

Flows com ABC-2020 Automatic Batch Controller



# Flows com ABC-2020 Automatic Batch Controller User Manual

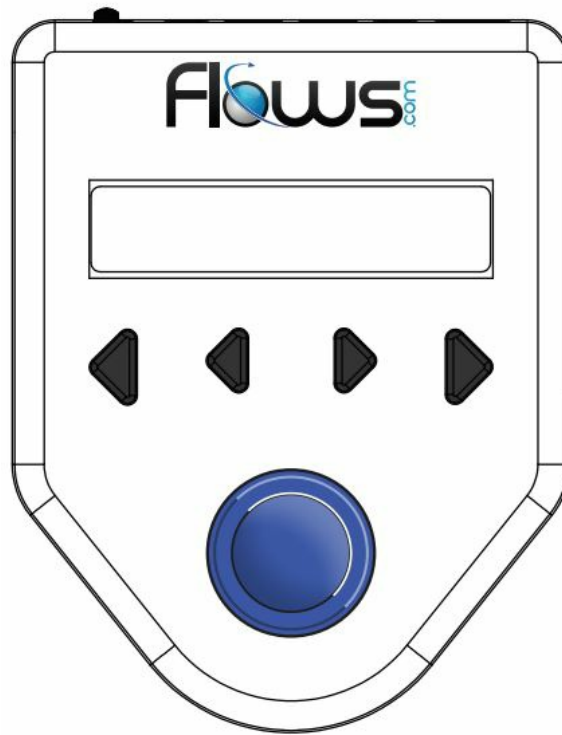
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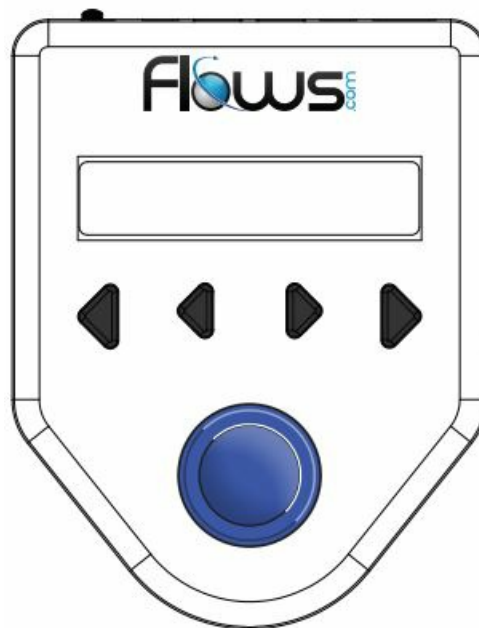


**Flows com ABC-2020 Automatic Batch Controller**



### **Contents of Box**

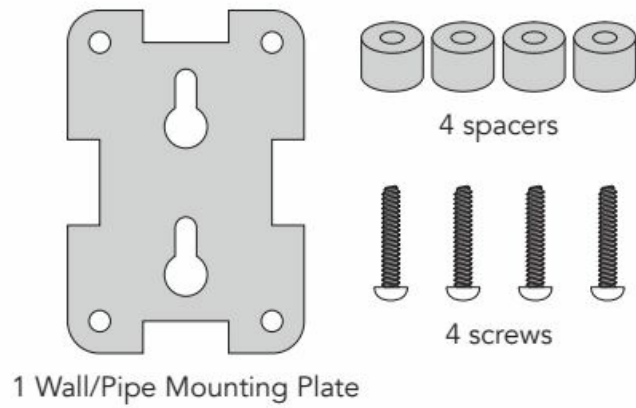
The ABC Automatic Batch Controller



- Power Cord – 12 VDC Standard US Wall Plug Transformer

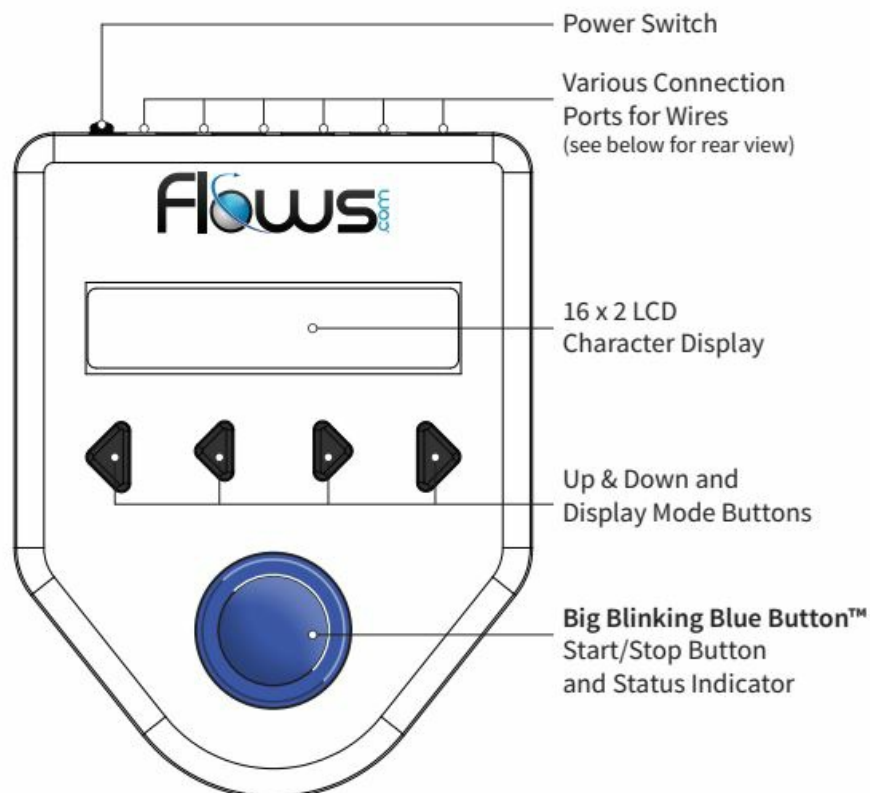


- Mounting Kit

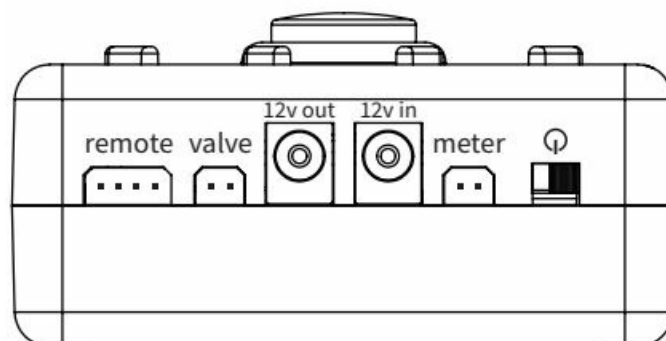


## The Automatic Batch Controller

### Physical Features – Front View



### Wire Connections – Rear View



**Note:** if using a pump relay, in place of a valve, that control signal wire goes into the port labelled “valve”.

## Setup and Installation Guidelines

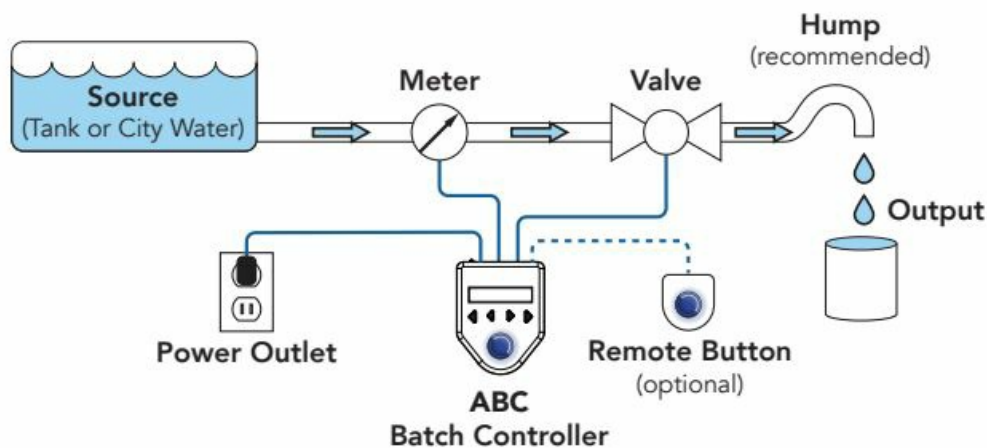
The ABC Automatic Batch Controller is designed to be used with any meter that has a pulse output switch or signal. This makes the controller extremely versatile and allows for a myriad of installation setups. How you set it up or install it depends on many factors. For more information and installation and examples with illustrations and videos, please visit: <https://www.flows.com/ABC-install/>

### General Guidelines

1. Make sure that the direction of flow follows any arrows on the valve, pump, and meter. Most meters will have an arrow moulded into the side of the body. They will also typically have a strainer on the inlet. Valves and pumps will also have arrows when the direction of flows matters. It does NOT matter for full port ball valves.
2. It is recommended that you place the valve after the meter and as close to the final outlet as possible. If you are using a pump in place of a valve, it is recommended that the pump be placed before the meter.

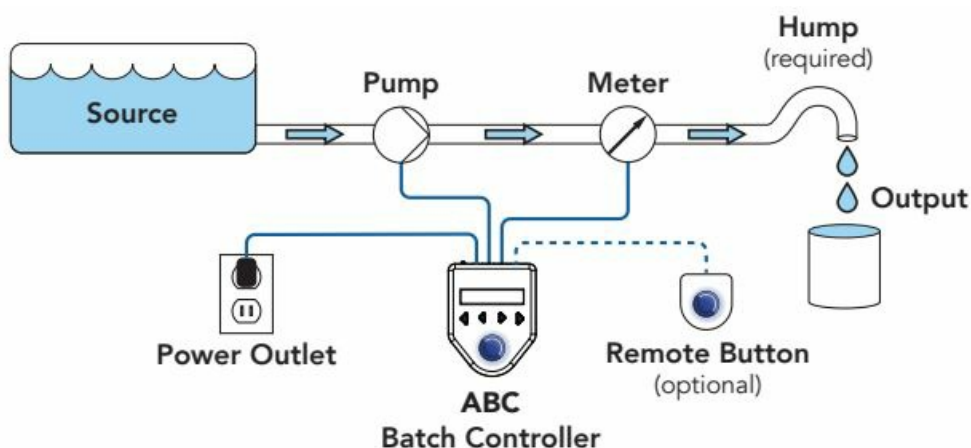
### Valve & Meter

for City Water, Pressurized Tanks, or Gravity Feed Systems

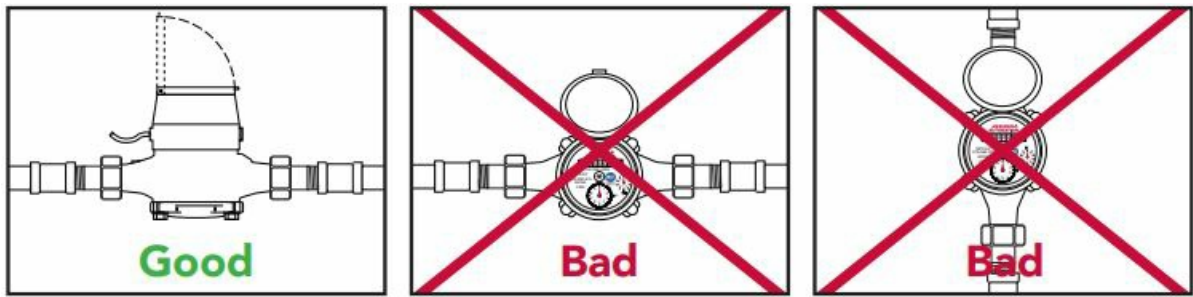


### Pump & Meter

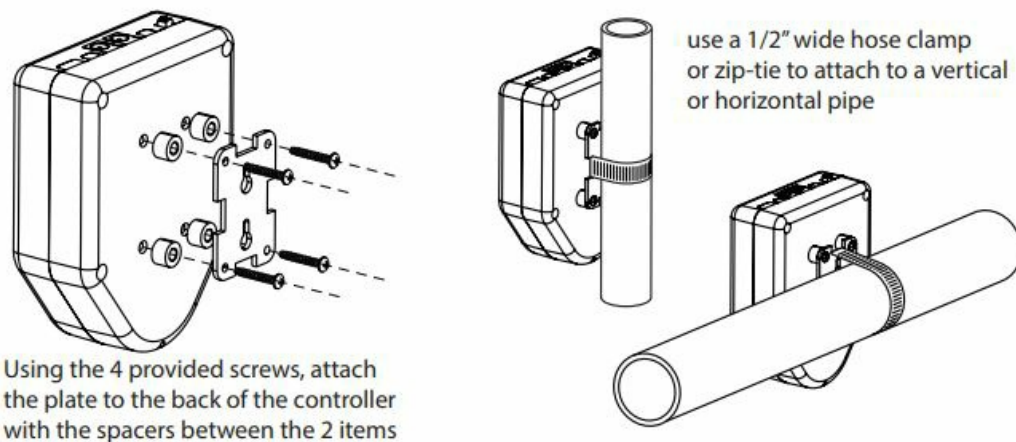
for Non-Pressurized Tanks, or Reservoirs



1. If using a multi-jet meter (like a typical household water meter: our WM, WM-PC, WM-NLC) it is important that the meter is horizontal, level, and the register (display face) is facing directly upwards. Any variance from this will make the meter less accurate due to the mechanics and working principle. See accessories that make this easy on page 8.



2. 4. Meter manufacturers typically recommend a certain length of straight pipe both before and after the meter. These values are usually expressed in multiples of the pipe ID (inner diameter). That allows for the values to hold true for multiple meter sizes. Not adhering to these values may affect the accuracy of the meter. The repeatability of the meter should still be ok even if the accuracy is off, so adjustments can be made simply by changing the set value of the batches to compensate.
3. Mount the batch controller as desired. The ABC-2020 comes with a kit for mounting the controller to a wall or pipe as shown here.



4. Once the Batch Controller is mounted, connect all wires including power, meter, and valve or pump. If using a remote button, connect that as well. Port labels are printed clearly and directly above each port. If you purchased the ABC installed in the ABC-NEMA-BOX and cannot read the labels above the ports, you can refer to the illustration on page 2 to see what the ports are.
5. Install the pulse output switch and wire on the meter. If you purchased a meter from Flows.com with the controller, the switch will already be attached. If you purchased a meter at a later date, or from a different source, follow the instructions that came with the meter.

**Note:** the pulse output must be a contact closure type! Meters with voltage-type pulse output require the use of a Pulse Converter. Contact Flows.com to see if a particular meter will work with the ABC. If the wire does not have the proper connector on the end, you can purchase a wiring/connector kit from Flows.com.

- **Part Number:** ABC-WIRE-2PC

6. It is recommended that a hump is placed close to the outlet. When using a pump, this ensures that the meter will remain full between batches which is desirable for meter life and accuracy. Even when using a valve this can be useful to avoid a long dribble out once the valve has closed.
7. **IMPORTANT:** Once the meter and valve or pump is installed and you are ready to dispense your first batch, you should run a few small batches. This will initialize the system by purging any air present and getting the meter dials lined up (on mechanical meters) to the proper starting point. It will also validate that the meter is working and the pulse output switch and wire are properly installed. This process can also be used to fine-tune your setup about how the liquid exits the outlet and enters the receiving vessel. Additionally, these batches can be used to check how much extra goes through at the end of a batch.

- **ABC-2020-RSP:** as long as a full pulse unit does not go through your batches will be accurate. Any partial

units are taken from the next batch which will then get that amount at the end – effectively cancelling it out.

- **ABC-2020-HSP:** The display on the controller will record and display the entire total amount that passes through the meter regardless of what the batch was set for. Using that number you can subtract the batch set amount and get the proper value to set the “Overage” to in the settings.

## Operation

Once you have the power cord, meter, and valve (or pump relay) connected to the ABC controller, the operation is quite simple.

**IMPORTANT:** See Setup Guideline #9 on the previous page before dispensing a critical batch.

**Step 1:** Turn the controller on using the sliding power switch. Confirm that the controller has the correct program loaded for the meter that you are using which is displayed for one second on the opening screen. If you purchased this controller as part of a complete system, it will have all of the correct settings for the K-factor or pulse value and units of measure to match the meter that came with the system.

**ABC-2020-RSP** is for meters with even pulse values. These meters have a pulse output where one pulse is equal to an even unit of measure such as 1/10th, 1, 10, or 100 gallons, 1, 10, or 100 litres, etc. Meters of this type offered by Flows.com include:

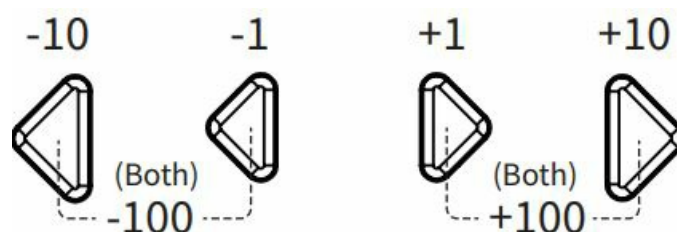
- Multi-jet Water Meters (must be mounted horizontally with face up)
- WM-PC, WM-NLC, WM-NLCH Positive Displacement Water Meters (nutating disc type)
- D10 Magnetic Inductive and Ultrasonic Meters
- MAG, MAGX, FD-R, FD-H, FD-X These meters have an active voltage pulse signal, they require the ABC-PULSE-CONV pulse converter which also provides power to the meter. These meters have a settable volume per pulse.

### ABC-2020-HSP is for meters with K-factors

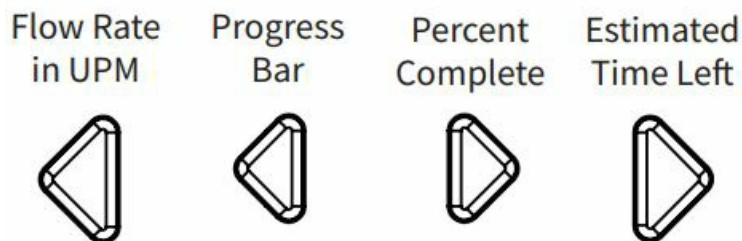
These meters have a pulse output where there are many pulses per unit of measure such as 7116 per gallon, 72 per gallon, 1880 per liter, etc. Meters of this type offered by Flows.com include:

Oval Gear Positive Displacement

- **OM**  
Turbine Meters
- **TPO**  
Paddle Wheel Meters
- **WM-PT**
- **Step 2:** Use the left and right buttons to set the volume desired.



- **Step 3:** Once the desired value is set press the Big Blinking Blue Button™ button to start the batch. While the batch is dispensing, the Big Blinking Blue Button™ button will blink once per second.
- **Step 4:** You can now select your preferred display mode using the arrow buttons:



After you press any button, the display will show what display mode has been selected. That will remain until the next pulse is received from the meter. You can change the display mode at any time while the batch is in progress. This value will be permanently saved.

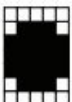
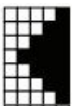
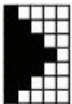
### Display Modes

- **Flow rate in Units per Minute** – this simply calculates the rate based on the time it took for the last unit to be dispensed.
- **Progress Bar** – Displays a simple solid bar that grows from left to right.
- **Percent Complete** – Displays the percentage of the total that has been dispensed
- **Estimated Time Left** – This mode takes the time elapsed during the last unit and multiplies it by the number of units remaining.

**Step 5:** While the batch is running, watch the Big Blinking Blue Button™. When the batch is 90% complete, the blinking will get faster indicating that the batch is almost complete. When the batch is complete, the valve will close or the pump will turn off and the Big Blinking Blue Button™ will remain lit.

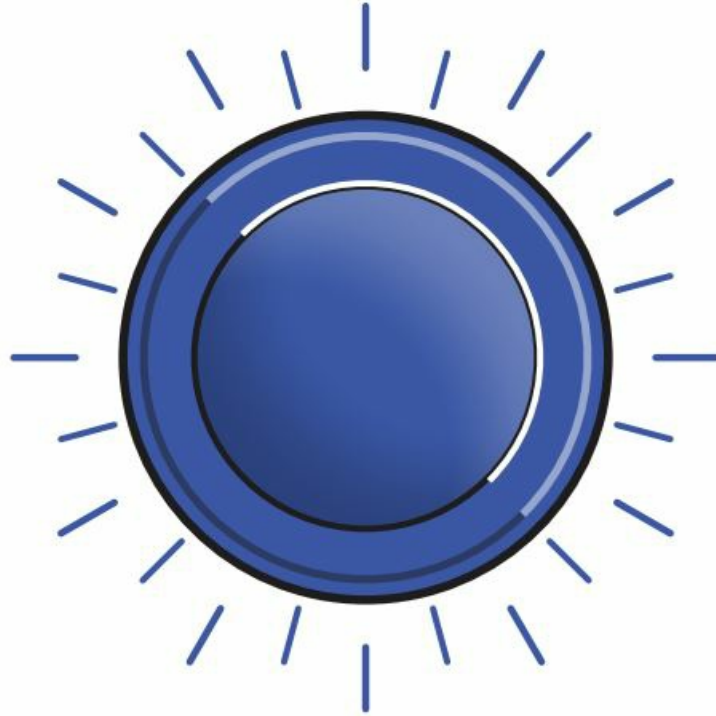
### Pausing or Canceling a Batch

While the batch is running, you can stop it at any time by pressing the Big Blinking Blue Button™. This will pause the batch by closing the valve or turning the pump off. The Big Blinking Blue Button™ will also remain off. There are 3 options of what to do next:

1.  Press the Big Blinking Blue Button™ to RESUME the batch
2.  Press the far left arrow button to STOP the batch
3.  Press the far right arrow button to RESET the meter to initialized state (ABC-2020-RSP only). This means the system will dispense the remainder of the current pulse unit; either 1/10th, 1, or 10. Timeout: (ABC-2020-RSP only)

There is a timeout value that can be set so if the controller does not receive a pulse for X number of seconds, it will pause the batch. This can be set from 1 to 250 seconds, or 0 to disable that function. The purpose of this function is to prevent an overflow in the case that the meter stops communicating with the controller. Status Indication: Status of the system is constantly indicated by the Big Blinking Blue Button™.





The status indications are as follows:

- **Solid On** = Set volume – System is ready
- **Blinking Once Per Second** = System is dispensing a batch
- **Blinking Fast** = Dispensing the last 10% of the batch
- **Blinking Extremely Fast** = Timeout
- **Off** = Batch has been paused

### Settings

Regardless of which program the ABC controller has, you enter the settings mode in the same way. When the controller is ready to dispense a batch in the “set volume” mode, simply press both outer arrows at the same time.



Once in the settings mode, you will be taken through a sequence of settings. Each one is changed using the arrows and set using the Big Blinking Blue Button™. Once you make a setting, the controller confirms what you set then advances to the next. The sequence of the settings and a description of what they do differs slightly for the two different programs.

**ABC-2020-RSP** (for meters with even pulse values)

### PULSE VALUE

This is simply the amount of liquid that is represented by each pulse. The possible values are: 0.05, 0.1, 0.5, 1, 5, 10, 50, 100. On mechanical meters this cannot be changed in the field. On digital meters this can be changed.

### UNITS OF MEASURE

Just a label to let you know what units are being used. The possible values are: Gallons, Liters, Cubic Feet, Cubic Meters, Pounds



## TIMEOUT

The number of seconds from 1 to 250 that can go by without a pulse before it pauses the batch. 0 = disabled.

## LOCKOUT

- **On** = you must press an arrow key on the controller before you can start a batch. The remote button will NOT be able to start a batch until this is done.
- **Off** = you can run unlimited batches by pressing the remote button.
- ABC-2020-HSP (for meters with K-factors)

## K-FACTOR

This represents "pulses per unit" it can be adjusted for better accuracy once the meter is installed into its actual application.

## UNITS OF MEASURE (same as above)

## RESOLUTION

Select 10ths or whole units.

## OVERAGE

Once you know how much extra volume passes at the end of a batch you can set this to have the controller stop early to land right on the target

## Troubleshooting

### **The batching system is dispensing too much.**

First, make sure that the meter is installed in the proper direction and orientation. Meters that are installed backwards will under-measure, therefore the system will over-dispense. You may be exceeding the maximum pulse rates. For use with a solenoid valve, or another fast-acting valve, it is recommended that you do not exceed one pulse per second (although up to two per second should be fine). For use with an EBV ball valve, it is recommended that you do not exceed one pulse per 5 seconds. If you are in fact exceeding the pulse rate, either adjust your flow rate to fix that or consider a different valve type or a batch controller program and meter with a different pulse rate. When using our multi-jet meters, you must make sure that less than one full unit is dispensed after the valve starts closing. While it seems like any overage will affect the accuracy of the batch, it is important to remember that any overage on the batch that is run will be subtracted from the first unit of the next batch. This effectively cancels out the overage on the last. If more than a full unit goes by... that full unit will not be subtracted.

### **The batch starts, but no units ever get counted.**

The pulse output switch and wire is not properly installed. Check that the switch is attached to the face of the meter and is firmly held in place by the small screw. Also, check that the other end of the wire is properly and completely plugged into the controller. Finally, inspect the wire and make sure there is no damage to the outer insulation and that both ends of the wire appear to be properly connected to the switch and connector.

**Note:** Mechanical reed switches eventually will wear out. The switches that Flows.com provides have a minimum life expectancy of 10 million cycles. For this reason, we recommend never selecting a resolution finer than what is needed. For instance: if to are dispensing 1000s of gallons, you would NOT want to go with 10ths of a gallon. You would be better off choosing 10 gallon pulses. That would be 100 times fewer cycles for the switch.

### **The batcher continually starts and stops.**

Check that the Big Blinking Blue Button™ is not stuck in the depressed state. If you are using the remote button, check that as well. If you are not using the remote button, check the connection port on the back of the controller and make sure that nothing is shorting out any of the pins. If that all checks out OK, you may have gotten water in one of the buttons or inside the controller. Unplug everything and let the unit dry out thoroughly. You can place it in

a container with a desiccant or dry rice for a day.

**The valve opens or pump starts as soon as the controller is turned on.**

The switch that controls the valve has gone bad. This switch is over-rated for use with the valves that we recommend, however shorting out the circuit for the valve can damage the switch. You will need to replace the controller. If the controller is within warranty (one year from time of purchase) contact Flows.com to request a Return Merchandise Authorization.

**The valve never opens, or the pump never starts.**

Check all wiring from the controller to the valve or pump relay. This includes the connections at both ends, as well as the entire length of wire. If the Big Blinking Blue Button™ is blinking, then the valve should be open, or the pump should be on.

## Accessories

### Meters

The ABC Batch Controller works with any meter that has a pulse output signal or switch. Flows.com offers a wide variety of meters to fit your application. The most common are from Assured Automation.

#### Multi-jet (must be installed horizontally)



WM-NLC  
Lead Free Brass



WM-NLCH  
for HOT water



WM-PC  
Plastic

#### Positive Displacement



D10  
Lead Free Brass



### Valves

The ABC Batch Controller works with any valve that can be actuated using a power supply or control signal of 12 VDC up to 2.5 Amps. This includes pneumatically actuated valves controlled by a 12 VDC solenoid valve.

#### Electric Valves



EBV  
Full Port Ball, SS  
Stainless Steel



ESV  
Solenoid Valve,  
Stainless Steel

#### Pneumatic Valves



VA  
Coaxial,  
Ni Plated Brass



101  
Full Port Ball,  
Ni Plated Brass

## 120 VAC Power Relay for Pump Control



This power supply control has two Normally Off switched outlets that are turned on by the 12 VDC signal sent from the controller. This allows for the use of any pump or valve that operates using a 120 VAC standard U.S. outlet plug.

### **Weatherproof Remote Buttons**



These remote buttons act as a clone of the Big Blinking Blue Button™ on the unit itself. They do exactly the same thing at all times.

**Part Number:** ABC-PUMP-RELAY

### **Part Numbers:**

- **Wired:** ABC-REM-BUT-WP
- **Wireless:** ABC-WIRELESS-REM-BUT

### **Weatherproof Box (NEMA 4X)**



Enclose the ABC Batch Controller in this weatherproof case for use outdoors or in a wash-down environment. The box features a clear, hinged front cover that is held securely shut with 2 stainless steel flip latches. The entire perimeter has a continuous poured seal for absolute protection from the elements. Wires exit through a PG19 cable gland that contracts around the wires when the nut is tightened. All weatherproof boxes come with a stainless steel mounting kit for easy installation using fasteners in all 4 corners. Boxes can be purchased separately, or with an ABC-2020 Batch Controller installed.

**Part Number:** ABC-NEMA-BOX

### **Pulse Converter**



This accessory allows for the use of our MAG series Magnetic Inductive Meters or any meter that provides a voltage pulse between 18 and 30 VDC. It converts the voltage pulse to a simple contact closure like that of the reed switches used on our mechanical meters.

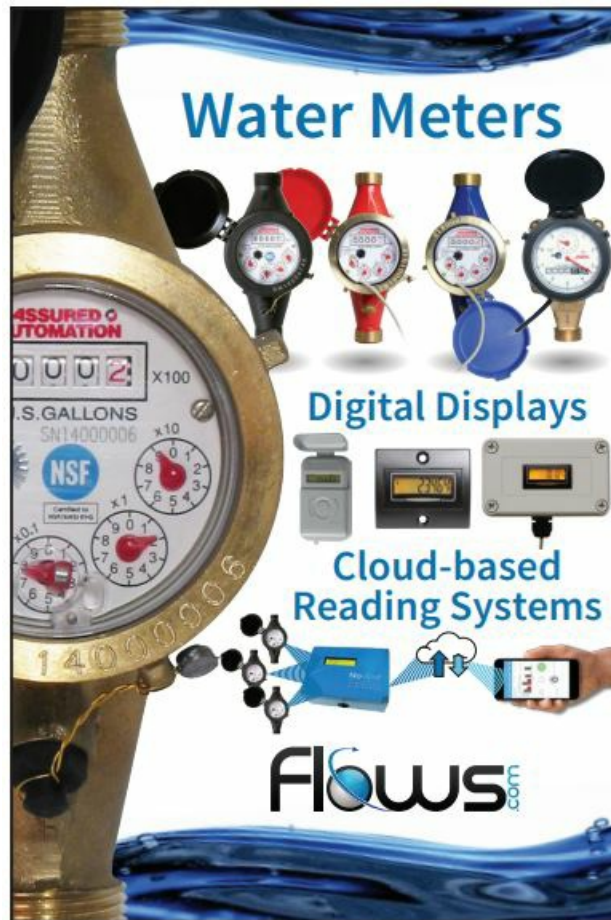
**Part Number:** ABC-PULSE-CONV

### **Warranty**

**STANDARD ONE YEAR MANUFACTURER WARRANTY:** The manufacturer, Flows.com, warrants this ABC Automatic Batch Controller to be free from defects in workmanship and materials, under normal use and conditions, for one (1) year for the original invoice date. If you experience a problem with your ABC Automatic Batch Controller, call 1-855-871-6091 for support and to request a return authorization.


## Disclaimer

This Automatic Batch Controller is provided as-is without any guarantees or warranty other than that stated above. In association with the batch controller, Flows.com, Assured Automation, and Farrell Equipment & Controls assume no liability of any kind, either express or implied, including but not limited to injuries to persons, damages to properties, or loss of goods. Use of the product by a user is at the user's risk.



50 S. 8th Street Easton, PA 18045 1-855-871-6091 Doc. FDC-ABC-2023-11-15

## Documents / Resources

	<p><a href="#">Flows.com ABC-2020 Automatic Batch Controller</a> [pdf] User Manual ABC-2020, ABC-2020 Automatic Batch Controller, Automatic Batch Controller, Batch Controller, Controller</p>
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## References

- [Water Meters and Meter Reading Systems from Flows.Com](#)
- [ABC Automatic Batch Controller - Installation Instructions](#)

- [User Manual](#)

[Manuals+](#), [Privacy Policy](#)

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