

7 Creating a Tuning List

7.1 Foreword

During commissioning and normal operation it is desirable to change the tuning parameters from the front panel of the instrument. In addition, MOD 30ML allows the user to create 'tuning displays' that contain many other types of information including recipe parameters and lookup values. This lab leads you through creating a basic Tune List for a PID block, which is accessed by pressing and holding the Scroll key on the front panel. Although the Component Gallery contains a complete PID loop with algorithm blocks, Display block, and Tune List, it is useful to use the PID tuning list as an example.

7.2 Objective

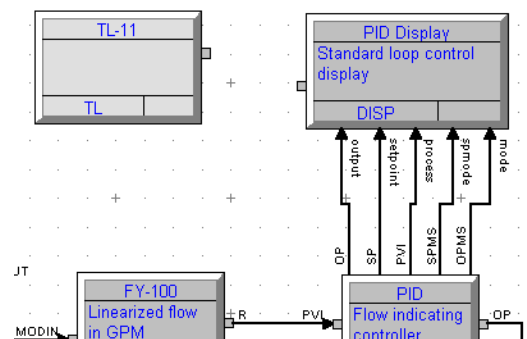
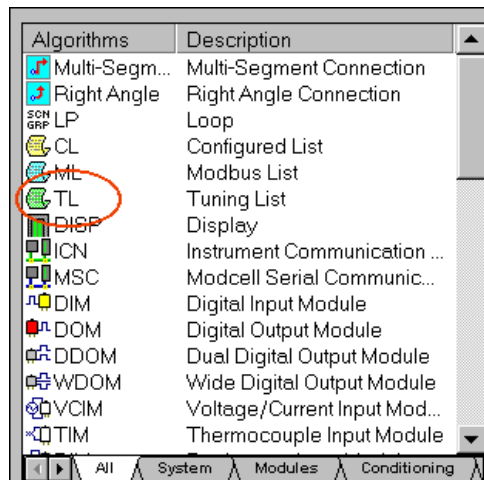
In this lab we will add a Tune List block to the PID strategy created in the PID Loop Lab, and configure it to show basic tuning and commissioning parameters. You will need the Mod Function Block Diagram that you created in the PID Loop Lab.

7.3 Instructions

Follow these instructions step-by-step to add and configure the Tune List block:

1. Adding a Tune List Block:
 - Open the PIDLoop instrument document in the ViZapp workspace and then open the loop compound that contains the PID and Display blocks.
 - Select the **TL** (Tune List) block from the Algorithms window and add it to the document next to the display block.

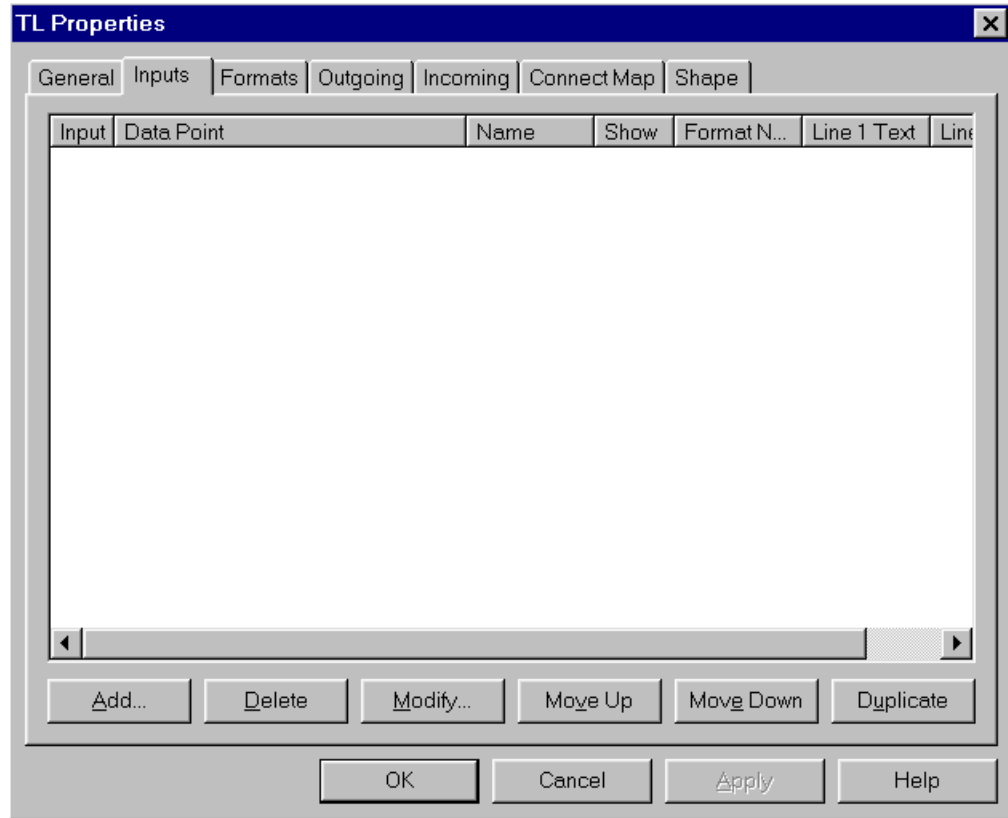
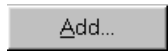
Figure 7.1.
Algorithms menu



Creating a Tuning List

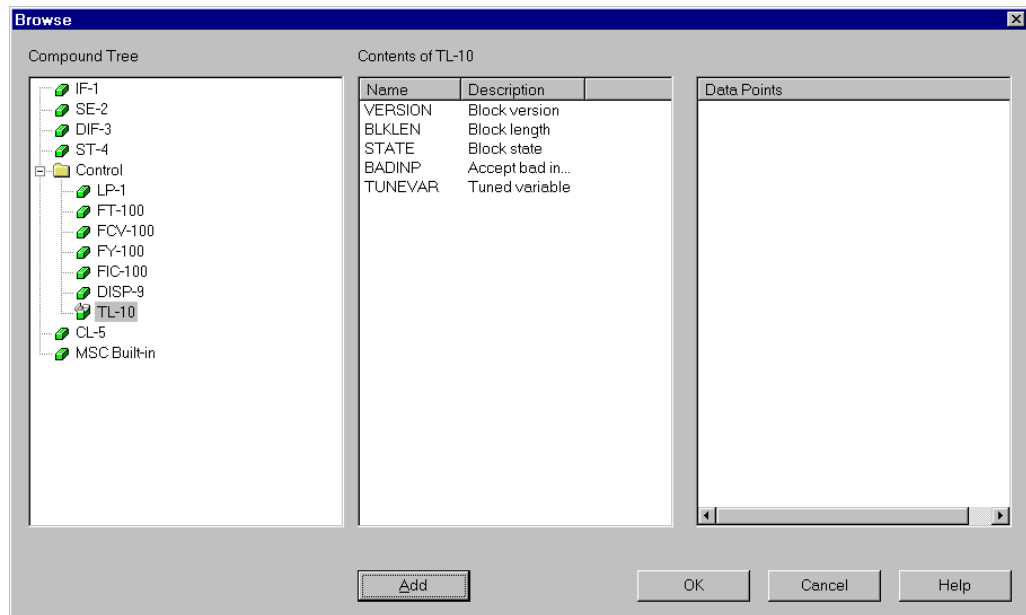
2. Configure the Tune List inputs:
 - Double-click on the TL block to configure: The TL block Properties will open.
 - Click on the Inputs tab to add inputs.

Figure 7 .2.
TL block



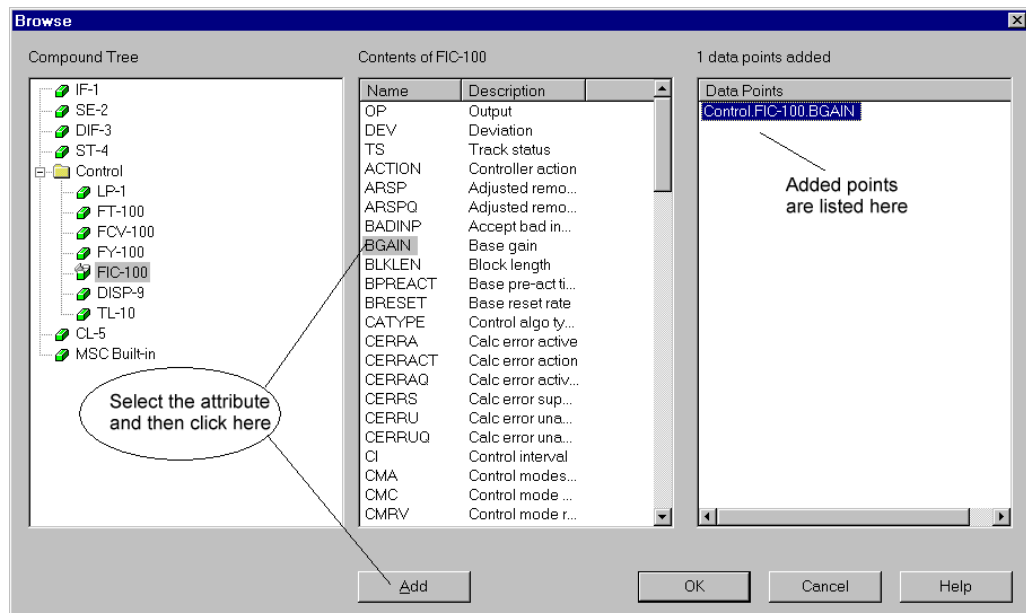
- Click on the **Add** button on this page/tab.

Figure 7 .3.
Browse



- The **Browse** dialog will be displayed as shown above and will list all the blocks and compounds that are present in your document as a tree structure. These will be shown with box icons next to them meaning that there groups and there are further items inside each group.
- You should see the FIC-100 block (the PID block) on this tree.
- Click on FIC-100 to open it. The tree will expand and will display the PID block parameters.

Figure 7 .4.
Browse



- Click on **BGAIN** (base gain) and then on the Add button at the bottom to add the Gain to the Tune List. **DO not hit the OK button !**

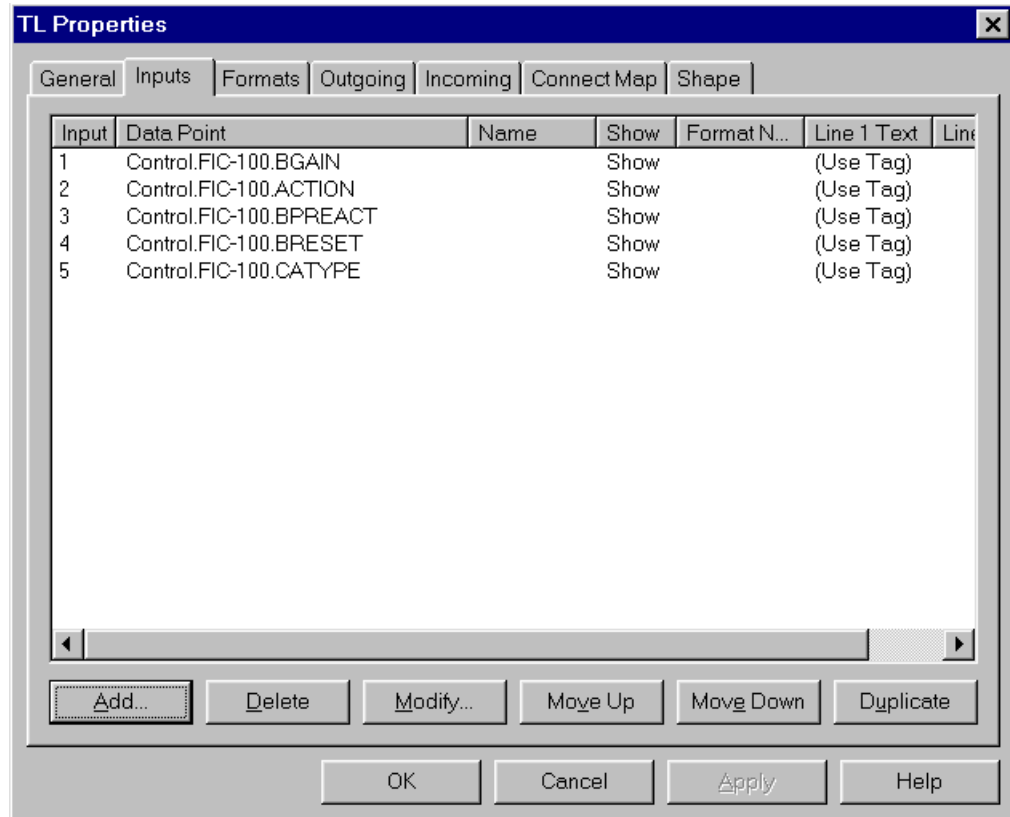
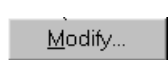
Creating a Tuning List

- Select BRESET, BPREACT, ACTION, and CATYPE from this list and add them in the same way. In addition to the three tuning terms, Controller Action (ACTION) and Control Algorithm Type (CATYPE) are useful attributes to see during commissioning.



You can select multiple attributes by pressing the **Ctrl** key on the keyboard and by clicking on them with the left mouse button. Hit the Add button after multiple selection to all the selected attributes.

Figure 7 .5.
TL block



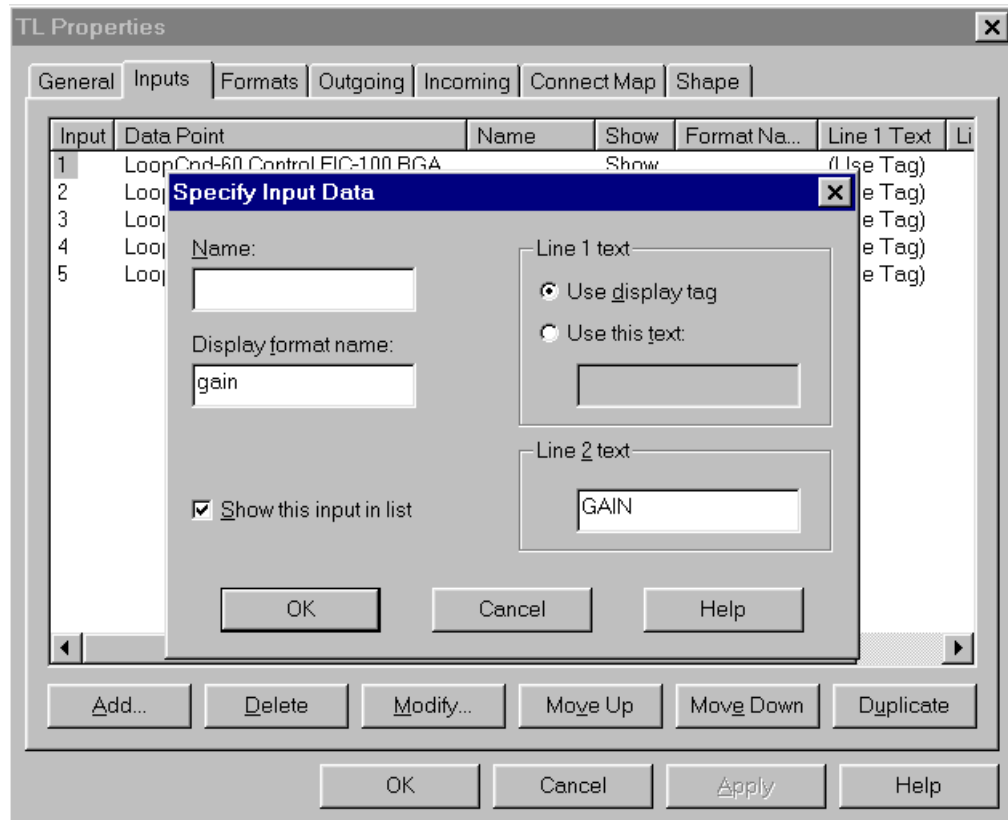
- Click on OK on the Browse dialog. This will redisplay the TL block Properties as shown above. The Inputs Tab will now display the attributes you just added.



The attributes will be displayed with full source path name of the connections. An alias can be entered by selecting an item and typing in any alias name. This name will then be displayed instead of the block tag and attribute name.

3. Configure text to be shown to the operator for each parameter:
 - Double-click on Input 1 (1 in the first column). The Specify Input Data dialog box appears as shown in the next figure.
 - Type gain in the Display Format Name field, and GAIN in the Line 2 Text field.

Figure 7 .6.
Tune List Input
Data



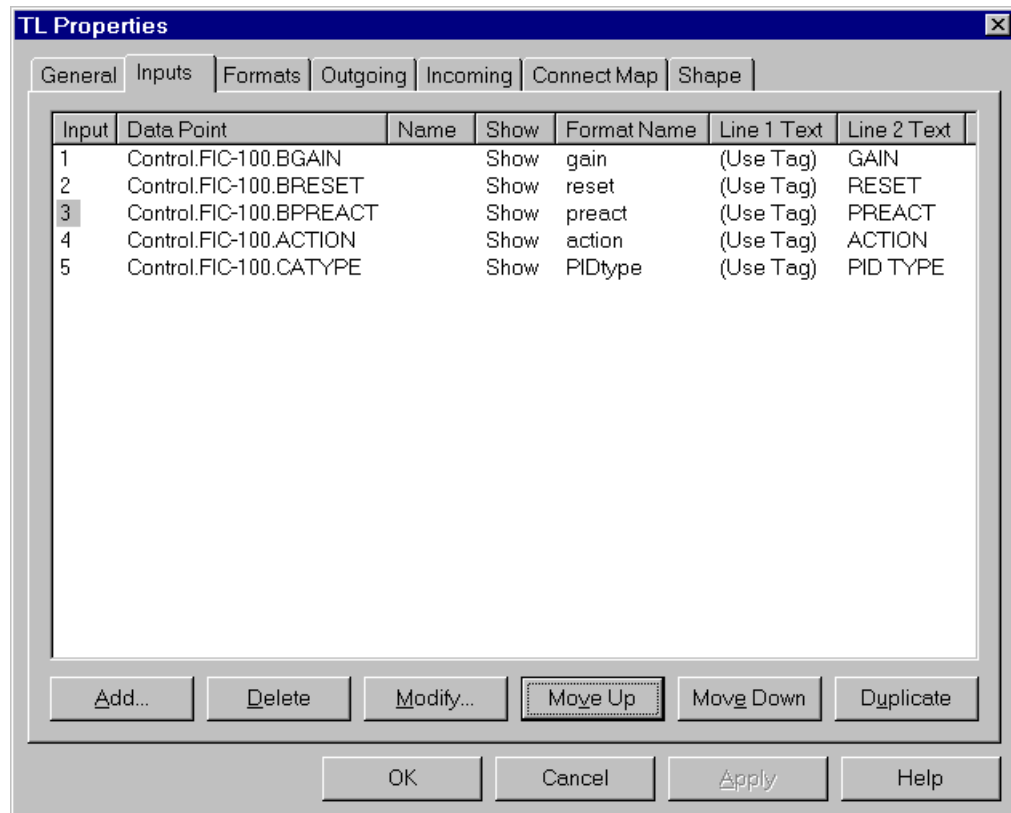
- Click on the OK button in the Specify Input Data dialog box.
- Repeat this procedure for the remaining inputs as follows:

Input	Data Point	Display Format name	Line 2 Text
2	BRESET	reset	RESET
3	BPREACT	preact	PREACT
4	ACTION	action	ACTION
5	CATYPE	PIDtype	PID TYPE

- The **Inputs** tab of the TL Properties dialog box will look like the next figure after you added the required inputs.

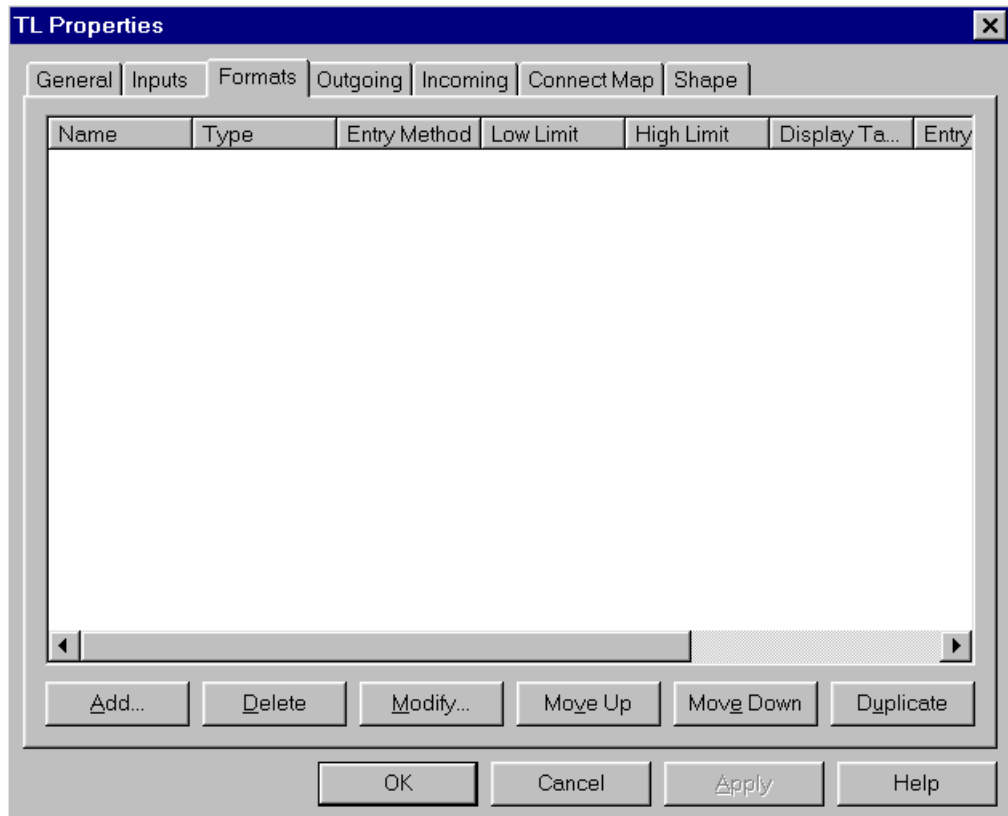
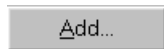
Creating a Tuning List

Figure 7.7.
Tune List Input
Data



4. Define the display format for the inputs:
 - Click on the Formats tab to add formats.

Figure 7 .8.
TL block formats



- Click on the **Add** button on this page/tab. The **Specify Format Data** dialog box appears.
- Fill in the format fields as shown in the diagram below, to add the following formats (where there is a blank do not make an entry):

Name	Format Type	Low Limit	High Limit	Entry Method	Eng. Units	Display State Table	Entry State Table
PIDType	State			none		PidTypT	
Action	State			Enter Required		PidActT	PidActT
Gain	Float2	.01	125	Enter Required			
Reset	Float2	0	25	Enter Required	RPM		
Preact	Float2	0	32	Enter Required	MIN		

- The **Specify Format Data** dialog box is shown in the next figure:

Creating a Tuning List

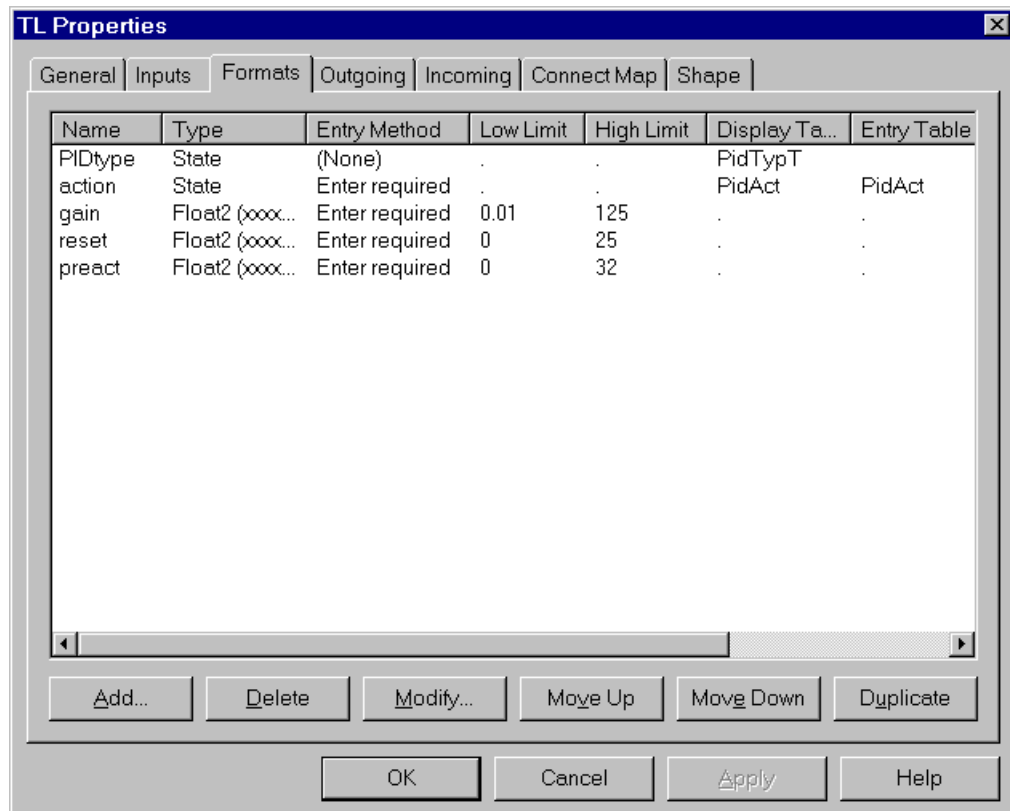
Figure 7 .9.
Tune List Format
Data for PIDtype
format



The *Name(s)* should match the format names that were assigned in the Input tab. The *Format Type* must match the data type of the input (e.g. gain is floating point with x decimal places, PID type is State). This information may be found in the Help menus associated with this dialog box). *Entry method* designates whether an operator entry is allowed, and if so, whether the data is accepted immediately or a confirmation is required. *High* and *low limits* may be entered if appropriate, along with *Engineering units*. To restrict the conditions under which a parameter may be changed, enter an expression in the *Allow edit when this expression is true field*. *Display* and *Entry state tables* control text associated with the possible entries for the tuning parameter. This text is contained in the State Table Block. For additional information on state tables, refer to IB-1800R-SCR, Display Guide.

- The TL block should look like the next figure after you added the required formats.
- You can also change the name of the TL block to **TuneList** on the **General** tab of this block's Properties.

Figure 7 .10.
TL Block

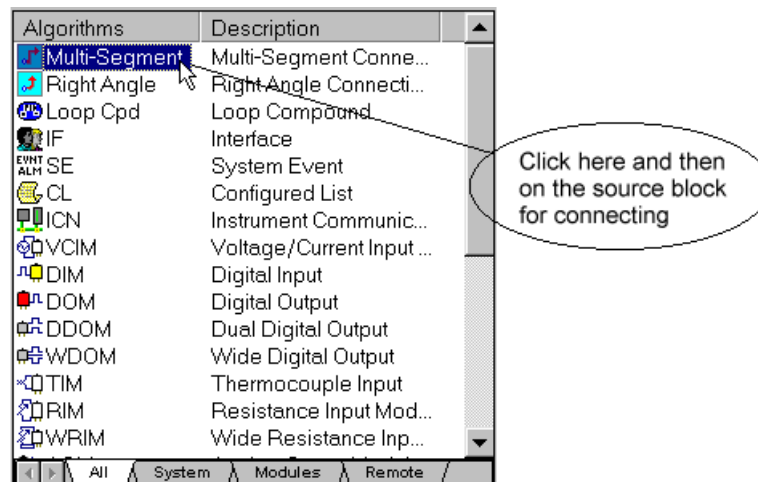


- Close the dialog box and the Tune List block with the OK buttons.

5. Connect the Tune List block:

- Click on the **Multi-Segment** connection item on the Algorithms menu to enable connection mode. See figure below:

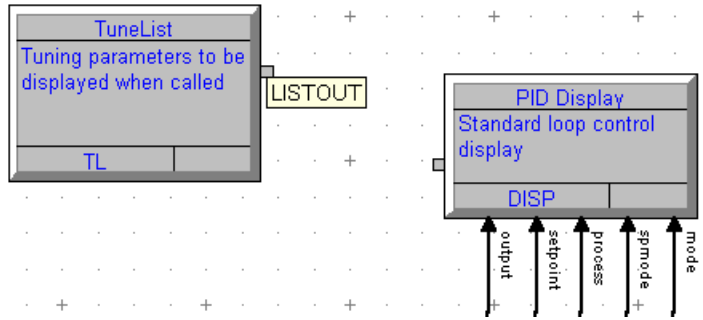
Figure 7 .11.
Algorithm -
Connection



- Move to the workspace on the right and click on the **TL** block's output connection point as shown in the next figure. Notice that moving the cursor over the output of a block, shows a fly-by box. This box shows the name of the output (for example, in this case LISTOUT).

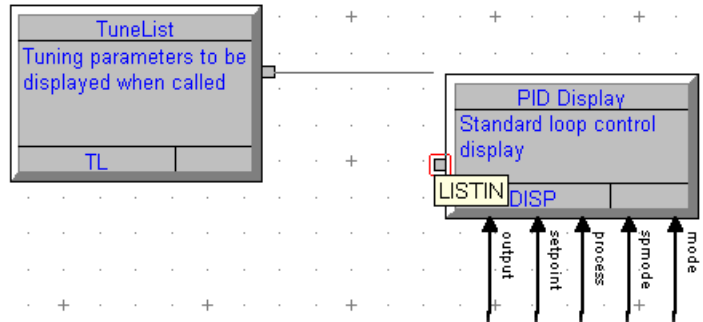
Creating a Tuning List

Figure 7.12.
Connecting blocks



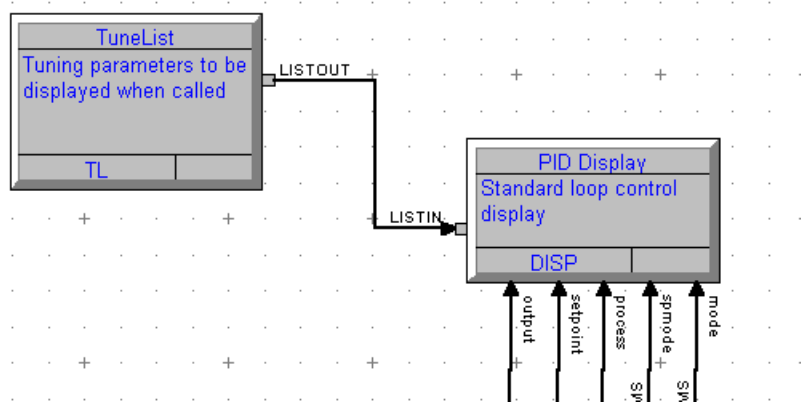
- Move the cursor to the **Display** block's input now. Moving the cursor will draw a line.

Figure 7.13.
Connecting blocks



- You will get a fly-by box that will say LISTIN when you move over the input.
- Click on the input of the Display block. See the figure above.

Figure 7.14.
Connecting blocks



- The connection will now be complete. The connection line will have the source name and destination name displayed right on it as shown in the above figure.



Once the configuration has been compiled and downloaded to the controller, the Tune List attributes may be accessed by pressing and holding down the Scroll key.