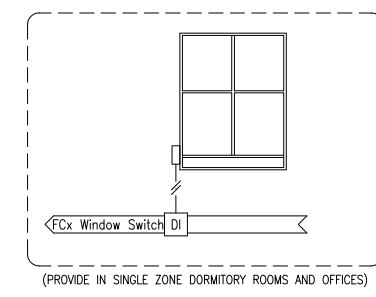


NOTES

1. Provide with temperature display and communications port.

(OCCUPANCY SENSOR INSTALLED BY DIV. 16/26)

NOTE 1



POINTS LIST

POINT NAME	POINT DESCRIPTOR	POINT TYPE				REMARKS
		DI	AI	DO	AO	
FCUxx.HTG-V-C-0	FCUx HW Valve Open			1		Floating Motor Output
FCUxx.HTG-V-C-C	FCUx HW Valve Close			1		Floating Motor Output
FCUxx.CHW-V-C-0	FCUx CHW Valve Open			1		Floating Motor Output
FCUxx.CHW-V-C-C	FCUx CHW Valve Close			1		Floating Motor Output
FCUxx.S-FN-C	FCUx SF Start/Stop			1		
FCUxx.S-FN-STS	FCUx SF Status	1				
FCUxx.SA-T	FCUx SA Temperature		1			
FCUxx.ZN-xx-T	FCUx Zone xx Temp		1			
FCUxx.OCC-OVRD	FCUx Occ Override	1				
FCUxx.OCC-OVRD-S	FCUx Occ Sensor	1				
FCUxx.WINDOW-STS	FCUx Window Switch	1				
TOTALS		4	2	5	0	

BILL OF MATERIAL

DESIG	QTY	MODEL NO.	DESCRIPTION
TS 1	1		Temp Sensor, Zone
TS 2	1		Temp Sensor, Duct
V1, V2	2		Valve Actuators, Floating Motor
CS1	1		Current Switch

SEQUENCE OF OPERATION

General: The four pipe horizontal fan coil unit shall be fully controlled by the BAS.

Space Temperature Control: During periods of occupied operation (space is occupied, scheduled to be occupied or occupancy is detected) the operator may adjust the Normal (72F adj.) setpoint. Occupants may further adjust the Normal setpoint via the local sensor setpoint adjustment (the range of adjustment shall be configurable via the BAS, initially +/-2F). The BAS shall automatically apply an offset for cooling and heating set points during occupied periods as follows:
 1. Space cooling setpoint shall be the Normal space temperature setpoint plus 2F (adj.).
 2. Space heating setpoint shall be the Normal space temperature setpoint minus 2F (adj.).

During periods of unoccupied operation (space is scheduled unoccupied or no occupancy is detected for a preset period) the operator may adjust Setback heating (50F adj.), and Setback cooling (85F adj.) setpoints. The BAS will prevent the operator from entering a Setback heating setpoint higher than the Space heating setpoint OR entering a Setback cooling setpoint lower than the Space cooling setpoint.

Occupancy Override: Occupancy override shall be initiated at the local zone sensor or via the occupancy sensor. Unit shall change to the occupied mode whenever the override button is depressed (or signal is received from the occupancy sensor) for a period of 2 hours (adj.) and reset to normal operation at the end of the period or whenever the override button is held for more than 5 seconds (adj.).

Occupancy Sensor:
 GENERAL: Occupancy sensors shall be dual-technology (PIR / Ultrasonic) ceiling and/or wall mounted based on space size, configuration and use. Multiple sensors shall be networked to provide full coverage of any controlled space with 20% overlap. An isolated relay contact shall be provided for each controlled space designated for BAS monitoring.

OCCUPIED MODE SENSING: Once scheduled occupancy is established the BAS shall monitor the occupancy sensor contact and adjust the space temperature set point as follows:

- A) Sensor detects occupancy during occupied period:
 - 1) BAS shall maintain normal occupancy set points.
- B) Sensor indicates no occupancy during occupied period:
 - 1) Every continuous 15 minute (adj.) period after non-occupancy the normal space set points shall be reset 25% (adj.) toward their unoccupied set point. (i.e. 72F normal cooling, 80F setback cooling; after first 15 minutes set point adjusts to 74F)
 - 2) When occupancy is detected during occupied period set points shall reset to normal occupied schedule
- C) Sensor detects occupancy during unoccupied period:
 - 1) BAS shall initiate an occupancy override and reset to normal occupancy set points.

Fan: Fan shall be enabled only when window switch is not active. Fan shall run continuously during occupied mode. During unoccupied mode, fan shall be deenergized except as required to maintain setback temperature setpoints for both heating and cooling with a cycle differential of 3F (adj.). BAS shall prove fan operation and use the status indication to accumulate runtime.

Valves: BAS shall modulate the chilled water and hot water valves to maintain the active space temperature setpoint (normal occupied, setback cooling, setback heating). Logic shall prevent overlapping control of the valves.

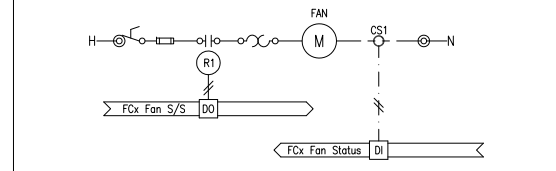
Heating Request: A "Heating Request" shall be broadcast to the HW system serving this unit whenever the HW output is at 100% (adj.) OR the space temperature falls below the throttling range of the heating loop.

Cooling Request: A "Cooling Request" shall be broadcast to the CHW system serving this unit whenever the CHW output is at 100% (adj.) OR the space temperature rises above the throttling range of the cooling loop.

LOGIC VARIABLES

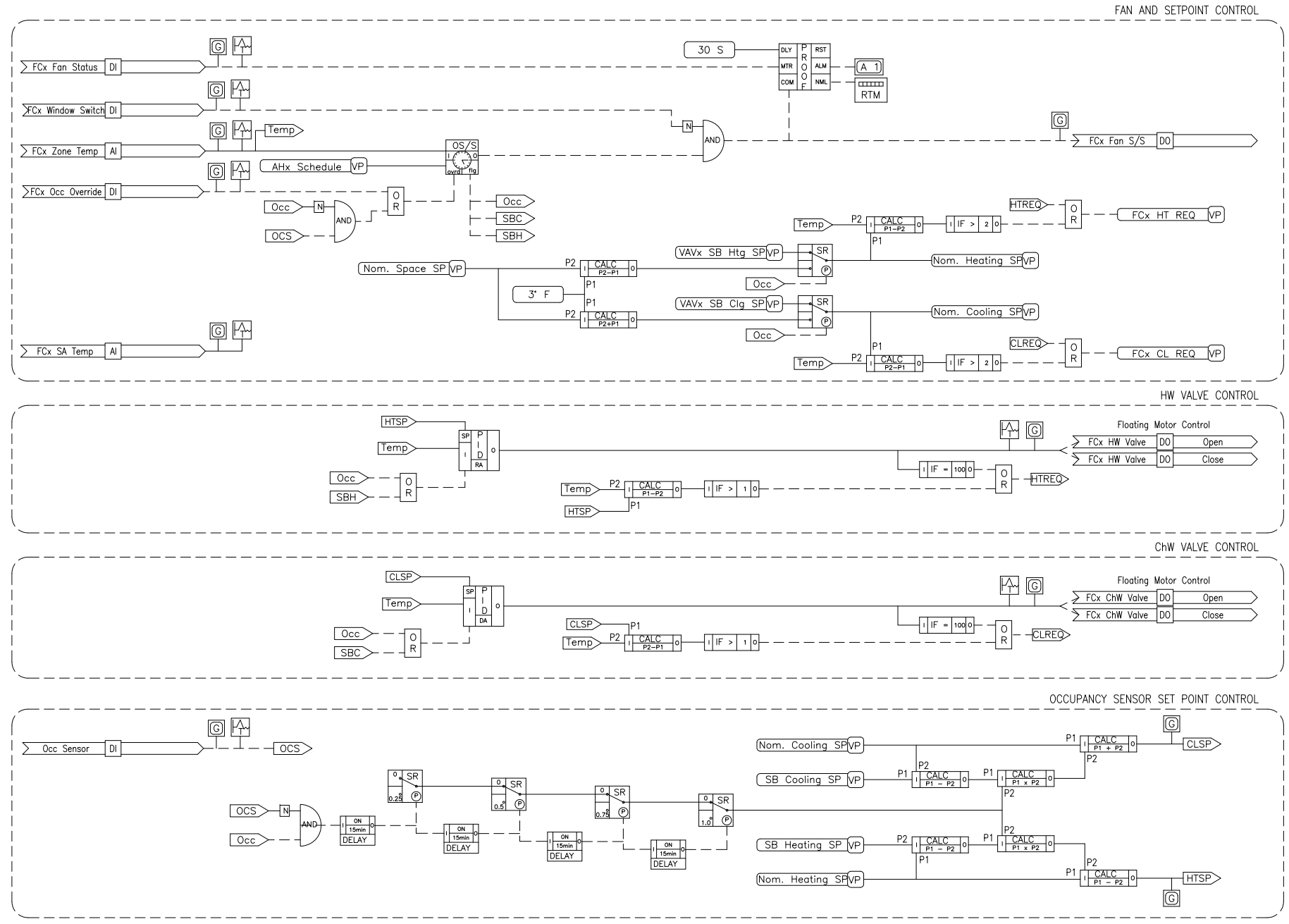
BINARY	ANALOG	DESCRIPTION	#
Occ		ON WHEN UNIT IS INDEXED TO OCCUPIED MODE	7
OCS		ON WHEN OCCUPANCY SENSOR IS ACTIVE	3
SBC		ON WHEN UNIT IS INDEXED TO SET-BACK COOLING MODE	2
SBH		ON WHEN UNIT IS INDEXED TO SET-BACK HEATING MODE	2
Temp		VARIABLE VALUE OF CURRENT ZONE TEMPERATURE	7
HTSP		VARIABLE VALUE OF ACTIVE HEATING SETPOINT	2
CLSP		VARIABLE VALUE OF ACTIVE COOLING SETPOINT	2

ELECTRIC LADDER DIAGRAMS



(Actual wiring configuration to be confirmed by installer)

CONTROL SCHEMATIC



CONTROL LOGIC

Developed in Association with
Facility Dynamics
 ENGINEERING
 6700 Alexander Bell Drive - Suite 220
 Columbia, MD - 21046 - (410) 290-0800

UNIVERSITY OF VIRGINIA
 FACILITIES MANAGEMENT
 HVAC CONTROLS STANDARDS

Eng	HJN
Drawn	HJN
Chkd	---
Appd	---
Issued	8/4/11
Job No.	10080
Scale	N/A

STANDARD

FAN COIL UNIT
 (4-PIPE)

14 OF 30
 SHEET NUMBER

C-2.3

DWG NUMBER