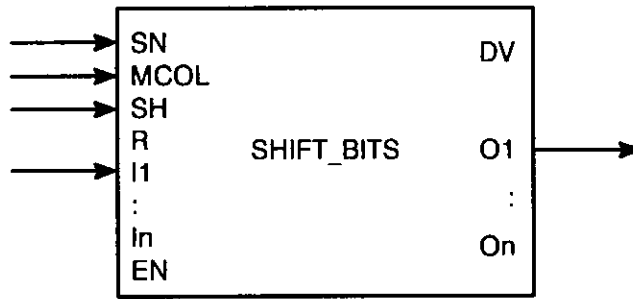


# 30.0 SHIFT BITS

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 BOOLEAN data structure towards the output(s), update the output(s) with the state(s) at column MCOL - 1 and if ENABLE is TRUE shift the state(s) of the input(s) into column 0, else set the state(s) of column 0 FALSE.

## Program Statement

```
CALL SHIFT_BITS(STRUCTURE_NAME=struct_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 BOOLEAN 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 15 characters and must be type BOOLEAN. The required BOOLEAN data structure is automatically created by this control block.

MCOL (MAX\_COLUMNS) =

Required number of columns (depth) for the BOOLEAN 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 state(s) at column MCOL - 1, and shift new states(s) 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 state(s) of the input(s) will be transferred into column 0 of the data structure. When ENABLE is FALSE and SHIFT is TRUE, set the state(s) of column 0 FALSE.

**I1 (INPUT1) =**

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

**In (INPUTn) =**

Data input n, type BOOLEAN. 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 BOOLEAN. This parameter must be specified.

**On (OUTPUTn) =**

Data output n, type BOOLEAN. 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 an OUTPUT(n) must also be programmed, and 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\_BIT block creates a BOOLEAN 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 MAX\_COLUMNS. 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.