



Software Products:
TymPlex™ - Tymkon™ Host Software
Instruction Manual

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1. GLOSSARY

1.1. *Tymkon*

Tymkon (pronounced 'time-con') is a series of process sequence controllers designed for batch-type process-control applications. All Tymkon controllers are based on a CMOS microprocessor as the major control element. This, along with other CMOS components and with the application of digital filtering, enables these controllers to operate reliably in the high electrical noise environments in which they often must function. Programming may be accomplished with front-panel controls or from a host computer.

1.2. *TicTalk*

TicTalk is a phrase used to encompass a network (used in the generic sense) of Host Computers, Tymkon's, Gas Panel Interfaces, Drive Controllers and other peripherals. In a typical installation, the interconnection of these devices requires the integration of different parallel and serial communications protocols from several different vendors. *TicTalk* provides the user a consistent programming interface for these various devices.

1.3. *TymEdit*

TymEdit is a recipe editor that allows the user to edit and print process segment tables, recipes, temperature tables and configuration information. This information is then stored in Microsoft Access database tables on the host computer's hard disk where it can be retrieved for later download to one or more Tymkon's.

1.4. *TymPlex*

TymPlex is a PC-based software application that provides a graphical user interface and data collection tool for all current versions of Tymkon process sequencer controllers. It allows the user to download recipes from the Microsoft Access database tables created by TymEdit and provides access to all of the Tymkon front panel functions as well as data logging functions.

1.5. *TymPro*

TymPro is a user profile editor that allows an installation's supervisory staff to edit user lists, process lists, and user-permissions information. These data tables are then made available to TymPlex, TymEdit and other Tymkon-related applications to regulate user access to various tools.

2. SOFTWARE INSTALLATION

2.1. Software Scope

The purpose of this document is to provide instructions for use of the TymPlex™ software application only. For more complete information regarding Tymkon features and behaviors, please refer to the Tymkon Manual. For information concerning other Tymkon related applications, refer to the appropriate manual.

All Tymkon Process Sequencers are designed to store (32) Process Recipes, (64) Process Segments and (32) Temperature Segments in local, non-volatile memory regardless of whether a Host PC is used. The *TymPlex™* application allows the user to download recipes, run recipes and to monitor and graph various process parameters. *TymPlex™* allows access to any features that are available at the front panel of the Tymkon.

2.2. System Requirements

The preferred operating system for *TymPlex™* is WindowsXP Pro (with Service Pack 3) but it has been successfully used on most versions of Windows including Windows 98 and Vista. Windows 95 and earlier versions of windows are not supported.

TymPlex™ communicates with the *Tymkon* process controllers directly. They communications via a standard EIA-232 serial port. Most PC's come with serial ports, however, there are PCI serial boards that install easily into most PC's and contain (4) or more serial ports are available from several different vendors.

*Note: For more information about the connection between the host PC and the Tymkon, please refer to the **Tymkon Instruction Manual**.*

2.3. Software Installation

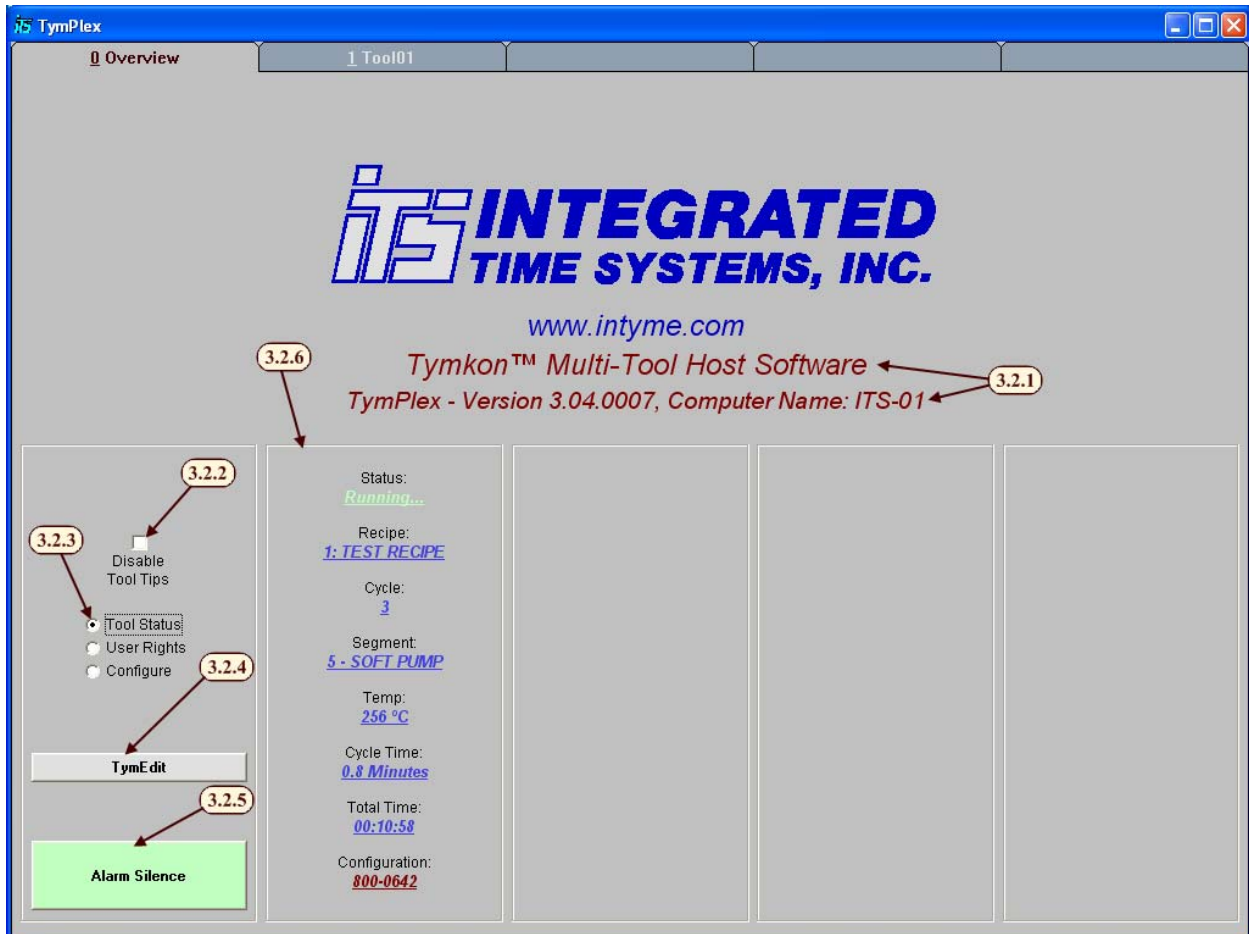
For detailed instructions on installing *TymPlex™* and other related software, please refer to the *TicTalk Software Installation Manual*.

3. INSTRUCTIONS

3.1. Description

The following screen shots display *TymPlex*[™] as configured for use with a single *Tymkon*. In an actual installation, *TymPlex*[™] may be configured to support up to eight *Tymkon*'s.

3.2. Overview Tab



3.2.1. This area displays the program name and version. You will likely be asked for this information when requesting technical support from the factory.

3.2.2. The Disable Tool Tips checkbox enables or disables Tool Tips. A Tool Tip may appear when the mouse hovers over a button or other object in the program.

3.2.3. This set of option buttons selects one of three displays: **Tool Status** displays the overview of each tool and is selected by default; **User Rights** displays which features the current user can access. (See paragraph 4. Instructions – with TymPro Installed for more information about user rights and permissions.); and **Configure** controls which of the eight possible *Tymkon* screens are enabled.

3.2.4. The *TymEdit* button, launches *TymEdit* provided it was installed in the same directory as *TymPlex*.

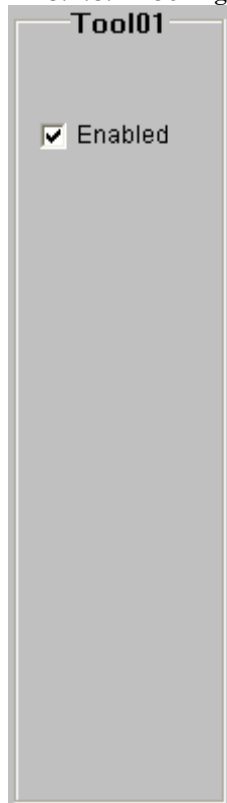
3.2.5. The Alarm Silence button, issues an alarm silence command to all attached *Tymkons*.

3.2.6. The *Tymkon* overview area has a different output based on which option is selected.
If Tool Status is selected, *TymPlex* will display the Status, Recipe Number, Cycle Number, Segment Number and Name, Center Zone Temperature, remaining Cycle Time, Remaining Total Time and configuration number for each *Tymkon*.

3.2.7. If User Rights is selected, *TymPlex* will display the current user rights on each *Tymkon*.
(See 4. Instructions – with TymPro Installed for more information about user rights and permissions.)



3.2.8. If Configure is selected, *TymPlex* displays an enable checkbox for each of the eight possible tools it can support.



Note: TymPlex supports up to eight Tymkon's and each installed Tymkon requires a separate RS232 serial port. Each 'Enabled' check box enables another tab for an additional Tymkon. After the appropriate number of tools has been enabled, the user must exit and then restart TymPlex for the additional tabs to appear.

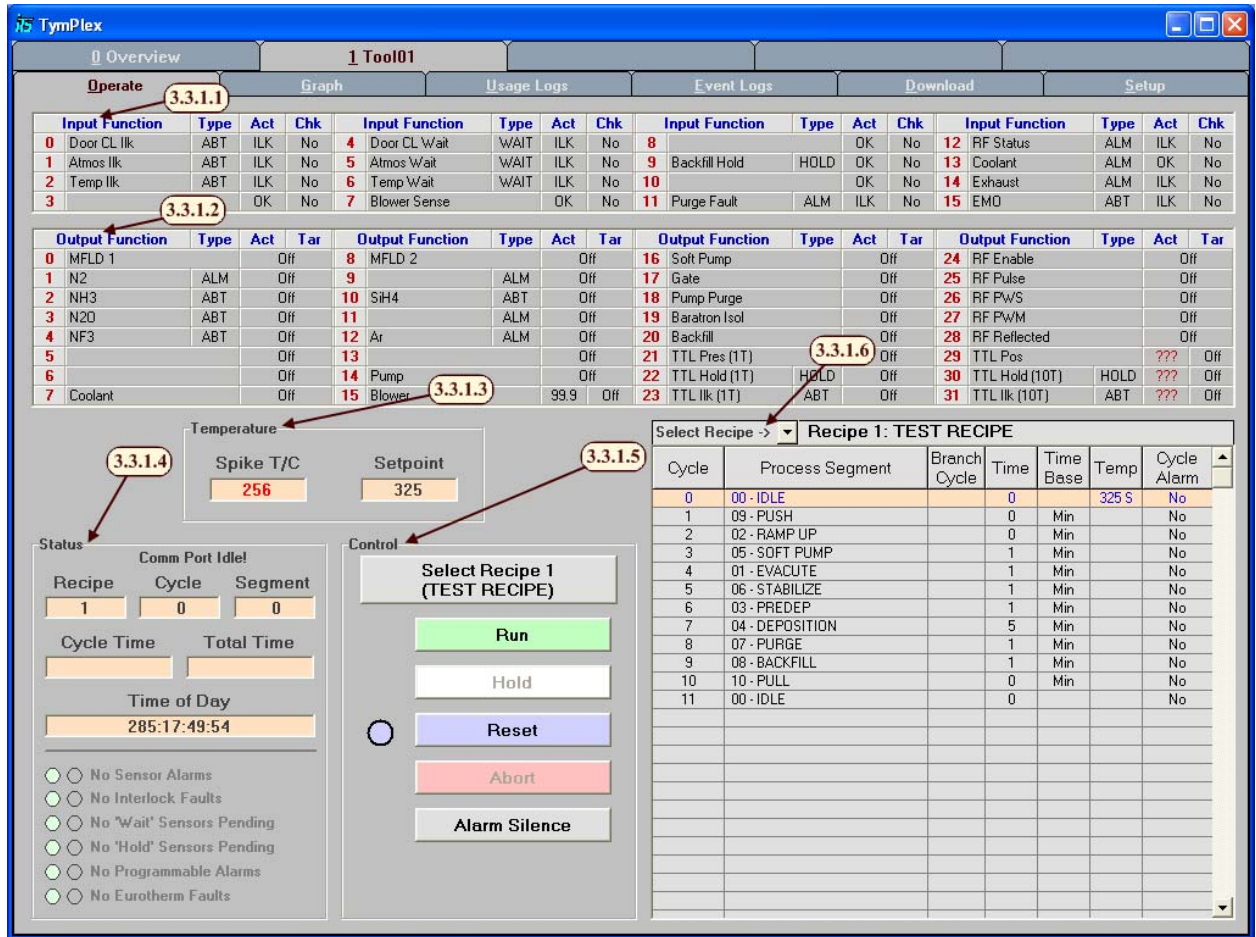
3.3. Individual Tymkons

Each individual *Tymkon* has it's own major tab. But all Tymkons have the same set of minor tabs. They are: Operate, Graph, Usage Logs, Event Logs, Download and Setup. With each minor tab being accessed with the ,alt. key and the underlined first letter of each minor tab.

Note: The name of this tab us user defined but defaults to Tool01 through Tool08. It will always be prefaced with a "0n – " where n is the tab number. Please note the number is underlined and is thus used with the <alt> key as a hotkey.

3.3.1. Operate

The operate screen allows everything that is displayed on the Tymkon front panel to be seen remotely. Additionally, and operations that can be performed on the Tymkon itself, can be done from the operate screen.



3.3.1.1. The Input area displays either 8 or 16 inputs depending on the type of Tymkon it is connected to. Each input displays:

- The Input Number displays each inputs corresponding number on the *Tymkon*.
- The Name column displays the input functions name.
Note: This information is not available on the Tymkon.
- The Type column displays the input type. TODO: List types
- The Action column displays the action the input is taking. TODO: List Actions
- The Check column displays if the input should be checked. TODO: Why?

3.3.1.2. The Output area displays either 16 or 32 outputs depending on the type of Tymkon it is connected to. Each output displays:

- The Output Number column displays each outputs corresponding number on the *Tymkon*.
- The Name column displays the output functions name.
Note: This information is not available on the Tymkon.
- The Type column displays the input type. TODO: List types
- The Actual column displays the actual value being reported back if the output has an analog.
- The Target column displays the target value being sent if the output has an analog.

3.3.1.3. The Temperature area displays 8 zones. Each zone includes:

Note: This information is not available on the Tymkon.

- k. The Zone Number column displays each zones corresponding number on the *Tymkon*.
 - l. The Name column displays the zone's name.
 - m. The Set Point column displays the set point being sent to that zone.
 - n. The PV1 (Spike) column displays the actual value being reported back by the spike thermocouple.
 - o. The PV2 (Profile) column displays the actual value being reported back by the profile thermocouple.
- 3.3.1.4. The Status area, displays the overall status about the *Tymkon*.
- p. The current Recipe, Cycle and Segment number.
 - q. The remaining time in the current cycle and the total time remaining for the whole recipe.
 - r. The current time as recorded by the *Tymkon*.
 - s. Any faults or waits currently pending.
- 3.3.1.5. The Control area, allows the *Tymkon* to be: Run, put into Hold, Reset, Aborted, or silence the alarm. These operations are all available on the *Tymkon* front panel, please refer to the ***Tymkon Instruction Manual*** for more information about *Tymkon* control. The Lot Number area, allows lot numbers to be saved in the log with each process run on the *Tymkon*. Multiple Lot Numbers can be stored with each process, the <tab> key is used to delineate between lot numbers.
- Note: The data log is only performed by the PC running TymPlex, not the Tymkon. If TymPlex is closed or the Tymkon disconnected data will be lost.*
- 3.3.1.6. The current Recipe area, display's information about the currently selected recipe. The drop down box allows different recipes to be selected.
- Note: The recipe is only valid if this PC downloaded the last recipe to the Tymkon and the recipe has not been edited since on the Tymkon itself.*

3.3.2. Graph

The graph screen gets data from the datalog and presents it in a graphical manor. Different time frames can be selected to graph as well as old datalogs that are no longer being logged to. (See 3.3.6. Setup for information about configuring the graph)

[Tab1 -) Graph.bmp]

- 3.3.2.1. The Browse File button, allows an old data log to be queried and then displayed.
 - 3.3.2.2. This displays the path to the datalog currently being used.
 - 3.3.2.3. The Restore File button, resumes working of the current datalog. TODO: I think.
 - 3.3.2.4. This is the graph area, what is graphed and what colors are used can all be configured in setup. The graph can be zoomed into by holding the <shift> key and clicking and dragging in the graph window. The graph can be restored to it's unzoomed state by clicking the restore button.
- Note: It is recommended that when zooming you include the horizontal axis in the selection or it will vanish.*
- 3.3.2.5. These three controls control what time frame is graphed. It is made up of three controls, Set Start Time which controls the start time of the graph, Set End Time which controls the end of the graph and the Graph Range which controls how much time to display. Any combination of these can be used except all three at once. If both

start and end time are set, the range is ignored. If neither is set, the end is the current time and the Graph Range determines how much time to display.

3.3.2.6. The Refresh button, restores the graph to its unzoomed state. It can also be used to force a refresh of the graph to include new data, though the graph does this automatically.

3.3.2.7. The Print button, prints the graph as it is currently displayed.

3.3.2.8. The Configure button, changes minor tabs to the Setup tab. (See 3.3.6. Setup)

3.3.2.9. The Grid/Graph option buttons, Selects to view the datalog in either graph form or a grid view.

3.3.3. Usage Logs

These times store the amount of time an input or output has been on. They can be used in applications where after a certain amount of time, service is required.

[Tab1 -) Usage Logs.bmp]

3.3.3.1. Displays usage times for each of the inputs.

3.3.3.2. Displays usage times for each of the outputs.

3.3.3.3. Displays usage times for the Total Process Time, this includes all times the Tymkon is not in Cycle 0.

3.3.3.4. Displays usage times for the User-Defined Time, this timer is user defined and can be cleared and set whenever the user desires.

3.3.3.5. Displays how many times each recipe has been run.

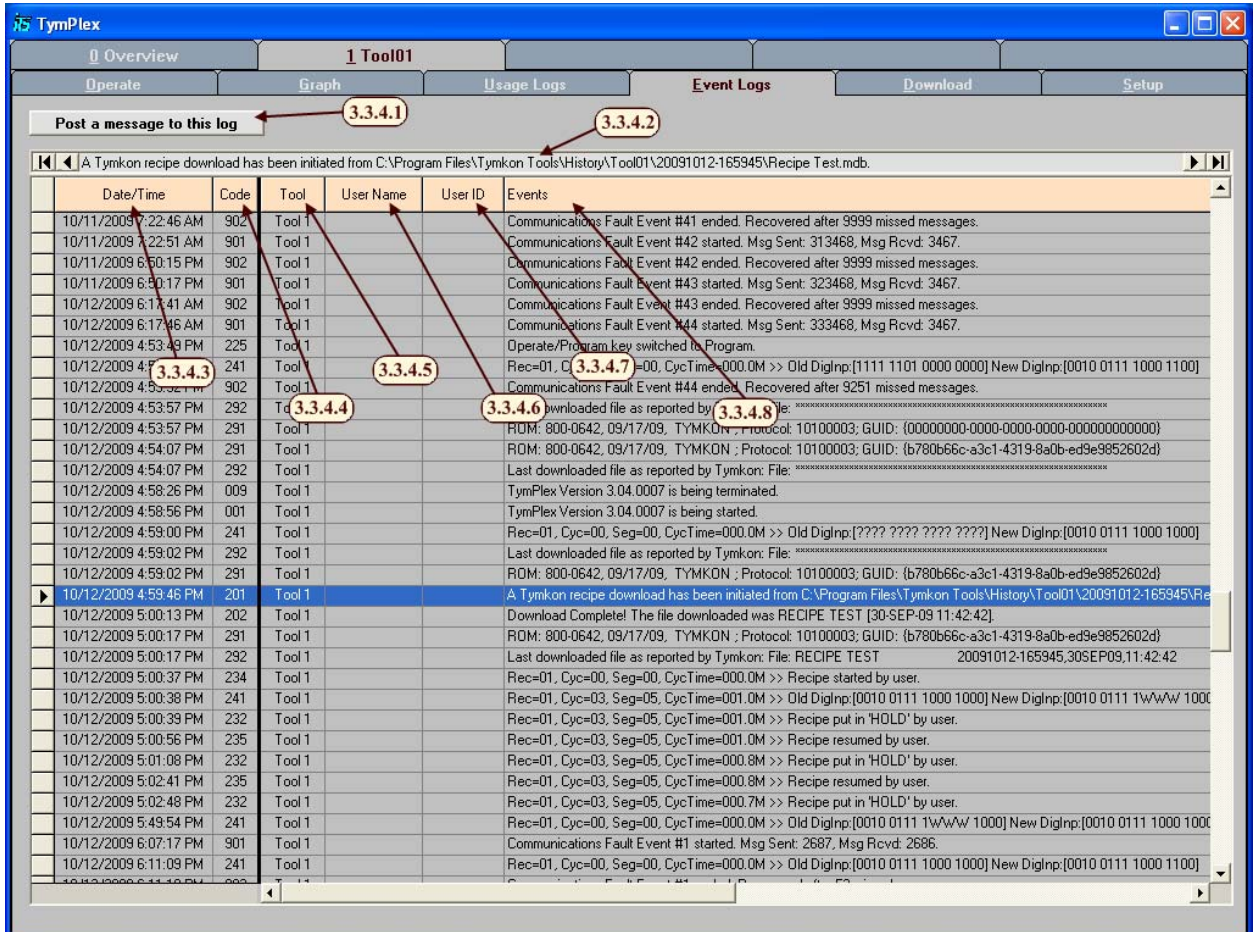
3.3.3.6. Displays Usage Timers & Runs Counters... TODO

3.3.3.7. This allows timers to be cleared. Select the timer/counter that is going to be cleared and then click clear.

3.3.3.8. This allows how the timers are displayed to be configured, either hours, minutes or seconds can be selected.

3.3.4. Event Logs

This table displays events that have been recorded by TymPlex. Each entry includes: Date and Time Stamp, Identifying Codes, Tool Name, User Name User ID, and an Event Description.



3.3.4.1. Post a Message to this Log Button –

3.3.4.2. Selected Event –

3.3.4.3. Date/Time –

3.3.4.4. Event Log Code –

3.3.4.5. Tool Name –

3.3.4.6. User Name –

3.3.4.7. User ID –

3.3.4.8. Events –

The following is a list of all the Event Log Codes:

| Value | Event Name |
|-------|--|
| 1 | TymPlex Startup |
| 2 | Create New Datalog |
| 3 | New Datalog Created |
| 4 | New Runlog Created |
| 9 | TymPlex Shutdown |
| 10 | TymPlex Settings |
| 101 | User Login |
| 102 | Automatic User Logout |
| 109 | User Defined Message |
| 201 | Initiate Recipe Download |
| 202 | Recipe Download Complete |
| 203 | Recipe Download Aborted by User |
| 204 | Recipe Download Aborted |
| 205 | Recipe Download Aborted, Error in File |
| 206 | Wrong Configuration |
| 221 | Manual Abort on Tymkon |
| 222 | Recovery from Manual Abort |
| 223 | Manual Abort |
| 225 | Status of Program Key |
| 231 | Recipe Reset |
| 232 | Recipe Hold |
| 233 | Recipe Aborted |
| 234 | Recipe Started |
| 235 | Recipe Resumed |
| 241 | Change in Digital Inputs |
| 242 | End-of-Cycle Wait Alarm Timed Out |
| 291 | Tymkon Settings |
| 292 | Last Recipe File Downloaded |
| 293 | Set Tymkon GUID |
| 901 | Start Communications Fault |
| 902 | End Communications Fault |

3.3.5.8. The Communications Buffer, displays the communications messages going back and forth between *TymPlex* and the *Tymkon*.

3.3.6. Setup

This screen configures the graph, datalog, tool name and communications.

[Tab1 -) Setup (Disconnected).bmp]

3.3.6.1. This area controls the graphing of outputs. Whether the set point, PV1 or PV2 is graphed is controlled by the check boxes. Clicking in the color box will open a color picker for that function. Actual is graphed as solid line and targets as dot-dash line. Both will use the selected color.

3.3.6.2. This area controls the graphing of zones. Whether the actual or target value is graphed is controlled by the check boxes. Clicking in the color box will open a color picker for that function. The target is graphed as dot-dash line, PV1 is graphed as solid line and PV2 as dashed line. All three will use the selected color.

3.3.6.3. This area controls graphing *Tymkon* behavior. Graph enable controls if the graph is visible or not. Cycle and Segment each display which cycle and segment the *Tymkon* is running respectively. Mode is graphed using the following values:

| Mode | Value |
|------------------|-------|
| Idle | 5 |
| Abort | 20 |
| Input Fault | 35 |
| Hold | 50 |
| Wait | 65 |
| Running | 80 |
| Process Complete | 95 |

Target Temperature graphs... TODO: What does this do?

Note: Disabling the Graph Enable may speed up TymPlex on older systems.

3.3.6.4. The Graph Y-Axis area controls the two Y-Axes. Grid(%) controls the spacing between tick marks on the percent side. Min (°C) and Max (°C) control the upper and lower bounds of the temperature side.

3.3.6.5. The Clear button disables everything from being graphed except for Graph Enable.

3.3.6.6. The Import button ... TODO: What does this do?

3.3.6.7. The Apply button applies any changes that have been made to the graph settings.

Note: This button changes color to red when graph settings have been changed.

3.3.6.8. The Cancel button aborts all changes that have been made to the graph settings.

Note: This button changes color to green when graph settings have been changed.

3.3.6.9. The Tool Name Section allows the name of the tool to be changed.

- 3.3.6.10. The Create New Datalog File button, creates a new datalog and archives the old one for future use.
- 3.3.6.11. The datalog area, tells if the datalog is enabled or not. If enabled it will briefly change when the datalog is being written to say: Saving Data! The file that is currently being used as the datalog is also displayed.
- 3.3.6.12. The Enable Lot Identification checkbox, sets whether the Lot Identification area is visible on the Operate screen. (See 3.3.1. Operate)
- 3.3.6.13. The Enforce Lot Identification checkbox, sets whether a Lot identification must be entered before a recipe can be run.
Note: This ignores the status of Enable Lot Identification.
- 3.3.6.14. The Enable Datalog checkbox, sets whether a datalog is saved or not.
- 3.3.6.15. The Enable Auto Recipe Select checkbox, sets whether a recipe is automatically selected... TODO: Check this.
- 3.3.6.16. The Com Port select drop-down selects which com port the Tymkon is connected to.
Note: After making changes to the com ports, the program must be restarted or the Re-initialize all Ports button must be used. Until one of these is done the changes will not take effect.
- 3.3.6.17. The Ignore Program/Operate Switch checkbox, sets whether TymPlex ignores the current status of the Operate/Program switch.

When

Mode Number (Color of Alarm Silence button) – Mode

0 () – Unknown (Shouldn't happen)

5 (White) – Idle

20 (Red) – Abort

35 (Red) – Input Fault

50 (Blue) – Hold

65 (Blue) – Wait

80 (Green) – Running

95 (Yellow) – Process Complete

4. INSTRUCTIONS – WITH TYMPRO INSTALLED

APPENDIX A: - DATABASE STRUCTURE

TymEdit stores process recipes in Microsoft Access 97 database files. Each database file contains a data table for each of the (32) Process Recipes and for the Process Segment Table, Temperature Table and Configuration Tables that support *Tymkon* operation.

Although *TymEdit* and the companion applications use Microsoft Access 97 file structures, the files may be opened and viewed in later versions of Microsoft Access. However, files that are edited and saved in later versions of Microsoft Access are not compatible with current versions of *TymEdit*, *TymPlex* and *TymPro*. Generally, the applications that are provided keep all of the details of the database tables hidden from the user and no database knowledge is required.

Each file created by *TymEdit* contains more than (40) different data tables but the user needs only to be aware that there are two types of information stored in the tables: **Process Data** and **Configuration Data**. A file containing the appropriate Configuration Data for a particular *Tymkon* configuration is provided with the original equipment. The user would then use a copy of this template file as a foundation on which to build process recipes.