

Scanning Devices Inc.

766D-TC4 Target Barcode System

Installation Instructions

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What's Included

The 766D-TC4 Target Barcode System consists of the following components.

1. (1) Microcontroller user interface panel, with keypad and display.
2. (1) 7600-MS3 Laser scanner with extension cable.
3. (1) MAP40-1005 Power supply.

Optional Components

1. 7600-KS1 Supervisory key switch.

2. 7600-MS3 additional laser scanner(s) with extension cable.

Installation Guidelines.

1. Keypad - If not factory installed, attach keypad cable to the 9-pin d-sub connector on the back of the microcontroller (left-top connector as viewed from the back). Secure the cable with #4-40 x 1/4" machine screws (provided).

2. Microcontroller User Interface - Mount the microcontroller panel by means of four mounting holes in its corner. Holes are sized for #6 threaded screws (provided). Mount with #6-32 x 1/2" machine screws, lock washers and nuts (provided),

3. Power Supply – Power One MAP 40-1005

Mount power supply to provide as much convection airflow as possible for cooling. Use insulated stand-offs or other insulated mounting hardware to avoid electrical contact between power supply and mounting chassis. Attach 110/220 VAC input power to Input Terminals. Connect the power output plug to the Microcontroller User Interface Panel. (Green connector, lower left side as viewed from the back.)

4. Laser Scanner –Mount the scanner head so that it views the barcode position as closely as possible directly in front of the scanner-viewing window. Avoid having the scanner view the barcode “out of the corner of its eye”. Position the viewing face of the scanner 2.5” – 4” from the surface on which the barcode will be presented.

Attach the laser scanner 15 pin female d-sub connector to the 15-pin male d-sub connector on the extension cable. Attach the 15 pin female connector on the extension cable to the desired 15-pin male d-sub scanner input on the Microcontroller User Interface Panel. The microcontroller panel can accommodate up to four scanners. (See wiring diagram)

5. Key switch – The 7600-KS1 Supervisory key switch mounts in 3/4” diameter hole. Locate key switch so that an operator can reach the key switch while viewing the system display. The Key switch is factory wired with two conductor (red and brown) cable. Connect red conductor to terminal C on the Microcontroller User Interface Panel. (Green connector, lower left side as viewed from the back.) Connect brown conductor to terminal A on the Microcontroller User Interface Panel. (See wiring Diagram)

Connection to User Equipment

The User Equipment consists of two signals to user equipment. These signals provide a “handshake” mechanism between controller and user equipment such as motion controllers or feeders that deliver the barcode object to be read.

Signals are.

Trigger– trigger input is a logic gate pulled up to +5 volt DC logic level 1 (TRUE) by 10 K ohm resistor. When the user control equipment initiates moving an item into place for reading, it should switch this signal low (FALSE) (pull this signal low by a current switch to signal ground) to respond to the controller, indicating that a bar code is moving into place to read.

When the target barcode has been loaded (See page <> operating for instructions to load target barcode) and key switch removed, the system will respond to the Trigger Input.

In response to the Trigger signal, the system will begin to scan for the barcode. The system will continue to scan until a barcode is read or the Trigger signal is returned to logic level 1 (TRUE) by the user equipment, whichever comes first. This event is the end of the read cycle.

At the end of the read cycle, the system will determine the result:

Good Read: a barcode was read and was the same as the target barcode.

Bad Code: a barcode was read but was not the same as the target barcode.

No Read: no barcode was read during the read cycle. This result may be due to no object being presented with a barcode or an object with an unreadable barcode being presented.

Result Output: When the system is started and ready to read barcodes, the output signal is set low. When triggered the signal goes high indicating the system is reading.

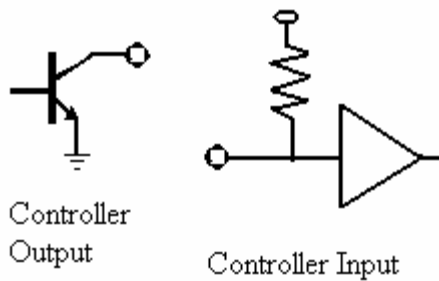
A good read returns the signal low and enables the next trigger.

A bad code or a no read error leaves the signal high until the error is cleared.

The PLC program should check Result Output and Trigger only when Result Output is low.

Disconnecting or removing the connection between the PLC and the system presents an error condition to the PLC.

The schematic drawing below represent controller input and output circuits and user equipment circuits suitable for interfacing.



Microscan MS-3 Laser Scanner Set Up

Laser scanners purchased through Scanning Devices are pre-programmed to work with your specified barcodes and settings. If scanners are purchased elsewhere, they must be programmed prior to use.

Step 1 - Install Microscan ESP software on a Windows Operating System (98 or later) PC

1. Insert the Microscan Tools CD into your computers CD drive.
2. Choose ESP Software from the main menu
3. Launch Setup.exe under ESP and follow the onscreen prompts.

Step 2 – Connecting the Scanner to the PC for Programming

1. Connect the MS-3 Laser scanner to the male 15 pin D-sub connector on the test/programming box provide with your Barcode system.
2. Connect the cable with the female 9 pin D-sub to a COM port on your PC.
3. Connect the round DIN connector to the test box and its two conductors to a +5V DC power supply. Red to +5VDC and Black to Ground. The power supply provided with the Barcode system is an excellent source for power. Refer to the wiring diagram for proper terminal connections.

Step 3 – Select Reader Model in ESP

1. Start ESP from the icon installed on your computers desktop.
2. Select the MS-3 Laser Scanner from the menu by clicking on the appropriate icon and clicking OK.
3. Do not connect to the scanner by clicking NO when prompted

Step 4 – Programming the Laser Scanner

1. Click on the “App Mode” icon at the top left of the ESP window.

2. From the main menu select File → Open then select the _____ .esp file provided by Scanning Devices on CD or disk. You may also copy the file to a location on your hard disk for easier access.
3. You will be prompted to save the current settings prior to loading your ESP file.
4. When your file is loaded, you be prompted to connect to the scanner. Click on YES to connect.
5. Select the proper COM port and click start.
6. When connected, you will see a green “Connected” box in the status bar in the lower right of the screen.
7. If the connection fails, try selecting a different COM port and try again
8. Return to the “App Mode” by selecting the icon at the top left of the ESP window.
9. Click on the Send/Receive icon at the top of the ESP window → Save to Reader → Send and Save.
10. The scanner will give an audible beep when it has been successfully programmed.

Step 5 – Verifying scanner setup to your code

1. In the “App Mode” window, select the Terminal icon to test the scanner is set to read your barcode.
2. Place your barcode in scanners viewing area and press the pushbutton on the test / programming box provided by Scanning Devices. Your code should be read and displayed within the terminal window. Programming is complete.
3. If your code cannot be read or is read incorrectly, return to step 4 and re-program the scanner.

Step 6 – Other Useful Utilities in ESP (optional)

1. Use the EZ mode to determine the optimal distance to mount the scanner from your barcode. Click on the TEST button to start reading your code. Move the scanner to find the best distance and angle to achieve a 100% reading rate.

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766D-TC4 Target Barcode System

Operation Instruction

ON POWER UP

Power supply sequences on power up. Expect a short delay before observing any action, 2 – 4 seconds.

After this initial sequence:

1. The microcontroller display should glow light yellow. The display should be visible requesting that the operator select active scanners (or enter key switch if installed). This indicates that power has been delivered to the microcontroller and startup has been completed.
2. Barcode scanners should illuminate a red laser line in the path of the barcode. This indicates system startup has been completed and scanners are wired properly.

TEACHING THE SYSTEM ABOUT THE BARCODES IT IS TO READ

Target III Barcode Reader/Verifier has the capability to read the following barcodes:

Code 39

Interleaved 2 of 5 Code

Codabar

Code 128

UPC/EAN

The system has the ability to distinguish and read all these codes with any conditioning. However, some time is required to differentiate between codes each time a barcode is presented for reading. IN order to make the system operate as fast as possible and minimize “no-reads” in response to fast moving labels, it is best to minimize the number of codes which are enabled at any time.

Enabling relevant codes:

On power up, the system prompts the operator for the active scanners. Push the “Back Arrow” key (←) at this prompt. (If a key switch is installed, turn the key switch and push the back arrow key.) This will put the barcode system in learn mode.

Follow the operator prompts: Select a scanner. Place a barcode of the type to be read/verified in view of the selected scanner.

The system will read the barcode and report the type of code. It will store the code type in non-volatile memory. This barcode type will be used until the procedure is repeated with a different barcode type.

If a change in the barcode type is required, repeat this procedure for the new barcode type.

Operating Description

The Scanning Device Target III Barcode Reader/Verifier operates with from one to four scanners to read barcodes and compare them to a target barcode stored in system memory. When all scanners successfully read barcodes that match the target barcode, the system sets its output to allow an external controller or computer to proceed with its process. The system can be triggered by the external controller to operate in a fully automatic manner.

The system allows the operator to define active scanners and enter target barcodes in preparation for operation. The system then readies its scanner(s) and enables its output to signal the external process to deliver barcodes for reading.

When the process begins, the system reads barcodes and compares to the target barcode. If one or more of the active scanners fails to report a barcode that matches the target barcode, the system sets and holds its output in the ERROR state. Errors may be caused by failure to read a barcode caused by no barcode being present or if present, the barcode was not readable (“no-read”). Errors may also be caused by reading a barcode that does not match the target code (“bad code”).

Errors are reported on the system display as type of error (“no-read” or “bad-code”) and scanner at which the error was detected. The system display is used to prompt the operator through the process used to clear errors. Errors may be cleared by key-entry at the system keypad. All errors must be acknowledged and cleared before the system ERROR state is cleared and the output to the external process energized signaling the process to resume.

An optional key switch may be required to allow errors to be cleared, adding a degree of security to the error recovery process.

SETUP PROCEDURE

(Required at power-up or when changing the active scanners or changing the barcode being read). In order to operate, the system requires a list of active scanners and a target barcode. If either of these parameters is not defined, the system will not be able to begin.

These two parameters are stored in non-volatile memory and recalled on power-up. These parameters may be selected for continued use with a single keystroke. Or, new parameters may be entered with the simple procedure described below.

SETUP I – DEFINE ACTIVE SCANNERS

The figure below defines the keypad procedure to specify which scanners will be used. The system recalls the previous list of active scanners and displays it on line 2 of its display. If this list is correct, push the “#” key to continue with these scanners. If a change is required, push the “*” key. The display will change to ask for scanners. Enter numbers from 1 – 4 to specify the new list of active scanners. Numbers correspond to the address of the connector at the back of the microcontroller, with connector #1 at the top and connector #4 at the bottom of the back panel. Press ENTER when all have been keyed. The system returns to the original display with the new list. Press the “#” key if this is correct or the “*” key to repeat the entry process.

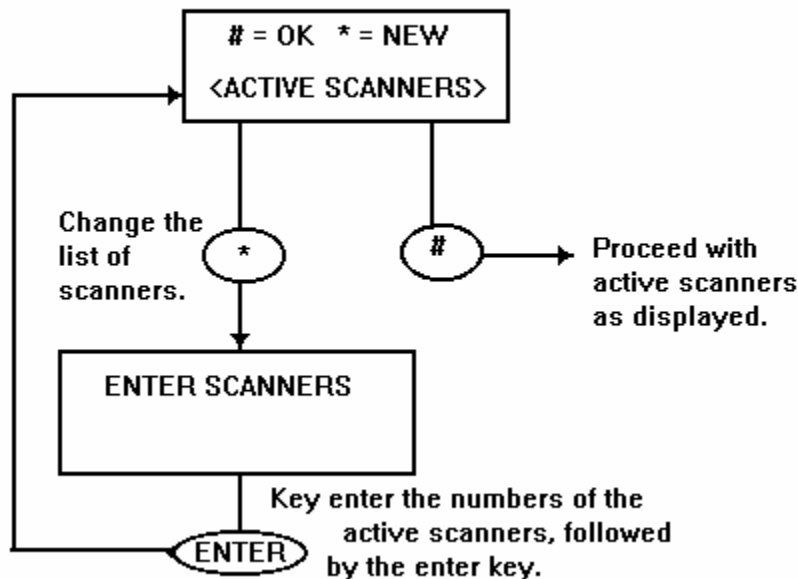


Figure 2: Procedure to Select Active Scanners

SETUP II – DEFINE TARGET BARCODE

During the setup procedure, the previous target barcode is recalled from system memory. The operator may elect to continue to use the previous target barcode with a single keystroke (#), or may use the procedure illustrated below to select a new target barcode. The new target barcode may be key-entered (numeric data only), or scanned from one of the system barcode scanners.

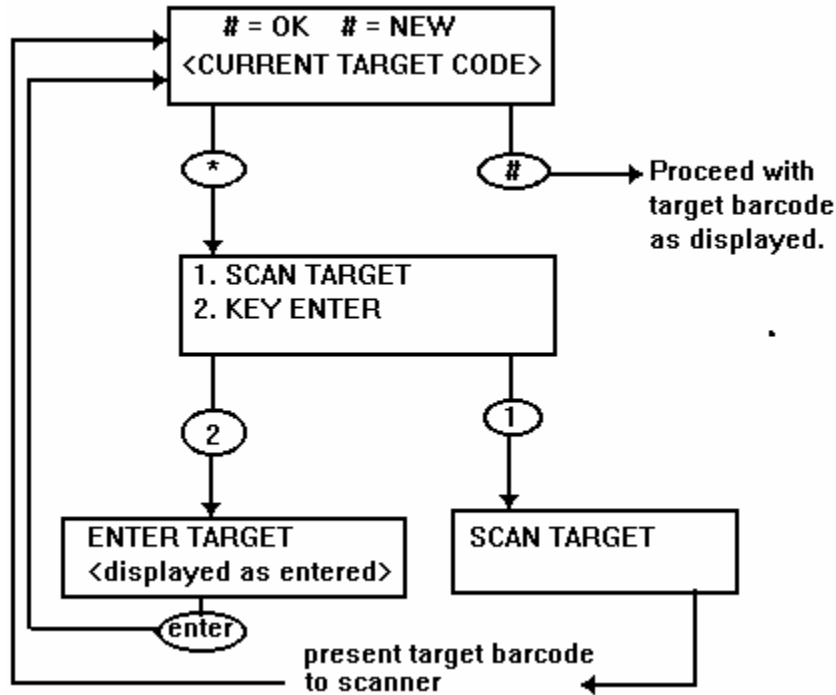


Figure 3: Procedure to Select Target Barcode

Once the list of active scanners and the target barcode are established, operator setup is complete.

The system then readies its barcode scanners and enters the READY state. The ready output is energized, signaling that the system is ready for the external process to deliver barcodes for reading/verification.

ERROR SITUATIONS AND RESPONSES

When an error is detected, the system illuminates its RED front panel ERROR Indicator and holds its Ready output OFF, signaling that the external process should not delivery barcodes. Errors are reported on the system display. Errors must be cleared by the operator as reported via the system keyboard. When all errors are cleared, the system

turns off the ERROR indicator and energizes its READY output, signaling that the process may continue.

If the system is equipped with a key switch, the operator will be prompted to insert the key switch in order to access the error clearing function. Errors cannot be cleared without inserting and turning the key switch. When errors have been cleared, the operator will be prompted to remove the key switch. The system will not resume until the key switch has been removed.

When errors are detected, the System displays this message:

**Reading Errors
Insert KeySwitch**

After the key switch has been entered and turned, one or more of the following messages are displayed to indicate more detail on the error:

1. Bad Code -- a barcode was read at the indicated scanner that did not match the target code.

**Bad Code at: < >
< code >**

2. No Read – the indicated scanner(s) did not read a barcode during the time a barcode should have been read. The barcode was either unreadable or not present.

**No Read at:
<Scanner numbers>**

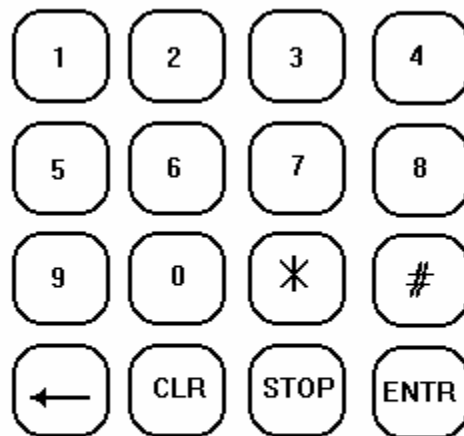
After clearing the errors and with the key switch still inserted and turned, press either CLR, STOP or ENTER on the keypad. The display then prompts to remove the key switch.

**Errors Cleared
Remove Keyswitch**

When the key switch has been removed, the system energizes its READY output allowing the external process to resume.

KEYPAD

The keypad is a 16-key matrix pad, consisting of 10 numerals and 6 special keys in the following configuration:



Numerals are used for data entry, to active/deactivate scanners, select menu choices or enter target barcodes.

Special keys are used for other functions:

- (Asterisk) – used to select “new data” from a function menu; initiates data entry for that function.
- # (Pound) – used to proceed with data entered.
- ← (Left Arrow) – returns to the previous menu, allowing repeat of the previous data entry.
- CLR – Clears errors or clears data entered prior to hitting the ENTR key.
- STOP - Returns the system to its power-up condition, requesting new setup information and preventing the READY output from being energized. When properly configured, this condition should cause the process to STOP.
- ENTR – signifies that data entry is complete and the system can take action on the data entered.

DISPLAY

The display is a two line, 16-character LCD (Liquid Crystal Display) type with yellow backlighting for enhanced visibility. The system displays instructions, operator commands, error conditions and system status.

In addition to the LCD display, the system has two LED indicator lights visible through the front panel. The GREEN indicator is lit when the system is ready to read and verify barcodes. When the system detects an ERROR, it turns the GREEN indicator OFF and the RED indicator ON, signifying the ERROR state.

In normal operation, the GREEN indicator will be ON continuously until an ERROR is detected. The RED indicator is on when an error is detected.

Contact Scanning Devices

For installation help, accessories and supplies, contact Scanning Devices Inc.

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