

100% OUTSIDE AIR HANDING UNIT WITH ENERGY RECOVERY SEQUENCE OF OPERATIONS: 100% OA PACKAGED DX UNIT WITH ENERGY RECOVERY WHEEL UNIT CONTROL POINT MATRIX THE SYSTEM IS A 100% OUTSIDE AIR UNIT WITH ENERGY RECOVERY. THE UNIT IS COMPRISED OF AN INTAKE SECTION WITH AUTOMATIC OUTSIDE AIR Adjustable Show On Al AO BI BO AV Trend Alarm **Point Name** DAMPER, FILTER SECTION, DX COOLING COIL, HOT GAS REHEAT COIL, VARIABLE SPEED SUPPLY FAN(S), INDIRECT-FIRED GAS HEATER, DISCHARGE PLENUM, Measurement Graphic VARIABLE SPEED EXHAUST FAN(S), EXHAUST AIR DAMPER, ENERGY RECOVERY WHEEL, AND A CONDENSING UNIT SECTION. Outside Air Temp % RH Outside Air Humidity THE BMS SHALL COMMAND THE UNIT ON AND OFF. ON A START SIGNAL FROM THE BMS, THE UNIT'S FACTORY CONTROLLER SHALL CONTROL THE OPERATION OF THE UNIT. THE OUTSIDE AIR AND EXHAUST AIR DAMPERS SHALL OPEN. UPON CONFIRMATION THE DAMPER IS OPEN, THE SUPPLY AND Outside Airflow Measurement CFM EXHAUST FANS SHALL BE COMMANDED TO RUN. THE SUPPLY AND EXHAUST FANS SHALL RUN CONTINUOUSLY BY THE BAS DIRECT DIGITAL CONTROLLER Setpoint (DDC) ACCORDING TO THE MENU DRIVEN, ADJUSTABLE WEEKLY SCHEDULING PROGRAM WHEN THE VFD IS IN THE AUTO POSITION. THE SPEED OF THE End Switch SUPPLY FAN SHALL BE MODULATED VIA THE ECM CONTROLLER TO MAINTAIN A SETPOINT STATIC PRESSURE (INDIVIDUALLY ADJUSTABLE) LOCATED TWO-Outside Air Damper - Position % Full Open Closure Failure THIRDS OF THE DISTANCE DOWN THE LONGEST MAIN DUCT TRUNK. COORDINATE SENSOR LOCATIONS WITH ENGINEER PRIOR TO INSTALLATION. THE MOTORIZED OUTDOOR AIR DAMPER SHALL BE COMMANDED AND VERIFIED OPEN PRIOR TO ACTIVATION OF THE SUPPLY AIR FAN. Exhaust Air Temp % RH Exhaust Air Humidity SYSTEM TEMPERATURE CONTROL:
DISCHARGE AIR TEMPERATURE CONTROL SHALL BE DEPENDENT ON THE OUTSIDE AIR TEMPERATURE. THE SYSTEM SHALL EITHER BE IN COOLING MODE OR Cooling Coil Leaving Air Temp HEATING MODE AS NECESSARY TO MAINTAIN SPACE TEMPERATURE SETPOINT. RESET SUPPLY AIR TEMPERATURE AS INDICATED BY BAS INTERFACE Heating Coil Leaving Air Temp Supply Air Temp SEQUENCE APPLIES IN OCCUPIED AND UN-OCCUPIED MODES. High Static Safety > Setpoint in. w.g. Low Static Safety > Setpoint in. w.g. FAN SPEED CONTROL:
THE ECM CONTROLLER FOR THE SUPPLY FAN SHALL CONTROL THE SPEED OF THE FAN TO MAINTAIN A STATIC PRESSURE SETPOINT (AS DETERMINED BY Duct Static Pressure Sensor in. w.g. T&B AND CONTROLS CONTRACTOR) AT A REMOTE STATIC PRESSURE SENSOR LOCATED APPROXIMATELY 2/3 DOWN THE MAIN SUPPLY AIR DUCT. Fault Status Occupied / Unoccupied SUPPLY AIR TEMPERATURE RESET:
THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE AND SHALL CREATE A COOLING SUPPLY AIR TEMPERATURE SETPOINT RESET BASED ON COOLING REQUIREMENTS BELOW:

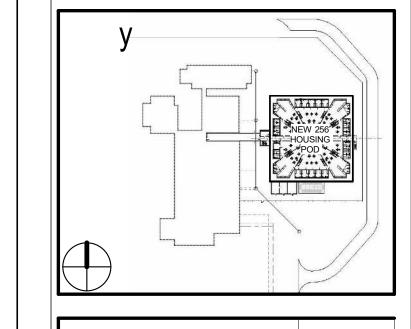
Failure to Start Supply Air Temp Reset Supply Air Static Pressure Reset Outside Air Enthalpy BTU/LB Outside Air Dewpoint

Orlando. FL 32801 www.tlc-engineers.com P 407.841.9050 TLC No.:120018 THINK. LISTEN. CREATE. Professional Seals Christopher J. Floegel, P.E. State of Florida Professional Engineer License No. 84276 This item has been electronically signed and sealed by the individual named above, using a dated Digital Signature in the space below, per F.A.C. Rule 61G15-23.004. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies. Christopher Floegel

10365 Hood Road South Suite 203 t +1 904-262-8660

Suite 1000, Orlando, FL

f +1 407.649.8664



 \rightarrow SAFETIES: ACTIVATION OF THE DUCT SMOKE DETECTOR(S) OR ACTIVATION OF THE BUILDING \rightarrow \rightarrow

SCALE NOT TO SCALE ISSUED FOR PERMIT **REVISIONS**

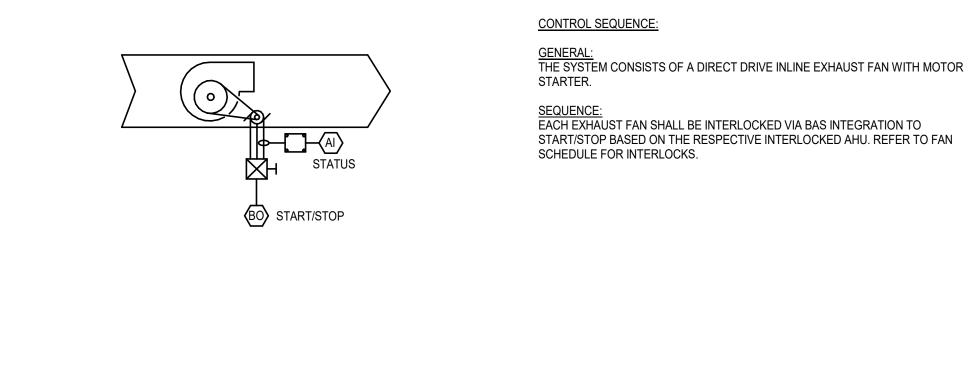
APPROVED BY

C FLOEGEL C FLOEGEL C FLOEGEL CHECKED BY JULY 24, 2020

HVAC CONTROLS

PROJECT NO. 50101397

DESTROY AFTER USE



| EXHAUST FAN CONTROL POINT MATRIX | | | | | | | | | | | |
|----------------------------------|----|----|----|----|----|-------|-------|--------------------|------------------------|------------------|--------------------|
| Point Name | Al | AO | ві | во | AV | Trend | Alarm | Alarm Condition | Unit of Measurement | Adjustable (Y/N) | Show On Graphic |
| Exhaust Fan Start/Stop | | | | | | | | | On/Off | Y | • |
| Supply Fan Status | | | | | | | | Failure to Start | Amps | N | • |
| Exhaust Fan Interlock | | | | | | | | | °F | N | |

CONTROL DIAGRAM FOR EXHAUST FANS

SPATE TEMPERATURE SENSOR. FURNISH ONE **CONDENSING UNIT** SENSOR PER FCU. MOUNT AT 48" AFF (REFER TO PLANS

STATUS

PER EQUIPMENT SELECTION

INDOOR UNIT

BO START/STOP

STATUS DISCHARGE AIR TEMPERATURE

DX FAN COIL UNITS CONTROL POINT MATRIX Al AO BI BO AV Trend Alarm Condition Measurement (Y/N) Space Temp <68 °F Heating Supply Fan Start/Stop - Starter Supply Fan Status ■ ■ Failure to Start Ν Condensing Unit Status ■ ■ Failure to Start Amps FCU Discharge Air Temp

CONTROL SEQUENCE:

GENERAL:
THE SYSTEM CONSISTS OF AN INDOOR UNIT WITH CONSTANT VOLUME SA FAN AND CONDENSING UNIT. THE UNIT IS DDC CONTROLLED UTILIZING ELECTRIC

FIRE ALARM SYSTEM SHALL AUTOMATICALLY SHUT DOWN THE FCU FAN. THESE

SAFETIES SHALL BE INTERLOCKED WITH THE FAN WHEN OPERATING THROUGH

SEQUENCE:
THE FCU SHALL BE CONTROLLED ON A SEVEN-DAY TIME SCHEDULE

AUTOMATICALLY THROUGH THE LOCAL DDC CONTROLLER.

THE DDC CONTROLLER OR BYPASS CONTACTOR.

CONTROL DIAGRAM FOR SPLIT DX SYSTEMS