User Manual for the
HE693SNP900 and HE693SNP940

SNP Interface Module

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PREFACE

This manual explains how to use the Horner APG SNP Interface Card for use with GE Fanuc Series 90-30 PLCs.

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To obtain warranty service, return the product to your distributor with a description of the problem, proof of purchase, post paid, insured and in a suitable package.

ABOUT PROGRAMMING EXAMPLES

Any example programs and program segments in this manual or provided on accompanying diskettes are included solely for illustrative purposes. Due to the many variables and requirements associated with any particular installation, Horner APG cannot assume responsibility or liability for actual use based on the examples and diagrams. It is the sole responsibility of the system designer utilizing the SNP Interface to appropriately design the end system, to appropriately integrate the SNP Interface Card and to make safety provisions for the end equipment as is usual and customary in industrial applications as defined in any codes or standards which apply.

Note: The programming examples shown in this manual are for illustrative purposes only. Proper machine operation is the sole responsibility of the system integrator.

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CHAPTER ONE: INTRODUCTION

1.1 Product Description

Congratulations on your purchase of the SNP Interface Module. The HE693SNP900/940 (SNP900/940) is a Series 90-30 compatible interface module which allows an additional SNP slave port to be added to any Series 90-30 PLC. The SNP900 port may be configured for either RS-232 or RS-485 operation. The SNP940 may be configured for RS-232, RS-485 or up to a 14.4k baud modem.

Note: The SNP900/940 does not support radio modem operation.

The SNP (Series Ninety Protocol) Interface Module functions as an SNP slave module. SNP900/940 expands the capablity of a Series 90-30 PLC to support multiple SNP masters. SNP900/940 allows a SNP master device to access Series 90-30 PLC reference data as though it were connected directly to the PLC's SNP port. SNP messages may access up to 10,000 bytes of data in a single request. Datagram requests are supported up to a limit of 250 bytes per request.

Revision A of the SNP900 product does not support Logicmaster 90 communications. Revision B (or later) supports Logicmaster communications for programming and data access. Revision C or later adds utilization of the SNP-X protocol. Revision D (or later) supports the "Change SNP ID" communication request.

WARNING: This port is not intended for the transfer of series 90-30 system configuration data. Logicmaster 90 support includes transfer of program and reference table data only.

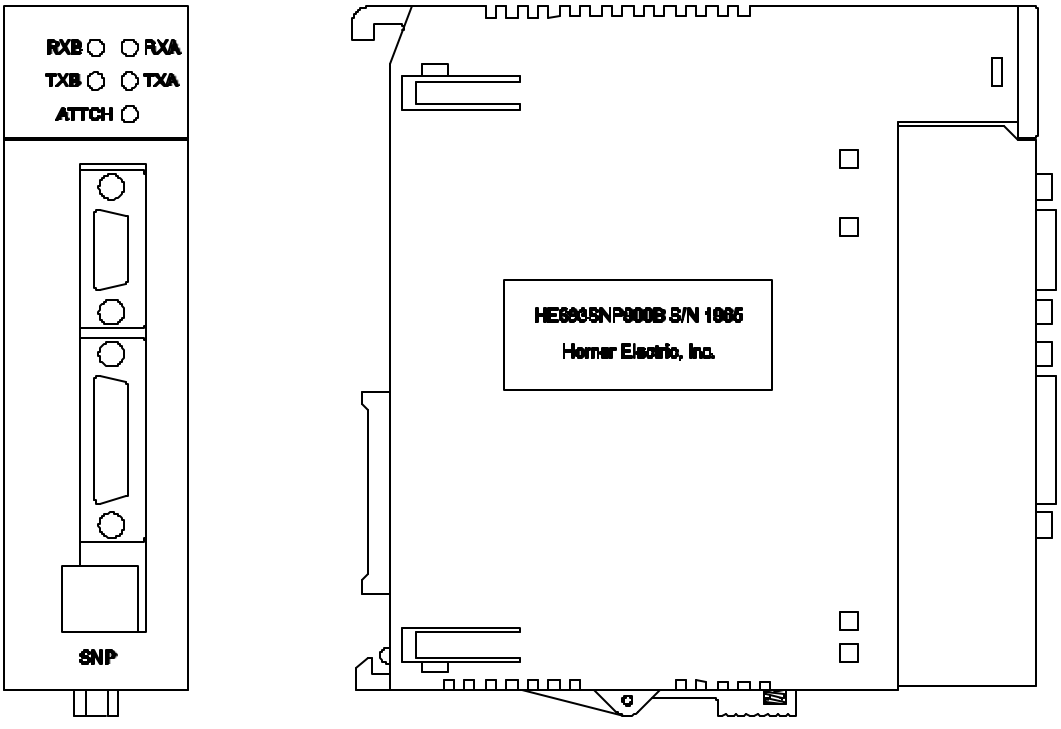


Figure 1.1 – Front and Side Views

Configuration of the port type, associated serial protocol parameters, and hardware handshaking is easily accomplished through either the GE Fanuc Hand Held Programmer (HHP) or LogicMaster 90 (LM90).

The SNP900/940 can be used with ALL Series 90-30 CPUs. However, the following conditions must be met:

1. The SNP900/940 requires that the associated Series 90-30 PLC must be version 5.01 (or greater) for communication with any compatible SNP device.

2. The SNP900/940 requires a version of 6.50 or greater for use with LogicMaster 90.

CHAPTER TWO: INSTALLATION

2.1 Mounting Requirements

The SNP Module is designed to plug into any 90-30 backplane slot. For installation information, refer to the 90-30 Installation Manual.

2.2 Power requirements

Table 2.1 – Power Requirements		
	SNP900	**SNP940**
Inrush	300mA @ 5VDC (3msec.)	350mA @ 5VDC (3msec.)
Steady State	200mA @ 5VDC	300mA @ 5VDC

2.3 Module Installation

1. Remove power to the 90-30 CPU/Rack.
2. Install the SNP900/940 in a free slot.
3. Apply power to the PLC.
4. Configure the communication port parameters with the HHP or LM90.
5. Connect the SNP master to the appropriate port.
6. Start SNP master application.

2.4 Module Configuration

Before the SNP900/940 is connected to the SNP Master, it should be configured with the appropriate parameters. Either the GE Fanuc Hand Held Programmer (HHP) or LogicMaster 90 (LM90) can be used to configure the parameters. The SNP900/940 also requires a PLC CPU version 5.01 or later. A CPU version of 6.50 or later is required for use with LogicMaster.

2.4.1 Configuration with the Hand Held Programmer

1. Install the SNP Interface module into the PLC.
2. Apply power to the PLC rack. The PLC will perform it's power-up diagnostics and a menu will appear on the Hand Held Programmer's display.
3. Enter the following key sequence on the Hand Held Programmer.

DISPLAY	KEYSTROKE	COMMENTS
1. PROGRAM 2. DATA	**MODE**	Press the MODE key to reach this screen.
4 1. PROGRAM <S 2. DATA	4	Press the 4 key, a 4 will appear as the first character in the display.
R0: 00 PLC <S KEY CLK : OFF	**ENTER**	Press the ENTER key, the display will now show the PLC CPU status.

DISPLAY	KEYSTROKE	COMMENTS
R0: 01 EMPTY <S	↓	Press the DOWN ARROW key until the slot number containing the SNP Interface Module appears following the "R0:". This example assumes the module resides in slot 1, therefore the DOWN ARROW key is only pressed once.
R0: 01 READ <S	READ/VRFY ENTER	Press the READ/VRFY key, then ENTER. This will cause the PLC to "read" the SNP Interface Module. The model number of the module will be displayed.
R0: 01 SNP900 <S I08 : I_	1 ENTER	Enter the starting reference for the 8 digital inputs (%I) assigned to the module. Press the ENTER key.
R0: 01 SNP900 <S I08 : I001 - 016	→	Pressing the RIGHT ARROW key will cause the first configuration parameter to be displayed.
R0: 01 SNP900 <S PORT: RS485	→	All of the additional parameters can be modified by entering the numeric data or pressing the +/- key then pressing ENTER.
R0: 01 SNP900 <S BAUD RT: 19200		Pressing the RIGHT ARROW key will cause the next configuration parameter to be displayed. These additional parameters are described below and in greater detail in Chapter 3.

Table 2.2 – Configuration Parameters

Additional Parameters	Limits/Options
Port	RS-232, RS-485 or modem
Baud	300, 600, 1200, 2400, 4800, 9600, 14400, 19200
Parity	None Even and Odd (See Limitations.)
Stop Bits *	1,2
Handshake	SNP, No CTS
Idle Time	1-60 Seconds
Modem TAT	0-255 (units of 10 milliseconds)
Certain fields will generate a CNF_ERR on the Hand Held Programmer if they are invalid for the mode of operation.	

2.4.2 Configuration with Logicmaster 90

1. Install the SNP Interface module as described in the PLC documentation.
2. Connect serial port of the pc to the PLC's main programming port.
3 Execute the Logicmaster 90 software.
4. Enter the Configuration Package from the Main Menu <F2>.
5. Select the proper folder.
6. Choose I/O Configuration from the Configuration Menu <F1>.
7. Cursor over to the slot containing the SNP Interface module.
8. Select Other <F8> and Foreign <F3>.
9. The following screen should be displayed.

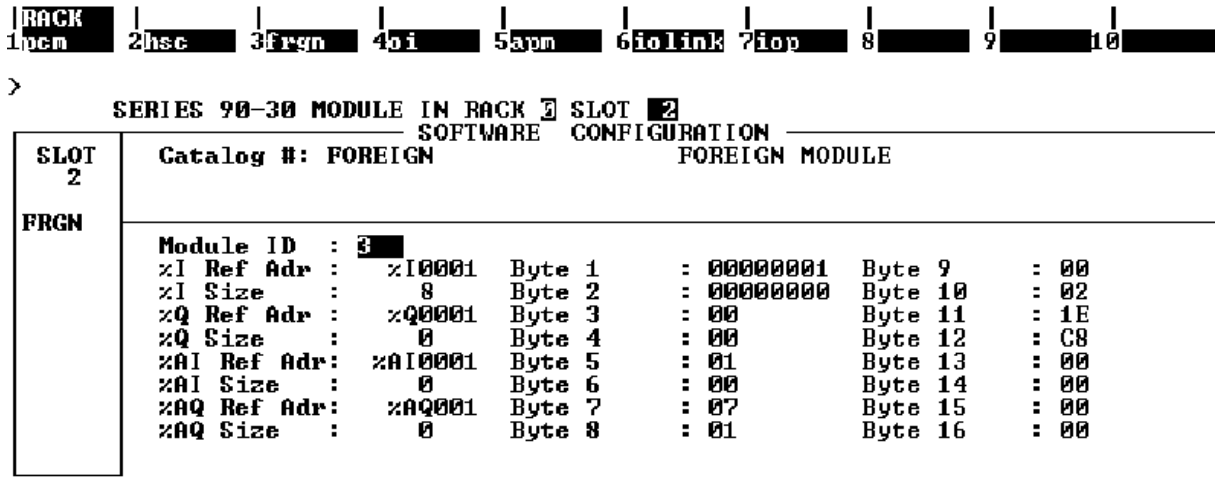


Figure 2.1 – Example Configuration Screen

10. Configure the %I Reference Address of choice and the %I size as 8.
11. Cursor over to byte 1 and enter a 1 (00000001). This signifies to the PLC that the SNP Module is an intelligent module.
12. Bytes 5 through 12 should be setup according to Table 2.3.
13. All remaining bytes should be set to 0

Table 2.3 – Byte Setup

Byte Number	Byte Value	Definition
5	0=RS-232, 1=RS485, 2=modem	Port
6	0	N/A
7	0=300, 1=600, 2=1200, 3=2400, 4=4800, 5=9600, 6=14,400, 7=19,200	Baud Rate
8	0=None, 1=Odd, 2=Even	Parity
9	0=1,1=2	Stop Bits
10	0=SNP, 1=No CTS	Handshaking
11	1-3Ch (1-60 Seconds in Hex)	Idle Time
12	0-FFh (0-255/0-2.55 Seconds in Hex)	Modem Turn-around Time

CHAPTER 3: OPERATION

3.1 SNP Protocol

The Series Ninety Protocol (SNP) is a proprietary serial communications protocol developed by GE Fanuc for communication between PLCs and related equipment. The protocol is a set of rules that establish and maintain a communication link between an SNP master and SNP slave device. SNP is typically a half-duplex protocol that uses either RS-485 (enhanced version of RS-422) or RS-232 electrical interfaces. Both types are provided in the SNP900/940. SNP also allows serial communications characteristics to be varied such as baud rate, parity and stop bits.

SNP devices are connected in direct point-to-point or multidrop arrangements. For multiple-drop configurations, only one SNP master exists. When multiple slave devices exist, each slave is addressed by a unique SNP ID. For the SNP900/940, the SNP ID is the same as that configured for the associated PLC. In a multiple twisted pairs RS-485 multidrop configuration, up to one master and 31 slaves can be supported. Termination resistors need to be provided at each end of the cable matching the impedance (typically 120 ohms).

SNP is a master-slave protocol where the master device initiates all communications requests to which the slave device responds. The SNP900/940 is an SNP 'slave' device designed to respond to most 'data' requests issued by the master. LogicMaster 90 communicates with PLCs through SNP, and Revision A of SNP900/940 does not support Logicmaster communications. Revision B (and later) supports Logicmaster communications for programming and data access but does not support configuration. Revision C (or later) adds utilization of the SNP-X protocol. The SNP900/940 uses the SNP-X protocol if the SNP handshaking option is selected, and the device with which it is communnicating is utilizing SNP-X. Revision D (or later) supports the "Change SNP ID" communication request.

When an SNP master sends a request to a slave, it must create a connection (ATTACHMENT) before it transfers the data. If the master needs to communicate with another slave, it must break the first connection and establish a different connection with the other slave. SNP connections are established with the communication line BREAK signal, and RTS/CTS is used to maintain the connection.

Note: If an external modem is to be used, it must be able to support receipt and transmission of the BREAK character.

The SNP Read and Write Memory requests allow the master device to directly read and write memory in the PLC through SNP900/940. Any one of the read or write requests can only be directed to a contiguous group of a single memory type. However, SNP provides an additional type of request called Datagrams. Datagrams offer the capability to read from several slave memory locations in a single request and provide significantly faster retrieval of mixed memory types from a slave device than from separate readings of each memory type.

Master devices use either of the two types of requests to access reference data. However, there are certain limitations on the SNP900/940 which restrict the amount of data the master device can access over the port with one request. An SNP request is divided into several smaller packets; however, the largest amount of inclusive data which may be passed or requested in any single request is 10,000 bytes of data. A single datagram request or response is limited to 250 bytes of data.

Master devices also use the logon request to attempt to access restricted level services such as changing the PLC run state, clearing fault tables, changing the SNP ID, downloading programs, etc. SNP900/940 does not support this type of logon request and the associated restricted services. If a logon is attempted, an SNP error message (5-17, *programmer is already attached*) will be generated.

While it is outside the scope of the manual to describe the actual SNP message protocol, additional information can be found in the *GE Series 90 PLC Serial Communications User's Manual,* **GFK-0582**.

3.2 SNP Identification

The SNP900/940 responds to either a null address or the SNP address assigned the associated Series 90-30 PLC. To configure the PLC or SNP address, refer to the associated reference manual.

3.2.1 Changing SNP ID

The SNP900/940 supports the 'Change SNP ID' Communications Request (ComReq). After the power-up initialization, the SNP900/940 module defaults to the same SNP ID as the PLC CPU. The 'Change SNP ID' ComReq changes the SNP ID of the SNP900/940 slave device to a specified value (*the SNP ID of the PLC CPU is not affected*). This section discusses the structure of a ComReq and describes the use of 'Change SNP ID' ComReq in particular. For details on using communications requests, refer the GE Faunc's User Manual "Series 90 PLC Serial Communications" (GFK-0582C).

a. Using a COMREQ Instruction

A ComReq is initiated when a COMREQ Ladder Instruction is activated. An associated Status Word reports the progress and results of the ComReq.

The COMREQ instruction has four inputs and two outputs:

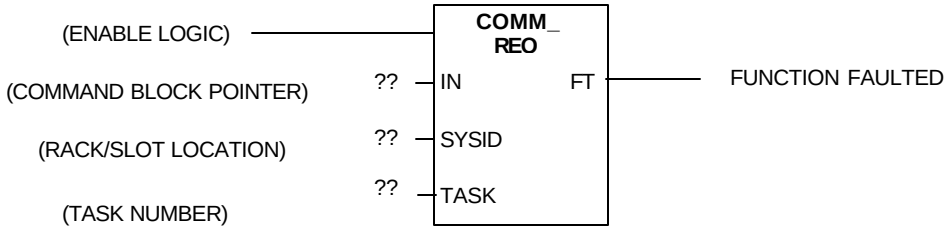


Figure 3.1 – Comreq Instruction Inputs/Outputs

Enable Logic: Control logic for activating the COMREQ instruction.

Command Block Pointer (IN): Location of the command block. Command block contains additional information about the ComReq and can be located in any word-oriented area of the memory (%R, %AI, or %AQ).

Rack/Slot Location (SYSID): This is a hexadecimal value. The value specifies the rack/slot location of the SNP900/940 associated with this ComReq. For example, for rack '0' and slot'4', the value is '0004h' and for rack '3' and slot '9', the value is '0309h'.

Task Number (TASK): Set the Task Number to 1.

FT Output: In case of a WAIT mode ComReq, FT output provides power flow to optional logic depending upon whether the ComReq was successfully completed.

Table 3.1 – FT Outputs		
Enable	Error?	FT output
Active	No	False
Active	Yes	True
Not Active	No Execution	False

The COMREQ Instruction never passes power to the FT output in NOWAIT mode.

Note: 'Change SNP ID' uses NOWAIT mode, and the power is not passed to the FT output.

b. Command Block:

The Command Block contains the details of a ComReq. The address of the Command Block is specified by the IN input of the COMREQ Ladder Instruction. The address is in any word-oriented area of the memory (%R, %AI, or %AQ). The Command Block structure is placed in the designated memory area using an appropriate programming instruction. (The Block MOVE instruction is recommended.)

The Command Block has the following structure:

Word 1: Data Block Length
Word 2: WAIT/NOWAIT Flag
Word 3: Status Pointer Memory Type
Word 4: Status Pointer Offset
Word 5: Idle Timeout Value
Word 6: Maximum Communication Time
Word 7 ~ 134: Data Block

Data Block Length (Word 1): The parameter is the length of the Data Block portion of the Command Block. The length is measured from the beginning of the Data Block at Word 7 - not from the beginning of the Command Block.

Note: In case of 'Change SNP ID' ComReq, the Data Block Length (word 1) is always 5.

WAIT/NOWAIT Flag (Word 2): This flag determines whether the PLC will wait for a reply from SNP900/940 to the COMREQ Ladder Instruction. If the Command Block specifies NOWAIT mode, the program will not wait for a reply and the program execution begins immediately after sending the ComReq. In case of WAIT mode, the program will wait for a reply from the communication module to the ComReq. The maximum length of time that the PLC waits for the response is specified in the Command Block as 'Idle Timeout Value'. If no response is received within the timeout value, the program execution continues.

Table 3.2 – WAIT / NOWAIT Values	
Mode	Word value
NOWAIT	0
WAIT	1

Note: 'Change SNP ID' uses NOWAIT mode.

Status Word Pointer Memory Type (Word 3): The Status Word is written into PLC memory at the location specified by the Command Block Word 3 and 4. The format of the location includes memory type (Word 3) and offset (Word 4).

Table 3.3 – Memory Type

Abbreviation	Memory Type	Value to Enter	
		Decimal	Hexadecimal
%I	Discrete Input Table	70	46h
%Q	Discrete Output Table	72	48h
%R	Register Memory	8	08h
%AI	Analog Input Table	10	0Ah
%AQ	Analog Output Table	12	0Ch

Status Word Pointer Offset (Word 4): Word 4 contains the offset within the memory type selected. *The status word is a zero-based number.* For example, when %R1 is to be used for Status Word, the offset would be zero and when using %R100, the offset would be 99.

Idle Timeout Value (Word 5): In case of WAIT mode, idle timeout value is the maximum time the PLC waits for the communications module to acknowledge the receipt of the request. For NOWAIT mode, the value is not used.

Note: 'Change SNP ID' uses NOWAIT mode, and idle timeout value (word 5) is not used.

Maximum Communication Time (Word 6): In case of WAIT mode, this value specifies the maximum amount of time the program should hold the window open when the communications module is busy. For NOWAIT mode, this value is not used.

Note: 'Change SNP ID' uses NOWAIT mode, and maximum communication time (word 6) is not used.

Data Block (Words 7 ~ 134): The Data Block contains information related to a particular ComReq and depends on the communication protocol used.

Note: For 'Change SNP ID' ComReq, the next section describing the Command Block discusses the Data Block format.

c. 'Change SNP ID' ComReq Example

The following information covers the Command Block for the 'Change the SNP ID' ComReq using an example. The SNP ID of the slave device in SNP900/940 is set to "12AB27" using a 'Change SNP ID' ComReq. %R1 is used to get the status of the ComReq.

Command Block:

Word 1:	00005 (0005)	SNP Data Block Length (Do not change)
Word 2:	00000 (0000)	NOWAIT Mode (Do not change)
Word 3:	*00008 (0008)*	*Status Word Memory Type (%R)*
Word 4:	*00000 (0000)*	*Status Word Address minus 1 (%R1)*
Word 5:	00000 (0000)	Not Used (Do not change)
Word 6:	00000 (0000)	Not Used (Do not change)
Word 7:	07002 (1B5A)	SNP Command Number (Do not change)
Word 8:	*12849 (3231)*	*Characters 1 and 2 of new SNP ID: '1' (31h), '2' (32h)*
Word 9:	*16961 (4241)*	*Characters 3 and 4 of new SNP ID: 'A' (41h), 'B' (42h)*
Word 10:	*14130 (3732)*	*Characters 5 and 6 of new SNP ID: '2' (32h), '7' (37h)*
Word 11:	00000 (0000)	Characters 7 and 8 of Slave SNP ID: null, null (Do not change)

For the Series 90-30 PLCs, the SNP ID is restricted to a maximum of 6 bytes followed by a null character (0). The 6 bytes must be the ASCII characters '0' through '9' inclusive and upper case 'A' through 'F' inclusive. A null SNP ID (Character 1 = 0) is not allowed.

The Status Word (%R1) reports on the progress and results of a ComReq. The memory address to which the Status Word is written by SNP900/940 is specified in the Command Block Word 3 and Word 4. Word 3 describes the memory type, and Word 4 describes the offset within the memory type. The offset is a zero-based number. For example, when %R1 is to be used for Status Word, the offset is zero and when using %R100, the offset is 99.

Note the following points when interpreting the Status Word:

1. SNP900/940 never sends a zero for the Status Word to the PLC CPU. If the user program needs to know if the command is complete, it can zero the Status Word before issuing the ComReq and then check for being nonzero.
2. If the Status Word selected is invalid, SNP900/940 ignores the ComReq, and no status is reported.
3. A status code of 1 in the low byte and 0 in the high byte indicates that the request was successfully completed.
4. Non-zero values (other than 1) in the low byte indicate errors. In case of error, the low byte provides the major error code and the high byte contains any applicable minor error code.

Table 3.4 below lists the possible error codes in case of the 'Change SNP ID' ComReq error:

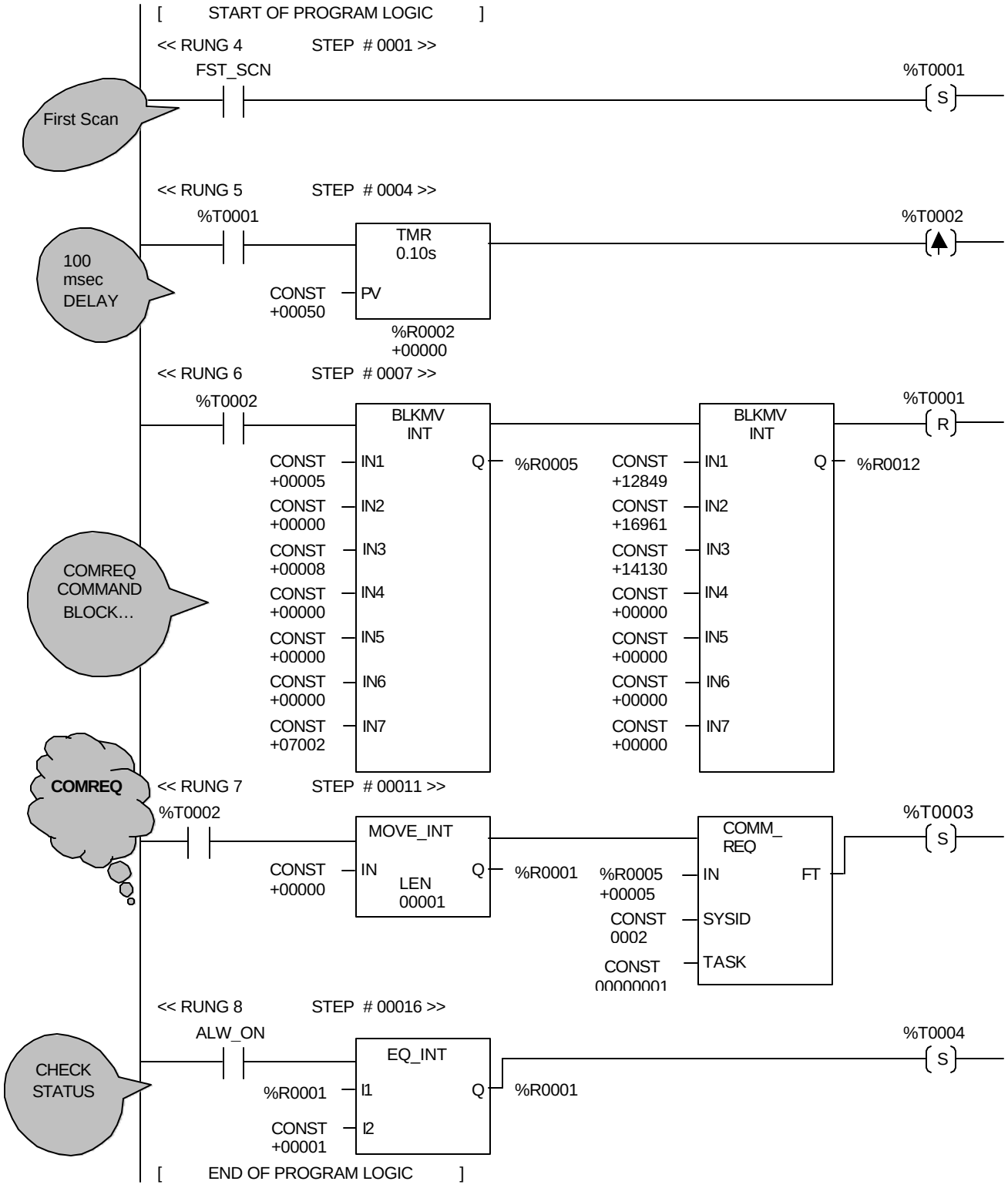
Table 3.4 – Error Codes

Error Description	High Byte of Status Word	Low Byte of Status Word
Invalid SNP ID	36h	0Ch
Invalid request (Word 7 of Command Block)	xx (Don't care)	0Bh

Note: The first COMREQ issued to an SNP900/940 (after PLC power-up) must be delayed; the SNP900/940 cannot accept COMREQs immediately after a PLC application is started. It is recommended to have a delay of five seconds past the first scan.

Refer to the following Ladder Program example using the 'Change SNP ID' ComReq.

Ladder Program Example



3.3 Port Selection

Via the software configuration, the user may select the RS-232 or RS-485 or modem port. The HE693SNP900/940 does not allow simultaneous communication on multiple ports.

Table 3.5 - Pinouts

9-Pin RS-232 Port				15-Pin RS-485 Port		
Pin #	**Signal**	**Direction**		**Pin #**	**Signal**	**Direction**
1	[DCD] Always High	Output		5	[PWR] 5VDC Power	N/A
2	[TXD]	Output		6	[RTS-]	Output
3	[RXD]	Input		7	[GND]	N/A
4	No Connection	N/A		8	[CTS+]	Input
5	[GND]	N/A		9	[TERM]	Input
6	[DSR]	Output		10	[RXD-]	Input
7	[CTS]	Input		11	[RXD+]	Input
8	[RTS]	Output		12	[TXD-]	Output
9	[RI]	Output		13	[TXD+]	Output
				14	[RTS+]	Output
				15	[CTS-}	Input

Activity on these ports may be monitored by the LED's on the front panel. See Front panel diagnostic LED's in Section 3.7.

3.4 Port Parameters

The user specifies the baud rate, stop bits and parity of the SNP port. SNP devices typically default to 19.2k baud, Odd parity and 1 stop bit. Modem applications utilizing the Logicmaster 90 dialer are restricted to 9600 baud, no parity, and 1 stop bit.

Note: The SNP900/940 is unable to generate 2 stop bits when a parity other than NONE is selected. This may or may not affect other devices on a network with these parameters. If problems exist with this configuration, change all the network devices to only 1 stop bit.

3.5 Port Handshaking

The SNP900/940 provides two different hardware handshaking modes to provide for standard SNP configurations.

SNP COMPATIBLE MODE:

This mode is typically compatible with most SNP devices. SNP900/940 asserts RTS when an ATTACH message with a valid address is received from the master device. Thereafter, SNP900/940 also begins to sample the CTS line assuming the master device drives this line for the remainder of the attachment. When the CTS line drops, SNP900/940 breaks the attachment and ignores all messages until a new attach sequence begins.

NO CTS MODE:

The mode behaves as the SNP Compatible Mode with the exception that CTS is not monitored. This is for SNP master devices which do not provide hardware handshaking. In this case, SNP900/940 assumes the attachment is broken when either the IDLE timer has timed out or a new attachment sequence has begun.

Note: Do not select "NO CTS" handshaking mode in multidrop applications.

3.6 SNP Timing Parameters

Configuring a SNP network also involves setting up time-out and time-delay values.

IDLE TIME

This specifies the amount of time which may pass, after an attachment, without receiving new messages, before the slave breaks the connection. This is a configurable value and is in terms of seconds. Note that the master can optionally either increase this time or turn off the timer completely.

MODEM TURNAROUND TIME

This specifies the amount of time which must pass between the reception and transmission of a new message. This allows for propogational transmission delays in SNP handshake mode. This is a configurable value and is in terms of 10mSec. Please note that the master can optionally increase this time.

MAX ACKNOWLEDGE TIME

This specifies the amount of time which may pass, after sending a message, before an acknowledgment is received from the master, before the slave breaks the connection. This value is not configurable and is set to 1 Second. Note that the master can optionally either increase this time or turn off the timer completely.

3.7 Front Panel Diagnostic LEDs

In RS-232 applications, RXA and TXA will flicker when there is activity on the associated lines for the RS-232 port. In RS-485 applications, RXB and TXB will flicker when there is activity on the associated lines for the RS-485 port. For modem applications, RXB indicates a ring, and TXB indicates a carrier detect.

For all applications, the ATTCH LED indicates that the SNP900/940 has received a properly addressed attached message and is communicating with the master.

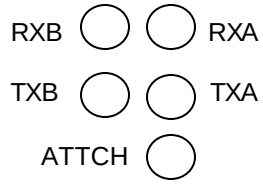


Figure 3.2 – Front Panel LEDs

3.8 Remote Modem Access (SNP940 Only)

The HE693SNP940 module is designed to provide convenient remote programming/data access for Series 90-30 PLCs via telephone modem. The SNP940 can only 'accept' a call. No dial-out capabilities exist.

The following procedures must be followed for Logicmaster 90-30 dial-up access.

1. Configure the SNP940 module.

Due to limitations in the Logicmaster 90 telephone dialer, the SNP940 must be configured for the following parameters:

a. Modem port
b. 9600 baud rate
c. No parity
d. 1 stop bit
e. SNP Handshaking

2. Connect the Telephone Line to SNP940 module.

The RJ-11 (LINE) jack present on the front of the SNP940 is designed to directly accept a telephone line.

NOTE: *It is recommended that an external surge protector be installed on the telephone line to offer some protection against lightening strikes.*

3. Run the Logicmaster Auto-dialer.

The Logicmaster 90 Dialer is accessible from the "Logicmaster 90 Utilities" entry from the main menu. This program must be setup for the appropriate personal computer COM port, baud rate, parity, and stop bits. The configuration parameters (in the edit menu) must be configured to the following values:

a. 9600 baud rate
b. 8 data bits
c. No parity
d. 1 stop bit

The telephone number for any other SNP940 module(s) must also be setup. For additional instructions, see the Logicmaster 90-30 documentation from GE Fanuc.

4. Dial the SNP940.

After following the proper procedures as outlined in the Logicmaster Auto-Dialer documentation, initialize a telephone call to the telephone line connected to the SNP940 module. Once the "CARRIER 9600" message is displayed on the PC screen, exit the Logicmaster Auto-Dialer and enter the Logicmaster Programming Package.

5. Setup the Logicmaster Serial Parameters.

After entering the Logicmaster Programmer, check the PLC Communications Serial Port Setup, accessible from the Programmer Mode and Setup menu selection. Make sure the COM port and serial parameters are correct (9600, n, 1). Once these are setup properly, Logicmaster is able to go "ONLINE" and offer full programmability. The TXB light is constantly green in color. The ATTCH light flickers indicating a properly addressed message and communications with the master.

Program downloads are not possible to the SNP940 if a device is in the Hand Held Programming mode *and* it is attached to the PLC Power Supply SNP port.

6. Hang-up.

After completing the programming task(s), exit the Logicmaster Programmer Package and select the Auto-Dialer Hang-Up option from within Logicmaster 90 Utilities.

WARNING: Use of LogicMaster 90 for configuration purposes is not supported. Use of the feature may result in undesirable effects such as loss of configuration and data.