AT89STK-10 Starter Kit

Hardware User Guide
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Section 1

Introduction

This document describes the Flash Evaluation Board dedicated to the AT89C5130/31A and the AT8xC5122D USB microcontrollers. This board is designed to enable an easy evaluation of the Mass Storage USB class using demonstration firmware (refer to firmware Guide). It must be plugged to a CPU board (AT89C5130/31A or AT8xC5122 D evaluation board).

1.1 Features

The Flash evaluation board provides the following features:

- Support the following microcontrollers:
  - AT89C5130A
  - AT89C5131A
  - AT8xC5122D
- No external power supply required
  - Power supplied by the USB line via the CPU board (AT89C5130/31A or AT8xC5122 D evaluation board)
- On board DataFlash memory (ATMEL AT45DB321B, 4MB)
- Support Nand Flash memory (MICRON MT29F2GO8AABWP, 256MB) - Add-on board
- Support Pluggable DataFlash Card (ATMEL AT45DCB004C, 4 MB)
Figure 1-1. Flash Evaluation Board

Figure 1-2. Flash Evaluation Board with the related memories

Add-on Nand Flash Board
Respect this way to plug it

On board Data Flash

Jumpers to select AT89C5130A, 31A & AT8xC5122D

Data Flash Card
Must be plugged upside down
2.1 CPU board selection

As mentioned above, the Flash evaluation board can be used either with the AT89C5130/31 or AT8xC5122 D. The figure below show the jumpers state to enable each mode:

Figure 2-1. AT8xC5130/31AD Jumpers state

The figures below show how to plug the Flash evaluation board to AT89C5130/31A or AT8xC5122 D evaluation board (AT89STK05 or AT89STK03):
Figure 2-3. Flash evaluation board plugged to AT89C5130/31A evaluation board (AT89STK05)

Warning: Before plugging the Flash Evaluation Board (AT89STK10) to the AT89C5130/31A evaluation board (AT89STK05), disconnect the three LEDs by removing the solder on solder straps. The figure below shows the location of these solder straps:

Figure 2-4. AT89STK-05 - LEDs Disconnection

Remove the solder on these solder straps
2.2 Power supply

The Flash Evaluation Board power is supplied by the CPU board. The power supply must be set to 3.3V for the AT89C5131A Evaluation board and 3.6V for the AT8xC5122D Evaluation board. The figure 2.5 shows the different possible configurations of the AT89C5130/31A Evaluation board (AT89STK05) and the figure 2.6 shows how to select 3.6V on the AT8xC5122D Evaluation board in the 3.6V power supply configuration:

**Figure 2-5.** Flash evaluation board plugged to AT8xC5122D evaluation board (AT89STK03)

**Figure 2-6.** Power supply (3.3V) - AT89C5131A Evaluation Board (AT89STK05)
2.3 Memory selection

The Flash evaluation board supports three Flash memories (Pluggable Nand Flash, Pluggable DataFlash Card and On board DataFlash). Just one memory can be activated at the same time.

To configure the board with your specific usage, you have to put the solder straps in the right state.

*Figure 2-8. Solder straps*

```
“Open”  “Close”
```

*Solder location*

*Figure 2-9. Solder Straps location*

The tables hereunder show the configuration related to each memory mode:
Table 1. Nand Flash Configuration (Default configuration)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Name</th>
<th>Function</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP1..8</td>
<td>D0..7</td>
<td>Connect Data P0 on onboard dataflash</td>
<td>Open</td>
</tr>
<tr>
<td>SP9</td>
<td>CS</td>
<td>Connect CS of internal dataflash</td>
<td>Open</td>
</tr>
<tr>
<td>SP10</td>
<td>R/nB</td>
<td>Connect R/nB on dataflash</td>
<td>Open</td>
</tr>
<tr>
<td>SP 11</td>
<td>SER</td>
<td>Select DataFlash in serial mode</td>
<td>Open</td>
</tr>
<tr>
<td>SP 12</td>
<td>PAR</td>
<td>Select DataFlash in parallel mode</td>
<td>Open</td>
</tr>
<tr>
<td>SP 13</td>
<td>VccP</td>
<td>Connect power supply of parallel interface of DataFlash</td>
<td>Open</td>
</tr>
<tr>
<td>SP 14</td>
<td>GNDP</td>
<td>Connect ground of parallel interface of DataFlash</td>
<td>Open</td>
</tr>
<tr>
<td>SP 15</td>
<td>CS_ext</td>
<td>Connect CS of external dataflash</td>
<td>Open</td>
</tr>
</tbody>
</table>

Table 2. On Board DataFlash Configuration (Serial mode)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Name</th>
<th>Function</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP1..8</td>
<td>D0..7</td>
<td>Connect bus P0 on onboard dataflash</td>
<td>Open</td>
</tr>
<tr>
<td>SP9</td>
<td>CS</td>
<td>Connect CS of internal dataflash</td>
<td>Close</td>
</tr>
<tr>
<td>SP10</td>
<td>R/nB</td>
<td>Connect R/nB on dataflash</td>
<td>Close/Open</td>
</tr>
<tr>
<td>SP 11</td>
<td>SER</td>
<td>Select DataFlash in serial mode</td>
<td>Close</td>
</tr>
<tr>
<td>SP 12</td>
<td>PAR</td>
<td>Select DataFlash in parallel mode</td>
<td>Open</td>
</tr>
<tr>
<td>SP 13</td>
<td>VccP</td>
<td>connect power supply of parallel interface of DataFlash</td>
<td>Open</td>
</tr>
<tr>
<td>SP 14</td>
<td>GNDP</td>
<td>connect gnd of parallel interface of DataFlash</td>
<td>Open</td>
</tr>
<tr>
<td>SP 15</td>
<td>CS_ext</td>
<td>Connect CS of external dataflash</td>
<td>Open</td>
</tr>
</tbody>
</table>

Table 3. On Board DataFlash Configuration (Parallel mode)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Name</th>
<th>Function</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP1..8</td>
<td>D0..7</td>
<td>connect bus P0 on onboard dataflash</td>
<td>Close</td>
</tr>
<tr>
<td>SP9</td>
<td>CS</td>
<td>Connect CS of internal dataflash</td>
<td>Close</td>
</tr>
<tr>
<td>SP10</td>
<td>R/nB</td>
<td>Connect R/nB on dataflash</td>
<td>Close</td>
</tr>
<tr>
<td>SP 11</td>
<td>SER</td>
<td>put DataFlash in serial mode</td>
<td>Open</td>
</tr>
<tr>
<td>SP 12</td>
<td>PAR</td>
<td>put DataFlash in parallel mode</td>
<td>Close</td>
</tr>
<tr>
<td>SP 13</td>
<td>VccP</td>
<td>connect power supply of parallel interface of DataFlash</td>
<td>Close</td>
</tr>
<tr>
<td>SP 14</td>
<td>GNDP</td>
<td>connect gnd of parallel interface of DataFlash</td>
<td>Close</td>
</tr>
<tr>
<td>SP 15</td>
<td>CS_ext</td>
<td>Connect CS of external dataflash</td>
<td>Open</td>
</tr>
</tbody>
</table>

The firmware doesn’t support this mode.
### Table 4. Pluggable DataFlash Card Configuration

<table>
<thead>
<tr>
<th>Reference</th>
<th>Name</th>
<th>Function</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP1..8</td>
<td>D0..7</td>
<td>connect bus P0 on onboard dataflash</td>
<td>Open</td>
</tr>
<tr>
<td>SP9</td>
<td>CS</td>
<td>Connect CS of internal dataflash</td>
<td>Open</td>
</tr>
<tr>
<td>SP10</td>
<td>R/nB</td>
<td>Connect R/nB on dataflash</td>
<td>Open</td>
</tr>
<tr>
<td>SP 11</td>
<td>SER</td>
<td>put DataFlash in serial mode</td>
<td>Open</td>
</tr>
<tr>
<td>SP12</td>
<td>PAR</td>
<td>put DataFlash in parallel mode</td>
<td>Open</td>
</tr>
<tr>
<td>SP 13</td>
<td>VccP</td>
<td>connect power supply of parallel interface of DataFlash</td>
<td>Open</td>
</tr>
<tr>
<td>SP 14</td>
<td>GNDP</td>
<td>connect gnd of parallel interface of DataFlash</td>
<td>Open</td>
</tr>
<tr>
<td>SP 15</td>
<td>CS_ext</td>
<td>Connect CS of external dataflash</td>
<td>Close</td>
</tr>
</tbody>
</table>
3.1 Nand Flash Application
3.2 Serial Dataflash Application
4.1 Flash Evaluation Board

J5
SER/nPAR
SO
CLK
SI

HE13_4 FD

J3
1  NF nWP2
  2
  3
  4  NF nWP0
  5  Vcc
  6  NF CLE
  7  NF ALE
  8  NF R/nB1
  9  NF nCE0
 10  NF R/nB0
 11  NF nCE1
 12  NF nRE
 13  NF nWE

HE13_13 FD

J4
nWP  NF nWP3
  2
  3
  4  NF nWP1
  5  P0_5
  6  NF D6
  7  NF D5
  8  NF D4
  9  NF D3
 10  NF D2
 11  NF D1
 12  NF D0
 13  VSS

HE13_13 FD

J6
1  P2_6
  2  P2_7
  3  C51_ALE
  4  RESET

HE13_4 FD

R4
10 K

Vcc
4.2 Nand Flash Add-on board

Figure 4-1. Schematic
Figure 4-2. Component Side

Figure 4-3. Solder Side