KILNS BUILT TO LAST
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TRU-VIEW MULTI-THERMOCOUPLE DIGITAL PYROMETER SYSTEM INSTRUCTIONS

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SYSTEM DESCRIPTION

Jupiter and the DaVinci kilns are designed with two to five separate heating zones. The number of zones depends on the model ordered. The input to each zone in the manual version of these kilns is controlled with an infinitely variable input switch. Each section is one heating zone.

When firing a kiln it is highly desirable to attain even temperatures, especially in the last stages of the firing cycle. Without constant temperature indication it may be difficult to insure even temperatures when the Dawson Kiln Sitter shuts off the kiln. This may result in the some of the load being underfired or overfired. The TRU-VIEW multi-thermocouple system indicates the temperature of each zone by allowing you to switch the thermocouple input from zone to zone. Typically there is one thermocouple per infinite input switch and typically this thermocouple is located in the center (centered top to bottom) of each heating zone. By seeing the relative temperatures in the various heating zones you can make fine adjustments with the input switches to even out the gradients from top to bottom. You can also tell what speed your kiln is firing at.

TRU-VIEW PYROMETER INSTRUCTIONS

IMPORTANT MAINTENANCE ISSUE

When battery starts to loose power you will get erratic temperature readings. We recommend changing or checking the voltage on the battery with a voltage meter every six months.

FEATURES

KNOW THE REAL TEMPERATURE AT ALL TIMES: The TRU-VIEW pyrometer system, which consists of the pyrometer, one or more thermocouples and a thermocouple selector switch, provides the only method by which you can tell the temperature in your kiln during the entire firing of kiln.

ACCURATE LOW TEMPERATURE CONTROL: During the pre-heat cycle, it is very often necessary not to exceed a very low temperature for various periods of time. At the maturing point, under varied firing conditions, it is desirable to take temperature readings at various points in the kiln.

CONTROL TEMPERATURE GRADIENTS: With the unique design of the Jupiter and DaVinci switching circuits, temperature differences are easily corrected at the maturing point by measuring the temperature to detect any difference between top and bottom. Then, at the various points, the necessary adjustments are easily made by the zone switching controls on the kiln. Thus you can load your kiln to capacity without worrying about temperature differences.

CHECK YOUR KILN SITTER: Acts as a check against your Dawson Kiln Sitter or other control device at any temperature point including the cut off point.

MORE FLEXIBLE PLACEMENT OF LOADS: You may place your load to best advantage without regard to temperature differences. Perfect firings are possible at all times. No more refiring.

BETTER GLAZE RESULTS: This is possible when used with the Jupiter or DaVinci switching action. Control over the flow of glaze is possible by varying the time and temperature factors. This may be accomplished by holding your temperature at a particular level. By observing your pyrometer and using your switches to their best advantage, it is very easy to hold your temperature constant for varying periods of time until through practice you are able to obtain far superior glaze and body results.

ACCURATELY CONTROL COOL DOWN: Cool your kiln slowly by using a low heat during the cooling cycle. By this method it is frequently possible to obtain much better glaze and body results, particularly with fine porcelain work.

QUALITY CONSTRUCTION: All digital operation now means these pyrometers are extremely accurate.

TRU-VIEW PYROMETER INSTRUCTIONS

INSTALLATION

If you bought the TRU-VIEW with your kiln it will normally already be installed. If you are installing it on an older kiln (or a non-L&L kiln) then you must follow a few easy directions.
The TRU-VIEW is simple to install. Mount the TRU-VIEW box to either a wall or the kiln instrument box using sheet metal screws (or whatever is appropriate for mounting to your wall). Typically L&L kilns will have prepunched holes in the stainless steel case. These holes are 17/32”diameter. Typically the firebrick has been left undrilled. For 14 gauge thermocouples use a 25/32” drill bit (a 3/8” bit will also work but it may be a bit tight). For an 8 gauge thermocouple use a 17/32” drill bit. Use a drill that has a speed reducer on it. Slowly drill a hole through the soft firebrick. Go slowly especially towards the end to keep the brick from breaking out. There should be typically one thermocouple per section. The position of the thermocouple in the kiln (top to bottom) should match the position (top to bottom) on the selector switch. The thermocouples themselves should protrude into the kiln at least 1” to 2”. Note that only the very end of the thermocouple (where the weld is) will actually sense the temperature.

NOTE: Make sure that there is direct contact between the wire in the thermocouple element and the lead wires that connect this element to the pyrometer box. The thermocouple connection block is basically only used as a clamp to clamp these two wires together. The reason for this is that these wires are all special alloys with very specific electrical characteristics. If there is some other alloy in the circuit it can easily throw off the temperature reading significantly.

TROUBLESHOOTING

PYROMETER OR CONTROL IS NOT ACCURATE OR READS IN REVERSE OR DOES NOT SEEM TO INDICATE AT ALL

1. Sometimes pyrometers are not as accurate as cones or other temperature measuring devices. Usually this is not a real problem. The accuracy will not normally vary within a particular pyrometer. We suggest calibrating the pyrometer with an instrument of known accuracy. If you are using cones as your ultimate reference then note at what temperature on the pyrometer the cone slumps and mark it on the pyrometer. Alternately you may use the adjustment screw on the front of the pyrometer to change the reading of the pyrometer based on the maturing temperature of whatever cone you are typically using. If you do this be sure the speed of firing is taken into account because any given cone will mature at different temperatures depending on the speed of firing. See the information from Orton concerning cones for more details on cone maturing temperatures, speed of firing and cone sizes.
2. Check the polarity of the thermocouple wire. THERMOCOUPLE POLARITY: Positive is Chromel wire which is non magnetic. Color of positive thermocouple lead wire is Yellow. Negative lead is Alumel wire which is magnetic. Negative lead on thermocouple lead wire is Red.
3. Trace thermocouple extension wire circuit, making sure that all positive leads are connected together and all negative leads are connected together, with no cross wiring.
4. Check thermocouple for correct immersion depth. Welded end of probe should protrude at least l-l/2" into chamber.

TRU-VIEW PYROMETER INSTRUCTIONS

CHECKING THERMOCOUPLE CIRCUIT

1. First inspect thermocouple weld for a good bead and no corrosion or erosion. If there is evidence of deterioration, replace the thermocouple. IT IS WISE TO KEEP A SPARE THERMOCOUPLE ON HAND.
2. If the thermocouple itself is in good condition, trace the thermocouple extension wire circuit. Check for poor connections or broken leads.
3. THERMOCOUPLE POLARITY: Positive is Chromel wire which is non-magnetic. Color of positive thermocouple lead wire is Yellow. Negative lead is Alumel wire which is magnetic. Negative lead on thermocouple lead wire is Red.
4. THERE SHOULD NEVER BE ANY OTHER METAL SUCH AS A SCREW BETWEEN THE THERMOCOUPLE WIRE AND THE THERMOCOUPLE LEAD WIRE. IT SHOULD BE A DIRECT CONTACT. The thermocouple lead wire is special calibrated wire for Type K thermocouples. Using any dissimilar metal in the circuit will cause an error in the millivolt reading from that thermocouple.

THERMOCOUPLES DON'T LAST

1. Upgrade to Pyrocil Thermocouples.
2. Only insert thermocouples in the kiln for part of the firing cycle (when you need to see temperatures).
3. Sulfur will attack Type K thermocouples. Sulfur can be in glazes, clay, oil, dirt, mortar, some furnace cements, and some asbestos. A simple test for this is to immerse a thermocouple with suspected contamination in a 20% hydrochloric acid containing a few pieces of metallic zinc. If sulfur is present it can be detected by the smell of hydrogen sulfide (a rotten egg smell). Also moistened lead acetate paper held over the top of the test solution will turn brown or black if sulfur is present. If you can't get rid of the sulfur problem you can purchase a thermocouple with a protection sheath. (Contact factory).