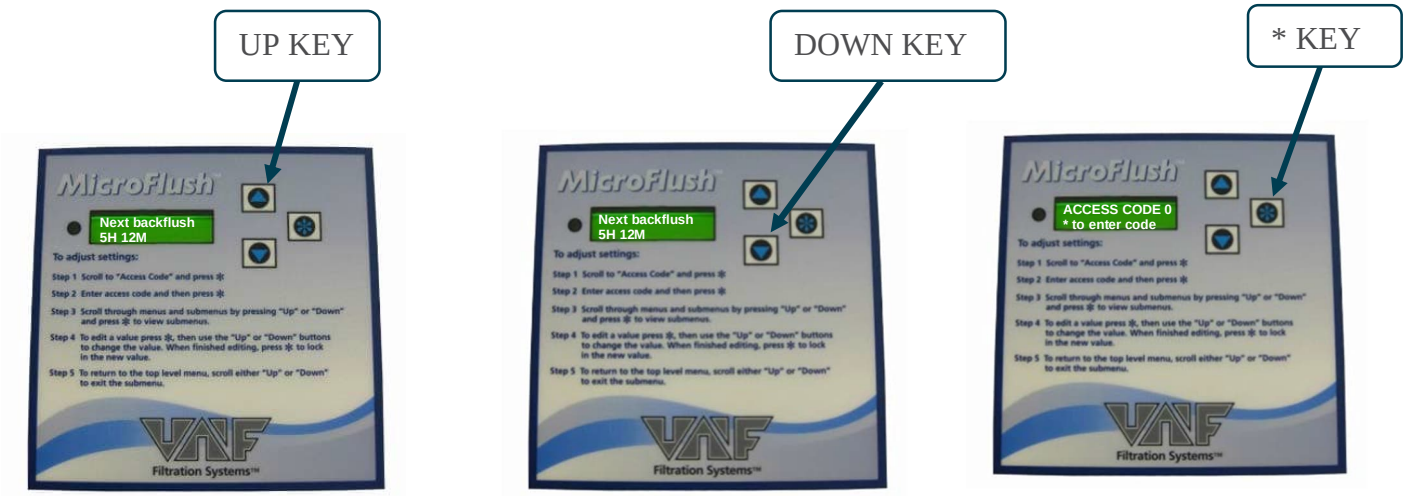
3.0 INTRODUCTION

The VAF MicroFlush Controller is designed to automatically backflush filters on either a time or differential pressure basis. The controller is a microprocessor-based system. This technology allows the operator to scroll through Menus that can be changed to suit each site.



The controller has a list of menu items that allow adjustment of the filter back flushing. The menus are accessed by pressing the “UP” or “DOWN” keys.

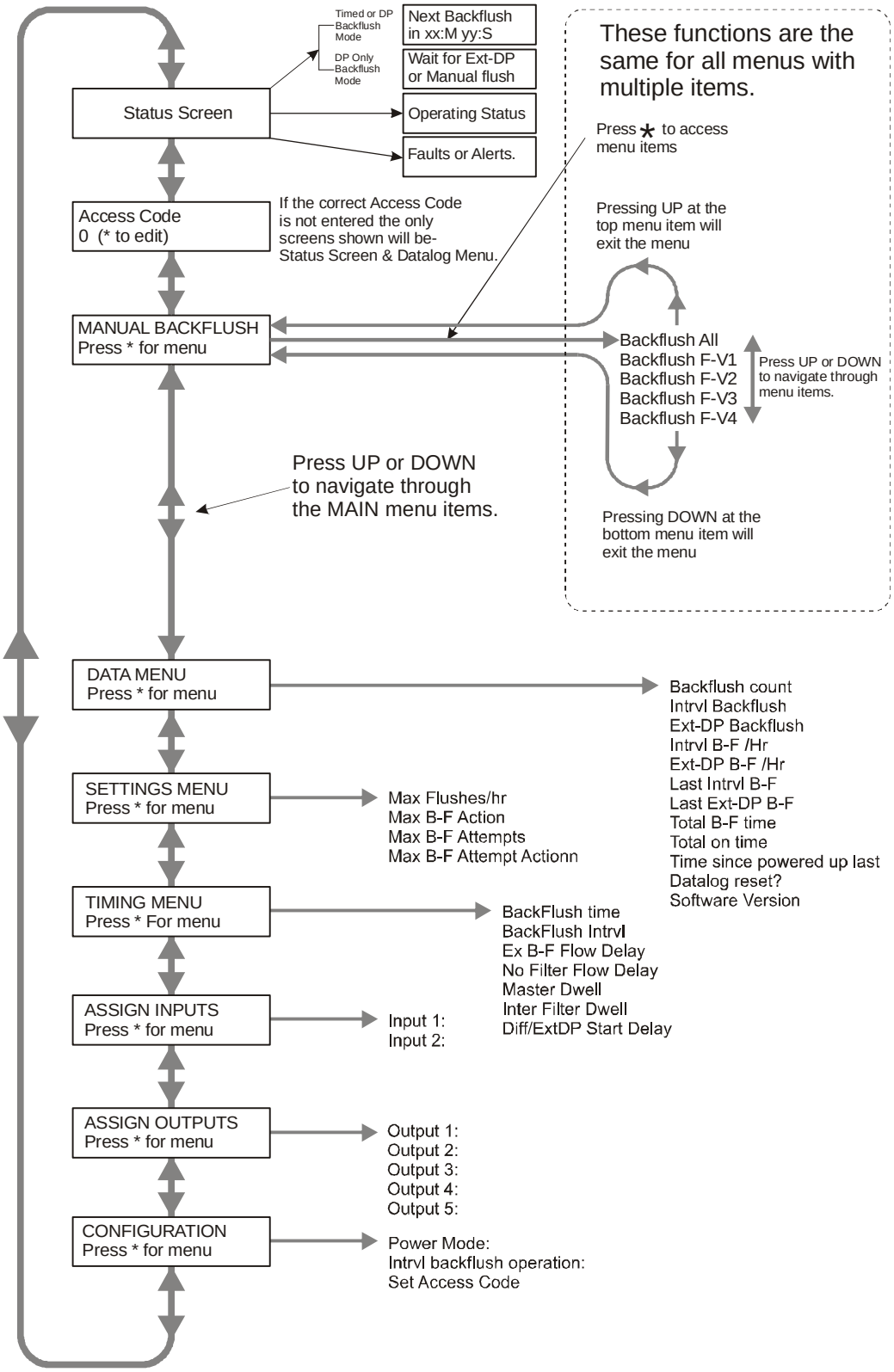
`To scroll through the main menu options, press the up or down key to view the list of menus available.



To view all Menus the correct Access Code must be entered. From the status screen press the “DOWN” key once, when the Access Code screen is displayed press the *“STAR” (Edit) key, the number will now start to flash, press the “UP” key until the correct access code has been entered, press the * key again to lock in the access code (21 default access code). Now all menus will be visible, press “UP” or “DOWN” keys to scroll through the menus.

To enter one of the main menus, press the * key, then press the “DOWN” key to view the options within that menu. To edit the value of the menu item, press the * key when the required menu is displayed and then press the “UP” or “DOWN” key depending on the value required. When the required value is entered, press the * key again to lock the new value in. To exit any menu, scroll “UP” until the top of this menu reached or “DOWN” until the bottom is reached. Either will exit back to the entry point of the menu. The same applies for all menus.

4.0 MENU STRUCTURE



5.0 FILTER APPLICATION

The MicroFlush Controller is suitable for use with numerous types of filters. Please consult your local VAF representative to confirm the specific application.

Automatic purging of sand separator

Controls Multi Media Tanks

Automates Bag and Cartridge Filters

Controls other screen filter technologies.

6.0 TOP LEVEL MENU ITEMS

Top Level Menu Item	Access Code Required	Notes
Next backflush in XX:M XX:S	NO	Status Screen 1 –See Note1
Wait for ext-dp or manual flush	NO	Status Screen 2 –See Note2
Batt: (Status description) XX.XX volts	NO	Good, Okay, Replace, Low –See Note3
ACCESS CODE 0 (* to edit)	NO	Default: 21
MANUAL BACKFLUSH Press * for menu	YES	
DATALOG MENU Press * for menu	NO	
SETTINGS MENU Press * for menu	YES	
TIMING MENU Press * for menu	YES	
ASSIGN INPUTS Press * for menu	YES	
ASSIGN OUTPUTS Press * for menu	YES	
CONFIGURATION Press * for menu	YES	

NOTE: The “Next Backflush” status screen is only visible when “Interval Backflushing” is enabled.
This is the main status screen when “Interval Backflushing” is disabled, and an external or Differential Pressure switch or sensor is used to initiate the backflush.
The Battery condition is only displayed when operating in battery mode; it will alternate displaying with another screen.

See detailed descriptions for each of the sub menu items in the follow sub sections.

7.0 STATUS MENU ITEMS

The MicroFlush controller provides various status menu items for the operator. The status menu will automatically cycle through the current status items (the operator can also press * to manually cycle through the status menus)

Next backflush
in XX:M XX:S

Wait for Ext-DP
or manual flush

When the powered up MicroFlush controller is on, the operator will be presented with one of these two status items. Also, after 5 minutes of operator inactivity the unit will reset the access code to zero and display the status screen.

If interval backflushing has been enabled the “Next backflush” status item will be displayed. The time remaining until to the “Next Backflush” will continue to count down unless the pause or stop input has been asserted.

If interval backflushing has been disabled, the “Wait for Ext-DP” status screen will be shown. This item indicates the system is waiting for an external flush input, or for the operator to trigger the backflush from the “manual backflush” menu.

The MicroFlush controller will display the battery status screen when the controller has been configured for “Battery Power Mode.”

Batt: Good
12.83 volts

On the first line of the display, you will see “Batt: NN”, where NN is one of “Good”, “Okay”, “Replace”, “Low.” This indicates the general condition of the battery. When high draw latching solenoid valves are used the indicated battery condition may change from “Replace” to “Low” after operation but return back to “Replace”. This is normal and the batteries should be replaced soon. On smaller valves there will be a considerable amount of useable life in the battery when “Low” is indicated.

When a backflush has been triggered the status screen will indicate what has initiated the backflush.

Manual Backflush
activated

During backflushing the status menu will keep the operator informed of what the current state of the backflush is.

For Example:

Time Backflush activated

↓

Master dwell 5sec remain

↓

Backflushing F1 00:M 29:S remain

Time Backflush activated

Ext-DP Backflush activated

There are other status menu items that will indicate why the unit may have stopped back flushing.

Stop Input has been activated

When an input has been configured as Stop and that input has been activated the system will turn off all valves and stop backflushing. The interval timer will be reset and when the input is removed the interval timer will start to count down again.

Pause Input has been activated

When an input has been configured as pause and the input has been activated all valves will turn off and the interval back flushing timer will pause. When the input is removed the backflush valves will turn back on and backflushing will continue from the point at which it was paused.

B-F /Hr Exceeded Press * to Reset

The controller tracks the number of backflushes per hour and also the number of backflush attempts per continuous “Ext-DP” input signal. Both these safeguards can be configured in the “SETTINGS” menu. The purpose of these functions is to give the user the option to prevent continual backflushing should the Differential Pressure or External Backflush signal be continually asserted. If the “Action” for these items is set to “Stop”, the controller will cease all backflushing and thus prevent excess water

Attempt Limit Press * to Reset

from being dumped to drain. If the “Action” for these items is only set to “Alarm” then the message will be displayed, but the controller will continue to backflush.

8.0 ACCESS CODE

The MicroFlush controller requires an access code to either manually cause a backflush or to change any setting. A user without an access code can view the status screens and the “DATALOG” menu only. The default access code is 21 but can be changed by the user. If you forget your access code, you will be able to reset it by contacting VAF for further help.

ACCESS CODE 0 (* to edit)

To enter your access code, scroll through the menus until you see this screen (By pressing either “UP” or “DOWN”). After you have scrolled to the “ACCESS CODE” menu item the next step is to press the “*”. This will take you into editing mode.

ACCESS CODE 0 (* to save)

The 0 will now begin to flash if you press either the “UP” or “DOWN” the flashing value will increase or decrease. (In most menus holding the “UP” or “DOWN” button will cause the valve to change by a larger amount. However, this feature is disabled in the access code menu. After you have entered the correct access code the next step is to save in the access code. This is accomplished by pressing the “*” key once more. The number on the screen will stop flashing and the “UP” and “DOWN” keys will again allow you to scroll through the menus. The access code will only be saved for 15 minutes after the last key press, and then it will be reset to 0 and will have to be entered again if further access is required.

9.0 MANUAL BACKFLUSH MENU

MANUAL BACKFLUSH
Press * for menu

The manual backflush menu allows the operator to initiate a backflush on all valves or an individual valve. The manual backflush will run for the configured back flush time. Press "*" to enter the Manual backflush menu.

Press * to flush all filters.

Backflush All
Press * to start

If only one filter needs to be backflushed, then press the down key until the desired filter is shown. Any filter(s) not assigned to an output will be skipped and not displayed.

Backflush F1
Press * to start

When the desired filter number is displayed, press the * key to start. If an output has been assigned as a master valve it will operate along with the selected filter.

If an individual filter is backflushed the master valve delay will also operate, and the prescribed master dwell delay will occur.

Backflush F2
Press * to start

Backflush F3
Press * to start

Backflush F4
Press * to start

10.0 DATALOG MENU

The MicroFlush controller stores information about how often and when backflushes have occurred. To enter the DATALOG scroll through the menus until you see the “DATALOG” menu, then press “*” to enter the menu.

DATALOG MENU
Press * for menu

- Backflush Count: The total number of backflushes since last data log reset

Backflush Count
xx total

- Interval Backflushes: The number of interval backflushes since last data log reset.

Int Backflushes
xx

- Ext-DP Backflushes: The number of Ext-DP backflushes since last data log reset.

Ext-DP Backflush
xx

- Interval Backflushes Last Hour: The number of Interval backflushes that occurred in the last hour.

Intervl B-F/Hr
xx

- Ext-DP Backflushes Last Hour: The number of Ext-DP backflushes that occurred in the last hour.

Ext-DP B-F/Hr
xx

- Last Interval Backflush: How long since the last interval backflush occurred. If the elapsed time is more than one hour it will display xx:Hr yy:M.

Last Intrvl B-F
Xx:M yy:S ago

- Last Ext-DP Backflush: How long since the last Ext-DP backflush occurred. If the elapsed time is more than one hour it will display xx:Hr yy:M.

Last Ext-DP B-F
Xx:M yy:S ago

- Total Backflush Time: The total time the unit has spent back flushing. If total time is more than one hour it will display xx:Hr yy:M

Total B-F Time
Xx:M yy:S

- Total On Time: The total the unit has been running.

Total On Time
Xx:H yy:M

- On Time since powered up last: The time elapsed since the power has been turned on.

Xx:H yy:M Since
Powered up last

- Datalog Reset: A special item that allows the operator to reset all valves in the data log. This is achieved by pressing the "*" key while this menu item is on screen. This screen is not visible unless the correct access code has been entered.

Datalog Reset?
Press * to reset

- Software Version: This screen displays the current software version. It may be helpful in determining if any further software upgrades are available and should be quoted when calling the technical support line.

Software Version
11.41.00

To exit the data log menu, scroll "UP" until the top of this menu reached or "DOWN" until the bottom is reached; either will exit back to the entry point of the DATALOG MENU.

11.0 SETTINGS MENU

SETTINGS MENU
Press * for menu

The settings menu has system limits and the action required when these system limits have been exceeded.

Max flushes/hr
XX max

This defines the max number of backflushes allowable in a one-hour window. The next menu item defines what should happen if this limit has been exceeded. This option is useful in preventing a blocked filter or damaged filter from causing excess flushing. If Interval and Differential backflushing are both active this will be the combined total of both.

Where XX is: None, Stop, Alarm or Alarm+Stop. If the Max Flushes/hr limit is exceeded the system will either continue backflushing or stop depending on this setting.

Max B-F Action
None

- If this option is set to none the limit will be totally ignored and backflushing will continue when required.

Max B-F Action
Stop

- If set to Stop the controller will stop backflushing and a fault message will be displayed on the status screen. No fault output will be set.

Max B-F Action
Alarm

- If set to Alarm a message will be display but the controller will continue to backflush when required. If an output is programmed to be fault it will also be activated.

Max B-F Action
Alarm+Stop

- If set to Alarm+Stop a message will be displayed on the status screen and the controller will stop all backflushing. If an output is programmed to be fault, it will also be activated.

Max B-F Attempts
X max

Maximum Backflush Attempts places a limit on the number of consecutive backflush attempts that should normally occur via an external differential pressure switch input. If the External Differential input is not automatically released after a backflush has occurred and another backflush is therefore initiated this counter will

increment. This continues until the “Max B-F Attempts” is exceeded or if External Differential is released. Once this limit has been exceeded the MicroFlush controller will respond according to the setting in the max backflush attempts action menu (Max B-F Attn Action). This is usually set at 3 to 5 attempts.

The options are:

- If this option is set to none the limit will be totally ignored and backflushing will continue when required.
- If set to Stop the controller will stop backflushing and a fault message will be displayed on the status screen. No fault output will be set.
- If set to Alarm a message will be display but the controller will continue to backflush when required. If an output is programmed to be fault it will also be activated.
- If set to Alarm+Stop a message will be displayed on the status screen and the controller will stop all backflushing. If an output is programmed to be fault it will also be activated.

Max B-F Att Actn None

Max B-F Att Actn Stop

Max B-F Att Actn Alarm

Max B-F Att Actn Alarm+Stop

12.0 TIMING MENU

TIMING MENU
Press * for menu

The timing menu configures the various timed functions and parameters.

The Backflush time defines how long each filter is to be backflushed. If greater than 59:M 59S the display will change to display Hours and Minutes. XX:H XX:M. The maximum backflush time is 18 Hours. Recommended backwash time for a screen filter is 15 seconds.

Backflush time
XX:M XX:S /Fltr

When Interval Backflushing is enabled, this setting defines the interval between backflush sequences. If greater than 59:M 59S the display will change to display Hours and Minutes. XX:H XX:S. The maximum interval setting is 18 Hours.

Backflush Intrvl
XX:M XX:S

Ex B-F Flow Dly
XX:M XX:S

If one of the programmable inputs is set to activate from a flow switch in the backflush line to detect excessive wastewater, then this menu will be visible. It needs to be set to a time that is considered sufficient for all filters to have finished a backflush cycle. If flow is detected via a flow switch in the waste line for a period greater than the set value, the controller will cease all backflushing. If an output is programmed to be fault it will also be activated and the fault output should be used to turn off pump operation.

No Fltr Flow Dly
XX:M XX:S

If one of the programmable inputs is set to activate from a system flow switch to detect loss of water flow through the filter, then this menu will be visible. If no flow is detected via a flow switch in the filter supply line for a period greater than the set value, the controller will cease all backflushing. If an output is programmed to be fault it will also be activated.

Master Dwell
XX:M XX:S

The MicroFlush controller has the capacity for one master valve output and up to four filter valve outputs. The Master Dwell time defines how long after the master valve is opened before opening the first filter backflush valve.

Multi Fltr Dwell
XX:M XX:S

The Multi Fltr Dwell defines how long after a filter valve is turned off before the next filter valve is turned on.

Diff/ExtDP Start
Delay: x sec

This setting configures how long the MicroFlush controller requires the “External Differential Pressure Switch” Input to be asserted before a backflush is triggered. This feature is useful in installations when pressure “surges” or “spikes” trigger a false DP and initiate an unnecessary backwash.

Valve latching
Pulse: XX.Xmsec

If in battery mode, this menu will be displayed as it is assumed that low powered latching valves will be used to conserve battery usage. The valve latching pulse is the duration required for latching solenoid valves to properly latch either open or closed. Please check the valve manufacturer’s datasheet for the required duration or contact your supplier for further information. Pulse times larger than necessary may cause the valve not to operate correctly and/or will reduce battery life. If latching valves are to be used when connected to an AC supply, simply change the Power Mode in configuration to Battery Mode.

13.0 ASSIGN INPUTS MENU

ASSIGN INPUTS
Press * for menu

The MicroFlush controller has two configurable inputs. Both inputs can be configured/assigned to a number of different optional modes. The same options apply for both inputs.

- Disabled: The Input has no function

Input X
Disabled

- Stop: When an input is configured as a Stop input and the input is asserted the controller will stop any current interval or differential input backflush for the duration that the input signal asserted. When the input is released, and another backflush occurs the sequence will start from the first filter again.

Input X
Stop

- Pause: When an input is configured as a pause input and the input is asserted the controller will turn off the master valve and any current filter backflush valve and pause the filter backflush timer. When the input is released, the appropriate filter valve(s) will be re-activated, and the backflush timer restarted. However, if there was no current backflush in progress the controller will simply stop the interval timer and prevent any further backflush until the pause input is released.

Input X
Pause

- Ext-DP Flush: The Ext-DP Flush input option allows an external differential pressure switch or remote system to cause a backflush. There is a delay associated with the activation of this input to prevent false triggering.

Input X
Ext-DP Flush

- Reset Faults: This option allows a remote system to reset any faults.

Input X
Reset Faults

- B-F Flow SW N/O: The Backflush flow switch option allows connection of a flow switch in the filter drain line which is used to detect excessive backflushing or defective valves which may inadvertently cause the wasting of water. The N/O (normally open) feature allows flow switches to be used which close when flow is detected.

Input X
B-F Flow SW N/O

- B-F Flow SW N/C: The Backflush flow switch option allows connection of a flow switch in the filter drain line which is used to detect excessive backflushing or defective valves which may inadvertently cause the wasting of water. The N/C (normally closed) feature allows flow switches to be used which open when flow is detected.

Input X
B-F Flow SW N/C

- Filtr Flow SW N/O: The Filter flow switch option allows connection of a flow switch in the filter supply line which is used to detect the loss of flow to the filter. The N/O (normally open) feature allows flow switches to be used which close when flow is detected.

Input X
Fltr Flow SW N/O

- Filtr Flow SW N/C: The Filter flow switch option allows connection of a flow switch in the filter supply line which is used to detect the loss of flow to the filter. The N/C (normally closed) feature allows flow switches to be used which open when flow is detected.

Input X
Fltr Flow SW N/C

14.0 ASSIGN OUTPUTS MENU

ASSIGN OUTPUTS
Press * for menu

The MicroFlush controller has five (5) outputs; each output can be configured/assigned to a different function.

The default configuration is:

Output 1 = Master Valve

Output 2 = Filter 1

Output 3 = Filter 2

Output 4 = Filter 3

Output 5 = Filter 4

These are the functions that every output can be configured. The outputs are numbered 1 to 5 from left to right when looking at the connection terminals – See output connection for more information.

NOTE: When in Battery mode only filter/valve functions can be applied to the outputs.

- Disabled: If an output has no function, it should be disabled. All outputs not being used should be disabled. The disabled function can also be used to temporarily disable a filter whilst it is out of service. Any filter that is disabled will be skipped during a backflush.

Output X
Disabled

- Master Valve: The master valve turns on at the start of the backflush cycle and turns off at the end. Master valves are typically used to redirect or increase flows during the backflush cycle. Output 1 is normally programmed to be the Master Valve. If a Master Valve output is not required, this output can be Disabled or programmed to another function.

Output X
Master Valve

- Filter Valve 1: Filter valve 1 turns on at the same time as the master valve. There is also an adjustable timer to delay the operation of filter valve 1, it is called the Master Dwell and is used to give the master valve time to operate before operating any filter valves. Output 2 is normally programmed to be Filter Valve 1.

Output X
Filter Valve 1

- Filter Valve 2: Filter valve 2 turns on after filter valve 1. There is also an adjustable timer to delay the operation between filter valves - it is called the Inter Filter Dwell and is used to give the previous valve time to close before operating the next filter valve. Output 3 is normally programmed to be Filter Valve 2.

Output X
Filter Valve 2

- Filter Valve 3: Filter valve 3 turns on after filter valve 2, there is also an adjustable timer to delay the operation between filter valves - it is called the Inter Filter Dwell and is used to give the previous valve time to close before operating the next filter valve. Output 4 is normally programmed to be Filter Valve 3.

Output X
Filter Valve 3

- Filter Valve 4: Filter valve 4 turns on after filter valve 4, there is also an adjustable timer to delay the operation between filter valves - it is called the Inter Filter Dwell and is used to give the previous valve time to close before operating the next filter valve. Output 5 is normally programmed to be Filter Valve 4.

Output X
Filter Valve 4

- Fault: If an output is programmed to be a Fault output it will activate whenever the controller detects a fault.

Output X
Fault

Some faults can shut down backflushing others are for indication only. When the fault is reset, the output will turn off.

- No Fault: If an output is programmed to be a No Fault output it will activate when the controller is fault free and turn off when a fault is detected.
- Backflushing: If an output is programmed to be a Backflushing output it will activate whenever the controller is running a backflush cycle.
- Not Backflushing: If an output is programmed to be a Not Backflushing output it will activate whenever the controller is NOT running a backflush cycle and deactivate when it is backflushing.

Output X
No Fault

Output X
Backflushing

Output X
Not Backflushing

15.0 CONFIGURATION MENU

CONFIGURATION
Press * for menu

The Power Mode setting configures internal settings to make the best use of the power source used.

- In AC Mode. The display is always on, and the update rate is increased to allow for faster response.
- In Battery Mode: The display turns off after a few seconds and the system sleeps to conserve battery power. This mode should be used in conjunction with low powered latching solenoid valves.

Power Mode
AC Mode

Power Mode
Battery Mode

The timed backflush feature can be "Enabled" or "Disabled." Set to Disabled if Differential only backflushing is required.

- Enabled: Interval and differential input backflushing possible.

Intrvl backflush
flushing: Enable

- Disabled: Differential input only backflushing possible.

Intrvl backflush
flushing: Disable

This option allows you to change the default access to code to a site-specific access code. Please make a note of this access code as forgetting this access code will require you to contact your distributor for assistance.

Set Access Code
XX

16.0 INITIALIZATION MESSAGES

When the MicroFlush controller powers up, there are some messages that are for information purposes only.

Micro Flusher
S/W V: XXXXXXX

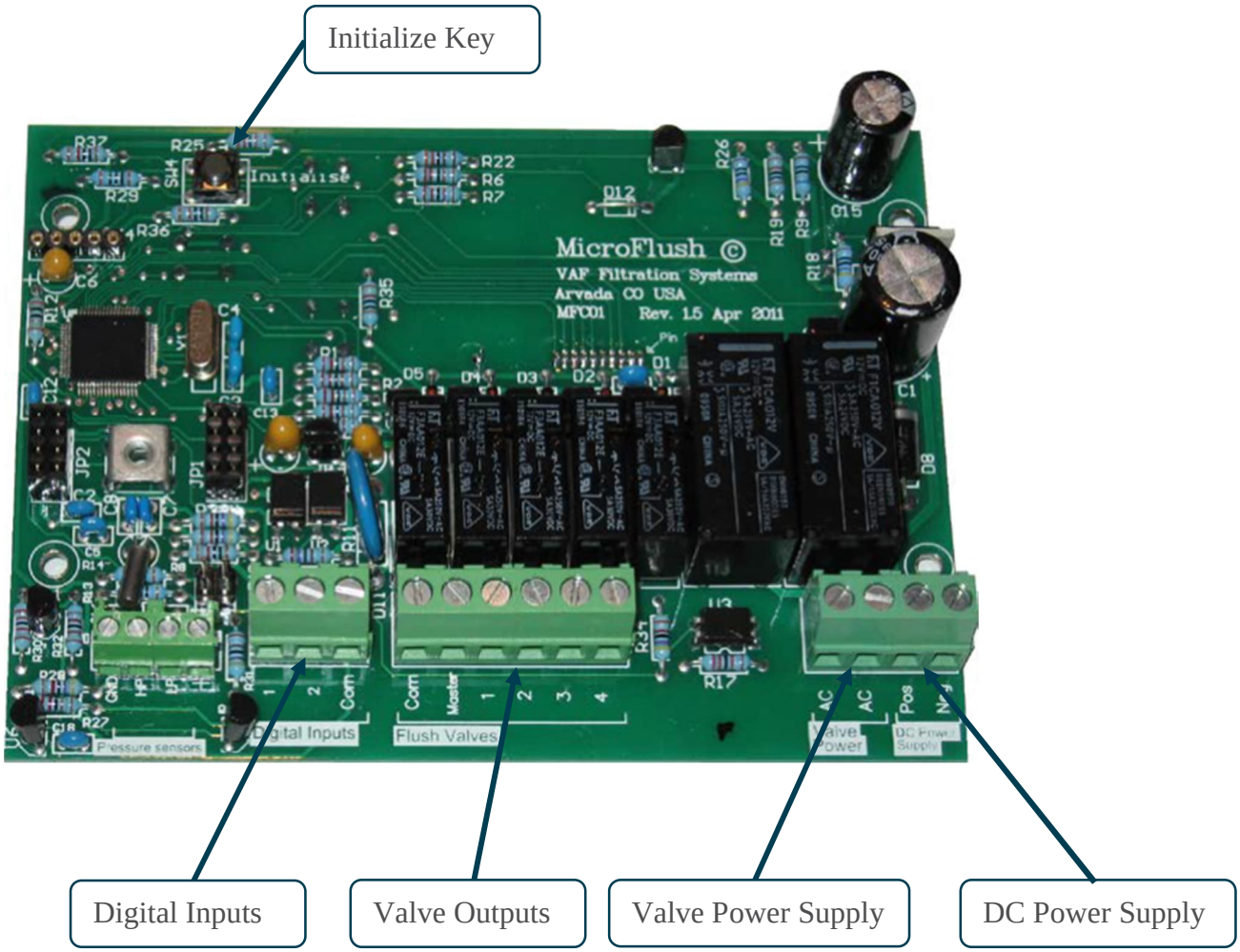
Normally this is the only start up message displayed, showing the current firmware version.

NO CONFIGURATION
PRESS INIT P-B

However, if for some reason the internal configuration has been corrupted or new software installed this message will be displayed NO CONFIGURATION. To rectify this, a full initialization is required. To perform a full system reset, please see section SYSTEM INITIALIZATION. If this occurs sometime after the controller has been commissioned, please advise your distributor as soon as possible.

17.0 TERMINAL CONNECTIONS

The MicroFlush controller requires that some terminals be connected to allow for optional features to be used.

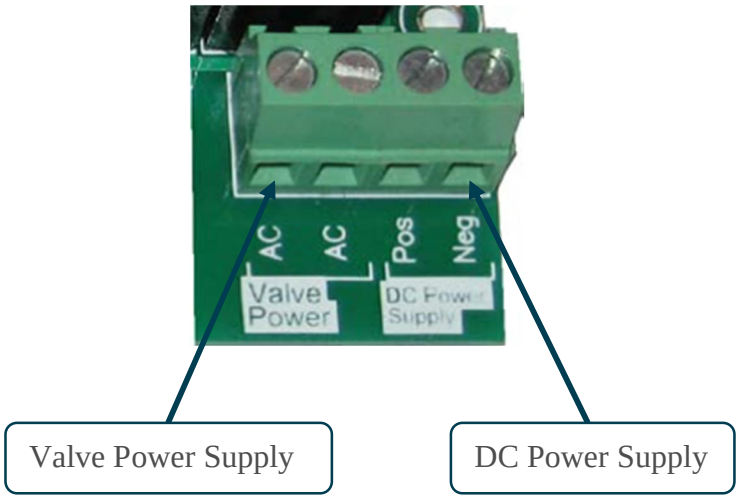


18.0 POWER CONNECTIONS

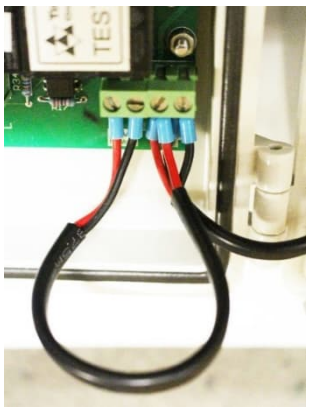
All the power terminals are located on the bottom right edge of the circuit board and are labeled.

The MicroFlush controller can be powered by 8 AA batteries (12VDC) or an AC Power module that supplies 12VDC to the DC power input. When the controller is powered by only a DC power supply then only 12VDC valves must be used. If powered by the AC power module, then 24VAC valves can be used.

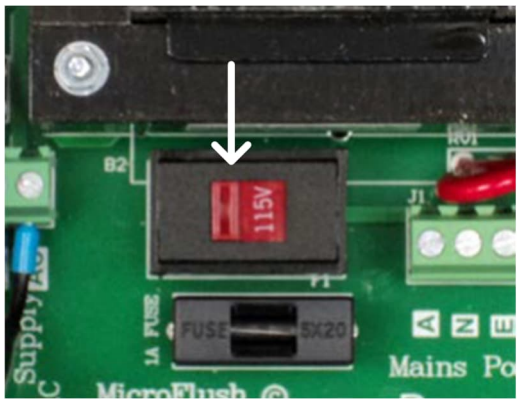
The correct power supply module needs to be used and the “Power Mode” setting in the “CONFIGURATION” menu needs to be set according to the type of valve used.



Valve type	Voltage	Power Mode setting	Power supply module
Standard (Non latching)	24VAC	AC Mode	AC Module
Latching	9-30VDC	Battery Mode	Battery or AC Module
Standard (Non-latching)	12VDC	AC Mode	AC Module (re-wiring required, please see below)

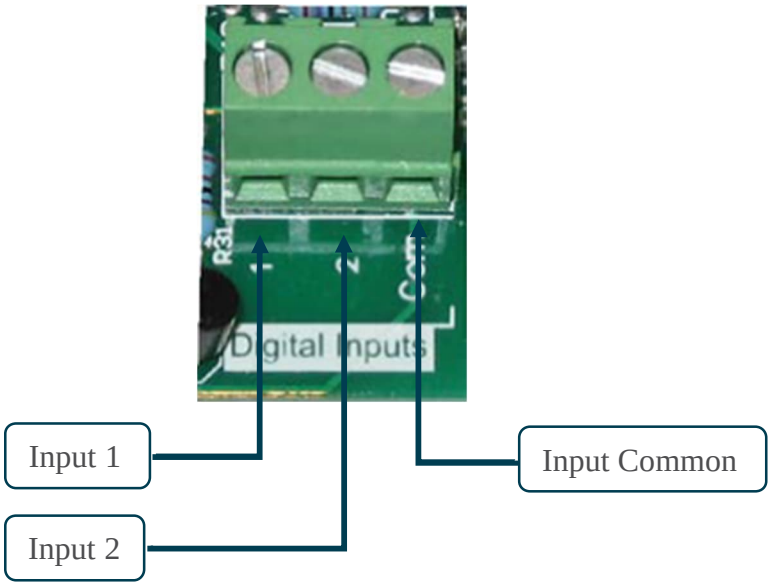


When the MicroFlush controller is powered by AC power, check VAC switch under transformer to be sure the power setting is in the correct position (115 or 220 VAC). Slide switch to desired setting.

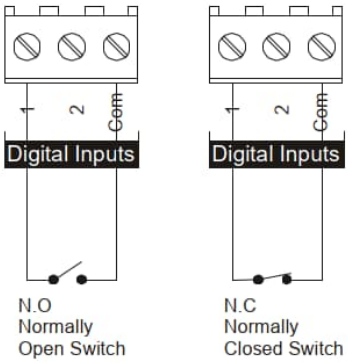


19.0 INPUTS

The MicroFlush controller has two programmable inputs for external control:



These inputs are Voltage free – do not apply voltage to the inputs.



19.1 DISABLED

If an input is not used, then setting it to be disabled would be appropriate.

19.2 STOP

When an input is set to stop the controller, it will stop any current backflush in progress and prevent any further backflushing. When the stop signal is removed backflushing can resume at any time and will start from filter 1.

19.3 PAUSE

When an input is set to pause the controller will pause any current backflush countdown in progress and turn off all valves that are currently on. When the pause signal is removed the valves that were on prior to the pause will be turned back on and backflushing will resume at point where it was. While the pause input is on no further backflushing will occur.

19.4 EXT-DP FLUSH

The external differential pressure input is used in conjunction with an adjustable differential pressure switch with a voltage free output. Differential pressure switches work by measuring the pressure before and after the filter. When this pressure exceeds the set differential pressure the contacts should close in the switch which initiates a system backflush.

Safeguards exist to prevent over flushing and water wastage. See the settings section of this manual (Max Flush /Hr and Max Flush Attempts).

This input can be used by any external device with voltage free contacts to initiate a backflush.

19.5 RESET FAULTS

If an input is programmed to reset faults an external system can be used to remotely reset any current fault conditions.

19.6 B-F FLOW SW N/O – DETECTS FLUSH VALVE FAILURE

Setting an input to operate in conjunction with a flow switch that is monitoring the backflush water will allow the controller to detect backflush flows that occur after a backflush event has occurred. Used in conjunction with a fault output, it allows the system to activate an output to alert someone or connect the output in a way that will shut down the water supply to the filter. There is a delay timer associated with this function. When backflushing ceases, if the flow switch detects flow in the backflush line the timer will start; if the flow continues past the Ex B-F Flow Dly time setting then a message will appear on the screen and an output can be activated. An input will need to be set to B-F Flow SW mode before the Ex B-F Flow Dly timer appears in the timing menu. N/O – Normally Open switch (Closes when water is detected).

19.7 B-F FLOW SW N/C – DETECTS LOSS OF SUPPLY WATER OR PLUGGED SCREEN

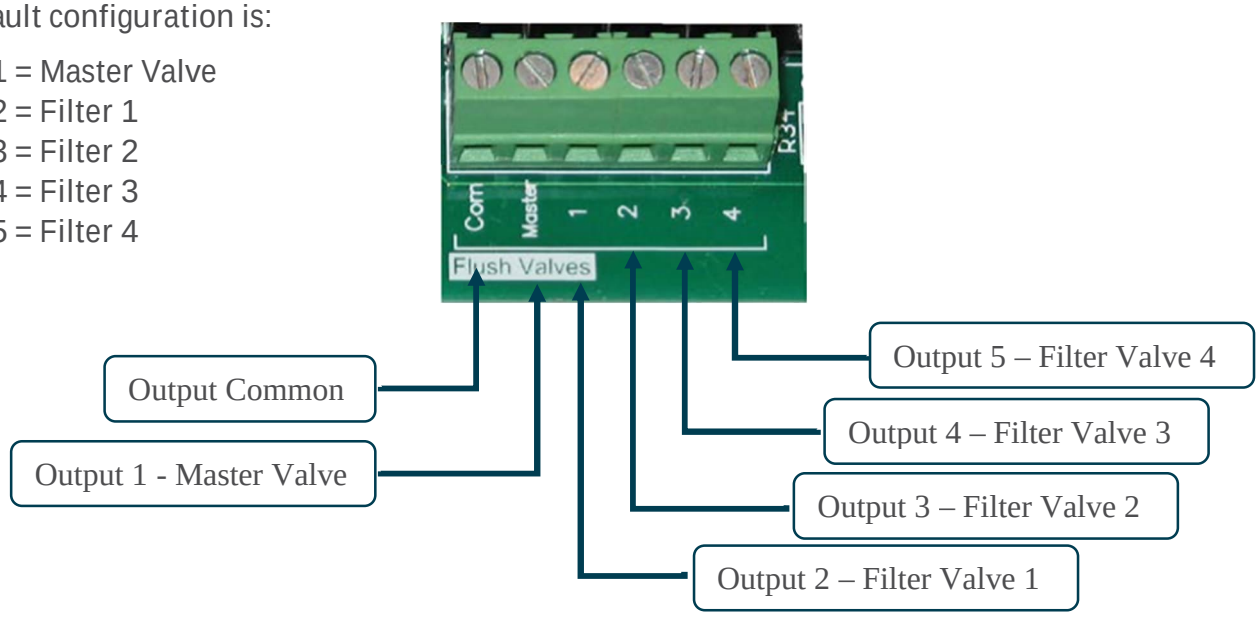
Same as above but used in conjunction with flow switches that only have normally closed contacts. N/C – Normally Closed switch (Opens when water is detected).

20.0 OUTPUTS

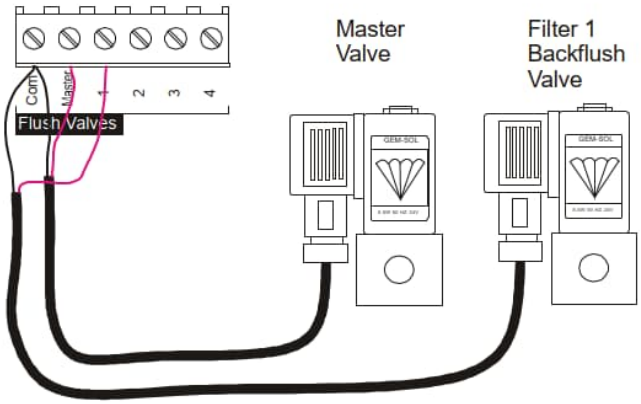
The MicroFlush controller has five programmable outputs. Each can be configured to a different function. The default or normal settings are for Master and Filter Valve operation. See the Configure Output Menu section for more information on output options.

The default configuration is:

Output 1 = Master Valve
Output 2 = Filter 1
Output 3 = Filter 2
Output 4 = Filter 3
Output 5 = Filter 4



TYPICAL CONNECTION WITH MASTER VALVE AND ONE FILTER

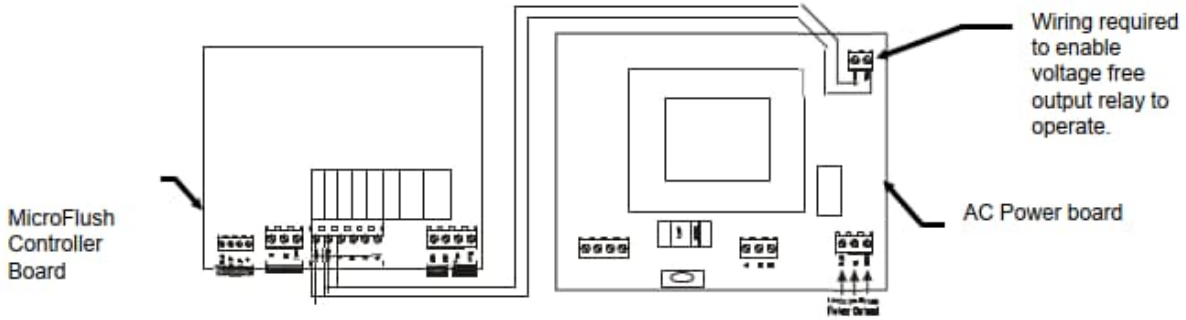


21.0 RELAY OUTPUTS

UTILIZING OUTPUT 1 TO OPERATE THE VOLTAGE FREE RELAY WHICH IS INCOPORATED ON THE AC POWER BOARD.

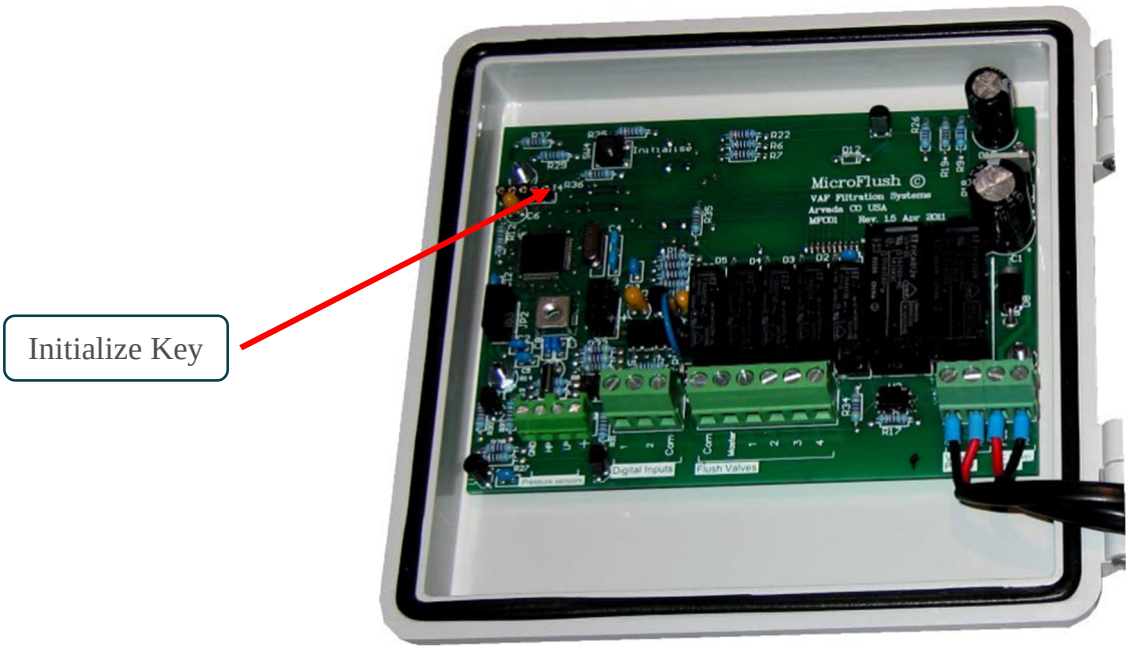
If Output 1 is changed to Fault operation from Master valve, output 1 along with Common can then be connected to the Voltage Free Relay input. The relay has change over contacts and is rated at 10A.

Any output can be used to for this function. While only one output is shown, any backflush or alarm condition can be used.



22.0 SYSTEM RESET

A full system reset can be performed by turning off the power to the controller. Wait 30 seconds, hold down the Initialize Key and then turn the power back on. When Storing Data is displayed release the Initialize key.

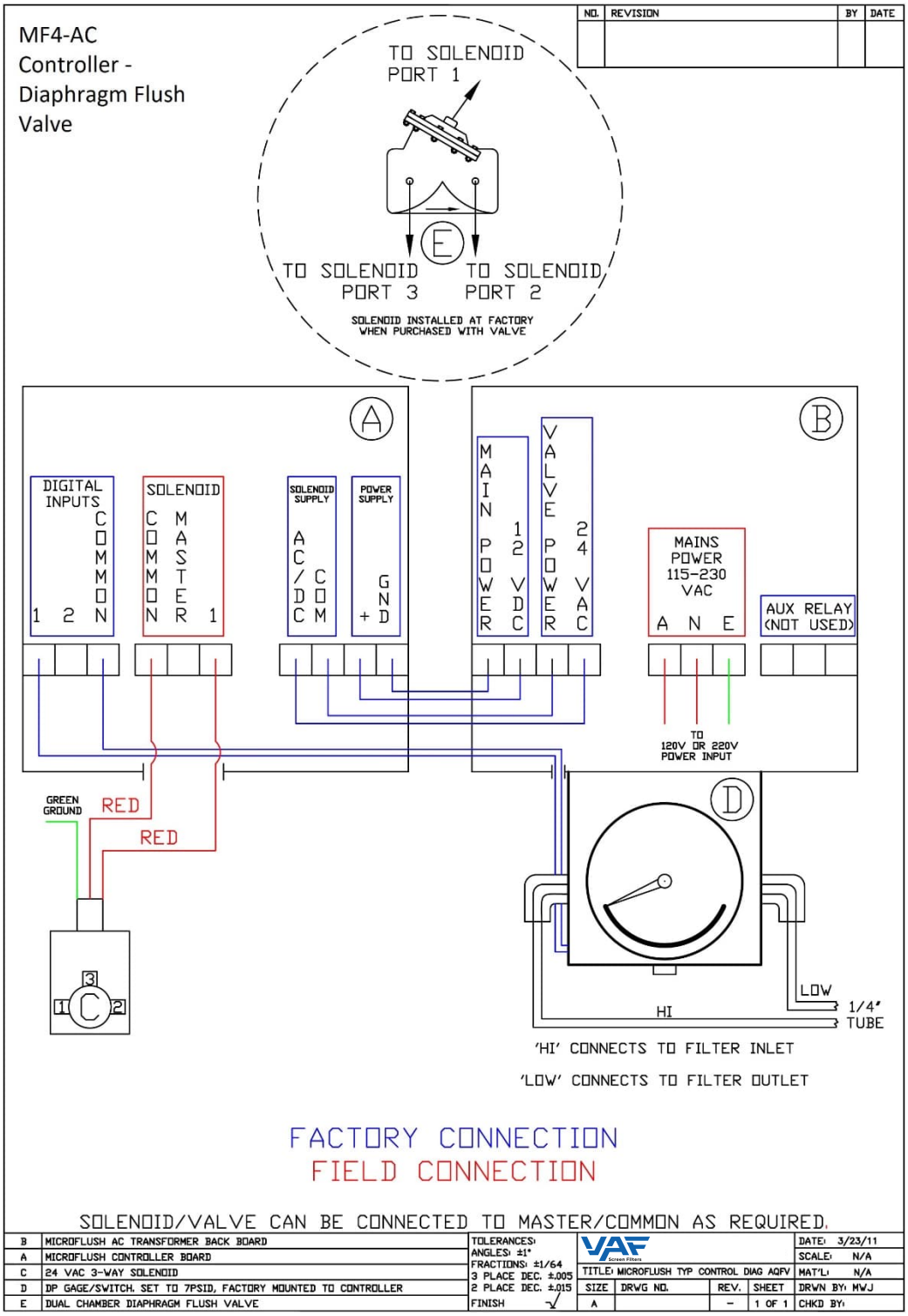


23.0 SPECIFICATIONS & STANDARDS.

SPECIFICATIONS

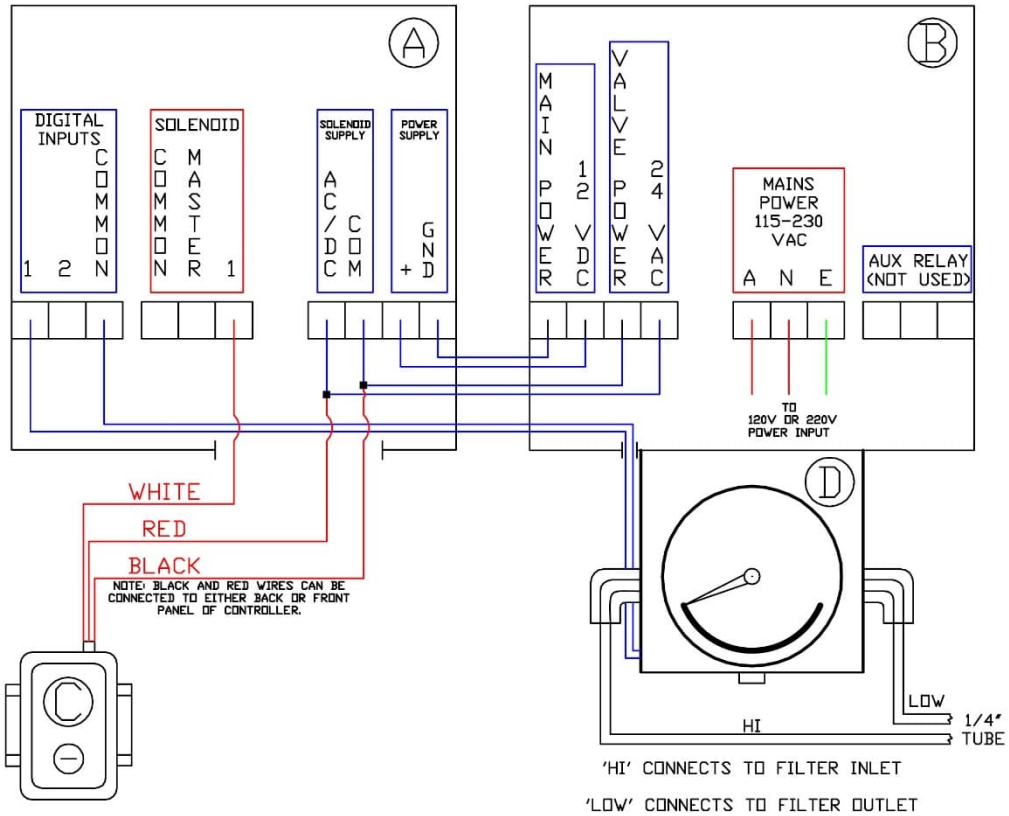
Power output	12 VDC, 24VAC
Power input	120 or 220VAC
Input power frequency – AC	48-62Hz
Maximum power output	40 watts
Temperature range	-5 to 60° C (23° F to 140° F)
Relative humidity range	to 90% non-condensing
Enclosure rating	IP65
Output Relay	3-amp rating
	Mechanical life 20 x 10^6 cycles
	Electrical life 1 x 10^5 cycles
Enclosure Size	15 cm x 15 cm x 9 cm (6" X 6" X 3 ½")

24.0 CONNECTION/WIRING DIAGRAMS



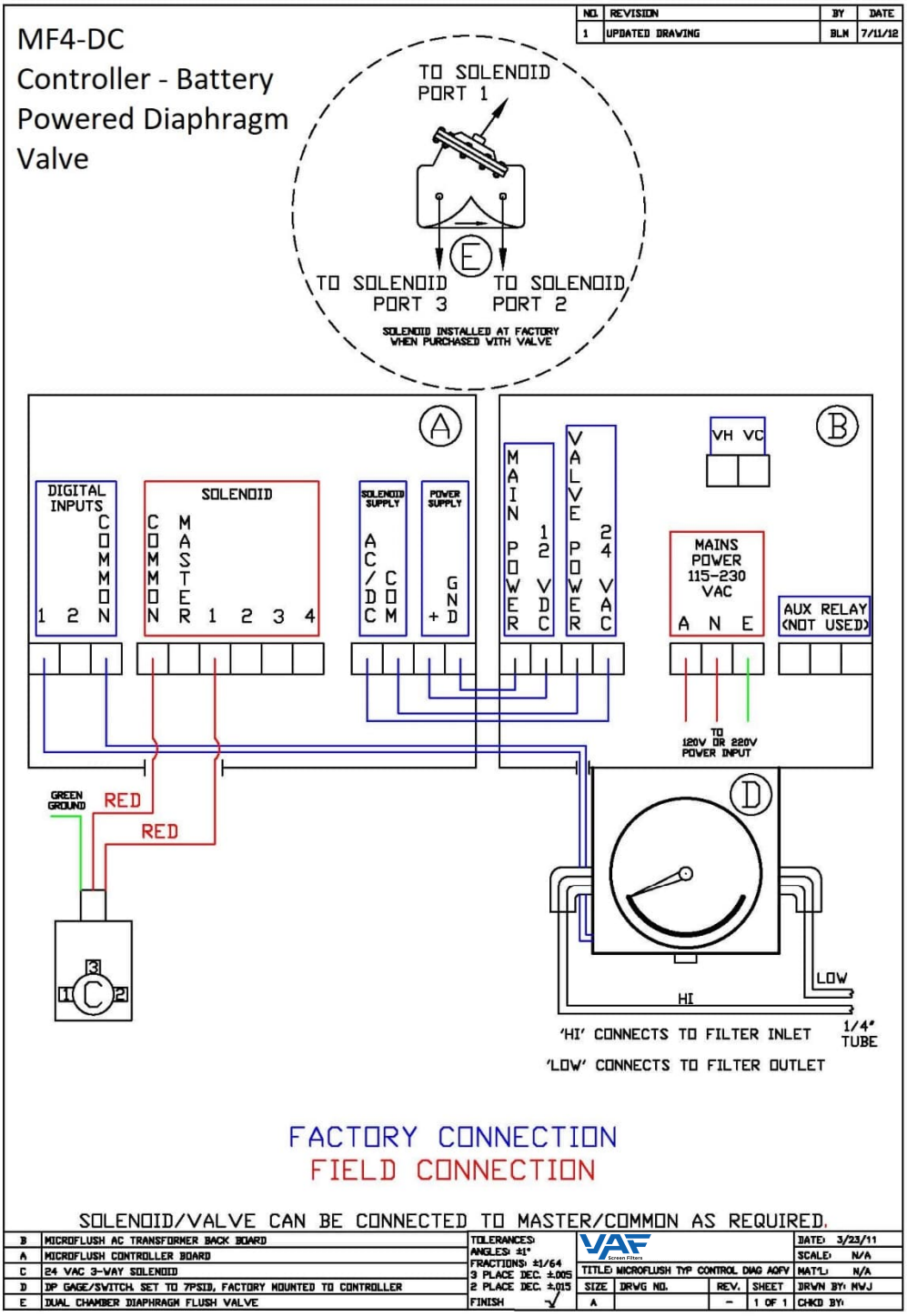
NO.	REVISION	BY	DATE

MF4-AC
Controller -
Electronic Ball Valve



FACTORY CONNECTION
FIELD CONNECTION

A	MICROFLUSH CONTROLLER BOARD	TOLERANCES: ANGLES: ±1° FRACTIONS: ±1/64 3 PLACE DEC. ±.005 2 PLACE DEC. ±.015 FINISH √					DATE: 9/25/11
B	MICROFLUSH AC TRANSFORMER BACK BOARD						SCALE: N/A
C	24VAC ELECTRONICALLY ACTUATED BALL VALVE		TITLE: MICROFLUSH TYP CONTROL DIAG BALL				MAT'L: N/A
D	DP GAGE/SWITCH. SET TO 7PSID, FACTORY MOUNTED TO CONTROLLER		SIZE	DRWG NO.	REV.	SHEET	DRWN BY: MWJ
			A		–	1 OF 1	CHKD BY:


NO. REVISION BY DATE
1 UPDATED DRAWING BLM 7/11/12
MF4-DC
Controller - Battery
Powered Diaphragm
Valve
TO SOLENOID PORT 1
TO SOLENOID PORT 3
TO SOLENOID PORT 2
SOLENOID INSTALLED AT FACTORY WHEN PURCHASED WITH VALVE
A
B
DIGITAL INPUTS
COMMON
1 2 COMMON
SOLENOID
COMMON MASTER 1 2 3 4
SOLENOID SUPPLY
AC/DC COM
POWER SUPPLY
GND +D
MAIN POWER 12 VDC
VALVE POWER 24 VAC
VH VC
MAINS POWER 115-230 VAC
A N E
AUX RELAY (NOT USED)
TO 120V OR 220V POWER INPUT
GREEN GROUND
RED
RED
C
D
LOW
HI
'HI' CONNECTS TO FILTER INLET
1/4" TUBE
'LOW' CONNECTS TO FILTER OUTLET
FACTORY CONNECTION
FIELD CONNECTION
SOLENOID/VALVE CAN BE CONNECTED TO MASTER/COMMON AS REQUIRED.
B MICROFLUSH AC TRANSFORMER BACK BOARD
A MICROFLUSH CONTROLLER BOARD
C 24 VAC 3-WAY SOLENOID
D DP GAGE/SWITCH, SET TO 7PSID, FACTORY MOUNTED TO CONTROLLER
E DUAL CHAMBER DIAPHRAGM FLUSH VALVE
TOLERANCES:
ANGLES: ±1°
FRACTIONS: ±1/64
3 PLACE DEC. ±.005
2 PLACE DEC. ±.015
FINISH √
DATE: 3/23/11
SCALE: N/A
TITLE: MICROFLUSH TYP CONTROL DIAG AGFV
MAT'L: N/A
SIZE A
DRWG NO.
REV. -
SHEET 1 OF 1
DRWN BY: MWJ
CHKD BY: