

Handheld VAV Balancing Tool

Installation Instructions

NS-ATV7003-0

Part No. 24-10211-2, Rev. C

Release 4.1

Issued October 6, 2008

Supersedes March 10, 2008

Applications

The Variable Air Volume (VAV) Balancing Tool allows you to easily adjust and set the required parameters for VAV applications that reside on the Metasys® system VAV Modular Assembly (VMA) 1600 Series or Field Equipment Controller (FEC) Series controllers.

The VAV balancing parameters display on the tool's Liquid Crystal Display (LCD). You use the dial and two buttons on the tool to navigate through simple, intuitive menus to balance the VAV box. The menus you see are customized to the type of application residing in the controller. The balancing operation also features an adjustable time-out parameter that returns the tool and controller to normal operation if you leave the controller in balancing mode.

The handheld VAV Balancing Tool is lightweight and portable. It can plug into any model of network sensor to access the VAV controller.

The VAV Balancing Tool is compatible with the following Metasys system BACnet® protocol devices:

- FEC loaded with a VAV application
- VMA1600 loaded with a VAV application
- Network Sensors connected to an FEC or VMA1600 loaded with a VAV application

North American Emissions Compliance

United States

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his/her own expense.

Canada

This Class (A) digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Classe (A) respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

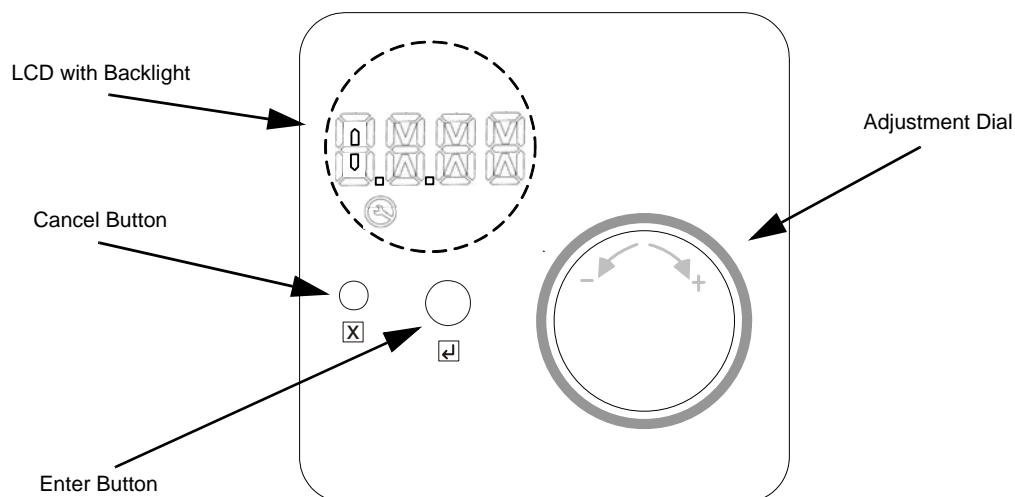


Figure 1: Front of the VAV Balancing Tool, 80 x 80 mm (3.2 x 3.2 in.)

Installation

Parts Included

- one handheld VAV Balancing Tool
- one 1.5 m (5 ft) retractable cable
- one laminated user guide (*Metasys Balancing Sensor User Guide [Part No. 24-10159-5]*)
- one padded carrying case
- one set of installation instructions

Special Tools Needed

The VAV Balancing Tool allows you to change the VAV box parameters. To measure actual airflow and other parameters, you need standard VAV measuring equipment.

Accessories

Table 1: Products and Accessories (Order Separately)

Code Number	Description
NS-ATV7003-0	Handheld VAV Balancing Tool
MS-BTCVT-700	Cable replacement set; includes one 1.5 m (5 ft) retractable cable
MS-ZFRCBL-0	Wire harness with connectors for use with some wireless enabled field controllers.

Wiring

Wiring Consideration and Guidelines

Observe the following guidelines when wiring the VAV Balancing Tool:

- Do not allow the VAV Balancing Tool to hang from the cable connection.
- Provide some slack in the cable between the VAV Balancing Tool and the controller or network sensor.

Power Supply, Network, and Communication Connections

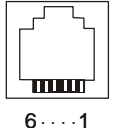
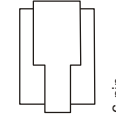
SA Bus Port

The Sensor-Actuator Bus (SA Bus) port on the VAV Balancing Tool is a 6-pin, RS-485 port designed to connect the VAV Balancing Tool to an accessible SA Bus port on a Master-Slave/Token-Passing (MS/TP) device. The MS/TP device is typically the network sensor on the VAV controller SA Bus, using the cable assembly provided. The SA Bus port is a straight through, one-to-one connection (not a crossover). The maximum allowable cable length is 100 ft.

Do not plug the SA port cable into a standard phone jack.

Note: Connect through the MS-ZFRCBL-0 when connecting to a wireless-enabled VMA1600.

Table 2: SA Bus Port Pin Designations

Diagram	Pin Number (Both Ends of Cable)	Signal Name
 	1	SA +
	2	SA -
	3	15 VDC Common
	4	+15 VDC
	5	No Connection
	6	No Connection

Connecting the VAV Balancing Tool

Observe the following guidelines and procedures when connecting the VAV Balancing Tool to your system.

1. Connect one male end of the supplied cable to the VAV Balancing Tool.
2. Connect the other end of the cable to the controller or network sensor.

IMPORTANT: The VAV Balancing Tool has a dedicated MS/TP bus address of 198. Only one VAV Balancing Tool can be connected to the MS/TP bus per physical trunk on the system.

Setup and Adjustments

The VAV Balancing Tool device itself requires no commissioning.

Operation

Using the VAV Balancing Tool

Once the VAV Balancing Tool is physically connected to the SA bus of the VMA or FEC controller, you can use the tool to balance the VAV box. Refer to the *VAV Balancing Tool Technical Bulletin (LIT-12011087)*.

Repair Information

Do not open the VAV Balancing Tool housing. The VAV Balancing Tool has no user-serviceable parts inside.

The VAV Balancing Tool requires no periodic field maintenance.

Technical Specifications

Handheld VAV Balancing Tool

Product Code		NS-ATV7003-0
Power Requirements		15 VDC Nominal, provided through the SA Bus Port; Consumption is 1.35 watts maximum
Terminations		6-Position Modular Jack
Transmission Speed		Serial Communication (SA Bus) 9600, 19.2k, 38.4k, or 76.8k bps
Sensor Addressing		Fixed Address of 198
Cable		1.5 m (5 ft) retractable cable
Ambient Conditions	Operating	0 to 50°C (32 to 122°F); 5 to 95% RH, Noncondensing; 30°C (86°F) Maximum Dew Point
	Storage	-40 to 85°C (-40 to 185°F); 5 to 95% RH, Noncondensing
Compliance	United States	UL Listed, File E107241, CCN PAZX7, Under UL 916, Energy Management
		FCC Compliant to CFR 47, Part 15, Subpart B, Class A
	Canada	UL Listed, File E107241, CCN PAZX7, Under CSA C22.2 No. 205, Signal Equipment
		Industry Canada, ICES-003
	Europe	CE Mark, EMC Directive 89/336/EEC; EN61000-6-3 (2001) Generic Emission Standard for Residential and Light Industry; EN61000-6-2 (2001) Generic Immunity Standard for Heavy Industrial Environment
Australia and New Zealand	C-Tick Mark, Australia/NZ Emissions Compliant	
Dimensions		80 x 80 x 250 mm (3.2 x 3.2 x 1.0 in.)
Shipping Weight		0.165 kg (0.365 lb)

The performance specifications are nominal and conform to acceptable industry standard. For application at conditions beyond these specifications, consult the local Johnson Controls® office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.



Building Efficiency
507 E. Michigan Street, Milwaukee, WI 53202

Metasys® and Johnson Controls® are registered trademarks of Johnson Controls, Inc. All other marks herein are the marks of their respective owners. © 2008 Johnson Controls, Inc.