

# How to use the Omnii-Comm to send Commands

Asynchronous control commands can be sent to the Omnii-Comm when a port is defined as a “Master” and one of the following protocols is selected for the port:

- Allen-Bradley Full Duplex
- Square D
- Reliance

These are the only Omnii-Comm protocols that have unsolicited write capability.

Use ladder logic to enable a standard message instruction as shown in Figure 1.

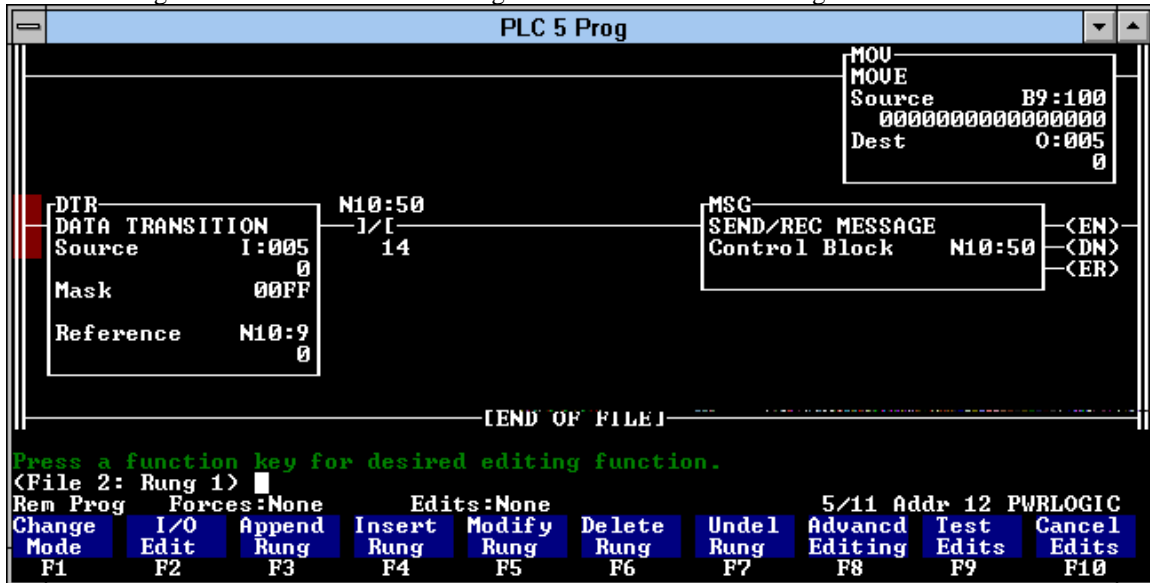


Figure 1 PLC MSG Instruction

Address the instruction to the port that the Omnii-Comm is connected to. The data portion of the message will be used to form the actual command to be sent. When a command is received, it is buffered internally in the Omnii-Comm. At the completion of the current poll (if any) polling will be suspended and the command(s) interpreted. The Omnii-Comm supports the following commands:

- 0 Pass command to RTU
- 1 Suspend scan
- 2 Resume normal scan
- 3 Load dynamic poll table
- 4 Perform single dynamic poll
- 5 Perform cont. dynamic poll
- 6 Disable dynamic poll table
- 7 Change poll timing
- 8 Reset OmniiComm

The command number is the first word of the data sent from the PLC.

```

PLC 5 Prog
MESSAGE INSTRUCTION DATA ENTRY FOR CONTROL BLOCK N10:50

Communication Command:          PLC-2 UNPROTECTED WRITE
PLC-5 Data Table Address:      N10:0
Size in Elements:              10
Local/Remote:                  LOCAL
Remote Station:                 N/A
Link ID:                        N/A
Remote Link Type:               N/A
Local Node Address:             11
Destination Data Table Address: 010

BLOCK SIZE = 8 WORDS

Press a key to change a parameter or <ENTER> to accept parameters.
> █
Rem Prog  Forces:None  Edits:None  5/11 Addr 12 PWRLOGIC
Command  PLC-5  Size in  Local/  Remote  Link  Remote  Local  Destin
Type     Address Elemnts Remote Station ID    Link   Node   Address
F1       F2       F3       F4     F5     F6    F7     F8     F9

```

Figure 2 MSG Instruction Parameters

### Command 0 Pass command to RTU

Use Command 0 to send an asynchronous command to a remote device. Note that only write commands are valid. You cannot use this function to read data from a remote. The format of the data sent is shown below:

- WD 0 Command number (0 to 8 see table above)
- WD 1 Byte count of data in message
- WD 2 Time out for command (10msec per count)
- WD 3 Linked Poll number, Linked poll delay
- WD 4 Port, Protocol
- WD 5 thru 11 format depends on the protocol number in word 4
- WD 12-WD N Data to write

Word 3 is used to specify a poll number that can be optionally started after the command is sent. This could be used, for instance, to read back a status that confirms the control action. The optional delay field permits delaying the poll for a period of time from 10 to 2,550 msec. The hi byte of the word is used for the poll number and the low byte is the poll delay.

Word 4 is used to specify the port number and protocol number to be used. The hi byte is the port number. A port number is used to identify each Omnii-Comm internal communication resource. During configuration, you assign a communication resource to each connector. Valid port numbers are:

- 1 HC11 UART
- 2 UART 1 Chan A
- 3 UART 1 Chan B
- 4 C/T Chan 2
- 5 C/T Chan 3
- 6 UART 2 Chan A
- 7 UART 2 Chan B
- B Bit-Banger

The low byte of word 4 is the protocol number. Valid protocol numbers for commands are:

|          |  |
|----------|--|
| 11 [0Bh] | MODBUS protocol                        |
| 12 [0Ch] | Allen-Bradley DF1 Full-Duplex Protocol |
| 13 [0Dh] | Square D Protocol                      |
| 17 [11h] | Reliance Protocol                      |
| 18 [12h] | Allen Bradley half-duplex Protocol     |
| 19 [13h] | OMRON SYSMAC PC Protocol               |
| 20 [14h] | Power Measurement 3720 ACM Protocol    |
| 21 [15h] | American Dynamics AD 2150 Series       |
| 22 [16h] | Dukane MACS II                         |
| 23 [17h] | Caterpillar G3600 CCM                  |
| 24 [18h] | Dynalco TM-5000                        |
| 25 [19h] | Dynalco TEC-9000                       |
| 26 [1Ah] | Caterpillar Digital Voltage Regulator  |

Words 5 thru 11 are interpreted differently, depending on the protocol number used in word 4. The following table defines the format for words 5 thru 11

### **Command 1 Suspend scan**

Use Command 1 to stop all polling. No additional data required.

### **Command 2 Resume normal scan**

Use Command 2 to resume normal polling. No additional data required.

### **Command 3 Load dynamic poll table**

Use Command 3 to load a "Dynamic Poll". A Dynamic Poll is a custom poll built in the PLC ladder logic and sent to the Omnii-Comm using a message instruction. This poll is usually used for troubleshooting or other special circumstances. The dynamic poll data is contained in words 2 thru word 27.

When Command 3 is issued normal polling is halted automatically.

### **Command 4 Perform single dynamic poll**

Starts the previously loaded Dynamic Poll and runs it one time for each Command 4 message received.

### **Command 5 Perform continuous dynamic polls**

Starts the previously loaded Dynamic Poll and runs it continuously

### **Command 6 Disable dynamic poll table**

Removes the Dynamic Poll table

### **Command 7 Change poll timing**

Word 1 is the poll number to change, Word 2 is the new poll timer value

### **Command 8 Reset OmniiComm**

Causes a restart of the Omnii-Comm

# COMMAND DATA FORMAT

| Protocol #         | WD 5               | WD 6                                     | WD 7                 | WD 8           | WD 9           | WD 10          | WD 11      |
|--------------------|--------------------|--|----------------------|----------------|----------------|----------------|------------|
| 11 (MODBUS)        | MODBUS addx        | FC=5,6,15,16<br>Note: place in high byte | not used             | not used       | point cnt      | start reg/coil | byte count |
| 12 (Allen-Bradley) | PLC type, PLC addx | CMD, FNC                                 | spare                | LP, File type  | File #         | start element  | byte count |
| 13 (Square D)      | Command, spare     | route1, route2                           | route3, route4       | route5, route6 | route7, route8 | start element  | byte count |
| 17 (Reliance)      | PLC type, PLC addx | 0400(hex)                                | Dest slot, Src slot  | not used       | not used       | start element  | byte count |
| 18 (DF-1 HD)       | PLC type, PLC addx | CMD, FNC                                 | spare, STN           | LP, File type  | File #         | start element  | byte count |
| 19 (Omron)         | PLC address        | 5744(hex)                                | not used             | not used       | not used       | start element  | byte count |
| 20 (3720 ACM)      |                    |  |                      |                |                |                |            |
| 21 (AD 2150)       |                    |  |                      |                |                |                |            |
| 22 (Dukane)        |                    |  |                      |                |                |                |            |
| 23 (Caterpillar)   |                    |  |                      |                |                |                |            |
| 24 (TM5000)        | Node #             | CMD, Diff ena.                           | Channel # (K CMD)    | Channel cnt.   | not used       | not used       | byte count |
| 25 (TEC9000)       | Funct, Node        | CMD, Data type                           | Param # or Data type | Data type      | Data type      | Data type      | Data type  |
| 26 (Cat DVR)       | CDU (01-99)        | CMD, not used                            | not used             | not used       | not used       | not used       | byte count |

## Notes for Allen-Bradley and DF-1 HD:

Valid PLC types are: 02=PLC 2, 05=PLC 5, 50=SLC 500 and 250=PLC 5/250

Valid CMD, FNC codes are PLC 2 write=0000, PLC 5 write=0F00, SLC500 write=0FAA

LP (Logical Processor) is used for PLC 5/250 commands only

File type is not used for PLC 2, valid types are PLC 5 Binary=42(hex), PLC 5 Floating Pt.=46(hex), PLC 5 Integer=4E(hex), SLC 500 bit=85(hex), SLC 500 Integer=89(hex)

File number is not used for PLC 2

## Notes for Square D:

Valid Commands for Square D are non-priority write=02 and priority write=1E

The first unused route field must be set to FF(hex)

## Notes for Reliance:

Valid PLC types for Reliance are: Single PLC=00, Multiple PLC=01