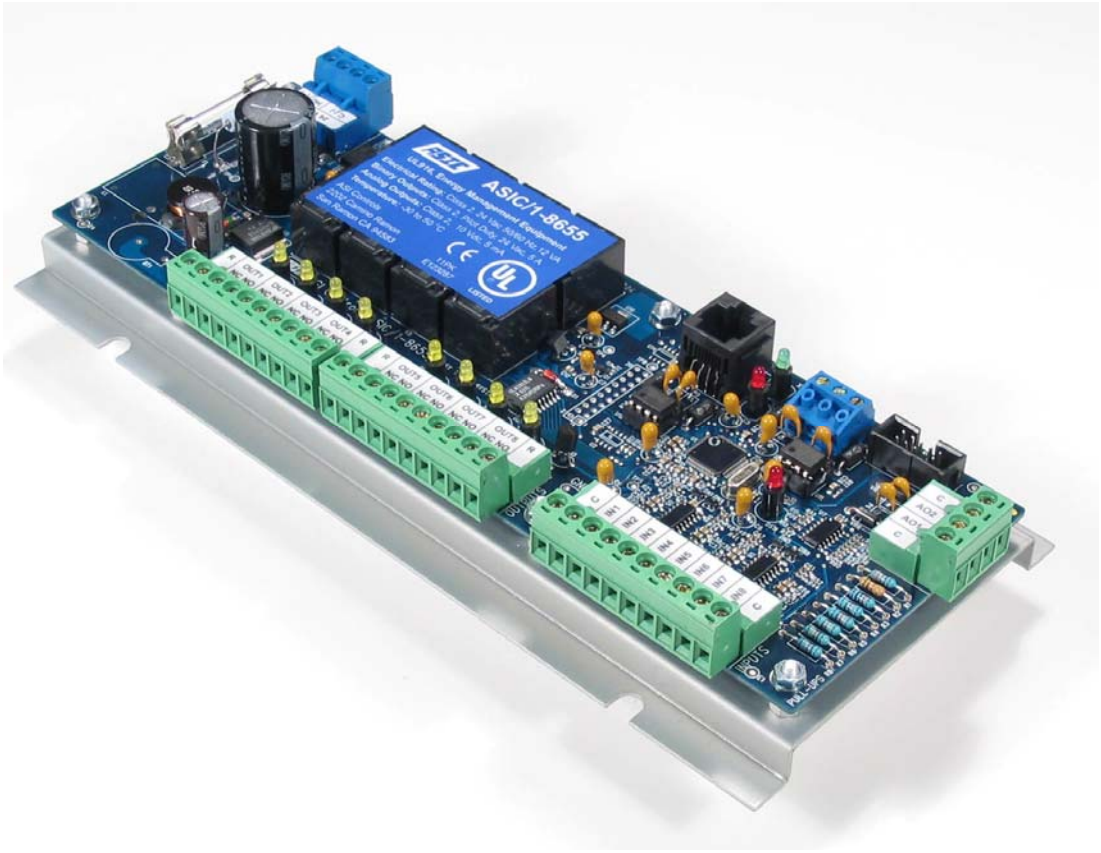
ASIC/1-8655

Engineering Guide

By ASI Controls



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ASIC/1-8655 Overview

ASIC/1-8655 Engineering Guide

The ASIC/1-8655 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.

Air Conditioner Sequences

The ASIC/1-8655 Packaged Air Condition controller has 8 air conditioner personalities for up to 2 stages of heating and two stages of cooling:

Personality 1, 1 Stage Air Conditioner with 1 Stage Heating
Personality 2, 1 Stage Air Conditioner with 2 Stage Heating
Personality 3, 2 Stage Air Conditioner with 1 Stage Heating
Personality 4, 2 Stage Air Conditioner with 2 Stage Heating
Personality 9, 3 Stage Air Conditioner with 1 Stage Heating
Personality 10, 3 Stage Air Conditioner with 2 Stage Heating
Personality 11, 4 Stage Air Conditioner with 1 Stage Heating
Personality 12, 4 Stage Air Conditioner with 2 Stage Heating

Personality 1 or 2, 1 AC with 1 HTG or 2 HTG

Single Stage Air Conditioner. In Cooling mode Compressor 1 is on a fraction of the Compressor Duty Cycle Time based on the Cooling Requirement. For 1 Stage sequences the Compressor 1 On Time is 0 to 100% as the Cooling Requirement goes from 0 to 100% .

For Personality 1, Single Stage Heating. In Heating Mode Heat 1 is on a fraction of the Heating Base Time based on Heating Requirement. The Heat 1 On Time is 0 to 100% as the Heating Requirement goes from 0 to 100%

For Personality 2, Two Stage Heating. In Heating Mode Heat 1 and 2 are on a fraction of the Heating Base Time based on Heating Requirement. The Heat 1 On Time is 0 to 100% as the Heating Requirement goes from 0 to 50%. The Heat 2 On Time is 0 to 100% as the Heating Requirement goes from 50 to 100%

Personality 3 or 4, 2 AC with 1 HTG or 2 HTG

Two Stage Air Conditioner. In Cooling mode Compressor 1 and 2 are on a fraction of the Compressor Duty Cycle Time based on Cooling Requirement. The Compressor 1

On Time is 0 to 100% as the Cooling Requirement goes from 0 to 50%. The Compressor 2 On Time is 0 to 100% as the Cooling Requirement goes from 50 to 100%

For Personality 3, Single Stage Heating. In Heating Mode Heat 1 is on a fraction of the Heating Base Time based on Heating Requirement. The Heat 1 On Time is 0 to 100% as the Heating Requirement goes from 0 to 100%

For Personality 4, Two Stage Heating. In Heating Mode Heat 1 and 2 are on a fraction of the Heating Base Time based on Heating Requirement. The Heat 1 On Time is 0 to 100% as the Heating Requirement goes from 0 to 50%. The Heat 2 On Time is 0 to 100% as the Heating Requirement goes from 50 to 100%

Personality 9 or 10, 3 AC with 1 HTG or 2 HTG

Three Stage Air Conditioner. In Cooling mode Compressor 1, 2 and 3 are on a fraction of the Compressor Duty Cycle Time based on Cooling Requirement. The Compressor 1 On Time is 0 to 100% as the Cooling Requirement goes from 0 to 33%. . The Compressor 2 On Time is 0 to 100% as the Cooling Requirement goes from 33 to 66%. The Compressor 3 On Time is 0 to 100% as the Cooling Requirement goes from 66 to 100%

For Personality 9, Single Stage Heating. In Heating Mode Heat 1 is on a fraction of the Heating Base Time based on Heating Requirement. The Heat 1 On Time is 0 to 100% as the Heating Requirement goes from 0 to 100%

For Personality 10, Two Stage Heating. In Heating Mode Heat 1 and 2 are on a fraction of the Heating Base Time based on Heating Requirement. The Heat 1 On Time is 0 to 100% as the Heating Requirement goes from 0 to 50%. The Heat 2 On Time is 0 to 100% as the Heating Requirement goes from 50 to 100%

Personality 11 or 12, 4 AC with 1 HTG or 2 HTG

Four Stage Air Conditioner. In Cooling mode Compressor 1, 2, 3 and 4 are on a fraction of the Compressor Duty Cycle Time based on Cooling Requirement. The Compressor 1 On Time is 0 to 100% as the Cooling Requirement goes from 0 to 25%. The Compressor 2 On Time is 0 to 100% as the Cooling Requirement goes from 25 to 50%. The Compressor 3 On Time is 0 to 100% as the Cooling Requirement goes from 50 to 75%. The Compressor 3 On Time is 0 to 100% as the Cooling Requirement goes from 75 to 100%

For Personality 11, Single Stage Heating. In Heating Mode Heat 1 is on a fraction of the Heating Base Time based on Heating Requirement. The Heat 1 On Time is 0 to 100% as the Heating Requirement goes from 0 to 100%

For Personality 12, Two Stage Heating. In Heating Mode Heat 1 and 2 are on a fraction of the Heating Base Time based on Heating Requirement. The Heat 1 On Time is 0 to 100% as the Heating Requirement goes from 0 to 50%. The Heat 2 On Time is 0 to 100% as the Heating Requirement goes from 50 to 100%

Water Source Heat Pump Sequences

The ASIC/1-8355 Packaged Air Condition controller has 4 water source heat pump personalities for up to 2 stages of compression heating and cooling, and up to 1 additional heating stage.

Personality 5, 1 Stage Water Source Heat Pump
Personality 6, 1 Stage Water Source Heat Pump with 1 Stage Heating
Personality 7, 2 Stage Water Source Heat Pump
Personality 8, 2 Stage Water Source Heat Pump with 1 Stage Heating

Personality 5, Single Stage Heat Pump

Single Stage Water Source Cooling. In Cooling mode the Reversing Valve is in the cooling position and Compressor 1 is on a fraction of the Compressor Duty Cycle Time based on Cooling Requirement. For 1 Stage sequences the Compressor 1 On Time is 0 to 100% as Requirement goes from 0 to 100% .

Single Stage Water Source Heating. In Heating mode the Reversing Valve is in the heating position and Compressor 1 is on a fraction of the Compressor Duty Cycle Time based on Heating Requirement. For 1 Stage sequences the Compressor 1 On Time is 0 to 100% as Requirement goes from 0 to 100% .

Personality 6, Single Stage HP with Electric Heat

Single Stage Cooling. In Cooling mode the Reversing Valve is in the cooling position and Compressor 1 is on a fraction of the Compressor Duty Cycle Time based on Cooling Requirement. For 1 Stage sequences the Compressor 1 On Time is 0 to 100% as Requirement goes from 0 to 100% .

Stage 1 Water Source Heating. In Heating mode the Reversing Valve is in the heating position and Compressor 1 is on a fraction of the Compressor Duty Cycle Time based on Heating Requirement. For 1 Stage sequences the Compressor 1 On Time is 0 to 100% as Requirement goes from 0 to 50% .

Stage 2 Electric Heating. Heating Mode 2 is on a fraction of the Heating Base Time based on Heating Requirement. The Heat 2 On Time is 0 to 100% as Requirement goes from 50 to 100%

Personality 7, Two Stage Heat Pump

Two Stage Water Source Cooling. In Cooling mode the Reversing Valve is in the cooling position and Compressor 1 and 2 are on a fraction of the Compressor Duty Cycle Time based on Cooling Requirement. For 2 Stage sequences the Compressor 1 On Time is 0 to 100% as Requirement goes from 0 to 50% . For 2 Stage sequences the Compressor 2 On Time is 0 to 100% as Requirement goes from 50 to 100% .

Two Stage Water Source Heating. In Heating mode the Reversing Valve is in the heating position and Compressor 1 and 2 on a fraction of the Compressor Duty Cycle Time based on Heating Requirement. For 1 Stage sequences the Compressor 1 On Time is 0 to 100% as Requirement goes from 0 to 50% . For 2 Stage sequences the Compressor 2 On Time is 0 to 100% as Requirement goes from 50 to 100% .

Personality 8, Two Stage HP with Electric Heat

Two Stage Water Source Cooling. In Cooling mode the Reversing Valve is in the cooling position and Compressor 1 and 2 are on a fraction of the Compressor Duty Cycle Time based on Cooling Requirement. For 2 Stage, the Compressor 1 On Time is 0 to 100% as Requirement goes from 0 to 50% . For 2 Stage, the Compressor 2 On Time is 0 to 100% as Requirement goes from 0 to 33% .

Two Stage Water Source Heating. In Heating mode the Reversing Valve is in the heating position and Compressor 1 and 2 on a fraction of the Compressor Duty Cycle Time based on Heating Requirement. For 1 Stage, the Compressor 1 On Time is 0 to 100% as Requirement goes from 0 to 50% . For 2 Stage, the Compressor 2 On Time is 0 to 100% as Requirement goes from 33 to 66% .

Stage 3 Electric Heating. Heating Mode 2 is on a fraction of the Heating Base Time based on Heating Requirement. The Heat 2 On Time is 0 to 100% as Requirement goes from 66 to 100%

About this Document

This manual, ASIC/1-8655 Engineering Guide, DOC-1568 and Windows™ help system was last revised on 2008-05-30. 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/1-8655 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 (New 155A..,255A..) 12=1200, 96 = 9600, 192 = 19200, 128=38400	[Default 96]
4	Spare	
5	Demand Reset Range (New 155A..,255A..)	[Default 6]
6	Demand Group (New 155A...,255A..)	[Default 0]
7	Demand Shed Level (New 155A...,255A..)	[Default 6]
8	Demand Rotate Level (New 155A...,255A..,355A..)	[Default 6]
9	Group Address	[Default 0]
10	Reserved - Not Used	
11	Reserved - Not Used	
12	Reserved - Not Used	
13	Reserved - Not Used	
14	Reserved - Not Used	
15	Personality	[Default 1]
16...47	Description, bytes 1..32 [Default 'ASIC/1-8655 Package AC FW655A']	

Table 2, Non-volatile Setpoints

Entry	Description (FW251E..,255A..)	
1	Cooling Unoccupied Temp Setpoint	[Default 85]
2	Heating Unoccupied Temp Setpoint	[Default 65]
3	Cooling Occupied Temperature Setpoint	[Default 74]
4	Heating Occupied Temperature Setpoint	[Default 72]
5	Cooling Night Setback Temp Setpoint	[Default 85]
6	Heating Night Setback Temp Setpoint	[Default 65]
7	Zone Temperature Alarm Range	[Default 4]
8	User-adjust Setpoint	[Default 3]
9	Zone Sensor Bias	[Default 0]
10	DAT High Limit Alarm SP (304A.,355A..)	[Default 0]
11	DAT Low Limit Alarm SP (304A.,355A..)	[Default 0]
12	DAT Alarm Hysteresis (304A.,355A..)	[Default 5]
13	Water Loop Max Alarm SP (304A.,355A..)	[Default 0]
14	Water Loop Min Alarm SP (304A.,355A..)	[Default 0]
15	Water Loop Alarm Hysteresis (304A.,355A..)	[Default 5]
16	Economizer Type	[Default 0] FW655A 1.0
	0 = None, 1 = On/Off, 2= Modulating as first 25% of cooling., 3= Mixed Air, 4= Discharge Air	
17	Spare	[Default 0]
18	Throttle Range (0.1 deg F) (255A.,355A..)	[Default,4.0 deg F]
19	Integral Time (255A..,355A..)	[Default,5*0.5 min = 2.5 min]
20	Econo Temp SP	[Default 65]
21	Econo Low Limit Temp Signed (655A15)	[Default 45]
22	Econo Max Pos SP	[Default 255]
23	Econo Min Pos SP	[Default 52]
24	Econo Close Pos SP	[Default 0]
25	Econo Base Time	[Default 90 s]
26	OAT CLG Lockout Setpoint	[Default 60] FW355A 1.4
27	OAT HTG Lockout Setpoint	[Default 70] FW355A 1.4
28	Economizer Freeze Limit Setpoint Signed (655A15)	[Default 35]
29	Mixed Air Temperature Setpoint	[Default 55] FW655A
	Discharge Air Temp Setpoint	FW655A1.2
30	Economizer-Kp	[Default 25] FW655A
31	Economizer-Ki	[Default 5] FW655A
32	Upper Limit Temperature Setpoint	[Default 85] FW155B
33	Lower Limit Temperature Setpoint	[Default 65] FW155B
34,35	CO2 Ventilation Setpoint	[Default 800] 655A1.2
36	CO2 Ventilation Gain –Ki	[Default 64] 655A1.2
37	Changeover Setpoint	[Default 0] 655A1.2
38	HTG Temp Upper Limit	[Default 73] 655A13
39	CLG Temp Lower Limit	[Default 71] 655A1.3

Table 3, Non-volatile Control Parameters

Entry	Description (304A..,355A..)	
1	Afterhours Time Allowed (304A..,355A..)	[Default 60 m]
2	Economizer Offset Temperature (655A1.2)	[Default 2 deg]
3	Interstage Time (FW304A ,355A)	[Default 5 s]
4	Economizer Offset Time (655A1.2)	[Default 120s]
5	Fan Wait Time (FW304A ,355A)	[Default:20 s]
6	Default Output State (FW655A)	[Default 0]
7	Comp Duty Cycle Time (FW304A ,355A)	[Default 150*4s, 600 s]
8	Comp Min ON Time (FW304A ,355A)	[Default 30*4s, 120 s]
9	Comp Min OFF Time (FW304A ,355A)	[Default 45*4s, 180 s]

10	Out OR Power-up ON Status (FW304A ,355A)	[Default:0]
11	Out OR Power-up State (FW304A ,355A)	[Default 0]
12	Heat Base Time (FW304A ,355A)	[Default 30*4s, 120 s]
13	Heat Min On Time (FW304A ,355A)	[Default:5*4s, 20 s]
14	Heat Min Off Time (FW304A ,355A)	[Default:5*4s, 20 s]
15	Comp Try Max (FW304A ,355A)	[Default 3]
16	Comp Retry Wait (FW304A ,355A)	[Default:120]
17	Comp Fault Delay (FW304A ,355A)	[Default 20]
18	Proof of Fan Delay (FW355A 1.9) (Auxiliary Switch Delay FW304A,)	[Default 10 s]
19	High Fan Delay Time (FW355A)	[Default 30s]
20	High Fan Temp Offset (FW355A)	[Default 5]
21	Occupancy Sensor Threshold" (FW304A ,355A)	[Default 40]
22	Default AO1 State (FW655A)	[Default 0]
23	Default AO2 State (FW655A)	[Default 0]
24	Gas Heat Fan On Delay (355A)	[Default 30s]
25	Gas Heat Fan Off Delay (355A)	[Default 30s]
26	AO1 Minimum Value (655A..)	[Default 0]
27	AO1 Maximum Value (655A..)	[Default 255]
28	Fan On/Off Mask (FW255A ,355A)	[Fixed BO-1, 01h]
29	Heat 1/RV Mask (FW255A ,355A)	[Fixed BO-4, 08h]
30	Heat 2 Mask (FW255A ,355A)	[Default BO-5, 10h]
31	Comp 1 On/Off Mask (FW255A ,355A)	[Fixed BO-2, 02h]
32	Comp 2 On/Off Mask (FW255A ,355A)	[Fixed BO-3, 04h]
33	Lights On/Off Mask	[Default BO-8, 80h]
34	Econo Damper Open Mask	[Default BO-6, 20h]
35	Econo Damper Close Mask	[Default BO-7, 40h]
36	AO2 Minimum Value (655A..)	[Default 0]
37	AO2 Maximum Value (655A..)	[Default 255] 255=10Vdc
38	MSNBL AO2 Assignment (655A..) LSNBL AO1 Assignment (655A..) 0 – None 1 – Cooling Requirement 2 – Heating Requirement 3 - Economizer Cooling Requirement 4… Changeover Heating/Cooling 5.. 15 - None	[Default 0] [Default 0]
39	Auxiliary Delay Time	[Default 120 s]
40	Auxiliary Temp Offset (150E..)	[Default 2 F]
41	Auxiliary Cooling Output Mask (150E.,655a.) Dehumidify Output Mask (655a1.8)	[Default 0,None] [Default 0,None]
42	Auxiliary Hysteresis	[Default 5]
43	Auxiliary Heat Output Mask (151B..151C)	[Default 0,None]
44	Auxiliary 1 Output Mask (155A..) Compressor 3 Output Mask (655A1.5)	[Default 0,None]
45	Auxiliary 2 Output Mask (155A..) Compressor 4 Output Mask (655A1.5)	[Default 0,None]
46	High Fan Output Mask (355A..)	[Default 0,None]
47	Fan Start Delay (655A13)	[Default 0s]
48	RH Setpoint (0..100) (655A18)	[Default 60]
49	RH Hysteresis (655A18)	[Default 5]
50	Lights Off Delay Time (min) (655a2.1)	
51	Occupancy Sensor Delay Time(sec) (655a2.1)	
52	Single Setpoint Deadband (655a2.1)	
53	Spare (655a2.1)	
54	Spare (655a2.1)	
55	Spare (655a2.1)	
56	Spare (655a2.1)	

57	Spare (655a2.1)
58	Spare (655a2.1)

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	[Default,60 min]
7,8	Fan Run Time Total	
9,10	Compressor Run Time Total	
11,12	Compressor Starts Total	

Table 5, Non-volatile Function Tables

Not Used by FW355A

Entry	Description ..	
1	Factory Analog Input Tollerance	[Default 15] (655a0.3)
2	Factory Analog Output Tollerance	[Default 15] (655a0.3)
3	AO1 Calibration [Default 241] (655a1.0)	
4	AO2 Calibration [Default 241] (655a1.0)	

Table 6, Non-volatile Flags

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

Flags should follow FW155A. A Few differences.

> 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	[Default 0]
	1 = Yes, 0 = No	
	bit 0 - State Schedule Disable	(155A..)
	bit 1 - Lights Schedule Disable	(155A..)
	bit 2 - Water Loop Comp Disable	(355A)
	bit 3 - MRDY Intermit Fan Enable	(155A..251A..,255,355)
	bit 4 - RV Normal	(355A..)
	bit 5 - Comp Fault Lockout	(355A..)
	bit 6 - Ignore Global Enable	(155A,255,355..)
	bit 7 - NSB Intermittent Fan Enable	(155A.., 255,355..)
2	Non-volatile flag #2	[Default 1]
	1 = Yes, 0 = No	
	bit 0 - Afterhours Enable	(155A..,255,355..)
	bit 1 - Comp Fault Enable	(355A..)
	bit 2 - EM1, Emergency 1 Override	(155A..255,355..)
	bit 3 - EM2, Emergency 2 Override	(155A..255,355..)
	bit 4 - DAT Comp Disable	(FW355A..)
	bit 5 - Auxiliary Heating Enable	(155A..,255A,355A)
	bit 6 - Auxiliary Cooling Enable	(155A..,255A,355A)
	bit 7 - Intermittent Fan Enable	(355A..)
3	Non-volatile flag #3	[Default 0]
	bit 0 - Lights Reverse Enable	(355A2.0,355B1.1)
	bit 1 - UNO Intermittent Fan Enable	(155A..,255A..,355A..)
	bit 2 - User Adjust Enable	(155A..255,355)
	bit 3 - Shed Fan Enable	(155A..255,355)
	bit 4 - Occupancy Sensor Enable	(155A..255,355)
	bit 5 - Occupancy Sense Close	(155A..255,355)
	bit 6 - Lights Occupied Enable	(155A..255,355)
	bit 7 - OAT Cooling Lockout Enable	(255A.., 355A..)
4	Non-volatile flag #4	[Default 0]
	bit 0 – On-Off Thermostat Enable (Bang Bang)	(655A..)
	bit 1 - OAT Heating Lockout Enable	(255A.., 355A..)
	bit 2 - Occupancy Afterhours Enable	(155A..255,355)
	bit 3 - Lockout Heating	(255,355)
	bit 4 - Lockout Cooling	(255,355)
	bit 5 - Economizer Auto Initialize	(355A..)
	bit 6 – CO2 Ventilation Enable	(655A1.2)
	bit 7 – Heat Fan Delay Enable	(655A1.3)
5	Firmware flag #5	
	bit 0 - High Fan CLG Enable	(355A..)
	bit 1 - High Fan Only CLG Enable	(355A..)
	bit 2 - High Fan HTG Enable	(355A..)
	bit 3 - High Fan Only HTG Enable	(355A..)
	bit 4 - Gas Heat Enable	(355)
	bit 5 - Proof of Fan Enable	(355A 1.9..)
	bit 6 – Half Degree Enable	(155B,655A..)
	bit 7 – Digital Display Enable	(155B,655A..)

6 Firmware flag #6
bit 0 – OAT Override Enable (655A1.8)
bit 1 - Flash Enable (655A)
bit 2 – Cooling Fan Delay Enable (655A1.8)
bit 3 - Dehumidify Output Enable (655A1.8)
bit 4 - Single Setpoint Enable (600A1.3,655a2.0)
bit 5 –Lights Default OFF Enable (655A2.1)
bit 6 - Default State Unoccupied Enable (655A2.1)
bit 7 – Aux Occupied Output Enable (655a2.1)

7 Firmware flag #7 (Spare 655a2.1)
bit 0 – WS-051 Person Enable – 655a2.2
bit 1 – WS-051 Occupied Unoccupied Enable (655a2.6)-
bit 2 –
bit 3 –
bit 4 –
bit 5 –
bit 6 –
bit 7 –

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 Ready hol	16	Morning Ready 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 Ready Tue	36	Morning Ready 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 Ready Thur	56	Morning Ready 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 Ready Sat	76	Morning Ready 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, Input Configuration

A new table is established 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]
	LSNBL	Input 1 Convert	
2	MSNBL	Input 2 Type	[Default 30h]
	LSNBL	Input 2 Convert	
3	MSNBL	Input 3 Type	[Default 00h]
	LSNBL	Input 3 Convert	
4	MSNBL	Input 4 Type	[Default 00h]
	LSNBL	Input 4 Convert	
5	MSNBL	Input 5 Type	[Default 12h]
	LSNBL	Input 5 Convert	
6	MSNBL	Input 6 Type	[Default 12h]
	LSNBL	Input 6 Convert	
7	MSNBL	Input 7 Type	[Default 12h]
	LSNBL	Input 7 Convert	
8	MSNBL	Input 8 Type	[Default 12h]
	LSNBL	Input 8 Convert	
Alternate Conversion Parameters (eAlternateConversions)			
9	Spare		[Default 00h]
10	Spare		[Default 00h]
11	Spare		[Default 00h]
Custom Input Parameters LOBYTE HIBYTE(eCustomParameters)			
12,13	Custom Span IN-5		[Default 4095] (655A1.0)
14,15	Custom Offset IN-5		[Default 0] (655A1.0)
16,17	Custom Span IN-6		[Default 4095] (655A1.0)
18,19	Custom Offset IN-6		[Default 0] (655A1.0)
20,21	Custom Span IN-7		[Default 4095] (655A1.0)
22,23	Custom Offset IN-7		[Default 0] (655A1.0)
24,25	Custom Span IN-8		[Default 4095] (655A1.0)
26,27	Custom Offset IN-8		[Default 0] (655A1.0)

Note: Custom Span and Offset for IN-4 were added in 655A1.2. If custom Span and Offsets were used in earlier versions, they must be corrected when upgrading to 655A1.2

12,13	Custom Span IN-4	[Default 4095] (655A1.2)
14,15	Custom Offset IN-4	[Default 0] (655A1.2)
16,17	Custom Span IN-5	[Default 4095] (655A1.2)
18,19	Custom Offset IN-5	[Default 0] (655A1.2)
20,21	Custom Span IN-6	[Default 4095] (655A1.2)
22,23	Custom Offset IN-6	[Default 0] (655A1.2)
24,25	Custom Span IN-7	[Default 4095] (655A1.2)
26,27	Custom Offset IN-7	[Default 0] (655A1.2)
28,29	Custom Span IN-8	[Default 4095] (655A1.2)
30,31	Custom Offset IN-8	[Default 0](655A1.2)

Table 8, Input Conversions

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. (Not used in FW655A)

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 (cubicfeet/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 =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 - Static Pressure Slope/Offset (Tracker)

Convert Type
0 = 0 to 5 Vdc = -0.1 to + 0.1 "wc Modus
1 = Custom (inputs 5,6,7,8 only)
2 =

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

Convert Type
0 = 0 to 5 Vdc = 0 to 100 % RH
1 = Custom (inputs 4,5,6,7,8)
2 =

Input Type = 6 - CO2

Convert Type
0 = 0 to 5 Vdc = 0 to 2400 ppm
1 = Custom (inputs 4,5,6,7,8)
2 =

Specific Slope(Span/4095) and Offset needed for designated input.

Input Type= 7 - AWM3200 Airflow Sensor

Raw value in units of 25 ft/min. (Not used in FW655A)

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 (cubicfeet/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

MSNBL	Input Type	8, Binary Input
LSNBL	Input Convert	2, Triple Contact

Convert Type (655A1.1)
(128) 0 = Binary Normally Open
(129) 1 = Binary Normally Closed
(130) 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

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 14. (New FW155A..) The values displayed depend on the Input Types and Convert Types in Table 14.

Entry Description

Input Values LO Fraction/ HI Integer

Note These are backwards from ASIC/1-8305 which were LO Integer/HI Fraction
Old Doubles Entry 1..16 are not supported (655A)

1,2 Reserved
3,4 Reserved
5,6 Reserved
7,8 Reserved
9,10 Reserved
11,12 Reserved
13,14 Reserved
15,16 Reserved

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. Leave these locations for conversions if used!

33,34 Primary Airflow Conversion (rPrimaryAirConvert)
35,36 Spare
37,38 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)

Word Values 0.01 deg F or ft/min

47,48 Zone Temp (IN-1)
49,50 Slide Switch (IN-2)
51,52 Variable User Adjust/Interlock (IN-3)
53,54 Spare (IN-4) -
CO2 Level (655A1.2)
55,56 Outdoor Air Temperature (IN-5)
57,58 Discharge Air Temp (IN-6)
59,60 Water Loop Temp (IN-7)
61,62 Mixed Air/Auxiliary Temp (IN-8)

Table 10, RAM Values

Entry	Description
1	ASIC/1 Time, seconds
2	ASIC/1 Time, minutes
3	ASIC/1 Time, hours (0..23)(355A) (15 min increments 304A)
4	ASIC/1 Day
5	Control State Status (304A,355A) (0= N/A 1= unocc, 2=occ, 3=nsb, 4=mwu) (304A,355A) This is not the same as FW255A which has values 0..3 bit 0,1 - 0= unocc; 1=occ; 2=nsb; 3=mwu (155A,255A) bits not specifically defined can be indeterminate state.
6	Control Mode (bits 01; 0=db, 1 = cooling, 2 = heating) (304A,355A) bits not specifically defined can be indeterminate state.
7	Afterhours Time Remaining (304A,355A)
8	zone sensor flags ("flags") (304A,355A) bit 0 - Slide Switch Status - Down, slide switch is down bit 1 - Slide Switch Status - Up, slide switch is up bit 2 - Controller Interlock, interlock is present bit 3 - Holiday Status bits not specifically defined can be indeterminate state.
9	alarm ("flags + 1") (304A,355A) bit 0 - Alarm 1 - Zone Temp HI (too hot) bit 1 - Alarm 1 - Zone Temp LO (too cold) bit 2 - Alarm 2 - Discharge Air Temp (too hot) bit 3 - Alarm 2 - Discharge Air Temp (too cold) bit 4 - Alarm 3 - HI Water Loop Temp (too hot) bit 5 - Alarm 3 - LO Water Loop Temp (too cold) bit 6 - Afterhours Status, bit 7 - Synchronize Status,
10	emergency flags ("flags + 2") (304A,355A) bit 0 - Emergency Status, set emergency 1 bit 1 - Emergency Status, set emergency 2 bit 2 - HP Compressor Enable bit 3 - [rfNEW_TWO_HEAT] bit 4 - Alarm 4 Comp Fault, compressor fault switch is closed bit 5 - Spare (304C.. Alarm 5 Overflow Switch) [rfDAT_LOCKOUT] bit 6 –Occupancy Sensor Delay Status (655a2.1) bit 7 - Non-volatile corruption detected
11	Zone Temperature (rounded) (304A,355A)
12	Spare (355A) Diagnostic-rBitflags15 (655a2.1)
13	Compressor Duty Cycle Timer (304A,355A)
14	Output Status, (304A,355A) bit 0 - Fan Status bit 1 - RV Status 0 = CLG,1=HTG Based on BO-4 & RV Normal bit 2 - Compressor 1 bit 3 - Lights
15	Comp 1 On Time (304A,355A)
16	Interstage Timer (304A,355A)
17	Comp 1 Min ON/OFF Timer (304A,355A)
18	Comp 2 On Timer (355A)
19	Comp 2 Min ON/OFF Timer (355A)
20	Discharge Air Temp (255A,355A)
21	Water Loop Temp (255A ,355A)
22	Auxiliary Temp (IN-8) (255A,355A)

23 Active CLG Temp SP (155A.,251A..,255A..,355A)
24 Active HTG Temp SP (155A.,251A..,255A..,355A)

25 Controller Status (rPollStatus)[Also T16,3]
bit 0,1 - Mode 0 = DB, 1= CLG, 2 = HTG
bit 2,3 - State 0 = UNOCC, 1 = OCC, 2 = NSB, 3 = MRDY
bit 4 - Reserved = 0 (Acknowledged)
bit 5 - Reserved = 0 (Communication Error Status)
bit 6 - In After-hours
bit 7 – Synch Required

26 Emergency Flags (rBitFlags+2)
bit 0 - Emergency 1 Status (304C..)
bit 1 - Emergency 2 Status (304C..)
bit 2 - HP Compressor Enable (304C..)
bit 3 - (304C..) [rfNEW_TWO_HEAT]
bit 4 - Alarm 4 LO Comp Fault (304C..) [rfCOMP_FAULT]
bit 5 - Spare (304C.. Alarm 5 Overflow Switch) [rfDAT_LOCKOUT]
bit 6 –Occupancy Sensor Delay Status (655a2.1)
bit 7 - Non-volatile Status (355A) [rfCOMP_RETRY]

27 Alarm #1 (rPollStatus+1)
bits 0- Alarm 1 HI Zone Temp (304C..)
bits 1 - Alarm 1 LO Zone Temp (304C..)
bits 2 - Alarm 2 HI DA Temp (304C..)
bits 3 - Alarm 2 LO DA Temp (304C..)
bits 4 - Alarm 3 HI Water Loop (304C..)
bits 5 - Alarm 3 LO Water Loop (304C..)
bit 6 - Afterhours Status (304C..)
bit 7 - Synchronize Status (304C..)

28 Alarm #2
Bit0 - Shed Compressor Status (304G)
Bit1 - Shed Fan Status (304G)
Bit2 - Comp Lockout Statu (304G)
Bit3 - Proof of Fan Status (FW355A 1.9)
(304C Alarm 6 Auxiliary Switch)
Bit4 - State Overridden (355A)
Bit5 - Occupancy Sensor Status (355A)
Bit6 - RV Status (355A)
0=Cooling,1=Heating
Bit7 - Non-volatile Written Status 304A)

29 Heat 1 On Timer (355A)
30 Heat 1 Min On/Off Timer " (355A)
31 Comp Fault Counter (304F..)
32 Comp Try Counter (304F..)
33 Comp Retry Timer (304F..)
34 Comp Fault Timer (304F..)
35 Mode OR Status (355A)
0 = None, 10=DB, 11=CLG, 12= HTG

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.

36 Damper Status
MSNBL Spare
LSNBL 3 Position Economizer Status

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 FunctionStatus On,Off,OR (255A..,355A..)
BITS_0,1 Output Status- Fan
BITS_2,3 Output Status- Heat 1
BITS_4,5 Output Status- Heat 2
BITS_6,7 Output Status- Comp 1(355A..)

38 FunctionStatus On,Off OR (255A..,355A..)
BITS_0,1 Output Status- Comp 2 (355A..)
BITS_2,3 Output Status- Lights
BITS_4,5 Output Status- Auxiliary CLG
Output Status – Dehumidify(655a1.8)
BITS_6,7 Output Status- Auxiliary HTG

39 FunctionStatus On,Off,OR (255A..,355A..)
BITS_0,1 Output Status- Auxiliary 1
Output Status- Comp 3 (655A15)
BITS_2,3 Output Status- Auxiliary 2
Output Status- Comp 4 (655A15)
BITS_4,5 Output Status- Hi Fan(355A..)
BITS_6,7 Output Status- Economizer On/Off (355A..)

40 Output OR State (255A..,355A..)
0 = Not Overridden, 1 = Overridden.
(bitwise) bit0 = Output 1,..., bit7 = Output 8

41 Output OR On Status (255A..,355A..)
0 = Overridden Off, 1 = Overridden On.
(bitwise) bit0 = Output 1,..., bit7 = Output 8

Input Status

42 Input O/R Status (255A..,355A..)
(bitwise) bit0 = Input 1,..., bit7 = Input 8

43 Input Fault Status (rFaultStatus) (255A..,355A..)
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

44 Input Fault Status(rFaultStatus+1) (255A..,355A..)
bits0,1 - Input 5 Fault
bits2,3 - Input 6 Fault
bits4,5 - Input 7 Fault
bits6,7 - Input 8 Fault

45 Output Status-Raw (255A..,355A..)
(bitwise) bit0 = Output 1,..., bit7 = Output 8

46 Cooling Requirement
Calculation (%) Product of PI algorithm. (355A..)

47 Heating Requirement
Calculation (%) Product of PI algorithm. (355A..)

48 LSNBL Control State Scheduled (rTodLights_State) (355A..)
0=UNOCC, 1=OCC, 2=NSB,3=MRDY
MSNBL Lights Scheduled Status
1=Lights Off, 2=Lights On, 3=Lights Off, 4=Lights On,

49 Light Blink Timer (255A..,355A..)

50 Trend Timer (255A..,355A..)

51 Auxiliary CLG/HTG Timer (255A..,355A..)

Active Demand Limit Parameters

52 Active Demand Level (355A..)

53 Active Demand Group (355A..)

54	User Adjust Status	(355A..)
55	Heat Base Timer	(355A..)
56	Heat 2 On Timer	(355A..)
57	Heat 2 Min On/Off Timer	(355A..)
58	Economizer Position SP	(355A..)
59	Economizer Position	(355A..)
60	High Fan Timer	(355A..)
61	Gas Heat Delay Timer	(355A..)
62	Fan Wait Timer /Fan Delay Timer	
63	Trend Pointer	(355A1.4)
64	Fan Run Time Today	(355A1.4)
65,66	Compressor Run Time Today	(355A1.4)
67	Compressor Starts This Hour	(355A1.4)
68	Compressor Starts Last Hour	(355A1.4)
69	Compressor Starts Today	(355A1.4)

Table 11, PROM Data (Read Only)

Entry	Description
1..10	Product Identification
1	Product Number (ASCII) 8
2	Product Number (ASCII) 6
3	Product Number (ASCII) 5
4	Product Number (ASCII) 5
5	Version Number (ASCII) n
6	Version number (ASCII) m
7	Firmware revision (ASCII) 6
8	Firmware revision (ASCII) 5
9	Firmware revision (ASCII) 5
10	Firmware revision (ASCII) a
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 upper half of Non-volatile using MT= 07h Read Multiple bytes from upper NON-VOLATILE, or reading Table 254 Upper NON-VOLATILE,. Trend table 1 starts at MT= 07h, byte 0, through byte 95, or Table 254, Entry 1 through 96. Trend table 2 starts at MT= 07h, byte 96, through byte 191, or Table 254, Entry 97 through 192.

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 16]
8	Trend 1 Entry Number	[Default 4,Zone Temperature]
9	Trend 2 Table Number	[Default 16]
10	Trend 2 Entry Number	[Default 8,Discharge Air Temp]

Trend 1 Choices:

Zone Temperature	(FW355:T16,4) Default
Discharge Air Temp	(FW355:T16,8).
Water Loop Temp	(FW355:T16,9).
Outdoor Air Temp	(FW355:T16,10).
Other	

Trend 2 Choices:

Discharge Air Temp	(FW355:T16,8).Default
Water Loop Temp	(FW355:T16,9).
Outdoor Air Temp	(FW355:T16,10).
Zone Temperature	(FW355:T16,4)
Other	

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

Entry	Description
1	Alarm Status 1 bit 0 - Alarm 1 Hi, Zone Temperature bit 1 - Alarm 1 LO, Zone Temperature bit 2 - Alarm 2 Hi, Discharge Air Temp bit 3 - Alarm 2 LO, Discharge Air Temp bit 4 - Alarm 3 Hi, Water Loop Temp bit 5 - Alarm 3 LO, Water Loop Temp bit 6 - Alarm 4 Hi, Compressor Lockout bit 7 - Alarm 4 LO, Compressor Fault
2	Alarm Status 2 bit 0 - Alarm 5 Hi, Fan Verify Alarm (ON 655A1.0, OFF 655A1.5) bit 1 - Alarm 5 LO,, spare bit 2 - Alarm 6 Hi, Changeover Alarm (655A1.2) bit 3 - Alarm 6 LO bit 4 - Alarm 7 Hi bit 5 - Alarm 7 LO bit 6 - Alarm 8 Hi (ASIC/2 Only) bit 7 - Alarm 8 LO (ASIC/2 Only)
3	Controller Status (rPollStatus) bit 0,1 - Mode 0 = DB, 1= CLG, 2 = HTG bit 2,3 - State 0 = UNOCC, 1 = OCC, 2 = NSB, 3 = MRDY bit 4 - Reserved = 0 (Acknowledged) bit 5 - Reserved = 0 (Communication Error Status) bit 6 - In After-hours bit 7 –Synch Required
4	Zone Temperature
5	Active CLG Temp SP
6	Active CLG Temp SP
7	Output Status
8	Discharge Air Temperature IN-6 (T10,E20)
9	Water Loop Temperature IN-7 (T10,E21)
10	Outdoor Air Temperature IN-5 (T10,E09)
11	Mixed Air/Aux Temperature IN-8(T10,E22) (655A1.2)

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. 655A1.0: 24 Entries, 28 Entries (655a1.5); 32 Entries (655a1.8); 40 Entries (655a2.0);

Entry	Description
1	Economizer Cooling Requirement (xEconoCoolReq)
2	Analog Output 1 Value (xAO1Value)
3	Analog Output 2 Value (xAO2Value)
4	Analog Output Override Status bit 0 – AO1 Overidden bit 1 – AO2 Overidden
5,6	Mixed/Discharge Air Temp – previous
7	AO1 Unscaled
8	AO2 Unscaled
9	FactoryTest XP Out bit 0 – XP05 Output, …, bit 7 XP12 Output,
10	Factory Test XP IN bit 0 – XP01, bit 1 – XP02, bit 2.7 - reserved
11	Factory Test State (xFactTestState)
12	Fan Start Timer FW655A1.3
13	Test Variable 0 (xScratch)
14	Test Variable 1 (xScratch+1)
15,16	OAT Control (655a1.8) Test Variable 3 (xScratch+3) (655a0.2)
17	Relay Faults (655a0.3) (xFactRelaysFailed)
18	Input Faults (655a0.3) (xFactInputFailed)
19	Other Faults (655a0.3) (xFactoryTestFailed)
20	Economizer Offset Timer (655a1.2)
21	CO2 Ventilation Minimum (655a1.2)
22	Changeover Flags (xChangeoverFlags) Bits01Changeover Mode (655a1.2) 0, Auto; 1 Force Changeover ON; 2, Force Changeover Off Bit 2 Changeover Status (655a1.2)

	0, Off; 1, On	
	Bit 3 Spare	
	Bit 4 Spare	
	Bit 5 Spare	
	Bit 6 Spare	
	Bit 7 Spare	
23	Comp 3 On Timer	(655A15)
24	Comp 3 Min ON/OFF Timer	(555A15
25	Comp 4 On Timer	(655A15)
26	Comp 4 Min ON/OFF Timer	(655A15)
27	xFlashWriteCycles (655a1.5)	
28	xSaveConfigTimer (655a1.5)	
29,30	RH Value (xDehumidInputDbl)	(655a1.8)
31	Lights Off Delay Timer (min) (655a2.1)	
32	Occupancy Sensor Delay Timer (655a2.1)	
33	xScratch (655a2.0)	
34	(655a2.0)	
35	(655a2.0)	
36	(655a2.0)	
37	(655a2.0)	
38	(655a2.0)	
39	(655a2.0)	
40	(655a2.0)	

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ASIC/1-8655 Commands

ASIC/1-8655 State Commands

0x10 Set/Reset Operating State

This command forces the controller into an operating state.
(150A...,154D...,155A,251A..,255A..) 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!!**
Removed (655a1.8)
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 (655A1.2) -
09 (09h) - Set Changeover OFF (655A1.2)
10 (0Ah) - Reset Changeover to Normal (655A1.2)

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

A1_AsIfOushedAction

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

A1_ClearCompLockout

14 (0Eh) - Clear Compressor Lockout Alarm (New FW355A..)

Soft Interlock

15 (0Fh) – Set Soft Interlock (655a1.8)
Sets Interlock. Clears automatically after 30 seconds.

A1_ControlModeAction

16 (10h) - Set Deadband Control Mode (New FW355A..)
17 (11h) - Set Cooling Control Mode(New FW355A..)
18 (12h) - Set Heating Control Mode(New FW355A..)
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..) 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
4 - Reserved (FW251A ..)
5 - Reserved (FW251A ..)
6 - Reserved (FW251A ..)
7 - Reserved (FW251A ..)
8 - Reserved (FW251A ..)
9- Reserved (FW251A ..)

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. (New FW155A.., New FW255A..)

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/1-8655 Override Outputs

0x20 Physical Output Override

CAUTION: The Compressor and Heat stages are not Interlocked to the Fan Overrides. These are intended for temporary check-out use ONLY. Use Overrides with Caution.

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

CAUTION: The Compressor and Heat stages are not Interlocked to the Fan Overrides. These are intended for temporary check-out use ONLY. Use Overrides with Caution.

ASI DDE Server supports this message

_FunctionOR=M1 ->MT=21h, M1

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.

ASI LinkOPC Server uses PA_FunctionORAction to send this command

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 1/RV OFF
2 (02h) - Force Heat 1/RV ON
3 (03h) - Restore Heat 1/RV
4 (04h) - Force Low FAN OFF
5 (05h) - Force Low FAN ON
6 (06h) - Restore Low FAN
7 (07h) - Force Lights OFF
8 (08h) - Force Lights ON
9 (09h) - Restore Lights
10 (0Ah) - Reserved
11 (0Bh) - Reserved
12 (0Ch) - Force Comp1 OFF (355A....)
13 (0Dh) - Force Comp1 ON (355A....)
14 (0Eh - Restore Comp1 (355A....)

15 (0Fh) - Reserved
16 (10h) - Reserved
17 (11h) Force Comp2 OFF (355A....)
18 (12h) -Force Comp2 ON (355A....)
19 (13h) - Restore Comp2 (355A....)

20 (14h) - Force Auxiliary CLG OFF (New FW155A.., 255A..)
21 (15h) - Force Auxiliary CLG ON (New FW155A.., 255A..)
22 (16h) - Restore Auxiliary CLG (FW155A.., 255A..)

23(17h) - Force Auxiliary HTG OFF (New FW155A.., 255A..)
24(18h) - Force Auxiliary HTG ON (New FW155A.., 255A..)
25 (19h) - Restore Auxiliary HTG (New FW155A.., 255A..)

26 (1Ah) - Spare (FW355A..)
27 (1Bh) - Spare (FW355A..)
28 (1Ch) - Spare (FW355A..)
29 (1Dh) - Force Economizer Stop (FW655A..)

30 (1Eh) - Force Auxiliary 1 OFF (FW155A..,255A..,355A....)
Compressor 3 (655A1.5)
31 (1Fh) - Force Auxiliary 1 ON (FW155A..,255A..,355A....)
Compressor 3 (655A1.5)
32 (20h) - Restore Auxiliary 1 (FW155A..,255A..,355A....)
Compressor 3 (655A1.5)
33 (21h) - Force Auxiliary 2 OFF (FW155A..,255A..,355A....)
Compressor 4 (655A1.5)
34 (22h) - Force Auxiliary 2 ON (FW155A..,255A..,355A....)
Compressor 4 (655A1.5)
35 (23h) - Restore Auxiliary 2 (FW155A..,255A..,355A....)
Compressor 4 (655A1.5)
36 (24h) - Force High Fan (Auxiliary 3) OFF (355A....)
37 (25h) - Force High Fan (Auxiliary 3) ON
(355A....)
38 (26h) - Restore High Fan (Auxiliary 3) (355A....)

39 (27h) - Force Economizer OFF (New 355A....)
40 (28h) - Force Economizer ON (New 355A....)
41 (29h)- -Restore Economizer On/Off (New355A....)

39 (27h)- Spare (355A....)
40 (28h)- Spare (355A....)
41 (29h)- Spare (355A....)

42-(2Ah)- Force Economizer Damper CLOSED (655A)
43 (2Bh)- Force Economizer Damper OPEN (655A)
44 (2Ch)- Force Economizer Damper MIN (655A)
45 (2Dh)- Force Economizer Damper MAX (655A)
46 (2Eh)- Restore Economizer Damper (655A)

47 (2Fh) - Force Heat 2 OFF (355A....)
48 (30h) - Force Heat 2 ON (355A....)
49 (31h) - Restore Heat 2 (355A....)

Response: ACK

0x27, Override Analog Output Value

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

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

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 Spare
05 - Force input 5 Table 9, Entry 55,55 Outdoor Air Temperature
06 - Force input 6 Table 9, Entry 57,58 Discharge Air Temp
07 - Force input 7 Table 9, Entry 59,60 Water Loop Temp
08 - Force input 8 Table 9, Entry 61,62 Auxiliary Temperature

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

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

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.

7Bh Sensor Calibration

ASIC/1-8655 (FW655a1.0..)

Factory Test Commands MT=0x7B Calibrate

M1= 128 0x80 Calibrate Low AI
129 0x81 Calibrate HI AI
130 0x82 - NA (was Calibrate AO)
131 0x83 Factory Test – complete
132 0x84 Setup AI Test
133 0x85 Do AI Test
134 0x86 Setup A0 Test
135 0x87 Do AO Test

ASIC/1-8655 Glossary

Introduction

The glossary contains, in alphabetical order, brief definitions of all of the control parameters and setpoints used by the ASIC/1-8655 controllers.

Parameters are referred to in the glossary by their full proper names. On the ASI Expert software and ASI Setup screens. The Tag name used by ASI Expert and ASI LinkOPC is also included.

With FW655a Table 3 has been increased to 58 entries. It is necessary to brain dump the controller after upgrading the firmware, and then reloading your application.

Parameters and Setpoints ASIC/1-8655

The table number, T, and entry number, E, for a given parameter may be determined by consulting the Tables chapter in this ASIC/1-8655 Engineering Guide. It is indicated at the end of the description as (T,E), (T,E,WORD), (T,E,bit0), etc.

Active Control Mode

Shows present mode of the controller. PA_Active Control Mode (T10,6 bits01). See also Control Mode.

Active Cooling Temperature Setpoint

The current cooling temperature setpoint saved in RAM PA_ActiveCLGTempSP [deg F/C] , PA_ActiveCLGTempSP-half [0.5 deg F/C]. (T10,23)

Active Demand Group

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

Active Demand Level

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

Active Heating Temperature Setpoint

The current heating temperature setpoint saved in RAM. PA_ActiveHTGTempSP [deg F/C] , PA_ActiveHTGTempSP-half [0.5 deg F/C] . (T10,24)

Afterhours Date Stamp

Holds a month, date and hour which the user should set to the current date and hour when he resets Afterhours Total Time to zero. [XX/XX XX am/PM]. User-changeable.A1_AfterhourDate(T4,1,Word) , A1_AfterhourDate-hour (T4,3)

Afterhours Enable

If set to [Yes] the push-button on input 2 on the wall sensor activates the Afterhours 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 [Yes, No Default No]. User-changeable. A1_AfterhourEnable (T6,2,bit0)

Afterhours Request

Tells whether the controller is currently operating in Afterhours Override mode. [Yes or No]. Not user-changeable. See also Poll Status, In Afterhours A1_AfterhourRequest (T16,3, bit6).

Afterhours Reset

Action to clear Afterhours Total Time and update Afterhours Date. A1_AfterhoursReset

Afterhours Status

Tells whether the Afterhours button has been pressed and Afterhours time allowed is non-zero. [Yes or No]. A1_AfterhourStatus (T16,3,bit1).

Afterhours Time Allowed

This is an non-volatile memory 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 Afterhours 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]. PA_AfterhourTimeAllowed .(T3,11) Also (T4,6)

Afterhours Time Remaining

The number of minutes remaining before Afterhours Override mode will cease to operate and the control will revert to its original state. [0 to 255 mins]. Not user-changeable. A1_AfterhourTimeRemain (T10,7)

Afterhours Total Time

The accumulated time the controller has spent in Afterhours Override mode. The user must set this counter to 0 and appropriately change the Afterhours Date Stamp if he or she wished to begin a new tracking of the time spent in Afterhours Override mode. [0 to 65535 mins, Default 0 mins]. A1_AfterhourTotalTime (T4,4,WORD)

Alarm 1, Zone Temperature Alarm

This alarm is set in all control states, bit 0 = 1 zone temperature too hot; bit 1 = 1 zone temperature too cold. A1_Alarm1ZoneTemp(T10,9,bits0,1 & A1_Alarm1ZoneTemp (T16,1, bits0,1) A1_Alr1ZoneTempOPC (returns –1,0,+1)

Alarm 2, Discharge Air Temperature Alarm

If the discharge air temperature raises above the DAT High Limit Setpoint, a high DAT high limit alarm is set. If the setpoint is 0, this alarm is ignored. If the discharge air temperature falls below the **DAT Low Limit Setpoint** .a DAT Low Limit alarm is set. Once a discharge air alarm is set, the temperature must recover by the **DAT Alarm Hysteresis** before the alarm is cleared. . bit 2 = 1 too hot; bit 3 = 1 too cold. PA_Alarm2DischargeAir (T16,1, bits2,3)

Alarm 3, Water Loop Temperature

If the water loop temperature raises above the **Water Loop Max Alarm Setpoint** this point a high water loop alarm is set. If the setpoint is 0, this alarm is ignored. If the water loop temperature falls below **Water Loop Min Alarm Setpoint** , a low water loop alarm is set. . Once a water loop alarm is set, the temperature must recover by the **Water Loop Alarm Hysteresis** before the alarm is cleared. bit 4 = 1 Hi ; ,bit 5 = 1, PA_Alarm3WaterLoop (T16,1,bits 4,5) PA_Alr3WaterLoopOPC returns (-1,0,+1)

Alarm 4 HI, Compressor Lockout

If Fault Compressor Lockout is set, the compressor will turn off on Compressor Fault. It will wait for a Compressor Retry Wait time and then try again. If another Compressor Fault Alarm occurs before the end of the minimum ON time, another attempt is made to Start the compressor, as described above, until the maximum allowed tries has been exceeded. If Fault Compressor Lockout is Enabled, when the maximum allowed tries

[Default, 3] has been reached, then a Compressor Lockout Alarm is set and no further attempt is made to start the compressor. The Compressor Lockout Alarm is cleared by only a new MT=10, M1=14 message, or resetting power to the unit. PA_Alarm4HICompLockout (T16,1,bit 6)

Alarm 4 LO, Compressor Fault

When the compressor 1 or 2 is ON and when Compressor Fault Enable, is yes, the status of the Compressor Fault contacts across input 6 are monitored. If a Low Input 6 Fault is detected for a Compressor Fault Delay [Default 20 s], then the Alarm 4, LO Compressor Fault is set. PA_Alarm4LOCompFault (T16,1,bit 7)

Alarm 5 - Fan Verify Alarm

When the fan is ON, if Fan Proof Status does not go "Yes" within Fan Proof Delay, then the Fan Verify Alarm is set.(655A1.0)When the fan is OFF, if Fan Proof Status does not go "No" within Fan Proof Delay, then the Fan Verify Alarm is set. (655A1.5) The Fan Verify Alarm is for information only. No actions result. PA_Alarm5FanProof (T16,2,bit0)

Analog Output Assignment

Identifies the value used to control the analog output: 0 - None Not assigned. 1 - PA_CLGRequirement ; 2 - PA_HTGRequirement ; 3 - PA_EconoCoolReq , 4- Changeover HTG/CLG (655A1.2) PA_AO1Assign (T3,38,LSN), PA_AO2Assign (T3,38,MSN)

Analog Output Calibrate

Calibratioin factor for 10 Vdc Analog Outputs. May be adjusted if Analog output reads high or low. A1_AO1Calibrate (T5,3); A1_AO2Calibrate (T5,4). (655A0.4)

Analog Output Max Output

The voltage 0..255 = 0..10 Vdc when the control input is 100% (255) FW655A PA_AO1MaxVolts(T3,26) , PA_AO2MaxVolts(T3,27) .

Analog Output Min Output

The voltage 0..255 = 0..10 Vdc when the control input is 0% (0) FW655A PA_AO1MinVolts (T3, 36), PA_AO2MinVolts(T3,37) .

Analog Output Value

The actual output value 0..255 = 0..10 Vdc FW655A PA_AO1OutputValue (18,2), PA_AO1OutputValue (18,3)

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 changedA1_ASIC1Time-day (NA, Mon, …, Sun) A1_ASIC1Time-day0 (0..7) .(T10,4,LSNBL)

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]. .(T10,1,3 BYTES) A1_ASIC1Time

Auxiliary 1,2 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.

A1_Auxiliary1OutputMask (T3,44,BYTE)
A1_Auxiliary2OutputMask (T3,45,BYTE)

Auxiliary Cooling Enable

Enables Auxiliary Cooling Feature which will bring on an additional output if the Cooling Requirement is equal to 100%(255) and the Zone Temperature is greater than the Active Cooling Setpoint by a value greater than the Auxiliary Cooling Temperature Offset for an Auxiliary Cooling Wait Time . A1_AuxiliaryCLGEnable (T6,2,bit 6)

Auxiliary Cooling Output Mask

Assigns output mask if Auxiliary Cooling has been enabled. PA_AuxCLGOutputMask (T3,41)

Auxiliary Heating Enable

Enables Output on Auxiliary Heating Mask whenever the controller is in Heating Mode. Is off in deadband and cooling. A1_AuxiliaryHTGEnable . (T6,2,bit5).

Auxiliary Heating Output Mask

It indicates the physical output assigned to Auxiliary Heating Output (FW155,T3,43)

Auxiliary Hysteresis

The amount that the heating or cooling requirement must fall before the auxiliary heating or cooling is turned off. [Default 5/255] PA_AuxHysteresis (T3,42)

Auxiliary Occupied Output Mask

If Aux Heating is not used, Aux Heating Enable is No, we can use that output for Auxiliary Occupied Output. If Aux iliary Occupied Output Enable is yes, then when the Control Mode is Occupied ,then Aux Occupied output is ON. If Control Mode is Not Occupied,then Aux Occupied output is OFF. T3 E43 (655A2.1)

Auxiliary Occupied Output Enable

Auxiliary Occupied Output can be enabled, if Aux Heating is not used. PA_AuxOCCOutputEnable ,T6 E6 bit 7 (655A2.1)

Auxiliary Occupied Output Status

The Auxiliary Occupied Output Status can be displayed. The Aux Heating Override message, will override the Aux Occupied Output. PA_OutputStatus-AuxOCC T10 E38 bits 67 (655A2.1)

Auxiliary Temp (IN-4) - word

Optional Auxiliary Temperature measured on Input #4, smoothed and converted using Input Convert Type and saved in RAM. A1_AuxTempIN-04-word (T9,53,WORD 0.01F)

Auxiliary Temp (IN-8) – byte

Optional Auxiliary Temperature measured on Input #8 and rounded to single byte value and saved in RAM. PA_AuxTempIN-08-byte (T10,22,BYTE)

Auxiliary Temp (IN-8) - word

Optional Auxiliary Temperature measured on Input #8, smoothed and converted using Input Convert Type and saved in RAM. PA_AuxTempIN-08-word (T9,61,WORD 0.01F)

Auxiliary 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] PA_AuxTempOffset (T3,40)

Auxiliary Wait Time

The length of time that Auxiliary Temp Offset exists before auxiliary cooling is brought on. [Default 120 s] PA_AuxWaitTime (T3,39,BYTE)

Auxiliary Wait Timer

The RAM length of time that Auxiliary Temp Offset exists before auxiliary cooling is brought on. PA_AuxWaitTimer (T10,51,BYTE)

Bang Bang Enable

See On-Off Thermostat Enable . FW655A (T6,E4 bit0)

able is true, then the temperature control algorithm then an on off thermostat action is used to determine the Cooling or Heating Requirement PA_BangBangEnable

Baud Rate

The communication speed. 192 = 19,200 baud, 96 = 9600 baud, 12 = 1200 baud. If any other value then baud rate is 9600 baud. New baud rate takes effect immediately. [Default 9600] A1_BaudRate (T1,3)

Changeover Alarm

If Analog output Changeover HTG/CLG is used, a Changeover alarm is set when an analog output has been assigned to Changeover, and the Changeover Status conflicts with the Control Mode. There is no action taken by the Changeover Alarm. Table 16, Entry 2 bit 2 - Alarm 6 Hi, Changeover Alarm (655A1.2)

Changeover Mode

Indicates if changeover is Auto or forced via communication message.r PA_ChangeoverMode, 0, AutoChangeover; 1 Changeover ON; 2, Changeover Off Table 18,Entry 22,BITS01 (655A1.2)

Changeover Setpoint

Used by Auto Changeover to compare with Water Loop Temperature (IN-7) to decide whether the Changeover Analog Output is Heating or Cooling. PA_ChangeoverSP {Default 0] (T2,37) 655A1.2

Changeover Status

If Changeover Status is Yes, then the Changeover Analog Output is Heating. If Changeover Status is No, then the Changeover Analog Output is Cooling. PA_ChangeoverStatus; 0, No; 1 Yes T18,Entry 22,BIT2 (655A1.2)

CLG Temperature Upper Limit

Upper Limit of user adjust in the Digital Display Wall Sensor in the Heating Control Mode.. See Upper Limit Temperature Setpoint

CO2 Level

The CO2 level 0-2000 ppm as measured on a sensor on Input 4. A custom Span and Offset has been added for Input 4. T9,E53,54, PA_CO2LevelIN-4 WORD (FW655A1.2)

CO2 Ventilation Enable

If CO2 Ventilation Enable is yes, then a Ventilation Minimum Position is calculated based on the CO2 level 0-2000 ppm as measured on a sensor on Input 4. compared to a CO2 Setpoint. T6,E4 bit 6 (FW655A1.2) [Default No]

CO2 Ventilation Gain-Ki

A Integral calculation determines the Ventilation Minimum Position. between Economizer Closed Position, and Economizer Maximum Position. The Ventilation Minimum Position is calculated using a direct-acting Integral algorithm which compares the CO2 Level with the CO2 Ventilation Setpoint, every 30 seconds. If the measured CO2 Level is greater than the CO2 Setpoint, then the Ventilation Minimum Position increases. T2,E36 PA_CO2VentGain-Ki , [Default 64] (FW655A1.2)

CO2 Ventilation Maximum Position

If CO2 Ventilation Enable is yes, then a CO2Ventilation Minimum Position is calculated based on the CO2 level 0-2000 ppm as measured on a sensor on Input 4. compared to a CO2 Setpoint. The Ventilation minimum position goes from zero to CO2 Ventilation Maximum Position. T3,E53 0..255 = 0..100% (655a2.1)

CO2 Ventilation Minimum

When the fan is on, if CO2 Ventilation Enable is yes, then the Economizer Cooling Requirement is compared with the Ventilation Minimum Position, and the larger value is used. T18,E21 (655A1.2)

CO2 Ventilation Setpoint

The Ventilation Minimum Position is calculated using a direct-acting Integral algorithm which compares the CO2 Level with the CO2 Ventilation Setpoint, every 30 seconds. T2,E34,35 PA_CO2VentSetpoint [Default 800] (FW655A1.2)

Compressor 1 Min On/Off Timer

Times the minimum on and off time for Compressor 1. PA_Comp1MinON-OFFTimer (T10,17,Byte)

Compressor Duty Cycle Time

Time base for duty cycle control of heat pump in 4 s increments [0-1024 s]. [Default: 600 s] PA_CompDutyCycleTime (T3,7)

Compressor Duty Cycle Timer

Times the compressor duty cycle. PA_CompDutyCycleTimer (T10,13,Byte)

Compressor Fault Counter

If the Compressor Fault Alarm has been enabled, and the Compressor Fault contacts are closed for a Compressor Fault Delay [Default, 20 s], then the Compressor Fault Alarm is set and the Compressor Fault Counter is incremented. The Compressor Fault Counter is cleared at the beginning of each day. Multiple tries are allowed before the compressor is locked out. If the compressor is locked out, then a Compressor Lockout Alarm is set which must be cleared using communications. If the Compressor Fault Alarm has been enabled, and the Compressor Fault contacts are closed for a Compressor Fault Delay [Default, 20 s], then the Compressor Fault Alarm is set and the Compressor Fault Counter is incremented. The Compressor Fault Counter is cleared at the beginning of each day. PA_CompFaultCounter (T10,31)

Compressor Fault Delay

If the Compressor Fault contacts are closed for a Compressor Fault Delay [Default, 20 s], then the Compressor Fault Alarm is set. The Compressor Fault Alarm is cleared when the Compressor Fault contacts are open for a Compressor Fault Delay. PA_CompFaultDelay (T3,17)

Compressor Fault Enable

[Yes, No] If the Compressor Fault Alarm has been enabled, and the Compressor Fault contacts on input #6 are closed for a Compressor Fault Delay [Default 20 s], then the Compressor Fault Alarm is set and the Compressor Fault Counter is incremented. The Compressor Fault Alarm takes precedence over the Discharge Air Temperature HI/LO Alarm. The Compressor Fault Counter is cleared at the beginning of each day. PA_CompFaultEnable (T6,2,bit1)

Compressor Fault Lockout

If Compressor Fault Lockout is set, and the Compressor Fault Alarm is set, the controller turns OFF compressor. It then retries until Compressor Try Max has been reached. . PA_CompFaultLockout (T6,1,bit5)

Compressor Fault Timer

If the Compressor Fault Alarm has been enabled, and the Compressor Fault contacts are closed for a Compressor Fault Delay [Default, 20 s], then the Compressor Fault Alarm is set and the Compressor Fault Counter is incremented. PA_CompFaultTimer (T10,34)

Compressor Minimum Off Time

Compressor Minimum Off Time. Minimum compressor off time in 4 s increments [0-1024 s]. PA_CompMinOFFTime (T3,9)

Compressor Minimum On Time

Compressor Minimum On Time. Minimum compressor on time in 4 s increments [0-1024 s]. PA_CompMinONTime (T3,8.)

Compressor On Timer

Calculates the amount of time compressor stage 1or 2 should be on during the current compressor duty cycle. PA_Comp1OnTimer (T10,15,Byte), PA_Comp2OnTimer (T10,18,Byte)

Compressor On/Off Mask

The output mask for Comp 1 On/Off output. Always BO-2 .
PA_Comp1On-OffMask (T3,31)
The output mask assignment for Comp 2 On/Off output. Always BO-2
PA_Comp2On-OffMask (T3,32)

Compressor Retry Timer

The controller waits an adjustable Compressor Retry Wait [Default, 120 s] before attempting to restart the compressor. No further action on the compressor output is taken until the Compressor Retry Wait times out. When the Retry Wait times out, if the compressor output is still requested, and if the Compressor Fault Alarm has cleared, then the Compressor Try Counter is incremented. If the Try Counter is less than or equal to the maximum allowed tries, the compressor is restarted. PA_CompRetryTimer (T10,32)

Compressor Retry Wait

The controller waits an adjustable Compressor Retry Wait [Default, 120 s] before attempting to restart the compressor PA_CompRetryWait (3,16)

Compressor Run Time Today

Time for Compressor 1 Today in 1/2 minute increments. PA_CompRunTimeToday (T10,65,WORDU)

Compressor Run Time Total

Accumulated Compressor 1 Run Time in hours. Accumulates from Compressor Run Time Today at midnight. PA_CompRunTimeTotal (T4,9,WORDU)

Compressor Starts Last Hour

Compressor 1 Starts in previous hour . updates from Compressor Starts This Hour at beginning of hour. PA_CompStartsLastHour (T10,68,BYTE)

Compressor Starts This Hour

Compressor 1 Starts in current hour . PA_CompStartsThisHour (T10,67,BYTE)

Compressor Starts Today

Compressor 1 Starts Today . PA_CompStartsToday (T10,69,BYTE)

Compressor Starts Total

Accumulated Compressor 1 Starts. Accumulates from Compressor Starts Today at midnight. PA_CompStartsTotal (T4,11,WORDU)

Compressor Try Counter

If Compressor Lockout is enabled, and the Compressor Fault Alarm is set, the controller turns OFF compressor. When the Retry Wait times out, if the compressor output is still requested, and if the Compressor Fault Alarm has cleared, then the Compressor Try Counter is incremented. If the Try Counter is less than or equal to the maximum allowed tries, the compressor is restarted. PA_CompTryCounter (T10,32)

Compressor Try Max

When the Retry Wait times out, if the compressor output is still requested, and if the Compressor Fault Alarm has cleared, then the Compressor Try Counter is incremented. If the Try Counter is less than or equal to the maximum allowed tries, the compressor is restarted. PA_CompTryMax (T3,15)

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. Shows present mode of the controller. A1_ControlMode [HTG,DB,CLG], A1_ControlMode0 [2,0,1] (T16,3, bits01). See also Active Control Mode.

Control State

Shows present state of the controller. A1_ControlState[UNO,OCC,NSB,MRDY] A1_ControlState0 [0,1,2,3] (T16,3, bits23). See also Active Control State.

Controller Interlock

Shorting input #3 gives Interlock for address (input = 0 V). The interlock is required for all messages with a B4B4h , or B455h destination address. PA_ControllerInterlock (T10,8,bit2 304A)

Cooling Fan Delay Enable

If Cooling Fan Delay Enable is yes, then it holds fan off until compressor comes on. (655A1.6, T6,E6 bit2)

Cooling Night Setback Temperature SP

This is the desired zone temperature during Night Setback with the controller in cooling mode. (T2,5)
PA_CoolingNSBTempSP [deg F] PA_CoolingNSBTempSP [deg C]
PA_CoolingNSBTempSP-half [0.5 degF] , PA_CoolingNSBTempCSP-half [0.5 degC]

Cooling Occupied Temperature SP

This is the desired zone temperature during an Occupied state in cooling mode. (T2,3)
PA_CoolingOCCTempSP [deg F] PA_CoolingOCCTempSP [deg C]
PA_CoolingOCCTempSP-half [0.5 degF] , PA_CoolingOCCTempCSP-half [0.5 degC]

Cooling Requirement

Cooling calculated value (%) as result of PI algorithm, saved in RAM and used to determine the on time for cooling stages. (T10,46)

Cooling Unoccupied Temperature SP

This is the desired zone temperature during an Unoccupied state with the controller in cooling mode (T2,1) PA_CoolingUNOTempSP [deg F] PA_CoolingUNOTempSP [deg C] PA_CoolingUNOTempSP-half [0.5 degF] , PA_CoolingUNOTempCSP-half [0.5 degC]

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-4 Custom Span A1_CustomSpanIN-4 (T8,12,WORD)(655A1.2)
A1_CustomOffsetIN-4 (T8,14,WORD)(655A1.2)
IN-5 A1_CustomSpanIN-5 (T8,16,WORD)(655A1.2)
A1_CustomOffsetIN-5 (T8,18,WORD)(655A1.2)
IN-6 A1_CustomSpanIN-6 (T8,20,WORD)(655A1.2)
A1_CustomOffsetIN-6 (T8,22,WORD)(655A1.2)
IN-7 A1_CustomSpanIN-7 (T8,24,WORD)(655A1.2)
A1_CustomOffsetIN-7 (T8,26,WORD)(655A1.2)
IN-8 A1_CustomSpanIN-8 (T8,28,WORD) (655A1.2)
A1_CustomOffsetIN-8 (T8,30,WORD) (655A1.2)

Note: Custom Span and Offset for IN-4 were added in 655A1.2. If custom Span and Offsets were used in earlier versions, they must be corrected when upgrading to 655A1.2

DAT Compressor Disable

the DAT Compressor Disable is Set, then the Low Discharge Air Temperature Alarm disables the compressor. A High Discharge Alarm does not disable the compressor. PA_DATCompDisable (T6,2,bit 4)

Default Analog Output State

The state assumed by the analog outputs after power reset in personality 0, and the state assumed by the analogoutputs during flash downloads. PA_DefaultAO1State [Default 0] , PA_DefaultAO2State [Default 0]

Default AO State

Default state assumed by Analog Ouputs on reset of power in Personality zero, or during Flash programming of the controller. [Default 0]
PA_DefaultAO1State (T3,22), PA_DefaultAO2State (T3,23) (FW655A)

Default Output State

The state assumed by the binary outputs after power reset in personality 0, and the state assumed by the binary outputs during flash downloads. Bit 0 = OUT 1, … , Bit 7 = OUT 8 [Default 0]

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]
PA_DefaultOutputState (T3,6) (FW655A)

Dehumidify Output Enable

If Dehumidify Output Enable (T6,E6, bit 3) is Yes, then the inputs are examined to find a Relative Humidity Sensor . If the RH Value is greater than the RH Setpoint (T3,E48), then the Dehumidify Output is On. (655A1.8)

Dehumidify Output Mask

The Dehumidify output uses the Aux Cooling Output which is disabled if Dehumidify Output Enable is Yes. The Dehumidify Output Mask (T3,E41)must be assigned to an unused output.

Dehumidify Output Status

If Dehumidify Output Enable (T6,E6, bit 3) is Yes, then the inputs are examined to find a Relative Humidity Sensor. Any unused input may be configured for Relative Humidity. The value of the first RH sensor found is loaded into the RH Value (T18,E29.,30 Word) 0.0 to 100.0% RH. If the RH Value is greater than the RH Setpoint (T3,E48), then the Dehumidify Output is On . If the RH Value is less than the RH Setpoint minus the RH Hysteresis (T3,E49) then the Dehumidify Output is “Off”. No other action is take by the controller. This sequence depends on the air conditioning unit to perform the necessary interlocks. The Dehumidify feature is configured on the Expert “Aux Output “ view.

Demand Group

The Demand Group used by rotating demand shedding. A1_DemandGroup (T1,6,BYTE)

Demand Reset Range

The maximum Demand Level [Default 6].A1_DemandResetRange (T1,5,BYTE)

Demand Rotate Level

The Active Demand Level at which rotating demand shedding occurs. A1_DemandRotateLevel (T1,8,BYTE)

Demand Shed Level

The Active Demand Level at which demand shedding occurs. A1_DemandShedLevel (T1,7,BYTE)

Description

A 32 character description may be stored non-volatile memory to help identify that controller. A1_Description (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. In Hibyte, Low Byte Order! A1_DeviceAddress (T1,1,WORDr)

Digital Display Enable

Enables 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. PA_DigDisplayEnable (T6,5,bit7)

Discharge Air Temp

Optional Discharge Air Temperature measured on Input #6 and rounded to single byte value and saved in RAM. PA_DischargeAirTemp1 (T10,20,BYTE) & PA_DischargeAirTemp (T16,8)

Discharge Air Temp Alarm Hysteresis

Once a discharge air alarm is set, the temperature must recover by this much before the alarm is cleared. (2-25 F) [Default, 5] PA_DATAlarmHysteresis (T2,12)

Discharge Air Temp High Limit Alarm Setpoint

The maximum discharge air temperature setpoint. (35-160 F) If the discharge air temperature raises above this point a high discharge air alarm is set.[Default, 140] PA_DATHighLimitAlarmSP (T2,10)

Discharge Air Temp Low Limit Alarm Setpoint

The minimum discharge air temperature setpoint. (35-160 F). [Default, 40 F] If the discharge air temperature falls below this point a low discharge air alarm is set. PA_DATLowLimitAlarmSP (T2,11)

Discharge Air Temperature SP

Temperature SP for control of Discharge Air Economizer Damper. PA_DischargeAirTempSP (T2,29) [Default 55] FW655A1.2

Discharge Air Temperature-previous

Previous Discharge Air Temperature measured on Input 8 used for calculating Economizer Cooling Requirement. PA_Discharge AirTemp-previous (18,5,WORD) FW655A1,2

Discharge Air Temp-word

Optional Discharge Air Temperature measured on Input #6, smoothed and saved in RAM. 0.01 deg PA_DischargeAirTemp-word (T9,57,WORD)

Economizer Auto Initialize

If Economizer Auto Initialize is Yes, then the Tri-State Economizer output is driven fully closed for an Economizer Base time, every 100 minutes. . [Default No] PA_EconoAutoInitialize (T6,4,bit5)

Economizer Base Time

The time required to drive the economizer fully open. [Default 120s] PA_EconoBaseTime (T2,25,Byte)

Economizer Close Position SP

The percentage of the Economizer Base Time for the Closed Position. [Default 0] When the economizer is closed it is driven closed for an additional Economizer Base Time. PA_EconoClosePosSP (T2,24)

Economizer Cooling Required

Goes from Economizer Min Position to Max Position SP as the Primary Calculation goes from 0 to 25%) FW655A, PA_EconoClgReq (T18,1)

Economizer Damper Close Mask

If Economizer Modulate Enable is set then the output assigned by this mask is used for the tri-state economizer Close Output. [Default Out 7] PA_EconoDamperCloseMask (T3,35)

Economizer Damper Open Mask

If Economizer Enable is set then the output assigned by this mask is used for On/Off economizer. If Economizer Modulate Enable is set then the output assigned by this mask is used for the tri-state Economizer Open Output. Economizer Modulate Enable takes priority over Economizer Enable. [Default Out 6] PA_EconoDamperOpenMask (T3,34)

Economizer Enable

If Economizer Enable is yes then the Economizer Type determines the control sequence. 355A,355B . Not used by 655A. (T6,4,bit6)

Economizer Freeze Limit Temperature

If the outdoor temperature is less than the Economizer Freeze Limit Setpoint, then the economizer is driven closed. [Default 35] PA_EconoFreezeLimitTemp (T2,28). Signed (FW655A15)

Economizer Ki

Integral constant used for control of Mixed Air Damper. PA_Economizer-Ki [Default 5] (T2,31)

Economizer -Kp

Proportional constant used for control of Mixed Air Damper. PA_Economizer-Kp [Default 25] (T2,30)

Economizer Low Limit Temperature SP

If the outdoor temperature is less than the Economizer Setpoint and greater then the Economizer Low Limit SP, then the economizer is permitted. [Default 45] PA_EconoLowLimitTemp (T2,21) Signed (FW655A15)

Economizer Maximum Position SP

The percentage of the Economizer Base Time for the Maximum Position. [Default 100 %] PA_EconoMaxPosSP (T2,22)

Economizer Minimum Position SP

The percentage of the Economizer Base Time for the Minimum Position. [Default 50] PA_EconoMinPosSP (T2,23)

Economizer Offset Temperature

Used by Discharge Air Economizer to determine if Economizer is unable to satisfy the cooling load. If the Cooling Requirement is 100% and the difference between the Zone Temperature and the Active CLG Setpoint is greater than the Economizer Offset Temperature for a Economizer Offset Time, then the Economizer can not satisfy cooling. [Default 2 deg]
.PA_EconoOffsetTemp (T3,2) FW655A1.2

Economizer Offset Time

Used by Discharge Air Economizer to determine if Economizer is unable to satisfy the cooling load.. If the Cooling Requirement is 100% and the difference between the Zone Temperature and the Active CLG Setpoint is greater than the Economizer Offset Temperature for a Economizer Offset Time, then the Economizer can not satisfy cooling. [Default 120 seconds]
PA_EconoOffsetTime (T3,4) FW655A1.2

Economizer Offset Timer

Used by Discharge Air Economizer to time the Economizer Offset Time. PA_EconoOffsetTimer(T18,20) FW655A1.2

Economizer Position

The actual drive time position of the Tri-state economize in seconds . PA_EconoPosition (T10,59)

Economizer Position SP

The calculated economizer position as fraction of the Economizer Base Time. PA_EconoPositionSP (T10,58)

Economizer Temperature SP

If the outdoor temperature is less than the Economizer Setpoint and greater than the Economizer Low Limit SP, then the economizer is permitted. PA_EconoTempSP (T2,20)

Economizer Timer

Used to determine if Discharge Air Economizer has not been able to satisfy the cooling requirement PA_EconoTimer (T18,20) FW655A1.2

Economizer Type

If Economizer Enable is yes then the Economizer Type determines the control sequence. 0 = None, 1= On-Off Economizer, 2 = Modulating Economizer, 3 = Mixed Air Economizer, 4 = Discharge Air Economizer(655A1.2) . PA_EconomizerType (T2,16) FW655A.

Emergency Override

Emergency 1 and Emergency 2 state forces non-volatile memory to turn OFF the fan and electric heat off, and drive economizer closed. . A1_Emergency1OR (T6,2,bit 2) A1_Emergency2OR (T6,2,bit 3)

Emergency Status

RAM Emergency Status

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

PA_EmergencyStatus (T10,26,bits01);

Factory Analog Input Tolerance

Tolerance used to test Analog Inputs during Factory Test. Not a User Parameter. A1_AnalogInTolerance (T5,1)

Factory Analog Output Tolerance

Tolerance used to test Analog Outputs during Factory Test. Not a User Parameter. A1_AnalogOutTolerance(T5,2)

Factory Default Table

Type "Table 1" <Enter> This causes a "Brain Dump" of the standard Factory Default Table 1. This command requires a Controller Interlock. A1_DefaultTable1

Fan On/Off Mask

The output mask assignment for fan output. PA_FanOn-OffMask (T3,28 read only) Always BO-1.

Fan Proof Delay

Proof of Fan Delay, Table 3, Entry 18 [10s], Wait on start, and debounce 10 s PA_FanProofDelay (T3,18)

Fan Proof Enable

A Proof of Fan Switch across Input 7 (Water loop) Opens on proof of fan. If Proof of Fan Enable is Yes, the switch is examined whenever the fan, or high fan is on, or in Heating with Gas Heat Enable = Yes. The Proof of Fan Switch is for information only. No actions result from proof of fan alarm. PA_FanProofEnable (T6,5,bit5)

Fan Proof Status

Proof of Fan Status set when proof of fan established. PA_FanProofStatus (T10,28,bit3)

Fan Run Time Today

Time for Fan Run Today in 15 minute increments. PA_FanRunTimeToday (T10,64,BYTE)

Fan Run Time Total

Accumulated Fan Run Time in hours. Accumulates from Fan Run Today at midnight. PA_FanRunTimeTotal (T4,7,WORDU)

Fan Start Delay

Adds Fan Start Delay (0..255s) on Reset of Power and change of Control State. Fan does not start until Fan Start Timer counts to zero. For Constant Fan this delays the initial start after reset or schedule change. The Intermittent Fan does not start until controller leaves deadband which is typically more than 30 seconds after reset or schedule change and Fan Start Delay should be greater than 30 seconds. See also Fan Start Timer PA_FanStartDelay , T3, E47 FW655A1.3

Fan Start Timer

On Reset of Power and change of Control State Fan does not start until Fan Start Timer counts to zero. For Constant Fan this delays the initial start after reset or schedule change. The Intermittent Fan does not start until controller leaves deadband which is typically more than 30 seconds after reset or schedule change and Fan Start Delay should be greater than 30 seconds. See also Fan Start Delay PA_FanStartTimer, T18,E12 FW655A1.3

Fan Wait Time

Delay time for fan to turn off after entering Deadband. [Default, 30] Time for fan to run at end of compressor cycle with intermittent fan operation. [0-255 s]. [Default, 30 s] PA_FanWaitTime(T3,5)

See also Fan Wait Timer(T10,E62)

Flash Enable

Enables update of firmware (executable application program) over RS-485 communication. [Default: No] PA_FlashEnable (T6,6,bit1)

Gas Heat Delay Timer

This timer is used to delay the start and stop of the fan when gas heat is used. (10,61) Not used in 655A

Gas Heat Enable

A new option that overrides fan operation for gas heat for AC personalities1,2,3,4 only. In Heating Mode the fan does not come on . When Gas heat is used the Fan is controlled by the Heat stage. PA_GasHeatEnable (T6,4,bit5)

Group Address

This specifies the Group Address (Group Address 0) to which the controller will respond. Default 512D (200H) Range 0x0100-0xFF00 (multiples of 0x100) Resolution 256 A1_GroupAddress (T1,9) Default 0

Half Degree Enable

Enables temperature control in 0.5 deg F/C. PA_HalfDegEnable (T6,5,bit6).

Heat 1 Mask

It indicates the physical output assigned to Heat 1 Output for AC personalities or RV output for Heat Pump Personalities. Always BO-4. Read Only. PA_Heat1Mask (T3,29) See Also PA_RVMask

Heat 2 Mask

It indicates the physical output assigned to Heat 2 PA_Heat2Mask (T3,30)

Heat Base Time

This represents the duty cycle to be used for electric/gas heat applications. 4 sec increments. Default:60*4 seconds Range: 0-255 seconds Resolution: 4 second PA_HeatBaseTime (T3,12)

Heat Base Timer

Times the heating duty cycle for Heat 1 and Heat 2. PA_HeatBaseTimer (T10,55,Byte)

Heat Fan Delay Enable

If Heat Fan Delay Enable is yes in heating mode, Intermittent Fan does not come on until Heating Requirement > 0. Fan stays on as heat duty cycles in heating mode. PA_HeatFanDelayEnable, T6, E4 bit 7.FW655A1.3

Heat Min Off Time

This represents the Minimum off time to be used for heat applications. 4 sec increments. Default:60*4 seconds PA_HeatMinOffTime (T3,14)

Heat Min On-Off Timer

Times the minimum on and off time for Heat 1. PA_Heat1MinOn-OffTimer (T10,30,Byte)
Times the minimum on and off time for Heat 2. PA_Heat2MinOn-OffTimer (T10,57,Byte)

Heat Min OnTime

This represents the Minimum on time to be used for heat applications. 4 sec increments. Default:60*4 seconds PA_HeatMinOnTime (T3,13)

Heat On Timer

Calculates the amount of time Heat 1 should be on during the current Heating Base Time PA_Heat1OnTimer (T10,29)
Calculates the amount of time Heat 2 should be on during the current Heating Base Time PA_Heat2OnTimer (T10,56)

Heat Pump Compressor Enable

This RAM flag is set to True at power up. When set the HP Compressors operate under normal sequence control. It can be cleared Only with MT=10, M1 = 12 Heat Pump Disable, and set only with MT=10, M1 =11 Heat Pump Enable Message. If cleared the Heat Pump compressor is locked out. Included for backward compatibility. PA_HPCompressorEnable (T10,26,bit2)

Heat Pump Request (Not Implemented)

This was implemented in ASIC/1-4300 FW304i, but was not implemented in ASIC/1-8355 or ASIC/1-8655.

Heating Night Setback Temperature SP

This is the desired zone temperature during Night Setback with the controller in heating mode. (T2,6)
PA_HeatingNSBTempSP [deg F] PA_HeatingNSBTempSP [deg C]
PA_HeatingNSBTempSP-half [0.5 degF] , PA_HeatingNSBTempCSP-half [0.5 degC]

Heating Occupied Temperature SP

Occupied Heating Temperature Setpoint This is the desired zone temperature during an Occupied state in heating mode (T2,4)
PA_HeatingOCCTempSP [deg F] PA_HeatingOCCTempSP [deg C]
PA_HeatingOCCTempSP-half [0.5 degF] , PA_HeatingOCCTempCSP-half [0.5 degC]

Heating Requirement

Heating calculated value (%) as result of PI algorithm, saved in RAM and used to determine the on time for heating stages.. PA_HeatingRequirement (10,47)

Heating Unoccupied Temperature SP

Unoccupied Heating Temperature Setpoint This is the desired zone temperature during an Unoccupied state with the controller in heating mode. (T2,2) PA_HeatingUNOCCTempSP [deg F] PA_HeatingUNOCCTempSP [deg C] PA_HeatingUNOCCTempSP-half [0.5 degF] , PA_HeatingUNOCCTempCSP-half [0.5 degC]

High Fan CLG Enable

The switching between low speed and high-speed fan may be enabled for cooling mode. [Default No] PA_HighFanCLGEnable (T6,5 ,bit0, 355A..)

High Fan Delay Time

If enabled, and if the zone temperature deviates from the active control setpoint by the High Fan Temperature Offset for at least the High Fan Delay Time, then the high-speed fan output replaces the low-speed fan. [Default 30s] PA_HighFanDelayTime (T3,19)

High Fan Delay Timer

Used to time when the zone temperature deviates from the active control setpoint by the High Fan Temperature Offset [RAM sec]PA_HighFanDelayTimer (T10,60)

High Fan HTG Enable

The switching between low speed and high-speed fan may be enabled for heating mode . [Default No] PA_HighFanHTGEnable (T6,5,bit2)

High Fan Only CLG Enable

The high-speed fan only may be forced for cooling mode and deadband entered from cooling. [Default No] PA_HighFanOnlyCLGEnable (T6,5 ,bit1)

High Fan Only HTG Enable

The high-speed fan only may be forced for heating mode and deadband entered from heating. [Default No] PA_HighFanOnlyHTGEnable (T6,5 ,bit3)

High Fan Output Mask

The High Fan output is used to change fan speed when the zone temperature is outside the setpoint by the High Fan Temperature Offset for a High Fan Delay Time. In switching between High & Low we want to make for 1 second before break. PA_HighFanOutputMask (T3,46,BYTE).

High Fan Temperature Offset

If enabled, and if the zone temperature deviates from the active control setpoint by the High Fan Temperature Offset for at least the High Fan Delay Time, then the high-speed fan output replaces the low-speed fan. Control is switched back to the low-speed fan when zone temperature has returned to the active control setpoint for High Fan Delay Time. PA_HighFanTempOffset [Default 4 F] (T3,20)

Holiday Status

Indicates that today is a holiday. PA_HolidayStatus (T10,8,bit3)

HTG Temperature Lower Limit

Lower Limit of user adjust in the Digital Display Wall Sensor in the HTG Control Mode. In deg F/C or in 0.5 deg F/C See Lower Limit Temperature Setpoint

Ignore Globals Enable

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

Input Raw

The 12 bit raw input value. 0 to 5 Vdc = 0 to 4095. Note: Microprocessor is only accurate to 10 bits. A1_RawIN-01, …, A1_RawIN-089 (T9,17, 8 WORDS)

Input Calibrate 0 Vdc

Action for factory use only. PA_InputCalib-0

Input Calibrate 5 Vdc

Action for factory use only. PA_InputCalib-5

Input Conversion

The type of conversion assigned to each input.
The LSNBL is the Convert Type. The MSNBL is the Input Type A1_Input1Conversion, … , A1_Input8Conversion (T14,1..8)

Input Convert

The type of conversion assigned to each input which depends on the Input Type.
The LSNBL is the Convert Type. The MSNBL is the Input Type. A1_Input1Convert , .., A1_Input8Convert . (T14,1..8,LSNBL)

Input Fault Limit

HI Fault Limit [Default 240] and Low [Default 3] for inputs
A1_IN-1HiFaultLimit (T17,9), A1_IN-1LowFaultLimit (T17,1)
…
A1_IN-8HiFaultLimit (T17,16), A1_IN-8LowFaultLimit(T17,8)

Input Fault Status

Bit pairs show status of faults on inputs 1 through 8.
Bit pairs 00 = 0, no fault ;10 = 2 , LO fault; 11 = 3, HI Fault; 01 = 1 reserved
PA_InputFaultStatusIN-1,..,PA_InputFaultStatusIN-8 (T10,43,WORD)

Input Override Status

Shows status of overridden inputs. Bitwise. PA_InputORStatus (T10,42)

Input Type

The type assigned to each input.
A1_Input1Type, .., A1_Input1Type (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, General

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. PA_IntergralTime (T2,19,BYTE)

Intermittent Fan Enable

If set to [Yes] the Supply Fan operates in intermittent control mode in Occupied State. If set to [No] the supply fan operates in continuous deadband mode.
PA_IntermittentFanEnable (6,2,bit 7)

Interstage Time

The Interstage Time is the delay between coming on of Fan compressors or heating stages. In seconds. PA_InterstageTime (T3,3,BYTE)

Interstage Timer

Times interstage and random delay times. In seconds. PA_InterstageTimer (T10,16,BYTE)

Light Blink Timer

Used to time the 60 second wait before turning off lights. PA_LightBlinkTimer (T10,49,BYTE)

Lights Default Off

If Lights Default Off is Yes and the controller is not synchronized, the default condition of the lights is OFF. T6E6 bit5. (655A2.1)

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. A1_LightsOccupiedEnable (T6,3,bit6)

Lights Off Delay Time/Timer

If the Lights Off Delay Time non-zero, the Light Output will wait a Lights Off Delay Time, before turning off. There is no blink. 0..255 minutes. T3, E50 Lights Off Delay Time, T18 E31Lights Off Delay Timer (655a2.1)

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: Mon,…,Sun, Hol. A1_LightsOFF1Friday , A1_LightsON1Friday , A1_LightsON1Fri-raw, etc. (T7, various)

Lights On/Off Mask

The output mask assignment for chilled water On/Off output. Displays output number that has been assigned PA_LightsOn-OffMask (T3,33)

Lights Reversed Enable

When enabled, the output identified by the Lights Output Mask is reversed. When the lights are on, the physical output is Off. When the lights are off, the physical output is ON. The output status, and Output Status - Lights are unchanged. PA_LightsReverseEnable (T6,3,bit0)

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 Afterhours push-button during occupied, if Lights Occupied Enable is set and the state is occupied, or communication override. A1_LightsScheduleDisable (T6,1,bit1)

Lights Scheduled Status

The Lights determined from the Schedule or Occupied if unsynchronized. 1=Lights Off, 2=Lights On, 3=Lights Off, 4=Lights On, PA_LightsScheduledStatus (T10,48,MSNBL)

Lockout Cooling

All Cooling stages locked out except economizer. PA_LockoutCooling (6,4,bit4)

Lockout Heating

All Heating stages locked out . PA_LockoutHeating (6,4,bit3)

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)

Mixed Air Temperature

Temperature measured on Input 8 used for Mixed Air Temperature Control. PA_MixedAirTemp-word (T9,61,WORD) FW655A

Mixed Air Temperature SP

Temperature SP for control of Mixed Air Economizer Damper. PA_MixedAirTempSP (T2,29) [Default 55] FW655A

Mixed Air Temperature-previous

Previous Mixed Air Temperature measured on Input 8 used for calculating Economizer Cooling Requirement. PA_MixedAirTemp-previous (18,5,WORD) FW655A

Mode Override Status

Indicates the status of Control Mode override: 0 = None, 10 = Deadband OR, 11 = Cooling OR, 12= Heating OR When overridden the heating or cooling requirement are forced to 100% or 0% as appropriate. PA_ModeOverrideStatus (10,35)

Morning Ready Intermittent Fan Enable

If set to [Yes] the Supply Fan operates in intermittent control mode in Morning Ready State. If set to [No] the supply fan operates in continuous Deadband mode. PA_MWUIFanEnable (6,1,bit 3)

Morning Ready Schedule

The Morning Warm-up or Cool-down Schedule has entries for one on time in 1/4 hour intervals for 8 days: Mon,…,Sun, Hol. A1_MRDYFriday , A1_MRDYFriday-raw, etc. (T7,various)

Night Setback Intermittent Fan Enable

If set to [Yes] the Supply Fan operates in intermittent control mode in Night Setback State. If set to [No] the supply fan operates in continuous Deadband mode. PA_NSBIFANEnable (6,1,bit 7)

Night Setback Schedule

The Night Setback Schedule has entries for one on in 1/4 hour intervals for 8 days: Mon, …,Sun, Hol. A1_NSBFriday, A1_NSBFriday-raw (T7,various)

OAT Control

If OAT Override Enable is yes, then the Outdoor Air Temperature is a variable, that can be changed over communications and used to control the economizer cycle.. At reset it is loaded with the Economizer Low Limit Setpoint. (T18,E15,16 WORDs, 0.01 deg) (655a1.8)

OAT Cooling Lockout Enable

All Cooling stages locked out except economizer when Outdoor Air Temp is less than the OAT Cooling Lockout Setpoint. PA_OATCLGLockoutEnable (6,3,bit7)

OAT Cooling Lockout SP

If the outdoor temperature is less than the OAT Cooling Lockout Setpoint and , then all cooling stages except economizer are locked out. PA_OATCLGLockoutSP (2,26)

OAT Heating Lockout Enable

All Heating stages locked out when Outdoor Air Temp is greater than the OAT Heating Lockout Setpoint. PA_OATHTGLockoutEnable (6,4,bit1)

OAT Heating Lockout SP

If the outdoor temperature is greater than the OAT Heating Lockout Setpoint and , then all Heating stages are locked out. PA_OATHTGLockoutSP (2,27)

OAT Override Enable

If OAT Override Enable is yes, then the Outdoor Air Temperature is a variable, that can be changed over communications and used to control the economizer cycle. Controller must be reset before this becomes effective. (655a1.8, T6,E6, bit 0)

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 (T6,4,bit2) [Default No]

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 (T6,3,bit5)

Occupancy Sensor Delay Status

Shows when Occupancy Sensor is waiting to go unoccupied. T10 E10 bit 6 (655a2.1)

Occupancy Sensor Delay Time/Timer

If the Occupancy Sensor Enable is yes, the switch on Input #8 is examined at all times to determine if the room is occupied . The controller waits an Occupancy Sensor Delay Time before the transition from Occupied to Unoccupied. T3, E51 Occupancy Sensor Delay Time (seconds), T18 E32 Occupancy Sensor Delay Timer (seconds) (655a2.1)

Occupancy Sensor Enable

Enables operation of an occupancy sensor on 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 (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 (T10,28,bit5)

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 (T3,21)

Occupied Schedule

The Occupied Schedule has entries for two on times in 1/4 hour intervals for 8 days: Mon,…,Sun, Hol. A1_OCC1Friday , A1_OCC2Friday, etc. (T7,various)

On-Off Thermostat Enable

If On-Off Thermostat Enable is true, then the temperature control algorithm then an on off thermostat action is used to determine the Cooling or Heating Requirement. FW655A (T6,E4 bit0) PA_On-Off ThermostatEnable

Outdoor Air Temperature

The single byte Outdoor Air Temperature updated from Outdoor Air Temperature-word. If OAT Override Enable is “Yes”, then it is updated from OAT Control. (T16,E10,BYTEs)

Outdoor Air Temperature-word

The signed word value of Input 5. (T9,E9.10,WORDs, 0.01deg)

Output Override On Status

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

Output Override Power-up ON Status

This variable indicates which overridden physical outputs are to be overridden in the ON condition at power-up. This is kept in non-volatile memory. PA_OutORPower-upONStatus (FW355A,T3,10)

Output Override Power-up State

This variable indicates which physical outputs are to be overridden at power-up. This is kept in non-volatile memory.. PA_OutORPower-upState (T3,11)

Output Override State

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

Output Status – Actual

Bitwise representation of physical output states in RAM. A1_OutputStatus (T16,7,Byte)

Output Status – Auxiliary Heat

Shows status of Auxiliary Heat Output if Assigned and Enabled.
[On, Off, O/R On, O/R Off, Restore] (T10,38,Bits6,7)

Output Status – Comp 1 On/Off

The functional Output Status of Comp 1 On/Off. Always BO-2. PA_OutputStatus-Comp1(T10,37,Bits6,7)

Output Status – Comp 2 On/Off

The functional Output Status of Comp 2 On/Off. Always BO-3 if used by the personality. PA_OutputStatus-Comp2 (T10,38,Bits0,1)

Output Status – Comp 3 On/Off

The functional Output Status of Comp 3 On/Off. If used by the personality and if Output Mask (T3,E44) is Assigned. PA_OutputStatus-Comp3 (T10,39,Bits0,1)

Output Status – Comp 4 On/Off

The functional Output Status of Comp 4 On/Off. If used by the personality and if Output Mask (T3,E45) is Assigned. PA_OutputStatus-Comp4 (T10,39,Bits2,3)

Output Status – Economizer

The functional Output Status if Economizer Tri-state is Yes and Economizer Open and Close Masks are assigned. Open, Close, Stop, O/R Open, O/R Closed, Restore] PA_OutputStatus-EconoDmp (T10,36,MSNBL)[

Output Status – Economizer On-Off

The functional Output Status of Economizer On/Off. If Economizer Enable is yes and if Output Mask is Assigned. PA_OutputStat-EconOnOff (T10,39,Bits67)

Output Status – Fan

The functional Output Status of Fan On/Off. Always BO-1. PA_OutputStatus-Fan (T10,37,Bits01)

Output Status – Heat 1

The functional Output Status of Heat 1 On/Off or Reversing Valve On/Off. Always BO-4. [On, Off, O/R On, O/R Off, Restore] . PA_OutputStatus-Heat1 (T10,37,Bits23)

Output Status – Heat 2

The functional Output Status of Heat 2 On/Off. If used by the personality and if Output Mask is Assigned. PA_OutputStatus-Heat2 (T10,37,Bits45)

Output Status – Lights

The functional Output Status of Lights On/Off. Output Mask is Assigned. (T10,38,Bits23)[On, Off, O/R On, O/R Off]

Output Status – Raw

Bitwise representation of physical output states in RAM. PA_OutputStatus-raw (T10,45,BYTE)

Output Status – RV

The functional Output Status of Reversing Valve On/Off or Heat 1 On/Off . Always BO-4. [On, Off, O/R On, O/R Off, Restore] PA_OutputStatus-RV (T10,37,Bits23)

Personality

One of 8 Personalities For Roof Top Air Conditioners. A1_Personality [returns number], PA_Personality-PA [returns string] (T1,15,BYTE)

Primary Calculation

FW255A it is usually the cooling requirement for the cooling is 0 to 25500 = 0 to 100% and is retained as a word value. . A1_PrimaryCalculation (T9,43,WORD)

Product Identification

Returns firmware identification string. Same as MT=4Ah. A1_ProductIdentification (T11,1,10BYTES)

Reset ASIC

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. Sends MT=0x48 command. A1_Reset,

RH Value

The value returned by a Relative Humdity Input. If Dehumidify Output Enable (T6,E6, bit 3) is Yes, then the inputs are examined to find a Relative Humidity Sensor. Any unused input may be configured for Relative Humidity. The value of the first RH sensor found is loaded into the RH Value (T18,E29.,30 Word) 0.0 to 100.0% RH

RV Mask

It indicates the physical output assigned to Heat 1 Output for AC personalities or RV output for Heat Pump Personalities. Always BO-4. Read Only. PA_RVMask (T3,29) See also PA_Heat1Mask

RV Normal

Sets Flag to identify the normal (non-energized) state of the reversing valve. [1=Heating, 0=Cooling] [Default, Cooling] PA_RVNormal (T6,1,bit 4)

RV Status

Actual state of the reversing valve based on Output 3 RV status and RV Normal [1=Heating, 0=Cooling] PA_RVStatus (T10,28,bit 6)

Secondary Calculation

Secondary calculations 0 to 25500 = 0 to 100% and is retained as a word value, used internally. A1_SecondaryCalculation (T9,45,WORD)

Shed Compressor Status

The Shed Compressor Status is set when Active Demand Level exceeds the Demand Shed Level or Demand Rotate Level for the matching Demand Group. The Comp 1, Comp2, Heat 1, Heat 2, AuxCLG and AuxHTG are shed when the Shed Compressor Status is Yes. RV is not shed or changed. .PA_ShedCompressorStatus (T10,28,bit0)

Shed Fan Enable

If Shed Fan Enable is Yes, then the fans are shed when the Shed Compressor Status is set A1_ShedFanEnable (T6,3,bit 3)

Shed Fan Status

Shows if the fans are shed ..PA_ShedFanStatus (T10,28,bit1)

Single Setpoint Deadband

If Digital Display Single Setpoint Enable is yes, the WS-051 displays the Occupied Cooling Temperature Setpoint.. On change the OCC HTG Temp SP is set to OCC CLG Temp SP –Single Setpoint Deadband. T3, E52 (655a2.1)

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.
(T10,8,bit 2) slide switch is up ;
(T10,8,bit 3) slide switch is down. PA_SlideSwitchStatus

Soft Interlock

The Interlock may be set by a Soft Interlock message MT=0x10, M1=15 (0x0F) on the communication line. You may then change address or brain-dump the controller remotely. The Soft Interlock clears automatically after 30 seconds. (655a1.8)
Note: Do not send this message with Group or Global command as it will set the Interlock for ALL controllers.

State Default Unoccupied

If State Default Unoccupied is Yes and the controller is not synchronized, the default Control State is Unoccupied. .. T6E6 bit6. (655A2.1).

State Overridden

This flag indicates that the control state has been overridden from the Scheduled State. PA_StateOverridden (T10,28, BIT4)

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.
A1_StateScheduleDisable (T6,1,BIT0)

State Scheduled

This indicates the control state would be used based on the State Schedules.
1=UNOCC, 2=OCC,3=NSB,4=MRDY PA_ControlStateScheduled (T10,48,LSNBL)

Synchronize ASIC1

The ASIC/1 controller can be synchronized or put into holiday mode from this entry on the setup screen. Sends MT=0x38. A1_ASIC1Synchronize

Synchronize Required

ASIC clock is synchronized. A1_SynchronizeRequired (T10,9,bit7)

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] PA_ThrottlingRange (T2,18,BYTE)

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.
A1_Trend1Name
Trend 1 Table Number (T13,7) A1_Trend1TableNumber
Trend 1 Entry Number (T13,8) A1_Trend1EntryNumber
[Default, Zone Temperature (T16,4)]
A1_Trend2Name

Trend 2 Table Number (T13,9) A1_Trend2TableNumber
Trend 2 Entry Number (T13,10) A1_Trend2EntryNumber
[Default, Discharge Air Temp (:T16,8).

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. [Default, 0] A1_TrendDayofWeek (T13,4).

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 . A1_TrendInterval (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.

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. A1_TrendNumberofValues (T13,5)

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. A1_TrendUserDate, A1_TrendUserHour (T13,1,3BYTES)

Unoccupied Intermittent Fan Enable

If set to [Yes] the Supply Fan operates in intermittent control mode in Unoccupied State. If set to [No] the supply fan operates in continuous Deadband mode. A1_UNOIfanEnable (6,3,bit 1)

Unoccupied Schedule

The Unoccupied Schedule has entries for two on times in 1/4 hour intervals for 8 days: Mon,…,Sun, Hol. A1_UNOCC1Friday, A1_UNOCC2Friday, etc. (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 Enable

Enables the User Adjust Option. Requires an input #2 or #3 to be configured for a User Adjust Switch or Variable User Adjust. Permits operation of the slide switch or variable user adjust potentiometer to raise or lower the setpoint by an amount given by the User Adjust setpoint. A1_UserAdjustSwitchEnabl (T6,3,bit2)

User Adjust Setpoint

This is an non-volatile memory variable that represents the number of degrees that the user can adjust the temperature setpoint (either up or down). Default 3 deg Range 0-16 deg F (+/-16) PA_UserAdjustSP [deg], PA_UserAdjustSP-half [0.5 deg] (T2,8)

User Adjust Status

Represents the number of degrees that the user has adjusted the temperature setpoint (either up or down).- User Adjust SP to + User Adjust SP PA_UserAdjustStatus[deg], PA_UserAdjustStatus-half [0.5 deg] (T10,54)

Water Loop Alarm Hysteresis

Once a water loop alarm is set, the temperature must recover by this much before the alarm is cleared. non-volatile memory setpoints (2-25 F) [Default, 5 F] PA_WaterLoopAlarmHystere (T2,15)

Water Loop Compressor Disable

In FW304G a Water Loop Compressor Disable option is included. If the Loop Compressor Disable is Set, then the high or low Water Loop temperature Alarm disables the compressor. PA_WaterLoopCompDisable (T6,1,2)

Water Loop Max Alarm Setpoint

The maximum loop temperature non-volatile memory setpoint (35-160 F)[Default, 0 F (disabled)] If the water loop temperature raises above this point a high water loop alarm is set. PA_WaterLoopMaxAlarmSP (T2,13)

Water Loop Min Alarm Setpoint

The minimum loop temperature non-volatile memory setpoint (35-160 F)[Default, 0 F (disabled)] If the water loop temperature falls below this point, a low water loop alarm is set. PA_WaterLoopMinAlarmSP (T2,14)

Water Loop Temp

Optional Water Loop Temperature measured on Input #7 and rounded to single byte value and saved in RAM. PA_WaterLoopTemp (16, 9) (10,21,BYTE)

Water Loop Temp –word

Optional Auxiliary Temperature measured on Input #7, smoothed and converted using Input Convert Type and saved in RAM in 0.01 degrees. PA_WaterLoopTemp-word (T9,59,WORD)

WS-051 Occupied Unoccupied Enable

Enables the WS-051 Occupied Unoccupied feature that allows toggling active state from the Override switch. .(T6,E7 bit 1) (655a2.6)

WS-051 Personality Enable

Enables the WS-051 Change Personality feature that allows changing the personality through the WS-051 wall sensor.(T6,E7 bit 0) (655a2.2)

Zone Sensor Bias

Zone Sensor Bias allows adjustment of the zone temperature sensor reading up or down. [Default:0.0 deg] Signed 1 bit per 0.1 deg .PA_ZoneSensorBias (T2,9)

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. PA_ZoneTempAlarmRange (T2,7)

Zone Temperature

Zone Temperature measured on the assigned input and rounded to single byte value and saved in RAM. A1_ZoneTemp [degF/C], A1_ZoneTemp-half [0.5 degF/C] (T10,11,BYTE) (T16,4)

Zone Temperature – New

The most recent zone temperature reading the controller uses for heating/cooling calculation purposes obtained from the input identified as Zone Temperature. .A1_ZoneTempNew (T9,41,WORD)

Zone Temperature – Previous

The zone temperature reading from 30 seconds previous that the controller uses for heating/cooling calculation .A1_ZoneTempPrevious (T9,39,WORD)

ASIC/1-8655 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 23,141 (0x5A65) ASIC/1-8655 Roof Top Controller (655A..)
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/1-8655 Read Me

ASIC/1-8655 FW655A Rev 2.7q Release 2010-03-01

- Fixes problem with Discharge Air Economizer Offset Timer after Reset.
- Fixes Discharge Air Economizer Emergency mode to drive damper closed.

ASIC/1-8655 FW655A Rev 2.6f Release 2010-01-26

- Improves Single Setpoint feature so that pressing Up, Down, or Mode allows change and displays the average of the OCC HTG and CLG Temperature Setpoints.
  Single Setpoint Enable and User Adjust Enable must be set to enable setpoint change. Up or down arrows change the Occupied Cooling Temperature Setpoint within the cooling maximum and minimum limits.
  Occupied Heating Temperature Setpoint is Occupied Cooling Temperature Setpoint vminus the Single Setpoint Deadband. The new setpoints are saved on timeout (15s) or pressing the Mode button.

ASIC/1-8655 FW655A Rev 2.5c Release 2009-12-09

- Fixes Auxiliary Cooling so that Aux Hystersis is used and it does not go off until the Zone Temperature is less than the Cooling Temperature Setpoint.

Note: Aux Heating goes off when the rounded ZT => Active HTG SP.
Aux Heating does not use Auxiliary Hysteresis.

ASIC/1-8655 FW655A Rev 2.4d Release 2009-05-20 ECO-428 70020-08

- WS-051 Single Setpoint change now displays average of HTG/CLG Temp SP and displays HTG, CLG and Setpoint Icons.

Note: User Adjust Enable must be set to change setpoint.

-ASIC/1-8655 FW655A Rev 2.3 (655a21g-rel.hex) Release 2008-10-27

- Gas Heat Enable no longer applies to Heat Pump Personalities
- Modifies WS-051 Change Personality Feature
  WS-051 Person Enable T6,E7 bit0 must be yes.
  First Press [UP] then [Mode] and hold for 5 seconds for Change Personality Mode
  Displays status of Gas Heat Enable T6E5bit4 with Heat Icon
  Press [Mode] once to Toggle Gas Heat Enable flag
  Press [Up] Increment or [Down] Decrement to change Personality 1..8
  >> Press [O/R] then [Mode] and hold for 5 seconds to save personality, flag and reset.
  15 seconds with no activity exits without saving new personality.

ASIC/1-8655 FW655A Rev 2.2 (655a21e-rel.hex) Release 2008-09-11

- Adds WS-051 Change Personality Feature that allows changing the personality through the WS-051 wall sensor. Adds WS-051 Person Enable T6,E7 bit0
  First Press [UP] then [Mode] and hold for 5 seconds for Change Personality Mode
  Press [Up] Increment or [Down] Decrement to change Personality 1..8
  Press [Mode] then [O/R] and hold for 5 seconds to save personality and reset.
  15 seconds with no activity exits without saving new personality.

ASIC/1-8655 FW655A Rev 2.1 (655a21_l-rel.hex) Release 2008-05-30

- Fixes a Fan Wait Timer Bug when switching rapidly between Occupied and Unoccupied
- Fixes Lights Occupied Enable so the lights go On and off with Occupied State. Adds Lights Default Off option. Adds Lights Delay Off timer in Minutes.
- Adds State Default Unoccupied option.
- Adds Occupancy Delay Timer when going from OCC to UNOCC
- Adds Single Setpoint Deadband parameter to Single Setpoint feature for WS-051 Digital Display
- Adds CO2 Economizer Maximum Position
- Adds Auxiliary Occupied Output feature when Aux Heating is not used.
- Remove obsolete Table 60,61 to free memory

ASIC/1-8655 FW655A Rev 2.0 Release 2007-01-04

- Adds Single Setpoint Enable T6E5bit0 feature for WS-051 Digital Display. If enabled, then the CLG OCC Temp Setpoint is changed and the HTG OCC Temp Setpoint is 2 degrees less.
- Fixes Analog Outputs for AO Assignment is 1= CLG; 2= HTG; or 4 = Xover When Fan is Off, Analog Output goes to AO Minimum Value. If Gas Heat Enable is set, then Fan is ignored in the heating and the Analog Output follows the heating requirement.

ASIC/1-8655 FW655A Rev 1.9 (655a19a-rel.hex) Release 2006-06-23

- Fixes Dehumidification Output feature to ignore fan.

ASIC/1-8655 FW655A Rev 1.8 (655a18b-rel.hex) Release 2006-05-25

- Adds option to use a parameter for OAT. If OAT Override Enable (T6,E6,bit2) flag is set, then the economizer is controlled using a new parameter OAT Control(T18,E15 WORDs). At reset OAT Control is is initialized at reset to Econo Low LimitSP*100 (T2,E21)
- Adds Dehumidification Output feature to energize an output if the Relative humidity exceeds a setpoint. The Relative Humidity sensor can be assigned to an unused input.
- Adds New Command, MT=0x10, M1=15 (0x0F), Set Soft Interlock. When sent to Destination Address (not group or global) it sets a soft controller interlock for 30 seconds.
- Adds Cooling Fan Delay feature to lock out fan until Compressor comes on.If Cooling Fan Delay Enable (T6,E6 bit2) is yes, the it holds fan off until compressor comes on.
- Fixes Intermittent Fan problem where fan goes off for a Fan Start Delay and comes back on until the end of the Fan Wait Time.
- Improves Trend by fixing occasional missed value bug. Corrects problem with updating Trend Day of Week when trend rolls over.

ASIC/1-8655 FW655A Rev 1.7 (655a17c.hex) Release 2004-09-22

- Fixes Memory write defect that causes excessive writing to Flash Memory when Trending is used and will eventually damage the controller flash memory. If Trending is used Disable Trend or upgrade to FW655A1.7 immediately. If you do NOT have Trend enabled, then No action is required. Trend is disabled by Factory Default. Please verify that you do not have it enabled.

ASIC/1-8655 FW655A Rev 1.6 (655a16a.hex) Release 2004-08-04

- Fixes problem with Thermostat On-Off Enable for 2 stage cooling, Personalities 3, 4, 7 & 8.

ASIC/1-8655 FW655A Rev 1.5t Release 07/02/2004

- Adds personalities 9 & 10 for 3 Stage AC with 1 or 2 HTG
- Adds personalities 11 & 12 for 4 Stage AC with 1 or 2 HTG
- Adds Thermostat On-Off Enable option for 3 and 4 stage AC.
- Adds Proof of Fan OFF Alarm. When the fan is OFF, if Fan Proof Status does not go "No" with in Fan Proof Delay, then the Fan Verify Alarm is set. The Fan Verify Alarm is for information only. No actions result.
- Allows Negative Setpoints for Economizer. Outdoor Air Temperature IN-5 (T16,E10)(T10,09),PA_EconoFreezeLimitTemp (T2,28), PA_EconoLowLimitTemp (T2,21) are now signed.
- Adds debouncing to Tri-Mux input to prevent accidental switch status during transition.

ASIC/1-8655 FW655A Rev 1.4a Release 10/17/2003

- Fixes a problem with Input Types 148,149 ZT10kType 2 and with Input Types 164, 165 ZT10kType3 not being recognized as Zone Temperature. Fan was locked out.

ASIC/1-8655 FW655A Rev 1.3d Release 08/20/2003

- Adds Fan Start Delay (0..255s) on Reset of Power and change of Control State Fan does not start until Fan Start Timer counts to zero. For Constant Fan this delays the initial start after reset or schedule change. The Intermittent Fan does not start until controller leaves deadband which is typically more than 30 seconds after reset or schedule change and Fan Start Delay should be greater than 30 seconds.
  Fan Start Delay, T3, E47 Fan Start Timer T18,E12
- Adds Heat Fan Delay Enable, T6, E4 bit 7. If Heat Fan Delay Enable is yes in heating mode, Intermittent Fan does not come on until Heating Requirement > 0. Fan stays on as heat duty cycles in heating mode.
- If Digital Display Enable and User Adjust Enable are yes, User Adjust Status is zero.
- Digital Display Fan Icon follows Low Fan correctly.
- Give separate ranges for Digital Display HTG and CLG Setpoint Adjust. Maintain a 2 count separation. Add two new parameters with defaults. Note: Not implemented in FW155B.
  SP T2, E32 -> CLG Temp Upper Limit [Default 85]
  New> T2, E38 -> CLG Temp Lower Limit [Default 71]
  New> T2, E39 -> HTG Temp Upper Limit [Default 73]
  SP T2, E33 -> HTG Temp Lower Limit [Default 65]

ASIC/1-8655 FW655A Rev 1.2v Release 02/04/2003

- Fixes problem that relay may not pickup if turning on one output, at the same time as turning off an output with a higher number.
- Fixes problem when OAT is negative with OAT Heating Lockout and with Economizer.
- Adds Economizer Type 4, Discharge Air
- Adds CO2 Demand Ventilation
- Adds Custom Span and Offset for Input 4.
  Note: This shifts Span and Offsets for Input 5, 6, 7, & 8.
- Adds Input Conversions for 10k Type 2 & Type 3 Thermistors
- Adds Changeover Analog Output for hydronic cooling/heating, Changeover Mode, Changeover Status, Changeover Alarm AO Assignment 0 = None, 1= Cooling, 2=Heating 3= Economizer, 4= Changover HTG/CLG
- Note: New parameters have been added.
  You must BRAIN Dump in upgrading from Version 1.0 to 1.2

ASIC/1-8655 FW655A Rev 1.1c Release 01/03/2003

- Adds Binary Input Types for Input Conversions
  128 Binary Input Normally Open
  129 Binary Input Normally Closed
  130 Binary Input TriMux
  These input types will work with any un-used input or with Personality 0.

ASIC/1-8655 FW655A Rev 1.0 Release 10/28/2002

- Initial Release