Manuals+ — User Manuals Simplified.

meitav-tec
PYROCON19
Controller and User
Interface Panel

meitav-tec PYROCON19 Controller and User Interface Panel Owner's Manual

Contents

meitav-tec PYROCON19 Controller and User Interface Panel

Introduction

The PYROCON19-TRACE offers smart and simple control for HEAT TRACING SYSTEMS.
It can operate up to 4 heating zones and one auxiliary zone, with selectable sequencing method. Typical applications include pipes, valves and gutters.
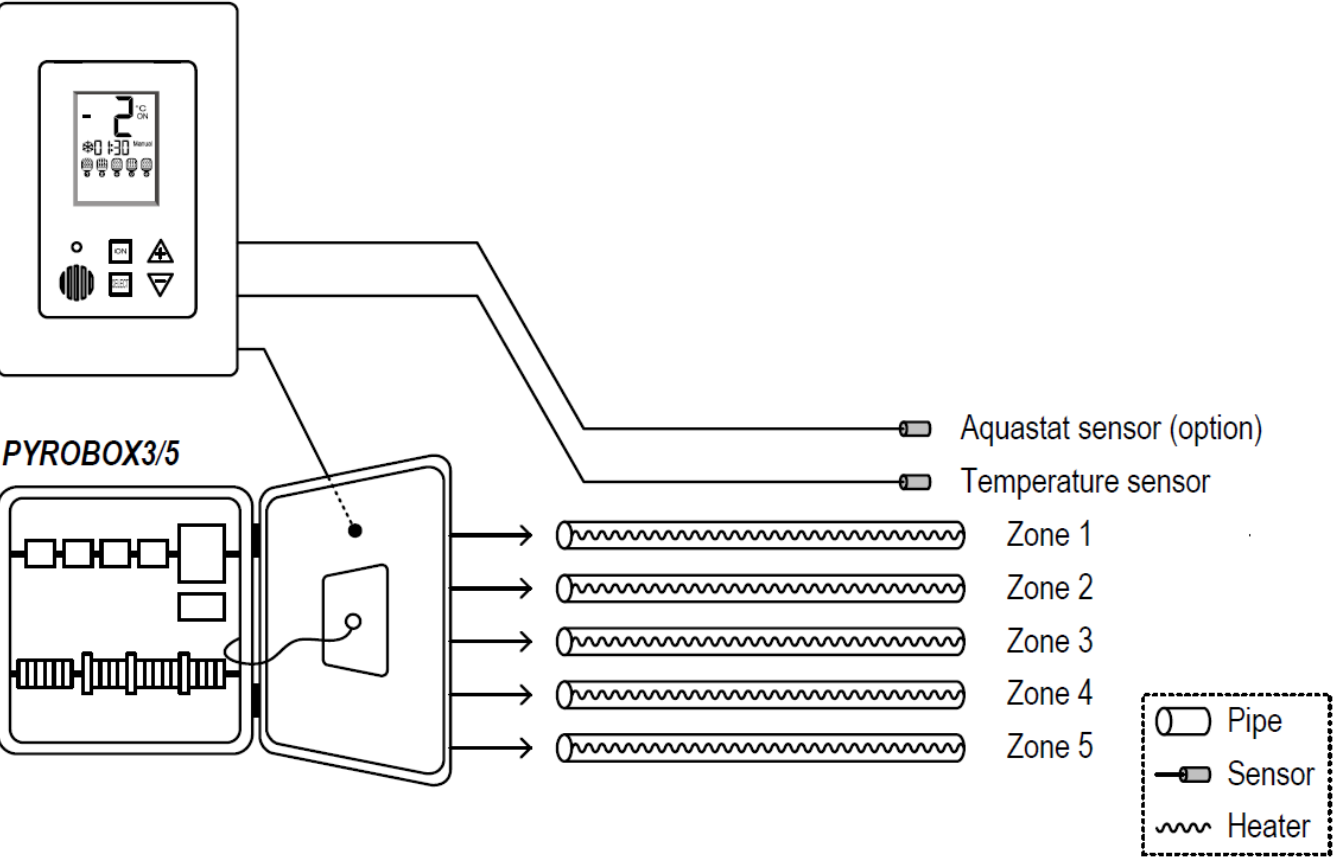The backlit LCD screen provides full interface and information to the system status.
The Use of several zones staggering allow covering longer pipes length with less available electrical power.

The PYROCON19-TRACE offers various operating and programming options such as:

- Switchable temperature scales (°F or °C)
- Both Automatic and Manual modes
- Adjustable heaters cycle and splitting times
- Adjustable heaters hold on off delay
- Adjustable Lower ambient temperature limit to stop heaters (lockout)
- Energy saving temperature limit
- Commissioning/Test environment

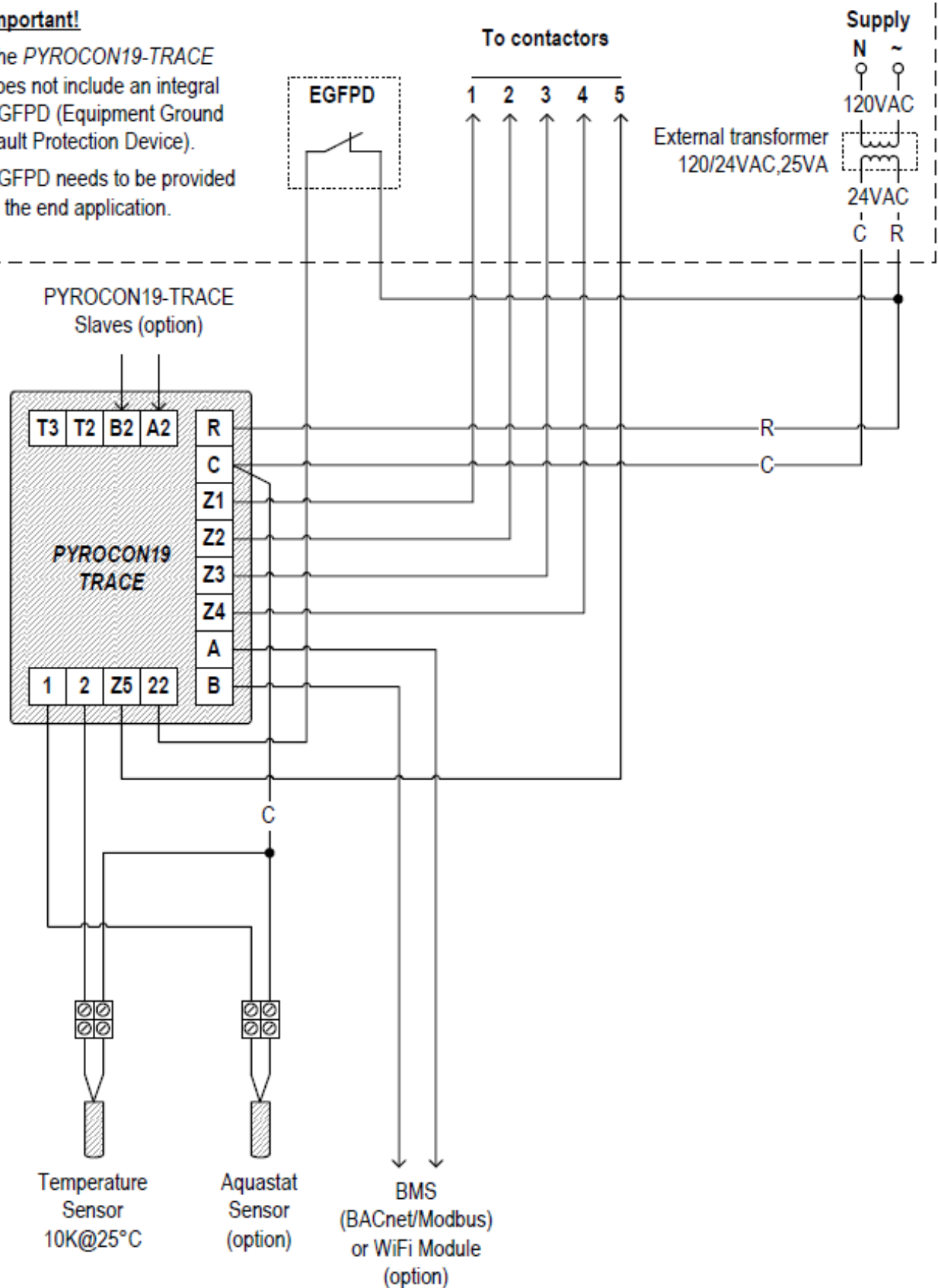**PYROCON19-TRACE General system layout with PYROBOX3/5**

PYROCON19-TRACE

PYROBOX3/5

Aquastat sensor (option)

Temperature sensor

Zone 1
Zone 2
Zone 3
Zone 4
Zone 5

	Pipe
	Sensor
∿∿	Heater

Wiring diagram for stand alone configuration

To contactors

EGFPD

1 2 3 4 5

Supply

N ~

120VAC

External transformer 120/24VAC, 25VA

24VAC

C R

PYROCON19-TRACE Slaves (option)

| T3 | T2 | B2 | A2 |

R
C
Z1
Z2
Z3
Z4
A
B

| 1 | 2 | Z5 | 22 |

PYROCON19 TRACE

R

C

C

Temperature Sensor 10K@25°C

Aquastat Sensor (option)

BMS (BACnet/Modbus) or WiFi Module (option)

Connecting PYROCON19-TRACE slaves (option)

Number of PYROCON19-TRACE Slaves	Master's MAC Addresses	Slave's MAC Addresses
Up to 3	1-63	14-16

These slaves can be connected directly to A2,B2 terminals on the PYROCON19-TRACE or through multiple PYRO-JBOX junction boxes with built in 50VA, 110~24VAC transformer – Allowing connection and powering up to 3 slaves.
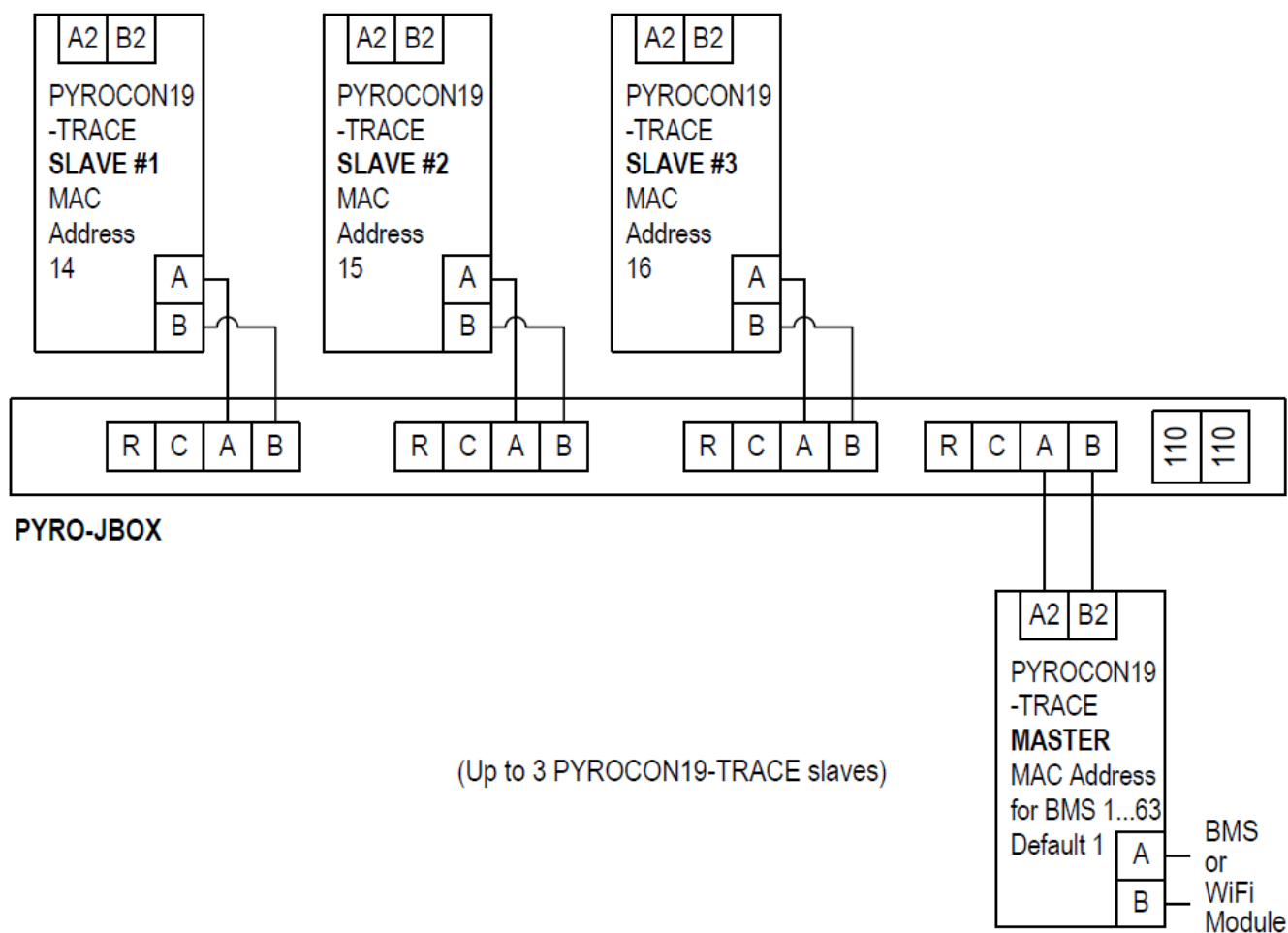
Please refer to technician parameter P08 for Salve's MAC Address. and to parameter P11 for Master/Slave configuration

Operating instructions

Turning the system ON and OFF

- Press and hold the [ON] button for 0.5 seconds to turn the system ON or OFF.
- The words "ON" or "OFF" will appear on display.

Selecting temperature scale

- Press the [+] button for Celsius.
- Press the [-] button for Fahrenheit.

Selecting Automatic or Manual mode
Press the [SELECT] button to switch between modes:

"**Automatic**" Heating will start and stop automatically depending on the set point and ambient temperatures.
"**Manual ON**" Heating will start regardless of the set point and ambient temperatures and will stop after a preset time (pls. refer to the "Manual ON" section in the tech. settings).

Note: Mode will always return to "Automatic" after switching the unit OFF and ON.

Heaters indication

The number beneath the heater icon indicate the heater output (1 to 5).

Output 1   Output. 2   Output 3   Output 4   Output 5
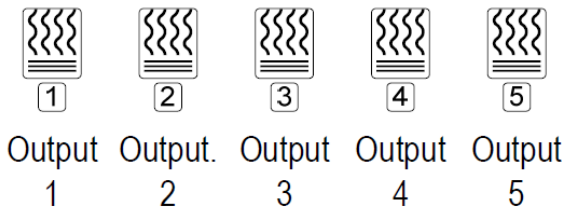
Black icon – Heater ON
White icon – Heater OFF

Heater ON   Heater OFF

Snow flake icon and digital time indication
A solid snow flake icon will appear on display during normal heaters operation.

A blinking snow flake icon will appear on display during heaters off delay or when manual mode is activated. The digital clock will count down the remaining time until the heaters are turned off.
The snow flake icon will disappear from display as long as the heaters are turned off.

Technician settings
Use the technician settings mode to view and adjust the following parameters:

- P01   Temperature set point
- P02   Lower ambient temperature limit to stop heaters
- P03   Time delay before stopping the heaters
- P04   ON time for manual mode
- P05   Heaters cycle time / Splitting time
- P07   Heaters outputs logic
- P08 MAC Address for BMS and for Master-Slaves
- P09   Commissioning / Test mode
- P11 Master/Slave
- P15   Temperature sensor calibration Offset Restore defaults

Enter technician settings mode

- Move DIP switch S1 located on the back side of thermostat to ON position.
- Press the [SELECT] and [+] buttons simultaneously to move forward to the next technician parameter.
- Press the [SELECT] and [-] buttons simultaneously to return to the previous technician parameter.
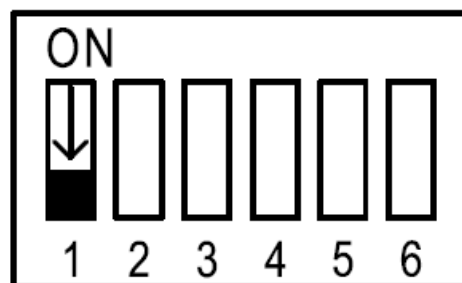
ON

1 2 3 4 5 6
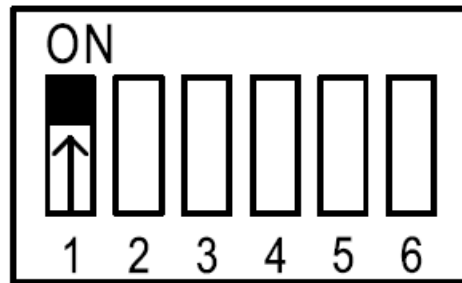
Enter technician
settings mode

Save changes and exit technician settings mode
Move DIP switch S1 located on the back side of thermostat to OFF position.
The thermostat will return to normal operation mode in OFF state.

Important: Changes made to technician parameters will not take effect as long as DIP switch S1 is in ON position.

ON

1 2 3 4 5 6

Save changes and exit
technician settings
mode

Parameters:
P01 – Temperature set point

- Move DIP switch S1 located on the side of thermostat to ON position.
- "P01" and the temperature set point will appear on display.
- Use the [+] and [-] buttons to adjust the temperature set point.

   Range: 14…77°F / -10…+25°C, Default: 37°F / 3°C

As long as the ambient temperature is lower than the temperature set point P01, the PYROCON19-TRACE will turn ON.
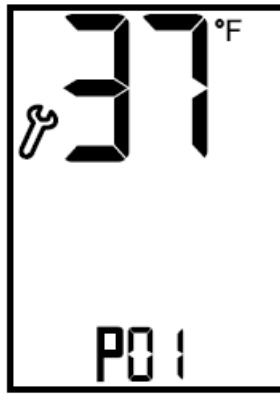
Temperature
set point

P02 – Lower limit temperature for heating

- Press the [SELECT] and [+] buttons simultaneously.
- "P02" and the low limit temperature will appear on display.
- When the temperature on the temperature sensor drops below the low temperature limit, the heating system will stop.
- Use the [+] and [-] buttons to adjust the temperature set point.
- Range: -40…+23°F / -40…-5°C Default: -31°F / -35°C
- Press the [SELECT] and [+] buttons simultaneously again.
- The word "ON" or "OFF" will appear on display.
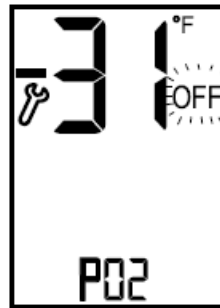- Use the [+] and [-] buttons enable (ON) or disable (OFF) the P02 parameter.

If disabled, the heating system will operate without low temperature limitations.
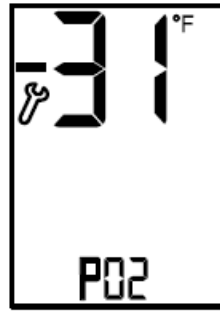
Low limit
Temperature

P02
enabled

P02
disabled

P03 -Time delay before stopping the heaters

- Press the [SELECT] and [+] buttons simultaneously.
- "P03", "dL" and the time delay before stopping the heaters (Hold ON) will appear on display.
- Use the [+] and [-] buttons to adjust the time delay – Hours.
  Range: 0…9 hours Default: 1 hour
- Press the [SELECT] and [+] buttons simultaneously again.
- Use the [+] and [-] buttons to adjust the time delay – Minutes.
  Range: 0…59 minutes Default: 30 minutes

Time delay
(hours)

Time delay
(minutes)

Note 1. The time delay countdown will start when the ambient temperatures rises above the set point temperature.
Note 2. The staggering sequence will continue during the time delay period.

P04 – Manual mode ON time

- Press the [SELECT] and [+] buttons simultaneously.
- "P04", "On" and the "Manual ON" mode time period will appear on display.

  The time frame in which the heaters remain ON after receiving an "Manual ON" command.
- Use the [+] and [-] buttons to adjust the "Manual ON" time (Hours).

  Range: 1…48 hours Default: 4 hours
- Press the [SELECT] and [+] buttons simultaneously again.
- Use the [+] and [-] buttons to adjust the "Manual ON" time (Minutes).

  Range: 0…59 minutes Default: 30 minutes

Manual ON
(hours)

Manual ON
(minutes)

P05 – Heaters cycle and splitting time

- Press the [SELECT] and [+] buttons simultaneously.
- "P05", "SP" and the splitting time will appear on display.

  The minutes will blink.

  The heaters cycle / splitting time parameter defines the working time of the heaters when working in sequence.

  Example: the splitting time is set to 10 minutes and 4 heaters work in sequence, each heater will be ON for 2.5 minutes (10/4=2.5).
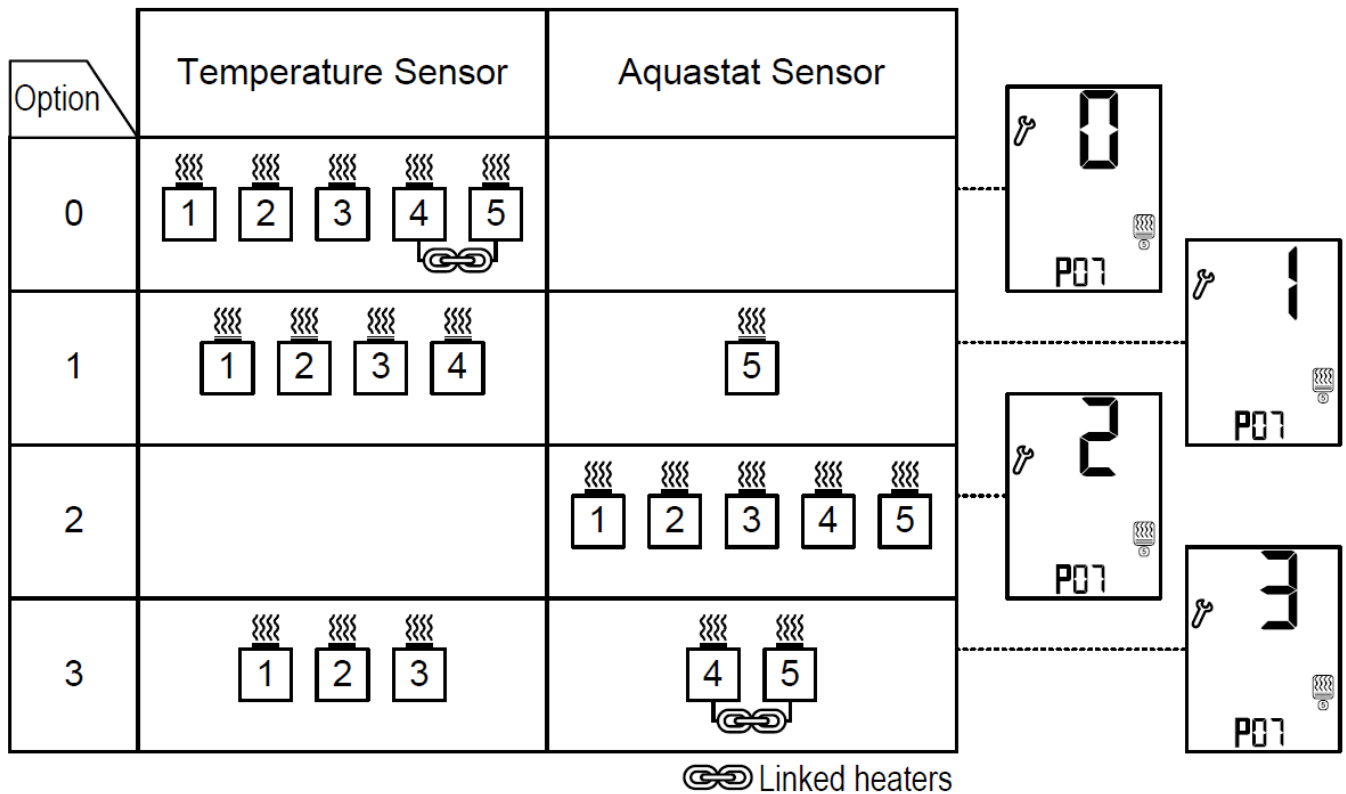- Use the [+] and [-] buttons to adjust the splitting time.

  Range: 1…600 minutes Default: 120 minutes.

Splitting time
(minutes)

P07 – Heaters outputs logic (by TEMPERATURE SENSOR or by AQUASTAT SENSOR)

- Press the [SELECT] and [+] buttons simultaneously.
- "P07" and the figures "0", "1", "2" or "3" will appear on display.
- Use the [+] and [-] buttons to define the logic of output 1-5 as follows:

| Option	Temperature Sensor	Aquastat Sensor
0	〰1 〰2 〰3 〰4 〰5 (4 and 5 linked)	
1	〰1 〰2 〰3 〰4	〰5
2		〰1 〰2 〰3 〰4 〰5
3	〰1 〰2 〰3	〰4 〰5 (linked)

🔗 Linked heaters

Note: If option 2 is selected, the temperature display will remain blank.

P08 – MAC Address for BMS and for Master-Slaves

- Press the [SELECT] and [+] buttons simultaneously.
- "P08" and the MAC Address will appear on display.
- Use the [+] and [-] buttons to set the MAC Address of the unit.
  Setting the MAC address for the unit will make it available through the home automation system.
    - For controller set by P11 as Master –
      Address range for BMS 1…63, default 1
    - For controller set by P11 as Slave –
      Address range 14…16, default 14

MAC Address (Master)   MAC Address (Slave)

PYRO-JBOX

(Up to 3 PYROCON19-TRACE slaves)
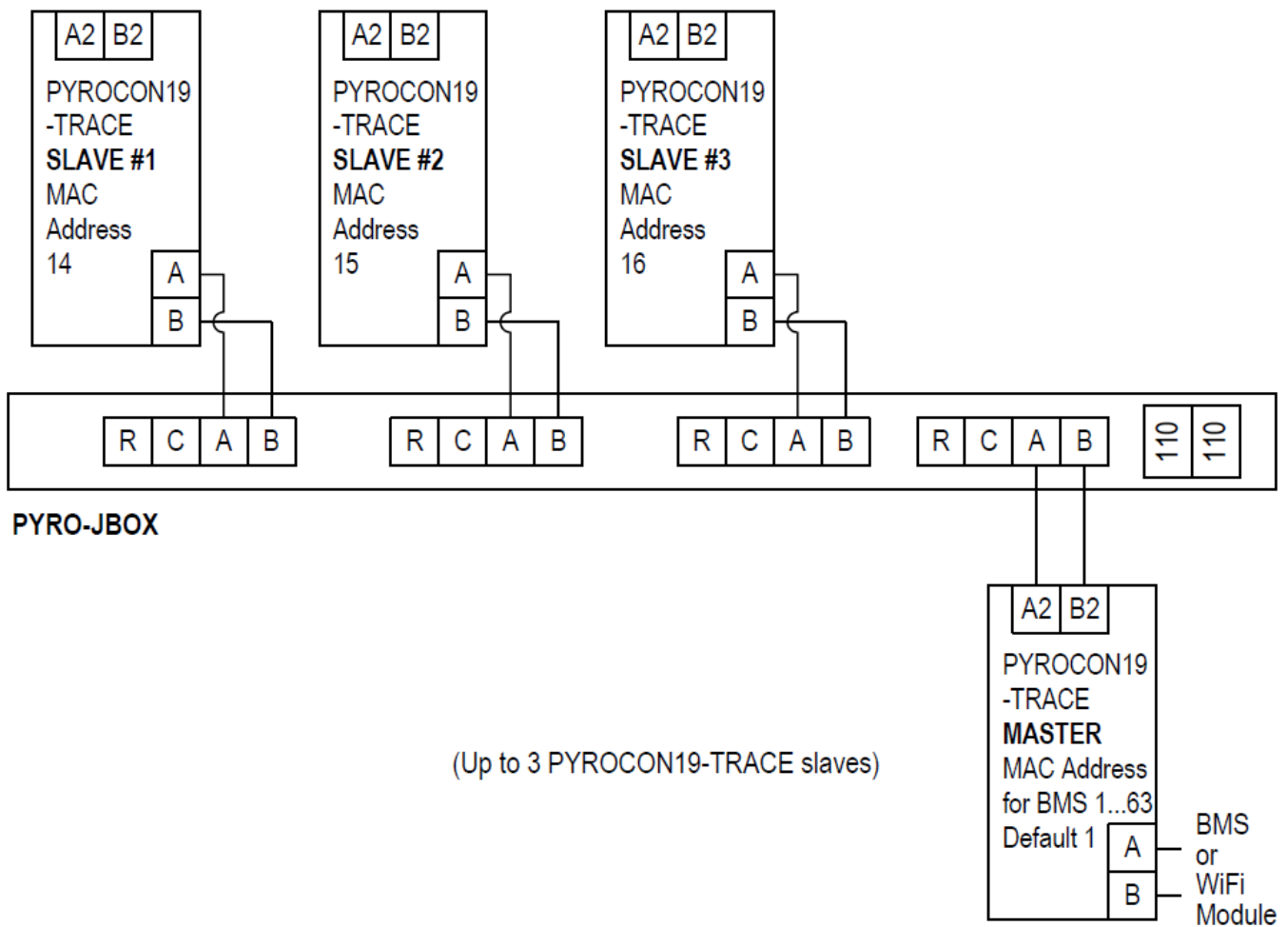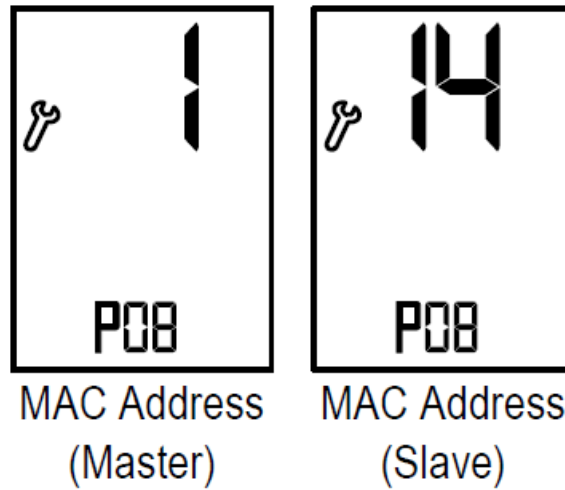
P09 – Test conditions mode / Technician commissioning mode
Turn ON test conditions to check the functionality of the system regardless of temperature sensors parameters (i.e. during the summer).
In test conditions, the Ambient temperature is always -7°C/19°F.

- Press the [SELECT] and [+] buttons simultaneously.
- "P09" will appear on display.
- Use the [+] button to enter test/commissioning mode – the word "Test" will appear on display.
- Use the [-] button to manually exit test/commissioning mode – the word "Test" will disappear from display.

  Note: If the technician did not manually exit test/commissioning mode, the unit will automatically return to normal mode after 5 hours.
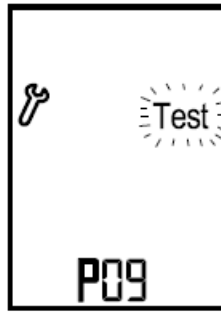
Test
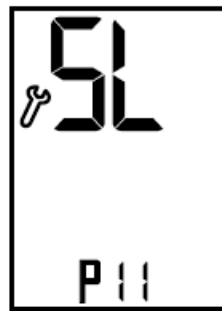conditions
mode

P11 – Master/Slave

- Press the [SELECT] and [+] buttons simultaneously.
- "P11" will appear on display.
  Use the [+] and [-] buttons to select between:
    - "ПА" – Master (When using one PYROCON19-TRACE or when controlling other PYROCON19-TRACE devices connected to A2,B2 as slaves) – default
    - "SL" – Slave (controlled by another PYROCON19-TRACE connected to A, B)

Master   Slave

P15 – Temperature sensor calibration offset

- Press the [SELECT] and [+] buttons simultaneously.
- "P10" will appear on display.
- Use the [+] button to adjust the offset for calibration of measured temperature.
  Range: -9…+9°F / -6…+6°C Default: 0°F / 0°C
  Note: If the technician did not manually exit test/commissioning mode, the unit will automatically return to normal mode after 5 hours.

Save changes and return to normal display
In order to save changes and return to normal display, move DIP switch S1 back to OFF position.
Important: Changes made to technician parameters will not take effect as long as DIP switch S1 is in ON position.
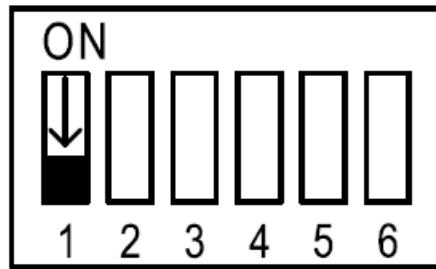
Save changes and exit
technician settings
mode

Restore default values

- Move DIP switch S1 to ON position.
- Press and hold the [ON] button for 10 seconds. The thermostat will beep.
- Move DIP switch S1 back to OFF position.

Short measuring times (test only) – DIP switch S2

- Use DIP switch S2 to short the
    - "ON" – Short measuring times – for test/commissioning only (measuring times will be divided by 60).
    - "OFF" – Normal operation.

        Short measuring times: A real 1 hour will take 1 minute and a real 1 minute will take 1 second.
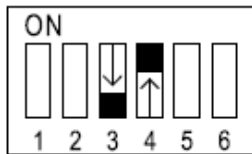
Heaters sequencing logic – DIP switches S3 and S4
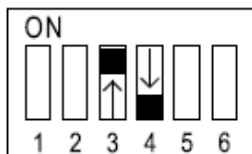Use DIP switches S3 and S4 to define the sequencing logic of the heater (zones) as follows:
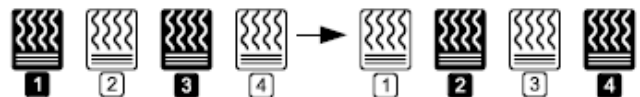
S3 OFF, S4 OFF

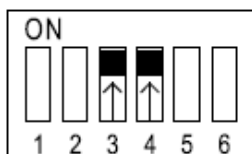All 4 outputs work per request from the temperature sensor
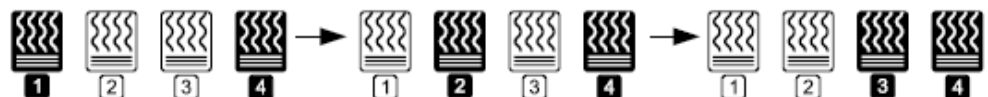
S3 OFF, S4 ON

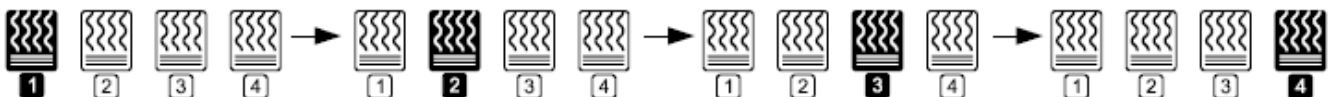Outputs 1+3 and outputs 2+4 work together (according to splitting time)

S3 ON, S4 OFF

Outputs 1,2 and 3 work in sequence (according to splitting time) and output 4 works continuously.

S3 ON, S4 ON

All 4 outputs work in sequence (according to splitting time)

Note: if output 5 is set to work together with outputs 1-4, (see "Heater output no. 5 logic" in the technician settings), it will operate the same as output 4.

Enable/Disable zones

Follow the steps below to enable or disable each of the 5 zones. By default, all zones are enabled.

1. Turn the thermostat OFF.
2. Press and hold both the [+] and the [-] buttons simultaneously for 10 seconds.
3. Choose the required zone using the [Select] button. Selected zone number will appear on display and the heater icon will flash.
4. Use the [+] button to enable the selected zone (black heater icon).
5. Use the [-] button to disable the selected zone (white heater icon).
6. Repeat steps above 3 to 5 for any required zone.
7. Press and hold both the [+] and the [-] buttons simultaneously again for 5 seconds to return to normal display.
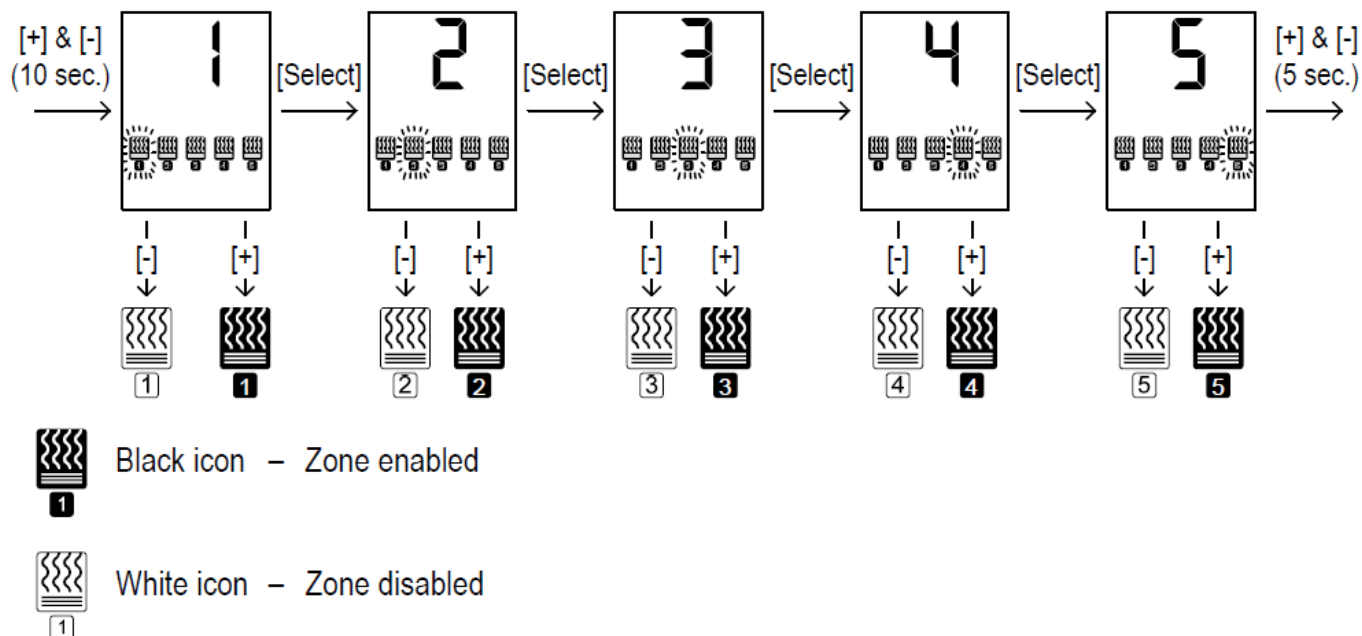
Select Critical zones

Follow the steps below to set each of the active zones as Critical or Non-critical zone. By default, all zones are critical.

1. Turn the thermostat ON.

2. Press and hold both the [+] and the [-] buttons simultaneously for 10 seconds.

3. Choose the required zone using the [Select] button. Selected zone number will appear on display and the heater icon will flash.

4. Use the [+] button to set zone as Critical zone ("ON" will appear on display).

5. Use the [-] button to set zone as Non Critical zone ("OFF" will appear on display).

6. Repeat steps above 3 to 5 for any required zone.

7. Press and hold both the [+] and the [-] buttons simultaneously again for 5 seconds to return to normal display.
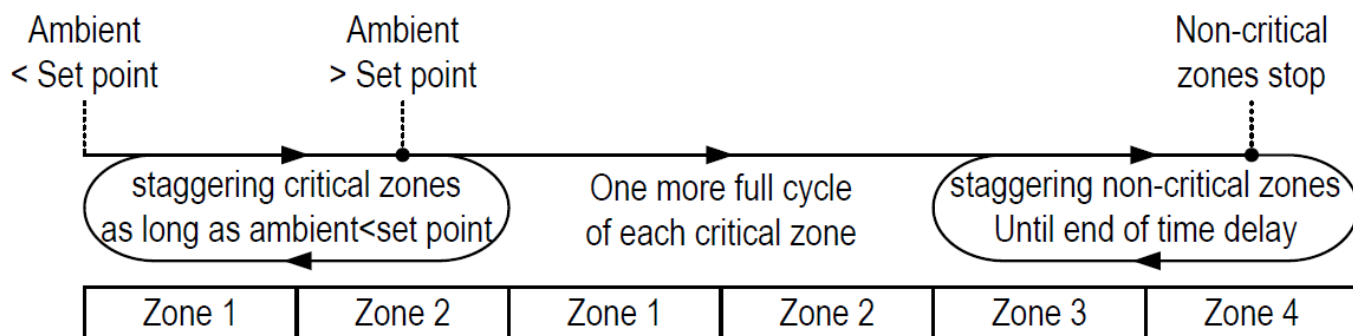
Note: As long as the ambient temperature is less than the set point, only critical zones will participate in the staggering scenario.
Once the set point is reached, the active zone will complete its cycle followed by one more full cycle of each critical zone (including another full cycle of the active zone).
After that, and for the rest of the "time delay before stopping the heaters" set by parameter P04, the system will start staggering between the non-critical zones .

Example:

- Zones 1,2,3,4 enabled
- Zones 1,2 Critical
- Zones 3,4 Non-critical
- Sequencing logic 1+3 together, 2+4 together
- Time delay before stopping the heaters: P04 = 9 hours.

Ambient < Set point   Ambient > Set point   Non-critical zones stop

staggering critical zones as long as ambient<set point   One more full cycle of each critical zone   staggering non-critical zones Until end of time delay

| Zone 1 | Zone 2 | Zone 1 | Zone 2 | Zone 3 | Zone 4 |

BMS – BACnet/Modbus
Use DIP switch S6 located on the side of thermostat to select BMS (A1,B1) network protocol:

- S6 ON – BACnet
- S6 OFF – MODBUS

ON
1 2 3 4 5 6
Modbus

ON
1 2 3 4 5 6
BACnet
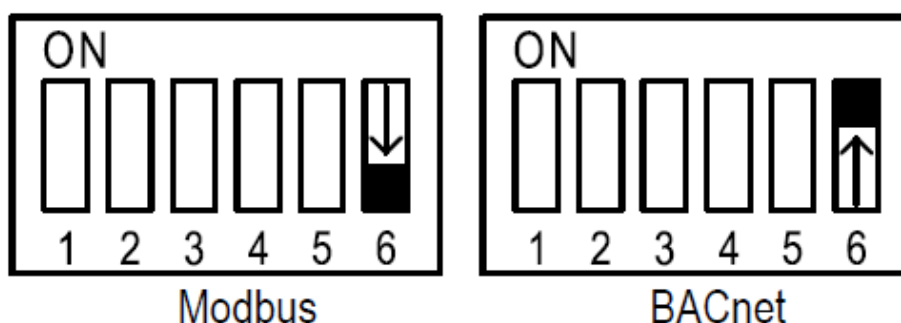
Temperature readings and Communication errors

Temperature sensor readings is out of reliable measuring range
Low temperature readings: Ambient temperature < -9°F/-23°C
High temperature readings: Ambient temperature > 54°F/12°C

The system will continue to operate using constant predefined values.
In addition, the display will alternate between "LO" and -11°F/-24°C for low temperature readings, and between "HI" and 55°F/13°C for high temperature readings.

Temperature sensor is not connected or short circuit
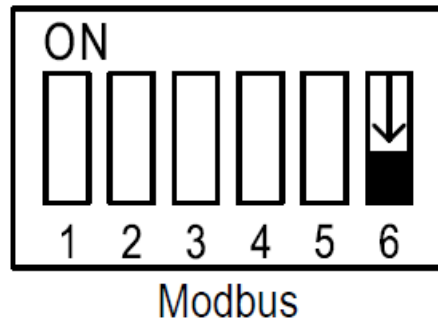"SensErr 2" Will appear on display.

Slaves – Communication error
Aux1 – Slaves communication error
"Aux1" and "00" Will appear on display.

Object list – Modbus
Use DIP switch S6 located on the side of thermostat to select BMS (A1,B1) network protocol – S6 OFF – Modbus

Modbus

MODBUS RTU Mode, Address Slave 1-127,
Baud rate: 9600, n, 8, 1
Supported Commands:
0x03 = Read Holding Registers (for all).
0x06 = Preset Single Register (For R/W registers only),
Command 0x2B is used to identify controller

Vendor Url = "meitavtec.com"
VendorName = "Meitav-Tec".
ProductCode = "20420801"
MajorMinorRevision = "V 20420801.3119"

N°	Address	Value	Object Name	Default	Access
1	0 [0x00]	-40…35°C (-40…95°F)	TemperatureOutside	–	R
2	1 [0x01]	-10…25°C (14…77°F)	SetPoint	3°C (37°F)	R/W
3	2 [0x02]	-40…0°C (-40…32°F)	LowLimitHeat	-35°C (-31°F)	R/W
4	3 [0x03]	1…540 min	HeatersOffDelay	30 min	R/W
5	4 [0x04]	10…2880 min	ManualPeriodTime	40 min	R/W
6	5 [0x05]	4…600 min	StaggeringTime	20 min	R/W
7	6 [0x06]	0…2	TemperatureAquastatLogic	0	R/W
8	7 [0x07]	0…4	HeaterMode	0	R/W
9	8 [0x08]	1-On,0-Off	CommissioningMode	0-Off	R/W
10	9 [0x09]	1-On,0-Off	Heater 1	–	R
11	10 [0x0A]	1-On,0-Off	Heater 2	–	R
12	11 [0x0B]	1-On,0-Off	Heater 3	–	R
13	12 [0x0C]	1-On,0-Off	Heater 4	–	R
14	13 [0x0D]	1-On,0-Off	Heater 5	–	R
15	14 [0x0E]	1-On,0-Off	Aquastat_Signal	–	R
16	15 [0x0F]	1-On,0-Off	SettingMode	–	R
17	16 [0x10]	1-On,0-Off	ShortTimeMode	–	R
18	17 [0x11]	1-On,0-Off	StageringMode	–	R
19	18 [0x12]	1-On,0-Off	StageringMode	–	R
20	19 [0x13]	1-On,0-Off	OnOff	0-Off	R/W
21	20 [0x14]	1-On,0-Off	C_F_Scale	0-Off	R/W
22	21 [0x15]	1-On,0-Off	RestoreDefaults	0-Off	R/W
23	22 [0x16]	1-On,0-Off	GroundFault	0-Off	R
24	23 [0x17]	-40…35°C (-40…95°F)	InternalTemperature(T3)	–	R
25	24 [0x18]	1-On,0-Off	InternalHeater	–	R

Object list – BACnet
Use DIP switch S6 located on the side of thermostat to select BMS (A1,B1) network protocol – S6 ON – BACnet
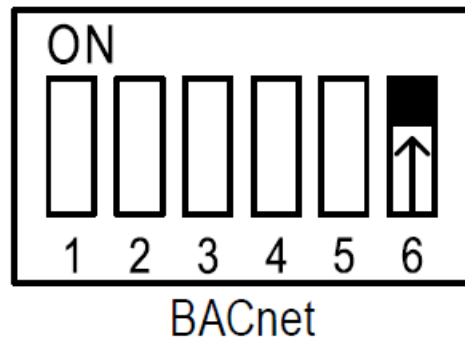
BACnet

BACnet MSTS Baud rate: 9600, 19200, 38400, 76800 no parity, 8 data bits, 1stop bit

N°	Object	Value	Object Name	Default	Access
1	AnalogValue_#0	-10…25°C (14…77°F)	SetPoint	3°C (37°F)	R/W
2	AnalogValue_#1	-40…0°C (-40…32°F)	LowLimitHeat	-35°C (-31°F)	R/W
3	AnalogValue_#2	1…540 min	HeatersOffDelay	30 min	R/W
4	AnalogValue_#3	10…2880 min	ManualPeriodTime	40 min	R/W
5	AnalogValue_#6	4…600 min	StaggeringTime	20 min	R/W
6	AnalogValue_#7	-40…35°C (-40…95°F)	TemperatureOutside	–	R
7	AnalogValue_#8	0…2880 min	HeatersOffTimeDelay	–	R
8	AnalogValue_#9	0…4	HeaterMode	0	R/W
9	AnalogValue_#29	0…2	TemperatureAquastatLogic	0	R/W
10	AnalogValue_#20	-40…35°C (-40…95°F)	InternalTemperature(T3)	–	R
11	AnalogValue_#24	1… 4194303	BacnetDeviceInstanceNumber	315000+MAC	R/W
12	BinaryInput_#2	1-On,0-Off	SettingMode	–	R
13	BinaryInput_#3	1-On,0-Off	ShortTimeMode	–	R
14	BinaryInput_#4	1-On,0-Off	StageringMode	–	R
15	BinaryInput_#5	1-On,0-Off	StageringMode	–	R
16	BinaryInput_#8	1-On,0-Off	Aquastat_Signal	–	R
17 BinaryOutput_#0	1-On,0-Off	Heater 1	–	R
18 BinaryOutput_#1	1-On,0-Off	Heater 2	–	R
19 BinaryOutput_#2	1-On,0-Off	Heater 3	–	R
20 BinaryOutput_#3	1-On,0-Off	Heater 4	–	R
21 BinaryOutput_#4	1-On,0-Off	Heater 5	–	R
22 BinaryOutput_#5	1-On,0-Off	InternalHeater	–	R
23	BinaryValue_#0	1-On,0-Off	OnOff	0-Off	R/W
24	BinaryValue_#2	1-On,0-Off	C_F_Scale	0-Off	R/W
25	BinaryValue_#4	1-On,0-Off	CommissioningMode	0-Off	R/W
26	BinaryValue_#5	1-On,0-Off	RestoreDefaults	0-Off	R/W
27 BinaryValue_#14	1-On,0-Off	GroundFault	0-Off	R

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Documents / Resources

PYROCON19-TRACE Controller and User Interface panel Owner's manual & Technician Settings meitav-tec Rev 11	**meitav-tec PYROCON19 Controller and User Interface Panel** [pdf] Owner's Manual PYROBOX3, PYROBOX5, PYROCON19 Controller and User Interface Panel, PYROCON19, Controller and User Interface Panel, User Interface Panel, Interface Panel

References

- **User Manual**