

Prefunctional Checklist Approvals and Procedures

Project _____

PC-05 Terminal Units

Associated checklists _____

Contractor filling out this form _____

1. Submittal

* For the items assigned to the Contractor(s) signing below, the checklist items are complete as marked and ready for functional testing. The checklist items have been checked off only by parties having direct knowledge of the event.
*This checklist is submitted for approval for the TU list attached, subject to the attached list of outstanding items yet to be completed. A Statement of Correction will be submitted upon deficiency correction. None of the outstanding items preclude safe and reliable functional testing of other TU's.

Controls Contractor _____ Date _____

Sheet Metal Contractor _____ Date _____

General Contractor _____ Date _____

Mechanical Contractor _____ Date _____

2. Requested Documentation Submitted:

Document	Y/N	Contr.
Manufacturer's cut sheets		
Installation and checkout manual		
O&M manual		

Document	Y/N	Contr.
Completed control drawings		
Full written sequences of operation		
All control parameters, deadbands & setpoints		

Documentation complete as per contract documents..... **YES** **NO**

3. Checkout Record

Prefunctional checklist items are to be completed on each TU as part of startup & initial checkout, preparatory to functional testing. Further instructions and an explanation of each checklist item, by column number, are found below. See attached sheets for actual checkout record. This checklist does not take the place of the manufacturer's recommended checkout and startup procedures or report. The installing contractor's startup and checkout plan shall make reference to incorporating this checklist or have it attached when submitting the plan to the commissioning agent for approval, prior to execution.

Col. # **CHECKOUT PROCEDURES AND KEY:** (refers to column number of TU record)

- 1 Application and installation in conformance with mfr's recommendations and job specs. Specified sound wrapping and joint sealant installed.
- 2 Any high pressure ducting upstream has been leak and pressure tested, cleaned and approved prior to setting TU.
- 3 Model and tag checked against plans and equipment list. Tag or mark affixed.
- 4 Unit secured per manufacturer's recommendations, contract documents and seismic requirements.
- 5 Unit has sufficient clearance to be serviced.
- 6 Inlet conditions OK: Smooth, round, straight duct for at least 3 duct diameters when possible and 2 diameters minimum for velocity pressure sensor for flow readings and 3 to 5 diameters for single point electronic sensors, else airflow straighteners, OR per manufacturer's recommendation.
- 7 All balancing devices have been provided in compliance with the contract documents.
- 8 Any hot or chilled water piping installation complete with valves tagged. Auto-flow control valves checked to ensure proper model.
- 9 Controls Hardware Check: a) Wiring checked to each point. b) Software pt. address input into box and checked for all points (zone temp., pressures for flow calcs, damper position, fan status, supply air temp., valve position, etc.). c) Release actuator clutch and verify free damper.
- 10 Controls Software Load. Power up unit and download approved software program.

Notes:

- 11 Operational Check. a) Start air handler fans. b) Override space temp. to be 55F to simulate full heating. Verify that BAS flow sensors read the maximum heating flow and minimum cooling flow for that box per box schedule. Verify proper opening of heating coil valve, if applicable. c) Override space temp. to be 80F to simulate full cooling. Verify that BAS flow sensors read the maximum cooling flow and minimum heating flow for that box per box schedule. Verify by observation, the proper closing of heating coil valve, if applicable. During the above sequencing, if box is fan powered, verify no unusual sound or vibration and verify proper fan staging.
- 12 Sensor Calibrations. All Sensors: a) Verify that all sensor locations are appropriate and away from causes of erratic operation. Verify that sensors with shielded cable, are grounded only at one end. b) For sensor pairs that are used to determine temperature or pressure differences, make sure they are reading within 0.2F of each other for temperature and within a tolerance equal to 2% of the reading, of each other, for pressure. Critical applications may be tighter. Sensor Without Transmitters: Make a reading with a calibrated test instrument within 6 inches of the site sensor. Verify that the sensor reading (via the permanent thermostat, gage or BAS is within 0.5F for temps and within 3% of design for pressures of the instrument- measured value. If not, install an offset in the BAS, calibrate or replace sensor.
- ** Fully document procedures 9-12 on a separate form for each terminal unit. The form should have a cell to record each check and calibration for each sensor and BAS point, including initial and final values and max and min cfms. Other data may also be included (inlet size, k factor, etc.). The above procedures are not a substitute for the manufacturer's recommended start-up and checkout procedures, but are to be combined with them , as applicable.
- 13 All A/E punch list items related to this TU have been corrected.
- 14 The system has been balanced in accordance with required procedures and the TAB has been approved for the AHU of this TU.
- 15 Required pipe cleaning to this unit, pipe flushing and pressure testing has been completed successfully.
- 16 Construction filter has been removed and final filter installed, if applicable.

3. Approvals

This filled-out checklist has been reviewed. Its completion is approved with the exceptions noted below.

Commissioning Agent

Date

Owner's Representative

Date

Notes: