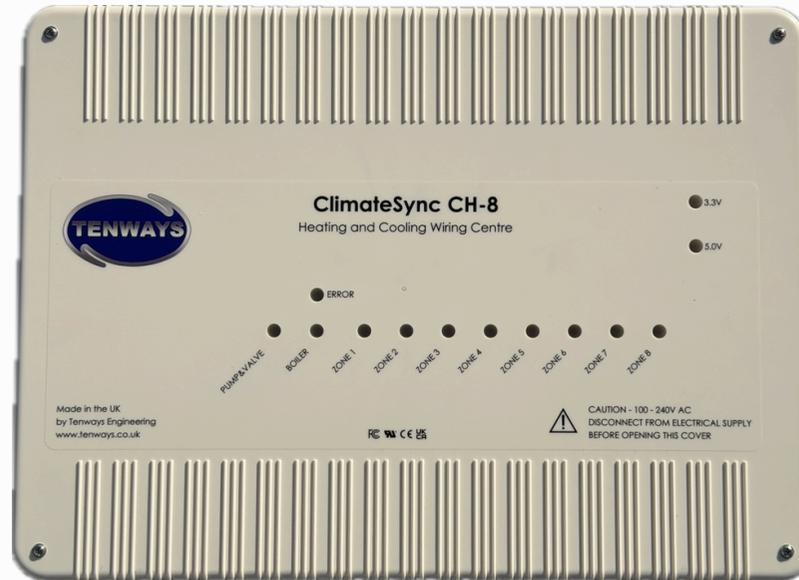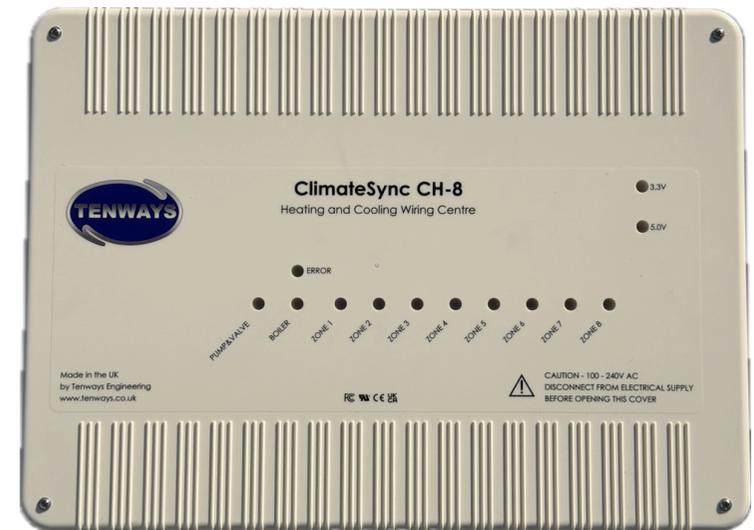# ClimateSync Setting Manual

The **ClimateSync CH-8** manual provides technical instructions for managing a multi-zone **heating and cooling** wiring center. The system supports up to eight zones, offering specialized control for **underfloor heating**, radiators, and air conditioning units. The documentation details hardware configurations using **DIP switches and rotary switches** to define application types, sensor resistance, and device addresses. Extensive software parameters allow users to customize temperature hysteresis, **automated mode changeovers**, and safety features like **overheat prevention** and freeze protection. Additionally, the manual outlines **Modbus and ASCII communication** protocols for integrating the controller into wider building automation networks. Overall, these sources serve as a comprehensive guide for the **installation, wiring, and digital programming** of the climate control interface.
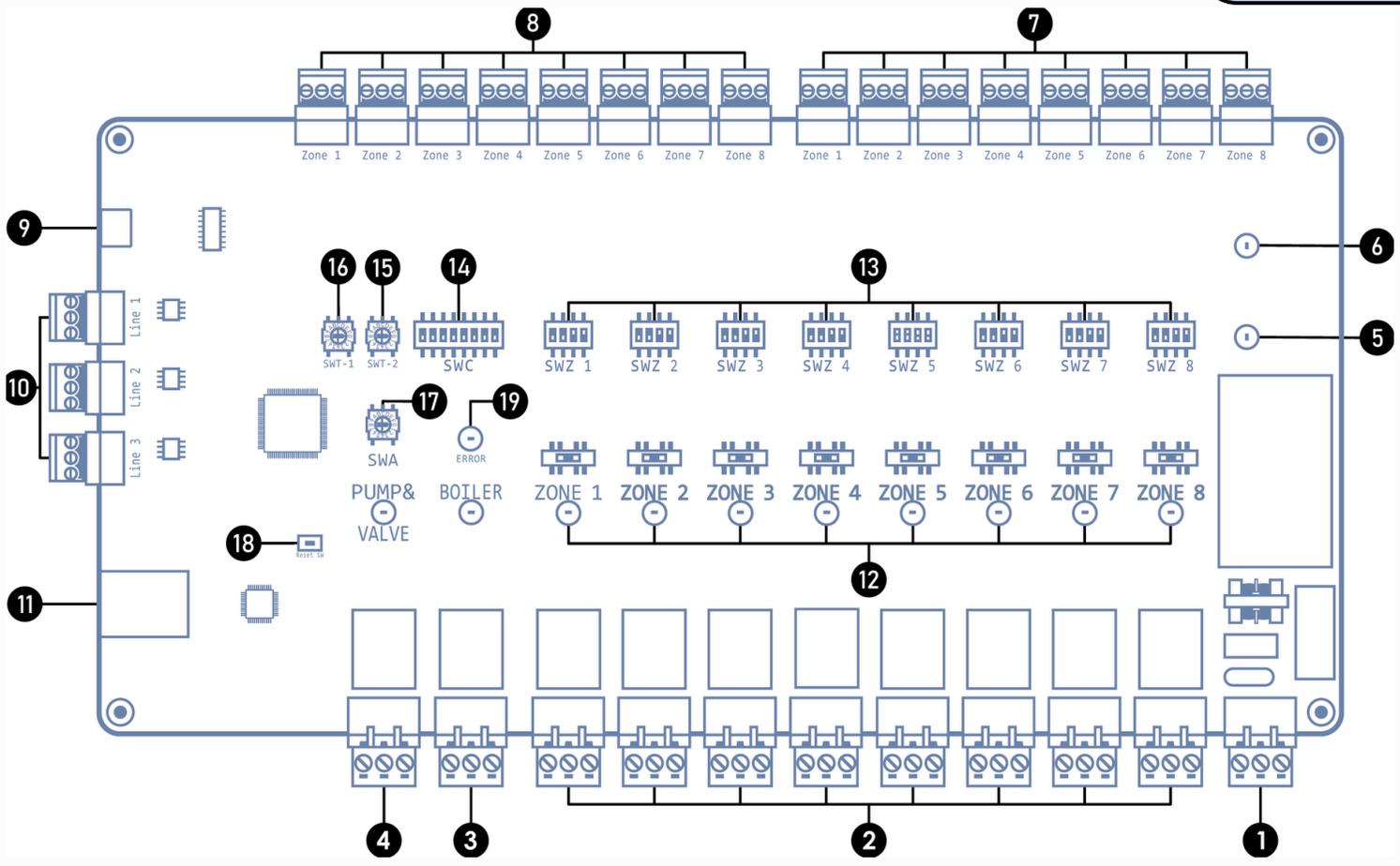
INDEX

Note: in this Manual, the letter x in Zone Parameter ID, represents the zone number. i.e x18 for zone 5, will be Zone parameter 518

Power Supply:	110-240V AC 50-60Hz
Power input maximum load:	200ma
Power input fuse rating:	500ma
Relay Rating:	5 Amp
USB Voltage:	5 VDC
PCB dimensions:	305mm x 150mm
Enclosure dimensions:	400mm (W) x 290mm (H) x 50mm (D)
Enclosure Material:	POLYLAC® ABS PA-765A
Flammability Rating:	UL94 Standard V-0 Value
Weight:	1500g
Temperature Sensor Type:	NTC
Temperature Sensor Rating range:	5-100kΩ
Temperature Sensor default Rating:	10kΩ @ 25ºC
Certification:	CE, UKCA, FCC, ROHS
Operating conditions:	Ambient temperature -10°C ~ 60°C / 14°F ~ 140°F Humidity 0% ~ 96% non-condensing
Storage conditions:	Ambient temperature -20°C ~ 60°C / -4°F ~ 158°F Humidity 0 % ~ 98 % non-condensing
Communication Lines:	MODBUS RTU L1: RS-485 communication line (A / B)
	MODBUS RTU L2: RS-485 communication line (A / B)
	MODBUS RTU L3: RS-485 communication line (A / B)
	Ethernet: 100Mbps
	USB Host 12Mbps

ClimateSync Layout

1. Main Power Input 110-240V AC 50-60Hz
2. Heating Control Zone 1- 8 (NO-COM-NC Volt Free Relays)
3. Boiler Demand Signal (NO-COM-NC Volt Free Relay)
4. Manifold Pump / Valve Signal (NO-COM-NC Volt Free Relay)
5. Power LED (5V)
6. Power LED (3.3V)
7. Room Temperature Sensors Zone 1- 8
8. Floor Temperature Sensors Zone 1- 8
9. USB-C Connection
10. Modbus Port Line 1- 3

11. Ethernet Port
12. Zone Demand LED's Zone 1- 8
13. Zone Setup DIP Switches (SWZ 1- 8)
14. Common Setup DIP Switch (SWC)
15. Rotary Switch for Floor Temperature Limits (SWT-2)
16. Rotary Switch (SPARE)
17. Rotary Switch for ClimateSync ID Setup (SWA)
18. Reset Button
19. Error LED (illuminates if any temperature sensor is faulty)

SWZ*-1: OFF = Zone Not in Use

ON = Zone in Use

Zone DIP Switches

SWZ*-2: OFF = Floor temperature Limit not required

ON = Floor temperature Limit Required

SWZ*-3: Zone Application type:

OFF = **WET UFH** (Heat Demand will also trigger Boiler & Pump)

ON = **OTHER**, by following Zone Parameter ID x18 (118, 218....818):

1: **ELECTRIC Floor Heating** (1) (Heat Demand will not trigger Boiler & Pump).

2: **RADIATOR** (2) (Heat Demand will also trigger Boiler)

3: **ON/OFF** only (3) (no temperature control, locked in fan mode)

SWZ 1 - 8

NOTE: the default application type for SWZ*-3 ON is ELECTRIC floor heating (type 1)

SWZ*4-: SPARE
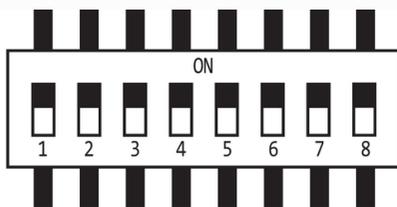
SWC-1: OFF = Auto Mode: AC Cool/ AC Heat

ON = Auto Mode: AC Cool / Floor Heating

Common DIP Switches

SWC-2: SPARE

SWC-3: OFF = HEAT MODE triggers AC Heat (HAUX triggers Floor Heat)

ON = HEAT MODE triggers Floor Heat (HAUX triggers AC Heat)

SWC-4: SPARE

SWC-5: SPARE

SWZ 1 - 8

SWC-6: OFF = Filter Sign indicates: Clean AC filter (after, please reset the counter)

ON = Filter Sign indicates: Floor Temperature Limit Reached

SWC-7: SPARE

SWC-8: OFF = USB communication Disabled

ON = USB communication Enabled (Default)

SWT-2:

Floor temperature limit setting. Range: 27⁰C (Position 0) ~ 42⁰C (Position F)

Note: Higher and lower limits, as well as individual zone limits are possible via Parameter Settings. Common Parameter 34 defines the value of position 0 (default = 27°C as below table)

Switch Position	0	1	2	3	4	5	6	7	8	9		A	B	C	D	E	F
Temp Limit (°C)	27°C	28°C	29°C	30°C	31°C	32°C	33°C	34°C	35°C	36°C		37°C	38°C	39°C	40°C	41°C	42°C

SWT-2
Rotary Switch

SWA:

ClimateSync Address: up to 16 ClimateSync's can be daisy chained as one network (addresses 0~F)

Note: the zone addresses for each ClimateSync will follow SWA address as below.

SWA Switch Position	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Zone Addresses	001 : 008	011 : 018	021 : 028	031 : 038	041 : 048	051 : 058	061 : 068	071 : 078	081 : 088	091 : 098	101 : 108	111 : 118	121 : 128	131 : 138	141 : 148	151 : 158

SWA
Rotary Switch

SWT-1 Spare

ClimateSync

TENWAYS

Function:

Activate and configure Modbus lines L1, L2 L3

here you activate / deactivate modbus lines and set the modbus table application.

Notes:

- only one line can be set as a Slave.
- no need to set Modbus table for the slave line

Modbus Lines Setup

Modbus Line 1

Step 1: Activate / Deactivate Line 1
   Set common Parameter 12
Options:
   Unused (2)
   Master (1)
   Slave (0)
      if set as Master, Proceed to set
      modbus application Map

Step 2: Set Modbus Table (for Master Line)
   Set common Parameter 15
Options:
   CoolPlug CG5   (Table 3)
   TR9 Controller   (Table 11)
   TMTSC as wall controller   (Table 12)
   TMTSC as FCU controller   (Table 13)

Modbus Line 2

Step 1: Activate / Deactivate Line 2
   Set common Parameter 13
Options:
   Unused (2)
   Master (1)
   Slave (0)
      if set as Master, Proceed to set
      modbus application Map

Step 2: Set Modbus Table (Master Line)
   Set common Parameter 16
Options:
   CoolPlug CG5   (Table 3)
   TR9 Controller   (Table 11)
   TMTSC as wall controller   (Table 12)
   TMTSC as FCU controller   (Table 13)

Modbus Line 3

Step 1: Activate / Deactivate Line 3
   Set common Parameter 14
Options:
   Unused (2)
   Master (1)
   Slave (0)
      if set as Master, Proceed to
      set modbus application Map

Step 2: Set Modbus Table (Master Line)
   Set common Parameter 17
Options:
   CoolPlug CG5   (Table 3)
   TR9 Controller   (Table 11)
   TMTSC as wall controller   (Table 12)
   TMTSC as FCU controller   (Table 13)

Function:

Operation state after power reset

here you set for each zone, the zone operation state after power reset

Operation state after power reset

ON/OFF State after power reset

Set zone Parameter x10

Options:
0 = OFF (Default)
1 = ON

Operation Mode State after power reset

Set zone Parameter x11

Options:
0 = Cool
1 = Heat
2 = Auto
3 = Dry
4 = HAUX (Default)
5 = Fan
6 = HH

Temperature Set Point State after power reset

Set zone Parameter x12

Range:
1°C ~ 85°C   (34°F ~ 185°F)

Default 23°C   (74°F)

Fan Speed State after power reset

Set zone Parameter x13

Options:
0 = Low
1 = Medium
2 = High
3 = Auto
4 = Top
5 =Very Low

Lock/Unlock Zone

Note: if a zone is locked, all the above parameters will be fixed

Set zone Parameter x14

Options:
0 = Unlocked (Default)
1 = Locked

Function:

 Defines the zone heating application type.

Options:

1. **WET UFH** (Radiant Heat) - zone demand will also trigger the Boiler & Pump Relays.
2. **ELECTRIC UFH** (Radiant Heat) - zone demand will NOT trigger the Boiler & Pump Relays.
3. **RADIATOR** - zone demand will also trigger the Boiler Relay.
4. **ON/OFF only** - zone locked in FAN mode (no temperature control).

Configuration Options			
	WET UFH	**Set** zone DIP Switch SWZ*-3 **OFF**	
	ELECTRIC UFH	**Set** zone DIP Switch SWZ*-3 **ON**	**Set** zone parameter x18 to ELECTRIC UFH (1)
	RADIATOR	**Set** zone DIP Switch SWZ*-3 **ON**	**Set** zone parameter x18 to RADIATOR (2)
	ON/OFF Only	**Set** zone DIP Switch SWZ*-3 **ON**	**Set** zone parameter x18 to ON/OFF (3)
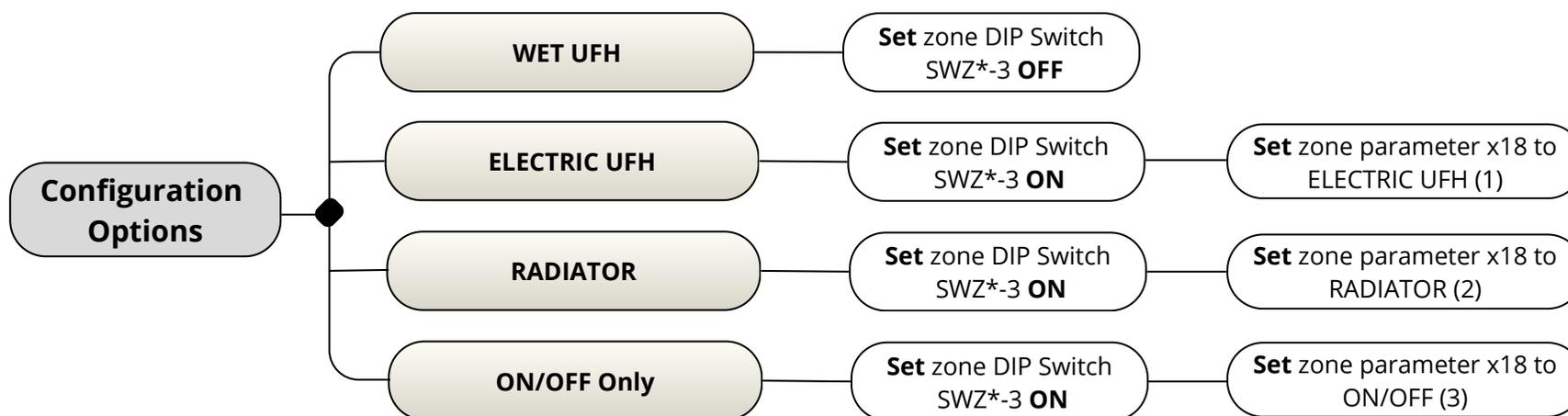
NOTE: Default application type for SWZ*-3 **ON** is ELECTRIC UFH (1)

Function:
 Automation "heat" command will trigger which mode?
ClimateSync supports three heat modes:
AC Heat ("heat" mode), Floor Radiant Heat ("haux" mode), Combined Floor Radiant Heat & AC Heat ("hh" mode).

By default, when "heat" command is received from an Automation system via the CoolMaster/ CooLinkBridge, the ClimateSync will trigger AC HEAT mode.
 some Automation system drivers only have one heat option ("heat" command). Here you can set which of the three options above will be used for "heat" mode.

	AC HEAT ("heat")	Set common DIP Switch SWC-3 to OFF
Target Heat source for "heat" command	**Radiant Floor Heat / Radiator (zone relay) ("haux")**	Set common DIP Switch SWC-3 to ON and Set common Parameter 28 to 0 (Default)
	Combined AC HEAT & Radiant Floor Heat / Radiator (zone relay) ("hh")	Set common DIP Switch SWC-3 to ON and Set common Parameter 28 to 1
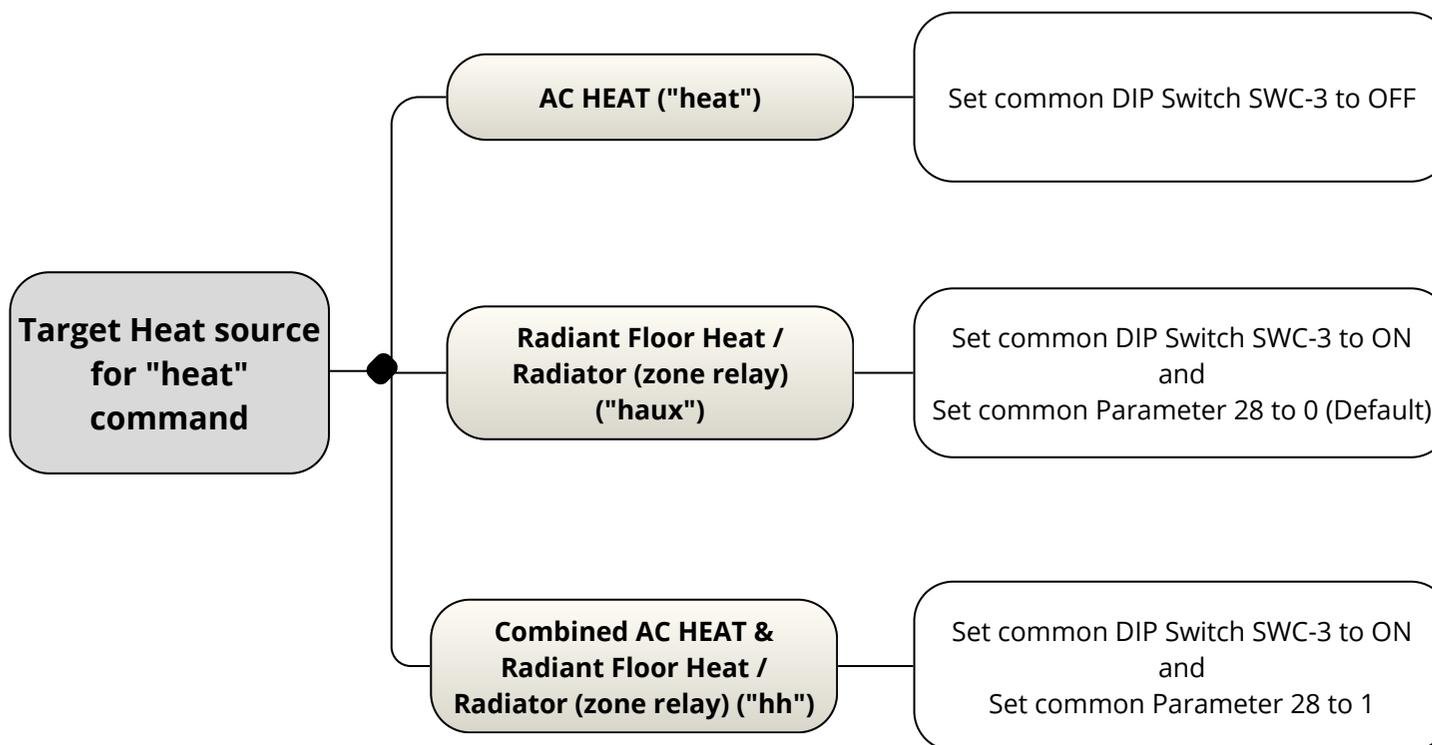
NOTE: Default for Parameter 28 is 0

ClimateSync

Function:

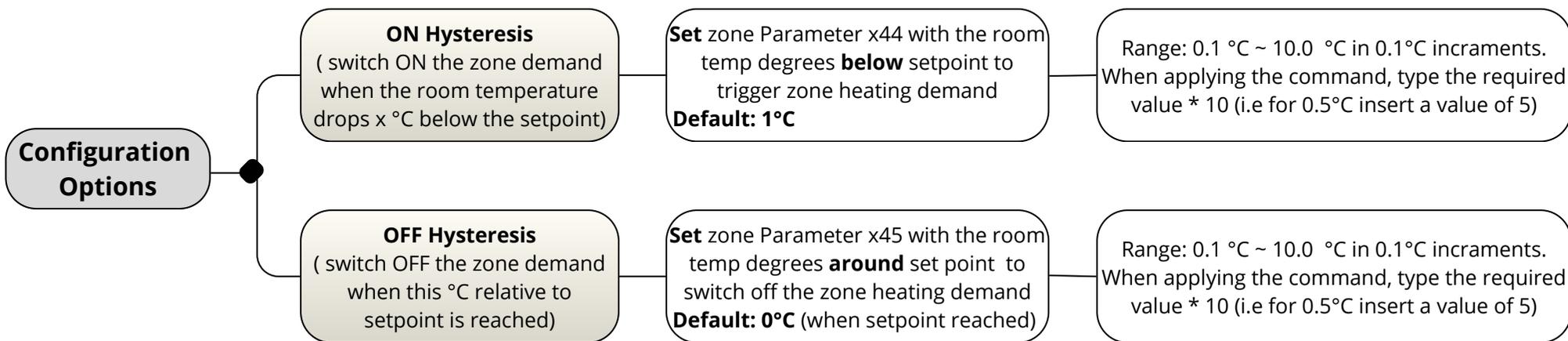 **On/Off Hysteresis (for heat demand).**
The hysteresis defines how much the room temperature can vary around the set point before the heating relay switches on or off.
This prevents frequent relay switching and ensures stable temperature control.
Example:
 a set point of 23 °C, an ON hysteresis of 0.5 °C, and an OFF hysteresis of 0.5 °C:
• The relay switches ON when the temperature drops to 22.5 °C
• The relay switches OFF when the temperature rises to 23.5 °T

Configuration Options

ON Hysteresis
(switch ON the zone demand when the room temperature drops x °C below the setpoint)

Set zone Parameter x44 with the room temp degrees **below** setpoint to trigger zone heating demand
Default: 1°C

Range: 0.1 °C ~ 10.0 °C in 0.1°C incraments. When applying the command, type the required value * 10 (i.e for 0.5°C insert a value of 5)

OFF Hysteresis
(switch OFF the zone demand when this °C relative to setpoint is reached)

Set zone Parameter x45 with the room temp degrees **around** set point to switch off the zone heating demand
Default: 0°C (when setpoint reached)

Range: 0.1 °C ~ 10.0 °C in 0.1°C incraments. When applying the command, type the required value * 10 (i.e for 0.5°C insert a value of 5)

Note: OFF Hysteresis can be set to above or below the setpoint. to set below set point, use the table below

Required OFF Hysteresis °C below set point	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1	-1.1	-1.2	-1.3	-1.4	-1.5	-1.6	-1.7	-1.8	-1.9	-2
Parameter X45 Value	255	254	253	252	251	250	249	248	247	246	245	244	243	242	241	240	239	238	237	236

 Note: negative OFF Hysteresis available from Firmware 0.1.80.8

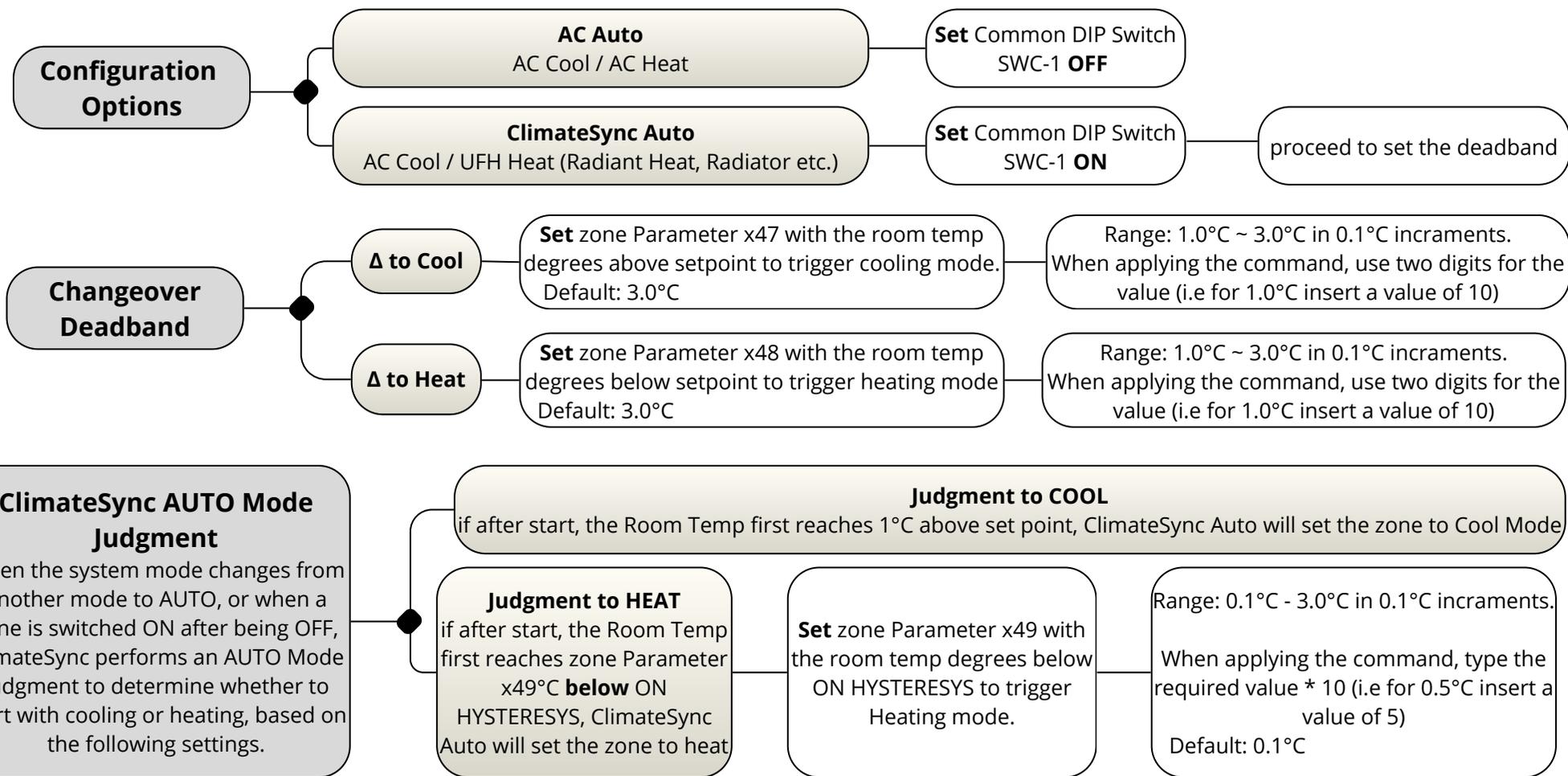**ClimateSync offers two options for AUTO Operation Mode:**
1. **AC AUTO:** the AC will Cool or Heat based on set point (deadband by AC Logic).
2. **ClimateSync AUTO:** ClimateSync to automatically switch between floor radiant heat (or Radiator) and air conditioning. based on the set point and room temperature.

You can define a ΔT (delta T) value — the temperature difference from the set point that triggers the mode switch.

Example: a set point of 23 °C and ΔT set to 3 °C, the system will:

• Start cooling if the room reaches 26 °C

• Start heating if the room drops to 20 °C

Between these points, the system maintains comfort using normal relay on/off control around the set point (ON/OFF Hysteresis).
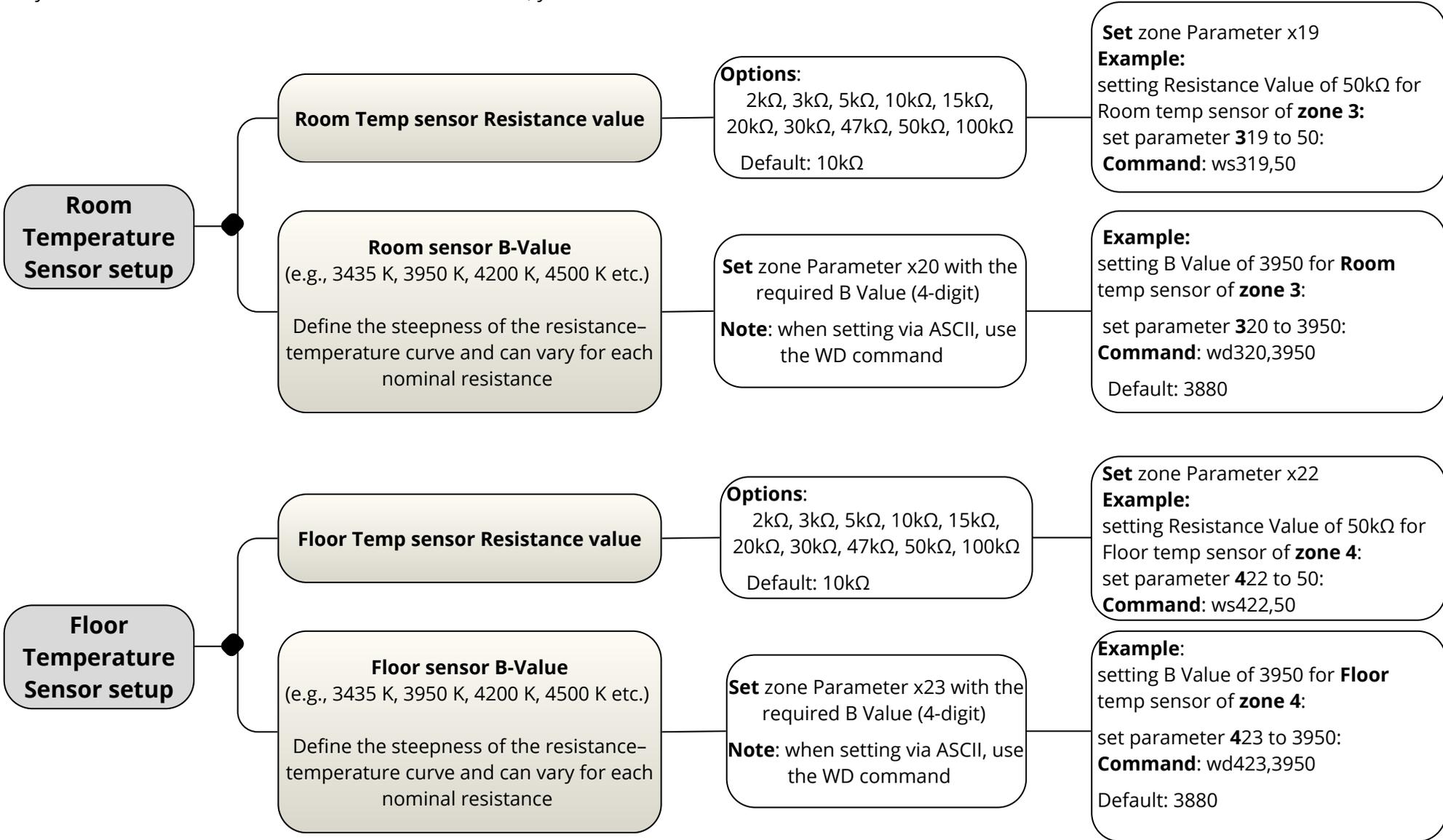
Configuration Options

AC Auto
AC Cool / AC Heat
— **Set** Common DIP Switch SWC-1 **OFF**

ClimateSync Auto
AC Cool / UFH Heat (Radiant Heat, Radiator etc.)
— **Set** Common DIP Switch SWC-1 **ON** — proceed to set the deadband

Changeover Deadband

Δ to Cool
Set zone Parameter x47 with the room temp degrees above setpoint to trigger cooling mode. Default: 3.0°C
— Range: 1.0°C ~ 3.0°C in 0.1°C incraments. When applying the command, use two digits for the value (i.e for 1.0°C insert a value of 10)

Δ to Heat
Set zone Parameter x48 with the room temp degrees below setpoint to trigger heating mode Default: 3.0°C
— Range: 1.0°C ~ 3.0°C in 0.1°C incraments. When applying the command, use two digits for the value (i.e for 1.0°C insert a value of 10)

ClimateSync AUTO Mode Judgment
When the system mode changes from another mode to AUTO, or when a zone is switched ON after being OFF, ClimateSync performs an AUTO Mode Judgment to determine whether to start with cooling or heating, based on the following settings.

Judgment to COOL
if after start, the Room Temp first reaches 1°C above set point, ClimateSync Auto will set the zone to Cool Mode

Judgment to HEAT
if after start, the Room Temp first reaches zone Parameter x49°C **below** ON HYSTERESYS, ClimateSync Auto will set the zone to heat

Set zone Parameter x49 with the room temp degrees below ON HYSTERESYS to trigger Heating mode.

Range: 0.1°C - 3.0°C in 0.1°C incraments.

When applying the command, type the required value * 10 (i.e for 0.5°C insert a value of 5)
Default: 0.1°C

Note: Before Judgment temperature is reached, no heating or cooling will be produced

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Function:

 Room & Floor Temperature Sensor setup

The ClimateSync supports NTC type temperature sensors.

By default the sensor resistance value is 10KΩ. However, you can set individual Resistance and B-value for each sensor.
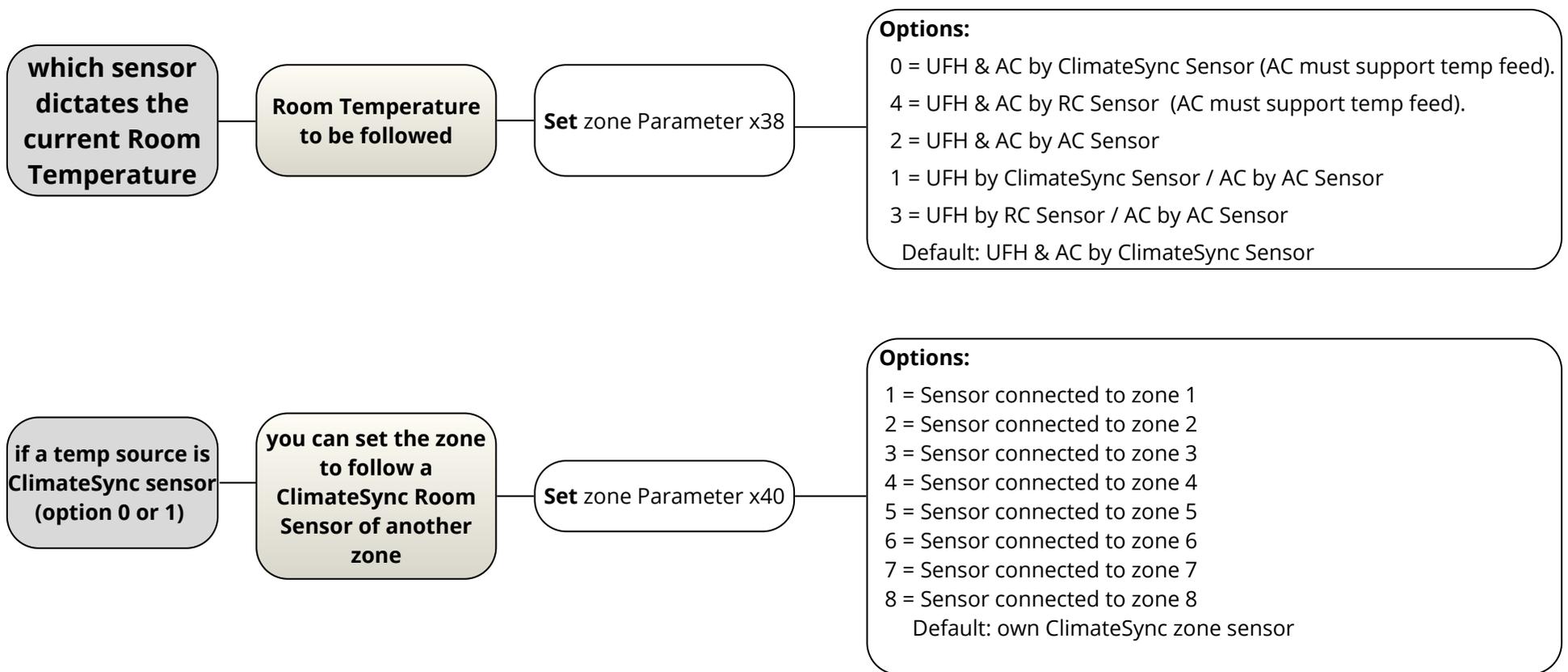
Room Temperature Sensor setup

Room Temp sensor Resistance value

Options:
 2kΩ, 3kΩ, 5kΩ, 10kΩ, 15kΩ, 20kΩ, 30kΩ, 47kΩ, 50kΩ, 100kΩ

 Default: 10kΩ

Set zone Parameter x19
Example:
setting Resistance Value of 50kΩ for Room temp sensor of **zone 3:**
 set parameter **3**19 to 50:
 Command: ws319,50

Room sensor B-Value
(e.g., 3435 K, 3950 K, 4200 K, 4500 K etc.)

Define the steepness of the resistance–temperature curve and can vary for each nominal resistance

Set zone Parameter x20 with the required B Value (4-digit)

Note: when setting via ASCII, use the WD command

 Example:
setting B Value of 3950 for **Room** temp sensor of **zone 3**:

 set parameter **3**20 to 3950:
Command: wd320,3950

 Default: 3880

Floor Temperature Sensor setup

Floor Temp sensor Resistance value

Options:
 2kΩ, 3kΩ, 5kΩ, 10kΩ, 15kΩ, 20kΩ, 30kΩ, 47kΩ, 50kΩ, 100kΩ

 Default: 10kΩ

Set zone Parameter x22
Example:
 setting Resistance Value of 50kΩ for Floor temp sensor of **zone 4**:
 set parameter **4**22 to 50:
 Command: ws422,50

Floor sensor B-Value
(e.g., 3435 K, 3950 K, 4200 K, 4500 K etc.)

Define the steepness of the resistance–temperature curve and can vary for each nominal resistance

Set zone Parameter x23 with the required B Value (4-digit)

Note: when setting via ASCII, use the WD command

Example:
setting B Value of 3950 for **Floor** temp sensor of **zone 4**:

set parameter **4**23 to 3950:
Command: wd423,3950

Default: 3880

Function:

 Temperature Source (Room Temperature)
By default, The ClimateSync follows a room temperature sensor connected to the ClimateSync's zone temperature sensor terminal.
Here you can set other temperature sensing options

which sensor dictates the current Room Temperature

Room Temperature to be followed

Set zone Parameter x38

Options:

 0 = UFH & AC by ClimateSync Sensor (AC must support temp feed).

 4 = UFH & AC by RC Sensor (AC must support temp feed).

 2 = UFH & AC by AC Sensor

 1 = UFH by ClimateSync Sensor / AC by AC Sensor

 3 = UFH by RC Sensor / AC by AC Sensor

  Default: UFH & AC by ClimateSync Sensor

if a temp source is ClimateSync sensor (option 0 or 1)

you can set the zone to follow a ClimateSync Room Sensor of another zone

Set zone Parameter x40

Options:

1 = Sensor connected to zone 1
2 = Sensor connected to zone 2
3 = Sensor connected to zone 3
4 = Sensor connected to zone 4
5 = Sensor connected to zone 5
6 = Sensor connected to zone 6
7 = Sensor connected to zone 7
8 = Sensor connected to zone 8
   Default: own ClimateSync zone sensor

NOTE:

 Floor Temperature Source can also be set to follow another zone:
By setting zone parameter x39.
The setting values are similar to Parameter x40 above (ClimateSync Room Temp temp sensor to follow another zone).

Function:
 Defines whether the ClimateSync should apply a floor temperature protection limit to prevent overheating of the floor surface.
 This feature ensures that the floor temperature remains within safe and comfortable limits when underfloor heating is in operation.

By default, all zones with Floor Temp Limit Enabled (SWZx-2 ON) follow a common floor temperature limit, which is set using the rotary switch SWT-2.

If you prefer to set an individual floor temperature limit for a specific zone, you can disable the zone's participation in the global limit and enable its individual floor limit control. to do so, set zone Parameter ID x26 to ON (1).

Once individual control is enabled, the next two settings allow you to configure:
1. Zone-specific temperature limit (Zone Parameter ID x27) – When the floor sensor reaches this temperature, the zone relay will switch OFF.
2. Relay reactivation point (Zone Parameter ID x28) – Defines how much the floor temperature must drop (below the limit) before the relay switches ON again. The default drop is 1°C

Configuration Options
- **Floor limit not required** — Zone DIP Switch SWZ*-2 **OFF** — The controller will not monitor floor temperature.
- **Floor limit Required** — **Set** zone DIP Switch SWZ*-2 **ON** — **Proceed** to Floor Limit Type

Floor Limit Type
- **Global Floor Limit** (the same temp limit to all floor limit enabled zones) — use Rotary Switch SWT-2 to set the required floor temp limit (Range: 27°C ~ 42°C. See Switch Setting page). Note: Common Parameter setting 41 Defines how much the floor temperature must drop (below the limit) before the relay switches ON again. The default drop is 1°C
- **Indivudual Floor Limit**
  - **set** zone parameter x26 to ON (enable zone individual floor limit)
  - **set** zone parameter x27 (Zone-specific temperature limit – When the floor sensor reaches this temperature, the zone relay will switch OFF.)
  - **set** zone parameter x28 (Relay reactivation point – Defines how much the floor temperature must drop (below the limit) before the relay switches ON again. The default drop is 1°C)

ClimateSync Error Code List:

0001: Faulty ClimateSync Room Temperature Sensor: no resistance or value out of range.

0002: Faulty ClimateSync Floor Temperature Sensor: no resistance or value out of range.

0003: Air Conditioning (AC) communication error: the ClimateSync is unable to communicate with the AC unit.

0004: Remote Controller (RC) communication error: the ClimateSync is unable to communicate with the Modbus wired controller (RC).

ClimateSync ERROR LED:
Indicates a temperature sensor is faulty. Please reset the ClimateSync once fixed the sensor.

Daikin Fault Code conversion:

Freeze Protection

Freeze Protection ensures the property maintains a minimum indoor temperature. When enabled, you can set the temperature at which freeze protection will activate heating, and the temperature at which it will deactivate once the zone has warmed up.

Notes:
1. Freeze Protection only activates if the zone is in the OFF state and the room temperature falls below the defined trigger temperature.
2. The Freeze Protection deactivation temperature must be set lower than any normal operating setpoint, as if the active setpoint is lower than the freeze-protection target temperature, the system may remain in Freeze Protection mode and never reach the deactivation point.

Freeze Protection

Enable / Disable Freeze protection	**Set** zone Parameter x51	**Options:** 0 = Disabled (default) 1 = Enabled
Set Trigger temperature °C to activate freeze protection cycle	**Set** zone Parameter x52	Default: 5°C
Set temperature °C to deactivate freeze the protection cycle	**Set** zone Parameter x53	Default: 12°C
Set the heat source for freeze protection	**Set** zone Parameter x54	**Options:** 0 = Floor Heating (default) 1 = AC Heat

Room Overheat protection

Setback is aimed to maintain a maximum indoor temperature. When enabled, you can set the temperature at which Setback will activate cooling operation, and the temperature at which it will deactivate once the zone has cooled down.

Notes:
1. Setback only activates if the zone is in the OFF state and the room temperature raises above the defined trigger temperature.
2. The Setback deactivation temperature must be set higher than any normal operating setpoint, as if the active setpoint is higher than the Setback target temperature, the system may remain in Setback cycle and never reach the deactivation point.

Setback Cooling	Enable / Disable Setback	**Set** zone Parameter x55	**Options:** 0 = Disabled (default) 1 = Enabled
	Set Trigger temperature °C to activate Setback cooling cycle	**Set** zone Parameter x56	Default: 30°C
	Set temperature °C to deactivate Setback cooling cycle	**Set** zone Parameter x57	Default: 26°C
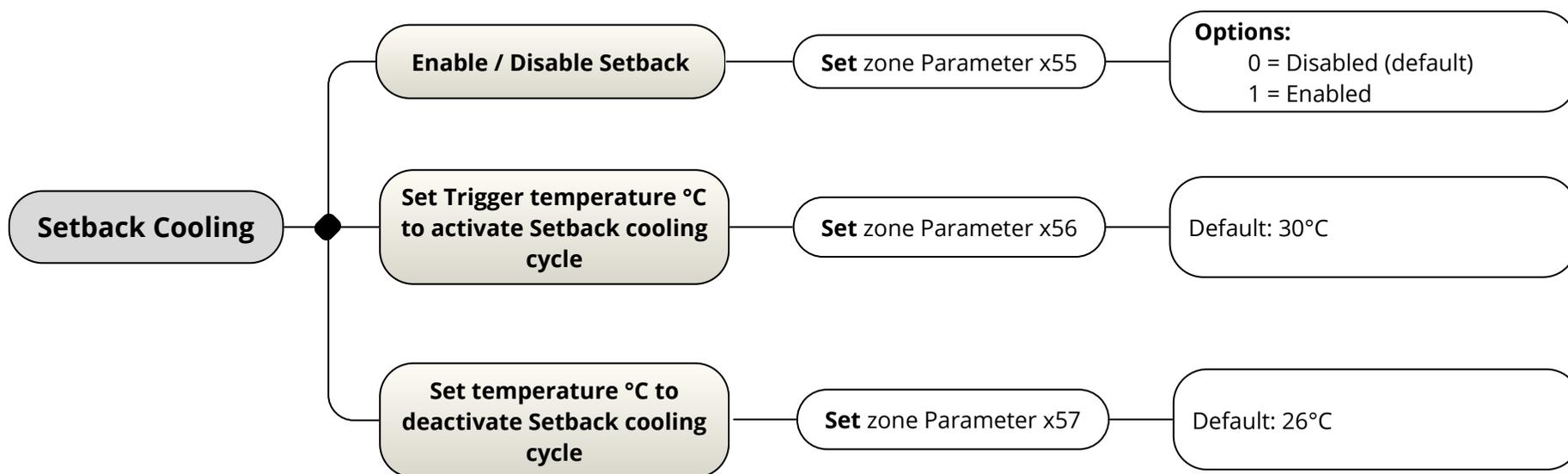
Boiler Trigger Delay
 here you set a time delay which will be applied for calling on the Boiler to heat the water.
this is often used when a delay is required to allow valves and actuators to fully open before the boiler is triggered.

the available setting value is 0-240 seconds.

Default: 0 Seconds

| Boiler Delay | Set Boiler Trigger Delay (Seconds) | Set CommonParameter 37 | Value options: 0 ~ 240 Seconds Default: 0 Seconds |
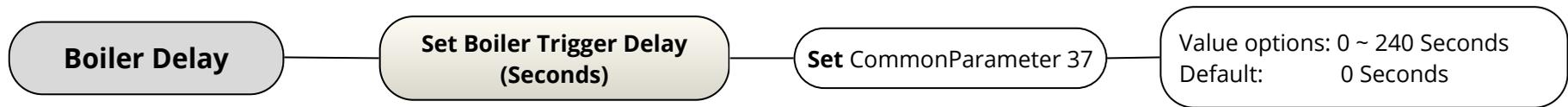
Operation Modes:

AC Cool
AC Heat
AC Dry
Radiant Heat (UFH)
Combined AC Heat & Radiant Heat
Auto (AC Cool / Radiant Heat)
FAN
OFF

Fan Speeds:

Low
Medium
High
Auto
Top (for AC units that support)
Very Low (for AC units that support)

Temperature Set Point:

Available Range: 1°C ~ 85°C / 34°F ~ 185°F
Default Range: 5°C ~ 35°C / 41°F ~ 95°F

To change Set Point range:
Zone Parameter x35: Minimum set point °C (Default 5°C)
Zone Parameter x36: Maximum set point °C (Default 35°C

Swing:

Options: Vertical, 30 Degrees, 45 Degrees, 60 Degrees, Horizontal, Auto, Off

⚙ **ClimateSync Communication Interface**
Section: ASCII Communication via USB-C

The ClimateSync controller includes a built-in USB-C port that allows direct connection to a computer for configuration, diagnostics, and engineering-level access.
Communication is performed using an ASCII command protocol over a virtual serial (telnet-style) interface, providing full system visibility and control.

To begin, connect a USB-C cable between the ClimateSync and a computer.
The device will appear as a virtual COM port on the host operating system.
Next, open a terminal application such as PuTTY, or use TenwaysCom, a communication tool designed specifically by TENWAYS.
Select the correct COM port and connect using the standard serial parameters: • 9600 bps • 8 data bits • No parity • 1 stop bit

Once the serial connection is opened, the ClimateSync will automatically reboot, displaying the main ClimateSync setup information on the terminal.
After the startup sequence finishes, the controller will present the command prompt, indicating that it is ready to receive ASCII commands.

Commands are sent as plain-text ASCII strings and must be terminated with a carriage return <CR>.
Commands are not case-sensitive, but they must follow the exact syntax specified in the command list.

For every valid command, the ClimateSync returns a response such as confirmation, data output, or a formatted status value.
Invalid commands or parameters result in an error message.

Both read operations (retrieving status, temperatures, modes, sensor values, zone states, and parameter settings) and write operations (changing parameters, sending control instructions, updating limits) are supported.

Only one active communication session is allowed at a time; multiple programs cannot access the port simultaneously.

Always close the serial/telnet session before disconnecting the USB-C cable to prevent incomplete transactions.

ClimateSync HELP command, will display the available commands:

HELP - Print help info
INFO - MAC and Firmware version and every other setting of the ClimateSync
SWPOS - Position of all Switches
LINE - Actual Line Types
SCANL - SCANL<line> = Scanning Slave Devices on the Master Line)
APPTYPE - Actual Application Types
B - Reboot ClimateSync

Parameters:
L - List all setting Parameters
DEFAULT - Set all Parameters to default
DE - DE<zone> - Set a specific <zone> Parameters to default (<zone> = 1...8)
DE9 - Set common Parameters to default
RS - RS<address> - Read single Parameter
RD - RD<address> - Read double Parameter
WS - WS<address>,<value> - Write <value> to a single Parameter<address> (One string no spaces)
WD - WD<address>,<value> - Write <value> to a double Parameter<address> (One string no spaces)

Status:
LS - List Zones status
LSZS - List Zones Floor and Room Sensor Sources
LSPROT - List Zones protection status (Freeze and SetBack)
ATEMP - Actual Temperature values
UTEMP - Used Temperature values
LTEMP - Temperature Limit Settings ON_HS; OFF_HS; dT_to_Cool; dT_to_Heat

Control:
ON - ON = Switch all Zones ON or ON<zone> = Switch a specific Zone ON
OFF - OFF = Switch all Zones OFF or OFF<zone> = Switch a specific Zone OFF
ST - ST<zone>,<value> = Set Temp of a specific Zone (if zone=0 then ALL zones)
FS - FS<zone>,<value> = Set FanSpeed of a specific Zone (if zone=0 then ALL zones)
SWING - SWING<zone>,<value> = Set Swing of a specific Zone (if zone=0 then ALL zones)
MODE - MODE<zone>,<value> = Switch a specific Zone to <value> mode (COOL=0,HEAT=1,...) - (if zone=0 then ALL zones)
COOL - COOL<zone> = Switch a specific Zone to COOL - (COOL = Switch all Zones COOL)
HEAT - HEAT<zone> = Switch a specific Zone to HEAT - (HEAT = Switch all Zones HEAT)
AUTO - AUTO<zone> = Switch a specific Zone to AUTO - (AUTO = Switch all Zones AUTO)
DRY - DRY<zone> = Switch a specific Zone to DRY - (DRY = Switch all Zones DRY)
HAUX - HAUX<zone> = Switch a specific Zone to HAUX - (HAUX = Switch all Zones HAUX)
FAN - FAN<zone> = Switch a specific Zone to FAN - (FAN = Switch all Zones FAN)
HH - HH<zone> = Switch a specific Zone to HH - (HH = Switch all Zones HH)

Protection:
LOCKZ - LOCKZ<zone> = Lock a specific Zone - PowerStatus, Mode, SetPoint, FanSpeed
UNLOCKZ - UNLOCKZ<zone> = UnLock a specific Zone
FRON - FRON<zone> = Freeze Protection Enabled at a specific Zone
FROFF - FROFF<zone> = Freeze Protection Disabled at a specific Zone
SETON - SETON<zone> = Cool SetBack Enabled at a specific Zone
SETOFF - SETOFF<zone> = Cool SetBack Disabled at a specific Zone

Names of Zones:
NAME - NAME<zone>,String = Give name to a specific Zone - if zone=0 - Name of the ClimateSync
NAMEL - NAMEL = List of the Zone names and ClimateSync Name
DNAME - DNAME<zone> = Delete a specific Zone name - if zone=0 - Delete the name of the ClimateSync

```
>
ClimateSync 1.3
Fw.: 0.1.80.10 (T)          ◄───────────────  Firmware Version and Serial Number
MAC: F0:2A:2B:8A:00:0F

SWA: 0
SWT-1: 0
SWT-2: 0 (27)                              SWA:          Climate Sync Address 0-F (16 addresses)
SWC: 1 0 0 0 1 0 0 1                        SWT-1         SPARE
SWZ-1: 1 1 0 0                              SWT-2         Rotary switch for floor limit temperature (27°C - 42°C ). see DIP switch setting page.
SWZ-2: 1 1 0 0                              SWC:          8 Global DIP Switches for common ClimateSync setup  0=OFF, 1=ON. see DIP switch setting page.
SWZ-3: 1 1 1 0           ◄───────────       SWZ1 - SWZ8:  4 Individual zone DIP Switches for Zone Setup 0=OFF, 1=ON. see DIP switch setting page.
SWZ-4: 1 1 0 0
SWZ-5: 1 1 1 0
SWZ-6: 1 1 0 0
SWZ-7: 1 1 1 0
SWZ-8: 1 1 0 0
3-pos: 00000000

Floor Temp Sensor Filter is ON
ROOM Temp Sensor Filter is ON
Application Type: 0 0 1 0 3 0 2 0  ◄─────  Zones 1-8 application type 0=wet UFH, 1=Electric UFH, 2=Radiator, 3=ON/OFF

AUTO Mode: AC/HAUX      ◄──────────────   AUTO MODE  AC/AC = AC Cool AC Heat,  AC/UFH = AC Cool UFH Heat

ASCII control: Enabled
Degree in Celsius
ClimateSync in SYNC mode
System: Heat Pump
Heat Mode: AC Heat      ◄──────────────   "heat" command will trigger AC Heat (other options: UFH, Combined UFH & AC Heat)
Filter Sign: Dirty Filter  ◄───────────   Filter Sign indication type: Options: Dirty Filter, Floor temperature limit reached.

Line 1 : Modbus Master (Type:13)
Line 2 : Modbus Master (Type:12)  ◄─────  Modbus lines setup
Line 3 : Modbus Slave (ID:1)
```

SetPoint:	Zone1: 23.0C	Zone2: 23.0C	Zone3: 23.0C	Zone4: 23.0C	Zone5: 23.0C	Zone6: 23.0C	Zone7: 23.0C	Zone8: 23.0C	◄──── Zone Default set point
Temp ON_HS:	Zone1: 22.0C	Zone2: 22.0C	Zone3: 22.0C	Zone4: 22.0C	Zone5: 22.0C	Zone6: 22.0C	Zone7: 22.0C	Zone8: 22.0C	◄──── Zone ON Hysteresis in relation to set point
Temp OFF_HS:	Zone1: 23.0C	Zone2: 23.0C	Zone3: 23.0C	Zone4: 23.0C	Zone5: 23.0C	Zone6: 23.0C	Zone7: 23.0C	Zone8: 23.0C	◄──── Zone OFF Hysteresis in relation to set point
Temp dT_to_COOL:	Zone1: 26.0C	Zone2: 26.0C	Zone3: 26.0C	Zone4: 26.0C	Zone5: 26.0C	Zone6: 26.0C	Zone7: 26.0C	Zone8: 26.0C	◄──── Zone Auto Mode dT_to_COOL in relation to set point
Temp dT_to_HEAT:	Zone1: 20.0C	Zone2: 20.0C	Zone3: 20.0C	Zone4: 20.0C	Zone5: 20.0C	Zone6: 20.0C	Zone7: 20.0C	Zone8: 20.0C	◄──── Zone Auto Mode dT_to_HEAT in relation to set point

```
Checking Modbus Slave devices...

Scanning Slave-Type: 13 on Line1...
1:+ 2:+ 3:+ 4:+ 5:- 6:- 7:- 8:-    ◄────   Slave devices discovered on L1(+ represents slave discovered)

Scanning Slave-Type: 12 on Line2...
1:+ 2:+ 3:+ 4:+ 5:- 6:- 7:- 8:-    ◄────   Slave devices discovered on L2 (+ represents slave discovered)

Line 3 is not a Master Line!

Floor Limit: F1:27.0  F2:27.0  F3:27.0  F4:27.0  F5:27.0  F6:27.0  F7:27.0  F8:27.0      Zone Floor temperature Limit
Floor Temp:  F1:24.9  F2:25.1  F3:25.4  F4:25.4  F5:25.4  F6:24.9  F7:25.2  F8:25.0      Zone current floor temperature
Room Temp:   R1:21.3  R2:25.4  R3:24.8  R4:25.3  R6:24.9  R7:25.3  R8:25.4    ◄──────    Zone current room temperature
RC Temp:     R1:21.3  R2:25.4  R3:24.8  R4:25.3                                          Zone Current Wired controller temperature
AC Temp:     A1:21.3  A2:25.4  A3:24.8  A4:25.3                                          Zone current AC room temperature

Init Master Line 1 as MTSC-FCU...
Init Master Line 2 as MTSC-AC...

Synchronization...

DONE
```

RS Command   = Reading Parameter

WS Command = Writing Parameter

RD Command = Reading Special Parameter for temp sensor B value

WD Command = Writing Special Parameter for temp sensor B value

`rs118`
`118:1`

Reading zone 1 application type: the value of parameter 118 (parameter 18 of zone 1)

Reply (**1=**UFH, **2=**Radiator, **3=** ON/OFF)

`ws518,2`
`518:2`

This command writes the Zone 5 application type (**1** = Electric, **2** = Radiator, **3** = On/Off) into Parameter 518 (Parameter 18 of Zone 5). confirmation Reply

`ws13,1`
`13:1`
`ws16,12`
`16:12`

This command writes value 1 into Parameter 13 to set Line 2 as a Modbus Master (**0** = Slave, **1** = Master, **2** = Unused). confirmation Reply.
This command writes value 12 into Parameter 16, setting Line 2 to use the Modbus slave map for the TMTSC wall-controller confirmation Reply (**3** = CG5, **11**= TR9 Controller, **12** = TMTSC as wall controller, **13** = TMTSC as FCU controller)

`rd620`
`620:3880`

Reading special parameter: parameter 20 of zone 6 (Zone 6 Room Temp sensor B Value)
Reply: the B Value is 3880

`wd620,3950`
`620:3950`

Writing special parameter: setting parameter 20 of zone 6 to 3950
Reply: successfully set B Value to 3950

ClimateSync Integration Specifications

To integrate ClimateSync with third-party Home Automation systems, custom software, or network tools, the following parameters are required:

1. Physical Layer (Ethernet)
- Connection Type: Standard RJ45 Ethernet cable.
- Network Interface: 10/100 Base-T.

2. IP Configuration
   Configure using the ClimateSync Configuration Tool or By ASCII
- IP Address Type (Parameter 70): Static IP=1 (Recommended) or DHCP=0 (Default).
  - Note: For automation, a Static IP is highly recommended to ensure the controller does not "drift" on the network.
- IP: Parameter 71 (1st Quartet), 72 (2nd Quartet), 73 (3rd Quartet), 74 (4th Quartet).
- Subnet Mask: Parameter 79 (1st Quartet), 80 (2nd Quartet), 81 (3rd Quartet), 82 (4th Quartet).
- Gateway: Parameter 75 (1st Quartet), 76 (2nd Quartet), 77 (3rd Quartet), 78 (4th Quartet).

3. TCP Socket Server Details
- Protocol: TCP (Transmission Control Protocol).
- Communication Mode: Socket Server (ClimateSync acts as the Server).
- TCP Port: 10102.

4. Application Layer (Messaging Protocol)
- Command Format: Raw ASCII String.
- Encoding: UTF-8 / ASCII.
- Message Termination: CR (\r), LF (\n), or CRLF (\r\n).
- Communication Style: Request-Response (The client sends a command, and ClimateSync provides a response).

5. Implementation Best Practices
- Response Timeout: Implement a client-side timeout of at least 500ms to 1000ms. The controller prioritizes real-time Modbus traffic; therefore, peak bus activity may slightly delay the ASCII response.
- Connection Management: It is recommended to use "short-lived" connections—opening the socket only for the duration of the command/response cycle and closing it immediately after.
- Error Resilience: If a persistent connection is maintained, the client software must include robust logic to detect socket timeouts and perform automatic re-connections.
- Traffic Isolation: For deterministic performance, it is advised to host ClimateSync on a stable network segment or dedicated VLAN to minimize the impact of broadcast traffic.

TENWAYS ClimateSync

⚙ **ClimateSync firmware update**

Option 1:
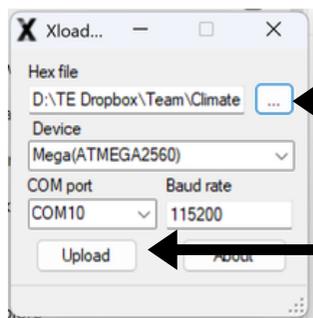Use the ClimateSync configurtation Tool to upload the Firmware.
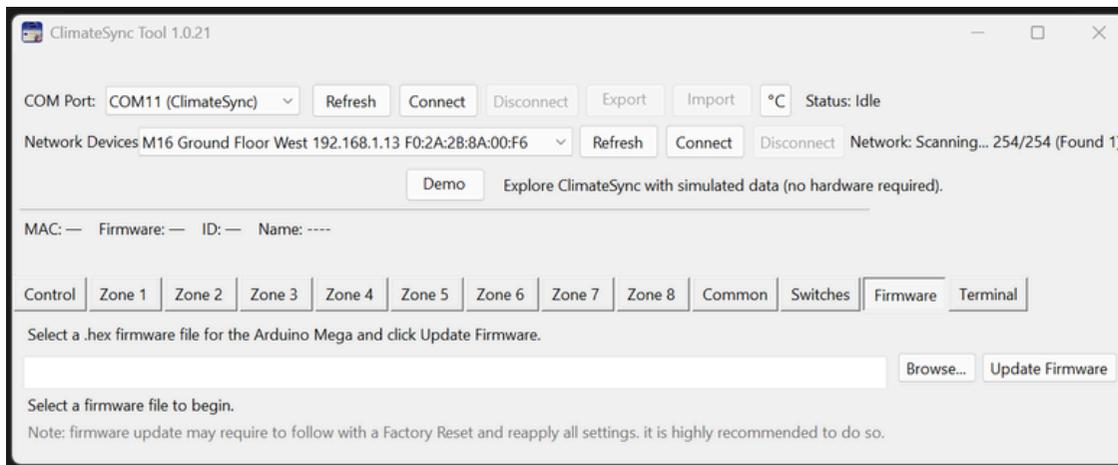
Option 2:
Use the X Loader program to update the ClimateSync Firmware over USB
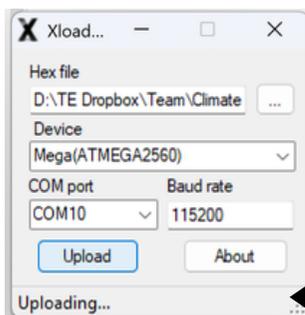
use the below settings:
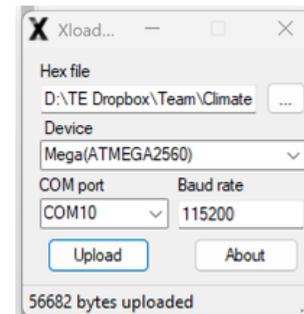**Device:** Mega (ATMEGA2560)
Baud Rade: 115200

Click here to select the firmware file

Click here to start updating the ClimateSync

Updating...

Update Complete

Notes:
1. **only Update the firmware if instructed to do so by a ClimateSync Engineer.**
2. **some updates may require reboot to default parameters and applying all site specific parameter settings.**