Errata Sheet

This Errata Sheet contains corrections or changes made after the publication of this manual.

Product Family*:	PLC Data Logging	**Date**:	August 2018
Manual Number	PC-DPLC-M		
Revision and Date	4th Edition, Rev. B; February 2014		

Change to Chapter 5. Ladder Logic; 5.1 WX/RX Commands

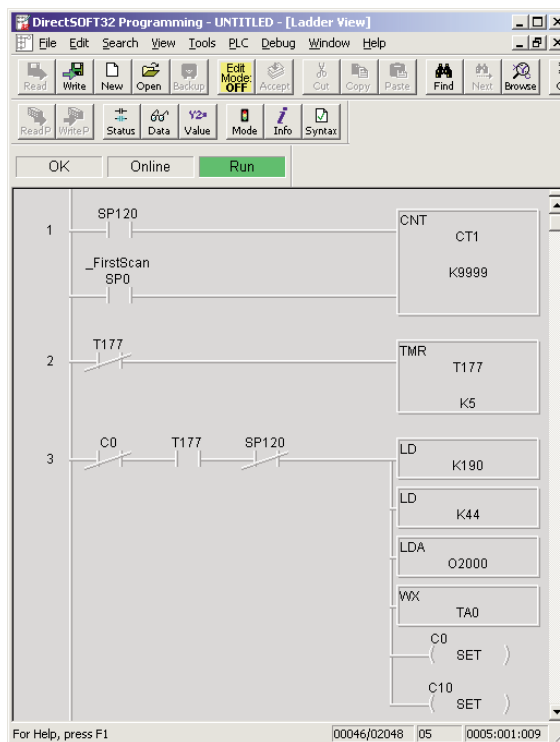*Step 1 on page 20 is incorrect: It should be:*

"1. Load the address 90 (BCD) into the low byte and the slot number of the ECOM module into the high byte. Address 90 (BCD) is required for PLC-to-PC communications with DataWorx PLC".

5.0 Ladder Logic

Unlike similar data collection products, DataWorx PLC uses "report by exception" on the PLC. Instead of the PC polling the PLC for updated data, the PLC sends the PC data only when necessary. This eliminates waste in network bandwidth and provides a scalable architecture.

Modifications must be made to the PLC program to accommodate this operation. DataWorx PLC comes with a sample DirectSoft project that shows how to send a network message and receive a message every second.

Below is a screenshot of the sample DirectSoft project. While the first two rungs control the timer, the actual network code does not start until rung three, where the WX is used.

> *Note: It may be necessary to modify the provided sample code in order to write data only when needed.*

5.1 WX/RX Commands

low

To use the WX instruction:

high

1. Load the address 90 (BCD) into the ~~high~~ byte and the slot number of the ECOM module into the ~~low~~ byte. Address 90 (BCD) is required for PLC-to-PC communications with DataWorx PLC.

2. Load the number of bytes to be transferred. This will be 32+ the number of data bytes (1 - 96). Thus, the total bytes transferred will be 33 - 128.

3. Load the address of the data block used to generate the packet. **This address must be specified in HEX**.

4. Insert the WX instruction.

Note: the V-memory address specified in the WX instruction will be ignored.

Note: DL05/06 slots start at 1. DL205 and 405 slots start at 0. Also, see PLC Configuration Help windows on main configuration...page 47.

LD K0290:	Specifies ECOM module in slot number 02 and address 90 [Note: 90 is a fixed value]
LD K0040:	Specifies 40 bytes (16 setup + 16 address + 8 data bytes)
LDA O2000:	Specifies V2000 as the address of our block of memory
WX V0000:	Perform the write (V0000 is ignored)

Example:

Below is a screenshot of the WX instruction:
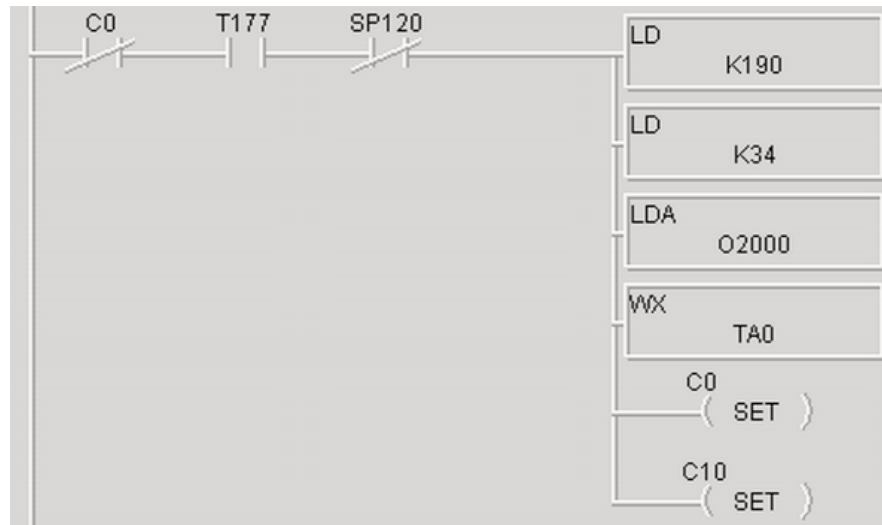
On the following page is a table detailing the format of the V-memory Block needed for a WX instruction (assuming V2000).

Note: You can use the DataWorx Autoconfigure feature to enter all the V memory location values. See page 48.

DataWorx PLC

V Memory Address	Contents	Value
V2000 - V2007 Setup Values		
V2000	Version	0
V2001	Function	1 = COMM_FUN_SEND
V2002	Media	1 = Ethernet 802.2
V2003	Protocol	1 = UDP/IP
V2004	Flags	Bit 0: COMM_FLAG_NO_WAIT_ACK Bit 1-7: Unused 1 = ACK not required for message 2 = ACK is required for message
V2005 - V2007	Reserved	0
V2010 - V2017 Destination Address		
V2010	Ethernet Address	First two bytes of Ethernet address to send to
V2011	Ethernet Address	Next two bytes of Ethernet address to send to
V2012	Ethernet Address	Last two bytes of Ethernet address to send to
Example: If destination is Ethernet address: 00 11 22 33 44 55: * V2010 = 0011 (HEX), V2011 = 2233 (HEX), V2012 = 4455 (HEX)		
V2013	IP Address	First two bytes of IP address to send to
V2014	IP Address	Last two bytes of IP address to send to
Example: If we are sending to IP address 192.168.0.100: The conversion to HEX is: C0.A8.00.64: V2013 = C0A8 (HEX), V2014 = 0064 (HEX)		
V2015	Socket Number	0x7777 (30583 decimal) This needs to be the same socket the PC is listening on.
V2016	Reserved	0
V2017	Reserved	0
V2020 - V2177 Message / Data to Send	User Defined	This is the block of data to send. Words are byte swapped - so that a text message entered with the Data View in DirectSOFT will be sent correctly. **Data must be in binary format not BCD.**

*The Ethernet address and IP address of a PC running Windows can be obtained by running ***ipconfig/all*** from a command prompt.

To Use the RX instruction:

1. Load the address (90 BCD) into the low byte and the slot number of the ECOM module into the high byte.

2. Load the number of bytes to read (2 - 128) to read. Address 90 (BCD) is required for PLC-to-PC communications with DataWorx PLC.

Note: To read only the error code, specify 2 bytes. To read the error code AND response data, specify 32 + the number of response bytes expected.

3. Load the address where you want to store the data in the PLC. **The address must be specified in HEX.**

4. Insert the RX instruction and specify V0000 as the address from which to read.

Example: Below is a screenshot of the RX instruction.
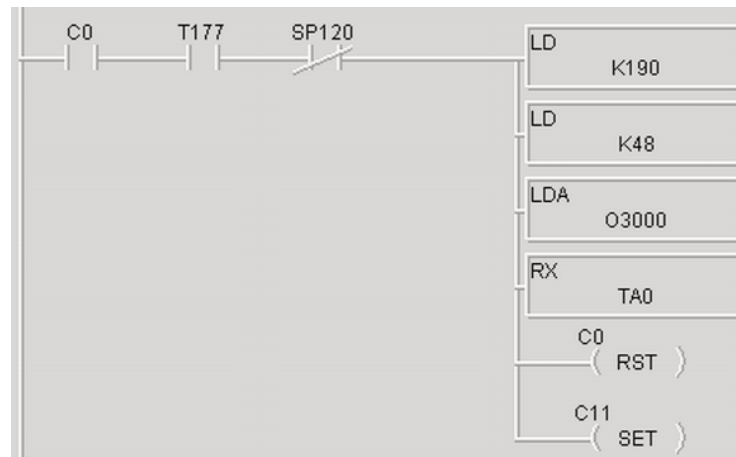
LD K0290:	Specifies ECOM module in slot number 02 and address 90
LD K0040:	Specifies 40 bytes to read (16 setup + 16 address + 8 response bytes)
LDA 03000:	Specifies V3000 as the address to store the data
RX V0000:	Perform the read. V0000 is used to indicate that we want to read the error and response data

The following table details the format of the data block returned by an RX instruction (assuming V3000) when using it to read the Error and response data.

V Mem. Addr.	Contents	Value
V3000 - V3007 Setup Values		
V3000	Error Code (from last WX instruction execution)	0 = No Error 1 = Invalid Media Value 2 = Invalid IP address in ECOM module 3 = Invalid Protocol Specified 4 = Invalid Function Specified 5 = Invalid Version Specified 6 = Invalid Number of Bytes Specified in WX instruction must be at least 32 bytes 7 = RX/WX Overrun. Tried to issue RX/WX while one is being processed 8 = Internal ECOM Error 9 = Packet was not acknowledged by the receiver (PC) A = Timeout error waiting for the response
V3001	Number Data Bytes	Specifies number of data bytes returned by the receiver (PC)
V3002	Media	1 = Ethernet 802.2
V3003	Protocol	1 = Ether-UDP
V3004 - V3007	Reserved	0
V3010 - V3017 Receiver's Address		
V3010	Ethernet Address	First two bytes of receiver's Ethernet address
V3011	Ethernet Address	Next two bytes of receiver's Ethernet address
V3012	Ethernet Address	Last two bytes of receiver's Ethernet address
V3013	IP Address	First two bytes of receiver's IP address
V3014	IP Address	Last two bytes of receiver's IP address
V3015	Socket Number	Socket number the receiver is using
V3016 - V3017	Reserved	0
V3020 - V3177	Response Data	Application specific

DL-05 or DL-06 PLC

The following special relay bits can be used in a 05 or 06 PLC program to monitor the Busy status of an ECOM module in a particular slot of a **05 or 06 Series PLC.**

Local Base
SP120 Module Busy Slot 1
SP122 Module Busy Slot 2
SP124 Module Busy Slot 3
SP126 Module Busy Slot 4

DL-205 PLC

The following special relay bits can be used in a 205 PLC program to monitor the Busy status of an ECOM module in a particular slot of a **205 Series PLC.**

Local Base
SP120 Module Busy Slot 0
SP122 Module Busy Slot 1
SP124 Module Busy Slot 2
SP126 Module Busy Slot 3
SP130 Module Busy Slot 4
SP132 Module Busy Slot 5
SP134 Module Busy Slot 6
SP136 Module Busy Slot 7

DL-405 PLC

The following special relay bits may be used in a 405 PLC program to monitor the Busy status of an ECOM module in a particular slot of a **405 Series PLC**.

Local Base
SP120 Module Busy Slot 0
SP122 Module Busy Slot 1
SP124 Module Busy Slot 2
SP126 Module Busy Slot 3
SP130 Module Busy Slot 4
SP132 Module Busy Slot 5
SP134 Module Busy Slot 6
SP136 Module Busy Slot 7

Expansion Base #1	Expansion Base #2	Expansion Base #3
SP140 Module Busy Slot 0	SP160 Module Busy Slot 0	SP200 Module Busy Slot 0
SP142 Module Busy Slot 1	SP162 Module Busy Slot 1	SP202 Module Busy Slot 1
SP144 Module Busy Slot 2	SP164 Module Busy Slot 2	SP204 Module Busy Slot 2
SP146 Module Busy Slot 3	SP166 Module Busy Slot 3	SP206 Module Busy Slot 3
SP150 Module Busy Slot 4	SP170 Module Busy Slot 4	SP210 Module Busy Slot 4
SP152 Module Busy Slot 5	SP172 Module Busy Slot 5	SP212 Module Busy Slot 5
SP154 Module Busy Slot 6	SP174 Module Busy Slot 6	SP214 Module Busy Slot 6
SP156 Module Busy Slot 7	SP176 Module Busy Slot 7	SP216 Module Busy Slot 7

5.2 Do-more PLC support

DataWorx now has direct support for the Do-more PLC. This section contains instructions on how to configure DataWorx for use with the Do-more PLC.

Note: You will need DataWorx version 2.2 build 99 or higher and an H2-DM1E for this exercise.

Note: The Do-more PLC must have firmware version 1.1.2 or higher with a Booter version of 3.0.5 or higher for proper operation with DataWorx.

In Do-more Designer we will first create a UDP device that will be used in the PACKETOUT instruction.

Note: Ensure you have assigned an IP address to the Do-more CPU either in NetEdit or under System Information in Do-more Designer.

1. Click on PLC from the menu bar > then click on System Configuration.
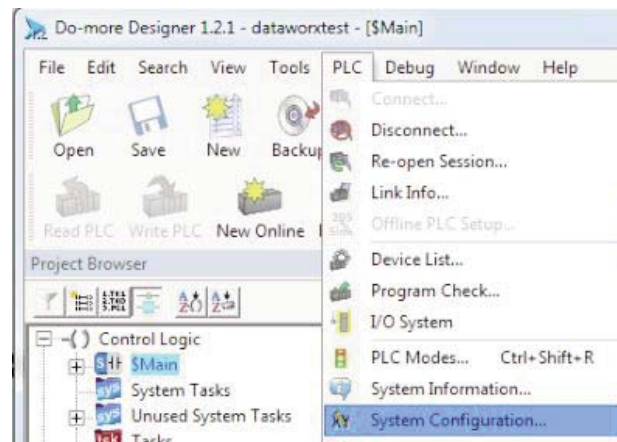
2. Now select Device Configuration > then select New Device.
3. In the Device name field enter '@dataworx', and in the UDP port field enter' 30583' > then hit OK > then hit OK once again to close out the window.
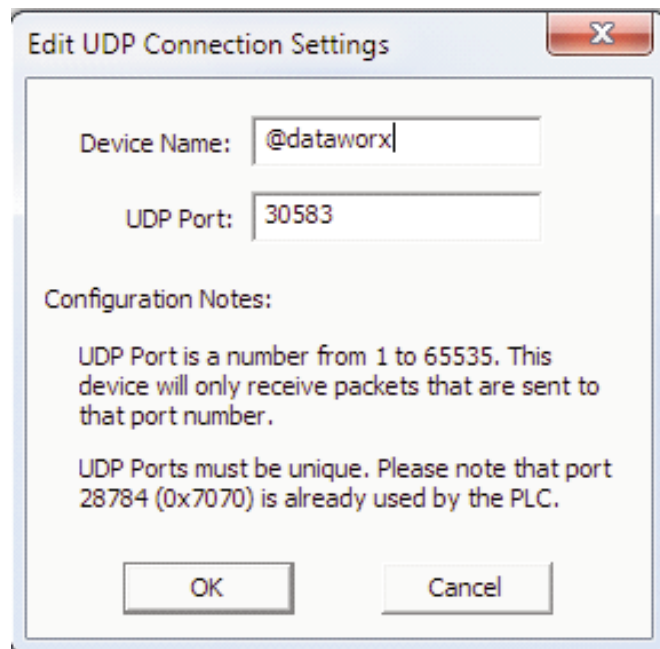
4. Select 'Yes' to the following pop up window.
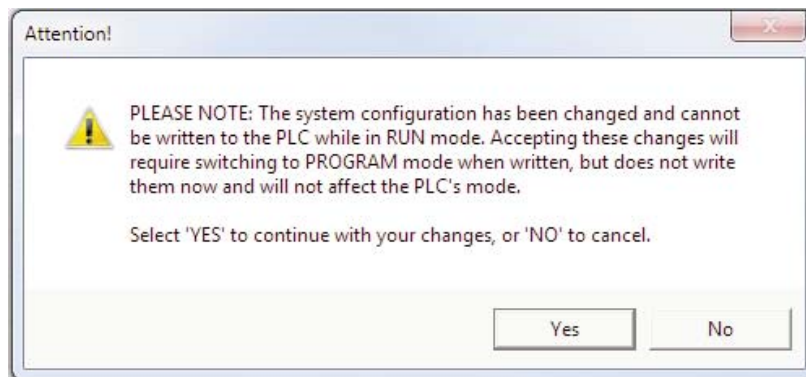
5. Next, on a empty rung enter a 'PACKETOUT' Instruction and fill in the fields with the below information:

    a. Device: Select the newly created '@dataworx device'.

    b. IP Address: Select Fixed and enter the IP address of the PC running DataWorx.

    c. To UDP Port Number: Enter '30583' (port number DataWorx is listening to).

   d. Data Start: Select Numeric Data Block and enter: (These will match our DataWorx setup in a later step)

i. Buffer Start = V0.

ii. Number of Bytes to Output = 8 (This will match our DataWorx setup in a later step).

e. On Success: Leave as default or select an unused C bit.

f. On Error: Leave as default or select an unused C bit.

6. Select the green checkmark to accept your selections.

7. Now for the input leg to the PACKETOUT instruction enter a Normally Open contact (F2) and assign an input or bool bit.

Note: Do not send data from the Do-more PLC to the DataWorx software using anything faster than a 500 msec update rate.

8. Accept and Download this to the Do-more CPU.
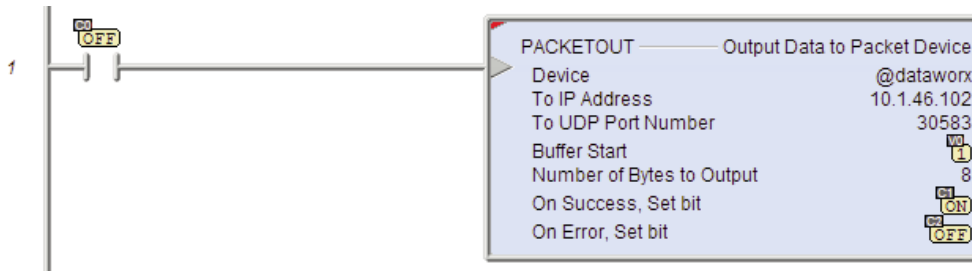
In these next steps we will set up the DataWorx configuration.

9. Open DataWorx PLC Monitor
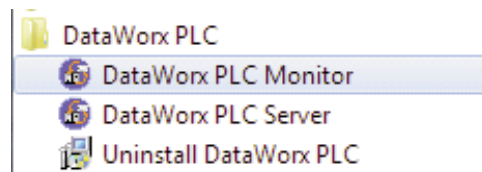
10. Now click on Options > Configure Server > then Add.

11. Use DataWorx to setup the PLC Configuration:

a. IP Address: enter IP address of your Do-more CPU.

b. Data Directory: Select a directory in which you would like the .csv file stored.

c. Do-more PLC: Check this box.

d. PLC Configuration: Enter 'V0'.

12. Select Add and enter four (Integer)2 byte words starting with V0.

13. Select OK to finish the configuration.

14. Now trigger the input rung to the PACKETOUT instruction in the Do-more PLC.

15. You should get the below update in the DataWorx window:

16. Now open the excel .csv file in the Data Directory we set up in step 11.b and verify the data was written.

The following steps demonstrate how to send fixed length String (ASCII) data from the Do-more PLC to the DataWorx software:

*Note: Close the .csv file, if open from the previous section, prior to proceeding.*

1. Open DataWorx Monitor > Connect > right click on device > configure.

2. Next click on Add, then configure the following settings:
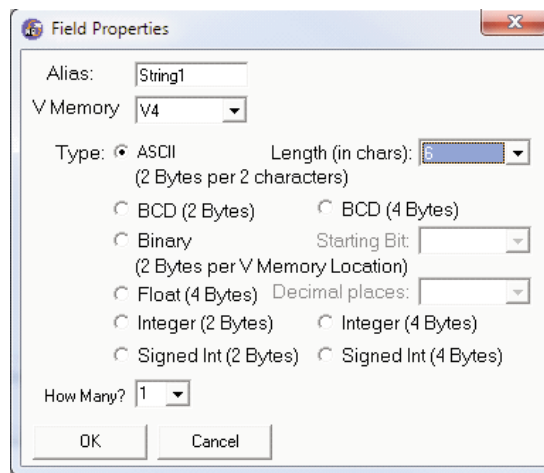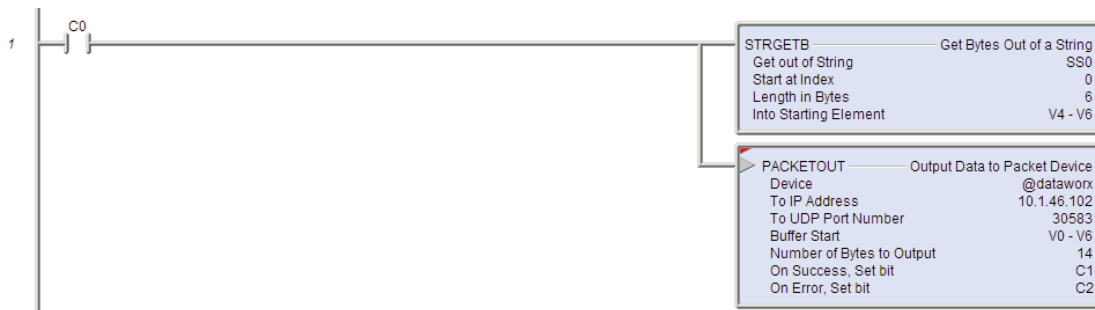

3. Click on OK.

4. Open the Do-more project used in the previous section, if not already open, and go online.

5. On Rung 1 insert a STRGETB instruction before the PACKETOUT instruction.

6. Configure the STRGETB with the following settings:
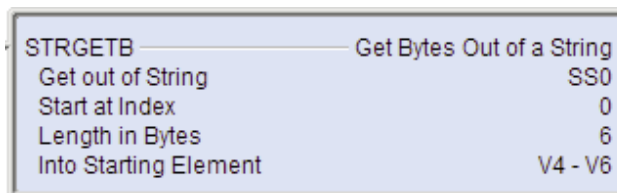
7. Add/Modify the PACKETOUT settings as seen on the following page:
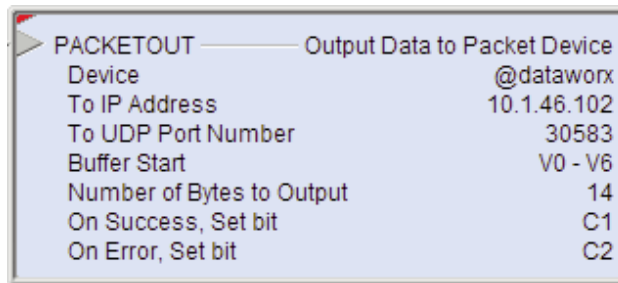
8. Rung 1 should now look like the following:

9. Accept the changes > Write them to the PLC.

10. Open Dataview > Enter SS0 into the Element field > in the Edit field enter 'abc123' and select Write Edits.

11. Delete the .csv file stored in the DataWorx Data Directory we set up in step 11 b.

Note: This will allow a new .csv to be created once new data is received.

12. Trigger the C0 contact.

13. Now open the excel .csv file stored in the Dataworx Data Directory and verify the data was written.

14. You should now see the previous V0-V3 and the new String1 data 'abc123' in your file.

Note: If a new .csv was not created or the data was not written, verify your setup and try again.