FMT1040
Installation Guide

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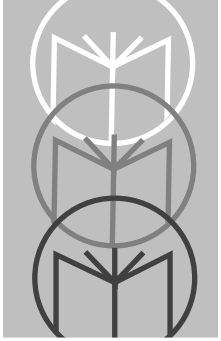


About This Guide

This installation guide is intended to provide the information necessary to install and configure the FMT1040.

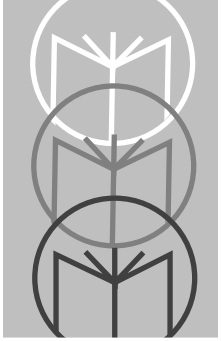
Chapter 1, *Physical Installation,* provides information about the mechanical installation and physical configuration.

Chapter 2, *Electrical Installation*, details the electrical connections and wiring information.

Chapter 3, *Setup*, shows how to set up the initial communication parameters and how to select the options necessary to connect to the network or operate as standalone.

Appendixes A and B provide the product specifications and configuration commands you will need to operate your FMT1040.

Refer to the *FMT1000 Series Programmer's Guide* for information on FMT1040 programming and functions. Refer to the *FMT1000 Series Remote Boot Setup Guide* and the *FMT1000 Series TCP/IP Remote Boot Setup Guide* for network-specific connection information.



Chapter 1
Physical Installation

Introduction

The FMT1040 connects directly into an Ethernet™ network. For network operation, it requires a network server to load the boot code that brings the computer on line. It also may boot and operate locally by using a PCMCIA SRAM card (not supplied). The SRAM card must be formatted and programmed using a PCMCIA reader / writer or a computer capable of handling SRAM cards.

Unpacking the FMT1040

The FMT1040 package includes the following components:

- FMT1040
- Network driver floppy disk
- Installation Guide.

Installation

We recommend that you perform the installation tasks in the order listed below to ensure proper operation. (This guide is organized in the same order.)

1. Select a suitable location for the unit.
2. Mount the FMT1040 in the selected location (see page 1-3).
3. Connect the appropriate devices to the unit (see page 2-5 to page 2-17).
4. Prepare a bootable image on the network server or on a PCMCIA card (see page 2-18 and page 3-5).
5. Connect to the Ethernet network.
6. Install the battery pack (see page 2-20).
7. Connect the power.

The FMT1040 should now be operational. If you encounter a problem, please contact your dealer or Symbol Technologies.

Keyboard Operation

The operation of the FMT1040 keyboard is slightly different from that of the standard IBM PC keyboard. Whereas the IBM PC keyboard allows key combinations or pressing of a key while pressing down one or two other keys, some FMT1040 characters require that you press a sequence of keys.

The **<2ND>** key provides access to FMT1040 second key characters such as **<F9>** or **<UDK1>**. The **<2ND>** key does not send out its own scan code. Instead, a key sequence is used. For example, to generate an **<F9>** code, you first press the **<2ND>** key, followed by the **<F1>** key. The **<2ND>** key must be pressed and released each time before the alternate function key can be keyed.

The FMT1040 **<SHIFT>** key operates like a PC **<SHIFT>** key, but it is used in sequence also. For example, to generate an exclamation point **(!)**, press and release the **<SHIFT>** key, then press and release the **<1>** key. The alternate numeric keys are not printed on the FMT1040 keypad, but they are the same as found on the standard IBM PC keyboard.

The **<UDK>** keys are user-definable. They can be programmed for a key sequence of as many as eight *up* key scan codes and eight *down* key scan codes. See the *FMT1000 Series Programmer's Guide* for details.

Computer Flush Mounting

Flush Mounting the FMT1040 with the Industrial Mounting Kit

The FMT1040 is designed to be capable of achieving NEMA 4 (IP66) seal rating when properly installed. This involves proper enclosure preparation and use of the Industrial Mounting Kit (Symbol P / N 59-16257-01). Figure 1-1 shows the mechanical dimensions of the FMT1040 case.

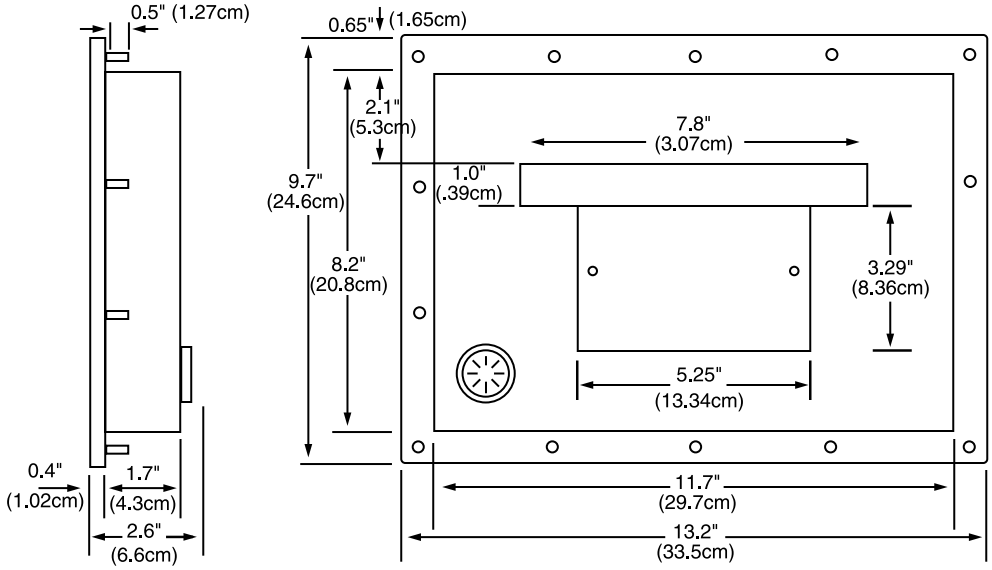


Figure 1-1. Mechanical Dimensions of the FMT1040, Back and Side Views

Industrial Mounting Kit

The Industrial Mounting Kit provides hardware for mounting the FMT1040 in industrial enclosures and instrument panels. The molded seals on the computer's mounting surface are capable of sealing to smooth or lightly textured panels.

Industrial Mounting Kit Parts List

- Backing Plate
- #8-32 Lock Nuts (14)

Installation Steps

1. Prepare a cutout in the panel using the inside rectangle of the backing plate as a template.
2. Drill 0.2-inch (0.5 cm) holes for clearance of #8 threaded hardware using the backing plate as a template.
3. Insert the computer inside casing through the front of the panel and the threaded posts through the 14 holes drilled in Step 2, above.
4. While holding the computer in place, slide the backing plate over the threaded posts and place the 14 #8-32 lock nuts provided.
5. After all lock nuts are in place and finger tight, torque to 12 inch pounds (1.4 newton-meters). Repeat the torque sequence to make sure each nut is torqued to 12 inch pounds (1.4 newton-meters) and thus assure proper sealing.

Figure 1-2 shows the backing plate dimensions. Figure 1-3 shows the FMT1040 relationship to the mounting panel and backing plate.

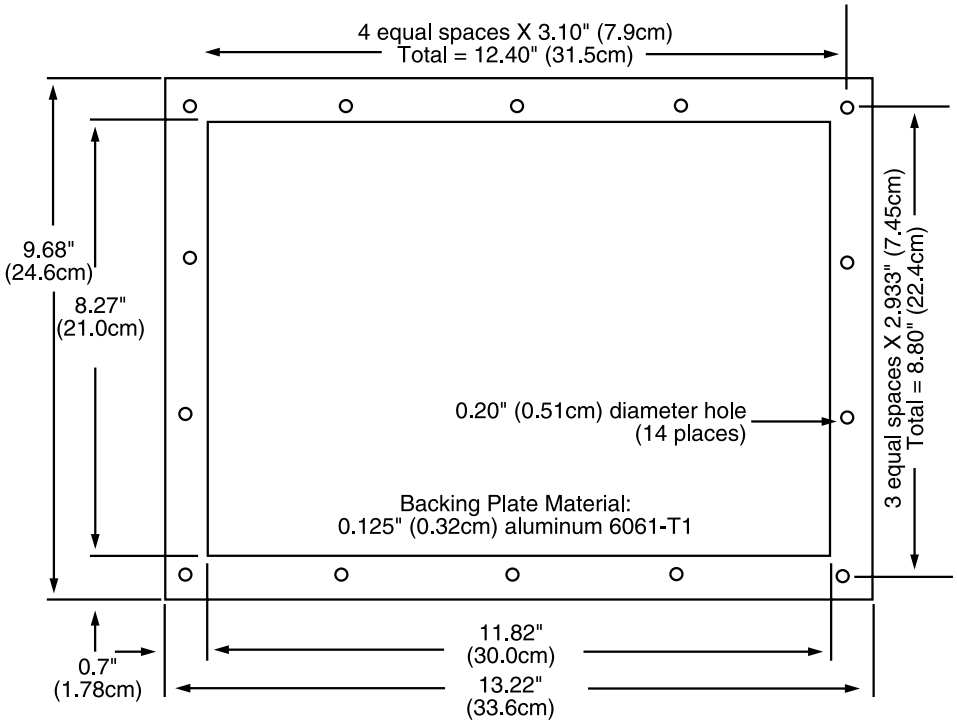


Figure 1-2. Mechanical Dimensions of Mounting Kit (Symbol P/N 59-16256-01) Backing Plate

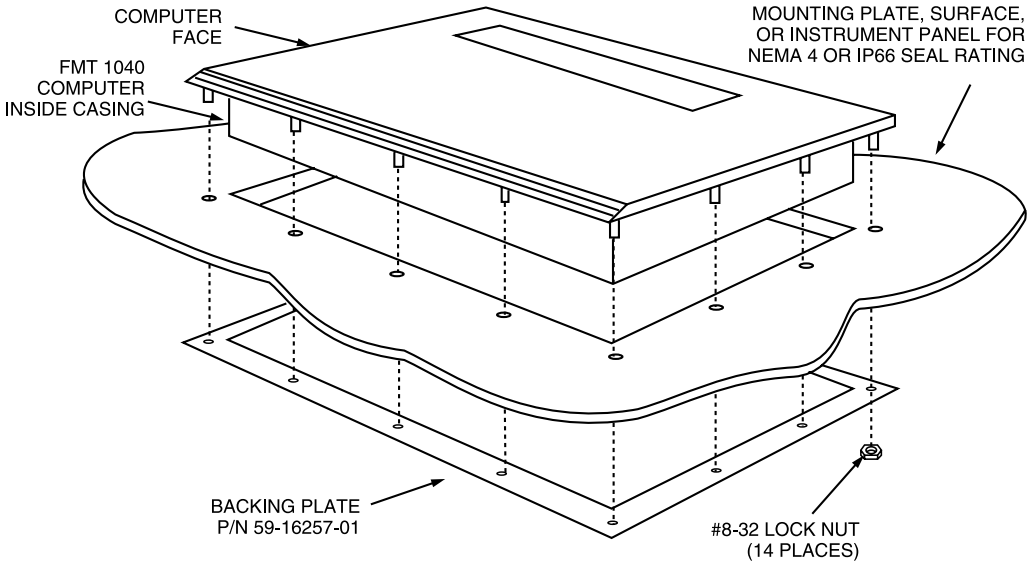


Figure 1-3. Three-dimensional view of FMT1040, Panel for Flush Mounting, and Backing Plate

Computer Desk or Wall Mounting

If hoseproof installation is not required, the FMT1040 may be wall-mounted or installed for desktop use by using the Wall Desk Tilt Stand (Symbol P / N 59-16256-01). The Tilt Stand view angle can be set to 30°, 37.5°, or 45°. Figure 1-4 shows the two installations, wall and desk.

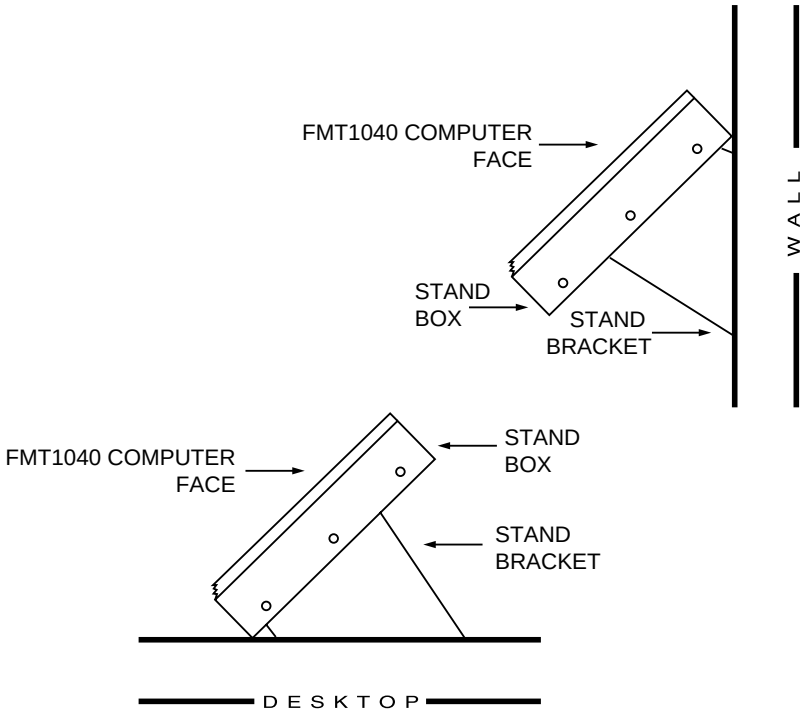


Figure 1-4. Two Possible Installations Using the Wall/Desk Stand

Desk/Wall Stand Parts List

- Tilt Stand Box
- Tilt Stand Bracket
- #6-32 Lock Nuts (2)
- #8-32 Lock Nuts (14)
- #6-32 Phillips Head Screws (6)
- Foam Washer with Adhesive Backing (1)
- Wandholder
- Rubber Feet with Adhesive Backing (4)

Installation Steps

1. Slide the FMT1040 into the tilt box making sure the rounded upper corners of each part and threaded posts are aligned. (See Figure 1-5.)
2. Mount the tilt box to the computer using the #8-32 lock nuts. Torque the lock nuts to 12 inch-pounds (1.4 newton-meters).
3. Mount the tilt bracket to desk or wall (hardware not supplied). Mounting holes are on 5.5 inch x 11 inch (13.97 cm x 27.94 cm) centers and can accommodate hardware up to #8.
4. For desk use without fixed mounting, apply the four rubber adhesive feet to the bottom of the bracket.
5. With FMT1040 installed in the box, mount the tilt box to the bracket. The three adjacent holes on the bracket may be used to set the tilt at view different angles. Use the #6-32 Phillips screws and lock nuts to secure the bracket to the tilt box. Figure 1-6 shows the FMT1040 installed.

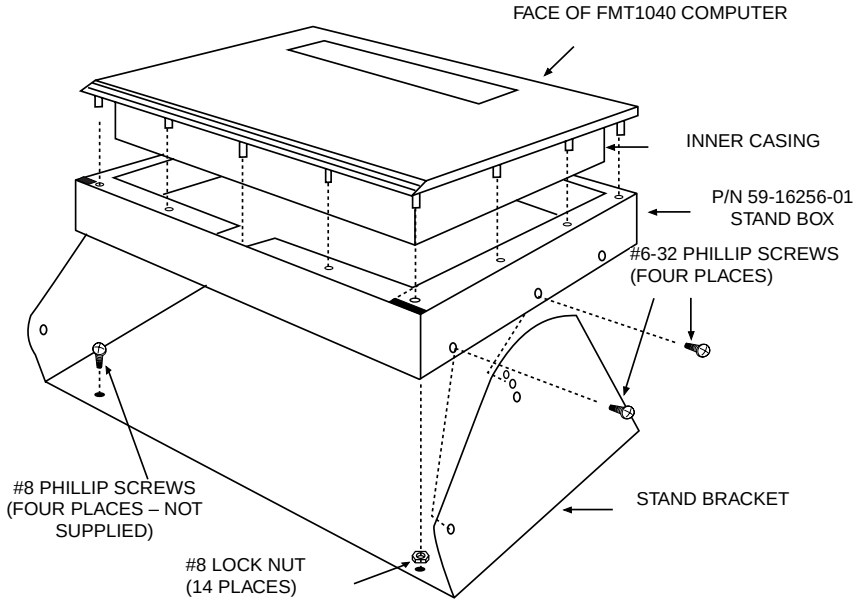


Figure 1-5. Three-Dimensional View of FMT1040 and Wall/Desk Stand

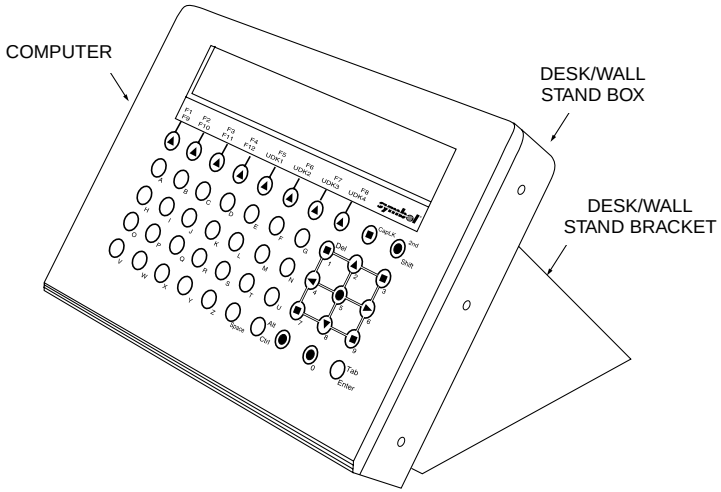


Figure 1-6. FMT1040 Installed in Wall/Desk Stand

Wandholder Installation

The wandholder should be installed in the middle tilt box hole after the desired tilt angle is established. Use the foam washer and apply the adhesive side to the wandholder. You may use the #6-32 Phillips screw provided with the Desk / Wall Stand to secure the wandholder. (See Figure 1-7.)

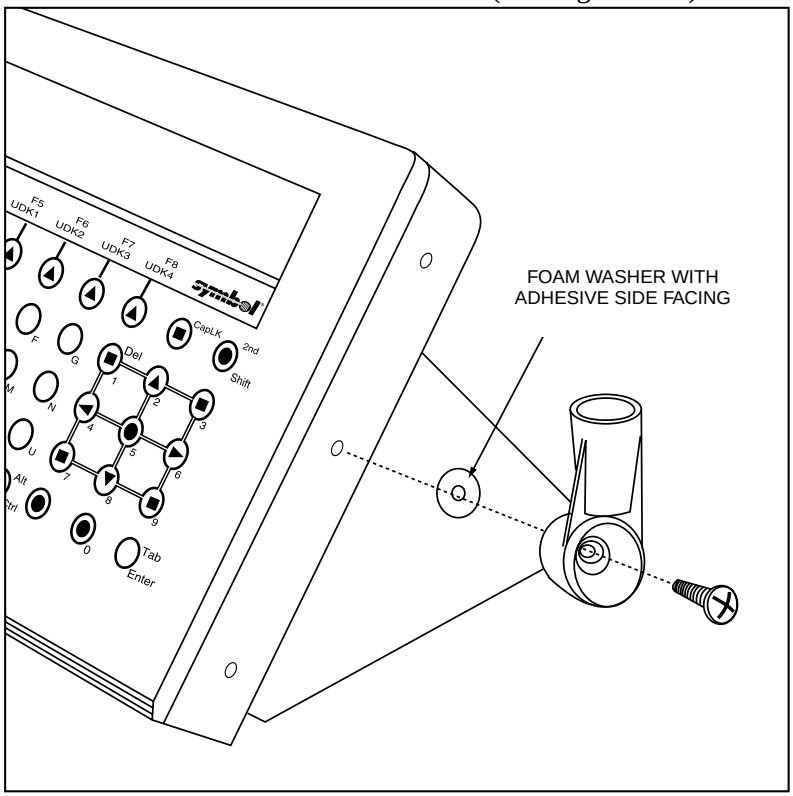


Figure 1-7. Use of Phillips #6-32 Screw To Install Wand Holder

Chapter 2
Electrical Installation

The FMT1040 connectors are listed below and shown in Figure 2-1.

- Power
- 10BaseT host
- COMM
- CGA header
- External beeper or speaker
- Auxiliary RS-232 SmartPort
- Bar code 1
- Bar code 2
- Digital I/O
- PCMCIA connector
- Battery
- Battery charge rate select

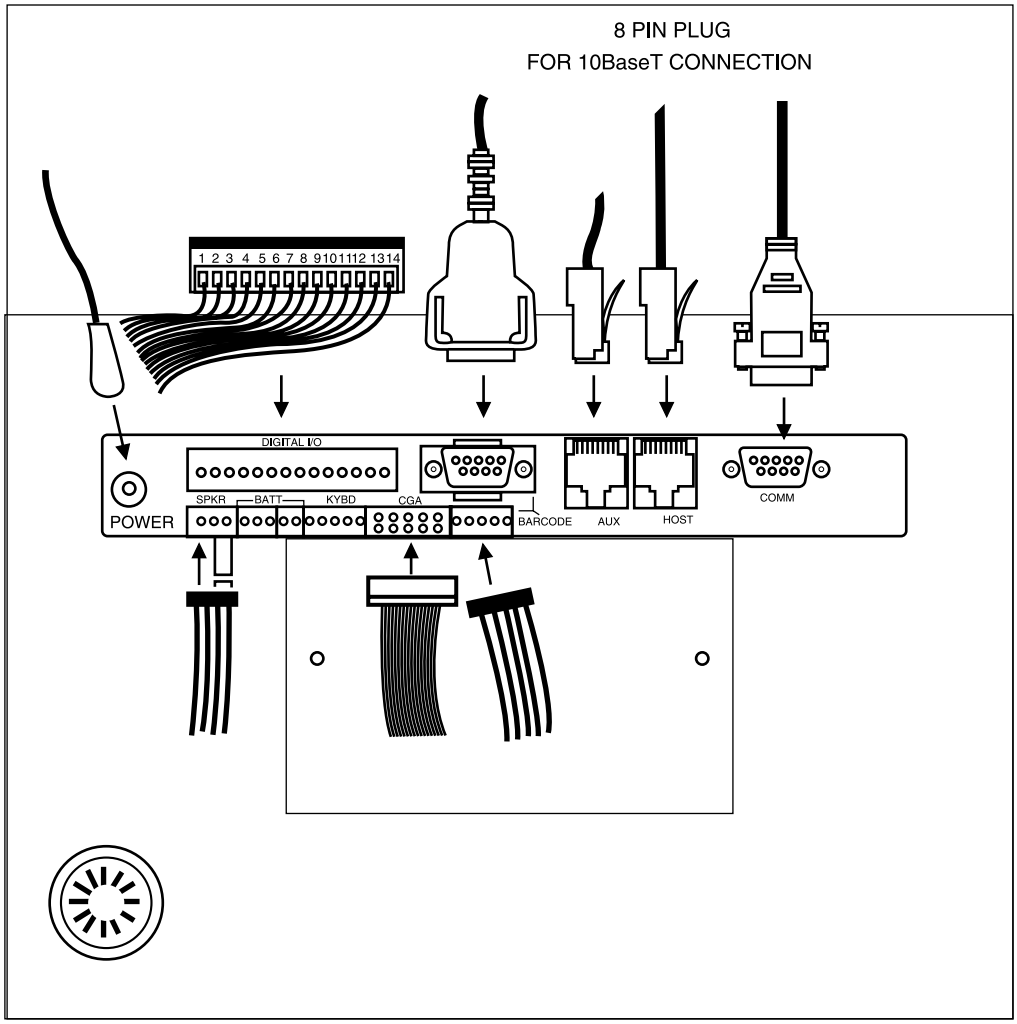


Figure 2-1. Back View of FMT1040, Showing Cables, Connectors, and their Destinations

Power

To power the FMT1040, we recommend Symbol P / N 59-16253-01 (110 VAC) or Symbol P / N 59-16255-01 (220 VAC) power supply, as shown in Figure 2-2 and Figure 2-3. These supply 12 VDC at 1.2 amps. For connecting power from other sources, a barrel-type mating connector is required. The connector should be wired so that the center is positive and the outside is ground. External DC should be 12 volts ±5%.

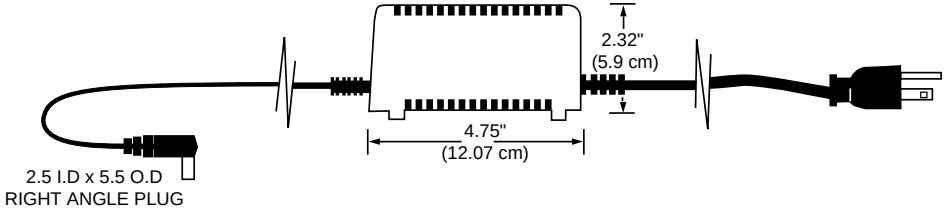


Figure 2-2. Symbol P/N 59-16253-01 North American Power Supply (110 VAC)

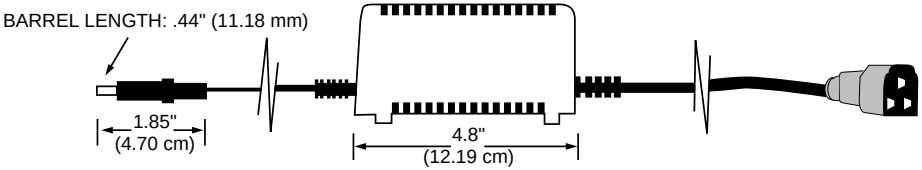
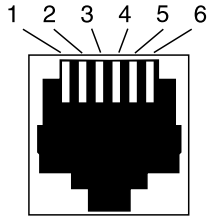


Figure 2-3. Symbol P/N 59-16255-01 International Power Supply (220 VAC)

Network Host

The FMT1040 has a built-in RJ45 connector (host) to allow connection to a 10BaseT Ethernet network. (See Figure 2-1, which shows the connection of a cable to the RJ45 connector of the FMT1040.) The pinout of the RJ45 connector is shown in Figure 2-4.

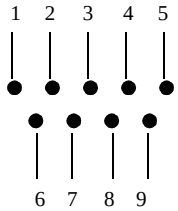


Pin #	Function
1	Transmit Data+
2	Transmit Data-
3	Receive Data+
4	N/C
5	N/C
6	Receive Data-
7	N/C
8	N/C

Figure 2-4. Pinout Table for RJ45 Connector

Serial Communication Port - COMM

The COMM interface requires a DE9 female connector with locking screws. This connector is compatible with the standard IBM PC nine-pin communication port cables. The pin assignments for COMM are shown in Figure 2-5.



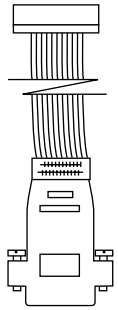
Pin #	Function
1	DCD
2	RX
3	TX
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

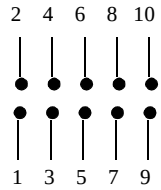
Figure 2-5. Pinout Table for COMM DE9 Female Connector

CGA Header

The FMT1040 allows connection to a CGA monitor. The CGA connector is a 10-pin header which requires the use of the CGA interface cable (P / N 59-16248-01). This interface cable will mate the 10-pin header to a standard CGA connection.

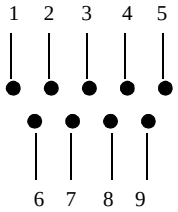
The pinout tables for the CGA interface cable and the cable itself are shown in Figure 2-6 (header) and Figure 2-7 (DE9).





Pin #	CGA Function	LCD Function
1	GND (through resistor)	GND (through resistor)
2	Intensity	DOT 3
3	GND	GND
4	Dot Clk	Dot Clk
5	Red **Video**	DOT 2
6	H Sync	LP
7	Green Video	DOT 1
8	V Sync	FLM
9	Blue Video	DOT 0
10	VSRC	VSRC

Figure 2-6. Pinout Table for the 10-Pin Header and the CGA Interface Cable



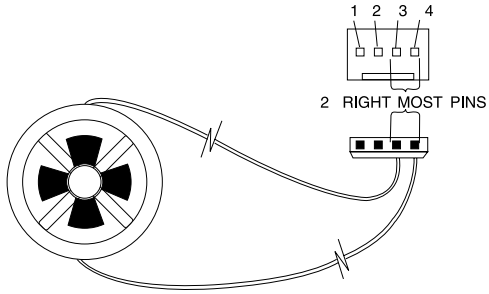
Pin #	Function
1	N/C
2	GND
3	Red Video
4	Green Video
5	Blue Video
6	Intensity
7	Dot Clk
8	H Sync
9	V Sync

Figure 2-7. Pinout table for the DE9 End of the CGA Interface Cable

External Beeper or Speaker

The four-pin external beeper or speaker connector connects to either a beeper or a speaker—not both. This connector is a polarized 0.1-in. (.25cm) spacing pin header with 0.025-in. (.06cm) square pins, Molex P / N 22-23-2041 or equivalent. Compatible mating connectors include Molex P / N 22-26-9043, Methode P / N1300-104-422, or equivalent. The two left-most pins control a 100-ohm speaker. The two right-most pins control a beeper, as shown in Figure 2-8 below.

The FMT1040 comes with a speaker included. In addition, Symbol P / N 59-16421-01 (see Figure 2-8) is an external beeper and assembly (12 VDC @ 50 mA) that emits a single tone with volume control.

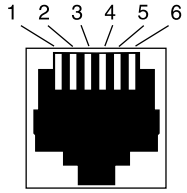


Pin #	Function
1	+Speaker
2	-Speaker
3	+Beeper
4	-Beeper

Figure 2-8. Beeper Assembly and FMT1040 Four-Pin Connector

Auxiliary RS-232 SmartPort

The auxiliary RS-232 connector is a six-pin RJ12 modular phone jack type connector. This port provides access for serial devices. (See Figure 2-9.)

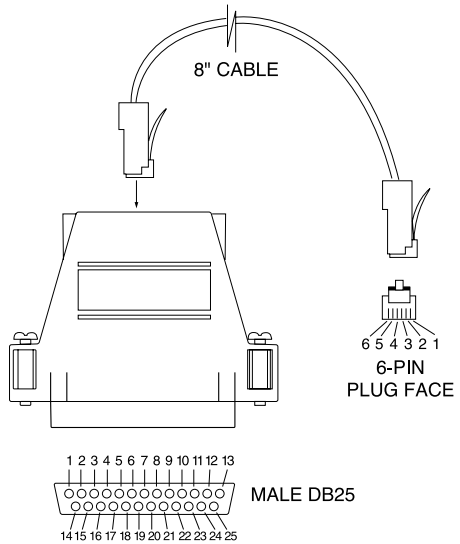


Pin #	Function
1	GND
2	TX
3	RX
4	RTS
5	CTS
6	+5 V

Figure 2-9. Pinout Table for the RJ12 Connector

Auxiliary RS-232 SmartPort Interface Cable

An interface cable (P / N 59-16251-01) converts the RJ12 connector to a male DB25 connector for the FMT1040. The interface cable and pinout are shown in Figure 2-10.



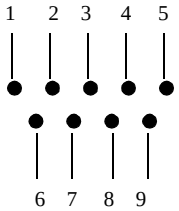
Pin #	Function	Pin #	Function	Pin #	Function
1	N / C	10	N / C	18	N / C
2	TX	11	N / C	19	N / C
3	RX	12	N / C	20	N / C
4	RTS	13	N / C	21	N / C
5	CTS	14	N / C	22	N / C
6	N / C	15	N / C	23	N / C
7	GND	16	N / C	24	N / C
8	N / C	17	N / C	25	N / C
9	+5V				

Figure 2-10. Six-Pin to DB25 interface Cable and Pinout Table

Bar Code Input Ports (2)

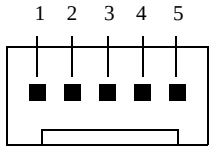
The FMT1040 provides two ports for bar code inputs. The main port is a DE9 connector with locking tabs. Most peripherals supplied by Intelligent Instrumentation will connect to this port. The secondary connector is a five-pin header. The built-in bar code slot or magnetic stripe reader connects to the five-pin header. Both pinouts follow as Figure 2-11 and Figure 2-12.

Note: A magnetic stripe device may be installed into either port. If you want to connect a bar code device *and* a magnetic stripe, we recommend connecting the bar code to the nine-pin connector.



Pin #	Function
1	+5V (VIA 2.2K pullup)
2	Bar Code Input
3	Bar Code 2 / Mag Data
4	GND
5	Mag Card Present
6	V Source (+12V)
7	GND
8	Mag Clock
9	+5V

Figure 2-11. Pinout Table for DE9 Connector



Pin #	Function
1	GND
2	Bar Code 2 / Mag Data
3	+5V
4	Mag Clock
5	GND

Figure 2-12. Pinout Table for Five-Pin Header

Input/Output Connector (I/O)

The input/output connector provides access to the two isolated inputs and relay outputs. The line functions are shown in Table 2-1.

Table 2-1. Pinout Table for Input/Output Connector

Line #	Function	Line #	Function
1	IN 1 (+)	8	Ground
2	IN 1 (-)	9	OUT 1 (Normally Closed)
3	IN 2 (+)	10	OUT 1 (COMMON)
4	IN 2 (-)	11	OUT 1 (Normally Open)
5	Vsource (+12 V)	12	OUT 2 (Normally Closed)
6	Ground	13	OUT 2 (COMMON)
7	Ground	14	OUT 2 (Normally Open)

The 14-pin input/output connector is shown in Figure 2-13 with a schematic showing details of the FMT1040 I/O circuit. The connector is shown here and elsewhere as it appears physically *and* as a diagram.

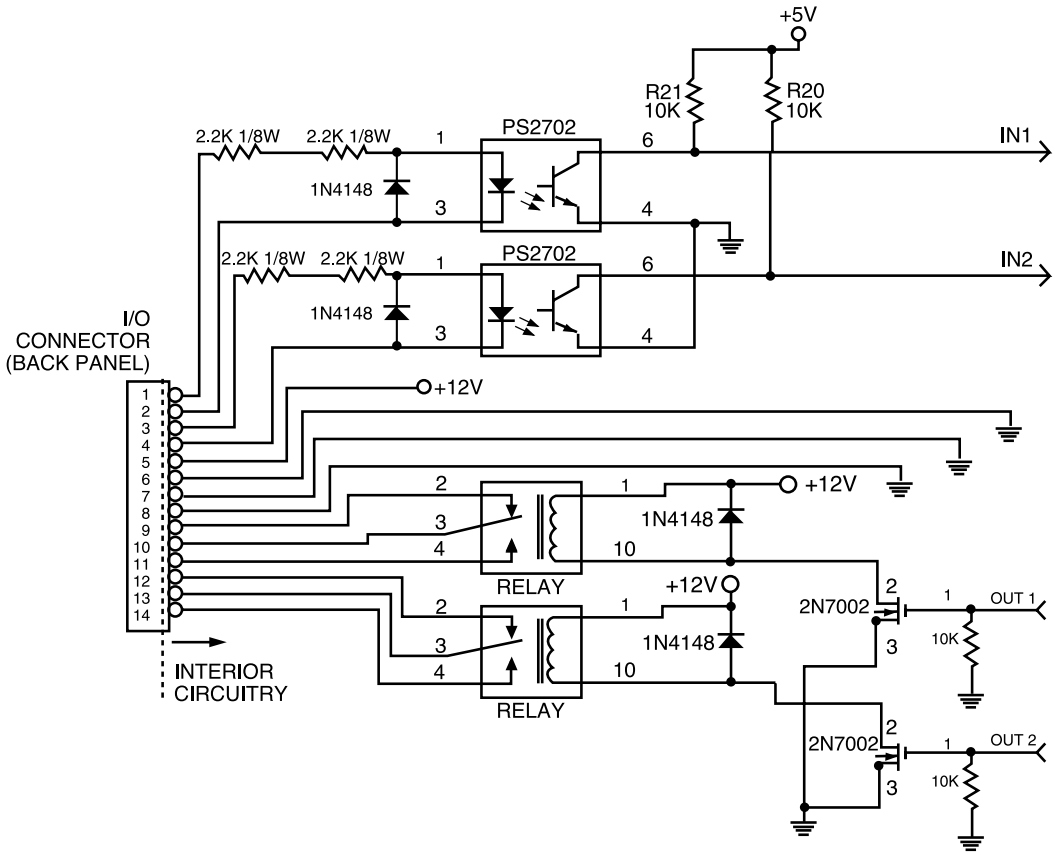


Figure 2-13. The 14-Pin Input/Output Connector and Related FMT1040 Schematic

Digital Inputs

Digital inputs may be used in one of two modes:

- Sensing DC voltage
- Sensing contact closure.

DC Voltage Inputs

Two optically isolated digital inputs may be used to sense DC voltages from 3 to 30 VDC. Also, the digital input channels count pulses. The cable shield, if present, may be connected to one of the return terminals on the connector as illustrated below. Figure 2-14 illustrates the FMT1040 circuitry dedicated to sensing DC voltage inputs.

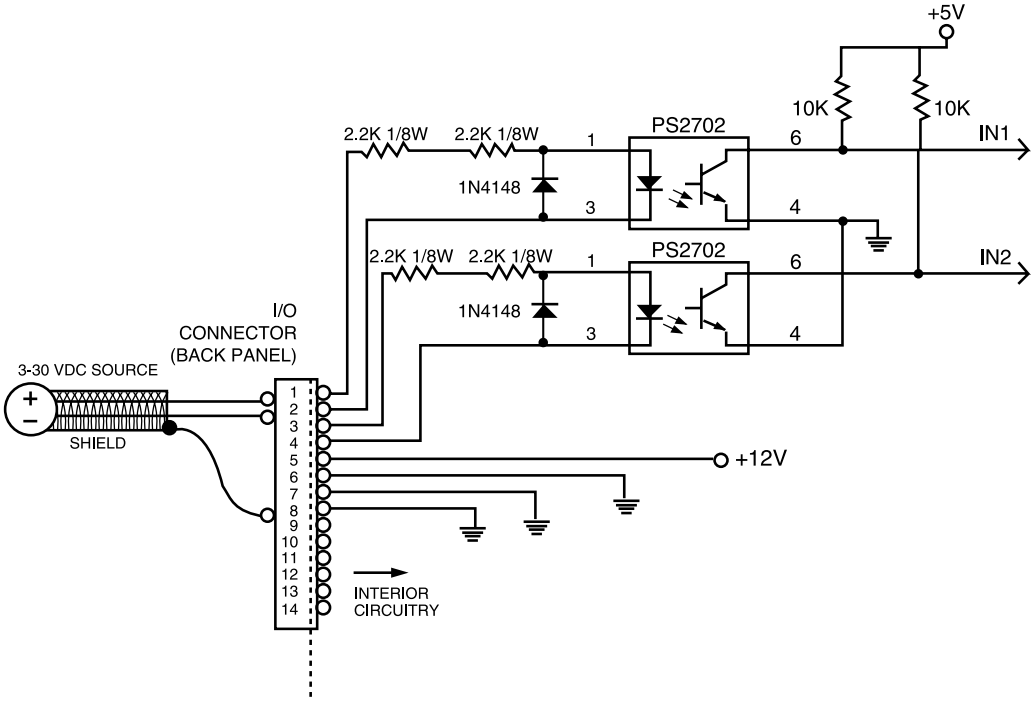


Figure 2-14. FMT1040 Schematic Showing DC Voltage Sensing

Dry Contact Use

The digital inputs may also be used to sense contact closures of devices such as relays, limit switches, photocells, etc. Wetting current is provided on the connector. This current source is nonisolated; however, an external isolated supply may be used if truly isolated contact inputs are required. Figure 2-15 illustrates the FMT1040 circuitry dedicated to sensing contact closure.

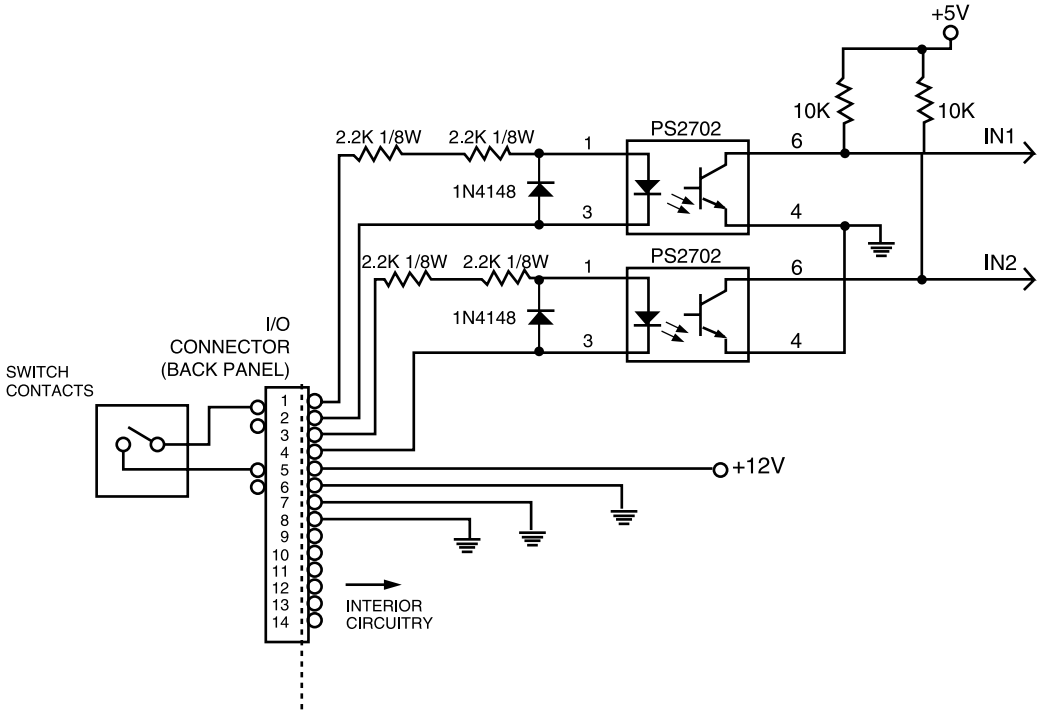


Figure 2-15. FMT1040 Schematic Showing Contact Closure Sensing

Relay Outputs

Two relay outputs are provided to drive lamps, door latches, slave relays, etc. Each relay has both normally open and normally closed contacts with a 1 amp rating. Figure 2-16 illustrates the FMT1040 relay output circuit.

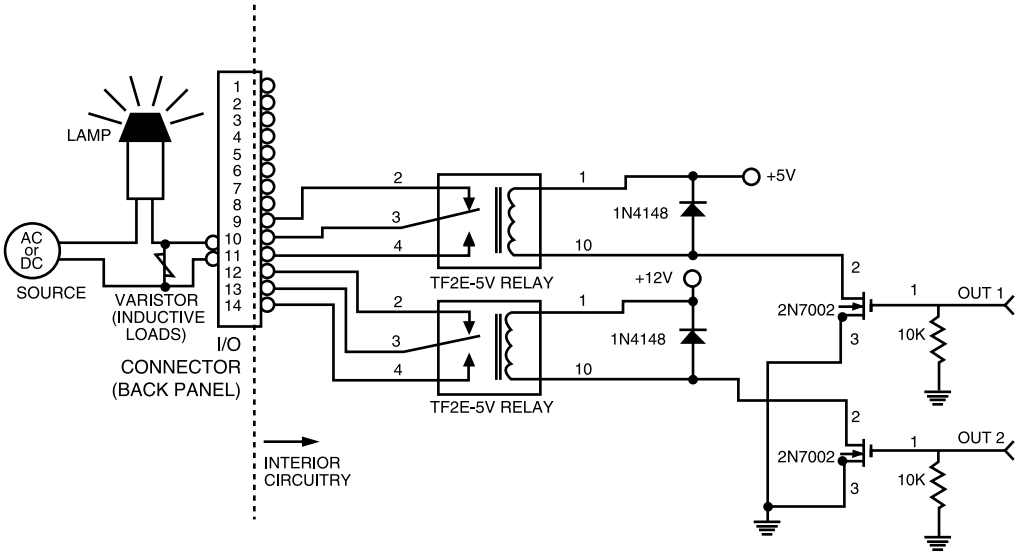


Figure 2-16. FMT1040 Schematic Showing Application of Relay Output with Protective Device

WARNING

Inrush current for solenoids and lamps are often 10 to 20 times the steady-state current. Switching loads with inrush currents greater than 1 amp will reduce relay life. Inductive loads will produce a large reverse EMF that causes premature contact failure. A protective device such as a varistor (Seimens #S05K50, MAIDA #D58Z0V500RA01, or equivalent) should be placed across the contacts or the load to prevent contact damage.

PCMCIA Card Connector

The 68-pin connector for the PCMCIA card may be found by removing the rear access door on the FMT1040. The PCMCIA connector will accept type I SRAM cards, but not Type II and III. First, cards must be formatted using a PCMCIA reader / writer. Bootable cards must be formatted as system disks. The FMT1040 SRAM card support emulates a floppy disk. Therefore, once formatted, the SRAM card appears as a floppy disk to the operating system and application systems.

Figure 2-17, below, shows PCMCIA card installation. Access to the PCMCIA card is accomplished by removing the access cover on the back of the FMT1040.

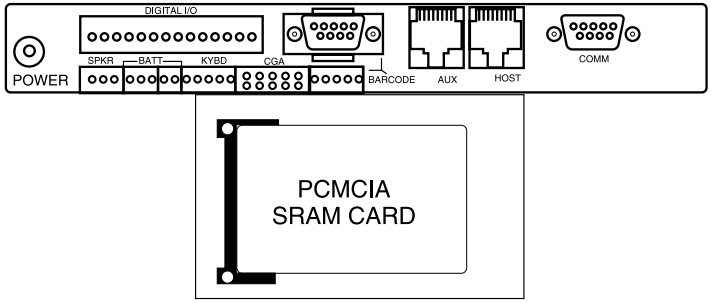


Figure 2-17. PCMCIA Card As It Is Installed Under Rear Access Cover.

WARNING

The PCMCIA card in the FMT1040 is a static-susceptible product. Use proper protective procedures when handling, storing, or installing the PCMCIA card. It is good practice to touch a grounded metal surface before making the connection or handling the card.

External Keyboard Connector

A five-pin header is provided for connection to an XT keyboard. This port adds full keyboard capability for file management, debugging, and system maintenance.

Caution

> Using this port will typically disable the FMT1000 Series terminal keypad and slot reader. This is because most keyboards do not follow the intended XT signal convention, i.e., they do not tri-state the data and clock outputs when not in use. Pressing an FMT1000 Series product key or using the slot reader with an external keyboard attached will have unpredictable results.

The external keyboard connector is positioned in the lower left section of the FMT1040 circuit board, as was shown in Figure 2-1. The keyboard adapter cable and pinout are shown in Figure 2-18.

Pin #	Function
1	Reset /
2	KBCLK
3	+5V
4	KBDATA
5	GND

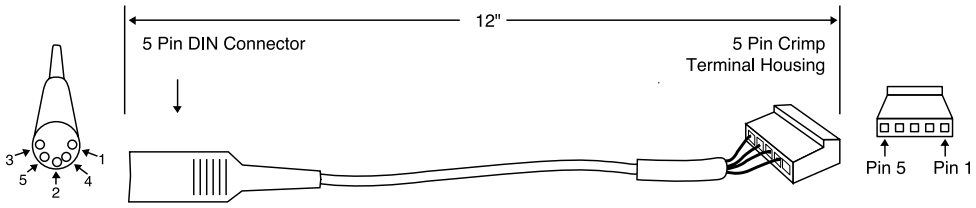


Figure 2-18. Keyboard Adapter Cable (Symbol P/N 59-16246-01) and Pinout Table

Battery Backup

The FMT1040 has a built-in battery charger designed to support either of two battery packs:

- Symbol P / N 59-16259-01 – An AA-size pack with seven Ni-Cd cells shrinkwrapped in a flat pack
- Symbol P / N 59-16258-01 – A C-size pack with seven Ni-Cd cells shrinkwrapped in a stacked three-on-four configuration.

The pack includes wires and a connector to plug into the main circuit board. The Ni-Cd cells are a high temperature type. They offer superior performance over standard cells for trickle charge standby use.

Installation

To install the battery pack, simply plug the connector into the two-pin header on the connector panel. (See Table 2-2.)

Table 2-2. Pinout for battery backup

Pin #	Function
1	+ BATT
2	GND

After installation, apply +12 VDC power to charge the pack.

Note: The battery will not supply power to the computer until +12 VDC has been applied. When +12 VDC power is lost, the battery pack takes over. This prevents battery discharge prior to actual startup. The battery circuit will also shut down in the event of a short circuit, overcurrent, or low battery voltage.

Charging

The charging rate is a constant current trickle of approximately C / 25 (1 / 25 rated capacity). With this rate, 24 to 48 hours is required to achieve a full charge of a completely discharged battery pack. The charge rate may be applied indefinitely at normal temperatures without overcharging. Temperatures of 40°C (104°F) and above will reduce the life expectancy at any charge rate.

The voltage during battery charging will range from 9.5 to 10.5 VDC, even though the nominal battery voltage is 8.4 VDC. The voltage supplied to the charger must be 11.4 to 13 VDC. Symbol P / N 59-16253-01 is recommended. (*9V power supply may not be used.)*

Charge Rate Selection

The charge selection is accomplished by placing a minishunt over pins 1 and 2 of the jumper connector for Symbol P / N 59-16258-01 battery pack or over pins 2 and 3 of the jumper connector for Symbol P / N 59-16259-01 battery pack as shown in Figure 2-19.

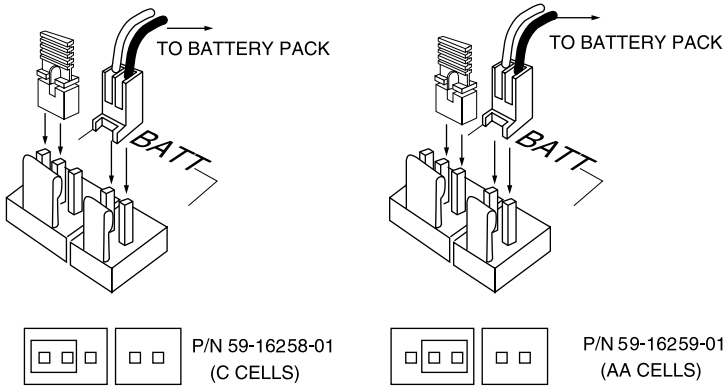


Figure 2-19. Charge Rate Selection for Chosen Battery Pack

Battery Capacity

The rated capacity of Symbol P / N 59-16259-01 battery pack is 500 mA-hr. The rated capacity of Symbol P / N 59-16258-01 battery pack is 1800 mA-hr. Many factors, however, will cause a reduction of capacity: age, discharge rate, and especially temperature. The graphs in Figure 2-20 indicate the effects of temperature on capacity and life expectancy. The estimated life graph is for a single cell. We estimate the battery pack's life expectancy to be about one-half that of a single cell.

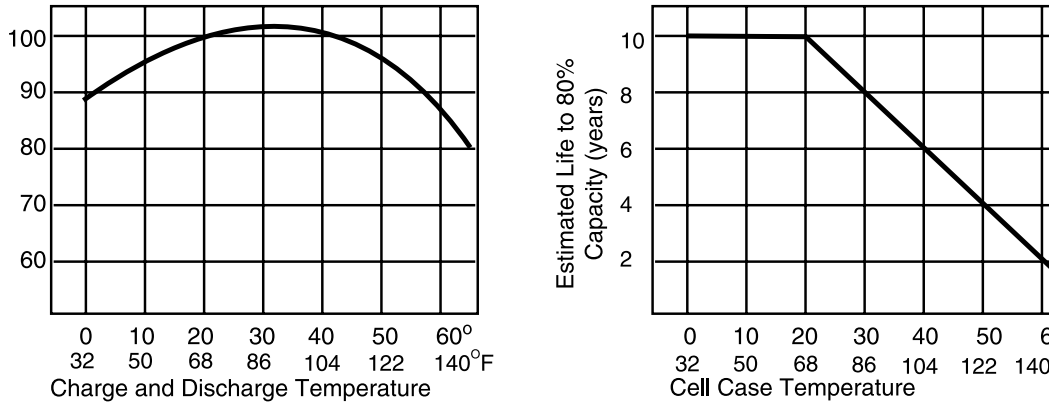


Figure 2-20. Temperature vs. Capacity and Life Expectancy

Considering these factors, the conservative system designer should derate the capacity to 70-80% of the nominal value to determine the backup time that can be guaranteed over a range of temperatures for two to five years. A typical FMT1040 with 10BaseT requires about 350 mA of operating current. At this discharge rate, Symbol P / N 59-16259-01 battery pack will power the computer for about one hour, assuming 70% capacity. Symbol P / N 59-16258-01 battery pack will supply power for about three hours.

System Maintenance

The batteries used in the battery packs are high temperature Ni-Cd cells. They are generally regarded as among the most reliable cells available. The cells in each pack are capacity-matched for series use.

Nonetheless, batteries do fail, as a consequence of high temperature, excessive charge / discharge cycles, age, or very deep discharges. Since batteries are specified in data collection system as a guarantee of operation during a power outage, periodic maintenance is necessary. The procedure outlined below should be performed every three to six months, depending on how critical the data protection is. Battery packs should be replaced every two to four years.

1. First, verify that the DC supply voltage is 11.4 to 13 VDC. The DC supply voltage can be measured with a voltmeter at the power jack.
2. With the DC power supply connected to the main circuit board, measure the battery voltage. Battery voltage can be measured with a voltmeter at the battery connector on the main circuit board of the FMT1040. This is illustrated in Figure 2-21 . It should be 9.5 to 10.5 VDC when the batteries are fully charged. If the battery voltage is less than 9.5 VDC, either the battery pack or the charging circuit is defective. Swap the battery pack with a fresh, fully charged pack to isolate the culprit.
3. Unplug the DC power supply and allow the battery pack to power the terminal for five minutes. The battery voltage should now measure between 8.7 and 9.7 VDC. If the voltage is less than 8 VDC, a cell is probably dead. If it is between 8.4 VDC and 8.7 VDC, the battery pack may be undercharged, may have reduced capacity due to age or other conditions, or may be subjected to an extremely heavy load.

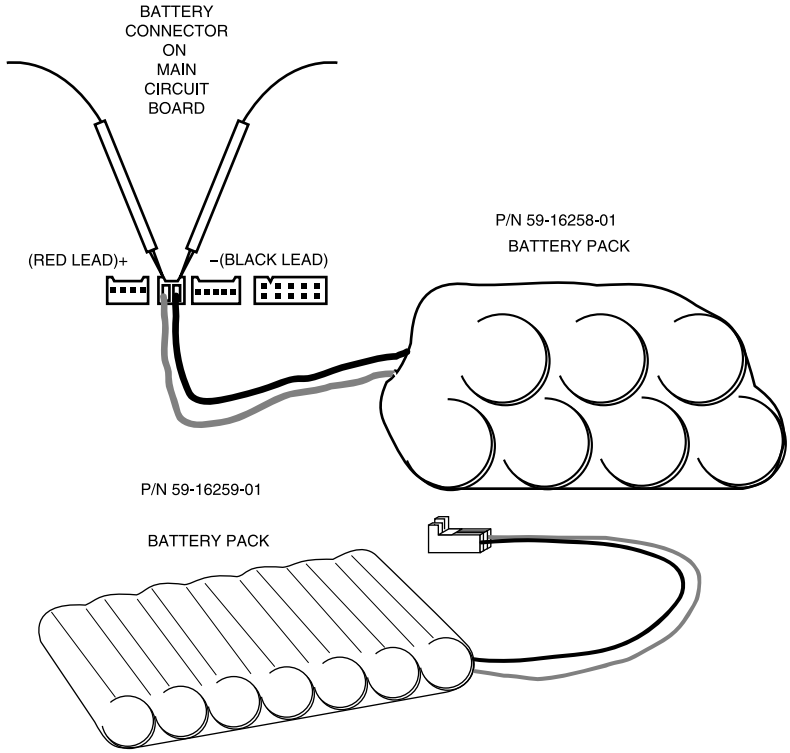


Figure 2-21. Battery Test Showing Position of Test Probes

Chapter 3
Setup

BIOS Setup

After the FMT1040 is booted, the Ethernet address and BIOS revision level appear on the first line of the 2 line by 40 character display. The second line displays *"[ENTER]=setup"* even if setup has been disabled. Figure 3-1 below shows a sample after-boot display.

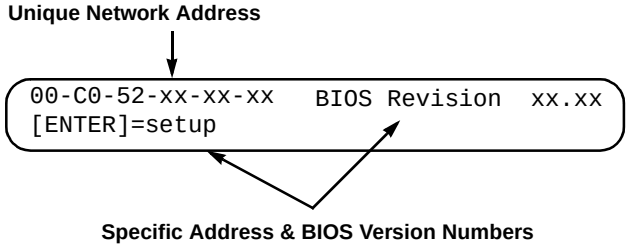


Figure 3-1. First FMT1040 Screen Display After Bootup

A delay of a few seconds occurs before the system finishes the boot process. To enter into the setup process, press the **<ENTER>** key while the address and revision are displayed.

Figure 3-2 shows a sample setup screen. Line 1 of the display indicates which setup screen and option are currently selected. Line 2 shows the currently saved options. The **<ENTER>** key accepts a setting and advances to the next setup screen.

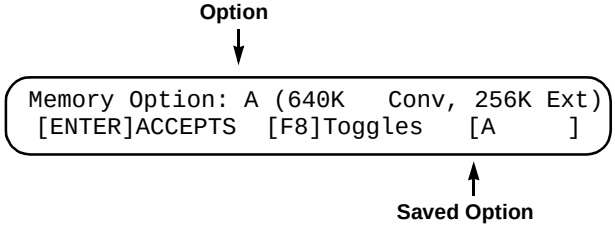


Figure 3-2. Memory Options Screen Using <F8> Key To Toggle Between Options

Pressing the following keys moves you through the setup screens and their option lists:

<F5>	Moves you backward through setup screens.
<F6>	Moves you forward through setup screens without change.
<F7>	Moves you backward through option list.
<F8>	Moves you forward through option list.
<ENTER>	Accepts option setting and advances you to next setup screen.

BIOS Setup Screens

After you press **<ENTER>** to get into the setup mode, you are presented with numerous setup screens to select options effecting display operation, memory configuration, boot type, etc. Details about the setup screens may be found on the network driver disk in a file named ***Readme.txt***. After all setup screens have been viewed and choices made, the save options screen appears as shown in Figure 3-3.

```
Confirm Setup              [F1]=Exit, Save
[F2]=Abandon Changes  [F8]=Exit, No Save
```

Figure 3-3. The Save Options Screen

Setup is now complete. Several options are available:

- **Press <F1>:** Exit and save changes to EEPROM. (Changes appear every time the FMT1040 boots up.)
- **Press <F2>:** Abandon changes. (Setup returns *immediately* to status in effect prior to entering setup.)
- **Press <F8>:** Exit without saving changes to EEPROM. (Setup returns to status in effect prior to entering setup but remains in effect for current work session.)

Network Setup

Setup Parameters

The FMT1040 boots onto your network as a diskless work station. The enclosed network driver diskette has the files that link the network operating system to the FMT1040.

Setup Steps

1. Create a boot image. A boot image must be created on your network's server. Please consult with your network manager to ensure that the boot image has been created and any other steps required to setup your server for booting diskless work stations have been completed. Refer to the *FMT1000 Series Remote Boot Setup Guide (*Symbol P / N 70-16672-01*)*and the *FMT1000 Series TCP/IP Remote Boot Setup Guide* (Symbol P / N 70-16673-01) for network specific connection information.
2. Connect the network cable. Use the 10BaseT cable to connect the FMT1040 10BaseT through the RJ45 connector.
3. Connect any barcode peripheral devices to the unit as shown in Figure 2-1.

   Note: You must connect bar code peripheral devices, especially lasers, before applying power to the FMT1040.

4. Connect Power. See page 2-3 for recommended power supply specifications. The FMT1040 goes through a series of tests and displays appropriate messages.

When the FMT1040 receives its boot code, it may also contain application-specific information so a different prompt may be displayed with each FMT1040 after booting. See your network manager for information about what prompt will be displayed by each computer after booting.

See the *FMT1000 Series Programmer's Guide* (Symbol P / N 70-16674-01) for information about other configurations, as well as for information about programming and using the FMT1020, including various built-in features.

Figure 3-4 shows a diagram of an FMT1040 network.

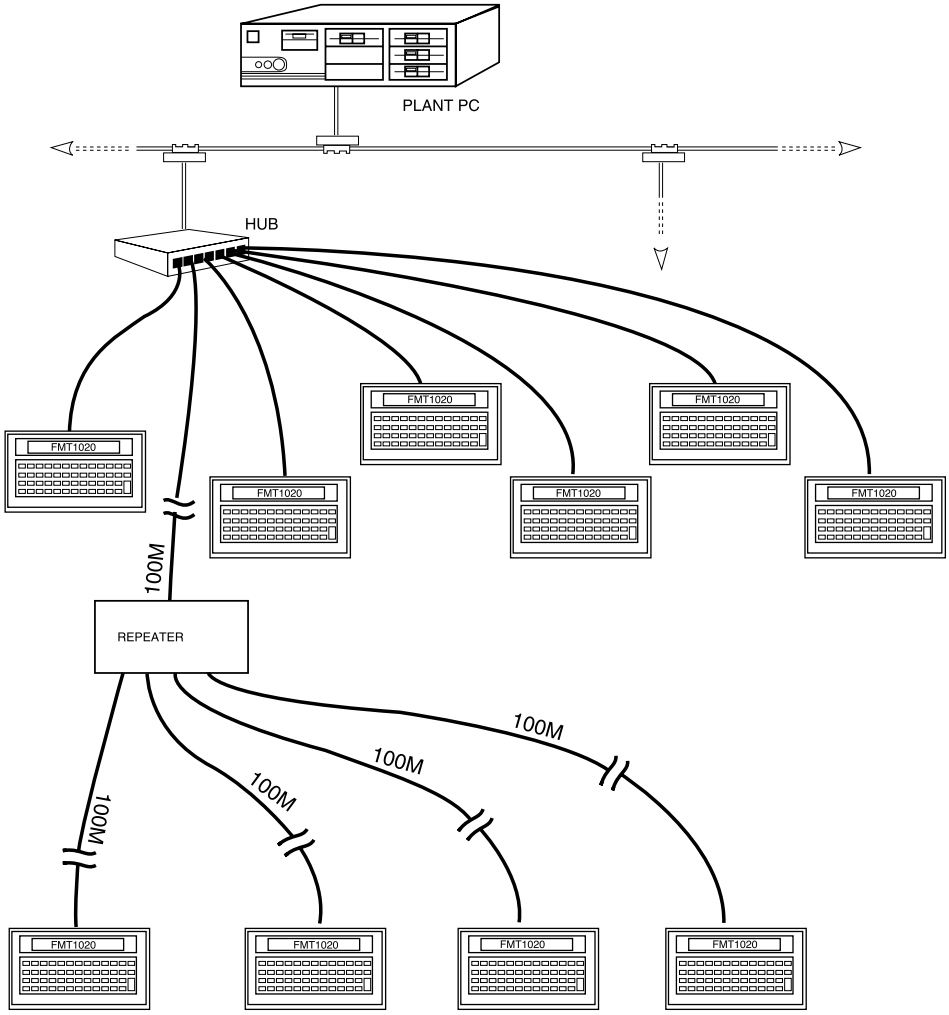


Figure 3-4. Network Setup Example Showing Use of Hub, Repeater and Multiple FMT1040 Computer Work Stations

See the *FMT1000 Series Programmer's Guide*, for information about other configurations. Programming and using the FMT1040, including various built-in features, will be explained in the programmer's guide.

Standalone Setup

The FMT1040 may be operated independent of a LAN by using a PCMCIA SRAM card. Data collected in this mode may be accessed via the RS-232 port.

For the FMT1040 to boot the DOS operating system from a PCMCIA SRAM card, the card must be formatted as a system bootable card. We have provided some information below that may be helpful to you.

Creating a Bootable SRAM Card with an Adtron Drive

FMT1040s have a Type I PCMCIA card slot. You can boot an FMT1040 series computer from a PC card, as with any DOS PC with a system formatted boot disk.

There are two ways of obtaining a PCMCIA bootable SRAM card: purchase one ready-made or create one yourself. This section will outline the steps required to create a bootable PCMCIA card.

The equipment used in these steps is as follows:

- Adtron drive unit (Model SDD-R-PCC)
- Adtron utility disk
- SRAM card for Adtron drive (Epson 1 MB)
- PC with a hard drive, COM1, floppy drive
- One formattable 1.44 MB floppy diskette

The steps detailed here will allow you to create a bootable SRAM card. You will first connect the Adtron drive to the COM port on a PC that has both a hard drive and a floppy drive. Then you will create an ADTRON subdirectory on your hard drive. (This subdirectory is used to hold the files necessary to make the SRAM card bootable (e.g., command.com, io.sys, msdos.sys).

An executable program from Adtron will be used to format the SRAM card and to move all the required files from the subdirectory onto the card.

Once the SRAM card is ready to be used as a boot disk, you will connect the Adtron device with the bootable SRAM card to the COM1 port on the FMT1040 computer and select Adtron as the Boot ROM type during setup.

Procedures

1. **Preparing your PC for Adtron drive access:**

   a. Edit the CONFIG.SYS file on your PC and add the following line

   ```
   DEVICE=C:\ADTRON\SDDRPCC.SYS
   ```

   b. Create a subdirectory for use by Adtron.

   ```
   c:>MD ADTRON
   ```

   c. Change directories to the ADTRON subdirectory.

   ```
   C:\CD ADTRON
   ```

   d. Copy the files from the Adtron utility disk. (The drive letter may vary.)

   ```
   C:\ADTRON>COPY B:*.*
   ```

   Reboot your PC. You should see a message that states that the Adtron device driver has successfully loaded. The drive reference for the Adtron drive will be the next available local drive letter. (We will use **`E:`** in these steps.)

2. **Accessing the Adtron drive.**

   Once the PC recognizes the new drive you can access it like any other drive on your computer. (If you are connected to a network, you may experience a conflict with your logical network drive overriding the local drive.) If you try to read the card in the Adtron drive (i.e., **`DIR E:`**) before you have formatted the PCMCIA card, you will get a standard error reading drive message from DOS.

3. **Creating system boot files for the Adtron.**

   There are two differences between a disk that is bootable and one that is not. The bootable disk has a boot sector and three system files—two hidden (IO.SYS, MSDOS.SYS) and one visible (COMMAND.COM). For the CMGRC program to create a bootable disk, the files and boot sector information must be accessible in the Adtron directory.

   a. Create a bootable floppy disk.

Insert floppy disk into drive A. (The drive letter may vary.)

Format the floppy disk as a system floppy disk:

C:>FORMAT A:/S

b. Copy the boot sector information.

Use the Adtron CPYBOOT utility to create a boot sector file.

C:\ADTRON.CPYBOOT A: BOOT.DAT

c. Copy the hidden files.

Use the Adtron CPYHDN utility to copy the two hidden I/O and DOS system files, IO.SYS and MSDOS.SYS. (These names depend on the maker of your DOS—see your DOS manual). You will need to run the utility once for each file.

C:\ADTRON>CPYHDN

At the prompt: **ENTER HIDDEN FILE TO COPY:**
respond by entering: **A.IO.SYS**

At the prompt: **ENTER DESTINATION FILE:**
respond by entering **IO.SYS**

C:\ADTRON>CPYHDN

At the prompt: **ENTER HIDDEN FILE TO COPY:**
respond by entering: **A.MSDOS.SYS**

At the prompt: **ENTER DESTINATION FILE:**
respond by entering **MSDOS.SYS**

d. Copy the command.com file

Copy **COMMAND.COM** from the floppy disk to the Adtron subdirectory.

C:\ADTRON>COPY A:COMMAND.COM

4. File verification

Before you run the format command, the following files must be available in the Adtron directory:

BOOT.DAT	COMMAND.COM
IO.SYS	MSDOS.SYS

5. Formatting a PCMCIA bootable system disk

The following command may be typed in at the command line, or it may be run from a .BAT file. The parameters are for a 1 MB disk. Refer to the Adtron documentation for any other configuration.

```
C:\ADTRON>cmgrc -f -tsram05 -d240,4,8,2 -yaboot.dat
ic:,io.sys,msdos.sys,command.com e:
```

Your Adtron card is now bootable from the FMT1040.

6. Setting up the FMT1040 for an Adtron boot.

a. Remove the PC card from the Adtron unit and put it into the FMT1040.

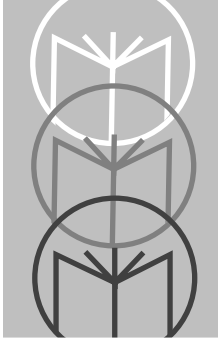
b. Power on the FMT1040.

c. Press **<enter>** on the FMT1040 and go into Setup mode.

d. Set the PCMCIA card slot to enable. If you don't have a monitor, be sure you enable distrack with a 2x40 CF configuration. Set the boot priority to *local.*

e. At the save option, press F1 to save and exit.

When the boot process has completed, you should see an **A** prompt on the FMT1040 screen. You can create CONFIG.SYS and AUTOEXEC.BAT files as necessary for your application.



Appendix A
Specifications

Physical

Size: 9.7 in. (24.64 cm) high x 13.2 in. (33.53 cm) wide x 2.5 in. (6.35 cm) deep
Weight: 6.7 lb (3.026 kilograms)

Power

Voltage: 12 VDC ±5%
Current: 350 mA typical
Current to peripherals: 300 mA maximum

Display

Type: Liquid Crystal Dot Matrix
Lighting: LED Backlight
Size: 1.2 in. (3.05 cm) x 9.4 in. (23.88 cm)
Lines & Columns: 2 lines x 40 characters
Character Height: 0.5 in. (1.27 cm)

Keyboard

Type: Silicone Rubber over Steel Domes
Number of Keys: 50
Key Spacing: 1.0 in. (2.54 cm) x 0.85 in. (2.16 cm)
Service Life: One million operations (minimum)

Environmental

Operating Temperature: 0° to 50°C
Storage Temperature: -10° to 70°C
Relative Humidity: 5% to 95% (non-condensing)

Bar Code Input

Scanners:

Wand
Slot
CCD (with wand emulation)
Laser (with wand emulation)

Symbologies:

Code 39, Code 39 mod 43, Code 39 full ASCII
CODABAR
Interleaved 2 of 5
Code 128
UPC/EAN/JAN

Magnetic Stripe Input

MSR200	**Magnetic Stripe Reader**
Card Standard	ANSI X4.13-1971
Encoding Standard	ANSI X4.16-1971
Read Track	Track 2 ABA
Density	75 BPI
Capacity	40 numeric characters

Digital Inputs

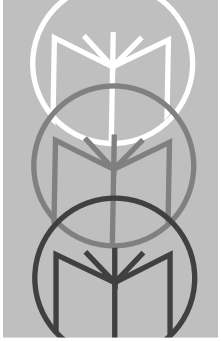
Voltage Input	3-30 VDC
Isolation Voltage	300 V_{RMS}
Count Frequency	20 Hz maximum (square wave input)
Debounce	10 msec minimum
Pulse Width	50 msec minimum
Wetting Current (dry contact use)	1.6 mA @ 9 VDC (un-isolated)

Relay Output Rating

Maximum Switching Power	30 W, 62.5 VA
Maximum Switching Voltage	48 VDC, 48 VAC
Maximum Switching Current	1 A
Minimum Switching Capability	10 mA, 10mVDC

Relay Output Expected Life (minimum operations):

Mechanical (at 180 cpm)	10^8
Electrical (at 20 cpm)	
1 A 30 VDC resistive load	2×10^5



Appendix B
I/O Processor Command Quick Reference

Listed below are the commands that configure the I/O processor board functions, including the beeper, the bar code port, the RS-232 serial smart port, and the digital I/O ports. These commands are sent to the I/O processor board using COM2; thus, any command that writes to a PC COM2 will send data to the FMT1040's I/O processor board. The returns are sent by default to the keyboard buffer.

An asterisk (*) marks the FACTORY DEFAULT. Except as marked (†), all commands have corresponding “SET” or “RETURN” commands.

For detailed information about these commands, please refer to the *FMT1000 Series Programmer's Guide.*

COMMAND	**DESCRIPTION**
R1D	RETURN USER KEY 1 DOWN (FACTORY DEFAULT = UDK1 DOWN SCANCODES)
R1M	RETURN RESPONSE STRING FOR COUNTER #1 MATCH
R1U	RETURN USER KEY 1 UP (FACTORY DEFAULT = UDK1 UP SCANCODES)
R25	RETURN INTERLEAVE 2 OF 5 MODE
R28	RETURN 128 MODE
R2D	RETURN USER KEY 2 DOWN (FACTORY DEFAULT = UDK2 DOWN SCANCODES)
R2M	RETURN RESPONSE STRING FOR COUNTER #1 MATCH

R2U	RETURN USER KEY 2 UP (FACTORY DEFAULT = UDK2 UP SCANCODES)
R39	RETURN CODE 3 OF 9 MODE
R3D	RETURN USER KEY 3 DOWN (FACTORY DEFAULT = UDK3 DOWN SCANCODES)
R3U	RETURN USER KEY 3 UP (FACTORY DEFAULT = UDK3 UP SCANCODES)
R4D	RETURN USER KEY 4 DOWN (FACTORY DEFAULT = UDK4 DOWN SCANCODES)
R4U	RETURN USER KEY 4 UP (FACTORY DEFAULT = UDK4 UP SCANCODES)
RAD	RETURN KEYBOARD AUTO DETECT FEATURE
RAE	RETURN AUX COMM PORT ENABLE
RAP	RETURN AUX RESPONSE PREFIX CHARACTERS (NO FACTORY DEFAULT)
RAS	RETURN AUX RESPONSE SUFFIX CHARACTERS (NO FACTORY DEFAULT)
RAT	RETURN AUX COMM TAG STRING (NO FACTORY DEFAULT)
RBA	RETURN BAUD AUX COMM
RBE	RETURN BATTERY SENSE ENABLE
RBH	RETURN BAUD HOST COMM
RBL	RETURN BACKLIGHT MODE
RBS	RETURN ON BATTERY RESPONSE STRING
RCB	RETURN CODABAR MODE

RCD	RETURN KEYBOARD INTERCHARACTER DELAY (FACTORY DEFAULT = 2 -> 20 MILLISECONDS)
RDA	RETURN DATA BITS / PARITY AUX COMM
RDE	RETURN DIGITAL I / O ENABLE
RDH	RETURN DATA BITS / PARITY HOST COMM
RDP	RETURN DIGITAL I / O PREFIX CHARACTERS (NO FACTORY DEFAULT)
RDS	RETURN DIGITAL I / O SUFFIX CHARACTERS (NO FACTORY DEFAULT)
RDT	RETURN DIGITAL I / O TAG STRING (NO FACTORY DEFAULT)
RE1	READ COUNTER 1
RE2	READ COUNTER 2
REA	RETURN AUTOENTER MODE AUX
RED	RETURN AUTOENTER MODE DIGITAL I / O
REI	RETURN AUTOENTER MODE INTERNAL
REP	RETURN AUTOCENTER MODE PERIPHERAL
RER†	RETURN ERROR CODE 0 = NO_ERROR 1 = COMMAND_ERROR 2 = PARAMETER_ERROR 3 = TIMEOUT_ERROR 4 = STOP_REQUEST_ERROR 5 = BUSY_ERROR
RES†	ECHO STRING INTERNAL PATH SETTING

RHA	RETURN HANDSHAKE AUX COMM
RHH	RETURN HANDSHAKE HOST COMM
RI1	RETURN INPUT 1 RESPONSE STRING (NO FACTORY DEFAULT)
RI2	RETURN INPUT 2 RESPONSE STRING (NO FACTORY DEFAULT)
RIB	RETURN AUX COMM INPUT BEEP ENABLE
RIM	RETURN AUX COMM INPUT STRING MAXLEN (NO FACTORY DEFAULT)
RIN†	RETURN AUX COMM INPUT STATUS 0 = NO_ERROR 1 = COMMAND_ERROR 2 = PARAMETER_ERROR 3 = TIMEOUT_ERROR 4 = STOP_REQUEST_ERROR 5 = BUSY_ERROR
RIO	RETURN AUX COMM INPUT TIMEOUT (FACTORY DEFAULT = 0)
RIP	RETURN INTERNAL PREFIX CHARACTERS (NO FACTORY DEFAULT)
RIR	RETURN AUX COMM INPUT READ MODE (NO FACTORY DEFAULT)
RIS	RETURN INTERNAL SUFFIX CHARACTERS (NO FACTORY DEFAULT)
RIT	RETURN INTERNAL TAG STRING (NO FACTORY DEFAULT)
RKC	RETURN KEYBOARD CLICK

RKE	RETURN KEYBOARD ENABLE
RKH	RETURN KEYBOARD HARDWARE RESET ENABLE
RKR	RETURN KEYBOARD REPEAT
RKT	RETURN KEYBOARD TYPE
RM1	RETURN MATCH VALUE FOR COUNTER #1
RM2	RETURN MATCH VALUE FOR COUNTER #2
ROB†	RETURN ON-BATTERY STATE 0=NOT ON BATTERY 1=ON BATTERY
ROO	RETURN AUX COMM OUTPUT WRITE TIMEOUT (FACTORY DEFAULT = 0)
ROU†	RETURN AUX COMM OUTPUT WRITE STATUS 0 = NO_ERROR 1 = COMMAND_ERROR 2 = PARAMETER_ERROR 3 = TIMEOUT_ERROR 4 = STOP_REQUEST_ERROR 5 = BUSY_ERROR
RP5	RETURN PERIPHERAL TAG FOR 5-PIN CONNECTOR
RP9	RETURN PERIPHERAL TAG FOR 9-PIN CONNECTOR
RPA	RETURN HOST / AUX COMM PASSTHRU MODE (NO FACTORY DEFAULT)
RPE	RETURN PERIPHERAL PORT ENABLE
RPI	RETURN PREFIX INPUT AUX COMM (NO FACTORY DEFAULT)

RPO	RETURN PREFIX OUTPUT AUX COMM (NO FACTORY DEFAULT)
RPP	RETURN PERIPHERAL PREFIX CHARACTERS (NO FACTORY DEFAULT)
RPS	RETURN PERIPHERAL SUFFIX CHARACTERS (NO FACTORY DEFAULT)
RPT	RETURN PERIPHERAL TAG STRING (NO FACTORY DEFAULT)
RR1	READ AND RESET COUNTER 1
RR2	READ AND RESET COUNTER 2
RRA	RETURN RESPONSE PATH FOR AUX COMM PORT
RRD	RETURN RESPONSE PATH FOR DIGITAL I/O
RRI	RETURN RESPONSE PATH FOR INTERNAL CMMDS
RRP	RETURN RESPONSE PATH FOR PERIPHERAL PORT
RS1	RETURN STATE INPUT 1 (0,1)
RS2	RETURN STATE INPUT 2 (0,1)
RSA	RETURN STOP BITS AUX COMM
RSB	RETURN SYMBOLOGY READ BEEP ENABLE
RSH	RETURN STOP BITS HOST COMM
RSI	RETURN SUFFIX INPUT AUX COMM (NO FACTORY DEFAULT)
RSM	RETURN SYMBOLOGY READ STRING MATCH LENGTH (FACTORY DEFAULT = 0 -> NO LENGTH IS PERFORMED)
RSO	RETURN SUFFIX OUTPUT AUX COMM

RSS	RETURN STARTUP STRING (FACTORY DEFAULT IS NULL)
RT1	RETURN MOMENTARY TIMEOUT FOR OUTPUT 1
RT2	RETURN MOMENTARY TIMEOUT FOR OUTPUT 2
RTC	RETURN PASSTHRU TERMINATION CHARACTERS (FACTORY DEFAULT = '+++')
RUP	RETURN UPC MODE
RVA	RETURN VIEWING ANGLE (FACTORY DEFAULT ARE AS FOLLOWS: FMT1020 QWERTY = 30 FMT1020 ALPHANUMERIC ABC = 30 FMT1020 NUMERIC = 30 FMT1060 = 30 FMT1040 = 50 THESE VALUES ARE SET AS A RESULT OF ISSUING A SKT COMMAND)
RVR†	RETURN FIRMWARE VERSION
S1D	SET USER KEY 1 DOWN
S1M	SET RESPONSE STRING FOR COUNTER #1 MATCH NO DEFAULT, DEFINABLE UP TO 80 CHARACTERS
S1U	SET USER KEY 1 UP
S25	SET INTERLEAVE 2 OF 5 MODE 0 = OFF 1 = ON*
S28	SET CODE 128 MODE

0 = OFF
1 = ON*

S2D SET USER KEY 2 DOWN

S2M SET RESPONSE STRING FOR COUNTER #2 MATCH
NO DEFAULT, DEFINABLE UP TO 80 CHARACTERS

S2U SET USER KEY 2 UP

S39 SET CODE 3 OF 9 MODE

0 = OFF
1 = CODE 3 OF 9*
2 = CODE 2 OF 9 MOD 43
3 = FULL ASCII CODE 3 OF 9

S3D SET USER KEY 3 DOWN

S3U SET USER KEY 3 UP

S4D SET USER KEY 4 DOWN

S4U SET USER KEY 4 UP

SAD SET KEYBOARD AUTO DETECT FEATURE

0=DISABLED
1=ENABLED *

SAE SET AUX COMM PORT ENABLE

0 = OFF
1 = ON*

SAP SET AUX RESPONSE PREFIX CHARACTERS

SAS SET AUX RESPONSE SUFFIX CHARACTERS

SAT SET AUX COMM TAG STRING

SBA SET BAUD AUX COMM

0 = 300 BAUD
1 = 600 BAUD
2 = 1200 BAUD
3 = 2400 BAUD
4 = 4800 BAUD
5 = 9600 BAUD*
6 = 19200 BAUD

SBE SET BATTERY SENSE ENABLE

0 = DISABLE *
1 = ENABLE

SBH SET BAUD HOST COMM

0 = 300 BAUD
1 = 600 BAUD
2 = 1200 BAUD
3 = 2400 BAUD
4 = 4800 BAUD
5 = 9600 BAUD*
6 = 19200 BAUD

SBL SET BACKLIGHT MODE

0 = OFF
1 = ON
2 = AUTO*

SBP† SET BEEPER

0 = HI
1 = HILO
2 = HIHI
3 = HILOHI
4 = HIHIHI
5 = TICK

SBS — SET ON BATTERY RESPONSE STRING
DEFAULT = “[ON BATTERY]”, DEFINABLE
UP TO 16 CHARACTERS

SCB — SET CODABAR MODE

0 = OFF
1 = ON*

SCD — SET KEYBOARD INTERCHARACTER DELAY

XXX -> XXX * 10 MILLISECONDS
(0 - 2.55 SECONDS)

SCM — RETURN CONCATENATE MODE

SCM — SET CONCATENATE MODE

0 = OFF*
1 = ON

SDA — SET DATA BITS / PARITY AUX COMM

0 = 7 BITS, EVEN PARITY
1 = 7 BITS, ODD PARITY
2 = 7 BITS, SPACE PARITY
3 = 7 BITS, MARK PARITY
4 = 8 BITS, EVEN PARITY
5 = 8 BITS, ODD PARITY
6 = 8 BITS, NO PARITY*

SDE — SET DIGITAL I / O ENABLE

0 = OFF
1 = ON*

SDH SET DATA BITS/PARITY HOST COMM

0 = 7 BITS, EVEN PARITY
1 = 7 BITS, ODD PARITY
2 = 7 BITS, SPACE PARITY
3 = 7 BITS, MARK PARITY
4 = 8 BITS, EVEN PARITY
5 = 8 BITS, ODD PARITY
6 = 8 BITS, NO PARITY*

SDP SET DIGITAL I/O PREFIX CHARACTERS

SDS SET DIGITAL I/O SUFFIX CHARACTERS

SDT SET DIGITAL I/O TAG STRING

SEA SET AUTOENTER MODE AUX

0 = OFF*
1 = CR
2 = CR\LF
3 = TAB

SED SET AUTOENTER MODE DIGITAL I/O

0 = OFF*
1 = CR
2 = CR\LF
3 = TAB

SEE† WRITE SETUPS TO EEPROM
(ONE BEEP GENERATED IF WRITE TO EEPROM IS SUCCESSFUL)

SEI SET AUTOENTER MODE INTERNAL

0 = OFF*
1 = CR
2 = CR\LF
3 = TAB

SEP	SET AUTOENTER MODE PERIPHERAL 0 = OFF* 1 = CR 2 = CR\LF 3 = TAB
SFD†	SET TO FACTORY DEFAULTS (ONE BEEP GENERATED IF WRITE TO EEPROM IS SUCCESSFUL)
SHA	SET HANDSHAKE AUX COMM 0 = NONE 1 = XON/XOFF* 2 = RTS/CTS
SHH	SET HANDSHAKE HOST COMM 0 = NONE 1 = XON/XOFF*
SI1	SET INPUT 1 RESPONSE STRING
SI2	SET INPUT 2 RESPONSE STRING
SIB	SET AUX COMM INPUT BEEP ENABLE 0 = OFF 1 = ON*
SIC†	SET AUX COMM INPUT CANCEL
SII†	SET AUX COMM INPUT BUFFER INITIALIZE
SIM	SET AUX COMM INPUT STRING MAXLEN

SIO SET AUX COMM INPUT TIMEOUT

XXX -> XXX * 1 SECOND
(0 - 255 SECONDS)

SIP SET INTERNAL PREFIX CHARACTERS

SIR SET AUX COMM INPUT READ MODE

0 = ONE READ
1 = CONTINUOUS READS

SIS SET INTERNAL SUFFIX CHARACTERS

SIT SET INTERNAL TAG STRING

SKC SET KEYBOARD CLICK

0 = OFF
1 = ON*

SKE SET KEYBOARD ENABLE

0 = OFF
1 = ON*

SKH SET KEYBOARD HARDWARE RESET ENABLE

0 = OFF
1 = ON*

SKR SET KEYBOARD REPEAT

0 = OFF
1 = ON*

SKT SET KEYBOARD TYPE

0 = FMT1020 QWERTY*
1 = FMT1020 ALPHANUMERIC ABC
2 = FMT1020 NUMERIC
3 = FMT1060
4 = FMT1040

SM1 SET MATCH VALUE FOR COUNTER #1
RANGE FROM 1 TO 1000000

SM2 SET MATCH VALUE FOR COUNTER #2
RANGE FROM 1 TO 1000000

SOC† SET AUX COMM OUTPUT WRITE CANCEL

SOO SET AUX COMM OUTPUT WRITE TIMEOUT

XXX -> XXX * 1 SECOND
(0 - 255 SECONDS)

SOW† SET AUX COMM OUTPUT WRITE STRING
(NO FACTORY DEFAULT)

SP5 SET PERIPHERAL TAG FOR 5-PIN CONNECTOR
ANY SINGLE CHARACTER, NO DEFAULT

SP9 SET PERIPHERAL TAG FOR 9-PIN CONNECTOR
ANY SINGLE CHARACTER, NO DEFAULT

SPA SET HOST / AUX COMM PASSTHRU MODE

0 = OFF
1 = ON

SPE SET PERIPHERAL PORT ENABLE

0 = OFF
1 = ON*

SPI SET PREFIX INPUT AUX COMM

SPO	SET PREFIX OUTPUT AUX COMM
SPP	SET PERIPHERAL PREFIX CHARACTERS
SPS	SET PERIPHERAL SUFFIX CHARACTERS
SPT	SET PERIPHERAL TAB STRING
SR1	RESET COUNTER 1
SR2	RESET COUNTER 2
SRA	SET RESPONSE PATH FOR AUX COMM PORT 0 = KEYBOARD* 1 = HOST COMM
SRD	SET RESPONSE PATH FOR DIGITAL I/O 0 = KEYBOARD* 1 = HOST COMM
SRI	SET RESPONSE PATH FOR INTERNAL CMMDS 0 = KEYBOARD* 1 = HOST COMM
SRP	SET RESPONSE PATH FOR PERIPHERAL PORT 0 = KEYBOARD* 1 = HOST
SSA	SET STOP BITS AUX COMM 0 = 1 STOP BIT* 1 = 2 STOP BITS
SSB	SET SYMBOLOGY READ BEEP ENABLE 0 = OFF 1 = ON*

SSH SET STOP BITS HOST COMM

0 = 1 STOP BIT*
1 = 2 STOP BITS

SSI SET SUFFIX INPUT AUX COMM

SSM SET SYMBOLOGY READ STRING MATCH LENGTH

SSO SET SUFFIX OUTPUT AUX COMM

SSS SET STARTUP STRING

ST1 SET MOMENTARY TIMEOUT FOR OUTPUT 1

000 = OFF
999 = ON
XXX -> XXX * 0.1 SECONDS
(0.1 - 99.8 SECONDS)

ST2 SET MOMENTARY TIMEOUT FOR OUTPUT 2

000 = OFF
999 = ON
XXX -> XXX * 0.1 SECONDS
(0.1 - 99.8 SECONDS)

STC SET PASSTHRU TERMINATION CHARACTERS

SUP SET UPC MODE

0 = OFF
1 = ON*

SVA SET VIEWING ANGLE

† These commands have no corresponding “SET” or “RETURN” command. All other commands have corresponding “SET” or “RETURN” commands.

* FACTORY DEFAULT