Software Features

- 4 channels of temperature monitoring and control
- each channel has option to control, or monitor only
- 2 control modes: heating and cooling
- configure setpoint and dropout (hysteresis) for each channel
- ability to manually operate relays
- selectable COM port and baud rate
- logging function
    - option to disable
    - record temperatures once per minute
    - relay actions are recorded as they happen
    - temperatures and relay actions are recorded with a timestamp
    - log is saved to file _automatically_ every 24hr
    - save log to file manually
    - log file is created in tab-delimited format, for easy loading into a spreadsheet
- the [Tab] key can be used to step through all buttons and config items.
- some countries use a comma (**,**) to mark a decimal point, rather than a period (**.**). The program will detect what the local Decimal Separator is, and use that for temperature display and logging.

System Requirements

- Win98SE to WinVista32
  (not tested in Win95, or XP64 or Vista64)
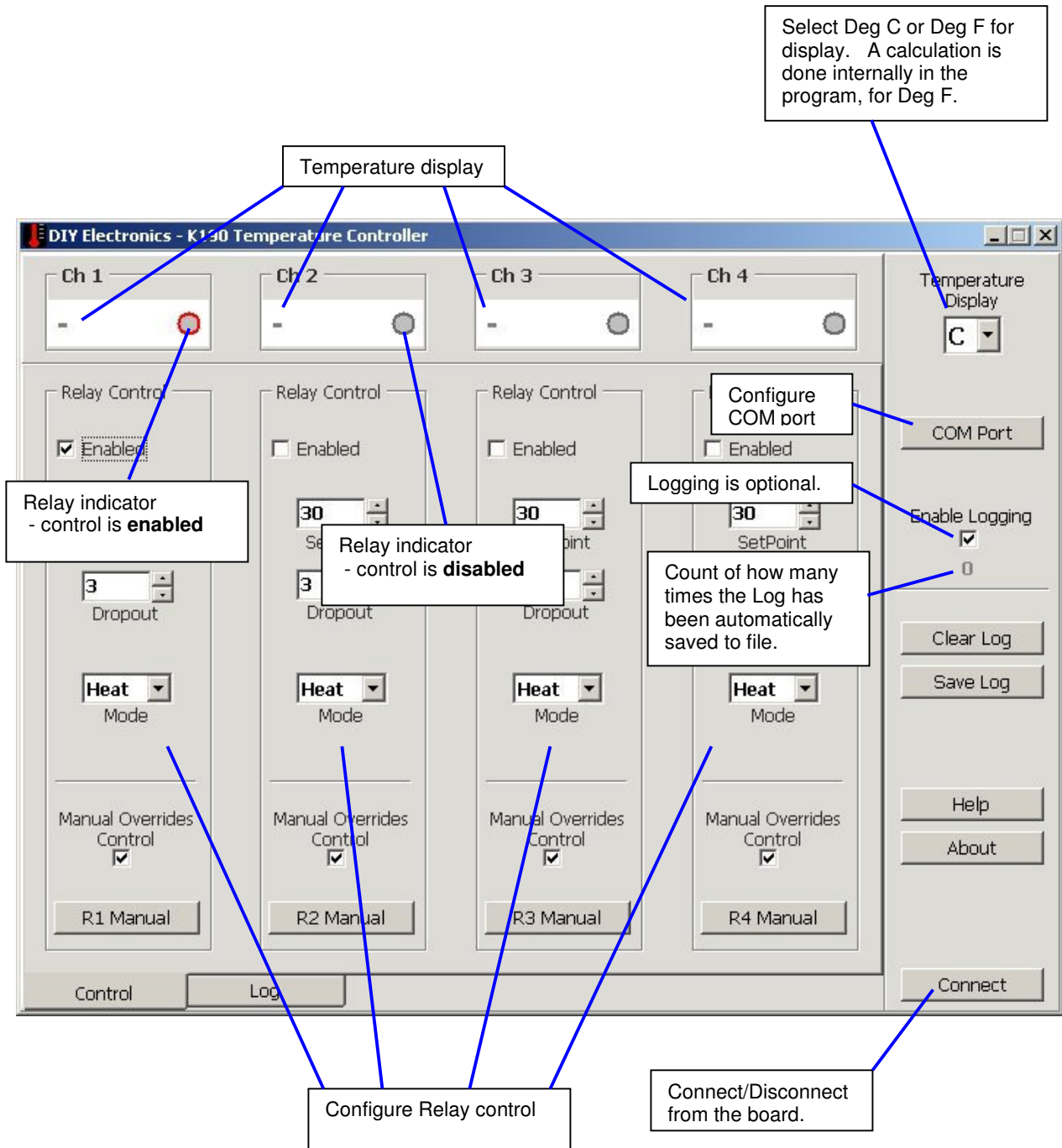- 1.2 MB of disk space.

Installation

The zip file includes the program exe and this pdf help file. Unzip to convenient location on your hard drive, then create a desktop shortcut to the exe file.

Software License

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www.kitsrus.com

Written for DIY by John Gray,
www.108relays.ca

Control page, disconnected

Select Deg C or Deg F for display.   A calculation is done internally in the program, for Deg F.

Temperature display

Configure COM port

Relay indicator - control is **enabled**

Relay indicator - control is **disabled**

Logging is optional.

Count of how many times the Log has been automatically saved to file.

Configure Relay control

Connect/Disconnect from the board.

Control page, connected

Showing sensors connected to Ch1, Ch2, and Ch4.

Channel displays are updated on a once-per-second rotation. At the same time, control settings are checked, and relays are activated or released, as needed.

Relay indicator
- control is enabled
- relay is **ON**

Relay indicator
- control is enabled
- relay is **OFF**

Operate a Relay manually.

Log page

A **timestamp** is added for each record.

Date and time are displayed according to local settings in the User's computer.

Temperature readings are logged at a rate of once per minute.

Start a fresh Log at any time.

A heating cycle. (SetPoint is 24, Dropout is 3)

```
                                    K190 Temperature Controller
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9/22/2008 2:47:39 PM                Logging enabled in
9/22/2008 2:47:48 PM                COM Port opened
9/22/2008 2:47:48 PM                Connecting to K190...
9/22/2008 2:47:48 PM                Temperature Monitor & Controller v1.0
9/22/2008 2:47:48 PM                K190 found
9/22/2008 2:47:49 PM    22                  21
9/22/2008 2:47:49 PM                Ch1: heat ON  (22)
9/22/2008 2:48:48 PM    24    20    -    21
9/22/2008 2:49:48 PM    24    20    -    21
9/22/2008 2:50:48 PM    25    20    -    21
9/22/2008 2:51:48 PM    25    20    -    21
9/22/2008 2:52:48 PM    26    20    -    21
9/22/2008 2:53:26 PM
9/22/2008 2:53:48 PM    27    20    -    21   Ch1: heat OFF  (27)
9/22/2008 2:54:48 PM    27    20    -    21
9/22/2008 2:55:48 PM    27    20    -    21
9/22/2008 2:56:48 PM    26    20    -    21
9/22/2008 2:57:38 PM                Manual - R2 - ON
9/22/2008 2:57:48 PM    25          -    21
9/22/2008 2:58:11 PM                Manual - R2 - OFF
9/22/2008 2:58:30 PM                Ch1: heat ON  (24)
9/22/2008 2:58:48 PM    24    20    -    21
9/22/2008 2:59:48 PM    24    20    -    21
```

The Log text uses tabs rather than commas for spacing, for improved readability.

Manual Relay action is also recorded.

Save the Log to file
The Log runs in memory, until saved to file. The Log is saved as a tab-delimited text file, for easy loading into a spreadsheet.

Autosave
The Log contents are saved automatically to file (if logging is enabled), once approximately every 24 hours. The 24hr period starts from when first connected to the K190 board. Files are saved to the User's ..\MyDocuments\K190 folder.

The log filename includes a date-time stamp in iso format. (YYYY-MM-DD hh-mm-ss)
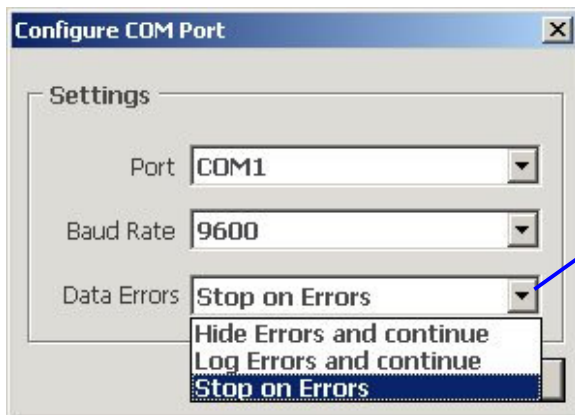
Configuration

Enable/Disable relay control for this channel. If disabled, then this channel will monitor only.

Temperature at which the Relay will turn ON.

Difference from SetPoint value, at which the Relay will turn OFF.

"Heat" mode – the relay will turn ON when temperature goes <u>below</u> the SetPoint value.   The relay will turn OFF when temperature rises <u>above</u> the SetPoint by the Dropout (hysteresis) amount.

"Cool" mode – the relay will turn ON when temperature goes <u>above</u> the SetPoint value.   The relay will turn OFF when temperature drops <u>below</u> the SetPoint by the Dropout amount.

If enabled…
When the Manual button is clicked, this channel's thermostatic relay control is disabled (this is "override").

If disabled…
Manual relay action is only temporary, when control is enabled.

Relay Control

☑ Enabled

26
SetPoint

3
Dropout

Heat ▼
Mode

Manual Overrides Control
☑

R1 Manual

This will toggle the Relay state.

COM Port

Data Errors
Assuming a decent serial cable and newer hardware, there normally shouldn't be any data errors.

If the program is running on older equipment with flaky hardware, data errors are a possibility. The program can be configured to hide these errors, which may help to provide increased stability.

Again, if running on older equipment, consider disabling all power management settings.

Shortcut Keys

[Ctrl] + [Q]	Close the program
[Ctrl] + [N]	Connect/Disconnect from the board
[Ctrl] + [E]	Enable/Disable logging
[Ctrl] + [P]	Opens COM Port configuration
[Ctrl] + [R]	Clear the current log
[Ctrl] + [S]	Save the current log to file
[Ctrl] + [L]	View Log page
[Ctrl] + [T]	View Control page
[Ctrl] + [1]	Operate Relay 1 (if connected)
[Ctrl] + [2]	Operate Relay 2 (if connected)
[Ctrl] + [3]	Operate Relay 3 (if connected)
[Ctrl] + [4]	Operate Relay 4 (if connected)
[Ctrl] + [B]	Opens About box
F1	Help

Some of the standard text editor keys can be used in the **Log screen**, eg:
 - Home/End
 - Page Up/Down
 - Select All
 - Copy

Be sure to mouse-click in the Log screen first.