

Operating Instructions Zone Controller TC802Z

1.) General Information

Depending on the kiln's size it may be necessary to divide the kiln into several heating zones with individual power relays and thermocouples to give best temperature distribution. By using our zone control system you can drive kilns with up to 16 zones. The master controller TC804/5/6 drives the first zone, for every additional zone a TC802Z slave controller is required. A digital communication link establishes automatic data transfer between all units (setpoint and actual temperature, program status, control parameters etc.). The user can adjust temperature balance and - if required - defined deviation. It is also possible to adjust a time delay for each particular zone. This is useful e.g. for a melting point moving through the zones.

2.) How to Operate the Zone Control

Load program and start firing on your master controller TC804/5/6 as described in your controller manual. The zone controller starts its operation automatically showing a flashing decimal point on the very right of the display. There is no need for any program input on the slave controller.

The display of the TC802-Z shows the actual temperature of the corresponding zone. By pressing the key [⇒] the following values can be displayed:

- setpoint temperature transferred from the master controller (unit display '°C' is blinking); can be different from master setpoint if *delay* or *deviation* is adjusted (see below); if there is no value sent from the controller, the display shows '- -' (e.g. is program is stopped)
- temperature deviation (display shows 'd ...'); to adjust a defined temperature deviation on a particular zone, you can enter the required difference here (+ / -). Use the keys [↑] and [↓] to adjust value
Example: Entering a value of 'd+10' causes the TC802Z to control this zone in all segments 10°C higher than the master zone. Please consider the physical limitations because of the heat convection (depending on the type of kiln)
- time delay (unit display shows 'm' for min): This option is only available if the parameter no. 5 is set to 1 (see section 6. of this manual) The temperature curve will be delayed for up to 15.00 minutes depending on the adjusted value. The EVENT 2 bit of the master controller switches this delay ON or OFF for every single segment.

Pressing the key [⇒] again switches the display back to kiln temperature reading.

3.) Adjustable maximal Values

The range for the adjustable temperature is from -199 to +199 °C; in most kilns maximal temperature deviation will be less because of heat convection effects. The delay time can be adjusted from 0.00 to 15.00 minutes in steps of 15 seconds.

The 'X' in the very left of the unit display shows the active state of the relay output F0.

4.) Error Messages

The error messages of TC802Z are identical to TC804/5/6 controllers. Please refer to appendix A of this manual for detailed explanation and trouble shooting.

5.) Getting Started

Each zone controller TC802-Z is connected to its corresponding zone (thermocouple (+) and (-), mains supply (L), (N), (PE), relay contacts). For connection details please refer to appendix E of this manual.

For communication link, the receptacles marked as RXTX+ and RXTX- have to be connected (i.e. 2 wires, one wire connects the RXTX+ of the master, RXTX+ of slave 1, RXTX+ of slave 2 etc. and one wire connects all RXTX- receptacles).

6.) Configurable Parameters

The TC802Z is equipped with adjustable operating parameters. These parameters are pre-set at factory and normally need not to be changed. To avoid unauthorized changing, the parameters are locked. For unlocking proceed as follows: Turn of the controller, press key [install] and turn it on again (hold [install] pressed). Now enter the parameter mode by pressing the key [install] for about 4 seconds. The TC802Z now is showing the first parameter. Press the key [⇒] to step to the next parameter.

Attention: Quit the parameter mode using the key [⇒] to ensure proper saving of all parameters. The parameter list is nearly identical to the TC804/5 parameter list described in appendix B. Only the following parameters are different:

code	usage	value range	unit
...			
3.	use own PID-parameters/cyclus timet	0-1	-
	Default „0“: The zone controller uses the PID values of the main controller. If one zone of the kilns has very different temperature reaction from the main zone it is helpful to adjust the parameters for this zone individually (adjustment „1“). Therefore on adjustment „0“, the parameters 8 / 9 / C / D of the TC802Z do not affect anything.		
...			
5.	enable DELAY operation	0-1	1=DELAY enabled
	Default „0“: No delay operation enabled, ie. the zone controllers setpoint temperature follows the mains controller setpoint without delay. The adjustment of the delay value is disabled (refer 2 d.). On adjustment „1“ the DELAY operation is enabled, ie. on activation by the main controller (EVENT) the TC802Z delays the firing curve at the adjusted time (refer to section 2 d.).		
...			
A.	adjustable range for offset temperature	0-999	°C
	This is to define the maximum adjustable temperature for offset. Check the type of kiln to make sure that no value is entered that the kiln might be unable to manage. E.g. a maximum offset of +200°C will cause problems to most types of kilns because the zone near the controlled zone will be heated up too much.		
...			
D.	zone number	1-15	-
	Number of the control zone: (1 = 1st zone = main controller), 2 = 2nd zone, 3 = 3rd zone etc. This information is being used to share the heat cycles of all heating zones. This is useful to reduce peak current and ensure smooth heating.		