

SIEMENS



BACnet PTEC Controller

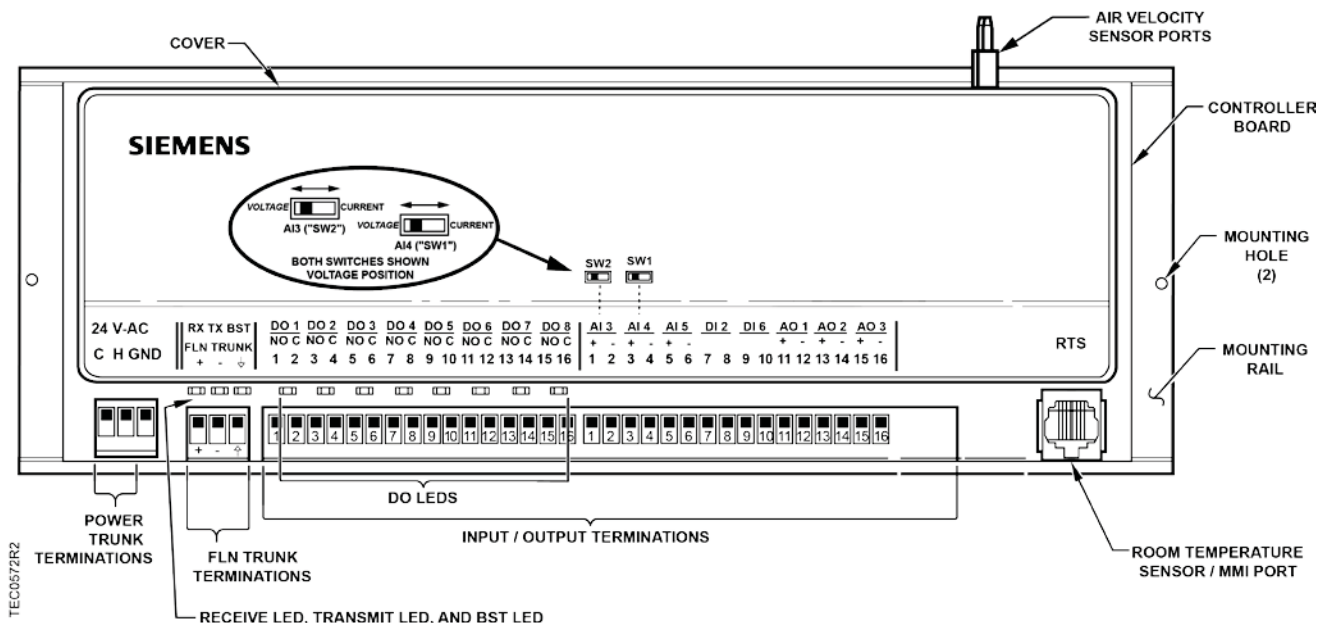
VAV Chilled Beam Slave Mode Controller, Application 6692

Application Note

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Overview



Generic Controller I/O Layout. See *Wiring Diagram* for application specific details.

Application 6692 is the slave mode application for the BACnet VAV Chilled Beam with Demand Control Ventilation (CO2) and Floating or Analog Output Controller (550-494PA). Slave mode is the default application that displays when power is first applied to the controller. Slave mode provides no control. Instead, it allows the operator to perform equipment checkout before a control application is put into effect and to set some basic controller parameters (CTLR ADDRESS, APPLICATION, etc.).

BACnet

The controller communicates using BACnet MS/TP protocol for open communications on BACnet MS/TP networks.

Product	Supported BIBBs	BIBB Name
BTEC/PTEC	DS-RP-B B	Data Sharing-Read Property-B
	DS-RPM-B	Data Sharing-Read Property Multiple-B
	DS-WP-B	Data Sharing-Write Property-B
	DM-DDB-B	Device Management-Dynamic Device Binding-B
	DM-DOB-B	Device Management-Dynamic Object Binding-B
	DM-DCC-B	Device Management-Device Communication Control-B
	DM-RD-B	Device Management-Reinitialize Device-B
	DM-BR-B	Device Management-Backup and Restore-B
	DM-OCD-B	Device Management-Object Creation and Deletion-B
	CPT	Confirmed Private Transfer (Auto Discovery)
	UPT	Unconfirmed Private Transfer

Hardware Inputs

Analog

Air velocity sensor
Room temperature sensor
Room temperature setpoint dial
Room unit with humidity and/or CO2
Temperature sensor (10k or 100k)
Analog Inputs (AI 3/AI 4, 0 to 10 Vdc/4 to 20 mA)

Digital

Digital inputs (2)

Hardware Outputs

Analog

Analog outputs (3) 0 to 10 V

Digital

Digital outputs (8)
OR
Floating control actuators (up to 3)

Using Auxiliary Points

It is possible to have extra points available in addition to the ones used by the current application that is running in the controller. These extra points must be controlled by PPCL in the PTEC controller or by the field panel.

Using the Controller as a Point Extension Device

If the controller is used only as a point extension device, with no existing control application is in effect, its application must be set to slave mode and the points can be controlled by PPCL in the PTEC or can be unbundled at the field panel. All of these points must be controlled from the field panel or with PPCL in the PTEC controller in order to be used. See the *Point Database* for more information.

For other combinations of DOs and motors, see the *Start-up Procedures* for complete motor enable/reverse procedures.



NOTE:

If using either a motor or DOs as auxiliary points, be sure to set MTR SETUP to the correct value. If using a pair of DOs to control a motor, the DOs cannot be unbundled or commanded separately.

Motor Enable/Reverse Values for MTR SETUP			
	MTR SETUP Value ¹⁾		
	Disabled	Enabled	Enabled and Reversed
Motor 1	0	1	3
Motor 2	0	4	12
Motor 3	0	16	48

¹⁾ The values in this table are additive and must be added per the requirements of the job.

Example

If using DO 1 and DO 2 as the physical terminations for a direct acting motor, follow these steps:

1. Set MTR SETUP to 1 to enable the motor.
2. MTR1 COMD (DMPR COMD) can be controlled by PPCL in the PTEC or at the field panel.

Floating Control Actuation Auto-correct

In addition to the existing options for floating control actuator full stroke actions, all floating control actuators are provided with additional logic to fully drive open or closed when commanded to 100% or 0%.

Room Unit Operation

Sensor Select

SENSOR SEL is a configurable, enumerated point (values are additive). This point tells the controller what type of room unit is being used and how to handle loss of data. It also provides the ability to enable the optional RH and CO₂ sensors and indicates which thermistor type is connected.

Room Temperature, Setpoint, RH and CO₂

- When the digital room unit (Series 2200/2300) is used, SENSOR SEL selects the source for temperature and setpoint and enables a loss of communications indication:
 - Temperature/Setpoint enable and supervision for fail communications (temperature) with a value of 1.
 - Relative humidity enable and supervision (from the room unit) for fail communications with a value of 2.
 - CO₂ enable and supervision (from the room unit) for fail communications with a value of 4.
- When the analog room unit (Series 1000/2000) is used, default temperature sensing (0) from an analog room unit is enabled. Relative humidity and CO₂ sensing are not available and should not be selected.

Thermistor Inputs

- Default for input is 10K.
- To enable 100K thermistor on input, see the following table for additive values of 8.

Other Inputs (only available on Digital Room Unit)

- Use the following table to select and enable communications supervision of room temperature/setpoint dial, relative humidity and CO₂ for additive values of 1, 2 and 4.

SENSOR SEL Value * (additive)	Description (include values to enable feature)
1	Select Digital Room Unit (for temperature sensing and setpoint dial)
2	Relative Humidity (RH) sensing
4	CO ₂ sensing
8	Long board: 100K Ω thermistor on AI 5 (or input is 10K Ω)
16	(Not used)

Room CO2

CO2 or RM CO2 displays the CO₂ value in units of parts-per-million (ppm).

Room RH

RM RH displays the relative humidity value in percent. RM RH can be used for PPCL in the PTEC or unbundled for control or monitoring purposes.

RM RH displays the relative humidity value in percent.

PPCL STATUS

PPCL STATUS displays LOADED or EMPTY.

- LOADED = PPCL - programming is present in the controller. A new application number must be assigned (12000 through 12999).
- EMPTY = NO PPCL - programming is present.

Application 6692 Point Database

Object Type ¹	Object Instance (Point Number)	Object Name (Descriptor)	Factory Default (SI Units) ²	Eng Units (SI Units)	Range	Active Text	Inactive Text
AO	1 ⁴⁾	CTLR ADDRESS	255	--	0-255	--	--
AO	2	APPLICATION	6692	--	0-32767	--	--
AI	{03} ⁴⁾	RM CO2	450	PPM	0-8191	--	--
AI	{04} ⁴⁾	ROOM TEMP	74.0 (23.44888)	DEG F (DEG C)	48-111.75	--	--
AI	{13} ⁴⁾	RM STPT DIAL	74.0 (23.44888)	DEG F (DEG C)	48-111.75	--	--
AI	{15}	AI 3	0	PCT	0-102	--	--
BO	18	WALL SWITCH	NO	--	Binary	YES	NO
BI	{19}	DI OVRD SW	OFF	--	Binary	ON	OFF
BI	{24}	DI 2	OFF	--	Binary	ON	OFF
BI	{25}	DI 3	OFF	--	Binary	ON	OFF
BI	{26}	DI 4	OFF	--	Binary	ON	OFF
BI	{27}	DI 5	OFF	--	Binary	ON	OFF
BI	{28}	DI 6	OFF	--	Binary	ON	OFF
BO	{29}	DAY.NGT	DAY	--	Binary	NIGHT	DAY
AI	{35}	AIR VOLUME	0 (0.0)	CFM (LPS)	0-131068	--	--
AO	36	FLOW COEFF	1	--	0-2.55	--	--
AO	{38}	AOV2	0	VOLTS	0-10.23	--	--
AO	{39}	MTR3 POS	0	PCT	0-102	--	--
AO	{40}	MTR2 POS	0	PCT	0-102	--	--
BO	{41}	DO 1	OFF	--	Binary	ON	OFF
BO	{42}	DO 2	OFF	--	Binary	ON	OFF
BO	{43}	DO 3	OFF	--	Binary	ON	OFF
BO	{44}	DO 4	OFF	--	Binary	ON	OFF
BO	{45}	DO 5	OFF	--	Binary	ON	OFF
BO	{46}	DO 6	OFF	--	Binary	ON	OFF
AI	{47}	AI 4	0	PCT	0-102	--	--
AO	{48}	MTR1 COMD	0	PCT	0-102	--	--
AO	{49}	MTR1 POS	0	PCT	0-102	--	--
AO	51	MTR1 TIMING	95	SEC	0-511	--	--
AO	{52}	MTR2 COMD	0	PCT	0-102	--	--
AO	{53}	MTR3 COMD	0	PCT	0-102	--	--

Object Type ¹	Object Instance (Point Number)	Object Name (Descriptor)	Factory Default (SI Units) ²	Eng Units (SI Units)	Range	Active Text	Inactive Text
AO	{54}	AOV3	0	VOLTS	0-10.23	--	--
AO	58	MTR SETUP	0	--	0-255	--	--
AO	59	DO DIR.REV	0	--	0-255	--	--
AO	{60}	AOV1	0	VOLTS	0-10.23	--	--
AO	66	TEMP OFFSET	0.0 (0.0)	DEG F (DEG C)	-31.75-32	--	--
AO	{78}	CTL TEMP	74.0 (23.44888)	DEG F (DEG C)	48-111.75	--	--
BO	{81}	DO 7	OFF	--	Binary	ON	OFF
AI	{82}	AUX TEMP AI5	74.0 (23.495556)	DEG F (DEG C)	37.5-165	--	--
BO	87	CAL MODULE	NO	--	Binary	YES	NO
BO	{89}	DO 8	OFF	--	Binary	ON	OFF
BO	{94}	CAL AIR	NO	--	Binary	YES	NO
AO	95	CAL SETUP	4	--	0-255	--	--
AO	96	CAL TIMER	12	HRS	0-255	--	--
AO	97	DUCT AREA	1.0 (0.09292)	SQ. FT (SQ M)	0-6.375	--	--
AO	{99}	ERROR STATUS	0	--	0-255	--	--
AO	102	MTR2 TIMING	130	SEC	0-511	--	--
AO	103	MTR3 TIMING	130	SEC	0-511	--	--
AO	110	MTR1 ROT ANG	90	--	0-255	--	--
AO	{124} ⁴⁾	SENSOR SEL	0	--	0-255	--	--
AI	{126} ⁴⁾	RM RH	50	PCT	0-102	--	--
BO	{127}	PPCL STATE	EMPTY	--	Binary	LOADED	EMPTY

¹⁾ Object Types are; Analog Input (AI), Analog Output (AO), Binary Input (BI) and Binary Output (BO).

²⁾ A single value in a column means that the value is the same in English units and in SI units.

³⁾ Point numbers that appear in brackets { } may be unbundled at the field panel.

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