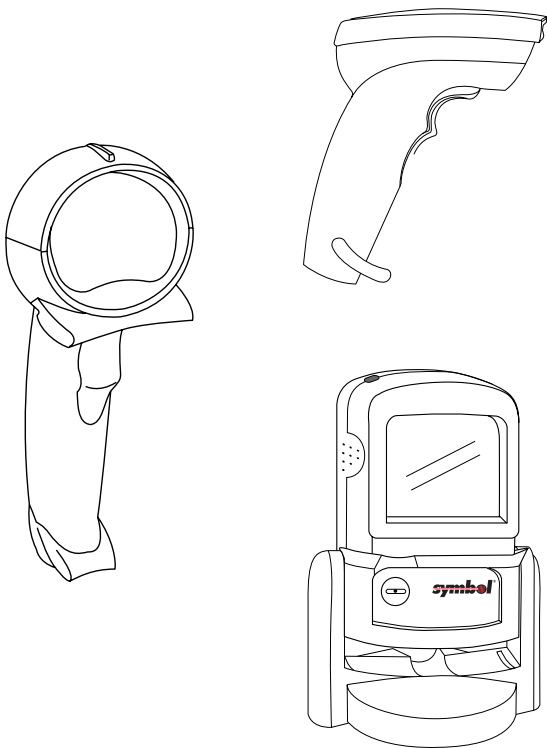


Q R G

S y m b o l S c a n n e r s



symbol[®]

S y m b o l S c a n n e r s

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Patents

This product is covered by one or more of the following U.S. and foreign Patents:

U.S. Patent No. 4,460,120; 4,496,831; 4,593,186; 4,603,262; 4,607,156; 4,652,750; 4,673,805; 4,736,095; 4,758,717; 4,816,660; 4,845,350; 4,896,026; 4,897,532; 4,923,281; 4,933,538; 4,992,717; 5,015,833; 5,017,765; 5,021,641; 5,029,183; 5,047,617; 5,103,461; 5,113,445; 5,130,520; 5,140,144; 5,142,550; 5,149,950; 5,157,687; 5,168,148; 5,168,149; 5,180,904; 5,216,232; 5,229,591; 5,230,088; 5,235,167; 5,243,655; 5,247,162; 5,250,791; 5,250,792; 5,260,553; 5,262,627; 5,262,628; 5,266,787; 5,278,398; 5,280,162; 5,280,163; 5,280,164; 5,280,498; 5,304,786; 5,304,788; 5,306,900; 5,321,246; 5,324,924; 5,337,361; 5,367,151; 5,373,148; 5,378,882; 5,396,053; 5,396,055; 5,399,846; 5,408,081; 5,410,139; 5,410,140; 5,412,198; 5,418,812; 5,420,411; 5,436,440; 5,444,231; 5,449,891; 5,449,893; 5,468,949; 5,471,042; 5,478,998; 5,479,000; 5,479,002; 5,479,441; 5,504,322; 5,519,577; 5,528,621; 5,532,469; 5,543,610; 5,545,889; 5,552,592; 5,557,093; 5,578,810; 5,581,070; 5,589,679; 5,589,680; 5,608,202; 5,612,531; 5,619,028; 5,627,359; 5,637,852; 5,664,229; 5,668,803; 5,675,139; 5,693,929; 5,698,835; 5,705,800; 5,714,746; 5,723,851; 5,734,152; 5,734,153; 5,742,043; 5,745,794; 5,754,587; 5,762,516; 5,763,863; 5,767,500; 5,789,728; 5,789,731; 5,808,287; 5,811,785; 5,811,787; 5,815,811; 5,821,519; 5,821,520; 5,823,812; 5,828,050; 5,850,078; 5,861,615; 5,874,720; 5,875,415; 5,900,617; 5,902,989; 5,907,146; 5,912,450; 5,914,478; 5,917,173; 5,920,059; 5,923,025; 5,929,420; 5,945,658; 5,945,659; 5,946,194; 5,959,285; 6,002,918; 6,021,947; 6,047,892; 6,050,491; 6,053,413; 6,056,200; 6,065,678; 6,067,297; 6,068,190; 6,082,621; 6,084,528; 6,088,482; 6,092,725; 6,101,483; 6,102,293; 6,104,680; 6,114,712; 6,115,678; 6,119,944; 6,123,265; 6,131,814; 6,138,180; 6,142,379; D305,885; D341,584; D344,501; D359,483; D362,453; D363,700; D363,918; D370,478; D383,124; D391,250; D405,077; D406,581; D414,171; D414,172; D418,500; D419,548; D423,468; D424,035; D431,158; D430,159; D431,562.

Invention No. 55,358; 62,539; 69,060; 69,187 (Taiwan); No. 1,601,796; 1,907,875; 1,955,269 (Japan).

European Patent 367,299; 414,281; 367,300; 367,298; UK 2,072,832; France 81/03938; Italy 1,138,713.

rev. 09/00

Purpose

This *Flash Programmer's Guide* describes how to use the Flash Utility program to download/upload software to and from a Symbol scanner. The Flash Utility program is to be used by Symbol certified personnel only (including VARs and service-trained customers).

Installing the Flash Utility

1. Create a local directory and copy the Flash Utility executable (`a:\flash.exe`) below to it. Always execute the program from this local directory.
2. All the scanner's software components required for Flash operation (except the product code and EEparameters) are provided on the associated diskette. Copy these files to the directory created in Step 1.

Operational Requirements

The equipment listed below is required for Flash Utility operation. Additional equipment is needed for the Symbol scanner (see *Symbol Scanner Requirements* on page 2).

- PC (486 or better) with a serial comm port (com1, com2, etc.) running Windows.
- The Flash Utility program (`flash.exe`)

Depending on the desired Flash operation, the following software components (files) are required. These components are formatted for Flash downloading (the file extensions are `.FDL`); do not use any other file formats. Also, do not use components for different scanners, or for different revisions of the same scanner.

Component Name	Component Description	Required to....	Example
Product-Code	The scanner's operational software	... download a revision of operational software to the scanner	nbrwnaca.fdl (must be obtained from Symbol)
EParameters (optional)	The scanner's power-up operating parameters. These may be different than defaults, but scanning the "Set Defaults" parameter bar code permanently erases these settings.	... download operating parameters to the scanner. This can be done separately or in conjunction with downloading operational software.	nbrwnpaa.fdl (must be obtained from Symbol)

Symbol Scanner Requirements

The equipment listed below is required when using the Flash utility with a Symbol scanner:

- Symbol scanner
- Symbol scanner flash programming cable
- External power supply (Symbol p/n 50-14000-008, 50-14000-009, 50-14000-010, or 50-14000-058)
- Disk containing the executable `flash.exe` (Symbol p/n 21-31012-01)

Note: Upon an initial Flash operation, the scanner must be powered before starting the Flash utility operation. Upon a failed Flash operation, the scanner must be re-powered before starting the Flash utility operation.

Flash Utility Operation

To run the Flash utility program, launch a Windows application with a “launch script” (Windows File Manager may be used for this). The launch script defines the mode of operation, options and scanner component file names as described in the following sections.

Launch Script Syntax

The launch script syntax for all Flash operations is:

```
flash <operation> [P1 P2...] NULL [f1 f2]
```

Where:

- flash is the Flash utility applications name
(a path may be specified).
- <operation> is the type of Flash operation to perform
(see *Operations* on page 4).
- [-P1 -P2...] is 1 or more options providing additional program
control (see *Options* on page 4).
- NULL is a scanner-specific Flash-Loader file required only
for older versions of the Flash utility. For the
program on the associated diskette, this is NULL.
Note: This must be uppercase.
- [f1 f2...] is 1 or 2 files required to perform the Flash operation
(see *Files* on page 5).

Operations

Permissible Flash operations are listed below. Replace the launch script parameter *<operation>* with one from the first column of the list. **Note:** These must be uppercase. Depending on the intended Flash operation, specific files must be included in the launch script (see *Flash Operation Examples* on page 6).

DL	Download product code & EEPROMs
DL-CODE	Download product code only
DL-EEPROMS	Download EEPROMs only
UL	Upload (entire/partial Flash)
UL-CODE	Upload product code only
UL-EEPROMS	Upload EEPROMs

Options

Following are the options *[-P1 -P2...]* supported (* indicates defaults, ** are not supported by Symbol scanners:

-Cd	Specifies the PC comport to use (i.e., -C1=com1, *-C2=com2, etc.)
-Bd	Specifies the max baud rate (-B0=9600, -B1=19200, -B2=38400, **-B3=57600, -B4=76800, **-B5=115200, *-B6=153600)
-Ps	Specifies a path for all files (all files following in script)
-Axxxx,xxxx	Start address and length (used for UL command only)
-Wd	Add wait time between packets (use if communication errors occur)
-X	Enable continuous mode (queries user to perform the operation again)
-L	Log results to file log.dat in local directory

F l a s h P r o g r a m m i n g

Files

The following are allowable launch script files (*[f1 f2...]*):

- | | |
|--------------|--|
| <prod.fdl> | The scanner's operational software
(i.e., nbrwnaca.fdl) |
| <eeps.fdl> | The scanner's power-up operating parameters
(i.e., nbrwnpaa.fdl) |
| <loader.fdl> | The scanner's specific Flash-Loader software
(should be NULL) |
| <anyfile> | Any file name, this file captures UpLoaded code
(i.e., capture.dat) |

Flash Operation Examples

Following are examples of launch scripts for various configurations and operations. The LS 6004 is used for these examples. **Note:** Examples assume the .FLD files are stored in the local directory `c:\symbol\ls6004`.

Download Launch Script Examples

1. To program (or download) a scanner with operational software, use the following launch script:

```
Flash DL-CODE NULL c:\symbol\ls6004\nbrwnaca.fdl
```

2. To eliminate the path, use the launch script below to perform the same operation as example #1. This script uses the optional path identifier, which is used for the remaining examples.

```
Flash DL-CODE -Pc:\symbol\ls6004\ NULL nbrwnaca.fdl
```

3. To program a scanner with operational software and load the EEPROM parameters, use the following launch script:

```
Flash DL -Pc:\symbol\ls6004\ NULL nbrwnaca.fdl nbrwnpaa.fdl
```

4. To program several scanners with operational software and load the EEPROM parameters at the “max-baud-rate” in continuous mode (-X), use the launch script below.

```
Flash DL -Pc:\symbol\ls6004\ -X NULL nbrwnaca.fdl nbrwnpaa.fdl
```

5. To program a scanner with operational software for a PC which only supports baud rates up to 9600, use the “baud-rate” option to specify 9600 (-B0) as shown below. (The Flash-Utility program expects the PC to support higher baud rates; running the Flash-Utility program will fail without the baud command below).

```
Flash DL-CODE -B0 -Pc:\symbol\ls6004\ NULL nbrwnaca.fdl
```

Upload Launch Script Examples

1. To read (or Upload) and store a scanner’s operational software into the file `code.dat`, use the launch script:

```
Flash UL-CODE -Pc:\symbol\ls6004\ NULL code.dat
```


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2. To read and store a scanner's entire Flash memory into the file `entire.dat`, use the launch script:

```
Flash UL -Pc:\symbol\ls6004\ NULL entire.dat
```

3. To read and store a portion of the scanner's Flash memory into the file `partial.dat`, use the launch script below. The optional parameter `-A8000,10000` specifies the start address and length for the partial data.

```
Flash UL -A8000,10000 -Pc:\symbol\ls6004\ NULL partial.dat
```

4. To read and store a scanner's EEPROM parameters into the file `ee-ps.dat` use the launch script:

```
Flash UL-EEPROMS -Pc:\symbol\ls6004\ NULL ee-ps.dat
```

Flash-Operation Errors

Using this Flash utility program can produce two types of errors: Script-Syntax errors, and Flash Programming errors. When a Flash operation is completed, an error code is produced. This error code is a hex number; the tables that follow translate this error code. An error code of zero indicates the operation was successful.

Error Log

The launch script and results (error code) of each Flash operation are logged to the file `log.dat` in your local directory. This file provides a history of the Flash operation. To enable the error logging, include a `-L` in the launch script.

Launch Script Syntax Errors

Most of these are displayed on the output screen as they are encountered. These are typically syntax errors in the launch script (invalid operations, options, etc.) or incorrect or missing file names. Most of these errors can be corrected by fixing the launch script or ensuring the specified files exist.

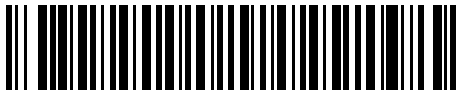
Error	Cause of Error
0x21	Error opening file
0x22	Error reading file
0x23	Error writing file
0x31	Error opening comm port
0x32	Error configuring comm port (may be invalid baud)
0x41	Command specified in launch script is invalid
0x42	Option specified in launch script is invalid
0x43	Launch script syntax is invalid
0x44	The Flash command is not supported
0x50-0x5F	Internal error (defect if this error occurs)

Flash Programming

Flash Programming Errors

These are errors in the actual Flash-Utility operation, and are only displayed as an error code at completion of the Flash operation. The scanner's LED continually blinks the error code that is displayed.

Error	Cause of Error
0x01	Receive time-out error
0x02	STX not found
0x03	Packet "len" too long
0x04	Packet chksum failed
0x05	Code chksum failed
0x06	Received block > Block-Size
0x07	General command error
0x08	Illegal command ID
0x09	Unsupported command ID
0x0A	Out-Of-Range Addr
0x0B	Blk# received out-of-sequence
0x0C	Command received out-of-sequence
0x0D	Final download check
0x0E	Specified baud not supported



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