



The DMC-162 from REPL is a low cost addition to the Operator Interface line. Featuring 2 lines of 16 characters backlit LCD, it allows monitoring machine status as messages AND change data in the PLC. Cost is saved since the unit uses PLC memory.

- Compact 1/8 DIN size case
- ASCII messages from PLC data memory
- Access PLC registers, timers and counters
- Embed register values and bit sensitive text
- Display data in a BAR GRAPH format
- No setup software required
- Data Entry possible

### Function Keys and LEDs

The *DMC-162* has 6 keys which hold a bit ON in the register B003:011 while the key is pressed. These keys can be used to replace push buttons.

The same keys can also be used to monitor and edit PLC data registers, timers, counters etc. when the unit is in the register display mode.

The *DMC-162* has 2 LEDs controlled by 2 bits in B003:010 in the PLC. These bits are R500 and R501. The LEDs are ON when the status of these bits is "1" and OFF when the status is "0".

### Modes of Operation

Two words are defined in the PLC to control the display and unit operation: CONTROL WORD and OFFSET WORD. In the Toshiba T1 PLC, these words are B003:010 and N007:020 respectively.

The unit operates in 2 modes. B003:010 controls the operating mode.

In the message mode, 16 words ( MMSG to MMSG+15 ) are scanned by the *DMC-162* and displayed on the LCD where MMSG is the register number stored in D1000. Each word has 2 bytes of ASCII characters. The user simply has to put the correct data in these registers to display a message. Data can be embedded in a message by special formats. This mode is used to display alarm or status.

In the Operator mode, a key press initiates the register mode and times out after the specified time period to the message mode. This is useful when normally the machine status is monitored but the operator may change presets etc. once in a while. Note that in this mode, the operator gets access to ALL the PLC registers and bits. Hence, it is advisable to use a password protection created using the PLC data registers and ladder logic before this mode is activated.

If the PLC needs to control the register being viewed and/or edited, the message mode itself can be used effectively using the data embedding feature. When the data is to be edited, the UP and DOWN arrow keys can be used in the PLC to increment or decrement the data. This way, the operator gets access only to those registers as allowed by the PLC ladder logic. Refer to the examples for detailed information on this.

### Control Word

The *DMC-162* reads B003:010 ( CONTROL WORD ) in the PLC which controls the operating mode. B003:011 has the status of the keypad. The status of each bit mentioned is "1" when key is pressed and "0" when the key is released. The meaning of the individual bits in B003:010 is as follows:

|        |   |      |        |
|--------|---|------|--------|
| R500   | 1: LED0 On 0: LED0 Off  | R510 | Key F1 |
| R501   | 1: LED1 On 0: LED1 Off  | R511 | Key F2 |
| R502-7 | Reserved for future use   | R512 | Key F3 |
| R508-9 | 00: Message 01: Register<br>10: Operator 11: Invalid                      | R513 | Key F4 |
| R50A-B | Timeout to message mode<br>00: 10 sec 01: 20 sec<br>10: 30 sec 11: 40 sec | R514 | Key F5 |
| R50C-E | Reserved for future use   | R515 | Key F6 |
| R50F   | Disable data entry in Message mode (ON : Disable)                         |      |        |

### Messages

In the Message mode, the unit displays 32 bytes ( 16 words ) from the location given by the Offset register. For example, if the Offset register has number 120 in it, unit will display 32 bytes ( 16 words ) from D120 to D135.

Thus, there are two ways to control the display messages. One is to store messages in the data memory and the ladder logic simply changes the number in the Offset register. Another is, the program memory puts different message data in the MMSG registers by using the ASC instruction. Note that the former method uses data memory while the later uses program memory. Combination of the two can also be used.

### Embedded Registers and Variables

It is possible to embed N007:000 to N007:015 in messages by using a special format in the message mode. When the message words (MMSG to MMSG+15) contain ASCII bytes which are between 20H to 7FH, the corresponding ASCII characters are displayed. The range 00H to 0BH is used to embed variables in the messages. The range 0CH to 0FH is used to show data in bar graph format. It is possible to embed one data entry field in a message. It is similar to embedding a register, only instead of 0 to F, use 10 to 1F hex bytes to address N007:000 to N007:015. The registers N007:000 to N007:015 can be edited with this feature one at a time in a message. A decimal point can be inserted in the variable. Refer to the example to understand how this can be done. The PLC ladder can control bit sensitive text messages by simply manipulating the ASCII characters based on a bit status.

