

Prodigy V.8

Getting Started With Prodigy

Getting Started with Prodigy

This document is intended to help you get started with Prodigy. It covers the installation and licensing of your Prodigy system and goes on to provide instructions on how to walkthrough the built in Alchemy demonstration. Finally it gives simple instructions on how to add your own hardware to the system and how to interact with this hardware through display objects.

The example screens used in this document are taken from Prodigy version 8 and if you are running a different version of Prodigy there may be some slight differences with some of the screens. This should not cause any major difficulties, but if problems do arise free technical support is available by e-mail at support@tascomp.com.

This document is provided in addition to the full manual, which can be found on your Prodigy CD. You are at liberty to print as many copies of this manual as you require. Alternatively copies may be purchased from your supplier. You may find it useful to refer to the relevant chapters of the manual while walking through the "Configuring Your Own System" section of this document.

If this demonstration raises any questions you would like answered, or you experience any technical problems, please contact support@tascomp.com.

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Installing Prodigy

System Requirements

Pentium processor-based PC (2.0 GHz or above recommended)

1024 Mb RAM (2048 Mb recommended)

500 Mb free disk space (10 Gb recommended)

100 Mb free disk space on the system or 'C' partition

1 Mb Video card (4Mb recommended)

Microsoft Windows 2000 SP4, XP SP2 (XP recommended)

NTFS filing system

Sound card optional.

Installing

Insert the Prodigy CD. If AutoPlay isn't enabled, view the disk contents using Windows Explorer. Open the **CD_Autorun** folder and Double-click on **Installer_RunFlash.exe**. The dialog below will appear.



There are several buttons on this screen. The purpose of each button given below.

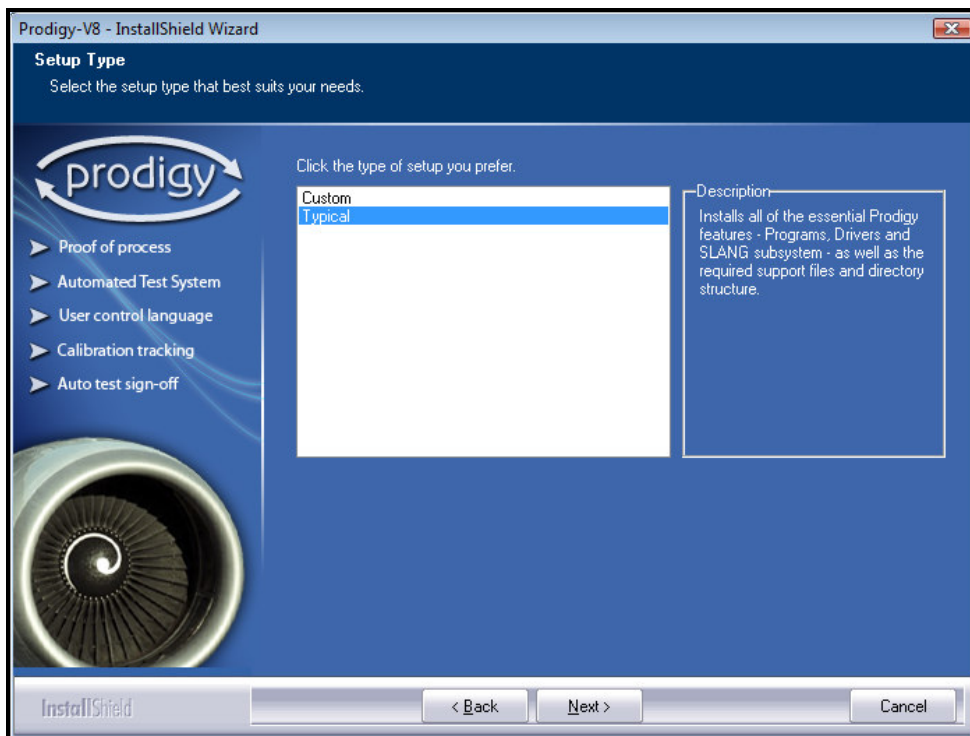
- **Install Prodigy.**
This installs Prodigy and is described in greater detail below.
- **Install Template.**
A number of pre defined configurations are provided on the CD as templates to allow you to gain experience of Prodigy features and to see how different applications can be tackled.
- **Install Extras.**
This provides another set of menu options for facilities such as Microsoft Word and Powerpoint

Viewers, and an Adobe Acrobat Reader. The Word Viewer and Acrobat Reader can be used within Prodigy to display maintenance documents.

- **Reference.**
This provides sales information such as example screen shots, the Technical Overview brochure, the Prodigy Price List and the Prodigy Manual as a PDF document.
- **Browse CD.**
This displays the contents of the CD in an Explorer window.
- **Visit Website.**
If you have internet access this will take you to Tascomp's home web page.
- **Contact Us.**
This displays contact information for Tascomp.

To install Prodigy press the **Install Prodigy** button and follow the on-screen instructions.

Eventually you will be asked what type of installation you require.



Select the required installation type from the list.

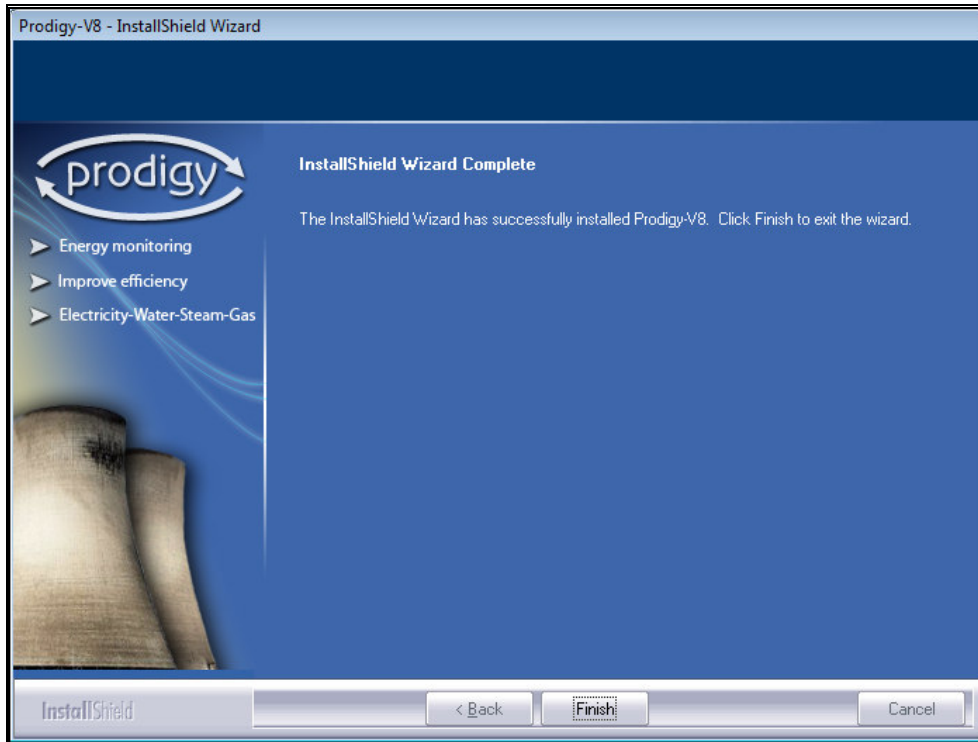
- **Typical.**
This installs a complete un-configured Prodigy system. All of the files required to run Prodigy will be installed but it will be an empty system apart from the menu bar which will have some default options to help you configure your system.
- **Custom.**
This will give you the option to install SQL server for use in a Prodigy system. All the files required to use SQL databases in Prodigy will be installed along with all of the files required for a prodigy system to function.

Notes.

- All Prodigy installations require Internet Explorer Version 5.0 or later so that you can use Prodigy's help facilities.
- Prodigy will work in demonstration mode for 30 days from the time that it is first installed, after which it will no longer run. During that 30 day period the system will inform you that you are in demonstration mode every time prodigy is started.

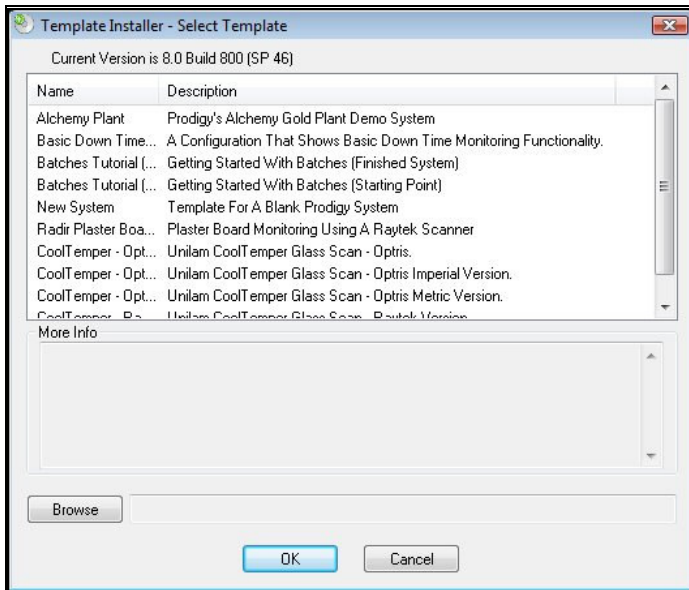
- In demonstration mode, Prodigy will be fully functional (except for allowing modification of the Signal Database) for 2 hours. After this, it will stop responding and display a message informing the user. You will need to restart Prodigy to use it again. You may do this either by shutting down and re-starting the machine, or by stopping and re-starting the Prodigy service.

Finally you will be shown this screen informing you that the installation is complete. If a restart is required you will be presented with a different screen asking you to restart your system, do this to complete the installation.

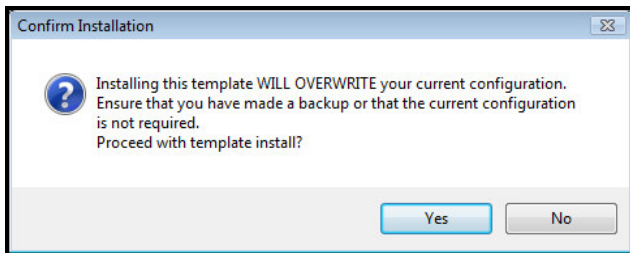


Installing Templates

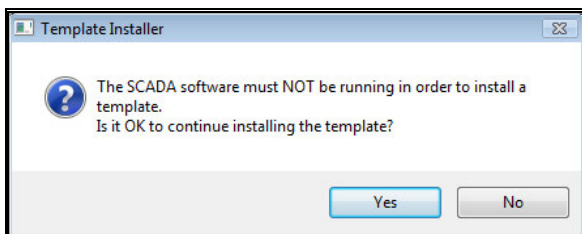
If it is the first time that Prodigy has been installed on a system then a template must be installed. The Template installer can be accessed from the Prodigy CD front screen and the program can be seen below.



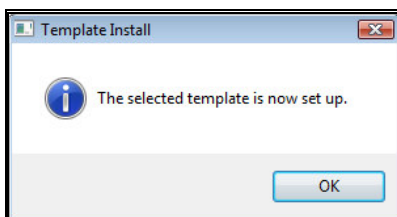
To install a template select the appropriate template from the selection available (in this case the Alchemy Plant will be installed). Click **OK** to install the template and the following dialog will be displayed.



The chosen template will write over any previous systems/templates that have been installed. If you are unsure click cancel, these options can be selected later from the install templates menu. The template installer will again pop up the following dialog checking to see that Prodigy is not running.



Click **Yes** to finalise the install of the template, when the template has been installed the following dialog will be loaded to confirm that the template has been set up.

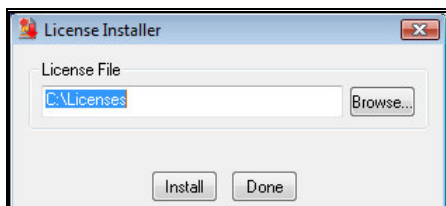


Licensing Prodigy

Prodigy is a licensed product and comes supplied with the license file on the CD; the license governs which facilities within Prodigy you are allowed access to. If no license has been supplied Prodigy will run in demonstration mode, whereby it will need to be restarted every two hours and also the Signal Database cannot be modified.

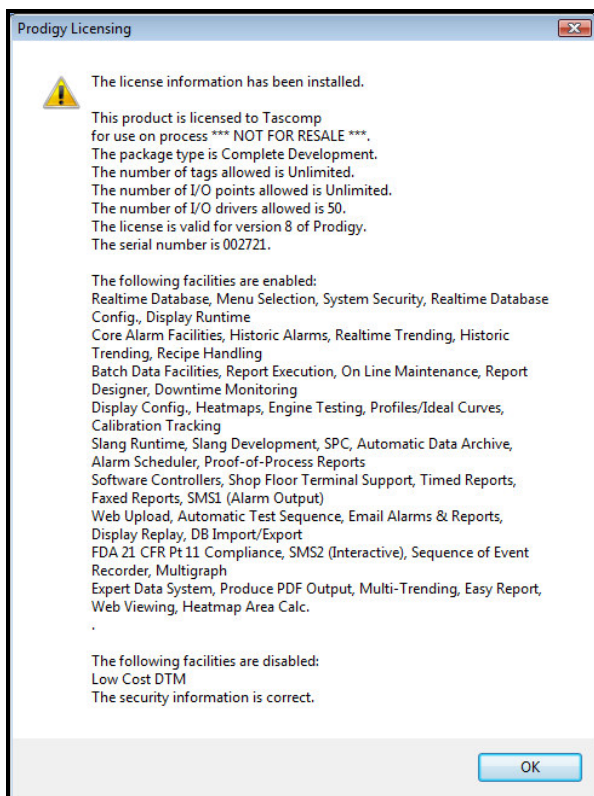
If you have a license for limited I/O points and Tags then you should not install the license until you have finished with the Alchemy Demo as this may have more tags than your license allows and once a license has been installed there is no way to return to demo mode.

If you **have** got a license disk then you must install it by running the **License Installer** program. This can be run from the Prodigy folder on the start menu and will display the following dialog.

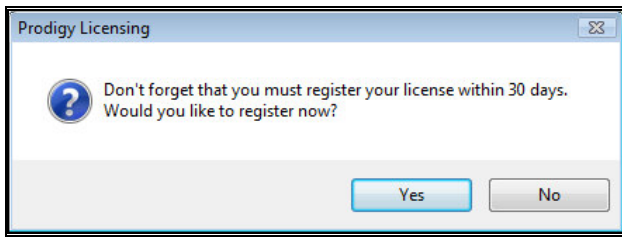


By default the program looks for the license on drive C but you can browse to another location if necessary.

When the license has been selected press the **Install** button to put the license on the system. The program will read the license file and ensure its validity. If it is OK it will install it onto the PC and show a dialog similar to the following one, outlining the functionality allowed by the license.



After pressing **OK** you will be asked if you want to **Register** the license.

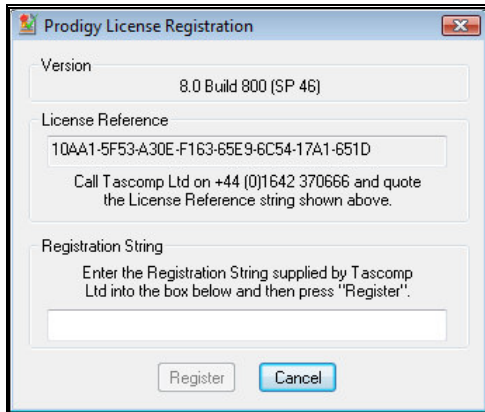


Registering Prodigy

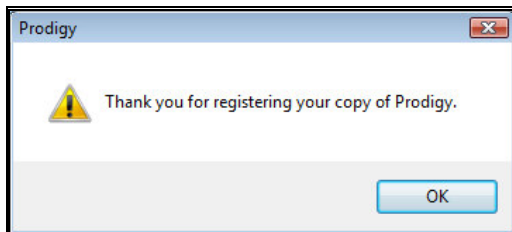
Prodigy licenses must be **registered**. If Prodigy is not registered it will work for 30 days from the time that the license is first installed, after which it will no longer run. During that 30 day period the system will request that you register the license every time you start a Mimic display.

Be aware that if you do not register and then leave Mimic running for the remainder of your 30 day period, the system will not ask you to register again and will then stop working at the end of the 30 day period. Re-installing the license (or a different Prodigy license) will not reset the 30 day period. Setting the date back will also cause Prodigy to stop working.

The **Registration** program displays a dialog that is shown below.



The **License Reference** string is generated by the system and uniquely identifies the Prodigy license that is installed and the machine that the system is running on. This number should be quoted to Tascomp either by phone, fax, letter or email through the web site. In return, you will be supplied with a **Registration String** that should be entered into the relevant box on the dialog. When this has been done press the **Register** button. If the registration string is not valid for the license reference quoted, the Registration program will issue an error dialog. The most likely cause of this error is simply typographical – ensure that the number you quoted and the number you received were both transcribed correctly.



Once the license has been successfully registered the system will be fully functional (within the constraints of the license you have purchased) and will no longer prompt for registration.

Keep a record of the License Reference and Registration String. If you ever re-install Prodigy you can use the Registration String again without having to contact Tascomp (provided that no significant details have altered – this will be true if the License Reference number is the same).

If you have a Prodigy Dongle then there is no need to contact Tascomp register your license. When you're asked simply insert your Dongle into a USB port on the appropriate PC and it will register your license.

The dongle needs to be in the PC at all times for the license to remain registered. If it is removed there will be an hour countdown that will alert the user every minute that the dongle has been removed, after the hour is up Prodigy will no longer function.

The Alchemy Demonstration

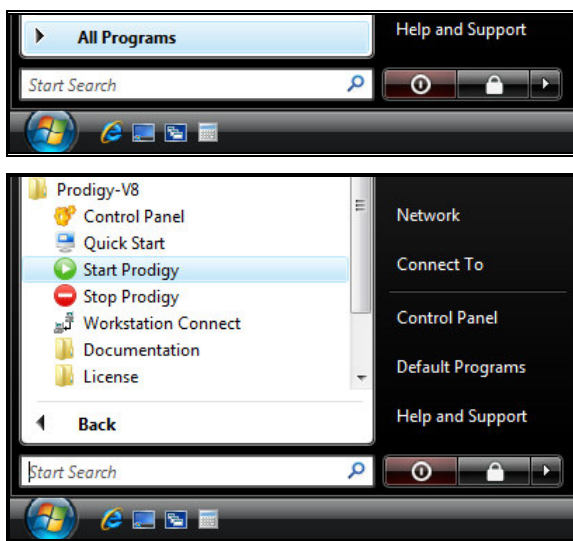
Walking Through the Alchemy Demonstration

It is recommended that you follow the Alchemy demonstration before creating your own Prodigy system. It has been designed to show many of the features available to you.

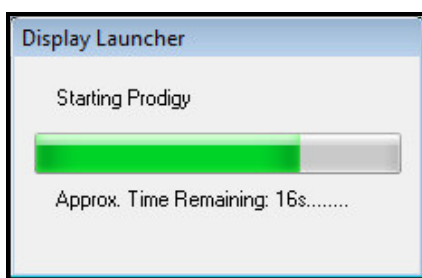
This walkthrough assumes you have a basic knowledge of Microsoft Windows and terms.

Start Prodigy

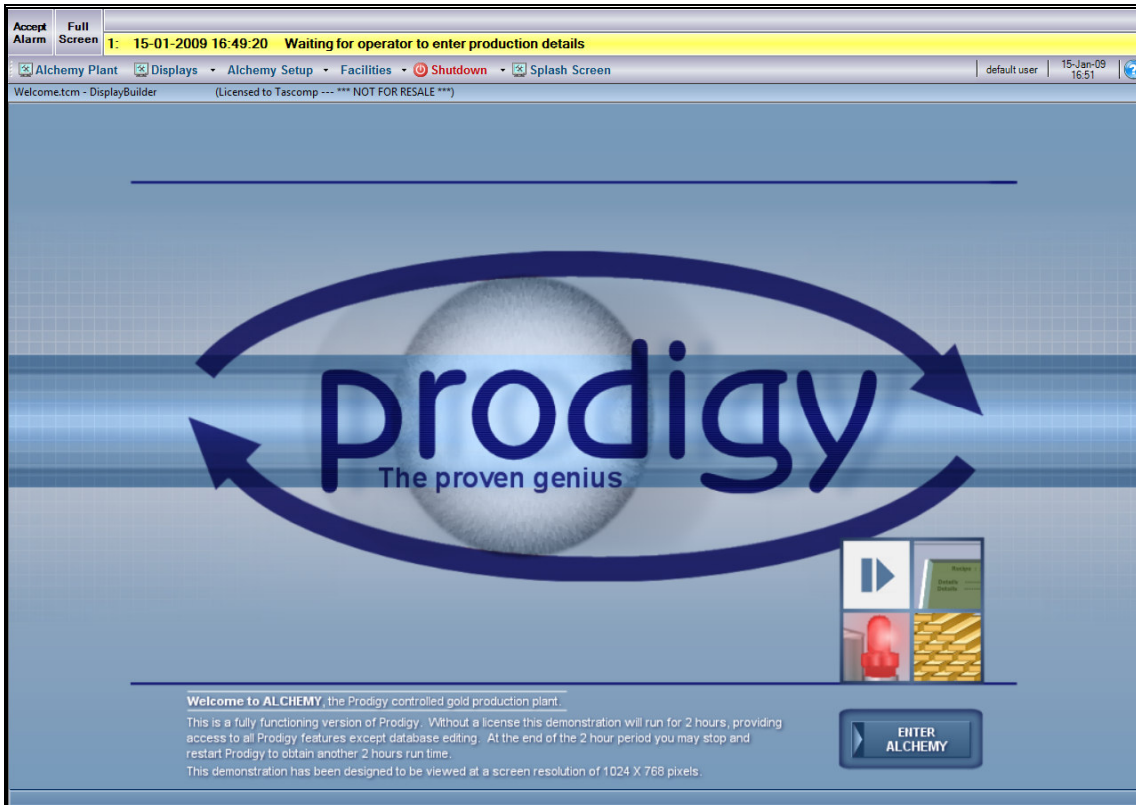
Start Prodigy clicking on the *Start Menu* followed by *All Programs* and find the Prodigy-V8 folder, selecting the **Start Prodigy** option will start the Prodigy Display Launcher.



As Prodigy is starting up, an information window displays the current status of the start up procedure.

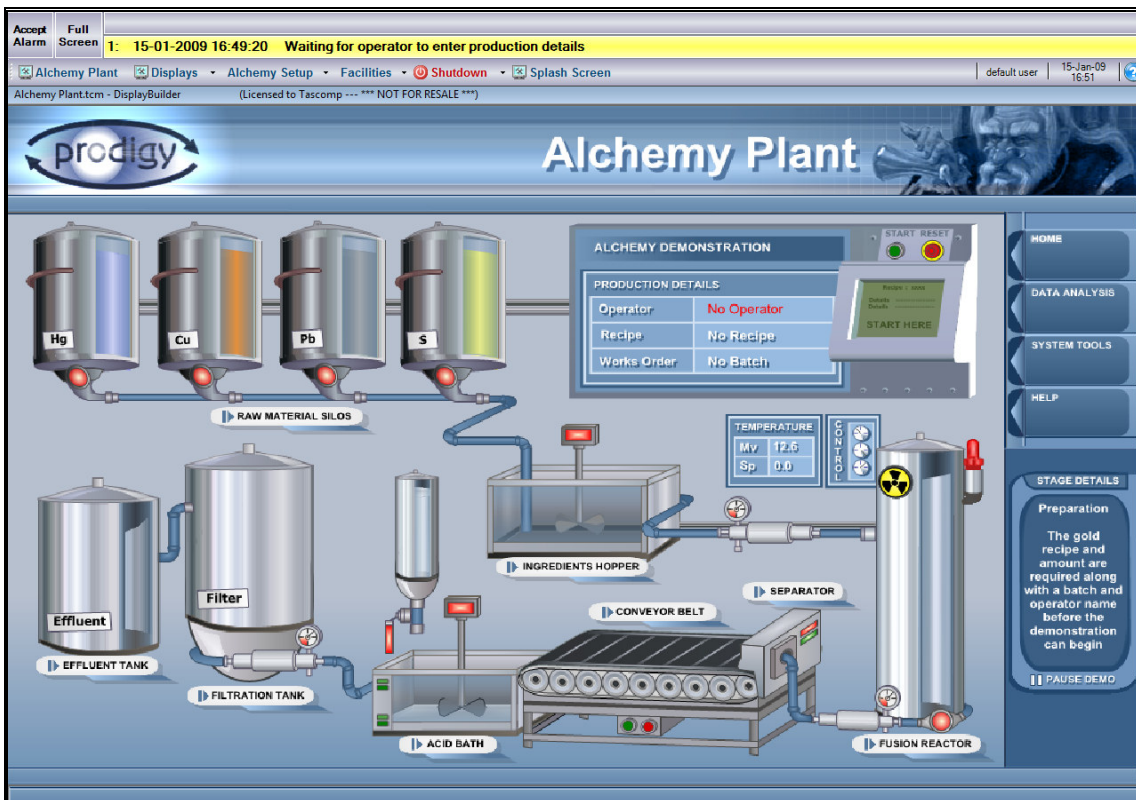


The Prodigy Menu Bar and the Alarm Display will appear at the top of the screen and then the "Welcome to Alchemy" display will appear (see below) occupying the rest of the display. The Alchemy plant simulation programs will also be started.



Press the **Enter Alchemy** button to start the demonstration. The main Alchemy plant display will then appear. This shows a mythical Alchemy plant, which will manufacture Gold from base metals! If you wish to restart the Alchemy demonstration for any reason (i.e. you get lost or enjoyed it so much that you want to run through it again), press the **Reset Demo** button (emergency stop button on the control panel).

The main Alchemy plant mimic is shown below.



Running the Alchemy Demonstration

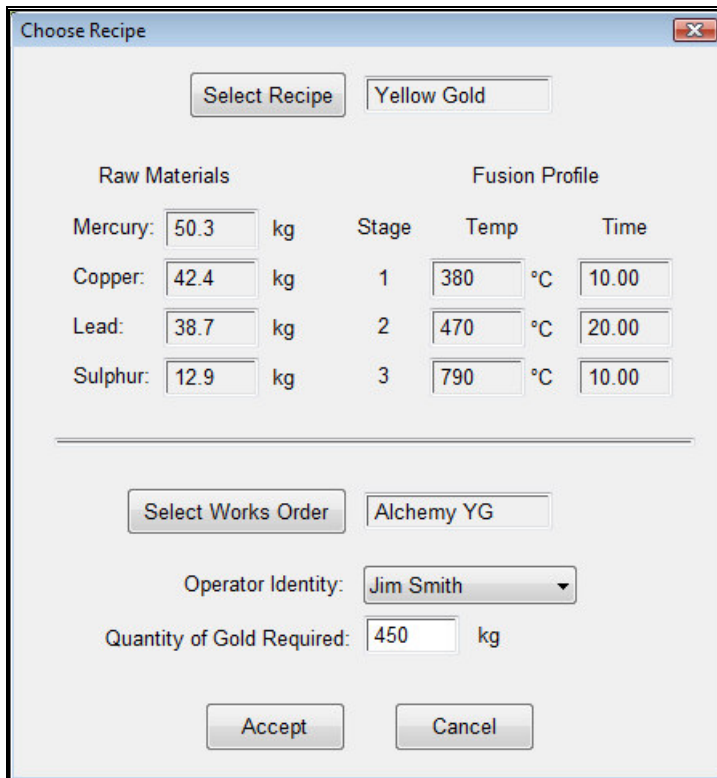
To start manufacturing gold you need to enter details such as the type of gold you wish to produce. To do this you need to click on the clipboard indicated by the **Start Here** prompt.



An Xform will appear that allows the required recipe to be chosen by clicking on the **Select Recipe** button, selecting from the list and clicking on the **OK** button.

A Works Order Number defines this production run. The name used is entirely up to you and is entered by clicking on the **Select Works Order** button and typing in a new batch name (the Works Order, 'Alchemy' will already appear in the list), then click on the **OK** button.

Select an Operator Identity from the drop down list and then enter the Quantity of Gold Required (100 to 500 kg).

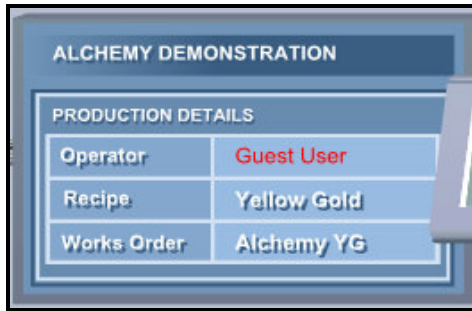


Raw Materials		Fusion Profile		
	kg	Stage	Temp	Time
Mercury:	50.3			
Copper:	42.4	1	380 °C	10.00
Lead:	38.7	2	470 °C	20.00
Sulphur:	12.9	3	790 °C	10.00

The Completed Recipe Form

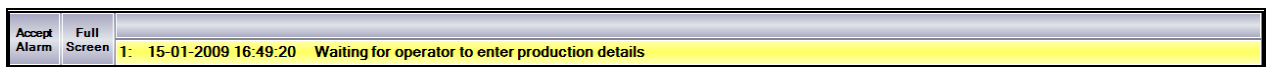
Pressing the **Accept** button will load these details.

The white board on the control panel will now have been altered to indicate your selections.



Stage 1 – Start the Process

First, clear the alarm banner of active alarms or events by accepting them. Click on the “Accept Alarm” button on the alarm banner until all the red (unaccepted) alarms or yellow event messages disappear or turn green (accepted).

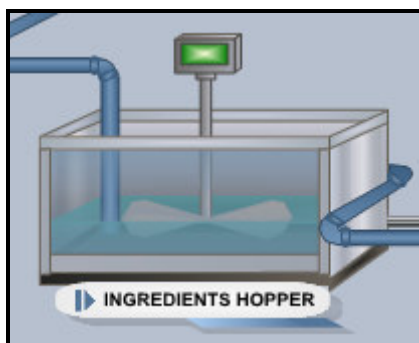
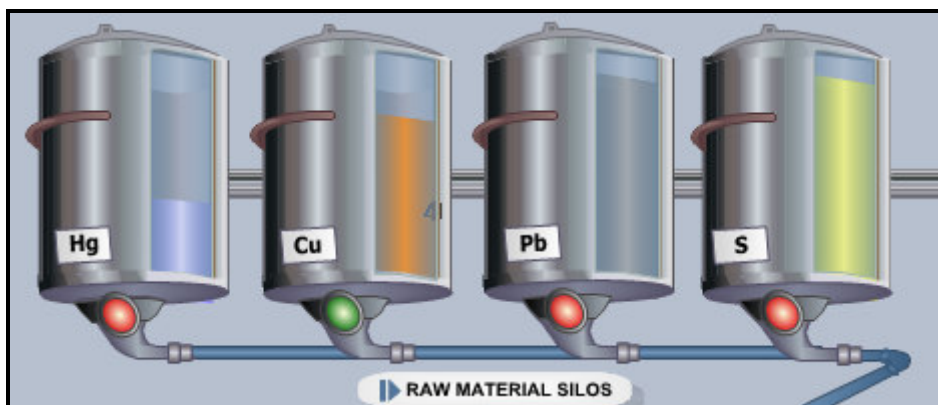


Click on the **Start Process** button located on the control panel (next to the clipboard that we used earlier).



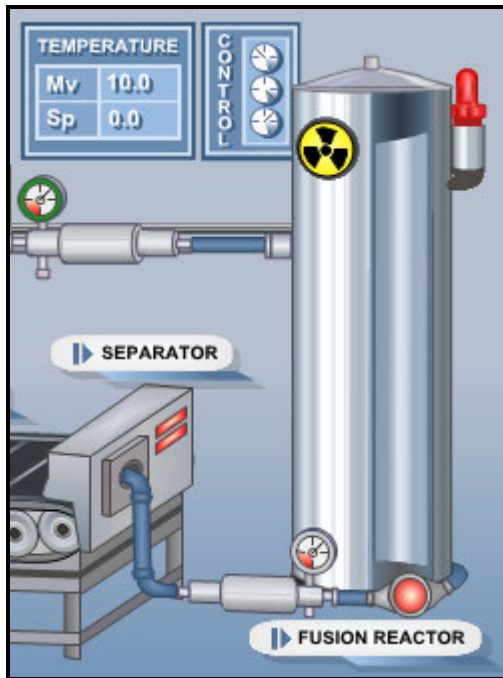
Stage 2 – Mixing the Ingredients

The production process will then begin and follow the recipe that you have selected. The Raw Material Silo valves will open and close in sequence, transferring mercury, copper, lead and sulphur into the Ingredients Hopper. Stirrer 1 will also be started to thoroughly mix the raw materials.



Stage 3 – Filling the Fusion Reactor

When the ingredients have been thoroughly mixed they will be transferred to the Fusion Reactor. Pump 1 will start and the mixed ingredients will be removed from the Ingredients Hopper and added into the Fusion Reactor.



During this process you may see a yellow hard hat and tool box icon appear around Pump 1, at the same time an alarm will be triggered. This is to indicate that the pump run time has exceeded its preventative maintenance period.



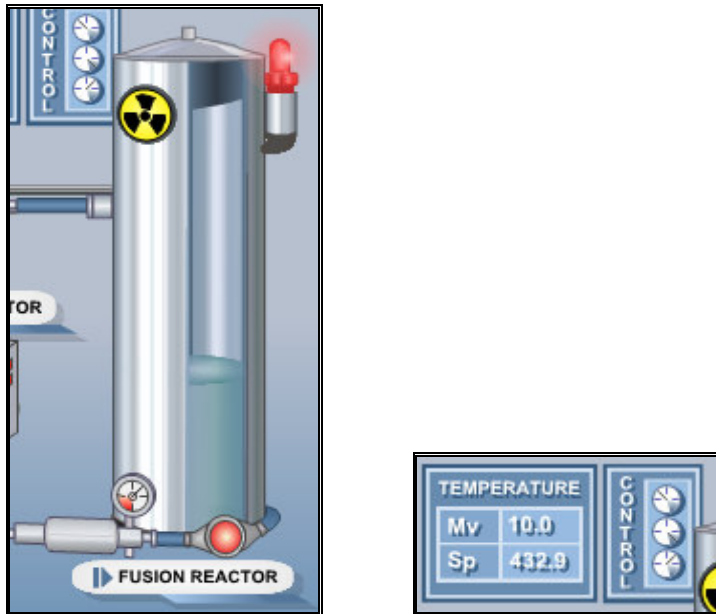
Clicking on the tool box icon will allow you to view maintenance information such as the pump's part list (Word document) and schematic wiring diagram (pdf document).

Clicking on the yellow hard hat will change to the Planned Maintenance display where you can view the run times of the pumps, stirrers etc. and the operation counts of the various valves (Clicking on the Home or Go Back icons will return you to the main Alchemy plant display).

Stage 4 – The Fusion Reaction

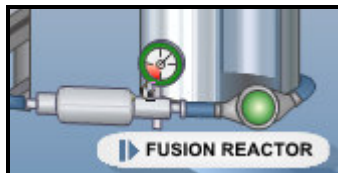
Once the Ingredients Hopper has been emptied, the fusion process will start. The fusion temperature is controlled by a software PID controller which can be seen next to the reactor (MV is the measured value and SP is the setpoint).

As the chosen gold recipe is followed, the setpoint will be altered and the fusion reactor will be controlled accordingly. Clicking on the Reactor Controls icon will change to the Fusion Reactor Controls display where the control of the three reactor zones can be seen (Clicking on the Home or Go Back icons will return you to the main Alchemy plant display).



Stage 5 – Emptying the Fusion Reactor

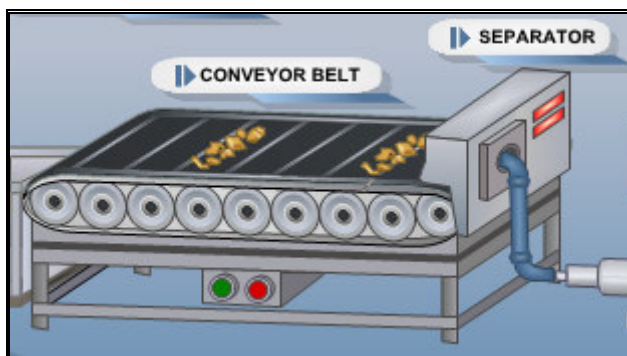
When the fusion process has completed, the Fusion Reactor Valve will open and Pump 2 will be started. The contents of the reactor will then be transferred into the Separator.



When the Fusion Reactor is empty, the valve will close and the pump will stop. The conveyor will then start.

Stage 6 – Running the Conveyor

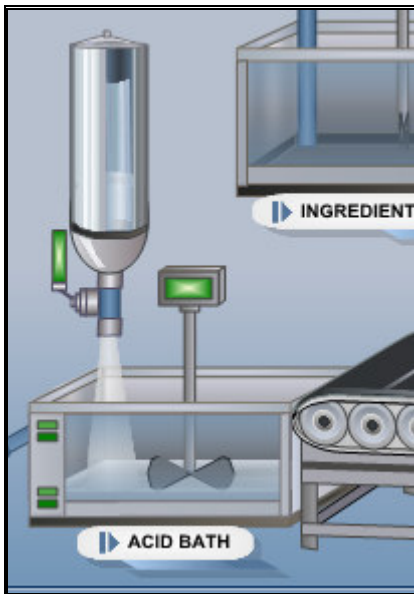
The Separator will then split the product into chunks that are transferred into the Acid Bath via the Conveyor Belt.



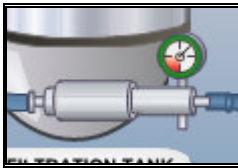
When the Separator has been emptied and everything transferred into the Acid Bath, the Conveyor will stop.

Stage 7 – Dissolving in the Acid Bath

The Acid Valve will then be pulsed open to add hydrochloric acid to the Acid Bath and Stirrer 2 will be run until all of the material has been dissolved.

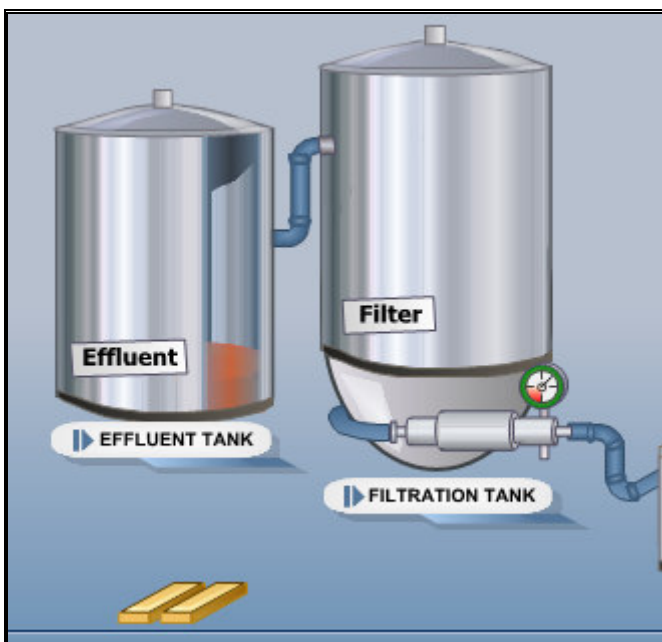


Stirrer 2 will then be stopped and Pump 3 started.



Stage 8 – Filtration

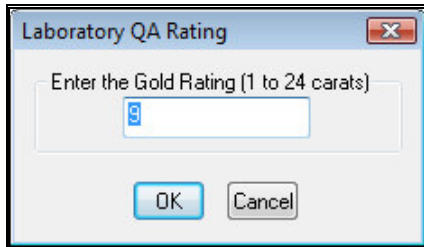
Pump 3 transfers the suspension from the Acid Bath into the Filtration Tank where the gold is separated from the effluent.



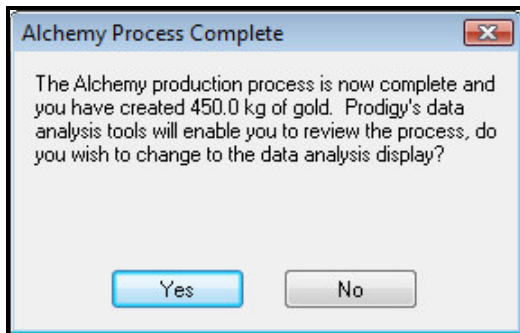
Congratulations, you have just used Prodigy to manufacture a quantity of gold!

Stage 9 – Laboratory Analysis

Having produced the gold you then need to analyse it to determine its rating (1 to 24 carats). A dialog will automatically pop up to allow you to enter the rating.



The production process is now complete. Another pop up dialog will appear asking if you want to change to the Data Analysis display.



Data Analysis and Reporting Tools


Changing to the Data Analysis display will present you with a selection of icons that highlight some of the analysis facilities that are available to you. Full details of these can be found in the User Guide so only a cursory look will be given here.

The screenshot displays the 'Data Analysis' interface within a window titled 'Data Analysis.tcm - DisplayBuilder'. The window includes a license notice: '(Licensed to Tascomp --- *** NOT FOR RESALE ***)'. The interface features the Prodigy logo and a large 'Data Analysis' title. A central grid of 16 tool icons is arranged in two columns. Each icon is accompanied by a title and a brief description of its function. On the right side, there is a vertical navigation menu with buttons for 'HOME', 'DATA ANALYSIS', 'SYSTEM TOOLS', and 'HELP'. Below this menu is a 'STAGE DETAILS' section with a 'Preparation' card that states: 'The gold recipe and amount are required along with a batch and operator name before the demonstration can begin'. At the bottom of this section is a 'PAUSE DEMO' button.

Icon	Tool Name	Description
	ALARM HISTORY REPORT	Alarms, conditions and event messages can be recorded into an alarm history database for later review.
	SMS TEXT MESSAGING	Reports can be requested, notifications of alarm conditions sent and alarms accepted through the SMS2 Interactive text messaging facility.
	TREND DISPLAY	Any number of analogue and digital signals can be reviewed using Prodigy's state of the art trending facilities.
	EVENT VIEWER	Events and digital state changes can be logged to provide a concise history of any actions taken by a control system.
	TABULAR REPORT	Tabular reports can be used to review batch based or time based information that has been recorded into an Access database.
	EMAILED REPORT	Reports and alarm conditions can be emailed to a Manager's office using the internet or a local intranet.
	PROOF OF PROCESS REPORT	Proof of process reports can be produced that include one off header information, alarm events and trend graphs.
	TIMED REPORT	Reports can be automatically produced at regular periods or when triggered by an event.
	XFORM	Manual entries can be made and data reviewed through configurable Xforms.
	FAXED REPORT	Raw materials suppliers can be kept informed of the current stock levels through faxed reports.
	DOWN TIME MONITORING	Machine utilisation and down time periods can be logged and reasons assigned, to provide production rates and accurate down time analysis.
	WEB UPLOAD	Reports can be automatically published on the internet or a local intranet.
	MULTIGRAPH	Multiple data sets can be plotted against each other and any signal values can be plotted against any other.
	EXPERT DATA SYSTEM	Expert analysis can be performed on real time data and with manual interactions, as the process continues.
	STATISTICAL PROCESS CONTROL	Statistical Process Control analysis on real time and batch based data is an essential tool for improving product quality and process efficiency.
	PLANNED MAINTENANCE	Preventative maintenance can be improved by monitoring the operating times of the equipment in use.

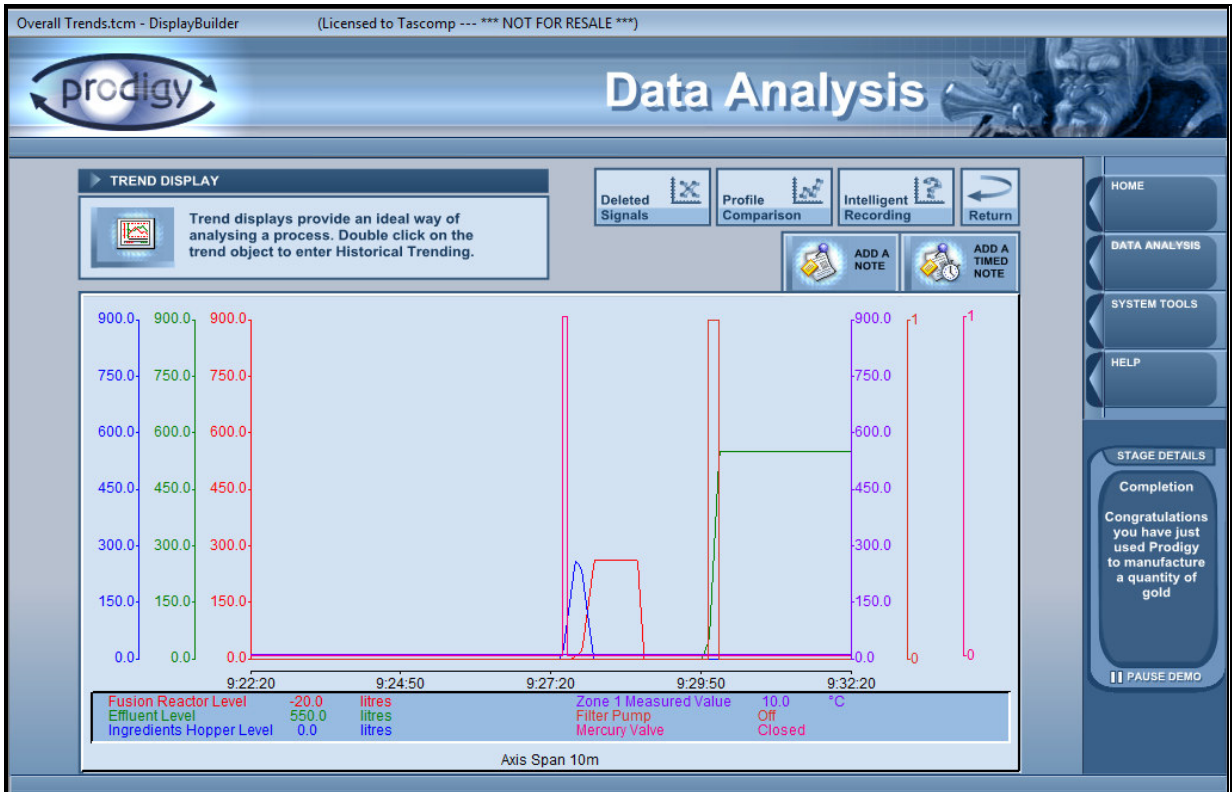
Trend Display

Clicking on the Trend Display icon will change to the Overall Trends display.

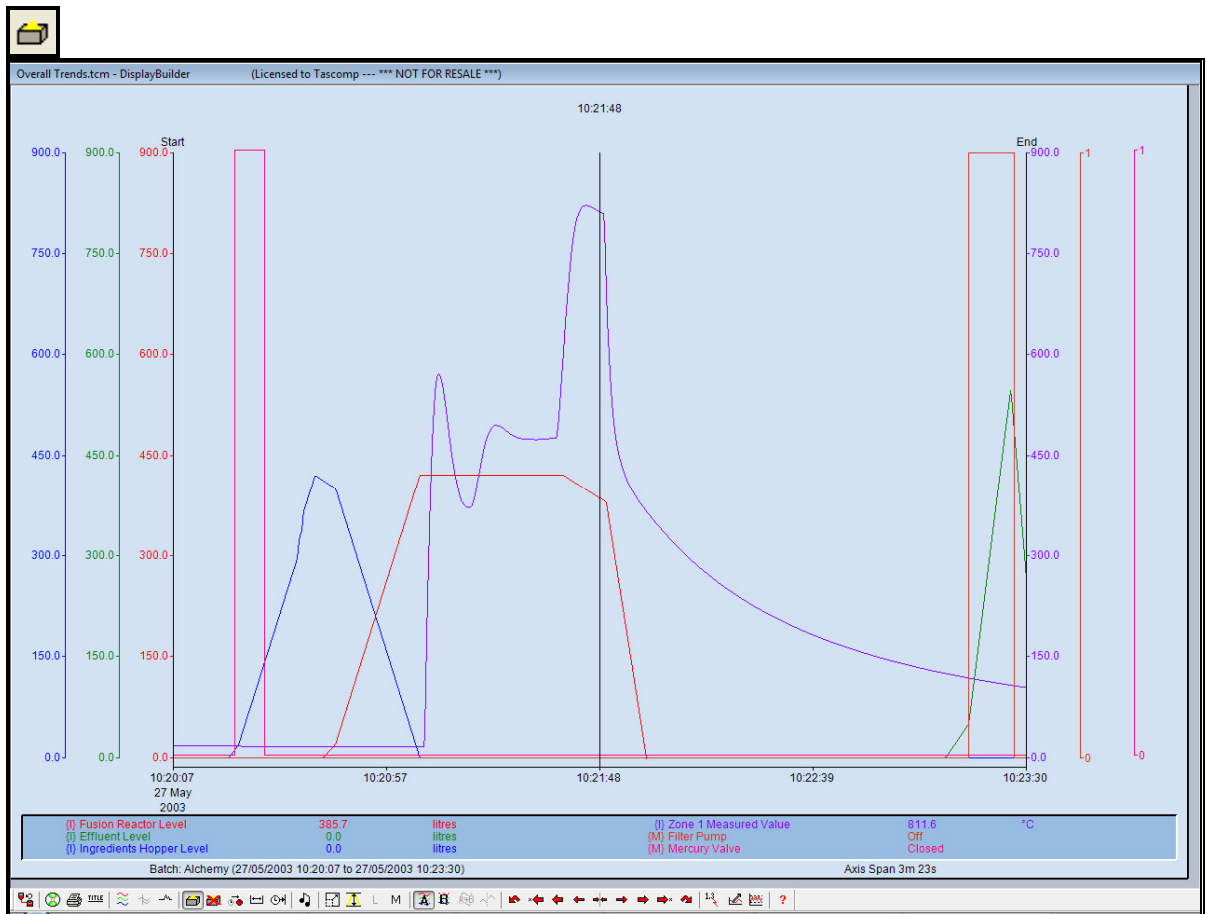


TREND DISPLAY
Any number of analogue and digital signals can be reviewed using Prodigy's state of the art trending facilities.

This is a real time trend graph that continuously moves from right to left. Double clicking on the trend will take you into an historic mode where the graph stops moving and you can read off values from any point in time.



Press the **Batch** button at the bottom of the screen and select the batch (Works Order Number) that you have just run.



This will change the time span to show the start through to the end of the batch. You can still move left and right with the other **Next** and **Previous Time Period** buttons and by right clicking on the trend you can still alter the time period shown.



Double clicking on the trend again will return you to the real time mode. To return to the Data Analysis display simply click on the return button in the top left corner.

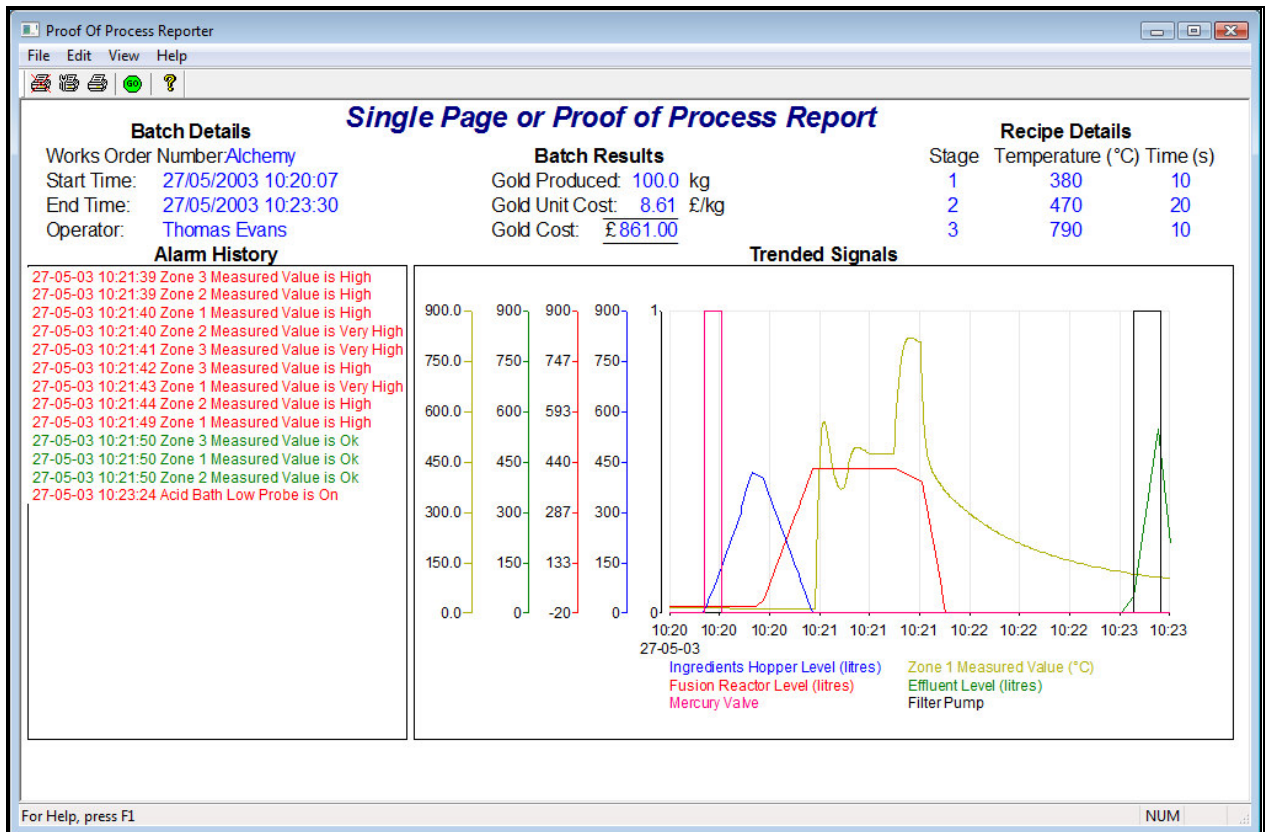


Proof of Process Report

Clicking on the Proof of Process Report button will start that facility.

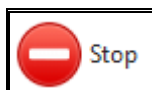


Selecting a batch (Works Order Number) from the list allows you to view it as a summary of that production run.



Stopping Prodigy

When you have finished investigating Prodigy stop the services and displays by selecting **Stop Prodigy** from the start menu



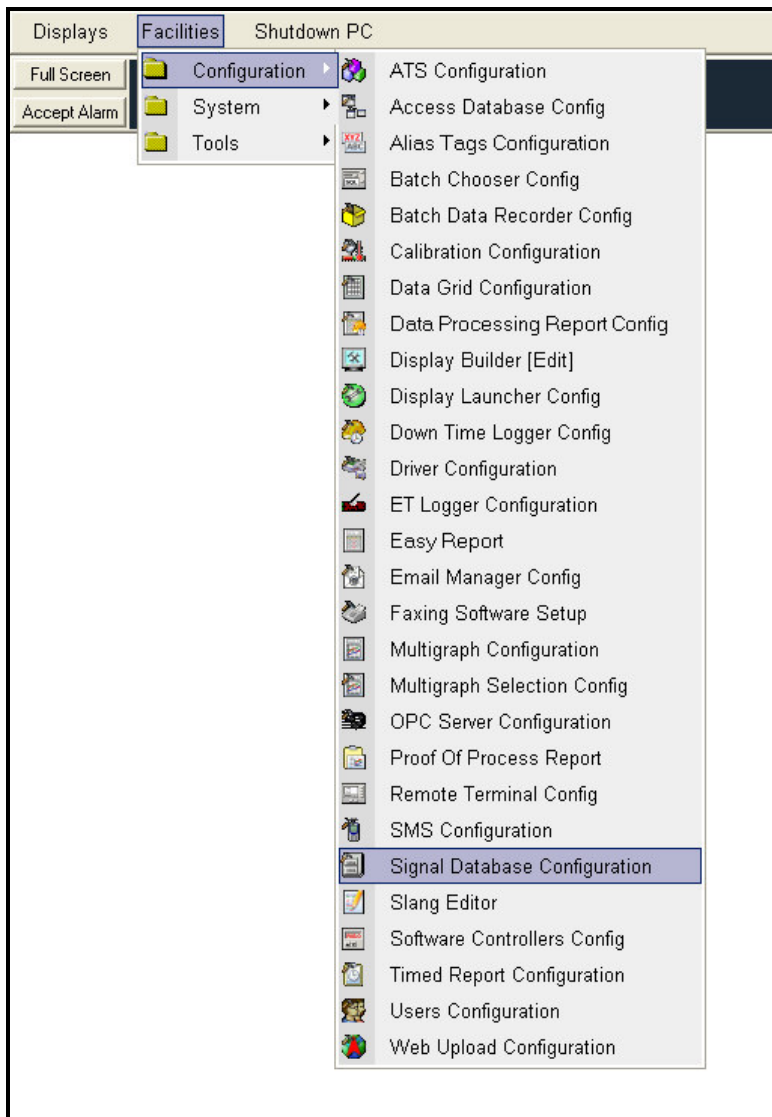
Configuring Your Own System

Connect some hardware

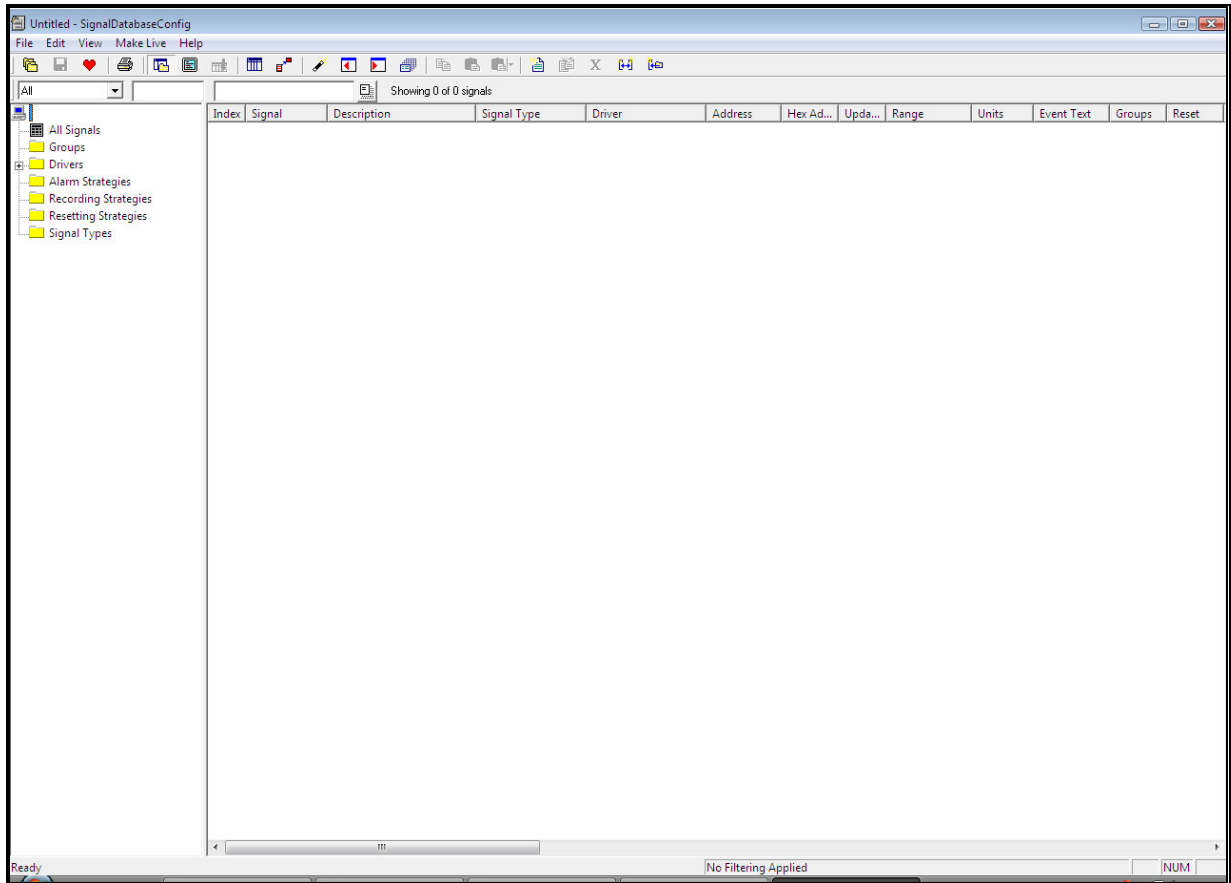
The next section takes you through how to configure **Prodigy** to talk to some real-world hardware. This walk through is based around a Shinko JCS three term controller using Modbus RTU protocol. The walk through configures signals to communicate with the setpoint and measured value addresses of this controller. Any similar hardware using a protocol supported by **Prodigy** (see User Guide) will suffice. Please ensure the hardware is wired up correctly and that all communications parameters are configured correctly. The example shown starts from a empty **Prodigy** system.

Add Signals

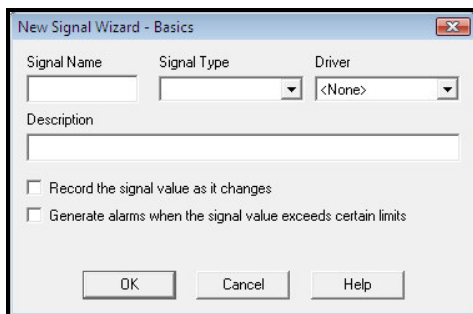
Begin by selecting **Signal Database Configuration** from the Facilities, Configuration options of the **Prodigy** menu bar.



The Signal Database Configuration process begins by displaying the current Signals Database; as we are starting from an empty **Prodigy** system there are no current signals, the Database window can be seen below.

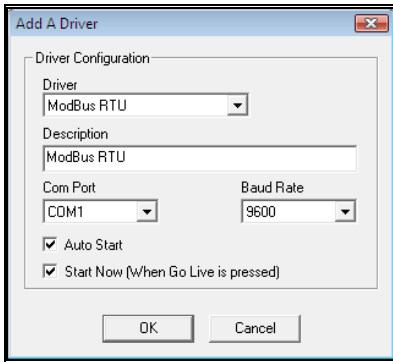


To Create a new signal click the “New” button. The *New Signal Wizard* (below) is then displayed.



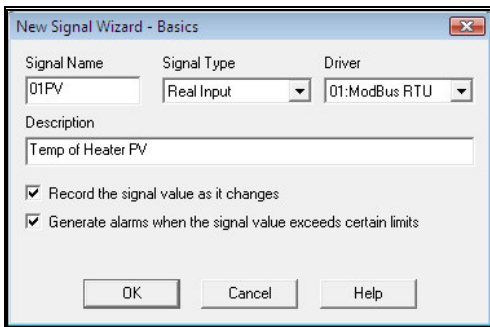
Firstly create *one* new signal for the PV value (Process or Measured Value) for the Shinko JCS, type its name (e.g. 01PV) into the *Signal Name* field (this must be 8 or less characters with no spaces between characters). Now select the type of signal from the *Signal Type* drop down box, for this piece of equipment use *Real Input* (since it’s a measured value, descriptions of all the signal types can be found in the user manual).

Now select the *driver* from the drop down box, as we have not configured any signals to communicate with this communications loop before we will have to select the *<New...>* option. As specified earlier the Shinko JCS uses the Modbus RTU protocol, the *Add A Driver* dialog (below) will appear.

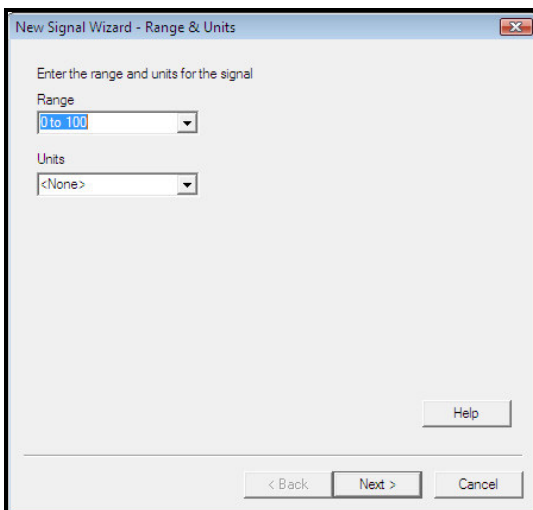


Select the *ModBust RTU* in the *Driver* drop down box; the Shinko JCS has a standard Baud Rate of 9600 so this can be kept as it is and generally the equipment will be linked up through COM1 so this needs selecting from the *Com Port* drop down menu. Then check both the *Auto Start* and *Start Now (When Go Live is pressed)* boxes. Now click *OK*. (Note the description field was automatically filled in)

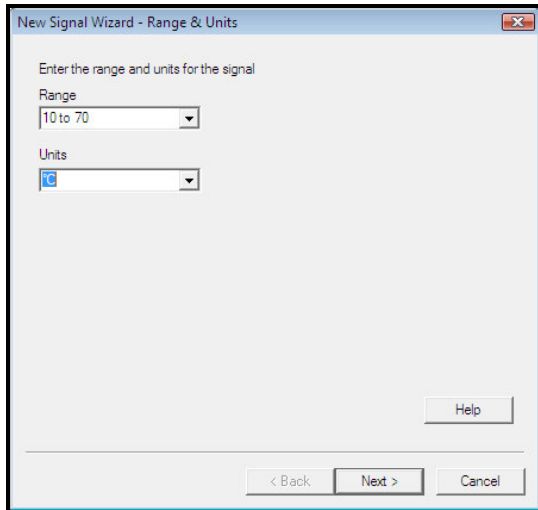
Fill in the *Description* box with a suitable description of what the signal does.



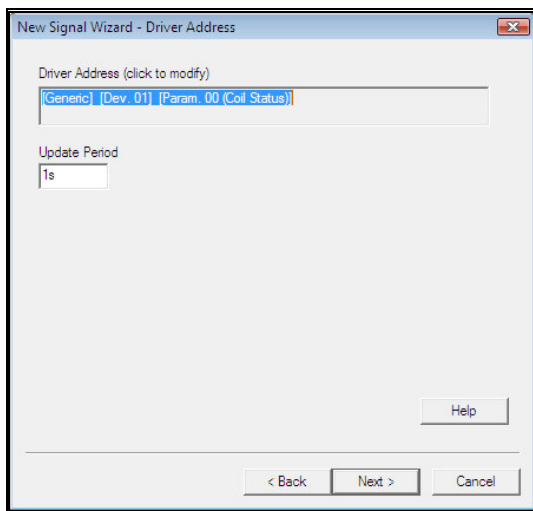
The first check box will enable data to be recorded whenever the signal value changes and the second allows alarms to be assigned to the signal so that if it passes boundaries an alarm will flag up in the Prodigy alarm bar. Now press *OK* to proceed to the next part of the New Signal Wizard (below).



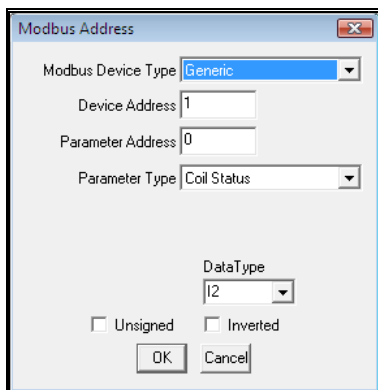
From the *Range* drop down box select *<New...>* and type in a range from 10 to 70 (this is a display range and will not stop Prodigy recording data from outside the range), now select degrees celcius from the *Units* drop down box. When finished the window should look like the one below.



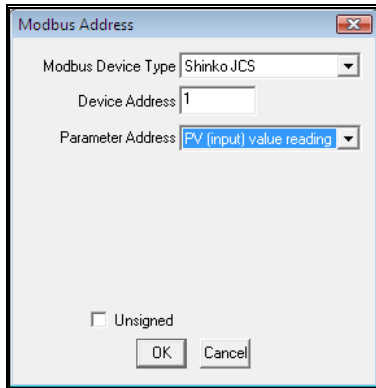
Now press *Next* to move to the next part of the New Signal Wizard (below).



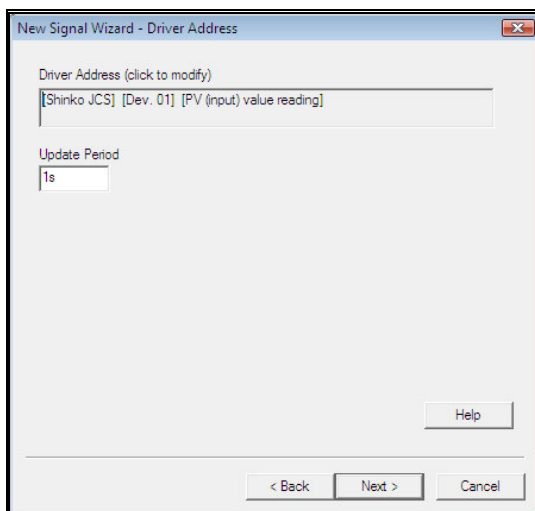
Click in the the *Driver Address* section where it is highlighted in blue and the following *Modbus Address* dialog will appear. This will allow us to set up the address of the device on the communications loop.



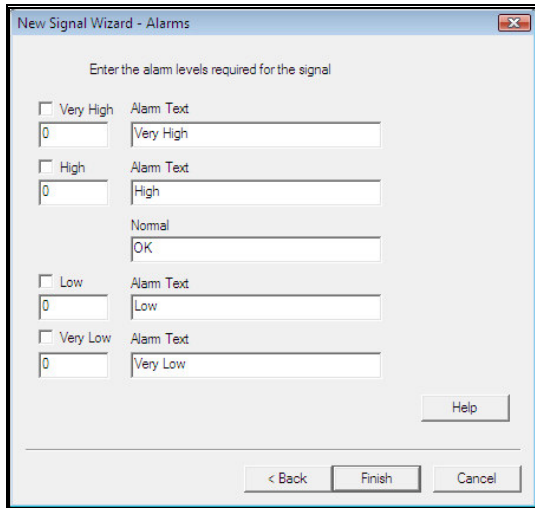
In the **Modbus Device Type** select Shinko JCS, this will change the window and the menus available (below). If the device type was not already available parameters would have to be set with information obtained from the manufacturers manual for the device to be used.



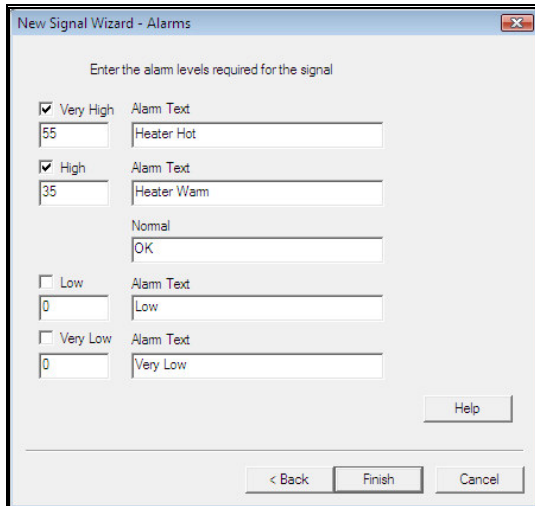
Leave the **Device Address** as 1, or change it if your hardware is not at device 1 (but for this example it is). Now select the **PV (input) value reading** from the **Parameter Address** drop down menu; this will configure all the values that could be seen in the previous **Modbus Address** dialog and sets everything up so this signal is the PV value of the Shinko JCS. Press **OK** and return to the New Signal Wizard dialog that can be seen below.



The Driver Address has now changed from the previous value; the **Update Period** can be left at 1s as this is a suitable value for this application (the update period is how often **Prodigy** will refresh the value obtained from the signal). Now press **Next** to move to the final stage of the New Signal Wizard (below) this wizard will only be shown if the alarms tick box was selected on the 1st dialog (**Basics**).




This step allows alarms for the signal to be created, this dialog requires the values of PV when alarms should be activated and also the text that will be displayed when an alarm is triggered. As we are using a heater the lower limits are not relevant so do not need filling in but the upper limits may have a value entered for **Very High** and **High**, suggested values and **Alarm Texts** are shown below.

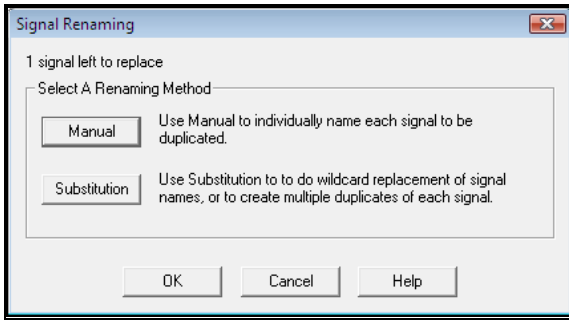


Note: Alarm messages in the alarm banner are shown as '<Signal Description> is <Alarm Text>'

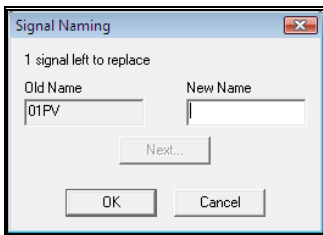
Now press **Finish** and the first signal will have been created, it can be seen in the signal database below; from here some parts can be modified by double clicking on the appropriate field, this facility is used later on.

Index	Signal	Description	Signal Type	Driver	Address	Hex Ad...	Upda...	Range
0	01PV	Temp of Heater PV	Real I/O	ModBus RTU	[Shinko J...	0x01...	1s	10 to 70

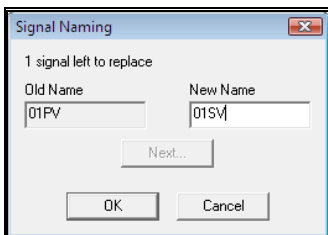
Now a second signal will be created, as much of the information is the same as the previous signal that was just completed, the **duplicate** button  can be used. First select the signal **01PV** (or whatever it has been named) and then press the **duplicate** button. The dialog shown below will then appear.



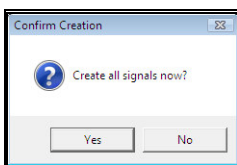
Select **Manual** and the **Signal Naming** dialog will appear (below).



Into the **New Name** field enter a name for the new signal, as it is for the set value (SV) of the Shinko JCS a suggested name is 01SV.



After entering a new name for the signal press OK and a dialog will appear asking if you want to create a new signal.



Press **Yes** and the new signal will be created (below) this will now be ready to be edited so that it can control the SV value of the Shinko JCS.

Index	Signal	Description	Signal Type	Driver	Address	Hex Ad...	Upda...	Range
0	01PV	Temp of Heater PV	Real I/O	ModBus RTU	[Shinko J...	0x013...	1s	10 to 70
1	01SV	Temp of Heater PV	Real I/O	ModBus RTU	[Shinko J...	0x013...	1s	10 to 70

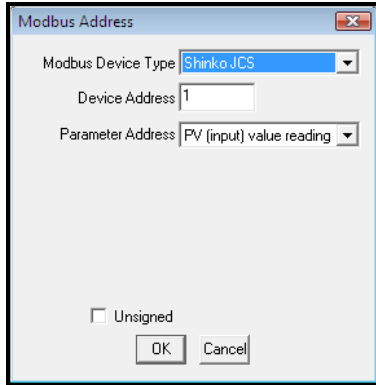
Three parameters of the new signal need to be edited the *Description*, *Address* and *Alarm* (below).

Description
Temp of Heater PV
Temp of Heater PV

Address
[Shinko JCS] [Dev. 01] [PV (input) value reading]
[Shinko JCS] [Dev. 01] [PV (input) value reading]

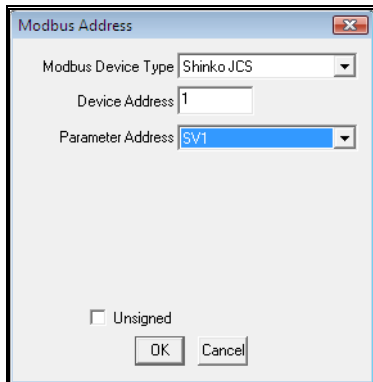
Alarm
High at 35.00, V. High at 55.00
High at 35.00, V. High at 55.00

Firstly double click the *Description* field for the signal *OISV*, this will allow it to be changed to a more suitable description of the signal. Next double click the *Address* field, this will bring up the following dialog (below).



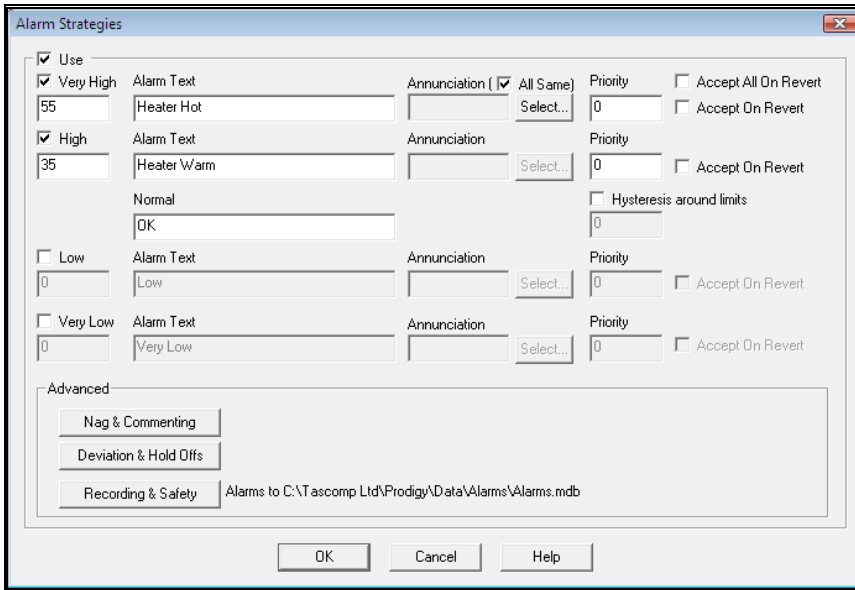
The dialog box titled "Modbus Address" has a close button in the top right corner. It contains three fields: "Modbus Device Type" with a dropdown menu showing "Shinko JCS", "Device Address" with a text input field containing "1", and "Parameter Address" with a dropdown menu showing "PV (input) value reading". At the bottom, there is an unchecked checkbox labeled "Unsigned" and two buttons: "OK" and "Cancel".

The *Parameter Address* needs to be changed, use the drop down box and select signal *SV1* (below). *SV* (the set value) can be varied on the device but setting up this address will allow a value to be sent from *Prodigy* to the device and hence *Prodigy* will be able to control the set temperature.

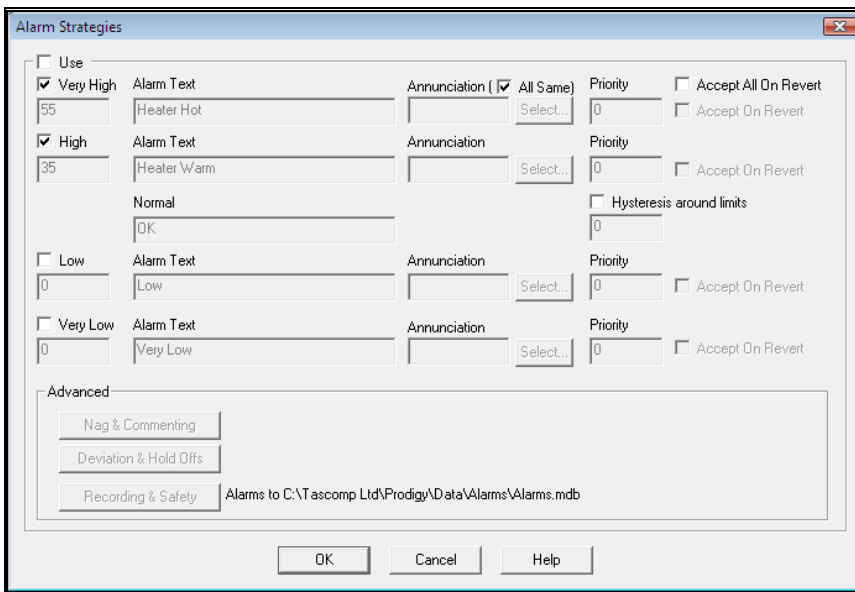



The dialog box titled "Modbus Address" is identical to the previous one, but the "Parameter Address" dropdown menu now shows "SV1" selected.

Press *OK* and then finally double click on the *Alarm* field, the following dialog will appear (below).



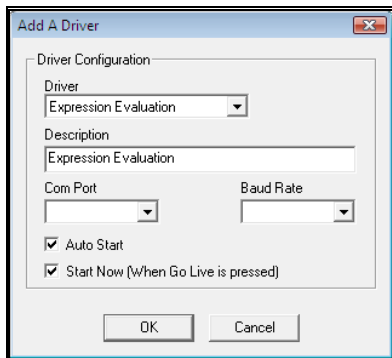
Uncheck the *Use* box at the top of the dialog, this will ensure that there are only alarms when the actual temperature is too high not the set value. Below is how the box should appear, press *OK*.



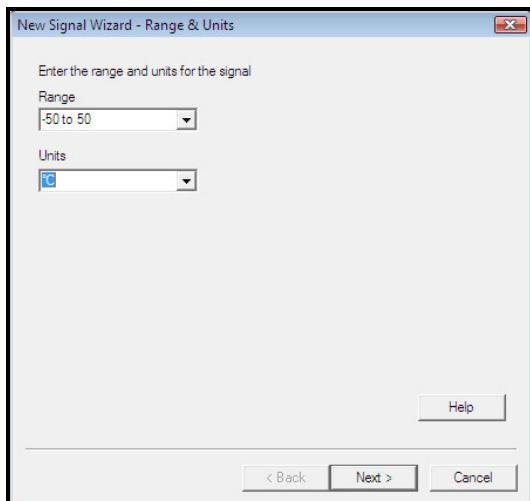
Now two signals have been created that can be used show the temperature that the Shinko JCS is trying to set the heater to and the temperature that the heater is at. Now a third one will be created that will find the error between the signals. Firstly create a new signal by clicking the new button. 



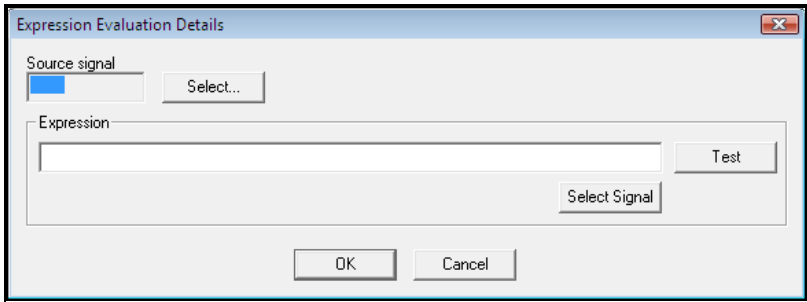
In the dialog that appears fill in the **Signal Name**, **Description** and check the top box (**Record the signal...**) like before (e.g **Signal Name** – 01ERROR). Set the **Signal Type** to **Real Derived** as an expression will be used to define the value of the signal from within the system. Then in the **Driver** drop down box select **<New...>** this will bring up a dialog. Set **Driver** to **Expression Evaluation** (allows an expression to control the signal) and check both the boxes (**Auto Start** and **Start Now**), the dialog should now appear as below. As this is a derived driver (i.e one not connector to any hardware) the **Com Port** and **Baud Rate** boxes need not be entered.



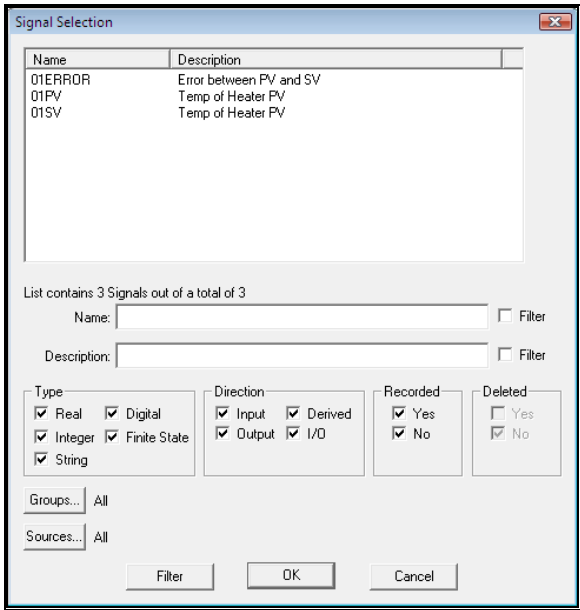
Press **OK** on the **Add A Driver** dialog and then on the New Signal Wizard Press **OK** again; the next stage of the Wizard should appear. Set an appropriate **Range** (e.g. -50 to 50) and select the **Units** (Degrees Celcius) The dialog should now appear as below.



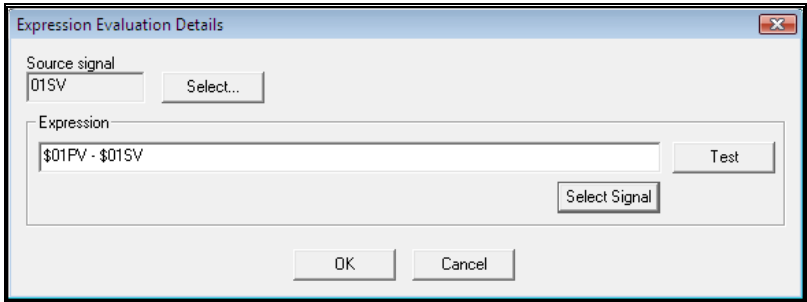
Press **Next** and then click in the **Driver Address** box to modify it as before with the **01PV** signal, you will be presented with the following dialog (below). Notice that the Driver Address box is different since there is a different driver selected.



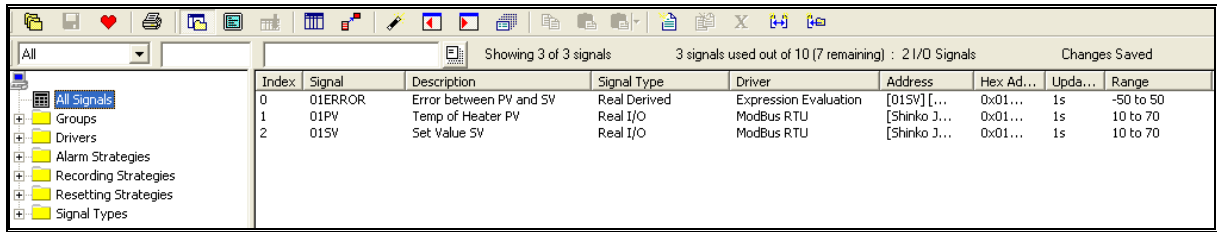
Press **Select** next to the **Source signal** box, the following dialog will appear (below).







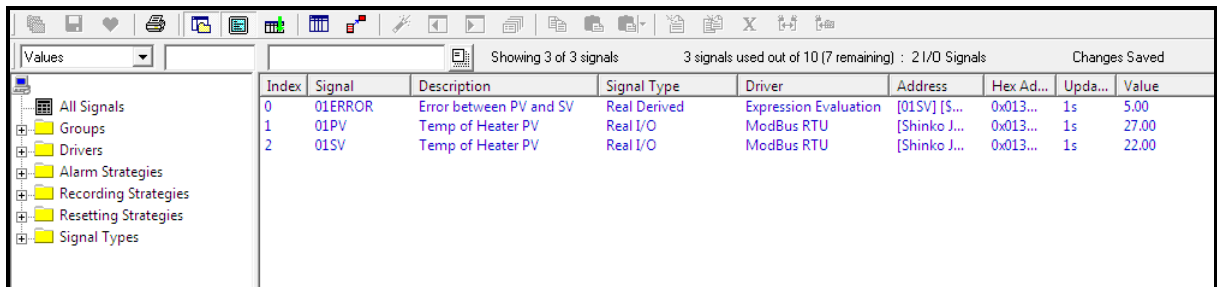
Highlight the signal **01SV** and press **OK** this makes the derived signal update everytime the **01SV** signal is updated. Then in the **Expression** section on the **Expression Evaluation Details** dialog press **Select Signal** and first select the signal **01PV**; now press the minus sign on the keyboard and then press the **Select Signal** button and this time select the signal **01SV**. The window should now appear as below this has created an expression that will subtract the value of signal **01SV** from the signal **01PV** and give a value of the error between them, the signal **01ERROR**.



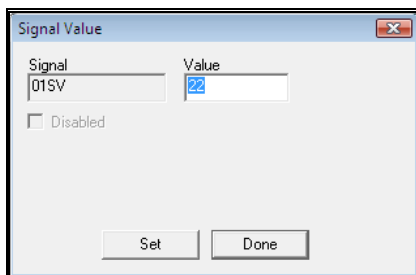
Press **OK** and then press **Finish**; there will now be three signals as can be seen below.



Save the changes by pressing the save button . Now check that all the equipment is correctly connected to COM1 of the PC and the Shinko JCS. Now the go live button  can be pressed to start monitoring and controlling the new signals. To observe the readings press the monitor button  this will show an almost identical view as the one above. To observe the values that are being read from the Shinko JCS change the drop down menu from *All*  to *Values* this will then give the view seen below.



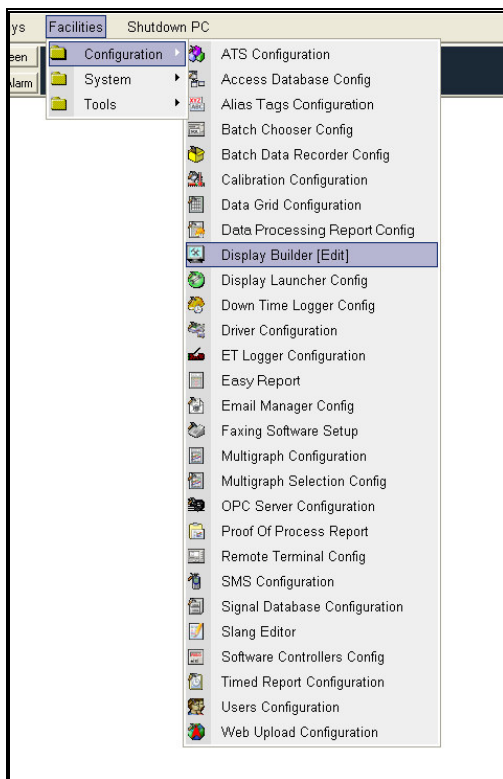
It can be seen that the signal **01ERROR** is the difference between signals **01PV** and **01SV**; if you want to change the value of **01SV** this can either be done on the Shinko JCS or you can right click on signal **01SV** and select **Signal Value**. This will bring up a dialog where the signal value can be entered (below).



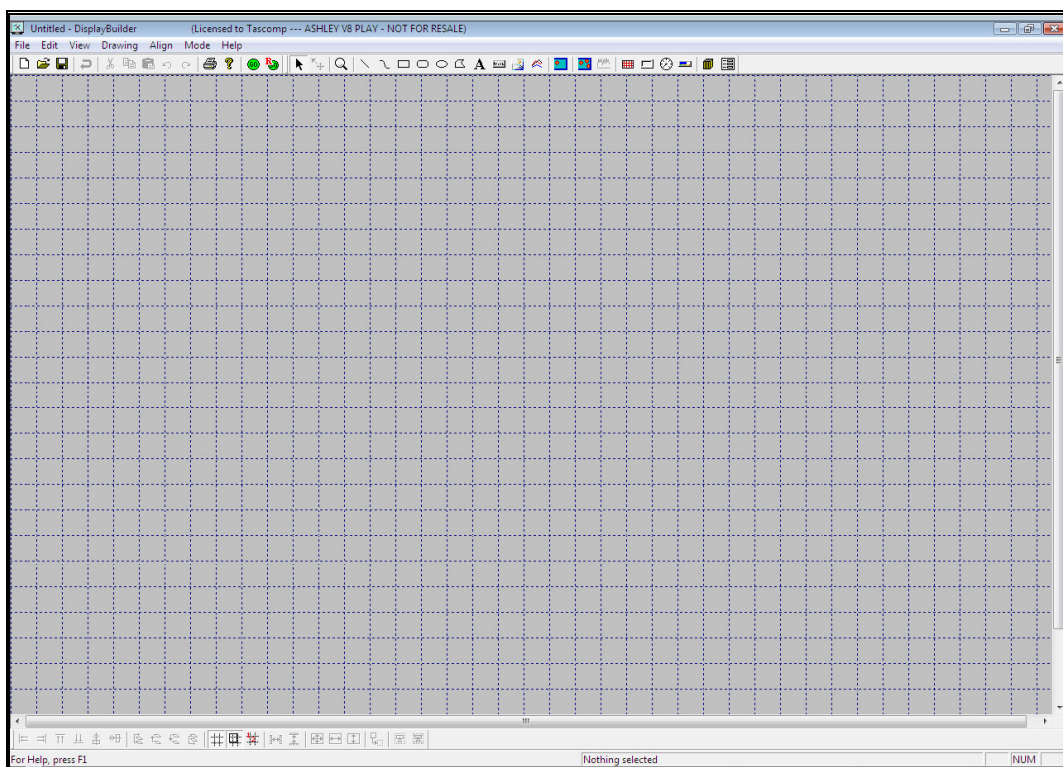
To send a value to the device simply type a number into the **Value** field then press **Set** followed by **Done**. This will then set the value of **01SV** to the required value and it can be observed that the controller tries to change the temperature of the heater to match this value (as a result **01PV** changes).

Create A Display

Start by selecting *Display Builder [Edit]* from the Facilities, Configuration menu of the Prodigy Menu Bar.



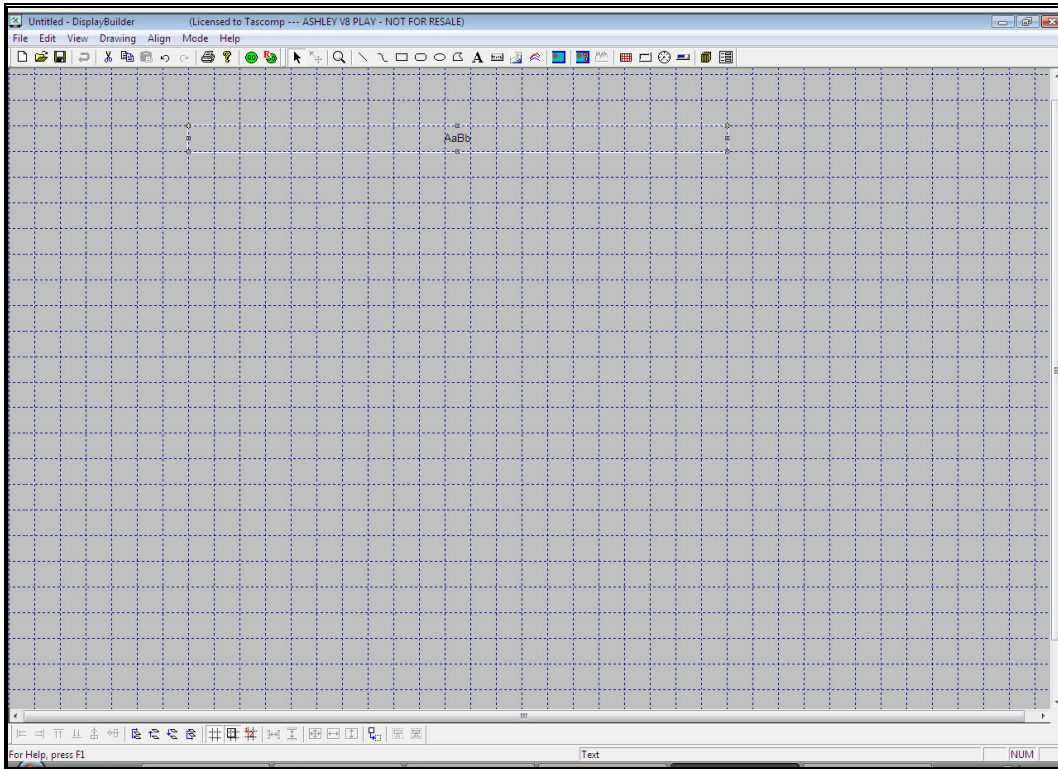
The display builder program will appear as shown below. In this mode displays can have objects added, removed or modified. A blank grey display is loaded in as standard.



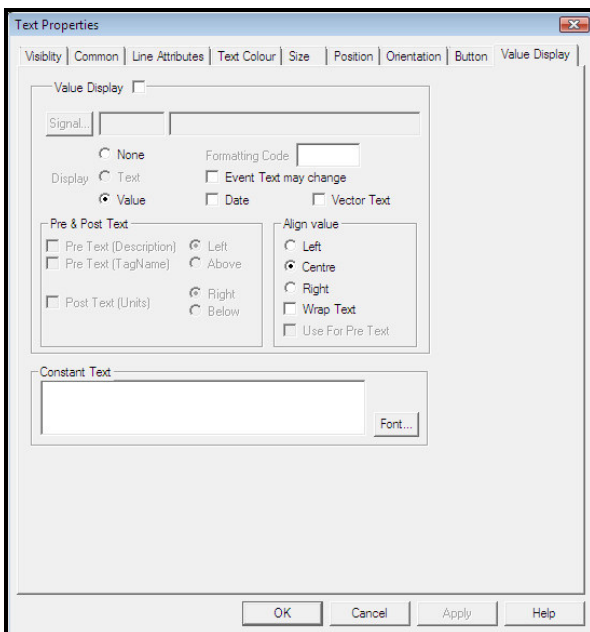
The first thing we will do is add a text item to the display. Click the button on the toolbar that is highlighted below.



Drag out a decent sized box for the text item, similar to that shown below. Don't worry, we will fine-tune the size of the box later.

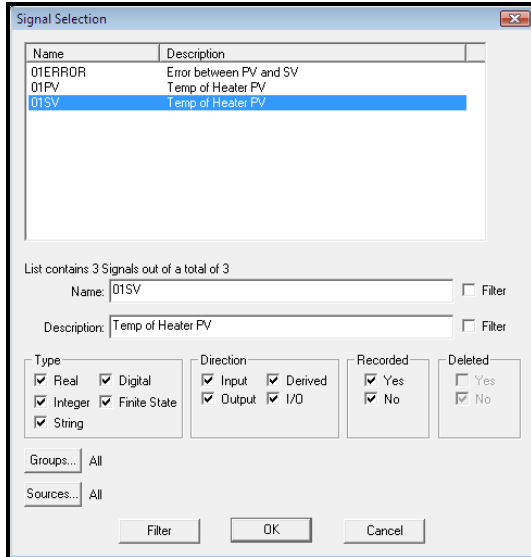


Right click over the text item that you have created. This will display the *Text Properties* dialog.



Check the **Value Display** box and then click the **Signal** button to display the **Signal Selection** dialog (often referred to as the SigScan dialog).

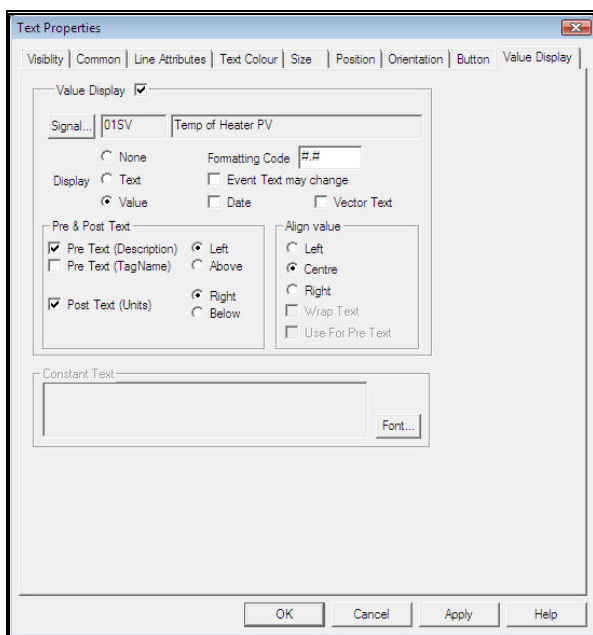
This is the standard signal selection utility for Prodigy and it allows you to select the signal you require by providing a number of filtering options. In this instance we want the signal 01SV so either scroll down the list to find it, or begin to type the name into the **Name** field of the box. The more you type, the further the scrolling list "homes in" on the signal you require.



When you have found 01SV, either double-click on it in the list or single click on it and then press **OK**.

Now select the **Value** radio button and enter **##** into the format field. This indicates that the value of the signal will be displayed as a real number with one digit after the decimal point. All digits to the left of the decimal point are shown regardless of how many #s are placed there. Other examples of formatting codes are **###** to show 3 decimal places or **#** to show the value as an integer.

Check the boxes for **Pre Text (Description)** and **Post Text (Units)**. This means that the text display will automatically show the description and units associated with this signal. Click **OK** when you have finished.



Now choose the "Selection tool", by pressing the button highlighted below.

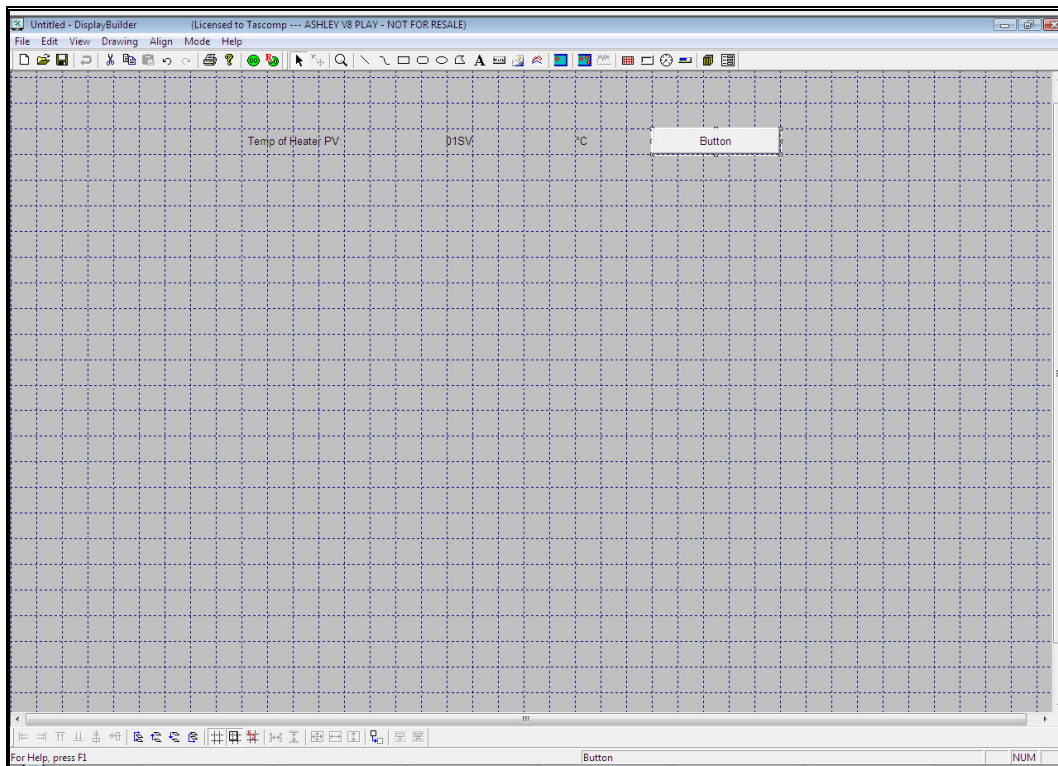


You can now drag the text box to a suitable size by clicking and dragging one of the 8 drag handles drawn around the edge of the text box.

When you are happy with the Text Box select the Button tool by clicking the button highlighted below.

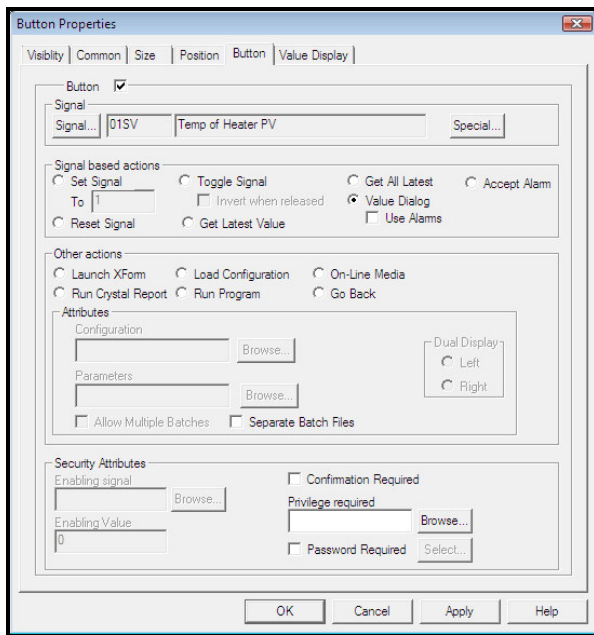


Drag a button onto the display alongside the text box, as shown below.



Right click on the button object to display the **Button Properties** dialog, shown below. Check the **Button** box and then select the signal 01SV in the same way as we did for the Text Box, and check the **Value Dialog** radio button. This means that when the button on the Mimic display is clicked, it will display a dialog that allows you to change the value of the signal associated with the button (01SV).

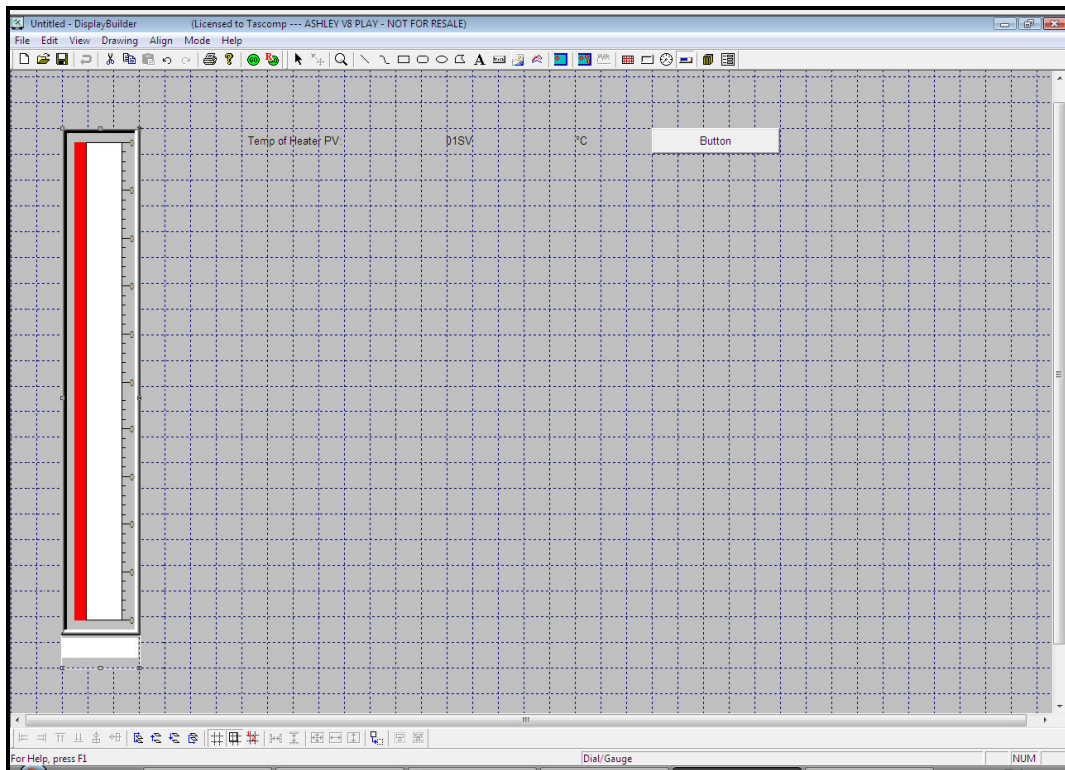
Click **OK** when you have completed this dialog.



Next select the Bar Gauge tool by clicking the button highlighted below.

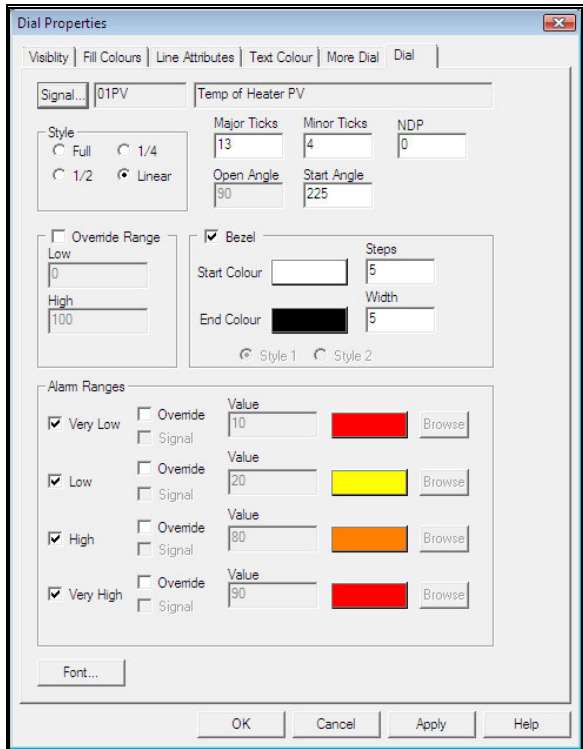


Drag out a tall Gauge to the side of the button and text box, as shown below.

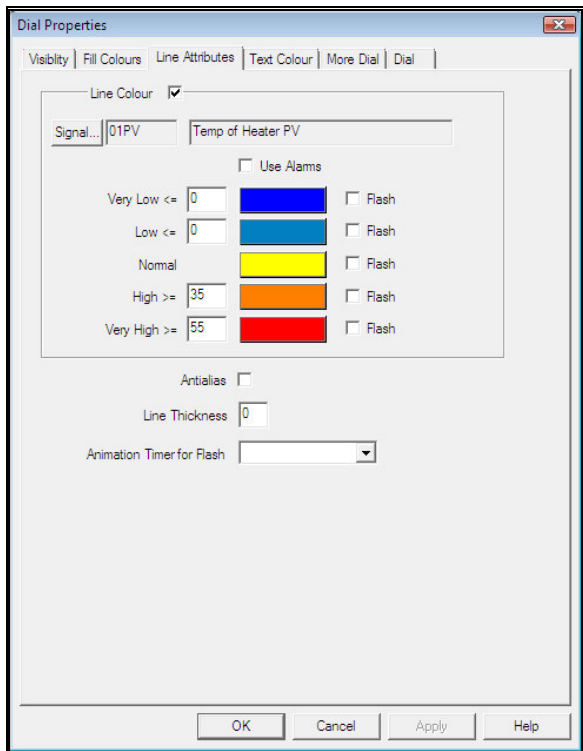


Right-click on the gauge to show the **Bar Gauge Properties** dialog.

On the Dial Tab select the signal 01PV in the same way as we did for the Text Box.



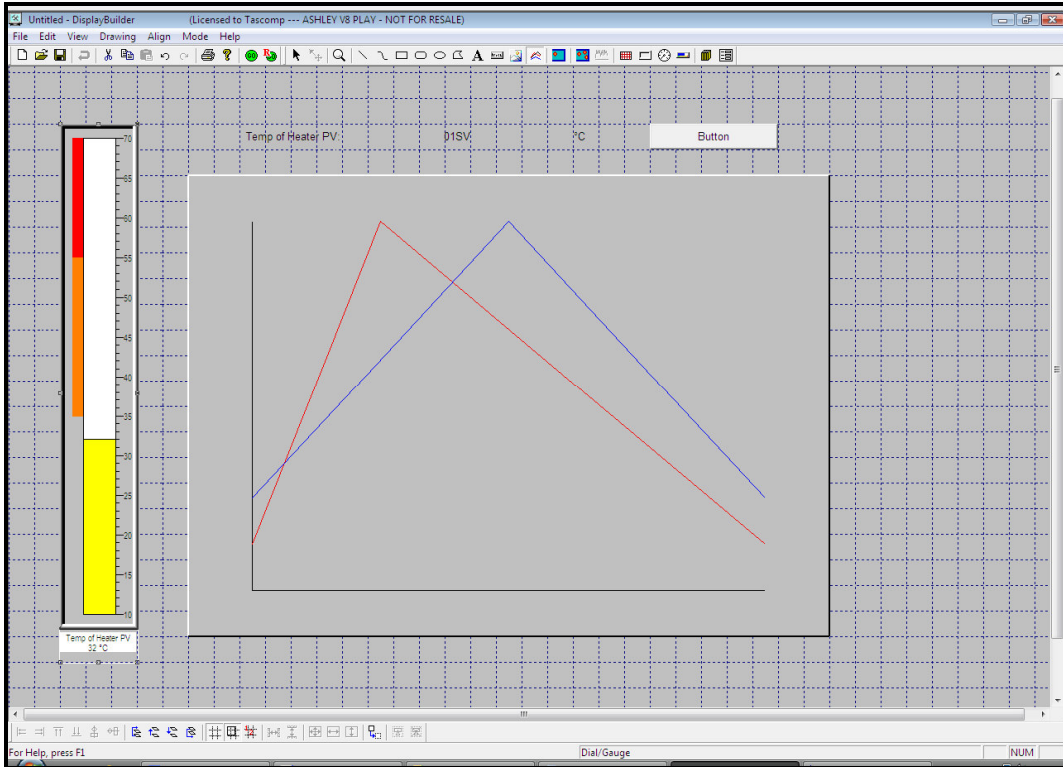
On the **Line Attribute** tab check the line colour box then select the signal 01PV and check the **Use Alarms** box – the values that you specified in the Alarm Strategy section of the Database Configuration will be placed into the relevant boxes on this screen. You can choose the colours that you want by clicking on the coloured boxes, or just leave the defaults.



Now we will add a trend object to the display. Choose the Trend tool by clicking the button highlighted below.

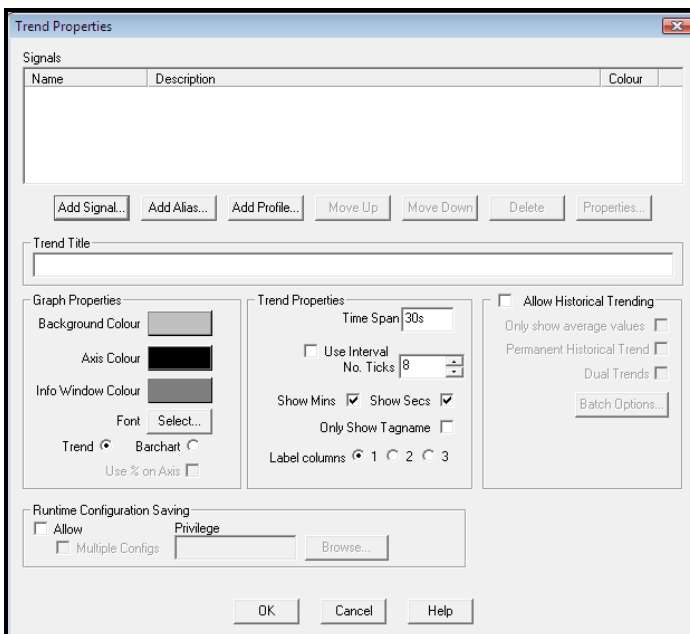


Drag a trend box onto the display, as shown below.

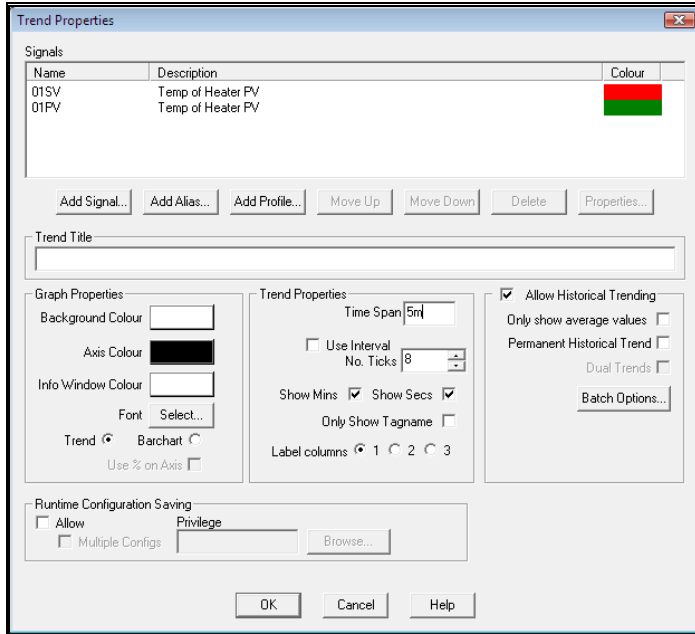


Right-click over the trend object to display the **Trend Properties** dialog.

Begin by adding in our two signals. Click the **Add Signal...** button and select 01SV and then repeat this operation to add 01PV. Colours can be changed or left as defaults.

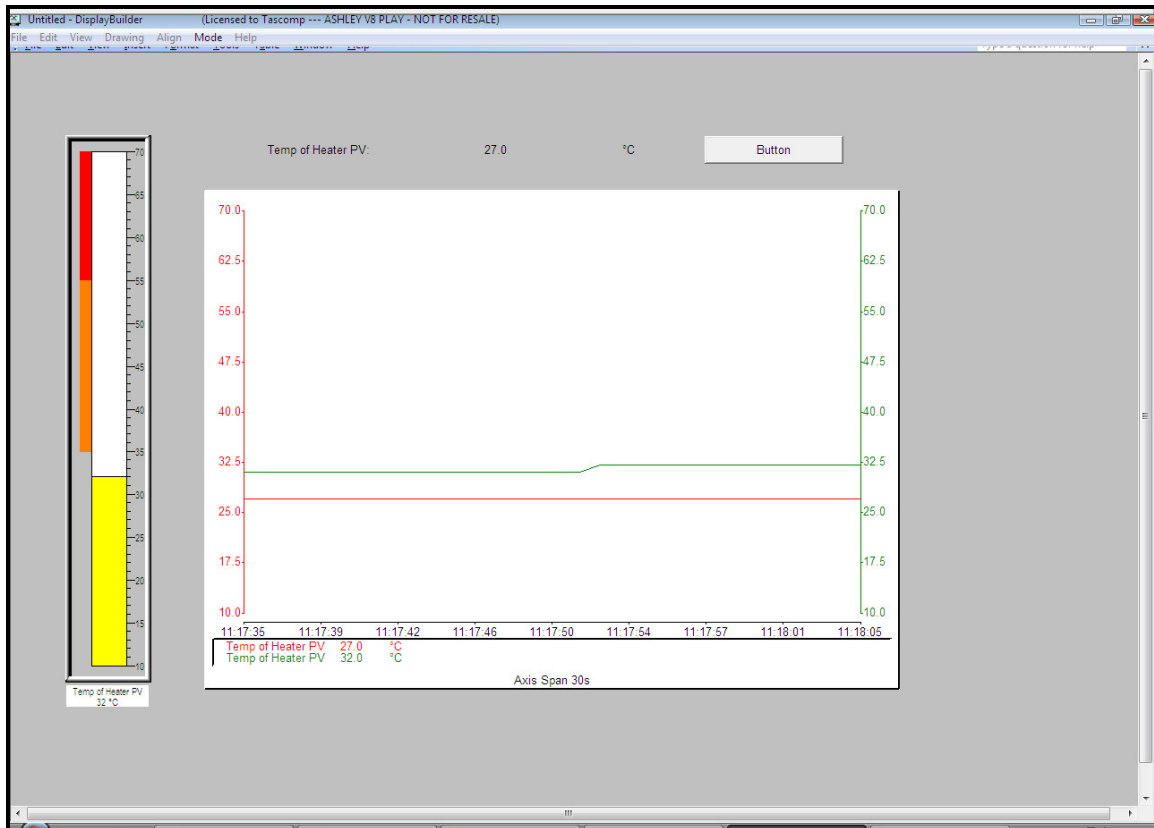


On the main **Trend Properties** dialog, set the **Time Span** to 5m (5 minutes or whatever time period you would like) and check the **Allow Historical Trending** box; this will allow the double clicking option to enter historical mode for chart recorder mode. Click **OK** when you have finished.

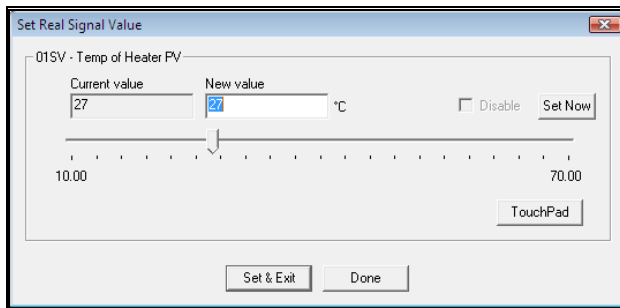


Run the display by pressing the **Go** button.

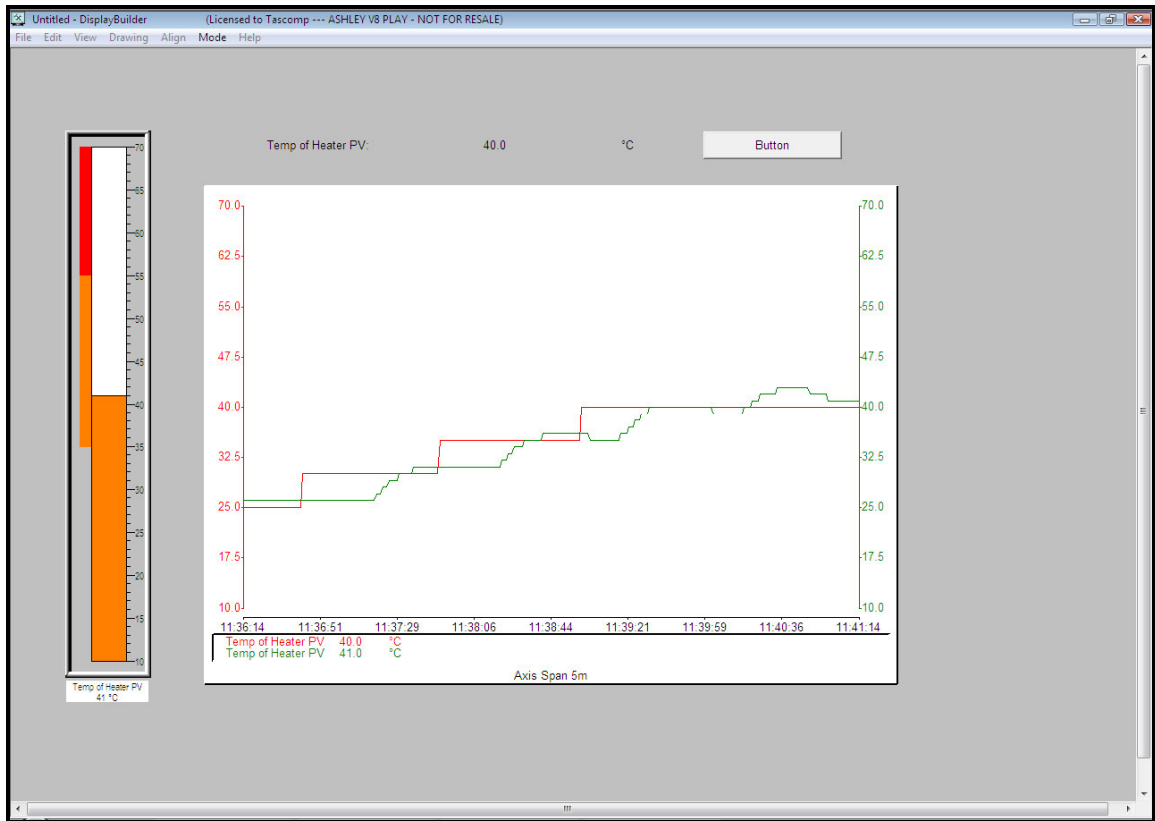
The display will look similar to that shown below, depending on the values of the setpoint and measured value within your controller.



Click the **Button** on the display. The dialog shown below appears and this lets you modify the value of the signal 01SV. You can move the slider or type in a value. Press the **Set Now** button to send the selected value to the controller. Do this a few times and watch the value for the setpoint change on the trend object. Click **Set & Exit** or **Done** when you have finished.



The gauge does not only move up and down as the temperature measured changes but also the colour of the bar will change as limits are reached, the orange and red rectangles at the side of the gauge are located where the alarm limits are located.



Press the Save button while in Design mode and enter a name for the display. Once saved, it will be available on the Prodigy Menu bar, under **Displays**.