

15900PPRS – HVAC BAS Systems Trade Preferences

New Construction and or Renovations to mechanicals systems shall incorporate the following methodology for Controls.

1. Energy Conservation: All buildings within the campus shall have the ability for saving energy. Mechanical systems shall have the capacity to utilize night setbacks, curtailment and reset functions.
2. Brown philosophy is Direct Digital Control with pneumatic end devices, except as directed by the operations group.
3. All Direct Digital Control systems shall be referred as Building Automation Systems (BAS).
4. All buildings, with the exception of Rental Properties, shall be connected to the campus fiber optic network back to the systems head-end.
5. If BAS software is of a higher revision (Andover and Siemens only), include cost to upgrade entire campus system.
6. As of 4/02 the Johnson's Metasys System will *NOT* be brought up to any other revision 12. All future installations shall be fitted with field equipment that is compatible to the existing system current to the Campus.
7. BAS shall be true standalone. Whenever more than two controllers reference a shared point, a minimum of two reference points shall be installed.
8. BAS software will include:
 - a. All operating system discs
 - b. Recovery disc
 - c. Complete system backup disc
 - d. All program disc's
9. Documentation to include Visio-compatible drawings.
10. The BAS system shall be connected to emergency power. Example: IF Hot Water pumps are connected to emergency power so should the BAS controllers that control these pumps.
11. The BAS Network controller shall be connected to a UPS. Use Johnson EM350's, Andover CX's and Seimen AEMs.
12. Surge protection will be external to BAS equipment.

13. Field panels

- a. Field panels shall not be installed in hostile environments. Humidity must be less than 65-70% and space temperatures should not exceed 100 degrees F.
- b. All field panels must have a minimum clearance of 18 inches for access.
- c. BAS field panels to have:
 - i. One duplex receptacle installed.
 - ii. Adequate lighting
 - iii. Local disconnect switch.
 - iv. Proper labeling

14. All BAS wiring conduits to be painted Yellow every 10 feet (couplings). All junction box covers will also be painted yellow for easy identification.

15. Pneumatic valve and damper actuator pilot positioners **SHALL NOT** be used except for high temperature hot water valves.

16. High Temperature and steam valves will be normally closed.

17. All temperature sensors **WILL BE PLATINUM** or 10k thermistor with (+ -) 0.36% accuracy.

18. Current (CT) sensors to be used for equipment status's only. Adjustable type only.

19. Humidity sensors shall be Vaisala only.

20. Differential transmitters shall be Foxboro only.

21. BAS start/stop of small fractional fans are not required.

22. All Equipment will have a Hand-Off-Auto switch installed. Safeties must work in the hand position as well as Automatic.

23. For VAV systems, no reduced air flow settings for boxes during unoccupied periods (fans should be off except for preoccupancy period).

24. Acquiring of IP taps and addresses for Ethernet compatible equipment is the responsibility of Brown Project Manager.

25. Fan Coil units

- a. Fan Coil units will not utilize electronic circuitry. Fan coil minimum requirements are:

- i. Electric or Pneumatic spring return valves.
 - ii. Local or remote thermostat.
 - iii. Local speed control switch.
 - iv. Summer/Winter change over switch.
 - b. Fan coil units can be grouped by single circuits to secure same.
26. Damper motors shall not be installed inside any equipment or plenums.
27. Laptop or computer interface units shall be Toshiba. See Controls supervisor for minimum requirements and specifications prior to submittals. Substitutions not allowed except with written permission of Controls Supervisor and Brown Project Manager.
28. Complete Control sequences shall be submitted within two weeks of preliminary mechanical drawings.
29. Control prints shall be submitted two weeks after equipment submittals.
30. Training:
 - a. Curriculum shall be outlined and submitted for approval of owner.
 - b. A qualified factory instructor shall perform classroom training on site.
 - c. Factory Training of at least one trades person.
31. Variable Frequency drives will be either ABB or Toshiba.
32. Circuit Breaker location will be posted on equipment.

END OF SECTION