



INPUT/OUTPUT SUMMARY

SYSTEM APPARATUS OR AREA POINT DESCRIPTION	ANALOG IN		DIGITAL IN		OUTPUTS		ALARMS		SYSTEMS FEATURES	
	MEASURED	CONTROL	D/O	D/I	D/O	A/O	ALARM	PROGRAMS	PROGRAMS	PROGRAMS
OUTSIDE AIR TEMP.										
AC UNIT 1										
HEATING (STAGED)										
COOLING										
DISCHARGE TEMP.										
SUPPLY FAN VAV										
DUCT STATIC										
AC UNIT 2										
HEATING (STAGED)										
COOLING (2 STAGES)										
DISCHARGE TEMP.										
DIFFERENTIAL PRESSURE										
AC UNIT 3										
HEATING (STAGED)										
COOLING (2 STAGES)										
DISCHARGE TEMP.										
DIFFERENTIAL PRESSURE										
FPM BOXES	X	X	X		X	X	X	X	X	X
VAV ONLY BOXES	X	X	X		X	X	X	X	X	X

NOTES:  
 (1) SUPPLY AIR DUCT SMOKE DETECTOR.  
 (2) MEASURED WHERE INDICATED ON PLANS.  
 (3) ONE (1) SENSOR, 2/3 DISTANCE DOWN MAIN TRUNK.

**SEQUENCE OF OPERATION**

1. ROOFTOP AIR CONDITIONING UNIT AC-1 AND TERMINAL BOXES

A. ROOFTOP PACKAGE UNIT SHALL BE PROVIDED WITH INTERNAL DDC MICROPROCESSOR CONTROLS BY UNIT MANUFACTURER. INTERFACE SHALL BE THRU UNIT MRS DDC INTERFACE AND RTM MODULE LOCATED WITHIN GRADE-MOUNTED UNIT.

THE CENTRAL UNIT CONTROL SHALL PERFORM THE FOLLOWING FUNCTIONS AS DIRECTED BY THE CENTRAL EMS PANEL:

- SUPPLY AIR PRESSURE CONTROL
  - VARIABLE SPEED DRIVE CONTROL
  - SUPPLY AIR STATIC PRESSURE CONTROL
  - SUPPLY AIR TEMPERATURE CONTROL
  - COOLING AND ECONOMIZER CONTROL
  - SUPPLY AIR TEMPERATURE SETPOINT RESET BASED ON OUTDOOR AIR TEMPERATURE
- MORNING WARMUP
  - MORNING WARMUP WITH GAS-FIRED HEATING SECTION

THE UNIT SHALL BE EQUIPPED WITH TRADDAMPER CONTROL TO PROVIDE:

- OUTDOOR AIR CFM COMPENSATION
  - MODULATES MINIMUM POSITION OF ECONOMIZER TO ACCOMMODATE VARYING UNIT AIRFLOWS

THE UNIT SHALL BE EQUIPPED WITH STATITRAC CONTROL TO PROVIDE:

- EXHAUST AIR FAN CONTROL
  - DIFFERENTIAL PRESSURE CONTROL VARIES EXHAUST AIR FAN CAPACITY TO MAINTAIN BUILDING PRESSURE

REFER TO DIAGRAM 4/MS.1.

B. CENTRAL DDC PANEL SHALL PERFORM THE FOLLOWING FUNCTIONS:

- START/STOP OF THE CENTRAL AIR HANDLING UNIT AND FUNCTIONS LISTED IN A ABOVE
- START/STOP OF EXHAUST FANS EF-1, EF-2, EF-3, EF-4, AND EF-5.
- OCCUPIED/UNOCCUPIED SETTINGS FOR THE CENTRAL AIR HANDLING UNIT AND THE TERMINAL BOXES.
- OPERATION OF ALL TERMINAL BOXES.
  - OCCUPIED/UNOCCUPIED SETTINGS
  - HEATING/COOLING
- FOR AC-2, STAGED HEATING, COOLING, AUTOMATIC CHANGEOVER, FAN CONTROL, ECONOMIZER, AND NIGHT SETBACK
- FOR AC-3, STAGED HEATING, COOLING, AUTOMATIC CHANGEOVER, FAN CONTROL, ECONOMIZER, AND NIGHT SETBACK
- ON POWER FAILURE, OPERATES FAN, ECONOMIZER, AND HEATING SECTION OF AC-3 TO SERVE DATA TOWER.
- CYCLES BUILDING LIGHTING BASED ON ASTRONOMICAL CLOCK SETTINGS (DRY CONTACT; LIGHTING CONTROL RELAY PANEL NOT IN DIVISION 15).
- CYCLES BUILDING GROW LIGHTING BASED ON ASTRONOMICAL CLOCK SETTINGS (DRY CONTACT; LIGHTING CONTROL RELAY PANEL NOT IN DIVISION 15).

C. USER INTERFACES SHALL BE AS FOLLOWS:

- INTERFACE PANEL ON THE FACE OF THE AIR HANDLING UNIT DDC PANEL WITH A MINIMUM OF 2 LINE X 40 CHARACTER DISPLAY FOR MONITORING, SETTING, EDITING, AND CONTROLLING.
- CENTRAL DDC PANEL SHALL BE MONITORED BY A PERSONAL COMPUTER PROVIDED BY THE CONTROLS CONTRACTOR.
- CENTRAL DDC PANEL SHALL BE PROVIDED WITH A MODEM FOR MONITORING BY A SERVICE CONTRACTOR.

2. AIR CONDITIONING UNIT AC-4 AND AC-4A:

A. UNIT MFRS. ELECTRONIC SEVEN-DAY THERMOSTAT PROVIDES START/STOP, HEATING, COOLING, AUTOMATIC CHANGEOVER, FAN CONTROL, NIGHT SETBACK.

B. INDEPENDENT ROOM SENSOR REPORTS TO DDC CONTROL PANEL FOR MONITORING BY THE CENTRAL SYSTEM.

C. FAN RUNS CONTINUOUSLY DURING OCCUPIED HOURS.

3. FANS:

A. EXHAUST FANS EF-1 AND EF-5: RUN CONTINUOUSLY DURING OCCUPIED HOURS.

B. EXHAUST FANS EF-2, EF-3 AND EF-4: CYCLED BY ROOM SENSOR TO OPERATE UPON TEMP RISE TO 80 F (ADJ.).

4. UNIT HEATER UH-1:

WALL THERMOSTAT CYCLES FAN AND HEATER TO MAINTAIN SETPOINT (ADJ.).

5. GENERAL:

THE FOLLOWING WORK SHALL BE CONSIDERED TO BE UNDER DIVISION 16:

A. ALL POWER WIRING FROM POWER SOURCE TO EQUIPMENT.

B. CHECKING CURRENT CHARACTERISTICS AND ROTATION OF ALL MOTORS.

C. FURNISHING AND INSTALLING DISCONNECT SWITCHES UNLESS SPECIFICALLY NOTED OTHERWISE.

D. FURNISHING AND INSTALLING ALL STARTERS.

THE FOLLOWING WORK SHALL BE CONSIDERED TO BE UNDER DIVISION 15:

A. ALL TEMPERATURE, INTERLOCK, AND EQUIPMENT CONTROL WIRING, CONDUIT, AND APPURTENANCES, HIGH AND LOW VOLTAGE.

B. ALL CONTROL WIRING, LINE OR LOW VOLTAGE, INCLUDING BUT NOT LIMITED TO WIRING THROUGH THE COILS OF THE MAGNETIC STARTERS AND RELAYS, AND THROUGH THE CONTACTS OF THERMOSTATS AND OTHER PILOT DEVICES, EXCEPT WHERE NOTED OTHERWISE.

OWNER WILL NOT ENTERTAIN ADDITIONAL COSTS DUE TO LACK OF COORDINATION BETWEEN DIVISION 15 AND DIVISION 16.

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**SUN HEALTHCARE SYSTEMS, INC.**  
 CAMPUS: PHASE ONE  
 ANACORTES, WASHINGTON

TRUE NORTH

DATE: 5/18/99  
 CONSTRUCTION SET

N.B.  
 PARTNER IN CHARGE  
 PROJECT MANAGER  
 R.V.  
 PROJECT ARCHITECT  
 P.M.J.  
 DATE

SEAL: 5/18/99  
 EXPIRES: 5/18/00

SIDER & BYERS  
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CONTROLS

98046  
 PROJECT NO.  
 5/18/99  
 DATE  
 M6198046  
 OWNER USE ONLY

**M6.1**  
 SHEET NUMBER  
 CONSTRUCTION SET

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