

October 2001

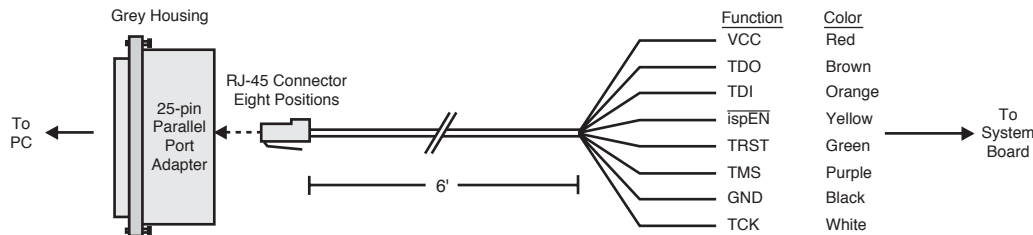
Features

- **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[®] 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)

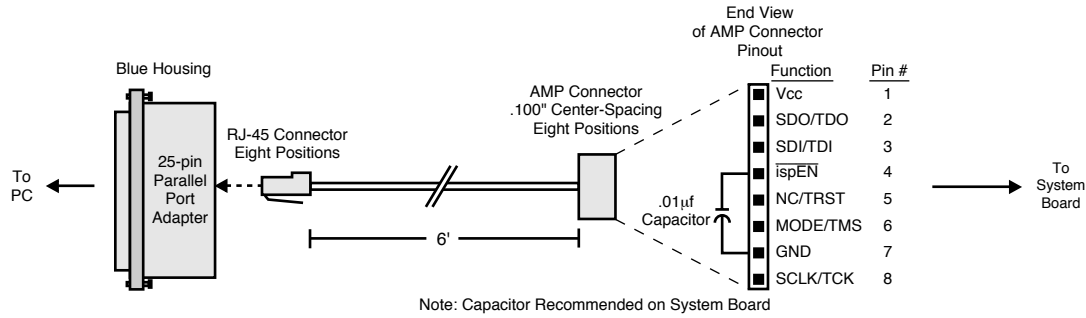


Supports 1.8V, 2.5V, 3.3V and 5V Programming

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:

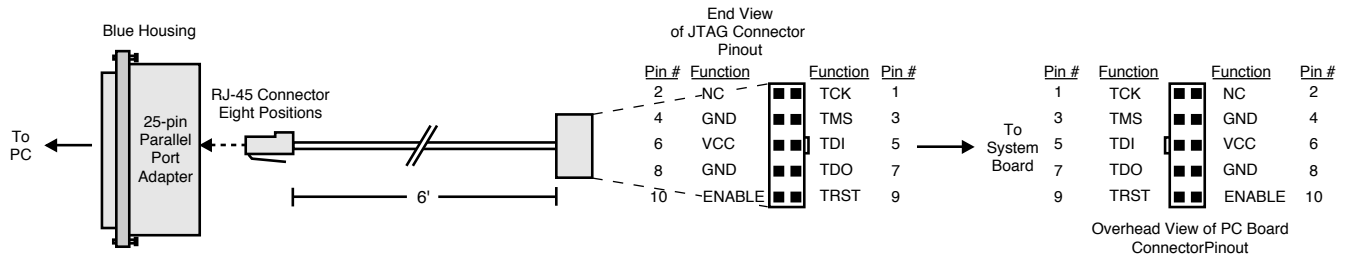
Parallel Port Connector		Flywire Cable		Your Board			
DB 25 Pin	Function	Function	Color	Pin #	8-Position Connector	Pin #	10-Position Connector
—	—	V _{CC}	Red	1	V _{CC}	6	V _{CC}
10	TDO	TDO	Brown	2	SDO/TDO	7	TDO
2	TDI	TDI	Orange	3	SDI/TDI	5	TDI
5	ispEN	ispEN	Yellow	4	ispEN	10	Enable
6	TRST	TRST	Green	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)



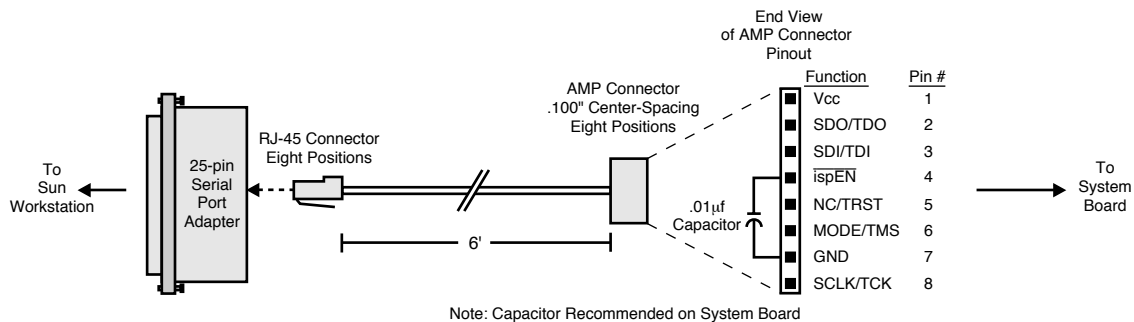
Supports 2.5V, 3.3V and 5V Programming

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



Supports 2.5V, 3.3V and 5V Programming

Figure 4. ispDOWNLOAD Cable In-System Programming Interface for the Sun Workstation (pDS4102-WS)



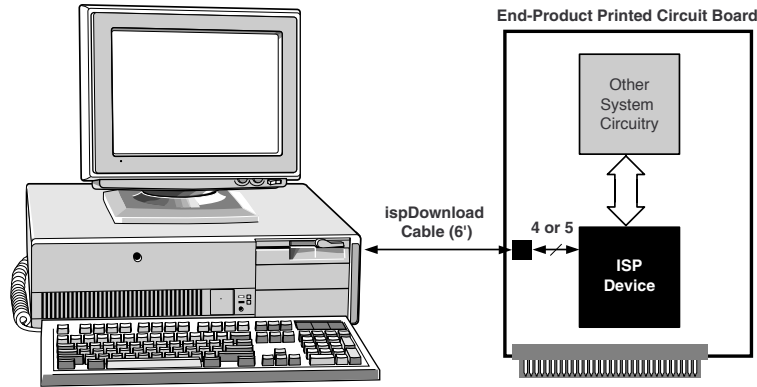
Supports 3.3V and 5V Programming

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.

ispDOWNLOAD Cable for the Sun Workstation

The ispDOWNLOAD Cable for the Sun Workstation provides a quick and easy means for programming all Lattice ISP devices from a Sun Workstation. Setting up the workstation ispDOWNLOAD cable is as simple as connecting the serial interface adapter to the RS-232 port of the workstation and connecting the ispDOWNLOAD cable assembly to the target ISP system.

Figure 5. Configuring In-System Programming from a Remote System



The serial interface adapter contains an embedded controller that handles programming commands from the host workstation to the target system and processes them for proper ISP operation. Additional features of the serial interface adapter include:

- Automatic baud rate detection for 300 baud to 115,200 baud operations
- Operational at supply voltages of 3.3V or 5V
- Standard Lattice ISP programming interface and ispJTAG™ interface (IEEE 1149.1) support
- RJ-45 interface jack for easy ISP cable assembly replacement
- Compact size and low power requirements
- Easy interface to the Lattice ISP Engineering Kit Model 300 for all Lattice ISP device programming and Model 100 for single ispLSI® device programming

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
ispDOWNLOAD cable (Sun Workstation only). Contains 6' cable with RJ45 and 8-position AMP connectors, serial interface adapter for the RS232 Workstation port, documentation and ISP Daisy Chain Download software for the Sun Workstation.	pDS4102-WS

Technical Support Assistance

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