

Job Name/Location:

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Architect:

GC:

Engr:

Mech:

Rep:

(Company)

(Project Manager)

VUCOMS8250

MultiSITE™ MS8250 VAV Room Controller

For Commercial/High End Hospitality Variable Air Volume (VAV) Applications



Description:

Application specific and programmable cost-effective room controller for low-voltage Variable Air Volume (VAV) zone control.

Features:

- Configurable to support damper control for Pressure Independent (PI) and Pressure Dependent (PD) VAV systems.
- Embedded local configuration utility using the touch screen allowing for simplified configuration, sequence selection, re-initialization, setting of setpoints and control of display settings.
- Customizable color digital touch screen interface with multi-language support.
- BACnet® (Available BACnet options listed under Connectivity) or Modbus®.
- On-Board ZigBee® Communication Module.
- Automatic Demand Response (ADR) used to reduce energy load when electric grid contingencies threaten supply-demand balance.
- Custom LUA script can be uploaded to the VAV Room Controller.
- Passwords can be set to prevent unauthorized user access to main screen adjustments and / or configuration menu parameters.
- Senses both Room Temperature and Relative Humidity.
- Configurable temporary or permanent local override setpoints.
- Local or remote override during unoccupied mode.
- Adjustable local unoccupied heating and cooling setpoint limits, maximum heating and minimum cooling limits, as well as adjustable dead and proportional bands.
- Remote night set back.
- Advanced PIR Occupancy Functions generate automatic energy savings during occupied and unoccupied periods without sacrificing comfort.

BACnet is a registered trademark of ASHRAE.

Modbus is a registered trademark of Schneider Electric USA, Inc.

ZigBee and ZigBee PRO are registered trademarks of the ZigBee Alliance, Inc.

Conforms to ASHRAE specifications for Green Building Standards and applicable safety, EMC and radio standards.

Operating Ranges:

Occ, Unocc, Standby Cooling Setpoint	54°F to 100°F (12°F to 37.5°C)
Occ, Unocc, Standby Heating Setpoint	40°F to 90°F (4.5°C to 32°C)
Room / Outdoor Air Temp. Display	-40°F to +122°F (-40°C to +50°C)
Proportional Band for Room Temp. Control	Cooling and Heating: 3.2°F (1.8°C) Default

Operating Environment:

Operating Temperature	32°F to 122°F (0°C to 50°C)
Storage Temperature	-22°F to +122°F (-30°C to +50°C)
Operating and Storage Humidity	0-95% RH (Non-Condensing)

Optional Accessories (Sold Separately):

- ☐ VCM8001V504 - CO₂ Sensor Module
- ☐ VCM8002V504 - Wi-Fi Module
- ☐ SEDCO2G5045 - Wall Mounted ZigBee Room Sensor (CO₂, Temperature, and Humidity)

Notes:

Must follow installation instructions in the applicable LG installation manual.

Available functions / features may differ based on the connected system.

For continual product development, LG reserves the right to change specifications without notice.

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Electrical:

Input	24 Vac ±15% recommended, Absolute Max 29.5 Vac, 50/60Hz or 24 Vdc ±15%
Peak Device Consumption	Up to 6 Vac with CO ₂ sensor or Wi-Fi Module Plus Output Load (Max. Total 94 Vac)
Transformer Maximum Rating	100 Vac, 4.17 A
Power Supply Wiring	16 or 18 Gauge
Communications Cable	22 Gauge Typical, 24 Gauge Minimum

Output Ratings:

Nine Electronic Relays	24 Vac or 24 Vdc ±15% Same as Input Power, 1.0 Amp., In-rush = 3.0 Amps
Four Analog Outputs	0 - 10 Vdc, 5mA maximum, 2 kΩ resistance; Configurable Output Analog/Electronic Relay

Inputs:

Analog	Modulating 0-10 Vdc across UI19, UI24 to Common
Binary	Dry Contact Across Terminals UI16, UI17 to Common

Connectivity:

BACnet MS/TP
BACnet/IP (Available with optional Wi-Fi Module)
Modbus RTU
ZigBee® PRO wireless mesh network (P)

Dimensions and Weight:

Dimensions	4.72" H x 3.39" W x 1.06" D
Shipping Weight	0.75 lb. (0.34 kg)

Local and Remote Temperature Sensors:

Local Type	10 K NTC Type 2 Thermistor
Local Sensor Resolution	± 0.2°F (± 0.1°C)
Local Sensor Control Accuracy	±0.9°F (± 0.5°C) @ 70°F (21°C) Typical Calibrated
Remote Type	10 K NTC Type 2 Thermistor UI20, UI22, UI23

Humidity Sensor:

Precision	Reading Range from 10-90% R.H. Non-Condensing 10 to 20% Precision: 10%; 20 to 70% Precision: 5% 70 to 90% Precision: 10%
Stability	Less than 0.25 % Yearly (Typical Drift)

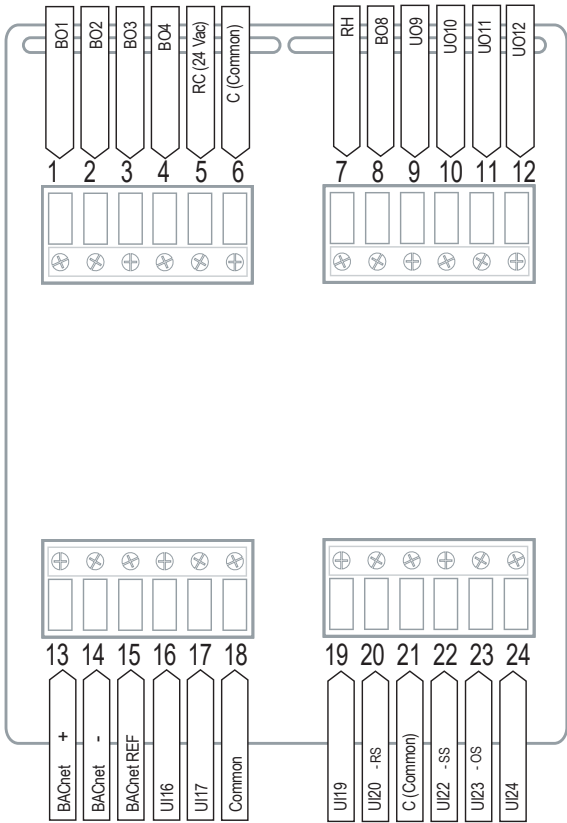
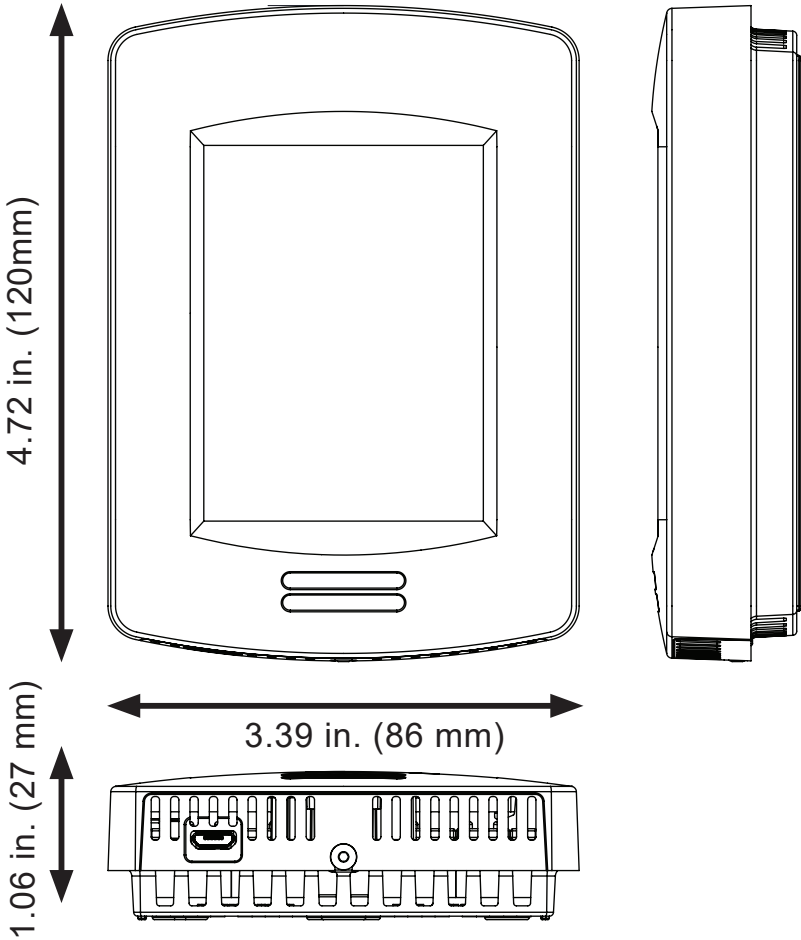
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Terminal Identification - Fan Type

Supported fan types:

- Parallel On / Off
- Serial On / Off
- Parallel Electronically Commutated Motor (ECM)
- Serial ECM

Supported output types:

- On / Off: Binary Output
- ECM: Analog Output

Terminal Identification for Fan Control Table.

Binary (24 Vac)		
Terminal	Name	Connection
4	BO4	24 Vac ~ Enable
6, 18, or 21	C / 24 Vac ~ Common	24 Vac ~ Common
ECM (0-10 Vdc)*		
Terminal	Name	Connection
6, 18, or 21	C / 24 Vac ~ Common	24 Vac ~ Common
10	UO10	0-10 Vdc Output

Note:

*Floating duct reheat is not possible when fan type is ECM.

Terminal Identification - Air Flow Sensor (PI Only)

Supported air flow sensor parameters:

- Output voltage = 0-10 Vdc
- Pressure range = 0.5 or 5 inch water column
- Flow a one (1) inch water column:
 - Minimum = 10
 - Maximum = 10000

Terminal Identification for Air Flow Sensors Table.

PI-Only Air Flow Sensor		
Terminal	Name	Connection
5	RC / 24 Vac Hot	24 Vac ~ Hot
6, 18, or 21	C / 24 Vac Common	24 Vac ~ Common
24	UI24	0-10 Vdc Input

Note:

- Refer to the VAV box manufacturer flow chart for the recommended settings.
- See "Air Flow Sensor (PI Only)" at left for recommendations.

Terminal Identification - Damper

Supported output types:

- 0-10 Vdc Direct Acting
- 0-10 Vdc Reverse Acting
- 2-10 Vdc Direct Acting
- 2-10 Vdc Reverse Acting
- Floating

Recommended Damper Actuator Type: Elec, Prop, 0-10 Vdc, NSR, 24 Vac, Plenum, 35 in-lb or equivalent.

Note:

Damper actuator not included with room controller.

Terminal Identification for Damper Actuator Table.

0-10 Vdc Analog Actuator		
Terminal	Name	Connection
5	RC / 24 Vac ~ Hot	24 Vac ~ Hot
6, 18, or 21	C / 24 Vac ~ Common	24 Vac ~ Common
11	UO11	0-10 Vdc Output
Floating Actuator*		
Terminal	Name	Connection
6, 18, or 21	C / 24 Vac ~ Common	24 Vac ~ Common
9	UO9	Close Actuator
11	UO11	Open Actuator

*Floating actuation time limits:

- Minimum = 0.5 minutes.
- Maximum = 9.0 minutes.
- Increment = 0.5 minutes.

Terminal Identification - Changeover and Supply Sensors

The Room Controller is compatible with remote mount temperature sensors using 10K Type 2 NTC thermistors.

Terminal Identification for Changeover and Supply Sensors Table.

Changeover and Supply Sensors		
Terminal	Name	Connection
19	UI19	Changeover Sensor
6, 18, or 21	C / 24 Vac ~ Common	24 Vac ~ Common
22	UI22	Supply Sensor

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Terminal Identification - Reheat - Duct

Supported output types:

- 0-10 Vdc Direct Acting
- 0-10 Vdc Reverse Acting
- 2-10 Vdc Direct Acting
- 2-10 Vdc Reverse Acting
- Floating
- On/Off
- PWM
- Valve NC
- Valve NO

Terminal Identification for Duct Heater Table.

0-10 Vdc Analog Duct Heater			
Terminal	Name	Connection	Required Settings
5	RC / 24 Vac ~ Hot	24 Vac ~ Hot	Duct Heater Configuration: • 0-10 Vdc Direct Acting, or • 0-10 Vdc Reserve Acting
6, 18, or 21	C / 24 Vac ~ Common	24 Vac ~ Common	
12	UO12	0-10 Vdc Output	
Floating Duct Heater			
Terminal	Name	Connection	Required Settings
6, 18, or 21	C / 24 Vac ~ Common	24 Vac ~ Common	Duct Heater Configuration: Floating
10	UO10	24 Vac ~ Open Damper Actuator	
12	UO12	24 Vac ~ Close Damper Actuator	
On/Off or PWM Duct Heater			
Terminal	Name	Connection	Required Settings
6, 18, or 21	C / 24 Vac Common	24 Vac Common	Duct Heater Configuration: • On/Off, or • PWM, or • Valve NC, or • Valve NO
12	UO12	24 Vac Output	

Terminal Identification - Reheat - Baseboard

The MS8250 controls baseboard heaters through:

- Relay = 4 CPH (Cycles Per Hour)
- PWM = 10-second duty cycle
- Valve (Normally Open or Normally Closed) = 8 CPH (Cycles Per Hour)

Supported output types:

- Relay On/Off
- PWM
- Valve NC
- Valve NO

Terminal Identification for Baseboard Reheat Table.

Relay with Transformer (Dry Contact)			
Terminal	Name	Connection	Required Settings
7	RH	Room Controller Terminal 5 (24 Vac ~)	Baseboard Reheat: Relay
8	BO8	24 Vac ~ to Baseboard	
24 Vac ~			
Terminal	Name	Connection	Required Settings
5	RC / 24 Vac ~ Hot	Room Controller Terminal 7 (RH)	Baseboard Reheat: • Relay, or • PWM, or • Valve NC, or • Valve NO
6, 18, or 21	C / 24 Vac ~ Common	24 Vac ~ Common	
7	RH	Room Controller Terminal 5 (24 Vac ~)	
8	BO8	24 Vac ~ to Baseboard	

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Home Screen Display



Note:
User HMI is configurable and allows display functions such as Date, Time, Humidity, Outdoor Temperature, Setpoint, and others to be enabled or disabled by setting various parameters.

BACnet Compatibility Specifications

Note:
This document contains BACnet compatibility specifications of the LG MultiSITE MS8000 Series Room Controllers, and follows the BACnet PICS format. Objects common to the models appear in one table, objects that are model specific appear in separate tables.

Supported BACnet Services: The BACnet communicating controller meets all requirements for designation as an Application Specific Controller (B-ASC). The BACnet controller supports the following BACnet Interoperability Building Blocks (BIBBs).

Application Service	Designation
Data Sharing-COV-B	DS-COV-B
Data Sharing – Read Property - B	DS-RP-B
Data Sharing – Read Property Multiple - B	DS-RPM-B
Data Sharing – Write Property - B	DS-WP-B
Data Sharing - Write Property Multiple Service - B	DS-WPM-B
Device Management - Time Synchronization - B	DM-TS-B
Device Management - Device Communication Control - B	DM-DCC-B
Device Management – Dynamic Device Binding - B	DM-DDB-B
Device Management – Dynamic Object Binding - B	DM-DOB-B
Scheduling-Internal-B	SCHED-I-B

Note:
The controller does not support segmented requests or responses.

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Name / Type & Instance	Object Property	Controller Parameter
Room Controllers / Device	Object_Identifier: Property 75 (R,W)	Unique ID number of a device on a network
	Object_Name: Property 77 (R,W)	Unique name of a device on a network
	Model Name: Property 70 (R)	Controller model number
	Firmware Revision: Property 44 (R)	Current BACnet firmware revision used by controller
	Protocol Version: Property 98 (R)	Current BACnet firmware protocol version; Default is Version 1
	Protocol Revision: Property 139 (R)	Current BACnet firmware protocol revision; Default is Version 2
	Max ADPU Length: Property 62 (R)	Maximum ADPU Length accepted; Default is 480
	ADPU Timeout: Property 10 (R)	ADPU timeout value; Default is 3000 ms
	Application-Software-Version: Property 12 (R)	Controller base application software version; Default is based on current released version
	Max_Master (R,W)	Maximum master devices allowed to be part of network. 0 to 127, default is 127
	Description Property 28 (R,W)	String of printable characters (Same as "Long Screen Message" CSV2)
	Location: Property 58 (R,W)	String of printable characters (Same as "Short Screen Message" CSV1)
	Local Date: Property 56 (R)	Indicates date to best of device knowledge
	Local Time: Property 57 (R)	Indicated time of day best of the device knowledge

Object Properties

Analog Objects

Object Type Read/Write Settings			Object Property	Controller Parameter
Input AI	Output AO	Values AV		
Read Only	Read Only	Read Only	Event State Property 36	Indicates if object has an active event state associated with it
Read Only	Read Only	Read Only	Object Identifier Property 75	Unique ID number of an object on a network
Read Only	Read Only	Read Only	Object Name Property 77	Unique name of an object on a network
Read Only	Read Only	Read Only	Object Type Property 79	Indicates membership in a particular object type class
Read / Write	Read / Write	Read / Write	Out of Service Property 81	Indicates whether (TRUE/FALSE) the physical input object represents is not in service
Read / Write*	Read / Write	Read / Write	Present Value Property 85	Contains values of all properties specified
N/A	Read Only	Read Only	Priority Array Property 87	Read-only array of prioritized values
Read Only	Read Only	Read Only	Reliability Property 103	Indicates if Present_Value is "reliable"
N/A	Read Only	Read / Write†	Relinquish Default Property 104	Default value used for Present_Value when values in Priority_Array have a NULL value
Read Only	Read Only	Read Only	Status Flags Property 111	Represents flags that indicate general health of life safety point object
Read Only	Read Only	Read Only	Units Property 177	Indicates measurement units of Present_Value
N/A	Read Only	N/A	High Limit Property 1101	Specifies a limit Present_Value must exceed before an event is generated
N/A	Read Only	N/A	Low Limit Property 1100	Specifies a limit Present_Value must fall below before an event is generated

N/A = Not Applicable, property not used for objects of that type.

* The Present_Value is only writeable when Out_Of_Service is TRUE.

† Relinquish default is Read Only for AV100+

Binary Objects

Object Type Read/Write Settings			Object Property	Controller Parameter
Input BI	Output BO	Values BV		
Read Only	Read Only	Read Only	Active Text Property 4	Characterizes intended effect of the ACTIVE state of Present_Value property
Read Only	Read Only	Read Only	Event State Property 36	Indicates if object has an active event state associated with it
Read Only	Read Only	Read Only	Inactive Text Property 46	Characterizes intended effect of INACTIVE state of Present_Value property
Read Only	Read Only	Read Only	Object Identifier Property 75	Unique ID number of an object on a network
Read Only	Read Only	Read Only	Object Name Property 77	Unique name of an object on a network
Read Only	Read Only	Read Only	Object Type Property 79	Indicates membership in a particular object type class
Read / Write	Read / Write	Read / Write	Out of Service Property 81	Indicates whether (TRUE/FALSE) physical input object represents is not in service
Read Only	Read / Write	N/A	Polarity Property 84	Indicates relationship between physical state of input and Present_Value
Read / Write	Read / Write	Read / Write	Present Value Property 85	Contains values of all properties specified
Read Only	Read Only	Read Only	Priority Array Property 87	Read-only array of prioritized values
N/A	Read Only	Read Only	Relinquish Default Property 104	Default value to be used for Present Value when values in Priority_Array have a NULL value
Read Only	Read Only	Read Only	Status Flags Property 111	Represents flags that indicate general health of life safety point object

N/A = Not Applicable, property not used for objects of that type.

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Multi-state Objects

Object Type Read/Write Settings		Object Property	Controller Parameter
Input MSI	Values MV		
Read Only	Read Only	Event State Property 36	Indicates if object has an active event state associated with it
Read Only	Read Only	Number of States Property 74	Defines number of states Present_Value may have
Read Only	Read Only	Object Identifier Property 75	Unique ID number of an object on a network
Read Only	Read Only	Object Name Property 77	Unique name of an object on a network
Read Only	Read Only	Object Type Property 79	Indicates membership in a particular object type class
Read / Write	Read / Write	Out of Service Property 81	Indicates whether (TRUE/FALSE) physical input object represents is not in service
Read / Write*	Read / Write	Present Value Property 85	Contains values of all properties specified
N/A	Read Only	Priority Array Property 87	Indicates relationship between physical state of input and Present_Value
N/A	Read / Write	Relinquish Default Property 104	Default value used for Present_Value when values in Priority_Array have a NULL value
Read Only	Read Only	State Text Property 110	Represents descriptions of all possible states of Present_Value
Read Only	Read Only	Status Flags Property 111	Represents flags that indicate general health of life safety point object

N/A = Not Applicable, property not used for objects of that type.

*The Present_Value is only writeable when Out_Of_Service is TRUE.