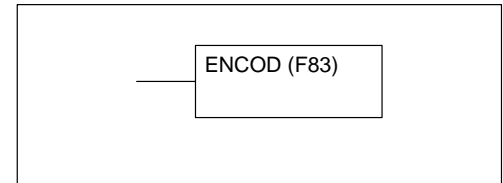


Number Conversion Instructions

Encode ENCOD (F83)

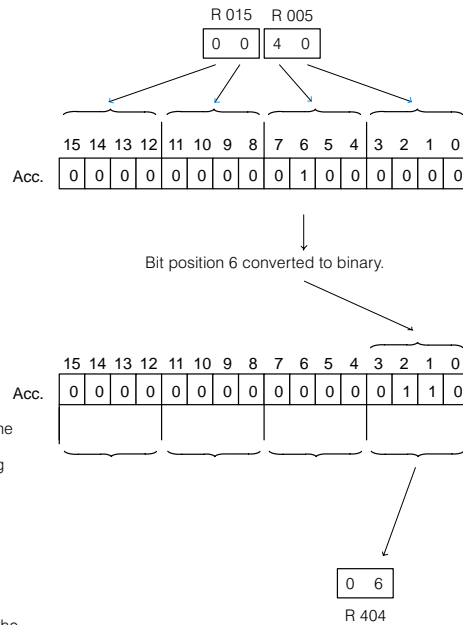
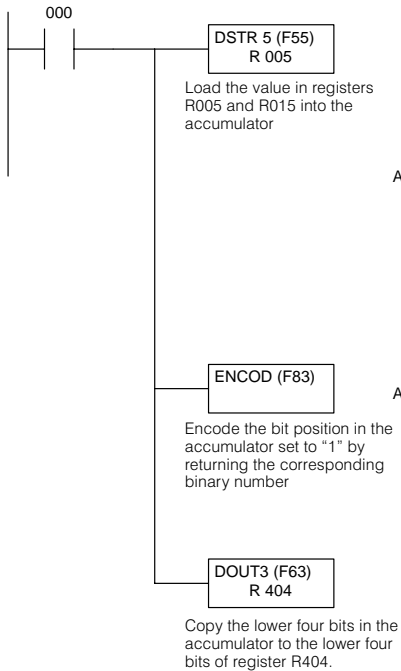
The Encode instruction encodes the accumulator bit position that contains a 1 by returning the corresponding binary representation. If the most significant bit is set to HEX F (decimal 15), the binary value 15 is returned to the accumulator. If the accumulator value is 0000 or 0001 a zero will be returned to the accumulator. If there is more than one bit position set to a "1" the least significant "1" will be encoded. The discrete bit flag 777 is used to indicate if there were multiple 1s in the accumulator.



Discrete Bit Flags	Description
777	Will be on if there was more than one bit position set to a "1" in the accumulator.

In the following example, when input 000 is on the 16-bit binary pattern from registers R005 and R015 is loaded in the accumulator by the Data Store 5 (F55) instruction. In this example the 6th bit (BCD 40) is on. When the Encode (F83) instruction executes the accumulator will contain the BCD value of 6. The lower four bits of the accumulator are copied to the lower four bits of register R404 by the Data Out 3 (F63) instruction.

DirectSOFT Display

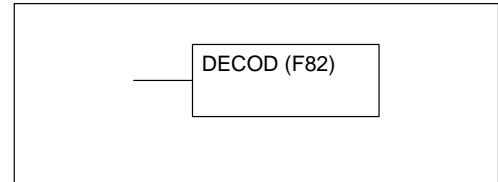


Handheld Programmer Keystrokes

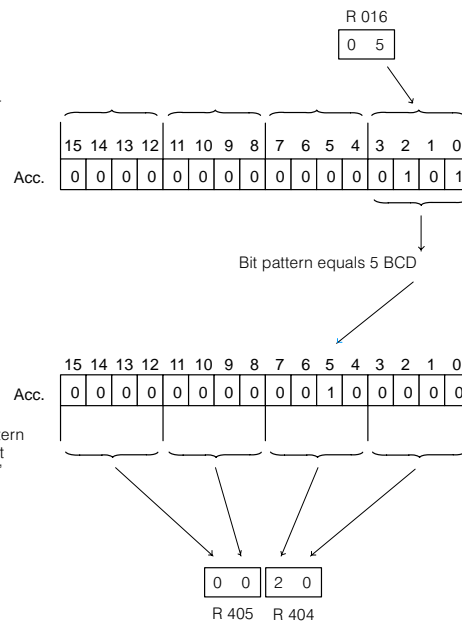
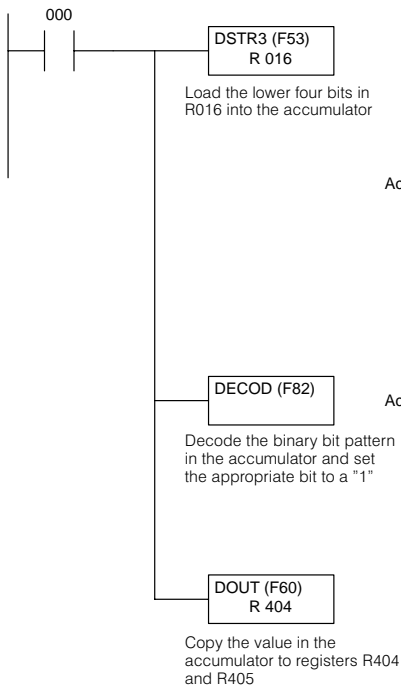
STR	SHF	0	ENT
F	5	5	ENT
R	5	ENT	
F	8	3	ENT
F	6	3	ENT
R	4	0	4 ENT

**Decode
DECOD (F82)**

The Decode instruction decodes a four bit binary number (0-F) in the accumulator and sets the corresponding bit position to a one. If the accumulator contains a HEX F (decimal 15) the most significant bit (bit 15) will be set in the accumulator. If the accumulator contains a zero the least significant bit (bit 0) will be set to a one. All other bits in the accumulator will be set to a zero.



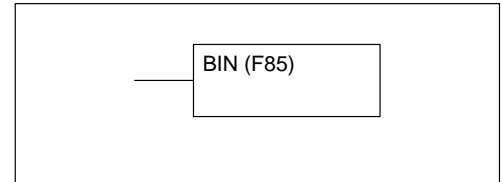
In the following example, when 000 is on the binary value of the lower four bits in R016 (5) will be loaded in the accumulator by the Data Store 3 (F53) instruction. The Decode instruction will then translate the value 5 to a 1 in the fifth bit position of the accumulator. The value 20 in the accumulator is copied to data registers R404 and R405 with the Data Out (F60) instruction.

DirectSOFT Display**Handheld Programmer Keystrokes**

STR	SHF	0	ENT
F	5	3	ENT
R	1	6	ENT
F	8	2	ENT
F	6	0	ENT
R	4	0	4 ENT

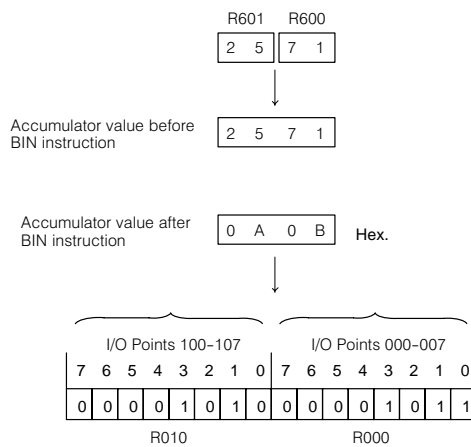
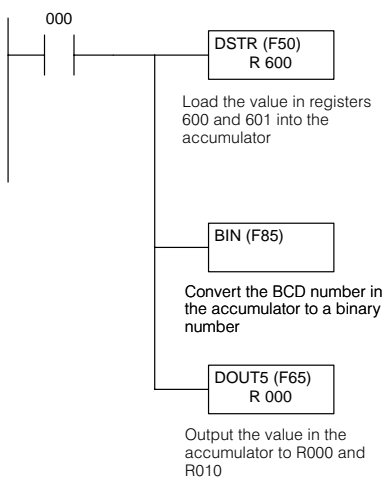
Binary BIN (F85)

The Binary (F85) instruction converts a BCD value in the accumulator to the binary/HEX equivalent value. The result of the conversion resides in the accumulator.



In the following example, when input 000 is on the value (2571 BCD) in R600 is loaded into the accumulator using the Data Store (F50) instruction. The value in the accumulator is converted to a binary number (HEX 0A0B) using the Binary (F85) instruction with the result residing in the accumulator. The value in the accumulator is copied to I/O registers R000 and R010 (which corresponds to I/O points 0–7 and 100–107) with the Data Out 5 (F65) instruction.

DirectSOFT Display



Handheld Programmer Keystrokes

STR	SHF	0	ENT
F	5	0	ENT
R	6	0	0 ENT
F	8	5	ENT
F	6	5	ENT
R	0	ENT	

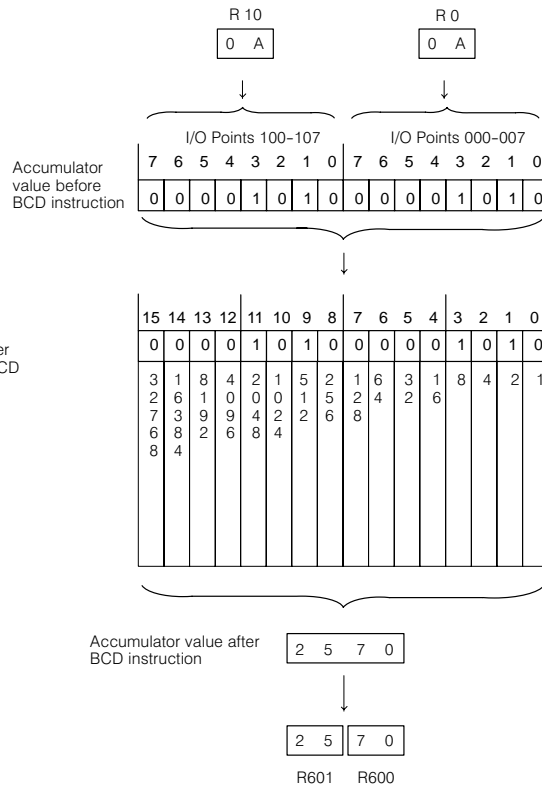
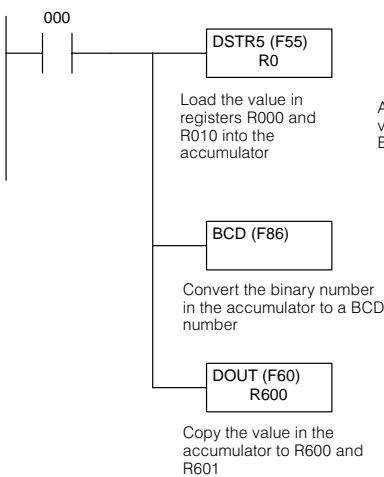
Binary Coded Decimal BCD (F86)

The Binary Coded Decimal (F86) instruction converts a binary/HEX value in the accumulator to the BCD equivalent. The result of the conversion resides in the accumulator.

BCD (F86)

In the following example, when input 000 is on the value (HEX 0A0A) in R000 and R010 is loaded into the accumulator with the Data Store 5 (F55) instruction. The value in the accumulator is converted to a BCD number (BCD 2570) using the BCD (F86) instruction with the result residing in the accumulator. The value in the accumulator is output to register R600 using the Data Out (F60) instruction.

DirectSOFT Display

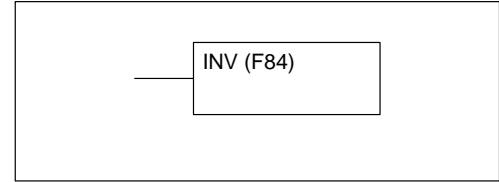


Handheld Programmer Keystrokes

STR	SHF	0	ENT
F	5	5	ENT
R	0	ENT	
F	8	6	ENT
F	6	0	ENT
R	6	0	ENT

Invert INV (F84)

The Invert instruction generates the one's complement of the number in the accumulator. The result is stored in the accumulator.



In the following example, when input 000 is on the value (AD63) in R000 and R010 is loaded into the accumulator using the Data Store (F55) instruction. The value in the accumulator is inverted with the result residing in the accumulator. The value (HEX 529C) is copied to registers R404 and R405 using the Data Out (F60) instruction.

