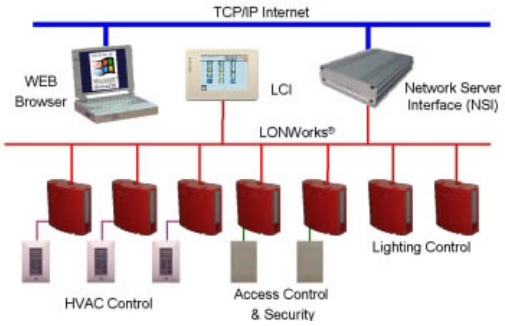
# iRadiant™

## Hydronic Controls with *internet* Access

***iRadiant* from Caleffi** is a new approach to system integration and building automation. It is a LonWorks based control network that is feature rich, yet simple to install and use. iRadiant is part of the Caleffi Profile Building Automation control package that includes application specific controllers for all aspects of HVAC, including air handlers, fan coils, heat pumps, direct expansion units, VAV and VVT terminals. The Profile platform also incorporates Access and Lighting controls. Essentially, the swipe of an access card means that buildings are properly lit, and kept comfortable during occupied or unoccupied periods.

As part of this network, iRadiant can now share its' data so that hydronics can be integrated into the entire building control loop. This means system coordination; one system user interface device, common scheduling and universal alarms for all HVAC functions.

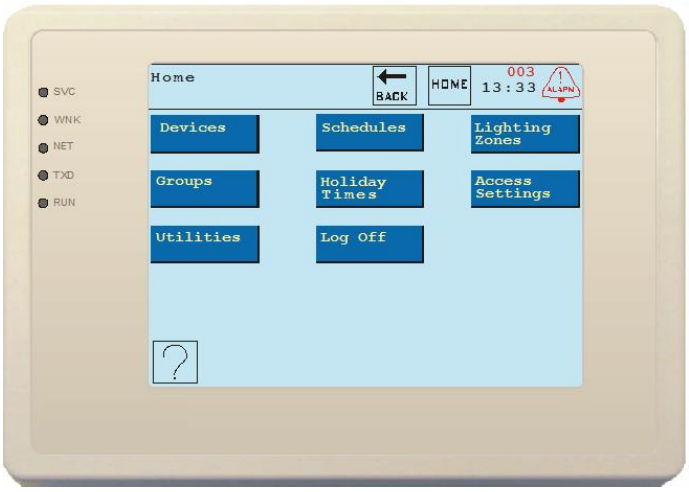



### Application Flexibility—From Stand Alone to *internet* Access

iRadiant controls are flexible. They can be used as stand alone controllers, or they can be set up as part of a local HVAC network using the Local Control Interface (LCI). More importantly, they can be set up as part of a communicating network using our Net Server to provide remote access through the Internet. Using TCP/IP or dial up to access the system, Web pages automatically display all system data through a standard browser format. Data can be read, changed, trended, and graphed over the Internet. All system alarms can be sent via email, page, or voice mail. This powerful feature means improved system control, complete diagnostics, improved occupant comfort and unparalleled service capabilities.

### Easy to Install Self Configuring Controls

The iRadiant controls are built on Caleffi's patented self configuring technology. Simply touch the reset pin and the control automatically identifies and configures itself on the network. No software or programming is required. The data is downloaded to the LCI where all information can be seen and adjusted on the large "touchscreen". And, with simple 2 wire non polarity sensitive wiring, iRadiant controls are easy to install. No special wiring or shielded cable is required.

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### BLR-1: Boiler Staging, Injection Mixing and Snow Melt / Domestic Hot Water in One Control

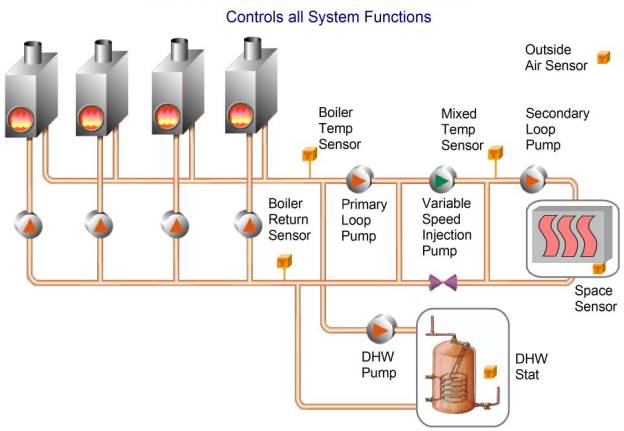
### Boiler Staging Function

The BLR-1 boiler staging control is configured to control four (4) single stage boilers, or two (2) two stage boilers. The integral PID logic precisely calculates the boiler staging differentials based on outside temperature and actual load demands assuring proper control of the boiler primary loop temperature. This eliminates the guesswork associated with setting fixed differentials between boiler stages and protects the boilers from short cycling**.** The BLR-1 also features Lead/Lag rotation of the boilers based on actual run time. The boiler rotation schedule is fully adjustable through the touch screen display.

To ensure proper boiler shutdown, boilers are sequentially shut down as heating demand is satisfied. The BLR-1 has a Post Purge feature that operates the primary loop system pump for a selectable time period after the heating demand is satisfied to dissipate any heat build up and provide greater operating efficiencies.

### Domestic Hot Water Control Capabilities

The BLR-1 offers the flexibility to control a domestic hot water system (DHWS). When the input is used as a domestic hot water control, the BLR-1 receives an input from the DHWS aquastat to maintain a selectable domestic hot water temperature.




## Interactive Boiler Reset

System reset is incorporated in the BLR-1 logic. This provides system reset based on outdoor temperatures when the outdoor sensor is used. The self learning curve automatically adjusts to meet actual system demands. Based on input from the space sensor inputs, the reset curve is automatically adjusted. Simply set the maximum boiler temperature required at outside design conditions. If the boilers are non-condensing and a low limit temperature is required, the BLR-1 has a fully adjustable low limit temperature range setting.

## Boiler Anti-Condensation Feature

To protect boilers from harmful flue gas condensation which occurs when return water temperatures are too low, the BLR-1 features a boiler return sensor which automatically disables the injection pump or three way mixing valve when the boiler return water temperature falls below a pre-selected temperature (usually 130F). If the boilers are condensing boilers, this feature can be bypassed.

## Occupied/Unoccupied Scheduling

The BLR-1 can schedule boilers for operation during occupied times, and either set back or disable boilers during unoccupied periods. A built in Optimum Start logic function automatically calculates required start up capacity needed based on sensor input for maximum energy savings. The BLR-1 automatically calculates the heat retention within the monitored zones, and can advance the set-back schedule based on actual heat loss for greater energy savings.

## Injection Mixing for Maximum Radiant Heating Comfort and Improved Snow Melting

The BLR-1 is perfect for radiant heating and snow melt applications. In addition to Weather Compensated Reset of the injection mixing loop, the BLR-1 integrates data from the room sensor to adjust the temperature of the injection mixing loop to compensate for actual system demand conditions. Multiple space temperature sensors can be used to provide additional interactive zoning. All space sensor inputs are monitored by the BLR-1 to provide precise control of the injection mixing loop.

When using the injection mixing loop for Snow Melt functions, the space sensor can be placed in the slab and set to monitor and control the actual slab temperature. Combined with the SIS-1 sensor, this provides snow melt activation based upon outside temperature, surface moisture content, and actual slab temperatures.

The injection mixing output available on the BLR-1 controller provides for the control of an injection pump or three way mixing valve with 0-10 volt signal. When used with an injection pump, the PSC-1 variable speed pump drive features a selectable pump idling speed to ensure that pumps are operated within the proper voltage curve to assure longer pump life and better system performance.

## Fewer Sensors Required -Plus Alarm Functions

Because iRadiant is an integrated controller network, only one outside sensor is required for all of its reset functions and only one sensor for the boiler return function. The sensor data is shared with all controller functions. This system integration means easier and more reliable installations, and simplified wiring. All sensor functions are monitored and can be reported via email or page.

## Integrated Pump Control

The iRadiant controllers feature control outputs for the Primary loop pumps, injection mixing pumps (or 3 way mixing valve) secondary loop pump and the Snow Melt or Domestic Hot water pump. All pumps are monitored for operation, and a built-in pump exercise feature automatically operates pumps for a period of 1 to 10 minutes to ensure that pumps do not seize during the summer period.

## BZU-1 iRadiant Zone Controller

This powerful addition to the iRadiant platform features multiple sensing of up to five (5) zones per BZU-1 controller. The data monitored by the BZU-1 controller is reported to the BLR-1 and integrated with the BLR-1's load calculations. This provides accurate heat output from the injection mixing loop and assures occupant comfort for each controlled zone when used to control space heating requirements. When used in snow melt applications, it provides more economical operation of large snow melt systems by accurately monitoring and controlling the slab temperature in multiple locations. Each zone input from the BZU-1 has a corresponding digital output to control the coil of a relay when individual zoning for each sensor is required. Up to eight (8) BZU-1 controllers can be added per LCI to provide powerful application solutions for any heating or snow melt project.

## *iRadiant* - the future of hydronic controls

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