HiRef

Innovators above the standards

SERVICES | TELECOMMUNICATIONS | INDUSTRY | DATA CENTER

Control and management system

HINODE

for air conditioning systems

HiNode 2.0 is the exclusive system designed and developed by HiRef for air conditioning management and supervision. It interfaces with every unit and device in the system, optimising their operation, meeting user requirements efficiently and effectively, and delivering performance in line with the analysis brief. Failure prediction logic and calculation of performance degradation over time allow taking timely action to ensure service continuity to the user.

Main advantages

Information management

The system lets you verify the main operating variables for the managed units, displaying trends over time in graph form and recording them together with the event history. The data can also be exported in different formats and sent automatically by e-mail.

User flexibility

HiNode 2.0 software was designed and developed by the HiRef Controls team. It allows several basic operations to be performed and can be integrated with many customised functions according to the type of system to be managed.

Integration, efficiency and redundancy

HiNode operates according to an integration logic focussing on maximum efficiency and redundancy targets - to manage all types of chillers, heat pumps, air conditioners for Data Centers, auxiliary heat generation devices (e.g. gas boilers), distribution systems on both the primary and secondary side, and dissipation devices.

Controlled devices and functions: HiRef air conditioning unit

Management of load distribution between available units with selection of the most suitable resource, in addition to basic functions managed by LAN connected machines. Heating/cooling generation calculation based on working temperatures between primary and secondary circuits. Running time balancing and advanced Dynamic Setpoint function.

Controlled devices and functions: information management

System data aggregation, local graphic interface with touch screen display, and remotely via web (personalised on request), datalogger and trends, alarm reports and management.

Controlled devices and functions: buffer tanks between primary and secondary circuits

Management of heating/cooling generation request and seasonal switchover control.

Controlled devices and functions: on/off and modulating distribution pump management

Timed rotation, constant and variable flow control, constant ΔT, constant head pressure Flow balancing between primary and secondary circuits.

Controlled devices and functions: on/off and modulating valve management

Inactive circuit shut-off. Direct and mixed zone management. Groundwater temperature control before return to aquifer (temperature and flow limit).

Controlled devices and functions: energy metering

Thermal energy and electric energy. MID-certified devices.

The heart of the device

HiNode 2.0 consists of a programmable microprocessor controller that ensures compatibility with the main serial and Ethernet communication protocols. It has digital and analog (0-10 V, 4-20 mA) inputs and outputs to control system auxiliaries (pumps, valves, etc.) and acquire temperature and pressure signals. Operation data can be accessed locally via LCD or touchscreen display, or remotely via web interface. HiNet service can be added for data synchronization to cloud.

Operation logic

HiNode 2.0 efficiently and effectively manages the distribution of thermal loads among the units installed, even from different ranges. The implemented control algorithms determine which and how many resources will be activated, ensuring contemporaneity – i.e. partial load operation – and energy recovery. This makes it possible to achieve very high energy efficiency levels and greater operating cost savings.

Technological components

Monitoring and control

HiNode allows the main system operating parameters to be monitored, both remotely and through its 15" colour touch screen display. Thanks to its user friendly interface, it is possible to view work trends or any alarms and centrally manage all the devices connected to the system, such as HiRef air conditioning units, split tanks, distribution pumps, ON/OFF and modulating valves.

Additional benefits

- Electrical or thermal energy metres upon request, also MID certified (Measuring Instruments Directive 2014/32/UE)
- Supported serial communication protocols: Modbus RTU on RS485; Bacnet on RS485; Konnex; LonWorks
- Supported Ethernet communication protocols: Modbus TCP/IP; Bacnet/IP; SNMP v1-v2c

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