PowerWedge® 20

User's Guide

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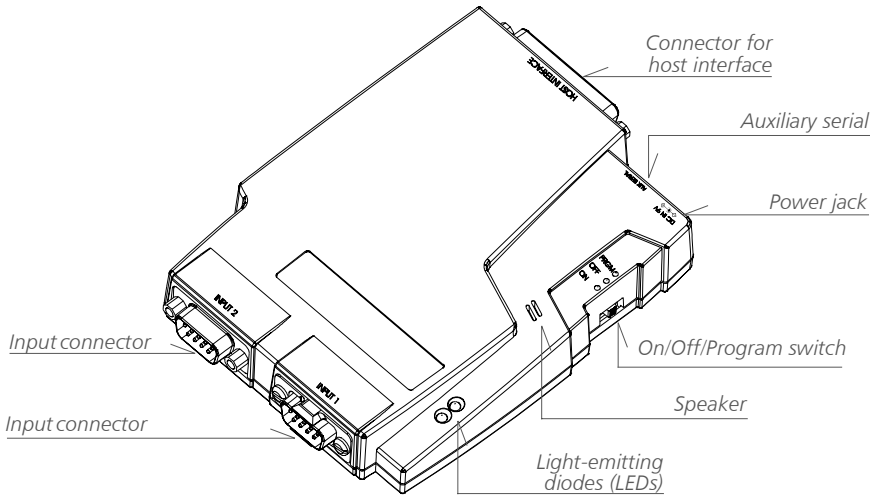
Table of Contents

About the PowerWedge 20

The PowerWedge 20® is a small but powerful fixed-station decoder. It accepts input from a variety of devices, and it recognizes and automatically discriminates among many bar code symbologies.

Figure 1. The PowerWedge 20



Models

The PowerWedge 20 is available in two models.

PowerWedge 20

NOTE

For installation information, see Installing the PowerWedge 20 on page 7**.**

The PowerWedge 20 standard model (FD-000-20) is a “universal” decoder, because you can use it as either a keyboard wedge or a serial device. When installed as a keyboard wedge, the decoder sends scanned bar code data to your computer as if it were typed on the keyboard. In both types of installation, auxiliary serial communication is supported through a dedicated jack.

PowerWedge 20 Dual

The PowerWedge 20 Dual model (FD-000-22) has all the features of the standard PowerWedge 20, but both input connectors accept data from bar code scanners. (In the standard model, the second input connector accepts only magnetic stripe reader input.)

Bar Code Symbologies

The PowerWedge 20 recognizes and decodes the following symbologies:

- Codabar/Ames
- Code 11
- Code 128
- Code 39, including:
  - — Extended ASCII
  - — MIL-STD-1189
- Code 93
- EAN-8/13
- JAN-8/13
- Labelcode 4/5
- Matrix 2 of 5
- MSI
- Standard 2 of 5
- UPC-A
- UPC-E
- UPC/EAN/JAN extensions

NOTE

The symbologies listed above were supported at the time this user's guide was written. Additional symbologies may also be supported, while some of the symbologies listed may be discontinued. Please contact your dealer or Customer Service for current information.

Input Devices and Connectors

The PowerWedge 20 decodes input from any of the following devices on input connector 1:

- Wands (visible light and infrared)

NOTE

For installation information, see Installing the PowerWedge 20 on page 7**.**

- Handheld laser scanners
- Handheld charge-coupled device scanners (CCDs)
- Magnetic stripe readers (MSRs)
- I.D. badge readers

NOTE

Input connector 1 can also be used for both input and output of cloning data (see page 32).

The second input connector on both models of the PowerWedge 20 accepts input from a magnetic stripe reader. The PowerWedge 20 can read up to three magnetic stripe tracks simultaneously, and it supports the California driver's license magnetic stripe.

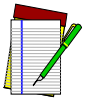
On the PowerWedge 20 Dual, input connector 2 also accepts input from any of the other devices listed above. It does not accept cloning data, however.

Both models of the PowerWedge 20 support auxiliary serial input.

Laser/Input Modes

The PowerWedge 20 can operate in any of the following laser/input modes:

Normal Mode



NOTE

Bar codes for setting laser/input modes are on page 105.

In normal mode, the PowerWedge 20 accepts bar code or magnetic stripe input from all supported types of input devices except serial devices. This is the default setting for the PowerWedge 20's laser/input modes.

Autoscan Mode

Use this mode for stand-mounted lasers. This mode returns the laser to the ready-to-read state immediately after each read.

Multiscan Mode

This mode allows you to scan bar codes without pressing and releasing the trigger for each read. In this mode, the laser or CCD remains in the ready-to-read state for as long as the trigger is held down.

Symbol Blinking Mode

Use this mode for automatic scanning with a Symbol laser mounted on the Symbol IntelliStand.

NOTES

Installing the PowerWedge 20

The PowerWedge 20 comes in two models (see page 2). The model number is printed on the label on the bottom of the unit. Follow the installation procedure for your model.

NOTE

The interface cable you need to use with the PowerWedge 20 depends on the type of installation (serial or keyboard wedge) and the type of computer or terminal you are connecting it to. Be sure you have the correct cable before beginning the installation. (Contact your dealer or Customer Service for more information about cables.)

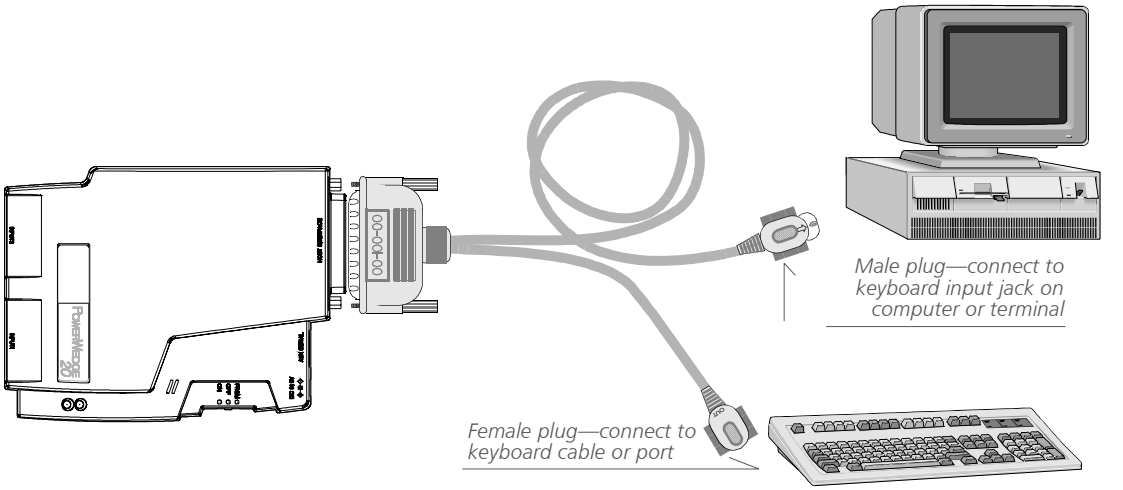
Keyboard Wedge Installation

1. Turn your computer or terminal off, and unplug the keyboard.

2. The largest plug on the cable is labeled with the cable number. Attach that plug to the connector labeled HOST INTERFACE on the PowerWedge 20 (see Figure 2).

Figure 2. Connecting the PowerWedge 20 or Dual

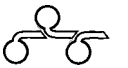
(drawing not to scale)



NOTE

Your computer or terminal may require a different cable than the one shown in the Figure.

On Macintosh computers, the keyboard connectors are called Apple Desktop Bus (ADB) ports. They are marked with the following icon:



3. Attach the small male plug of the cable to the keyboard input jack on the computer or terminal. Attach the female plug of the cable to the keyboard cable or port (see Figure 2). (For cables with telephone-style connectors, attach the cable plug to the computer or terminal, and plug the jack from the keyboard into the socket on the cable connector.)

4. Plug your bar code scanner into the connector labeled INPUT 1 on the PowerWedge 20 (see Figure 1).

5. Move the switch on the PowerWedge 20 to the ON position.

6. Turn on the computer or terminal. The decoder should beep, and the green LED (light-emitting diode) should light up.

7. Scan the programming bar code for the type of computer or terminal you are using. (The bar codes for host devices start on page 107.)

You can now begin using the PowerWedge 20.

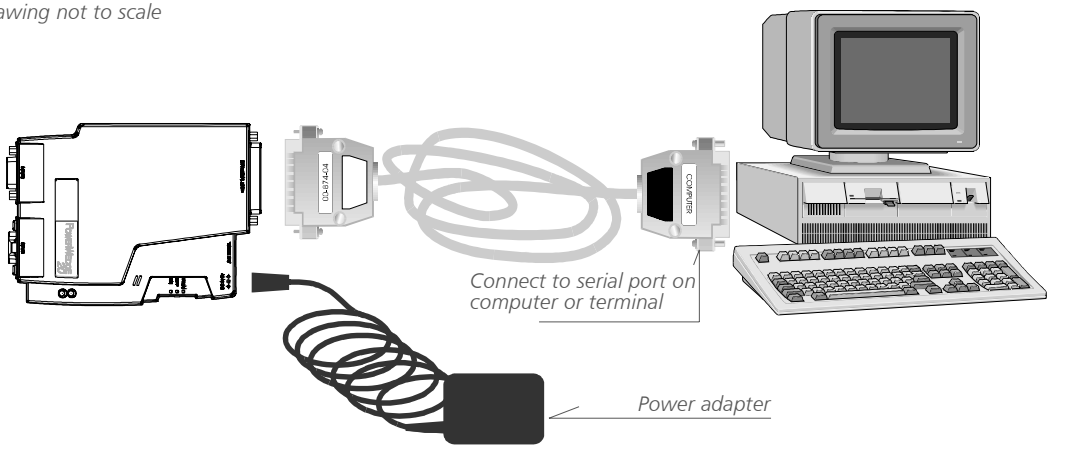
Serial Installation

1. Turn your computer or terminal off.

2. One plug on the serial cable is labeled with the cable number. Attach that plug to the jack labeled HOST INTERFA the PowerWedge 20 (see Figure 3).

Figure 3. Connecting the PowerWedge 20 (or dual) to a Standalone PC

Drawing not to scale



NOTE

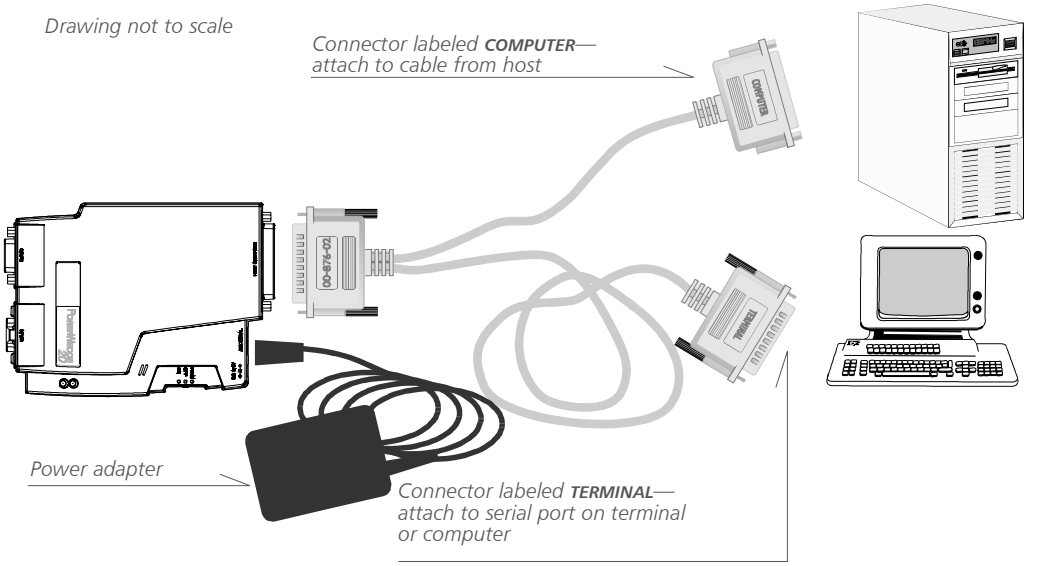
Your computer or terminal may require a different cable than the one shown in the Figure.

On Macintosh computers, attach the smaller cable connector to the modem port. The modem port is marked with the following icon:

STAND-ALONE CONFIGURATION Attach the other end of the cable to an available serial port on your computer or terminal (see Figure 3).

EAVESDROP CONFIGURATION Locate the cable that connects your computer or terminal to the host. Unplug that cable from the computer or terminal's serial port, and attach it to the connector labeled COMPUTER on the PowerWedge 20 interface cable. Then attach the connector labeled TERMINAL on the PowerWedge 20 cable to the computer or terminal's serial port (see Figure 4).

Figure 4. Connecting to a Terminal in a Multiuser System



NOTE

Your computer or terminal may require a different cable than the one shown in the Figure.

Use only a power adapter supplied by your Dealer. Using another adapter can damage the decoder or input device.

3. Attach the small, round plug of the 9-volt power adapter to the power input jack on the PowerWedge 20 (see Figure 1). Plug the other end into an outlet or power strip (preferably one that has surge protection).

4. Plug your bar code scanner into the connector labeled INPUT 1 on the front panel of the decoder box (see Figure 1).

5. Move the switch on the PowerWedge 20 to the ON position (see Figure 1). The decoder should beep, and the green LED (light-emitting diode) should light up.

6. Turn on your computer or terminal.

7. Scan the following label to set the decoder for serial operation:

You can now begin using the PowerWedge 20.

NOTE

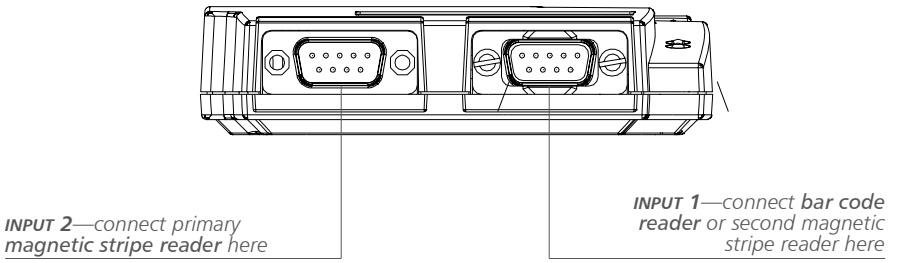
The decoder is set at the factory with the following parameter settings for serial communications. For information about these parameters, see Serial Programming Parameters on page 36**.**

CODE PARAMETER	I.D. #	DEFAULT SETTING
Data type	C0	ASCII
Baud rate	C1	9600
Data bits	C2	8
Parity	C3	None
Stop bits	C4	1
Xon/Xoff handshaking	C5	Off

Installing Bar Code Readers

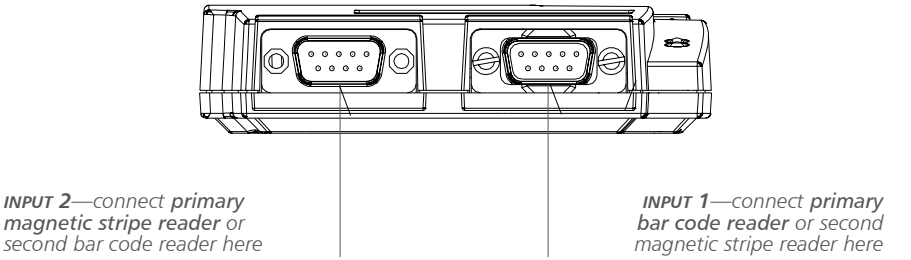
On the PowerWedge 20 standard model (FD-000-20), INPUT 2 is reserved for magnetic stripe input. Connect your bar code reader to INPUT 1 (see Figure 5).

Figure 5. Input Connectors on the PowerWedge 20 Standard Model



Both connectors on the PowerWedge 20 Dual model (FD-000-22) can accept input from bar code readers. However, INPUT 1 is optimized for bar code input, and INPUT 2 is optimized for magnetic stripe input. If you are using two bar code readers, connect the primary one to INPUT 1 and the other one to INPUT 2 (see Figure 6.) Then scan the following bar code with the primary reader to enable the secondary one:

Figure 6. Input connectors on the PowerWedge 20 Dual



Installing a Magnetic Stripe Reader (MSR)

Both connectors on the PowerWedge 20 and PowerWedge 20 Dual can accept input from magnetic stripe readers. However, INPUT 1 can read only two tracks simultaneously, while INPUT 2 can read up to three tracks simultaneously. Attach your magnetic stripe reader to INPUT 2. If you are using two MSRs, connect the primary one to INPUT 2 and the other one to INPUT 1 (see Figure 5 and Figure 6).

For information about programming parameters for magnetic stripe readers, see Magnetic Stripe Programming Parameters on page 44.

Installing an Auxiliary Serial Device

Both models of the PowerWedge 20 accept auxiliary serial input through a dedicated RJ-11(telephone-style) jack.

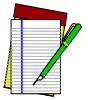
To attach an auxiliary serial device . . .

NOTE

Be sure you have the correct cable before beginning the installation. (Contact your dealer or Customer Service for information about cables.)

1. Install the PowerWedge 20 as described earlier in this section.
2. Attach the RJ plug from the serial cable to the jack labeled AUX SERIAL on the PowerWedge 20 (see Figure 1).
3. Attach the other end of the cable to the output connector on the serial device.
4. With a bar code reader attached to the PowerWedge 20, scan the following bar code to enable auxiliary serial input:

You can now begin using the serial device with the PowerWedge 20.

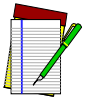


NOTE

For more information about auxiliary serial input, see page 38.

NOTES

Programming the PowerWedge 20



NOTE

See Programming Options on page 60 **for the default settings for all code parameters.**

The PowerWedge 20 is configured with certain default parameter settings before it is shipped from the factory. These predefined defaults will work for most applications. However, you may need to customize your settings for the specific types of bar codes you will be scanning.

The following methods can be used to program the PowerWedge 20:

- Predefined-default programming—*see page 18*
- Auto-Learn—*see page 19*
- Menu programming—*see page 21*
- Bar code batch programming—*see page 23*
- On-screen programming—*see page 25*
- Serial batch programming—*see page 29*
- Cloning—*see page 32*

Predefined Defaults

The PowerWedge 20 has the following three sets of default parameters:

- **Predefined Default 0 (D0)** turns every on/off parameter off and sets all minimum and maximum lengths to zero (00). Menu programming remains enabled. This default set makes it easy for you to start with everything off and then enable only the bar code symbologies and parameters you wish to use. This can prevent unwanted data entry to your applications.

NOTE

The host device setting (C0) is not affected by the predefined default sets.

- **Predefined Default 1 (D1)** turns every on/off parameter on and sets all maximum lengths as high as possible. It also sets bar code and magnetic stripe preambles and postambles. This default set gives you the best chance of reading an unknown bar code symbology, and it also identifies the bar code type for you.
- **Predefined Default 2 (D2)** is the default set that was installed in the decoder at the factory. This default set meets most users' needs.

You can reset your PowerWedge 20 to one of the predefined default sets by scanning one of the following bar codes:

D0

D1

D2

Auto-Learn

Auto-Learn is the simplest method of customizing the PowerWedge 20. With Auto-Learn, you "teach" the decoder to accept the types of bar codes you use.

The current settings for the PowerWedge 20 remain unchanged unless they are explicitly set during Auto-Learn programming. For example, enabling Code 11 does not affect other symbologies. To disable all symbologies except the ones you want to use, program the decoder to use Predefined Default 0 (see page 18) before starting Auto-Learn.

To program the PowerWedge 20 using Auto-Learn . . .

NOTE

The Auto-Learn feature does not affect terminators or checksums. To set them, use one of the other programming methods described in this section.

1. Scan the START bar code below. (The bar code also appears on the bottom of the PowerWedge 20.)

START 

2. Scan a sample of each of your bar code labels. Be sure the decoder beeps after each read. It is important that you scan each type of label (e.g., Code 39, UPC) as well as the smallest and largest bar codes (e.g., 6 characters and 10 characters) that you want the decoder to read.

NOTE

To quit Auto-Learn mode without saving the setup, scan the following bar codes (E first, F second):

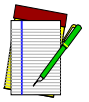
3. Save the setup by scanning the bar code labeled E below (or on the bottom of the PowerWedge 20) *twice*. After the first scan, the decoder should beep once and the red LED should flash. After the second scan, the decoder should beep five times and the green LED should be lit.

E  *Scan this twice.*

Menu Programming

This programming method makes use of a "menu" of bar codes found on the bottom of the PowerWedge 20. You can use these bar codes to enter the programming I.D. numbers and settings listed in Programming Options on page 60.

To program the PowerWedge 20 using the bar code menu . . .



NOTE

If you make a mistake or "get lost" while in programming mode, scan the ESC bar code. This will reset the decoder to expect a code I.D. number, ignoring any entries you made since you were last at the base level of programming mode. To quit programming mode without saving any changes, scan the E bar code and then the F bar code.

1. Scan the START bar code on the bottom of the PowerWedge 20.

2. Look in Programming Options on page 60 for the identification number (I.D. #) of the parameter you want to change. Scan the bar codes for the digits of that I.D. number. Then scan the bar codes for the setting you want to make or string you want to enter.

3. For example, the I.D. number for enabling Codabar is 20, and the code for On is 1. So to turn on Codabar, you would scan 2 and 0 (for 20) and then scan 1 (for On). (For other examples, see "Entering Values," "Entering Strings," and "Setting an Autoterminator," below.)

4. After making all your changes, save the setup by scanning the bar code labeled E on the bottom of the PowerWedge 20 *twice*. After the first scan, the decoder should beep once and the red LED should flash. After the second scan, the decoder should beep five times and the green LED should be lit.

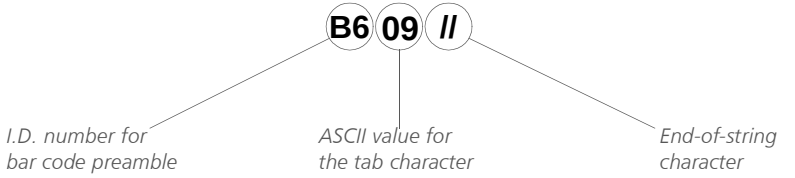
Entering Values

To enter a value setting, you must scan two bar codes for the I.D. number and two more for the value. For example, to set a minimum length of 6 for Code 128, you would scan 4 and 1 (for I.D. #41, Code 128 minimum length) and then 0 and 6 (for the value 06).

Entering Strings

To enter a string, look in Full Keyboard Support on page 112 for the ASCII values of the characters you want to enter, and then scan the bar codes for those values. End the string by scanning the bar code for //, which is the end-of-string character.

For example, to include a tab at the beginning of every block of data you read, you would set a bar code preamble by scanning the bar codes for the following characters:



Setting an Autoterminator

An *autoterminator* is an ASCII character that the decoder places at the end of each data transmission. You can use autoterminators to separate input with tabs, carriage returns, punctuation, or other ASCII characters.

To set an autoterminator (I.D. #B1), scan the bar codes for the ASCII value of a single ASCII character with no string terminator (//). For example, to set an autoterminator of CR (carriage return), you would enter B10D. To set no autoterminator, you would enter B100.

Bar Code Batch Programming

The bar code batch method uses bar codes that program the PowerWedge 20 with a single scan. Each batch bar code contains commands to place the decoder into programming mode, set one or more parameters, save the settings, and exit programming mode. When you successfully scan a batch bar code, your decoder programs itself to your settings, beeps five times, and automatically returns to read mode, ready to go to work.

To program the PowerWedge 20 using batch programming . . .

NOTE

To accept batch programming, the PowerWedge 20 must be programmed to use the extended (or full ASCII) Code 39 character set. The decoder was shipped from the factory ready to read the extended character set. If you have changed the default, use the bar code menu or on-screen programming to set I.D. #05 to on.

1. Find the batch bar codes you need in Programming Bar Codes on page 74, or create custom bar codes containing the programming I.D. numbers and parameters you want to set. You can create the bar code with a bar code printing program, a word-processing program, a desktop publishing program, or any other program that can use and print a Code 39 font. See the guidelines below.

2. Use a wand, laser, or CCD connected to the PowerWedge 20 to read the bar codes. The decoder beeps five times when programming is successful. If a bar code contains an invalid programming entry, the decoder beeps twice and ignores the programming instructions in the entire bar code.

Guidelines for Creating Batch Bar Codes

Keep the following in mind when creating bar codes for batch programming:

- Create your programming bar codes using the standard Code 39 character set, *not* the full ASCII character set. (You must read the bar codes in full ASCII Code 39 mode, however.)
- The first and last character of each bar code must be an asterisk (*), the start and stop character for Code 39. (Most label-printing software programs automatically place the asterisks in Code 39 bar codes.)
- The first asterisk of each bar code must be followed immediately by the characters $+$-. This lets the decoder know that it is reading programming information rather than data.
- Each bar code must end with EE and the final asterisk.
- String data must appear in a programming bar code after the I.D. number for the code parameter. Use two slashes (//) to terminate the string. (Parameters that accept string data include preambles and postambles.)
- You must enter control or "action" characters (for example, tabs, line feeds, or function keys) by encoding their Code 39 equivalents (see Full Keyboard Support on page 112). For example, to enter a horizontal tab, you would include the character pair $I in the bar code.

The following bar code provides an example of batch programming. Scanning it will turn off the autoterminator and set the maximum length for Interleaved 2 of 5 labels to 15.

Like all Code 39 bar codes, this one starts and ends with an asterisk (*). $+$- starts programming mode. B1 specifies the autoterminator parameter, and %U is the Code 39 equivalent of the null character, which turns it off. 0A specifies the Interleaved 2 of 5 maximum-length parameter, and 15 sets it to 15 characters per label. EE saves the new settings and exits programming mode.

On-Screen Programming

This programming method lets you display programming parameters and settings on your screen. You can select parameters and change their settings using the computer's keyboard.

NOTE

For on-screen programming of either model of the PowerWedge 20 installed with a serial cable, you must use a communications program (such as Procomm). Be sure the decoder's serial parameters settings (baud rate, parity, etc.) match the settings of the communications program.
For keyboard wedge installation, on-screen programming is available via cable 00-001-00 for AT-compatible computers, or cable 00-061-00 for PS/2 style computers.

To program the PowerWedge 20 on-screen . . .

1. Open a text editor (for example, the DOS EDIT utility), or go to the DOS prompt.

2. If you are using a text editor, use Courier or another monospaced font. If you are programming from the DOS prompt, type copy con nul and press **Enter**.

3. Move the switch on the PowerWedge 20 to the PRGM position (see Figure 1), and then press the **Enter** key on your keyboard. The decoder should beep three times, and the on-screen programming menu should appear on your screen, as shown in Figure 7.
   The menu is arranged in categories and subcategories identified by numbers and letters. Two or more categories or subcategories can share a single number or letter; for example, Code 39 and Interleaved 2 of 5 both use 0 (zero).
   The last line of the menu prompts you for input.

Figure 7. Main Menu for On-Screen Programming

```
***** POWERWEDGE 20 VER 1.X MAIN MENU *****

BAR CODEMAG. STRIPECOMMUNICATIONS
---------------------------------
0 CODE394 CHANNEL 1 & 2C HOST SELECTION
0 I2of55 CHANNEL 3C SERIAL OPTIONS
1 M2of55 CA DL CONVERT
1 S2of5INPUT EDITINGD DEFAULTS
1 CODE116 EXTRA FIELDSD MORE CONTROLS
2 CODABAR/AMES7 DEFINITION 1
2 MSI8 DEFINITION 2E SHOW/EXIT
3 UPC-A9 DEFINITION 3E CLONING
3 UPC-EA DEFINITION 4
3 EAN/JANA ALLOW QUAL ONLY
4 CODE128B OTHER CONTROLS
5 LCODE-4/55 SYMBOLOGY IDS
USE BACKSPACE TO EXIT MODES
(0-E):
```

4. Type the I.D. of the category or subcategory you want to display or change, and press **Enter**. For example, enter 2 to display the current parameter settings for Codabar bar codes. This will also display the parameters and settings for the other symbologies having 2 as an I.D., as shown in Figure 8.

Figure 8. On-Screen Programming Options

```
CODABAR/Ames
0 ENABLE=1
1 MIN LENGTH=04
2 MAX LENGTH=20
3 TRANSMIT START/STOP=0
4 CODABAR TO CLSI CONVERSION=0
5 INTERCHARACTER GAP CHECK=0
MSI
6 ENABLE=0
7 MIN LENGTH=04
8 MAX LENGTH=10
9 2ND CHECKSUM REQUIRED=0
A 2ND CHECKSUM MOD 11=0
B TRANSMIT CHECKSUM=0
CODE93
C ENABLE=1
D MIN LENGTH=02
E MAX LENGTH=20
(0-B):
```

Notice that the parameters in this list are also identified by numbers and letters. The value following the equals sign (=) in each line is the current setting for that parameter (0 means off, and 1 means on). The last line is the input prompt.

NOTE

To return to the previous menu level, press the Backspace key on your keyboard.

5. Type the I.D. of the parameter whose setting you want to change, and press **Enter**. A prompt will display the valid settings for the parameter in parentheses and separated by a "pipe" character (¦), as shown in the following example:

```
ENABLE CODABAR/AMES (0¦1):
```

6. Type the setting you want to use, and press **Enter**. The list of options will be redisplayed to verify the change you made.

7. Select another option from the list, or press the **Backspace** key to return to the main menu.

NOTE

To leave on-screen programming without saving any changes, type EF and press Enter.

8. When you are finished checking or changing parameter settings, type **EE** at the prompt and press **Enter**. This will save your changes and exit on-screen programming.

9. Press **Ctrl+Z** to return to the DOS prompt.

Displaying and Printing Current Settings

While you are in on-screen programming mode, you can display the current settings for all the parameters. At the main menu prompt, type E and press **Enter**, and then type D and press **Enter** again. At the next prompt (ECHO SETTINGS TO SCREEN), type 1 and press **Enter**. A list of all the parameters will appear on your screen. You can pause the display of the list at any time by pressing the PAUSE key on your keyboard; then press any key to continue the display.

If you are using a text editor, you can use commands in the editor's menu to print the list of settings or save it to a file. If you are working from the DOS prompt, you can also save or print the list of settings. To print or save the list, follow steps 1 through 9 above, with the following changes in step 2:

- To print the list, use the following command: copy con prn.
- To save the list as a file, use the following command: copy con *filename*.

Serial Batch Programming

The serial batch method of programming involves creating an ASCII file of programming commands and then transmitting the ASCII file to the PowerWedge 20. The decoder's serial parameter settings must match the host's settings, and the setting for start-program enable (I.D. #B0) must be either 01 or 03.

Follow these guidelines when creating ASCII files for serial batch programming:

- The first line of the file must begin with $+$-. This is the decoder's "trigger" to enter programming mode.
- Valid characters for the first character in a line (except the first line) are programming variables or a semicolon.
- A semicolon as the first character in a line indicates the beginning of a comment. A semicolon anywhere else in a string is treated as a normal character. An end-of-line character (CR or CR/LF) marks the end of the comment. (Comments contain information useful to you or anyone else reading the file. They have no effect on the decoder.)
- Data must appear in a line in a specific order: the programming I.D. number for the parameter followed by a value for the parameter setting. If the parameter type is a string, the string characters must be followed by two slashes (//) to terminate the string. (You can use strings as values for preambles, postambles, and extra fields in input editing.)

NOTE

For Code 39 and ASCII equivalents for serial characters, see Table 1.

- You must enter control or "action" characters (for example, tabs, line feeds, or function keys) as a "mnemonic" word enclosed in parentheses (see Full Keyboard Support on page 112). For example, to enter a horizontal tab, you would type (TABR).

- The file must end with EE followed by an end-of-line character (CR or CR/LF) for the programming changes to be saved and the decoder to exit programming mode.

The following is an example of an ASCII file used for serial batch programming:

```
$+$-
;This is a file example with comments
;The first line started programming mode
;Use predefined default D0
D0
;Enable Code 39--00 is Code 39 enable/dis-
able,
;   1 = enable
001
;Set Code 39 minimum length (01) TO 4 (04)
0104
;Set postamble (B7) to a right tab
B7(TABR)//
;Save changes and exit programming mode
EE
```

The last line of the file is blank, because a carriage return ended the line before it.

The following example would have the same results when used to program the decoder:

```
$+$-D00010104B7(TABR)//EE
```

Code 39 and ASCII Equivalents for Serial Characters

Table 1 provides Code 39 and ASCII equivalents for serial characters. For Code 39, ASCII, and mnemonic equivalents of keyboard keys, See "Full Keyboard Support" on page 112.

Table 1. Code 39 and ASCII Equivalents for Serial Characters

Character	Code 39	ASCII Value	Character	Code 39	ASCII Value	Character	Code 39	ASCII Value
NUL	%U	80	VT	$K	0B	SYN	$V	16
SOH	$A	01	FF	$L	0C	ETB	$W	17
STX	$B	02	CR	$M	0D	CAN	$X	18
ETX	$C	03	SO	$N	0E	EM	$Y	19
EOT	$D	04	SI	$O	0F	SUB	$Z	1A
ENQ	$E	05	DLE	$P	10	ESC	%A	1B
ACK	$F	06	DC1	$Q	11	FS	%B	1C
BEL	$G	07	DC2	$R	12	GS	%C	1D
BS	$H	08	DC3	$S	13	RS	%D	1E
HT	$I	09	DC4	$T	14	US	%E	1F
LF	$J	0A	NAK	$U	15	Terminate string: //		

Cloning

Cloning is a way to copy the setup from one PowerWedge 20 to another. Once you have programmed the first PowerWedge 20, you can use it as a master to turn other PowerWedge 20s into clones of the first one.

To program the PowerWedge 20 using cloning . . .

NOTE

If you are using a PowerWedge 20 Dual as the master for cloning, you can connect the bar code reader to INPUT 2. The cloning cable, however, must be connected to INPUT 1.

1. Connect a bar code reader to the connector labeled INPUT 1 on the programmed PowerWedge 20 (the "master"), and set the On/Off/Program switch to the ON position (see Figure 1).

2. Scan the following bar code:

NOTE

Cloning will work only if the master and slave are the same model. For example, you cannot use a PowerWedge 20 Dual as the master and a standard PowerWedge 20 as the slave.

You can also use the bar code menu on the bottom of the PowerWedge 20 to enter cloning mode. Scan the labels for START, E, and C, in that order.

To make your own cloning cable, see the pinout diagram on page 132.

This puts the programmed PowerWedge 20 into cloning mode. While the decoder is in cloning mode, the red and green light-emitting diodes (LEDs) alternate flashing twice (that is, the flashing sequence is green-green-red-red, green-green-red-red, and so on).

3. Remove the bar code reader from the master, and connect the cloning cable (part number 00-874-25) to INPUT 1 on the master.

4. The PowerWedge 20 that you want to program is called the "slave." Set the On/Off/Program switch on the slave to the OFF position.

5. Connect the free end of the cloning cable to INPUT 1 on the slave.

6. Set the On/Off/Program switch on the slave to the PRGM position.

   The parameter settings from the master PowerWedge 20 will immediately be copied into the slave. The slave will indicate successful programming by beeping three times and repeatedly flashing its green LED twice.

7. Turn the slave off and disconnect the cable from it.

8. Repeat steps 4 through 7 to make additional clones.

General Programming Parameters

Table 2 describes some of the general parameters for programming the PowerWedge 20. Page references indicate where to find bar codes for setting the parameters. For descriptions of serial parameters, see page 36. For information about magnetic stripe programming parameters, see page 44. For a complete list of parameters and defaults, see Programming Options on page 60.

Table 2. General programming parameters for the PowerWedge 20

I.D. #	PARAMETER	DESCRIPTION
05	Code 39 full ASCII *(page 77)*	Supports the Code 39 extended ASCII character set (see Full Keyboard Support on page 112). For example, a character string encoded in Code 39 as +A is transmitted as a lowercase *a*. This allows every key of the keyboard to be encoded in a Code 39 bar code.
25	Codabar wide intercharacter gaps *(page 89)*	Allows reading of Codabar bar codes printed with large gaps between characters.
33, 36	UPC conversion *(starting on page 95)*	Converts UPC-A bar codes to EAN-13 (I.D. #33), and converts UPC-E bar codes to UPC-A (I.D. #36).
3C–3E	UPC/EAN/JAN extensions *(starting on page 97)*	Reads two-digit (I.D. #3C) and five-digit (I.D. #3D) extensions if the decoder is programmed to allow them. Doesn't read UPC, EAN, or JAN bar codes if the decoder is programmed to *require* extensions (I.D. #3E) and no extensions are present.
B1	Autoterminator *(page 100)*	Appends an ASCII character to each transmission. You can program the ASCII value for any single character (see Full Keyboard Support on page 112). The factory default is a carriage return (the **Enter** key). Programming a value of 00 disables the autoterminator so that the decoder transmits only the bar-coded data.
B2	ASCII capital to lowercase *(page 100)*	Changes scanned capital letters to lowercase (or lowercase to uppercase if your caps lock is enabled).

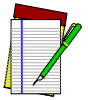
Table 2. General programming parameters for the PowerWedge 20

I.D. #	PARAMETER	DESCRIPTION
B3	Intercharacter delay *(page 101)*	Adds 1 to 99 milliseconds between transmissions of ASCII characters. Use a larger number if characters are omitted when transmitted to the host.
B4	CCD/laser redundancy *(page 101)*	Requires charge-coupled devices (CCDs) and lasers to obtain two identical reads in a row before transmitting the decoded data. This is an error-checking feature. Only one read's worth of data is transmitted.
B5	Symbology identifiers *(page 101)*	Precedes the encoded data with a character identifying the type of bar code (see page 68).
B6, DA B7, DB	Preamble Postamble	Precedes data with a preamble (I.D. #B6 or DA) or appends a postamble (I.D. #B7 or DB). Enter a character string ending with **//**. (I.D. numbers DA and DB are for the second bar code scanner on the Dual model.)
B8–BC	Beeper *(page 102)*	Controls the decoder's beeper. You can select one of eight pitches for the decoder's good-read beeps (I.D. #B8) and program the number of beeps (I.D. #B9), the duration of each beep (I.D. #BA), and the beep volume (I.D. #BC). You can enable an end-of-transmission beep (I.D. #BB) to indicate that the decoder is ready to scan again.
BF	Numeric keypad *(page 103)*	Transmits numeric keypad values instead of the number keys in the top row of the keyboard. (Some applications recognize a difference between a number typed on the top row of the keyboard and the same number typed on the keyboard's numeric keypad.)
C0	Host device *(page 107)*	Identifies the host computer type. This setting is not affected by the predefined defaults (D0–D2).

Serial Programming Parameters

You can use batch programming to set serial parameters for both models of the PowerWedge 20. This section describes the parameters; bar codes for setting them begin on page 108. (For a complete listing of parameters and defaults, see Programming Options on page 60.)

Data Type (I.D. #C0)



Bar codes for setting data type are on page 108.

NOTE

This parameter determines the data content transmitted to or received from the host. The ASCII setting transmits and receives the standard ASCII character set (with the exception of the null character, ASCII 00h, which is received as 80h). The PC SCAN CODES setting transmits the press-and-release codes for the keys on a PC keyboard.

Baud Rate (I.D. #C1)

Bar codes for setting baud rate are on page 109.

NOTE

This parameter determines the communication speed. The setting you use for the decoder must match the setting that the host uses.

Data Bits (I.D. #C2)

Bar codes for setting data bits are on page 109.

NOTE

This parameter specifies the number of data bits in each character.

Parity (I.D. #C3)

Bar codes for setting parity are on page 110.

NOTE

This parameter specifies the parity of the data characters.

Stop Bits (I.D. #C4)

Bar codes for setting stop bits are on page 110.

NOTE

This parameter selects the minimum space between data characters.

Xon/Xoff Handshaking (I.D. #C5)

NOTE

Bar codes for setting this parameter are on page 110.

This parameter is used for software data-flow control. The host can send the Xon character (ASCII 11h) to allow transmission and send the Xoff character (ASCII 13h) to stop transmission.

Enable Auxiliary Serial Input (I.D. #C7)

NOTE

Bar codes for setting this parameter are on page 110.

This parameter is used to let the decoder know if it is going to send data received at the auxiliary serial input jack to the host. This allows data from a serial ASCII output device (for example, a scale or voice-input device) to pass through the decoder and appear to the host as if it had been typed in at the keyboard.

Each auxiliary serial data record input can be up to 125 characters long (including the end-of-record character). You can edit auxiliary serial data just as if the data came from bar codes or magnetic stripes (see Input Editing on page 45).

NOTE

The decoder will not accept bar code or magnetic stripe data while it receives data from the auxiliary device.

Since host keyboard interfaces are slower than most serial devices, the decoder buffers (stores) the data as much as it can. The decoder will try to stop the auxiliary device's data transmission by signaling on the hardware-handshake-out line (pin 5 of the auxiliary serial interface cable's connector).

It is very important that your auxiliary device support hardware handshaking or ACK/NAK protocol if you plan to transmit large files through the auxiliary port. The decoder will transmit data when the Clear to Send (CTS) signal is high and will not transmit data when the CTS signal is low. Since the CTS input has an internal pullup, no connection is required if transmission does not need to be controlled. The decoder can receive data when the Ready to Send (RTS) signal is high and will not receive data when the signal is low.

Protocol (I.D. #CA)

Bar codes for setting protocol are on page 111.

NOTE

This parameter specifies the format of the data records (groups of data characters) transmitted and received.

In *EOR-only* protocol, a record consists of data characters followed by the end-of-record (EOR) character. (The Xon/Xoff command characters are received with no EOR character appended.) When the protocol parameter is set to 00 (EOR only), the data records are received according to both the EOR-character (I.D. #CC) and timeout (I.D. #CD) settings. Records received with the EOR character appended are processed immediately. If the timeout setting is between 01 and 99 (10 to 990 milliseconds), then the data is processed if either an EOR character is received or a timeout occurs.

In *ACK/NAK* protocol, a record consists of data characters followed by the end-of-record (EOR) character and a check character. This protocol transmits and receives ASCII ACK/NAK (ACK = 06h, NAK = 15h) characters for data integrity control.

A data record must have an EOR character and a check character (mod 256 sum of all data characters and the EOR character) appended to be considered good. (The EOR-character setting, I.D. #CC, cannot be 00.) If the record is good, an ACK character is transmitted to inform the host that the data arrived successfully. If the record is bad, a NAK character is transmitted to the host.

If the NAK character is received or a timeout occurs, the data record is retransmitted. Up to ten attempts will be made. If a communications error occurs, a nine-beep error signal is issued and the decoder is reset.

The interfunction delay setting (I.D. #BE; the default is 00) determines the delay between the receipt of the data record and the transmission of the ACK/NAK response. The length of time the decoder will wait before checking for a valid record after each character is received is determined by the timeout setting. If the timeout setting is between 01 and 99, the delay is between 10 milliseconds and 990 milliseconds; if the timeout setting is 00, the delay is 2.55 seconds.

Require Host Response (I.D. #CE)

NOTE

Bar codes for setting this parameter are on page 111.

Host response records can be either host-controlled indicator records (see below) or serial batch programming records (see page 28). If this parameter is set to on, the decoder will wait after sending a packet of data, and the host must respond with a host-controlled indicator record before the decoder can continue decoding.

Host-Controlled Indicators (I.D. #CF)

NOTE

Bar codes for enabling and disabling host-controlled indicators are on page 111.

Host-controlled indicator (HCI) data consists of special ASCII records either transmitted to the decoder through the serial communications interface or sent to the system through output redirection (see Redirecting Output on page 54). Turning this parameter setting to on provides the host with a method to indicate, through the serial port, the status (good or bad) of a read by changing the light-emitting diode (LED), sounding the beeper, or both. You can also use HCI to include delays between LED and beep events. The decoder can receive up to 125 bytes of control data.

The host-controlled data can be sent from the host at any time. After a bar code or magnetic stripe has been read successfully, the red LED on the decoder lights up, the decoder beeps (unless the volume setting is 0), and the data is sent to the host. If the require-host-response parameter is set to on, the decoder will wait for the host to respond with a valid packet of data before returning to reading bar code or magnetic stripe input.

Table 3 lists HCI command assignments. All commands are human-readable ASCII characters. An example of a host-controlled indicator command block appears after the table.

Table 3. Host-Controlled Indicator Commands

TYPE	COMMAND	MEANING
Delay *(control character D followed by one to three numeric characters from 0 through 254, representing 10-millisecond increments)*	D0	No delay
	D1	10-millisecond delay
	D254	2,540-millisecond delay
Beep volume *(control character B followed by one numeric character from 0 through 3)*	B0	Off
	B1	Low
	B2	Medium
	B3	Loud
Beep tone *(control character T followed by one numeric character from 0 through 7)*	T0	2400Hz
	T1	2618Hz
	T2	2880Hz
	T3	3200Hz
	T4	3600Hz
	T5	3840Hz
	T6	4114Hz
	T7	4430Hz
LED *(control character L followed by one numeric character from 0 through 2)*	L0	Off
	L1	Red
	L2	Green
CTRL high/low for pin 10 on 25-pin connector *(control character C followed by 0 or 1)*	C0	Low
	C1	High

The following example of a host-controlled indicator command block will set the decoder's tone to 3840Hz, turn the beeper on at full volume, turn the green LED on, wait 50 milliseconds, turn the green LED off, wait 50 milliseconds, turn the green LED on again, wait 50 milliseconds, turn the LED off, wait 50 milliseconds, and turn the beeper off:

```
T5B3L2D5L0D5L2D5L0D5B0
```

Magnetic Stripe Programming Parameters

Table 4 describes the options for programming the magnetic stripe channels for both models of the PowerWedge 20. Each of the options works with any channel. Bar codes for setting these parameters begin on page 98. (For a complete listing of parameters and defaults, see Programming Options on page 60.)

Table 4. Magnetic Stripe Parameters for the PowerWedge 20

I.D. #			PARAMETER	DESCRIPTION
CH. 1	CH. 2	CH. 3		
44	4A	54	Enable	Allows the decoder to accept data on the enabled channel or channels.
45	4B	55	Required	Specifies that the channel must have valid data before *any* channel's data will be transmitted.
48 49	4E 4F	58 59	Preamble Postamble	Can be used to identify which channel data is entering from. Preambles and postambles assigned to bar code data are ignored when magnetic stripe data is transmitted.
5A	5A	5A	Auxiliary serial and magnetic stripe symbology identifiers	Identifies which track the magnetic stripe data comes from or whether it comes from auxiliary serial input.
5B	5B	5B	Bar code symbology identifiers	Identifies the bar code symbology in which the data is encoded.
5C	5C	5C	California DL/ID alpha conversion	Can be used to convert the seventh and eighth characters of the California driver's license identification to their alphanumeric equivalents.

Input Editing

The PowerWedge 20 gives you the ability to modify input from bar code scanners, magnetic stripe readers, auxiliary serial devices, and keyboards. This feature is known as *input editing*.

With input editing, you program the decoder to change the format of the input data before it sends the data to your computer or terminal. You can program your decoder for input editing using any programming method (see Programming the PowerWedge 20 on page 17).

Table 5 shows just a few of the many uses for input editing.

Table 5. Examples of Input Editing

By programming the decoder to ...	You can change this ...	To this ...
Delete the first three characters of each string	A0037066 A0037067	37066 37067
Separate the input into two fields separated by a space	A0037066 A0037067	A 0037066 A 0037067 *or* A003 7066 A003 7067
Separate the input into three fields separated by dashes	A0037066 A0037067	A-003-7066 A-003-7067
Rearrange the order of the fields	A0037066 A0037067	0037066A 0037067A
Separate the input into fields separated by commas and rearrange the order of the fields	A0037066 A0037067	7066,A003 7067,A003
Add text to the data	A0037066 A0037067	Ser. #A0037066 Ser. #A0037067 *or* A0037066 Jan/95 A0037067 Jan/95

Input editing overrides standard preamble and postamble settings. Programmed preambles and postambles will be attached only to data input that doesn't qualify for editing (see the next section).

Creating Qualification Definitions

To qualify for input editing, the data that enters the decoder must meet certain criteria that you define. For example, you may require the data to be Code 39, to have exactly ten numbers or letters, and to end with an X. These criteria make up a *qualification definition.* Any input that meets all the criteria for a definition will be edited according to the parameters that you set for it and output in the format that you specify.

You can create up to four different qualification definitions for input editing. The definitions are numbered 1 through 4, and each definition has its own set of I.D. numbers for programming parameters (see Table 6). Parameters for each definition include the following:

- Symbology This specifies whether the data must be of a particular bar code type or come from a specific magnetic stripe channel, an auxiliary serial device, or keyboard input. Only data of the designated symbology can be considered for qualification. (This parameter can also be set to consider *any* input regardless of symbology or source.)
- Record length This specifies what length (from 1 through 99 characters) the data must be. Only data of the designated length will be considered. (This parameter can also be set to consider data of *any* length.)
- Number of input fields This specifies into how many fields (from 1 through 8) the input data will be broken down. Each field can then be defined as a specific number of characters (or *any* number of characters) beginning with a specific character (or *any* character).
- Output sequence This specifies the order in which to output the defined fields. The output sequence can also include additional information, such as symbology identifiers, preambles, postambles, or up to 16 extra fields that contain text strings. These extra fields are numbered 0 through 9 and A through F; each field has its own programming I.D. number. (For more information about output sequencing, see Understanding Output Sequences on page 51.)

When data is read, the decoder processes the definitions in numerical order. If the input data qualifies under definition 1, the decoder edits and outputs the data; if the data does not qualify under definition 1, the decoder tries definition 2. The process continues in order through all four definitions, and the data is edited according to the first definition under which it qualifies; the other definitions are not used. If the data doesn't qualify under any of the four definitions, then the decoder outputs the data without editing it.

NOTE

If the "allow qualified data only" parameter (I.D. #AD) is enabled, no data will be output unless it qualifies under one of the definitions.

Parameters for Input-Editing Definitions

Table 6 lists I.D. numbers and predefined defaults for parameters for input-editing definitions 1 through 4. You can change your decoder's settings for these parameters using the bar code menu, bar code batch, serial batch, or on-screen method of programming.

Table 6. Input Editing Parameters

PARAMETER	I.D. #	TYPE	PREDEFINED DEFAULTS		
			D0	D1	D2
Definition 1	*Enter 1 for On and 0 for Off.*				
Enable	70	On/Off	Off	On	Off
Symbology *(0 = any; for other values, see I.D. #B5 on page 52)*	71	Value	0	C	0
Record length *(01–99, or 00 for any)*	72	Value	00	00	00

Table 6. Input Editing Parameters (Continued)

PARAMETER	I.D. #	TYPE	PREDEFINED DEFAULTS		
			D0	D1	D2
Number of fields *(01–08)*	73	Value	01	05	01
Fields 1–8 *(length followed by qualifier; 00 = any length; (00) = any qualifier)*					
Field 1	74	Field	00(00)	00(00)	00(00)
Field 2	75			01!	
Field 3	76			00(00)	
Field 4	77			01=	
Field 5	78			03(00)	
Field 6	79			00(00)	
Field 7	7A			00(00)	
Field 8	7B			00(00)	
Output sequence *(see Table 7)*	7C	String	//	*	//
**60610561036201B1// (see* Understanding Output Sequences on page 51*, for explanation)*					
Definition 2		*Enter 1 for On and 0 for Off.*			
Enable	80	On/Off	Off	Off	Off
Symbology *(0 = any; for other values, see I.D. #B5 on* page 52)	81	Value	0	0	0
Record length *(01–99, or 00 for any)*	82	Value	00	00	00
Number of fields *(01–08)*	83	Value	01	01	01
Fields *(length followed by qualifier; 00 = any length; (00) = any qualifier)*					
Field 1	84	Field	00(00)	00(00)	00(00)
Field 2	85				
Field 3	86				
Field 4	87				
Field 5	88				
Field 6	89				
Field 7	8A				
Field 8	8B				
Output sequence *(see Table 7)*	8C	String	//	//	//

Table 6. Input Editing Parameters (Continued)

PARAMETER	I.D. #	TYPE	PREDEFINED DEFAULTS		
			D0	D1	D2
Definition 3	*Enter 1 for On and 0 for Off.*				
Enable	90	On/Off	Off	Off	Off
Symbology *(0 = any; for other values, see I.D. #B5 on page 52)*	91	Value	0	0	0
Record length *(01–99, or 00 for any)*	92	Value	00	00	00
Number of fields *(01–08)*	93	Value	01	01	01
Fields *(length followed by qualifier; 00 = any length; (00) = any qualifier)*					
Field 1 Field 2 Field 3 Field 4 Field 5 Field 6 Field 7 Field 8	94 95 96 97 98 99 9A 9B	Field	00(00)	00(00)	00(00)
Output sequence *(see Table 7)*	9C	String	//	//	//

Table 6. Input Editing Parameters (Continued)

PARAMETER	I.D. #	TYPE	PREDEFINED DEFAULTS		
			D0	D1	D2
Definition 4	*Enter 1 for On and 0 for Off.*				
Enable	A0	On/Off	Off	Off	Off
Symbology *(0 = any; for other values, see I.D. #B5 on page 52)*	A1	Value	0	0	0
Record length *(01–99, or 00 for any)*	A2	Value	00	00	00
Number of fields *(01–08)*	A3	Value	01	01	01
Fields *(length followed by qualifier; 00 = any length; (00) = any qualifier)*					
Field 1 Field 2 Field 3 Field 4 Field 5 Field 6 Field 7 Field 8	A4 A5 A6 A7 A8 A9 AA AB	Field	00(00)	00(00)	00(00)
Output sequence *(see Table 7)*	AC	String	//	//	//
Allow qualified data only	AD	On/Off	Off	Off	Off

Understanding Output Sequences

An output sequence does not contain any text that will actually be output; it contains pointers to fields, which may contain input data or text strings. For example, you cannot include a comma in an output sequence; instead, you must include the output-sequence value of the field containing a comma.

An output sequence can also contain autoterminators, preambles, and postambles. Each field and other type of information is assigned a specific value (either the field number or letter, or the parameter I.D. number) for inclusion in the output sequence (see Table 7).

Each output sequence must end with an end-of-string character (//).

Each input editing definition has its own output sequence with its own I.D. number. The order of the values in the output sequence determines the order in which the field contents and other information will appear in the output. If a field is not included in the output sequence, its contents will be stripped from the data during input editing.

Table 7. Output Sequence Settings

TYPE OF INFORMATION	VALUE USED IN OUTPUT SEQUENCE	ACTUAL OUTPUT
Fields 01–08	01–08	The contents of each specified field
Magnetic stripe preambles Channel 1 Channel 2 Channel 3	 48 4E 58	A text string
Magnetic stripe postambles Channel 1 Channel 2 Channel 3	 49 4F 59	A text string
Extra fields	60–6F	The contents of each specified field; see Using Extra Fields on page 53
Redirection commands	90–96	None; see Table 9
Autoterminator	B1	A single ASCII character
Symbology identifier	B5	A code identifying the input form
End-of-string character (//)	Must be used to end each output sequence	

Using Extra Fields

You can define up to 16 extra fields for input editing. Use the extra fields to include text strings or keyboard actions. For example, by defining one field to contain the word *aisle,* another field to contain the word *bin,* a third field to contain a tab, and another field to contain a space, you can change

N21263

to

aisle N21 bin 263

You can include the value for each extra field in the output sequence of any or all of the qualification definitions.

Table lists I.D. numbers and predefined defaults for extra fields. You can change your decoder's settings for these parameters using the bar code menu, bar code batch, serial batch, or on-screen method of programming.

Table 8. Extra-Field Parameters

PARAMETER	I.D. #	TYPE	PREDEFINED DEFAULTS		
			D0	D1	D2
Extra field 0	60	String	//	Acc#//	//
Extra field 1	61	String	//	//*	//
Extra field 2	62	String	//	, //†	//
Extra fields 3–16	63–6F§	String	//	//	//

**Two spaces*
†A comma followed by a space
§Extra field 3 = 63, Extra field 4 = 64, Extra field 5 = 65, Extra field 6 = 66, Extra field 7 = 67, Extra field 8 = 68, Extra field 9 = 69, Extra field A = 6A, Extra field B = 6B, Extra field C = 6C, Extra field D = 6D, Extra field E = 6E, Extra field F = 6F

Redirecting Output

After input editing, data is normally output to the host computer or terminal. You can include output-redirection commands or system commands in the output sequence to redirect the data output (see Table 9).

Table 9. Output-Redirection Settings

VALUE USED IN OUTPUT SEQUENCE	EFFECT
90	Switches output back to the host after data has been redirected
91	Redirects data as control commands to be sent to the system's host-controlled indicator (HCI) parser (see)
92–95	Redirects data to the serial port's handshake-out line using the following settings:
92	9600 baud, 8 data bits, no parity, 1 stop bit
93	9600 baud, 7 data bits, even parity, 1 stop bit
94	2400 baud, 8 data bits, no parity, 1 stop bit
95	2400 baud, 7 data bits, even parity, 1 stop bit
96	Redirects data to the serial port's Tx line

An Input Editing Example

NOTE

To read the bar codes in this example, your PowerWedge 20 decoder must accept Code 39 bar codes with a maximum length of 26 characters. Scan the following bar code to reset your decoder to predefined default D2 and set the maximum length for Code 39 bar codes to 26:

Let's say you are the head of security for a large manufacturing company. Each employee in your company has an identification badge with a Code 39 bar code containing the employee's first name and last name, a five-digit employee number that begins with 0, and sometimes additional information. Names, numbers, and other information in the bar codes are separated by periods, as in the following example:

To enter certain areas of the building, employees must present their badges to an I.D. badge reader that passes the data through a PowerWedge 20 to a central computer. The information output to the computer also includes the location of the I.D. badge reader. The output is in the following format:

Last name, First nameEmp. #Location

Today you are installing a badge reader and decoder at a new location called Area M, and you need to program the decoder to output the data in the proper format. Using the example above, you want the output to be as follows:

Rogers, Sally1836Area M

To get the results you want, you need to complete three steps.

Step 1: Create a Qualification Definition

The definition will require the input to be Code 39 data of any length and will break that data down into seven fields, including (1) first name, (3) last name, (5) employee number with the leading zero dropped off, and (7) other information, as shown below:

Any input that doesn't meet the definition criteria will not be edited.

Table 10 lists the parameters and values you need to use. If you are using predefined defaults (see page 18), you need to program only the parameters whose values are different from the defaults. For example, the D1 default setting for I.D. #71 (definition 1 symbology) is C (Code 39); so if your decoder is using the D1 settings, you do not need to set I.D. #71.

Table 10. Parameter Settings for the Example

Parameter	I.D. #	Value	Meaning
Enable definition 1	70	1	Use definition 1 to filter incoming data.
Symbology	71	C	Only Code 39 input will be edited.
Record length	72	00	The incoming data can contain any number of characters.
Number of fields	73	07	The incoming data contains seven fields.
Field 1	74	00(00)	The first field can be of any length and can begin with any character.
Field 2	75	01.	The second field is exactly one character long and that character is a period.

Table 10. Parameter Settings for the Example

Parameter	I.D. #	Value	Meaning
Field 3	76	00(00)	The third field can be of any length and can begin with any character.
Field 4	77	02.	The second field is exactly two characters long and the first character is a period.
Field 5	78	04(00)	The fifth field is exactly four characters long and can begin with any character.
Field 6	79	01.	The sixth field is exactly one character long and that character is a period.
Field 7	7A	00(00)	The seventh field can be of any length and can begin with any character.

If you are using the bar code batch programming method and the D2 predefined defaults, your bar codes for the definition should look like the following:

Notice that the bar codes do not include settings for record length or for fields 1, 3, and 7. Since these parameters use the defaults, it is not necessary to include them in the bar codes. Also notice the %U in the second bar code. This is the Code 39 equivalent for the null character, which is used in place of 00 in bar code batch programming.

Step 2: Program Extra Fields

Set parameters for three extra fields to contain the following:

- The I.D. badge reader's location
- A comma and a space to separate the first name from the last name
- A tab to separate columns in the output

Table 11 lists the parameters and data strings you need to use. Each string ends with the end-of-string character (//).

Table 11. Parameter Settings for the Extra Fields

Parameter	I.D. #	String	Contents
Extra field 0	60	Area M//	The location of the I.D. badge reader
Extra field 1	61	, //	A comma followed by a space
Extra field 2	62	(TABR)//	A tab character

Your bar codes for the extra-field settings should look like the following:

Notice the use of the plus symbols (+) before the R, the E, and the second A. These cause the letters to be output as lowercase (*a*, *r*, and *e*). In the second bar code, /L is the Code 39 equivalent for a comma, and $I is the Code 39 equivalent for a tab character. Also notice that each extra-field setting ends with an end-of-string character (//).

Step 3: Program the Output Sequence

Enter the following codes: `03610162056260B1//`

where

`03` is **field 3** (last name)
`61` is **extra field 1** (comma and space)
`01` is **field 1** (first name)
`62` is **extra field 2** (tab)
`05` is **field 5** (employee number without the leading 0)
`62` is **extra field 2** (tab)
`60` is **extra field 0** ("Area M")
`B1` is the autoterminator (a carriage return)
`//` is the end-of-string character

Your bar code for the output sequence should look like the following:

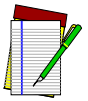
Once you've completed these steps, your new I.D. badge reader should be able to read the bar code on each employee's badge and report that the employee has entered Area M.

Programming Options

Table 12 lists programming I.D. numbers for predefined defaults, which provide a fast and easy way to set all parameters off, on, or to factory settings.

Table 13 lists cloning, display, and save-and-exit settings.

Table 14 provides the following information:



NOTE

For explanations of some general programming parameters, see page 34. For explanations of serial parameters, see page 36. For information about magnetic stripe programming parameters, see page 44. For input-editing parameters, see Input Editing on page 45**.**

- Code Parameter is the "human" name for programming options.
- I.D. # is the "decoder" name for programming options. For example, if you wanted to set a Code 39 minimum label length, you would enter **01** when programming the decoder. Programming I.D. numbers given in this section can be used with all programming methods.
- Type tells what kind of setting to use for each code parameter:

  — On/Off is a toggle. 1 turns the parameter on, and 0 turns it off.

  — Value requires a two-character entry (e.g., **02** for two beeps after each good read, or **05** for a length of five).

  — String uses one or more ASCII characters, followed by // to indicate the end of the string.

  — Immediate takes effect as soon as the I.D. number is entered.

- Acceptable Input gives the settings or range of settings that you can use for each code parameter.
- Predefined Defaults tells how the parameter is set when you select predefined default D0, D1, or D2 (see page 18).

Table 15 lists parameter settings for serial communications.

Table 12. Predefined Defaults

SETTING	I.D. #	TYPE
Predefined default set 0	D0	Immediate
Predefined default set 1	D1	Immediate
Predefined default set 2	D2	Immediate

Table 13. Cloning, Display, and Save-and-Exit Settings

SETTING	I.D. #	TYPE
Cloning	EC	Immediate
Display settings (on-screen programming only)	ED	Immediate
Save and exit	EE	Immediate
Exit only, no save	EF	Immediate

Table 14. General Programming Parameters

CODE PARAMETER	I.D. #	TYPE	ACCEPTABLE INPUT	PREDEFINED DEFAULTS		
				D0	D1	D2
Code 39			*Enter 1 for On and 0 for Off.*			
Enable	00	On/Off	On *or* Off	Off	On	On
Minimum length	01	Value	00–50	00	00	00
Maximum length	02	Value	01–50	01	50	20
Enable checksum	03	On/Off	On *or* Off	Off	Off	Off
Send checksum	04	On/Off	On *or* Off	Off	Off	Off
Full ASCII mode	05	On/Off	On *or* Off	Off	On	On
MIL-STD-1189 support	07	On/Off	On *or* Off	Off	On	Off
Interleaved 2 of 5			*Enter 1 for On and 0 for Off.*			
Enable	08	On/Off	On *or* Off	Off	On	On
Minimum length	09	Value	02–50	02	02	06
Maximum length	0A	Value	02–50	02	50	10
Enable checksum	0B	On/Off	On *or* Off	Off	Off	Off
Send checksum	0C	On/Off	On *or* Off	Off	Off	Off
Use lengths 6 and 14 only	0D	On/Off	On *or* Off	Off	Off	Off
Matrix 2 of 5			*Enter 1 for On and 0 for Off.*			
Enable	10	On/Off	On *or* Off	Off	On	Off
Minimum length	11	Value	01–50	01	01	06
Maximum length	12	Value	01–50	01	50	10

Table 14. General Programming Parameters (Continued)

CODE PARAMETER	I.D. #	TYPE	ACCEPTABLE INPUT	PREDEFINED DEFAULTS		
				D0	D1	D2
Enable checksum	13	On/Off	On *or* Off	Off	Off	Off
Send checksum	14	On/Off	On *or* Off	Off	Off	Off
Standard 2 of 5			*Enter 1 for On and 0 for Off.*			
Enable	15	On/Off	On *or* Off	Off	On	Off
Minimum length	16	Value	01–50	01	01	06
Maximum length	17	Value	01–50	01	50	10
Enable checksum	18	On/Off	On *or* Off	Off	Off	Off
Send checksum	19	On/Off	On *or* Off	Off	Off	Off
Use 2-bar start/stop	1A	On/Off	On *or* Off	Off	Off	Off
Code 11			*Enter 1 for On and 0 for Off.*			
Enable	1B	On/Off	On *or* Off	Off	On	Off
Minimum length	1C	Value	01–50	01	01	04
Maximum length	1D	Value	01–50	01	50	10
Require 2 check digits	1E	On/Off	On *or* Off	Off	Off	Off
Send check digit(s)	1F	On/Off	On *or* Off	Off	On	Off
Codabar/Ames			*Enter 1 for On and 0 for Off.*			
Enable	20	On/Off	On *or* Off	Off	On	On
Minimum length	21	Value	01–50	01	01	04
Maximum length	22	Value	01–50	01	50	20
Send start/stop	23	On/Off	On *or* Off	Off	Off	Off

Table 14. General Programming Parameters (Continued)

CODE PARAMETER	I.D. #	TYPE	ACCEPTABLE INPUT	PREDEFINED DEFAULTS		
				D0	D1	D2
Codabar-to-CLSI conversion	24	On/Off	On *or* Off	Off	Off	Off
Wide intercharacter gaps allowed	25	On/Off	On *or* Off	Off	On	Off
MSI			*Enter 1 for On and 0 for Off.*			
Enable	26	On/Off	On *or* Off	Off	On	Off
Minimum length	27	Value	01–14	01	01	04
Maximum length	28	Value	01–14	01	14	10
Require 2 check digits	29	On/Off	On *or* Off	Off	Off	Off
2nd check digit Mod 11	2A	On/Off	On *or* Off	Off	Off	Off
Send check digit(s)	2B	On/Off	On *or* Off	Off	On	Off
Code 93			*Enter 1 for On and 0 for Off.*			
Enable	2C	On/Off	On *or* Off	Off	On	On
Minimum length	2D	Value	00–50	00	01	02
Maximum length	2E	Value	00–50	00	50	20
Universal Product Code-A (UPC-A)			*Enter 1 for On and 0 for Off.*			
Enable	30	On/Off	On *or* Off	Off	On	On
Send system digit	31	On/Off	On *or* Off	Off	On	On
Send check digit	32	On/Off	On *or* Off	Off	On	Off
Convert UPC-A to EAN-13	33	On/Off	On *or* Off	Off	On	Off

Table 14. General Programming Parameters (Continued)

CODE PARAMETER	I.D. #	TYPE	ACCEPTABLE INPUT	PREDEFINED DEFAULTS		
				D0	D1	D2
Universal Product Code-E (UPC-E)			*Enter 1 for On and 0 for Off.*			
Use system digit 0	34	On/Off	On *or* Off	Off	On	On
Use system digit 1	35	On/Off	On *or* Off	Off	On	On
Convert UPC-E to UPC-A	36	On/Off	On *or* Off	Off	On	Off
Send system digit	37	On/Off	On *or* Off	Off	On	Off
Send check digit	38	On/Off	On *or* Off	Off	On	Off
European Article Numbering (EAN) Japan Article Numbering (JAN)			*Enter 1 for On and 0 for Off.*			
Enable EAN-8/JAN-8	39	On/Off	On *or* Off	Off	On	On
Enable EAN-13/JAN-13	3A	On/Off	On *or* Off	Off	On	On
Convert EAN-13 to ISBN	3B	On/Off	On *or* Off	Off	Off	Off
Transmit EAN/JAN checksum	3F	On/Off	On *or* Off	Off	Off	Off
UPC, EAN, JAN EXTENSIONS			*Enter 1 for On and 0 for Off.*			
Allow 2-digit extensions	3C	On/Off	On *or* Off	Off	On	On
Allow 5-digit extensions	3D	On/Off	On *or* Off	Off	On	On
Require extensions	3E	On/Off	On *or* Off	Off	Off	Off
Code 128			*Enter 1 for On and 0 for Off.*			
Enable	40	On/Off	On *or* Off	Off	On	On
Minimum length	41	Value	01–50	01	01	02
Maximum length	42	Value	01–50	01	50	20

Table 14. General Programming Parameters (Continued)

CODE PARAMETER	I.D. #	TYPE	ACCEPTABLE INPUT	PREDEFINED DEFAULTS		
				D0	D1	D2
Enable UCC128	43	On/Off	On *or* Off	Off	Off	Off
Labelcode 4/5			*Enter 1 for On and 0 for Off.*			
Enable	52	On/Off	On *or* Off	Off	On	Off
Convert	53	On/Off	On *or* Off	Off	Off	Off
Magnetic Stripe Channel 1			*Enter 1 for On and 0 for Off.*			
Enable	44	On/Off	On *or* Off	Off	On	On
Required	45	On/Off	On *or* Off	Off	Off	Off
Preamble	48	String	*	//	1 //†	//
Postamble	49	String	*	//	1//§	//

**Any supported keyboard keys, up to the maximum length supported by available total memory (about 130 characters)*
†Includes a space after the 1
§Includes a space before the 1

Magnetic Stripe Channel 2			*Enter 1 for On and 0 for Off.*			
Enable	4A	On/Off	On *or* Off	Off	On	On
Required	4B	On/Off	On *or* Off	Off	Off	Off
Preamble	4E	String	*	//	2 //†	//
Postamble	4F	String	*	//	2//§	//

**Any supported keyboard keys, up to the maximum length supported by available total memory (about 130 characters)*
†Includes a space after the 2
§Includes a space before the 2

Table 14. General Programming Parameters (Continued)

CODE PARAMETER	I.D. #	TYPE	ACCEPTABLE INPUT	PREDEFINED DEFAULTS		
				D0	D1	D2
Magnetic Stripe Channel 3			*Enter 1 for On and 0 for Off.*			
Enable	54	On/Off	On *or* Off	Off	On	Off
Required	55	On/Off	On *or* Off	Off	Off	Off
Preamble	58	String	*	//	3 //†	//
Postamble	59	String	*	//	3//§	//
Auxiliary serial and magnetic stripe identifiers	5A	String	**	‡	‡	‡
Bar code symbology identifiers	5B	String	§§	‡	‡	‡
California DL/ID alpha conversion	5C	On/Off	On *or* Off	Off	On	On

**Any supported keyboard keys, up to the maximum length supported by available total memory (about 130 characters)*

†Includes a space after the 3

§Includes a space before the 3

***0 = Auxiliary serial*
1 = Magnetic stripe channel 1
2 = Magnetic stripe channel 2
3 = Magnetic stripe channel 3

‡See I.D. #B5 on page 68 for default settings

§§0 = UPC-A
1 = I 2 of 5
2 = Code 39
3 = M 2 of 5
4 = UPC-E
5 = S 2 of 5
6 = EAN-8
7 = MSI
8 = Codabar/Ames
9 = Code 11
A = Code 128
B = EAN 13
C = Labelcode 4/5

Select the I.D. letter for the symbology you want to change, and then enter a string followed by //.

Table 14. General Programming Parameters (Continued)

CODE PARAMETER	I.D. #	TYPE	ACCEPTABLE INPUT	PREDEFINED DEFAULTS		
				D0	D1	D2
Other Controls			*Enter 1 for On and 0 for Off.*			
Programming mode	B0	Value	00 = Off 01 = Serial batch 02 = Menu 03 = Both	02	02	02
Autoterminator	B1	Value	*Any single ASCII character (00 = Off)*	(CR)	(CR)	(CR)
ASCII capital to lowercase	B2	On/Off	On *or* Off	Off	Off	Off
Intercharacter delay	B3	Value	00–99 *(milliseconds)*	00	00	00
CCD/laser redundancy	B4	On/Off	On *or* Off	Off	Off	Off
Send assigned symbology identifiers*	B5	On/Off	On *or* Off	Off	On	Off
**Bar Code* *A = UPC-A* *B = I 2 of 5* *C = Code 39* *D = M 2 of 5* *E = UPC-E* *F = S 2 of 5* *G = EAN-8* *H = MSI* *I = Codabar/Ames* *J = Code 11* *K = Code 128* *M = EAN-13* *N = Labelcode 4/5* *Magnetic Stripe* *1 = Channel 1* *2 = Channel 2* *3 = Channel 3* *Other* *S = Auxiliary serial*						
Bar code preamble	B6	String	†	//	§	//
Bar code postamble	B7	String	†	//	**	//

†*Any supported keyboard keys, up to the maximum length supported by available total memory (about 130 characters)*
§CODEID // *(includes a space after CODEID)*

Table 14. General Programming Parameters (Continued)

CODE PARAMETER	I.D. #	TYPE	ACCEPTABLE INPUT	PREDEFINED DEFAULTS		
				D0	D1	D2
Other Controls *(continued)*			*Enter 1 for On and 0 for Off.*			
Good-read tone	B8	Value	00 = 3600 Hz 01 = 3840 Hz 02 = 4114 Hz 03 = 4430 Hz 04 = 2400 Hz 05 = 2618 Hz 06 = 2880 Hz 07 = 3200 Hz	04	04	04
Good-read number of beeps	B9	Value	01–04	01	01	01
Good-read tone duration	BA	Value	00 = 0.07 sec. 01 = 0.13 sec. 02 = 0.18 sec. 03 = 0.36 sec.	00	00	00
End-of-transmission beep	BB	On/Off	On *or* Off	Off	On	Off
Beeper volume	BC	Value	00 = Off 01 = Low 02 = Medium 03 = High	03	03	03
Laser connected to INPUT 2 (Dual model only)	BD	On/Off	On *or* Off	Off	Off	Off
Interfunction delay	BE	Value	00–99 *(milliseconds)*	00	00	00
Use numeric keypad	BF	On/Off	On *or* Off	Off	Off	Off
Strip Motorola data identifiers	D3	On/Off	On *or* Off	Off	Off	Off

Table 14. General Programming Parameters (Continued)

CODE PARAMETER	I.D. #	TYPE	ACCEPTABLE INPUT	PREDEFINED DEFAULTS		
				D0	D1	D2
Other Controls *(continued)*			*Enter 1 for On and 0 for Off.*			
Laser/input modes	D4	Value	00 = Normal 01 = Autoscan 02 = Multiscan 03 = Symbol blinking	00	00	00
Require keyboard	D5	On/Off	On *or* Off	On	On	On
Autoscan timeout	D6	Value	01–99 *(minutes)* 00 = 256 minutes	30	30	30
CTRL out at power-up	D7	On/Off	On = High Off = Low	On	On	On
Bar code preamble for INPUT 2 (Dual model only)	DA	String	*	//	†	//
Bar code postamble for INPUT 2 (Dual model only)	DB	String	*	//	§	//

**Any supported keyboard keys, up to the maximum length supported by available total memory (about 130 characters)*
†INPUT2 *// (includes a space after INPUT2)*
§ TEST// *(includes a space before TEST)*

Table 14. General Programming Parameters (Continued)

CODE PARAMETER	I.D. #	TYPE	ACCEPTABLE INPUT	PREDEFINED DEFAULTS		
				D0	D1	D2
Host device	C0	Value	*	*None*	*None*	*None*

**00 = IBM PC (international keyboard)*
01 = IBM AT, PS/2 30-286, 50, 50Z, 60, 70, 80, 90, 95 (international keyboard)
02 = IBM PS/2 25, 30 (international keyboard)
NOTE: *Settings 00–02 work with DOS only. They transmit the ASCII character set and are not full-keyboard compatible.*
10 = IBM PC (U.S. keyboard)
11 = IBM AT, PS/2 30-286, 50, 50Z, 60, 70, 80, 90, 95 (U.S. keyboard); ADDS terminals; NCR 2900; I/O Corp 2476
12 = IBM PS/2 25, 30 (U.S. keyboard)
15 = IBM and Telex terminals (102-key keyboard)
17 = IBM and Telex terminals (122-key keyboard); Decision Data models 3496 and 3781
21 = Macintosh (U.S. keyboard)
25 = Data General D213, D413
32 = TeleVideo
40 = DEC
42 = NEC PowerMate
50 = Serial ASCII
51 = Serial PC scan codes
NOTE: *The host devices listed above were supported at the time this user's guide was printed. Additional devices may also be supported. Please contact your dealer or Customer Service for current information.*

Table 15. Serial Programming Parameters

CODE PARAMETER	I.D. #	TYPE	ACCEPTABLE INPUT	PREDEFINED DEFAULT (C8)
			Enter 1 for On and 0 for Off.	
Data type	C0	Value	50 = ASCII 51 = PC scan codes	50
Baud rate	C1	Value	00 = 300 01 = 600 02 = 1200 03 = 2400 04 = 4800 05 = 9600 06 = 19200 07 = 38400 08 = 57600	05
Data bits*	C2	Value	07 = 7 Bits 08 = 8 Bits	08
Parity*	C3	Value	00 = None 01 = Mark 02 = Space 03 = Odd 04 = Even	00
Stop bits*	C4	Value	01 = 1 Bit 02 = 2 Bits	01
Xon/Xoff handshaking	C5	On/ Off	On *or* Off	Off
Enable auxiliary serial input	C7	On/ Off	On *or* Off	Off
Predefined serial defaults	C8			
Protocol	CA	Value	00 = EOR only 01 = ACK/NAK	00
**The PowerWedge 20 will not operate with a combination of 7 data bits, no parity, and 1 stop bit*				

Table 15. Serial Programming Parameters (Continued)

CODE PARAMETER	I.D. #	TYPE	ACCEPTABLE INPUT	PREDEFINED DEFAULT (C8)
End-of-record (EOR) character	CC	Value	*Any single ASCII character*	(CR)
Timeout	CD	Value	01–99* 00 = 2.55 seconds	03
Require host response	CE	On/ Off	On *or* Off	Off
Use host-controlled indicators	CF	On/ Off	On *or* Off	Off
**10-millisecond increments; the default setting (03) means 30 milliseconds*				

Programming Bar Codes

This section provides bar codes for common setup parameters for programming the PowerWedge 20. Factory default settings (D2) are underlined.

Alphabetical List of Contents

Predefined Defaults

DO

D1

D2

Auto-Learn

START

SAVE AND EXIT

Scan this twice.

EXIT WITHOUT SAVING

Scan this first.

Then scan this.

Cloning

EC

Code 39

ENABLE

On

Off

MINIMUM LENGTH

00

10

20

30

40

50

MAXIMUM LENGTH

10

20

30

40

50

ENABLE CHECKSUM

On

Off

OUTPUT CHECKSUM

On

Off

FULL ASCII MODE

On

Off

MIL-STD-1189 SUPPORT

On

Off

Interleaved 2 of 5

ENABLE

On

Off

MINIMUM LENGTH

2

6

10

20

30

40

50

MAXIMUM LENGTH

10

20

30

40

50

REQUIRED LENGTH *(no default; overrides minimum and maximum settings)*

2

4

6

8

10

12

14

16

18

20

ENABLE CHECKSUM

On

Off

OUTPUT CHECKSUM

On

Off

LENGTHS 6 AND 14 ONLY *(case code)*

On

Off

Matrix 2 of 5

ENABLE

On

Off

MINIMUM LENGTH

06

10

20

30

40

50

MAXIMUM LENGTH

10

20

30

40

50

ENABLE CHECKSUM

On

Off

OUTPUT CHECKSUM

On

Off

Standard 2 of 5

ENABLE

On

Off

MINIMUM LENGTH

06

10

20

30

40

50

MAXIMUM LENGTH

10

20

30

40

50

ENABLE CHECKSUM

On

Off

OUTPUT CHECKSUM

On

Off

USE 2-BAR START/STOP

On

Off

Code 11

ENABLE

On

Off

MINIMUM LENGTH

4

10

20

30

40

50

MAXIMUM LENGTH

10

20

30

40

50

REQUIRE 2 CHECK DIGITS

On

Off

OUTPUT CHECK DIGIT(S)

On

Off

Codabar/Ames

ENABLE

On

Off

MINIMUM LENGTH

04

10

20

30

40

50

MAXIMUM LENGTH

10

<u>20</u>

30

40

50

OUTPUT STOP/START

On

<u>Off</u>

CODABAR-TO-CLSI CONVERSION

On

<u>Off</u>

WIDE INTERCHARACTER GAPS ALLOWED

On

Off

MSI

ENABLE

On

Off

MINIMUM LENGTH

1

4

7

10

12

14

MAXIMUM LENGTH

1

4

7

10

12

14

REQUIRE 2 CHECK DIGITS

On

Off

2ND CHECK DIGIT MOD 11

On

Off

OUTPUT CHECK DIGIT(S)

On

Off

Code 93

ENABLE

On

Off

MINIMUM LENGTH

02

10

20

30

40

50

MAXIMUM LENGTH

10

20

30

40

50

Code 128

ENABLE

On

Off

MINIMUM LENGTH

2

10

20

30

40

50

MAXIMUM LENGTH

10

<u>20</u>

30

40

50

ENABLE UCC128

On

<u>Off</u>

Labelcode 4/5

ENABLE

On

Off

CONVERT

On

Off

UPC-A

ENABLE UPC-A

On

Off

OUTPUT SYSTEM DIGIT

On

Off

OUTPUT CHECK DIGIT

On

Off

CONVERT UPC-A TO EAN-13

On

Off

UPC-E

USE SYSTEM DIGIT 0

On

Off

USE SYSTEM DIGIT 1

On

Off

CONVERT UPC-E TO UPC-A

On

Off

OUTPUT SYSTEM DIGIT

On

Off

OUTPUT CHECK DIGIT

On

Off

EAN/JAN

ENABLE EAN-8/JAN-8

On

Off

ENABLE EAN-13/JAN-13

On

Off

CONVERT EAN-13 TO ISBN

On

Off

TRANSMIT EAN/JAN CHECKSUM

On

Off

UPC/EAN/JAN Extensions

ALLOW 2-DIGIT EXTENSIONS

On

Off

ALLOW 5-DIGIT EXTENSIONS

On

Off

REQUIRE EXTENSIONS

On

Off

Magnetic Stripe Channels

ENABLE CHANNEL 1

On

Off

REQUIRE CHANNEL 1

On

Off

ENABLE CHANNEL 2

On

Off

REQUIRE CHANNEL 2

On

Off

ENABLE CHANNEL 3

On

Off

REQUIRE CHANNEL 3

On

Off

CALIFORNIA DRIVER LICENSE/ID CARD ALPHA CONVERSION *(Track 3)*

On

Off

Other Controls

PROGRAMMING MODE

Off

Serial Batch

Menu

Both

AUTOTERMINATOR

(CR)

(TAB)

None

ASCII UPPERCASE TO LOWERCASE CONVERSION

On

Off

INTERCHARACTER DELAY *(in milliseconds)*

0

5

10

20

40

CCD/LASER REDUNDANCY

On

Off

OUTPUT SYMBOLOGY IDENTIFIER

On

Off

GOOD-READ TONE *(in hertz)*

2400 Hz

3200 Hz

3600 Hz

4430 Hz

GOOD-READ BEEPS

1

2

3

4

GOOD-READ BEEP DURATION *(in seconds)*

0.07

0.13

0.18

0.36

END-OF-TRANSMISSION BEEP

On

Off

BEEPER VOLUME

Off

Low

Medium

High

LASER CONNECTED TO INPUT 2

On

Off

INTERFUNCTION DELAY *(in milliseconds)*

0

5

10

20

40

USE NUMERIC KEYPAD

On

Off

LASER/INPUT MODES

Normal

Autoscan

Multiscan

Symbol Blinking

REQUIRE KEYBOARD

On

Off

AUTOSCAN TIMEOUT

1 min.

5 min.

10 min.

30 min.

60 min.

256 min.

CTRL OUT AT POWER-UP

High

Low

Host Device

PC/XT (International keyboard)

AT; PS/2™ models 30-286, 50, 50Z, 60, 70, 80, 90, and 95 (International keyboard)

PS/2 models 25 and 30 (International keyboard)

PC/XT (U.S. keyboard)

AT; PS/2 models 30-286, 50, 50Z, 60, 70, 80, 90, and 95 (U.S. keyboard); ADDS; NCR 2900; I/O Corp 2476

PS/2 models 25 and 30 (U.S. keyboard)

IBM and TELEX terminals (102-key keyboard)

IBM and TELEX terminals (122-key keyboard); Decision Data models 3496 and 3781

Macintosh™ (U.S. keyboard)

Data General models D213 and D214

TeleVideo

DEC

NEC PowerMate

Serial Parameters

DATA TYPE

ASCII

PC scan codes

BAUD RATE

300

600

1200

2400

4800

9600

19200

38400

57600

DATA BITS

7 bits

8 bits

PARITY

None

Mark

Space

Odd

Even

STOP BITS

1

2

XON/XOFF HANDSHAKING

On

Off

ENABLE AUXILIARY SERIAL INPUT

On

Off

PROTOCOL

EOR only

ACK/NAK

REQUIRE HOST RESPONSE

On

Off

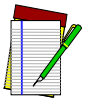
USE HOST-CONTROLLED INDICATORS

On

Off

Full Keyboard Support

Almost every key on your keyboard—including nonprinting keys, such as **PgDn** and **Ctrl**—can be programmed into your PowerWedge 20 decoder. The tables in this section list ASCII values, "mnemonic" values, and Code 39 equivalents for programming all keyboard keys.



Some of the values listed in the ASCII column of the tables (for example, 03 for Caps Lock) are not really ASCII values. They are, however, the values you should use for programming the keys.

NOTE

Full ASCII mode for Code 39 must be enabled in the decoder for batch programming.
Be sure to include the parentheses when you enter mnemonics.

Use the *ASCII* values whenever you program your decoder with the menu method. For example, to turn on the **Caps Lock** key (value 03 from table) through menu programming, you would scan the bar codes for 0 and 3.

Use the *Code 39* values to create bar codes for batch programming or to include lowercase or nonalphanumeric characters in a bar code. For example, to include an exclamation mark (!) in a bar code, you would encode it as /A (slash capital *a*).

Use *mnemonics* for on-screen and serial batch programming. For example, to encode the **Enter** key, you would type (CR).

Some keys act immediately when read into the decoder. For example, the decoder transmits the page-down command to the computer as soon as it reads a bar code containing the characters %U$Z.

Other keys are not quite so simple. For example, the **Ctrl** key has to be "turned" on and off. When you type **Ctrl+C**, for instance, you hold the **Ctrl** key down while you press **C**, and then you release the **Ctrl** key. Three signals are sent to the host device: **Ctrl** key on (down), **C**, **Ctrl** key off (up). This is the way you need to think when encoding **Ctrl**, **Alt**, **Shift**,

and other keys requiring a key to be held down while another is pressed. To include the **Ctrl+C** keystroke combination in a batch bar code, you would encode RCS. For on-screen or serial batch programming for an IBM PC keyboard, you would need to enter (XC1)C(XC0). The ASCII equivalent for menu programming is 124313.

NOTE

The zap character does not eliminate preambles or postambles.

Including a function key in a bar code can present a problem if your decoder is programmed to follow every bar code transmission with an autoterminator character. You can eliminate the autoterminator by including the "zap" character, $Z, in any bar code that you do *not* want followed by the autoterminator. For example, you would encode %UAZ to send function key **f1** with no autoterminator after it.

Table 16 lists the equivalents for keys that are common to many keyboards. For encoding keys from a specific keyboard, see the appropriate table from the following list:

Computer or Terminal	Table	Page
ADDS	17	116
DEC	20	121
Decision Data	20	121
IBM PCs and compatibles	17	116
IBM terminals	21	126
Macintosh	18	117
NCR 2900	17	116
NEC PowerMate	17	116
TeleVideo terminal	19	119
Telex	21	126

For information about IBM terminals and illustrations of IBM keyboards, see the section beginning on page 123.

Table 16. Common Keyboard Keys

Key	Code 39	ASCII Value	Key	Code 39	ASCII Value	Key	Code 39	ASCII Value
SP	space	20	A	A	41	a	+A	61
!	/A	21	B	B	42	b	+B	62
"	/B	22	C	C	43	c	+C	63
#	/C	23	D	D	44	d	+D	64
$	/D	24	E	E	45	e	+E	65
%	/E	25	F	F	46	f	+F	66
&	/F	26	G	G	47	g	+G	67
'	/G	27	H	H	48	h	+H	68
(*	/H	28	I	I	49	i	+I	69
)†	/I	29	J	J	4A	j	+J	6A
*	/J	2A	K	K	4B	k	+K	6B
+	/K	2B	L	L	4C	l	+L	6C
,	/L	2C	M	M	4D	m	+M	6D
-	- *or* /M	2D	N	N	4E	n	+N	6E
.	. *or* /N	2E	O	O	4F	o	+O	6F
/	/O	2F	P	P	50	p	+P	70
0	0 *or* /P	30	Q	Q	51	q	+Q	71
1	1 *or* /Q	31	R	R	52	r	+R	72
2	2 *or* /R	32	S	S	53	s	+S	73
3	3 *or* /S	33	T	T	54	t	+T	74

Table 16. Common Keyboard Keys (Continued)

Key	Code 39	ASCII Value	Key	Code 39	ASCII Value	Key	Code 39	ASCII Value
4	4 *or* /T	34	U	U	55	u	+U	75
5	5 *or* /U	35	V	V	56	v	+V	76
6	6 *or* /V	36	W	W	57	w	+W	77
7	7 *or* /W	37	X	X	58	x	+X	78
8	8 *or* /X	38	Y	Y	59	y	+Y	79
9	9 *or* /Y	39	Z	Z	5A	z	+Z	7A
:	/Z	3A	@	%V	40	`	%W	60
;	%F	3B	[	%K	5B	{	%P	61
<	%G	3C	\	%L	5C	|	%Q	7C
=	%H	3D	]	%M	5D	}	%R	7D
>	%I	3E	^	%N	5E	~	%S	7E
?	%J	3F	_	%O	5F	Delete	%T	7F
Zap[§]	$Z	1A						

**When used as a string value in on-screen programming, must be entered as (( )*
[†]When used as a string value in on-screen programming, must be entered as ( ))
[§]Not an actual key; see information about the "zap" character on page 113

Table 17. IBM PC and NEC PowerMate Keyboard Keys

Key	Mne-monic	Code 39	ASCII Value	Key	Mne-monic	Code 39	ASCII Value
F1*	(X16)	%U$A	8001	↑	(UP)	%U%A	801B
F2*	(X17)	%U$B	8002	↓	(DOWN)	%U%B	801C
F3*	(X18)	%U$C	8003	←	(LEFT)	%U%C	801D
F4*	(X19)	%U$D	8004	→	(RIGHT)	%U%D	801E
F5*	(X20)	%U$E	8005	Caps Lock*	(X3)	$C	03
F6*	(X21)	%U$F	8006	Num Lock*	(X4)	$D	04
F7*	(X22)	%U$G	8007	Scroll Lock*	(X5)	$E	05
F8*	(X23)	%U$H	8008	Horizontal Tab*	(TABR)	$I	09
F9*	(X24)	%U$I	8009	Vertical Tab*	(X10)	$K	0B
F10*	(X25)	%U$J	800A	Enter*	(CR)	$M	0D
F11*	(X26)	%U$K	800B	Alt Off*	(XA0)	$N	0E
F12*	(X27)	%U$L	800C	Alt On*	(XA1)	$O	0F
Insert	(X36)	%U$U	8015	Left Ctrl Off*	(XC0)	$R	12
Home	(X37)	%U$V	8016	Left Ctrl On*	(XC1)	$S	13
Page Up	(X38)	%U$W	8017	Right Ctrl On	(X511)	%U$P	8010
Delete	(X39)	%U$X	8018	Right Ctrl Off	(X510)	%U$O	800F
End	(X40)	%U$Y	8019	Shift Off*	(XE0)	$V	16

Table 17. IBM PC and NEC PowerMate Keyboard Keys (Continued)

Key	Mne-monic	Code 39	ASCII Value	Key	Mne-monic	Code 39	ASCII Value
Page Down	(X41)	%U$Z	801A	Shift On*	(XE1)	$W	17
Backspace	(X8)	$H	08	Esc*	(X11)	%A	1B
**Keys supported for keyboard data input (see* Input Editing on page 45*)*							
Numeric Keypad							
Enter	(Enter)	%U%E	801F	3	(NP3)	%U3	8033
*	(X52)	%U/J	802A	4	(NP4)	%U4	8034
+	(X53)	%U/K	802B	5	(NP5)	%U5	8035
-	(X55)	%U-	802D	6	(NP6)	%U6	8036
/	(X57)	%U/O	802F	7	(NP7)	%U7	8037
0	(NP0)	%U0	8030	8	(NP8)	%U8	8038
1	(NP1)	%U1	8031	9	(NP9)	%U9	8039
2	(NP2)	%U2	8032				

Table 18. Macintosh Keyboard Keys

Key	Mne-monic	Code 39	ASCII Value	Key	Mne-monic	Code 39	ASCII Value
F1	(X16)	%U$A	8001	End	(X40)	%U$Y	8019
F2	(X17)	%U$B	8002	Page Down	(X41)	%U$Z	801A
F3	(X18)	%U$C	8003	↑	(UP)	%U%A	801B
F4	(X19)	%U$D	8004	↓	(DOWN)	%U%B	801C

Table 18. Macintosh Keyboard Keys (Continued)

Key	Mnemonic	Code 39	ASCII Value	Key	Mnemonic	Code 39	ASCII Value
F5	(X20)	%U$E	8005	←	(LEFT)	%U%C	801D
F6	(X21)	%U$F	8006	→	(RIGHT)	%U%D	801E
F7	(X22)	%U$G	8007	Tab	(TABR)	$I	09
F8	(X23)	%U$H	8008	Return	(CR)	$M	0D
F9	(X24)	%U$I	8009	ζ	(XB0)	$P	10
F10	(X25)	%U$J	800A	Apple	(XB1)	$Q	11
F11	(X26)	%U$K	800B	Control	(XC0)	$R	12
F12	(X27)	%U$L	800C	Control	(XC1)	$S	13
F13	(X28)	%U$M	800D	Option	(XD0)	$T	14
F14	(X29)	%U$N	800E	Option	(XD1)	$U	15
F15	(X30)	%U$O	800F	Shift	(XE0)	$V	16
Help	(X36)	%U$U	8015	Shift	(XE1)	$W	17
Home	(X37)	%U$V	8016	Caps Lock	(XF0)	$X	18
Page Up	(X38)	%U$W	8017	Caps Lock	(XF1)	$Y	19
Delete	(X39)	%U$X	8018	Esc	(X11)	%A	1B
Numeric Keypad							
Enter	(ENTER)	%U%E	801F	3	(NP3)	%U3	8033
*	(X52)	%U/J	802A	4	(NP4)	%U4	8034
+	(X53)	%U/K	802B	5	(NP5)	%U5	8035
-	(X55)	%U-	802D	6	(NP6)	%U6	8036

Table 18. Macintosh Keyboard Keys (Continued)

Key	Mne-monic	Code 39	ASCII Value	Key	Mne-monic	Code 39	ASCII Value
/	(X57)	%U/O	802F	7	(NP7)	%U7	8037
0	(NP0)	%U0	8030	8	(NP8)	%U8	8038
1	(NP1)	%U1	8031	9	(NP9)	%U9	8039
2	(NP2)	$U2	8032				

Table 19. TeleVideo Keyboard Keys

Key	Mne-monic	Code 39	ASCII Value	Key	Mne-monic	Code 39	ASCII Value
F1	(X16)	%U$A	8001	FUNCT	(XF0)	$X	18
F2	(X17)	%U$B	8002	FUNCT	(XF1)	$Y	19
F3	(X18)	%U$C	8003	TAB	(TABR)	$I	09
F4	(X19)	%U$D	8004	←Tab	(X10)	$K	0B
F5	(X20)	%U$E	8005	Enter	(CR)	$M	0D
F6	(X21)	%U$F	8006	ESC	(X11)	%A	1B
F7	(X22)	%U$G	8007	CHAR INSERT	(X43)	%U/A	8021
F8	(X23)	%U$H	8008	LINE INSERT	(X44)	%U/B	8022
F9	(X24)	%U$I	8009	LINE ERASE	(X45)	%U/C	8023
F10	(X25)	%U$J	800A	NO SCROLL	(X46)	%U/D	8024
F11	X26)	%U$K	800B	SEND	(X47)	%U/E	8025

Table 19. TeleVideo Keyboard Keys (Continued)

Key	Mnemonic	Code 39	ASCII Value	Key	Mnemonic	Code 39	ASCII Value
F12	(X27)	%U$L	800C	CHAR DELETE	(X48)	%U/F	8026
F13	(X28)	%U$M	800D	LINE DELETE	(X49)	%U/G	8027
F14	(X29)	%U$N	800E	PAGE ERASE	(X50)	%U/H	8028
F15	(X30)	%U$O	800F	PAGE	(X51)	%U/I	8029
F16	(X31)	%U$P	8010	LINE FEED	(X58)	%U/Z	803A
BACK-SPACE	(X8)	$H	08	CLEAR SPACE	(X59)	%U%F	803B
↑	(UP)	%U%A	801B	BREAK	(X60)	%U%G	803C
↓	(DOWN)	%U%B	801C	CE	(X61)	%U%H	803D
←	(LEFT)	%U%C	801D	PRINT	(X62)	%U%I	803E
→	(RIGHT)	%U%D	801E				
Numeric Keypad							
=	(X54)	%U/L	802C	3	(NP3)	%U3	8033
-	(X55)	%U/M	802D	4	(NP4)	%U4	8034
.	(X56)	%U/N	802E	5	(NP5)	%U5	8035
00	(X15)	%U%J	803F	6	(NP6)	%U6	8036
0	(NP0)	%U0	8030	7	(NP7)	%U7	8037
1	(NP1)	%U1	8031	8	(NP8)	%U8	8038
2	(NP2)	$U2	8032	9	(NP9)	%U9	8039

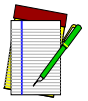
Table 20. DEC Keyboard Keys

Key	Mne-monic	Code 39	ASCII Value	Key	Mne-monic	Code 39	ASCII Value
F1	(X16)	%U$A	8001	Prev Screen	(X38)	%U$W	8017
F2	(X17)	%U$B	8002	Next Screen	(X41)	%U$W	801A
F3	(X18)	%U$C	8003	Lock	(X3)	$C	03
F4	(X19)	%U$D	8004	Num Lock	(X4)	$D	04
F5	(X20)	%U$E	8005	Scroll Lock	(X5)	$E	05
F6	(X21)	%U$F	8006	Backspace	(X8)	$H	08
F7	(X22)	%U$G	8007	Tab	(TABR)	$I	09
F8	(X23)	%U$H	8008	Enter	(CR)	$M	0D
F9	(X24)	%U$I	8009	Esc	(X11)	%A	1B
F10	(X25)	%U$J	800A	Insert Here	(X36)	%U$U	8015
F11	(X26)	%U$K	800B	Remove	(X39)	%U$X	8018
F12	(X27)	%U$L	800C	Ctrl Off	(XC0)	$R	12
F13	(X28)	%U$M	800D	Ctrl On	(XC1)	$S	13
F14	(X29)	%U$N	800E	Shift Off	(XE0)	$V	16
F15	(X30)	%U$O	800F	Shift On	(XE1)	$W	17
F16	(X31)	%U$P	8010	Help	(X43)	%U/A	8021
F17	(X32)	%U$Q	8011	Do	(X44)	%U/B	8022
F18	(X33)	%U$R	8012	Find	(X45)	%U/C	8023
F19	(X34)	%U$S	8013	PF1	(X46)	%U/D	8024

Table 20. DEC Keyboard Keys (Continued)

Key	Mne-monic	Code 39	ASCII Value	Key	Mne-monic	Code 39	ASCII Value
F20	(X35)	%U$T	8014	PF2	(X47)	%U/E	8025
↑	(UP)	%U%A	801B	PF3	(X48)	%U/F	8026
↓	(DOWN)	%U%B	801C	PF4	(X49)	%U/G	8027
←	(LEFT)	%U%C	801D	Select	(X50)	%U/H	8028
→	(RIGHT)	%U%D	801E	Compose Character	(X51)	%U/I	8029
Numeric Keypad							
,	(X54)	%U/L	802C	4	(NP4)	%U4	8034
-	(X55)	%U-	802D	5	(NP5)	%U5	8035
.	(X56)	%U/N	802E	6	(NP6)	%U6	8036
0	(NP0)	%U0	8030	7	(NP7)	%U7	8037
1	(NP1)	%U1	8031	8	(NP8)	%U8	8038
2	(NP2)	$U2	8032	9	(NP9)	$U9	8039
3	(NP3)	%U3	8033				

IBM Terminals



NOTE

Mnemonic keys (XA)–(XF) are "on/off" keys. For example, to encode an Alt+B keystroke combination, you need to turn Alt on by entering (XA1) before the B and then turn it off afterward with (XA0).

Several models of IBM terminals support more than one type of keyboard. Some key definitions depend on the keyboard, while others are the same for all keyboards. Figure 9 and Figure 10 show the layouts of two IBM-terminal keyboards.

To encode a key on your keyboard, find the key in the appropriate figure. Keys that are common to both keyboards appear with their normal labels; see Table 16 for the Code 39 and ASCII equivalents for these keys. Keyboard-specific keys in the figures begin with an X (for example, X11) or have a mnemonic label; to encode those keys, see Table 21.

Figure 9. IBM 102-key keyboard

Figure 10. IBM 122-key keyboard

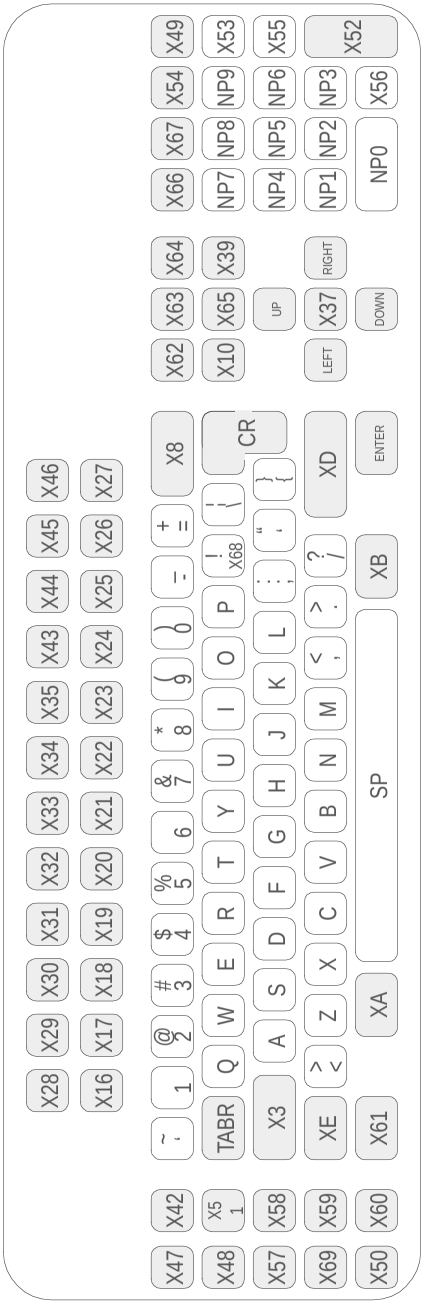


Table 21. IBM Terminal Keyboard Keys

Mne-monic	Code 39	ASCII Value	Mne-monic	Code 39	ASCII Value	Mne-monic	Code 39	ASCII Value
(TABR)	$I	09	(X13)	%C	1D	(X43)	%U/A	8021
(CR)	$M	0D	(X14)	%D	1E	(X44)	%U/B	8022
(Enter)	%U%E	801F	(X15)	%E	1F	(X45)	%U/C	8023
(UP)	%U%A	801B	(X16)	%U$A	8001	(X46)	%U/D	8024
(DOWN)	%U%B	801C	(X17)	%U$B	8002	(X47)	%U/E	8025
(LEFT)	%U%C	801D	(X18)	%U$C	8003	(X48)	%U/F	8026
(RIGHT)	%U%D	801E	(X19)	%U$D	8004	(X49)	%U/G	8027
(XA0)	$N	0E	(X20)	%U$E	8005	(X50)	%U/H	8028
(XA1)	$O	0F	(X21)	%U$F	8006	(X51)	%U/I	8029
(XB0)	$P	10	(X22)	%U$G	8007	(X52)	%U/J	802A
(XB1)	$Q	11	(X23)	%U$H	8008	(X53)	%U/K	802B
(XC0)	$R	12	(X24)	%U$I	8009	(X54)	%U/L	802C
(XC1)	$S	13	(X25)	%U$J	800A	(X55)	%U/M	802D
(XD0)	$T	14	(X26)	%U$K	800B	(X56)	%U/N	802E
(XD1)	$U	15	(X27)	%U$L	800C	(X57)	%U/O	802F
(XE0)	$V	16	(X28)	%U$M	800D	(X58)	%U/Z	803A
(XE1)	$W	17	(X29)	%U$N	800E	(X59)	%U%F	803B
(XF0)	$X	18	(X30)	%U$O	800F	(X60)	%U%G	803C
(XF1)	$Y	19	(X31)	%U$P	8010	(X61)	%U%H	803D
(X1)	$A	01	(X32)	%U$Q	8011	(X62)	%U%I	803E

Table 21. IBM Terminal Keyboard Keys

Mnemonic	Code 39	ASCII Value	Mnemonic	Code 39	ASCII Value	Mnemonic	Code 39	ASCII Value
(X2)	$B	02	(X33)	%U$R	8012	(X63)	%U%J	803F
(X3)	$C	03	(X34)	%U$S	8013	(X64)	%U%V	8040
(X4)	$D	04	(X35)	%U$T	8014	(X65)	%UA	8041
(X5)	$E	05	(X36)	%U$U	8015	(X66)	%UB	8042
(X6)	$F	06	(X37)	%U$V	8016	(X67)	%UC	8043
(X7)	$G	07	(X38)	%U$W	8017	(X68)	%UD	8044
(X8)	$H	08	(X39)	%U$X	8018	(X69)	%UE	8045
(X9)	$J	0A	(X40)	%U$Y	8019	(X70)	%UF	8046
(X10)	$K	0B	(X41)	%U$Z	801A	(X71)	%UH	8047
(X11)	%A	1B	(X42)	%USP	8020	(X72)	%U$U	8048
(X12)	%B	1C						

Numeric Keypad						
(NP0)	%U0 *or* %U/P	8030		(NP5)	%U5 *or* %U/U	8035
(NP1)	%U1 *or* %U/Q	8031		(NP6)	%U6 *or* %U/V	8036
(NP2)	%U2 *or* %U/R	8032		(NP7)	%U7 *or* %U/S	8037
(NP3)	%U3 *or* %U/S	8033		(NP8)	%U8 *or* %U/X	8038
(NP4)	%U4 *or* %U/T	8034		(NP9)	%U9 *or* %U/Y	8039

Connectors

Host Interface Connector

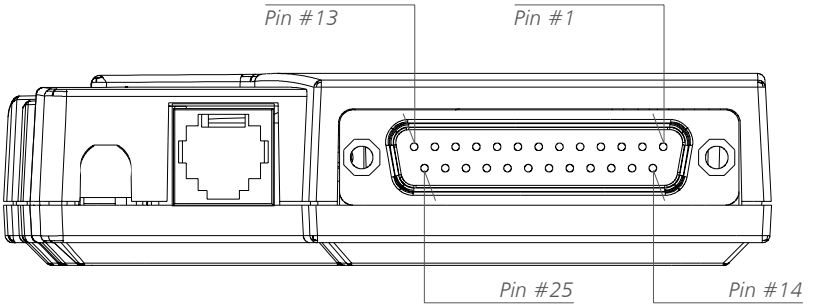


Table 22

Pin #	Description	Usage Notes
1	Audio output	
2	No connection	Reserved
3	No connection	Reserved
4	No connection	Reserved
5	No connection	Reserved
6	Ready	Equivalent of Data Terminal Ready (DTR), Data Set Ready (DSR)
7	Keyboard interface	Keyboard wedge only
8	Keyboard interface	Keyboard wedge only
9	Keyboard interface	Keyboard wedge only

Table 22 (Continued)

Pin #	Description	Usage Notes
10	Keyboard interface	Keyboard wedge only
11	Serial handshake in	Serial configuration only
12	Keyboard interface	Keyboard wedge only
13	Keyboard interface	Keyboard wedge only
14	Ground	Signal ground
15	Keyboard interface	Keyboard wedge only
16	Keyboard interface	Keyboard wedge only
17	Keyboard interface	Keyboard wedge only
18	Keyboard interface	Keyboard wedge only
19	Serial handshake out	Serial configuration only
20	Serial data in	Serial configuration only
21	Serial data out	Serial configuration only
22	Serial tap in	Serial configuration only
23	+5V	
24	+12V	Serial configuration only
25	Ground	Signal ground

Input 1 Connector

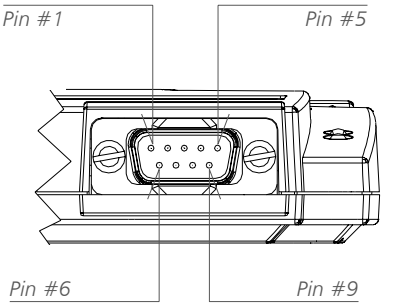


Table 23

Pin #	Usage
1	Laser sync in / mag channel 1 data in
2	Bar code data in
3	Good-read out
4	Mag present in
5	Laser trigger in / mag channel 1 clock in
6	Laser-scan enable out / mag channel 2 clock in
7	Ground
8	Mag channel 2 data in
9	+5V

Input 2 Connector

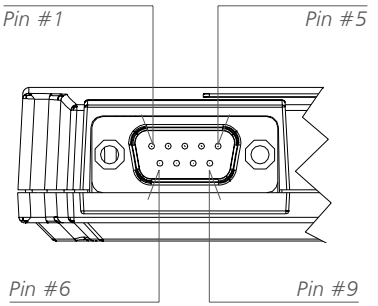
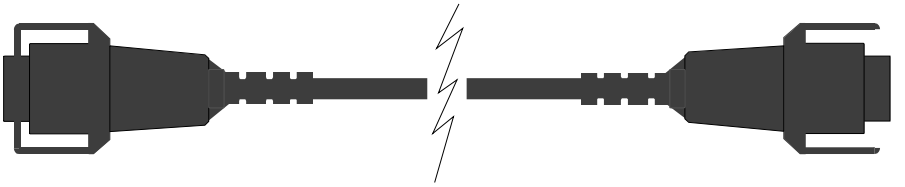


Table 24

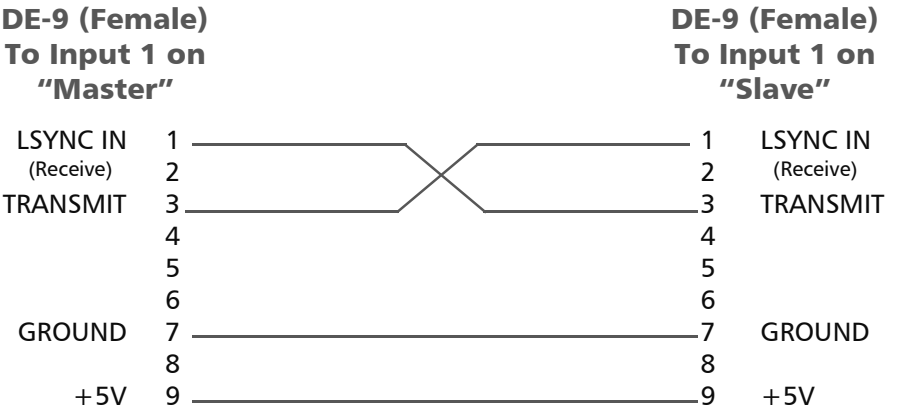
Pin #	Usage
1	Mag channel 1 data in / laser sync in (Dual model only)
2	Mag channel 3 data in / bar code data in (Dual model only)
3	Mag channel 3 clock in
4	Mag present in
5	Mag channel 1 clock in / laser trigger in (Dual model only)
6	Mag channel 2 clock in / laser scan enable out (Dual model only)
7	Ground
8	Mag channel 2 data in
9	+5V

Cloning Cable



NOTE

The clip latches on one connector have been removed for easy switching of slave units. See page 32 for information about cloning.



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NOTES

Technical Support

PSC Website Technical Support

The most comprehensive source for technical support and information for PSC products is the PSC website: www.pscnet.com. The site offers product support, product registration, warranty information, answers to frequently asked questions (product FAQs), product manuals, product tech notes, software updates, patches, demos, and instructions for returning products for repair.

Reseller Technical Support

Another excellent source for technical assistance and information is an authorized PSC reseller. A reseller is directly acquainted with specific types of businesses, application software, and computer systems and, therefore, is in the best position to provide individualized assistance.

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If the solution to a technical support question is not available through the PSC website or a local reseller, contact PSC technical support directly via E-mail at TechSupport@pscnet.com.

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For advanced, cost-effective services, contact the PSC Solutions Group (PSG) at (888) 583-3008 or (541) 683-5700 from outside the United States of America, or psg@pscnet.com. You can also visit PSG's webpage, accessible at www.pscnet.com.

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