EM100Pro
Hardware Connection and
Accessory Usage

DediProg provides different methods to let users connect EM100Pro to the applications.

The common scenarios that users may face:

- SPI Flash is soldered on board (no pins header on board)
- SPI Flash is in the socket (no pins header on board)
- On board pins header compatible with SPI Flash pin out
- On board pins header compatible with SF100 pin out
- On board pins header with no standard pin out
- Hold Pin is connected to Vcc without pull up resistor
EM100Pro pins assignment
EM100Pro Pin out

- Signals GND, Vcc, CS, CLK, MOSI and MISO have to be connected to application.
- Two Serial Flash can be supported when the SPI bus is shared.
- **In Quad IO:** DQ0(MOSI), DQ1(MISO), DQ2 (Wp), DQ3(Hold)
- Hold signal can be connected to drive the Hold pin of the on board Serial Flash low and disable it. This is only possible if Hold pin is driven high through pull-up resistor and application is not working in quad IO mode.
- EM100Pro is monitoring application Vcc to enable or disable the SPI outputs.
  - Vcc>2.7V then SPI outputs are enabled
  - Vcc<2.7V then SPI outputs are switched in High impedance to protect the application controller

**EM100Pro pins assignments**

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<td>17</td>
<td>15</td>
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<td>9</td>
<td>7</td>
<td>5</td>
<td>3</td>
<td>1</td>
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<tr>
<td>GND</td>
<td>CTRL</td>
<td>CTRL</td>
<td>CTRL</td>
<td>3.3V</td>
<td>GND</td>
<td>WP1/DQ2</td>
<td>MISO/DQ1</td>
<td>CS1</td>
<td>Hold2</td>
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<tr>
<td>CTRL</td>
<td>CTRL</td>
<td>3.3V</td>
<td>NC</td>
<td>Wp2</td>
<td>MOSI/DQ0</td>
<td>CLK</td>
<td>Hold1/DQ3</td>
<td>Vcc</td>
<td>CS2</td>
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SPI Flash Soldered on Board Without Pins Header on the Board
User can connect the EM100Pro to the SPI Flash soldered on board directly by using our DediProg SO Test Clip. Work with SO8N, SO8W, SO16W.

**Caution:** If the on board Serial Flash Hold pin is directly connected to Vcc (no pull-up resistor or if the on board Serial Flash do not support the Hold pin feature (some Atmel parts), please refer to the “Hold pin management” slide. This connection is not possible in Quad IO mode.
User can remove the SPI Flash and solder DediProg 1.27mm pitch SMT Pin Header in place of the SPI Flash. Then connect EM100Pro for SPI flash emulation or our SPI Flash reference board if trial has to be performed with real Serial Flash. Work with SO8N, SO8W, SO16W.

**Caution:** If the on board Serial Flash Hold pin is directly connected to Vcc (no pull-up resistor) then EM100Pro hold pin must be configured as floating or input in the DediProg software.

1) Remove the on board SPI Flash

2) Solder the SMT Header

3) Connect EM100Pro for emulation

4) Connect SPI Flash reference board for trial with real Serial flash
SPI Flash in the Engineering Socket Without Pins Header on the Board
Connect EM100Pro with SO Engineering Socket 1/2

Engineers can solder the engineering socket in place of the Serial flash to have the option to switch easily from EM100Pro to real Serial Flash. The EM100Pro will be connected by inserting first a special SMT male header provided by DediProg in the engineering socket.

Caution: If the on board Serial Flash Hold pin is directly connected to Vcc (no pull-up resistor) then EM100Pro hold pin must be configured as floating or input in the DediProg software.

Please contact DediProg for special SMT Header
Connect EM100Pro with SO Engineering Socket 2/2

1) Serial Flash in Engineering socket

2) Remove the Serial Flash from the Engineering socket

3) Insert the DediProg Special SMT connector

4) Slide the SMT connector between the socket contact pins and the plastic so that connector pins are shifted outside the socket then you can insert the other side.

5) Plug the EM100Pro cable in the SMT connector.
Connect EM100Pro with DIP Engineering Socket

If the application is using DIP engineering socket to insert Serial flash in DIP package
Then EM100Pro can easily been plugged by using our DIP cable.

**Caution:** If the on board Serial Flash Hold pin is directly connected to Vcc (no pull-up resistor) then EM100Pro hold pin must be configured as floating or input in the DediProg software.

DIP engineering socket

Connect EM100Pro With the DIP cable
On Board Pins Header
Compatible with SPI Flash Pin Out
Connect EM100Pro with EM100Pro Cable

If the application board has been designed with the 2.54mm pitch pin Header according to the SO8 Serial flash pin out (see table below) then EM100Pro can be connected with the standard EM100Pro cable (included in the shipment).

**Caution:** If the on board Serial Flash Hold pin is directly connected to Vcc (no pull-up resistor or if the on board Serial Flash do not support the Hold pin feature (some Atmel parts), please refer to the “Hold pin management” slide.

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
<th>Pin</th>
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<tbody>
<tr>
<td>1</td>
<td>CS1</td>
<td>2</td>
<td>Vcc</td>
</tr>
<tr>
<td>3</td>
<td>MISO/DQ1</td>
<td>4</td>
<td>Hold1/DQ3</td>
</tr>
<tr>
<td>5</td>
<td>WP1/DQ2</td>
<td>6</td>
<td>CLK</td>
</tr>
<tr>
<td>7</td>
<td>GND</td>
<td>8</td>
<td>MOSI/DQ0</td>
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On board Pins Header
Compatible with SF100 Pin Out
Connect EM100Pro to SF100 Pin Header

If the application board has been designed with the 2.54mm pitch pin Header compatible with our SF100 pin out (see table below) then EM100Pro can be connected as follow:

1. Using the DediProg EM100Pro Split cable. If the real Serial Flash is unsoldered from the board then no extra signals has to be connected (Vcc, GND, CS, CLK, MISO and MOSI)

2. If Serial Flash is still soldered on the board then user has to connect the Serial flash Hold pin to the EM100Pro Hold signal or to the ground to disable it by using our Grabber clip.

<table>
<thead>
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<th>Pin Header (top view)</th>
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<tbody>
<tr>
<td>1</td>
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<tr>
<td>3</td>
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<td>5</td>
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**Remark:** the pin hold is not Available on this header. On board Serial Flash will have to be disabled Like illustrated in both pictures.

**Caution:** If the on board Serial Flash Hold pin is directly connected to Vcc (no pull-up resistor or if the on board Serial Flash do not support the Hold pin feature (some Atmel parts), please refer to the “Hold pin management” slide.
Not standard
On Board Pins Header
Connect EM100Pro to Not Standard Pin Header

If the on board header is not standard then user can use our EM100Pro split cable for adaptation. Pin header must provide at least Vcc, Gnd, CS, CLK, MISO and MOSI. If the on board Serial Flash is still on the board then Hold pin need to be used to disable it.

**Caution:** If the on board Serial Flash Hold pin is directly connected to Vcc (no pull-up resistor or if the on board Serial Flash do not support the Hold pin feature (some Atmel parts), please refer to the “Hold pin management” slide.
On Board
Hold Pin Management
Case 1: The Real Serial Flash is still on board when EM100Pro is connected. (soldered or in engineering socket).

1) **Hold pin is connected to Vcc through a pull-up resistor**
   - If EM100Pro Hold signal is connected to the application (Via pin header, SO Test Clip or grabber) then it can be used to disable the on board Serial Flash. The EM100Pro Hold signal can be configured low in the EM100Pro software.
   - If the EM100Pro Hold signal is not connected to the application then SPI flash Hold pin has to be connected to the ground with Grabber to disable it.

2) **Hold pin is connected directly to Vcc in the application board (no pull-up)**
   In this case, the on board Serial Flash cannot be disabled and have to be removed from the board. See next slide.

3) **SPI Flash does not support Hold feature (some Atmel parts) or used in Quad IO**
   In this case, the on board Serial Flash cannot be disabled and have to be removed from the board. See next slide.
Case 2: The Real Serial Flash has been removed from the board.

1) Hold pin is connected to Vcc through a pull-up resistor
   No issue, EM100Pro hold signal can be kept connected to application with any setting (driven low, Floating or input).

2) Hold pin is connected directly to Vcc in the application board (no Pull-up)
   In this case and if EM100Pro Hold pin is connected, the EM100Pro hold pin must be configured as floating or input in the DediProg software.
Contact us

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