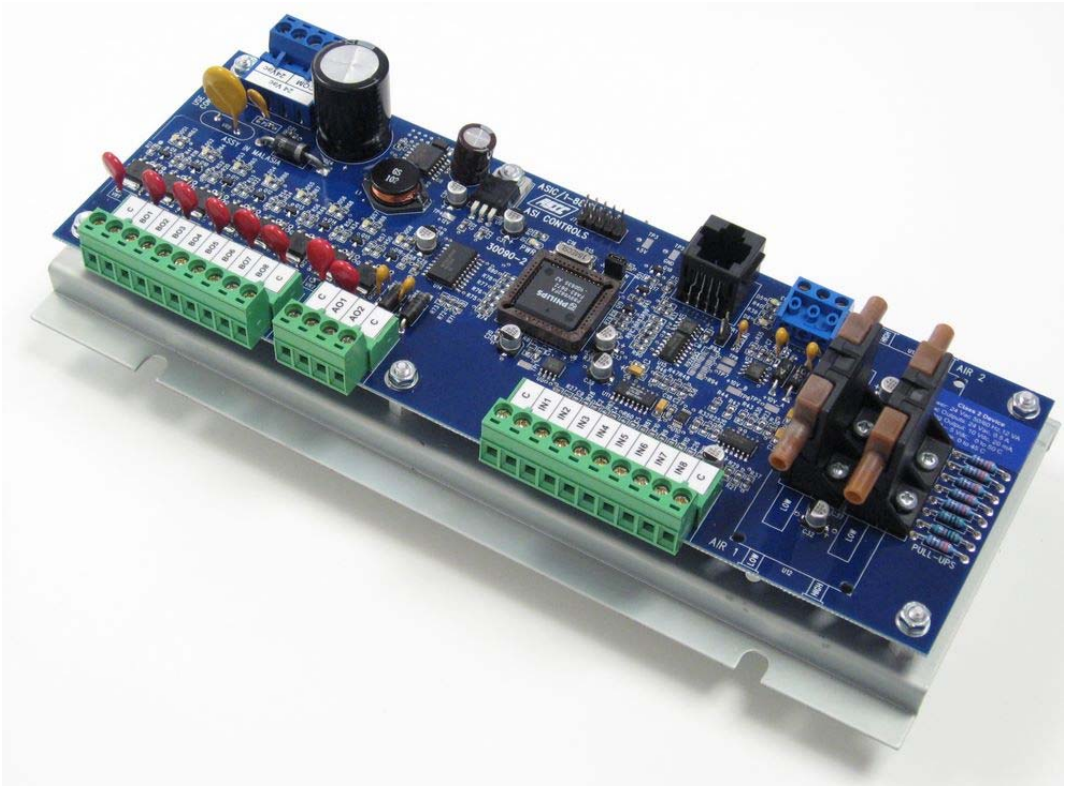
ASIC/1-8800

Engineering Guide

By ASI Controls



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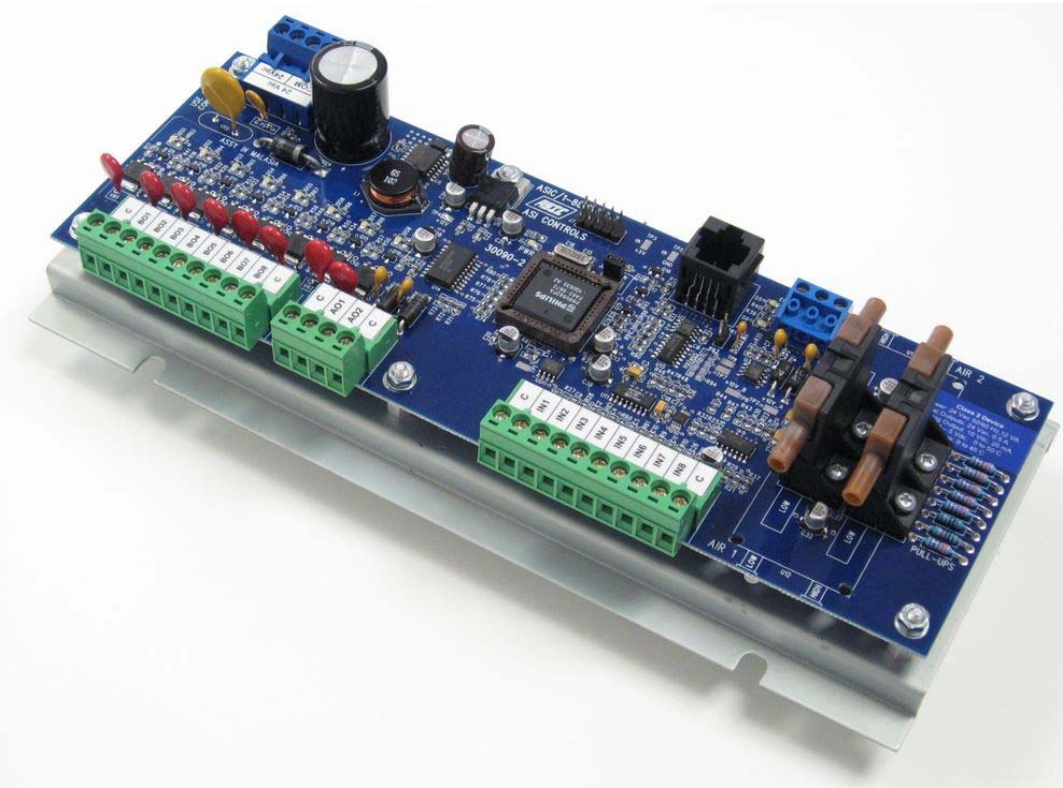
ASIC/1-8800 Overview

ASIC/1-8800 Engineering Guide

The ASIC/1-8800 Engineering Guide provides detailed technical infomrmation necessary to access and exploit the full capabilities of this ASI Controls product. It includes Table Definitions showing the spcific location of parameters and setpoints. It provides a listing of all Command messages for time synchronization, and override of control state, input values, and outputs. It also includes a full Glossary describing each paramenter in the controller. The Appendix includes Global and Group addresses, and a Firmware History.



The ASIC/1-8800 is a pre-programmed digital controller for the control of pressure independent Variable Air Volume (VAV), Fan-Powered VAV, Dual Duct and Volume Tracking terminal units. The controller includes an integral damper actuator and on-board airflow sensor and maintains the space temperature by varying the air volume. The controller monitors zone temperature through the WS-0X1 Wall Sensor and calculates the correct air volume to be distributed to the space based upon comparing this temperature with the cooling and heating setpoints. This pressure independent controller is mounted on the VAV terminal being controlled. The controller has personalities for

cooling only, and cooling with hot water or electric reheat, and constant or intermittent fan.

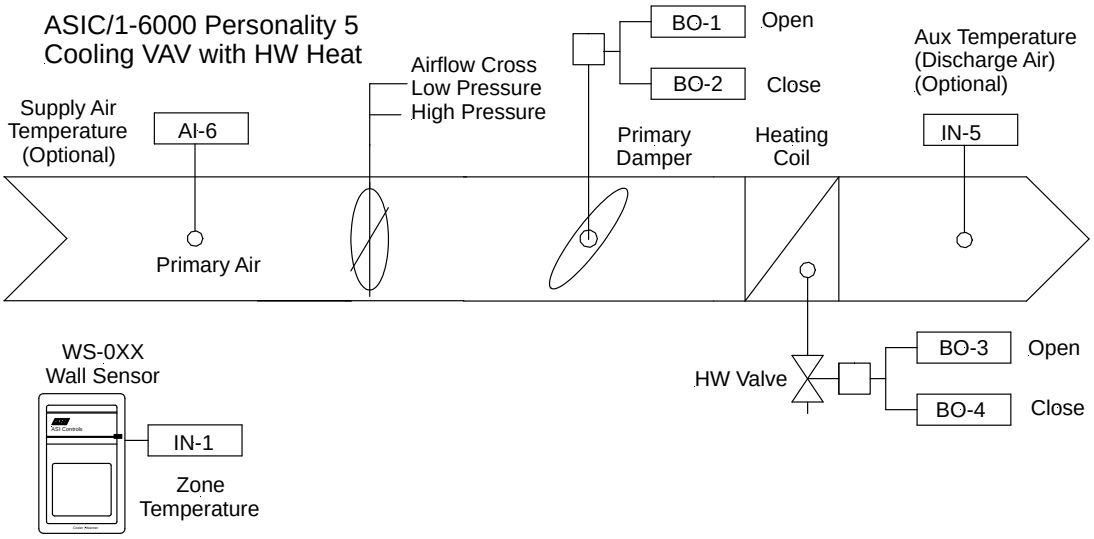
To set the controller into operation the operator needs only to enter a unique device address, select the correct personality for the application and verify or modify duct area and airflow K-factors.

The pre-programmed controller allows newly installed zones to be started up quickly and efficiently. Pre-tuned PI algorithms mean that controllers can accurately maintain space temperature.

The controllers include after-hours override, user temperature setpoint adjustment, minimum and maximum airflow setpoints and lighting control features. Afterhours usage is automatically stored at each unit for retrieval by the building operator. Time-based features such as scheduled changes in setpoints and lighting control may be used when the controller is connected in a network that can synchronize the ASIC/1 internal software clock.

The ASIC/1-8800 can operate-stand alone or as part of a communicating control network with other ASI controllers. Communication at speeds up to 19,200 baud means rapid access to information. This enables integrated control of the complete mechanical system to ensure optimum building performance. Temperatures, airflow, setpoints, and other controller information may be easily reported to ASI WebLink, or to any Windows based software that is a client for OLE for Process Control (OPC) or Dynamic Data Exchange (DDE).

ASIC/1-8800-SD VAV Personalities



The ASIC/1-8800 is preprogrammed with different personalities for single duct cooling VAV terminals. The Zone Temperature is compared with the Active Heating and Cooling Temperature Setpoints.

If Cooling is required, a PI calculation is used to determine the Cooling Requirement, and the Primary Airflow Setpoint is calculated between Cooling Minimum and Cooling Maximum Airflow. The Primary Air Damper is then modulated to meet the Primary Airflow Setpoint giving Pressure Independenent operation.

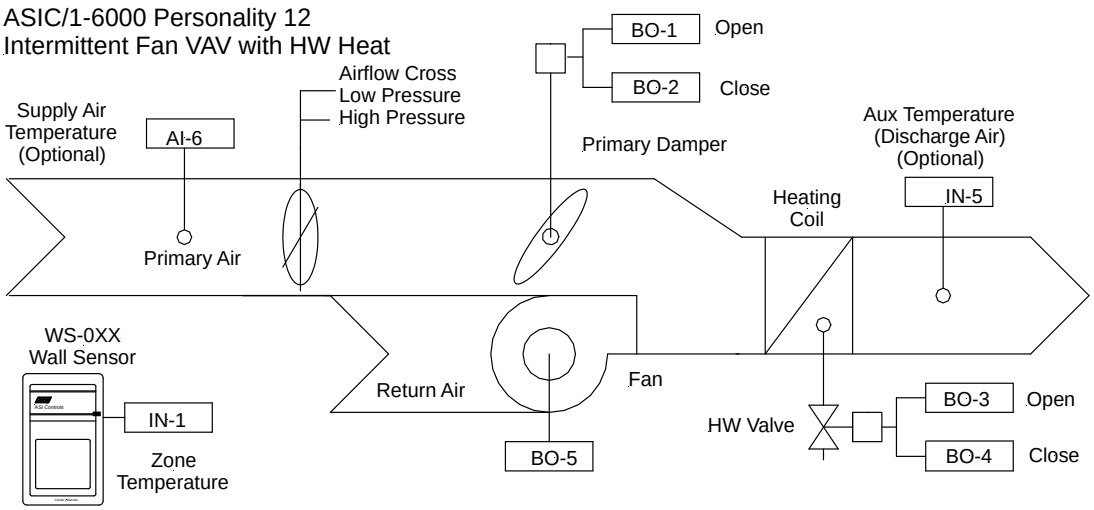
In the Deadband Control Mode the Primary Airflow is set to minimum.

If Heating is required and available the Primary Airflow is set to the Heating Minimum Airflow Setpoint and a Heating Requirement is calculated. Depending on the type of heat available, the Hot Water Valve is modulated open or closed based on drive time; one two or three stages of electric heat are duty cycled, or the Thermic Valve is pulsed on and off.

The operation of the singled duct VAV terminal is determined by the Personality selected. Please see the Application Bulletin 70, Single Duct VAV for further details.

	No Reheat	1 Stage Electric	2 Stage Electric	3 Stage Electric	HW Valve Open/Close	Thermic Valve
VAV	1	2	3	4	5	18

ASIC/1-8800-SD Intermittent Fan Personalities



The ASIC/1-8800 is preprogrammed with different personalities for fan-powered parallel VAV system with intermittent fan.

The Zone Temperature is compared with the Active Heating and Cooling Temperature Setpoints.

If Cooling is required, a PI calculation is used to determine the Cooling Requirement, and the Primary Airflow Setpoint is calculated between Cooling Minimum and Cooling Maximum Airflow. The Primary Air Damper is then modulated to meet the Primary Airflow Setpoint giving Pressure Independenent operation.

If the Primary Airflow falls below the Fan Energize Airflow Setpoint then the Fan is turned On.

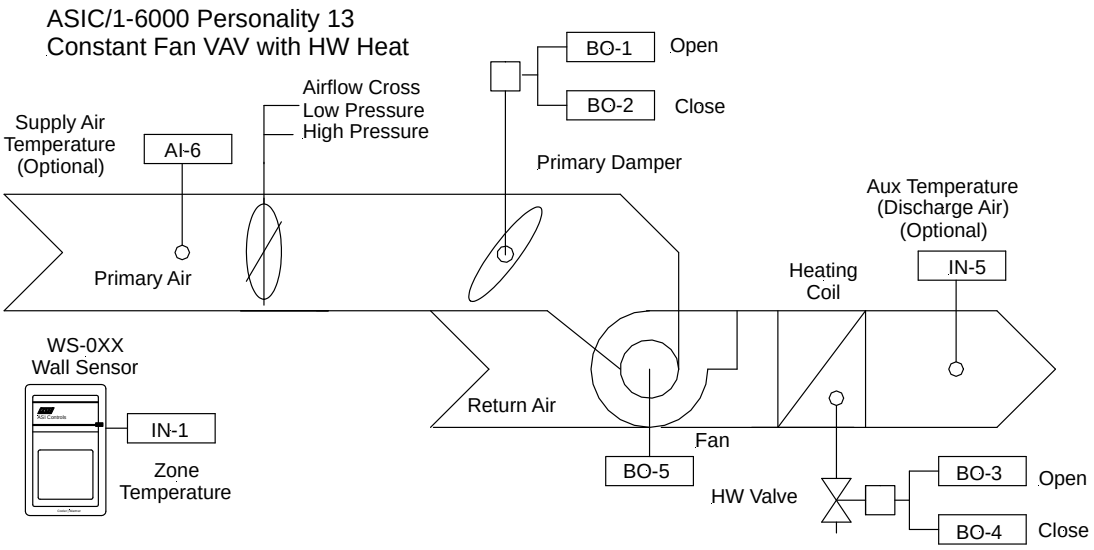
In the Deadband Control Mode the Primary Airflow is set to minimum.

If Heating is required and available the Primary Airflow is set to the Heating Minimum Airflow Setpoint and a Heating Requirement is calculated. Depending on the type of heat available, the Hot Water Valve is modulated open or closed based on drive time; one two or three stages of electric heat are duty cycled, or the Thermic Valve is pulsed on and off.

The operation of fan-powered parallel VAV terminal is determined by the Personality selected. Please see the Application Bulletin 71, Intermittent Fan VAV for further details.

	No Reheat	1 Stage Electric	2 Stage Electric	3 Stage Electric	HW Valve Open/Close	Thermic Valve
Intermittent Fan	16	6	7	8	12	19

ASIC/1-8800-SD Constant Fan Personalities



The ASIC/1-8800 is preprogrammed with different personalities for fan-powered series VAV terminals with constant fan.

The Zone Temperature is compared with the Active Heating and Cooling Temperature Setpoints.

If Cooling is required, a PI calculation is used to determine the Cooling Requirement, and the Primary Airflow Setpoint is calculated between Cooling Minimum and Cooling Maximum Airflow. The Primary Air Damper is then modulated to meet the Primary Airflow Setpoint giving Pressure Independenent operation.

In the Deadband Control Mode the Primary Airflow is set to minimum.

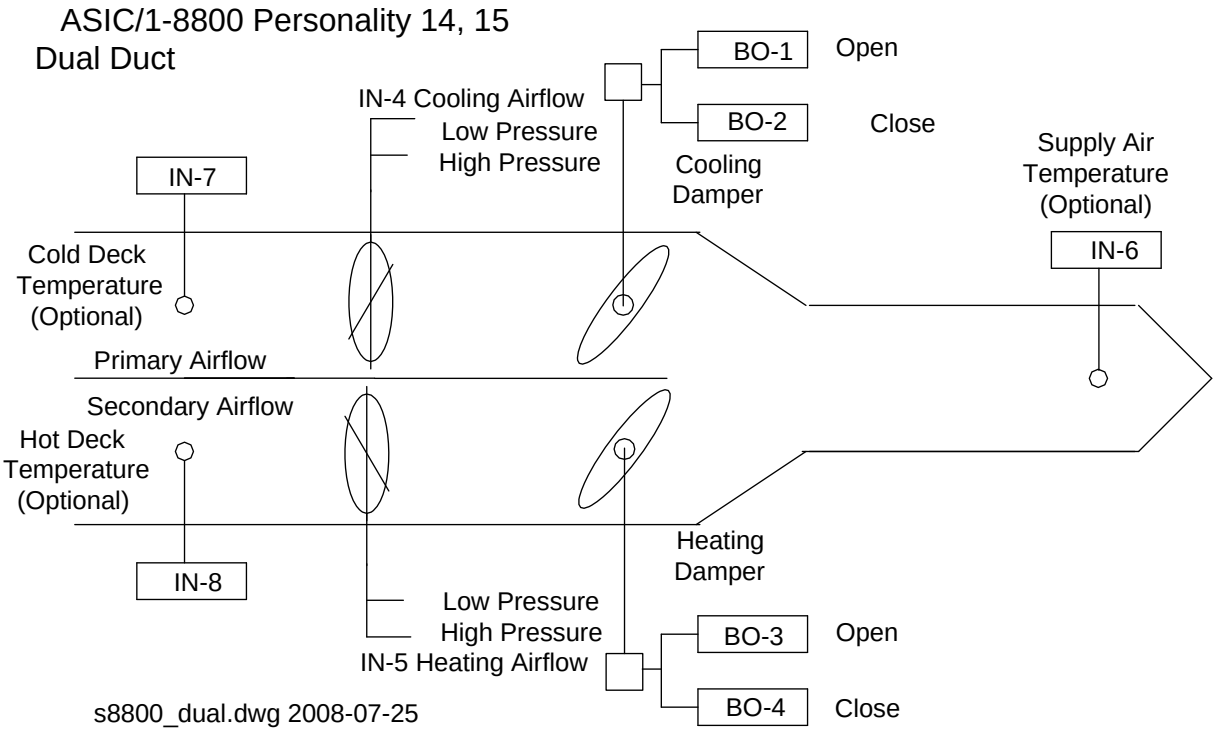
If Heating is required and available the Primary Airflow is set to the Heating Minimum Airflow Setpoint and a Heating Requirement is calculated. Depending on the type of heat available, the Hot Water Valve is modulated open or closed based on drive time; one two or three stages of electric heat are duty cycled, or the Thermic Valve is pulsed on and off.

For Series Fan Powered Terminal box control, the constant fan operation is based on the control state, and mode. In Deadband the fan is on or off depending on the sequence selected. The fan is ON whenever the primary air damper is not closed. In the morning warm up state, the fan is on. In night setback or unoccupied states, the fan is off unless the system is in heating mode.

The operation of fan-powered series VAV terminal is determined by the Personality selected. Please see the Application Bulletin 72, Constant Fan VAV for further details.

	No Reheat	1 Stage Electric	2 Stage Electric	3 Stage Electric	HW Valve Open/Close	Thermic Valve
Constant Fan	17	9	10	11	13	20

A1-8800-DD Dual Duct VAV - 2 Airflow Sensors



The ASIC/1-8800 is preprogrammed with two personalities for dual duct VAV system with or without blending.

The ASIC/1-8800 uses an primary airflow sensor to give pressure independent control of the variable air volume cooling. The Zone Temperature is compared with the Active Heating and Cooling Temperature Setpoints.

If Cooling is required, a PI calculation is used to determine the Cooling Requirement, and the Primary Airflow Setpoint is calculated between Cooling Minimum and Cooling Maximum Airflow. The Primary Air Damper is then modulated to meet the Primary Airflow Setpoint giving Pressure Independenent operation. In the Deadband Control Mode the Primary Airflow is set to minimum.

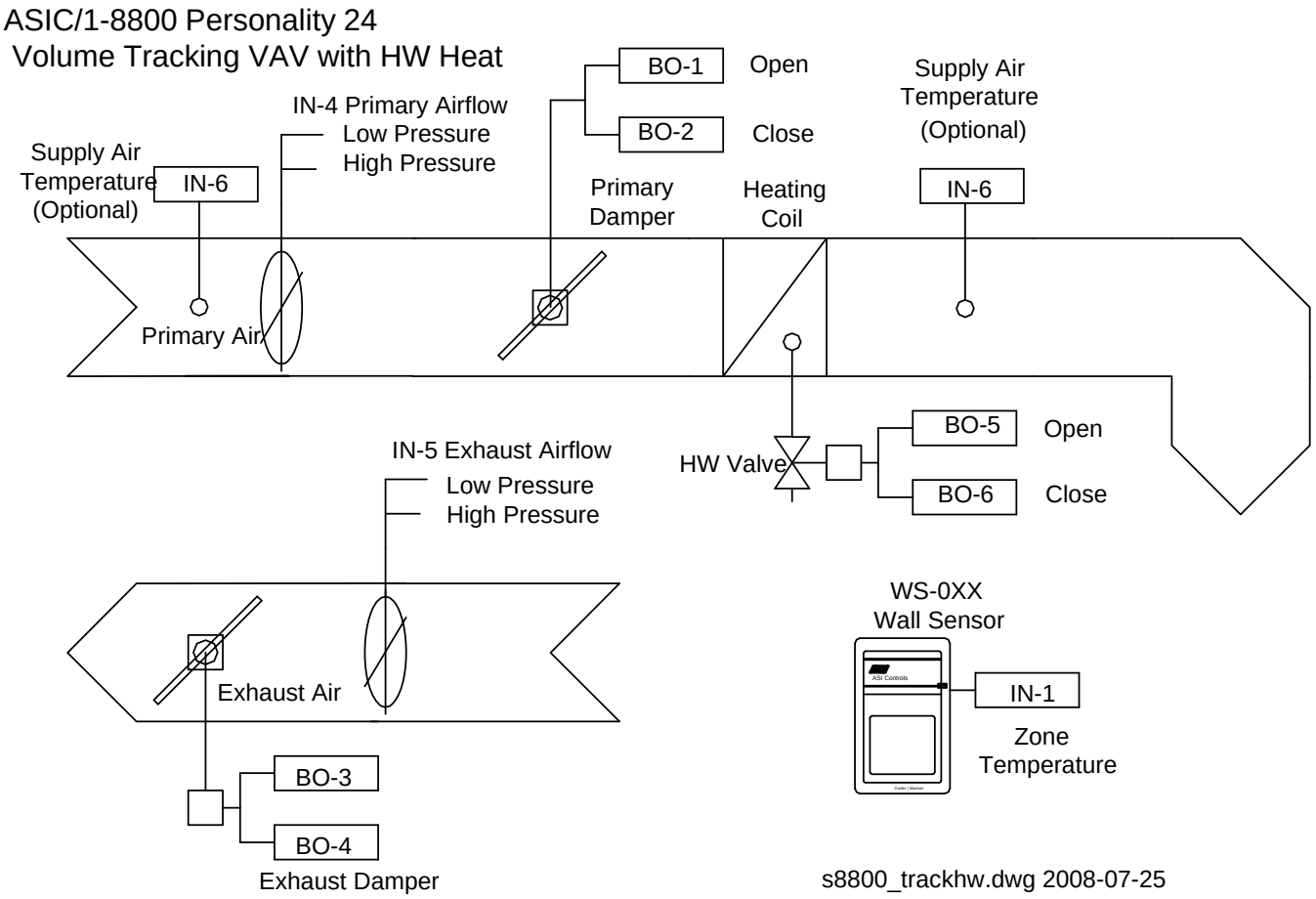
It uses a secondary airflow sensor to give pressure independent control of the variable air volume heating. If the blending personality, 15, is selected, then the cooling and heating airflow are modulated, so that a minimum total airflow is maintained.

Please see the Application Bulletin 83, Dual Duct VAV for further details.

Dual Duct Personalities

	Without Blending	With Blending
Dual Duct	14	15

A1-8800-DD Tracking VAV - 2 Airflow Sensors



We will have to port the Volume Tracking code from the ASIC/1-8755. The primary damper is a simple VAV personality. The 8755 is built on top of 8055.

The primary air supply airflow for cooling and heating is controlled solely based on zone temperature as in normal single duct VAV. Tracking control sequences do not support fan operation.

The ASIC/1-8800-TRK comes with two airflow sensor for tracking sequences and those requiring monitor of total and primary and exhaust airflows..

> Volume Tracking options for VAV(Personality 21), 1 Stage Electric Heat (Personality 22), 2 Stage Electric Heat (Personality 23), HW Valve(Personality 24), and Thermic Valve (Personality 25).

The tracking personalities control the secondary airflow based on exhaust volume independent of the zone state being occupied or unoccupied.. An optional flag determines whether the Volume tracking is Positive (less air leaving the zone) or Negative (more air leaving the zone)..

We will **not** implement pressure tracking or indicators or switches.

	No Reheat	1 Stage Electric	2 Stage Electric	3 Stage Electric	HW Valve Open/Close	Thermic Valve
Volume Tracking	21	22	23	NA	24	25

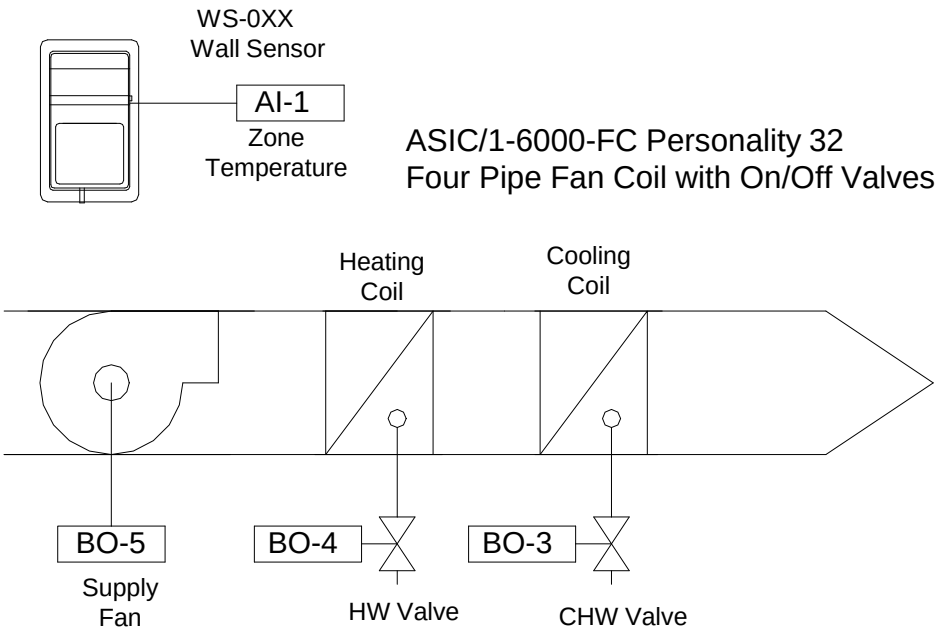
Exhaust Volume Control

A separate velocity sensor in the secondary air duct measures the exhaust air volume. An exhaust volume setpoint is calculated once a second based on the measured Primary Airflow, the active Tracker Airflow Setpoint, and the ratio of duct sizes and K-factors. The exhaust airflow is maintained at the calculated exhaust airflow setpoint in all control

modes. An optional flag determines which Tracker Positive or Negative Airflow Setpoint is active.

> A Positive Volume Setpoint will control so more air enters the space than is exhausted from the space. The room pressurization is Positive with respect to the reference zone.
>
> A Negative Volume Setpoint will control so less air enters the space than is exhausted from the space. The room pressurization is Negative with respect to the reference zone.

ASIC/1-8800 Fan Coil Personalities



Two new personalities, 31, 2-pipe On/Off Fan Coil and 32, 4-pipe On/Off Fan Coil have been implemented for simple fan coil applications

About this Document

This manual was produced using *Doc-To-Help*®, by WexTech Systems, Inc. This manual, ASIC/1-8800 Engineering Guide, DOC-1683, and Windows™ help system was last revised on 2009-04-14. ASI Controls is always working to improve our products. Should you have any questions, or suggestions that would help our products better meet your needs, or that would help us serve you better, please call, write, or e-mail to:

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ASIC/1-8800 Tables

Table Messages

The data in the ASIC/1 product family is organized into standard tables. Each table entry represents one byte of data. ASI Expert and the ASI DDE and ASI LinkOPC servers use this fact to identify the data to be displayed.

Table 1, Non-Volatile General Parameters

Entry	Description	
1	Device Address, hi byte	
2	Device Address, lo byte	
3	Baud Rate (New155A..)	[Default, 96]
4	Spare	
5	Demand Reset Range (New 155A..)	[Default, 6]
6	Demand Group (New 155A..)	[Default, 0]
7	Demand Shed Level (New 155A..)	[Default, 6]
8	Demand Rotate Level (New 155A..)	[Default, 6]
9	Group Address	[Default, 0]
10	Reserved - Not Used	
11	Reserved - Not Used	
12	Reserved - Not Used	
13	Reserved - Not Used	
14	Not Used	[Default 10] FW175A..
15	Personality	[Default, 1]
16...47	Description, bytes 1..32	[Default, 'ASIC/1-8800 Dual Duct VAV'']

Table 2, Non-Volatile Setpoints

Note: All Airflow setpoints and values are in raw units of 25 fpm at K-factor = 2338. The value in CFM is given by

CFM (raw)*(25 ft/min)*(Kf/2338)* (Duct_Area*0.005 ft2)

Note: FW150B, FW600a or FW880 if Half Degree Enable is "yes" then Temperature Setpoints are in 0.5 deg increments. If Zone Temperature is in deg C, then Temperature Setpoints are in Celsius.

Entry	Description	
1	Cooling Occupied Temperature Setpoint	[Default, 74]
2	Heating Occupied Temperature Setpoint	[Default, 72]
3	Cooling Airflow Occupied Min Setpoint	[Default, 0]FW155A..,600A
	(eOccCoolMinimum)	[Default, 20] FW175A..
	Damper CLG Min Position	FW600a, 880a

4	Cooling Airflow Occupied Max Setpoint (eOccCoolMaximum) Damper CLG Max Position FW600a	[Default, 80]
5	Heating Airflow Occupied Min Setpoint (eOccHeatMinimum) Damper HTG Min Position FW600a, 880a	[Default, 0]FW155A..,600A [Default, 20] FW175A..
6	Heating Airflow Occupied Max Setpoint Damper HTG MaxPosition FW600a	[Default, 80] (eOccHeatMaximum)
7	Fan Energize Airflow Setpoint	[Default, 160] (eFanOnSP)
8	Throttle Range (0.1 deg F) (New 155A..)	[Default,4.0 deg F]
9	Integral Time (0.5 min increments) (New 155A..)	[Default,5 = 2.5 min]
10	Cooling Unoccupied Temp Setpoint	[Default, 85 F]
11	Heating Unoccupied Temp Setpoint	[Default, 65 F]
12	Cooling Night Setback Temp Setpoint	[Default, 85 F]
13	Heating Night Setback Temp Setpoint	[Default, 65 F]
14	Zone Temperature Alarm Range	[Default, 4 F]
15	Primary Airflow Alarm Range	[Default, 160]
16	Secondary Airflow Alarm Range	[Default, 160]
17	Changeover Setpoint	[Default, 0 F] (eAutoChangeSP)
18	Zone Sensor Bias (0.1 deg F)	[Default, 0.0 deg]
19	Blend Total Occupied Airflow Setpoint Tracker Positive Airflow Setpoint	[Default, 0] FW880a..(eOccTotal) [Default, 20] FW880a..
20	Blend Total Unoccupied Airflow Setpoint Tracker Negative Airflow Setpoint A Negative Setpoint > 0 will cause zone to go Negative. FW175A1.1	[Default, 0] FW880a (eUnoccTotal) [Default, 20] FW175A..
21	Blend Ratio Numerator	[Default, 1]
22	Blend Ratio Denominator	[Default, 1]
23	Cooling Airflow Unocc Minimum Setpoint	[Default, 0]FW155A.. [Default, 20] FW175A..
24	Cooling Airflow Unocc Maximum Setpoint	[Default, 80]
25	Heating Airflow Unocc Minimum Setpoint	[Default, 0] FW155A.. [Default, 20] FW175A..
26	Heating Airflow Unocc Maximum Setpoint	[Default, 80]
27	Cooling Airflow NSB Minimum Setpoint	[Default, 0] FW155A.. [Default, 20] FW175A..
28	Cooling Airflow NSB Maximum Setpoint	[Default, 80]
29	Heating Airflow NSB Minimum Setpoint	[Default, 0]FW155A.. [Default, 20] FW175A..
30	Heating Airflow NSB Maximum Setpoint	[Default, 80]
31	Demand Reset Range (New 155A..)	[Default, 0] (T1E5)
32	Upper Limit (CLG)Temperature Setpoint	[Default 85] FW155B
33	Lower Limit (HTG)Temperature Setpoint	[Default 65] FW155B
34	Upper Limit HTG Temp Setpoint	[Default 85] FW600a,655A1.3
35	Lower Limit CLG Temp Setpoint	[Default 65] FW600a,655A1.3
36	Spare FW600a (eSpare0)	
37	SpareFW600a (eSpare0)	

Table 3, Non-Volatile Control Parameter

Entry	Description	
01	Baud Rate (FW150F..) 96 = 9600 baud, 192 = 19,200, 128 = 38,400,else 9600 baud	[Default, 9600]
02	Primary Airflow Smooth Filter	[Default, 6]
03	Secondary Airflow Smooth Filter	[Default, 6]
04	Output Override Power-up State	[Default, 0] (eOutputOverRides)
05	Output Override Power-up On Status	[Default, 0] (eOverRideStatus)

06 Spare (eSpare0) 880a
Occupancy Delay (4s) [Default 8(32s)] (eSpare0) 600a14,
07 Spare (eSpare0) 880a
Door Event Time (4s) [Default 8(32s)] (eDoorEventTime) 600a14,
08 Electric Heat Minimum AF SP (eElectricMinAF)[Default 10] (155A2.3)
09 Airflow 2 Hysteresis [Default 9] (eSecondaryHysteresis) (880a)
10 Electric Heat Base Time (eHeatBaseTime) [Default, 240]
11 Afterhours Time Allowed (in minutes) [Default, 60]
12 Airflow Hysteresis [Default, 1]
13 User Adjust Setpoint (in deg F) [Default, 3]
14 Outside Airflow Setpoint [Default, 0] (FW155A2.0) (eOutsideAirSetpoint)
15 Occupancy Sensor Threshold (FW155A,1.3)(600a1.3)[Default,25]
(eOCCSensorThreshold)
16 Primary Airflow Calibrate Low Byte (ePrimaryAirCalibration)
17 Primary Airflow Calibrate High Byte
18 Secondary Airflow Calibrate Low Byte (eSecondaryAirCalibration)
19 Secondary Airflow Calibrate High Byte
20 HW Valve Base Time (in seconds) [Default, 120 s] (eValveBaseTime)
21 AO-1 Maximum (eAOMaxOutput) FW600a [Default, 254]
22 AO-1 Minimum Output LOW(eAOMinOutput) FW600a [Default, 0]
23 LSNBL AO-1 Assignment (eAOAssignment) FW600a [Default, 2]
MSNBL AO-2 Assignment (eAOAssignment) FW600a [Default, 2]
0 – None
1 – Cooling Requirement
2 – Heating Requirement
3 - Not Used
4 - Changeover Heating/Cooling
5 – ECM Fan Speed
6..15 - None
24 Damper Drive Time (s) (FW600a) [Default, 9 s] (eDamperDriveTime)
25 ECM Fan Speed Setpoint (FW600a) [Default, 128] (eFanSpeedAO)

Note: When Output Masks are changed it requires a power reset before the new value becomes effective.

26 Primary Damper Open Mask [Default, 01 hex]
27 Primary Damper Closed Mask [Default, 02 hex]
28 Secondary Damper Open Mask [Default, 04 hex]
29 Secondary Damper Closed Mask [Default, 08 hex]
30 Fan On/Off Mask [Default, 10 hex] FW600a..
[Default, 20 hex] FW155A.880a.
31 Electric Heat 1 On/Off Mask [Default, 04 hex] FW155A..
32 Electric Heat 2 On/Off Mask [Default, 08 hex] FW155A..
33 Electric Heat 3 On/Off Mask [Default, 10 hex] FW155A..
34 Thermic HW valve On/Off Mask [Default, 04 hex] FW155A..
35 Lights On/Off Mask [Default. None] 600A
[Default, 80 hex] FW155A
36 HW Valve Open Mask [Default, 04 hex]
37 HW Valve Closed Mask [Default, 08 hex]
38 Aux Cooling Wait (150E..) [Default, 120 s]
39 Aux Cooling Temp Offset (150E..) [Default, 2 F]
40 Aux Cooling Output Mask (150E..) [Default, 00h] (eAuxCoolMask)
xx FC CHW Valve On/Off Mask (600A1.4) [Assign 0x04]
41 Aux Cooling Airflow Hysteresis (150E..) [Default, 5] (eAuxCoolHysteresis)
42 Single Setpoint Deadband ((600a1.8)) [Default 5]
43 Auxiliary Heat Output Mask [Default, 0]
xx FC HW Valve On/Off Mask (600A1.4) [Assign 0x08]
44 Auxiliary 1 Output Mask (New 155A..) [Default, 0] (eAuxOutOne)
45 Auxiliary 2 Output Mask (New 155A..) [Default, 0] (eAuxOutTwo)
46 Auxiliary 3 Output Mask (New 155A..) [Default, 0] (eAuxOutThree)

47	VV_DefaultOutputState (600a1.8)	[Default, 0]
48	Airflow 1 Integration Time (seconds) (600a1.8)	[Default, 0]
49	Airflow 2 Integration Time (seconds) (880a1.0)	[Default, 0]
50	AO-2 Maximum (eAO2MaxOutput) FW880A	[Default, 254]
51	AO-2 Minimum Output (eAO2MinOutput) FW880A	[Default, 0]
52	spare	

Table 4, Non-Volatile Monitored Data

Entry	Description	
1	Afterhours Date Stamp, month	[Default, 0]
2	Afterhours Date Stamp, day	[Default, 0]
3	Afterhours Date Stamp, hour	[Default, 0]
4	Afterhours Total Time, LO	[Default, 0]
5	Afterhours Total Time, HI	[Default, 0]
6	Afterhours Time Allowed (New 155A..)	[Default,60 min] (eOverTimeAllowed)

Table 5, Non-Volatile Function Tables

Entry	Description	
1	Primary Airflow K-factor (lo)	[Default, 34]
2	Primary Airflow K-factor (hi)	[Default, 9]
3	Secondary Airflow K-factor (lo)*	[Default, 34]
4	- Secondary Airflow K-factor (hi)*	[Default, 9]

Note: All Airflow setpoints and values are in raw units of 25 fpm at K-factor = 2338.
The value in CFM is give by
CFM (raw)*(25 ft/min)*(Kf/2338)* (Duct_Area*0.005 ft2)

Note: 09*256+ 34 = 2338 decimal
Air flow velocity in ft/min = (raw)*(25 ft/min)*(K-factor/2338)

Note: Duct area in 0.005 sq ft increment. (70 decimal= 0.35 ft^2)

5	Primary Duct Area (lo)	[Default, 70]
6	Primary Duct Area (hi)	[Default, 0]
7	Secondary Duct Area (lo)	[Default, 70]
8	Secondary Duct Area (hi)	[Default, 0]
9	Blend Ratio Numerator	[Default, 1]
10	Blend Ratio Denominator	[Default, 1]

HW Valve Output as function of Heating Requirement (eWaterTable)

11	HW Valve Table (1) 0% (New 155A..)	[Default, 0]
12	HW Valve Table (2) 25% (New 155A..)	[Default, 64]
13	HW Valve Table (3) 50% (New 155A..)	[Default, 128]
14	HW Valve Table (4) 75% (New 155A..)	[Default, 192]
15	HW Valve Table (5) 100% (New 155A..)	[Default, 254]

Table 6, Non-Volatile Flags

Note: Individual flags may be read and set with the 4Bh and 4Ch messages.

> Note: When Non-Volatile Flags are changed it requires a power reset before the new value becomes effective.

Entry	Description	
1	Non-Volatile flag #1 1 = Yes, 0 = No bit 0 - State Schedule Disable (efTodDisState) bit 1 - Lights Schedule Disable bit 2 - Multiple Airflow Min/Max Enable bit 3 - Morning Warm-up Option 2 Enable; (efAMWU2Flag)	[Default, 0]

0 = Morning Warm-up Option 1;
1 = Morning Warm-up Option 2
bit 4 – Tracker Negative Enable (efTrackerVolumeNeg) (880a)
bit 5 – (ecall_en_2) Used??
bit 6 - Ignore Globals Enable; 0 Accept Globals (efIGNORE_GLOBAL)
bit 7 - NSB Option 2 Enable – Intermittent Fan; (efNSB2Flag)
0= NSB Option 1, 1 = NSB Option 2

2 Non-Volatile flag #2 [Default, 1]
1 = Yes, 0 = No
bit 0 - Afterhours Enable (efPBAfterHoursEn)
bit 1 - Outside Airflow Enable (FW155A2.0) (efOutsideAirEnable)
bit 2 - Force Emergency 1 (eEmergency_1)
bit 3 - Force Emergency 2 (eEmergency_2)
bit 4 - Dual Heating Enable (efDualHeatFlag)
bit 5 - Auxiliary Heating Enable (efEnableAuxHeating)
bit 6 - Auxiliary Cooling Enable (efEnableAuxCooling)
bit 7 – Default State Unoccupied (FW 155A2.2) (efDefaultStateUnocc)

3 Non-Volatile flag #3 [Default, 0]
bit 0 – Reverse Lights Enable (efInvertLitesEn) (155A2.0)
bit 1 – UNO Intermittent Fan Enable (UNO Option 2 Enable)(efUNOCC2Flag)
bit 2 - User Adjust Switch Enable(New 155A..) (efVariableEnable)
bit 3 - Shed Fan Enable(New 155A..) (efShedFanEnable)
bit 4 - Occupancy Sensor Enable (New 155A..,600a1.3) (efOccSensorEnable)
bit 5 - Occupancy Sense Close (New 155A.., 600a1.3) (efOccSenseOpen)
bit 6 - Lights Occupied Enable (New 155A..) (efOccLightsEnable)
bit 7 - IFAN Heating Only Enable (New 155A..) (efIntFanHeatOnlyEnable)

4 Non-Volatile flag #4 [Default, 0]
bit 0 - Local Heat Enable (efLocalHeatEnable)
bit 1 - Thermic Valve Reversed (efThermicReverse)
bit 2 - Occupancy Afterhours Enable(efOccAfterHoursEn)(600a1.3)
bit 3 - Spare (efSpare_2)
bit 4 - Spare (efSpare_3)
bit 5 - Spare (efSpare_4)
bit 6 – Lights Default (880a) (efLightsDefault) 0= ON, 1= OFF
bit 7 - Spare (efSpare_5)

5 Non-Volatile flag #5 (155B only) [Default, 0]
bit 0 –Single Setpoint Enable (600A1.3,655a2.0) (efSingleSPEnable)
bit 1 - (efSpare_7)
bit 2 -(efSpare_8)
bit 3 -(efSpare_9)
bit 4 –Pressure Dependent Enable (600A..) (efPressDependEnable)
bit 5 - Flash Enable (600A..) (efEnableBootloader)
bit 6 – Half Degree Enable (600A,155B,655A..) (efHalfDegSpEnable)
bit 7 – Digital Display Enable (600A,155B,655A..) (efDisplayEnable)

Table 7, Non-Volatile Daily Event Schedules

Each ASIC/1 contains a time of day and event schedule. The day is divided into 96 periods of 15 minutes. The control state changes when there is an exact match to a scheduled event. An event time of zero (00:00) indicates that the schedule is "not used".

At midnight, the clock rolls over to period 0, of the next day. The controller examines the last event of the new day and assumes that the beginning of the day is the same as the end of the day.

On synchronize the controller looks at the most recent event to determine the scheduled state. If there is no recent event, it looks to the last event of the day assumes that the beginning of the day is the same as the end of the day. The controller does not look to the previous days schedule, when looking for the most recent time of day event.

A time event of midnight (12:00AM or 24:00) is a valid end of day event. (FW155A, …)

For 8655 655A this rule works for all states (UNOCC, OCC, NSB, MRDY). For 8055 155A and 155B and 6000 600A the MRDY state is ignored. For 8255 FW255A do not use MRDY at end of day.

For older products 8015 (150E...,154E...), 8205, etc., the control state changes only on exact match. To set an event at midnight use period 1, (00:15 hrs) .

The Daily Event Schedule is implemented through Table 7

The defaults for the Saturday, Sunday, and Holiday schedules are:

NSB	= (00:15 hours)	[Default, 1]
Lights Off 1	= (00:15 hours)	[Default, 1]

The defaults for the weekday schedules are:

NSB #1	= (19:00 hours, 7 PM)	[Default, 76 decimal]
Lights Off 1	= (19:00 hours, 7 PM)	[Default, 76 decimal]
Occupied #1	= (07:00 hours, 7 AM)	[Default, 28 decimal]
Lights On 1	= (07:00 hours, 7 AM)	[Default, 28 decimal]
All others default to zero.		[Default, 0]

Entry	Description	Entry	Description
1	Occupied #1 holiday	11	Occupied #1 Monday
2	Occupied #2 holiday	12	Occupied #2 Monday
3	Unoccupied #1 holiday	13	Unoccupied #1 Monday
4	Unoccupied #2 holiday	14	Unoccupied #2 Monday
5	Night setback holiday	15	Night setback Monday
6	Morning Warm-up hol	16	Morning Warm-up Monday
7	Lights ON 1 holiday	17	Lights ON 1 Monday
8	Lights OFF 1 holiday	18	Lights OFF 1 Monday
9	Lights ON 2 holiday	19	Lights ON 2 Monday
10	Lights OFF 2 holiday	20	Lights OFF 2 Monday
21	Occupied #1 Tuesday	31	Occupied #1 Wednesday
22	Occupied #2 Tuesday	32	Occupied #2 Wednesday
23	Unoccupied #1 Tuesday	33	Unoccupied #1 Wednesday
24	Unoccupied 2 Tuesday	34	Unoccupied 2 Wednesday
25	Night setback Tuesday	35	Night setback Wednesday
26	Morning Warm-up Tue	36	Morning Warm-up Wednesday
27	Lights ON 1 Tuesday	37	Lights ON 1 Wednesday
28	Lights OFF 1 Tuesday	38	Lights OFF 1 Wednesday
29	Lights ON 2 Tuesday	39	Lights ON 2 Wednesday
30	Lights OFF 2 Tuesday	40	Lights OFF 2 Wednesday

Entry	Description	Entry	Description
41	Occupied #1 Thursday	51	Occupied #1 Friday
42	Occupied #2 Thursday	52	Occupied #2 Friday
43	Unoccupied #1 Thursday	53	Unoccupied #1 Friday
44	Unoccupied #2 Thursday	54	Unoccupied #2 Friday
45	Night setback Thursday	55	Night setback Friday
46	Morning Warm-up Thur	56	Morning Warm-up Friday
47	Lights ON 1 Thursday	57	Lights ON 1 Friday

48	Lights OFF 1 Thursday	58	Lights OFF 1 Friday
49	Lights ON 2 Thursday	59	Lights ON 2 Friday
50	Lights OFF 2 Thursday	60	Lights OFF 2 Friday
61	Occupied #1 Saturday	71	Occupied #1 Sunday
62	Occupied #2 Saturday	72	Occupied #2 Sunday
63	Unoccupied #1 Saturday	73	Unoccupied #1 Sunday
64	Unoccupied #2 Saturday	74	Unoccupied #2 Sunday
65	Night setback Saturday	75	Night setback Sunday
66	Morning Warm-up Sat	76	Morning Warm-up Sunday
67	Lights ON 1 Saturday	77	Lights ON 1 Sunday
68	Lights OFF 1 Saturday	78	Lights OFF 1 Sunday
69	Lights ON 2 Saturday	79	Lights ON 2 Sunday
70	Lights OFF 2 Saturday	80	Lights OFF 2 Sunday

Table 8, Non-Volatile Input Configuration

Table 8 is used for configuring Inputs. Conversions affect the results displayed in Table 9.

Input Conversions

Entry	Description	
Engineering Unit Input Conversions (eInputConversions)		
1	MSNBL Input 1 Type	[Default: 14h] Zone Temp deg F
	LSNBL Input 1 Convert	
2	MSNBL Input 2 Type	[Default: 00h] raw
	LSNBL Input 2 Convert	
3	MSNBL Input 3 Type	[Default: 32h] User Adjust, 20k pot
	LSNBL Input 3 Convert	
4	MSNBL Input 4 Type	[Default: 22h] Primary AF CFM
	LSNBL Input 4 Convert	
5	MSNBL Input 5 Type	[Default: 10h] 3 k thermistor, deg F
	LSNBL Input 5 Convert	
6	MSNBL Input 6 Type	[Default: 10h] 3 k thermistor, deg F
	LSNBL Input 6 Convert	
7	MSNBL Input 7 Type	[Default: 10h] 3 k thermistor, deg F
	LSNBL Input 7 Convert	
8	MSNBL Input 8 Type	[Default: 10h] 3 k thermistor, deg F
	LSNBL Input 8 Convert	
Alternate Conversion Parameters (eAlternateConversions)		
9	Spare	[Default: 00h]
10	Spare	[Default: 00h]
11	Spare	[Default: 00h]
Custom Input Parameters LO Byte, HI Byte(eCustomParameters)		
12,13	Custom Span IN-5	[Default: 4095]
14,15	Custom Offset IN-5	[Default: 0]
16,17	Custom Span IN-6	[Default: 4095]
18,19	Custom Offset IN-6	[Default: 0]
20,21	Custom Span IN-7	[Default: 4095]
22,23	Custom Offset IN-7	[Default: 0]
24,25	Custom Span IN-8	[Default: 4095]
26,27	Custom Offset IN-8	[Default: 0]

Input Type = 0 - Raw

Convert Type

0 = 12 bit, Raw 0..4095; Fault Limit: High raw 4090, Low raw 3
1 = 10 bit, Raw 0..1023; Fault Limit: High raw 1020, Low raw 3
2 = 8 bit, Raw 0..255 ; Fault Limit: High 250, Low raw 3
3 = Volts, 0 to 5.000; ; Fault Limit: High raw 4090, Low raw 3

Input Type = 1 - Temperature (3 kohm thermistor)

Convert Type

0 = 0.01 deg F (3.32 kohm pull-up)
1 = 0.01 deg C (3.32 kohm pull-up)
2 = 0.01 deg F (1.82 kohm pull-up)
3 = 0.01 deg C (1.82 kohm pull-up)
4 = Zone Temperature, 0.01 deg F (3.32 kohm pull-up)
5 = Zone Temperature, 0.01 deg C (3.32 kohm pull-up)

Input Type = 2 - AWM3300 Airflow Sensor

Raw value in units of 25 ft/min.

Convert Type(LSNBL)

(32) 0 = Primary Airflow, FPM (feet/min)
(33) 1 = Secondary Airflow, FPM (feet/min)
(34) 2 = Primary Airflow, CFM (cubic feet/min)
(35) 3 = Secondary Airflow, CFM (cubic feet/min)

(36) 4 = Primary Airflow, LPS (liter/sec)
(37) 5 = Secondary Airflow, LPS (liter/sec)
(38) 6 = Primary Airflow, CMH (cubic meter/hour)
(39) 7 = Secondary Airflow, CMH (cubic meter/hour)

Input Type =3 - User Adjust

Convert Type
0 = -100 %, 0, +100% Slide Switch, 510 ohm pullup
1 =-100 % to 100% .5 k to 5.5k pot, 5.11 k pull-up.
2 =-100 % to 100% 10 k to 30k pot., 10 k pull-up

Input Type = 4 - Zone Pressure Slope/Offset (Tracker)

Convert Type
0 = 0 to 5 Vdc = -0.1 to + 0.1 "wc Modus

Input Type = 5 - Humidity (0..100%)

Convert Type
0 = 0 to 5 Vdc = 0 to 100 % RH

Input Type = 6 - Custom Inputs

Convert Type
0 = 0 to 5 Vdc = CO2 0 to 2400 ppm
1 = Custom (inputs 5,6,7,8 only)
Specific Slope(Span/4095) and Offset needed for designated input.

Input Type= 7 - AWM3300 Airflow Sensor

Raw value in units of 25 ft/min.
Convert Type
0 = Primary Airflow, FPM (feet/min)
1 = Secondary Airflow, FPM (feet/min)
2 = Primary Airflow, CFM (cubic feet/min)
3 = Secondary Airflow, CFM (cubic feet/min)
4 = Primary Airflow, LPS (liter/sec)
5 = Secondary Airflow, LPS (liter/sec)
6 = Primary Airflow, CMH (cubic meter/hour)
7 = Secondary Airflow, CMH (cubic meter/hour)

Input Type= 8 - Binary Inputs min.

Convert Type
0 = Binary Normally Open
1 = Binary Normally Closed
2 = Binary Triple Contact

Input Type = 9 - Temperature (10 kohm thermistor type 2)

(Input Conversion)
MSNBL Input Type 9, 10k Thermistor Type 2
LSNBL Input Convert
(144) 0 = "10k ThermType2 (3.32k Rp) F" "10kType2(3.3k)F"
(145) 1 = "10k ThermType2 (3.32k Rp) C" "10kType2(3.3k)C"
(146) 2 = "10k ThermType2 (10k Rp) F" "10kType2(10k)F"
(147) 3 = "10k ThermType2 (10k Rp) C" "10kType2(10k)C"
(148) 4 = "Zone 10k ThermType2 (3.32k Rp) F" "Z10kType2(3.3k)F"
(149) 5 = "Zone 10k ThermType2 (3.32k Rp) C" "Z10kType2(3.3k)C"

Note: 10 k thermistor Type 2 is implemented in 655A1.2

Input Type = 10 - Temperature (10 kohm thermistor type 3)

MSNBL Input Type 10, 10k Thermistor Type 3
LSNBL Input Convert
(160) 0 = "10k ThermType3 (3.32k Rp) F" "10kType3(3.3k)F"
(161) 1 = "10k ThermType3 (3.32k Rp) C" "10kType3(3.3k)C"

(162) 2 = "10k ThermType3 (10k Rp) F" "10kType3(10k)F"
(163) 3 = "10k ThermType3 (10k Rp) C" "10kType3(10k)C"
(164) 4 = "Zone 10k ThermType3 (3.32k Rp) F" "Z10kType3(3.3k)F"
(165) 5 = "Zone 10k ThermType3 (3.32k Rp) C" "Z10kType3(3.3k)C"
Note: 10 k thermistor Type 3 is implemented in 655A1.2

Input Type = 11 – Sensirion SDP1000-R Airflow Sensor

Raw value in units of 25 ft/min.

Convert Type
(176) 0 = Primary Airflow, FPM (feet/min)
(177) 1 = Secondary Airflow, FPM (feet/min)
(178) 2 = Primary Airflow, CFM (cubic feet/min)
(179) 3 = Secondary Airflow, CFM (cubic feet/min)
(180) 4 = Primary Airflow, LPS (liter/sec)
(181) 5 = Secondary Airflow, LPS (liter/sec)
(182) 6 = Primary Airflow, CMH (cubic meter/hour)
(183) 7 = Secondary Airflow, CMH (cubic meter/hour)

Table 9, RAM Input Values

Word, 16 bit, smoothed values. Note the actual value being read depends on the input configuration that is in Table 8. (New FW155A..) The values displayed depend on the Input Types and Convert Types in Table 14.

Old Doubles , Table 9 Entries 1..16 (Added FW600a1.1) and FW880A!!
LO Byte- Fraction, HI Byte - Integer,
Changed in FW155A Rev.1.3..

NOTE: Old Doubles Not Implemented in FW155B 1.0 … FW600a1.0
Displays arbitrary number (rStackEnd)

New Doubles, Table 9 Entries 47 ..62
Integer in 0.01 deg , LO Byte, and HI Byte
FW155A Rev.1.1..1.2

Old Doubles

Input Values - New Style, Integer in 0.01 deg , LO Byte, and HI Byte
FW155A Rev.1.1..1.2, 600A1.1 FW880A!!

1,2 Zone Temp (IN-1) 0.01 deg
3,4 Slide Switch (IN-2)
5,6 Variable User Adjust/Interlock (IN-3)
7,8 Primary Airflow (IN-4) - In 25 ft/min
9,10 Aux Temperature (IN-5) 0.01 deg
11,12 Supply Air Temp 1 (IN-6)) 0.01 deg
Zone Pressure
13,14 Reserved 1/2 AO1
15,16 Reserved Vunreg/10

Raw Input Values (rRawInputData) 0..4095
17,18 Raw (IN-1)
19,20 Raw (IN-2)
21,22 Raw (IN-3)
23,24 Raw (IN-4)
25,26 Raw (IN-5)
27,28 Raw (IN-6)
29,30 Raw (IN-7)
31,32 Raw (IN-8)

Alternate Converted Values.
33,34 Primary Airflow Conversion (rPrimaryAirConvert)

35,36 Secondary Airflow Conversion (rSecondaryAirConvert)
37,38 Alternate Airflow Conversion (Spare)

Working Heating and Cooling Calculation Values
39,40 Zone Temp Previous (rOldZoneTemperature)
41,42 Zone Temp New (rNewZoneTemperature)
43,44 Primary Calculation 0..25500 (rPrimaryCalculation)
45,46 Secondary Calculation 0..25500 (rSecondaryCalculation)

New Doubles

Engineering Unit Input Values
Input Values - New Style, Integer in 0.01 deg , LO Byte, and HI Byte
Added FW155A Rev.1.3…

47,48 Zone Temp (IN-1)
49,50 A1_AuxTempIN-02-word
51,52 A1_AuxTempIN-03-word/Variable User Adjust/Interlock (IN-3)
53,54 Primary Airflow (IN-4) - in ft/min
55,56 Secondary Airflow (IN-5) -in ft/min
57,58 Aux Temp (IN-6) xDuctTemperatures, +1
Zone Pressure (Tracker) FW175A..
59,60 Aux Temp (IN-7) xDuctTemperatures+2, +3
61,62 Aux Temp (IN-7) xDuctTemperatures+4, +5

Table 10, RAM Values

Entry Description
1 ASIC/1 Time, seconds
2 ASIC/1 Time, minutes (0..59)
3 ASIC/1 Time, hours (0..23)
4 ASIC/1 Time, day (1..7) 1 = Monday
5 Control State (rPollStatus+1)
bit 0,1 - 0= unocc; 1=occ; 2=nsb; 3=mwu
6 Control Mode (rPollStatus+1)
bit 4,5 - 0=db; 1 = cooling; 2 = heating;
7 Afterhours Time Remaining
8 Zone Sensor Flags (rBitFlags0+6)
bit 0 - reserved
bit 1 - Afterhours Status (rfOVERTIME)
1 = Yes, in afterhours
bit 2,3 - Slide Switch Status Not implemented
00h = 0 = slide switch is center
01h = 1 = slide switch is up
10h = 2 = slide switch is down
Note: 1 and 2 were reversed in earlier documentation.
bit 4 - reserved
bit 5 - reserved
bit 6 - reserved
bit 7 - reserved
9 Alarm Status (rPollStatus+2)
bit 0,1 - Alarm 1 - Zone Temperature Alarm
bit 0 = 1 HI, zone temperature too hot;
bit 1 = 1 LO, zone temperature too cold
bit 2,3 - Alarm 2 - Primary Airflow Alarm – Not Used
bit 2 = 1 HI, Primary Airflow too high;
bit 3 = 1 LO Primary Airflow too low;
bit 4,5 - Alarm 3 - Secondary Airflow Alarm
bit 4 = 1 HI, Secondary (Exhaust) Airflow too high;
bit 5 = 1 LO, Secondary (Exhaust) Airflow too low;
bit 6 - Afterhours Status
1 - if pushbutton has been pressed
and AfterhoursTime Allowed is non zero.

bit 7 - Synchronize Required
1 = synchronization required

Entry Description (continued)

10 Status Flags (rBitFlags+2)
bit 0 - reserved
bit 1 - Non-VolatileWritten Status
1 = Non-Volatilewas written
bit 2 - reserved
bit 3 - reserved
bit 4 - reserved
bit 5 - reserved
bit 6 - reserved
bit 7 - Holiday Status
1 = Today is a Holiday

11 Emergency Flags (rBitFlags+8)
bit 0,1 - Emergency Status
0 = No Emergency 1
1 = Emergency 1
2 = Emergency 2
bit 2 - Synchronized Status
1 = Is synchronized.
bit 3 - reserved
bit 4 - reserved
bit 5 - reserved
bit 6 - reserved
bit 7 - reserved

12 Changeover Flags (rBitFlags+5)
bit 0 - reserved
bit 1 - reserved
bit 2 - reserved
bit 3,4 - Changeover Mode
00b = 0 = Changeover Auto
01b = 1 = Changeover forced ON
10b = 2 - Changeover forced OFF
bit 5 - Changeover Status
1 = In changeover
bit 6 - Sensor Failure Status
0 = Zone Temperature OK
1 = Zone Temperature Fail
bit 7 - Non-VolatileStatus
1 = Non-Volatile corruption

13 Miscellaneous Status Flags (rBitFlags0)
bit 0 - State Overridden (rfSTATE_OVERRIDE)
bit 1 - Occupancy Status (rfOccupancy) (600a1.3)
bit 2 - reserved
bit 3 - reserved
bit 4 - reserved
bit 5 - reserved
bit 6 - reserved
bit 7 - reserved

14 Status Flags (rBitFlags+4)
bit 0 - reserved
bit 1 - reserved
bit 2 - Controller Interlock
1 = Interlock Present
bit 3 - reserved
bit 4 - reserved
bit 5 - reserved
bit 6 - reserved
bit 7 - reserved

15 Variable User Adjust Status (rVariableOffset)
-20 to +20 = -100% to +100%

16 Cooling Requirement (rCoolingRequirement)
0 to 255 = 0 to 100% (New 155A..)

Note: All Airflow setpoints and values are in raw units of 25 fpm at K-factor = 2338. The value in CFM is given by CFM = (raw)*(25 ft/min)*(Kf/2338)* (Duct_Area*0.005 ft2)

17 Primary Airflow (rCoolAirFlow)
Actual Primary airflow value, in 25 ft/min increments.

18 Secondary Airflow (rHeatAirFlow)
Actual Secondary airflow value, in 25 ft/min increments.

19 Primary Airflow Setpoint , in 25 ft/min increments
Damper Position Setpoint (s) (600A..) (rCoolAirSetPt)

20 Heating Requirement (rHeatingRequirement)
0 to 255 = 0 to 100% (New 155A..)
Product of Heating PI algorithm.
HW Heating - HW Valve Position SP .(see T10,47, FW155A..)
Dual Duct - Heating Airflow Setpoint.(see T10,46, FW155A..)
Tracker - Exhaust Airflow Setpoint.(see T10,46, FW155A..)
Electric Heat - Electric Heat On Time.(see T10,48, FW155A..)

21 HW Valve Actual Position (rHeatStroke)

22 Damper Output Status - (rMotorStatus)
bits 0,1 - Primary Damper Output Status
00h = 0 = Stop
01h = 1 = Drive Open
10h = 2 = Drive Closed
bits 4,5 - Secondary Damper Output Status
00h = 0 = Stop
01h = 1 = Drive Open
10h = 2 = Drive Closed

23 Active Cooling Temperature Setpoint (rCoolingSetPoint)

24 Active Heating Temperature Setpoint (rHeatingSetPoint)

25 Zone Temperature - Rounded (New 155A..) (rNewZoneTemp)
Zone Temperature - Previous (FW150e..)

26 Output Status -Actual (Bitwise representation) (rActualOutputs)

27 Aux Temperature 1 (IN-6) Truncated * (rAuxTemp1)
Zone Pressure (IN-6) Truncated

28 Aux Temperature 2 (IN-7) Truncated *(rDuctTemperatures+3)

29 Aux Temperature 3 (IN-8)Truncated * (rDuctTemperatures+5)

*Note: These entries are not available in FW150e or 151C.

Note: New RAM Values start here

30 Scheduled Status (rTodLights_State)
MSNBL State Scheduled Status
0=UNOCC, 1=OCC, 2=NSB,3=MRDY
bit 4 Lights Scheduled Off Status
1=Lights Off, 0=Lights On
LSNBL Lights Scheduled Status
1=Lights Off, 2=Lights On, 3=Lights Off, 4=Lights On,

Input Status

31 Input O/R Status (rDoubleOverRides)
(bitwise) bit0 = Input 1,..., bit7 = Input 8

32 Input Fault Status (rFaultStatus)
Bit pairs 00 = 0 - no fault
10 = 2 - LO fault

11 = 3 - HI Fault
01 = 1 reserved
bits0,1 - Input 1 Fault
bits2,3 - Input 2 Fault
bits4,5 - Input 3 Fault
bits6,7 - Input 4 Fault

33 Input Fault Status (rFaultStatus+1)
bits0,1 - Input 5 Fault
bits2,3 - Input 6 Fault
bits4,5 - Input 7 Fault
bits6,7 - Input 8 Fault

34 Output Status-Raw (rOutputStatus)
(bitwise) bit0 = Output 1,..., bit7 = Output 8

Tri-state Output Status
For tri-state outputs the status will be a Nibble which will have one of the following values. 0= Stop, 1= Open, 2 = Close , 3 = OR Open, 4 = OR Close, 5 = OR Min, 6 = OR Max, 7 = OR Stop.

35 Damper Status (rFunctionalStatus)
MSNBL Output Primary Damper Status
LSNBL Output Secondary Damper Status
Tracker Exhaust Damper Status

36 Valve Status (rFunctionalStatus+1)
MSNBL Output HW Valve Status
LSNBL Spare

Binary Output Status
For binary outputs the status will be a pair of bits which will have one of the following values. 0= Off, 1= On, 2 = OR Off, 3 = OR On .

37 Function Status On, Off, OR (rFunctionalStatus+2)
BITS_0,1 Output Status- Fan
BITS_2,3 Output Status- E HTG 1
BITS_4,5 Output Status- E HTG 2
BITS_6,7 Output Status- E HTG 3

38 Function Status On, Off, OR (rFunctionalStatus+3)
BITS_0,1 Output Status- Thermic
BITS_2,3 Output Status- Lights
BITS_4,5 Output Status- Aux CLG
BITS_6,7 Output Status- Aux HTG

39 Function Status On, Off, OR (rFunctionalStatus+4)
BITS_0,1 Output Status- Aux 1
xxTracker Positive Indicator
BITS_2,3 Output Status- Aux 2
xxTracker Neutral Indicator
BITS_4,5 Output Status- Aux 3
xxTracker Negative Indicator
BITS_6,7 Spare

40 Output OR State (rOutOvers)
0 = Not Overridden, 1 = Overridden.
(bitwise) bit0 = Output 1,..., bit7 = Output 8

41 Output OR On Status (rOutOverOns)
0 = Overridden Off, 1 = Overridden On.
(bitwise) bit0 = Output 1,..., bit7 = Output 8

Active Airflow Setpoints K1*A1*Vsp CFM

42 Active CLG AF Min SP (rCoolingMinimum)

43 Active CLG AF Max SP (rCoolingMaximum)

44 Active HTG AF Min SP (rHeatingMinimum)

45 Active HTG AF Max SP (rHeatingMaximum)

46 Secondary Airflow SP (rHeatAirSetPt) 880a
in 25 ft/min increments

Dual Duct - Heating Airflow Setpoint.(T10,20, FW150e..)
Tracker - Exhaust Airflow Setpoint.(T10,20, FW150e..)

47 HW Valve Position SP (rValvePositionSP)
HW Heating - HW Valve Position SP .(T10,20, FW150e..)

48 Electric Heat Timer (rHeatStroke)
Electric Heat - Electric Heat On Time.(T10,20, FW150e..)

49 Light Blink Timer (rLightTimer)

50 Trend Timer (rTrendTimer)

51 Aux Cooling Timer

Active Demand Limit Parameters

52 Active Demand Level

53 Active Demand Group

54 Mode Override Status (FW155A..)(rModeOverride)

55 Input Overrides Raw (rRawOverRides) (155a)

56 Input Overrides Double (rDoubleOverRides) (155a)

57 Trend Pointer (rTrendPointer) (FW175) rTrendPointer

58 (rTest1)

59 (rStackEnd)

Table 11, PROM Data (Read Only)

Entry	Description
1	Product Number (ASCII)
2	Product Number (ASCII)
3	Product Number (ASCII)
4	Product Number (ASCII)
5	Version Number (ASCII)
6	Version number (ASCII)
7	Firmware revision (ASCII)
8	Firmware revision (ASCII)
9	Firmware revision (ASCII)
10	Firmware revision (ASCII)
11..21	FW Date Stamp (655A)
22..27	FW Time Stamp (655A)

Table 12, Reserved

This Table is no longer supported

Table 13, Non-Volatile Trend Setup

Trending in the ASIC/1=8X55 has been revised as follows.

With FW155A.. the trend interval is in 15 minute periods. The trend data always starts at midnight. The first trend entry is at 00:00 hours as identified by the Trend Day of Week.

Trending only takes place when the controller is synchronized and when Trend Day of Week is non-zero.

Both trends use the same date stamp and trend pointer.

The trend pointer is the offset from the starting byte based on the time that has elapsed since mid-night on the Trend Date Stamp Day of Week. The trend may extend across multiple days up to 1 week.

Two RAM data trends of 96 values have been assigned. Trend data is read from Non-Volatile memory

When the calculated trend position exceeds 96 values, or the day returns to the current Date, then the trend rolls over and begins again with the current Trend Day of Week.

Entry	Description
1	Trend User Date, month [Default,0]

2	Trend User Date, day	[Default, 0]
3	Trend User Date, hour	[Default, 0]
4	Trend Day of Week	[Default, 0]
5	Trend Number of Values (RAM)	[Default, 0]
6	Trend Interval (quarterhours)	[Default,1 = 15 min]
7	Trend 1 Table Number	[Default, 10]
8	Trend 1 Entry Number	[Default, 25,Zone Temperature]
9	Trend 2 Table Number	[Default, 10]
10	Trend 2 Entry Number	[Default, 17,Primary Airflow]

Table 14, Non-Volatile Trend 1 Data

Entry	Description
1	Trend 1 Data Value 1
...	
96	Trend 1 Data Value 96

Table 15, Non-Volatile Trend 2 Data

Entry	Description
1	Trend 2 Data Value 1
...	
96	Trend 2 Data Value 96

Table 16, RAM Standard Polling

This standard polling table always returns the following 8 data bytes from the controller. HI alarm is bit0,2,4,6, LO alarm is bit 1,3,5,7.

Entry	Description	
1	Polling Alarm 1 (rAlarmStatus)	
	BITS_0,1	Alarm 1 - HI,LO Zone Temp Alarm
	BITS_2,3	Alarm 2 - HI,LO Primary Airflow
	BITS_4,5	Alarm 3 - HI,LO Secondary Airflow (Dual Duct)
	BITS_6,7	Alarm 4 HI- Spare
		Alarm 4 LO- Spare
2	Polling Alarm 2 (rAlarmStatus+1)	
	BITS_0,1	Alarm 5 HI,LO
	BITS_2,3	Alarm 6 - future
	BITS_4,5	Alarm 7 - future
	BITS_6,7	Alarm 8 - future
3	Polling Status (rPollStatus)	
	BITS_0,1	Poll Status - Mode
	BITS_2,3	Poll Status - State
	BITS_4,5	Poll Status - Reserved
	BITS_6	Poll Status - InAfterhr
	BITS_7	Poll Status - HP Request
4	Zone Temp - Rounded	
5	Active CLG SP	
6	Active HTG SP	
7	Output Status (rActualOutputs)	
8	Primary Airflow Conversion LO Byte (rPrimaryAirConvert)	
9	Primary Airflow Conversion HI Byte	
10	Secondary Airflow Conversion LO Byte (rSecondaryAirConvert)	
11	Secondary Airflow Conversion HI Byte (rSecondaryAirConvert+1)	

Table 17, Non-Volatile Input Raw Fault Limits

These 8 bit values are used to determine if the input raw readings are out of range. Note: 0 to 5 Vdc inputs will show a low fault if the voltage is below 0.06 Vdc or a high fault if the vlotage is above 4.70 Vdc.

Low Input Raw Fault Limits (eLoFault)

1	Input 1 Low Fault Limit	[Default 3]
2	Input 2 Low Fault Limit	[Default 3]
3	Input 3 Low Fault Limit	[Default 3]
4	Input 4 Low Fault Limit	[Default 3]
5	Input 5 Low Fault Limit	[Default 3]
6	Input 6 Low Fault Limit	[Default 3]
7	Input 7 Low Fault Limit	[Default 3]
8	Input 8 Low Fault Limit	[Default 3]

Hi Input Raw Fault Limits (eHiFault)

9	Input 1 Hi Fault Limit	[Default 240]
10	Input 2 Hi Fault Limit	[Default 240]
11	Input 3 Hi Fault Limit	[Default 240]
12	Input 4 Hi Fault Limit	[Default 240]
13	Input 5 Hi Fault Limit	[Default 240]
14	Input 6 Hi Fault Limit	[Default 240]
15	Input 7 Hi Fault Limit	[Default 240]
16	Input 8 Hi Fault Limit	[Default 240]

Table 18, XRAM Data

This standard table returns values from XRAM in the 8655. When values are displayed it is polled by Expert. 655A

Entry	Description	
1	AO1 Output Value xAOCommand	FW600a
2	AO1 Unscaled xAOUnScaledValue	FW600a
3	AO Override Status xAOOverrideFlags	FW600a
	bit 0 – AO1 Overidden	
	bit 1 – AO2 Overidden	
4	AO1 Override Value xAOOverrideValue	FW600a
5	Duct Temp (IN-6) (xDuctTempSingles)	
6	Duct Temp (IN-7) (xDuctTempSingles+1)	
7	Duct Temp (IN-8) (xDuctTempSingles+2)	
8	Test Variable (xTest1)	
9	Test Variable (xTest1+1)	
10	Test Variable (xTest1+2)	
11	Test Variable (xTest1+3) (880a)	
	Occupancy Timer (600a1.4) (xOccDelayTimer)	
12	Test Variable (xTest1+4) (880a)	
	Status Byte (xStatusFlags1)	
	bit 0 – xxWindow Switch Status (600A1.4)	
	bit 1 – xxDoor Switch Status (600A1.4)	
	bit 2 – xxDoor Switch Previous (600A1.4)	
13	Test Variable (xTest1+5) (880a)	
	Door Event Timer (600a1.4) (xDoorEventTime)	
14	Test Variable (xTest1+6) (880a)	
	Window Timer (600a1.4) (xWindowTimer)	
15	Damper Initialize Position (s) (600a) (xDamperInitTimer)	
16	Damper Position (s) (600a) (xPresentMotorPosition)	
17,18	Airflow1 Error Sum (600a1.8) (880a)	
19,20	Airflow2 Error Sum (600a1.8)) (880a)	
21	AO2 Output Value (xAO2Command) (880a1.0)	
22	AO2 Unscaled (xAO2UnScaledValue) (880a1.0)	

23 AO2 Override Value (xAO2OverrideValue) (880a1.0)
24 Loopback Status (800a) 0=not tested, 1= OK, else fail.

Table 60, Polling Setup

Not IMPLEMENTED (880a)

Allows set-up of specific 1-byte data items to be returned when reading Table 61.(FW 150E...,154E...)

Note: Only 4 bytes may be downloaded at a time.

Entry	Description	
1	Polling List 1 Table	[Default, 10]
2	Polling List 1 Entry	[Default, 25] Zone Temperature
3	Polling List 2 Table	[Default, 10]
4	Polling List 2 Entry	[Default, 17] Primary Airflow
5	Polling List 3 Table	[Default, 00]
6	Polling List 3 Entry	[Default, 00]
7	Polling List 4 Table	[Default, 00]
8	Polling List 4 Entry	[Default, 00]

Table 61, Polling Value

Not IMPLEMENTED (880a)

Returns the 4; bytes identified in Table 60. (FW150e...,154E...)

Entry	Description
1	Polling List 1 Value
2	Polling List 2 Value
3	Polling List 3 Value
4	Polling List 4 Value

ASIC/1-8800 Commands

ASIC/1-8800 State Commands

0x10 Set/Reset Operating State

This command forces the controller into an operating state.
(150A...,154D...,155A,251A..,255A.., 600A) This message writes to RAM.

ASI DDE Server supports this message

_CommandOR = M1 -> MT=10, M1

ASI DDE Server _StateOR sends MT=10 where

_StateOR =1 -> MT=10, M1=6, UNO
_StateOR =2 -> MT=10, M1=5, OCC
_StateOR =3 -> MT=10, M1=3, NSB
_StateOR =4 -> MT=10, M1=4, MRDY
_StateOR =5 -> MT=10, M1=7 , Restore

ASI LinkOPC Server uses the A1_CommandORAction, DT=50, Class = 1, to send the Operating State Command to the controller.

Message body:

M1 = 01 (01h) - Disable ASIC/1 –**DO NOT USE!!**
02 (02h) - Enable ASIC/1 A1_MagicORAction

A1_StateORAction

03 (03h) - Set State to Night Setback -
04 (04h) - Set State to Morning Ready
05 (05h) - Set State to Occupied [Default State]
06 (06h) - Set State to Unoccupied
07 (07h) - Restore State to Daily Event Schedule

A1_ChangeoverAction

08 (08h) - Set Changeover ON -
09 (09h) - Set Changeover OFF
10 (0Ah) - Reset Changeover to Normal

11 (0Bh) - Reserved HP Enable
12 (0Ch) - Reserved HP Disable

A1_AsIfPushedAction

13 (0Dh) - As If Pushed (New FW155A..)-
duplicates function of afterhours push-button exactly.

A1_ClearCompLockout

14 (0Eh) - .)
15 (0Fh) -

A1_ControlModeAction

16 (10h) - Set Deadband Control Mode (New FW155A..)
17 (11h) - Set Cooling Control Mode(New FW155A..)

18 (12h) - Set Heating Control Mode(New FW155A..)
19 (13h) - Restore Control Mode(New FW355A..)

Response: ACK

0x12 Set/Reset Emergency State

This commands sets the emergency state of the ASIC/1. (150A...,154D...,155A.., FW251A ...255A..,600A) Note: This command writes to NON-VOLATILE memory

ASI DDE Server supports this message

_EmergencyOR=M1 ->MT=12h, M1

ASI LinkOPC Server uses A1_EmergencyORAction to send this command

Message body:

M1 = 1 - Assume Emergency 1 state
2 - Assume Emergency 2 state
3 - Cancel ALL Emergency states

Response: ACK

0x16 Set/Reset Demand Status

Implement Demand Limit for spread of setpoints .

This message is used to set the demand level and demand group. Each controller will take predetermined action based on demand level and rotating demand group statuses. The broadcast demand group is compared with the controller demand group assignment. If the current rotating demand group is identical to the controller rotating demand group, then the output will typically be shed. The demand management controller is responsible for changing the rotating demand group periodically. (FW155A.., FW255A..,600A)

Note: This message writes to RAM.

ASI DDE Server supports this message

_DemandOR=Value ->MT=16h, M1(LOBYTE),M2(HIBYTE)

ASI LinkOPC Server uses A1_DemandOR to send this command.

Message body:

M1 = 0 - Clear Demand Level
1 - Demand Level = 1
2 - Demand Level = 2
3 - Demand Level = 3
4 - Demand Level = 4
5 - Demand Level = 5
6 - Demand Level = 6
M2 = [0, ..,255] Demand Group

Response: ACK

M1 = 16

ASIC/1-8800 Override Outputs

0x20 Physical Output Override

Disconnects Control Algorithm from Output (150A...,154D....., FW251A ...255A..)

Note: This command writes to RAM, New MT=26h writes to NON-VOLATILE.

ASI DDE Server supports this message

_OutOROn =M2 ->MT=20h, M1=1,M2
_OutOROff =M2 ->MT=20h, M1=2,M2
_OutORClear =M2 ->MT=20h, M1=3,M2

ASI LinkOPC Server uses A1OutputOverrideAction to send this command.

Message body:

M1 = 1 - Override output ON
2 - Override output OFF
3 - Restore output to algorithmic response
(leaves outputs in existing state, without regard to previous state)
M2 = Number of physical output, 1....8

Response: ACK

0x21 Override Outputs by Function

ASI DDE Server supports this message

_FunctionOR=M1 ->MT=21h, M1

ASI LinkOPC Server uses VV_FunctionORAction to send this command

Note: Commands ON,OFF, and Restore write to NON-VOLATILE in FW150, Write to RAM in FW155A.and FW255A Commands MIN and MAX write to RAM. FW600A does not have Secondary Damper.

> Note: Functional overrides act immediately. On restore they will be restored to sequence conditions the next time the function is executed. For many functions it is immediate, but for Restore Fan it may take up to a minute. If a function override is applied for an output that is not active for the current sequence, that output will not change when its output is restored. All function overrides clear on reset of power.

Message body:

M1 = 1 (01h) - Force Heat OFF
2 (02h) - Force Heat ON
3 (03h) - Restore Heat
4 (04h) - Force FAN OFF
5 (05h) - Force FAN ON
6 (06h) - Restore FAN
7 (07h) - Force Lights OFF
8 (08h) - Force Lights ON
9 (09h) - Restore Lights
10 (0Ah) - Force Primary Damper CLOSED (FW155A..)
11 (0Bh) - Force Primary Damper OPEN (FW155A..)
12 (0Ch) - Force Primary Damper MINIMUM (FW155A..)
13 (0Dh) - Force Primary Damper MAXIMUM (FW155A..)
14 (0Eh) - Restore Primary Damper (FW155A..)

Secondary Damper (Heating or Exhaust) FW880A (Not in FW600A)

15 (0Fh) - Force Secondary Damper CLOSED (FW155A..)
16 (10h) - Force Secondary Damper OPEN (FW155A..)
17 (11h) - Force Secondary Damper MINIMUM (FW155A..)
18 (12h) - Force Secondary Damper MAXIMUM (FW155A..)
19 (13h) - Restore Secondary Damper (FW155A..)
20 (14h) - Force Aux CLG OFF (New FW155A..)
21 (15h) - Force Aux CLG ON (New FW155A..)

22 (16h) - Restore Aux CLG

23(17h) - Force Aux HTG OFF (New FW155A..)
24(18h) - Force Aux HTG ON (New FW155A..)
25 (19h) - Restore Aux HTG (New FW155A..)

26 (1Ah) - Force Cooling Damper STOP (New FW155A..)
27 (1Bh) - Force Heating Damper STOP (New FW155A..)
28 (1Ch) - Force HW Valve STOP (New FW155A..)
29 (1Dh) - Reserved
30 (1Eh) - Force Aux 1 OFF (New FW155A..)
31 (1Fh) - Force Aux 1 ON (New FW155A..)
32 (20h) - Restore Aux 1 (New FW155A..)
33 (21h) - Force Aux 2 OFF (New FW155A..)
34 (22h) - Force Aux 2 ON (New FW155A..)
35 (23h) - Restore Aux 2 (New FW155A..)
36 (24h) - Force Aux 3 OFF (New FW155A..)
37 (25h) - Force Aux 3 ON (New FW155A..)
38 (26h)- Restore Aux 3 (New FW155A..)

39 (27h)- Force Thermic Valve OFF (New FW155A..)
40 (28h) - Force Thermic Valve ON (New FW155A..)
41 (29h)- Restore Thermic Valve (New FW155A..)

Response: ACK

0x27, Override Analog Output Value

DT= 50, Class = 12, ASIC/1 Analog Output Override
Used in ASIC/1-8655, ASIC/1-6000

TCL: DeviceAction [A1_AOOverrideAction] [index=M1] [Value=M2,M3]

DeviceAction A1_AOOverrideAction 2 231

Note: This command writes to RAM. AO overrides are not preserved through reset.

Sets override flag and downloads a new Value.

Message body:

M1 = 01 - OR AO1
02 - OR AO2
M2 = Override Value (0..255)

Response: ACK

0x28, Clear Analog Output Overrride

DT= 50, Class = 13, ASIC/1 Analog Output Override
Used in ASIC/1-8655, ASIC/1-6000

TCL: DeviceAction [A1_AOOverrideClear] [index=M1] [Value=M2,M3]

DeviceAction A1_AOOverrideClear 2 0

Clears override flag .

Message body:

M1 = 01 - OR AO1
02 - OR AO2

Response: ACK

Group 4: Messages to Handle Inputs

0x31 Restore Inputs to Normal Operation

Sets integer and fractional values to 0 first. (150A...,154D...)

ASI DDE Server supports this message

_InputORClear=M1 ->MT=31h, M1

ASI LinkOPC Server uses A1_InputOverrideClear to send this command

Message body:

M1 = 00 - Restore all overridden inputs. (150E...,154E...)
1...8 - Restore input selected (Same as in message type 30)

Response: ACK

0x35 Disable Input and Force New 2 byte Value

Message 35h sets the input override flag, and writes a new value in the converted value Table 9, Entries 1..16, in engineering units. . The airflow value is typically in CFM. The Temperature values are typically in units of 0.01 F. (FW155A.., 255A.., 355A)

ASI Data Servers support this message

_InputORB,M1 = Value ->MT=35, M1, M2=LO(Value),M3=HI(Value)

ASI LinkOPC Server uses A1_InputOverrideAction to send this command

The input override is restored with message 31h.
Note: This message writes to RAM.

Message body:

M1 = 01 - Force input 1 Table 9, Entry 47,48 Zone Temperature
02 - Force input 2 Table 9, Entry 49,50 User Adjust
03 - Force input 3 Table 9, Entry 51,52 Variable User Adjust
04 - Force input 4 Table 9, Entry 53,54 Airflow
05 - Force input 5 Table 9, Entry 55,55 Aux Temperature
06 - Force input 6 Table 9, Entry 57,58 Supply Air Temp
07 - Force input 7 Table 9, Entry 59,60
08 - Force input 8 Table 9, Entry 61,62

17 (11h) - Force input 1 raw	Table 9, Entry 17,18
18 (12h) - Force input 2 raw	Table 9, Entry 19,20
19 (13h) - Force input 3 raw	Table 9, Entry 21,22
20 (14h) - Force input 4 raw	Table 9, Entry 23,24
21 (15h) - Force input 5 raw	Table 9, Entry 25,25
22 (16h) - Force input 6 raw	Table 9, Entry 27,28
23 (17h) - Force input 7 raw	Table 9, Entry 29,30
24 (18h) - Force input 8 raw	Table 9, Entry 31,32

M2 = New value (LO) 0...255
M3 = New Value (HI)

Response: ACK

Time Messages

0x38 Synchronize

This command downloads information using time in "Host" computer. Upon reset the controller looses time information and is "unsynchronized." Upon synchronization the controller examines the Time of Day Schedule to determine the proper state. (150A...,154D...,155A...., FW251A ...255A..)

Note: This command writes to RAM.

ASI DDE Server supports this message

_TimeOR=M1 ->MT=38h, M1, etc. from PC

ASI LinkOPC Server uses A1_ASIC1Synchronize to send this command

Beginning with FW 150D.. and 154D.., if the controller is already synchronized before receiving a new synchronize command, the controller examines the time of day schedule for an EXACT match. Only if there is an EXACT match will the controller revert to the time of day schedule. Otherwise the controller maintain its current state including any state overrides that are in effect.

Message body:

M1 = Day, 01...07 where 1 = Monday (81...87 hex represent holidays)
M2 = Hours, 0...23 decimal
M3 = Minutes, 0...59 decimal
M4 = Seconds, 0...59 decimal

Response: ACK

Group 6: General Housekeeping Messages

0x40 Set Device Address

Each ASIC/1 must have its own unique two-byte address. The device address can be any number between 1 and 32000 decimal, excluding group addresses. Group addresses are multiples of 256 (01 00 hex). Each ASIC/1 can also have a one-byte group address

Initializing the controller address requires a 'B4 55 hex' destination address and a hardware interlock to identify the specific controller whose address is being changed (155A.., 255A..)

> Note: This command writes to EEPROM. FW155A only responds if an interlock is in place.

Message body:

M1 = Device Address, High byte
M2 = Device Address, Low byte

Response: ACK

0x41 Initialize Default Tables (Brain dump)

This command initializes many of the ASIC/1 setpoints and operating parameters with their assigned default values kept in the EPROM default tables.

> Note: This command writes to EEPROM and completely reconfigures the controller. All previous setup data is lost. FW 155A only responds if an interlock is in place.

Initializing the controller default table requires 'B4 55 hex' destination address and a hardware interlock to identify the specific controller whose default table is being downloaded. (155A.., 255A..)

Message body:

M1 = 1 - Load default table #1 FW155A
M1 = 2 - Load default table #2 FW175A..
M1= 3 – Clear Trend!

Response: ACK

0x 42 Get ASIC/1 Device Address

Requesting the controller address requires 'B4 55 hex' or 'B4 B4 hex' destination address and a hardware interlock to identify the specific controller whose is being returned. (155A.., 255A..)

> Note: FW 155A only responds if an interlock is in place.

Message body: None
Response:
M1 = Device Address, High byte
M2 = Device Address, Low byte

0x48 Reset ASIC/1 as if From Power-up

The controller software clock will lose synchronization during a reset of power. The Reset message causes the controller to respond as if power had been turned off and turned on. The Reset message never gets a response message. A command to reset the ASIC/1 causes a 500ms delay in responding to a new command. (150A...,154D.., 155A.., FW251A ...255A..,355A..)

ASI DDE Server supports this message
_Reset=M1 ->MT=48h, . from PC

ASI LinkOPC Server uses A1_Reset to send this command

Message body: None

Response: None

0x4A Who Are You?

Return Product and Firmware Version and Revision. This message returns 10 ASCII characters from PROM. The product number is a unique 4 digit ASCII number that identifies the product, e.g. 8015. The Revision number is a two digit ASCII number starting with 10 which reflects subsequent changes in hardware or firmware which are backwardly compatible with previous versions. The firmware revision level reflects the changes to firmware with added features and bug fixes, 150F,151C, 155A, etc.

ASIC/1-8015 FW 150F Rev 1.0 returns "801510150F"
ASIC/1-8255FW 255A Rev 1.0 returns "825510255A"

ASI Data Servers support this message
_ID ->MT=4Ah, Returns STRING,10

Message body:
M1 = 1

Response:
M1...M4 = product number in ASCII (4 bytes)
M5...M6 = product reversion in ASCII (2 bytes)
M7...M10 = Firmware Version number in ASCII (4 bytes)

Group 10: Setpoints And Parameters

The function, default assignment, and range of setpoints and parameters included in group 10 commands are explained at the end of this section.

0x7B Sensor Calibration

ASIC/1-8800

With the ASIC/1-8800 only calibration at zero is required. The controller supports both the AMW-3300 and Sensirion SDP-1000-R airflow sensors.

Message body:

M1 = - Primary airflow transducer
61 - CLG 0.0 "w.c. (0 Pa)
- Secondary airflow transducer
62 - HTG 0.0 "w.c. (0 Pa)
136 (0x88) Loopback Test

Response: ACK

> Caution: The sensors are calibrated at the factory and recalibration in the field generally should not be done. Use these commands only after you thoroughly understand the procedure. Mis-calibration can cause improper control action.

Note: All Airflow setpoints and values are in raw units of 25 fpm at K-factor = 2338. The value in CFM is given by
CFM (raw)*(25 ft/min)*(Kf/2338)* (Duct_Area*0.005 ft2)

Note: FW880a uses Loopback for J6.1 to trigger relay in factory test. Write CHR from Port 1 <> Port 2.
Uses MT=0x7B, M1=136 (0x88) for LoopBack, Set bit in controller for OK, Not OK.
Table 18 Entry 24, Loopback Status (800a) 0=not tested, 1= OK, else fail.,
2= Port 2 Fail receive, 4=Port 2 Fail transmit.

ASIC/1-8800 Glossary

Introduction

The glossary contains, in alphabetical order, brief definitions of all of the control parameters and setpoints used by the ASIC/1-8800 controllers and earlier controllers. The range of acceptable values, default value loaded upon a controller reset, and whether the parameter is user-changeable or not, are included.

Parameters are referred to in the glossary by their full proper names. On the Setup software and ASI Setup screens, parameters may by referred to by abbreviated or different names for lack of space or other reasons. Where differences exist between the proper names and the current screen parameter name, the screen parameter name is included as ("Parameter").

Parameters and Setpoints

The table number, T, and entry number, E, for a given parameter may be determined by consulting the "ASIC/1-8055 Communications Protocol Manual" It is indicated at the end of the description as (T,E), (T,E,WORD), (T,E,bit0), etc.

Active Cooling Airflow Maximum Setpoint

Present Maximum Cooling Airflow Setpoint for Control. (FW155A,T10,43)

Active Cooling Airflow Minimum Setpoint

Present Minimum Cooling Airflow Setpoint for Control.(FW155A,T10,42)

Active Cooling Temperature Setpoint

The current cooling temperature setpoint saved in RAM in deg F. (FW150:T10,23)

Active Demand Group

Present Demand Group as received on the communication line.(FW155A,T10,53)

Active Demand Level

Present Demand Level as received on the communication line. (FW155A,T10,52)

Active Heating Airflow Maximum Setpoint

Present Maximum Heating Airflow Setpoint for Control.(FW155A,T10,45)

Active Heating Airflow Minimum Setpoint

Present Minimum Heating Airflow Setpoint for Control.(FW155A,T10,44)

Active Heating Temperature Setpoint

The current heating temperature setpoint saved in RAM in deg F. (FW150:T10,24)

Active User Adjust

Current Temperature offset because of current User Adjust. (FW155A,T10,15)

Afterhour Date Stamp

Holds a month, date and hour which the user should set to the current date and hour when he resets Afterhour Total Time to zero. [XX/XX XX am/PM]. User-changeable.(FW150:T4,1,3 Bytes)

Afterhour Enable

If set to [Yes] the push-button on the wall sensor will activate Afterhour Override mode upon being depressed. When this is enabled the push-button will give override to occupied mode, or toggle the lights if already in occupied mode and permit operation of the slide switch to raise or lower the setpoint by an amount given by the use adjust setpoint. [Yes, No Default No]. User-changeable. (FW150:T6,2,bit0)

Afterhour Request

Tells whether the Afterhour button has been pressed and Afterhour time allowed is non-zero. [Yes or No]. Not user-changeable. (FW150:T10,9,bit6

Afterhour Status

Tells whether the controller is currently operating in Afterhour Override mode. [Yes or No]. Not user-changeable. (FW150:T10,8,bit1)). See also Poll Status - In Afterhours (FW155A, T10,32, bit6).

Afterhour Time Allowed

This is an EEPROM variable that represents the number of minutes the After Hours Override will be in effect when the push button is pressed. The time period that Afterhour Override will be in effect following a triggering by the wall sensor push-button. This is used only during Night Setback or in an Unoccupied State. Default 60 minutes Range 0-255 minutes Resolution 1 minute [0 to 255 minutes]. User-changeable.(FW150:T3,11) Also (FW155A,T3,11 & T4,11)

Afterhour Time Remaining

The number of minutes remaining before Afterhour Override mode will cease to operate and the control will revert to its original state. [0 to 255 mins]. Not user-changeable. (FW150:T10,7)

Afterhour Total Time

The accumulated time the controller has spent in Afterhour Override mode. The user must set this counter to 0 and appropriately change the Afterhour Date Stamp if he or she wished to begin a new tracking of the time spent in Afterhour Override mode. [0 to 65535 mins, Default 0 mins]. (FW150:T4,4,WORD) User-changeable.

Airflow Error Sum

Used by the Airflow PI algorithm. The accumulate airflow sum is used to fine tune the damper control. T18,E17-18 VV_AF2ErrorSum (600a1.8,880a)
T18,E19-20 VV_AF1ErrorSum (880a)

Airflow Hysteresis

This is an EEPROM variable. The damper motor will not be activated until the actual airflow differs from the calculated value by more than the hysteresis band. Default 25 FPM Range 0 - 3300 Feet per Minute Scaling 1 bit per 25 FPM Resolution 25 FPM. All airflow values are displayed in CFM. Used by the Airflow PI algorithm. As the damper drives the airflow toward the setpoint, the output begins to pulse, where the pulse size in 1/6 s increments is given by 4*Airflow Error/AF Hysteresis. The smallest non-zero Airflow Hysteresis gives the fastest approach to setpoint.
T3,E12 VV_AirflowHysteresis (600a1.8,880a,155a)
T3,E9 VV_Airflow2Hysteresis (880a)

Airflow Integration Time

Used by the Airflow PI algorithm. The time in seconds for a constant 25 ft/min count error to add up to 1 pulse output. If the Airflow Integration Time is zero, the PI algorithm is not used, and the damper drives to the Airflow Setpoint and stops.

T3,E48 VV_AF1IntegrationTime (600a1.8,880a)
T3,E49 VV_AF2IntegrationTime (880a)

Alarm 1 - Zone Temperature Alarm

bit 0 = 1 zone temperature too hot; bit 1 = 1 zone temperature too cold;
(FW150:T10,9,bits 0,1) This alarm is set in Occupied control state only.
(FW150E,,FW151A..C) This alarm is set in all control states (FW152A,FW153A..).
(FW155A.T10,9,bits0,1 & T16,1, bits0,1)

Alarm 2 - Cooling Airflow Alarm

bit 2 = 1 primary airflow too high; bit 3 = 1 primary airflow too Low; (FW150:T10,9,bits 2,3) This alarm is set in Occupied control state only. (FW150E,,FW151A..C) This alarm is set in all control states (FW152A,FW153A..).
(FW155A.T10,9,bits2,3 & T16,1, bits2,3)

Alarm 3 - Heating Airflow Alarm – Not Used

In dual duct applications where the second airflow is controlled bit 4 = 1 secondary airflow too high; bit 5 = 1 secondary airflow too low ; (FW150:T10,9,bits 4,5) This alarm is set in Occupied control state only. (FW150E,,FW151A..C) This alarm is set in all control states (FW152A,FW153A..). .
(FW155A,T10,9,bits4,5 & T16,1, bits4,5)

Analog Output Assignment

Identifies the value used to control the analog output:

0 - None Not Used.
1 - CLGRequirement ; 2 – HTG Requirement;
3 – Not Used (EconoCoolReq ,)
4 - Changeover HTG/CLG
5 – ECM Fans Speed

FW600A T3,E23 (0..2 only) VV_AO1Assign (T3,23,LSNBL)
FW880A T3,E23 (0..2 only) VV_AO2 _users.web and _locations.web (Thanks Mike for finding the problem)Assign (T3,23,MSNBL)

Analog Output Max Output

The voltage 0..255 = 0..10 Vdc when the control input is 100% (255)
FW600A VV_AO1MaxOutput(T3,E22)
FW880. VV_AO1MaxOutput(T3,E22) VV_AO2MaxOutput(T3,E51)
FW655A PA_AO1MaxVolts(T3,E26) , PA_AO2MaxVolts(T3,E27)

Analog Output Min Output

The voltage 0..255 = 0..10 Vdc when the control input is 0% (0)
FW600A VV_AO1MinOutput(T3,E21)
FW880. VV_AO1MinOutput(T3,E21) VV_AO2MinOutput(T3,E50)
FW655A PA_AO1MinVolts (T3, 36), PA_AO2MinVolts(T3,37)
FW880.

Analog Output Value

The actual output value 0..255 = 0..10 Vdc
FW600 T18,1 Scaled, T18,2 Unscaled,
FW880 VV_AO1OutputValue(T18,1),VV_AO1-unscaled (T18,2)
VV_AO2OutputValue(T18,21),VV_AO2-unscaled (T18,22)
FW655A PA_AO1OutputValue (18,2), PA_AO1OutputValue (18,3)

Analog Override Status/Value

FW600 VV_AO1OverrideStatus (T18,E3, bit 0), AO1Analog Override Value (T18,E4),
FW880 VV_AO1OverrideStatus (T18,E3, bit 0) VV_AO2OverrideStatus (T18,E3, bit 1)
FW880 A1_AO1OverrideValue (T18,E4), A1_AO2OverrideValue (T18,E23)

ASIC/1 Day "Day of Week"

The day of the week as the controller knows it. The clock may be synchronized to the current day, date and time as the PC knows them by placing the cursor at the screen

location for this parameter and pressing <s>. The day may be set to holiday by placing the cursor at the screen location and pressing <h>. The holiday status may only be cleared by a re-synchronization of the controller. These are the only two methods by which the clock may be changed.(FW150,T10,4,LS_NBL)

NOTE: If the controller clock reads "NA" for the day, this indicates that the controller has not been synchronized. [1 = Monday].

ASIC/1 Time "Time of Day"

The time of day as the controller knows it. The clock may be synchronized to the current day, date and time as the PC knows them by placing the cursor at the screen location for this parameter and pressing <s>. The day may be set to holiday by placing the cursor at the screen location and pressing <h>. The holiday status may only be cleared by a re-synchronization of the controller. These are the only two methods by which the clock may be changed. [XX:XX:XX]. .(FW150,T10,1,3 BYTES)

Aux Temp 1 (IN-6)

Optional Auxiliary Temperature measured on Input #6, smoothed and converted using Input Convert Type and saved in RAM. (FW155A,T9,11,WORD)

Aux Temp 1 (IN-6) - Truncated

Optional Auxiliary Temperature measured on Input #6 and rounded to single byte value and saved in RAM. (FW150:T10,27,BYTE)

Aux Temp 2 (IN-7)

Optional Auxiliary Temperature measured on Input #7, smoothed and converted using Input Convert Type and saved in RAM. (FW155A, T9,13,WORD)

Aux Temp 2 (IN-7) - Truncated

Optional Auxiliary Temperature measured on Input #7 and rounded to single byte value and saved in RAM. (FW155A,:T10,28,BYTE)

Aux Temp 3 (IN-8)

Optional Auxiliary Temperature measured on Input #8, smoothed and converted using Input Convert Type and saved in RAM. (FW150:T9,15,WORD)

Aux Temp 3 (IN-8) - Truncated

Optional Auxiliary Temperature measured on Input #7 and rounded to single byte value and saved in RAM. (FW155A:T10,29,BYTE)

Auxiliary 1,2,3 Output Mask

Auxiliary outputs may be assigned which are not connected to the sequence of operation. They may be controlled only by overrides from a user interface.
Auxiliary 3 Output Mask (FW155A, T3,44,BYTE)
Auxiliary 2 Output Mask (FW155A, T3,45,BYTE)
Auxiliary 3 Output Mask (FW155A, T3,46,BYTE)

Auxiliary Airflow

This is a RAM variable for the flow through the second auxiliary or heating duct. This value is used for dual duct boxes. Display depends on Input Conversion Type, typically Input-5. Default CFM. Word Value based on Secondary AF K-factor, and Duct Area All airflow values are displayed in CFM. (FW155:T9,9,WORD)

Auxiliary Cooling Airflow Hysteresis

Amount that airflow must drop before auxiliary cooling is terminated. - raw 25 ft/min [Default 5] (FW150:T3,41) (FW150E..,FW151A..D)

Auxiliary Cooling Enable

Enables Auxiliary Cooling Feature which will bring on an additional output if the primary airflow is equal to the Cooling Maximum Airflow setpoint by a value greater than the Aux Cooling Temperature Offset for an Auxiliary Cooling Wait Time .[Yes, No] (FW150:T6,2,bit 6) (FW150E..,FW151A..D)

Auxiliary Cooling Mask

Assigns output mask if Aux Cooling has been enabled. (FW150:T3,40) (FW150E..,FW151A..D)

Auxiliary Cooling Temp Offset

Number of degrees that zone temperature must exceed active setpoint before auxiliary cooling is brought on. in deg F or deg C [Default 2 F] (FW150:T3,39) (FW150E..,FW151A..D)

Auxiliary Cooling Timer

The RAM length of time that Auxiliary Cooling Temp Offset exists before auxiliary cooling is brought on. (FW155A:T10,__,BYTE)

Auxiliary Cooling Wait Time

The length of time that Auxiliary Cooling Temp Offset exists before auxiliary cooling is brought on. [Default 120 s] (FW150:T3,38,BYTE) (FW150E..,FW151A..D)

Auxiliary Heat Output Mask

A Heat Output Mask is used to assign the physical output to be used for this purpose.

The Auxiliary Heat Output Mask,, is in EEPROM location Absolute 10FBh and has not been included in either Table 3 or in the 24:/25h messages.(FW151A..C Only) (FW155A, T3,43,BYTE)

Auxiliary Heating Enable

Enables Output on Auxiliary Heating Mask whenever the controller is in Heating Mode. (FW155A, T6,2,bit5). Is off in deadband and cooling.

Auxiliary Heating Mask

It indicates the physical output assigned to Auxiliary Heating Output (FW155,T3,42)

Baud Rate

The communication speed. 192 = 19,200 baud, 96 = 9600 baud, 12 = 1200 baud., 128 = 38,400 baud If any other value then baud rate is 9600 baud. New baud rate takes effect immediately. (FW150F, T3,1) (FW155A, T3,1 and T1,3)

Changeover Mode

Displays status of forced changeover. If the controller is in changeover, it assumes that the primary supply air is hot.

"ON" = changeover has been forced on;
"OFF" = changeover forced off; and
"AUTO" = No forced Changeover
(FW150:T10,12,bits 3,4)

Changeover Setpoint

This is an EEPROM variable. When the duct temperature becomes greater than this value, the controller will enter a Changeover state. Implementation of the auto-changeover feature requires installation of an additional duct temperature sensor on input 6. The measured supply air temperature at the inlet is compared with Changeover Setpoint. If the supply air temperature is greater than the Changeover Setpoint the controller will go into a heating only changeover mode. If the auto-changeover setpoint is zero this feature is disabled. [Default 0 deg F (disabled)] Range 0-255 deg F Resolution 1 deg F (FW150:T2,17)

Changeover Status

Changeover is active. If the controller is in changeover, it assumes that the primary supply air is hot. Primary Airflow Setpoint will be modulated from HTG AF Min to HTG AF Max in proportion to the difference between the Zone temperature and the HTG Temp SP using a Heating Throttling Range. In changeover the fan speed will be modulated. The controller will update damper position so that the measured primary airflow matches the airflow setpoint. During changeover the local heating is locked out. (FW150:T10,12,bit5)

CHW Valve On/Off Mask

Identifies output used for On/Off Chilled Water Valve for Fan Coil Personalities. Typically assigned to Output 3. Same parameter used for VAV Aux Cooling Output Mask (150E..) [Default, 00h] (existing) Table 3 Entry 40 CHW Valve On/Off Mask (600A1.4)

Control Mode

The operating modes for the controller are Cooling, Deadband, and Heating. The control enters deadband when the temperature falls one degree F below the Active Cooling Setpoint, or above the Active Heating Setpoint. The control enters cooling when the temperature reaches the Active Cooling Setpoint. The control enters heating when the temperature reaches the Active Heating Setpoint. (FW150:T10,6,bits4,5)

Control State

During Occupied State the space temperature will be controlled between the CLG and HTG Temperature Setpoints. During Night Setback and Unoccupied states the primary damper is closed and the fan is off. During Morning Warm-up the controller functions exactly as in Occupied. Changeover is used to provide central heat.

RAM Controller State Byte. (bit 0,1; 0= unocc, 1=occ, 2=nsb, 3=mwu) Bits not specifically defined can be indeterminate. (FW150:T10,5,bits0,1) . (FW155A, T10,5,bits0,1, and T10,33,bits0,1)

Controller Interlock

Shorting input #3 gives Interlock for address (input = 0 V). (FW150:T10,14,bit 2) The interlock is required for all messages with a B4B4h destination address.

Cooling Airflow

see Primary Airflow

Cooling Airflow Alarm Range

see Primary Airflow Alarm Range

Cooling Airflow K-factor

See Primary Airflow K-factor

Cooling Airflow Maximum Setpoint

This EEPROM variable represents the maximum Airflow that will be allowed through the duct while in cooling mode. Default 2000 FPM Range 0 - 3300 Feet per Minute Scaling 1 bit per 25 FPM Resolution 25 FPM All airflow values are displayed in CFM. Also used for occupied state when Multiple Airflow Min/Max Enable is set. (FW150:T2,5)

Cooling Airflow Minimum Setpoint

This EEPROM variable represents the minimum Airflow that will be allowed through the duct while in cooling mode. Default 0 FPM Range 0 - 3300 Feet per Minute Scaling 1 bit per 25 FPM Resolution 25 FPM. All airflow values are displayed in CFM. Also used for occupied state when Multiple Airflow Min/Max Enable is set. (FW150:T2,3)

Cooling Airflow NSB Maximum Setpoint

This EEPROM variable represents the maximum Airflow that will be allowed through the duct while in cooling mode in the NSB state when Multiple Airflow Min/Max Enable is set. (FW150:T2,28) (150E..,151A..D)

Cooling Airflow NSB Minimum Setpoint

This EEPROM variable represents the minimum Airflow that will be allowed through the duct while in cooling mode in the NSB state when Multiple Airflow Min/Max Enable is set. (FW150:T2,27) (150E..,151A..D)

Cooling Airflow Unocc Maximum

This EEPROM variable represents the maximum Airflow that will be allowed through the duct while in cooling mode in the Unoccupied state when Multiple Airflow Min/Max Enable is set. (FW150:T2,24) (150E..,151A..D)

Cooling Airflow Unocc Minimum

This EEPROM variable represents the minimum Airflow that will be allowed through the duct while in cooling mode in the Unoccupied state when Multiple Airflow Min/Max Enable is set. (FW150:T2,23) (150E..,151A..D)

Cooling Damper Closed Mask

See Primary Damper Closed Mask

Cooling Damper Open Mask

See Primary Damper Open Mask

Cooling Night Setback Temperature SP

This is the desired zone temperature during Night Setback with the controller in cooling mode. Default 85 deg F Range 0-255 (45-95 effective) Resolution 1 deg F (FW150:T2,12)

Cooling Occupied Temperature SP

Occupied Cooling Temperature Setpoint This is the desired zone temperature during an Occupied state in cooling mode. Default 74 deg F Resolution 1 deg F Units (FW150:T2,1)

Cooling Requirement

The cooling requirement is a RAM value. In FW150 only the Primary Airflow Setpoint is Calculated. (FW150:T10,19). In FW155A it is always the cooling requirement is 0 to 255 = 0 to 100% (FW155A, T10,16)

Cooling Smooth Filter

See Primary Airflow Smooth Filter

Cooling Unoccupied Temperature SP

Unoccupied Cooling Temperature Setpoint This is the desired zone temperature during an Unoccupied state with the controller in cooling mode. Default 85 deg F Range (45 to 95 effective) Resolution 1 deg (FW150:T2,10)

Custom Span and Offset

It is possible to configure custom inputs on Inputs 5,6,7, & 8. The Custom Span is the signed difference between the input value at 5 Vdc minus the input value at 0 Vdc. The Custom Offset is the input value at 0 Vdc. [Default, Custom Span = 4095, Custom Offset =, 0]

IN-5 Custom Span (T8,12,WORD)
Custom Offset (T8,14,WORD)
IN-6 Custom Span (T8,16,WORD)
Custom Offset (T8,18,WORD)
IN-7 Custom Span (T8,20,WORD) Not Used
Custom Offset (T8,22,WORD) Not Used
IN-8 Custom Span (T8,24,WORD) Not Used
Custom Offset (T8,26,WORD) Not Used

Damper CLG Min/Max Setpoint

If Pressure Dependent Enable is yes, then in Cooling mode the Damper Position Setpoint is modulated as a percentage of the Damper Drive Time between the Damper Cooling Minimum and Maximum Setpoints. [0..100%] VV_DamperCLGMinSP (FW600A, T2,E3), VV_DamperCLGMaxSP (FW600A, T2,E4)

Damper Drive Time

If Pressure Dependent Enable is yes, then the Damper Position Setpoint is modulated as a percentage of the Damper Drive Time.[0..255 sec] VV_DamperDriveTime (FW600A, T3, E24)

Damper HTG Min/Max Setpoint

If Pressure Dependent Enable is yes, then in Heating mode the Damper Position Setpoint is modulated as a percentage of the Damper Drive Time between the Damper Heating Minimum and Maximum Setpoints. [0..100%] VV_DamperHTGMinSP (FW600A, T2,E53), VV_DamperHTGMaxSP (FW600A, T2,E6)

Damper Initialize

If Pressure Dependent Enable is yes, then the Damper Initialize timer in seconds is used to drive the damper closed for a Damper Drive Time to reinitialize the damper position. VV_DamperInitialize (FW600A, T18,E15)

Damper Position

If Pressure Dependent Enable is yes, then the Damper is drive open or closed so that the Damper Position is equal to the Damper Position Setpoint in seconds. VV_DamperPos (FW600A, T18,E16)

Damper Position Setpoint

If Pressure Dependent Enable is yes, then the Damper Position Setpoint is modulated as a percentage of the Damper Drive Time VV_DamperPosSP (FW600A, T10,E19)

Default Output State

Default state assumed by Binary Ouputs on reset of power in Personality zero, or during Flash programming of the controller. [Default 0]
VV_DefaultOutputState (T3,47) (FW600a, FW880a FW655a)

Default State Unoccupied

DefaultStateUnoccupied brings controller up in Unoccupied State at power up. On synchronization controller behaves normally.. Table 6 Entry 2 Bit 7 (155A2.2)

Default Table

Type "Table 1" <Enter> This causes a "Brain Dump" of the standard Default Table #1.

Demand Group

The Demand Group used by rotating demand shedding.(FW155A,T1,8,BYTE)

Demand Rotate Level

The Active Demand Level at which rotating demand shedding occurs. (FW155A,T1,7,BYTE)

Demand Shed Level

The Active Demand Level at which demand shedding occurs. (FW155A,T1,6,BYTE)

Description

A 32 character description may be stored EEPROM to help identify that controller. Default (varies with EPROM version) Range up to 32 characters. To change the description. (FW150:T1,16..47)

Device Address

The communications address of the accessed controller. Changing the device address of a controller requires that it be hardware interlocked (see text on the Address Screen to learn how to interlock a controller); address changing should only be done while in Local communications mode, as otherwise multiple controllers addresses may be altered. [1 to 16000]. User-changeable.

Digital Display Enable

Enables the Digital Display Wall Sensor, WS-051. In deg F/C or in 0.5 deg F/C . See also Upper Limit Temperature Setpoint and Digital Display Enable. PA_DigDisplayEnable (FW655A, 600A T6,5,bit7)

Door Event Enable

If Door Event Enable is yes, the Normally-Open Entry Door Switch is used together with the Occupancy Sensor to determine if the room should be in the Occupied or Unoccupied Control State Table 6 Entry 4 bit 3 (600a1.4)

Door Event Time

If an Occupancy event occurs before the Door Event Timer expires, the controller is set to or remains in the Occupied State. Table 3 Entry 7 (4s) [Default 32s] (600a1.4)

Door Event Timer

If an Occupancy event occurs before the Door Event Timer expires, the controller is set to or remains in the Occupied State. If an Occupancy event does NOT occur before the Door timer expires, the controller is set to the Unoccupied State. Table 18, Entry 13 (4s) (600a1.4)

Door Switch Status

Shows the status of the Door Switch. Table 18, Entry 3 bit 1 (600a1.4)

Dual Heating Enable

The Dual Heating feature ramps primary damper with heating. Both the primary air and the hot water heating valve in heating mode are modulated from minimum to maximum in proportion to heat requirement. This applies ONLY to Hot Water and Thermic Valve personalities. This feature is enabled by setting Enable Dual HTG [Yes, No][Default No].(FW150:T6,2,bit4)

ECM Fan Speed Setpoint

If Analog Output Assignment is 5, ECM Fan Speed, then the Analog Output is set to the value given by the ECM Fan Speed Setpoint. (0..255= 0..100%) (FW600, T3,E25)

Electric Heat 1 Mask

It indicates the physical output assigned to Electric Heat 1 Output (FW150:T3,31).

Electric Heat 2 Mask

It indicates the physical output assigned to Electric Heat 2 Output (FW150:T3,32).

Electric Heat 3 Mask

It indicates the physical output assigned to Electric Heat 3 Output (FW150:T3,33).

Electric Heat Base Time

This EEPROM variable represents the duty cycle to be used for electric heat applications. Default 240 seconds Range 0-255 seconds Resolution 1 second (FW150,T3,10,BYTE)

Electric Heat Minimum Airflow Setpoint

Locks out Electric Heat if Primary Airflow falls below Electric Heat Minimum Airflow SP. If Electric Heat Min AF SP is zero then this feature is disabled. Table 3 Entry 8, [Default 10].(FW155A2.3)

Electric Heat Timer

This RAM variable is used to time the duty cycle for electric heat applications.(FW155,10,48) For Electric Heat Personalities only.

Emergency Status

RAM Emergency Status (FW150:T10,11,bits0,1);

0 = indicates that no emergency is present;
1 = emergency 1 state is set;
2 = emergency 2 state is set.

EEPROM Emergency 1 state will force the damper to open and turn OFF the fan and electric heat. (FW150:T6,2,bits 2) EEPROM Emergency 2 state will force the damper to closed and turn OFF the fan and electric heat. (FW150:T6,2,bits 3)

Fan Energize Airflow Setpoint

This is a flow value at which an intermittent fan will turn on or off. It is stored in EEPROM. If the duct Airflow drops below this value, the fan will turn on, above this value the fan will be off. Default 4000 FPM Range 0 - 3300 Feet per Minute Scaling 1 bit per 25 FPM Resolution 25 FPM All airflow values are displayed in CFM.(FW150:T2,7)

Fan On/Off Mask

The output mask assignment for fan output. Displays output number that has been assigned (FW150:T3,30) [Default BO-5]

Fan Status

See Output Status - Fan

Flash Enable

Enables update of firmware (executable application program) over RS-485 communication. PA_FlashEnable (FW655AT6,6,bit1)
FW600AT6E5, bit6 [Default: No]

Group Address

This specifies the Group Address (Group Address 0) to which the controller will respond. Default 512D (200H) Range 100H-FF00H (multiples of 100H) Resolution 256 (100H) Extended group addressing is available which allows membership selection in up to 5 different categories. Consult protocol document for a discussion of extended group addressing. (FW150:T1,9) Default 0

Half Degree Enable

If Set Temperature setpoints are in 0.5 deg incremnts. Table 6,E5, bit 6. [Default Not Set]

Heating Airflow Maximum Setpoint

This EEPROM variable represents the maximum Airflow that will be allowed through the duct while in heating mode. Default 2000 FPM All airflow values are displayed in CFM. Also used for occupied state when Multiple Airflow Min/Max Enable is set. (FW150:T2,6)

Heating Airflow Minimum Setpoint

This EEPROM variable represents the minimum Airflow that will be allowed through the duct while in heating mode. Default 0 FPM Range 0 - 3300 Feet per Minute Scaling 1 bit per 25 FPM Resolution 25 FPM All airflow values are displayed in CFM. Also used for occupied state when Multiple Airflow Min/Max Enable is set. (FW150:T2,5)

Heating Airflow NSB Maximum

This EEPROM variable represents the maximum Airflow that will be allowed through the duct while in heating mode in the NSB state when Multiple Airflow Min/Max Enable is set. Resolution 25 FPM (FW150:T2,30) (150E..,151A..D)

Heating Airflow NSB Minimum

This EEPROM variable represents the minimum Airflow that will be allowed through the duct while in heating mode in the NSB state when Multiple Airflow Min/Max Enable is set. Resolution 25 FPM(FW150:T2,29) (150E..,151A..D)

Heating Airflow Unocc Maximum

This EEPROM variable represents the maximum Airflow that will be allowed through the duct while in heating mode in the Unoccupied state when Multiple Airflow Min/Max Enable is set. Resolution 25 FPM (FW150:T2,26) (150E..,151A..D)

Heating Airflow Unocc Minimum

This EEPROM variable represents the minimum Airflow that will be allowed through the duct while in heating mode in the Unoccupied state when Multiple Airflow Min/Max Enable is set. Resolution 25 FPM(FW150:T2,25) (150E..,151A..D)

Heating Calculation

See Heating Requirement

Heating Night Setback Temperature SP

This is the desired zone temperature during Night Setback with the controller in heating mode. Default 65 deg F Range 0-255 (45 to 95 effective) Resolution 1 deg F Units (FW150:T2,13)

Heating Occupied Temperature SP

Occupied Heating Temperature Setpoint This is the desired zone temperature during an Occupied state in heating mode. Default 72 deg F Range 0-255 (45-95 effective) Resolution 1 deg (FW150:T2,2)

Heating Requirement

The heating requirement is a RAM value. (FW150:T10,20) 0 to 255 = 0 to 100%.. In earlier product its meaning depended on personality. In FW155A it is always the heating requirement. (FW155A, T10,20)

1) For Dual Duct Heating it is the Secondary Airflow Setpoint which modulates between Heating Airflow Minimum Setpoint and Heating Airflow Maximum Setpoint. (FW150:T10,20) (FW155A, T10,46)

2) For Hot Water heating it is the Heating Requirement which is the percentage of the HW Valve Base Time use to calculate the HW Valve Position Setpoint. (FW150:T10,20) (FW155A, T10,47)

3) For Electric Heating it is the Heating Requirement which is the percentage of the Electric Heat Base Time used to calculate the Electric Heat Timer. (FW150:T10,48)

Heating Unoccupied Temperature SP

Unoccupied Heating Temperature Setpoint This is the desired zone temperature during an Unoccupied state with the controller in heating mode. Default 65 deg F Range (45-95 effective) Resolution 1 deg F (FW150:T2,11)

Holiday Status

Indicates that today is a holiday. (FW150:T10,10,bits 7)

HW Valve Actual

The actual drive time of the Hot Water Valve. The valve is driven until the actual drive time is equal to the HW Valve Position Setpoint. (FW150:T10,21)

HW Valve Base Time

This setpoint establishes the time required for the hot water valve to go from fully closed to fully open for Hot Water Heating. It is used to control the operation of the hot water valve. Default 120 seconds Range 1-255 seconds Resolution 1 second (FW150:T3,20)

HW Valve Close Mask

The output mask assignment for hot water closed output. Displays output number that has been assigned (FW150:T3,37)

HW Valve On/Off Mask

Identifies output used for On/Off Hot Water Valve for Fan Coil Personalities. Typically assigned to Output 4. Same parameter used for VAV Aux Heat Output Mask (150E..) [Default, 00h] (existing) Table 3 Entry 43 (600A1.4)

HW Valve Open Mask

The output mask assignment for hot water open output. Displays output number that has been assigned (FW150:T3,36)

HW Valve Position SP

Current Hot Water Valve position setpoint which is the required drive time, saved in RAM.(FW150:T10,20) Note: For FW155A, T10,20 is the Heating Requirement, (FW155A,T10,47)

IFan Heating Only Enable

Used by intermittent fan personalities to allow fan operation only in the heating mode. The fan is off in deadband and cooling modes. (FW155A,T6,3,bit 7)

Ignore Globals Enable

If set to [Yes], all commands on the communications line sent using global addressing are ignored. [Yes, No Default No]. User-changeable.(FW150:T6,1,bit6)

Input Fault Status

Bit pairs show status of faults on inputs 1 through 8. (FW155A,T10,32,WORD)
Bit pairs 00 = 0 - no fault ;10 = 2 - LO fault; 11 = 3 - HI Fault; 01 = 1 reserved

Input n - Raw

The 12 bit raw input value. 0 to 5 Vdc = 0 to 4095. Note: Microprocessor is only accurate to 10 bits. (FW155A,T9,17, 8 WORDS)

Input n Convert

The type of conversion assigned to each input. (FW155A.,T14,1..8,LSNBL)
The LSNBL is the Convert Type. The MSNBL is the Input Type

Input n Type

The type assigned to each input. (FW155A.,T14,1..8,MSNBL. .

Input Type = 0 - Raw
Input Type = 1 - Temperature (3 kohm thermistor)
Input Type = 2 - AV3300 Airflow Sensor
Input Type =3 - User Adjust
Input Type = 4 - Static Pressure Slope/Offset (Tracker)
Input Type = 5 - Humidity (0..100%)
Input Type = 6 - CO2
Input Type = 7 - AV3200 Airflow Sensor

Input Override Status

Shows status of overridden inputs. Bitwise. (FW155A,T10,31)

Integral Time

The Integral Time is a PI tuning parameter used for both heating and cooling. The Integral Time is the time required for the integral term to be the same size as the proportional term for a constant error. In units of 0.5 seconds. (FW155A,T2,9,BYTE)

Light Blink Timer

Used to time the 60 second wait before turning off lights.(FW155A,T10,64,BYTE)

Lights Occupied Enable

When enabled, the lights are on whenever the state is occupied for any reason, or when the lighting schedule says the lights are on. In occupied the push-button toggles the lights on and off. New(FW155A, T6,3,bit6)

Lights On/Off 1,2 Schedule

The Lights schedule has entries for two on and off times in 1/4 hour intervals for 8 days. (FW150E..,T7, various)

Lights On/Off Mask

The output mask assignment for chilled water On/Off output. Displays output number that has been assigned (FW150:T3,35)

Lights Reverse Enable

Lights Reverse Enable flag for reversing light outputs. Table 6 Entry 3 bit 0 (FW155A2.0)

Lights Schedule Disable

If this is set, then the lights will ignore the daily event lighting schedule. The will turn on only based on the afterhour push-button during occupied, if Lights Occupied Enable is set and the state is occupied, or communication override.(FW155A,T6,1,bit1)

Lights Scheduled Off Status

Indicates that the lights should be off as determined from the Schedule or On if unsynchronized. (FW155A,T10,30,bit4) 1=Lights Off, 0=Lights On

Lights Scheduled Status

The Lights determined from the Schedule or Occupied if unsynchronized. (FW155A,T10,30,MSNBL) 1=Lights Off, 2=Lights On, 3=Lights Off, 4=Lights On,

Local Heat Enable

When enabled local heating, hot water or electric, is available in changeover. In changeover heating if Local Heat Enable is Yes, then the heat is on at 100% whenever the control mode is heating. New(FW155A, T6,4,bit 0)

Loopback Status

Used by Factory Test to determine status of WS-051 communication port.0=not tested, 1= OK, else fail (T18,E24)

Lower Limit (HTG) Temperature Setpoint

Lower Limit of user adjust in the Digital Display Wall Sensor. In deg F/C or in 0.5 deg F/C . See also Upper Limit Temperature Setpoint and Digital Display Enable. A1_LowerLimitTempSP [deg F], A1_LowerLimitTempSP-half [0.5 deg F], A1_LowerLimitTempSPC [deg C], A1_LowerLimitTempSPC-half [0.5 deg C], FW155B,655A (T2,33) Only in the HTG Control Mode FW655A13.

Lower Limit CLG Temperature

Lower Limit of user adjust in the Digital Display Wall Sensor in the CLG Control Mode. In deg F/C or in 0.5 deg F/C . See also Digital Display Enable.

A1_LowerLimitCLGTempSP [deg F], A1_LowerLimitCLGTempSP-half [0.5 deg F], A1_LowerLimitCLGTempSPC [deg C], A1_LowerLimitCLGTempSPC-half [0.5 deg C], 655A1.3, 600A (T2,39)

Morning Warm-up Option 2 Enable

One of two Morning Warm-up Sequences will be utilized. The specific behavior for each sequence is described in the application bulletin. 0 = MWU#1; 1 = MWU#2. Default 0 (FW150:T6,1,bit 3)

Morning Warm-up Schedule

The Morning Warm-up Schedule has entries for one on and off time in 1/4 hour intervals for 8 days. (FW150, T7,various)

Multiple Airflow Min/Max Enable

The multiple minimum and maximum airflow setpoints for Unoccupied and Night Setback states can be enabled.[No, Yes] (FW150:T6,1,bit 2) (150E..,151A..D)

Night Setback Schedule

The Night Setback Schedule has entries for one on and off time in 1/4 hour intervals for 8 days. (FW150, T7,various)

NSB Option 2 Enable

This indicates which of two Night Setback sequences will be utilized in NSB and Unoccupied control state. The specific behavior for each sequence is described in the application bulletin. Default 0 (FW150:T6,1,bit7)

Occupancy Afterhours Enable

If the Occupancy Afterhours Enable is yes, the switch on Input #8 is examined at all times to determine if the room is occupied. If Occupancy Afterhours Enable (efOccSensorAsPB) is Yes, the Afterhours feature is triggered by a maintained contact on input 8 in Unoccupied and Night Setback periods. If the Occupancy Status is Yes at the beginning of the UNO or NSB period, or if during UNO and NSB the Occupancy Status goes true, or if the Occupancy Status is still true at the end of the Afterhours period, Afterhours operation is triggered exactly as if the PB on Input#2 had been pressed. Afterhours Enable does not have to be set. . PA_OccupancyAfterhourEn (600a1.3, FW155A;,T6,4,bit2) [Default No]

Occupancy Delay

When the door closes, an Occupancy Delay timer starts running for an Occupancy Delay(4s) .Table 3 Entry 6 (600a1.4)

Occupancy Sense Closed

The Occupancy Sensor can be normally open or normally closed. If Occupancy Sense Close (efOccSenseOpen) is no, then Open contacts set the Occupancy Sensor Status to Yes. If Occupancy Sense Close is Yes, then Closed contacts set the Occupancy Sensor Status to Yes. A1_OccupancySenseClose (600a1.3,T6,3,bit5)

Occupancy Sensor Enable

Enables operation of an occupancy sensor on Input 5 (8055, Input 8). If the Occupancy Sensor Enable is yes, the switch on Input #8 is examined at all times to determine if the room is occupied . A1_OccupancySenseEnable (600a1.3,T6,3,bit4)

Occupancy Sensor Status

The Occupancy Status identifies when the room appears to be occupied. If Occupancy Status (rfOccupancy) is No ,and the Control State is Occupied, control is placed in the Unoccupied state. If Occupancy Status is Yes and Occupancy Afterhours Enable is No, control is in the state determined by schedule, override state, or if State Schedule Disable is set or the controller is unsynchronized in the Occupied Control State . PA_OccupancySensorStatus (655a2.0,T10,28,bit5) (600a1.3;155a;T10,13,bit1)

Occupancy Sensor Threshold

The Occupancy Sensor Threshold gives the 8-bit numeric value at which the decision for Occupancy Sensor Status is yes or no. Multiply by 4 to give the 12-bit raw value. [Default: 25] PA_OccupancySensorThresh (655a, T3E21) (600a1.3;155a, T3E15)

Occupancy Timer

When the door closes, an Occupancy Delay timer starts running. When it expires the Door Timer starts counting down. Table 18, Entry 11 (4s) (600a1.4)

Operating Mode

See Control Mode

Outside Airflow Enable

Enables the Outdoor Air Feature
T6E2 bit 1 - Outside Airflow Enable (FW155A2.0) (efOutsideAirEnable)

Outside Airflow Hysteresis

Used by Outdoor Air feature. T3E09 Outside Airflow Hysteresis (eOATHysteresis)[Default 9] (155A2.3)

Outside Airflow Setpoint

An optional Outdoor Air feature controls the Secondary Airflow measured on Input 5 in the Occupied state. When Outside Airflow Enable is yes, the secondary damper is modulates the Secondary Airflow to the Outside Air Volume Setpoint within an Outside Airflow Hysteresis. In Night Setback, Unoccupied, and Morning Warmup states, the Outside Air Damper is driven closed continuously. Any pair binary outputs can be assigned to Secondary Damper Open and Closed Outputs.
T3,E14 Outside Airflow Setpoint [Default, 0] (FW155A2.0) (eOutsideAirSetpoint)

Output Override ON Status

This variable indicates which physical outputs are overridden. This is now kept in RAM. (FW155A,T10,41)

Output Override ON Status Defaults

This variable indicates which overridden physical outputs are to be overridden in the ON condition at power-up. This is kept in EEPROM. (FW155A,T3,25)

Output Override State

This variable indicates which overridden physical outputs are ON. This is now kept in RAM. (FW155A,T10,40)

Output Override State Defaults

This variable indicates which physical outputs are to be overridden at power-up. This is kept in EEPROM. (FW155A,T3,24)

Output Status - Actual

Bitwise representation of physical output states in RAM. (FW150:T10,26) (FW155A,T10,26,Byte)

Output Status - Auxiliary Heat

A binary Heat Output is turned ON whenever, and all during the time the TD-1 is in the Heating Mode. This is completely independent of the normal hot water valve modulation that is already a part of the TD-1. (FW151A..C Only) Uses Auxiliary Heat Output Mask (FW150:T3,43) and Output Status (FW150:T10,26) and Output Override Status and Output Override State.
(FW155A,T10,37,Bits6,7)[[On, Off, O/R On, O/R Off, Restore]

Output Status - Electric Heat 1 On/Off

Uses Electric Heat 1 On/Off Mask (FW150:T3,31) and Output Status (FW150:T10,26) and Output Override and Output Override State.
(FW155A,T10,38,Bits2,3) [On, Off, O/R On, O/R Off, Restore]

Output Status - Electric Heat 2 On/Off

Uses Electric Heat 2 On/Off Mask (FW150:T3,32) and Output Status (FW150:T10,26) and Output Override and Output Override State. .
(FW155A,T10,38,Bits4,5) [On, Off, O/R On, O/R Off, Restore]

Output Status - Electric Heat 3 On/Off

Uses Electric Heat 3 On/Off Mask (FW150:T3,33) and Output Status (FW150:T10,26) and Output Override and Output Override State. .
(FW155A,T10,38,Bits6,7) [On, Off, O/R On, O/R Off, Restore]

Output Status - Fan On/Off

Uses Fan On/Off Mask (FW150:T3,30) and Output Status (FW150:T10,26) and Output Override and Output Override State. .
(FW155A,T10,37,Bits0,1)[On, Off, O/R On, O/R Off, Restore]

Output Status - HW Valve

The functional Output Status depends on the HW Valve Open and Close Output Masks (FW150:T3,36&37), the Output Override and Output Override State, and the output state

(FW150:T10,26). .
(FW155A,T10,36,LS_NBL) [Open, Close, Stop, O/R Open, O/R Closed, O/R Stop,]

Output Status - Lights On/Off

The functional Output Status depends on the Lights On/Off Output Mask (FW150:T3,35), the Output Override, the Output Override State, and the output state (FW150:T10,18). .
(FW155A,T10,37,Bits2,3) [On, Off, O/R On, O/R Off]

Output Status - Primary Damper

The functional Output Status depends on the Cooling Damper Open and Close Output Masks (FW150:T3,26&27), the Output Override and Output Override State, and the output state (FW150:T10,26).

(FW155A,T10,35,LSNBL)[Open, Close, Stop, O/R Open, O/R Closed, O/R Stop

Output Status - Raw

Bitwise representation of physical output states in RAM (FW155A,T10,34,BYTE)

Output Status - Thermic Valve

The functional Output Status depends on the Thermic Valve Mask (FW150:T3,24),and Output Status (FW150:T10,26) and Output Override and Output Override State. (FW155A,T10,38,Bits0,1) [On, Off, O/R On, O/R Off].If Thermic Valve Reversed is True then the physical output status will be the opposite of that indicated here.

Output Status- CHW On/Off

Status of the Output assigned to the CHW Valve On/Off Mask. (Aux CLG) Table 10 Entry 38 BITS_4,5 (600a1.4)

Output Status- HW On/Off

Status of the Output assigned to the HW Valve On/Off Mask. (Aux HTG) Table 10 Entry 38 BITS_6,7 (600a1.4)

Personality

One of 17 Personalities of the VAV or Fan Powered Terminal boxes. See Application notes for details. (FW155A,T1,15,BYTE)

Poll Status - In Afterhours

Tells whether the Afterhour button has been pressed and Afterhour time allowed is non-zero. [Yes or No]. Not user-changeable. (FW155A, T10,32, bit6). See also Afterhour Status (FW150:T16,3,bit1).

Poll Status - Mode

Shows present mode of the controller. (FW155A, T16,3, bit0,1). See also Control Mode (FW150:T10,6,bits4,5).

Poll Status - State

Shows present state of the controller. (FW155A, T16,3, bit2,3). See also Control State (FW150:T10,5,bits0,1).

Pressure Dependent Enable

If enabled, then the Damper is controlled based on percentage of Damper Drive Time in seconds, rather than Airflow (FW6000, T3,E24)

Primary Airflow

This is a RAM variable for the flow through the primary or cooling duct. Range 0 - 3300 Feet per Minute Scaling 1 bit per 25 FPM @ K-factor of 2338. Resolution 25 FPM. All airflow values are displayed in CFM. (FW150:T10,17)

Primary Airflow Alarm Range

This is an EEPROM variable that dictates how far the flow through the cooling duct must differ from the calculated value before the alarm bit is set. This value is used for single duct boxes in both heating, deadband, and cooling modes in occupied state. Default

4000 FPM Range 0 - 3300 Feet per Minute Scaling 1 bit per 25 FPM @ K-factor of 2338. Resolution 25 FPM All airflow values are displayed in CFM. (FW150:T2,15)

Primary Airflow K-factor

The Primary Airflow K-factor relates the measured air duct velocity in the primary duct to the actual air duct velocity.

v_actual = (K-factor/2338)* v_measured

It gives the duct velocity in feet per minute necessary to generate a velocity pressure in the flow cross of 1.0 inches water column. The default value of 2338 has been determined for flow cross in an 8" duct. A different K-factor is necessary for different cooling duct sizes and flow crosses. Default 2338 Range 1500-4200 (FW150:T5,1,WORDU)

Primary Airflow Setpoint

This is a RAM variable for the calculated primary airflow requirement. Range 0 - 3300 Feet per Minute Scaling 1 bit per 25 FPM @ K-factor of 2338. Resolution 25 FPM. (FW150:T10,19): FW155A,T10,19. The Primary Airflow Setpoint modulates from Active Cooling Airflow Minimum to Maximum as the Cooling Requirement (FW155A,T10,16) modulates from 0 to 100% 0 to 255.

1) For VAV cooling it is the Primary Airflow Setpoint which modulates between Cooling Airflow Minimum Setpoint and Cooling Airflow Maximum Setpoint.

2) For Changeover Heating it is the Primary Airflow Setpoint which modulates between Heating Airflow Minimum Setpoint and Heating Airflow Maximum Setpoint.

Primary Airflow Smooth Filter

This is an EEPROM variable that controls the time response of the running average used to smooth the Primary Airflow measurement. It can be modified slightly to compensate for erratic readings from the velocity pressure transducer. Default 6 Range 0-255 Cooling (FW150:T3,2) This should not be changed without a clear understanding of the process.

Primary Calculation

FW155A it is usually the cooling requirement for the primary airflow is 0 to 25500 = 0 to 100% and is retained as a word value. In changeover it is used for the heating calculation that controls primary airflow. (FW155A, T9,43,WORD)

Primary Damper Closed Mask

The output mask assignment for primary damper closed output. Displays output number that has been assigned (FW150:T3,27)

Primary Damper Open Mask

The output mask assignment for primary damper open output. Displays output number that has been assigned (FW150:T3,26)

Primary Damper Status

See Output Status - Primary Damper

Primary Duct Area

Primary Duct Inlet Size This is an EEPROM variable that represents the inlet duct area for the primary (cooling) duct. Default 0.35 sq. ft. (8" dia.) Range 0.08-4.0 sq. ft. Scaling 1 bit per 0.005 sq. feet (FW150:T5,5,WORDU)

Product Identification

FW150,T11,1,10BYTES. Returns firmware identification string. Same as MT=4Ah.

Reset ASIC/1

The controller can be reset as if from loss of power upon command. When the controller is reset it looses time synchronization and clears all RAM values.

Scheduled State Status

This indicates the control state would be used based on the State Schedules.
1=UNOCC, 2=OCC,3=NSB,4=MRDY (FW155A,T10,30,LSNBL)

Secondary Calculation

FW155A it is usually the heating requirement is 0 to 25500 = 0 to 100% and is retained as a word value. . In changeover the primary calculation is used for the heating calculation that controls primary airflow. (FW155A, T9,45,WORD)

Sensor Fault - Zone Sensor

The values of inputs are verified to be within normal ranges. If an input value is suspect a bit is set in the RAM sensor failure status byte. (FW150:T10,12,bit 6)

Shed Fan Enable

If set then the intermittent or constant fan I shed when Active Demand Level exceeds the Demand Rotate Level or Demand Shed Level. (FW155A,T6,3,bit 3)

Single Setpoint Deadband

Used when Digital Display is enabled to force a single Temperature Setpoint. WS-051 displays OCC CLG Temp SP . On change sets OCC HTG Temp SP = OCC CLG Temp Single Setpoint Deadband (600a1,8880a).

Single Setpoint Enable

Used when Digital Display is enabled to force a single Temperature Setpoint. WS-051 displays OCC CLG Temp SP . On change sets OCC HTG Temp SP = OCC CLG Temp SP -2. (600A1.3, T6,E5, bit0) (655a2.0,T6, E6, bit4)

Slide Switch Status

Switch status on wall sensor.
(FW150:T10,8,bit 2) slide switch is up ;
(FW150:T10,8,bit 3) slide switch is down.

State

See, Control State

State Overridden

This flag indicates that the control state has been overridden from the Scheduled State. (FW155A,T10,13,bit0)

State Schedule Disable

If this option is selected, then the state of the controller is dependent on messages sent on the communication line. Or on the status of the Occupancy Sensor. (FW150:T6,1,bit1)

State Scheduled Status

The State determined from the Schedule or Occupied if unsynchronized. (FW155A, T10,30, LSNBL) 1=UNOCC, 2=OCC,3=NSB,4=MRDY

Sync/Holiday

The ASIC/1 controller can be synchronized or put into holiday mode from this entry on the setup screen.

Synchronize Required

ASIC clock needs synchronization. (FW150:T10,9,bit 7)

Synchronize Status

ASIC clock is synchronized. (FW150:T10,11,bit 2)

Thermic Valve Mask

Identifies output used for thermic valve .(FW155A,T3,34,BYTE)

Thermic Valve Reversed

Indicates that thermic valve is reversed. When Thermic Valve Reversed is set valve is normally on. cycles off. The physical output identified by the thermic valve mask will be opposite to that reported by the Thermic Output Status. (FW155A,T6,4, Bit 1)

Throttling Range

The Throttling Range is a PI tuning parameter used for both heating and cooling. The Throttling Range gives the error signal that is required to give an output of 100%. In units of 0.1 deg F or deg C. (FW155A,T2,8,BYTE) **Throttle Range** = 4.0 deg F; **Integral Time** = 2.5 min ;Calc Time = 30 s, fixed. Max_range = 25500
Output Change = (25500/ThrottleRange)*[Δ Error*(CalcTime/Int Time)
+Δ Δ Error]

Tracker Negative Airflow Setpoint

A Tracker Negative Airflow Setpoint controls so that less air enters the space than is exhausted from the space. In units of 25 ft/min based on Primary Kfactor and Area. (T2,E20) (880a)

Tracker Negative Enable

If Tracker Negative Enable is yes, then the Tracking Negative Airflow Setpoint is active. If Tracker Negative Enable is no, then the Tracking Positive Airflow Setpoint is active. (880a,T1,E4 bit1)

Tracker Positive Airflow Setpoint

A Tracker Positive Airflow Setpoint controls so that more air enters the space than is exhausted from the space. In units of 25 ft/min based on Primary Kfactor and Area. (T2,E19) (880a)

Trend 1,2 Table & Entry Number

Any 2 parameters contained in the controller's tables may be trended. The table number and entry number for a given table may be determined from the Protocol Document. User-changeable. (FW150E..)

Trend 1 Table Number (FW150:T13,7),
Trend 1 Entry Number (FW150:T13,8)
[Default, Zone Temperature (FW150:T10,25)]
Trend 2 Table Number (FW150:T13,9),
Trend 2 Entry Number (FW150:T13,10)
[Default, Cooling Airflow (FW150:T10,17)].

Trend Day of Week

The Trend runs continuously whenever the Trend Day of Week is non-zero. 1= Monday. . The trend pointer is kept in RAM and is recalculated based on quarter hour periods since midnight of the Trend Day of Week. Trend Day of Week is rewritten whenever the trend rolls over. It starts fresh after 7 days. (FW155A,T10,4). [Default, 0]

Trend Interval

The time interval which occurs between reading successive trend values in 15 minute increments. Same for both parameters trended. [0 to 255 *15 min , Default 1 *15 min]. User-changeable.(FW150:T13,6)

With FW155A only 96 values are trended and the minimum trend interval is 15 minutes. The trend starts each day at midnight. The trend rolls over at midnight and writes a new Trend Day of Week. NEW!!

Trend Number of Values

Returns the index of the last value trended. The trend pointer is kept in RAM and is recalculated based on non-zero Trend Day of Week. (FW155A,T10,??).

Trend User Date

The month, date, and hour minutes at which the trend was begun. The user may change the Trend User Date in the course of performing a trend [XX/XX XX]. User-changeable.(FW150:T13,1,3BYTES)

Unoccupied Intermittent Fan Enable

See Unoccupied Option 2 Enable

This indicates which of two Unoccupied sequences will be utilized in Unoccupied control state. If enabled, then the primary damper is closed in Unoccupied Deadband. Default 0 (FW150:T6,3,bit1)

Unoccupied Option 2 Enable

This indicates which of two Unoccupied sequences will be utilized in Unoccupied control state. If enabled, then the primary damper is closed in Unoccupied Deadband. Default 0 (FW150:T6,3,bit1)

Unoccupied Schedule

The Unoccupied Schedule has entries for two on and off times in 1/4 hour intervals for 8 days. (FW155A,T7,various)

Upper Limit (CLG) Temperature Setpoint

Upper Limit of user adjust in the Digital Display Wall Sensor. . In deg F/C or in 0.5 deg F/C . See also Lower Limit Temperature Setpoint and Digital Display Enable. A1_UpperLimitTempSP FW155B,655A (T2,32) Only in the CLG Control Mode FW655A13.

Upper Limit HTG Temperature

Upper Limit of user adjust in the Digital Display Wall Sensor in the Heating Control Mode.. In deg F/C or in 0.5 deg F/C . See Digital Display Enable. A1_UpperLimitHTGTempSP [deg F], A1_UpperLimitHTGTempSP-half [0.5 deg F], A1_UpperLimitHTGTempSPC [deg C], A1_UpperLimitHTGTempSPC-half [0.5 deg C], 655A1.3, 600A (T2,38)

User Adjust Switch Enable.

Enables the User Adjust Switch Option. Requires an input #2 or #3 to be configured for a WT-0X1 User Adjust Switch. (FW155A,T6,3,bit2)

User-Adjust Setpoint

This is an EEPROM variable that represents the number of degrees that the user can adjust the temperature setpoint (either up or down). Default 3 deg F Range 0-16 deg F (+/-16) (FW150:T3,13)

Variable User Adjust Enable

Enables operation of User Adjust Switch or Variable User Adjust function. (FW155A,T6,3,bit0) Whether it is a Switch or a Potentiometer depends on the Input Configuration. . Requires input #2 or #3 to be configured for a WT-0X1 User Adjust Switch.

Window Switch Enable

Allows one or more Normally Closed window and patio door switches to be wired in series with 3.32 kohm across Input 6 in connection with Door Event for Fan Coil personalities. Table 6 Entry 4 bit 4 (600a1.4)

Window Switch Status

Shows status Window Switch on Input 6. Table 18, Entry 3 bit 0 (600a1.4)

Window Timer

Window Timer counts down from 30s when the Window Switch Status indicates that the window is open. Disables the Fan and Valves when it reaches 0. Table 18, Entry 14 (600a1.4)

Zone Sensor Bias

Temperature Setpoint Bias or offset. This is an EEPROM variable that allows adjustment of the zone temperature sensor reading up or down a few degrees. Default:0 Range -/+ Scaling 1 bit per deg F. (FW150:T2,8)

Zone Temp Alarm Range

This value dictates how far from the setpoint the zone temperature must fluctuate before the temperature alarm bit is set. If the difference between the setpoint and the zone temperature becomes greater than the Alarm SP, the alarm bit is set. Default 4 deg F Range 0-25 deg F (FW150:T2,14)

Zone Temp Fault Status

Shows fault status of input designated as Zone Temperature. (FW150E,T10,12,bit6)

Zone Temperature

The zone temperature reading the controller uses for heating/cooling calculation purposes obtained from the Wall Sensor attached to input #1. Not user-changeable .(FW150:T9,1,WORD)

Zone Temperature - Previous

The zone temperature reading the controller uses for heating/cooling calculation purposes obtained from the Wall Sensor attached to input #1. from 30 seconds earlier. Not user-changeable.(FW150:T9,33,WORD)

Zone Temperature - Truncated

Zone Temperature measured on the assigned input and rounded to single byte value and saved in RAM. (FW150:T10,25,BYTE)

ASIC/1-8800 Appendix

Controller Addressing

Device Addresses

Each controller has a 2 byte address kept in non-volatile memory that allows it to be directly addressed with commands on the communications line. When the controller recognizes its address, it processes the message and delivers the appropriate response message.

Group Addresses

Device addresses that are evenly divisible by 256 are reserved for Group addressing. Each controller can be assigned a separate single byte group address, 1..255. Group addressing is used to send a one way communication to a specific group of devices in the system. . No response is made by any devices listening to a message sent to a group address.

Care must be taken in sending commands to a group destination address. Only controllers of a single type should be assigned to the same group, because each type has different parameter assignments. For example, ASIC/1-8055 VAV controllers may have different setpoint assignments than ASIC/1-8655 Roof Top Controllers.

Global Addresses

All messages to ASI controllers may be transmitted using a Global Address. The Global address is fixed in each ASI controllers. Addresses 23,041 through 23,295 (0x5A01 through 0x5AFF) are reserved for device global addresses. All messages sent to the global address associated with a particular device will be received and acted on. No response is made by any listening devices to a 'Global' message.

Use of global address should be restricted to time synchronization (message type 38h), Set operating state (message type 10h), Set Emergency State (message type 12h). Other messages should be used only if all controllers on the system are the same type.

Global broadcast messages are always broadcast 3 times with a gap of approximately 50 ms between each repeated message.

The Device Global Address allows for global downloads of parameters and setpoints to all controllers of a particular type, without affecting other controllers which may use the same parameter location for a different purpose. The following Global Addresses are defined for the ASIC/1-8655 controllers.

Address 23,045 (0x5A05) ASIC/1-8055, ASIC/1-6000 VAV Controllers (155a,600a)
Address 23,125 (0x5A55) All ASIC/1-8x55 Controllers
(155A,175A, 255A, 355A,655A,600A)
Address 23,130 (0x5A5A) All ASIC/1 terminal unit controllers.

Initialization Addresses

Addresses 46,081 through 46,335 ('B4 01 hex' through 'B4 FF hex') are reserved for initialization of device addresses. These addresses are typically used with message type, 42h, Get address, to return the assigned device address of a controller. It is used with a hardware interlock in the ASIC/1 controllers. The ASIC/2 controllers do not use a hardware interlock.

Address 46,260 (0xB4B4) is used with a hardware interlock on ASIC/1 terminal unit controllers to perform certain commands such as installing a new controller address and loading the default table of parameters.

Address 46,165 (0xB455) is used with a hardware interlock on ASIC/1-8X55, or ASIC/1-6000 controller to perform certain commands such as installing a new controller address and loading the default table of parameters.

Address 46,112 (0xB420) is used with SINC/2 or SINC/3 Controller to retrieve the Device Address.

Address 46,192 (0xB470) is used with the ASIC/2 Controller family to retrieve the Device Address.

Firmware History

ASIC/1-8800 Read Me

ASIC/1-8800 FW880a Rev 1.0 Forthcoming

- Initial Release.

Note: This release requires expert 3.3.0.8 or later and new asic1.mdb, a1-8800.pvs, a1-8800.tcl files.