Special Data View Instructions for DL305 Family

*Direct*NET
Restrictions

Unlike the DL105, DL205 and DL405 PLC families, the DL305 family can only use *Direct*NET protocol. This protocol allows you to READ the status of each internal relay directly, but it will not allow you to use the Data View window to change the status of an internal relay by WRITING to that bit individually. Instead you must do so indirectly by addressing the respective status register that includes the bit whose status you wish to change. Using the example introduced on Page 6 of this manual, C160 was designated as the Start Switch. If you refer to the memory map for the DL305, you would find that C160 is the first bit of status register R16. Consequently, in order to change the status of the Start Switch via the Data View window, you must write an 8-bit word to R16, making sure the first bit is flagged.

You can start by first entering the element **R16** in the Data View window. When moving the cursor to click another field, you will notice the alias **RC160** appears in place of R16. Do not confuse this alias with C160. The RC designation refers to the entire 8-bit register R16, but C160 refers only to the first bit.

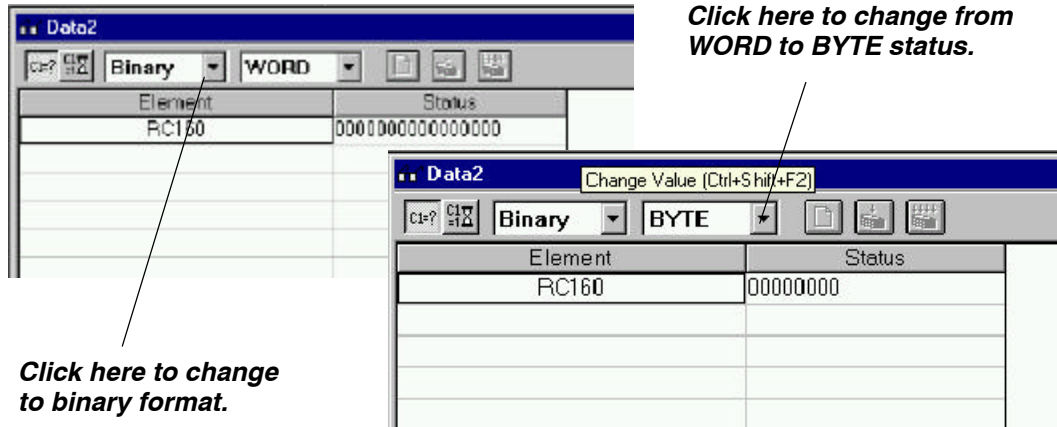The number shown in the status column, by default, is in BCD/hex format.

Type in R16

When you move the cursor to another field, R16 is replaced by the alias RC160.

Changing the Value to Binary to Observe All 8 Bits. The BCD/hex format does not allow to easily see the status for each of the 8 bits in R16 (RC160). Therefore you will need to change the format to binary.

The Data View window has a "drop down" button that can be used to select the binary format. This button is above the Element column. Select the button and you will see the several choices of formats available. Select **Binary** from the list. Notice now the value shown changes to **0000000000000000**, indicating a binary number format. However, it shows a default of 16 bits. Since the status registers are each 8 bits in size, click on the drop-down button above the Status column and change from **WORD** size to **BYTE** size data. This then displays only eight zeros: **00000000**.

Click here to change from WORD to BYTE status.

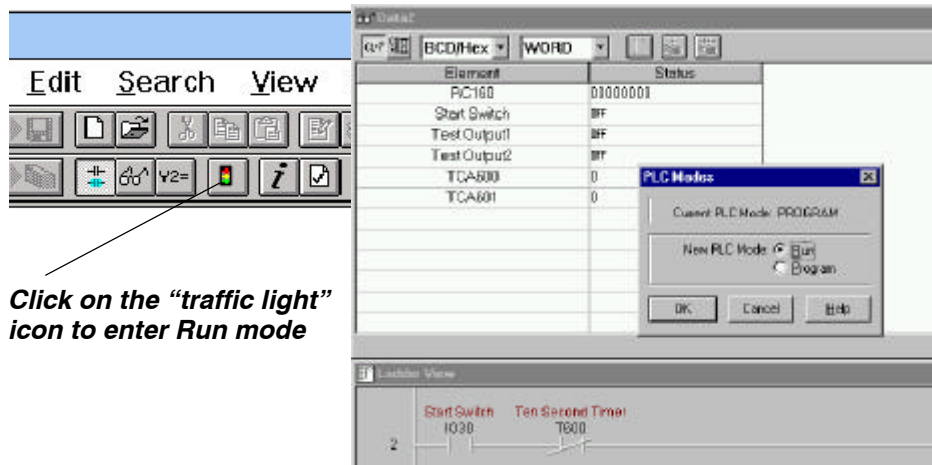*Click here to change to binary format.*

Although you could use R16 to view the status of C160 (Start Switch), C161 (Output1), and C162 (Output2), it is more convenient to view the internal relays directly for read-only purposes. Now you can type in the contacts by name (C160, C161, and C162). The software will substitute the nicknames for you. These use the bit format to show the contacts as being turned ON or OFF. If you see a **1**, the bit is **ON**. If you see a **0**, the bit is **OFF**. Include also **TCA600** (Timer/Counter 600 Current) and **TCA601** (Timer/Counter 601 Current) With the combination of the inclusive status register (R16) and the designated internal relays (C161, C162, and C163) in the Data View window, you can now write to any of these bits via the status register or read them directly by observing their respective bit values (0 or 1). Additionally you can watch TCA600 and TCA601 to see their respective values incrementing as the program runs.
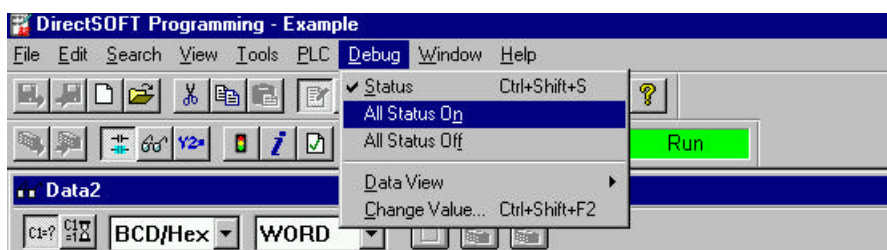
Changing to the Run Mode

You are now ready to test the program. First place the PLC in the **RUN** mode. Select the "traffic light icon" of the on-line tool bar. Then, click on the **Run** mode. You could also have chosen **PLC** from the main menu bar, selecting **PLC Modes** from the list of choices, and then selected **Run** mode from the pop-up dialog box.
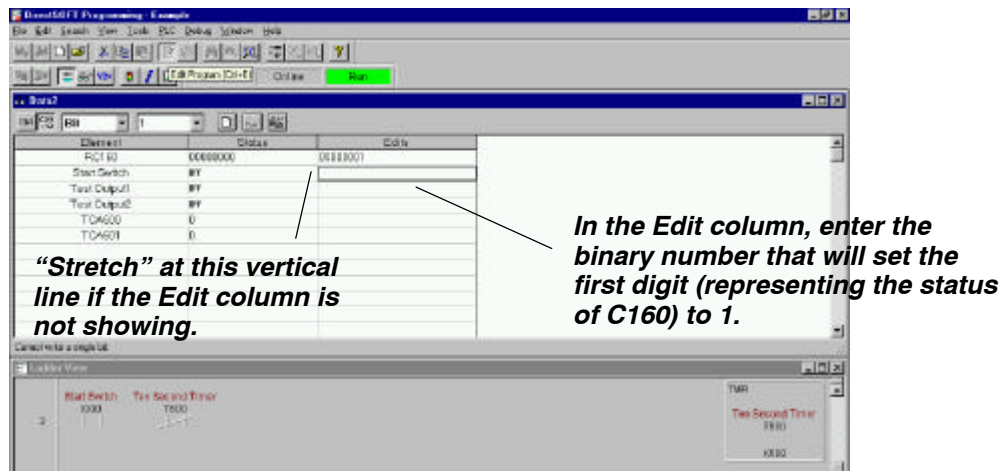
Click on the "traffic light" icon to enter Run mode

Enabling the All Status ON

To monitor the status of each element, you will need to place the software in the **All Status ON Mode**. Click on **Debug**, then **All Status ON**.
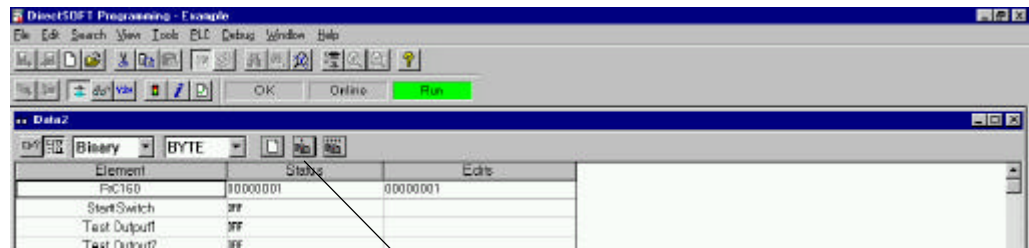
Entering Data for the Status Register

Start the program by writing a **1** to the status of the first bit in R16, which is actually C160. Do this in the **Edit** column of the Data View window. Sometimes the Data View window is not fully expanded. To make the Edit column visible, place your cursor on the vertical line that defines the right side of the status label. Hold down the mouse button and drag it to the right. Once the Edit column is visible, type in the 8 binary digits with the right-most digit (least significant digit) as a **1**. This is **00000001**.

"Stretch" at this vertical line if the Edit column is not showing.

In the Edit column, enter the binary number that will set the first digit (representing the status of C160) to 1.

Writing the Edits to the PLC

To write the new status to the PLC, select the icon with the single arrow pointing down to the PLC from the on-line tool bar . The other icon showing several arrows is for writing multiple edits to the PLC.

Click here to write your Edit

After selecting the appropriate **Write Edit to PLC** icon, you will then see a confirmation dialog. It will ask if you want to write the edit (or edits) to the PLC. You answer **yes**. With the Start Switch (C160) now ON, you will see the active elements change color as the counter accumulates each tick of the timer and the Boolean conditions are met. Now you can observe how the program runs. Be sure to read the main user manual later.

Click on Yes to confirm.

Timer and counter increments

Start Switch is ON