# ULTRA-ZONE™
## Forced Air Zone Controls

## SBD Motor Actuator Specifications:

**Operating Range -** .25" - 1.8" W.C.
**Pressure Sensor -** Belimo® D3 Dynamic Response
**Air Pressure Connectors -** 1/4" OD barbs integrated x2
**Power -** 24vac @ 4.0 volt/amp / 2.0 watt
**Wiring -** 18 AWG copper
**Case -** NEMA 3S, IP54
**Gear Release -** Manual
**Maintenance:** No Maintenance Required
**Memory:** Non-Volatile
**Interface:** NFC - Near Field Communication
**Listings -** UL, CE **Compliance -** ACCA Manual Zr
**Pitot Tubes -** Included x2
**Pressure Tubing -** 1/4" ID x 16' (NSF-51) Included x1
**Mounting -** The SBD can be mounted horizontally, vertically, or any other position required in the field.

### Description of the SBD2 Motor Actuator:

The Smart Bypass Motor Actuator is a digital differential pressure controller with an integrated PI loop and intelligent software. **The Smart Bypass Damper is the only industry bypass solution that can automatically measure, monitor and maintain the designed operating static pressure of the HVAC system in all modes of operation.**

The Smart Bypass Damper includes all accessories needed for field installation. If desired, a smart phone can be used to access the SBD's powerful features.
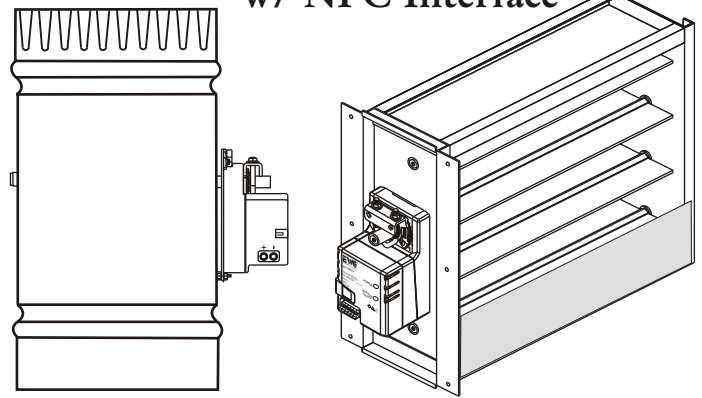
### Submittal Specifications:

Furnish and install a Model SBD2 self-balancing bypass damper manufactured by EWC Controls. Round SBD2's are fabricated from 24 gauge galvanized steel. Rolled shells include one female end and one male (crimped) end, with rigid stiffening beads. Includes pressure drop baffling for improved damper authority and linear response. Round SBD's are equipped with a Poron® gasket on the blade.
**\*Specify model SBD2 - 8", 10" , 12", 14", 16",18",  20"**

Furnish and install a Model SBD2 self-balancing bypass damper manufactured by EWC Controls. Rectangular SBD2's shall be fabricated from mill finished, extruded 080" aluminum and glass filled nylon bearings. Includes pressure drop baffling for improved damper authority and linear response.
**\*Specify model SBD2 - 12x8, 12x10, 12x12, 20x8**
**20x10, 20x12, etc.**
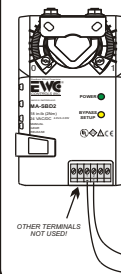
*\*Custom sizing is available, call for details.*

## How the Smart Bypass Damper Works:

The Ultra-Zone *Smart Bypass Damper* captures *(with the push of a button)* the total static pressure of the HVAC system during non-zoned mode, and modulates to maintain that same static pressure value, during zoned mode. As individual zone dampers open or close, the HVAC system static pressure will fluctuate. In order to maintain the true static pressure of the HVAC duct system during zoned HVAC operations, a bypass duct with a reliable bypass damper and a smart motor actuator must be installed. *No other bypass damper is easier to setup, than the Ultra-Zone Smart Bypass Damper.*

Register your SBD2 warranty today at *https://ewccontrols.com/warranty/*

## "SBD2" SMART BYPASS DAMPER FIELD WIRING

**SBD Motor Actuator**

*EWC*
MA-SBD2

POWER ●
BYPASS SETUP

*OTHER TERMINALS NOT USED!*

***24vac Constant Power Required***

*Connect to any M1 & M2 terminals on any Ultra-Zone zone control system, or to the R & C input terminals of any zone control system or any 24vac field transformer.*

24vac Hot
24vac Common

*Excellence Without Compromise*

## EWC® CONTROLS INC.

385 Hwy. 33
Englishtown, NJ 07726
Ph: 800-446-3110
Fx: 732-446-5362

P/N 090377A0320 REV. E  10.05.23

### SUBMITTAL FORM

SUBMITTED BY:
JOB:
ARCHITECT:
ENGINEER:
CONTRACTOR:
LOCATION:

**Installing the SBD2 Bypass Damper:**
Power up the SBD2 after installing it. The SBD2 will default closed and remain closed until you are ready for setup.

The pitot tubes and reference tubing are included with the SBD2. *Make sure you have removed these items from the shipping box before you throw the box away!*

*Due to the unique design and the self-balancing feature of the SBD2, there is no need to install and setup a separate bypass balancing hand damper.*

Mount both pitot tubes within 2 feet of the air handler on the center line of the Supply & Return plenums. *Observe the direction of airflow stamped on the pitot tube mounting plate. (See the graphic below)*

Connect each pitot tube to the SBD2 barbed fittings using the supplied 1/4" ID plastic tubing. *Keep the plastic tubing as short as possible with no kinks, cuts or nicks.* Connect 24vac power to the SBD2 motor actuator.

Upon power-up, the SBD2's Power LED will glow solid green. The yellow Bypass Setup button LED will blink, to indicate the SBD2 is ready and waiting for you to press the by-pass setup button LED and start the *"Automatic Setup"* routine.

**Preparing for Smart Bypass Setup:**
Before pressing the *Bypass Setup button LED*, the installer must confirm the following:
**(1)** *Both pitot tubes have been properly installed.*
**(2)** *All zone dampers are in the open position.*
**(3)** *The HVAC system is running at full (CFM) speed.*
**(4)** *De-humidification mode/profile is not engaged. Wait 15 minutes after cooling startup, to ensure the enhanced airflow profile function is complete.*
**(5)** *Ancillary devices such as ERV's and bypass type Humidifiers are off-line and isolated.*
**(6)** *The system air filter is new or clean.*
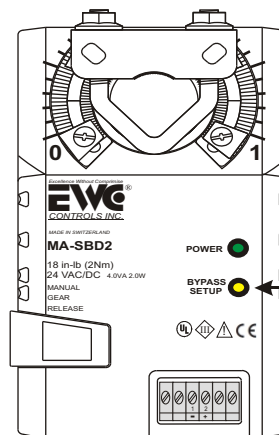
*Proceed to the Smart Bypass Setup Procedure!*

## Smart Bypass Setup Procedure:

Upon power-up, the Bypass Setup button LED is blinking *(waiting for "Auto Setup" routine).*

*1. With a pencil or pen, press the Bypass Setup button LED one time only! The Setup LED will light up solid, indicating an active Automatic Setup routine.*
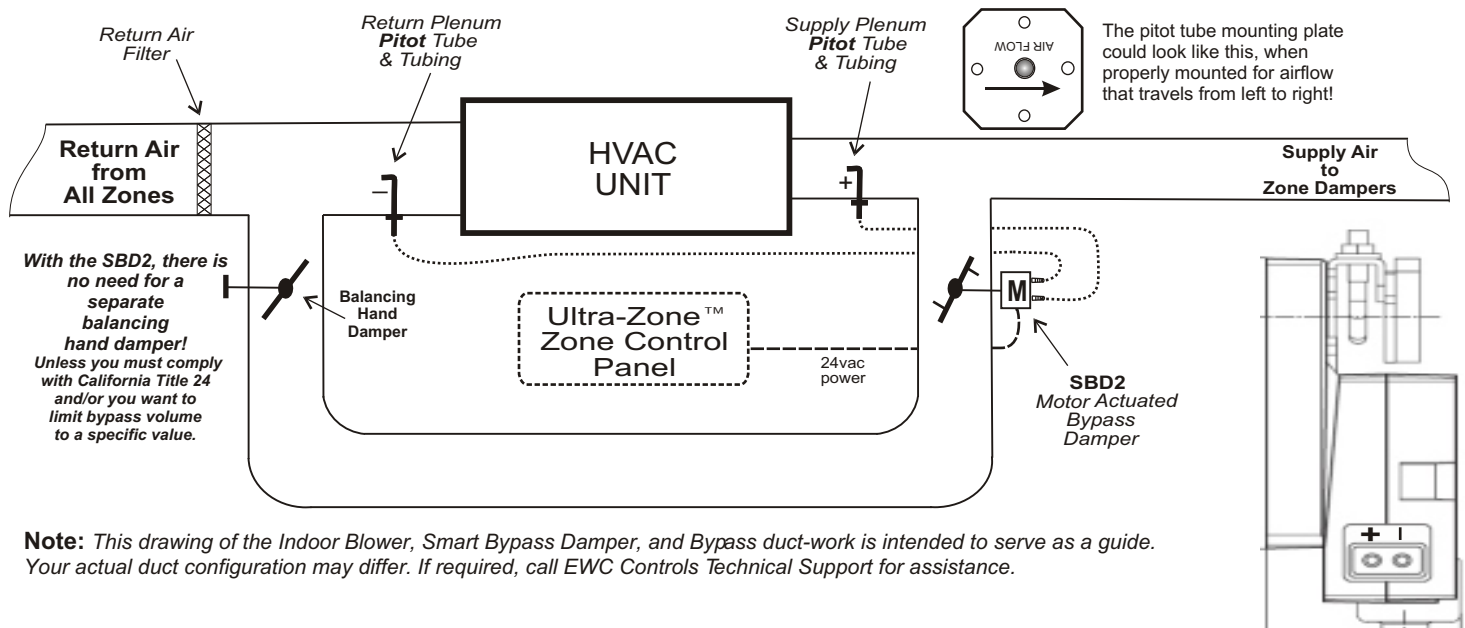
**A.** *The SBD2 will open and measure the system's total static pressure.*
**B.** *The SBD2 will close and measure the system's total static pressure.*
**C.** *If successful, the Bypass Setup LED will go out.* **You are Done!**
**D.** *If your SBD resumes blinking, double check the hoses and pitot tubes for proper installation, repair any issues and then try again.*
**E.** *Once the Setup LED stops blinking, you are done. The SBD2 will now control the system static pressure in all modes of operation.*
**F.** *During idle periods, the SBD2 will stroke partially open. The SBD will close or modulate as necessary, when the blower starts back up again.*

*If your SBD does not "Auto Setup", use the* **Belimo Assistant APP** *to manually select a Static Pressure set-point!*

Press the Bypass Setup button LED to "Auto Setup"



**MA-SBD2**
18 in-lb (2Nm)
24 VAC/DC 4.0VA 2.0W
MANUAL GEAR RELEASE
POWER
BYPASS SETUP

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# EWC Controls Recommended Bypass Duct Configuration



*Return Air Filter*

*Return Plenum **Pitot** Tube & Tubing*

*Supply Plenum **Pitot** Tube & Tubing*

AIR FLOW

The pitot tube mounting plate could look like this, when properly mounted for airflow that travels from left to right!

**Return Air from All Zones**

HVAC UNIT

**Supply Air to Zone Dampers**

*With the SBD2, there is no need for a separate balancing hand damper! Unless you must comply with California Title 24 and/or you want to limit bypass volume to a specific value.*

**Balancing Hand Damper**

Ultra-Zone™ Zone Control Panel

24vac power

M

**SBD2** *Motor Actuated Bypass Damper*

**Note:** *This drawing of the Indoor Blower, Smart Bypass Damper, and Bypass duct-work is intended to serve as a guide. Your actual duct configuration may differ. If required, call EWC Controls Technical Support for assistance.*

*Excellence Without Compromise*

# EWC®
## CONTROLS INC.

385 Hwy. 33 Englishtown, NJ 07726
Ph: 800-446-3110 - Fx: 732-446-5362

*Connect the pitot/tubing from the Supply plenum to the **+** port.*

*Connect the pitot/tubing from the Return plenum to the **-** port.*

# ULTRA-ZONE™
## Forced Air Zone Controls

**APPLICATION NOTE**
Model SBD2 Self-Balancing
Smart Bypass Damper
w/NFC Interface

Register your SBD2 warranty today at *https://ewccontrols.com/warranty/*

A powerful feature of the next generation Smart Bypass Motor Actuator is the (NFC) Near Field Communication interface capability. Using your Android or iOS Smart Phone and the Belimo® Assistant APP, you have the ability to manually configure your Smart (self-balancing) Bypass damper in the field. Go to *https://ewccontrols.com/acrobat/090376a0193.pdf* for setup guidance.

You will also have access to valuable information and tools such as:

• Observing the total Static pressure (Differential pressure) of the HVAC system in real time.

• Observing the active or idle position of the Smart Bypass damper in real time.

• See the "Closed & Open" static pressure (Dp) values, captured during Static Pressure "learn" mode.

• Manually change the "learned" Static pressure (Dp) set-point to a new set-point of your choice.

• See the total number of hours the Smart Bypass damper has been actively modulating.

• See the total number of hours the Indoor Fan has been running, since the SBD2 was installed.

• Select the "Trend Chart" icon and observe/create a graph of the HVAC system Static pressure (Dp) versus the SBD2's Static pressure (Dp) set-point *and* the active position of the damper in real time.

• Save or Email the Trend Chart file (.png) to the office, a customer or a colleague.

• Personalize each zoned installation by giving the SBD2 a name or location *eg, Smith residence or Upstairs unit or Basement system.*

*  Android phones with "NFC" enabled, can access the SBD2 data, by placing the phone directly on top of the SBD2 motor, after opening the Belimo® Assistant APP. The SBD2 provides a momentary "snap shot" of all relevant bypass data & functions. As soon as you move the phone away from the SBD2, the NFC link is broken. Place your phone on top of the SBD2 again, to obtain an update and observe new data or to make any desired changes.

*  iOS phones with "NFC" enabled, can also access the SBD2 by directly placing the phone on top of the SBD2 motor. Apple no longer prohibits direct NFC functionality, so you don't have to use a Blue Tooth to NFC converter. Just make sure your iOS phone firmware is up to date.

*  The Belimo® ZIP-BT-NFC converter, which is placed on top of the SBD2 rather than your Android or iOS phone, is the _preferred method_ of synching to the SBD2 because it maintains continuous access to the SBD2 motor, giving the user some freedom to move about and focus on the APP. The ZIP converter is almost a necessity when creating Trending Charts or setting up "twinned" SBD2's with staggered static pressure set-points. *eg, 0.40"wc and 0.50"wc.*
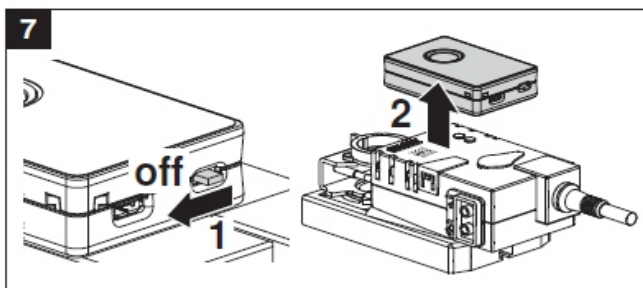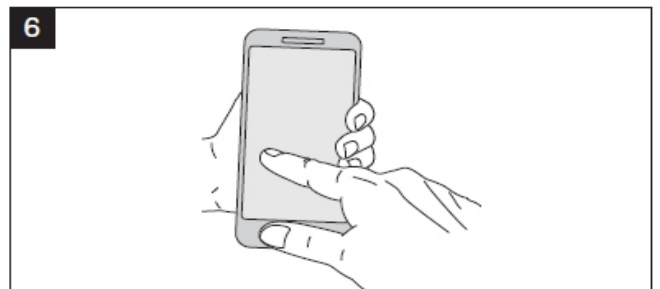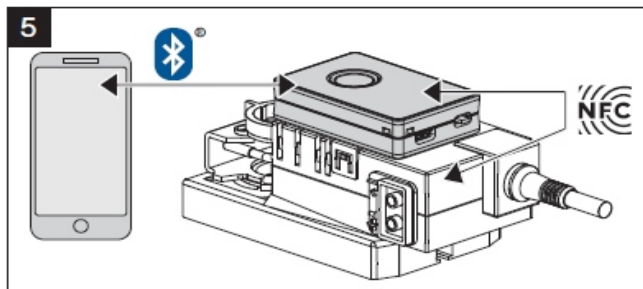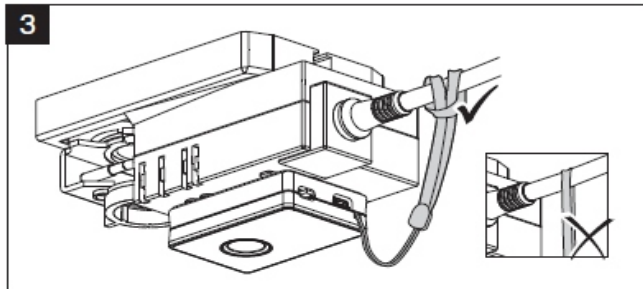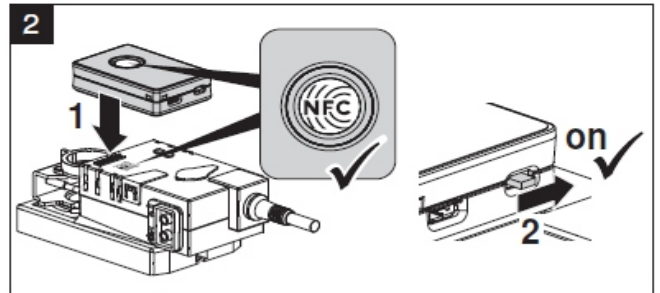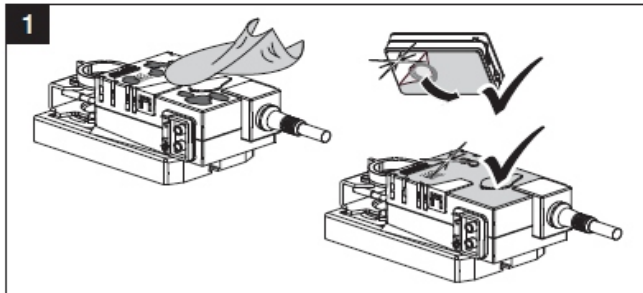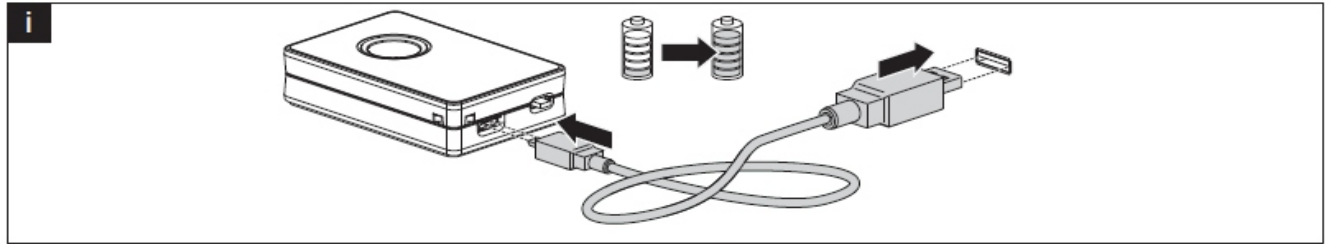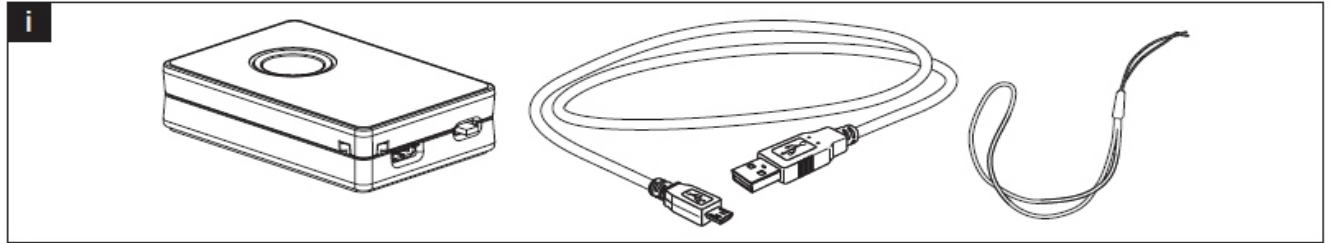
   *The ZIP-BT-NFC converter uses NFC to communicate with the SBD2 and communicates to your smart phone via Blue-tooth. If you move too far away from the converter, the blue-tooth link is broken. Moving back into range will prompt the link to re-establish.

   *Android users can also use the ZIP-BT-NFC converter if they choose to do so.

**BELIMO**

71940-00001.C

**i**



**i**



**1**



**2**



**on** ✓

**3**



**4**

Available on the
**App Store**

GET IT ON
**Google Play**

百度手机助手
有 颜 又 有 货

Q BELIMO

**5**



NFC

**6**



**7**

**off**

www.belimo.com/safety