

SHIFT Functions

SHIFT S27

DESCRIPTION

The SHIFT function treats a group of adjacent data table locations as a one dimensional array of bits. This block of tables is referred to as a GROUP. The elements within a Group are referenced by a bit number, commencing at bit 0. The SHIFT function shifts a Group left or right by a variable number of bits. When shifting the result is zero filled.

Note, a leftward operation displaces data tables from low locations to high locations.

FEATURES

- Group location specified by the user.
- User programmable Group length.
- User programmable shift count.

SPECIFICATION

Control language:-

SHIFT
 X-----SPEC-----VALUE-----Q
 S27 Zm

Table 1 Program rung data

Sym	Location	Use	Range
X	Rung Input	Shift count. (+ for left - for right 0 for no operation)	-15 to + 15
Zm	Value location	Start of parameter list (3 locations)	Any write-enabled table usable by special functions
Q	Rung output	Fault indication	-1 for no errors

Table 2 Value data

Sym	Location	Use	Range
EC	Zm	Error code	See table 3
GL	Zm + 1	Group length	1 to 128 data table locations
SA	Zm + 2	Internal GEM80 address of Group	Address of write-enabled data table location obtained by LOCATE (\$20)

Table 3 Fault conditions

Condition	Result (Q)	Code in Zm	
		Numeric Value	States ON
Programming error Group length invalid	0	3	0 & 1
Programming error Invalid group address:- (a) Group not in table usable by special. (b) Input Group extends beyond end of data table area.	0	5	0 & 2
Programming error. Invalid shift count specified.	0	65	0 & 6

APPLICATION NOTES

+---<AND>---SHIFT---SPEC---VALUE---<OUT>---+
 G11 S27 G0 G10

To shift right 4 positions a group defined by G100-G102 the initial values should be:

If G1 = 3, G2 = address of G100 supplied by S20
 G11 = -4

	G102	G101	G100
Initial contents:-	@5A00	@0000	@0001
After one scan:-	@05A0	@0000	@0000
After three scans:-	@0005	@A000	@0000
After seven scans:-	@0000	@0005	@A000



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