

## SMT-IAQ3 BACnet Protocol

### BACnet Interoperability Building Blocks Supported

| Description            | BIBB     | Comments                         |
|------------------------|----------|----------------------------------|
| Read Property          | DS-RP-B  |                                  |
| Read Property Multiple | DS-RPM-B |                                  |
| Write Property         | DS-WP-B  |                                  |
| Dynamic Device Binding | DM-DDB-B | Execute Who-Is, Initiate I-Am    |
| Dynamic Object Binding | DM-DOB-B | Execute Who-Has, Initiate I-Have |

### BACnet Standard Object Types Supported

| Object        | No Of Instance | Instance Assignments   |
|---------------|----------------|--|
| Device Object | 1              |  |
| Analog Input  | 4              | AI-1 CO2<br>AI-2 Temperature<br>AI-3 RH<br>AI-4 Outside Temperature  |
| Analog Output | 4              | AO-1 CO2 Voltage<br>AO-2 Temperature Voltage<br>AO-3 RH Voltage<br>AO-4 Air Quality  |
| Analog Value  | 43             | AV-1 PIN<br>AV-2 Display Temp<br>AV-3 Display RH<br>AV-4 Display CO2<br>AV-5 Calibrate Temp<br>AV-6 Calibrate RH<br>AV-7 Calibrate CO2<br>AV-8 Temperature Alarm Relay<br>AV-9 RH Alarm Relay<br>AV-10 CO2 Alarm Relay<br>AV-11 Alarm Relay Logic<br>AV-12 Beeper<br>AV-13 Beeper Mute<br>AV-14 Show Force Fresh Air Button<br>AV-15 T1 T2 Input Function<br>AV-16 Active Ventilation Outside Air Temperature<br>AV-17 Active Ventilation Inside Air Temperature<br>AV-18 Active Ventilation Output<br>AV-19 Temp Min Value<br>AV-20 Temp Max Value<br>AV-21 Temp Low Voltage<br>AV-22 Temp Max Voltage<br>AV-23 Temp Safety Voltage<br>AV-24 RH Min Value<br>AV-25 RH Max Value<br>AV-26 RH Low Voltage<br>AV-27 RH Max Voltage<br>AV-28 RH Safety Voltage<br>AV-29 CO2 Min Value<br>AV-30 CO2 Max Value<br>AV-31 CO2 Low Voltage<br>AV-32 CO2 Max Voltage<br>AV-33 CO2 Safety Voltage<br>AV-34 Back light<br>AV-35 Amber Temp Backlight Threshold<br>AV-36 Red Temp Backlight Threshold<br>AV-37 Amber RH Backlight Threshold<br>AV-38 Red RH Backlight Threshold<br>AV-39 Amber CO2 Backlight Threshold<br>AV-40 Red CO2 Backlight Threshold<br>AV-41 Speed of response for CO2<br>AV-42 Air Quality Display<br>AV-43 CO2 relay off threshold |
| Binary Input  | 3              | BI-1 TT Input<br>BI-2 Mute<br>BI-3 Force Fresh Air   |

|               |   |  |
|---------------|---|--|
| Binary Output | 3 | BO-1 Relay<br>BO-2 Beeper<br>BO-3 Ventilation Active |
|---------------|---|--|

**Device Object Properties (Required Object Properties)**

| Property Name /ID             | Default                       | R/W |
|-------------------------------|-------------------------------|-----|
| Object Identifier             | 165000 + Address              | R   |
| Object Name                   | "SMT-IAQ3_XXX", XXX = Address | R   |
| Object Type                   | 8                             | R   |
| System Status                 | OPERATIONAL                   | R   |
| Vendor Name                   | SmartTemp                     | R   |
| Vendor Identifier             | 165                           | R   |
| Model Name                    | SMT-IAQ3                      | R   |
| Location                      | Location                      | R/W |
| Description                   | Indoor Air Quality Monitor    | R/W |
| Application Software Revision | 1.0                           | R   |
| Protocol Version              | 1                             | R   |
| Protocol Revision             | 9                             | R   |
| Protocol Services Supported   |                               | R   |
| Object List                   |                               | R   |
| Max APDU Length               | 480                           | R   |
| Segmentation Support          | NONE                          | R   |
| APDU Timeout                  | 3000                          | R   |
| Number APDU Retries           | 3                             | R   |
| MaxMaster                     | 127                           | R   |
| Max_Info_Frames               | 1                             | R   |
| Database Revision             | 0                             | R   |

**Analog Input Objects**

| Property Name /ID | Comments/Default Value   | R/W |
|-------------------|--|-----|
| Object Identifier | OBJECT_ANALOG_INPUT:X  | R   |
| Object Name       | AI-1 CO2<br>AI-2 Temperature<br>AI-3 RH<br>AI-4 Outside Temperature  | R   |
| Object Type       | 0  | R   |
| Present Value     | REAL   | R   |
| Status Flag       | 0000   | R   |
| Event State       | NORMAL   | R   |
| Out-Of-Service    | FALSE  | R   |
| Units             | AI-1 Parts Per Million<br>AI-2 Degrees Celsius<br>AI-2 Degrees Fahrenheit<br>AI-3 Percent Relative Humidity<br>AI-4 Degrees Celsius<br>AI-4 Degrees Fahrenheit | R   |
| Min Pres Value    | AI-1 0<br>AI-2 -20<br>AI-3 0<br>AI-4 -20   | R   |
| Max Pres Value    | AI-1 2000<br>AI-2 99(Degrees Celsius)<br>AI-2 199(Degrees Fahrenheit )<br>AI-3 100<br>AI-4 99(Degrees Celsius)<br>AI-4 199(Degrees Fahrenheit )                | R   |
| Resolution        | AI-1 1<br>AI-2 0.1<br>AI-3 1<br>AI-4 0.1   | R   |

**Analog Output Objects**

| Property Name /ID | Default   | R |
|-------------------|---|---|
| Object Identifier | OBJECT_ANALOG_OUTPUT:X  | R |
| Object Name       | AO-1 CO2 Voltage<br>AO-2 Temperature Voltage<br>AO-3 RH Voltage<br>AO-4 Air Quality | R |
| Object Type       | 1   | R |

|                |   |   |
|----------------|---|---|
| Present Value  | AO-1 REAL<br>AO-2 REAL<br>AO-3 REAL<br>AO-4 0:Good 1:Poor 2:Bad | R |
| Status Flag    | 0000  | R |
| Event State    | NORMAL  | R |
| Out-Of-Service | FALSE   | R |
| Units          | AO-1 Volts<br>AO-2 Volts<br>AO-3 Volts<br>AO-4 No Units         | R |
| Min Pres Value | AO-1 0<br>AO-2 0<br>AO-3 0<br>AO-4 0                            | R |
| Max Pres Value | AO-1 10<br>AO-2 10<br>AO-3 10<br>AO-4 2                         | R |
| Resolution     | AO-1 0.01<br>AO-2 0.01<br>AO-3 0.01<br>AO-4 1                   | R |

#### Analog Value Objects

| Property Name /ID | Default  | R/W |
|-------------------|--|-----|
| Object Identifier | OBJECT_ANALOG_VALUE:X  | R   |
| Object Name       | AV-1 PIN<br>AV-2 Display Temp<br>AV-3 Display RH<br>AV-4 Display CO2<br>AV-5 Calibrate Temp<br>AV-6 Calibrate RH<br>AV-7 Calibrate CO2<br>AV-8 Temperature Alarm Relay<br>AV-9 RH Alarm Relay<br>AV-10 CO2 Alarm Relay<br>AV-11 Alarm Relay Logic<br>AV-12 Beeper<br>AV-13 Beeper Mute<br>AV-14 Show Force Fresh Air Button<br>AV-15 T1 T2 Input Function<br>AV-16 Active Ventilation Outside Air Temperature<br>AV-17 Active Ventilation Inside Air Temperature<br>AV-18 Active Ventilation Output<br>AV-19 Temp Min Value<br>AV-20 Temp Max Value<br>AV-21 Temp Low Voltage<br>AV-22 Temp Max Voltage<br>AV-23 Temp Safety Voltage<br>AV-24 RH Min Value<br>AV-25 RH Max Value<br>AV-26 RH Low Voltage<br>AV-27 RH Max Voltage<br>AV-28 RH Safety Voltage<br>AV-29 CO2 Min Value<br>AV-30 CO2 Max Value<br>AV-31 CO2 Low Voltage<br>AV-32 CO2 Max Voltage<br>AV-33 CO2 Safety Voltage<br>AV-34 Back light<br>AV-35 Amber Temp Backlight Threshold<br>AV-36 Red Temp Backlight Threshold<br>AV-37 Amber RH Backlight Threshold<br>AV-38 Red RH Backlight Threshold<br>AV-39 Amber CO2 Backlight Threshold<br>AV-40 Red CO2 Backlight Threshold<br>AV-41 Speed of response for CO2<br>AV-42 Air Quality Display<br>AV-43 CO2 relay off threshold | R   |

|                |   |     |
|----------------|---|-----|
| Object Type    | 2   | R   |
| Present Value  | AV-1 0-9999 (Default:21)<br>AV-2 0: Off 1:C(Default) 2:F<br>AV-3 0:Off 1:On(Default)<br>AV-4 0: Off 1:ppm(Default) 2:%<br>AV-5 +-5 (Default:0)<br>AV-6 +-25 (Default:0)<br>AV-7 +-100 (Default:0)<br>AV-8 -20-120 -21:Off(Default)<br>AV-9 0-100 -1:Off(Default)<br>AV-10 400-2000 0:Off(Default)<br>AV-11 0 Normally de-energised(Default) 1<br>Normally energised<br>AV-12 0:Off 1:Button(Default) 2:Alarm<br>3:Button&Alarm<br>AV-13 0:Off (Default) 1:Toggle 2:1Hour mute<br>3:3Hours mute 4:12Hours<br>AV-14 0:Off(Default) 1:Show 2:Reset after 1<br>hour 3:Reset after 4 hour<br>AV-15 0:Override(Default) 1:Average 2:FFA<br>3:Mute 5:Report 6:Outside 7:Pause<br>AV-16 5 -100 0:Off(Default)<br>AV-17 5 -100 0:Off(Default)<br>AV-18 0:Off(Default) 1:Relay 2:Temp 0-10Vdc<br>3:Relay&Temp 0-10Vdc<br>AV-19 -20-150 (Default:5)<br>AV-20 -20-150 (Default:5)<br>AV-21 0-10 (Default:0)<br>AV-22 0-10 (Default:10)<br>AV-23 0-10 (Default:0)<br>AV-24 0-100<br>AV-25 0-100<br>AV-26 0-10 (Default:0)<br>AV-27 0-10 (Default:10)<br>AV-28 0-10 (Default:0)<br>AV-29 0-2000<br>AV-30 0-2000<br>AV-31 0-10 (Default:0)<br>AV-32 0-10 (Default:10)<br>AV-33 0-10 (Default:0)<br>AV-34 0:Off 1:Alarm (Default) 2:Button<br>AV-35 0-100 -1:Off(Default)<br>AV-36 0-100 -1:Off(Default)<br>AV-37 0-100 -1:Off(Default) | R/W |
| Status Flag    | 0000  | R   |
| Event State    | NORMAL  | R   |
| Out-Of-Service | FALSE   | R   |
|                | AV-1 No Units<br>AV-2 No Units<br>AV-3 No Units<br>AV-4 No Units<br>AV-5 Degrees Celsius<br>AV-5 Degrees Fahrenheit<br>AV-6 Percent Relative Humidity<br>AV-7 Parts Per Million<br>AV-8 Degrees Celsius<br>AV-8 Degrees Fahrenheit<br>AV-9 Percent Relative Humidity<br>AV-10 Parts Per Million<br>AV-11 No Units<br>AV-12 No Units<br>AV-13 No Units<br>AV-14 No Units<br>AV-15 No Units<br>AV-16 Degrees Celsius<br>AV-16 Degrees Fahrenheit<br>AV-17 Degrees Celsius<br>AV-17 Degrees Fahrenheit<br>AV-18 No Units<br>AV-19 Degrees Celsius<br>AV-19 Degrees Fahrenheit  |     |

|       |   |   |
|-------|---|---|
| Units | AV-20 Degrees Celsius<br>AV-20 Degrees Fahrenheit<br>AV-21 Volts<br>AV-22 Volts<br>AV-23 Volts<br>AV-24 Percent Relative Humidity<br>AV-25 Percent Relative Humidity<br>AV-26 Volts<br>AV-27 Volts<br>AV-28 Volts<br>AV-29 Parts Per Million<br>AV-30 Parts Per Million<br>AV-31 Volts<br>AV-32 Volts<br>AV-33 Volts<br>AV-34 No Units<br>AV-35 Degrees Celsius<br>AV-35 Degrees Fahrenheit<br>AV-36 Degrees Celsius<br>AV-36 Degrees Fahrenheit<br>AV-37 Percent Relative Humidity<br>AV-38 Percent Relative Humidity<br>AV-39 Parts Per Million<br>AV-40 Parts Per Million<br>AV-41 No Units<br>AV-42 No Units<br>AV-43 Parts Per Million | R |
|-------|---|---|

#### Binary Input Objects

| Property Name /ID | Default  | R/W  |
|-------------------|--|--|
| Object Identifier | OBJECT_BINARY_OUTPUT:X                             | R  |
| Object Name       | BI-1 TT Input<br>BI-2 Mute<br>BI-3 Force Fresh Air | R  |
| Object Type       | 3  | R  |
| Present Value     | 0 = OFF<br>1 = ON                                  | BI-1 TT Input R<br>BI-2 Mute R/W<br>BI-3 Force Fresh Air R/W |
| Polarity          | 0 = Normal   | R  |
| Status Flag       | 0000   | R  |
| Event State       | NORMAL   | R  |
| Out-Of-Service    | FALSE  | R  |

#### Binary Output Objects

| Property Name /ID | Default  | R/W |
|-------------------|--|-----|
| Object Identifier | OBJECT_BINARY_OUTPUT:X                               | R   |
| Object Name       | BO-1 Relay<br>BO-2 Beeper<br>BO-3 Ventilation Active | R   |
| Object Type       | 4  | R   |
| Present Value     | 0 = OFF<br>1 = ON                                    | R   |
| Polarity          | 0 = Normal<br>1 = Reverse                            | R   |
| Status Flag       | 0000   | R   |
| Event State       | NORMAL   | R   |
| Out-Of-Service    | FALSE  | R   |