**RTHD (UC800)** 

Date: 12/6/2024 Reference Document: BAS-SVP083\*-EN



#### **Object Naming Conventions**

The communicated points for the Symbio<sup>™</sup> controllers are generally named according to their function. While many of the points are read-only, others include both read and write capability. The established naming convention helps to identify the capabilities of each point. For most points, the suffix identifies the capability according to the following definition. While there are some exceptions, the majority of the points have been defined according to these guidelines.

| Suffix     | Description  |
|------------|--|
| Status     | Points with the Status suffix are defined as read-only. The status point reports the value being used by the controller.   |
| Local      | Points with the Local suffix are defined as read-only. The local point reports values associated with controller sensors, both wired and wireless. The local value may or may not be actively used by the controller, depending on the presence or absence of a communicated value (BAS). When both a local and communicated value exist, the communicated value is used.  |
| Active     | Points with the Active suffix are defined as read-only. Points designated as active are normally the result of the arbitration between a communicated value(BAS) and at least one value local to the equipment, such as a sensor or default setpoint. The active point reports the value being input to the controller.  |
| Setpoint   | Points with the Setpoint suffix are defined as either read-only or read/write. For BACnet®, the binary input, analog input and multi-state input points are all read-only. These setpoints report the value currently in use by the controller. The analog value, binary value and multi-state value points are all read/write. These points are provided for use by the building automation system (BAS). When used, these points are written internally to arbitration logic. This defines the interaction with hardwired points, editable software configuration points and the relinquish default value/state. Refer to the Appendix for additional information. |
| Input      | Points with the Input suffix are defined as read-only. These points normally reflect the status of a sensor input, either hardwired or communicating wirelessly (Air-Fi®). However, the input point reflects the arbitrated result of the controller sensor input and a communicated value, if present. When both a controller sensor and communicated value exist, the controller will use and report the communicated value.   |
| Arbitrator | Points with the "Arbitrator" suffix are to be used as read-only. The arbitrator prioritizes inputs from communicating points, hardwired points and stored defaults points. The priority array of the arbitration point displays each of the values provided, including the active status, indicating which of the input sources is being used. Refer to the Appendix for additional information.   |
| BAS        | Points with the BAS suffix are defined as read/write. These points are provided for use by the building automation system (BAS). When used, these points are written to arbitration logic. This defines the interaction with hardwired points, editable software configuration points and the relinquished default value/state. Refer to the Appendix for additional information.  |
| Command    | Points with the Command suffix are defined as read/write. These points are written to change the default behavior of the controller. Once written, these point values may be persisted.  |
| Request    | Points with the Request suffix are defined as read/write. These points are written to request a change the operating behavior of the controller.   |



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#### **Object Data Points and Diagnostic Data Points**

The following tables are sorted as follows:

• Tables are listed by input/output type and sorted by object identifier. These tables provide the user with the unit's type for each object

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• Tables are sorted by object name and provide a complete list of object names, types, values/ranges, and descriptions.

Note: Not all points are available to the user. The available data points are defined during self-configuration and are dependent on the type of equipment.



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| Object Identifier | Object Name                           | Description | Units | Configuration Dependency |
|-------------------|---------------------------------------|-------------|-------|--------------------------|
| 1                 | Active Cool/Heat Setpoint Temperature |             | Real  |                          |
| 2                 | Active Current Limit Setpoint         |             | Real  |                          |
| 3                 | Active Base Loading Setpoint          |             | Real  |                          |
| 4                 | Actual Running Capacity               |             | Real  |                          |
| 5                 | Evaporator Refrigerant Pressure       |             | Real  |                          |
| 6                 | Evaporator Saturated Rfgt Temp        |             | Real  |                          |
| 7                 | Condenser Refrigerant Pressure        |             | Real  |                          |
| 8                 | Condenser Saturated Rfgt Temp         |             | Real  |                          |
| 9                 | Local Atmospheric Pressure            |             | Real  |                          |
| 10                | Compressor Starts                     |             | Real  |                          |
| 11                | Compressor Running Time               |             | Real  |                          |
| 12                | Evaporator Entering Water Temperature |             | Real  |                          |
| 13                | Evaporator Leaving Water Temperature  |             | Real  |                          |
| 14                | Condenser Entering Water Temperature  |             | Real  |                          |
| 15                | Condenser Leaving Water Temperature   |             | Real  |                          |
| 16                | Compressor Oil Pressure               |             | Real  |                          |
| 17                | Discharge Temperature                 |             | Real  |                          |
| 18                | Head Pressure Control Command         |             | Real  |                          |
| 19                | Starter Input Voltage AB              |             | Real  |                          |
| 20                | Starter Input Voltage BC              |             | Real  |                          |
| 21                | Starter Input Voltage CA              |             | Real  |                          |
| 22                | Starter Motor Current L1              |             | Real  |                          |
| 23                | Starter Motor Current L2              |             | Real  |                          |
| 24                | Starter Motor Current L3              |             | Real  |                          |
| 25                | Starter Motor Current L1 % RLA        |             | Real  |                          |
| 26                | Starter Motor Current L2 % RLA        |             | Real  |                          |
| 27                | Starter Motor Current L3 % RLA        |             | Real  |                          |
| 28                | Number of Circuits                    |             | Real  |                          |
| 29                | Number of Compressors— Ckt1           |             | Real  |                          |
| 30                | Number of Compressors—Ckt2            |             | Real  |                          |
| 31                | Chiller Design Capacity               |             | Real  |                          |
| 32                | Frequency Command                     |             | Real  |                          |



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| Object Identifier | Object Name                              | Description | Units | Configuration Dependency |
|-------------------|--|-------------|-------|--------------------------|
| 33                | AFD Output Power                         |             | Real  |                          |
| 34                | Approx Evap Water Flow                   |             | Real  |                          |
| 35                | Evap Differential Wtr Press              |             | Real  |                          |
| 36                | Approx Cond Water Flow                   |             | Real  |                          |
| 37                | Cond Differential Wtr Press              |             | Real  |                          |
| 38                | EXV Position Percent                     |             | Real  |                          |
| 39                | Heat Recovery Entering Water Temperature |             | Real  |                          |
| 40                | Heat Recovery Leaving Water Temperature  |             | Real  |                          |
| 41                | Heat Recovery Tank Water Temp            |             | Real  |                          |
| 42                | Evaporator Approach Temperature          |             | Real  |                          |
| 43                | Condenser Approach Temperature           |             | Real  |                          |
| 44                | Motor Winding Temperature 1              |             | Real  |                          |
| 45                | Motor Winding Temperature 2              |             | Real  |                          |



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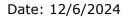
| Object<br>Identifier | Object Name  | Description | Units | Relinquish Default | Valid Range  |
|----------------------|--|-------------|-------|--------------------|--|
| 1                    | BAS Chilled Water Setpoint                           |             | Real  | 44°F (6.7°C)       | 0°F to 86°F (depending on installed options) (-17.78° to 30.0°C) |
| 2                    | BAS Current Limit Setpoint                           |             | Real  | 100% RLA           | 0 to 100%  |
| 3                    | BAS Hot Water Setpoint                               |             | Real  | 120°F (48.9°C)     | 80°F to 140°F (26.7°C to 60°C)                                   |
| 4                    | BAS Base Loading Setpoint                            |             | Real  | 50%                | 0-100%   |
| 5                    | BAS Heat Recovery Water Tank<br>Temperature Setpoint |             | Real  | 45°C<br>(113°F)    | 30°C to 45°C<br>86°F to 113°F                                    |

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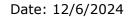


| Object Identifier | Object Name                                     | Object Status |
|-------------------|---|---------------|
| 501               | Comm Loss: Ext Base Loading Command Chiller     |               |
| 502               | Comm Loss: Ext Base Loading Setpoint Chiller    |               |
| 503               | External Base Loading Setpoint Chiller          |               |
| 504               | Comm Loss: Evap Entering Water Temp Chiller     |               |
| 505               | Comm Loss: Evap Leaving Water Temp Chiller      |               |
| 506               | Comm Loss: Outdoor Air Temperature Chiller      |               |
| 508               | Outdoor Air Temperature Sensor Chiller          |               |
| 510               | BAS Communication Loss                          |               |
| 511               | BAS Failed to Establish Communication           |               |
| 512               | Comm Loss: Local BAS Interface                  |               |
| 516               | LCI-C Software Mismatch: Use BAS Tool           |               |
| 517               | Comm Loss: Oil Loss Level Sensor Input Chiller  |               |
| 518               | Comm Loss: Cprsr Discharge Rfgt Temp Chiller    |               |
| 519               | Comm Loss: High Pressure Cutout Switch Chiller  |               |
| 520               | Comm Loss: Primary Oil Line SV                  |               |
| 521               | Comm Loss: Oil Pressure Chiller                 |               |
| 522               | Comm Loss: Oil Return Gas Pump Drain Chiller    |               |
| 523               | Comm Loss: Oil Return Gas Pump Fill Chiller     |               |
| 524               | Compressor Discharge Temperature Sensor Chiller |               |
| 525               | High Cprsr Rfgt Discharge Temperature Chiller   |               |
| 526               | High Differential Refrigerant Pressure Chiller  |               |
| 527               | High Pressure Cutout Chiller                    |               |
| 528               | High Refrigerant Pressure Ratio Chiller         |               |
| 529               | Loss of Oil at Compressor (Running) Chiller     |               |
| 530               | Loss of Oil at Compressor (Stopped) Chiller     |               |
| 531               | Low Differential Refrigerant Pressure Chiller   |               |
| 532               | Low Discharge Superheat Chiller                 |               |
| 533               | Low Oil Flow Chiller                            |               |
| 534               | No Differential Refrigerant Pressure Chiller    |               |
| 535               | Oil Flow Protection Fault Chiller               |               |
| 536               | Oil Pressure Transducer Chiller                 |               |
| 537               | Comm Loss: Slide Valve Load Chiller             |               |
| 538               | Comm Loss: Slide Valve Unload Chiller           |               |



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| Object Identifier | Object Name                                      | Object Status |
|-------------------|--|---------------|
| 539               | Restart Inhibit Chiller                          |               |
| 540               | Comm Loss: Condenser Rfgt Pressure Chiller       |               |
| 541               | Evaporator Rfgt Pressure Transducer Chiller      |               |
| 542               | Comm Loss: Condenser Water Flow Switch           |               |
| 543               | Comm Loss: Condenser Water Pump Relay Chiller    |               |
| 544               | Condenser Water Flow Lost Chiller                |               |
| 545               | Condenser Water Flow Overdue Chiller             |               |
| 546               | Comm Loss: Condenser Entering Water Temp Chiller |               |
| 547               | Comm Loss: Condenser Leaving Water Temp Chiller  |               |
| 548               | Condenser Entering Water Temp Sensor Chiller     |               |
| 549               | Condenser Leaving Water Temp Sensor Chiller      |               |
| 550               | Comm Loss: Evaporator Rfgt Liquid Level Chiller  |               |
| 551               | Evaporator Liquid Level Sensor Chiller           |               |
| 552               | High Evaporator Liquid Level Chiller             |               |
| 553               | Low Evaporator Liquid Level Chiller              |               |
| 554               | Low Evaporator Refrigerant Pressure Chiller      |               |
| 555               | Low Evaporator Refrigerant Temperature Chiller   |               |
| 556               | Low Evaporator Temp: Unit Off Chiller            |               |
| 557               | Comm Loss: Evaporator Water Flow Switch Chiller  |               |
| 558               | Comm Loss: Evaporator Water Pump Relay Chiller   |               |
| 559               | Evaporator Water Flow Lost Chiller               |               |
| 560               | Evaporator Water Flow Overdue Chiller            |               |
| 561               | High Evaporator Refrigerant Pressure Chiller     |               |
| 562               | High Evaporator Water Temperature Chiller        |               |
| 563               | Evap Water Flow (Entering Water Temp) Chiller    |               |
| 564               | Evaporator Entering Water Temp Sensor Chiller    |               |
| 565               | Evaporator Leaving Water Temp Sensor Chiller     |               |
| 566               | Low Evaporator Water Temp (Unit On) Chiller      |               |
| 567               | Low Evaporator Water Temp (Unit Off) Chiller     |               |
| 568               | Comm Loss: Electronic Expansion Valve 1 Chiller  |               |
| 569               | Comm Loss: Electronic Expansion Valve 2 Chiller  |               |
| 570               | Comm Loss: Evaporator Rfgt Pressure Chiller      |               |
| 571               | Evaporator Rfgt Pressure Transducer Chiller      |               |



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| Object Identifier | Object Name   | Object Status |
|-------------------|---|---------------|
| 572               | Comm Loss: Compressor % RLA Output Chiller            |               |
| 573               | Comm Loss: Cond Rfgt Pressure Output                  |               |
| 574               | Comm Loss: Cond Head Press Cntrl Output Chiller       |               |
| 575               | Comm Loss: Emergency Stop Chiller                     |               |
| 576               | Comm Loss: Ext Chilled/Hot Water Setpoint Chiller     |               |
| 577               | Comm Loss: Ext Current Limit Setpoint Chiller         |               |
| 578               | Comm Loss: External Auto/Stop Chiller                 |               |
| 579               | Comm Loss: External Hot Water Command Chiller         |               |
| 580               | Comm Loss: Op Status Programmable Relays Chiller      |               |
| 581               | Comm Loss: Refrigerant Monitor Input Chiller          |               |
| 582               | Emergency Stop Chiller                                |               |
| 583               | External Chilled/Hot Water Setpoint Chiller           |               |
| 584               | External Current Limit Setpoint Chiller               |               |
| 585               | Refrigerant Monitor Input Chiller                     |               |
| 586               | Comm Loss: External Ice Building Command Ice Building |               |
| 587               | Comm Loss: Ice Building Status Relay Ice Building     |               |
| 588               | Comm Loss: SSS/AFD Fault Chiller                      |               |
| 589               | Comm Loss: Starter Chiller                            |               |
| 590               | Solid State Starter Fault Chiller                     |               |
| 591               | Starter Failed to Arm/Start Chiller                   |               |
| 592               | Unexpected Starter Shutdown Chiller                   |               |
| 593               | At Speed Input Opened Chiller                         |               |
| 594               | At Speed Input Shorted Chiller                        |               |
| 595               | Compressor Did Not Accel: Transition Chiller          |               |
| 596               | Compressor Did Not Accelerate Fully Chiller           |               |
| 597               | Compressor Did Not Accelerate: Shutdown Chiller       |               |
| 598               | Starter Contactor Interrupt Failure Chiller           |               |
| 599               | Momentary Power Loss Chiller                          |               |
| 600               | Motor Current Overload Chiller                        |               |
| 601               | Over Voltage Chiller                                  |               |
| 602               | Phase Loss Chiller                                    |               |
| 603               | Phase Reversal Chiller                                |               |
|                   |   |               |

Power Loss Chiller



604

Date: 12/6/2024

Reference Document: BAS-SVP083\*-EN



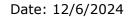
RTHD (UC800)

| Object Identifier | Object Name                                     | Object Status |
|-------------------|---|---------------|
| 605               | Severe Current Unbalance Chiller                |               |
| 606               | Starter Comm Loss: Main Processor Chiller       |               |
| 607               | Starter Did Not Transition                      |               |
| 608               | Starter Dry Run Test Chiller                    |               |
| 609               | Starter Fault Type I Chiller                    |               |
| 610               | Starter Fault Type II Chiller                   |               |
| 611               | Starter Fault Type III Chiller                  |               |
| 612               | Starter Module Memory Error Type 1 Chiller      |               |
| 613               | Starter Module Memory Error Type 2 Chiller      |               |
| 614               | Transition Complete Input Opened                |               |
| 615               | Transition Complete Input Shorted               |               |
| 616               | Under Voltage Chiller                           |               |
| 617               | Check Clock                                     |               |
| 619               | MP: Invalid Configuration Platform              |               |
| 622               | MP: Reset Has Occurred Platform                 |               |
| 623               | AFD Drive Fault Chiller                         |               |
| 624               | AFD Output Power Input Chiller                  |               |
| 625               | Comm Loss: AFD Speed Signal Output Chiller      |               |
| 626               | Comm Loss: AFD Output Power Input Chiller       |               |
| 627               | Software Error 1001: Call Trane Service Chiller |               |
| 628               | Low Evaporator Water Flow                       |               |
| 629               | Comm Loss: Evap Diff Water Pressure             |               |
| 630               | Comm Loss: Cond Diff Water Pressure             |               |
| 631               | Evaporator Diff Water Pressure Xdcr             |               |
| 632               | Condenser Diff Water Pressure Xdcr(a)           |               |
| 633               | Comm Loss: Adaptive Frequency Drive             |               |
| 634               | Comm Loss: External Heat Recovery Setpoint      |               |
| 635               | Comm Loss: External Heat Recovery Command       |               |
| 636               | Comm Loss: HR Entering Water Temp Sensor        |               |
| 637               | Comm Loss: HR Leaving Water Temp Sensor         |               |
| 638               | Comm Loss: Heat Recovery Tank Water Temp        |               |
| 639               | Comm Loss: Heat Recovery Water Flow Switch      |               |
| 640               | Comm Loss: Heat Recovery Water Pump Relay       |               |



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| Object Identifier | Object Name                                     | Object Status |
|-------------------|---|---------------|
| 641               | Ext Heat Recovery Temp Setpoint Sensor          |               |
| 642               | Heat Recovery Entering Water Temperature Sensor |               |
| 643               | Heat Recovery Leaving Water Temperature Sensor  |               |
| 644               | Heat Recovery Tank Water Temp Sensor            |               |
| 645               | Heat Recovery Water Flow Lost                   |               |
| 646               | Heat Recovery Water Flow Overdue                |               |
| 647               | Unexpected Heat Recovery Water Flow             |               |
| 648               | Unexpected Condenser Water Flow                 |               |
| 649               | Comm Loss: Economizer Valve                     |               |
| 650               | Comm Loss: Economizer Temperature               |               |
| 651               | Economizer Temperature Sensor                   |               |
| 652               | Comm Loss: Economizer Pressure                  |               |
| 653               | Economizer Pressure Sensor                      |               |
| 654               | Comm Loss: Economizer Bypass Valve              |               |
| 655               | AFD Bus Over Voltage                            |               |
| 656               | AFD Bus Under Voltage                           |               |
| 657               | AFD Comm Loss: Main Processor                   |               |
| 658               | AFD Emergency Stop Fault                        |               |
| 659               | AFD General Failure                             |               |
| 660               | AFD Ground Fault                                |               |
| 661               | AFD Instantaneous Current Overload              |               |
| 662               | AFD Inverter Heatsink Over Temp                 |               |
| 663               | AFD Motor Current Overload                      |               |
| 664               | AFD Output Phase Loss                           |               |
| 665               | AFD Rated Current Out of Range                  |               |
| 666               | High Pressure Cutout                            |               |
| 667               | AFD Interrupt Failure                           |               |
| 668               | High Motor Winding Temperature                  |               |
| 669               | Motor Winding Temp Sensor - Cprsr1A             |               |
| 670               | Excessive Condenser Pressure                    |               |
| 671               | Comm Loss: Motor Winding Temperature 1          |               |
| 672               | Comm Loss: Motor Winding Temperature 2          |               |
| 673               | Comm Loss: Oil Return Purge Valve               |               |



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| Object Identifier | Object Name                         | Object Status |
|-------------------|-------------------------------------|---------------|
| 674               | Comm Loss: Hot Gas Bypass Valve     |               |
| 675               | Comm Loss: Liquid Line Bypass Valve |               |



Heat Recovery Control Active Status

**RTHD (UC800)** 

Date: 12/6/2024

Reference Document: BAS-SVP083\*-EN



Configuration **Object Identifier Object Name** Description **Object Status** Dependency 0=stop 1 Run Enable 1=auto 0=no 2 **Local Setpoint Control** 1=yes 0=inactive 3 Limit Mode Relay Status 1=active 0=off 4 Chiller Running 1=on 0=no flow Condenser Water Flow Status 5 1=flow 0=off Head Relief Request Relay 6 1=on 0=auto 7 Active Base Loading Command 1=on 0=off 8 Compressor Running Status 1=running 0=off 9 **Evaporator Water Pump Command** 1=on 0=off Condenser Water Pump Command 10 1=on 0=no flow **Evaporator Water Flow Status** 11 1=flow 0=no 12 Alarm Present 1=yes 0=no 13 Shutdown Alarm Present 1=yes 0=no flow 15 Heat Recovery Water Flow Status



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1=flow 0=inactive

1=active

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| Object Identifier | Object Name               | Description        | Object States      | Relinquish Default | Valid Range |
|-------------------|---------------------------|--------------------|--------------------|--------------------|-------------|
| 1                 | BAS Basa Loading Enable   |                    | 0=auto             | 0=auto             | 0 or 1      |
| 1                 | BAS Base Loading Enable   | 1=on               | 1=true (can reset) | 0 01 1             |             |
| 2                 | DAS Diagnostic Boost      | 3 Diagnostic Boost | 0=false (no reset) | 0=false            | 0 or 1      |
| 2                 | BAS Diagnostic Reset      | 1=true (can reset) | 1=true (can reset) | 0 or 1             |             |
| 2                 | BAS Heat Recovery Command | 0=auto             | 0=auto             | 0 or 1             |             |
| 3                 |                           | 1=on               | 1=true (can reset) | 0 01 1             |             |



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| Object Identifier | Object Name              | Description | Object States  | Configuration<br>Dependency |
|-------------------|--------------------------|-------------|--|-----------------------------|
| 1                 | Chiller Running Status   |             | 1=not running 2=starting 3=running 4=stopping 5= Chiller in service mode |                             |
| 2                 | Chiller Mode Command     |             | 1=cool<br>2=heat<br>3=ice<br>4=not used                                  |                             |
| 3                 | BAS Communication Status |             | 1=established<br>2=lost<br>3=never established<br>4=starting             |                             |
| 4                 | Refrigerant Type         |             | 5=R-134A   |                             |
| 7                 | Manufacturing Location   |             | 3=Pueblo, CO, USA<br>4=Charmes,France<br>15=Taicang, China               |                             |
| 34                | Model Information        |             | 6=RTH  |                             |
| 35                | Cooling Type             |             | 1=water cooled   |                             |



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| Object Identifier | Object Name                   | Description | Object States              | When Exists | Relinquish<br>Default | Valid Range |
|-------------------|-------------------------------|-------------|----------------------------|-------------|-----------------------|-------------|
| 1                 | BAS Chiller Auto Stop Command |             | 1= Stop<br>2= Auto         | 2= Auto     | 1 or 2                |             |
| 2                 | BAS Chiller Mode Command      |             | 1=cool;<br>2=heat<br>3=ice | 1= Cool     | 1 to 4                |             |



# Symbio<sup>™</sup> 800 Integration Points List Modbus<sup>™</sup>

**RTHD (UC800)** 

Date: 12/6/2024

Reference Document: BAS-SVP083\*-EN



#### **Object Naming Conventions**

The communicated points for the Symbio™ controllers are generally named according to their function. While many of the points are read-only, others include both read and write capability. The established naming convention helps to identify the capabilities of each point. For most points, the suffix identifies the capability according to the following definition. While there are some exceptions, the majority of the points have been defined according to these guidelines.

| Suffix     | Description  |
|------------|--|
| Status     | Points with the Status suffix are defined as read-only. The status point reports the value being used by the controller.   |
| Local      | Points with the Local suffix are defined as read-only. The local point reports values associated with controller sensors, both wired and wireless. The local value may or may not be actively used by the controller, depending on the presence or absence of a communicated value (BAS). When both a local and communicated value exist, the communicated value is used.  |
| Active     | Points with the Active suffix are defined as read-only. Points designated as active are normally the result of the arbitration between a communicated value(BAS) and at least one value local to the equipment, such as a sensor or default setpoint. The active point reports the value being input to the controller.  |
| Setpoint   | Points with the Setpoint suffix are defined as either read-only or read/write. For BACnet®, the binary input, analog input and multi-state input points are all read-only. These setpoints report the value currently in use by the controller. The analog value, binary value and multi-state value points are all read/write. These points are provided for use by the building automation system (BAS). When used, these points are written internally to arbitration logic. This defines the interaction with hardwired points, editable software configuration points and the relinquish default value/state. Refer to the Appendix for additional information. |
| Input      | Points with the Input suffix are defined as read-only. These points normally reflect the status of a sensor input, either hardwired or communicating wirelessly (Air-Fi®). However, the input point reflects the arbitrated result of the controller sensor input and a communicated value, if present. When both a controller sensor and communicated value exist, the controller will use and report the communicated value.   |
| Arbitrator | Points with the "Arbitrator" suffix are to be used as read-only. The arbitrator prioritizes inputs from communicating points, hardwired points and stored defaults points. The priority array of the arbitration point displays each of the values provided, including the active status, indicating which of the input sources is being used. Refer to the Appendix for additional information.   |
| BAS        | Points with the BAS suffix are defined as read/write. These points are provided for use by the building automation system (BAS). When used, these points are written to arbitration logic. This defines the interaction with hardwired points, editable software configuration points and the relinquished default value/state. Refer to the Appendix for additional information.  |
| Command    | Points with the Command suffix are defined as read/write. These points are written to change the default behavior of the controller. Once written, these point values may be persisted.  |
| Request    | Points with the Request suffix are defined as read/write. These points are written to request a change the operating behavior of the controller.   |

#### **Object Data Points and Diagnostic Data Points**

The following tables are sorted as follows:

- Tables are listed by input/output type and sorted by object identifier. These tables provide the user with the unit's type for each object type.
- Tables are sorted by object name and provide a complete list of object names, types, values/ranges, and descriptions.

  Note: Not all points are available to the user. The available data points are defined during self-configuration and are dependent on the type of equipment.



#### Modbus™

RTHD (UC800)

Date: 12/6/2024



| Register<br>Address | Point Name   | Description | Register Ty8pe | Register Value               | Valid Range                              |
|---------------------|--|-------------|----------------|------------------------------|--|
| 40001               | BAS Chiller Auto Stop Command                        |             | Binary         |                              | 0, 1                                     |
| 40002               | BAS Chiller Mode Command                             |             | Enumeration    | 0= Cool<br>1= Heat<br>2= Ice | 0 to 2                                   |
| 40003               | BAS Chilled Water Setpoint                           |             | Temperature    |                              | (-17.78°C to 18.32°C)/<br>0°F to 65°F(a) |
| 40004               | BAS Current Limit Setpoint                           |             | Percent(b)     |                              | 0% to 100%                               |
| 40005               | BAS Hot Water Setpoint                               |             | Temperature    |                              | 26.66°C to 48.89°C/<br>80°F to 120°F     |
| 40006               | BAS Base Loading Setpoint                            |             | Percent        |                              | 40% to 100%                              |
| 40007               | BAS Base Loading Command                             |             | Binary         |                              | 0, 1                                     |
| 40008               | BAS Diagnostic Reset                                 |             | Binary         |                              | 0, 1                                     |
| 40009               | BAS Heat Recovery Water Tank<br>Temperature Setpoint |             | Temperature    |                              | 30°C to 45°C<br>86°F to 113°F            |
| 40010               | BAS Heat Recovery Command                            |             | Binary         |                              | 0, 1                                     |



#### Modbus™

RTHD (UC800)

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| Register<br>Address | Object Namge                          | Description | Register type | Register Value  | Valid Range |
|---------------------|---------------------------------------|-------------|---------------|---|-------------|
| 30001               | Software Type                         |             | NA            | 623=RTH   |             |
| 30002               | Software Revision                     |             | NA            |   |             |
| 30003               | Chiller Running                       |             | Binary        | 0=off<br>1=on   |             |
| 30004               | Active Current Limit Setpoint         |             | Percent       |   |             |
| 30005               | Active Base Loading Setpoint          |             | Percent       |   |             |
| 30006               | Actual Running Capacity               |             | Percent       |   |             |
| 30007               | Active Cool/Heat Setpoint Temperature |             | Temperature   |   |             |
| 30008               | Evaporator Entering Water Temperature |             | Temperature   |   |             |
| 30009               | Evaporator Leaving Water Temperature  |             | Temperature   |   |             |
| 30010               | Condenser Entering Water Temperature  |             | Temperature   |   |             |
| 30011               | Condenser Leaving Water Temperature   |             | Temperature   |   |             |
| 30012               | Evaporator Water Pump Command         |             | Binary        | 0=off<br>1=on   |             |
| 30013               | Evaporator Water Flow Status          |             | Binary        | 0=no flow<br>1=flow   |             |
| 30014               | Condenser Water Pump Command          |             | Binary        | 0=off<br>1=on   |             |
| 30015               | Condenser Water flow Status           |             | Binary        | 0=no flow<br>1=flow   |             |
| 30016               | Chiller Running Status                |             | Enumeration   | 0=not running<br>1=starting<br>2=running<br>3=stopping        |             |
| 30017               | Chiller Mode Command                  |             | Enumeration   | 0=cool<br>1=heat<br>2=ice<br>3=not used                       |             |
| 30018               | BAS Communication Status              |             | Enumeration   | 0=established<br>1= lost<br>2=never established<br>3=starting |             |
| 30019               | Alarm Present                         |             | Binary        | 0=no<br>1=yes   |             |
| 30020               | Shutdown Alarm Present                |             | Binary        | 0=no<br>1=yes   |             |



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| Register<br>Address | Object Namge                    | Description | Register type | Register Value         | Valid Range |
|---------------------|---------------------------------|-------------|---------------|------------------------|-------------|
| 30021               | Run Enable                      |             | Binary        | 0=stop<br>1=auto       |             |
| 30022               | Local Setpoint Control          |             | Binary        | 0=no<br>1=yes          |             |
| 30023               | Limit Mode Relay Status         |             | Binary        | 0=inactive<br>1=active |             |
| 30024               | Head Relief Request Relay       |             | Binary        | 0=off<br>1=on          |             |
| 30025               | Head Pressure Control Command   |             | Voltage       |                        |             |
| 30026               | Active Base Loading Command     |             | Binary        | 0=inactive<br>1=active |             |
| 30027               | Compressor Running Status       |             | Binary        | 0=off<br>1=running     |             |
| 30028               | Local Atmosphere Pressure       |             | Pressure      |                        |             |
| 30029               | Evaporator Refrigerant Pressure |             | Pressure      |                        |             |
| 30030               | Condenser Refrigerant Pressure  |             | Pressure      |                        |             |
| 30031               | Evaporator Saturated Rfgt Temp  |             | Temperature   |                        |             |
| 30032               | Condenser Saturated Rfgt Temp   |             | Temperature   |                        |             |
| 30033/30034         | Compressor Starts               |             | Count         |                        |             |
| 30035               | Compressor Oil Pressure         |             | Pressure      |                        |             |
| 30036               | Discharge Temperature           |             | Temperature   |                        |             |
| 30037               | Starter Input Voltage AB        |             | Voltage       |                        |             |
| 30038               | Starter Input Voltage BC        |             | Voltage       |                        |             |
| 30039               | Starter Input Voltage CA        |             | Voltage       |                        |             |
| 30040               | Starter Motor Current L1        |             | Current       |                        |             |
| 30041               | Starter Motor Current L2        |             | Current       |                        |             |
| 30042               | Starter Motor Current L3        |             | Current       |                        |             |
| 30043               | Starter Motor Current L1 % RLA  |             | Percent       |                        |             |
| 30044               | Starter Motor Current L2 % RLA  |             | Percent       |                        |             |
| 30045               | Starter Motor Current L3 % RLA  |             | Percent       |                        |             |
| 30046               | Frequency Command               |             | Frequency     |                        |             |
| 30047               | AFD Output Power                |             | Power         |                        |             |
| 30048               | Number of Circuits              |             | Number        |                        |             |
| 30049               | Number of Compressors- Ckt1     |             | Number        |                        |             |



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| Register<br>Address | Object Namge                       | Description | Register type | Register Value   | Valid Range |
|---------------------|------------------------------------|-------------|---------------|--|-------------|
| 30050               | Number of Compressors- Ckt2        |             | Number        |  |             |
| 30051               | Chiller Design Capacity            |             | Number        |  |             |
| 30052               | Refrigerant Type                   |             | Enumeration   | 4=R-134A   |             |
| 30053               | Model Information                  |             | Enumeration   | 5=RTH  |             |
| 30054               | Cooling Type                       |             | Enumeration   | 0=water cooled   |             |
| 30055               | Manufacturing Location             |             | Enumeration   | 2=Pueblo, CO<br>3=Charmes, France<br>14=Taicang, China |             |
| 30057               | Approximate Chiller Capacity- Evap |             | Number        |  |             |
| 30058               | Approximate Chiller Capacity- Cond |             | Number        |  |             |
| 30059               | Approx Evap Water Flow             |             | Number        |  |             |
| 30060               | Evap Differential Water Pressure   |             | Pressure      |  |             |
| 30061               | Approx Cond Water Flow             |             | Number        |  |             |
| 30062               | Cond Differential Water Pressure   |             | Pressure      |  |             |
| 30063/30064         | Compressor Running Time            |             | Temperature   |  |             |
| 30065               | EXV Position Percent               |             | Percent       |  |             |
| 30066               | Condenser Approach Temperature     |             | Temperature   |  |             |
| 30067               | Evaporator Approach Temperature    |             | Temperature   |  |             |
| 30068               | Heat Recovery Entering Water Temp  |             | Temperature   |  |             |
| 30069               | Heat Recovery Leaving Water Temp   |             | Temperature   |  |             |
| 30070               | Heat Recovery Tank Water Temp      |             | Temperature   |  |             |
| 30071               | Heat Recovery Water Flow Status    |             | Binary        |  |             |
| 30072               | Heat Recovery Active               |             | Binary        |  |             |
| 30073/30074         | Last Diagnostic                    |             |               |  |             |
| 30075               | Motor Winding Temperature 1        |             | Temperature   |  |             |
| 30076               | Motor Winding Temperature 2        |             | Temperature   |  |             |

