In-System Programming (ISP) Connector Pinout and Target Details

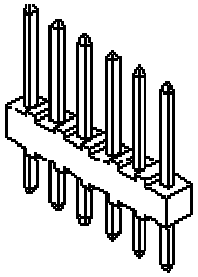
>>> PRELIMINARY<<<

This document is preliminary and unreleased – as such, information provided is subject to change without notice. Designs should be reviewed and verified before finalizing. FDI is available for consultation on the application of ISP to customer hardware – please contact FDI at support@teamfdi.com

This document provides details on how to design your hardware to support In-System Programming (ISP) capability for the Philips P89C51xx Microcontroller Devices for use with ISP Programming Hardware from FDI. The Philips P89C51 devices utilize a 2-wire communication interface, RXD (Receive Data) & TXD (Transmit Data) for ISP. In order to enter ISP mode with these devices, a specific reset sequence with PSEN- must be generated to the target device. This requires the Programmer Hardware to have control over the reset input and PSEN- of the target device. FDI has adopted a standard connector and pinout to facilitate widespread support for ISP in target designs that will be compatible with the ISP Programmers that FDI has developed. The connector utilized is a standard 0.100” pitch 6-pin header available from numerous suppliers.

Example Molex part numbers are listed below:

Part Numer	Description
22-03-2061	6pin vertical through hole
68301-1017	6pin vertical surface mount
22-03-2061	6pin right angle through hole



Example ISP Connector (6pin vertical PTH)

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The pinout of the connector is shown below (viewed from above);

Name	Pin
VCC	1
RESET	2
PSEN-	3
GND	4
RXD	5
TXD	6

Detailed description of the pinout is listed below;

Name	Description
VCC	Power from the target used to identify ISP mode on the programmer
RESET	Reset to the target CPU
PSEN-	PSEN- to the target CPU
GND	Ground from target hardware
RXD	Serial receive data TO the target CPU, FROM the programmer
TXD	Serial transmit data FROM the target CPU, TO the programmer

Notes:

1) ISP Programming is designed to operate at 3.3V, but is compatible with 5V target systems.
2) When ISP programming **is** being utilized, the target hardware should be in a state that does not interfere with the programming control signals. Any interference with these signals will cause the ISP Programmer to fail.
3) Philips App Note AN461 is an excellent reference for information on the specifics of the Philips In-System Programming of 8051 devices.

http://www.semiconductors.philips.com/acrobat_download/applicationnotes/AN461_9.pdf

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Example schematic: