

## BACnet VAV Controller Configuration Properties

BACnet Object Type: Analog Value

Datatype: Real

Name	Default	Min	Max	BACnet Object ID	BACnet Object Name	BACnet Units	BACnet Notes
Proportional	3	0	50	20	PropB	62 (celcius)	
Heat Integral	30	0	120	21	HeatInteg	72 (minutes)	
Cool Integral	30	0	120	22	CoolInteg	72 (minutes)	
Default Occupied Heat SP	21.5	-30	40	23	DefHeatSP	62 (celcius)	
Default Occupied Cool SP	22.5	-29.5	55	24	DefCoolSP	62 (celcius)	
Unoccupied Heat Setpoint	15	-30	40	25	UnocHeatSP	62 (celcius)	
Unoccupied Cool Setpoint	30	-29.5	55	26	UnocCoolSP	62 (celcius)	
MinHeatSPLimit	19	-30	40	27	HeatSPLim	62 (celcius)	
MaxCoolSPLimit	26	-29.5	55	28	CoolSPLim	62 (celcius)	
Low Scale Limit	15	-30	40	29	LoScaleLim	62 (celcius)	
High Scale Limit	30	-30	40	30	HiScaleLim	62 (celcius)	
Damper Opening Delay	95	15	300	31	DampOpDel	73 (seconds)	
Ventilation DB - Over	0.5	-15	15	32	VentDbOvr	62 (celcius)	
Damper Proportional Band	100	0	100	33	DampPB	98 (percent)	
Min Damper Opening (Vent)	10	0	100	34	MinDampOpV	98 (percent)	
Min Damper Opening (Heat)	30	0	100	35	MinDampOpH	98 (percent)	
Damper Differential (Demand)	10	1	100	36	DampDifDem	98 (percent)	
Min Ventilation Setpoint	90	0	7500	37	MinVentSP	84 (CFM)	
Max Ventilation Setpoint	225	0	7500	38	MaxVentSP	84 (CFM)	
Damper Differential (Flow)	40	0	1000	39	DampDifFlow	84 (CFM)	
Duct Diameter	8	0	26	40	DuctDiam	32 (inches)	
K Factor	2.39	1	300	41	Kfact	95 (None)	
Min Ventilation Heat Setpoint	120	0	7500	42	MinVentHeatSP	84 (CFM)	
Zone Temperature Offset	0	-15	15	43	ZonTempCal	62 (celcius)	
Supply Temperature Offset	0	-15	15	44	SupTempCal	62 (celcius)	
Airflow Offset	0	-1000	1000	45	FlowCal	84 (CFM)	
Correction Factor	1	0	10	46	CorFact	95 (None)	

Output 1 Setpoint	50	-95	95	47	OutSP1	98 (percent)	If using diff, invalid between -5 and 5
Output 2 Setpoint	50	-95	95	48	OutSP2	98 (percent)	If using diff, invalid between -5 and 5
Output 3 Setpoint	50	-95	95	49	OutSP3	98 (percent)	If using diff, invalid between -5 and 5
Output 4 Setpoint	50	-95	95	50	OutSP4	98 (percent)	If using diff, invalid between -5 and 5
Output 5 Setpoint	25	-95	95	51	OutSP5	98 (percent)	If using diff, invalid between -5 and 5
Output 1 Proportional Band	0	0	99	52	OutPB1	98 (percent)	
Output 2 Proportional Band	0	0	99	53	OutPB2	98 (percent)	
Output 3 Proportional Band	0	0	99	54	OutPB3	98 (percent)	
Output 4 Proportional Band	0	0	99	55	OutPB4	98 (percent)	
Output 5 Proportional Band	75	0	99	56	OutPB5	98 (percent)	
Output 1 Differential Band	40	0	99	57	OutDiff1	98 (percent)	PropBand must be first set to zero to use Differential
Output 2 Differential Band	40	0	99	58	OutDiff2	98 (percent)	PropBand must be first set to zero to use Differential
Output 3 Differential Band	40	0	99	59	OutDiff3	98 (percent)	PropBand must be first set to zero to use Differential
Output 4 Differential Band	40	0	99	60	OutDiff4	98 (percent)	PropBand must be first set to zero to use Differential
Output 5 Differential Band	8	0	99	61	OutDiff5	98 (percent)	PropBand must be first set to zero to use Differential
Output 1 Override Value	0	0	100	62	OutOvVal1	98 (percent)	
Output 2 Override Value	0	0	100	63	OutOvVal2	98 (percent)	
Output 3 Override Value	0	0	100	64	OutOvVal3	98 (percent)	
Output 4 Override Value	0	0	100	65	OutOvVal4	98 (percent)	
Output 5 Override Value	0	0	100	66	OutOvVal5	98 (percent)	
Group Code 1	0	0	250	67	GrpCode1	95 (None)	
Group Code 2	0	0	250	68	GrpCode2	95 (None)	
Group Code 3	0	0	250	69	GrpCode3	95 (None)	
Group Weight 1	0	0	15	70	GrpWght1	95 (None)	
Group Weight 2	0	0	15	71	GrpWght1	95 (None)	
Group Weight 3	0	0	15	72	GrpWght1	95 (None)	
Global Weight	1	0	60	73	GlobWght	95 (None)	
Math Group 1	0	0	250	74	MathGrp1	95 (None)	Group 0 = Global
Math Group 2	0	0	250	75	MathGrp2	95 (None)	Group 0 = Global
Math Group 3	0	0	250	76	MathGrp3	95 (None)	Group 0 = Global
Math Group 4	0	0	250	77	MathGrp4	95 (None)	Group 0 = Global
Math Group 5	0	0	250	78	MathGrp5	95 (None)	Group 0 = Global
Override Time IO	120	0	720	79	OvrdTime	72 (minutes)	
Morning Warm Up Time	0	0	300	80	MWUpTime	72 (minutes)	
Damper Override Value	0	0	100	81	DampOvrdVal	98 (percent)	
Math Refresh Rate	3	1	250	82	MathRate	73 (seconds)	
List Refresh Rate	30	0	250	83	ListRate	72 (minutes)	

MinCoolSPLim	20	-29.5	54	84	MinCoolSP	62 (celcius)	
MaxHeatSPLim	25	-30	54.5	85	MaxHeatSP	62 (celcius)	
Unoc Heat Offset	3	-20	20	86	UnocHeatSB	62 (celcius)	
Unoc Cool Offset	5	-20	20	87	UnocCoolSU	62 (celcius)	
Duct Heater SP	25	5	100	88	DuctHeatSP	98 (percent)	Minimum Damper/Flow Heat SPs only activate when the duct heater output reaches this value (for proportnl outputs, deactivates when goes below SP-5%)
Damper Max Position	100	0	100	89	DampMaxPos	98 (percent)	
MinSlabTemp	21	5	30	90	MinSlabTmp	62 (celcius)	
MaxSlabTemp	27	5	30	91	MaxSlabTmp	62 (celcius)	
MinSlabTempUnoc	19	5	30	92	UnocSlabTmp	62 (celcius)	
Outside Cutoff Temp	15	5	30	93	OutCutoff	62 (celcius)	
Radiant Proportionnal	1	0	10	94	RadProp	62 (celcius)	
Radiant Integral	60	0	1000	95	RadInteg	72 (minutes)	
Calib Slab Temp	0	-15	15	96	CalibSlab	62 (celcius)	
Radiant Floor Cycle Time	10	1	255	97	RadCycle	72 (minutes)	
Locked Address	0	0	127	98	LockedAddr	None	
Min Damper Pos - Standby	50	0	100	99	MinDampOpS	98 (percent)	Min Damper position when in standby mode
Ventilation DB - Under	0.5	-15	15	100	VentDbUnd	62 (celcius)	
Setpoint Offset	0	-15	15	102	SP_Offset	62 (celcius)	This offset is applied to the Default Heating Setpoint or to the setpoint provided by an attached potentiometer.
CO2 High Limit	1000	0	5000	105	CO2HiLim	96 (PPM)	
CO2 Min Damper Pos	30	0	100	106	CO2MinPos	98 (percent)	
CO2 Min Flow	150	0	5000	107	CO2MinFlow	84 (CFM)	
CO2 Calibration	0	-3000	3000	108	CO2Calib	96 (PPM)	
Center SP	22	-29.5	44.5	109	CenterSP	62 (celcius)	Heat and Cool SP are centered around this value.
Center Deadband	1	0.5	7.5	110	CenterDB	62 (celcius)	Alternate method for setting occupied heat and cool setpoints, in conjunction with AV104. Heat and cool setpoints are separated by this amount.
Ventilation Mode Target	100	0	100	111	VentModeTarg	98 (percent)	
Ventilation Mode Delay	5	0	100	112	VentModeDly	72 (minutes)	
Analog Input Damper Target	100	0	100	113	AiDampTarg	98 (percent)	
Duct Heater Supply Interlock	50	20	54	114	SupInterlk	62 (celcius)	
Multizone Reset Position	50	0	100	115	MultiRest	98 (percent)	

## BACnet VAV Controller Configuration Properties

### BACnet Object Type: MultiState Value

Datatype: Enumerated

Name	Default	Min	Max	BACnet Object ID	BACnet Object Name	BACnet Notes
Output 1 Control	10	1	256	2	OutCtrl1	1=Damper / 2=Demand / 3=Occ / 4=OccNightHeat / 5-9=Math1-5 / 10=OFF / 11=OccNightHeatCool / 12=FanStatus
Output 2 Control	10	1	256	3	OutCtrl2	1=Damper / 2=Demand / 3=Occ / 4=OccNightHeat / 5-9=Math1-5 / 10=OFF / 11=OccNightHeatCool / 12=FanStatus
Output 3 Control	10	1	256	4	OutCtrl3	1=Damper / 2=Demand / 3=Occ / 4=OccNightHeat / 5-9=Math1-5 / 10=OFF / 11=OccNightHeatCool / 12=FanStatus
Output 4 Control	2	1	256	5	OutCtrl4	1=Damper / 2=Demand / 3=Occ / 4=OccNightHeat / 5-9=Math1-5 / 10=OFF / 11=OccNightHeatCool / 12=FanStatus
Output 5 Control	2	1	256	6	OutCtrl5	1=Damper / 2=Demand / 3=Occ / 4=OccNightHeat / 5-9=Math1-5 / 10=OFF / 11=OccNightHeatCool / 12=FanStatus
Duct Heater ID	1	1	6	7	DuctHeatID	1=No Duct Heater Output / 2-6=Output1-Output5
Math Source 1	1	1	256	8	MathSrc1	1=WeightedAverage / 2=MaxHeating / 3=MaxCooling / 4=WeightedAverage (HeatOnly) / 5=WeightedAverage(CoolOnly) / 6=MathOccupancy / 7=MathOverride / 8=RadiantReq / Else=OFF
Math Source 2	1	1	256	9	MathSrc2	1=WeightedAverage / 2=MaxHeating / 3=MaxCooling / 4=WeightedAverage (HeatOnly) / 5=WeightedAverage(CoolOnly) / 6=MathOccupancy / 7=MathOverride / 8=RadiantReq / Else=OFF
Math Source 3	1	1	256	10	MathSrc3	1=WeightedAverage / 2=MaxHeating / 3=MaxCooling / 4=WeightedAverage (HeatOnly) / 5=WeightedAverage(CoolOnly) / 6=MathOccupancy / 7=MathOverride / 8=RadiantReq / Else=OFF
Math Source 4	1	1	256	11	MathSrc4	1=WeightedAverage / 2=MaxHeating / 3=MaxCooling / 4=WeightedAverage (HeatOnly) / 5=WeightedAverage(CoolOnly) / 6=MathOccupancy / 7=MathOverride / 8=RadiantReq / Else=OFF
Math Source 5	1	1	256	12	MathSrc5	1=WeightedAverage / 2=MaxHeating / 3=MaxCooling / 4=WeightedAverage (HeatOnly) / 5=WeightedAverage(CoolOnly) / 6=MathOccupancy / 7=MathOverride / 8=RadiantReq / Else=OFF
Net Port Baud Rate	4	1	6	13	Baud1	1=9600 / 2=19200 / 3=38400 / 4=57600 / 5=76800 / 6=115200
RJ45 Port Baud Rate	4	1	6	14	Baud2	1=9600 / 2=19200 / 3=38400 / 4=57600 / 5=76800 / 6=115200
Net Port Parity	1	1	3	15	Parity1	1=NONE / 2=ODD / 3=EVEN
RJ45 Port Parity	1	1	3	16	Parity2	1=NONE / 2=ODD / 3=EVEN
Output 5 Range	1	1	3	17	Out5Range	1=0-10V / 2=2-10V / 3=0-5V

DamperSpeed	3	1	5	18	DampSpeed	Sets the speed at which the damper will chase the flow setpoint (used only in pressure independent mode). 1=fastest / 5=slowest
RadiantFloorID	1	1	6	19	RadFloorID	1=No Radiant Output / 2-6=Output1-Output5
DampUnocMode	1	1	4	20	DampUnocMode	1=Open / 2=Demand / 3=Closed / 4=Normal
Analog Input Mode (VC2000 Only)	1	1	7	21	AnInputMode	1=Supply or Radiant Temp (selected based on config) / 2=Zone Temp / 3=Occupancy / 4=Discharge Temp / 5=Conference Occup / 6=CO2 / 7=Damper Override
Input Profile (C1050 Only)	1	1	256	21	AnInputMode	4MSB=AI3 Mode (0=Supply or Radiant Temp (selected based on config) / 1=Discharge Temp / 2=CO2), 4LSB=DI Mode (0=Occupancy / 1=Conference Occup / 2=Damper Override), add '1' to the result
Fan Powered Box Output ID	1	1	6	22	FPBoutID	1=No Fan Powered Box / 2-6=Output1-5
Fan Powered Mode	1	1	3	23	FPBmode	1=Parallel / 2=Series / 3=Series with fan protection
Integral Dropoff Rate	4	1	5	24	IntegDropOff	1=Slow Dropoff Rate / 5=Fast Dropoff Rate

## BACnet VAV Controller Configuration Properties

### BACnet Object Type: BinaryValue

Datatype: Enumerated

Name	Default	BACnet Object ID	BACnet Object Name	BACnet Notes
Damper Control	1	6	DampCtrl	0=Pressure / 1=Demand or Multizone (see Binary Value 31 to activate Multizone)
Damper Opening Direction	0	7	DampOpenDir	0=CCW / 1=CW
Flow Sensor Type	0	8	FlowSensType	0=LowVelocity / 1=HighVelocity
Output 5 Reverse Acting	0	9	Out5RevAct	0=Normal / 1=ReverseActing
Net Port Stop Bits	0	10	StopBits1	0=1 Stop Bit / 1=2 Stop Bits
RJ45 Port Stop Bits	0	11	StopBits2	0=1 Stop Bit / 1=2 Stop Bits
Math Enable	0	12	MathEn	Activates Math functions - Can also be activated by setting outputs to Math
Output 5 Pulsed	0	13	Out5Pulsed	0=Modulating / 1=Pulsed
UseHalomo	1	14	UseHalomo	When out1+2 or out5 are set to damper, setting this to TRUE means they will be driven by Halomo choices, otherwise use DampDelay
Output 1 Override Enable	0	15	OutOvrEn1	0=No Override / 1=Use override (see override values)
Output 2 Override Enable	0	16	OutOvrEn2	0=No Override / 1=Use override (see override values)
Output 3 Override Enable	0	17	OutOvrEn3	0=No Override / 1=Use override (see override values)
Output 4 Override Enable	0	18	OutOvrEn4	0=No Override / 1=Use override (see override values)
Output 5 Override Enable	0	19	OutOvrEn5	0=No Override / 1=Use override (see override values)
Damper Override Enable	0	20	DampOvrEn	0=No Override / 1=Use override (see override values)
Schedule Override Enable	0	21	SchdOvrEn	0=No Override / 1=Use override (see override values)
Schedule Override Value	1	22	SchdOvrVal	0=Unoccupied / 1=Occupied
Math Unoc Mode	0	23	MathUnocMode	0=Averaging math functions are replaced with Max Demand during unoccupied mode / 1=No change to math functions during unoccupied mode
Reverse Acting Output 1	0	24	Out1RevAct	0=Normal / 1=ReverseActing
Reverse Acting Output 2	0	25	Out2RevAct	0=Normal / 1=ReverseActing
Reverse Acting Output 3	0	26	Out3RevAct	0=Normal / 1=ReverseActing
Reverse Acting Output 4	0	27	Out4RevAct	0=Normal / 1=ReverseActing
BACnet Temp Units	0	29	BACnetUnits	0=Celsius / 1=Fahrenheit

Use Ext Ventilation Mode	0	30	UseExtVent	0=Normal / 1=Extended
Use Multizone	0	31	UseMultizone	0=Use Standard Damper Control (see BV6) / 1=Use Multizone Control

**BACnet**  
**VAV Controller Network Variables**

BACnet Object Type: Analog Value

Datatype: Real

Name	BACnet Object ID	BACnet Object Name	BACnet Writable	BACnet Units	BACnet Notes
Active Zone Temp	1	ZoneTmp	TRUE	62 (celcius)	
Active Heat Setpoint	2	HeatSP	TRUE	62 (celcius)	
Active Cool Setpoint	3	CoolSP	TRUE	62 (celcius)	
Supply Temp	4	SupplyTmp	TRUE	62 (celcius)	
Slab Temp	5	SlabTemp	TRUE	62 (celcius)	
Air Flow	6	AirFlow	TRUE	84 (CFM)	
Outside Temp Input	7	OutTemp	TRUE	62 (celcius)	
Demand	8	Demand	FALSE	98 (percent)	
Damper Position	9	DampPos	FALSE	98 (percent)	111% when performing damper reinitilisation
Output1	10	Out1	FALSE	98 (percent)	
Output2	11	Out2	FALSE	98 (percent)	
Output3	12	Out3	FALSE	98 (percent)	
Output4	13	Out4	FALSE	98 (percent)	
Output5	14	Out5	FALSE	98 (percent)	
Math1	15	Math1	FALSE	98 (percent)	
Math2	16	Math2	FALSE	98 (percent)	
Math3	17	Math3	FALSE	98 (percent)	
Math4	18	Math4	FALSE	98 (percent)	
Math5	19	Math5	FALSE	98 (percent)	
Discharge Temp	101	DischTemp	FALSE	62 (celcius)	
Flow Setpoint	103	FlowSP	FALSE	84 (CFM)	
CO2 Reading	104	CO2Val	TRUE	96 (PPM)	



Zone Temp Sensor	116	ZoneTmpSens	FALSE	62 (celcius)	Reading from local sensor (PL-T200, PL-T500, PL-T1000, PL-RS)
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**BACnet**  
**VAV Controller Network Variables**

BACnet Object Type: MultiStateValue

Datatype: Enumerated

Name	BACnet Object ID	BACnet Object Name	BACnet Writable	BACnet Notes
Damper State	1	DampStat	FALSE	1=OK / 2=STALLED / 3=REINITIALIZING

**BACnet**  
**VAV Controller Network Variables**

BACnet Object Type: BinaryValue

Datatype: Enumerated

Name	BACnet Object ID	BACnet Object Name	BACnet Writable	BACnet Notes
Occupancy Status	1	Occup	TRUE	0=Unoccupied / 1=Occupied (AUTO)
Unoc Override Status	2	UnoccOvr	TRUE	0=AUTO / 1=Activate override from unoccupied mode
Out 3 Enable Morning Warm-Up	3	Out3EnMWUp	TRUE	Output 3 disabled when this value is TRUE. Remains disabled until indicated otherwise, or until the morning warmup period expires
Out 4 Enable Morning Warm-Up	4	Out4EnMWUp	TRUE	Output 4 disabled when this value is TRUE. Remains disabled until indicated otherwise, or until the morning warmup period expires
Out 5 Enable Morning Warm-Up	5	Out5EnMWUp	TRUE	Output 5 disabled when this value is TRUE. Remains disabled until indicated otherwise, or until the morning warmup period expires
Standby Mode Active	28	StandbyMode	FALSE	When in standby mode, uses Standby Min position, declares demand and weight 0 to master
Fan Status Input	32	FanStatus	TRUE	0=Fan is stopped / 1=Fan is running

## BACnet Document Notes

### Output Identification

By default, this document identifies outputs using indexes 1 through 5, referring to the five outputs on a C1050 hardware platform. These indexes can be applied to other hardware platforms using the following table:

Output Identification (in this document)	C1050 C1000 VC1000F	VC2000 VC1000LT
Output 1	DO1	N/A
Output 2	DO2	N/A
Output 3	DO3	N/A
Output 4	DO4	DO
Output 5	AO	AO