



USER MANUAL



CATALOG

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FUNCTION BRIEF

Adopts advanced built-in intelligent controlling technology and applied it in developing back flushing controller which specialized for automatic filtration.

- BAC901 is designed for back flushing control of automatic filtration system specially, which is a 1-8 units moduling controller.
- This controller available for DC and AC two types.
- DC controller provide 6V power supply, control two lines of 12V DC latch type electromagnetic head, to realize electromagnetism voltage exchange through load pump.
- The AC model contains an internal transformer that can be powered by 110V or 220V from which it generates the 24V AC for the solenoids.
- During back flushing intervals, it can be triggered by time or built-in electronical pressure differential sensor to reach relative set up value, or triggered by an external pressure differential sensor which offers a dry connector signal.
- Infinite looping issue can be resolved by testing whether exceeds pre-defining back-flushing limit times. Controller can control an additional holding valve/main valve and one alarm output.
- Controller is equipped with customized liquid crystal display and keyboard.
- Back flushing intervals can triggered though pressure difference, time, external pressure difference and manual operation ways.

SIGNALS ON LCD SCREEN TRANSLATION

1. Status and value feedback display

DP ACTUAL--Actual pressure value of built-in pressure differential sensor

DWELL--Back flushing delaying time by each unit

PRE DWELL--Delaying after main valve starts

FLUSHING--Back flushing on processing

ACCUMULATIONS--Back flushing trigger times accumulation, with DP . TIME AND MANUAL, they means pressure differential trigger, interval times trigger and manual operation trigger accumulation, and can be clear to zero by " + "or " - "

2. Setting Display

FLUSH TIME--back flushing time set

DP SET--built-in pressure differential sensor trigger set

FLUSH MODE--back flushing period interval time set

Δ Main Valve--Main valve selection and main valve delaying time set

Δ Dwell Time--Back flushing delaying time set per unit

Δ DP Delay--Time set (second) of delaying testing of pressure differential after actions by every valve, to avoid of unstable pressure difference during activation.

Δ Looping--Pressure differential cycling time limit set, range from 1-10 to avoid of infinite cycling.

Δ Alarm--Use output as alarm output set. When external alarming equipment choose "Yes", external alarming equipment voltage suppose to be same with electromagnetism valve (for example AC 24V or DC 24V, if it's not the same, one RM with same voltage have to be replaced instead)

Δ Calibration--Built-in pressure differential sensor zero calibration.

Δ Delay Valve--Delay value and it's delaying time set, temporarily it's not public

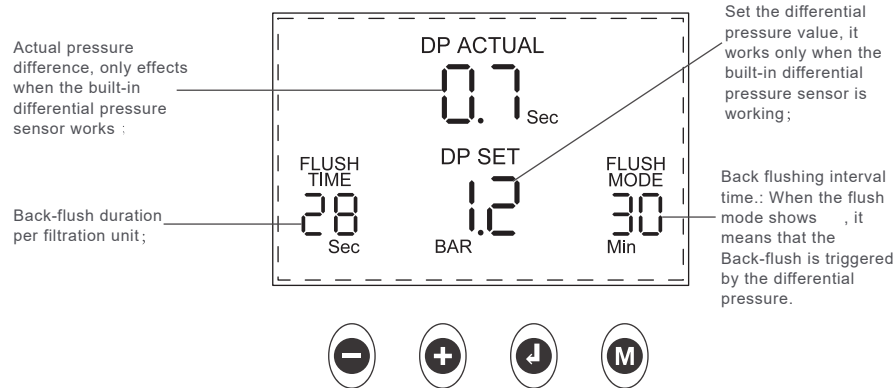
Δ View Output--Display the numbers of back flushing output by automatic checking

BAR / PSI--Pressure differential unit selection



THE INTERFACE INTRODUCTION

The controller is equipped with an LCD display and 4 keys as displayed below. When the controller is left untouched for 1 minute, the display will switch off. The only life signal is given by a beep sound every 20 seconds. Holding down the "M" button for a few seconds will bring the screen back to life.



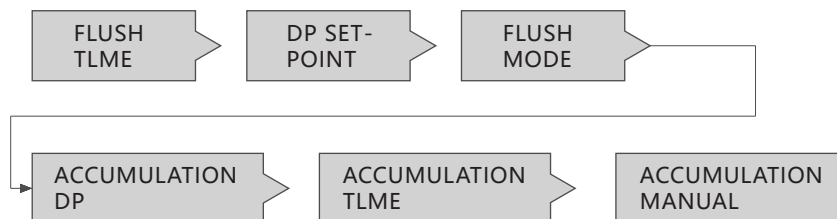
The screen contains several fields, some are editable, some can't be edited; press ENTER into edit mode, the cursor will flash under the character of the currently editable field, and each time you press ENTER again, the cursor starts to flash under the editable field.

Under edit mode, the "+" and "-" buttons can be used to change the value of the current edited field. Pressing the ENTER key again will determine the current fields which set up. meanwhile the cursor points to the next editable field and begins to flash.

Once in edit mode, the user is not able to return to the operation interface and can only press the ENTER key multiple times until the cursor reaches the flush time and it will stop flashing.

FUNCTION SETTING OPERATION

The following images are editable fields



Flush Time

To define the time interval for each station rinse, the following options are available:

5-20 seconds, each increase and decrease of 1 second

20-55 seconds, each increase and decrease of 5 seconds

1-6 minutes, each increase or decrease of 0.5 minute

DP Set Point

In this field, the user can define the pressure difference between the inlet and outlet of the filter. When the differential pressure setting is reached, a back-flush cycle is initiated. This field is meaningless when the system does not have a built-in differential pressure sensor. Therefore, the user-defined differential pressure set point is 00 and the actual display value is (--).

When the pressure is expressed in BAR, the differential pressure setting value ranges from 0.1 to 1.0 BAR.

When the system does not have a built-in electronic differential pressure sensor, but the user uses an external pressure sensor, the backwash request signal will be sent to the input terminal through a closed dry contactor.

Flush Mode

In Flush mode, you can define how to trigger the flush cycle. The following options are available:

OFF - Flusing on DP only, never on timer

Passing time - In this case, the flush cycle will be triggered repeatedly in the selected time interval, or triggered by the differential pressure signal. Which way comes to the set value first decides triggering sequence. In any case, after each start of the back flush cycle, the time interval of the next cycle begins, and the following intervals are available:

5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60 minutes

2, 3, 4, 5, 6, 8, 12, 18, 24, 72, 120 hours

Differential pressure - the flushing cycle is triggered only by the differential pressure

The Accumulations

The controller will accumulate and display the times of flushing triggered by differential pressure, time, or manually. In each of the cumulative fields, the "+" and "-" keys can be used to clear the accumulated value.

View Output - This is a special mode that lets you see how each output is distributed. At the same time, the output interface of the main valve can also be configured. The output interface of the main valve is the OutB of the last module by default. Use the "+" or "-" key to switch to the last output channel. The upper left corner shows the Main Valve as the output channel of main valve, press "M", the center of the key screen will display "--" to indicate that the current channel is closed, and the main valve output channel is switched to the previous channel OutA.

The above method can also open the current channel as the main valve, the lower left corner shows the output channel serial number, and the center of the screen displays its function with large letters.

The Configuration

Press ENTER for at least 3 seconds to enter the configuration program

The controller will detect the number of "plug-in" modules (2 outputs each) used in a particular situation.

How the output is distributed depends on the definitions made during the configuration process described below. The following rules apply to:

1. The backwash valve is sequentially started by the assigned output 1;
2. The initiating for the last back flushing valve can be canceled and the output assigned to this valve will remain unused.
3. When main valve defining, they will be assigned to the right side of the last back flushing valve in sequence (regardless the back flushing valve is used or not)

For example:

- If there are 3 "plug-in" modules, there will be 6 outputs that can be used. If there is no alarm output, delay start valve and main valve, these 6 outputs will be assigned to the back flushing valve.
- If an additional main valve needs to be defined, then the first 5 outputs will be assigned to the back flushing valve and the sixth output will be assigned to the main valve. Output 5 (as the last back flushing valve) can be deactivated or used normally.

During the configuration process, the following options will be defined:

Dwell time - delay time between every unit– can be set to 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, or 60 seconds

DP delay - The differential pressure sensor receives the differential pressure signal and the delay time before the controller makes a back flushing command – 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60 seconds

Looping limit – when evaluating the problem of infinite looping back flushing, there is a setting of the times of consecutive flushing cycles triggered by the differential pressure sensor; the times of setting can be selected within the range of 1-10, if select "no" as the number of flushing time, it means to ignore the looping problem.

Alarm - Yes/No - Assign an alarm output.

Delay start Valve - Yes/No – Assign an output that activates the delay valve.

Pressure units - the unit that determines the pressure measurement can be selected between BAR and Psi.

Calibration - Zero calibration of the built-in electronic differential pressure sensor. When the sensor's port is disconnected, select Calibration to "Yes".

Dispose of infinite looping problems

The number of consecutive flush cycles triggered by the differential pressure sensor exceeds the number of cycle limits defined during the configuration process, announcing the system to enter an infinite loop.

The problem of the infinite loop will be detected by the controller and displayed on the display screen, and the alarm output will be activated at the same time. In addition, the differential pressure indication signal will no longer be considered as a condition for triggering back flushing. The following backflush cycle can only be triggered by the countdown period of the interval.

When the constant index of the differential pressure sensor is removed, the infinite loop problem is considered as resolved.


Low pressure treatment

When the closed connector receives the low voltage input signal from the controller, the indicator begins to flash on the display screen. The controller will stop all actions, including the flushing cycle to the next countdown. If low pressure is generated during the back flushing sequence operation, when the low pressure condition is terminated, the back flushing sequence will start from the beginning instead of continuing at the stop point.


Filter system connect differential pressure sensor

The differential pressure sensor is connected to the filtration system by two plastic tubes, meanwhile the command tube from the filter inlet (high pressure) is connected to the red connector, and the command tube from the water outlet (low pressure) is linked to the black connector. It is necessary to install a small 120-mesh filter (not supplied) between the red connector and the high pressure water inlet.

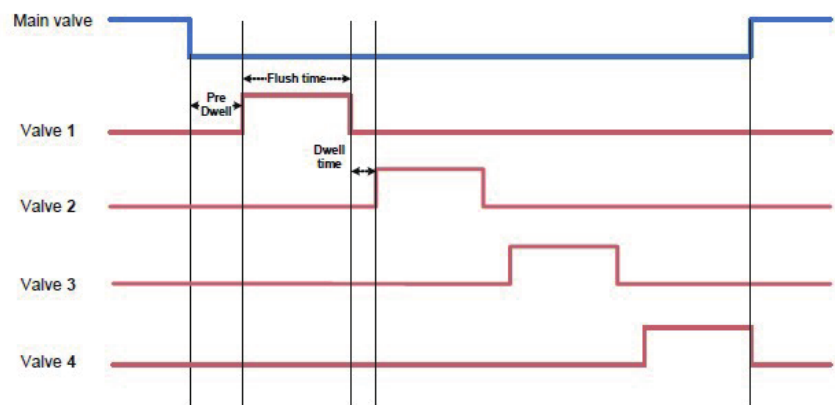
Low battery

The controller has two levels of low battery indication. At the first level, when the battery voltage drops to the first level,  this signal will begin to appear on the screen; when the battery voltage drops further to the second level, the output will be turned off, the screen will be cleared off, only leaving the low battery icon.

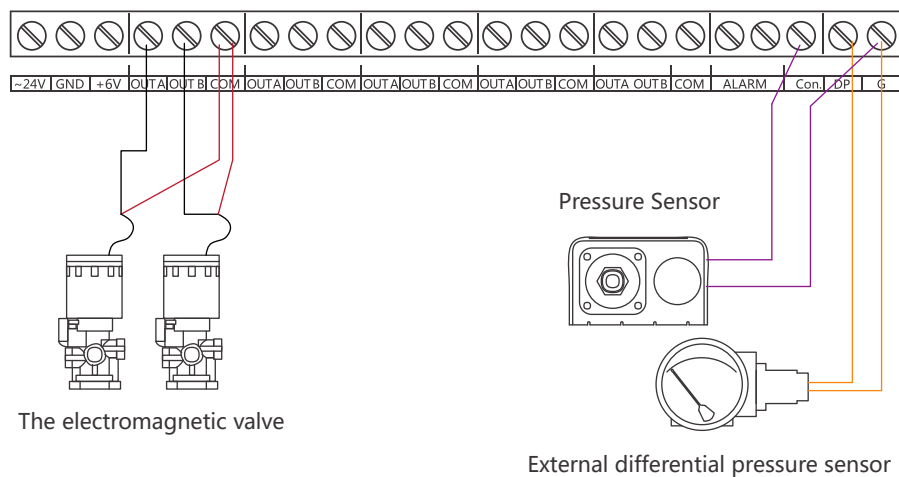
Manual activation

Flushing interval is able to activate by pressing "MANUAL" and when it was activated, icon  will appear on the display screen and continues to press "MANUAL", it can terminate flushing interval processing manually.

Processing sequence



WIRING DIAGRAM



The connecting terminal of the AC model should be connected to the internal 24V AC power and the DC 6V power respectively, and the DC type only needs to be connected to the DC 6V power supply.

Noted:

1. When the controller is not equipped with an built-in electronic differential pressure sensor, the user can choose to use an external differential pressure sensor.
2. DC type controller unit can be connected to 6V DC power supply, and the controller is connected with 12V DC latch type electromagnetic head.
3. The AC model controller can choose 110V or 220V AC power input, built-in 24V AC transformer, external connect with 24V alternating current magnetic head;

SPECIFICATIONS

DC model AAC901-DC

Power Supply: 4 section *1.5V 1 alkaline battery

Output: 12V direct current latch type electromagnetic head

Pressure difference: Built-in electronic pressure differential sensor Or External dry connector pressure differential sensor

Pressure sensor: dry connector pressure sensor

Working temperature: 0-60 °C

AC model AAC901-AC

Power supply: 50HZ or 60HZ 220V or 110V power supply, built in 24V AC transformer.

Output: 24V alternating current magnetic head

Pressure difference: built-in electronic pressure differential sensor Or External dry connector pressure differential sensor

Pressure sensor: dry connector pressure sensor

Working temperature: 0-60 degrees centigrade.



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