

# Building with the Boxed Intel® Celeron® D Processor in the LGA 775 Package

## Board Support

Intel® 910GL and Intel® 915 Express chipset based platforms are designed to support the 775-land processor package. These chipsets bring a decade worth of innovation to the desktop PC. For more information on these new chipsets go to:

[http://intel.com/design/chipsets/express\\_flyer.htm](http://intel.com/design/chipsets/express_flyer.htm)

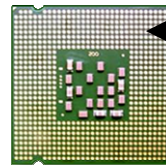
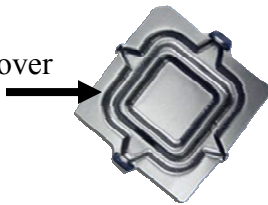
For a list of compatible socket LGA 775 boards see Motherboard Selector Guide at:

<http://indigo.intel.com/mbsg/>

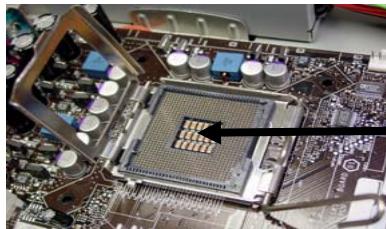
## Integrating the LGA 775 Processor

This new processor package incorporates 775 gold contacts that are mated into a 775 contact socket. This revolutionary technology improves integration and provides a path to future frequency and performance scaling.

Processor protective cover  
(Remove before  
integrating. Keep for  
re-use.)



Gold contacts are  
sensitive and should  
not be touched



Board LGA 775 socket (Ships with  
a protective cover. Remove before  
integrating. Contacts are sensitive  
and should not be touched)

For additional integration information see the Technical Reference and Support page on the Intel® Reseller Center website

## Thermal Requirements

The architecture of the Intel® Celeron® D processors manufactured on 90nm process technology enables higher frequencies and wider functionality which resulted in a change in the thermal specifications for the processor. A higher performing thermal solution is required to meet these thermal requirements. The boxed Celeron® D processor features a thermal solution designed by Intel to provide an effective cooling solution that matches the processor.

## Acoustics

### Fan Speed

To help minimize the acoustic noise levels generated from running the fan at higher speed for thermal performance, the thermal solution for boxed LGA 775 processors include a 4 pin connector for fan speed control. The new fan speed control technology is based on actual CPU temperature and power usage and takes advantage of the fact that the processor is not always running at maximum power.

The additional 4th wire sends a signal from the motherboard to the fan heatsink to control its speed.

### Thermal Diode

There is a thermal diode in the processor which measures actual CPU temperature. The processor sends information to the motherboard about its specific thermal requirements and the actual processor temperature. The motherboard then uses this information to optimally control the speed of the processor fan. Boxed Intel® Desktop boards based on Intel® 910GL and 915 Express chipsets were designed with the acoustic benefits of the 4-pin header. The acoustic benefits are reliant on the motherboard design. Please contact your board manufacturer for compatibility.

### Chassis Temperature

A 4-wire fan does not guarantee a quieter system. If the processor is being used in a hot environment and under heavy loads the fan will have to run fast enough to properly cool the processor. The internal chassis temperature is required to be maintained at 38°C (or lower). Selecting the correct chassis and verifying proper thermal management is critical for integrating a high quality boxed Intel Celeron D processor-based system. For Celeron D processors manufactured on 90nm process technology in 775-land package based platforms a Thermally Advantaged Chassis (TAC) version 1.1 is highly recommended to meet the internal chassis temperature.

### Thermally Advantaged Chassis (TAC) Version 1.1

A Thermally Advantaged Chassis version 1.1 will have a 90mm or larger rear chassis fan, an 80mm side vent, a PCI Express Graphics vent and is designed to meet a 38°C ambient chassis temperature. A properly cooled system will help it run more reliably and minimize the fan noise. For more chassis information go to:

[www.intel.com/go/chassis](http://www.intel.com/go/chassis)

### What does a Thermally Advantaged Chassis version 1.1 look like?



*(These examples are for illustration purposes only)*