Solidyne

TECH/DATA SHEET

Programmable Wall Mounted Zone Sensor with Display

WTS-DM

This Tech-Data Sheet is preliminary and will be updated

WTS-DM is designed as a wall mounted, advanced Programmable Zone Sensor with many types of most state-of-the-art transducers and sensors.

These advanced state of the art sensors and other features are:

- Temperature (standard)
- Occupant Comfort Set (standard)
- Ambient Light (standard)
- Relative Humidity (option)
- Advanced Air Quality CO2 transducer (option)
- After Hours Override Occ-Unocc (standard)

WTS-DM other features and capabilities:

- 3 - Digit White LED alphanumeric display
- 8 - Status LEDs
- Programmable multiple modes of operation
- Multi-conductor wiring to the main controller via for 8 conductor CAT-5 cable for fast and low-cost installation

Specifications:

Input Power: Supplied by M2 family of Controller

Temperature Input: 10k Thermistor **+/- 0.3°F** @ 77°F

Operating Temperature: +23°F to +150°F (-5°C to +66°C)

Storage Temperature: -40°F to +230°F (-40°C to +110°C)

Humidity Sensing: 10 to 95 %RH non-condensing **+/- 2%**

Storage Humidity: 10 to 95 %RH non-condensing

Comfort Set range: 55°F to 85°F as default. Can be changed.

WTS-DM wiring to M2/M2V Controllers:

WTS-DM must be wired to an **M2** family controller via the CAT-5 connection on the back of the device.

This method uses any straight through CAT-5 cable. See **Fig-4** for the proper RJ-45 crimping polarity.

One end of the CAT-5 cable terminates into either of the two RJ-45 female connectors on the back of the **WTS-DM**.
The other end will terminate into the middle **M2 (V)** RJ-45 female connector.

When the **WTS-DM** is wired via this method, the **Zone Temperature Sensor** input will automatically use **Input #1 (UI1**) of the **M2(V)** controller that it is attached.

The Zone Comfort Set input automatically uses **Virtual Input #1** (**VI1**) of the **M2(V)** controller that it is attached.

The Zone Ambient Light level sensor uses **Virtual Input #2 (VI2)** of the **M2(V)** controller that it is attached.

Fig-1
WTS-DM Front view:
Functions of status displays and program keys

CAT-5 wiring:
M2(V) Controllers automatically assigns its inputs to predefined

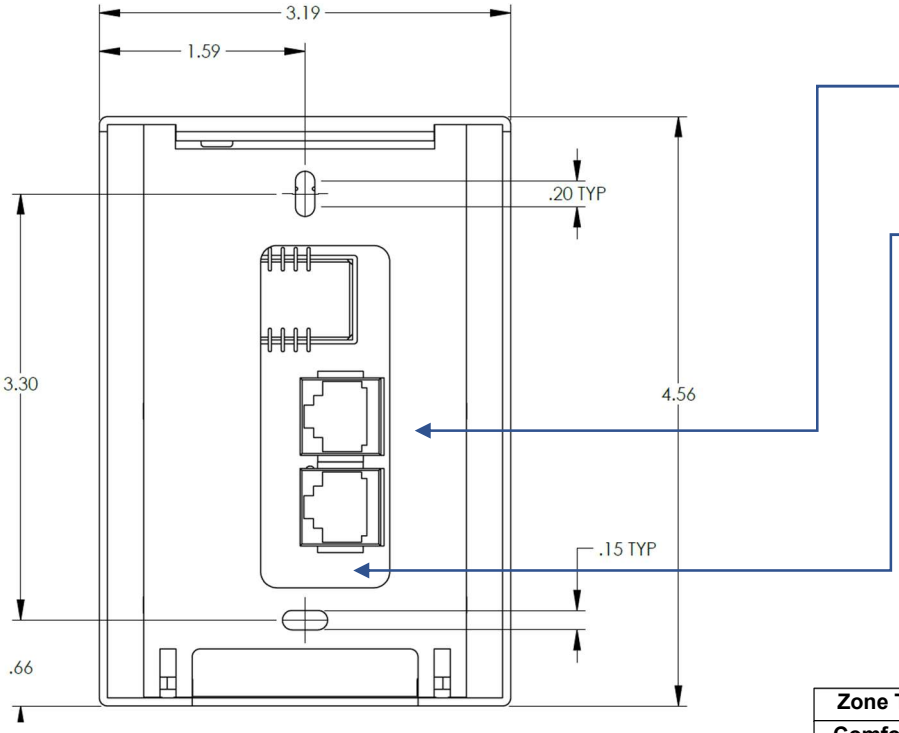
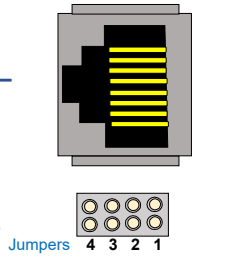


Fig-2
WTS – x dimensions and mounting guide



Addressing: **JP1 and JP2**
Mode: **JP3 and JP4**

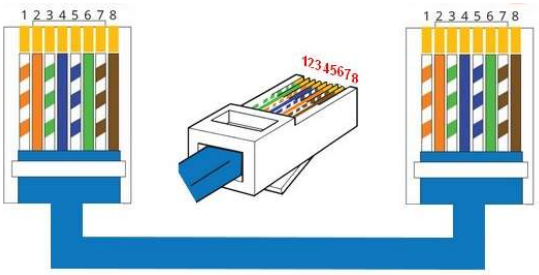
ADDRESSING JUMPERS:

Addressing Jumpers JP1 and JP2	3 - Daisy Chained WTS-x Sensors
JP1 in	**First WTS – x**
JP2 in	**Second WTS – x**
JP1+JP2 in	**Third WTS – x**

Fig-3 3 Jumpers 1 – 4 for programming and addressing

	M2	M2V
Zone Temp	**Input 1 (UI-1)**	**Input 1 (UI-1)**
Comfort Set	**Virtual 1 (VI-1)**	**Virtual 1 (VI-1)**
Ambient Light	**Virtual 2 (VI-2)**	**Virtual 2 (VI-2)**

Fig-4
CAT-5 wiring automatic input assignment list.
NOTE: Default jumper is **JP1** in position



Straight through configuration
Referred as **TAI 568B**

Fig-5 CAT-5 wires crimping guide

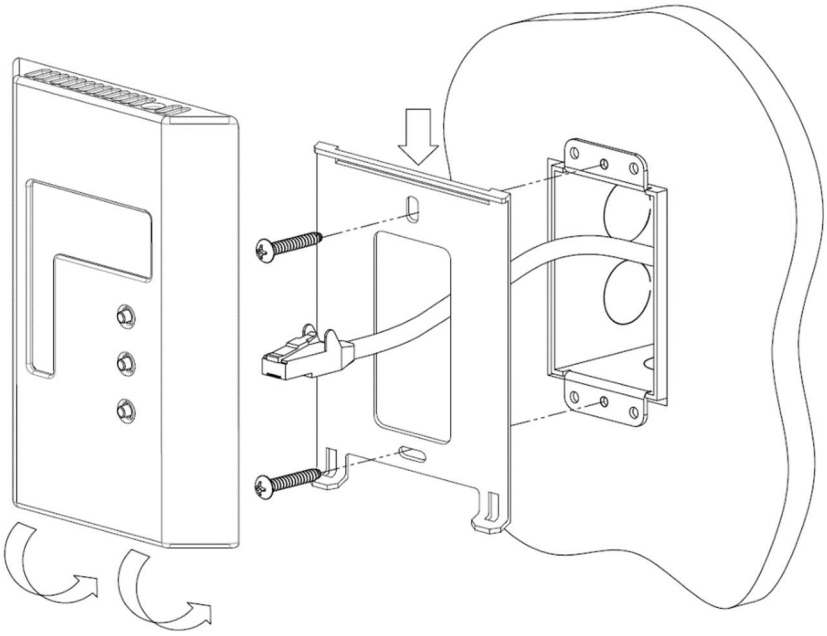


Fig-6
WTS – D wall mounting

WTS-DM has two parts. The base and the cover.

The base section is installed onto any 2" x 4" electrical or directly onto dry wall. Two 1.00" long Flat Head recrews are supplied with the unit. See **Fig. 6** above.

Once the back plate is installed and wiring done, attach the main cover and electronic section as shown above.

First, the cover section slides into the base and later, the cover (bottom) section is pressed into the "L" shape catches on the base and snaps in.

WTS-DM Programmable Modes of Operation:

WTS-DM has a built in 4 modes of operation.
Each one of these 4 modes displays the Zone temperature either as °F or °C until one of the 3 Touch Keys is touched.

The different modes only change the way the Comfort Set temperature displayed, set, or used.

These Modes are:

Mode 1:

This is the default mode. It gives the occupant(s) ability to view the zone present temperature and comfort set value on its 3-digit display.
As shown on Fig-5, the set point automatically assigned to Virtual Input 1.
By default, the occupant can set the setpoint from 55°F to 85°F.

Mode 2:

Mode 2 gives the user to view zone temperature numerically.

The built in 7 LED level indicator has 3 RED and 3 Blue and 1 GREEN LED; between 3 Red and 3 Blue LEDs.

When the user adjusts the comfort set point, this value will be set at Virtual 1.

By default, the 7 LED level indicators has a range of +3°F to -3°F where "0" will be set to Virtual Input 1 when the middle Green LED is set.

See **Fig 1** for further details.

Mode 3:

This mode eliminates the user zone comfort setpoint. It does allow the user to view the current temperature and be able to Override the system after hours occupancy.

Mode 4:

Same as Mode 3 above. Mode 4 the LED level indicators displays how warm or cool the zone is based on the Virtual Input 1 set value (via ICMS programming).

With the highest red LED lit, the zone is 3°F or warmer than the Virtual Input 1.

With the lowest Blue LED lit, the Zone is 3°F or cooler than the virtual Input 1.

M2-HH Commissioning Tool:

WTS-DM has two RJ45 connectors. The second one can be used to connect M2-HH.

After **WTS-DM** is installed on a wall, by using a special cabling, **M2-HH** can be connected to **WTS-DM** for any commissioning or testing. This is dove via small 5 pin connector at the bottom side of **M2-DM**.

(Refer to **M2-HH** Commissioning tool Tech Data Sheet for further information).

Program WTS-DM with M2-HH:

M2-HH is used to program the 4 Modes of **WTS-DM** operation. Refer to M2-HH documentation for details for connecting and using it.

1. **Changing the Mode of operation**:

   To change WTS-DM mode, select **F4**. The first item on the list is the WTS-DM Mode.

   Change the mode for your application.

2. **Controlling Comfort Setpoint**:

   The Virtual Input 1 can be disabled via M2-HH selecting:

   ZONE SET -> VS1 set to "N" (using +/- keys).

3. **Disable Light Level Sensor**:

   To disable the built in ambient light sensor:

   The Virtual Input 2 can be disabled via M2-HH selecting:

   LIGHT SENSE -> VS2 set to "N" (using +/- keys).

4. **Disable Zone Overrides:**

   To disable the user from triggering a zone override with **WTS-DM:**

   ZONE OVR ENABLE -> to "N" (using +/- keys).

5. **Calibrating the Zone Temperature:**

   WTS-DM temperature sensor can be calibrated with M2-HH if the desired.

   Select F4 and press DOWN arrow 4 times to the second page of **WTS-DM.**

   The first item is SENSOR ADJUST. Select OK.

   Enter the amount of offset. Press OK

6. **Sensor Update Rate:**

   The rate at which the Zone temperature refreshes its value on **WTS-DM** can be programmable from **1 to 256** seconds.
   In the second page of **WTS-DM**, select UP-RATE and Enter the desired number of seconds.
   Note: Default is **5-Seconds**.

7. **Changing the Min and Max Comfort SET (Setpoint):**

   WTS-DM Modes 1 uses numerical setpoint which can be programmed for minimum and maximum values, so that the user cannot change the setpoint to an extreme value. Both min and max can be changed to more desirable limits.
   On **WTS-DM** second screen, select OK on either MIN SETPOINT or MAXSETPOINT.
   Adjust these values for your required -desired values.

   The default minimum is 55°F and maximum is 85°F.

Program WTS-DM with M2-HH:

7. Setpoint-Comfort Adjust Operation

WTS-DM has 3 capacitive Touch Key buttons. The top one is "**ENTER**", middle one is "**UP**" and the bottom one is "**DOWN**" key.

If it is programmed to be in Mode 1 and 2, these buttons are available for user to change the Zone comfort Setpoint and after-hours Override.

To change the Comfort Setpoint, touch UP or DOWN keys to the desirable temperature on the 3-digit LED display and press ENTER key. This will change and update the Setpoint.

8. Zone Override Operation:

In all 4 modes of operation, **WTS-DM** can trigger a Zone Override command.

The override duration is programmed in the ICMS software for **Analog Input 1**.

The duration of the Override can be programmable from **1** minutes to **255** minutes.

To trigger the zone override, the user should touch the Orange Enter key. The display will show "or =" message for one second and then the user can touch the UP Key to select "On" or the DOWN key to select "OFF" which will be displayed on the **WTS-DM**.

After the override is selected to be ON, touch the ENTER key again to confirm the Override.

The status of the Zone Override state can be viewed anytime by touching the orange ENTER key. It will display either "On" or "OFF".

IMPORTANT NOTE: **This section will be revised soon.**

Jumper 3 must be installed for backward compatibility V05.13 or older.

WTS-DM sends the **RH** value to **M2(V)** instead of Light Sensor value. It is addressed as **VS 2**.

It is possible to get the Light Sensor data to the **M2(V)**. You must place Input jumper to **UI-2** for Thermistor position and program for 10K °F. The corresponding **UI-2** screw terminal should be totally open and not connected to anything.

For **M2V**, the light sensor value will appear as Input-3.

If Jumper – 3 (JP-3) on **WTS-DM** is in, the signal will appear at ADJ screw terminal.

Using ICMS, **M2V** Input 3 which was dedicated for ZTS-A or WTS-A Comfort Set adjustment, now should be set for 10K°F and multiplier =1 and offset = 0.
In ICMSconfig, you will see the inputs as numbered tabs with names.

NOTE:

When Jumper 3 is OFF, the **WTS-DM** works like the old **WTS-D**. The Light Sensor value goes into VS2. The RH value is not available because the existing M2/M2-V firmware doesn't request it via serial communication.

When Jumper 3 is ON, the **WTS-DM** provides the RH value instead of the Light Sensor value, via serial communication, which the **M2(V)** puts into VS2.

Since the accuracy on the RH value is more important than the Light Sensor, RH value into the **M2(V)** via the serial communication, which then goes into Virtual Sensor 2.

When Jumper 3 is ON, the **WTS-DM** provides the Light Sensor value as a 0 – 5 VDC signal on RJ45 pin 1.

Jumper 4 is not used. It is for future use.