



SPECIAL FURNACE CO INC

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CONTROL OPTIONS

SINGLE SET POINT CONTROLS

HONEYWELL UDC 2300 AND UDC 3300 DIGITAL SINGLE SET POINT CONTROLLERS

The UDC 2300 features accuracy of .30% of span. The UDC 3300 features include accuracy of 0.20% of span. Both have dual vacuum fluorescent displays and keyboard selectable inputs. The UDC 3300 has a deviation bargraph, two sets of PID constants and single ramp. A toll free number for service and instructions is provided by Honeywell. Next day replacement service is offered for warranty problems. This is the preferred control for a heavy production environment. Autotune is available as an option.

OTHER SINGLE SET POINT CONTROLS

Temperature controls from all major manufactures are available through L&L. Barber Colman, Honeywell, Eurotherm and West are among the major companies used. Customers who have service agreements with specific manufactures or who have standardized on particular control models may want to specify a control manufacturer.

COMMUNICATIONS

Most controls can be ordered with RS422 or RS232 communications.

PROGRAM CONTROLS

HONEYWELL UDC 3300 PROGRAMMER

Same as single set point UDC 3000 single set point control except has a programmable set point with six ramps and six soaks. Up to 99 recycles. Autotuning is included.

PROGRAMMABLE DCP100 TEMPERATURE CONTROL WITH UP TO 8 PROGRAMS

Honeywell DCP100 microprocessor based digital program control. 1/4 DIN size. Up to 8 programs with up to 16 segments per program. An overall maximum of 121 consecutive segments can be programmed into one profile by linking programs. Accuracy is .25% of scale. All PID tuning constants, maximum temperature and scale range are programmable. Various levels of

security lockout can be programmed into the control to prevent unauthorized changes. Thermocouple burnout protection is included. Real time clock allows program to start at a certain predetermined time on a certain day. Software is available for PC's to configure and download profiles from a computer.

YOKOGAWA UP30 & UP40 MULTI-PROGRAM CONTROLS

The Yokogawa UP30 multi-program temperature controller features 19 separate programs (up to 200 segments), self tuning, graphic vacuum florescent display and +/-0.15% accuracy. The UP40 features up to 99 programs with up to 400 segments total.

PROGRAMMABLE UMC 800 TEMPERATURE CONTROL

Honeywell UMC 800 microprocessor based digital Universal Multiloop Controller. There are up to 1000 segments of setpoint programming divided up in various programs. Color operator interface allows you to see various screens with alarms, function switches, loops and trends. All furnace logic is programmed within this control. All PID tuning constants, maximum temperature and scale range are programmable. Various levels of security lockout can be programmed into the control to prevent unauthorized changes. Thermocouple burnout protection is included.

HONEYWELL DCP550 PROGRAM CONTROL

Honeywell DCP550 microprocessor based digital program control. 1/2 DIN size. Up to 99 programs with up to 99 segments per program with an overall maximum of 2000 segments and 4000 events. Includes autotune and up to 9 sets of PID constants which can be linked to programs. Includes two high density 5 digit displays for Process Variable, Set Point, Deviation, Output and Segment Timing with two dedicated displays for program number and program segment as well as a two line 16 character LCD display for prompting and monitoring. Accuracy is .25% of scale. All PID tuning constants, maximum temperature and scale range are programmable. Various levels of security lockout can be programmed into the control to prevent unauthorized changes. Thermocouple burnout protection is included. A remote graphic display is available as an option via an RS485 communications link. This shows graphic display of program profiles.

OTHER PROGRAM CONTROLS

A wide range of program controls from Honeywell, West, Research, Inc., Barber Colman, Eurotherm, as well as other manufactures, are available.

**PROGRAM CONTROLS, ALARMS,
POWER CONTROLS, RECORDERS,
THERMOCOUPLES, WIRING OPTIONS**

PROCESS AND SAFETY ALARMS

EVENT/PROCESS ALARM

An alarm field configurable as either a temperature based alarm or a time based event on a program control rings a buzzer. Includes silencer.

AUDIBLE AND/OR VISUAL ALARM

An audible buzzer or loud bell as well as a flashing light can be wired into the overtemperature alarm or any other alarm condition. Includes silencer.

SPECIAL ALARMS

All kinds of special alarms can be wired into the furnace. For instance, a special alarm could shut down the furnace if the fan didn't turn. These are all by special quote.

POWER CONTROLS

ZERO FIRED SCR POWER CONTROL

A zero fired SCR power control with two-leg control is used instead of contactors. This is constructed with transient voltage protection, sub-cycle fuse protection, extra large heat sinks, and positive zero firing. Gain and bias adjustments are included for tuning.

SOLID STATE CONTACTORS

Power control can be a series of solid state SSR type contactors. These are quiet, have a long life and can be operated with a fast cycle time for even temperature control. They work like mercury contactors (on a relay output from the control) but have no mercury and are environmentally safe.

PHASE ANGLE FIRED SCR

Phase angle fired SCR power controls are generally used in non-metallic element furnaces (silicon carbide and molybdenum disilicide) These furnaces are usually equipped with step down transformers to provide a limited maximum voltage to the element circuit. Phase angle SCRs equipped with current limiting are required in these furnaces so that the proper voltage can be applied without excessive amperes. The phase angle fired SCR is utilized to vary the voltage during the heating and cooling cycle to minimize operator supervision.

YOKOGAWA AMMETER/VOLTMETER

A digital ammeter/voltmeter combination made by Yokogawa is useful for monitoring amps and volts. System includes a selector switch to allow operator to switch between each leg of each phase. This is important for determining element condition and when to change voltage taps in silicon carbide element furnaces. It can also be used to determine if an element has burned out in any furnace for uniformity purposes.

TEMPERATURE RECORDERS

DR450T DIGITAL ROUND CHART RECORDER

Model DR 450T Honeywell Digital Circular Chart Recorder with two digital displays (one of actual temperature reading) and digital keyboard programming. 0.1% of span accuracy (typically better than $\pm 1^{\circ}\text{F}$). The recorder prints its own charts. This allows complete configuration of charts scale and speed. You can focus on

a small segment of temperature or look at the whole range and easily change back and forth without changing paper. No need for preprinted paper. 10" round chart. Microprocessor based. Chart Speeds of 8 hours, 24 hours, 7 days or "x" hours from 1 to 744. Programmable in Degrees F or C. Input filter included. Up to four pens.

HONEYWELL DPR 1000 100 MM STRIP CHART

Provides analog tracing and digital printing with a single printing mechanism. Multi-color (up to six pens.) Includes printing buffer so that no data is lost. Non-volatile memory without battery. 0.25% accuracy. Programmable speed and range configuration. High noise immunity. Up to 12 messages and 12 alarms. Annotates scale.

VIDEO RECORDERS AND DATALOGGERS

Honeywell, Eurotherm Barber Colman and most other major control manufactures make a variety of video recorders and dataloggers that we can incorporate into our equipment.

THERMOCOUPLES

SHEATHED THERMOCOUPLES

Thermocouples sheathed in either inconel alloy, alumina or mullite are often quoted. These help protect the thermocouple from oxidation or other contamination from the furnace atmosphere. They include cast aluminum heads and NPT fittings.

TYPE R, TYPE S AND TYPE B THERMOCOUPLES

Precious metal Type R or S thermocouples are recommended when the furnace will be operated above 2000^oF for long periods of time. They are standard on some furnaces and optional on others. Type B are used for ultra-high temperatures.

FLEXIBLE CHROMEL/ALUMEL THERMOCOUPLES

A Type K thermocouple is made of high purity, 20 gauge calibrated thermocouple wire, insulated with ceramic fiber and protected with overbraided inconel wire. This allows the user to monitor the precise temperature of the work piece. Maximum continuous temperature is 1800^o; 2100^oF intermittent.

THERMOCOUPLE BUNDLE ACCESS HOLE

A capped alloy NPT fitting, generally 1" in diameter can be provided for easy periodic temperature survey of the furnace.

WIRING OPTIONS

NEMA 12 PANEL WITH FUSED DISCONNECT

This adds the following items to the furnace: The control panel is a dust tight NEMA 12 panel with a hinged gasketed door. A flange mounted power disconnect switch (normally Allen Bradley) is used on the control panel. Percentage timer controls replace normal bi-metal zone switches (if part of system.) All external switches and pilot lights are NEMA 13. The furnace power and control wiring system is manufactured according to J.I.C. Electrical Standard EGB-1-67. The control system equipment meets or exceeds U.L. 508, twelfth edition, and ANSI/NEMA Standard No. ICS 1-1978. J.I.C. stands for "Joint Industrial Council."

SPECIAL WIRING CODES

L&L can wire to special company codes and specifications. See specific quote. Send complete special electrical specifications.