

# Dynatrol DS-32 RTU

## DynaConfig User Manual

Version: V1.0



### **Dynatrol Systems Inc.**

#601, 4656 Westwinds Drive. N.E.

Calgary, Alberta

Canada, T3J 3Z5

Phone: (403) 235-5611 Fax: (403) 235-5610

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<b>1</b>	<b>DYNACONFIG .....</b>	<b>1-1</b>
1.1	Key Information .....	1-1
1.1.1	Brief Description.....	1-1
1.1.2	Getting Started .....	1-2
1.2	Welcome Screen.....	1-3
1.2.1	Welcome Screen .....	1-3
1.3	DynaConfig Main Screen .....	1-4
1.3.1	Main Screen .....	1-4
1.3.2	Change Drive .....	1-5
1.3.3	Wire List .....	1-5
1.3.4	Wire List Sample .....	1-6
1.3.5	Print Preview Sample.....	1-7
1.3.6	New Customer Dialog.....	1-8
1.3.7	Edit Customer Dialog .....	1-8
1.3.8	Copy Customer Dialog .....	1-9
1.3.9	Delete Customer Dialog.....	1-10
1.3.10	New Project Dialog.....	1-10
1.3.11	Edit Project Dialog.....	1-11
1.3.12	Copy Project Dialog.....	1-11
1.3.13	Delete Project Dialog.....	1-12
1.3.14	Copy RTU Dialog.....	1-13
1.3.15	Delete RTU Dialog .....	1-14
1.4	RTU Application Configuration Editor Screen.....	1-15
1.5	Table Selection Screen .....	1-18
1.6	Compile Screen .....	1-24
1.7	Release Screen.....	1-25
<b>2</b>	<b>DYNACONFIG APPLICATIONS .....</b>	<b>2-1</b>
2.1	List of Applications .....	2-1
2.2	B01 DBM Application .....	2-1
2.2.1	B01 DBM (Database Manager) Application .....	2-1
2.3	B02 Maintenance Application.....	2-1
2.3.1	B02 Maintenance Application .....	2-1
2.3.2	B02_CFG .....	2-2
2.3.3	B02_CXRF .....	2-4
2.3.4	B02_ASYN.....	2-8
2.3.5	B02_SOEH .....	2-13
2.3.6	B02_SOEB.....	2-13
2.3.7	B02_ERRH .....	2-14
2.3.8	B02_ERRB .....	2-14
2.3.9	B02_REST .....	2-15
2.4	R01 I/O Remote Interface Application.....	2-15
2.4.1	R01 I/O Remote Interface Application.....	2-15
2.4.2	R01_RIA .....	2-16
2.4.3	R01_AIDB .....	2-18

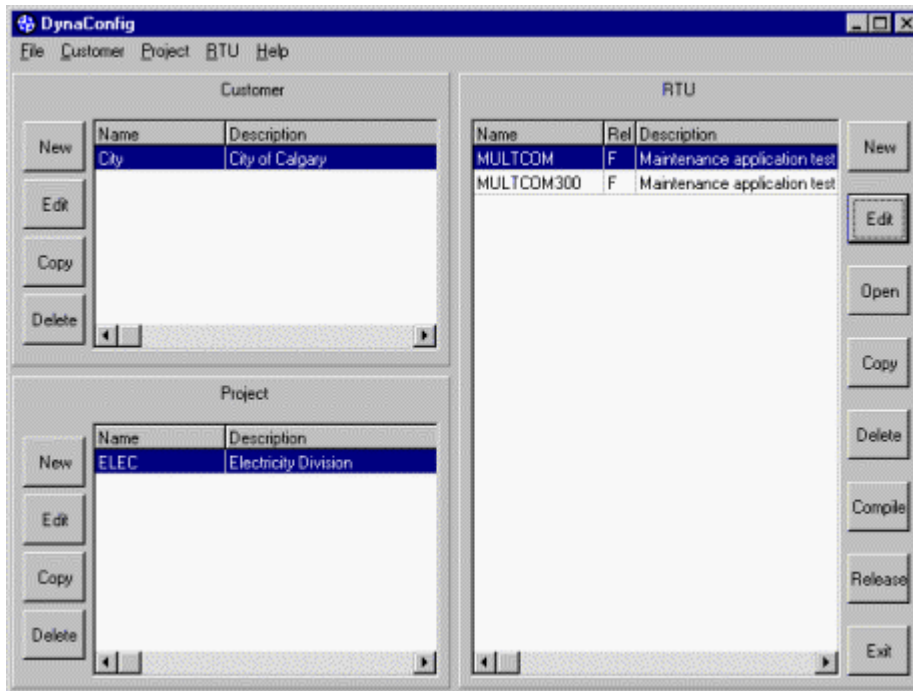
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2.4.4	R01_AIPT .....	2-21
2.4.5	R01_DIDB .....	2-22
2.4.6	R01_DIPT .....	2-22
2.4.7	R01_DODB .....	2-25
2.4.8	R01_DOPT .....	2-26
2.4.9	R01_HSAC .....	2-28
2.4.10	R01_AODB .....	2-30

# 1 DynaConfig

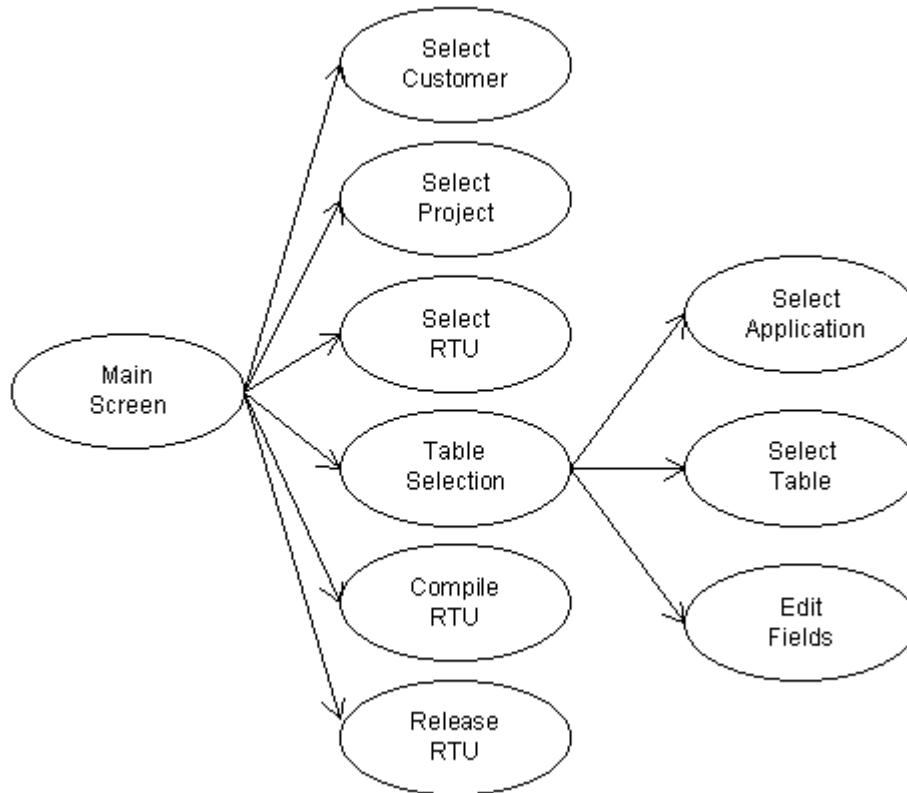
## 1.1 Key Information

### 1.1.1 Brief Description



DynaConfig is a multi-function, user-friendly utility used essentially to manage the DS-32's RTU configurations. Functions, which will be discussed in greater detail in later sections, include: **Generation of 'Project' groups**; **Generation of new configurations for an RTU**; **Editing and Modification of fields within the tables**; **Compilation and Generation of a downloadable file**; and **Tagging of an RTU Configuration as being released**. For an overview of how one goes about viewing or editing fields within a configuration, see **Getting Started**.

### 1.1.2 Getting Started



For most people, the purpose of using DynaConfig is to either view the configuration or modify the configuration. The following procedure will allow one to do either:

From the **Main Screen**:

1. Select Customer Configuration
2. Select Project Configuration
3. Select RTU Configuration
4. Press the “Open” button on the right side of the **Main Screen**
5. This will bring up the **Table Selection Screen**
6. Select the Application to be configured
7. Select the Table to be configured
8. Press the “Open” button on the right side of the Table Selection Screen
9. This will bring up the **Configuration Table Editor Screen**
10. If modification is the purpose, select the field to be modified, and modify it. Otherwise, just view the data.
11. Once one is satisfied with the configuration, one can exit back to the **Main Screen**
12. Select “Compile” to create a downloadable file

13. Use DynaView to download the file to the RTU and test the configuration
14. After several iterations of testing, once one is satisfied with the configuration, one can “Release” the configuration, which means that the configuration cannot be changed anymore.

## **1.2 Welcome Screen**

### 1.2.1 Welcome Screen

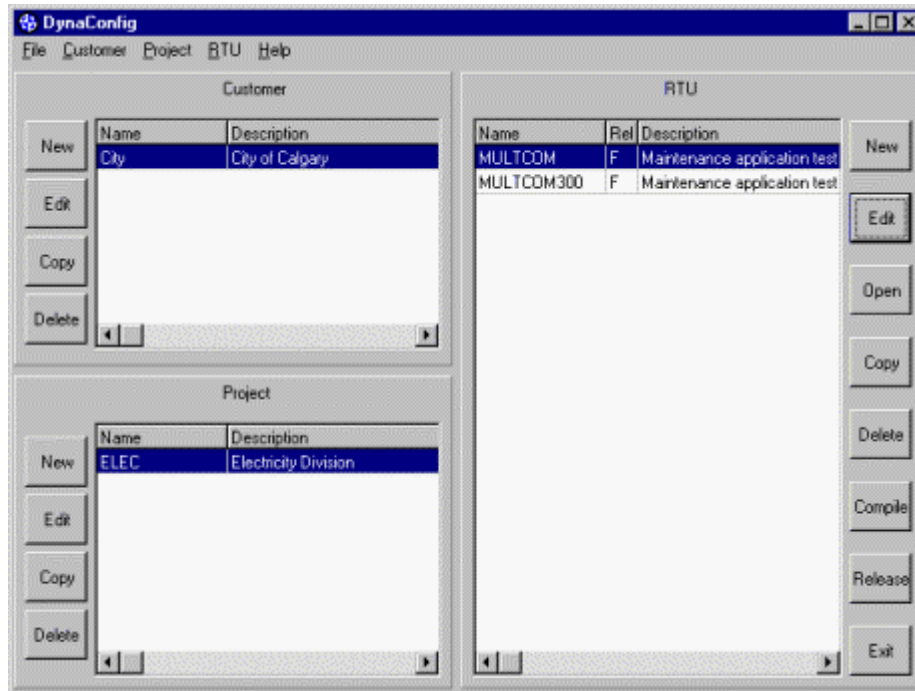


“Press Here to Continue” - allows entry into the DynaConfig utility. The **Main Screen** appears.

“Exit” - exits the DynaConfig utility.

## **1.3 DynaConfig Main Screen**

### 1.3.1 Main Screen



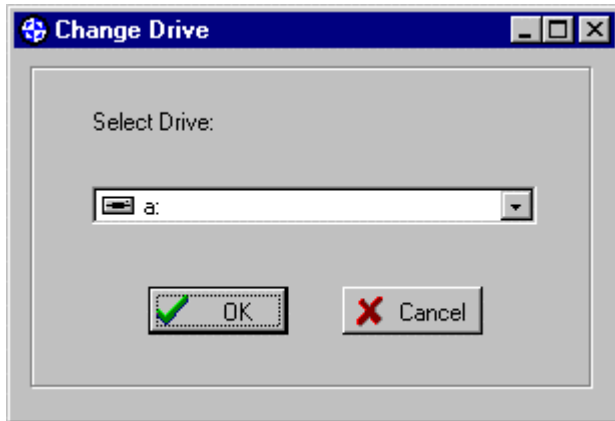
The main screen is the launching point for most of the functions. It also allows one to select various configurations (Customer, Project, and RTU configuration). The main screen is divided into 3 sections. The first section (top left corner) deals with customer functions, such as **New**, **Edit**, **Copy** and **Delete**. When a customer is selected (click in the customer area), the project section and the RTU section is updated accordingly.

The second section (bottom left corner) deals with project functions, such as: **New**, **Edit**, **Copy** and **Delete**. When a project is selected (click in the project area), the RTU section is updated accordingly.

The third section (right side) deals with RTU functions, such as: **New**, **Edit**, **Open**, **Copy**, **Delete**, **Compile** and **Release**. The “Exit” button allows the user to exit the DynaConfig utility. The “Rel” stands for released, and the column values are “F” for false and “T” for true.

Under File option, one can **Change Drive** or display the **Wire List**.

### 1.3.2 Change Drive



The two methods of selecting the drive that will be used are:

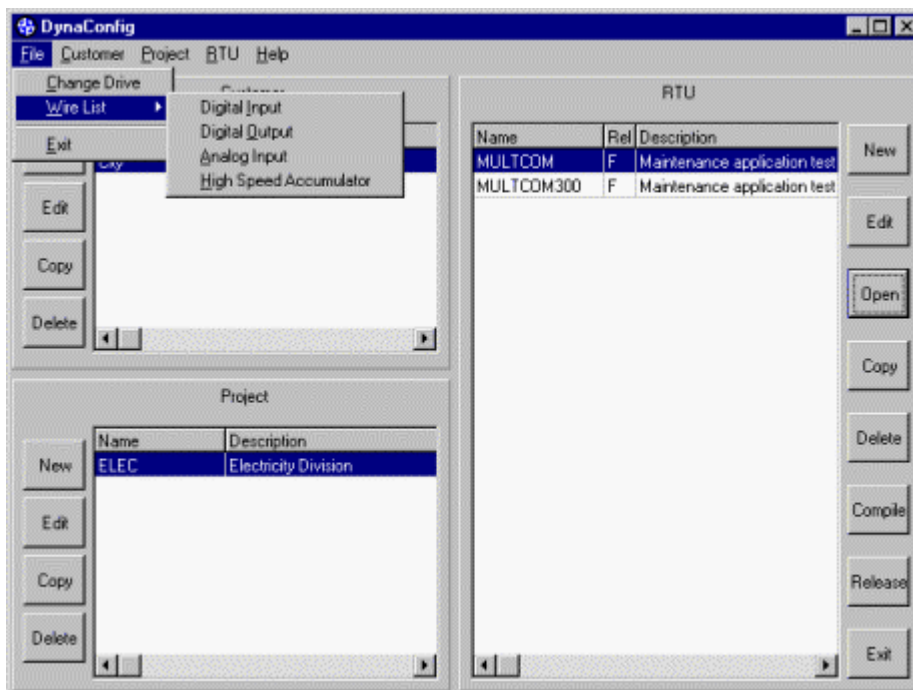
- Use the mouse to click on the selection box, a list will appear, choose the drive to be used.
- Use the arrow keys to select the drive to be used.

The default drive is C.

Select “OK” to accept the selected drive.

Select “Cancel” to use the original drive that was being used before selecting this dialog box.

### 1.3.3 Wire List



Selecting Wire List from the Main Screen under menu option “File”, brings up a submenu with the options Digital Input, Digital Output, Analog Input, and High Speed Accumulator. [Wire List Sample](#) shows an example of one of these options.

### 1.3.4 Wire List Sample

The screenshot shows a window titled "WireList" with a menu bar containing "File". Below the menu bar, there is a form with the following fields:

- Customer Name: City
- Project Name: ELEC
- RTU Name: MULTCOM
- Record Index: 1

An "Exit" button is located to the right of the form. Below the form is a table with the following columns: Index, Board/Device, H/W Point, Description, S/W Type, and S/W Point. The table contains 16 rows of data.

Index	Board/Device	H/W Point	Description	S/W Type	S/W Point
1	DI-M	1	R01 Valve 1 Open	Form A DI	1
2	DI-M	2	R01 DI Point 2	Form A DI	2
3	DI-M	3	R01 DI Point 3	Form C DI	3
4	DI-M	4	R01 DI Point 3	Form C DI	3
5	DI-M	5	R01 BCD Point 1	BCD	1
6	DI-M	6	R01 BCD Point 1	BCD	1
7	DI-M	7	R01 BCD Point 1	BCD	1
8	DI-M	8	R01 BCD Point 1	BCD	1
9	DI-M	9	R01 ACC Point 1	Form A ACC	1
10	DI-M	10	R01 ACC Point 2	Form A ACC	2
11	DI-M	11	R01 ACC Point 3	Form C ACC	3
12	DI-M	12	R01 ACC Point 3	Form C ACC	3
13	DI-M	13	R01 DI Point 4	Form A DI	4
14	DI-M	14	R01 DI Point 5	Form A DI	5
15	DI-M	15	R01 DI Point 6	Form A DI	6
16	DI-M	16	R01 DI Point 7	Form A DI	7

This wire list sample is for Digital Inputs. At the top, information about the customer, project, and RTU are displayed. The Record Index tells the user which line the person is on. All the fields are read-only.

Index – Used internally for relational database operations

Board/Device – Board is DI (Digital Input Board) and M (Main Device)

other options are: DO (Digital Output Board)

- AI (Analog Input Board)
- HSA (High Speed Accumulator Board)
- 1 (First Peripheral Device)
- 2 (Second Peripheral Device)

H/W Point – Number at the termination block

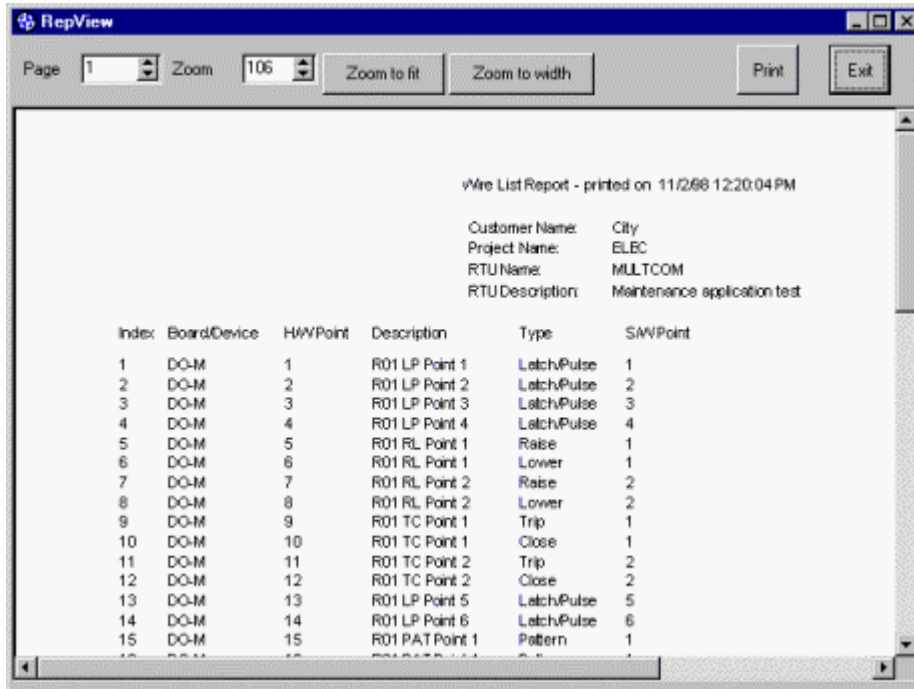
Description – Description for the use of the point

S/W Type – Software type (i.e. Form A DI, Form C DI, Form A ACC, Form C ACC, BCD)

S/W Point – Software point which is used to count the number of DI's, ACC's and BCD's

Under File option, one can **Print Preview** or Print the file using the default printer.  
 “Exit” – Exits out of this screen

### 1.3.5 Print Preview Sample



“Page” Spin edit – allows one to go to any page

“Zoom” Spin edit – allows one to zoom in or zoom out

“Zoom to Fit” – Zooms such that the entire page can be viewed on the screen

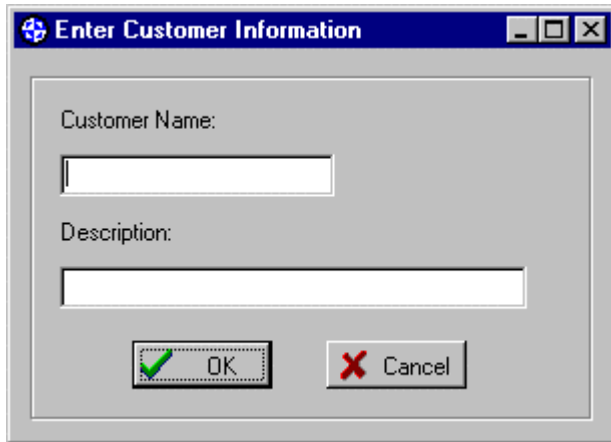
“Zoom to Width” – Zooms such that the entire width of page can be viewed on the screen

“Print” – Prints the file using the default printer

“Exit” – Exits out of this screen

The fields in the document are explained in **Wire List Sample**.

### 1.3.6 New Customer Dialog

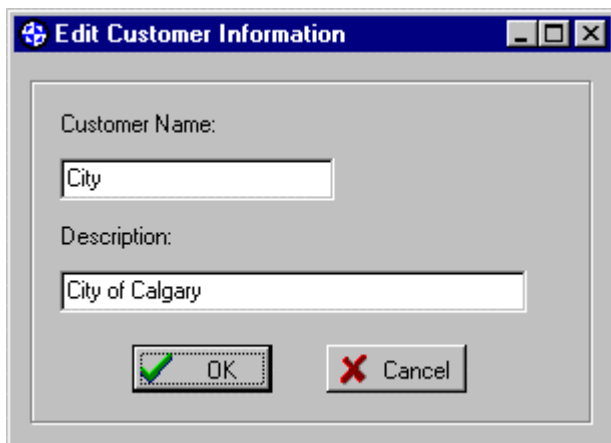


Enter the Customer Name and the Description. The maximum length for the Customer Name is 8 characters, and the maximum length for the Description is 80 characters.

Select “OK” to accept the Customer Name and Description entered.

Select “Cancel” to cancel this operation.

### 1.3.7 Edit Customer Dialog

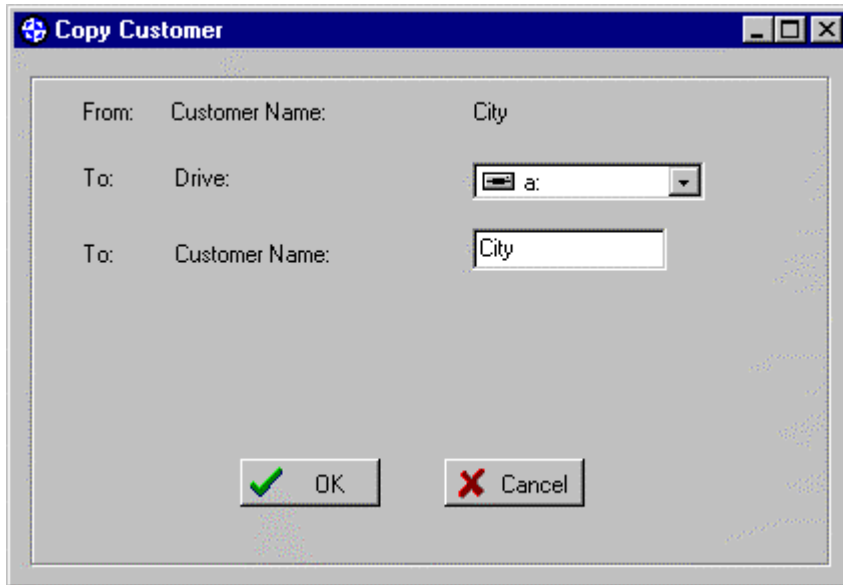


Modify the Customer Name and/or the Description. The maximum length for the Customer Name is 8 characters, and the maximum length for the Description is 80 characters.

Select “OK” to accept the Customer Name and Description entered.

Select “Cancel” to cancel this operation and revert to the original Customer Name and Description.

### 1.3.8 Copy Customer Dialog



The two methods of selecting the drive that will be copied to are:

- Use the mouse to click on the selection box, a list will appear, choose the drive to be copied to.
- Use the arrow keys to select the drive to be used.

Note: If a different drive is selected, then the Customer Name will be the same as the source Customer Name. If the same drive is selected, then the Customer Name must be changed. All projects and RTU configurations will be copied from the source Customer configuration to the destination Customer configuration.

Select "OK" to continue with the copy operation.

Select "Cancel" to cancel the copy operation.

### 1.3.9 Delete Customer Dialog

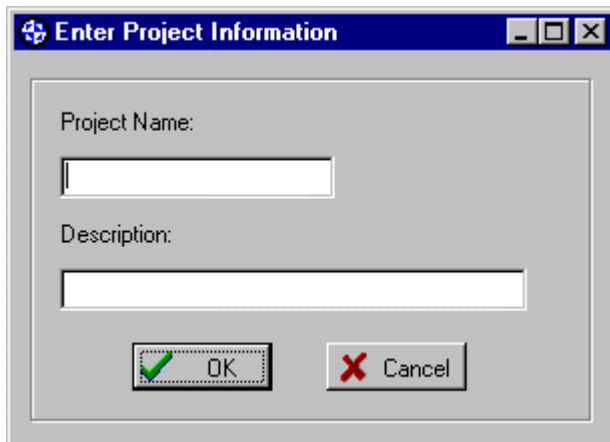


A huge warning is displayed, because there is no way to recover the data once the decision is made to delete the Customer configuration. All project and RTU configurations associated with the Customer configuration will be deleted.

Select “OK” to continue with the delete operation.

Select “Cancel” to cancel the delete operation.

### 1.3.10 New Project Dialog

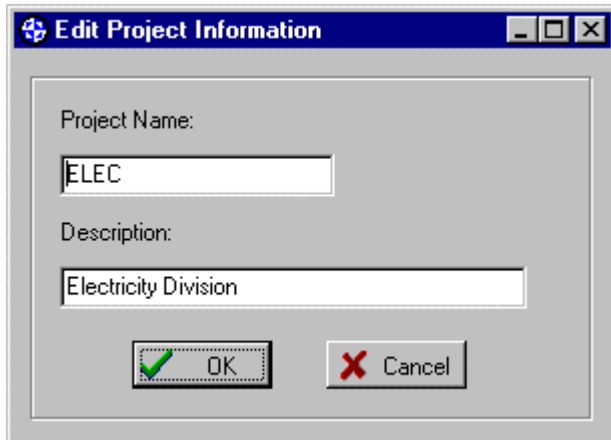


Enter the Project Name and the Description. The maximum length for the Project Name is 8 characters, and the maximum length for the Description is 80 characters.

Select “OK” to accept the Project Name and Description entered.

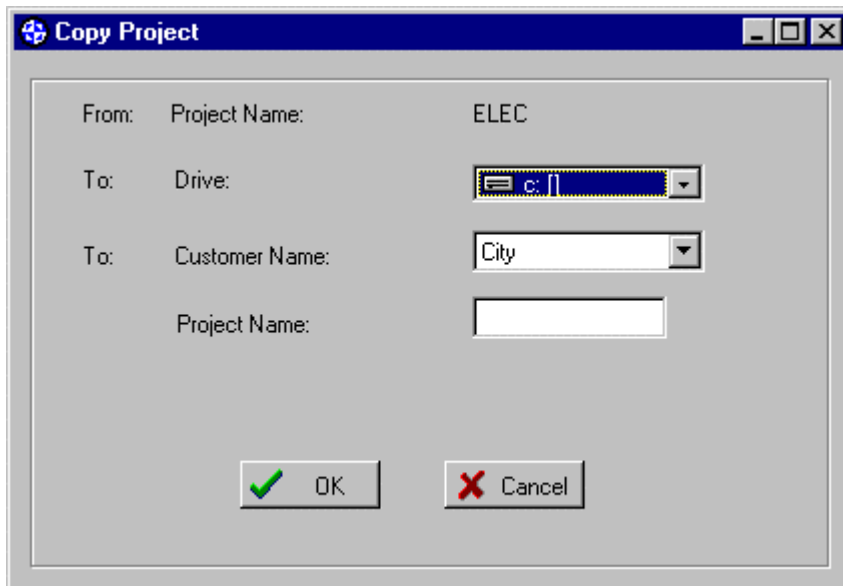
Select “Cancel” to cancel this operation.

### 1.3.11 Edit Project Dialog



Modify the Project Name and/or the Description. The maximum length for the Project Name is 8 characters, and the maximum length for the Description is 80 characters. Select "OK" to accept the Project Name and Description entered. Select "Cancel" to cancel this operation and revert to the original Project Name and Description.

### 1.3.12 Copy Project Dialog



The two methods of selecting the drive that will be copied to are:

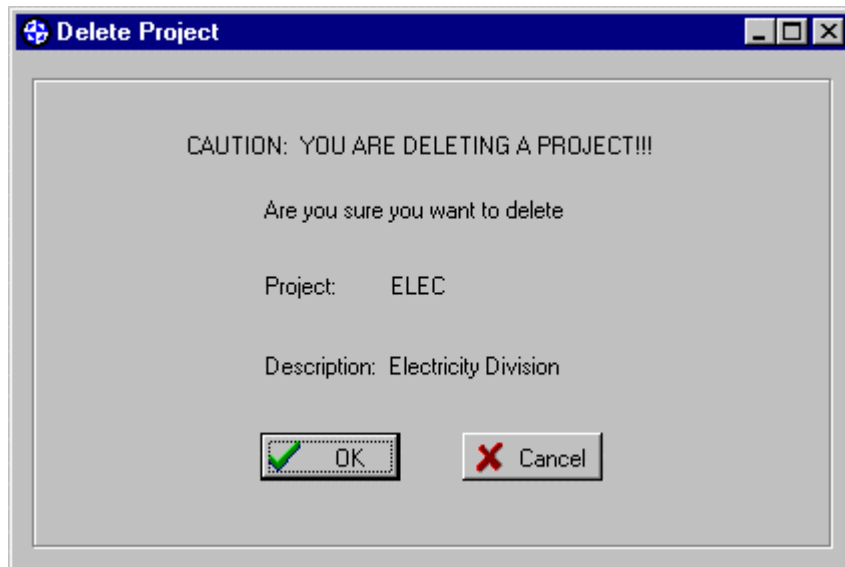
- Use the mouse to click on the selection box, a list will appear, choose the drive to be copied to.
- Use the arrow keys to select the drive to be used.

Note: If a different drive is selected, then the Project Name will be the same as the source Project Name. If the same drive is selected, then the Project Name must be changed. All RTU configurations will be copied from the source Project configuration to the destination Project configuration.

Select “OK” to continue with the copy operation.

Select “Cancel” to cancel the copy operation.

### 1.3.13 Delete Project Dialog

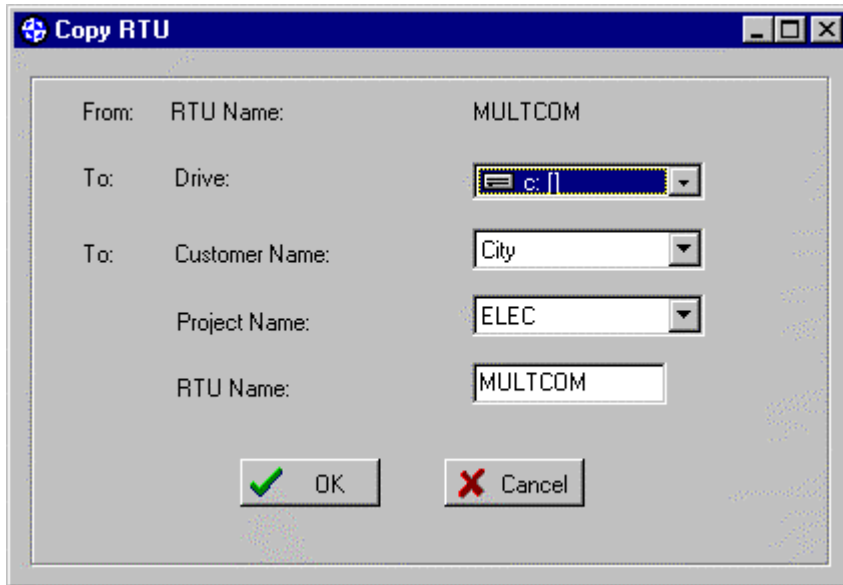


A huge warning is displayed, because there is no way to recover the data once the decision is made to delete the Project configuration. All RTU configurations associated with the Project configuration will be deleted.

Select “OK” to continue with the delete operation.

Select “Cancel” to cancel the delete operation.

### 1.3.14 Copy RTU Dialog



The two methods of selecting the drive that will be copied to are:

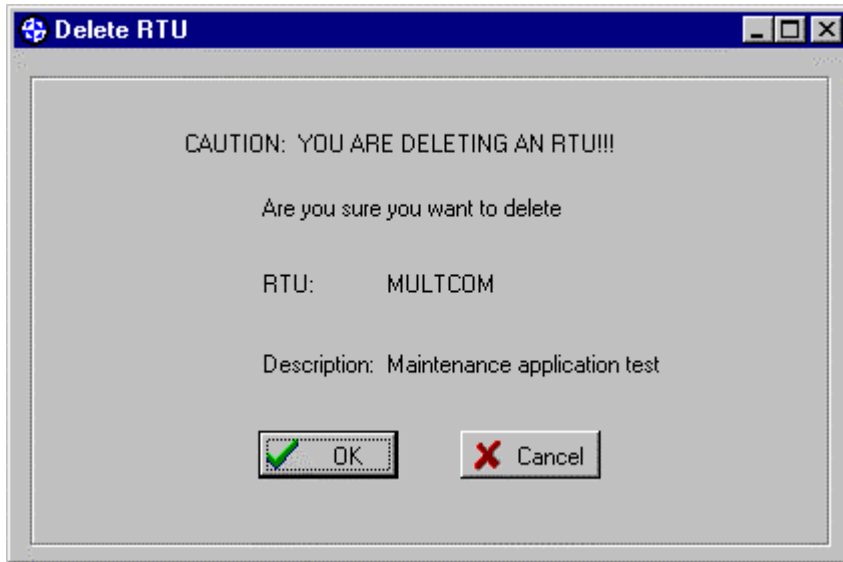
- Use the mouse to click on the selection box, a list will appear, choose the drive to be copied to.
- Use the arrow keys to select the drive to be used.

Note: If a different drive is selected, then the RTU Name will be the same as the source RTU Name. If the same drive is selected, then the RTU Name must be changed. All the RTU application configurations will be copied from the source RTU configuration to the destination RTU configuration.

Select "OK" to continue with the copy operation.

Select "Cancel" to cancel the copy operation.

### 1.3.15 Delete RTU Dialog



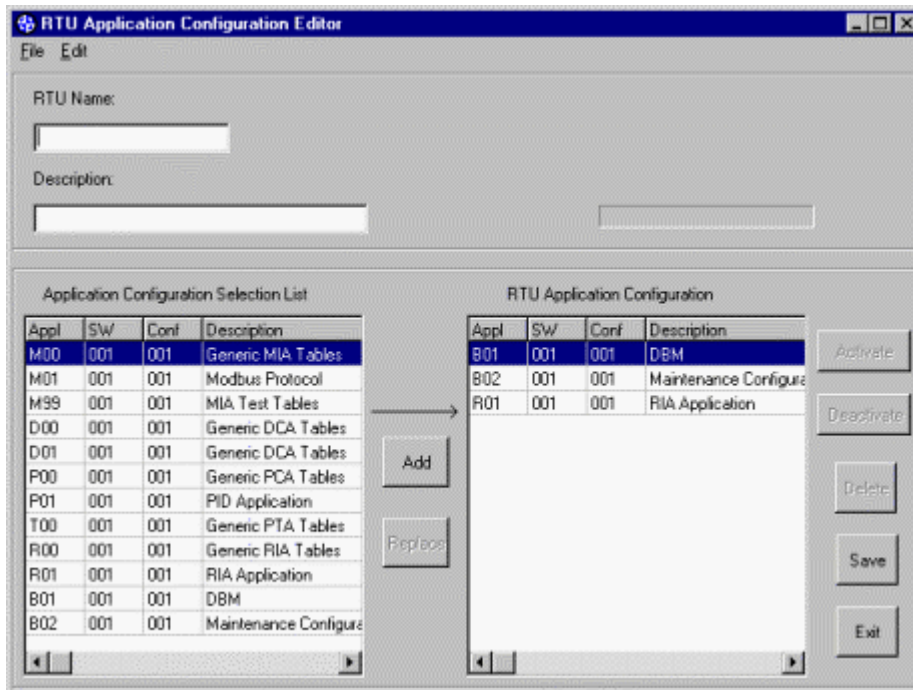
A huge warning is displayed, because there is no way to recover the data once the decision is made to delete the RTU configuration. All the RTU application configurations associated with the RTU configuration will be deleted.

Select "OK" to continue with the delete operation.

Select "Cancel" to cancel the delete operation.

## 1.4 RTU Application Configuration Editor Screen

### 1.4.1.1 New RTU Screen



Enter the RTU Name and the Description. The maximum length for the RTU Name is 8 characters, and the maximum length for the Description is 80 characters.

On the left side of the screen is the list of available applications that this RTU can have. On the right side of the screen is the applications selected for the RTU configuration. The “Add” button is enabled when the right side of the screen does not have that particular application in the RTU application configuration. The “Replace” button is enabled when the right side of the screen does have a version of that particular application in the RTU application configuration. The headings are:

Appl – Application

Mxx – MIA (or Master Interface Application)

Dxx – DCA (or Data Conversion Application)

Pxx – PCA (or Process Control Application)

Txx – PTA (or Protection Application)

Rxx – RIA (or Remote Interface Application)

xx- Application number

SW – Software version number

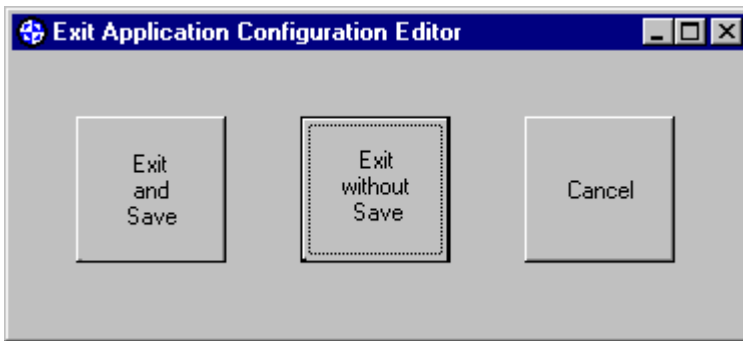
Conf – Configuration version number

Description – Description of the application

The buttons on the right side of the screen are for operations on the RTU Application Configuration. The “Activate” button allows one to activate an application. The “Act” field is accessed by scrolling to the right within the RTU Application Configuration area. “T” indicates true (that the application is activated) and “F” means false.

“Deactivate” will mean that the application is still part of the RTU Application Configuration, but will not be running in the RTU. “Delete” takes an application out of the RTU Application Configuration. “Save” saves the RTU Application Configuration. The progress bar at the top right shows when the save is done. “Exit” exits the screen, back to the **Main Screen**. If there were any changes made then **Exit Dialog** will appear.

#### 1.4.1.2 Exit Dialog Sample



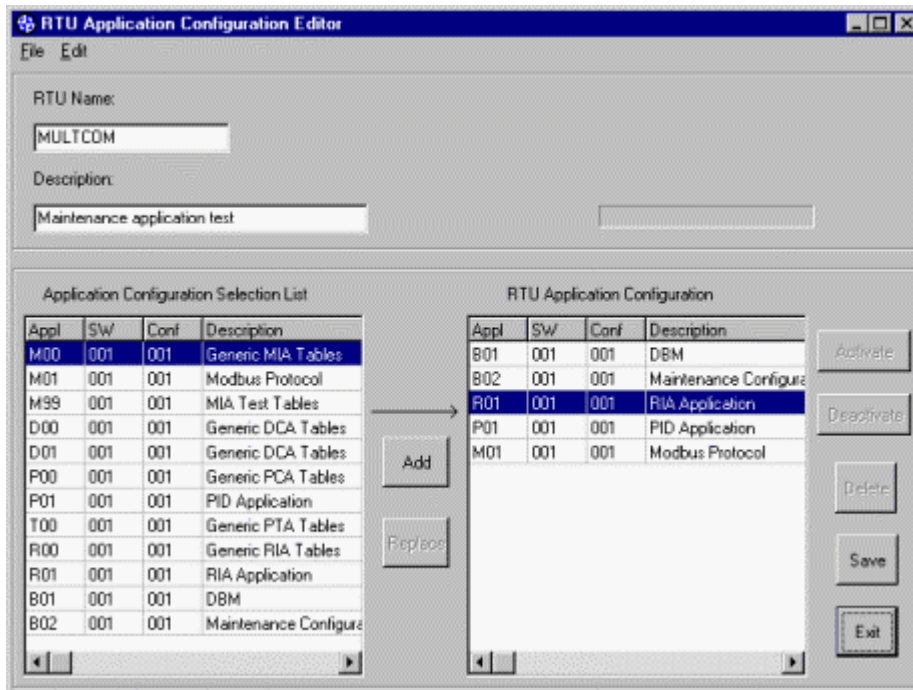
The Exit Dialog appears when the user is exiting a screen in which the user has modified a piece of data / configuration.

“Exit and Save” – to save the changes that have been made and exit the screen.

“Exit without Save” – to exit the screen without saving the changes.

“Cancel” – to remain on the screen to continue modification of the configuration.

### 1.4.1.3 Edit RTU Screen

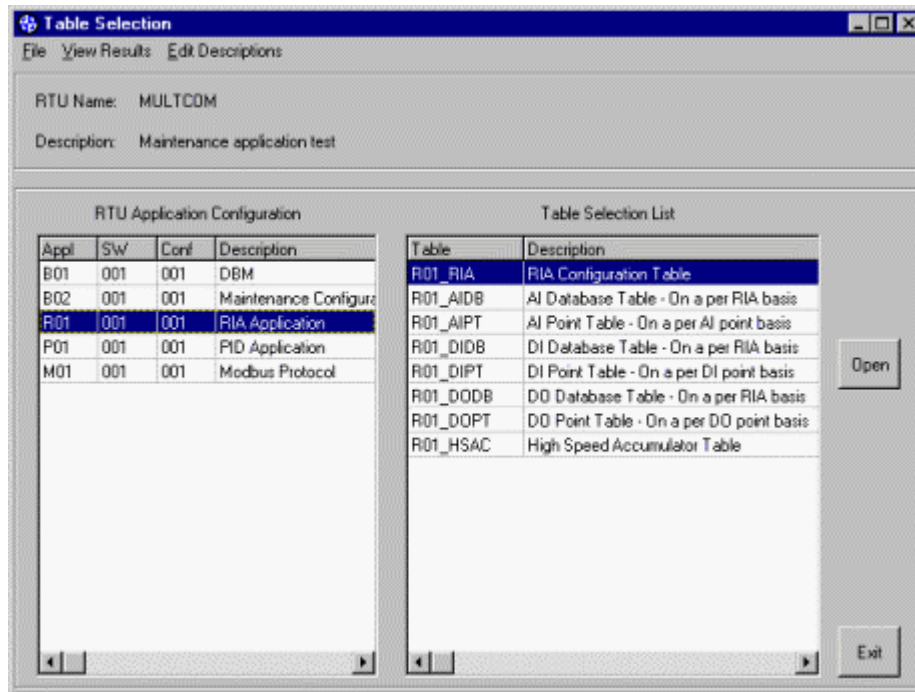


The Edit RTU Application Configuration Screen shares all the features of the [New RTU Screen](#). The main difference is that upon entering this screen, the RTU Name, Description, and RTU Application Configuration Items are filled in.

See [New RTU Screen](#).

## 1.5 Table Selection Screen

### 1.5.1.1 Table Selection Screen



The Table Selection screen allows one to select the application (on the left side of the screen) as well as the table (on the right side of the screen). When the user switches applications, the Table Selection List will be updated accordingly. Note: When switching away from the “R01” application, DynaConfig does a **Pre-compilation** so that the cross-reference choices are correct.

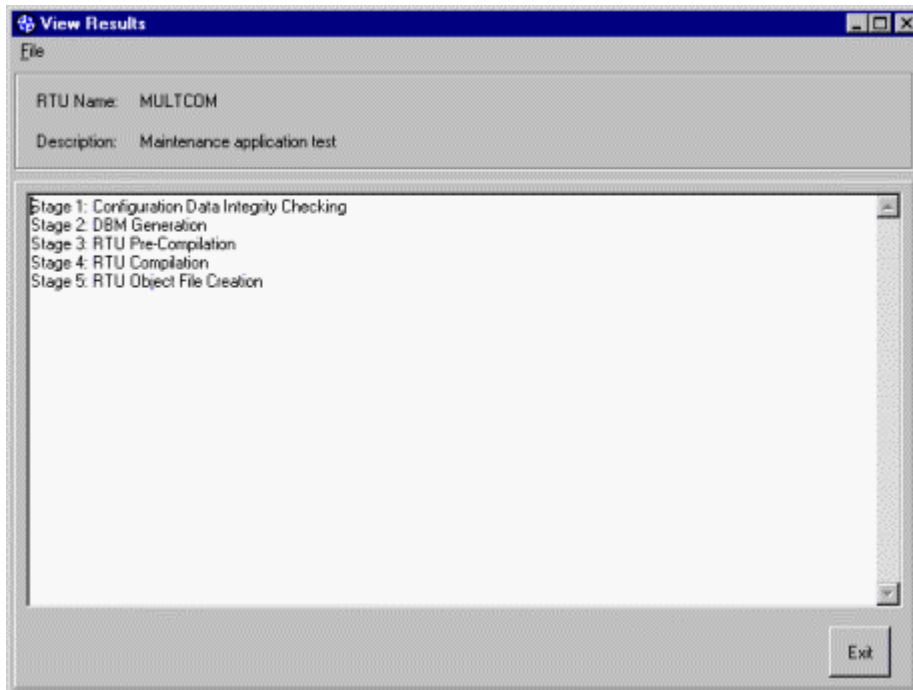
“Open” allows one to go to the **Configuration Table Editor** to edit fields within a table. Under File option, one can **Open the Configuration Table Editor** where one can edit fields within a table.

“View Results” allows one to **view the results** of the last compilation in order to correct one’s mistakes.

“Edit Description” takes one to the **Description Editor Selection Screen** where one can select a data type and then edit I/O descriptions.

“Exit” allows one to close the screen, and go back to the previous screen.

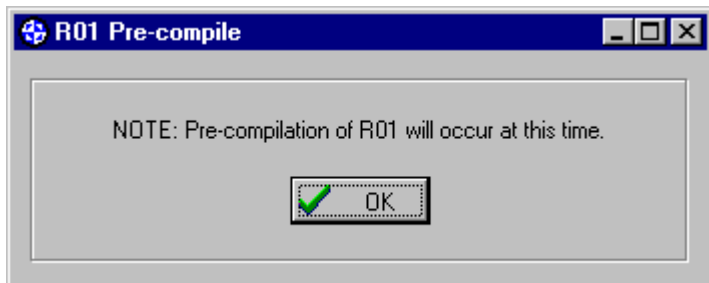
### 1.5.1.2 View Results



The View Results Screen displays the results of the last compilation performed. The example above shows a clean compilation. Should there be any errors encountered, one can use the View Results screen to correct errors in configuration.

“Exit” allows one to close the screen, and go back to the previous screen.

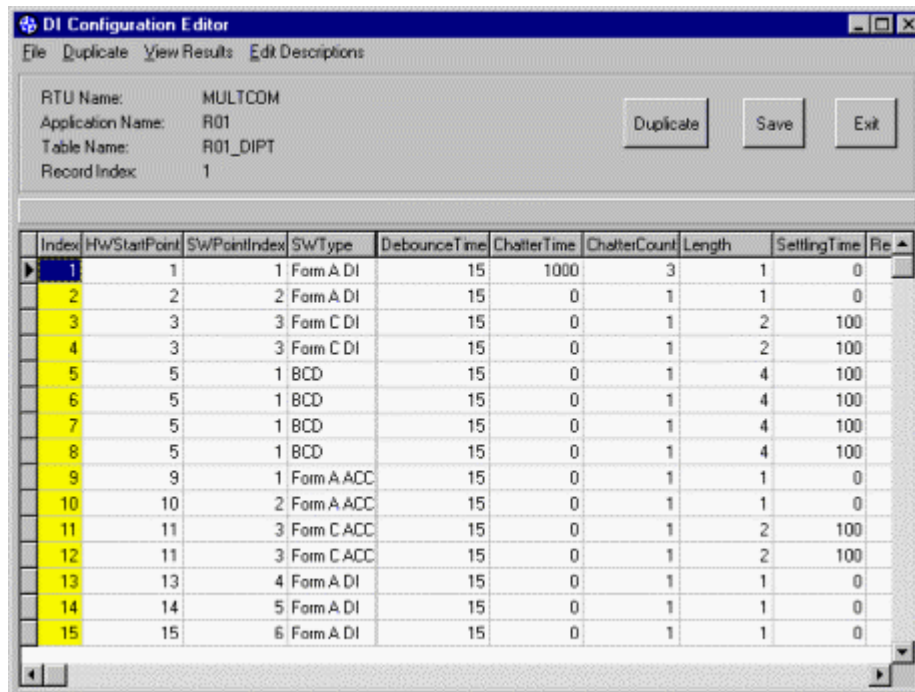
### 1.5.1.3 RTU Pre-Compile



This is just a note to the user that pre-compilation of R01 will take place as soon as they click on the “OK” button. R01 is the Remote Interface Application Configuration, that contains the information about the number and data types of each type of I/O. For example, R01 could be configured to have 5 Form A DIs, 5 Form C DIs and 1 Form A Accumulator, 16 Analog Inputs, 6 Latch/Pulse outputs, 5 Raise/Lower outputs and 3 High Speed Accumulators. When configuration of the MIAs (Master Interface Application) occur, the choices available need to reflect the configuration of R01. This is accomplished through the RTU pre-compilation.

### 1.5.1.4 Configuration Table Editor

#### 1.5.1.4.1 Configuration Table Editor Sample



The screenshot shows the 'DI Configuration Editor' window. At the top, there is a menu bar with 'File', 'Duplicate', 'View Results', and 'Edit Descriptions'. Below the menu bar, there are fields for 'RTU Name: MULTCOM', 'Application Name: R01', 'Table Name: R01\_DIPT', and 'Record Index: 1'. To the right of these fields are three buttons: 'Duplicate', 'Save', and 'Exit'. Below the fields and buttons is a table with the following columns: Index, HwStartPoint, SwPointIndex, SWType, DebounceTime, ChatterTime, ChatterCount, Length, SettlingTime, and File. The table contains 15 rows of data, with the first row selected (highlighted in blue) and the remaining rows highlighted in yellow.

Index	HwStartPoint	SwPointIndex	SWType	DebounceTime	ChatterTime	ChatterCount	Length	SettlingTime	File
1	1	1	Form A DI	15	1000	3	1	0	
2	2	2	Form A DI	15	0	1	1	0	
3	3	3	Form C DI	15	0	1	2	100	
4	3	3	Form C DI	15	0	1	2	100	
5	5	1	BCD	15	0	1	4	100	
6	5	1	BCD	15	0	1	4	100	
7	5	1	BCD	15	0	1	4	100	
8	5	1	BCD	15	0	1	4	100	
9	9	1	Form A ACC	15	0	1	1	0	
10	10	2	Form A ACC	15	0	1	1	0	
11	11	3	Form C ACC	15	0	1	2	100	
12	11	3	Form C ACC	15	0	1	2	100	
13	13	4	Form A DI	15	0	1	1	0	
14	14	5	Form A DI	15	0	1	1	0	
15	15	6	Form A DI	15	0	1	1	0	

The Configuration Table Editor screen allows one to edit fields within a table or add rows to a table. The status bar that appears below the header, but above the data editing area, shows information such as “Read Only Field”, “Read Only Table”, “Valid Range is xxxx to yyyy”, or “Choose from Picklist”. The fields and tables are application specific. See DynaConfig Applications for information specific to an application.

Under File option, one can **Print Preview** or Print the file using the default printer.

“Save” allows one to save the configuration.

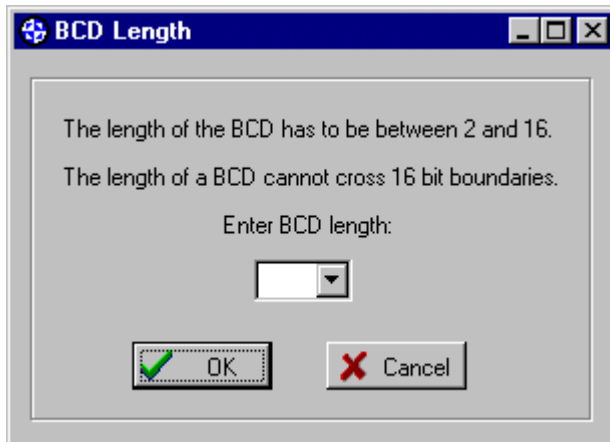
“Duplicate” allows one to copy data from the current row to the next row. (Only on certain Configuration Editors.)

“View Results” allows one to **view the results** of the last compilation in order to correct one’s mistakes.

“Edit Description” takes one to the **Description Editor Selection Screen** where one can select a data type and then edit I/O descriptions. (Only on certain Configuration Editors.)

“Exit” allows one to close the screen, and go back to the previous screen. If changes were made, and a “Save” not performed, then the **Exit Dialog** will appear.

#### 1.5.1.4.2 BCD Length Dialog

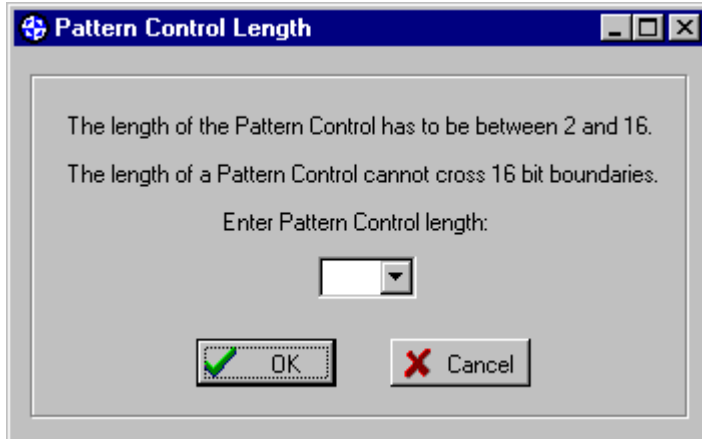


When selecting the **SWType** of BCD, the above dialog will appear. Enter the number of Digital Inputs that will be used for the BCD value. The range for the length is automatically calculated, such that one cannot cross 16 point boundaries.

Select "OK" to accept the BCD length entered.

Select "Cancel" to cancel this operation.

#### 1.5.1.4.3 Pattern Control Length Dialog



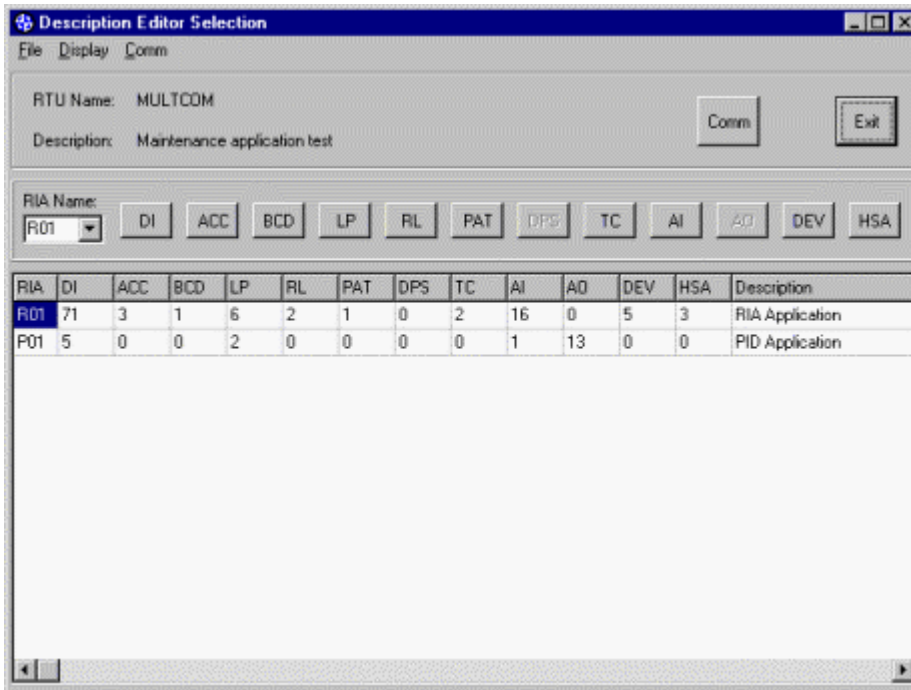
When selecting the **SWType** of Pattern Control, the above dialog will appear. Enter the number of Digital Outputs that will be used for Pattern Control. The range for the length is automatically calculated, such that one cannot cross 16 point boundaries.

Select "OK" to accept the Pattern Control length entered.

Select "Cancel" to cancel this operation.

### 1.5.1.5 Edit Descriptions

#### 1.5.1.5.1 Description Editor Selection Screen



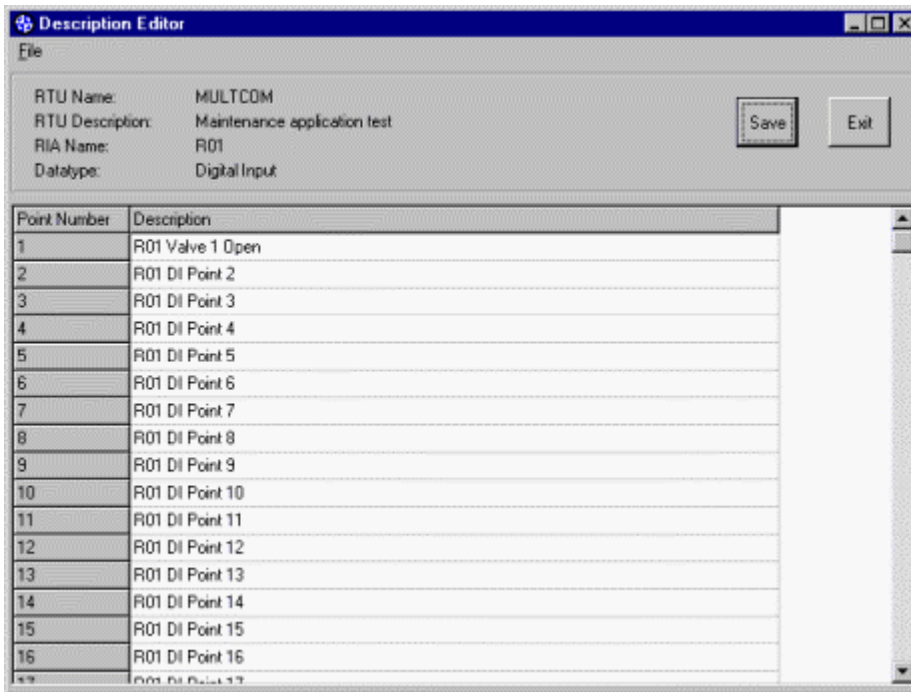
The Description Editor Selection screen allows one to select the application and data type for which one can then edit the descriptions of the points. Only buttons whose data types have points in them are enabled. Clicking on one of those buttons will bring up a screen like [Description Editor Sample](#).

Note: If the number of I/O has changed for the R01 Application, then a [PreCompile](#) is necessary before editing the descriptions. To do this, simply switch to another application on the [Table Selection Screen](#).

“Comm” is separated out, because it does not belong to any RIA applications.

“Exit” allows one to close the screen, and go back to the previous screen.

## 1.5.1.5.2 Description Editor Sample



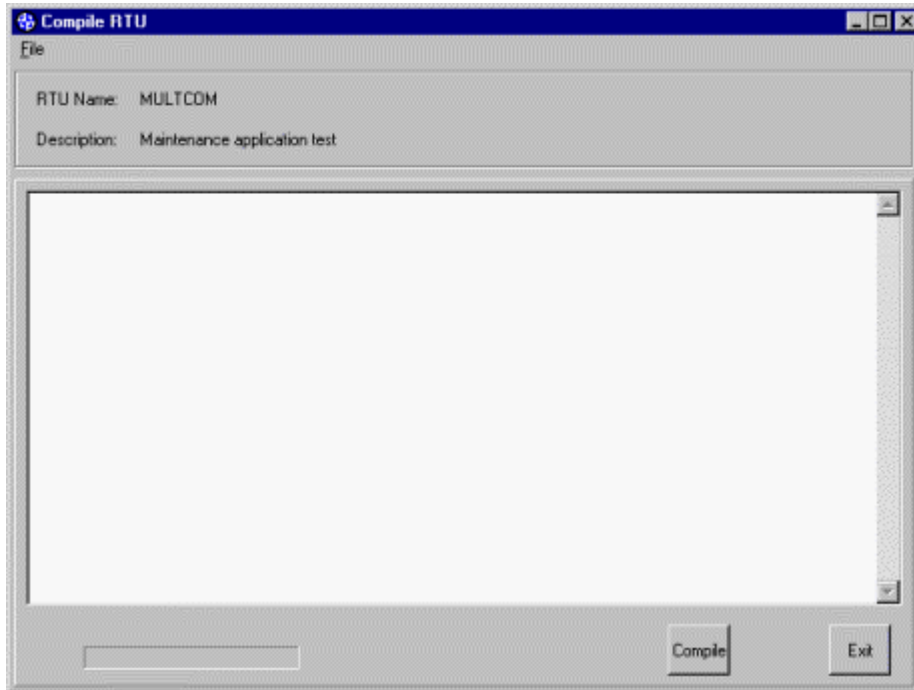
The Description Editor screen allows one to edit the descriptions of each of the points. DynaConfig generates default generic descriptions (as all the points after point 1 show). Generally, the user will use descriptions that have some meaning at site, such as point 1 above, indicates that it represents “Valve 1 Open”.

“Save” allows one to save the configuration.

“Exit” allows one to close the screen, and go back to the previous screen. If changes were made, and a “Save” not performed, then the **Exit Dialog** will appear.

## **1.6 Compile Screen**

### **1.6.1.1 Compile Screen**



The Compile screen allows one to see what the compiler is doing and determine if there are any errors in configuration.

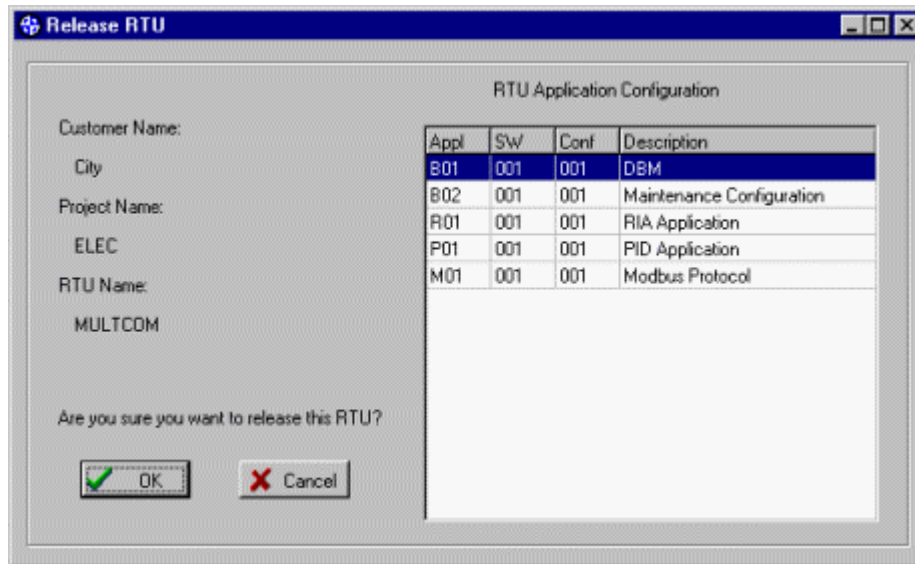
“Compile” allows the user to kick off the compilation.

“Exit” allows one to close the screen, and go back to the previous screen.

Note: **View Results** shows the same information that this Compile screen shows.

## 1.7 Release Screen

### 1.7.1.1 Release Screen



The Release screen shows the user the applications configured for the selected RTU configuration. The user should examine the configuration carefully, and only after thorough testing and verification release an RTU version. A released version cannot be modified. There is no way to undo the “release” action. Any changes required would have to be copied to a new version, modified and then compiled and downloaded.



## **2 DynaConfig Applications**

### **2.1 List of Applications**

#### **Base Applications**

- B01 Database Manager
- B02 Maintenance Application
- R01 I/O Remote Interface Application

#### **Optional Applications**

### **2.2 B01 DBM Application**

#### **2.2.1 B01 DBM (Database Manager) Application**

The Database Manager Application is one of the three Base Applications that is essential to the RTU's functionality. The Database Manager Application provides a common interface for all applications, such as MIA, RIA, DCA, PCA, PTA, and Maintenance.

There are no user configurable tables in this application.

### **2.3 B02 Maintenance Application**

#### **2.3.1 B02 Maintenance Application**

The Maintenance Application is one of the three Base Applications that is essential to the RTU's functionality. The Maintenance Application performs housekeeping functions. In addition, it is the application that DynaView (Maintenance and Diagnostic Utility) communicates to. DynaView allows the user to monitor and troubleshoot the RTU.

#### **List of Tables**

- B02\_CFG Maintenance Task Control Table
- B02\_CXRF Communication Configuration Cross Reference Table
- B02\_ASYN Async Communication Port Configuration
- B02\_SOEH SOE Header
- B02\_SOEB SOE Buffer
- B02\_ERRH Error Log Header
- B02\_ERRB Error Log Buffer

## B02\_REST System Restart Count Table

### 2.3.2 B02\_CFG

#### 2.3.2.1 B02\_CFG

##### **Maintenance Task Control Table**

This table contains fields required for the housekeeping functions to run. Some fields are Read Only, and some fields are configurable.

##### **List of Fields**

CustomerName	Read Only
ProjectName	Read Only
RTUName	Read Only
RTUAddress	Valid Range from 0 to 255
LocalBaudRate	Choose from picklist
SOEReset	Choose from picklist
SOETimeReadjust	Choose from picklist
RTUTempRange	Valid Range from -32768 to 32767
RTUTempDivisor	Valid Range from -32768 to 32767
RTUTempOffset	Valid Range from -32768 to 32767
TxRxBufferSize	Valid Range from 0 to 1024

#### 2.3.2.2 CustomerName

Table:	B02_CFG
Description:	The Customer Name from the <b>Main Screen</b> resides in this field.
Type of field:	Read Only Field.

#### 2.3.2.3 ProjectName

Table:	B02_CFG
Description:	The Project Name from the <b>Main Screen</b> resides in this field.
Type of field:	Read Only Field.

#### 2.3.2.4 RTUName

Table:	B02_CFG
Description:	The RTU Name from the <b>Main Screen</b> resides in this field.
Type of field:	Read Only Field.

### 2.3.2.5 RTUAddress

Table:	B02_CFG
Description:	The RTU address for remote maintenance access through the maintenance port.
Type of field:	Valid Range from 0 to 255.
Default:	1

### 2.3.2.6 LocalBaudRate

Table:	B02_CFG
Description:	The Baud Rate for the maintenance port when the Maintenance/Application Jumper is in the Maintenance position.
Type of field:	Choose from picklist. 9600 300 600 1200 1800 2400 4800 14400 19200 28800 38400
Default:	9600

### 2.3.2.7 SOEReset

Table:	B02_CFG
Description:	Flag indicating whether the SOE Buffer should be reset at startup.
Type of field:	Choose from picklist. Preserve SOE Buffer – SOE Buffer preserved at startup Reset SOE Buffer – Reset SOE Buffer at startup
Default:	Preserve SOE Buffer

### 2.3.2.8 SOETimeReadjust

Table:	B02_CFG
Description:	Flag indicating whether the time in the SOE should be readjusted with the system time adjustment.
Type of field:	Choose from picklist.

Readjust Disable – Time in SOE is NOT readjusted with system time adjustment

Readjust Enable – Time in SOE is readjusted with system time adjustment

Default: Readjust Disable

### 2.3.2.9 RTUTempRange

Table: [B02\\_CFG](#)  
 Description: Temperature Range.  
 Type of field: Valid Range from –32768 to 32767.  
 Default: 1

### 2.3.2.10 RTUTempDivisor

Table: [B02\\_CFG](#)  
 Description: Temperature Divisor.  
 Type of field: Valid Range from –32768 to 32767.  
 Default: 1

### 2.3.2.11 RTUTempOffset

Table: [B02\\_CFG](#)  
 Description: Temperature Offset.  
 Type of field: Valid Range from –32768 to 32767.  
 Default: 0

### 2.3.2.12 TxRxBufferSize

Table: [B02\\_CFG](#)  
 Description: Transmit / Receive Buffer Size.  
 Type of field: Valid Range from 0 to 1024.  
 Default: 256

## 2.3.3 B02\_CXRF

### 2.3.3.1 B02 CXRF

#### **Communication Configuration Cross Reference Table**

This table cross-references the hardware ports to the application/record number. All the fields in this table are configurable.

**List of Fields**

COM1:AppName	Choose from picklist
CommRecNum1	Choose from picklist
COM2:AppName	Choose from picklist
CommRecNum2	Choose from picklist
COM3:AppName	Choose from picklist
CommRecNum3	Choose from picklist
COM4:AppName	Choose from picklist
CommRecNum4	Choose from picklist
COM5:AppName	Choose from picklist
CommRecNum5	Choose from picklist

**2.3.3.2 COM1:AppName**

Table:	B02_CXRF
Description:	Application name associated with the first communications port.
Type of field:	Choose from picklist. This picklist is dynamic in nature. First there has to be an application such as MIA, DCA, PCA, PTA, or RIA configured. The application should have a table with the extension “_COMM” associated with it. Once this is configured, the options for the application will appear.
Default:	Spare

**2.3.3.3 CommRecNum1**

Table:	B02_CXRF
Description:	Record number of application selected in COM1:AppName .
Type of field:	Choose from picklist. This picklist is dynamic in nature. First there has to be an application such as MIA, DCA, PCA, PTA, or RIA configured. The application should have a table with the extension “_COMM” associated with it. The number of options available corresponds to the number of records configured in the “_COMM” table. Note: The picklist is only available after an application has been selected.
Default:	1

**2.3.3.4 COM2:AppName**

Table:	B02_CXRF
--------	----------

Description:	Application name associated with the second communications port.
Type of field:	Choose from picklist. This picklist is dynamic in nature. First there has to be an application such as MIA, DCA, PCA, PTA, or RIA configured. The application should have a table with the extension “_COMM” associated with it. Once this is configured, the options for the application will appear.
Default:	Spare

### 2.3.3.5 CommRecNum2

Table:	B02_CXRF
Description:	Record number of application selected in COM2:AppName .
Type of field:	Choose from picklist. This picklist is dynamic in nature. First there has to be an application such as MIA, DCA, PCA, PTA, or RIA configured. The application should have a table with the extension “_COMM” associated with it. The number of options available corresponds to the number of records configured in the “_COMM” table. Note: The picklist is only available after an application has been selected.
Default:	1

### 2.3.3.6 COM3:AppName

Table:	B02_CXRF
Description:	Application name associated with the third communications port.
Type of field:	Choose from picklist. This picklist is dynamic in nature. First there has to be an application such as MIA, DCA, PCA, PTA, or RIA configured. The application should have a table with the extension “_COMM” associated with it. Once this is configured, the options for the application will appear.
Default:	Spare

### 2.3.3.7 CommRecNum3

Table:	B02_CXRF
Description:	Record number of application selected in COM3:AppName .
Type of field:	Choose from picklist. This picklist is dynamic in nature. First there has to be an

application such as MIA, DCA, PCA, PTA, or RIA configured. The application should have a table with the extension “\_COMM” associated with it. The number of options available corresponds to the number of records configured in the “\_COMM” table.

Note: The picklist is only available after an application has been selected.

Default: 1

### 2.3.3.8 COM4:ApplName

Table: B02\_CXRF

Description: Application name associated with the fourth communications port.

Type of field: Choose from picklist.

This picklist is dynamic in nature. First there has to be an application such as MIA, DCA, PCA, PTA, or RIA configured. The application should have a table with the extension “\_COMM” associated with it. Once this is configured, the options for the application will appear.

Default: Spare

### 2.3.3.9 CommRecNum4

Table: B02\_CXRF

Description: Record number of application selected in COM4:ApplName .

Type of field: Choose from picklist.

This picklist is dynamic in nature. First there has to be an application such as MIA, DCA, PCA, PTA, or RIA configured. The application should have a table with the extension “\_COMM” associated with it. The number of options available corresponds to the number of records configured in the “\_COMM” table.

Note: The picklist is only available after an application has been selected.

Default: 1

### 2.3.3.10 COM5:ApplName

Table: B02\_CXRF

Description: Application name associated with the fifth communications port.

Type of field: Choose from picklist.

This picklist is dynamic in nature. First there has to be an

application such as MIA, DCA, PCA, PTA, or RIA configured. The application should have a table with the extension “\_COMM” associated with it. Once this is configured, the options for the application will appear.

Default: Spare

### 2.3.3.11 CommRecNum5

Table: B02\_CXRF

Description: Record number of application selected in COM5:ApplName .

Type of field: Choose from picklist.

This picklist is dynamic in nature. First there has to be an application such as MIA, DCA, PCA, PTA, or RIA configured. The application should have a table with the extension “\_COMM” associated with it. The number of options available corresponds to the number of records configured in the “\_COMM” table.

Note: The picklist is only available after an application has been selected.

Default: 1

## 2.3.4 B02\_ASYN

### 2.3.4.1 B02 ASYN

#### Async Communication Port Configuration

This table is used as the configuration for the maintenance port, when the Maintenance/Application Jumper is in the Maintenance position. Some of the fields in this table are configurable, and some are Read Only.

#### List of Fields

BaudRate	Choose from picklist
ConstDcd	Choose from picklist
DcdWait	Valid Range from 0 to 65535
RtsOn	Valid Range from 0 to 65535
RtsOff	Valid Range from 0 to 65535
CtsTime	Valid Range from 0 to 65535
DataBits	Read Only
StartBits	Read Only
StopBits	Read Only
Parity	Read Only
Break	Choose from picklist

FullHalfDup	Choose from picklist
XonXoff	Choose from picklist
CharTimeOut	Valid Range from 0 to 255
DcdReport	Choose from picklist
CtsReport	Choose from picklist
RTUSize	Valid Range from 0 to 65535
RxBufferSize	Valid Range from 0 to 2048

#### 2.3.4.2 BaudRate

Table:	B02_ASYN
Description:	The Baud Rate for the maintenance port when the Maintenance/Application Jumper is in the Application position and COM5:ApplName is set to Spare.
Type of field:	Choose from picklist. 9600 300 600 1200 1800 2400 4800 14400 19200 28800 38400
Default:	9600

#### 2.3.4.3 ConstDcd

Table:	B02_CXRF
Description:	Flag indicating whether the DCD should be constant or switching.
Type of field:	Choose from picklist. Switching Constant
Default:	Switching

#### 2.3.4.4 DcdWait

Table:	B02_CXRF
--------	----------

Description: Time to wait after detecting the DC to enabling the receiver.  
Type of field: Valid Range from 0 to 65535.  
Default: 8

#### 2.3.4.5 RtsOn

Table: [B02\\_CXRF](#)  
Description: Time to wait after asserting the RTS to transmitting the data.  
Type of field: Valid Range from 0 to 65535.  
Default: 8

#### 2.3.4.6 RtsOff

Table: [B02\\_CXRF](#)  
Description: Time to wait after transmitting the last character to dropping the RTS.  
Type of field: Valid Range from 0 to 65535.  
Default: 8

#### 2.3.4.7 CtsTime

Table: [B02\\_CXRF](#)  
Description: Time to wait for CTS before transmitting the data. This non-zero value takes precedent over the RtsOn time. 0 means disable.  
Type of field: Valid Range from 0 to 65535.  
Default: 0

#### 2.3.4.8 DataBits

Table: [B02\\_CXRF](#)  
Description: Number of data bits per byte.  
Type of field: Read Only Field.  
Default: 8

#### 2.3.4.9 StartBits

Table: [B02\\_CXRF](#)  
Description: Number of start bits.  
Type of field: Read Only Field.  
Default: 1

#### 2.3.4.10 StopBits

Table:	B02_CXRF
Description:	Number of stop bits.
Type of field:	Read Only Field.
Default:	1

#### 2.3.4.11 Parity

Table:	B02_CXRF
Description:	Parity bit.
Type of field:	Read Only Field.
Default:	None

#### 2.3.4.12 Break

Table:	B02_CXRF
Description:	Flag indicating whether the break should be Normal or Appended.
Type of field:	Choose from picklist. Normal Appended
Default:	Normal

#### 2.3.4.13 FullHalfDup

Table:	B02_CXRF
Description:	Flag indicating whether the communications is Full Duplex or Half Duplex.
Type of field:	Choose from picklist. Half Full
Default:	Half

#### 2.3.4.14 XonXoff

Table:	B02_CXRF
Description:	Flag indicating whether the communications has XonXoff enabled.
Type of field:	Choose from picklist. Disable Enable

Default: Disable

#### 2.3.4.15 CharTimeOut

Table: B02\_CXRF  
Description: Character to character time out.  
Type of field: Valid Range from 0 to 255.  
Default: 3

#### 2.3.4.16 DcdReport

Table: B02\_CXRF  
Description: Flag indicating how much reporting to do with respect to DCD.  
Type of field: Choose from picklist.  
No Reporting  
0 to 1 Reporting  
1 to 0 Reporting  
All Reporting  
Default: No Reporting

#### 2.3.4.17 CtsReport

Table: B02\_CXRF  
Description: Flag indicating how much reporting to do with respect to CTS.  
Type of field: Choose from picklist.  
No Reporting  
0 to 1 Reporting  
1 to 0 Reporting  
All Reporting  
Default: No Reporting

#### 2.3.4.18 RTUSize

Table: B02\_CXRF  
Description: Number of RTU addresses to be checked.  
Type of field: Valid Range from 0 to 65535.  
Default: 10

#### 2.3.4.19 RxBufferSize

Table: B02\_CXRF

Description:	Receive Buffer Size when the Maintenance/Application Jumper is in the Application position and the <b>COM5:ApplName</b> is set to Spare.
Type of field:	Valid Range from 0 to 2048.
Default:	512

### 2.3.5 B02\_SOEH

#### **2.3.5.1 B02 SOEH**

##### **SOE Header**

This table is used to reserve memory for the SOE Header in the Reserved Memory segment. All of the fields in this table are Read Only.

##### **List of Fields**

<b>StartRecord</b>	Read Only Field
<b>EndRecord</b>	Read Only Field

#### **2.3.5.2 StartRecord**

Table:	<b>B02_SOEH</b>
Description:	Starting record number. At run time, this data will be modified.
Type of field:	Read Only Field.
Default:	0

#### **2.3.5.3 EndRecord**

Table:	<b>B02_SOEH</b>
Description:	End record number. At run time, this data will be modified.
Type of field:	Read Only Field.
Default:	0

### 2.3.6 B02\_SOEB

#### **2.3.6.1 B02 SOEB**

##### **SOE Buffer**

This table is used to reserve memory for the SOE Buffer in the Reserved Memory segment. All of the fields in this table are Read Only. The number of records in this table determines the size of the SOE Buffer.

##### **List of Fields**

**SOERRecord**      Read Only Field

### 2.3.6.2 SOERRecord

Table:                **B02\_SOEB**  
 Description:        SOE record number. At run time, this data will be modified.  
 Type of field:      Read Only Field.  
 Default:             0

## 2.3.7 B02\_ERRH

### 2.3.7.1 B02 ERRH

#### Error Log Header

This table is used to reserve memory for the Error Header in the Reserved Memory segment. All of the fields in this table are Read Only.

#### List of Fields

**StartRecord**      Read Only Field  
**EndRecord**        Read Only Field

### 2.3.7.2 StartRecordErr

Table:                **B02\_ERRH**  
 Description:        Starting record number. At run time, this data will be modified.  
 Type of field:      Read Only Field.  
 Default:             0

### 2.3.7.3 EndRecordErr

Table:                **B02\_ERRH**  
 Description:        End record number. At run time, this data will be modified.  
 Type of field:      Read Only Field.  
 Default:             0

## 2.3.8 B02\_ERRB

### 2.3.8.1 B02 ERRB

#### Error Log Buffer

This table is used to reserve memory for the Error Buffer in the Reserved Memory segment. All of the fields in this table are Read Only. The number of records in this

table determines the size of the Error Buffer.

### **List of Fields**

**ErrorRecord**            Read Only Field

#### **2.3.8.2 ErrorRecord**

Table:                    **B02\_ERRB**  
 Description:            Error record number. At run time, this data will be modified.  
 Type of field:           Read Only Field.  
 Default:                 0

### **2.3.9 B02\_REST**

#### **2.3.9.1 B02 REST**

##### **System Restart Count Table**

This table is used to reserve memory for the Restart Counter in the Reserved Memory segment. All of the fields in this table are Read Only.

### **List of Fields**

**RestartCount**            Read Only Field

#### **2.3.9.2 RestartCount**

Table:                    **B02\_REST**  
 Description:            Restart counter. At run time, this data will be modified.  
 Type of field:           Read Only Field.  
 Default:                 0

## **2.4 R01 I/O Remote Interface Application**

### **2.4.1 R01 I/O Remote Interface Application**

The I/O Remote Interface Application is one of the three Base Applications that is essential to the RTU's functionality. The I/O Remote Interface Application performs the I/O driver functions for each of the data types.

### **List of Tables**

**R01\_RIA**    RIA Configuration Table  
**R01\_AIDB**   AI Database Table – On a per RIA basis

R01_AIPT	AI Point Table – On a per AI point basis
R01_DIDB	DI Database Table – On a per RIA basis
R01_DIPT	DI Point Table – On a per DI point basis
R01_DODB	DO Database Table – On a per RIA basis
R01_DOPT	DO Point Table – On a per DO point basis
R01_HSAC	High Speed Accumulator Table
R01_AODB	Analog Output Table

## 2.4.2 R01\_RIA

### 2.4.2.1 R01 RIA

#### **RIA Configuration Table**

This table contains the I/O configuration for the RTU. This table is populated correctly after the R01-PreCompile has taken place. As a result, this table has been designated as a Read Only Table.

#### **List of Fields**

NumDI	Read Only Table
NumACC	Read Only Table
NumBCD	Read Only Table
NumLP	Read Only Table
NumRL	Read Only Table
NumPAT	Read Only Table
NumDPS	Read Only Table
NumTC	Read Only Table
NumAI	Read Only Table
NumAO	Read Only Table
NumDEV	Read Only Table

### 2.4.2.2 NumDI

Table:	R01_RIA
Description:	Number of Digital Inputs.
Type of field:	Read Only Table.
Default:	16

### 2.4.2.3 NumACC

Table:	R01_RIA
Description:	Number of Accumulators.

Type of field: Read Only Table.  
Default: 0

#### 2.4.2.4 NumBCD

Table: R01\_RIA  
Description: Number of Binary Coded Decimals.  
Type of field: Read Only Table.  
Default: 0

#### 2.4.2.5 NumLP

Table: R01\_RIA  
Description: Number of Latch/Pulse Outputs.  
Type of field: Read Only Table.  
Default: 16

#### 2.4.2.6 NumRL

Table: R01\_RIA  
Description: Number of Raise/Lower Outputs.  
Type of field: Read Only Table.  
Default: 0

#### 2.4.2.7 NumPAT

Table: R01\_RIA  
Description: Number of Pattern Control Outputs.  
Type of field: Read Only Table.  
Default: 0

#### 2.4.2.8 NumDPS

Table: R01\_RIA  
Description: Number of Double Point Select Outputs.  
Type of field: Read Only Table.  
Default: 0

#### 2.4.2.9 NumTC

Table: R01\_RIA  
Description: Number of Trip/Close Outputs.

Type of field: Read Only Table.  
 Default: 0

#### 2.4.2.10 NumAI

Table: R01\_RIA  
 Description: Number of Analog Inputs.  
 Type of field: Read Only Table.  
 Default: 16

#### 2.4.2.11 NumAO

Table: R01\_RIA  
 Description: Number of Analog Outputs.  
 Type of field: Read Only Table.  
 Default: 0

#### 2.4.2.12 NumDEV

Table: R01\_RIA  
 Description: Number of Devices.  
 Type of field: Read Only Table.  
 Default: 3

### 2.4.3 R01\_AIDB

#### 2.4.3.1 R01 AIDB

##### AI Database Table

This table contains the Analog Input configuration that applies to all Analog Inputs.

##### List of Fields

TotalScanRate	Valid Range from 500 to 20000
RefBadDeadband	Valid Range from 100 to 1000
RefRptDeadband	Valid Range from 8 to 64
AIsmooth1	Valid Range from 1 to 100
AIsmooth2	Valid Range from 0 to 100
AIsmooth3	Valid Range from 0 to 100
NumOfACGroup	Valid Range from 0 to ((TotalAIBoards – 1) * 4 + 2)
PeriodRptDeadband	Valid Range from 35 to 276
PhaseRptDeadband	Valid Range from 6 to 46

**TotalAIBoards** Valid Range from 1 to (15 – NumAOBoards)

**2.4.3.2 TotalScanRate**

Table: **R01\_AIDB**  
 Description: The scan rate for each Analog Input point in milliseconds.  
 Type of field: Valid Range from 500 to 20000.  
 Default: 3000

**2.4.3.3 RefBadDeadband**

Table: **R01\_AIDB**  
 Description: The limit for determining if the analog reference is bad. If the reference is outside the deadband then the analog inputs are considered to be in “Bad Reference” mode.  
 Type of field: Valid Range from 100 to 1000.  
 Default: 500

**2.4.3.4 RefRptDeadband**

Table: **R01\_AIDB**  
 Description: The limit for determining when to report an analog reference drift.  
 Type of field: Valid Range from 8 to 64.  
 Default: 32

**2.4.3.5 AISmooth1**

Table: **R01\_AIDB**  
 Description: Analog smoothing factor 1.

$$V(N) = \frac{ASF1 * RV(N) + ASF2 * V(N-1) + ASF3 * V(N - 2)}{ASF1 + ASF2 + ASF3}$$

Where ASF – Analog smoothing factor  
 RV(N) – Raw Value at N time frame  
 V – Smoothed value

Type of field: Valid Range from 1 to 100.  
 Default: 1

#### 2.4.3.6 AISmooth2

Table:	R01_AIDB
Description:	Analog smoothing factor 2. See AISmooth1 for the formula.
Type of field:	Valid Range from 0 to 100.
Default:	0

#### 2.4.3.7 AISmooth3

Table:	R01_AIDB
Description:	Analog smoothing factor 3. See AISmooth1 for the formula.
Type of field:	Valid Range from 0 to 100.
Default:	0

#### 2.4.3.8 NumOfACGroup

Table:	R01_AIDB
Description:	Number of AC groups. These groups are counted in groups of 8.
Type of field:	Valid Range from 0 to $((\text{TotalAIBoards} - 1) * 4 + 2)$ .
Default:	0

#### 2.4.3.9 PeriodRptDeadband

Table:	R01_AIDB
Description:	The limit for determining when to report a change in period.
Type of field:	Valid Range from 35 to 276.
Default:	138

#### 2.4.3.10 PhaseRptDeadband

Table:	R01_AIDB
Description:	The limit for determining when to report a shift in phase.
Type of field:	Valid Range from 6 to 46.
Default:	23

#### 2.4.3.11 TotalAIBoards

Table:	R01_AIDB
Description:	The total number of AI Boards (Main Board plus AI peripheral Boards). The Main Board counts as 1.
Type of field:	Valid Range from 1 to $(15 - \text{NumAOBoards})$ .
Default:	1

## 2.4.4 R01\_AIPT

### 2.4.4.1 R01 AIPT

#### AI Point Table

This table contains the individual Analog Input point configuration. The number of records in this table is determined by the **TotalAIBoards** in the **R01\_AIDB** table.

#### List of Fields

<b>RptDeadband</b>	Valid Range from 8 to 64
<b>HighLimit</b>	Valid Range from -32768 to 32767
<b>LowLimit</b>	Valid Range from -32768 to 32767
<b>UniBiPolar</b>	Choose from picklist

### 2.4.4.2 RptDeadband

Table:	<b>R01_AIPT</b>
Description:	The limit for determining when to report a change in analog value.
Type of field:	Valid Range from 8 to 64.
Default:	32

### 2.4.4.3 HighLimit

Table:	<b>R01_AIPT</b>
Description:	The limit for determining when to report an analog high alarm.
Type of field:	Valid Range from -32768 to 32767.
Default:	27853

### 2.4.4.4 LowLimit

Table:	<b>R01_AIPT</b>
Description:	The limit for determining when to report an analog low alarm.
Type of field:	Valid Range from -32768 to 32767.
Default:	-27853

### 2.4.4.5 UniBiPolar

Table:	<b>R01_AIPT</b>
Description:	Flag to determine if the inputs are bipolar or unipolar.
Type of field:	Choose from picklist.

BiPolar  
 UniPolar  
 Default: BiPolar

## 2.4.5 R01\_DIDB

### 2.4.5.1 R01 DIDB

#### DI Database Table

This table contains the Digital Input configuration that applies to all Digital Inputs.

#### List of Fields

**TotalDIBoards** Valid Range from 1 to (16 – TotalDOBoards)  
**WettingDebounceTime** Valid Range from 25 to 200

### 2.4.5.2 TotalDIBoards

Table: **R01\_DIDB**  
 Description: The total number of DI Boards (Main Board plus DI peripheral Boards). The Main Board counts as 1.  
 Type of field: Valid Range from 1 to (16 – TotalDOBoards).  
 Default: 1

### 2.4.5.3 WettingDebounceTime

Table: **R01\_DIDB**  
 Description: The wetting debounce time in milliseconds.  
 Type of field: Valid Range from 25 to 200.  
 Default: 100

## 2.4.6 R01\_DIPT

### 2.4.6.1 R01 DIPT

#### DI Point Table

This table contains the individual Digital Input point configuration. The number of records in this table is determined by the **TotalDIBoards** in the **R01\_DIDB** table.

#### List of Fields

**HWStartPoint** Read Only Field  
**SWPointIndex** Read Only Field  
**SWType** Choose from picklist

DebounceTime	Valid Range from 2 to 200
ChatterTime	Valid Range from 0 to 30000
ChatterCount	Valid Range from 1 to 1000
Length	Read Only Field
SettlingTime	Valid Range from 10 to 3000
ReportDeadband	Valid Range from 1 to 100

#### 2.4.6.2 HWStartPoint

Table:	R01_DIPT
Description:	This field shows the starting hardware point number correlating to each software type. This field is updated after each change in SWType.
Type of field:	Read Only Field.

#### 2.4.6.3 SWPointIndex

Table:	R01_DIPT
Description:	This field shows the software point number correlating to each software type. This field is updated after each change in SWType. For example, the third Form A DI could be on record index 6. The sixth row would read 3 under SWPointIndex, and SWType would be Form A DI.
Type of field:	Read Only Field.

#### 2.4.6.4 SWType

Table:	R01_DIPT
Description:	Digital input type.
Type of field:	Choose from picklist.
	For Odd Rows:
	Form A DI
	Form A ACC
	Form C DI
	Form C ACC
	BCD
	For Even Rows:
	Form A DI
	Form A ACC
	BCD
Default:	Form A DI

#### 2.4.6.5 DebounceTime

Table:	R01_DIPT
--------	----------

Description: The debounce time in milliseconds.  
Type of field: Valid Range from 2 to 200.  
Default: 15

#### 2.4.6.6 ChatterTime

Table: **R01\_DIPT**  
Description: The chatter time in milliseconds. Zero means that the chatter filter is disabled. If the number of change of states exceeds the **ChatterCount** within the ChatterTime, then no more events will be sent to the SOE Buffer (and the point is considered to be in chatter mode), until such time that there is no more chattering.  
Type of field: Valid Range from 0 to 30000.  
Default: 0

#### 2.4.6.7 ChatterCount

Table: **R01\_DIPT**  
Description: The chatter count, which is used for the chatter filter. If the number of change of states exceeds this value within the **ChatterTime**, then no more events will be sent to the SOE Buffer (and the point is considered to be in chatter mode), until such time that there is no more chattering.  
Type of field: Valid Range from 1 to 1000.  
Default: 1

#### 2.4.6.8 Length

Table: **R01\_DIPT**  
Description: This field shows the number of hardware points used for each software type. This field is updated after each change in **SWType**.  
Type of field: Read Only Field.

#### 2.4.6.9 SettlingTime

Table: **R01\_DIPT**  
Description: Time to wait for any more changes before the Form C DI, Form C Accumulator or BCD is reported.  
Type of field: Valid Range from 10 to 3000.  
Default: 100

### 2.4.6.10 ReportDeadband

Table:	R01_DIPT
Description:	The limit for determining when to report a new accumulator value.
Type of field:	Valid Range from 1 to 100.
Default:	1

## 2.4.7 R01\_DODB

### 2.4.7.1 R01 DODB

#### DO Database Table

This table contains the Digital Output configuration that applies to all Digital Outputs.

#### List of Fields

TotalDOBoards	Valid Range from 1 to (16 – TotalDIBoards)
Address	Read Only Field
DebounceTime	Valid Range from 2 to 100
TCQueue	Valid Range from 0 to 10

### 2.4.7.2 TotalDOBoards

Table:	R01_DODB
Description:	The total number of DO Boards (Main Board plus DO peripheral Boards). The Main Board counts as 1.
Type of field:	Valid Range from 1 to (16 – TotalDIBoards).
Default:	1

### 2.4.7.3 Address

Table:	R01_DODB
Description:	This field shows the starting address of the DO boards. The starting address of the DO boards is the next address after the last DI board. This field is updated automatically after TotalDIBoards in R01_DIDB is modified.
Type of field:	Read Only Field.

### 2.4.7.4 DebounceTimeDO

Table:	R01_DODB
Description:	The relay power on/off detection debounce time in milliseconds.

Type of field: Valid Range from 2 to 200.  
 Default: 15

#### 2.4.7.5 TCQueue

Table: **R01\_DODB**  
 Description: The size of the Trip/Close queue.  
 Type of field: Valid Range from 0 to 10.  
 Default: 3

### 2.4.8 R01\_DOPT

#### 2.4.8.1 R01 DOPT

##### **DO Point Table**

This table contains the individual Digital Output point configuration. The number of records in this table is determined by the **TotalDOBoards** in the **R01\_DODB** table.

##### **List of Fields**

<b>HWStartPoint</b>	Read Only Field
<b>SWPointIndex</b>	Read Only Field
<b>DO Type</b>	Read Only Field
<b>SWType</b>	Choose from picklist
<b>Length</b>	Read Only Field

#### 2.4.8.2 HWStartPoint

Table: **R01\_DOPT**  
 Description: This field shows the starting hardware point number correlating to each software type. This field is updated after each change in **SWType**.  
 Type of field: Read Only Field.

#### 2.4.8.3 SWPointIndex

Table: **R01\_DODB**  
 Description: This field shows the software point number correlating to each software type. This field is updated after each change in **SWType**.  
 For example, the third Latch/Pulse could be on record index 6. The sixth row would read 3 under SWPointIndex, and **SWType** would be Latch/Pulse.

Type of field: Read Only Field.

#### 2.4.8.4 DO Type

Table: R01\_DODB

Description: This field shows what each hardware point is used for. This field is updated after each change in SWType. In the table below, the left side is DO Type and the right side is SWType.

Latch/Pulse occurs in singles

Latch/Pulse	Latch/Pulse
-------------	-------------

Raise/Lower occurs in pairs

Raise	Raise/Lower
Lower	Raise/Lower

Pattern Control has as much length as is desired up to the next 16 point boundary

Pattern Control	Pattern Control
-----------------	-----------------

Double Point Select occurs in pairs

Arm	Double Point Select
Execute	Double Point Select

Trip/Close occurs in fours

Trip	Trip/Close
Close	Trip/Close
Trip	Trip/Close
Close	Trip/Close

Type of field: Read Only Field.

#### 2.4.8.5 SWType

Table: R01\_DODB

Description: Digital Output type.

Type of field: Choose from picklist.

For Rows 1, 5, 9, 13, ...:	For other Odd Rows:	For Even Rows:
Latch/Pulse	Latch/Pulse	Latch/Pulse
Raise/Lower	Raise/Lower	Pattern Control
Pattern Control	Pattern Control	

	Double Point Select Trip/Close	Double Point Select
Default:	Latch/Pulse	

#### 2.4.8.6 Length

Table:	R01_DODB
Description:	This field shows the number of hardware points used for each software type. This field is updated after each change in SWType.
Type of field:	Read Only Field.

### 2.4.9 R01\_HSAC

#### 2.4.9.1 R01 HSAC

##### High Speed Accumulator Table

This table contains the High Speed Accumulator configuration that applies to each High Speed Accumulator point. Each Main Board has 3 High Speed Accumulators, therefore there are 3 records that can be edited.

##### List of Fields

NumWindows	Valid Range from 0 to 32000
SampleCount	Valid Range from 1 to 32000
HSASmooth1	Valid Range from 1 to 100
HSASmooth2	Valid Range from 0 to 100
HSASmooth3	Valid Range from 0 to 100
RPMReportDeadBand	Valid Range from 1 to 65535

#### 2.4.9.2 NumWindows

Table:	R01_HSAC
Description:	When NumWindows equals zero, HSA is disabled. If NumWindows is greater than zero, then the following formula applies:

$$\text{Total Time for Accumulation} = \text{NumWindows} * \text{SampleCount} * 96 \text{ milliseconds}$$

I.E. The HSA accumulates the pulses within the total time for accumulation and then reports it back to the Database Manager (if the value exceeds the RPMReportDeadBand).

Type of field: Valid Range from 0 to 32000.  
 Default: 0

### 2.4.9.3 SampleCount

Table: [R01\\_HSAC](#)  
 Description: Multiplication factor used to determine the Total Time for Accumulation. See [NumWindows](#).  
 Type of field: Valid Range from 0 to 32000.  
 Default: 31250

### 2.4.9.4 HSASmooth1

Table: [R01\\_HSAC](#)  
 Description: High Speed Accumulator smoothing factor 1.

$$V(N) = \frac{HSASF1 * RV(N) + HSASF2 * V(N-1) + HSASF3 * V(N-2)}{HSASF1 + HSASF2 + HSASF3}$$

Where HSASF – High Speed Accumulator smoothing factor  
 RV(N) – Raw Value at N time frame  
 V – Smoothed value

Type of field: Valid Range from 1 to 100.  
 Default: 1

### 2.4.9.5 HSASmooth2

Table: [R01\\_HSAC](#)  
 Description: High Speed Accumulator smoothing factor 2. See [HSASmooth1](#) for the formula.  
 Type of field: Valid Range from 0 to 100.  
 Default: 0

### 2.4.9.6 HSASmooth3

Table: [R01\\_HSAC](#)  
 Description: High Speed Accumulator smoothing factor 3. See [HSASmooth1](#) for the formula.  
 Type of field: Valid Range from 0 to 100.

Default: 0

#### 2.4.9.7 RPMReportDeadBand

Table: **R01\_HSAC**  
 Description: The limit for determining when to report a new RPM value.  
 Type of field: Valid Range from 1 to 65535.  
 Default: 1

### 2.4.10 R01\_AODB

#### 2.4.10.1 R01 AODB

##### AO Database Table

This table contains the Analog Output configuration that applies to all Analog Outputs.

##### List of Fields

**NumAOBoards** Valid Range from 0 to (15 – TotalAIBoards)  
**RefreshRate** Valid Range from 1000 to 3600000  
**StartAddress** Read Only Field

#### 2.4.10.2 NumAOBoards

Table: **R01\_AODB**  
 Description: The total number of AO Boards.  
 Type of field: Valid Range from 0 to (15 – TotalAIBoards).  
 Default: 0

#### 2.4.10.3 RefreshRate

Table: **R01\_AODB**  
 Description: Periodic refresh rate of the analog outputs (in ms)  
 Type of field: Valid Range from 1000 to 3600000.  
 Default: 8000

#### 2.4.10.4 StartAddress

Table: **R01\_AODB**  
 Description: This field shows the starting address of the AO boards. The starting address of the AO boards is the next address after the last AI board. This field is updated automatically after

Type of field:           TotalAIBoards in R01\_AIDB is modified.  
                              Read Only Field.