

DX System Analysis Form				
Project:				
Date:				
Architect:				
Mechanical Contractor:				
System Mark				
System Manufacturer				
System Model Number				
System Serial Number				
Heating Type	Heat Pump	Gas	Hot Water	Electric
Reheat Type	Hot Gas	Hot Water	Electric	N/A
Outdoor Temperature @ Outdoor Coil				
Outdoor Coil Leaving Temperature				
Indoor Temperature				
Indoor Relative Humidity				
Mixed Air Temperature Entering Indoor Coil				
Supply Air Temperature @ The Unit Discharge				
Supply Air Temperature @ The Farthest Supply Grille				
Refrigerant Type				
Suction Pressure				
Suction Line Temperature @ Compressor				
Discharge Pressure				
Discharge Line Temperature @ Compressor				
Liquid Line Pressure				
Liquid Line Temperature @ Condenser				
Superheat				
Subcooling				
Discharge Superheat				
Heating Entering and Leaving Air Temperature				
Inlet Gas Pressure				
Manifold Gas Pressure				
Electric Heat kW				
Amps per Heating Element				
Total Electric Heat Amps				
Discharge Air Temperature with Reheat Operational				
Supply Air CFM				
Return Air CFM (Occ, UnOcc)				
Outside Air CFM (Occ, UnOcc)				
This shall be filled out in heating, cooling & dehumidification modes for every piece of DX equipment. Outdoor ambient shall be 80°F minimum for cooling readings and 50°F or below for heating readings.				

SPLIT HEAT PUMP SYSTEM SCHEDULE			
System	Outside Air CFM		
	Minimum	295	185
	Maximum	295	185
	SEER / EER @ ARI	15.5 / 13.0	15.0 / 12.0
	Total Net Capacity at ARI, MBH	41.9	57.30
	Sensible Net Capacity at ARI, MBH	30.5	40.3
	EAT db./wb., °F	80.8 / 67.1	77.6 / 65.3
	LAT db./wb., °F	57.7 / 56.4	58.9 / 56.0
Air Handling Unit	Mark	AHU-01	AHU-02
	Manufacturer	Carrier	Carrier
Supply Fan	Model	FVACNF005	FVACNB006
	Supply Air, CFM	1,225	2,000
Auxiliary Electric Heat	External Static Pressure, In. WG	0.5	0.5
	Motor HP	0.5	0.75
	Volt/Phase	208/230/1	208/230/1
Indoor Unit Single Point Power Electrical	KW (240/3, 208/3)	18.0 / 13.5	24.0 / 18.0
	Volt/Phase	208/3	208/3
	Volt/Phase	208/3	208/3
Heat Pump	Mark	HP-01	HP-02
	Manufacturer	Carrier	Carrier
Options	Model	25HCC542	25HCC560
	Heat Pump, @ 47°F MBH	41.6	58.0
	HSPF	8.5	8.5
	MCA	27.6	34.2
	Max OCP	40.0	50.0
	Volt/Phase	208/230/1	208/230/1
Notes:			
A See Sequence of Control			
B Provide condensate overflow pan with liquid switch, 3/4" ball valve with threaded nipple and cap			
C 2" Filter housing with piano hinge and cam lock and gasketed seal			
D Install return duct mounted smoke detector			

ROOF CAP SCHEDULE	
Mark	RC-01
Function	Exhaust
CFM	300
Throat Area, ft²	0.852
Face Area, ft²	1.38
Max. ΔP (in. WG)	0.05
Construction	16 Ga. Marine Alloy Aluminum
Finish	Kynar
Cook Model	PR-12
Notes:	
1) Provide prefabricated roof curb with wood nailer and thermal insulation. See Architectural Drawings for roof slope and construction.	
2) Submit color chart for architect's selection of the Kynar finish. Finish selection shall be for the cap and roof curb.	
3) Provide 1/2" x 1/2" birdscreen	

GRILLE, REGISTER AND DIFFUSER SCHEDULE			
Mark	CD-1	CD-2	CG-1
Description	Square Louvered Face Ceiling Diffuser, Square Neck, Fixed Discharge Pattern, Induction Vanes	Square Louvered Face Ceiling Diffuser, Square Neck, Fixed Discharge Pattern, Induction Vanes	Square Louvered Face Ceiling Grille, Square Neck, 35° Deflection
Mounting	Lay-In	Surface	Surface
Material	Aluminum	Aluminum	Aluminum
Finish	Match Ceiling Color	Match Ceiling Color	Match Ceiling / Wall Color
Titus Model	TDV-AA	TDV-AA	350FL
Border Type	Type 3	Type 6	Type 1
Accessories	-	-	-
Notes:			
1) Titus has been specified to establish the type and quality of air device to be installed. Prior approved equals must be submitted 10 days prior to bid for consideration.			
2) Maximum NC Rating shall not exceed 30.			
3) Air devices that are ceiling cut-in type shall be centered in the tile.			
4) Ceiling mounted louvered return / exhaust grilles shall be installed with the blades pointed toward the closest wall so that the blades form a view block.			
5) Wall mounted return / exhaust grilles shall be installed with the blades pointing toward the floor or ceiling, whichever is nearest, so that the blades form a view block.			
6) Internal portion of duct, including inlet plenum box, attached to supply, return, exhaust and transfer grilles shall be blacked out with a dull finish, non-toxic, DTM paint.			
7) Grille termination shall be Flexmaster SIDB or prior approved equal unless otherwise specified in schedule above or noted on drawings. See detail for duct to grille, register, diffuser connection.			

SEQUENCE OF CONTROL

Provide all necessary equipment, materials, labor, devices, etc. to satisfy the intent of this Sequence of Control.

All controls wiring shall be in EMT conduit with MC flex whips (interior) Sealtight (exterior) no longer than 60" to all devices, equipment, etc. The Controls Contractor shall furnish and install all wall boxes and EMT conduit, with pull string, for all controls wiring including drops to thermostats, sensors and other wall mounted devices.

Heating set points shall be 71°F during Occupied periods and 65°F during Unoccupied periods with a +/- 3°F adjustment. Cooling set points shall be 72°F during Occupied periods and 80°F during Unoccupied periods with a +/- 3°F adjustment. All set points shall be adjustable.

HP-01.02

The System shall be controlled by a Honeywell 8000 Vision Pro with occupancy contacts and averaging sensors as shown on the Drawings. The occupancy contacts will be used as pilot relay to enable a power duty relay to enable / disable the return and outside air actuators. This Contractor shall provide a transformer with appropriate VA to power the return and outside air dampers. The unit's transformer will not be allowed to be used to power the damper actuators. The thermostats occupancy contacts will not be allowed to be used to directly enable / disable the damper actuators. The System shall be enabled during occupied periods. The unit's factory controls shall enable the unit in the heating or cooling mode as required to maintain the space temperature set point(s) as determined by the space temperature sensor. The fan shall be enabled whenever there is a call for heating or cooling and the outside air damper shall open from its closed position to its minimum set point position while the return air damper closes accordingly for proper air balance. The outside air damper shall be fully closed and the return damper open when the fan is disabled.

The space temperature sensor shall also enable the unit during unoccupied periods in the setback mode. The unit shall be enabled in the cooling mode whenever the space temperature exceeds 80°F to maintain the space temperature set point. The unit shall be enabled in the heating mode whenever the space temperature falls below 65°F to maintain the space temperature set point. When the unit is enabled in the night/setback mode, the fan shall be enabled when the unit is either heating or cooling and the outside air damper shall be fully closed at all times in unoccupied mode. Space temperature sensor shall be integrated into the room light system occupancy switch to enable system in occupied mode when in unoccupied time period.

Whenever the unit is disabled, the outside air damper shall be fully closed.

DSS-01

Unit shall be controlled via factory provided wall mounted wired room thermostat.

EF-01.02.03

Fan shall be enabled by the room's light switch. Provide switch type service disconnect at the fan.

EF-04

Fan shall run continuous. Provide switch type service disconnect at the fan.

DUCTLESS SPLIT HEAT PUMP SYSTEM SCHEDULE	
System	SEER
	23.0
	Total Capacity Range, MBH
	1.7 - 10.9
Electrical	Heat Pump Heating Range, MBH (@ 47°F)
	1.7 - 15.0
Evaporator	HSPF
	11.0
Heat Pump	Voltage / Phase
	208/1
Options	MCA
	10
Notes	MOCP
	15
Options	Mark
	DSS-IU-01
Notes	Basis of Design, Manufacturer
	Fujitsu
Options	Model
	9RLFW
Notes	Heat Pump
	Mark
Options	Basis of Design, Manufacturer
	Fujitsu
Notes	Model
	9RLFW
Options	1
	A, B
Options:	
1) Provide low ambient controls and trim kit.	
Notes:	
A) Indoor Unit receives power from Outdoor Unit.	
B) Line set and condensate piping shall be located within the wall. Exposed piping will not be allowed.	
C) Both the liquid and vapor lines will be insulated 3/4" Armaflex, non-split seam insulation. Insulation shall be mitered and glued.	

FAN SCHEDULE				
Mark	EF-01	EF-02	EF-03	EF-04
Drive	Direct	Direct	Direct	Direct
CFM	75	75	75	75
Watts	31	31	31	31
Motor HP	-	-	-	-
Motor RPM	-	-	-	-
Fan RPM	759	759	759	759
Static Pressure, In WC	0.25	0.25	0.25	0.25
Sones	0.9	0.9	0.9	0.9
Volt/Phase	115 / 1	115 / 1	115 / 1	115 / 1
Basis of Design	Manufacturer	Cook	Cook	Cook
	Model	GC-148	GC-148	GC-148
Accessories	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5
	A	A	A	B
Notes:				
Accessories:				
1. Provide speed control mounted on fan				
2. Provide spring vibration isolator kit				
3. Provide service disconnect switch.				
4. Provide backdraft damper.				
5. Provide white deluxe aluminum grille.				
Notes:				
A. Fan shall be controlled by associated room's light occupancy switch.				
B. Fan shall be enabled to run continuously.				

