

SECTION 6 - OPERATION

The DeltaMax servo controller has an embedded operating system, which operates out of Flash Memory. The application program written in Macroprogramming will control the specific functionality of the DeltaMax. This application program resides in the controller memory as follows:

64000 bytes for Program storage in Flash Memory
16000 bytes of Constant storage in Flash Memory
16000 bytes of Nonvolatile Data (variable) storage in NOVRAM
57344 bytes of Volatile Data storage in Static RAM

6.1 FIRMWARE DOWNLOADING

The DeltaMax operating system has the capability of being updated in the field. To accomplish this requires a computer, special factory available software and a communication cable. The software will run in Windows 3.1, Windows 95, Windows 98, Windows NT, Windows ME, and Windows XP and is available on request. The communication cable is identical to the cable used for loading the Macroprogram.

NOTE

Cable connection must be made to Port 1 of the DeltaMax for downloading.

After installing the software on a computer, the process may be started by double clicking on the Firmware Downloader icon. The operator will then need to select the file to download and the COM port to use for the operation before selecting the 'Download' button to initiate the process. The remainder of the procedure is explained using message boxes and during download the status is updated with a completion bar on the computer.

During the Download procedure, the seven-segment controller display will indicate several different statuses. The first being a 'c' for chip erase in process, after which, the file transfer begins which is indicated by a clockwise rotating illuminated segment. When the transfer is complete the new firmware number will be displayed one digit at a time (ex. 3902r01). Ultimately the status will display either an 'A' indicating program running or a 'C' indicating system reset. Downloading new firmware will not erase the Macroprogram currently stored in memory.

6.2 CONTROL PROGRAM

The control program consists of Macroprogram commands arranged using the MacroPro II software tools; refer to IB-11B022 for details on creating Macroprograms.

The Macroprogram establishes the motion sequences for the real axis designated Axis 1, the Pseudo axis and Programmable Limit Switch functions are designated as Axis 2 and the analog I/O functions have been designated as Axis 3. The Macroprogram can also be configured to receive positional information from a master encoder or resolver through the fiber optic port. This information can then be placed on an internal Master Angle Bus to create a master-slave relationship.

The I/O is designated as 16 inputs and 8 outputs. In addition, the 8 outputs may be used as programmable limit switches.

6.2 CONTROL PROGRAM (cont'd)

The communication ports, Port 1 and Port 2, are defaulted to packet protocol for use with the MacroPro II software tools. Port 2, however, is under software control in the Macroprogram and can be reconfigured for communication with other devices during operation.

NOTE

For additional information on creating the system control Macroprogram, refer to the MacroPro II manual (IB-11B022).

6.3 DRIVE PARAMETERS

There are two methods by which an operator can modify several key drive parameters. One method can be accomplished using a Macroprogram instruction '**delta_comp**' to modify some tuning parameters. A full description of the command as well as its benefits can be found in **Section 8 - Drive Tuning**.

The other method is through a parameter file. The parameter file has an extension of *.par and each Macroprogram has a parameter file associated with it. The file can be modified through the MacroPro II software tool referred to as the '**Analyzer**'. Every time the operator enters the Analyzer, the parameter file of the chosen program is compared to the current parameters in the DeltaMax. If there is a difference, the operator is given the option to either overwrite the drive parameters or keep the current drive parameters.

There is an option in the Analyzer, which will allow the operator to open a window in order to edit the drive parameters. The parameter to be edited consists of the drive package, monitor output; resolver cable length, brake mode, home position shift and several torque limiting functions.

Drive parameters may only be changed when the system is in its RESET condition visibly indicated on the controller status display with a "C". It is necessary when changing certain parameters to cycle the power to the DeltaMax controller. This is visibly indicated with a flashing "P" on the controller status display.

NOTE

For more information regarding the Analyzer and the parameter menu, refer to the MacroPro II manual (IB-11B022).