NT2S-SF121B-E

&

NT2S-SF122B-E

QUICK START GUIDE - V1.03

NT2ST QUICK START GUIDE

1. INTRODUCTION

NT2ST is used with NT2S-SF121B-E and NT2S-SF122B-E products. These products are compact but highly functional operator interfaces and NT2ST is designed to be extremely flexible to take advantage of this functionality.

The bright LED back light and 2 x 16 character screen provide a highly visible display for showing fixed or scrolling text messages, bit controlled text, and numerical data.

Special screen types exist for simplifying data entry. Navigation can be achieved using programmed function keys, configuring a LINK screen, or chaining message screens that change on a timer. Six function keys provide many options for operator control and data entry. Function keys can be programmed locally for each screen, or globally for the project, to perform tasks which include momentary, set on, set off, and toggle bit control, as well as numerous numeric value control tasks.

The Windows based program, NT2ST, provides many tools to achieve flexible solutions. Follow this quick start guide to gain an overall understanding of the layout of this software tool.

This document assumes the user is familiar with the operation of programs within Windows and basic PLC concepts. Consult a technical resource for answers to basic PLC questions.

2. NT2S OPERATION OVERVIEW

The screens displayed on the NT2S are stored in the program memory of the unit. The NT2S displays the screen number currently stored in the Screen Trigger Register (STR), which is a PLC memory location. The NT2S remembers the last three STR values and will display them in order when the current screen is finished displaying.

Numeric data is displayed by placing fields on a screen that reference PLC memory locations. Up to six numeric fields can be placed on a single screen. Bit status can be displayed on the screen using bit controlled text.

Navigation from screen to screen can be handled in several ways:

- Function keys can be programmed to change the STR. F1 can increment the STR by one, and F2 can decrement the STR by 1. Function keys can also change the STR to a specified number.

- Link screens can be created to navigate a series of screens specified by the user. A link screen is a parent screen which displays a series of child screens. Link screens save programming time because it automatically defaults to F1 being a NEXT key, and F2 being a PREV key. Programmer does not have to set these functions up on each screen. Call the link screen number in the STR to activate the link screen.

- Chained screens can be used to automatically cycle through a list of screens. When creating a screen, specify to what screen number it is linked. During operation, the NT2S will continue to change screens at the rate specified in the MIN TIME field of each screen. The screens will loop until a STR number is called for a screen not in the chain.

3. NT2ST SOFTWARE OVERVIEW

It is recommended that programming steps be performed by accessing the Windows menu items at the top of the program window. Deactivate the Tool Station (the Desktop cartoon image) by selecting **Options** menu**, Tool Station**. The tool station should disappear.

Select **Help** at any point within NT2ST to view context sensitive help information. The help document will provide a more thorough explanation than this document will for most functions.

The sections below are roughly in the order in which a project will be created.

4. ADD/REMOVE DRIVERS

Before beginning the first project, select **Project** and **Add/Remove Drivers**. This menu item is not available once a project has been created.

A dialog will appear that allows additional PLC models to be added to the PLC selection menu. Make sure that the PLC needed for the project is included in the list on the right.
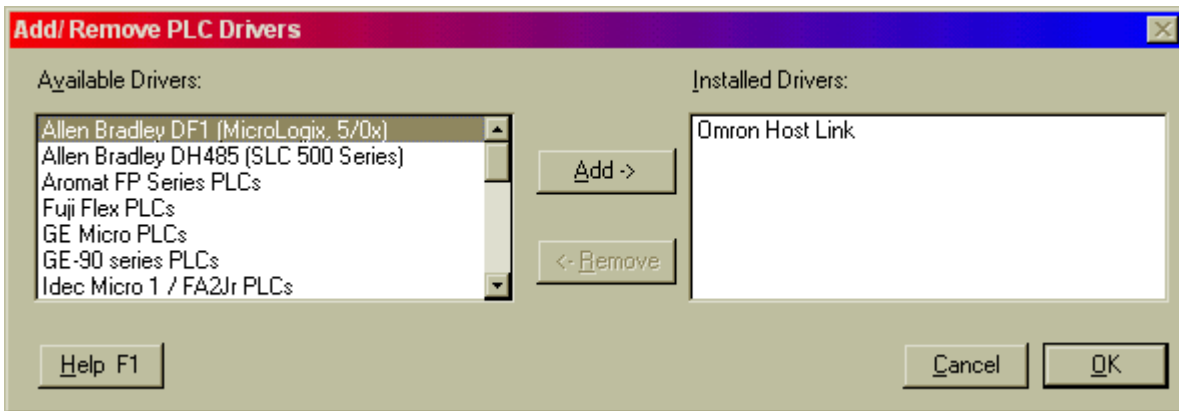
Select OK to complete addition of drivers to the project.

5. CREATE NEW PROJECT

1. Select **New** from the **Project** menu.

2. In the dialog presented, select the PLC and PLC Model from the New project dialog and select OK.

   The PLC model can be changed at any time during the project. From the **Project** menu, select, **PLC Model**, and select a new PLC model from the list. Accept the change by clicking on OK. Care must be taken to verify that the tag addresses are valid for the new PLC model.

   (If the brand of PLC required for the project does not appear, refer to the ADD/REMOVE DRIVERS section above.)

3. Select the NT2S hardware model that will be used for this project. Choose either NT2S-SF121B-E or NT2S-SF122B-E and click the CLOSE button.

   (If the incorrect NT2S model is selected, the project can be converted at anytime using the file conversion utility located on the **Project** menu, and select **Model type**. Just open the project and select this menu item and select OK.)

6. PROJECT SETUP

The Setup dialog is used to configure the NT2S operation parameters. Specify the LED register, screen trigger register, power up screen, serial port settings, function key password, and real time clock download time. The project setup dialog is accessed from the **Edit** menu, **Setup** menu item.

Generally, there is no need to change the default settings. The only parameters that need to be set by the user are Power up screen number and the function key password settings.
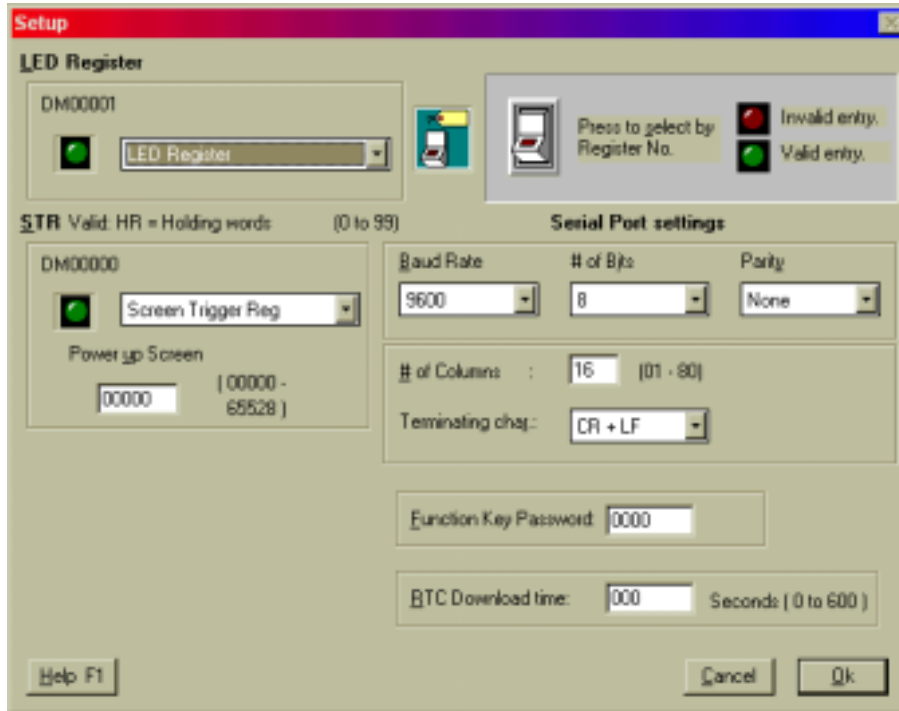
LED Register – This setting tells the NT2S which TAG to reference for the LED Register. Any TAG of the proper type can be referenced for this setting. The default TAG is labeled "LED Register".

STR – This setting tells the NT2S which TAG to reference for the Screen Trigger Register. Any TAG of the proper type can be referenced for this setting. The default TAG is labeled "Screen Trigger Reg".

Power Up Screen – Enter the screen number for the screen that should appear at system start-up. This screen number is only referenced internally from the NT2S and is not written down to the STR in the PLC.

Serial Port settings: Set the serial port parameters for serial printer connection. The communication is Serial RS232, Selectable 7 or 8 bit, Odd, Even or No Parity, No handshake, 300, 600, 1200, 2400, 4800, 9600 or 19200 Baud.

NOTE: Serial Communications specifications apply to the Unit - printer setup and do not affect PC to Unit communications.

Function Key Password – This password will be applied to any function key that has the password activated. The password will be used throughout the project.

RTC Download Time (NT2S-SF121B-E only) – Enter the time interval for downloading the RTC tags to the PLC here. The values range from 0 to 600 (seconds). 0 means the values will be downloaded as fast as possible. Any other interval will mean that NT2S will wait for the specific time interval before downloading the value into the PLC.

7. TAG DATABASE

Once the project has been created, the very first step should be to define the TAG DATABASE. The tag database is a list of names (tags) that reference PLC registers or coils (bits). When programming screens, reference is made to this tag database. Users can choose to reference the tags either by name or PLC address.

Tags will be referenced while creating the NT2S screens are created. Tags can always be edited or modified later in the project.

```
NT2 ST - Edit Tag database                                    _ □ ✕

No.    Register/Coil    Tag

0001   DM00001          LED Register          ▲        🏷 New        Help F1
0002   DM00000          Screen Trigger Reg
0003   DD               Date
0004   MO               Month                          🏷 Delete      Close
0005   YY               Year
0006   HH               Hours
0007   MI               Minutes
0008   SS               Seconds
0009   IR00000          Conveyor Status                🏷⇄ Import
0010   HR00000          Output Temperature    ▼
This tag is not in use.
```
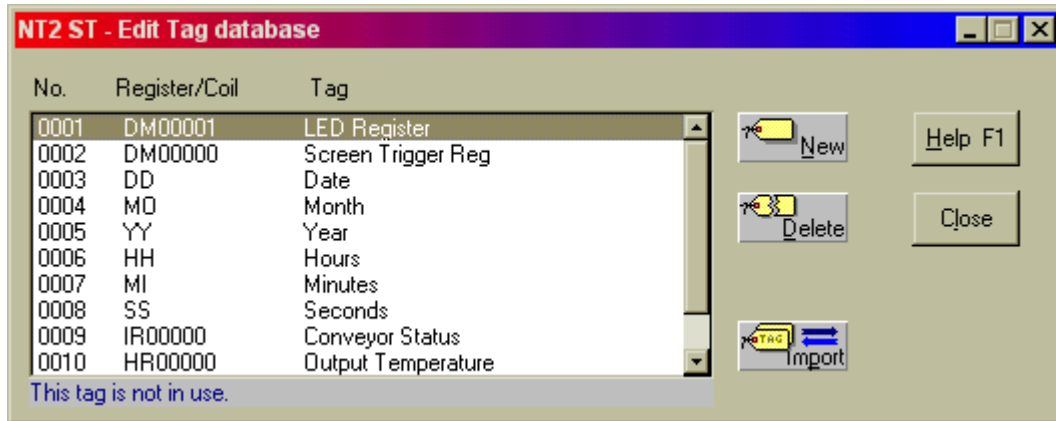
New projects are created a set of default TAGS. For instance, NT2S-SF122B-E has the following tags:

```
0001      LED Register                |DM00001|
0002      Screen Trigger Reg          |DM00000|
```

NT2S-SF121B-E projects are created with 8 tags. Tags 0003 through 0008 are associated with the RTC and cannot be directly addressed in NT2ST. Their addresses are offset from the LED Register address. The tags are defined as follows:

```
0001      LED Register                |DM00001|
0002      Screen Trigger Reg          |DM00000|
0003      Date               LED Register + 2 (Lower byte) ---- Date (DD)
0004      Month              LED Register + 3 (Higher byte) ---- Month (MO)
0005      Year               LED Register + 3 (Lower byte) ---- Year (YY)
0006      Hours              LED Register + 1 (Higher byte) ---- Hours (HH)
0007      Minutes            LED Register + 1 (Lower byte) ---- Minutes (MI)
0008      Seconds            LED Register + 2 (Higher byte) ---- Minutes (MI)
```
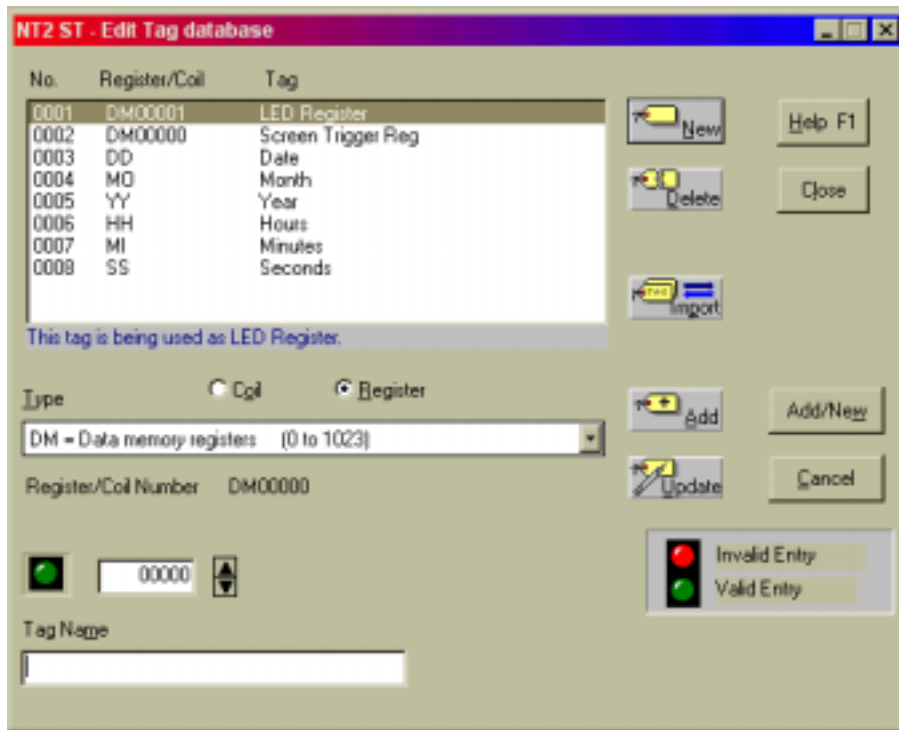
CREATE A REGISTER

A tag can reference an entire word in PLC memory, called a register. Use the following steps to create a tag for a register:

1. Select **Tag Database** from the **Edit** menu.
2. From the Tag Database editor dialog (shown above), choose NEW.
3. Select the Register button.
4. Choose the PLC memory location from the provided list box.
5. Select the specific register number in the address box provided.
6. Enter a tag name in the lower text box.
7. Select ADD button to complete the creation of the register tag.

CREATE A COIL

A tag can reference a bit in PLC memory, called a coil. Use the following steps to create a tag for a coil:

1. Select **Tag Database** from the **Edit** menu.
2. From the Tag Database editor dialog, choose NEW.
3. Select the Coil button.
4. Choose the PLC memory location from the provided list box.
5. Select the specific register and bit number in the address box provided.
6. Enter a tag name in the lower text box.
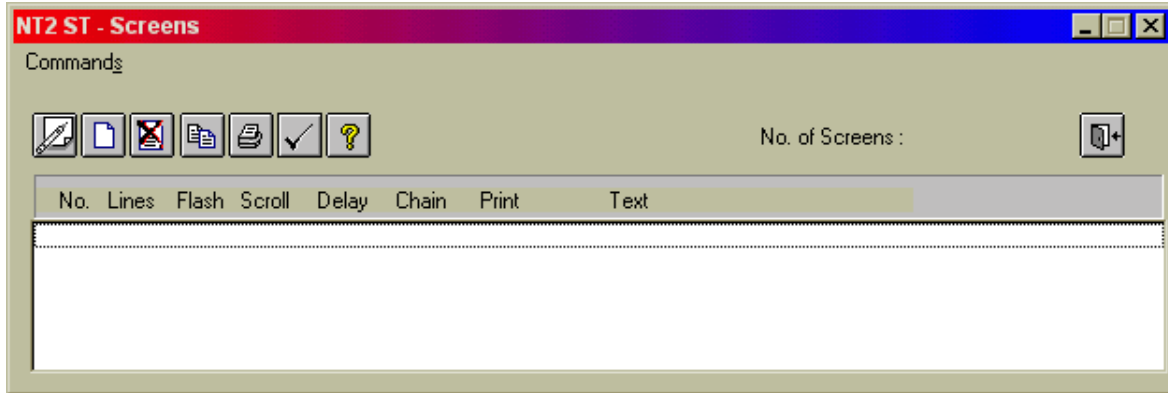7. Select ADD button to complete the creation of the coil tag.

8. EDIT – SCREENS

Launch Screen Editor from EDIT menu. Select SCREENS menu item.

1. From the Edit menu, select the Screens item.

2. Click on the new screen button → to launch the screen type selection dialog, New Screen.
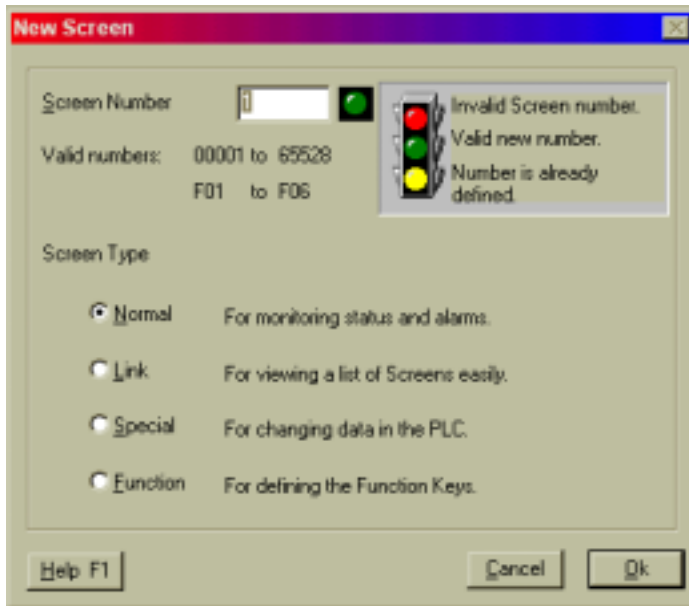
3. Four different types of screens can be selected from the New Screen dialog: Normal, Link, Special, and Function. The following sections will discuss each type of screen. Choose a screen type, enter a screen number, and select OK to launch the Editing Screen dialog.

9. NORMAL SCREEN

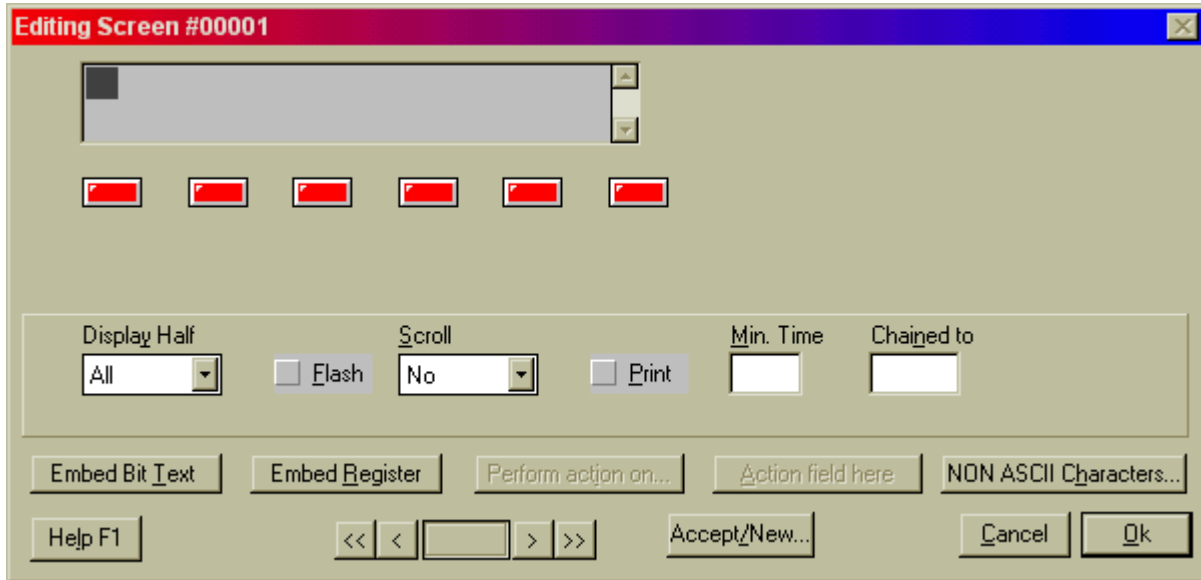Normal screens will make up 90% of all project screens. This type can be used for text message display, scrolling text messages, display of bit controlled text, display of analog values, and function key control. The function keys, in red below, can be programmed uniquely for each normal screen.

The text window in the upper left corner represents the NT2S display window. Some Normal screen settings include:

DISPLAY HALF – set display for ALL, TOP, or BOTTOM. This is primarily for use with scrolling messages. If ALL is selected, the scrolling rolls in from the bottom right and then pauses on the top line as the message continues to scroll in on the bottom. If TOP is selected the message forms a continuous scroll across the top line. Likewise for the BOTTOM setting.

SCROLL – Set scroll to NO, SLOW, MEDIUM, FAST. Activates scrolling messages. Scrolling messages cannot display imbedded coil or register values. During NT2S operation, scrolling messages cannot be interrupted. Screen cannot be changed until the entire scrolling message has been displayed.

FLASH – Selection box that allows the NT2S message to blink.

PRINT – Selection box that allows the NT2S screen data to print out the top serial port.

MIN TIME – A minimum time can be assigned to assure an operator can view the screen. If a number is entered in this field, screens will display for the specified minimum time. This is useful when displaying chained messages, confirming function key action, or displaying alarm/error messages.

CHAIN TO – If a screen number is placed in this box, the current screen will be displayed following the specified screen. The screens in a "chain" will each display for the specified time in the MIN TIME box.

EMBED BIT TEXT – This selection button launches an editing window where letters are assigned to bit values.
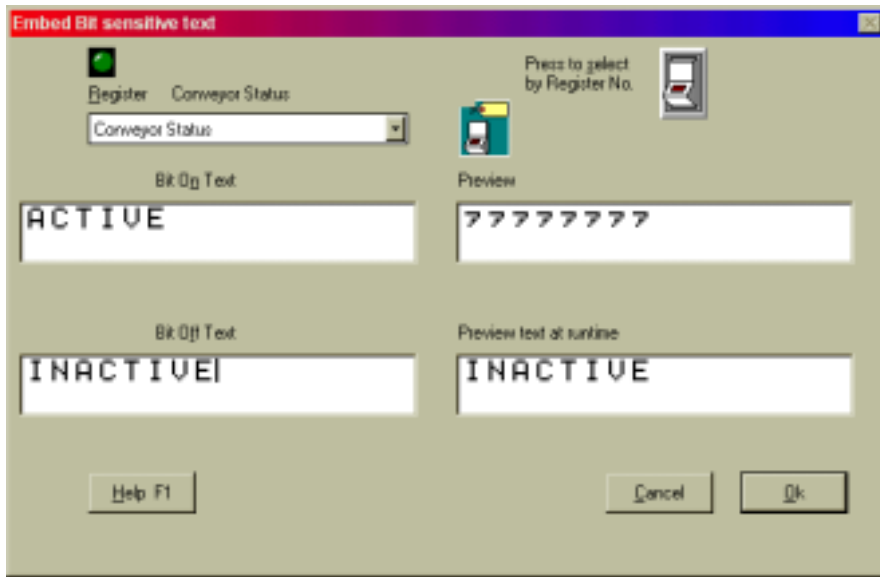
Once the text is assigned to bit values and OK is selected, text placeholders will appear in the display window. These placeholders can be positioned by adding characters before the placeholders. In this case, spaces were added at the far left of the second line to center the text.
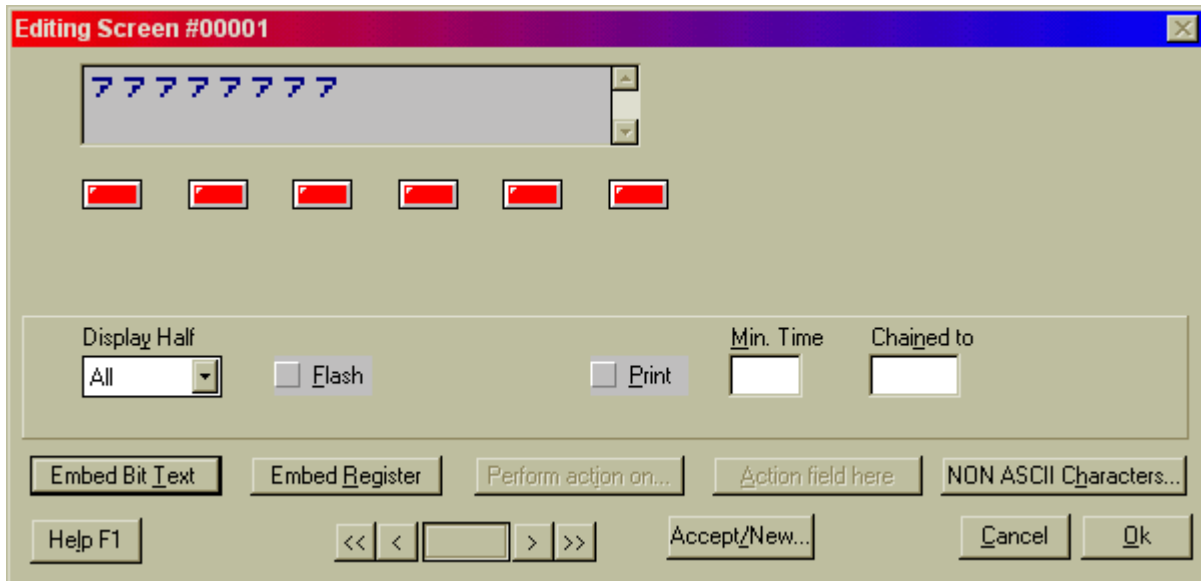
The Embedded Bit Text can be edited by selecting a placeholder in the NT2S display window. Choose EDIT from the menu that will be presented. A DELETE selection will also be presented.

Multiple Bit Text elements can be placed on a single NT2S screen. The program will allow up to 32 single character bit text messages per screen. It is also possible to have one of the states, On or Off, to have no text displayed.

EMBED REGISTER – This selection button launches an editing window for specifying numeric data display. This editing window allows the selection of data TAG, type, and format.
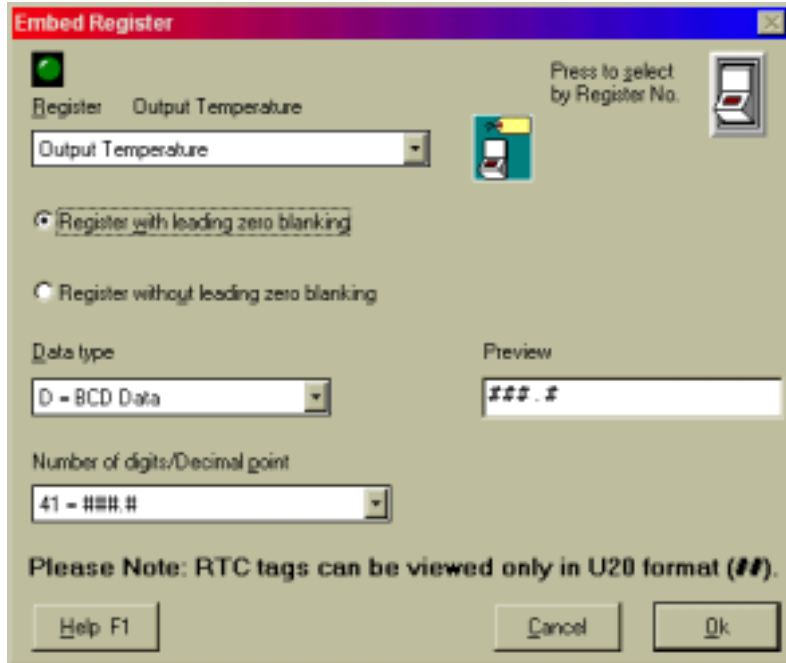
Once the register is assigned and formatted, select OK. Text placeholders will appear in the display window at the cursor location. These placeholders can be positioned by adding characters before the placeholders.
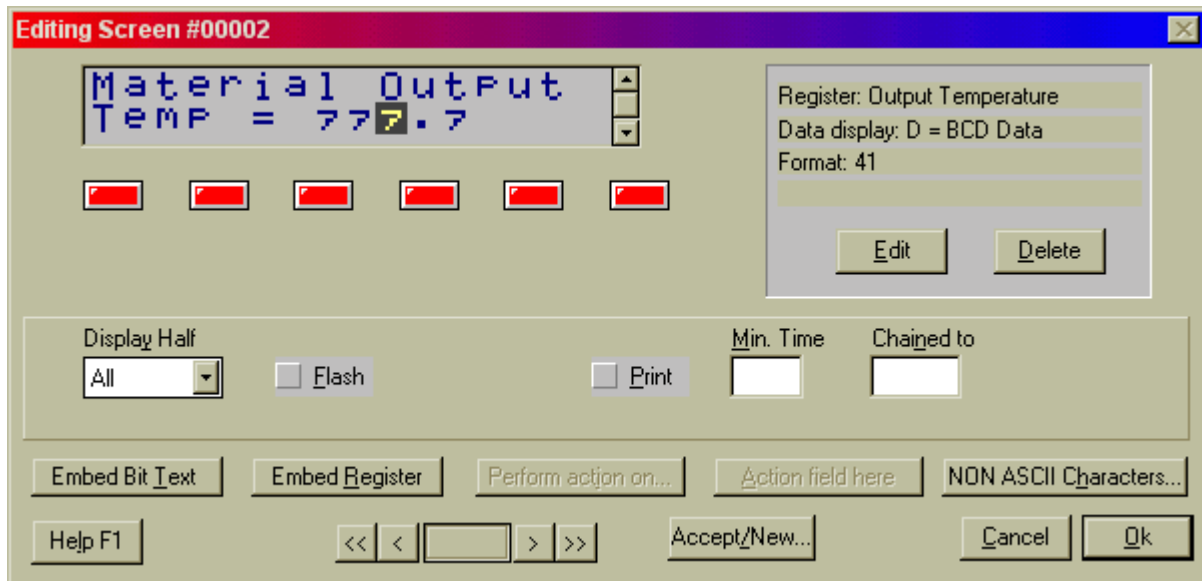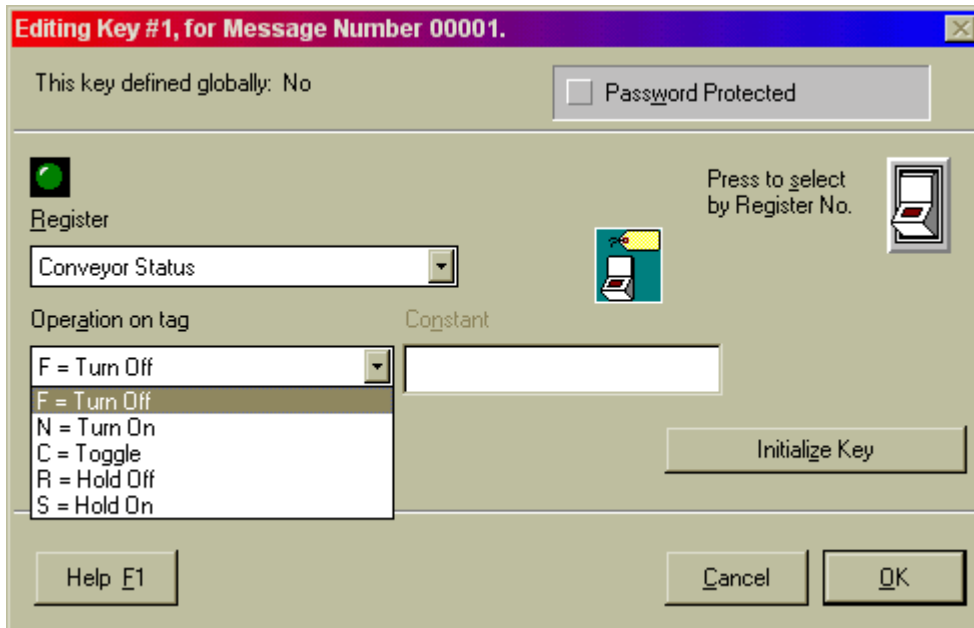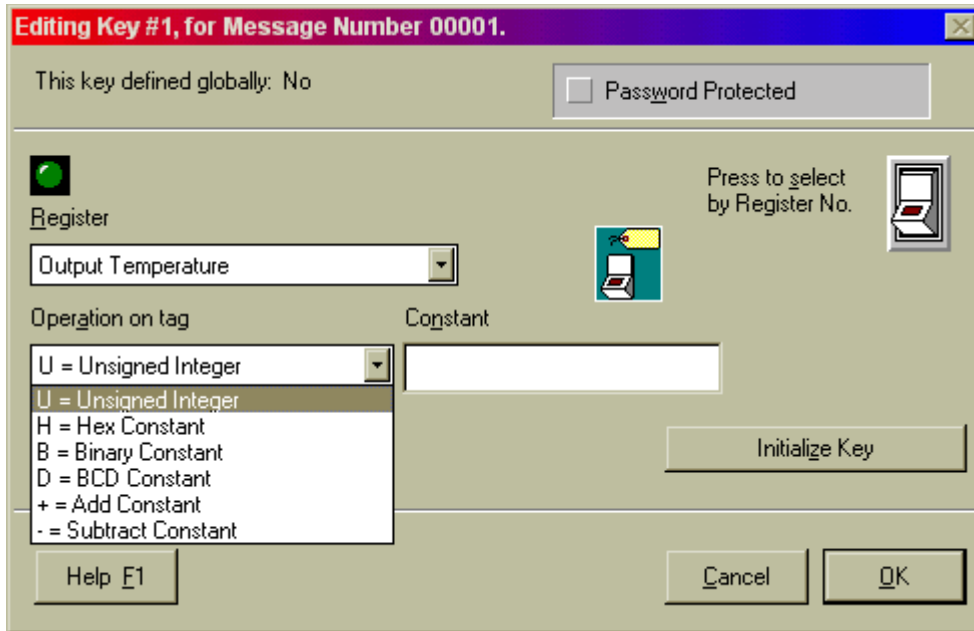

The Embedded Register can be edited by selecting a placeholder in the NT2S display window. Choose EDIT from the menu that will be presented. A DELETE selection will also be presented.

KEYS FOR SCREEN – The buttons shown in the lower right hand side of the screen dialog are for editing the function keys for that screen. This would be considered local programming for function keys, effective only for the current screen number. Global programming must be performed by creating a Function Key screen, or using the **Edit** menu, **Function Keys**.

Red keys have not been programmed yet. Green keys have been programmed.

Double click on the red key to program, or green keys to change programming. The following Editing Key screens will be displayed. The first dialog box below will be displayed if a register tag is chosen in the register list box. Choosing a coil tag will display dialog box at the bottom.

Editing Key #1, for Message Number 00001.

This key defined globally: No

☐ Password Protected

🟢
Register

Output Temperature ▾

Press to select by Register No.

Operation on tag | Constant

U = Unsigned Integer ▾

| U = Unsigned Integer |
| H = Hex Constant |
| B = Binary Constant |
| D = BCD Constant |
| + = Add Constant |
| - = Subtract Constant |

Initialize Key

Help F1 | Cancel | OK

Editing Key #1, for Message Number 00001.

This key defined globally: No

☐ Password Protected

🟢
Register

Conveyor Status ▾

Press to select by Register No.

Operation on tag | Constant

F = Turn Off ▾

| F = Turn Off |
| N = Turn On |
| C = Toggle |
| R = Hold Off |
| S = Hold On |

Initialize Key

Help F1 | Cancel | OK

Bits can be controlled in several ways. *Turn Off* and *Turn On* functions force set the bit to the 0 or 1 position. *Toggle* alternates the bit between 1 and 0 as the function key is pressed. *Hold Off* and *Hold On* set the bit to a 0 or a 1 as long as the function key is held (momentary switch).

10. LINK SCREEN

A link screen is a parent screen on which a series of child screens can be displayed. The link screen is assigned a screen number which can be called by the Screen Trigger Register (STR). When the link screen number is in the STR, the NEXT(F1) and PREV(F2) function keys can be used to navigate through the list of specified child screens.
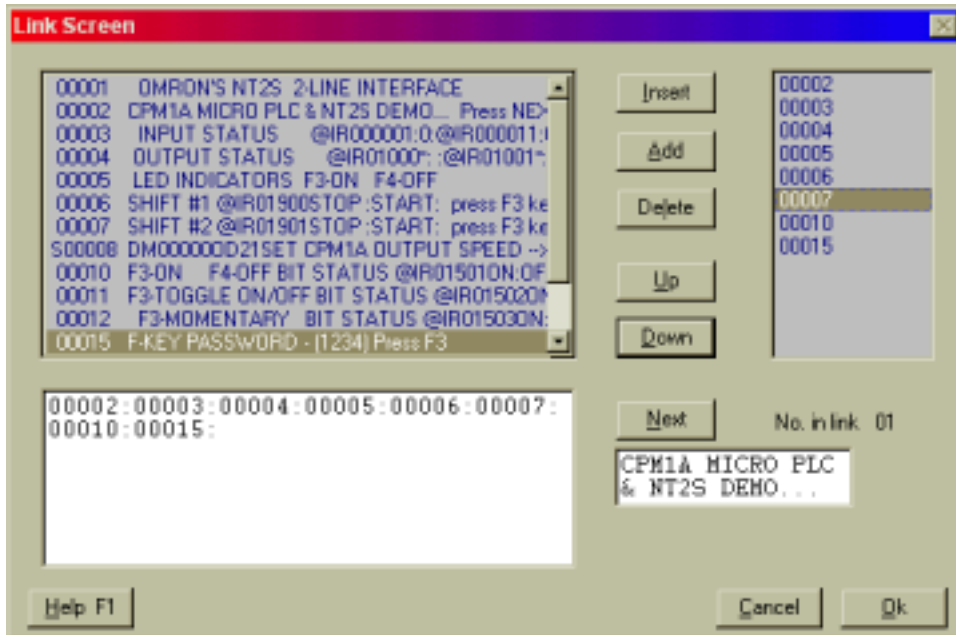
The child screens of the Link Screen can be any existing NORMAL or SPECIAL screen type.

NEXT and PREV functions of the link screen will override any function key programming on F1 and F2 of the child screens.

The progression of screens will follow the order listed in the right window. The order can be changed using the UP and DOWN keys. Pressing the Next button will show how linked screens will progress on the NT2S.

11. SPECIAL SCREEN

Special screens are used to enter analog values or set digital states. Generally digital states are more easily set from the Normal screens using function keys and bit controlled text. Only the F1 and F2 keys can be programmed on special screens. F3, F4, F5, and F6 are preprogrammed for data entry functions.

When creating a Special screen, the first screen to be displayed will be the Edit Action field dialog.
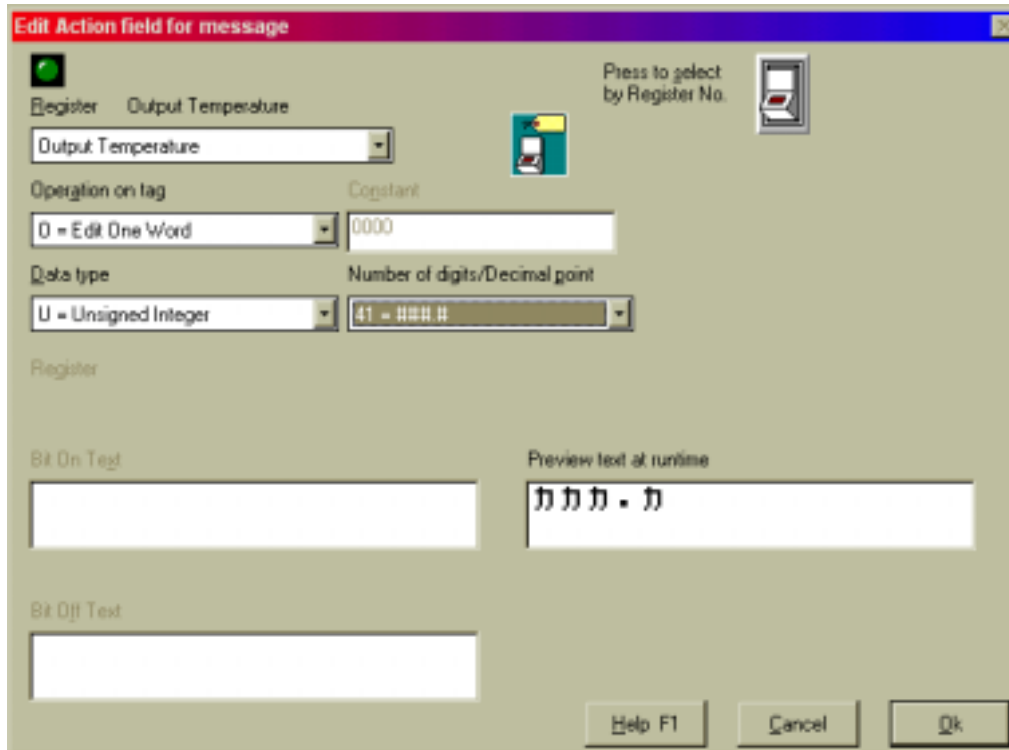
Operations can be performed on register or coil tags. (Recommend using Special screens only for changing registers, not coils. Use the function keys of a normal screen for changing coils.) Operation on Tag include:

- **Edit One Word** – Assign a value to the specified PLC register using the preprogrammed function keys. Values are entered into the NT2S field using the enter key (F6), up arrow (F3), and left arrow (F4). When the special screen is displayed, begin the number entry process by pressing the Enter key. The right most digit will begin blinking. Increment to the digit to the desired value and press the left arrow to shift it over. Increase the digits and shift them to the left until the desired number is displayed. Then press enter again to accept the value.

- Numbers are entered highest digit first. Entering the number 521, the user will enter the 5 first, shift it left, enter the 2 next, shift it left, and then enter a 1 and press enter.

A special screen can also perform the following functions.
- **Unsigned Integer**   **- Sends a specified unsigned integer constant value to the specified tag.**
- **HEX constant**   **- Sends a specified HEX constant value to the specified tag.**
- **Binary constant**   **- Sends a specified Binary constant value to the specified tag.**
- **BCD constant**   **- Sends a specified BCD value to the specified tag.**
- **Add constant**   **- Sends a specified HEX value to the specified tag.**
- **Subtract constant**   **- Sends a specified HEX value to the specified tag.**

However, NORMAL screens are recommended for writing constants to memory locations, as they are much easier to implement.

After selecting OK on the Edit Action Field screen, the Editing Screen dialog will appear. The previous dialog defined the Action Field. Insert the Action Field on to the NT2S screen by clicking on the ACTION FIELD HERE button on the lower right. Enter text to complete this screen. Click on the OK button.
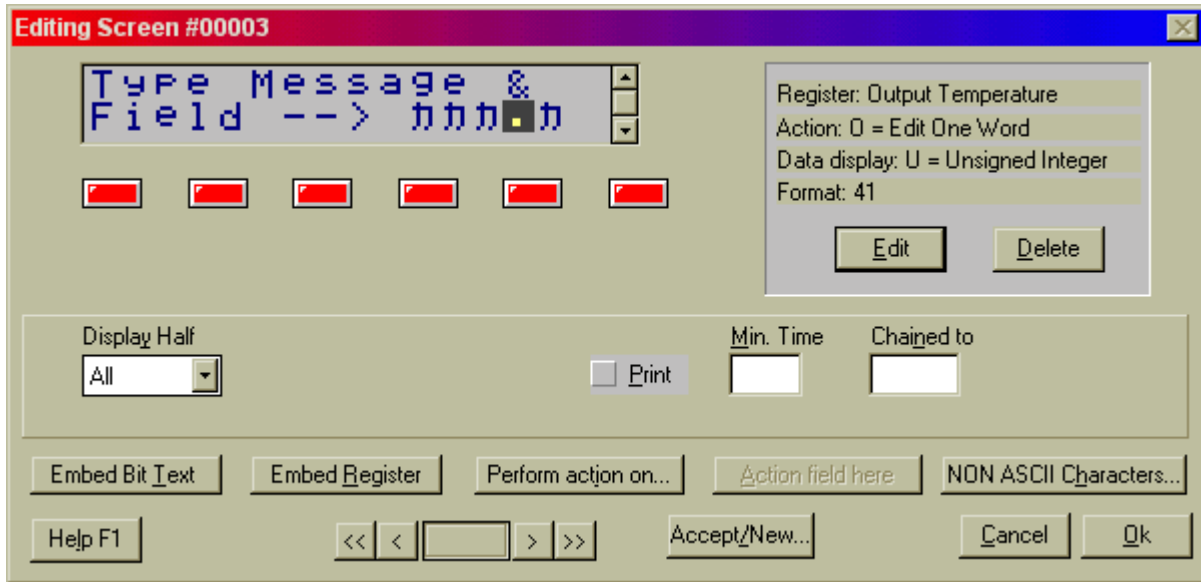
12. FUNCTION SCREEN

Function screens allow function keys to be defined globally. Function key screens, which can be created for each key, can have the screen numbers F01, F02, F03, F04, F05, F06. A pop-up message can be programmed to appear when the function key is pressed. This feature is not available when programming NORMAL screen function keys. The pop up message is an easy way to confirm function key key-strokes.

The programming of these Global function keys can be overridden by local function key programming. It will NOT replace local programming that has already been done. Only keys with no local programming will perform the global tasks.
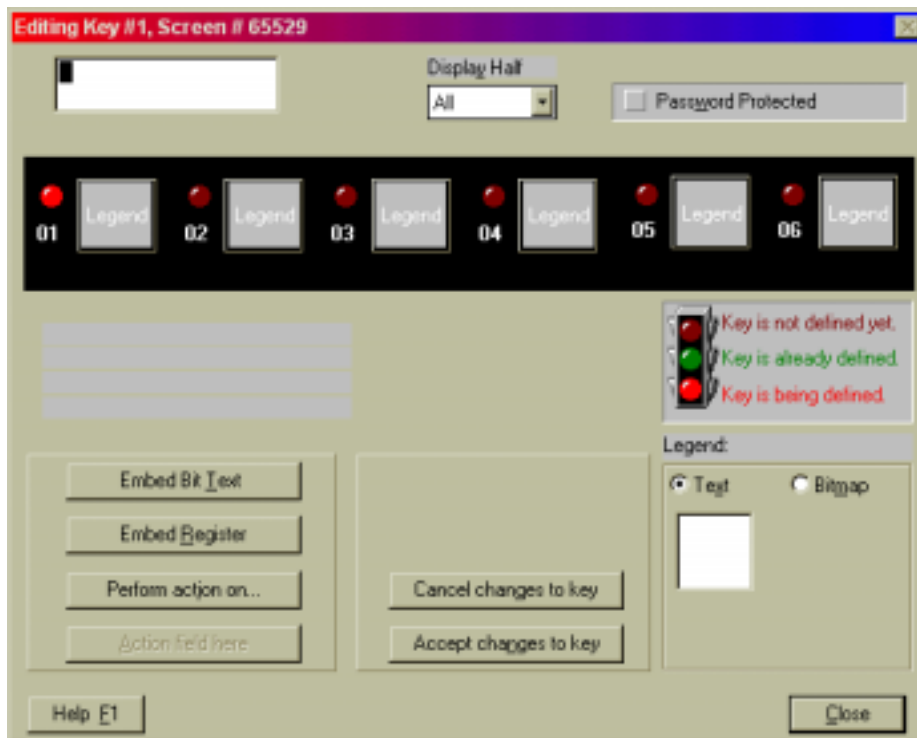
Programming begins by clicking on the function key that requires programming. Configure the action of the function key by clicking on PERFORM ACTION ON button.

Once the action is set, you may choose to enter text in the text window at the upper left. If text is entered here, a message will be displayed when that function key is pressed. If the field is left blank, the screen will not change from the current screen.

Bit controlled text, and register information can be placed on the function key pop-up screen using the EMBED BIT TEXT and EMBED REGISTER buttons in the lower left corner of the screen.

Select ACCEPT CHANGES TO KEY button when finished programming a function key. Select another function key number to edit, or select the CLOSE button.

When utilizing the pop-up window feature for the global function keys, it is necessary to enter a MIN TIME for the screen to display. If no MIN TIME is specified the screen will appear to quickly to read. Follow the instructions below for editing a Function Key screen to gain access to this setting.

There are two ways to edit a programmed function key screen. Use the **Function Keys** selection on the **Edit** menu item to access the Function Key editing dialog above. Or, click on the screen number, F0#, as it appears in the SCREENS dialog, as highlighted below.
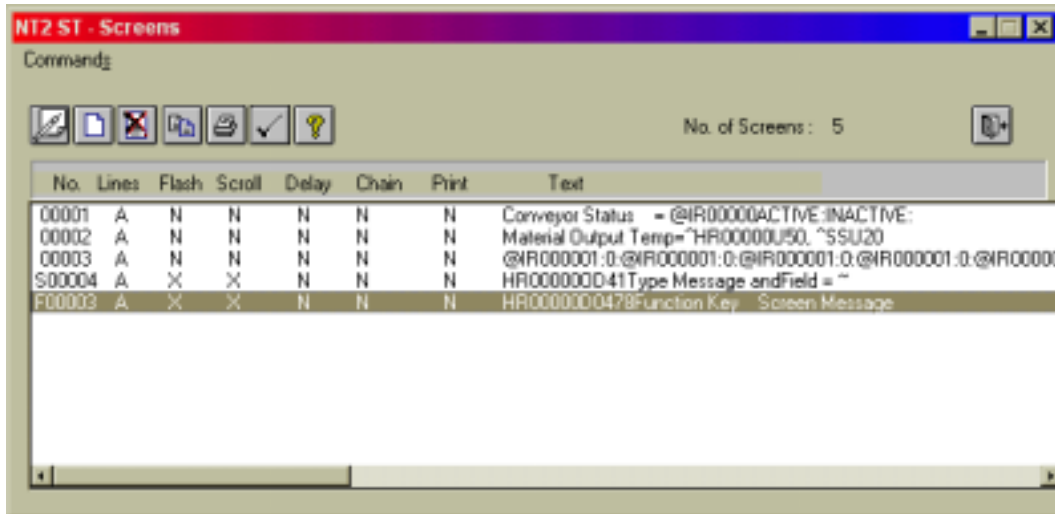
The following screen will appear.
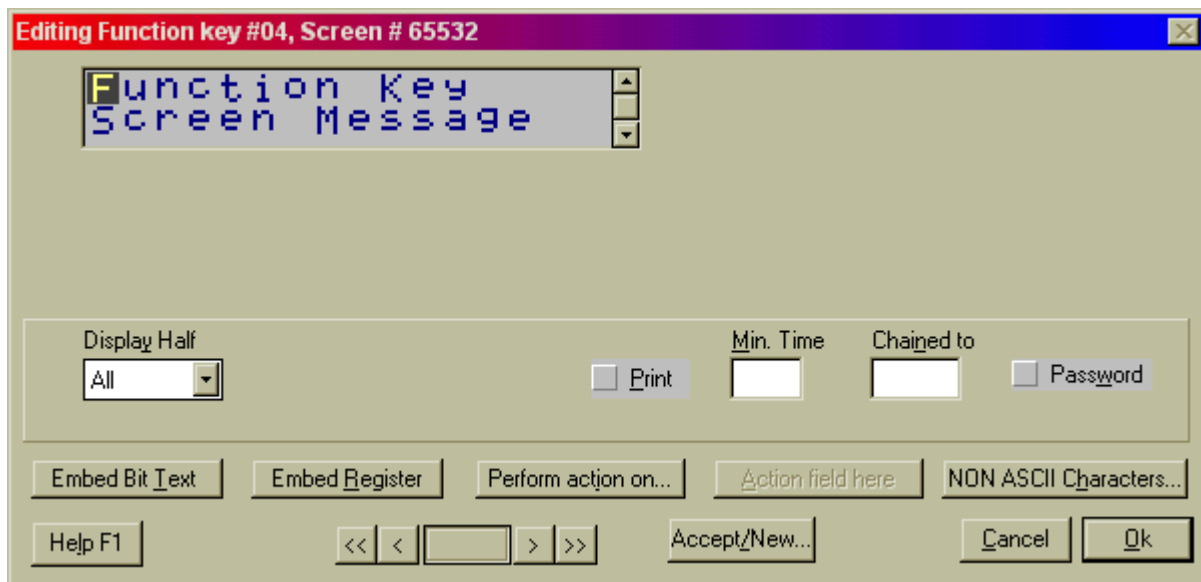
Click on the PERFORM ACTION ON button to change global function key program. Enter MIN TIME to control the time of display of function key message.

13. SPECIAL PROGRAMMING NOTES

STR Control from a Function Key

Any function key can be programmed to change the screen by sending a new value to the STR in the PLC. The STR is defined in the tag database as the Screen Trigger Register tag. The PLC register will store the value in HEX, so select HEX Constant for the function key operation. If the user needs to change to screen 25, enter the value 25 in the HEX constant field and the NT2S will send the HEX value 19 to the STR. Screen 25 will be displayed.

STR Control from the PLC

Since the display can have screen numbers up to 65,528 and the STR is only a four digit register, the STR is always Hexadecimal. Manipulate the STR in HEX when changing screens from the PLC. For example, if screen 12 is to be displayed, write the value 000C to the STR. This is usually done with a copy type command in the PLC ladder program.(Function 21-MOV for Omron)

Function Key Control Definitions

When programming function keys to control bits in the PLC there are five options for the type of bit control. After selecting one of the keys you must define a coil tag or address. Next you choose one of five "Operations" on that tag. The Five Operations and there effect on the PLC address are as follows:

TURN ON –

Performs a FORCE SET of that bit in the PLC. No other bits in that register are affected

TURN OFF –

Performs a FORCE RESET of that bit in the PLC. No other bits in that register are affected

TOGGLE –

Performs a FORCE SET first time the key is pressed then a FORCE RESET the next time. No other bits in that register are affected

HOLD ON –

If the bit is ON, there will be no change to the bit. If the bit is OFF the display performs a FORCE SET of that bit when the key is pressed and a FORCE RESET when released. No other bits in that register are affected

HOLD OFF –

If the bit is OFF, there will be no change to the bit. If the bit is ON the display performs a FORCE RESET of that bit when the key is pressed and a FORCE SET when released. No other bits in that register are affected

Entering Text on Second Line of Display

An NT2S can display messages on the top and bottom line for a particular screen. NT2ST requires a simple step to begin typing text on the second line of the display. Enter characters on the top line until the cursor is just past the end of the line.

Hot Water Temp
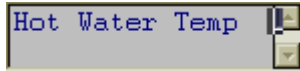
Type any character on the keyboard to initiate the second line. This character will be the first character on the second line.

Hot Water Temp
S
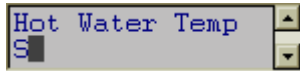
Type the second line as it should appear on the NT2S display.

Hot Water Temp
Second Line
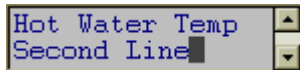
If the characters need to be centered on the second line, click on the first character of the second line with the mouse button and add spaces using the keyboard.

Hot Water Temp
    Second Line
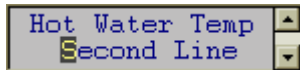
Remember, the second line can begin with a space, but it cannot be initiated with a space.

14. COMMUNICATION CABLES SPECIFICATIONS

OMRON CABLES
NT2S Program Download Cable
Use the standard Omron PLC and NT programming cables:
C200HS-CN220-EU
C200H-CN229-EU

NT2S-SF121B-E pin Designations

NT2S Port PIN # Female DB9 Port	Designation
2	TX232 (Transmit RS232)
3	RXD (Receive RS232/CMOS)
4&5	Circuit GND
6	VCC (+5V)
7	TXD (Transmit CMOS)
8	PLC Attach
9	Direction Control

NT2S-SF122B-E pin Designations

NT2S Port PIN # Male DB9 Port	Designation
2	Direction Control
3	TX232 (Transmit RS232)
4	VCC (+5V)
5	Circuit GND
6	TXD (Transmit CMOS)
7	RXD (Receive RS232/CMOS)
8 (same as 7)	RXD (Receive RS232/CMOS)

NT2S-SF123B-E pin Designations

NT2S Port PIN # Male DB9 Port	Designation
4	VCC (+5V)
5	Circuit GND
6	TXD (Transmit CMOS)
7	RXD (Receive CMOS)
8 (same as 7)	RXD (Receive CMOS)

Omron PLC Peripheral Port Cable (NT2S-SF121B-E): **NT2S-CN21#**

NT2S Port PIN # Male DB9	Omron Peripheral Port PIN #
7 TXD (CMOS)	5 *RXD*
3 RXD	7 *TXD*
5&9	10 *Ground*
	Short 3, 15, & 17
	Short 11 & 16
Metal cover to shield	Metal cover to shield

Omron PLC Peripheral Port Cable (NT2S-SF122B-E and NT2S-SF123B-E): **NT2S-CN22#**

NT2S Port PIN # Male DB9	Omron Peripheral Port PIN #
1&5 shorted	
4 Green VCC (+5V)	1 5V source
6 White TXD (CMOS)	5 RXD
7 Yellow RXD (CMOS)	7 TXD
1&5 Brown (GND)	10 *Ground*
	Short 3, 15, & 17
	Short 11 & 16
Metal cover to shield	Metal cover to shield

Omron PLC Serial Port Connection with NT2S-SF**121**B-E
Tested an NT2S-SF121B-E by connecting it to the Host Link (RS-232C) port on a CQM1 PLC and it worked fine. This cable is needed to connect to Host Link and has the following pinouts:

NT2S Port PIN # Male DB9 on cable	Omron Serial Port PIN # Male DB9 on cable
2 TXD (RS232)	3 RXD
3 RXD	2 TXD
5&9 Ground	9 Ground
	1 to shield
	4 to 5 short

Omron PLC Serial Port Connection with NT2S-SF**122**B-E
Tested an NT2S-SF122B-E connection to the following PLCs:
- C200Hα   – directly to serial port
- CQM1   – directly to serial port
- CPM2A   - directly to serial port
- CQM1H   – Connect to Serial Port
- CPM2C   – Connect to CPM2C-CN111

NT2S Port PIN # Female DB9 on cable	Omron Peripheral Port PIN # Male DB9 on cable
3 TXD (RS232)	3 RXD
4 VCC (+5V)	6 5V Source
2 & 5 Ground	9 Ground
7 RXD (RS232)	2 TXD
	1 to shield
	4 to 5 short

Allen-Bradley Cables

MicroLogix (DF1 protocol)

NT2S-SF121B-E Port PIN # Male DB9 on cable	AB Micrologix 1000 & 1500 8 PIN MINIDIN (from AB)
2 TXD (RS232)	4 RXD
3 RXD	7 TXD
5&9 Ground	2 Ground
	2 to shield

Allen Bradley SLC 5/0x (DF1 protocol)

NT2S-SF121B-E Port PIN # Male DB9 on cable	AB SLC 5/0x Male DB9 on cable
2 TXD (RS232)	2 RXD
3 RXD	3 TXD
5&9 Ground	5 Ground
	5 to shield

GE Micro Cables

Communication cable connections: GE Micro

HMI end	Designation	PLC end

SPECIFICATION NOT YET AVAILABLE

Modicon Cables

Modicon (Modbus master)

NT2S-SF121B-E Port PIN # Male DB9 on cable	Modicon Modbus Master 8 x 8 Modular Connector
2 TXD (RS232)	4 RXD
3 RXD	3 TXD
5&9 Ground	5 Ground
	5 to shield

Keyence Cables

Keyence KV Series

NT2S-SF121B-E Port PIN # Male DB9 on cable	Keyence KV Series PLC 4 x 4 Modular Connector
2 TXD (RS232)	3 RXD
3 RXD	1 TXD
5&9 Ground	1 Ground
	1 to shield

Toshiba Cables

Toshiba PLC T1

NT2S-SF121B-E Port PIN # Male DB9 on cable	Toshiba PLC T1 8 PIN Minidin Connector
2 TXD (RS232)	8 RXD
3 RXD	6 TXD
5&9 Ground	5 Ground
	5 to shield

Toshiba PLC T2

NT2S-SF121B-E Port PIN # Male DB9 on cable	Toshiba PLC T2 8 PIN Minidin Connector
2 TXD (RS232)	2 RXD
3 RXD	3 TXD
5&9 Ground	5 Ground
	5 to shield

Koyo Cables

Koyo 405 Series

NT2S-SF121B-E Port PIN # Male DB9 on cable	Koyo 405 Series 8PIN Minidin Connector
2 TXD (RS232)	3 RXD
3 RXD	2 TXD
5&9 Ground	13, 14, 15 Ground
	13, 14, 15 Shield
	1, 7, 8 Short

Koyo DL 205

NT2S-SF121B-E Port PIN # Male DB9 on cable	Koyo 205 Series 6 x 6 Modular
2 TXD (RS232)	3 RXD
3 RXD	4 TXD
5&9 Ground	1 Ground
	1 Shield

Koyo DL 305

NT2S-SF121B-E Port PIN # Male DB9 on cable	Koyo 305 Series 4 x 4 Modular
2 TXD (RS232)	1 RXD
3 RXD	2 TXD
5&9 Ground	4 Ground
	4 Shield

15. NT2S SPECIFICATIONS

Features	Description	NT2S-SF121B-E	NT2S-SF122B-E
Programming package	Windows Software Package - NT2ST	Yes	Yes
ASCII Controlled Messages	ASCII in PLC registers is displayed on the NT2S screen. Pointer in PLC memory tells NT2S which register to display. Pointers placed in that PLC register point to data value to be displayed.	No	No
Multi-vendor support	Omron, Allen-Bradley Micrologix and SLC 5/0x, GE Micro, Modicon, Keyence KV Series, Toshiba T Series, Koyo 305, 405, and DL205 Series.	Yes	No
Memory	type EEPROM	8k	8k
Power	24vdc Terminals or PLC Peripheral Port 5 vdc	24 vdc	5 vdc
Enclosure ratings	IP65	Yes	Yes
Standards	CE, cCSAus	Yes	Yes
Ambient Op Rating	0 to 50 C	Ok	Ok
Storage temp	-20 to + 60 C	Ok	Ok
Ambient Humidity	35 to 85 % with no condensation	Ok	Ok
Ambient Environment	No corrosive gasses	Ok	Ok
Weight	400 g	Ok	Ok
Panel Fitting	2 clamps	Ok	Ok
Face Dimensions	Dimensions of NT2S Front Bezel (mm)	109W x 60H	109W x 60H
Rear Unit Dimensions	Dimensions for portion of NT2S that enters panel (mm)	91W x 44H x 44D	91W x 44H x 44D
Panel Cutout	Recommended panel cutout Dimensions (mm) 1/8 DIN	92W x 45H	92W x 45H
Display Specifications			
Display	Lines * Characters	2 * 16	2 * 16
Character Height	mm	4.35 mm	4.35 mm
Backlit	LED Backlight	Ok	Ok
Effective display area	mm	60 x 13 mm	60 x 13 mm
Indicators	Red and Green LED indicators.	Yes	Yes
Number of screens	Max number of screens if only text messages are used. Adding function keys, scrolling messages, etc. decreases the maximum number of screens.	250	250
Data Format	HEX, BCD, OCT, BIN, signed, unsigned	Ok	Ok
Function Keys			
Available Function keys	Number of user programmable function keys	6	6
Global Function Key Program	Function key can be programmed for global functions. Key program is effective throughout the NT2S program.	Yes	Yes
Local Function Key Program	Function key can be programmed uniquely for each screen.	Yes	Yes
Function Key Binary Action	Momentary, Toggle On, Toggle Off, Set On, Set Off.	Yes	Yes
Function Key Numeric Action	Set constant value, increment, or decrement by a constant value to PLC register.	Yes	Yes
Numeric Entry	Special screen uses arrow, clear, and enter keys to input numeric values to PLC register.	Yes	Yes
Function Key Screen	Global Function key actions can be linked to a Function Key screen that displays upon activation of that function key. This can be used to confirm function key action.	Yes	Yes
Password Protect Any Key	Password can be activated for any function key.	Yes	Yes

Communications			
COM port 1	Programming & Printing port	DB9 connector RS-232 Port	DB9 connector RS-232 Port
COM port 2	Host PLC Communications	DB9 connector CMOS/RS-232 port	DB9 connector CMOS port
Special functions			
Real Time Clock	2-digit Year, Month, Date, Hour, Minute, Second	Yes	NA
2 User definable LEDs	Red and Green LED can be controlled from PLC	Yes	Yes
Scrolling Messages	Scroll messages up to 256 characters.	Yes	Yes
Flashing Display	Specify for backlight to flash.	Yes	Yes
Minimum Display Time	Define minimum display time for a screen.	Yes	Yes
Screen chaining	Chained screens will display in sequential fashion, each displaying for the set minimum display time.	Yes	Yes
Link Screen	Create a list of screens that can be navigated using the NEXT (F1) and PREVIOUS (F2) keys.	Yes	Yes
Bar Graph Display	Display numeric values as a bargraph.	Yes	Yes
Print Functions			
Print Screen	Configure serial communications port to commumicate with a printer. Print screen text and displayed PLC data values can be printed.	Yes	Yes