

Advanced Facility Air-Management Technology

Internet-Enabled HVAC
Monitoring & Control

Maximum Digital
Precision & Total
Configuration
Flexibility



Pure and Simple Solutions



LX1 Controls



LX1 Controls

AbsolutAire's Facility Air-Management Technology

For precise energy management, optimum equipment performance and reduced service costs, AbsolutAire offers advanced direct digital controls (DDC) for use on its heating, ventilating and makeup-air systems. This microprocessor-control technology integrates state-of-the-art hardware systems with acclaimed Niagara^{AX} FrameworkTM software to give users Internet-enabled facility air-management monitoring and control capabilities.

The AbsolutAire[®] LX1 control system can serve as a stand-alone energy management system (EMS) utilizing a web browser interface. Or it can be integrated with an existing building management system (BMS) through a local operating network such as BACnet or other open communication protocols for building automation and HVAC control.

The AbsolutAire DDC system is a simple, low-cost, reliable equipment monitoring and control solution. Existing Ethernet networks are easily plugged into the LX1 controller, allowing password-protected access to the AbsolutAire equipment by any computer on that network with a Java[™]-enabled web browser (such as Microsoft Internet Explorer[®]). All software and supporting graphics are resident on each unit controller, eliminating the need to load or maintain control software on the facility network.

Pure & Simple: AbsolutAire delivers *The Best Available Facility Air-Management Technology* ... precise, flexible and expertly integrated to meet specific needs.



AbsolutAire Advantages

- ▲ Internet-Enabled HVAC Monitoring & Control
- ▲ Maximum Digital Precision & Total Configuration Flexibility
- ▲ State-of-the-Art Software & Integrated Hardware



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Niagara^{AX} Framework is a trademark of Tridium, Inc.

Java is a trademark of Sun Microsystems, Inc.

Microsoft Internet Explorer is a registered trademark of Microsoft Corp.

Precise, Flexible, Expertly Integrated

AbsolutAire's LX1 control system brings Internet access and control down to the equipment level. Advanced microprocessor controllers are combined with smart sensors and equipment output devices to provide an Internet-ready, protocol-agnostic control solution that goes well beyond traditional HVAC control methods.

Built around the concept of "common objects" in the Niagara^{AX} Framework software, the AbsolutAire DDC system integrates software and hardware to deliver precise results. The controller can be stand-alone for specific equipment or linked with others as part of a multiple-unit control network.

The LX1 system provides a unified platform for access to unit operating status, set points, alarms, history, energy usage and more – from anywhere, anytime. Users can ensure facilities operate with peak efficiency and optimum energy usage patterns.

LX1 System Flexibility ...



Advanced LX1 systems for monitoring and control of AbsolutAire heating, ventilating and makeup-air equipment can be customized to specific needs. Key features include:

- ▲ Two-way communication for real-time monitoring and control.
- ▲ Fully interoperable systems for scheduling, alarming and trending.
- ▲ Choice of the most widely used integration standards, including LonWorks, BACnet, Modbus, N2, ASD and other open communication protocols.
- ▲ Scalable from a low-cost single-unit control to multiple-unit networks; can be modified as control strategies change.
- ▲ "RunReady" allows unit to run at the last user set point or in a baseline mode, if the network connection is lost.
- ▲ Alarms are provided for Burner Lockout, Low-Temperature Limit, Airflow and many other systems functions.
- ▲ For return air units with building pressure control, the LX1 controller provides:
 - A "Warm-up Cycle" for faster recovery from the unoccupied set point to occupied set point.
 - A "SmartDamper Alarm" for switching to maximum recirculation or to the unoccupied set point, if the unit exceeds the user-defined 100% outside air time limit.

LX1 Controls

Control: User-Friendly Functionality

AbsolutAire LX1 controls are built for operational reliability, high functionality and ease of use. Installation is simple with common communications cable and minimal special equipment. All operating information is available 365/24/7, either through on-site or remote access via web browser or other network access devices. The content-rich system-monitoring screens are shown here.



Login. Access to the AbsolutAire DDC system settings and stored data can be restricted to authorized users with secure password protection. User graphics can be added.

Menu. Simplified menu selections include Home, Alarms, History, Tools and Support. A drop-down menu allows viewing specific data for each AbsolutAire unit. If an alarm is triggered, the green checkmark menu button changes to a red exclamation point.

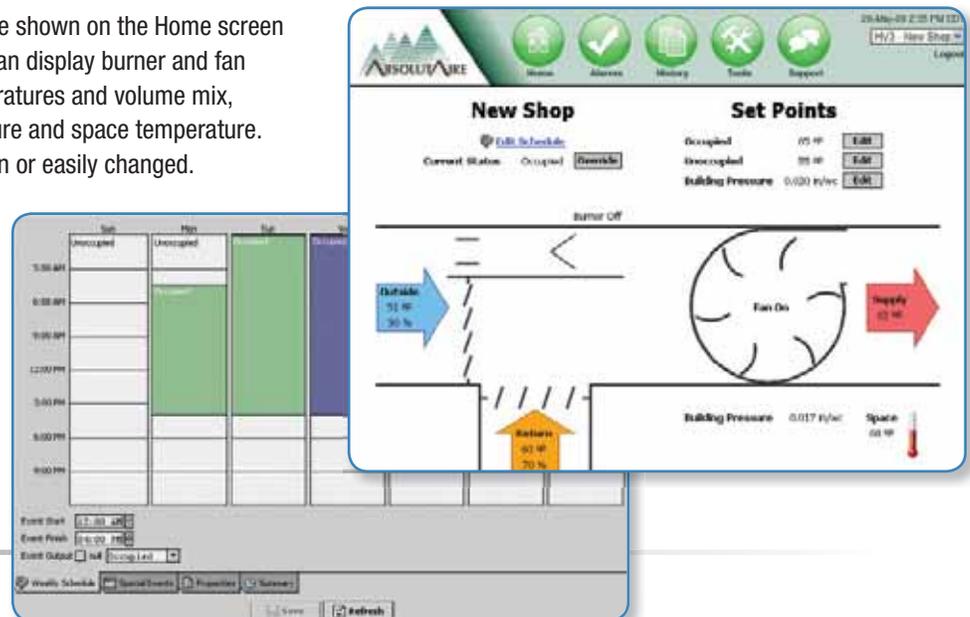


Operation: Real-Time Unit Status

Each AbsolutAire unit being monitored and controlled on the facility air-management network has a Home screen, accessed by selecting a specific unit. This screen provides continuously updated operating status, as well as key set points. Desired settings can be quickly edited, lockouts cleared and the operating schedule changed from this screen. An override button can suspend scheduled events for a specific time or until cleared. Operation schedules and set points are independently stored in each unit controller.

Home. System status and set points are shown on the Home screen for the AbsolutAire unit. Real-time status can display burner and fan operation, outside air and return air temperatures and volume mix, supply air temperature, the building pressure and space temperature. Set points and schedules can be overridden or easily changed.

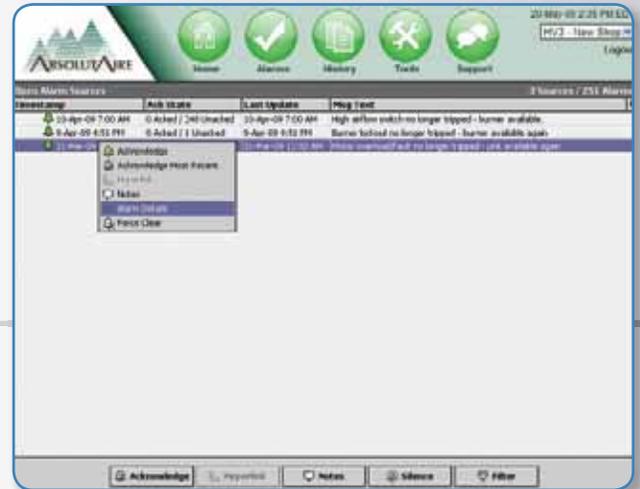
Schedule. An unlimited number of events per day can be set on the weekly operating schedule for the AbsolutAire unit. In addition, this scheduling function accommodates setting special events, which may be custom-defined one-time events or reoccurring events. In both cases, these settings override the weekly schedule as needed.



Alarms: Error Reporting Display

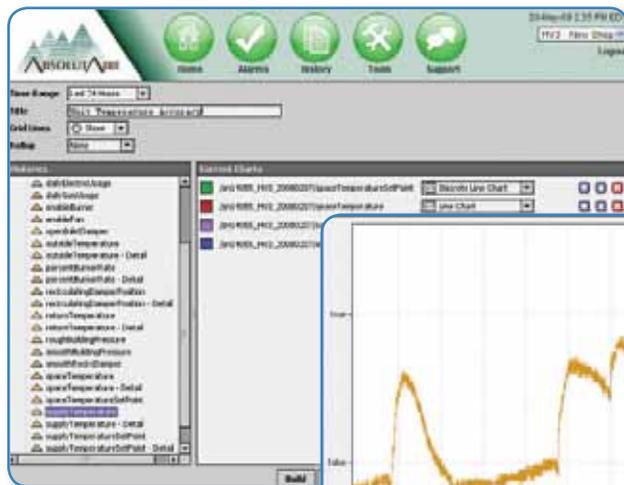
The AbsolutAire LX1 controller monitors all of the critical operating parameters on the selected equipment. Any variance from normal activates an alarm, even if the variance is momentary. Data displayed on the Alarms screen includes a timestamp for the date and time an alarm occurred, whether or not the alarm was acknowledged, the source or cause of the alarm, the date and time operation returned to normal, and operator-entered text regarding an alarm or repair explanation.

Alarms. Up to 500 of the most recent unacknowledged or active alarms for the AbsolutAire unit are stored in the LX1 system controller. Certain recurring alarms may require service.

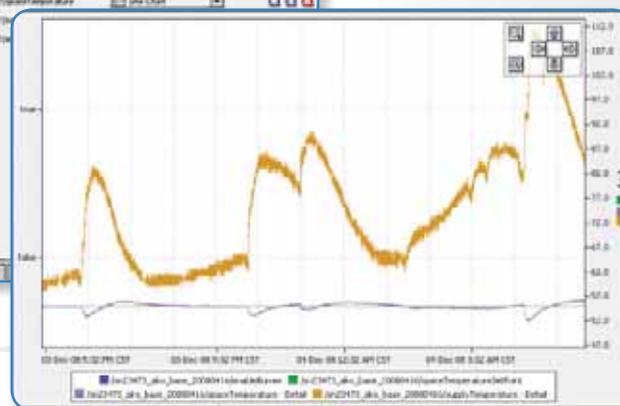


History: Operating Data Reviews

Historic operating data is important for adjusting operating parameters for precise energy management and forecasting service needs. With continuous monitoring and data collection, the history logs can be tailored to exact user needs. The AbsolutAire LX1 controller provides a basic history log of one month of values recorded at 15-minute intervals. Detailed histories provide values over 24 hours in five-second intervals, while daily histories provide only once-a-day data points for up to five years.



Operating History. This screen lists all of the operating parameters being monitored, as well as current charts for analyzing selected data. A given operating parameter can be selected to review basic or detailed history. Data graphs provide trend information.



Data Chart. This sample data plot from the History screen shows how the AbsolutAire unit increased supply air temperature to compensate for a sudden drop in space temperature caused by opening overhead doors on a cold morning. Under normal conditions, space temperatures are maintained within one degree of the set point.

LX1 Controls

Tools: Energy Management & System Maintenance

Valuable information for both energy management and system maintenance is shown on the Tools screen for AbsolutAire LX1 controls. Using unit sensor values, accurate estimates of gas and electric usage are provided in terms of rates and total usage. Fan history is given in terms of starts and total runtime to forecast service needs. Critical maintenance intervals for filters and bearing grease can be set, while total hours for each since the last service are noted, based on fan runtime.



Tools. Maintenance intervals can be customized using the edit functions. When the filter age or bearing grease age exceeds its pre-set service interval, an alarm is activated.

Support: Technical Resources & Documentation

The Support screen or menu selection provides the user with important links to technical resources, system documentation and factory support.



Support. AbsolutAire LX1 controls are fully supported from system selection and training through installation and operation.

Other AbsolutAire Control Solutions

In addition to advanced LX1 control technology, AbsolutAire also provides other monitoring and control solutions for its heating, ventilating and make-up air systems.



Single-Unit, Remote Control Option

With this control method, each air-handling unit includes a stand-alone microprocessor and a space-mounted smart stat. The unit status is managed using the smart stat, rather than a building network. The interface enables a user at the remote-control station to monitor current temperatures and unit status, change the occupied and unoccupied set points, temporarily override the current temperature set point and control the unit occupancy schedule. The opportunity also exists to easily upgrade and expand into a fully networked system with multiple units later, as needed.



Discrete I/O Controllers

If an existing building management system has a local programmable logic controller or user interface panel with available inputs and outputs, these can be wired directly into the terminal strip on the AbsolutAire equipment. This BMS control option works well, although it does not provide as much functionality as an AbsolutAire LX1 system or owner-specified system. Each equipment function or option that will be monitored and controlled requires separate wires from the unit to the I/O module. Some equipment operating options may also require the installation of additional relays, sensors or temperature-control hardware.

Owner-Specified Controllers

When AbsolutAire equipment will be monitored and controlled by an existing building management system, owner-specified controllers may be required to match specific BMS operating requirements. In such cases, AbsolutAire will install the hardware, but the customer is responsible for programming and must provide an authorized DDC technician during our factory testing of the controls. Certain technical requirements also apply to meet safety requirements and applicable ANSI standards. Full disclosure of customer responsibilities will be included in the equipment control specifications.

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- ▲ Spray & Bake Paint-Booth Heating Systems
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