



FRIO MODBUS/BACNET POINTS LIST

| BACnet | | | | | | | Modbus RTU | |
|--------|--------------------------|--------------|----------|---|------------|--|----------------|-------------|
| Object | Name | Type | Units | Range/Options | Read/Write | Description | Type | Address |
| A11 | Current | Analog Input | Amperes | 0-50 A | R | Current consumption of connected heat trace. <i>NOTE: The controller is only rated to 30 A</i> | Input Register | 30001-30002 |
| A12 | Voltage | Analog Input | Volts AC | 0-300 V | R | Voltage measurement from power supply to controller. <i>NOTE: The controller is only rated to 277 V</i> | Input Register | 30003-30004 |
| A13 | RTD Temperature C | Analog Input | °C | -100°C to 750°C | R | Temperature reading from RTD in Celsius, if connected. <i>NOTE: If RTD is not connected the read value will be 65535.</i> | Input Register | 30005-30006 |
| A14 | Thermistor Temperature C | Analog Input | °C | -40°C to 105°C | R | Temperature reading from thermistor in Celsius, if connected. <i>NOTE: If Thermistor is not connected the read value will be 65535.</i> | Input Register | 30007-30008 |
| A15 | RTD Temperature F | Analog Input | °F | -148°F to 1382°F | R | Temperature reading from RTD in Fahrenheit, if connected. <i>NOTE: If RTD is not connected the read value will be 65535.</i> | Input Register | 30009-30010 |
| A16 | Thermistor Temperature F | Analog Input | °F | -40°F to 221°F | R | Temperature reading from thermistor in Fahrenheit, if connected. <i>NOTE: If Thermistor is not connected the read value will be 65535.</i> | Input Register | 30011-30012 |
| A17 | Controller Mode | Analog Input | No Units | 0 = ALWAYS_OFF 1 = ALWAYS_ON 2 = THERMOSTAT_FP 3 = THERMOSTAT_TM 4 = CLOUD_CONTROL 5 = HYBRID_CLOUD_FP 6 = CLOUD_SCHEDULER_TM | R | Current controller setting. <ul style="list-style-type: none"> ALWAYS_OFF = Local manual control heater is always OFF. ALWAYS_ON = Local manual control heater is always ON. THERMOSTAT_FP = Local thermostat control for freeze protection THERMOSTAT_TM = Local thermostat control for temperature maintenance CLOUD_CONTROL = Cloud-based control for all smart control modes HYBRID_CLOUD_FP = Freeze protection thermostat with weather forecast data input for efficiency improvements CLOUD_SCHEDULER_TM = Cloud-based temperature maintenance schedule | Input Register | 30013 |

| BACnet | | | | | | | Modbus RTU | |
|--------|-------|--------------|----------|--|------------|--|----------------|---------|
| Object | Name | Type | Units | Range/Options | Read/Write | Description | Type | Address |
| A18 | State | Analog Input | No Units | 0 = CLOUD_CONTROL 1 = LOCAL_CONTROL 2 = OVERRIDE 3 = CRITICAL_ERROR 4 = MODBUS_CONTROL 5 = HYBRID_CONTROL 6 = SPOTCHECK 7 = CLOUD_SCHEDULER | R | <p>Current operational state of the control state machine.</p> <p>Possible State/Sub-state combinations:</p> <ul style="list-style-type: none"> • CLOUD_CONTROL <ul style="list-style-type: none"> ○ CLOUD_CONTROL - Device online and controlled by the Frio Cloud Platform ○ THERMOSTAT_FP - Offline fallback to thermostat control for freeze protection ○ THERMOSTAT_TM - Offline fallback to thermostat control for temperature maintenance ○ ALWAYS_ON - Offline fallback to always ON. ○ ALWAYS_OFF - Offline fallback to always OFF. • LOCAL_CONTROL <ul style="list-style-type: none"> ○ THERMOSTAT_FP - Local thermostat control for freeze protection ○ THERMOSTAT_TM - Local thermostat control for temperature maintenance ○ ALWAYS_ON - Local manual control heater is always ON. ○ ALWAYS_OFF - Local manual control heater is always OFF. • OVERRIDE <ul style="list-style-type: none"> ○ ALWAYS_ON - Heater ON due to Local or Cloud override command ○ ALWAYS_OFF - Heater OFF due to Local or Cloud override command • CRITICAL_ERROR <ul style="list-style-type: none"> ○ ALWAYS_OFF - The system has a critical error and the heater is OFF <p><i>NOTE: User must perform a manual test/reset cycle from the HMI to exit the critical error state.</i></p> <ul style="list-style-type: none"> • MODBUS_CONTROL <ul style="list-style-type: none"> ○ ALWAYS_ON - Heater is ON due to Modbus force on command ○ ALWAYS_OFF - Heater is OFF due to Modbus force off command • HYBRID_CONTROL <ul style="list-style-type: none"> ○ HYBRID_THERMOSTAT – Weather data indicates that heater operation can be suspended. ○ THERMOSTAT_FP – Operating as local freeze protection thermostat • SPOTCHECK <ul style="list-style-type: none"> ○ ALWAYS_ON – Checking S1 status with heater ON ○ ALWAYS_OFF - Checking S1 status with heater OFF • CLOUD_SCHEDULER <ul style="list-style-type: none"> ○ THERMOSTAT_TM – Heater is ON due to selected schedule ○ ALWAYS_OFF – Heater is OFF due to selected schedule | Input Register | 30014 |

| BACnet | | | | | | | Modbus RTU | |
|-------------|--------------------|---------------|----------|---|------------|---|------------------|---------|
| Object | Name | Type | Units | Range/Options | Read/Write | Description | Type | Address |
| A19 | Sub-state | Analog Input | No Units | 0 = THERMOSTAT_FP 1 = THERMOSTAT_TM 2 = ALWAYS_ON 3 = ALWAYS_OFF 4 = CLOUD_CONTROL 5 = HYBRID_THERMOSTAT | R | Current operational sub-state of the control state machine. See above for detailed description of possible State/Sub-state combinations. | Input Register | 30015 |
| BI11 | Alarm | Binary Input | No Units | 0 = No Alarms 1 = One or more alarms present | R | Alarm summary indicating whether any alarms are present on the device. | Discrete Input | 10001 |
| BI12 | Heater Relay State | Binary Input | No Units | 0 = Relay is open, heater is OFF 1 = Relay is closed, heater is ON | R | Current state of the heater. | Discrete Input | 10002 |
| AO13 | Force On/Off | Analog Output | No Units | 0=DO_NOTHING 1=FORCE_ON 2=FORCE_OFF | R/W | Force relay into On/Off state, ignoring device's control mode. <ul style="list-style-type: none"> DO_NOTHING = Device will operate according to the control mode in settings FORCE_ON = Device will enter the MODBUS_CONTROL/ALWAYS_ON State/Sub-state FORCE_OFF = Device will enter the MODBUS_CONTROL/ALWAYS_OFF State/Sub-state <p><i>NOTE: Modbus override takes priority over local and cloud override.</i></p> | Holding Register | 40001 |