

Appendix D

Limitations on Object File Size

This appendix explains application and configuration object file limits for AutoMax Processor modules. Note that there are limits both on the size of tasks that can be compiled and on the size of tasks that can be loaded onto the rack.

When BASIC, Control Block, and Configuration files are compiled, the object, symbol, and data size are printed to the screen and totaled. For Control Block tasks, estimated execution time is also printed to the screen. Note that for BASIC and Control Block tasks, the data required for arrays is included in the total displayed but does not actually affect the maximum allowable task size.

Task Size Limitations

	Object	Symbol	Data
Configuration file	*	**	**
BASIC task	***	64K	***
AutoMax Control Block task	32K	<----- 32K ----->	
UDC Control Block task	20K	<----- 20K ----->	
# of Symbols			
PC/Ladder Logic task	8K		

- * The configuration file has an object size of 0 unless the reconstructible option is used.
- ** The size limit for the configuration file is determined by the amount of memory available on the Common Memory module (M/N 57C413B or M/N 57C423), or if a Common Memory module is not being used, the AutoMax Processor that will store the configuration file.
- *** The size limit for the object and data is determined by the amount of memory available for application tasks on the AutoMax Processor that will run the task. Refer to the AutoMax Processor Module instruction manual (J-3650) for this information.

Determining the Size of Individual Tasks

For Control Block, BASIC, and Configuration files, after the task is compiled, the pertinent information is printed to the screen both in terms of object, symbol, and data, and in total. To the total figure add approximately 1K for system overhead. This figure will tell you how much memory on the Processor or UDC each task requires. You can also choose to create log files when you compile or verify application tasks. The log file will contain the same statistics printed to the screen.

For PC tasks, the Program Properties window in the Ladder editor is used to determine both the number of symbols and the approximate amount of memory the task will require on the Processor (this includes system overhead).

Application Task Memory Utilization in the Rack

See section 10.0 for the amount of memory available on each Processor module. In racks with a single Processor, add the total size of all the application tasks and the configuration to determine the amount of memory they will require on the Processor. In racks with multiple Processors, the configuration file will reside on the Common Memory module (M/N 57C413 or M/N 57C423 in slot 0). To determine the amount of memory that will be utilized on each Processor, add the total size of all the application tasks that will reside on each Processor.

In rare cases, PC/Ladder tasks that are within the limit specified above may not be loadable on a Processor. This is due to the manner in which Processor memory is allocated for bit variables in PC tasks. The smallest amount of Processor memory that can be allocated for any PC task variable is one word (16 bits). Each 16-bit register used in the PC task requires one word of memory. Individual bits within registers also require one word of memory. However, if more than one bit in a register is used, all those bits can be stored in one word of memory.

When there is a Common Memory module located in slot 0 of the rack (i.e., being used for bus arbitration and common memory storage) there are approximately 1400 words (2.8K) of memory available on each Processor for storing PC task bit variables. If there is no Common Memory module in the rack, or the Common Memory module is in a slot other than 0 (i.e., serving as extra memory), there are approximately 1000 (2K) words of memory available on each Processor for storing PC task bit variables. The M/N 57C435 Processor has approximately 2000 words (4K) of memory available for storing PC task bit variables regardless of whether or not a Common Memory module is in the rack.

This method of allocating space for bit variables will not cause a problem unless you use a large number of single bits within different words. Note that if you have run out of room for PC tasks for this reason, you can still load BASIC and Control Block tasks up to the limit of the Processor's memory.

Note that each physical online connection (maximum of four, one to each Processor) made through the Executive software either over the network or directly to the rack will require an additional 5K of memory on the Common Memory module. If there is no Common memory module, the 5K required will be allocated from the Processor.