

Modbus Heatpump Configuration Properties

Modbus Object Type: Holding Registers

Name	Default	Min	Max	Units	Modbus Reg #	Multiplier	Focus Screen	Modbus Notes
DeviceType	3	3	12	None	1	1	Device	(Not writable) 3=HeatPump / 12=Standalone Heatpump
Soft Version	7.4	0	655.35	None	2	100	Device	(Not writable)
Hard Version	3.1	0	65535	None	3	10	Device	(Not writable) 1.0=VC1000 / 2.0=C1000 / 2.5=C1050 / 3.0=M1000 / 3.1=M2000
Fan Heat SP	10	0	100	%	4	1	Fan	
Fan Cool SP	10	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 Dem Source	0	0	4	None	11	1	Cooling	0=Math1 / 1=Math2 / 2=Math3 / 3=Math4 / 4=Math5
Cool SP 1	35	5	95	%	12	1	Cooling	
Cool Diff 1	20	8	99	%	13	1	Cooling	
Heat Demand Source	0	0	4	None	14	1	Heating	0=Math1 / 1=Math2 / 2=Math3 / 3=Math4 / 4=Math5
Heat SP 1	55	5	95	%	15	1	Heating	
Heat Diff 1	20	8	99	%	16	1	Heating	
Analog Output 1 Function	0	0	3	None	17	1	Heating	0=None / 1=Preheat only / 2=Preheat and heating / 3=Heating only

Analog Output 1 Reverse Acting	0	0	1 None	18	1	Heating	0=Normal / 1=Rev Acting
Analog Output 1 Pulsed	0	0	1 None	19	1	Heating	0=Modulating / 1=Pulsing
Analog Output 1 Range	0	0	2 None	20	1	Heating	0=0-10V / 1=2-10V / 2=0-5V
Analog Output 1 SP	40	1	95 %	21	1	Heating	
Analog Output 1 Heat Mode	0	0	1 None	22	1	Heating	0=Proportionnal / 1=Differential
Analog Output 1 Heat Band	60	0	99 %	23	1	Heating	
Preheat SP	21.5	10	99 deg C	24	100	Heating	
Preheat Prop	20	0	50 deg C	25	100	Heating	
Preheat Integ	15	0	240 min	26	1	Heating	
Compressor Min ON Time	2	0	10 min	27	1	HeatPump	
Compressor Min OFF Time	5	1	15 min	28	1	HeatPump	
Rev Valve Mode	0	0	1 None	29	1	HeatPump	0=Powered when Cooling / 1=Powered when Heating
OutTemp Low Balance Point	-8	-100	20 deg C	30	100	HeatPump	
AddOn	0	0	1 None	31	1	HeatPump	0=No Add On / 1=Yes Add On
Safety Seq En	0	0	1 None	32	1	HeatPump	0=Disabled / 1=Enabled
Safety Seq Time	30	10	60 min	33	1	HeatPump	
Emergency Heat Activation Demand	90	0	100 %	34	1	HeatPump	
Emergency Heat Activation Temperature	25	20	45 deg C	35	100	HeatPump	
AuxHeatON	0	0	1 None	36	1	HeatPump	0=Auto / 1=Always use AuxHeat, forget compressor
Return Temp Lim C1	14	10	40 deg C	37	100	Limits	
Return Temp Lim Heat	35	0	50 deg C	38	100	Limits	
Supply Temp Lim Fan Stop	4	-40	40 deg C	39	100	Limits	
Supply Temp Lim Fan Start	12	-38	60 deg C	40	100	Limits	
Out Temp Preheat En	12	-100	21 deg C	41	100	Limits	
Out Temp Lim C1	-40	-40	40 deg C	42	100	Limits	

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

								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	58	1	Math	
Math1 Group	0	0	250	None	59	1	Math	
Math2 Group	0	0	250	None	60	1	Math	
Math3 Group	0	0	250	None	61	1	Math	
Math4 Group	0	0	250	None	62	1	Math	
Math5 Group	0	0	250	None	63	1	Math	
Demand Filter	10	0	100	%	64	1	Math	
List Refresh Rate	30	0	250	min	65	1	Math	0=No list refresh
Math Refresh Rate	3	1	250	sec	66	1	Math	0=No math refresh
Net Supply Temp Source	0	0	127	None	67	1	Network	
Cool Prio Zone 1	0	0	127	None	68	1	Network	0=No cool prio zone
Cool Prio Zone 2	0	0	127	None	69	1	Network	0=No cool prio zone
Cool Prio Zone 3	0	0	127	None	70	1	Network	0=No cool prio zone
MWUpEn	0	0	7	None	71	1	Network	Bit1=Out3, Bit2=Out4, Bit3=Out5 --> Bit Up = MWUp Active, else inactive
Morning Warm Up Time	0	0	300	min	72	1	Network	
OutTempOvrrEn1	0	0	15	None	73	1	Network	Bit1=Out3 / Bit2=Out4 / Bit3=Out5 / Bit4-->0=less,1=more
OutTempOvrrEn2	0	0	15	None	74	1	Network	Bit1=Out3 / Bit2=Out4 / Bit3=Out5 / Bit4-->0=less,1=more
Out Ovrr Temp1	-20	-30	40	deg C	75	100	Network	
Out Ovrr Temp2	-20	-30	40	deg C	76	100	Network	
Out3OvrrVal1	0	0	100	None	77	1	Network	
Out3OvrrVal2	0	0	100	None	78	1	Network	
Out4OvrrVal1	0	0	100	None	79	1	Network	
Out4OvrrVal2	0	0	100	None	80	1	Network	
Net Baud	3	0	5	None	81	1	Baud Rate	0=9600 / 1=19200 / 2=38400 / 3=57600 / 4=76800 / 5=115200
Net Parity	0	0	2	None	82	1	Baud Rate	0=NONE / 1=ODD / 2=EVEN
Net StopBits	0	0	1	None	83	1	Baud Rate	0=1 Stop Bit / 1=2 Stop Bits

RJ45 Baud	3	0	5	None	84	1	Baud Rate	0=9600 / 1=19200 / 2=38400 / 3=57600 / 4=76800 / 5=115200
RJ45 Parity	0	0	2	None	85	1	Baud Rate	0=NONE / 1=ODD / 2=EVEN
RJ45 StopBits	0	0	1	None	86	1	Baud Rate	0=1 Stop Bit / 1=2 Stop Bits
Location	0	0	0	None	87	1	Device	Each reg holds 2 chars -- 16 chars max -- 8 regs --regs 87-94
Slave List	0	0	65535	None	95	1	Slave List	Each reg holds 16 bits - 8 regs - 95 - 102
SupplyCoolLimit	9	-40	40	deg C	103	100	Limits	
SupplyHeatLimit	50	21.5	100	deg C	104	100	Limits	
Out5OverrVal1	0	0	100	None	105	1	Network	
Out5OverrVal2	0	0	100	None	106	1	Network	
AllDamperOverride	255	0	255	%	107	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.
Supply Analog Output Modulating Limit	40	21.5	100	deg C	108	100	Limits	If output 5 is modulating it will limit itself to this temp in the supply
Enable Absolute Overrides	0	0	1	None	109	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 Unoccupied Mode	0	0	1	None	110	1	Math	0=Averaging math functions are replaced with Max Demand during unoccupied mode / 1=No change to math functions during unoccupied mode
Fan Occupied Mode	4	0	4	None	111	1	Fan	0=OFF / 1=Intermittent HEAT / 2=Intermittent COOL / 3=Intermittent BOTH / 4=ON
Preheat Low Limit	13	5	40	deg C	112	100	Heating	Enforced when there is a cooling demand that isn't strong enough to turn on a cooling stage or open the econo
Password	0	0	0	None	117	1	Device	Each reg holds 2 chars -- 16 chars max -- 8 regs --regs 117-124

Compressor Override	0	0	15	None	125	1	Visualisation	bit1-->OFF=auto/ON=overr / bit2-->OFF=heat/ON=cool / bit3-->Compr1(OFF/ON) / bit4-->Compr2(OFF/ON)
Analog Out 1 Override	0	0	255	%	126	1	Visualisation	set to 255 to disable
Fan Override	0	0	2	None	127	1	Visualisation	0=Auto / 1=OFF / 2=ON
Schedule Override	0	0	2	None	128	1	Visualisation	0=Auto / 1=OFF / 2=ON
Reset	0	0	1	None	129	1	Device	Writing a 1 here will command the device to reset itself
GetList	0	0	1	None	130	1	Slave List	Writing a 1 here will command the device to refresh its slave list
Reprogram	0	0	255	None	131	1	Device	Writing 255 to this address causes the device to enter bootload mode (warning: cannot be returned from without Focus)
Tstat Override	0	0	1	None	133	1		For Tstat use: set to 1 to temporarily override back to occupied mode
User Mode Override	0	0	255	None	141	1	Visualisation	Bit0=Fan override Enable / Bit1=Fan Override Value / Bit2=Block Heating / Bit3=Block Cooling
NumCompr	1	0	2	None	150	1	HeatPump	0=reserved / 1 = 1 stage / 2 = 2stages
Cool SP 2	60	5	95	%	151	1	Cooling	
Cool Diff 2	40	8	99	%	152	1	Cooling	
Heat SP 2	85	5	95	%	153	1	Heating	
Heat Diff 2	20	8	99	%	154	1	Heating	
UseEcono	0	0	1	None	155	1	Econo	0=No economizer / 1=Use Economizer
EconoComprOK	0	0	1	None	156	1	Econo	0=Compressor disabled when economizer in use / 1=Compressor alternate setpoints enabled when economizer in use
CoolAltSP	75	5	95	%	157	1	Econo	
CoolAltDiff	20	8	99	%	158	1	Econo	
EconoMinDampPos	0	0	100	%	159	1	Econo	
Econo Change Over Temp	13	-40	40	deg C	160	100	Econo	
Econo Change Over Diff	3	0	20	deg C	161	100	Econo	
EconoSP	20	1	95	%	162	1	Econo	
EconoProp	30	0	100	%	163	1	Econo	
Outside Damper Diff	5	0	100	%	164	1	Econo	

Return Temp Lim C2	20	10	40 deg C	165	100	Limits	
Out Temp Lim C2	12	-40	40 deg C	166	100	Limits	
EconoLimTemp	13	5	30 deg C	167	100	Econo	
EconoMornVentTime	60	0	250 min	168	1	Econo	
Out Override 1 Participation	0	0	65535 None	169	1	Network	8 regs x 16 bits = 128 bits (regs 169-176)
Out Override 2 Participation	0	0	65535 None	177	1	Network	8 regs x 16 bits = 128 bits (regs 177-184)
TimeZone	7	0	25 None	185	1	Visualisation	0=GMT-12 / 25=GMT+13
EconoRange	0	0	2 None	186	1	Econo	0=0-10V / 1=2-10V / 2=0-5V
PressSP	0.75	0	2 inches H2O	187	100	Bypass	
PressDiff	0.15	0	1 inches H2O	188	100	Bypass	
DampSpeed	2	0	4 None	189	1	Bypass	0=fastest / 4=slowest
DamperDir	0	0	1 None	190	1	Bypass	0=CCW / 1=CW
DampDelay	95	15	300 sec	191	10	Bypass	
BypassRange	1	0	3 None	192	1	Bypass	0=0-10V / 1=2-10V / 2=0-5V / 3=2.4-7.5V
PressOffset	0	-1	1 inches H2O	193	100	Calibration	
Day Heat SP	21.5	-30	40 deg C	194	100	Temperature	
DayCoolSP	22.5	-29.5	55 deg C	195	100	Temperature	
Min Heat SP	19	-30	40 deg C	196	100	Temperature	
Max Heat SP	25	-30	40 deg C	197	100	Temperature	
Min Cool SP	20	-29.5	55 deg C	198	100	Temperature	
Max Cool SP	26	-29.5	55 deg C	199	100	Temperature	
Unoc Heat Offset	3	0	20 deg C	200	100	Temperature	
Unoc Cool Offset	5	0	20 deg C	201	100	Temperature	
Unoc Heat SP Lim	15	-30	40 deg C	202	100	Temperature	
Unoc Cool SP Lim	30	-29.5	55 deg C	203	100	Temperature	
Thermostat Min	15	-30	40 deg C	204	100	Temperature	
Thermostat Max	30	-30	40 deg C	205	100	Temperature	
Zone Temp Offset	0	-15	15 deg C	206	100	Calibration	

Zone Proportionnal Band	3	0	10	deg C	207	100	Temperature	
Zone Cool Integ	15	0	120	min	208	1	Temperature	
Zone Heat Integ	15	0	120	min	209	1	Temperature	
Group Code 1	0	0	250	None	210	1	Group Codes	
Group Code 2	0	0	250	None	211	1	Group Codes	
Group Code 3	0	0	250	None	212	1	Group Codes	
Group Weight 1	0	0	15	None	213	1	Group Codes	
Group Weight 2	0	0	15	None	214	1	Group Codes	
Group Weight 3	0	0	15	None	215	1	Group Codes	
Global Weight	1	0	60	None	216	1	Group Codes	
Unoc Override Time	120	0	720	min	217	1	Temperature	
Max Master	127	0	127	None	218	1	BACnet	
Device Instance	0	0	4194303	None	219	1	BACnet	Set to 4194303 to use the dipswitch as device instance
UseDST	1	0	1	None	221	1	Visualisation	Automatically adjust for daylight savings time (0=NO / 1=YES)
DST Active Month	3	1	12	None	222	1	Visualisation	1=January ... 12=December
DST Active Week	1	0	4	None	223	1	Visualisation	0= First weekend of month ... 4=5th weekend of month
DST Deactive Month	11	1	12	None	224	1	Visualisation	1=January ... 12=December
DST Deactive Week	0	0	4	None	225	1	Visualisation	0= First weekend of month ... 4=5th weekend of month
Pressure Input Range	0	0	3	None	226	1	Bypass	0= 0-1 inch H20 / 1=0-2.5 inch H20 / 2=0-2 inch H20 / 3=0-1.5 inch H20
WaterToAir	0	0	1	None	227	1	Visualisation	0= Air-to-Air / 1= Water-To-Air
Water Supply Calibration	0	-20	20	deg C	228	100	Calibration	
Input 4 Mode	0	0	3	None	229	1	Visualisation	M1000: 0=OFF / 1=Filter Sensor / 2=Schedule Override / 3=Water Supply Temperature for Water-To-Air mode VC1000: 0=Occupancy / 1=Proof of Fan
Input 1 Mode	0	0	2	None	230	1	Visualisation	0=Outside Temperature / 1=Water Supply Temperature (Water to Air mode only - will be Water RETURN if Input4 already set as Water Supply) / 2=Alarm Input (Water to Air VC1000 Only)

Pressure Input Voltage Range	0	0	1	None	231	1	Bypass	0=0-5VDC / 1=1-5VDC
Use CO2	0	0	1	None	232	1	CO2	
CO2 Setpoint	800	0	1500	ppm	233	1	CO2	
CO2 Proportional	200	0	1000	ppm	234	1	CO2	
Max CO2 Damp Pos	50	0	100	%	235	1	CO2	
CO2 Lim Temp	12	1	30	deg C	236	100	CO2	
CO2 Calibration	0	-2000	2000	ppm	237	1	Calibration	
Econo Override	255	0	255	%	240	1	Visualisation	set to 255 to disable
Bypass Override	255	0	255	%	241	1	Visualisation	Set 255 to disable
Time Set Year	0	0	99	None	250	1	Visualisation	Years after 2000
Time Set Month	0	1	12	None	251	1	Visualisation	1=Jan ... 12=December
Time Set Weekday	0	0	6	None	252	1	Visualisation	0=Sunday ... 6=Saturday
Time Set Day	0	1	31	None	253	1	Visualisation	Day of month
Time Set Hours	0	0	23	None	254	1	Visualisation	
Time Set Minutes	0	0	59	None	255	1	Visualisation	
Time Set Seconds	0	0	59	None	256	1	Visualisation	
Weekly Schedule	127	0	127	None	300	1	Calendar	Registers 300 to 427. Must access using Multiple Read/Write. [Sunday to Saturday, then Holiday] [period 1-8] [hour, minute]
Calendar	0	0	255	None	428	1	Schedule	Registers 428 to 475. Must access using Multiple Read/Write. [January to December][4 bytes = 32 days]. Each bit set to 1 is considered a holiday.
Display Only Registers	0	0	0	None	500	1	Visualisation	Registers 500 to 547. Must access using Multiple Read/Write. [8 first regs are visual display choices: OutTemp, RetTemp, SupTemp, Filter, Math, BypassMode, Press, ShowAuxHeat][Then 8 regs for each math name (x5)]
Display Setup	63	0	255	None	548	1	Visualisation	BIT0=DisplayOutTemp / BIT1=DisplayRetTemp / BIT2=DisplaySupTemp / BIT3=DisplayFilter / BIT4=DisplayPress / BIT5=DisplayAuxHeat / BIT6=UseRetTempAsZone / BIT7=DisplayHertz

Math Display	1	0	255	None	549	1	Visualisation	BIT0=DisplayMath1 / BIT1=DisplayMath2 / BIT2=DisplayMath3 / BIT3=DisplayMath3 / BIT4=DisplayMath5 (This is a copy of register #504)
Pressure Control Mode	1	0	2	None	550	1	Visualisation	0=NONE / 1=BYPASS DAMPER / 2=VFD (This is a copy of register #505)
Low Hertz	20	0	100	Hertz	551	1	Bypass	
High Hertz	60	0	100	Hertz	552	1	Bypass	
Econo Control Mode	0	0	1	None	600	1	Econo	0=Damper Position Control / 1=Supply Temperature Control
Econo Max Temp	18	5	30	deg C	601	100	Econo	Max Econo Temp for Supply Temperature Control
Econo Damper Speed	2	0	4	None	602	1	Econo	0=Slowest / 4=Fastest
VFD Min Voltage	3	0	10	Volts	603	10	Bypass	Applicable only when VFD is in use (not bypass damper)
VFD Max Voltage	10	0	10	Volts	604	10	Bypass	Applicable only when VFD is in use (not bypass damper)
Cooling Priority Low Stage Only	0	0	1	None	605	1	Network	When set to 1, cooling priority zones cannot activate the second stage of cooling
Morn Warm Up Participation	65535	0	65535	None	606	1	Network	8 regs x 16 bits = 128 bits (regs 606-613)
Alarm Input Normally Closed	0	0	1	None	614	1	Visualisation	0=Normally Open / 1=Normally Closed
Zone Setpoint Calib	0	-20	20	None	615	100	Calibration	This offset is applied to the Default Heating Setpoint or to the setpoint provided by an attached potentiometer.
Ignore Proor of Fan	0	0	1	None	616	1	Heating	0=Proof of Fan Required for Auxiliary Heat / 1=Auxiliary Heat does Not Require Proof of Fan
Integral Dropoff Rate	3	0	4	None	617	1	Temperature	0=Slow, 4=Fast

Modbus Heatpump Network Variable Outputs

Modbus Object Type: Input Registers

Name	Units	Modbus Reg #	Multiplier	Modbus Notes
Supply Temp	deg C	1	100	
Return Temp	deg C	2	100	
Outside Temp	deg C	3	100	
Occupancy Status	None	4	1	0=OFF / 1=ON
Compressor1	None	5	1	0=OFF / 1=ON
Rev Valve	None	6	1	0=COOLING / 1=HEATING
Auxiliary Heating	None	7	1	0=AUX HEAT OFF / 1=AUX HEAT ON
Analog Heating	None	8	1	
Math1	%	9	1	
Math2	%	10	1	
Math3	%	11	1	
Math4	%	12	1	
Math5	%	13	1	
Fan Action	None	14	1	0=FAN OFF / 1= FAN ON
Heatpump Status	None	15	1	0=FAN_OFF / 1=VENTILATING / 2=COOLING / 3=HEATPUMP / 4=EMERGENCY / 5=AUXILIARY / 6=OUT5_ONLY / 7=SAFETYMODE
EconoPos	%	16	1	
Compressor2	None	17	1	0=OFF / 1=ON
Fan Proof	None	18	1	0=NO PROOF / 1=PROOF OF FAN
Bypass Pos	%	19	1	
Zone Temp	deg C	20	100	
Heat SP	deg C	21	100	
Cool SP	deg C	22	1	
Demand	%	23	1	

Pressure	inches	24	100	
Filter State	None	25	1	0=OK / 1=DIRTY
Alarm State	None	26	1	0=OK / 1=ALARM
Water Supply Temp	deg C	27	100	
CO2 Reading	ppm	28	1	
Econo Target	deg C	29	100	The target supply temperature of the economizer (only valid if Control Mode is set to Supply Control).
Unocc Override	None	30	1	
Water Return Temp	deg C	31	100	

Modbus
Heatpump Network Variable Inputs

Modbus Object Type: Holding Registers

Name	Units	Modbus Reg #	Multiplier	Modbus Notes
Occupancy Input	None	136	1	0=OFF / 1=ON / 2=AUTO
Outside Temp 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.
Zone Temp Input	None	145	100	Register used by digital thermostat to send the current zone temperature