

SECTION 16000: BUILDING AUTOMATION & AUTOMATIC TEMPERATURE CONTROL SYSTEMS

PART I – GENERAL

WORK SPECIFIED HEREIN

- All components required for a complete Building Automation System (BAS) and temperature control system, shall be provided under this section of the specifications. The system to be a Nexrev Freedom building management system, (no substitutions allowed) and be provided by **Nexrev**, 601 Development Drive. Plano, TX 75074. Phone: (972) 303-8517, Technical Support: (866) 601-5520. Also refer to Required Vendor lists on sheet F2.0 for specific contacts.

SUBMITTALS

- Unless otherwise noted, the contractor shall prepare all shop drawings, product literature, etc. only as required to properly coordinate and construct the project.
- Review of submittals by the Professional of Record is limited to specific shop drawings as called for in the Project Manual.
- Shop drawings for review by the Professional of Record are not required for this section.

PART II – PRODUCTS

SYSTEM REQUIREMENT

The Building Automation System will perform the following:

1. Interface with the factory mounted, microprocessor based control systems in each of the rooftop units to provide complete monitoring and control capabilities.
2. Lighting control with individual outputs for the stocking area, employee area and exterior lights.
3. Exhaust fan control.
4. Monitor building electrical consumption and minimize usage as much as possible through energy management routines.

All electrical work required for the installation of the building automation system will be provided under Division 16 including the following:

1. All line and low voltage control wiring and conduit, as shown on the electrical drawings and control wiring diagrams, and as required by the sequence of operation for a complete control system installation.
2. Mounting of all required control components (i.e., room temperature sensors, phase loss monitor, outdoor sensor assembly, control panels, lighting contactors and control relays), that are not factory mounted.
3. Wiring of lighting circuits to Villa Lighting furnished contactors where required for lighting control.

4. Mounting and wiring of control relays for start/stop control of exhaust fans.
5. Mounting and wiring of all control and sensors for zone dampers.

Items required but not furnished under this section:

Section 16000 - Service Entrance

1. Demand pulse generator for KW input to Nexrev EMS.
 2. Telephone line for MODEM communications at the Nexrev Freedom controller.
 3. Data jack for PETSMART communications at the Nexrev Freedom controller.
- Nexrev Electronic Thermostat Modules (ETM) and related internal sensors to be furnished and factory installed by rooftop air conditioning unit manufacturer.
 - Direct digital microprocessor based Control Panel (Freedom Controller) and related sensors, labor, materials, and equipment shown on drawings and specified to make a complete Temperature Control and Energy Management System.
 - Provide a complete system of conduits and wiring as shown on the drawings.
 - Wiring shall be continuous between devices and equipment with **no splices.**
 - Furnish and install all devices and equipment associated with the Energy Management System as shown on the drawings.
 - Electrical Contractor shall make all 480, 120 and 24 volt terminations.
 - Nexrev shall install one inch high permanent black numbers on temperature sensors to correspond to the associated RTU.
 - General Contractor shall coordinate with Owner telephone installer for installation of dedicated telephone line.
 - Mechanical Contractor and Electrical Contractor shall coordinate for terminations of wiring within roof top units.
 - Mechanical Contractor and Electrical Contractor shall coordinate with Nexrev for system download (start up) and checkout.
 - Energy Management System components will be as manufactured by Nexrev. No exceptions.
 - Nexrev to provide equipment as specified herein and on the drawings as well as complete system design installation documents programming, start-up and checkout for a complete and operable Energy Management System. The following completed forms shall be filled out and turned over to Owner:
 1. Module Address Verification
 2. Load Title Verification

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3. Energy Management System Test Report
 4. Results of Phone Test performed by Nexrev.
 5. Warranty contact personnel, with 24 hour telephone list, and service personnel's home/office telephone numbers.
- Provide hardware and software warranty at no charge for a period of one year from date of system start-up.

PART III – EXECUTION

INSTALLATION

General Contractor, Mechanical Contractor, and Electrical Contractor shall verify all equipment and devices are installed to Nexrev printed installation and hardware mounting instructions.

NEXREV QUALITY CONTROL

The following noted trades shall verify specified quality and proper operation of system components. Perform required system testing as required by Nexrev. This testing and check out shall include but not be limited to:

- Verify analog light sensor location and placement. (Electrical Contractor)
- Verify area light switching pattern (Light Splits). (Electrical Contractor)
- Verify contactor operation. (Electrical Contractor)
- Verify operation of RTU's and HVAC equipment in both first and second stage operation, and heat and cool modes. (Mechanical Contractor)
- Verify sprinkler alarm interlock with Nexrev (if applicable). (Electrical Contractor)
- Establish remote communications with Owner maintenance. (General Contractor)

TESTING AND START-UP

1. The Energy Management System shall be complete and fully operational on or before the substantial completion date. Verify this date with Owner Representatives.
2. Contractor shall arrange to have a Nexrev Technician on-site to perform, but not limited to, the following:
 - System testing of all rooftop units.
 - System testing of all lighting contactors.
 - System testing of outdoor temperature sensor.
 - System testing of outdoor light sensor.
 - Download system.
 - Transfer system program to Owner monitoring computer.
 - System start-up

END OF SECTION