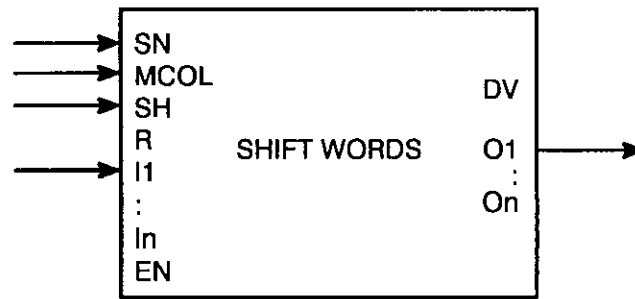


31.0 SHIFT WORDS

This function can be used in AutoMax Control Block tasks only. It cannot be used in UDC Control Block tasks.



Maximum 'n' = 8

Function

When RESET is FALSE and SHIFT is TRUE, shift the data in the specified INTEGER data structure towards the output(s), update the output(s) with the value(s) at column MCOL - 1, and if ENABLE is TRUE, shift the data at the input(s) into column 0, else shift zeroes into column 0.

Program Statement

```
CALL SHIFT_WORDS(STRUCTURE_NAME= struc_name%,           &
                  MAX_COLUMNS= max_columns%,           &
                  RESET= reset@, SHIFT= shift@,        &
                  INPUT1= input1%, ...INPUTn= inputn%, &
                  ENABLE= enable@, DATA_VALID= data_valid@, &
                  OUTPUT1= output1%, ...OUTPUTn= outputn%)
```

Inputs

SN (STRUCTURE_NAME) =

Name of the INTEGER data structure used to store the shifted data. This parameter must be specified by name only (literal value not accepted). The data structure name is limited to a maximum length of 16 characters and must be type INTEGER. The required INTEGER data structure is automatically created by this control block.

MCOL (MAX_COLUMNS) =

Required number of columns (depth) for the INTEGER data structure, type INTEGER. This parameter must be entered explicitly as a numeric literal. The minimum value is 1 and the maximum value is 32767 (see note 3). The columns of the data structure are numbered from 0 to MCOL - 1. Column 0 corresponds to the input of data structure and column MCOL - 1 to the output.

R (RESET) =

Reset input, type BOOLEAN. This parameter is optional. The default for this parameter is FALSE. When TRUE, all data in the data structure will be zeroed.

SH (SHIFT) =

Shift input, type BOOLEAN. This parameter must be specified. When RESET is FALSE and SHIFT is TRUE, shift the data in the data structure towards the output(s), update the output(s) with the value(s) at column MCOL - 1, and shift new data into column 0 (see ENABLE).

EN (ENABLE) =

Enable input, type BOOLEAN. This parameter is optional. The default for this parameter is TRUE. When ENABLE and SHIFT are TRUE, the values at the input(s) will be transferred into column 0 of the data structure. When ENABLE is FALSE and SHIFT is TRUE, zeros will be transferred into column 0.

I1 (INPUT1) =

Data input 1, type INTEGER. This parameter must be specified.

In (INPUTn) =

Data input n, type INTEGER. A maximum of 8 inputs can be specified. Each specified input must have a corresponding output.

Outputs

DV (DATA_VALID) =

Data valid output, type BOOLEAN. This is an optional parameter. DATA_VALID is set TRUE when the data in the data structure has been shifted a minimum of MCOL times since RESET went FALSE. When RESET is TRUE, DATA_VALID is set FALSE.

O1 (OUTPUT1) =

Data output 1, type INTEGER. This parameter must be specified.

On (OUTPUTn) =

Data output n, type INTEGER. This is an optional parameter. The number of outputs specified must be equal to the number of inputs.

Notes

1. Data structure names are limited to a maximum length of 16 characters. If this requirement is not met, a compilation error will occur.
2. The order in which the input/output pairs are entered is unimportant. However, for every INPUT(n) programmed a OUTPUT(n) must also be programmed. In addition, the input/output pairs must be contiguous beginning with input/output pair 1. If these requirements are not met, a compilation error will occur.
3. The SHIFT_WORDS block creates an INTEGER data structure that is used to store the data shifted from the inputs towards the outputs. The size of the data structure in bytes is equal to two times the number of programmed inputs times the number of MAX_COLUMNS specified. If the data structure size exceeds 32767 bytes, a compilation error will occur. Since the data structure is local to the control block task, its size is further limited by the maximum size of the total data storage area that the task can allocate for all the local variables.