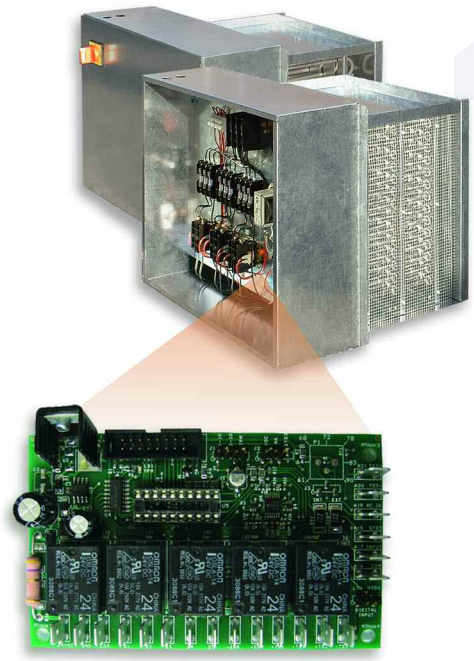


HEC

Universal Heater Controller

The HEC Universal Heater Controller is an integral part of our electric duct heaters. The HEC accepts any control input signal available in the industry and converts it to a modulating output to the SSR and/or staged (on/off) signal output to the electric heater relays.

Unique in the industry, the HEC features our patented iHCS (Intelligent Heater Control System), which measures the heater element's differential temperature to accurately calculate the air velocity (as low as 100FPM) without requiring air flow switches.

The HEC controller can override the thermostat demand if the air velocity is insufficient. This provides continuous and precise modulation of the heater even at extremely low air velocities (100 FPM), which is ideal in VAV applications.

Features

- Accepts any industry standard input signal
- Quick and simple input signal selection via jumpers
- Modulating, on/off, and/or up to 10 stages
- Eliminates the need of purchasing expensive staged thermostats
- Zero voltage crossing SSR

Patented iHCS (US 7,012,223)

(Intelligent Heater Control System)

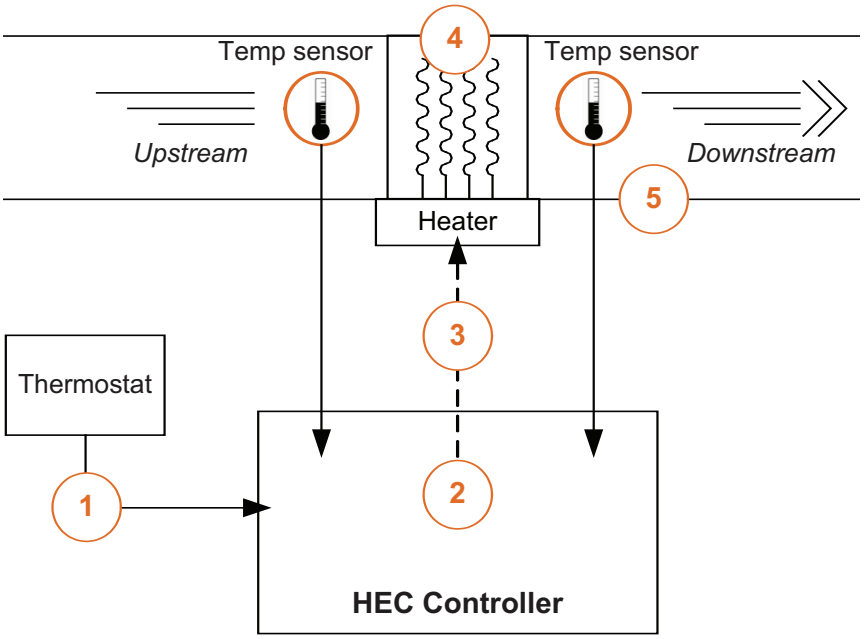
- Accurate air flow readings without using air flow switches
- Intelligently lowers output if velocity is insufficient as opposed to air flow switches that simply shut down the heater
- Operates as low as 100FPM (ideal for VAV applications)
- Additional heater element overheat protection
- Eliminates need to define air flow orientation

Models

Input Type	Input Signal	Output Signal
Electric	0-10Vdc, 2-10Vdc, or 4-20mA	1-24 Vdc for SSR (TPM) and/or Dry contacts (up to 10 stages)
	24Vac digital pulse, or ground digital DC pulse	
	Neptronic signal with/without integrated set point (see table below)	
Pneumatic	Direct or reverse acting 0-15 PSI (0-103 kPa) Adjustable set point from 2-20 PSI (14-138 kPa)	1-24 Vdc for SSR (TPM) and/or NO or NC contact

Neptronic Signal	Sensor or Thermostat Type	Details
Integrated Set Point	STC8-13 or STR1-13	Allows use of cost-effective sensor and set point is not accessible to user as it's located in control cabinet.
External Set Point	TRO5404, STS3-13, ITO3 + STC8-13, or other	User accessible set point.

Patent iHCS* Intelligent Heater Control System (US Patent 7,012,223)



* For modulating open coil models under 40kW and less than 3ft x 3ft

1 **Accepts any industry standard input signal**
In this example there is a demand for 6kW, which requires a minimum 500FPM.

2 **Precise air velocity readings (as low as 100 FPM)**
Using both temperature sensors and other known values, the HEC controller calculates the precise air velocity. These readings can go as low as 100FPM, which is excellent for VAV applications. In this example it is 200FPM.

3 **Load shedding: overrides demand if velocity is insufficient**
Protects elements from overheating and eliminates unnecessary shutdowns if velocity is insufficient for actual demand. In this example, the demand of 6kW requires a minimum 500FPM, but the HEC controller detected an actual velocity of 200FPM. The HEC controller lowers the output to 2kW for 200FPM as opposed to air flow switches that simply shutdown the heater.

4 **Additional overheat protection.**
If heater element is too hot or if there is no air flow, electronic shutdown of the heater prevents cycling of the contacts. This is in addition to the thermal cut-off.

5 **No air flow switches required**
The velocity is calculated using the factory installed temperature sensors and built-in algorithms. Using the temperature readings, the HEC controller also automatically determines the orientation of the air flow. This saves cost and reduces labour as expensive air flow sensors are not required and there is no need to fine tune air flow switch positioning.

neptronic®

Manufacturer of actuators, actuated valves, controls, humidifiers and electric heaters.

Head Office
Neptronic®
400 Lebeau Blvd, Montreal, Quebec H4N 1R6
Tel.: (514) 333-1433 Fax: (514) 333-3163
Toll Free (Canada/USA): 1-800-361-2308

U.S. Office
NEP Inc.
355 North Main Street, Suite 2
Hiawassee, Georgia 30546
Tel.: (954) 421-6216 Fax: (954) 421-8785

Middle East & India
NEP International
P.O. Box 125687, Dubai, UAE
Tel.: +97155 8825487 Fax: +9714 3426772
email: shyam@neptronic.com