

## Modbus

### C1050 Rooftop Configuration Properties

#### Modbus Object Type: Holding Registers

Name	Default	Min	Max	Units	Modbus Reg #	Multiplier	Focus Screen	Notes
DeviceType	1	1	1	None	1	1	Device	(Not writable) 1=RooftopBasic
Soft Version	7.6	0	655.35	None	2	100	Device	(Not writable)
Hard Version	2.5	0	65535	None	3	10	Device	(Not writable) 1.0=VC1000 / 2.0=C1000 / 2.5=C1050
Fan Heat SP	40	0	100	%	4	1	Fan	
Fan Cool SP	40	0	100	%	5	1	Fan	
Fan Interm Heat Source	0	0	4	None	6	1	Fan	0=Math1 / 1=Math2 / 2=Math3 / 3=Math4 / 4=Math5
Fan Interm Cool Source	0	0	4	None	7	1	Fan	0=Math1 / 1=Math2 / 2=Math3 / 3=Math4 / 4=Math5
Fan Unoccupied Sequence	2	0	4	None	8	1	Fan	0=OFF / 1=Intermittent HEAT / 2=Intermittent COOL / 3=Intermittent BOTH / 4=ON
Fan Override Sequence	4	0	4	None	9	1	Fan	0=OFF / 1=Intermittent HEAT / 2=Intermittent COOL / 3=Intermittent BOTH / 4=ON
Fan Min Cycle Time	15	0	120	min	10	1	Fan	
Cooling Mode	2	0	11	None	11	1	Cooling	0=NONE / 1=1STG / 2=2STG / 3=3STG with DMUX / 4=4STG with DMUX / 5=ANLG with PTA2 / 6=3STG / 7=4STG / 8=5STG / 9=6STG / 10=7STG / 11=8STG
Cooling Dem Source	0	0	4	None	12	1	Cooling	0=Math1 / 1=Math2 / 2=Math3 / 3=Math4 / 4=Math5
Cool 1 SP	25	5	95	%	13	1	Cooling	Setpoint register used for either stage 1 or analog cooling

							Register used for either (stage 1 differential) or (analog cooling proportional band) depending on mode
Cool 1 Band	20	8	99 %	14	1	Cooling	
Cool 2 SP	55	5	95 %	15	1	Cooling	
Cool 2 Diff	20	8	99 %	16	1	Cooling	
Cool 3 SP	80	5	95 %	17	1	Cooling	
Cool 3 Diff	20	8	99 %	18	1	Cooling	
Cool 4 SP	90	5	95 %	19	1	Cooling	
Cool 4 Diff	19	8	99 %	20	1	Cooling	
Cool Min ON Time	2	0	10 min	21	1	Cooling	
Cool Min OFF Time	5	0	15 min	22	1	Cooling	
Heat Demand Source	0	0	4 None	23	1	Heating	0=Math1 / 1=Math2 / 2=Math3 / 3=Math4 / 4=Math5
Output 4 Function	2	0	3 None	24	1	Heating	0=None / 1=Preheat permission / 2=Heating Stage / 3=Hot Gas Reheat
Output 4 SP	25	5	95 %	25	1	Heating	
Output 4 Diff	20	8	99 %	26	1	Heating	
Output 5 Function	0	0	4 None	27	1	Heating	0=None / 1=Preheat only / 2=Preheat and heating / 3=Heating only / 4=Hot Gas Reheat
Output 5 Reverse Acting	0	0	1 None	28	1	Heating	
Output 5 Pulsed	0	0	1 None	29	1	Heating	
Output 5 Range	0	0	2 None	30	1	Heating	0=0-10V / 1=2-10V / 2=0-5V
Output 5 SP	85	1	95 %	31	1	Heating	
Output 5 Heat Mode	1	0	1 None	32	1	Heating	0=Proportionnal / 1=Differential
Output 5 Heat Band	20	0	99 %	33	1	Heating	
Preheat SP	21.5	10	99 deg C	34	100	Heating	
Preheat Prop	20	0	50 deg C	35	100	Heating	
Preheat Integ	15	0	240 min	36	1	Heating	
Return Temp Lim C1	14	10	40 deg C	37	100	Limits	
Return Temp Lim C2	20	10	40 deg C	38	100	Limits	
Return Temp Lim Heat	35	0	50 deg C	39	100	Limits	
Supply Temp Lim Fan Stop	4	-40	40 deg C	40	100	Limits	
Supply Temp Lim Fan Start	12	-38	60 deg C	41	100	Limits	

Out Temp Preheat En	12	-100	21 deg C	42	100	Limits	
Out Temp Lim C1	-40	-40	40 deg C	43	100	Limits	
Out Temp Lim C2	12	-40	40 deg C	44	100	Limits	
Out Temp Lim Heat	30	0	50 deg C	45	100	Limits	
Out Unoc Fan Restart Lo	-40	-40	40 deg C	46	100	Limits	
Out Unoc Fan Restart Hi	60	-40	60 deg C	47	100	Limits	
Delay Heat Cool	5	0	100 min	48	1	Priority	
Deadband Heat Cool	20	0	30 %	49	1	Priority	
Priority Mode	1	0	2 None	50	1	Priority	0=AUTO / 1=MANUAL / 2=ALTERNATING
Manual Priority	1	0	1 None	51	1	Priority	0=Heat / 1=Cool
Priority switch out temp	8	-20	30 deg C	52	100	Priority	
Priority switch diff	4	0	20 deg C	53	100	Priority	
Supply Temp Offset	0	-20	20 deg C	54	100	Calibration	
Out Temp Offset	0	-20	20 deg C	55	100	Calibration	
Return Temp Offset	0	-20	20 deg C	56	100	Calibration	
Math1 Source	0	0	255 None	57	1	Math	0=WeightedAverage / 1=MaxHeating / 2=MaxCooling / 3=WeightedAverage (HeatOnly) / 4=WeightedAverage(CoolOnly) / 5=MathOccupancy / 6=MathOverride / 7=RadiantReq / Else=OFF
Math2 Source	0	0	255 None	58	1	Math	0=WeightedAverage / 1=MaxHeating / 2=MaxCooling / 3=WeightedAverage (HeatOnly) / 4=WeightedAverage(CoolOnly) / 5=MathOccupancy / 6=MathOverride / 7=RadiantReq / Else=OFF
Math3 Source	0	0	255 None	59	1	Math	0=WeightedAverage / 1=MaxHeating / 2=MaxCooling / 3=WeightedAverage (HeatOnly) / 4=WeightedAverage(CoolOnly) / 5=MathOccupancy / 6=MathOverride / 7=RadiantReq / Else=OFF

Math4 Source	0	0	255	None	60	1	Math	0=WeightedAverage / 1=MaxHeating / 2=MaxCooling / 3=WeightedAverage (HeatOnly) / 4=WeightedAverage(CoolOnly) / 5=MathOccupancy / 6=MathOverride / 7=RadiantReq / Else=OFF
Math5 Source	0	0	255	None	61	1	Math	0=WeightedAverage / 1=MaxHeating / 2=MaxCooling / 3=WeightedAverage (HeatOnly) / 4=WeightedAverage(CoolOnly) / 5=MathOccupancy / 6=MathOverride / 7=RadiantReq / Else=OFF
Math1 Group	0	0	250	None	62	1	Math	
Math2 Group	0	0	250	None	63	1	Math	
Math3 Group	0	0	250	None	64	1	Math	
Math4 Group	0	0	250	None	65	1	Math	
Math5 Group	0	0	250	None	66	1	Math	
Demand Filter	10	0	100	%	67	1	Math	
List Refresh Rate	30	0	250	min	68	1	Math	
Math Refresh Rate	3	1	250	sec	69	1	Math	
Net Supply Temp Source	0	0	127	None	70	1	Network	
Cool Prio Zone 1	0	0	127	None	71	1	Network	0=No cool prio zone
Cool Prio Zone 2	0	0	127	None	72	1	Network	
Cool Prio Zone 3	0	0	127	None	73	1	Network	
MWUpEn	0	0	7	None	74	1	Network	Bit1=Out3, Bit2=Out4, Bit3=Out5 --> Bit Up = MWUp Active, else inactive
MWUp Time	0	0	300	min	75	1	Network	
OutTempOverrEn1	0	0	15	None	76	1	Network	Bit1=Out3 / Bit2=Out4 / Bit3=Out5 / Bit4-->0=less,1=more
OutTempOverrEn2	0	0	15	None	77	1	Network	Bit1=Out3 / Bit2=Out4 / Bit3=Out5 / Bit4-->0=less,1=more
Out Overr Temp1	-20	-30	40	deg C	78	100	Network	
Out Overr Temp2	-20	-30	40	deg C	79	100	Network	
Out3OverrVal1	0	0	100	%	80	1	Network	
Out3OverrVal2	0	0	100	%	81	1	Network	
Out4OverrVal1	0	0	100	%	82	1	Network	

Out4OvrrVal2	0	0	100 %	83	1	Network	
Net Baud	3	0	5 None	84	1	Baud Rate	0=9600 / 1=19200 / 2=38400 / 3=57600 / 4=76800 / 5=115200
Net Parity	0	0	2 None	85	1	Baud Rate	0=NONE / 1=ODD / 2=EVEN
Net StopBits	0	0	1 None	86	1	Baud Rate	0=1 Stop Bit / 1=2 Stop Bits
RJ45 Baud	3	0	5 None	87	1	Baud Rate	0=9600 / 1=19200 / 2=38400 / 3=57600 / 4=76800 / 5=115200
RJ45 Parity	0	0	2 None	88	1	Baud Rate	0=NONE / 1=ODD / 2=EVEN
RJ45 StopBits	0	0	1 None	89	1	Baud Rate	0=1 Stop Bit / 1=2 Stop Bits
Location	0	0	0 None	90	1	Device	Each reg holds 2 chars -- 16 chars max -- 8 regs --regs 90-97
Slave List	0	0	65535 None	98	1	Slave List	Each reg holds 16 bits - 8 regs - 98 - 105
SupplyCoolLimit	9	-40	40 deg C	106	100	Limits	
SupplyHeatLimit	50	21.5	100 deg C	107	100	Limits	
Out5OvrrVal1	0	0	100 %	108	1	Network	
Out5OvrrVal2	0	0	100 %	109	1	Network	
AllDamperOverride	255	0	255 %	110	1	Network	Overrides all slave dampers to this position. Set 8th bit=1 to override based on flow (% of configured range). Set to 255 to remove override. Set to 254 to use MAX configured pos/flow. Set to 253 to use MIN configured pos/flow.
SupplyOut5ModLimit	40	21.5	100 deg C	111	100	Limits	If output 5 is modulating it will limit itself to this temp in the supply
Enable Absolute Overrides	0	0	1 None	112	1	Visualisation	0=Overrides are protected by limits and timing delays / 1=Overrides obey the users commands absolutely (no protection - use at own risk)
Math Unoc Mode	0	0	1 None	113	1	Math	0=Averaging math functions are replaced with Max Demand during unoccupied mode / 1=No change to math functions during unoccupied mode
Analog Cooling Range	0	0	1 None	114	1	Cooling	0=0-10VDC / 1=2-10VDC
Analog Cool Reverse Acting	0	0	1 None	115	1	Cooling	

Fan Occupied Mode	4	0	4	None	116	1	Fan	0=OFF / 1=Intermittent HEAT / 2=Intermittent COOL / 3=Intermittent BOTH / 4=ON
Password	0	0	0	None	117	1	Device	Each reg holds 2 chars -- 16 chars max -- 8 regs --regs 117-124
Cool 1 Override	0	0	255	None	125	1	Visualisation	0=OFF / 1-100=ON (Modulate if applicable) / Else=AUTO
Cool 2 Override	0	0	2	None	126	1	Visualisation	0=Auto / 1=OFF / 2=ON
Cool 3 Override	0	0	2	None	127	1	Visualisation	0=Auto / 1=OFF / 2=ON
Cool 4 Override	0	0	2	None	128	1	Visualisation	0=Auto / 1=OFF / 2=ON
Heat 4 Override	0	0	2	None	129	1	Visualisation	0=Auto / 1=OFF / 2=ON
Heat 5 Override	0	0	255	%	130	1	Visualisation	set to 255 to disable
Fan Override	0	0	2	None	131	1	Visualisation	0=Auto / 1=OFF / 2=ON
Schedule Override	0	0	2	None	132	1	Visualisation	0=Auto / 1=OFF / 2=ON
Reset	0	0	1	None	133	1	Device	
GetList	0	0	1	None	134	1	Slave List	
Reprogram	0	0	255	None	135	1	Device	Writing 255 to this address causes the device to enter bootload mode (warning: cannot be returned from without Focus)
User Mode Override	0	0	255	None	141	1	Visualisation	Bit0=Fan override Enable / Bit1=Fan Override Value / Bit2=Block Heating / Bit3=Block Cooling / Bit4=Block Dehum
Preheat Low Limit	13	5	40	deg C	150	100	Heating	Enforced when there is a cooling demand that isn't strong enough to turn on a cooling stage or open the econo
Use Dehumidification Sequence	0	0	1	None	151	1	Dehumidificati on	0=Disabled / 1=Enabled
Use Dehumidification Preheat	1	0	1	None	152	1	Dehumidificati on	Allow preheating during the dehumidification sequence
Dehumid Preheat SP	20	9	27	deg C	153	100	Dehumidificati on	Preheat SP used when dehumidification is active
Dehumid Zone Damper Min Pos	50	0	100	%	154	1	Dehumidificati on	All zone dampers will use this minimum position when dehumidification is active
Dehumid Cool Stage 1 SP	50	0	100	%	155	1	Dehumidificati on	Mechanical cooling stage 1 SP based on dehumidification demand
Dehumid Cool Stage 2 SP	80	0	100	%	156	1	Dehumidificati on	Mechanical cooling stage 2 SP based on dehumidification demand

Dehumid Cool Stage 1 Diff	20	8	99 %		157	1	Dehumidification	Mechanical cooling stage 1 differential band based on dehumidification demand
Dehumid Cool Stage 2 Diff	20	8	99 %		158	1	Dehumidification	Mechanical cooling stage 2 differential band based on dehumidification demand
Dig Out 4 Min Off Time	2	0	15 min		159	1	Heating	Minimum Off time of digital output 4
Cooling Priority Low Stage Only	0	0	1 None		160	1	Network	When set to 1, cooling priority zones cannot activate the second stage of cooling
AO1 Freeze Protect Pos	0	0	100 %		161	1	Heating	Drive output to this position when fan stops and supply and outside temp are too cold (set to 0 to disable)
Digital Input Mode	0	0	2 None		162	1	Visualisation	0=Occupancy / 1=Fan Proof / 2=Occupancy Override
Extra Comm Delay	0	0	1500 msec		163	1	Baud Rate	Extra delay that the master should wait when forwarding messages before declaring a timeout (intended for PL-TREE-COM)
Participation Outside Overr 1	0	0	65535 None		208	1	Network	Each bit defines the participation (Outside override rule 1) of one address on the slave list (8 regs = 128 devices)
Participation Outside Overr 2	0	0	65535 None		216	1	Network	Each bit defines the participation (Outside override rule 2) of one address on the slave list (8 regs = 128 devices)
Particip Morn Warm Up	65535	0	65535 None		224	1	Network	Each bit defines the participation of one address on the slave list (8 regs = 128 devices) (Regs 224 - 231)
Zone Prop	3	0	10 deg C		275	100	Visualisation	
Zone Heat Integ	30	0	120 min		276	1	Zone	
Zone Cool Integ	30	0	120 min		277	1	Zone	
Def Heat SP	21.5	5	30 deg C		278	100	Zone	
Def Cool SP	22.5	5.5	45 deg C		279	100	Zone	
Min Heat SP	19	5	30 deg C		280	100	Zone	
Max Heat SP	25	6	44.5 deg C		281	100	Zone	
Min Cool SP	20	5.5	44 deg C		282	100	Zone	
Max Cool SP	26	6.5	45 deg C		283	100	Zone	
Unoc Heat SP	15	5	30 deg C		284	100	Zone	
Unoc Cool SP	30	5.5	45 deg C		285	100	Zone	

Unoc Heat Offset	3	-20	20	deg C	286	100	Zone	
Unoc Cool Offset	5	-20	20	deg C	287	100	Zone	
Scale Lim Lo	15	5	30	deg C	288	100	Zone	
Scale Lim Hi	30	5	30	deg C	289	100	Zone	
Zone Temp Calib	0	-20	20	deg C	290	100	Calibration	
Zone SP Calib	0	-20	20	deg C	291	100	Calibration	
Zone Override Time	120	0	720	min	292	1	Zone	
Display Only Registers	0	0	0	None	300	1	Visualisation	Registers 300 to 345. Must access using Multiple Read/Write. [6 first regs are visual display choices: OutTemp, RetTemp, SupTemp, Filter, Fan, Math][Then 8 regs for each math name (x5)]
Display Setup	31	0	255	None	346	1	Visualisation	BIT0=DisplayOutTemp / BIT1=DisplayRetTemp / BIT2=DisplaySupTemp / BIT3=DisplayFilter / BIT4=DisplayFan / BIT5=UseRetTempAsZone
Display Label	0	0	4	None	347	1	Visualisation	0=Zoning Rooftop / 1=Split System / 2=Air Handler / 3=Furnace / 4=Package Unit
Cool 5 Override	0	0	255	None	375	1	Visualisation	0=AUTO / 1=OFF / 2=ON
Cool 6 Override	0	0	255	None	376	1	Visualisation	0=AUTO / 1=OFF / 2=ON
Cool 7 Override	0	0	255	None	377	1	Visualisation	0=AUTO / 1=OFF / 2=ON
Cool 8 Override	0	0	255	None	378	1	Visualisation	0=AUTO / 1=OFF / 2=ON
Const Cool Seq Enabled	0	0	1	None	400	1	Cooling	0=Demand based cooling / 1=Constant cooling with target supply temp
Const Cool SP Calc Mode	0	0	3	None	401	1	Cooling	0=Demand reset scale (same as econo) / 1=Fixed SP / 2=Outside temp reset scale / 3=Return temp reset scale
Cool Scale Min Temp	12	-40	40	deg C	402	100	Cooling	
Cool Scale Max Temp	18	-40	40	deg C	403	100	Cooling	
Const Cool Differential	5	1	15	deg C	404	100	Cooling	Centered on const cool supply SP
Compr Interstage Act Delay	3	0	60	min	405	1	Cooling	
Compr Interstage Deact Delay	2	0	60	min	406	1	Cooling	



Modulating Cool Prop	20	0	30 deg C	407	100	Cooling	Used for const cooling sequence only
Modulating Cool Integral	15	0	60 min	408	1	Cooling	Used for const cooling sequence only
Const Cool Morn Warm Up Seq En	0	0	15 None	409	1	Heating	Bit1(LSB) = DO4 Enabled / Bit2=Not Used / Bit3=AO1 Enabled / Bit4=Zone Damper Ovr Enabled
Const Cool Morn Warm Up Time	30	0	250 min	410	1	Heating	Morning warm up time for const cooling sequence
Const Cool Morn Warm Up Out Temp	13	-40	40 deg C	411	100	Heating	Out temp below which morning warm up is enabled
Const Cool Morn Warm Up Damp Ovr Mode	50	0	255 None	412	1	Heating	Zone damper positions during morning warm up. Set bit8(MSB) to override to instead be based on air flow (% of configured range).
Const Cool Morn Warm Up DO4 Ret Temp	19.5	0	40 deg C	413	100	Heating	
Const Cool Morn Warm Up AO1 Ret Temp	13	0	40 deg C	414	100	Heating	
Const Cool Supply Low Limit DO4	10	0	40 deg C	415	100	Heating	Only in use in constant cooling sequence
Const Cool Supply Low Limit Differential	2	1	15 deg C	416	100	Heating	Only in use in constant cooling sequence
Const Cool Supply Low Limit Setup	0	0	7 None	417	1	Heating	Bit1(LSB)=DO4 Enabled / Bit2=Not Used / Bit3=AO1 Enabled
Const Cool Demand Min	20	0	100 %	418	1	Cooling	
Const Cool Demand Max	30	0	100 %	419	1	Cooling	
Const Cool Target Min	13	5	30 deg C	420	100	Cooling	
Const Cool Target Max	18	5	30 deg C	421	100	Cooling	
Ignore Proof of Fan in Heating	0	0	1 None	422	1	Heating	
Integral Dropoff Rate	3	0	4 None	423	1	Zone	0=Slow, 4=Fast
Group Code 1	0	0	250 None	424	1	GroupCodes	
Group Code 2	0	0	250 None	425	1	GroupCodes	
Group Code 3	0	0	250 None	426	1	GroupCodes	
Group Weight 1	0	0	15 None	427	1	GroupCodes	
Group Weight 2	0	0	15 None	428	1	GroupCodes	

Group Weight 3	0	0	15	None	429	1	GroupCodes	
Global Weight	0	0	60	None	430	1	GroupCodes	
Cool 5 SP	0	0	100	%	431	1	Cooling	
Cool 5 Diff	0	0	100	%	432	1	Cooling	
Cool 6 SP	0	0	100	%	433	1	Cooling	
Cool 6 Diff	0	0	100	%	434	1	Cooling	
Cool 7 SP	0	0	100	%	435	1	Cooling	
Cool 7 Diff	0	0	100	%	436	1	Cooling	
Cool 8 SP	0	0	100	%	437	1	Cooling	
Cool 8 Diff	0	0	100	%	438	1	Cooling	
Fan Start Up Delay	15	0	250	sec	439	1	Fan	
Alternating Priority Delay	30	1	250	min	440	1	Priority	
Fan Pre Delay	2	0	250	min	441	1	Fan	
Fan Post Delay	0	0	250	min	442	1	Fan	
Chip Type	0	0	0	None	443	1	Device	0=PIC18F6722 / 1=PIC18F67K40

**Modbus**  
**C1050 Rooftop Network Variable Outputs**

Modbus Object Type: Input Registers

Name	Units	Modbus Reg #	Multiplier	Notes
Supply Temp	deg C	1	100	
Return Temp	deg C	2	100	
Outside Temp	deg C	3	100	
Occupancy	None	4	1	
Stage 1 Cooling	None	5	1	0=OFF / 1=ON (0-100 when analog)
Output 4 Heating	None	6	1	
Output 5 Heating	%	7	1	
Math1	%	8	1	
Math2	%	9	1	
Math3	%	10	1	
Math4	%	11	1	
Math5	%	12	1	
Stage 2 Cooling	None	13	1	0=OFF / 1=ON
Stage 3 Cooling	None	14	1	0=OFF / 1=ON
Stage 4 Cooling	None	15	1	0=OFF / 1=ON
Fan Status	None	16	1	
Dehumidification Status	None	17	1	0=OFF / 1=ON
Fan Proof	None	18	1	
Zone Temp	deg C	19	100	(Standalone only)
HeatSP	deg C	20	100	(Standalone only)
CoolSP	deg C	21	100	(Standalone only)
Demand	%	22	1	Demand of the zone controlled by this Basic Rooftop (Standalone only)
Const Cool Supply Target Temp	deg C	23	100	
Unoccupied Overr Status	None	24	1	

Quantity of Cooling Stages ON	None	25	1	0=ALL STAGES OFF / 1=STAGE 1 ON / 2=STAGE 1&2 ON / ... / 8=ALL 8 STAGES ON
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**Modbus**  
**C1050 Rooftop Network Variable Inputs**

Modbus Object Type: Holding Registers

Name	Units	Modbus Reg #	Multiplier	Notes
Occupancy Input	None	136	1	Allows the occupancy to be set by another network device (0=Unoccupied, 1=Occupied, 2=AUTO)
Outside Temperature Input	deg C	139	100	Allows the outside temp to be set by another network device. Physical sensor (if available) takes priority. Set to 0x7FFF to invalidate.
Supply Water Temp Input	deg C	142	100	Allows the supply water temp to be set by another network device.
Outside Humidity Input	%	143	10	Allows the outside humidity to be set by another network device.
Zone Temp Input	deg C	298	100	Write a zone temp (useful for thermostat)
Temporary Occup Override	None	299	1	Write a 1 here to activate unoccupied mode override (120 min - 1 simulates tstat button push)