



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 (32-bit Float)	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 (32-bit Float)	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 (32-bit Float)	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 (32-bit Float)	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 (32-bit Float)	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 (32-bit Float)	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 (16-bit Integer)	30013

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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	Current operational state of the control state machine. Possible State/Sub-state combinations: <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> • 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 (16-bit Integer)	30014

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Object	Name	Type	Units	Range/Options	Read/Write	Description	Type	Address
AI9	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 (16-bit Integer)	30015
AI10	Network Connection	Analog Input	No Units	0 = CONNECTING 1 = CONNECTED 2 = DISCONNECTED 3 = DISABLED	R	Current network connection status of the S1. The states apply for both ethernet and WiFi connection types.	Input Register (16-bit Integer)	30016
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 (16-bit Integer)	40001

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Object	Name	Type	Units	Range/Options	Read/Write	Description	Type	Address	Bit Extract Bit Offset	Bit Extract Length
BI14	Alarms - GFEP Trip	Binary Input	No Units	0 = No Alarm 1 = Alarm Active	R	Ground fault trip alarm	Input Register (Bitmap)	30017	0	1
BI15	Alarms - GFEP System	Binary Input	No Units	0 = No Alarm 1 = Alarm Active	R	Ground fault system alarm	Input Register (Bitmap)	30017	1	1
BI16	Alarms - Low Temperature	Binary Input	No Units	0 = No Alarm 1 = Alarm Active	R	Low temperature alarm	Input Register (Bitmap)	30017	2	1
BI17	Alarms - High Temperature	Binary Input	No Units	0 = No Alarm 1 = Alarm Active	R	High temperature alarm	Input Register (Bitmap)	30017	3	1
BI18	Alarms - Low Current	Binary Input	No Units	0 = No Alarm 1 = Alarm Active	R	Low current alarm	Input Register (Bitmap)	30017	4	1
BI19	Alarms - High Current	Binary Input	No Units	0 = No Alarm 1 = Alarm Active	R	High current alarm	Input Register (Bitmap)	30017	5	1
BI20	Alarms - Thermistor	Binary Input	No Units	0 = No Alarm 1 = Alarm Active	R	Temperature sensor alarm - thermistor	Input Register (Bitmap)	30017	6	1
BI21	Alarms - RTD	Binary Input	No Units	0 = No Alarm 1 = Alarm Active	R	Temperature sensor alarm - RTD	Input Register (Bitmap)	30017	7	1
BI22	Alarms - Power Loss	Binary Input	No Units	0 = No Alarm 1 = Alarm Active	R	Power loss alarm	Input Register (Bitmap)	30017	8	1
BI23	Alarms - Network	Binary Input	No Units	0 = No Alarm 1 = Alarm Active	R	Internet network connection loss alarm	Input Register (Bitmap)	30017	9	1
BI24	Alarms - GF High Current	Binary Input	No Units	0 = No Alarm 1 = Alarm Active	R	Ground fault high current alarm	Input Register (Bitmap)	30017	10	1
BI25	Alarms - Power Monitor	Binary Input	No Units	0 = No Alarm 1 = Alarm Active	R	Power monitor system alarm	Input Register (Bitmap)	30017	12	1