



Getting Connected With the COP8Flash Emulator

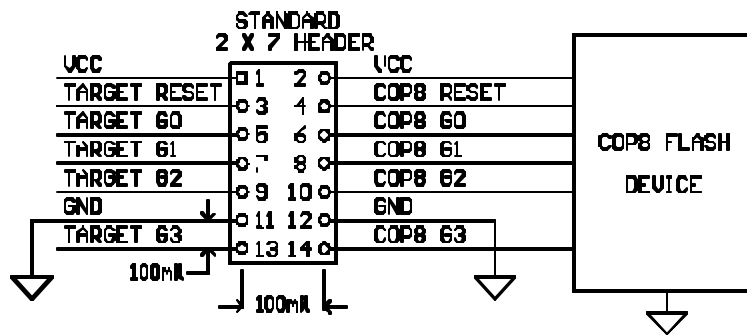
There are four ways to connect, and use the COP8 Flash Emulator:

1. First and preferably, the target application board is designed for the emulator to be used “on-board”, with the COP8 Flash Device in its normal position on the board you are developing, and the emulator connected via a ribbon cable to a 2x7 header near the COP8 device.
2. Second, if your application board was designed without the 2x7 header, then an emulation Package Adapter (COP8-EMFA-xxx) may be used, with the adapter being attached in place of the COP8 (soldered, or plugged into a socket), and the emulator connected via a ribbon cable to a 2x7 header on the adapter.
3. Third, if some limited debugging is required prior to any application board being available, there is a Null Target Board (COP8-EMFA-xxN) included with the emulator which has an on-board 68pin COP8CDR9 device with clock oscillator, and pinout test points..
4. Fourth, if an application board is not available and you need to fully exercise your code, you can use a COP8FLASH Reference Design board which includes a 2x7 emulator header (COP8-REF-xxxx).

The 2x7 Header pinouts, and these four methods are described below.

2x7 Header

The physical connection between the COP8 Flash Emulator and your application board, Package Adapter, or Null Target is through a ribbon cable to a 2x7 header.



The characteristics of the 2x7 header are:

- 100 mil spacing between all pins. (100 mils = 0.1”)
- Pins are square, 25 mils on each side.
- The header has a 230 mil insertion length (how much of the pin inserts into the connector).
- Example manufacturer and part numbers:

<u>Header</u>	<u>Shorting Blocks</u>
3M: 2380-6121TN	OUPIN: 2006-A U
Molex: 10-88-1801	

Note that both the 3M and the Molex part numbers are for 2x40 headers. You must “break” them to create a 2x7 header. This is easy to do, as the parts have been designed for this.

1) Emulator Connection On-Board

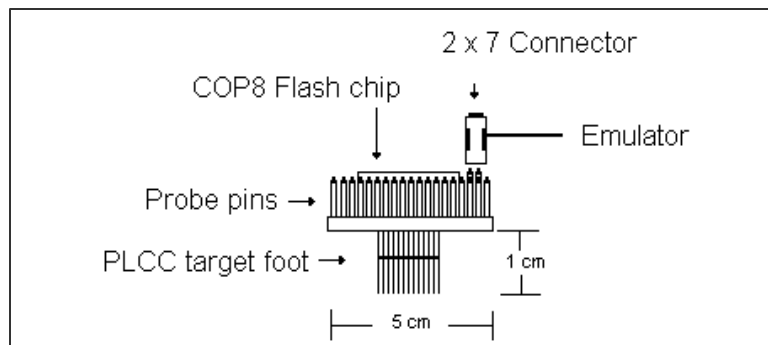
We strongly recommend that you use this method for debugging. By designing your application board with a 2x7 header located near Port G of the COP8 Flash Device, you provide for superior analog performance for your debugging and development

When the emulator's cable is connected to the header, the emulator controls the operation of the COP8 Flash Device on your application board. The signals from the COP8 Flash Device are connected to the emulator through one side of the header. The recreated ports and signals from the emulator are connected to the logic on your application board through the other side of the header.

If you want to run the COP8 Flash Device in your application without the emulator, disconnect the cable from the header and short all the pins across the header using standard shorting blocks. For production, the header need not be installed and the application system can be assembled with shorting wires connecting adjacent holes (1 to 2, 3 to 4, etc.) in the header pattern.

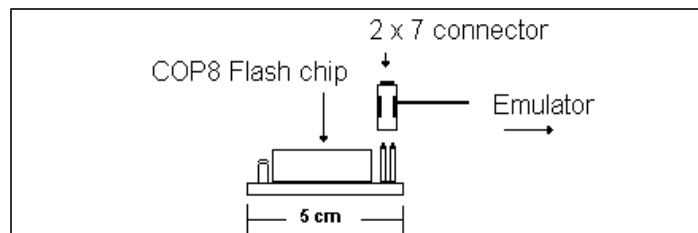
2) Emulator Connection with a Package Adapter

For designs that do not have the 2 x 7 emulation header on the application board, there are optional Flash Emulator Package Adapters with a COP8 device on-board, plus a 2x7 header for the emulator cable. The application board should have the COP8 Flash Device in a socket, then the chip is removed and the adapter is inserted into the socket. Currently, Package Adapters are available for 44 or 68pin PLCC COP8FLASH packages (COP8-EMFA-44P and COP8-EMFA-68P).



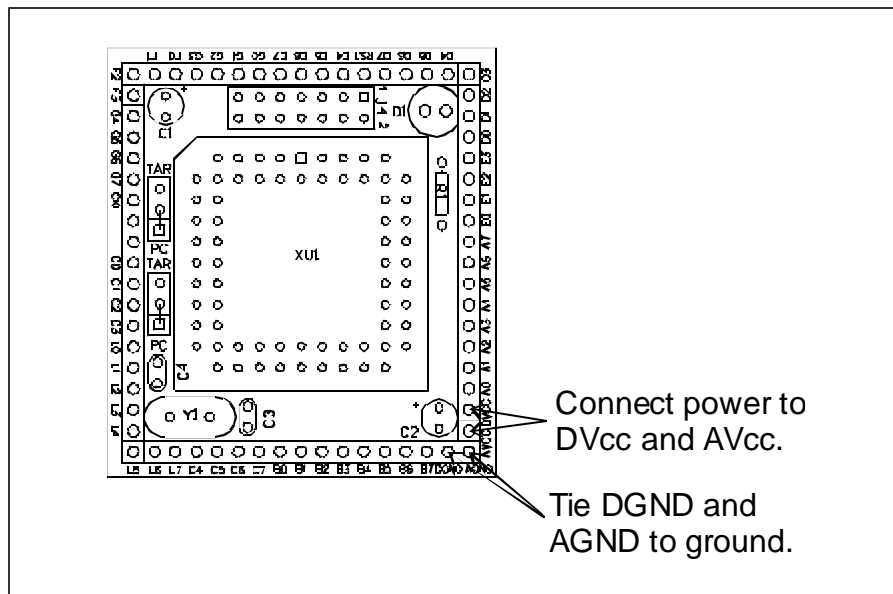
3) Emulator Connection to a Null Target Board

If an application board is not available, the program may be run to some extent on a Null Target board (COP8-EMFA-xxN). The Null Target board contains a 2x7 header for the emulator cable, a COP8 Flash Device, a 3.27MHz crystal, and test points for all device pins. Power to the Null Target Board is supplied by the emulator through the ribbon cable at about 2.7 volts, or up to 5.5v from an external source.



The Null Target included with your COP8Flash Emulator has a Brown-out Disabled COP8CDR already installed, but other versions may be substituted in the on-board socket. Note that only Brown-out Disabled devices may be used in the Null Target when power is supplied by the emulator. This is because other devices have a Brown-out detection feature that requires operation at higher than 2.7 volts.

If it is necessary to use the Null Target with a Brown-out Enabled COP8 Flash Device or to operate at a higher frequency, then the Null Target must be powered from an external source. The Vcc supply voltage must be applied to DVcc and AVcc while DGND and AGND are held at ground. DVcc and AVcc, and DGND and AGND can be wired together using the convenient pin-outs at the edge of the Null Target board. A higher frequency of operation may be attained, as the voltage is increased, by changing the crystal on the Null Target.



4) Emulator Connection to a COP8 Reference Design Board

If your application board is not available and you want more features than the Null Target provides, you can use a COP8FLASH Reference Design Board from National (COP8-REF-xxx). The Target board contains a 2x7 header for the emulator cable, a wide range of peripheral and I/O features, and a socketed COP8FLASH device. Power to the board is supplied externally, and it runs at full speed.