

**1 EXHAUST FAN - SINGLE STAGE COOLING**  
M-9908 N.T.S.

**EXHAUST FAN - SINGLE STAGE COOLING**

**APPLICABLE UNITS:**

- EF-2-10 INTERLOCKED W/ L-2-9
- EF-3-1 INTERLOCKED W/ L-3-2
- EF-3-2 INTERLOCKED W/ L-3-1
- EF-8-3 INTERLOCKED W/ L-8-1 THRU L-8-4 AND ASSOCIATED GENERATOR
- EF-8-4 INTERLOCKED W/ L-8-1 THRU L-8-4 AND ASSOCIATED FUTURE GENERATOR
- EF-8-5 INTERLOCKED W/ L-8-1 THRU L-8-4 AND ASSOCIATED FUTURE GENERATOR
- EF-8-6 INTERLOCKED W/ L-8-1 THRU L-8-4 AND ASSOCIATED FUTURE GENERATOR

**RUN CONDITIONS - CONTINUOUS:**

THE UNITS (EF-2-10, EF-3-1, AND EF-3-2) SHALL BE CONTINUOUSLY ENABLED TO MAINTAIN A ZONE TEMPERATURE COOLING SETPOINT OF 80°F (ADJ.).

UNITS EF-8-3 THROUGH EF-8-6 SHALL RUN WHENEVER THE ASSOCIATED GENERATOR RUNS OR WHEN ZONE TEMPERATURE RISES ABOVE COOLING SETPOINT OF 90°F (ADJ.) LOUVERS L-8-1, L-8-2, L-8-3, AND L-8-4 MUST BE PROVEN OPEN PRIOR TO GENERATOR START UP.

**ALARMS SHALL BE PROVIDED AS FOLLOWS:**

- HIGH ZONE TEMP: IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

**ZONE SETPOINT ADJUST:**

THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE COOLING SETPOINT AT THE ZONE TEMPERATURE SENSOR.

**FAN:**

THE FAN SHALL RUN ANYTIME THE ZONE TEMPERATURE RISES ABOVE COOLING SETPOINT, UNLESS SHUTDOWN ON SAFETIES.

**FAN OVERRIDE SWITCH:**

OCCUPANT SHALL BE ABLE TO TURN FAN ON AND OFF AND SWITCH FAN SPEEDS WITH A HAND-OFF-AUTO SWITCH MOUNTED ON THE WALL.

**OUTDOOR AIR DAMPER:**

THE OUTDOOR AIR DAMPER SHALL OPEN ANYTIME THE UNIT RUNS AND SHALL CLOSE ANYTIME THE UNIT STOPS. THE OUTDOOR AIR DAMPER SHALL CLOSE 30 SEC (ADJ.) AFTER THE FAN STOPS.

**DAMPER STATUS:**

THE FAN SHALL BE ENABLED AFTER THE DAMPER STATUS HAS PROVEN.

**ALARMS SHALL BE PROVIDED AS FOLLOWS:**

- DAMPER FAILURE: COMMANDED OPEN, BUT THE STATUS IS CLOSED.
- DAMPER IN HAND: COMMANDED CLOSED, BUT THE STATUS IS OPEN.

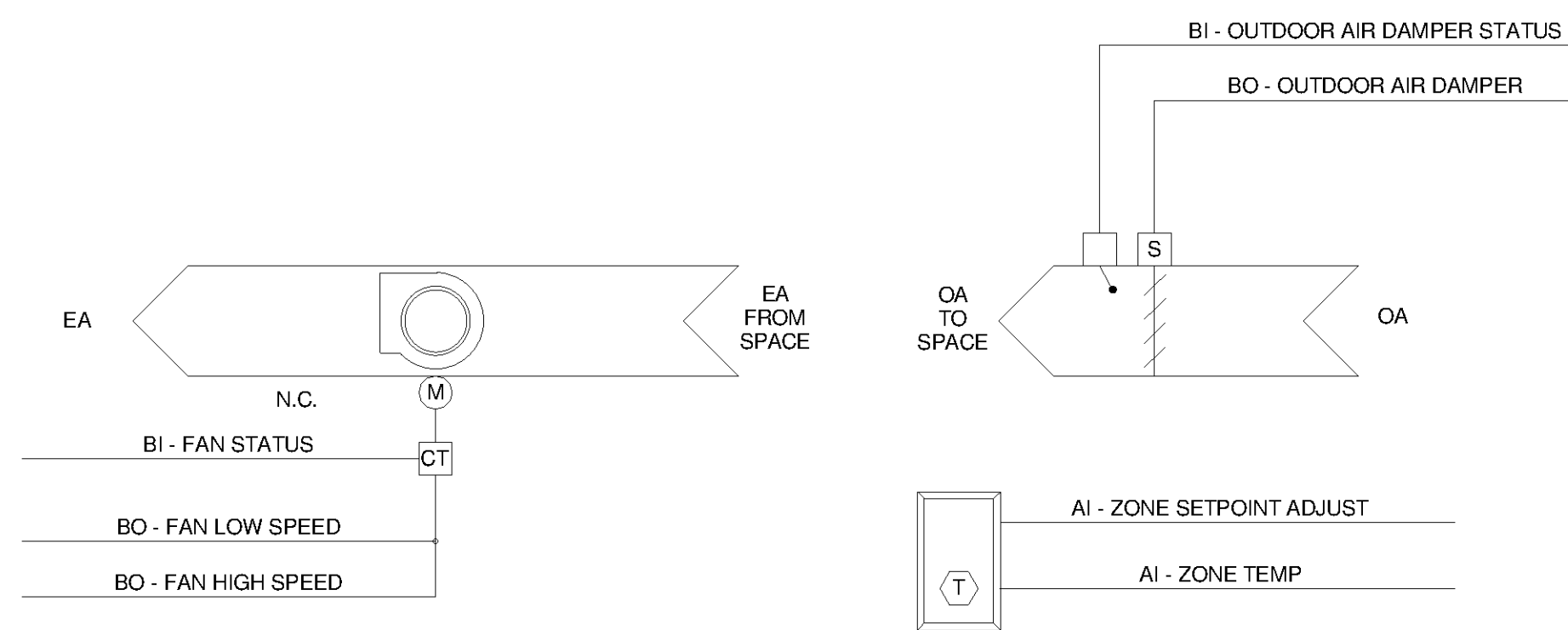
**FAN STATUS:**

THE CONTROLLER SHALL MONITOR THE FAN STATUS.

**ALARMS SHALL BE PROVIDED AS FOLLOWS:**

- FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- FAN RUNTIME EXCEEDED: FAN STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

POINT NAME	HARDWARE POINTS				SOFTWARE POINTS						SHOW ON GRAPHIC
	AI	AO	BI	BO	AV	BV	SCHED	TREND	ALARM		
ZONE TEMP	X								X		X
ZONE SETPOINT ADJUST	X										X
OUTDOOR AIR DAMPER STATUS			X						X		X
FAN STATUS			X						X		X
FAN START/STOP				X					X		X
OUTDOOR AIR DAMPER				X					X		X
COOLING SETPOINT					X				X		X
HIGH ZONE TEMP										X	
OUTDOOR AIR DAMPER FAILURE										X	
OUTDOOR AIR DAMPER IN HAND										X	
FAN FAILURE										X	
FAN IN HAND										X	
FAN RUNTIME EXCEEDED										X	
TOTALS	2	0	2	2	1	0	0	6	6		7
TOTAL HARDWARE (6)				TOTAL SOFTWARE (13)							



**2 EXHAUST FAN - SINGLE STAGE COOLING AND VENTILATION**  
M-9908 N.T.S.

**EXHAUST FAN - SINGLE STAGE COOLING AND VENTILATION**

**APPLICABLE UNITS:**

- EF-2-5 AND EF-2-6 INTERLOCKED W/ GH-2-2
- EF-2-7 INTERLOCKED W/ GH-2-3
- EF-2-8 INTERLOCKED W/ L-2-7
- EF-2-9 INTERLOCKED W/ L-2-8
- EF-8-1 INTERLOCKED W/ L-8-5

**RUN CONDITIONS - SCHEDULED:**

THE UNIT SHALL BE ENABLED ACCORDING TO A USER DEFINABLE TIME SCHEDULE IN THE FOLLOWING MODES:

- OCCUPIED MODE: THE UNIT SHALL RUN CONTINUOUSLY TO MAINTAIN MINIMUM VENTILATION.
- UNOCCUPIED MODE: THE UNIT SHALL MAINTAIN A ZONE TEMPERATURE COOLING SETPOINT OF 85°F.

**ALARMS SHALL BE PROVIDED AS FOLLOWS:**

- HIGH ZONE TEMP: IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

**ZONE SETPOINT ADJUST:**

THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE COOLING SETPOINT AT THE ZONE TEMPERATURE SENSOR.

**FAN:**

THE FAN SHALL RUN ANYTIME THE ZONE IS OCCUPIED OR THE ZONE TEMPERATURE RISES ABOVE COOLING SETPOINT, UNLESS SHUTDOWN ON SAFETIES.

**FAN OVERRIDE SWITCH:**

OCCUPANT SHALL BE ABLE TO TURN FAN ON AND OFF AND SWITCH FAN SPEEDS WITH A HAND-OFF-AUTO SWITCH MOUNTED ON THE WALL.

**OUTDOOR AIR DAMPER:**

THE OUTDOOR AIR DAMPER SHALL OPEN ANYTIME THE UNIT RUNS AND SHALL CLOSE ANYTIME THE UNIT STOPS. THE OUTDOOR AIR DAMPER SHALL CLOSE 30 SEC (ADJ.) AFTER THE FAN STOPS.

**DAMPER STATUS:**

THE FAN SHALL BE ENABLED AFTER THE DAMPER STATUS HAS PROVEN.

**ALARMS SHALL BE PROVIDED AS FOLLOWS:**

- DAMPER FAILURE: COMMANDED OPEN, BUT THE STATUS IS CLOSED.
- DAMPER IN HAND: COMMANDED CLOSED, BUT THE STATUS IS OPEN.

**FAN STATUS:**

THE CONTROLLER SHALL MONITOR THE FAN STATUS.

**ALARMS SHALL BE PROVIDED AS FOLLOWS:**

- FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- FAN RUNTIME EXCEEDED: FAN STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

POINT NAME	HARDWARE POINTS				SOFTWARE POINTS						SHOW ON GRAPHIC
	AI	AO	BI	BO	AV	BV	SCHED	TREND	ALARM		
ZONE TEMP	X								X		X
ZONE SETPOINT ADJUST	X								X		X
OUTDOOR AIR DAMPER STATUS			X						X		X
FAN STATUS			X						X		X
FAN START/STOP				X					X		X
OUTDOOR AIR DAMPER				X					X		X
COOLING SETPOINT					X				X		X
SCHEDULE							X				
HIGH ZONE TEMP										X	
OUTDOOR AIR DAMPER FAILURE										X	
OUTDOOR AIR DAMPER IN HAND										X	
FAN FAILURE										X	
FAN IN HAND										X	
FAN RUNTIME EXCEEDED										X	
TOTALS	2	0	2	2	1	0	1	6	6		7
TOTAL HARDWARE (6)				TOTAL SOFTWARE (14)							



BY	DESCRIPTION	DATE	MARK

HUNTSVILLE UTILITIES  
SOUTHEAST WATER TREATMENT PLANT  
**MECHANICAL HVAC CONTROLS**

Project No.: 200-11740-10003  
Designed By: SBR  
Drawn By: BJZ  
Checked By: DSB

**M-9908**