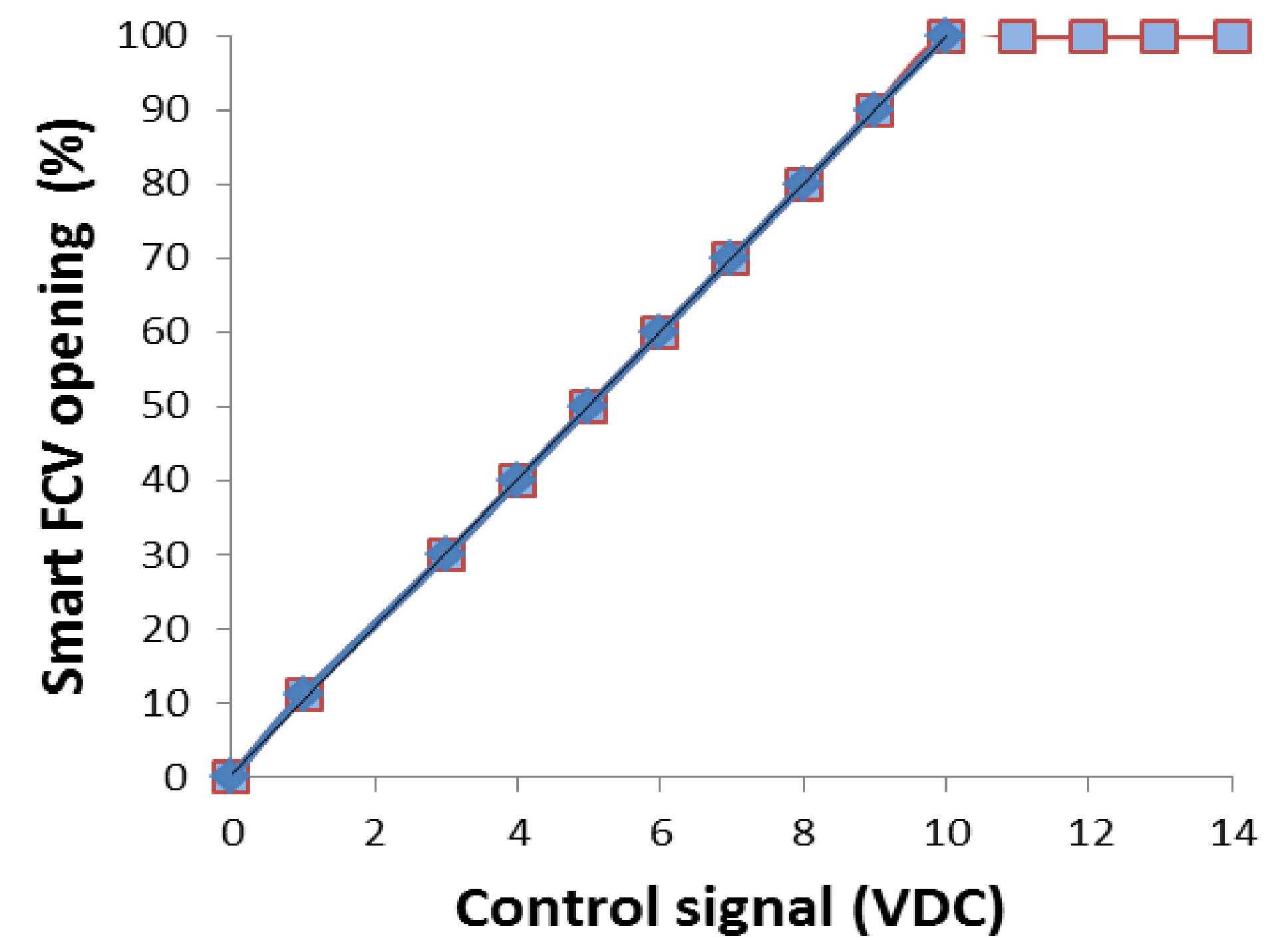
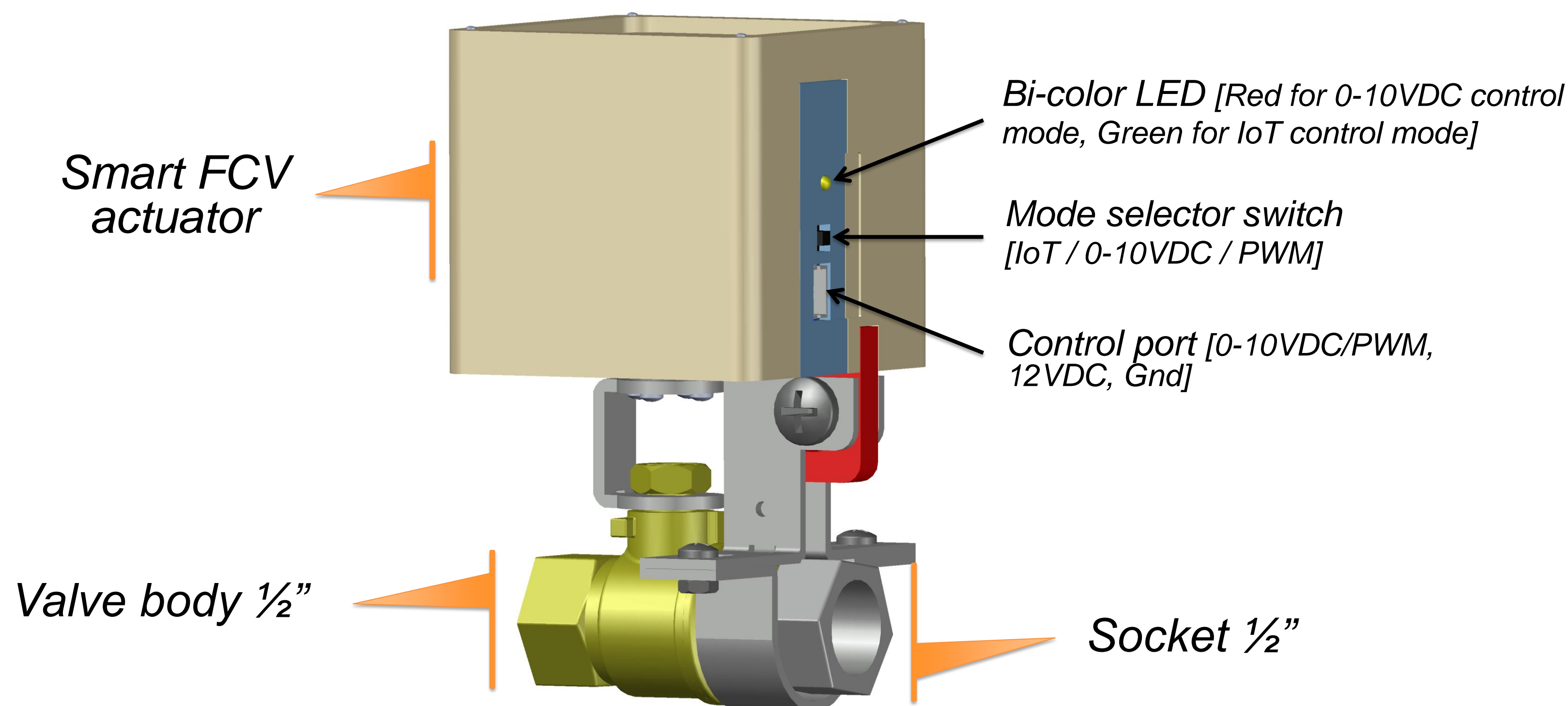


# SMART FLOW CONTROL VALVE

version 1.0

A smart flow control valve offering precise flow control with multiple control modes



## BRIEF TECHNOLOGY

SenseCon's Smart Flow Control Valve is an advanced device used in various industries like food, textile, and precision agriculture to regulate the flow rates automatically. Unlike traditional flow control valves, which often require manual adjustment or operate based on simple mechanical principles, smart flow control valve utilizes advanced technology in actuator to optimize flow rates based on real-time conditions. With three operation modes including IoT control, 0-10 VDC signal control, and external PWM signal control, it ensures adaptability to diverse control setups. Equipped with status visualization and data communication capabilities, it offers efficient and precise flow regulation.

## KEY FEATURES

- ❑ Three Operation Modes: Offers flexibility with IoT control, 0-10 VDC signal control, and external PWM signal control, catering to different control setups.
- ❑ Remote Control: IoT control enables remote operation via Wi-Fi internet connection, allowing users to set the valve opening from Arduino IoT Cloud Remote application.
- ❑ Real-time Data Communication: Provides live data on valve opening and time in IoT and 0-10 VDC signal control modes, facilitating real-time flow control.
- ❑ Bicolor LED Indicator: Indicates operation status for different control modes.
- ❑ Easy Installation: Designed for easy installation as a whole unit.

## SPECIFICATIONS

- Input power: 12 VDC (2A)
- Control signal range: 0-10 VDC ( $\leq 14$  VDC)
- External PWM signal range: 0-3.3 or 5 VDC
- Pipe fitting size: DN 15 (1/2")
- Product size: L×W×H = ~75 mm × ~85 mm × ~140 mm

## INSTALLATION

- Install the smart FCV as a whole unit.
- It is recommended not to dismantle its actuator before installing the valve body.
- In case, installation space is small then using the union fittings across the smart FCV can help to install the smart FCV and avoid dismantling.

## USEFULNESS & APPLICATION

- ❑ **Industrial Processes:** It can be used in industrial applications where precise control of flow rates is essential, such as water treatment, and manufacturing processes.
- ❑ **Food Industry:** In the food industry, it ensures precise control of flow rates for ingredients, additives, and processing fluids, maintaining product quality and consistency.
- ❑ **Textile Industry:** It facilitates accurate regulation of flow rates of dyes, chemicals, and water in textile dyeing and finishing processes, enhancing efficiency and product quality.
- ❑ **Poultry and Animal Farming:** Used for controlling the flow of water, feed, and medications in poultry and animal farming operations, ensuring optimal conditions for animal health and productivity.
- ❑ **Precision Agriculture:** As a component of precision agriculture, it enables variable rate application of fertilizers, pesticides, and irrigation water, optimizing resource usage and crop yields.

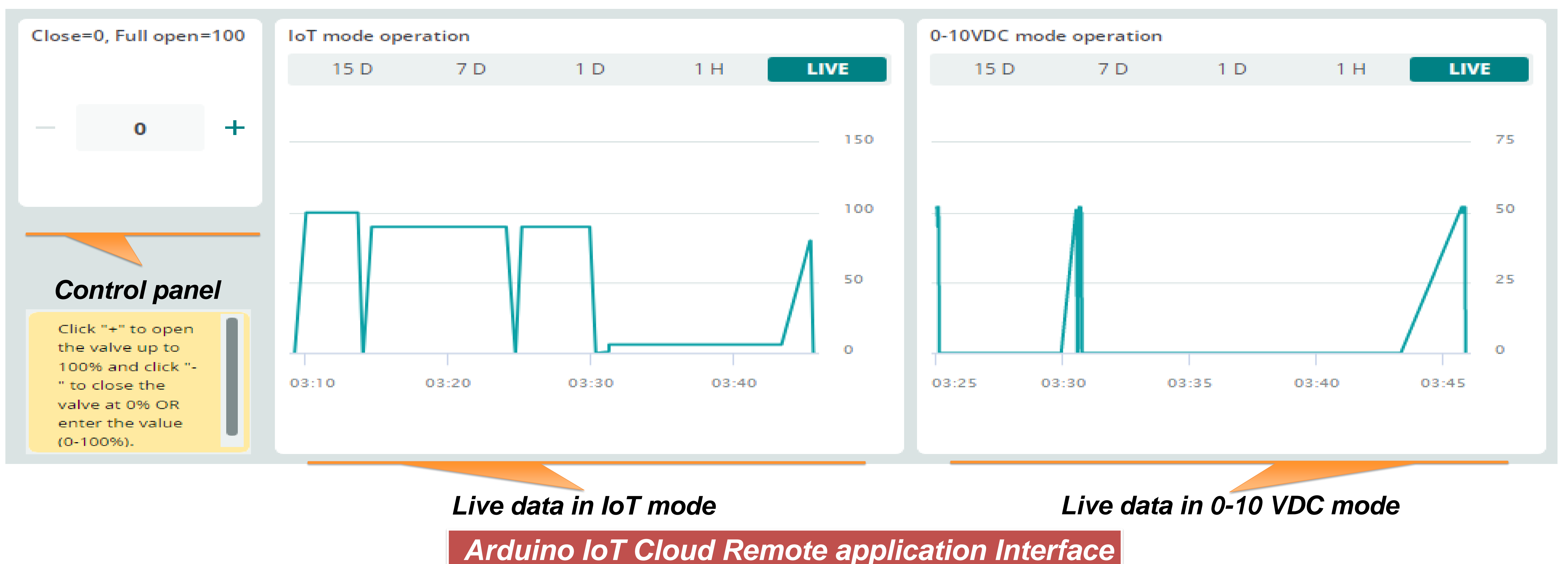
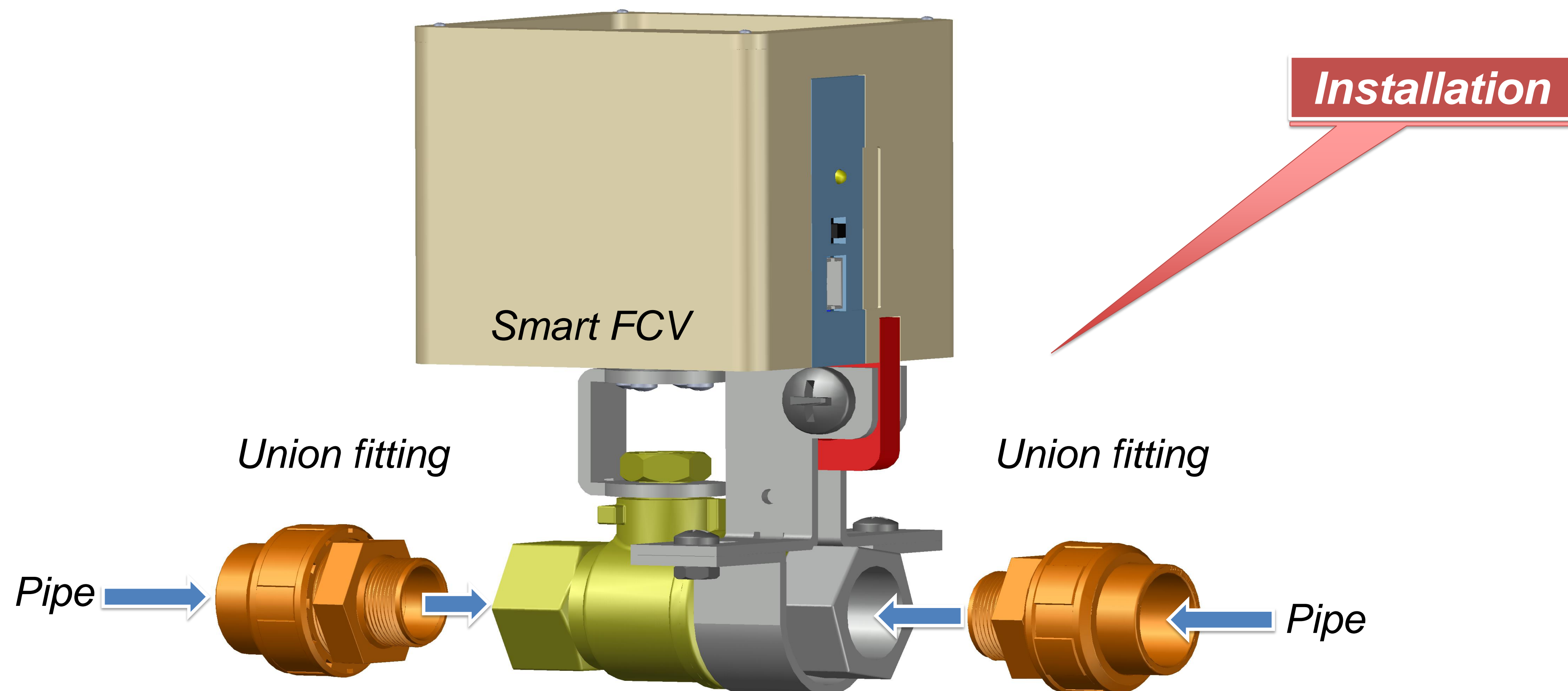
## SAFETY PRECAUTIONS

- ✓ **Power Supply:** Ensure that the power supply adheres to the prescribed specifications (12 VDC, 2A) to prevent electrical hazards and equipment damage.
- ✓ **Installation:** Follow recommended installation procedures, avoiding dismantling of the actuator before installing the valve body. Use union fittings if space is limited to prevent accidental damage during installation.
- ✓ **Mode Selection:** Exercise caution when selecting operation modes to prevent unintended control configurations. Confirm the mode selector switch position aligns with the desired mode of operation.
- ✓ **Maintenance:** Regularly inspect the valve for any signs of wear, damage, or leaks. Perform maintenance tasks according to manufacturer guidelines to ensure optimal performance and prevent safety hazards.

## TROUBLESHOOTING

- Smart flow control valve is not working at all. **Reason:** There might be power issue. **Solution:** Check the power supply. It must be according to the prescribed specifications.
- Smart flow control valve is not operating as IoT device. **Reason:** There might be a Wi-Fi internet connectivity issue. **Solution:** Check the Wi-Fi/hotspot settings i.e. Network SSID (name) and network password





## SETTING & OPERATION

- Smart flow control valve can be used in industrial applications where variable flow rate is required. It can vary the flow rates by opening from 0 to 100 % or vice versa.
- It has three modes of operation;
  - IoT control (Needs Wi-Fi internet connection)
  - 0-10 VDC signal control
  - External PWM signal control (0-3.3 or 5 VDC)
- Any of the above modes can be opted to control the smart flow control valve through mode selector switch installed on the smart FCV.
- When selector switch is set on IoT/0-10 VDC control mode, the IoT or 0-10 VDC signal control mode can be used.
- IoT control mode works with Wi-Fi internet connection and smart FCV can be controlled remotely using Arduino IoT Cloud Remote application. When working with IoT control mode, 0-10 VDC signal mode is automatically disabled.
- 0-10 VDC signal mode is activated automatically upon disabling the IoT control mode through Arduino IoT Cloud Remote application or disconnection with Wi-Fi.
- External PWM signal control mode can be chosen via the mode selector switch..

### □ **Bicolor LED indication**

- Green and red LEDs blink alternately when there is no control signal.
- Green LED blinks in IoT control mode.
- Red LED blinks in 0-10 VDC signal mode.
- LED is turned off in external PWM mode.

### □ **Data Communication**

- In IoT mode live data of valve opening (0-100%) is shared along with time on a graph of IoT mode.
- If IoT mode is disabled through Arduino IoT Cloud Remote application by setting at 0 % (Closed), the smart FCV is shifted on 0-10 VDC signal mode automatically. Then the smart FCV starts sharing the data for 0-10 VDC signal mode on a graph specified for 0-10 VDC signal mode.
- If IoT mode is disabled through disconnection of Wi-Fi internet then live data will not be shared on Arduino IoT Cloud Remote application.

### □ **Wi-Fi Connection**

- Every device comes with following information
  - Wi-Fi network name
  - Password
- Customers can setup their Wi-Fi / hotspot according to the above information which comes with the device.
- Alternately, customers, at the time of order, can recommend the above information in their orders for setting up in the device which is NOT changeable after the processing of order.