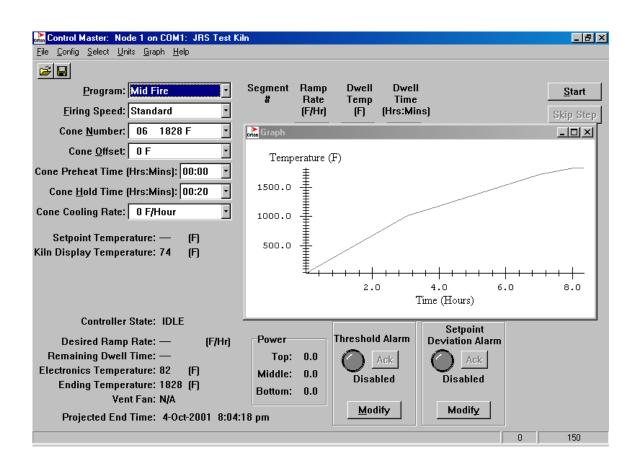# Orton

ControlMaster DX™

Autofire2000 Programming, Monitoring and Analysis Software

- Program & monitor up to 8 kilns from one PC
- Real-time graphs for Time vs. Temperature
- Remote temperature readings
- Data log and file export
- Data analysis
- Print Graphs

![Orton logo]

Package Contents

(1) RS232 Chip
(1) Serial Cable
(1) Remote Programming and Monitoring diskette
(2) Data Analysis diskettes

Hardware Installation

Each controller requires one RS232 serial port at the computer.

1. Connect the RS232 cable between the Computer serial port and the controller. Kiln manufactures may provide a pre-installed port at the controller for this connection. If no port is available, the supplied cable can be used to connect directly to the controller electronics. See diagram 1 for connection location. (J1)

2. **ControlMaster** software requires the installation of a RS232 communications chip on the controller electronics. See diagram 1 for installation location. The IC chip must be installed in the proper direction with the notch (pin 1) towards the center of the board.
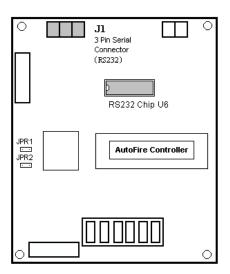

Diagram 1

Computer Requirements

ControlMaster is a Windows-based software program. It is compatible with any industry standard, IBM-compatible personal computer and Microsoft Windows 95 or higher. 800 x 600 monitor resolution is recommended.

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Software Installation

To Install **ControlMaster DX™** Software on Windows95, Windows98 or Windows2000:

1. Insert the floppy disk into a 3.5" disk drive.
2. Click Windows "Start"
3. Select "Run"
4. Open a:\setup.exe and click "OK" (substitute the appropriate letter for a: if your floppy drive is not the a: drive)
5. Follow the on-screen instructions

Controller Configuration

Node Id

The Node Id is a controller identification number. If there is only one **AutoFire™** Controller attached to the computer, the Node Id may be set to any value from 0 -15. The factory default value is 0. 0 is recommended for a single controller network. If there is more than one controller connected to the computer, the Node Id should be set to a different values for each controller for unique file name assignments and for identifying the controller/kiln. The Node Id can be set from the controller keypad Options or the software configuration screen.

Software Options

Two programs are supplied with **ControlMaster DX**.

1. Programming and Monitoring
2. Analysis

The Analysis application is optional. It is not required to run the Remote Programming and Monitoring application.

ControlMaster™ 2.x allows you to program, monitor, and save firings from multiple Controllers. The Analysis program allows you to graph, compare and print data from the saved files.

Programming & Monitoring Software

. **Installation Information**

ControlMaster™ is installed into the Windows 'Program Files' folder, in addition to the 'CMaster' application file, two file folders are created.

Time and Temperature firing data is automatically stored in the ***'Datalogs'*** folder when a firing is started. The file name identifies when the file was created and for which controller.
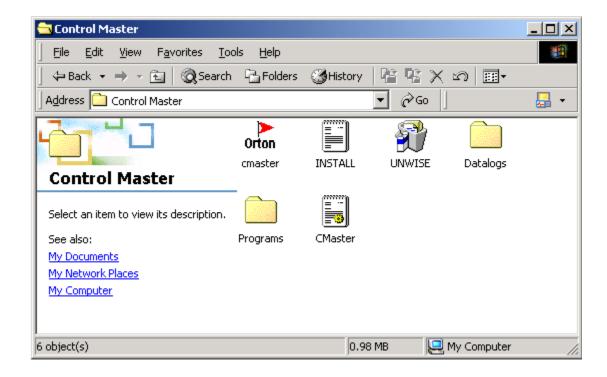
For example: CM N01 2001_09_13 07_57_13 COM.LOG

ControlMaster	[CM],
Controller Id #1	[N01],
Date	[Year_Month_Day] and
Time	[Hour_ Minutes_Seconds].

Setup Information for programming the controller can be saved in the ***'Programs'*** folder.
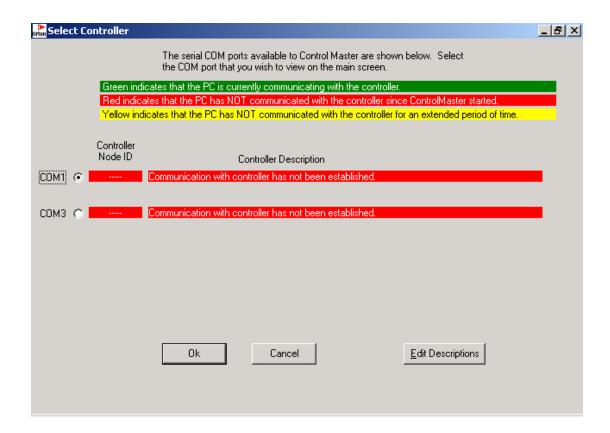
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Establishing Communications

Before the software can be utilized, it must detect and establish communications with at least one controller. The program will scan all available 'comports' for a controller connection. If no ports are found, the program will terminate. If you experience trouble detecting a serial port, check the Windows Control Panel Device Manager for active comports. As long as one port is found, the program will not terminate. Note that the software will detect all comports, including modems, it does not matter if a controller is connected to the port or not.

If the software does not terminate immediately, it has found available comports. If a controller is connected to COM1, the software will automatically detect and display the information for this controller. If the controller is not connected to COM1, the software will wait to establish communications on this port. Click the *Select* option on the menu bar to locate a controller on another comport.

Kiln Identification

Each controller can have unique controller identification from the *Select* screen. To edit the Controller Description, click on the edit button at the bottom of the screen. The edit feature is linked to the controller Id number not the comport assignment.

Modifying the CMaster.INI file

The <u>*Select*</u> menu will display all known comports. Any comport can be excluded from the software auto detection by editing the CMASTER.INI file. This is convenient for excluding known modem ports from the software. If a modem port appears in the menu selections, the INI file can be changed to 'EXCLUDE' this port from the software. Below is an example of the CMASTER.INI with COM3 excluded. It is important to use all capital letters when changing text in the INI file.

```
[Directories]

Programs=C:\Program Files\Control Master\Programs

Datalogs=C:\Program Files\Control Master\Datalogs

[COM_PORTS]

COM1=AUTO_DETECT

COM2=AUTO_DETECT

COM3=EXCLUDE

COM4=AUTO_DETECT

COM5=AUTO_DETECT

COM6=AUTO_DETECT

COM7=AUTO_DETECT

COM8=AUTO_DETECT

COM9=AUTO_DETECT
```
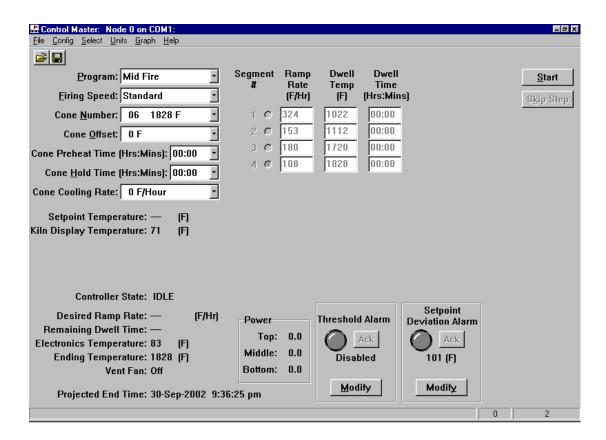
Overview

ControlMaster™ is shown below. Programming options are similar to those available on the controller keypad.
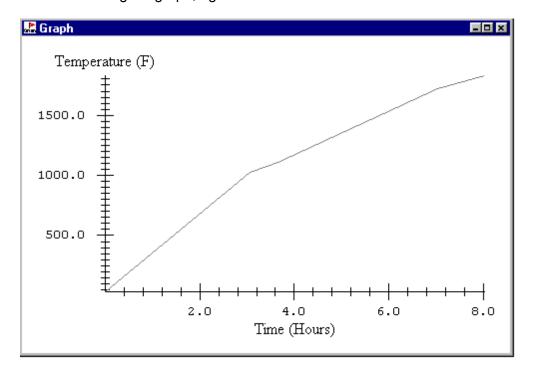

- Programming selections are at the top-left part of screen.
- Program segments are entered (for User Programs) or displayed (for Cone Firings) in the middle of the screen.
- Control buttons are located in the top-right corner.
- Alarm settings are located at the bottom of the screen.
- Monitoring information and controller status is in the left column.
- The status bar box on the far bottom-right indicates the number of times information has been retrieved from the selected controller; it is an indication to the operator that the PC is communicating with the controller
- The status bar box second from the right indicates the number of communication errors that have occurred for the selected controller.

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Graph Option

Click the *Graph* option on the menu bar to display a graph of the selected program. Graphs are also available to track the actual firing in process.

While viewing a graph, you can zoom in on the graph by left-click and dragging the mouse to create a box around the portion of the graph you wish to view close up. To return to the original graph, right click and select 'undo'.

Saving Setup Programs

Each time a firing is set up, the information for the firing can be saved as a Program. This can save time by allowing the saved file to be re-opened with the retained set-up information. To save a program, click on the disk icon at the top-left of the screen and assign a user filename for the program. Programs can be retrieved by clicking on the 'open folder' icon.
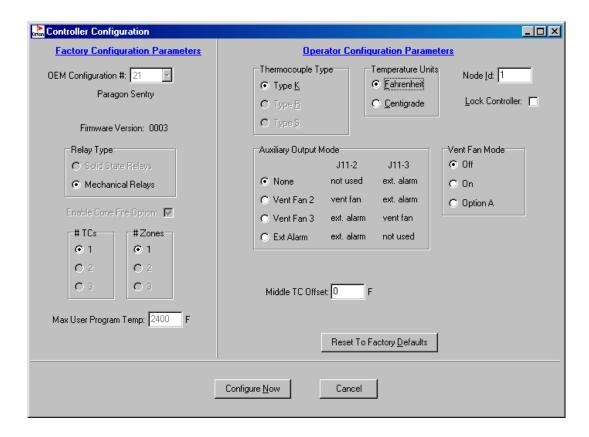
Programming Heating/Cooling Rates

When setting up a User 'Ramp/hold' program, cooling rates are programmed as negative value and heating rates are programmed as positive values. Always use a (-) sign when entering cooling rates.

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Configuration Screen

Click the *Config* option on the menu bar to view and edit controller configuration settings.

Controller Configuration

Factory Configuration Parameters

OEM Configuration #: 21

Paragon Sentry

Firmware Version: 0003

Relay Type
- ○ Solid State Relays
- ● Mechanical Relays

Enable Cone Fire Option: ☑

 # TCs
- ● 1
- ○ 2
- ○ 3

 # Zones
- ● 1
- ○ 2
- ○ 3

Max User Program Temp: 2400 F

Operator Configuration Parameters

Thermocouple Type
- ● Type K
- ○ Type R
- ○ Type S

Temperature Units
- ● Fahrenheit
- ○ Centigrade

Node Id: 1

Lock Controller: ☐

Auxiliary Output Mode

	J11-2	J11-3
● None	not used	ext. alarm
○ Vent Fan 2	vent fan	ext. alarm
○ Vent Fan 3	ext. alarm	vent fan
○ Ext Alarm	ext. alarm	not used

Vent Fan Mode
- ● Off
- ○ On
- ○ Option A

Middle TC Offset: 0 F

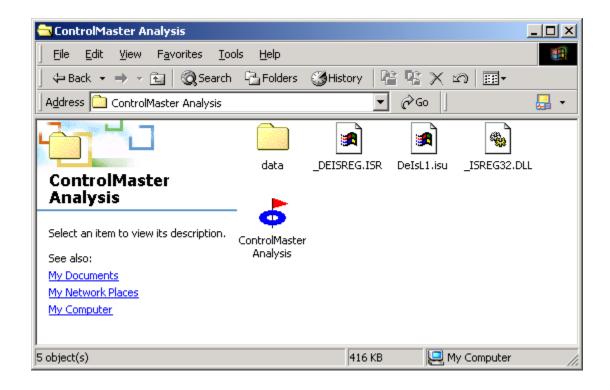Reset To Factory Defaults

Configure Now   Cancel

Configuration Settings can alter the performance and functionality of the controller. Changes to the controller configuration should not be made without first reviewing the controller user manual for detailed descriptions of configuration settings.

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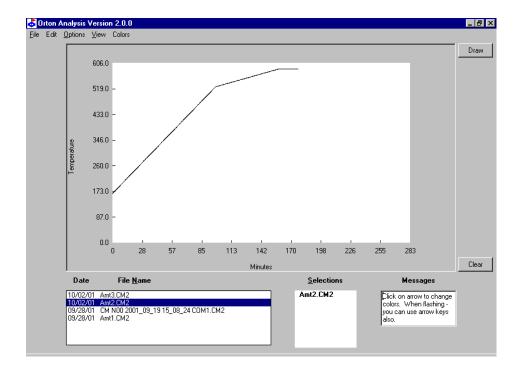
Analysis Software

Installation Information

Analysis files will be saved in a separate *Data* folder.

Importing files for Analysis

Click on the *File* menu and select *'Import Controller File'*. A standard Windows 'File Open' screen appears. Find the file to import from the ControlMaster Datalogs folder and click 'Open' to proceed. Imported files can be renamed for analysis. After the progress indicator reaches 100% the newly created analysis file appears in the file directory at the bottom-left of the screen.

To Display Data

First select the files you want by double-clicking on the file names in the directory list. You can also navigate the directory list with the up-down keyboard keys or scrollbar. File selections appear in the 'Selections' field at the bottom-center of the screen.

As many as 6 files can be displayed at one time.

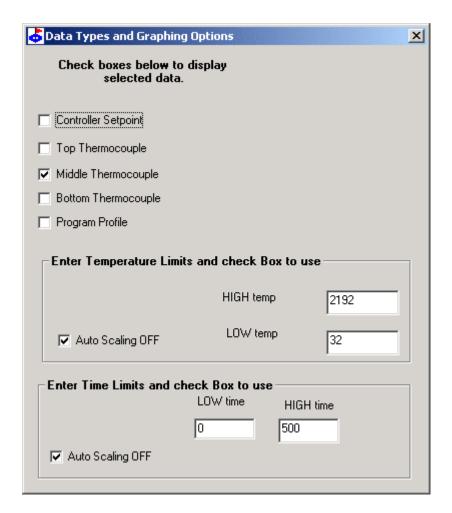Click the 'Draw' button to graph the file selections.

To remove a file(s) from the 'Selections' box, Double-click the file name in the 'Selections' box. To remove all files, click the 'Clear' button. This also erases the graph window.

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View Options

Click on the *View* menu to change the type of data displayed in the graph. A screen appears with 5 selectable curves to plot simultaneously. Check only the data you are interested in viewing.

- Controller set-point temperature

- Top thermocouple temperature

- Middle thermocouple temperature

- Bottom thermocouple temperature

- Firing program profile.

The X and Y axis of the graph will automatically scale to fit the data. These limits can be adjusted to 'zoom' on the data. The two fields for Time and Temperature allow the operator to manual change the scale limits on the graph. Leaving these items unchecked, the program automatically chooses the scale limits that are graphed. Otherwise, the operator can type in limits.

Temperature Units

Click the *Units* menu to change the temperature scale from Degrees Celsius to Degrees Fahrenheit.

Graph Colors

Click the *Colors* menu to assign a color to any particular curve. A screen appears with boxes showing the colors currently used for 6 possible files. The labels 'File #1 - File #6 are the 6 files listed in the 'Selections' box from top to bottom.
The color box is shown '3D'. To select a box, click on it or Tab to the one you want.
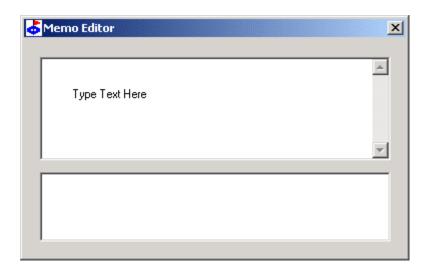
To change the color, click the *Palette* menu or right-click on the box you want. A standard Windows color pallete screen appears. Select a new color or cancel.

Adding Memos to a File

Click the *Edit* menu to add notes to the data files. A screen appears with 2 boxes. The lower box has the file names shown in the 'Selections' box. Click on a file name or press 'Enter' to view the memo for the selected file. Any text added to this field will be included in the file. The text added to the top memo field does not print along with the graph.

Printing files

To print a graph, Click on the *File* menu and select Print Graph. Grid lines can be added to the graph after the print function has been selected.