Comfort Controller 6400 (Outdoor Duty Rated)

The Comfort Controller 6400 is a microcontroller-based module that provides general purpose HVAC control and monitoring capability in a stand-alone or network environment using closed-loop, direct digital control. The *6400* gives the Carrier Comfort Network® (CCN) the capability to control and communicate with non-Carrier equipment and Carrier HVAC equipment not equipped with Product Integrated Controls (PICs).

You can connect 16 field points (8 inputs and 8 outputs) to the *6400*. To connect additional field points, add optional input/output modules (8 inputs and 8 outputs per I/O module) to the *6400*. By using multiple I/O modules, you can connect up to 48 additional points, giving you the capability to control and/or monitor a total of up to 64 field points. The appropriate number of I/O modules are selected for each control situation and simply installed along with the *6400* in your field-selected NEMA-3R enclosure. This modular concept contributes to overall versatility and ease of installation. The Comfort Controller 6400 includes a diverse library of performance-proven control routines, written in plain English, using simple "fill-in-the blanks" format for fast, easy programming. Additionally, for custom applications, Carrier's BEST++™ software provides custom programming capabilities to work independently, or in conjunction with the pre-engineered control routines.

FEATURES

- Stand-alone control and monitoring of up to 16 field points, using proven algorithms.
- 1600 Compatibility mode can be used to directly replace a 1600 controller.
- Firmware Updates via FieldLoader.
- Compatibility with the following interface devices: i-Vu®, ComfortVIEW™, and Network Service Tool V and subsequent versions.
- Three LEDs, conveniently located on the front of the module, indicate processor status (red), CCN Communication Bus status (yellow), and I/O module communication status (green).
- Entire database at your disposal. Based on your application's requirements, you determine how many and which algorithms, inputs/outputs, schedules, alarms, and system functions to include in the

8 INPUTS

Numbers	Specifications
1 to 8	Discrete, analog, or temperature Discrete Dry contact Pulsed dry contact Analog 4-20 mA 0-10 Vdc Temperature 5K & 10K ohm thermistors 1K ohm nickel RTD

8 OUTPUTS

Numbers	Specifications
1 to 8	Discrete or analog Discrete 24 Vdc@80 mA Analog 4-20 mA 0-11 Vdc (varies with point type)

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database. Therefore, the database will only consist of the items that are necessary for the application — valuable memory space is not wasted.
- Ability to display the amount of available database space.
- Ability to add items to database as necessary.
- Local connection for LID and CCN.
- Total facilities management when linked to a CCN.
- Ability to disable all inputs, all outputs, or disable both inputs and outputs by simply flipping a switch.
- Two-day backup of clock and data such as Data Collection and Runtime.
- Simplified field wiring using “plug type” terminals (two-pin connection).
- No need for batteries.
- Uses any standard, field-supplied 24 Vac, 60VA transformer.

FUNCTIONS

Cooling and Heating Control
Space Temperature Comfort Zone
Humidification and Dehumidification
Mixed Air Damper Optimization
VAV Fan Control
VAV Supply and Return Fan Tracking
Indoor Air Quality
Generic PID Control
Time Scheduling with/without Override
Analog Temperature Control
Discrete Interlock
Staged Thermostat
Proportional Thermostat
Primary/Secondary Pump Control
Staged Discrete Control
Permissive Interlock
Night Time Free Cooling
Morning Warm-up
Adaptive Optimal Start/Stop
Control Point Reset

On-Board Consumable Point
Calculates a usage value (kwh, gal/hr, lbs/hr, etc.) in applications where simple data collection is required.

On-Board Trending
Collects up to 48 data samples per point (with an adjustable iteration rate) on a revolving basis, or stops the trending after 48 samples are collected. Use as a means of troubleshooting.

Linkage to Airside (TSM) and Waterside (WSM) Systems
Optimizes efficiency by fully integrating all HVAC operations. (DAV)

Custom Programming (BEST^{++})
Enhances or supplements the industry-proven, pre-engineered algorithms with BEST^{++} by creating new algorithms to meet any unique control requirements.

CCN FEATURES

When included in a network with other CCN controllers, Option Modules, and user interfaces, the following additional capabilities are possible:

- Alarm processing, messages, and annunciation.
- Runtime, history, and consumable data collection and report generation.
- Demand limiting/loadshedding.
- Broadcast of data such as outside air temperature, outside air humidity, and time of day.
- Data transfer between system elements.
- Timed overrides for use with Tenant Billing.
- Airside and waterside linkage.

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Comfort Controller 6400-I/O
(Outdoor Duty Rated)

The Comfort Controller 6400-I/O is used with the Comfort Controller 6400 to expand the field point capacity from 16 points (8 inputs and 8 outputs) up to a total of 64 points.

Each *6400-I/O* can be configured to use all 16 points (8 inputs and 8 outputs) or only 8 outputs or only 8 inputs. This provides the ultimate flexibility in usage of field points to meet the specific needs of each application. Determine the number of *6400-I/O* required for your particular application. Then simply install the modules along with the *6400* in your field-selected NEMA-3R enclosure.

To determine the number of *6400-I/O* required by the particular application, first decide how many field points are required. Then order and install the *6400-I/O*(s) along with the *6400* in your field-selected enclosure. This modularity contributes to overall versatility.

FEATURES

- Monitors up to 16 field points.
- Two LEDs, conveniently located at the top of the module, indicate processor status (red) and module communication status (green).
- Local connection for LID.
- Ability to disable all inputs or all outputs by simply flipping a switch.
- Simplified field wiring using “plug type” terminals (two-pin connection).

8 INPUTS	
Numbers	Specifications
1 to 8	Discrete, analog, or temperature Discrete Dry contact Pulsed dry contact Analog 4-20 mA 0-10 Vdc Temperature 5K & 10K ohm thermistors 1K ohm nickel RTD

8 OUTPUTS	
Numbers	Specifications
1 to 8	Discrete or analog Discrete 24 Vdc@80 mA Analog 4-20 mA 0-11 Vdc (varies with point type)

Specifications subject to change without notice
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SPECIFICATIONS — Comfort Controller 6400 and Comfort Controller 6400-I/O

Power Requirements ..... 60VA@24 Vac + 15%
1.5A@33 Vdc + 15%
Dimensions ..... 13 in H x 2.75 in W x 5.5 in D
(33 cm x 7 cm x 14 cm)
Operating Temperature ..... -40°F to 158°F
(-40°C to 70°C)
Storage Temperature ..... -40°F to 185°F
(-40°C to 85°C)
Operating Humidity ..... 0 to 90%, non-condensing

Discrete Out Specifications

Output Signal ..... 24Vdc@80 mA current limited

Analog Out Specifications

4-20 mA Milliamp Type
- Load Resistance ..... 0-600 ohms
- Resolution ..... 0.085 mA
- Accuracy ..... ±2%

0-11 Vdc Voltage Type (varies with point type)
- Load Resistance ..... >50,000 ohms
- Resolution ..... 50 mV
- Accuracy ..... ±2%

Discrete In Specifications

Dry Contacts ..... Switch Closure

Pulsing Dry Contacts
- Repetition Rate ..... 5 Hz max.
- Minimum Pulse Width ..... 100 msec

Analog In Specifications

4-20 mA Milliamp Type
- Wire type 2-wire
- Resolution ..... 0.025 mA
- Accuracy ..... ±1%

0-10 Vdc Voltage Type
- Resolution ..... 0.0125 V
- Accuracy ..... ±1%

5K Thermistor Type
- Nominal reading @ 5,000 ohms ..... 77°F (25°C)
- Resolution ..... 0.1°F
- Accuracy ..... + 1°F

10K Thermistor Type
- Nominal reading @ 10,000 ohms ..... 77°F (25°C)
- Resolution ..... 0.1°F
- Accuracy ..... + 1°F

Nickel RTD Type
- Nominal reading @ 1,000 ohms ..... 70°F (21°C)
- Resolution ..... 0.1°F
- Accuracy ..... ±2°F

The *6400* and *6400-I/O* are UL 916 PAZX, VDE, ULC, and CE Mark listed.

ENCLOSURE AND POWER SUPPLY

The *6400* and *6400-I/O* are designed so that they can be easily installed in a field-supplied NEMA-3R enclosure.

The *6400* and *6400-I/O* use any standard, Class II, SELV-compatible, field-supplied 24 Vac, 60 VA transformer.

Note: Optional Comfort Controller 6400 HOA (Hand-Off-Auto) is not outdoor duty rated.

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