

ROOFTOP AIR CONDITIONING UNITS

TAG	CARRIER MODEL NUMBER	TOTAL COOLING MBH	SENSIBLE COOLING MBH	TOTAL SUPPLY CFM	O.A. CFM	HEATING INPUT MBH	HEATING OUTPUT MBH	APPROX. E.S.P. (IN.W.G.)	SUPPLY FAN HP	MINIMUM STAGES		COOLING ENTERING CONDITIONS		MINIMUM AMBIENT COOLING TEMP °F	NOTES
										COOLING	HEATING	E.A.T. D.B. °F	E.A.T. W.B. °F		
RTAC-1	48GEDN05	45.9	32.4	1400	150	67	54	0.5	3	2	2	77	64	40	1:2:3:5:6:7:8:9:10:11:12:13:14:15:16:18:19
RTAC-2	48NG-B24	23.2	18.1	850	100	60	48.6	0.5	0.5	2	2	77	64	40	1:2:3:4:5:9:10:14:15:16
RTAC-3	48GEDN04	35.5	26.1	1090	150	67	54	0.6	0.75	2	2	77	64	40	1:2:3:4:5:6:7:8:9:10:11:12:13:14:15:16:19
RTAC-4	48GEDN04	35.0	25.2	1025	150	67	54	0.6	0.75	2	2	77	64	40	1:2:3:4:5:6:7:8:9:10:11:12:13:14:15:16:19
1. COOLING CAPACITIES ARE GROSS VALUES BASED ON AIR ENTERING EVAPORATOR AT SCHEDULED CONDITION AND 95°F AMBIENT AIR TEMPERATURE. UNIT SHALL PROVIDE MECHANICAL COOLING DOWN TO SCHEDULED TEMPERATURE. UNIT SHALL UTILIZE A2L REFRIGERANT.															
2. HEATING CAPACITIES BASED ON 60°F AIR ENTERING HEAT EXCHANGER AND FIRING NATURAL GAS. PROVIDE ALUMINIZED STEEL HEAT EXCHANGER.															
3. PROVIDE TRAPPED CONDENSATE DRAIN. SEE CONDENSATE DRAIN TRAP DETAIL.															
4. UNIT SHALL HAVE BOTTOM DISCHARGE AND RETURN MOUNTED ATOP FULL PERIMETER 14" TALL (MINIMUM) ROOF CURB. SEE ROOF CURB DETAIL.															
5. STATIC PRESSURE SCHEDULED DOES NOT INCLUDE WET COOLING COIL, FILTER, HEATING PLANT, REHEAT COIL OR SYSTEM EFFECT LOSSES.															
6. PROVIDE FACTORY NON FUSED DISCONNECT SWITCH. PROVIDE PHASE MONITOR OPTION TO PROTECT AGAINST PHASE LOSS, PHASE IMBALANCE, AND PHASE REVERSAL(3 PHASE UNITS ONLY).															
7. PROVIDE FACTORY INSTALLED INSIDE THE CURB UTILITY PROVISIONS (POWER CIRCUIT AND CONTROLS CIRCUIT) SO THAT NO ELECTRICAL UTILITIES ARE OUTSIDE UNIT CASING. GAS CONNECTION SHALL BE OUTSIDE CASING. POWER CIRCUIT AND CONTROL CIRCUIT SHALL ALL BE ROUTED UP INSIDE THE CURB. CONTRACTOR SHALL ROUTE UTILITIES IN FACTORY DESIGNATED LOCATION. UNDER NO CIRCUMSTANCES SHALL CONTRACTOR CUT OPENINGS IN BOTTOM OF RTAC UNIT. FIELD CUTTING OF RTAC UNIT SHALL RESULT IN REJECTION OF RTAC UNIT AND NEW UNIT SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.															
8. PROVIDE FACTORY INSTALLED POWERED G.F.I. CONVENIENCE OUTLET, TRANSFORMER ETC.															
9. PROVIDE MANUAL OUTSIDE AIR DAMPER AND OUTDOOR AIR INTAKE HOOD.IF MANUFACTURER DOES NOT OFFER FACTORY MANUAL OUTSIDE AIR DAMPER, PROVIDE THIRD PARTY OUTSIDE AIR DAMPER AS MANUFACTURED BY ALADDIN, MGM, OR MICROMETL.															
10. PROVIDE ELECTRO-MECHANICAL CONTROLLER OR BASIC MICROPROCESSOR CONTROLLER.															
11. PROVIDE LOUVERED CONDENSER COIL HAIL GUARDS.															
12. PROVIDE HINGED ACCESS DOORS WITH 1/4 TURN LATCHES ON ALL ACCESS DOORS.															
13. PROVIDE INTEGRAL ON/OFF OR STAGED HOT GAS REHEAT DEHUMIDIFICATION COIL CIRCUIT. PROVIDE ALL OTHER CONTROL AND MATERIAL OPTIONS TO ACCEPT INPUT FROM SPACE HUMIDITY SENSOR.															
14. OUTDOOR AIR CFM FOR THIS UNIT AND AREA HAS BEEN DETERMINED BASED ON ASHRAE 62.1 INDOOR AIR QUALITY PROCEDURE RATHER THAN THE PRESCRIPTIVE VENTILATION RATE PROCEDURE. THE OUTDOOR AIR RATES USING THIS PROCEDURE ARE LOWER THAN THE PRESCRIPTIVE PROCEDURE. THIS UNIT SHALL BE PROVIDED WITH A CONTRACTOR INSTALLED NEEDLE POINT BI-POLAR IONIZATION UNIT TO REDUCE CONTAMINANT LEVELS TO THOSE EQUAL TO OR LOWER THAN THE VENTILATION RATE PROCEDURE. SEE BI-POLAR IONIZATION DETAIL. UNIT NOT SHOWN ON DRAWINGS BUT SHALL BE INSTALLED AT BLOWER PER MANUFACTURERS INSTRUCTIONS BI-POLAR IONIZATION UNIT SHALL BE GLOBAL PLASMA SOLUTIONS MODEL NUMBER CI-2. DESIGNED FOR MOUNTING INSIDE EQUIPMENT, AND WITH FACTORY FURNISHED 24VAC INPUT FOR POWERING BI-POLAR UNIT FROM ASSOCIATED EQUIPMENT'S 24V FAN TERMINAL.															
15. PROVIDE DIRECT DRIVE INDOOR FAN MOTOR.															
16. PROVIDE 2 STAGE SCROLL COMPRESSOR.															
17. PROVIDE BLANK OFF PANEL AT OUTSIDE AIR INTAKE.															
18. PROVIDE BOTTOM DISCHARGE AND BOTTOM RETURN MOUNTED ATOP 14" ACOUSTICAL ROOF CURB. SEE ACOUSTICAL ROOF CURB DETAIL.															
19. PROVIDE LOW AMBIENT CONTROL OPTION WITH CRANKCASE HEATER TO ALLOW COOLING DOWN TO SCHEDULED OUTSIDE AIR TEMPERATURE.															

GRILLES					
TAG	TITUS MODEL NUMBER	CONN. SIZE	FINISH	THROW AND/OR APPLICATION	NOTES
A	TMS	6" Ø	WHITE	4-WAY	1:5:7:8
B	TMS	8" Ø	WHITE	4-WAY	1:5:7:8
C	TMS	10" Ø	WHITE	4-WAY	1:5:7:8
D	50F	24" X 24"	WHITE	CEILING RETURN	5:10
E	TDC	6" X 6"	WHITE	1-WAY	2:6:7:8:9
F	50F	14" X 14"	WHITE	CEILING RETURN	3:4:6:7:8
1. ALUMINUM LOUVERED FACE SQUARE CONE CEILING SUPPLY DIFFUSER WITH FIXED 360° RADIAL AIR DISCHARGE PATTERN. PROVIDE FULL FACED LOUVERS.					
2. ALUMINUM LOUVERED FACE HIGH CAPACITY CEILING SUPPLY DIFFUSER WITH FIXED AIR DISCHARGE PATTERN AS SCHEDULED.					
3. ALL ALUMINUM 1" X 1" X 1" "EGG CRATE" EXHAUST/RETURN GRILLE.					
4. PROVIDE OPPOSED BLADE DAMPER.					
5. IN 24 X 24 PANEL FOR LAY-IN CEILING.					
6. FLANGED FRAME FOR SURFACE MOUNTING.					
7. NC LEVEL NOT TO EXCEED NC 25.					
8. SEE CEILING GRILLE DUCT CONNECTION DETAIL.					
9. PROVIDE RECTANGULAR TO ROUND FLAT ADAPTER OF SIZE REQUIRED. SEE RECTANGULAR TO ROUND FLAT ADAPTER DETAIL.					
10. 1" X 1" X 1" ALUMINUM EGGRATE RETURN CORE ONLY PANEL TO LAY IN 24 X 24 T-BAR GRID. IN AREAS WHERE CONDUIT, PIPING, DUCT, STRUCTURE, ETC. IS VISIBLE FROM 6" ABOVE FLOOR LEVEL, PROVIDE PLAT BLACK 26 GAUGE VISION SHIELD. SEE EGGRATE RETURN GRILLE VISION SHIELD DETAIL.					

FILTERS							
FILTER TYPE	CAMFILL FAR MODEL NUMBER	APPLICATION	MAXIMUM PRESSURE DROP @ INITIAL FLOW VELOCITY		ASHRAE 52.1-1992 DUST SPOT EFFICIENCY	ASHRAE MERV	NOTES
			PD IN WG	FFM			
PLEATED	30-30	ROOFTOP AIR CONDITIONERS	0.09	250	30%	8	1:2:3:4
1. UL CLASS 2, MEDIUM EFFICIENCY, COTTON AND SYNTHETIC MEDIA FILTER.							
2. PROVIDE RIGID HEAVY DUTY FRAME BONDED TO MEDIA WITH WELDED WIRE PLEATED SUPPORT GRID TO MAINTAIN RADIAL PLEAT.							
3. FILTER MINIMUM EFFICIENCY REPORTING VALUE (MERV) BASED ON EVALUATION IN ACCORDANCE WITH ASHRAE STANDARD 52.2-1999							
4. FILTER SIZE AND FILTER QUANTITIES FOR EACH PIECE OF EQUIPMENT SHALL BE DETERMINED BY EQUIPMENT MANUFACTURER.							

EXHAUST FANS							
TAG	GREENHECK MODEL NUMBER	CFM	APPROX. E.S.P. (IN.W.G.)	FAN RPM	MOTOR HP	SONES	NOTES
EF-1	SP-B100	75	0.2	742	80W	0.5	1:2:3:4:5
EF-2	SP-B100	75	0.2	742	80W	0.5	1:2:3:4:5
EF-3	SP-B100	75	0.2	742	80W	0.5	1:2:3:4:5
EF-4	SP-B100	75	0.2	742	80W	0.5	1:2:3:4:5
EF-5	SP-B100	75	0.2	742	80W	0.5	1:2:3:4:5
EF-6	SP-B100	75	0.2	742	80W	0.5	1:2:3:4:5
1. CENTRIFUGAL CEILING EXHAUST FAN WITH INTEGRAL POLYPROPYLENE WHITE GRILLE, FLAPPER BACKDRAFT DAMPER, PLUG IN TYPE DISCONNECT, AND MOUNTING BRACKETS. SEE CENTRIFUGAL CEILING MOUNTED EXHAUST FAN DETAIL.							
2. PROVIDE MANUFACTURER PROVIDED, CONTRACTOR INSTALLED PASSIVE INFRARED MOTION DETECTOR WITHG ADJUSTABLE TIME DELAY SHUTOFF SETTING. DETECTOR SHALL BE DESIGNED FOR CEILING MOUNTING, AND SHALL NOT BE INTEGRAL WITH FAN GRILLE.							
3. DIRECT DRIVE.							
4. PROVIDE FACTORY MOUNTED DISCONNECT SWITCH.							
5. PROVIDE SPEED CONTROLLER.							

DUCTLESS FAN COIL UNITS									
TAG	MITSUBISHI MODEL NUMBER	TOTAL COOLING MBH		SENSIBLE COOLING CAPACITY (MBH)	TOTAL SUPPLY CFM	HEATING CAPACITY MBH		APPROX. E.S.P. (IN.W.G.)	BLOWER MOTOR WATTS
		RATED	MIN.			RATED	MIN		
DFCU-1	PKA-AL12NL	12.0	4.3	8.7	385	N/A	N/A	N/A	30
DFCU-2	SLZ-AF09NL	9.0	2.3	8.1	300	12.8	4.9	N/A	50
DFCU-3	SLZ-AF09NL	9.0	2.3	8.1	300	12.8	4.9	N/A	50
DFCU-4	SLZ-AF09NL	9.0	2.3	8.1	300	12.8	4.9	N/A	50
DFCU-5	PLA-AE24NL	24.0	10.3	19.6	810	29.0	8.4	N/A	120
1. WALL MOUNTED COOLING ONLY DUCTLESS FAN COIL UNIT. PROVIDE ADJUSTABLE VANES, 3 SPEED FAN MOTOR, MICROPROCESSOR CONTROLLER, FILTER AND WALL MOUNTING BRACKET. SEE WALL MOUNTED DUCTLESS INDOOR UNIT DETAIL.									
2. COOLING CAPACITIES BASED ON AIR ENTERING EVAPORATOR AT 80°Fdb, 67°Fwb AND MATCHED WITH INDICATED CONDENSING UNIT/HEATPUMP. AIR CFM IS ON HIGH SPEED WITH WET COIL IN COOLING MODE.									
3. PROVIDE FACTORY PROVIDED CONDENSATE PUMP FOR WALL MOUNTING ABOVE CEILING. THIS PUMP IS IN ADDITION TO THE FACTORY INSTALLED PUMP. PROVIDE BLUE DIAMOND MODEL X87 WITH DISCHARGE HEAD OF 23 FEET AND SUCTION HEAD OF 16.5 FEET. PROVIDE OPTIONAL RESERVOIR. MOUNT CONDENSATE PUMP 6" ABOVE CEILING ON WALL BRACKET, AND PIPE VINYL TUBING DOWN TO PUMP RESERVOIR CONNECTION.									
4. PROVIDE PERMANENT WALL MOUNTED 12V DC HARD WIRED THERMOSTAT BY FAN COIL UNIT MANUFACTURER WITH 7 DAY PROGRAMMABLE FEATURE. LOOSE HAND HELD WIRELESS REMOTE WILL NOT BE ALLOWED.									
5. HEATING CAPACITY BASED ON AIR ENTERING EVAPORATOR AT 70° Fdb , AND OUTDOOR AIR AT 47° AND MATCHED WITH INDICATED HEAT PUMP UNIT.									
6. CEILING CASSETTE STYLE DUCTLESS FAN COIL UNIT. PROVIDE MANUALLY ADJUSTABLE VANES AND FACTORY INSTALLED CONDENDATE PUMP WITH MINIMUM 24" LIFT. UNIT SHALL BE DESIGNED FOR MOUNTING IN 2' X 2' GRID. (2 TON SHALL BE 33" X 33"FRAME. LOWER TONNAGE SHALL BE 24" X 24").									
7. DO NOT PROVIDE CONDENSATE PUMP WITH THIS WALL MOUNTED UNIT. UNITS CONDENSATE DRAINS BY GRAVITY.									

DUCTLESS CONDENSING UNITS/HEAT PUMPS						
TAG	MODEL NUMBER	TOTAL COOLING MBH		HEATING CAPACITY MBH		NOTES
		RATED	MIN.	RATED	MIN.	
DOU-1	PUY-AK12NL	12.0	4.3	N/A	N/A	1:2:3:4:5:6:7
DOU-2	SUZ-AA09NL	9.0	2.3	12.8	4.9	1:2:3:4:5:6:7
DOU-3	SUZ-AA09NL	9.0	2.3	12.8	4.9	1:2:3:4:5:6:7
DOU-4	SUZ-AA09NL	9.0	2.3	12.8	4.9	1:2:3:4:5:6:7
DOU-5	PUH-AH24NL	24.0	10.3	29.0	8.4	1:2:3:4:5:6:7
1. COOLING CAPACITY BASED ON 95°F AMBIENT AIR TEMPERATURE AND MATCHED WITH SCHEDULED DUCTLESS FAN COIL UNIT.						
2. PROVIDE REFRIGERANT PIPING SIZED AND DESIGNED IN ACCORDANCE WITH MANUFACTURERS INSTRUCTION. NOTE THAT BOTH REFRIGERANT LINES MUST BE INSULATED PER MANUFACTURER'S INSTRUCTIONS. PROVIDE INSULATED LINE SET , VERIFY EXACT LENGTH.						
3. SCHEDULED CAPACITIES ARE OVERALL CAPACITIES REQUIRED FOR MATCHED CONDENSING UNIT/HEATPUMP AND EVAPORATOR COIL.						
4. PROVIDE INTEGRAL CONTROLS INCLUDING CONTACTORS, CONTROL TRANSFORMER, ETC						
5. UNIT SHALL UTILIZE A2L REFRIGERANT. PROVIDE DC ROTARY COMPRESSOR WITH VARIABLE SPEED INVERTER TECHNOLOGY.						
6. MOUNT ON EQUIPMENT SUPPORT RAIL. SEE DUCTLESS HP/CU SUPPORT RAIL DETAIL.						
7. PROVIDE FACTORY WIND BAFFLE AND ALL OTHER ACCESSORIES TO ALLOW COOLING OPERATION TO SCHEDULED TEMPERATURE.						

MECHANICAL LEGEND	
	GRILLE. REGISTER, DIFFUSER DESIGNATION WITH CFM SHOWN BELOW FOR TAB FIRM TO BALANCE DEVICE
	RECTANGULAR (OR FLAT OVAL) DUCT SIZE: 1ST DIMENSION IS SIZE DRAWN
	RIGID ROUND DUCTWORK (OR FLUE PIPING)
	FLEXIBLE ROUND DUCTWORK
	RECTANGULAR TO ROUND TRANSITION
	FLEXIBLE CONNECTION
	DUCT LINER - SEE SPECIFICATION OR SHEET NOTES FOR THICKNESS AND TYPE
	SQUARE ELBOW WITH TURNING VANES
	45° BRANCH ENTRY FITTING
	90° ROUND TO ROUND SADDLE TAP
	SMOKE DAMPER - SEE SMOKE DAMPER DETAIL
	FIRE DAMPER - SEE FIRE DAMPER DETAIL
	COMBINATION FIRE/SMOKE DAMPER - SEE FIRE DAMPER DETAIL
	MANUAL VOLUME DAMPER
	BELLMOUTH TAKE-OFF FITTING
	45° TAKE-OFF FITTING
	SUPPLY DUCT TO OR FROM ABOVE (OR SUPPLY GRILLE)
	RETURN DUCT TO OR FROM ABOVE (OR RETURN GRILLE)
	ROOF MOUNTED EQUIPMENT
	SUPPLY ARROW INDICATING DIRECTION OF AIRFLOW OR DUCT/PIPE OFFSET UP
	RETURN OR EXHAUST AIRFLOW (DIRECTION)
	THERMOSTAT OR TEMPERATURE SENSOR WITH LOCKING COVER
	DDC TEMPERATURE SENSOR</