

## 4.0 SCAN LOOP

This function can be used in AutoMax Control Block tasks and UDC Control Block tasks.

### Function

The SCAN LOOP block is used to define the time intervals at which the task will execute. The periodic interval can be controlled by either the AutoMax Processor's or UDC module's real time clock or a system EVENT (for AutoMax Processor only) that is defined prior to the call of this block.

Note that this block is required in every AutoMax Control Block task or UDC Control Block task. The SCAN LOOP block must be the first block called. All definition of variables and initialization required must occur before this block is called.

This block also performs the function of latching all simple common integer (%), double integer (!), and boolean (@) variables defined within the task each time the task runs.

### Program Statement

```
CALL SCAN_LOOP(TICKS=ticks%, EVENT=event name)
```

### Inputs

TICKS =

Specifies the periodic interval of execution for the control loop, type INTEGER. For versions of the AutoMax Programming Executive earlier than 3.1, a tick is defined as 5.5 milliseconds. The AutoMax Programming Executive Version 3.1 (and later) allows you to assign a tick rate ranging from 0.5 milliseconds to 10 milliseconds for each AutoMax Processor. The default tick rate is 5.5 milliseconds. The tick rate for UDC modules is fixed at .5 milliseconds. The maximum number of ticks for UDC Control Block tasks is 20. See J-3750 or J2-3045 for more information. This parameter must be specified and must be specified as a literal value only (variable name not accepted).

EVENT =

Specifies the name of the previously defined (through a BASIC statement) hardware event that causes the task to run. This parameter is optional. If specified, the task will execute based on the event. If not specified, the task will execute based on the system clock. **This parameter cannot be specified for an AutoMax PC3000 Control Block task or a UDC Control Block task.**

Even if the EVENT input is programmed, the TICKS input must still be programmed. The TICKS input is used to define the scan period of the task that is required when making scan-time dependent coefficient calculations for frequency-based control blocks

(PROP\_INT, LAG, etc.).

```
100 COMMON ISCR%
```

```
.  
.  
.
```

```
500 EVENT NAME=START_TASK, &  
    INTERRUPT_STATUS=ISCR%, TIMEOUT=6
```

```
.  
.  
.
```

```
1000 CALL SCAN_LOOP(TICKS=4, EVENT=START_TASK)
```

The EVENT input parameter is intended to be used for AutoMax Processor control loop tasks having a feedback parameter obtained from an interrupting I/O module. There are presently four input modules that have this ability: the Resolver Input Module (57C411) the 32 Channel Input Module (57C419), the 2 Channel Analog Input Module (57C409), and the Pulsetach Module (57C421). These modules have the ability to latch the input data when the interrupt is generated. This effectively “freezes” the data in time until the task that uses it gets its turn to execute and read it from the input module.

The period at which the data is latched and the interrupt is generated is programmable. Refer to individual I/O module documentation for more information.

Note that the BASIC statement GOTO is not permitted to reference a SCAN\_LOOP block or any program line that precedes this block. A BASIC END statement must be executed every scan.