Indexed Addressing

Indexed addressing mode allows the user to reference many controller memory locations from a single numeric field. This enables the user to monitor the values of many memory locations while using only one field. This feature can be toggled on or off by either clicking on the appropriate icon in the *Extra ToolBelt* or by selecting *Indexed Addressing Mode* from the *Edit* menu. An example of using indexed addressing is given below, with the completed project screen being shown in Figure 6.

Example

For this example, assume a user has a plant in which industrial equipment is washed. There are three stages comprising the wash process. The user wants to be able to monitor the water temperature, the water pressure, the amount of time the equipment was in a particular stage, and the stage the process is in; all without pressing a key on the panel. The controller memory locations and their contents for this example are as follows:

DB10 DW0 - Temperature in Stage 1 (ranges between 0 and 9999)
DB10 DW1 - Temperature in Stage 2 (ranges between 0 and 9999)
DB10 DW2 - Temperature in Stage 3 (ranges between 0 and 9999)
DB10 DW3 - Pressure in Stage 1 (ranges between 0 and 9999)
DB10 DW4 - Pressure in Stage 2 (ranges between 0 and 9999)
DB10 DW5 - Pressure in Stage 3 (ranges between 0 and 9999)
DB10 DW6 - Time in Stage 1 (ranges between 0 and 9999)
DB10 DW7 - Time in Stage 2 (ranges between 0 and 9999)
DB10 DW8 - Time in Stage 3 (ranges between 0 and 9999)
DB10 DW9 - The stage the process is currently in (ranges between 1 and 3)

The numeric values are written into the controller by the machine and are changing constantly. Note that the memory locations are controller specific; those listed above are done so only to be able to more easily explain the procedure of using indexed addressing.

This example can be broken down into four basic steps:

1. Creating the *'Temperature'* indexed addressing field,
2. Creating the *'Pressure'* indexed addressing field,
3. Creating the *'Time'* indexed addressing field, and
4. Creating the *'Stage'* numeric field.

These fields are all related in that the values that are displayed within them are dependent upon the stage of the process. The indexed fields will be addressed in a manner so that whenever the field number is written into the *'Stage'* numeric field location (DB10 DW9), the corresponding information will be displayed in each of the indexed fields. For example, when a value of 2 is written into DB10 DW9, each

of the indexed fields will display the corresponding data: the temperature in stage 2, the pressure in stage 2, and the amount of time spent in stage 2.

Creating the Temperature Indexed Field

1. Either select *Indexed Addressing Mode* from the *Edit* menu or click on the appropriate icon in the *Extra ToolBelt*.

2. The addressing mode has been set to indexed. Now create a field on the screen where the temperature information for the process will be displayed. This can be done in the same manner as when creating a numeric field.

3. This will bring up a define field dialog box. The top portion of this dialog box is controller specific. The address we are using is DB10 DW9 and can be entered in this area of the dialog box. Since the values written into this memory location will be between 1 and 3, we can enter these as the minimum value and maximum value, respectively. This field needs to be a read only field, because we have the controller set up so that it will write the numeric value of the current state (either a 1, 2, or 3) into this location. A screen capture of this dialog box is shown in Figure 1.

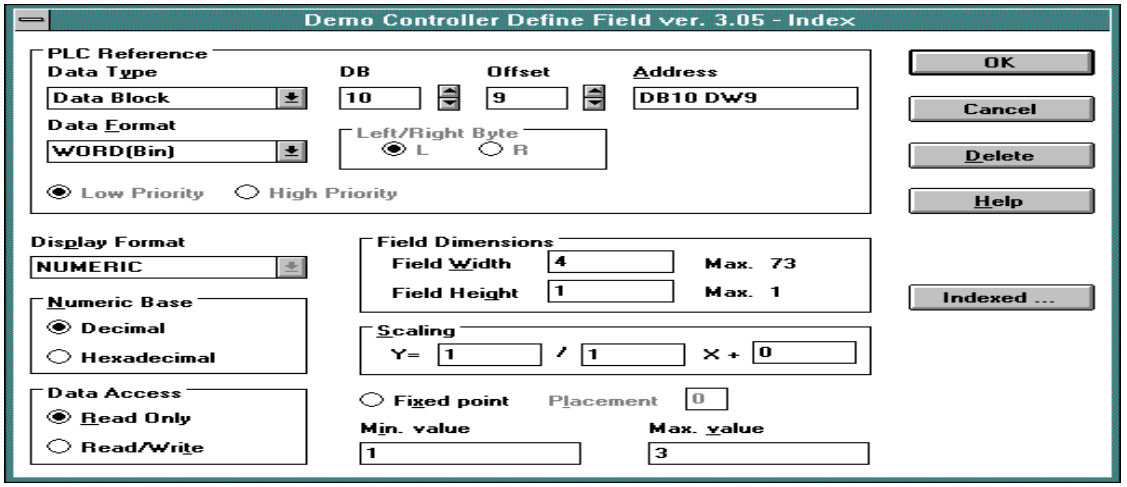

Figure 1

4. Clicking on the *Indexed* button will bring up a dialog box that allows the user to specify which memory location's contents will be displayed when a particular value is written into DB10 DW9. For example, whenever a value of 1 gets written into DB10 DW9, we want the temperature for stage 1 to be displayed. Likewise for the values 2 and 3. To specify the address, simply click on the value you wish to link to an address and click on the *Reference* button. This will bring up a dialog box in which you can specify the address. Since we want a value of 1 to display the temperature in state 1 (whose value is located in DB10 DW0), the value of 1 gets referenced to DB10 DW0. This is done in a similar fashion with similar reasoning for DB10 DW1 and DB10 DW2. A configured dialog box is shown in Figure 2.

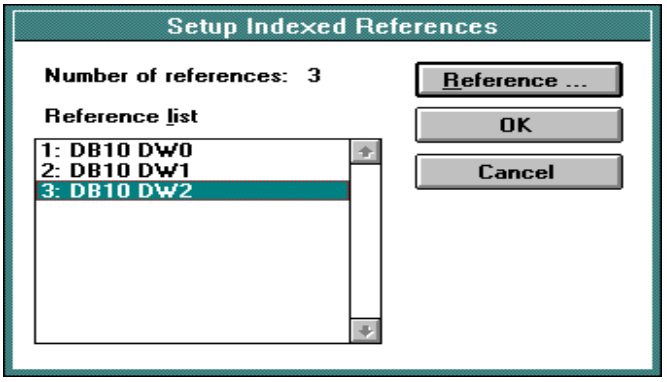

Figure 2

Creating the Pressure Indexed Field and the Time Indexed Field

1. Repeat steps 1 through 3 exactly as stated underneath *Creating the Temperature Field*.

2. Repeat step 4 as stated underneath *Creating the Temperature Field*, with the following exceptions:

- When creating the *pressure indexed field*, the value of 1 should be referenced to DB10 DW3. Likewise, the value of 2 should be referenced to DB10 DW4, and the value of 3 should be referenced to DB10 DW5. A configured dialog box is shown in Figure 3.

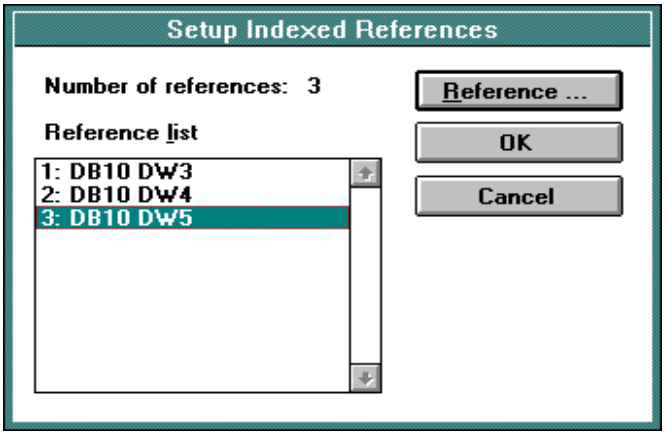

Figure 3

- When creating the *time indexed field*, the value of 1 should be referenced to DB10 DW6. Likewise, the value of 2 should be referenced to DB10 DW7, and the value of 3 should be referenced to DB10 DW8. A configured dialog box is shown in Figure 4.

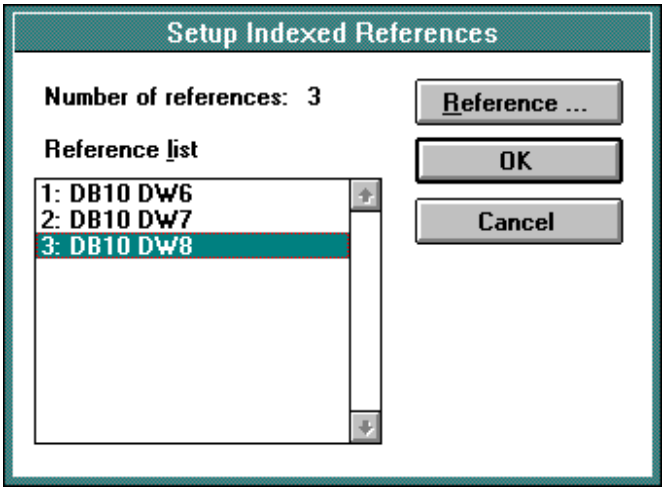

Figure 4

Creating the Stage Numeric Field

1. Since we want to create a numeric field, we need to turn off the indexed addressing mode. This can be done by either selecting *Indexed Addressing Mode* from the *Edit* menu or by clicking on the proper icon in the *Extra ToolBelt*.

2. Now simply create a numeric field and address it to DB10 DW9. The dialog box of this is shown in Figure 5. Note that since this field is only going to be displaying a single digit, the field width has been reduced to 1.

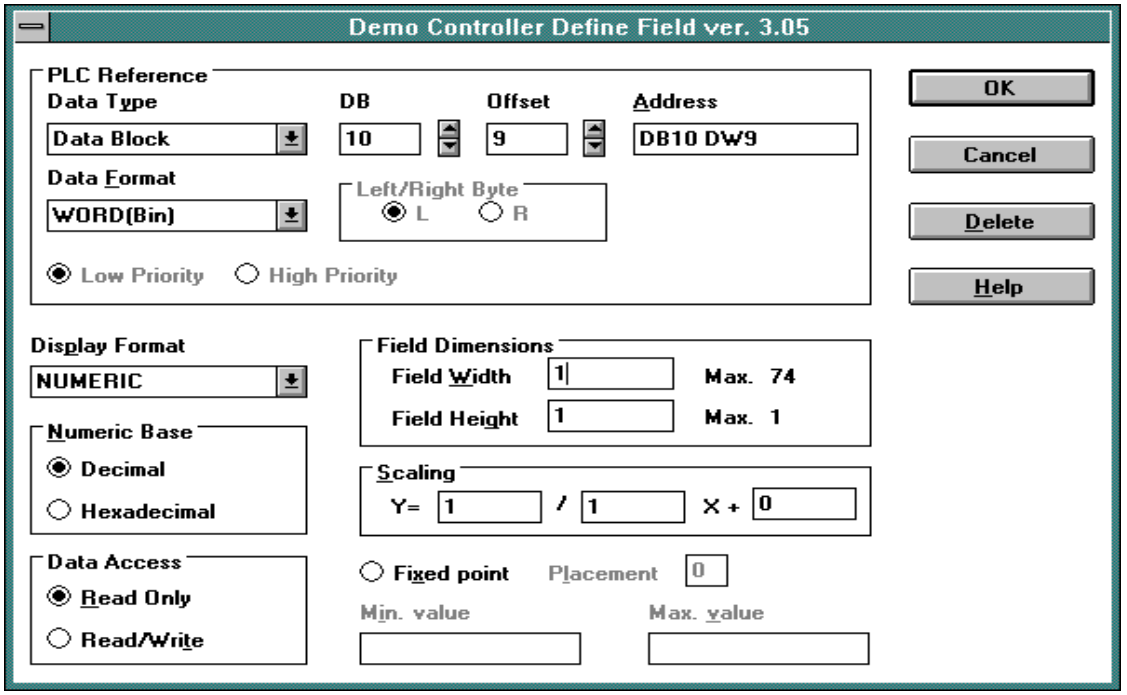

Figure 5

- **Note that if it were desirable for the user to be able to edit the stage of the process, that numeric field could have been created as a read/write field instead of a read only field.**

The Finished Project

A dialog box representing what the finished setup may look like is shown below.

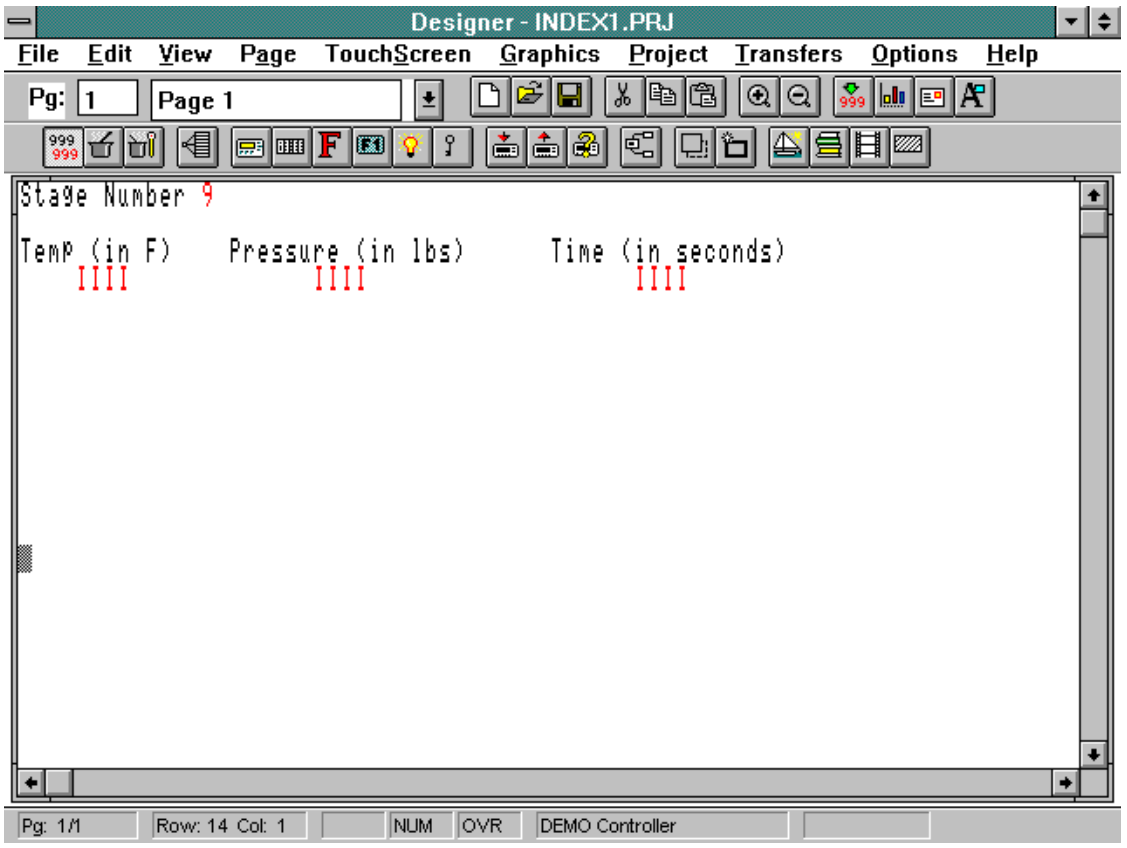

Figure 6

Technical assistance may be obtained :
In North America EXOR at 1 -513-874-4665.
In Europe EXOR Italy 045 - 8779068