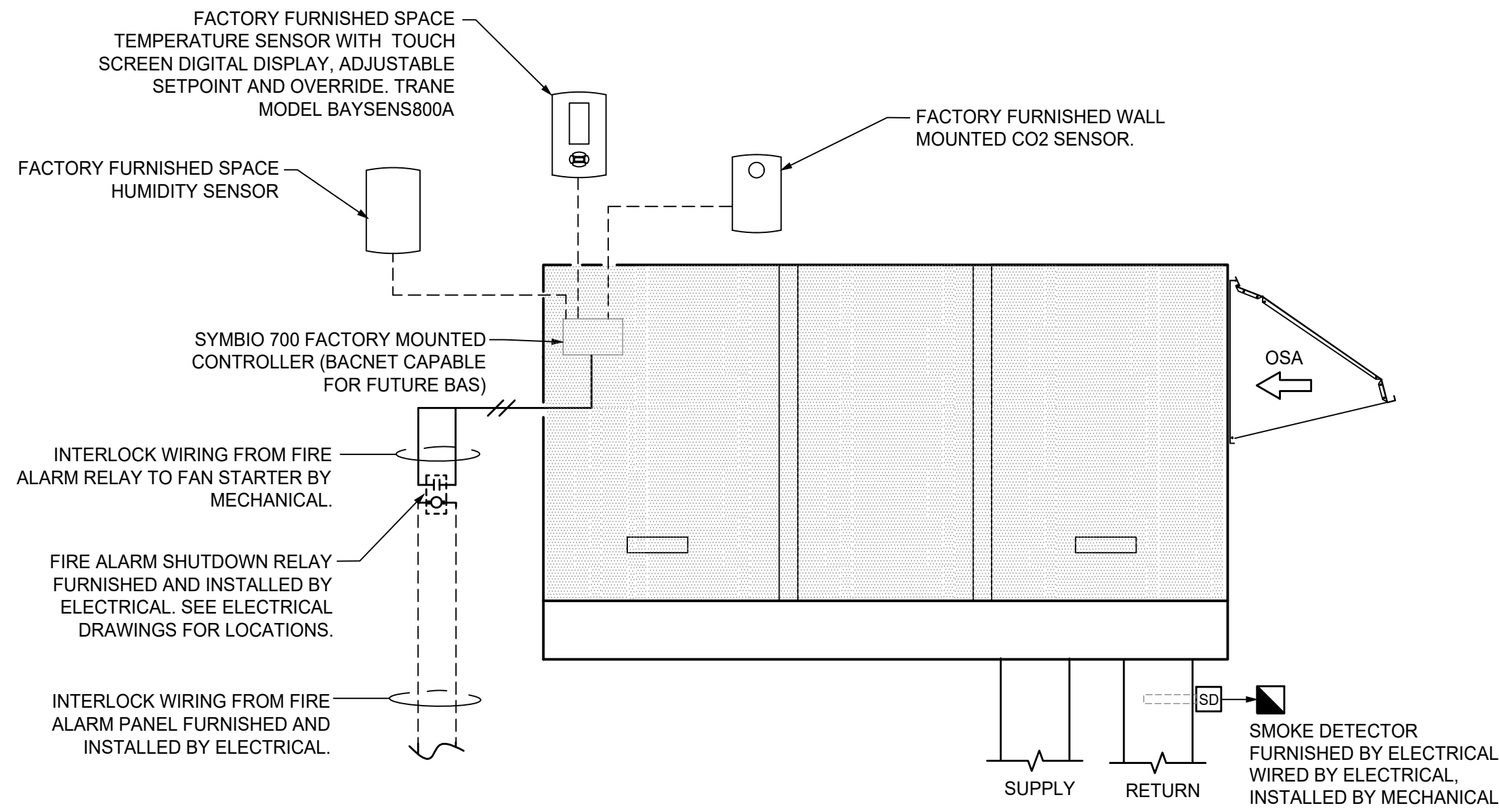




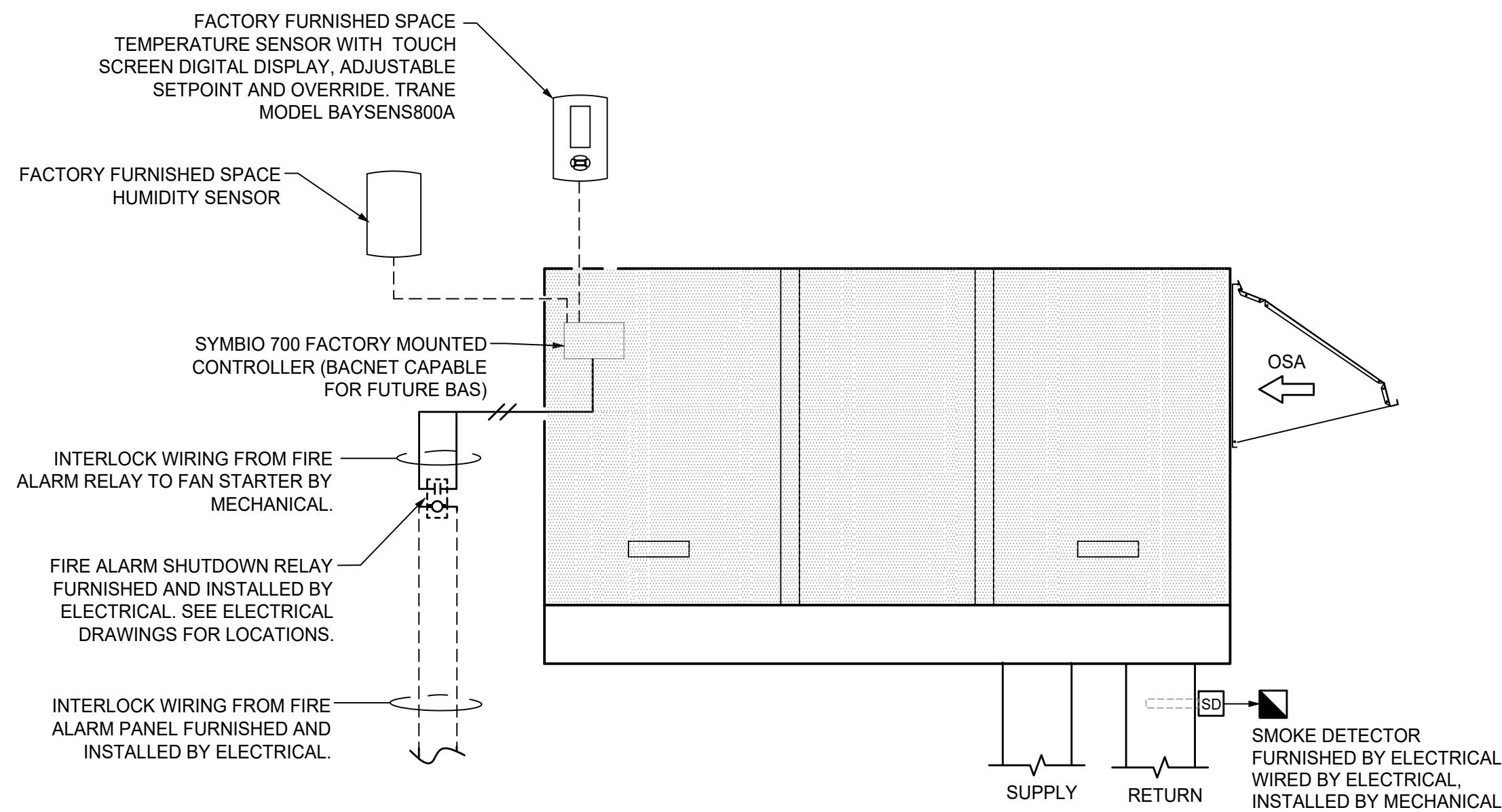
CONTROL SEQUENCE

COMMERCIAL PACKAGE ROOFTOP AC UNIT WITH MICROPROCESSOR TO CONTROL ALL UNIT FUNCTIONS. THE CONTROL SYSTEM SHALL BE SUITABLE FOR BOTH CV AND VAV APPLICATIONS. THE UNIT SHALL CONSIST OF A DX COOLING COIL, SUPPLY AIR FAN, MERV 13 FILTERS, DRY BULB ECONOMIZER WITH BAROMETRIC OR POWERED RELIEF AS SCHEDULED, HOT GAS REHEAT, AND WIRELESS COMMUNICATION INTERFACE. THE SUPPLY FAN IS FURNISHED WITH A VARIABLE FREQUENCY DRIVE WITH BYPASS. CONTROLS INCLUDE OSA AIRFLOW CONTROL (WITH DCV), SPACE TEMPERATURE AND HUMIDITY CONTROL. THE UNIT SHALL BE CONTROLLED AS FOLLOWS:

- SUPPLY FAN CONTROL
 - THE UNIT IS STARTED AND STOPPED FROM THE WI-FI THERMOSTAT SUBJECT TO LOW LIMIT T'STAT IN AIR STREAM ENTERING COOLING COIL, AND SIGNAL FROM FIRE ALARM SYSTEM. THE UNIT RUNS CONTINUOUSLY IN THE OCCUPIED MODE.
 - SUPPLY FAN SPEED CONTROL: THE UNIT SHALL OPERATE ON FACTORY CONTROLS AS SINGLE ZONE VARIABLE VOLUME.
 - A DUCT SMOKE DETECTOR SHALL BE PROVIDED IN THE RETURN DUCT PRIOR TO MIXING WITH OUTSIDE AIR AND IN THE SUPPLY DUCT (SEE ELECTRICAL DIVISION). THE SUPPLY FAN SHALL BE INTERLOCKED WITH SIGNAL FROM FIRE ALARM SYSTEM FOR FAN SHUTDOWN. INTERLOCK SHALL BE WIRED DIRECTLY TO THE UNIT CONTROLLER FOR SHUTDOWN. THE EXHAUST AIR FAN SHALL BE SHUTDOWN ALONG WITH UNIT CONTROLS.
- SPACE TEMPERATURE CONTROL
 - OCCUPIED MODE: THE UNIT CONTROLLER SHALL STAGE THE COMPRESSORS, FAN SPEED AND GAS HEAT TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 72 DEGREES F (ADJ.) AS SENSED BY THE WALL MOUNTED SPACE TEMPERATURE SENSOR.
- OUTSIDE AIR DAMPER CONTROL
 - OCCUPIED MODE: UNIT MOUNTED OUTSIDE AIR DAMPER SHALL OPEN TO MINIMUM POSITION. TO BE DETERMINED BY T&B AGENCY. THE UNIT CONTROLLER SHALL MODULATE THE OUTSIDE AND RETURN AIR DAMPERS BETWEEN MINIMUM AND MAXIMUM DEFINED OSA AIRFLOW RATES TO MAINTAIN 900 PPM CO2.
 - UNOCCUPIED MODE: THE OSA DAMPER SHALL BE CLOSED.
- RETURN DAMPER CONTROL
 - OCCUPIED MODE: UNIT MOUNTED RETURN DAMPER SHALL OPEN TO POSITION DETERMINED BY T&B AGENCY.
 - UNOCCUPIED MODE: THE RETURN AIR DAMPER SHALL BE OPEN.
- ECONOMIZER CONTROL
 - THE UNIT CONTROLLER SHALL MEASURE THE DRY BULB TEMPERATURE OF THE INDOOR AND OUTDOOR AIR AND WHEN MOST EFFICIENT COMMAND THE UNIT INTO ECONOMIZER MODE.
 - THE UNIT CONTROLLER SHALL MODULATE THE OSA DAMPER AND THE RETURN AIR DAMPER TOGETHER (REVERSE ACTION) TO MAINTAIN SPACE TEMPERATURE SETPOINT.
- SPACE HUMIDITY CONTROL
 - THE UNIT CONTROLLER SHALL ACTIVATE THE HOT GAS REHEAT MODE TO PROVIDE SPACE DEHUMIDIFICATION WHEN SPACE CONDITIONS ALLOW.
 - SPACE HUMIDITY LEVELS SHALL BE MONITORED BY A WALL MOUNTED HUMIDITY SENSOR.

GPU -1, 2 & 3 AND RTU-3 & 8 CONTROLS

NO SCALE



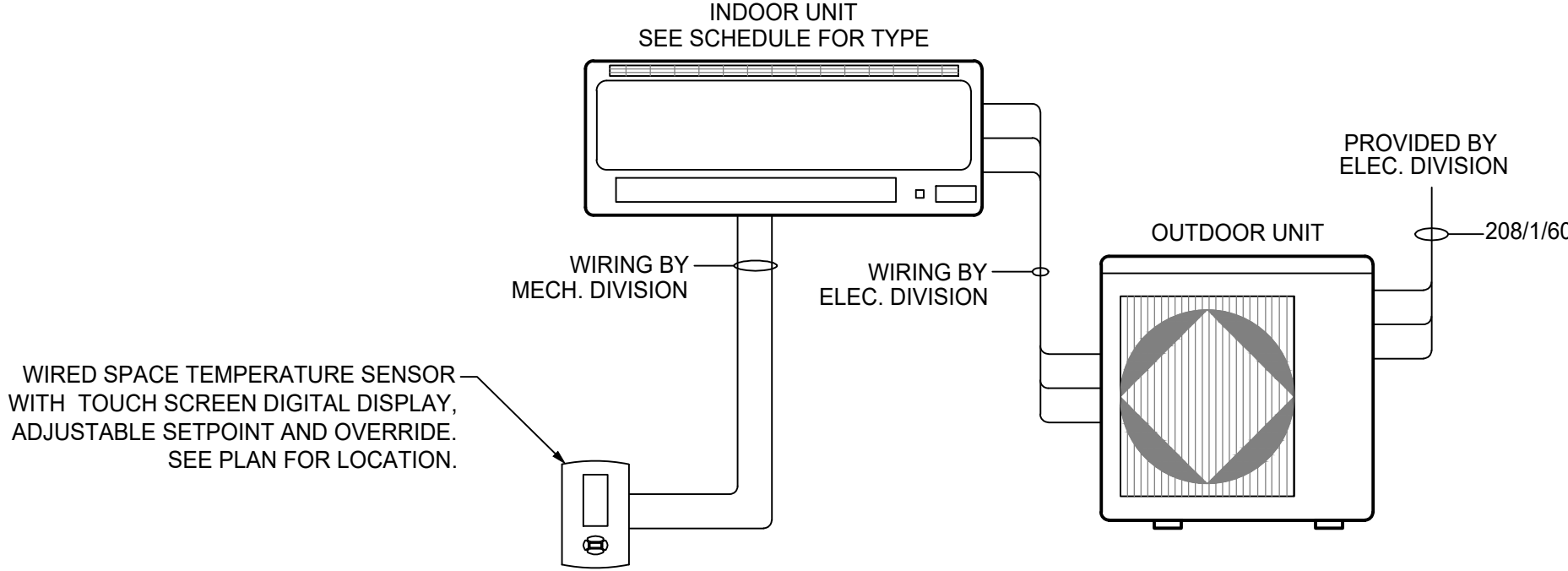
CONTROL SEQUENCE

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 - SUPPLY FAN SPEED CONTROL: THE UNIT SHALL OPERATE ON FACTORY CONTROLS AS CONSTANT VOLUME.
 - A DUCT SMOKE DETECTOR SHALL BE PROVIDED IN THE RETURN DUCT PRIOR TO MIXING WITH OUTSIDE AIR AND IN THE SUPPLY DUCT (SEE ELECTRICAL DIVISION). THE SUPPLY FAN SHALL BE INTERLOCKED WITH SIGNAL FROM FIRE ALARM SYSTEM FOR FAN SHUTDOWN. INTERLOCK SHALL BE WIRED DIRECTLY TO THE UNIT CONTROLLER FOR SHUTDOWN. THE EXHAUST AIR FAN SHALL BE SHUTDOWN ALONG WITH UNIT CONTROLS.
- SPACE TEMPERATURE CONTROL
 - OCCUPIED MODE: THE UNIT CONTROLLER SHALL STAGE THE COMPRESSORS, FAN SPEED AND GAS HEAT TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 72 DEGREES F (ADJ.) AS SENSED BY THE WALL MOUNTED SPACE TEMPERATURE SENSOR.
- OUTSIDE AIR DAMPER CONTROL
 - OCCUPIED MODE: UNIT MOUNTED OUTSIDE AIR DAMPER SHALL OPEN TO MINIMUM POSITION. TO BE DETERMINED BY T&B AGENCY. WHERE DCV IS SCHEDULED, THE UNIT CONTROLLER SHALL MODULATE THE OUTSIDE AND RETURN AIR DAMPERS BETWEEN MINIMUM AND MAXIMUM DEFINED OSA AIRFLOW RATES TO MAINTAIN 900 PPM CO2.
 - UNOCCUPIED MODE: THE OSA DAMPER SHALL BE CLOSED.
- RETURN DAMPER CONTROL
 - OCCUPIED MODE: UNIT MOUNTED RETURN DAMPER SHALL OPEN TO POSITION DETERMINED BY T&B AGENCY.
 - UNOCCUPIED MODE: THE RETURN AIR DAMPER SHALL BE OPEN.
- ECONOMIZER CONTROL
 - THE UNIT CONTROLLER SHALL MEASURE THE DRY BULB TEMPERATURE OF THE INDOOR AND OUTDOOR AIR AND WHEN MOST EFFICIENT COMMAND THE UNIT INTO ECONOMIZER MODE.
 - THE UNIT CONTROLLER SHALL MODULATE THE OSA DAMPER AND THE RETURN AIR DAMPER TOGETHER (REVERSE ACTION) TO MAINTAIN SPACE TEMPERATURE SETPOINT.
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 - SPACE HUMIDITY LEVELS SHALL BE MONITORED BY A WALL MOUNTED HUMIDITY SENSOR.

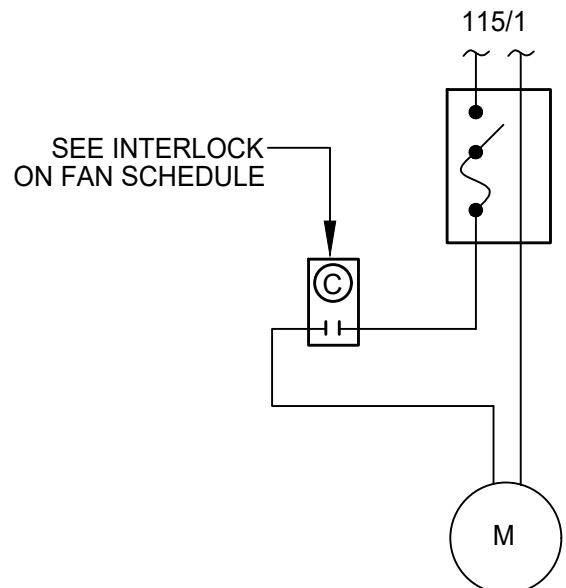
RTU-1, 2, 4, 5, 6, 7, 9 & 10 CONTROLS

NO SCALE



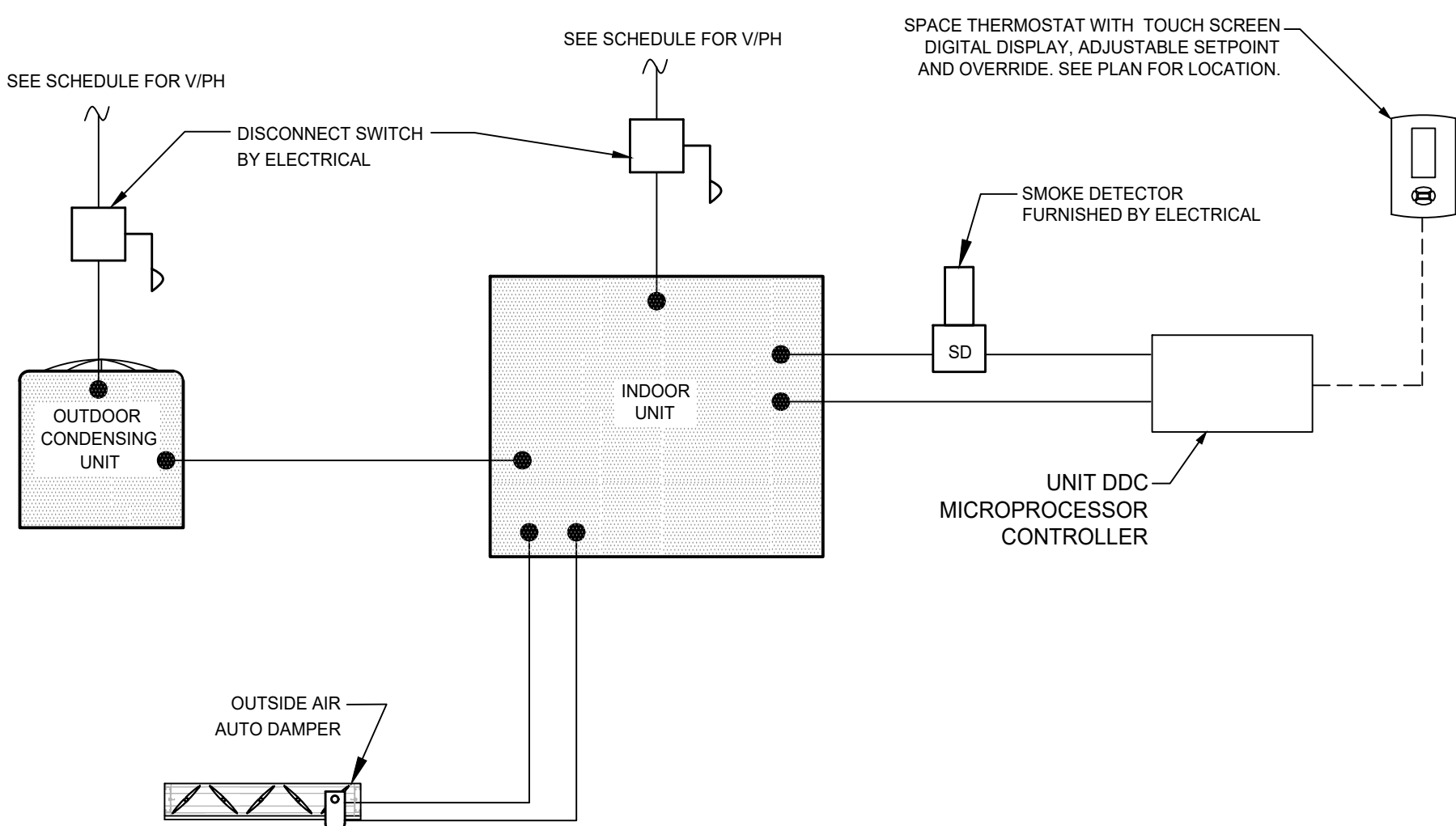
DUCTLESS AC UNIT (DAC-1, 2, 3 & 4) CONTROLS

NO SCALE



SINGLE PHASE EXHAUST FAN CONTROLS

NO SCALE



CONTROL SEQUENCE

SPLIT SYSTEM:
THE BAS SHALL START THE UNIT SUBJECT TO THE FIRE ALARM INTERLOCK AND FREEZESTAT. THE OUTSIDE AIR DAMPER SHALL OPEN TO MINIMUM POSITION. THE UNIT CONTROLLER SHALL CYCLE ON HEATING OR COOLING STAGES TO MAINTAIN THE OCCUPIED SPACE SETPOINT (70°F HEATING/75°F COOLING - ADJUSTABLE). THE UNIT CONTROLLER SHALL MAINTAIN NIGHT SETBACK TEMPERATURES AT 55°F HEATING AND 82°F COOLING.

SPLIT SYSTEM UNIT (AC-1 & 2 / CU-1 & 2) CONTROLS

NO SCALE

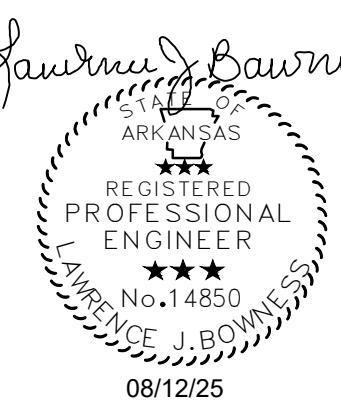
CONTROL SYSTEM GENERAL NOTES

- MECHANICAL CONTRACTOR TO COORDINATE WITH ELECTRICAL CONTRACTOR FOR EXACT QUANTITY AND LOCATIONS OF 120 V CONTROLS POWER NECESSARY TO CONTROL PANELS AND AUTOMATIC DAMPER ACTUATORS THROUGHOUT BUILDING.
- ALL SMOKE DETECTORS ARE PROVIDED AND WIRED BY ELECTRICAL, INSTALLED BY MECHANICAL.
- PROVIDE ALL NECESSARY RELAYS, SWITCHES, SENSORS, LOW VOLTAGE CONTROL WIRING, ACTUATORS, ETC. FOR A COMPLETE AND FUNCTIONAL CONTROLS SYSTEM.

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Revisions
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HVAC Controls

M7.01