

September 2002

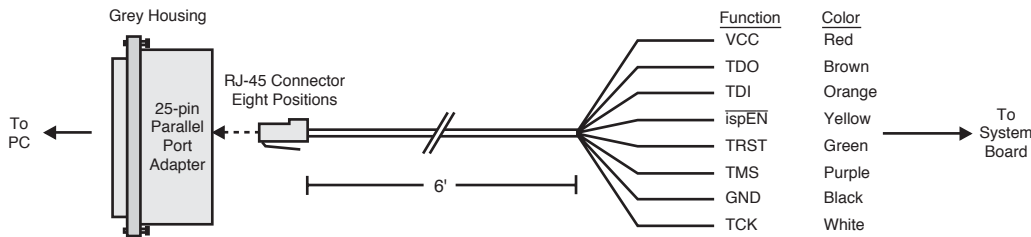
## Features

- **Cable and Parallel Port Adapter Facilitate In-System Programming of ISP Device Families**
  - Simplifies In-System Programming
  - Ideal for Design Prototyping and Debugging
- **Supports All ISP Device Families (Including ispPAC<sup>®</sup> Devices)**
- **Easy-to-Use Connectors**
  - 25-Pin Adapter Connects to PC Parallel Printer Port
  - 6' Cable Offers Printed Circuit Board Interface:
    - 8-Position Flywire Connectors
    - 8-Position, 1 x 8 .100" Center Connector
    - 10-Position, 2 x 5 .100" Center Connector

## ispDOWNLOAD Cable for the PC

The ispDOWNLOAD Cables for the PC are designed to facilitate in-system programming of all Lattice Semiconductor ISP devices on a printed circuit board directly from the parallel port of a PC. With in-system programmability, hardware functions can be programmed and modified in real-time on the system board to give additional product features, shorten system design and debug cycle time, enhance product manufacturability and simplify field upgrades. After completion of the logic design and creation of a programming file in the Lattice development system, ispVM™ System software programs devices on the end-product board. Programming signals are generated from the parallel port of a PC and directed through the ispDOWNLOAD Cable to the

**Figure 1. ispDOWNLOAD Cable In-System Programming Interface for the PC (HW7265-DL3)**

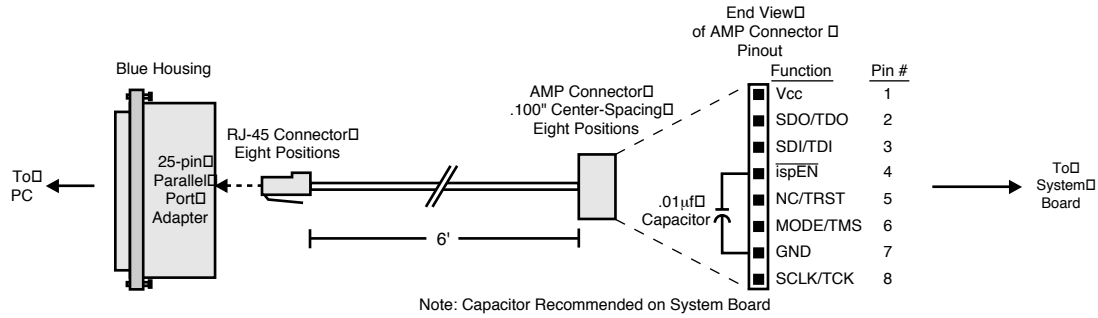


Supports 1.8V, 2.5V, 3.3V and 5V Programming

When connecting this cable to existing target system boards that have used the 1 x 8-position AMP connector or the 2 x 5-position (10-pin) connector, use the following table to make connections:

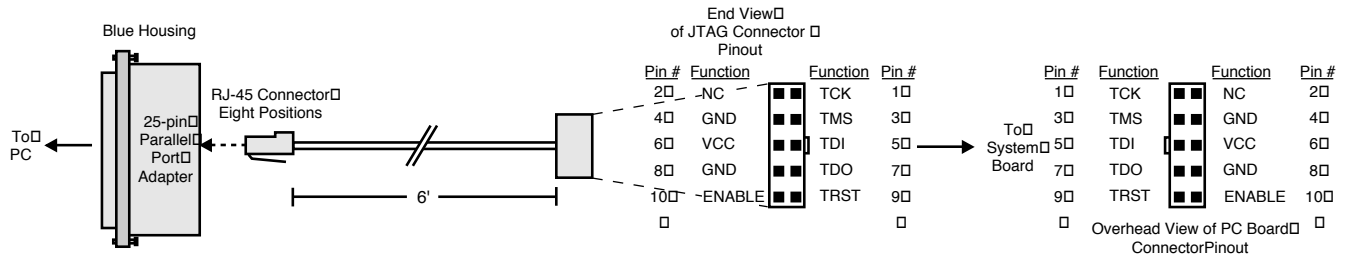
Parallel Port Connector		Flywire Cable		Your Board			
DB 25 Pin	Function	Function	Color	Pin #	8-Position Connector	Pin #	10-Position Connector
—	—	V <sub>CC</sub>	Red	1	V <sub>CC</sub>	6	V <sub>CC</sub>
10	TDO	TDO	Brown	2	SDO/TDO	7	TDO
2	TDI	TDI	Orange	3	SDI/TDI	5	TDI
5	ispEN	ispEN	Yellow	4	ispEN	10	Enable
6	TRST	TRST	Green	5	Do Not Connect (TRST)	9	TRST
4	TMS	TMS	Purple	6	MODE/TMS	3	TMS
—	—	GND	Black	7	GND	4	GND
3	TCK	TCK	White	8	SCLK/TCK	1	TCK
7	JTAG	—	—	—	—	2	No Connect
12	DL1-ID	—	—	—	—	8	GND (Do Not Connect)
8	OUT						
13	DL2-ID						
15	VCC						
20	GND						

Figure 2. ispDOWNLOAD Cable In-System Programming Interface for the PC (pDS4102-DL2)



Supports 2.5V, 3.3V and 5V Programming

Figure 3. ispDOWNLOAD Cable In-System Programming Interface for the PC (HW7265-DL2)



Supports 2.5V, 3.3V and 5V Programming

device. With one of these cables and a connector on a board, no additional components are required for programming. The ispVM System software automatically generates the appropriate ISP command, programming address and data from the programming file information. ispVM System software is included with all Lattice Semiconductor design tool products and from the Lattice web site at [www.latticesemi.com](http://www.latticesemi.com).

### Product Ordering Information

Product Description	Part Number
ispDOWNLOAD cable (PC only). Contains 6' cable with RT45 and flywire connectors and parallel port adapter.	HW7265-DL3
ispDOWNLOAD cable (PC only). Contains 6' cable with RJ45 and 8-position AMP connector and parallel port adapter.	pDS4102-DL2
ispDOWNLOAD cable (PC only). Contains 6' cable with RJ45 and 10-position JTAG connector and parallel port adapter.	HW7265-DL2

### Technical Support Assistance

Hotline: 1-800-LATTICE (Domestic)  
 1-408-826-6002 (International)  
 e-mail: [techsupport@latticesemi.com](mailto:techsupport@latticesemi.com)