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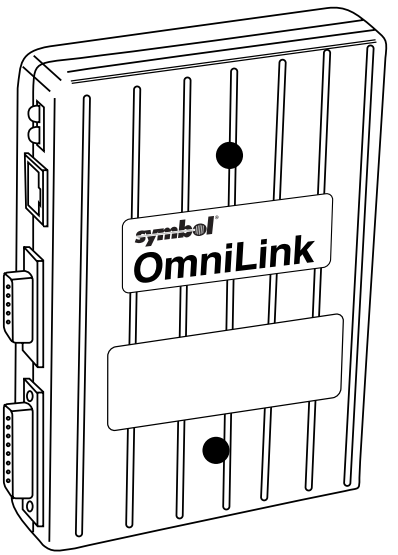
LL 500 Flash Programming Guide



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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.4,360,798; 4,369,361; 4,387,297; 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; 5,229,591; 5,230,088; 5,235,167; 5,243,655; 5,247,162; 5,250,791; 5,250,792; 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; 5,578,810; 5,581,070; 5,589,679; 5,589,680; 5,608,202; 5,612,531; 5,619,028; 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; 5,745,794; 5,754,587; 5,658,383; D305,885; D341,584; D344,501; D359,483; D362,453; D362,435; D363,700; D363,918; D370,478; D383,124; D391,250.

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.

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Purpose

This *Flash Programmer's Guide* describes how to use the Flash Utility program to download/upload software to and from LL 500s not containing external prom modules. 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 LL 500 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 LL 500 (see *LL 500 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 revisions of the LL 500.

Component Name	Component Description	Required to....	Example
Product-Code	The LL 500's operational software	... download a revision of operational software to the LL 500	AKDBAH.FDL (must be obtained from Symbol)
EEParameters (optional)	The LL 500'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 LL 500. This can be done separately or in conjunction with downloading operational software.	EEPS.FDL (must be obtained from Symbol)

LL 500 Requirements

The equipment listed below is required when using the Flash utility with the LL 500:

- LL 500
- LL 500 flash programming Pentapus adapter cable (Symbol p/n 25-31627-01)
- One of the following LL 500 power supplies, Symbol p/n:
  50-04000-037 50-04000-059
  50-04000-040 50-04000-084
  50-04000-041 50-04000-085
  50-04000-058

- One of the following LL 500 aux RS-232 cables, Symbol p/n:
  25-05395-01 RS-232, TxD Pin 2, Male
  25-04814-01 RS-232, TxD Pin 2, Female
- Disk containing the executable `flash.exe`
  (Symbol p/n 21-31012-01)

Note: Upon an initial Flash operation, the LL 500 must be powered before starting the Flash utility operation. Upon a failed Flash operation, the LL 500 must be re-powered before starting the Flash utility operation.

Setup

To connect the LL 500 to the host for flash programming:

1. Connect the LL 500 flash programming Pentapus adapter cable to the LL 500's RS-232C aux port.
2. Connect a standard LL 500 aux RS-232 cable between the adapter cable and a serial comm port of the PC.
3. Connect the power supply to the LL 500.

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 LL 500 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 5).
[-P1 -P2...]	is 1 or more options providing additional program control (see *Options* on page 5).
`NULL`	is an LL 500-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 6).

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 & EEParams
`DL-CODE`	Download product code only
`DL-EEPARAMS`	Download EEParameters only
`UL`	Upload (entire/partial Flash)
`UL-CODE`	Upload product code only
`UL-EEPARAMS`	Upload EEParameters

Options

Following are the options *[-P1 -P2...]* supported (***** indicates defaults, ** are not supported by the LL 500):

`-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

Files

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

`<prod.fdl>`	The LL 500's operational software (i.e., `AKDBAH.FDL`)
`<eeps.fdl>`	The LL 500's power-up operating parameters (i.e., `EEPS.FDL`)
`<loader.fdl>`	The LL 500'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. **Note:** Examples assume the .FDL files are stored in the local directory `c:\symbol\ll500`.

Download Launch Script Examples

1. To program (or download) the LL 500 with operational software, use the following launch script:
   ```
   Flash  DL-CODE  NULL c:\symbol\ll500\AKDBAH.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\ll500\ NULL AKDBAH.FDL
   ```
3. To program the LL 500 with operational software and load the EEParameters, use the following launch script:
   ```
   Flash  DL  -Pc:\symbol\ll500\ NULL AKDBAH.fdl EEPS.FDL
   ```
4. To program several LL 500s with operational software and load the EEParameters at the "max-baud-rate" in continuous mode (`-X`), use the launch script below.
   ```
   Flash  DL  -Pc:\symbol\ll500\  -X  NULL AKDBAH.FDL EEPS.FDL
   ```

5. To program the LL 500 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\ll500\ NULL AKDBAH.FDL
```

Upload Launch Script Examples

1. To read (or Upload) and store the LL 500's operational software into the file `code.dat`, use the launch script:

```
Flash  UL-CODE  -Pc:\symbol\ll500\ NULL code.dat
```

2. To read and store the LL 500's entire Flash memory into the file `entire.dat`, use the launch script:

```
Flash  UL  -Pc:\symbol\ll500\ NULL entire.dat
```

3. To read and store a portion of the LL 500'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\ll500\ NULL partial.dat
```

4. To read and store the LL 500's EEParameters into the file `EEPS.DAT` use the launch script:

```
Flash  UL-EEPARAMS  -Pc:\symbol\ll500\ NULL  EEPS.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 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 LL 500'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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