# Thermal Cyclers

**Thermo Electron currently offers one of the most extensive ranges of authorised PCR machines: from the economical PxE and sub-ambient PCR Sprint, through to the advanced Px2.**

### Product Features

- User friendly software interfaces
- Unique active tube temperature control
- Outstanding block performance
- Heated lids for oil free thermal cycling
- Licensed thermal cycling

### Optimal PCR Performance

Optimal PCR performance can be obtained in our blocks because of their accurate and reproducible temperature control and uniformity. Don't compromise your precious PCR, not all PCR machines are the same!
We have 3 distinct methods of temperature control:

- Simulated Control
- Active Tube Control
- Block Control

These precise control options combined with exceptional uniformity allows reduction of dwell times and faster results.

### Simulated Control

To compensate for the temperature lag that occurs in the sample compared to the block, Thermo has developed an advanced software algorithm to calculate the sample temperature during the PCR. The software constantly adjusts the block temperature to ensure the sample, not just the tube, reaches the programmed temperature quickly.

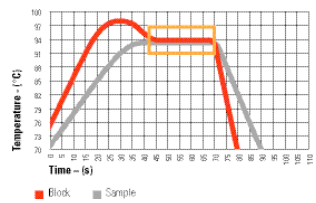


Fig 1. Simulated Control. Calculated sample temperature controls the progress of the reaction. Block temperature exceeds the set point, bringing sample to programmed temperature faster.

### Active Control

Active Tube Control (ATC) is Thermo's advanced method for monitoring and controlling a PCR reaction. This method can be used when using tubes and not all wells are required.

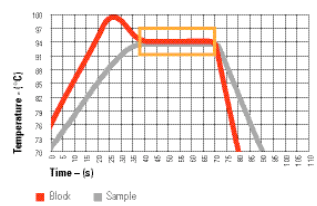


Fig 2. Active Control. The sample probe measures the actual sample temperature and controls the progress of the reaction. Block temperature exceeds the set point, bringing sample to programmed temperature faster.

### Block Control

Best for prolonged static incubations
This is the sole control method used on some thermal cyclers. If used during short incubation periods, as required during a PCR reaction, the reaction mix is at the set temperature for a considerably shorter time than that programmed, which could lead to a reduced yield of PCR product.

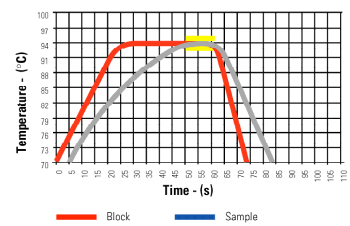


Fig 3. Block control. Note: the sample is at temperature for less than the programmed time.

### Instrument Selection Chart

| Model | PCR Sprint | PxE | Px2 |
|---|---|---|---|
| Active Tube Control | x | | x |
| Gradient Block Option | | | x |
| 96 Well Block Option | | x | x |
| 384 Well Block Option | | | x |
| In Situ Flat Block Option | | | x |
| Interchangeable Blocks | x | | x |

**The Polymerase Chain Reaction (PCR) is covered by US patents, which are owned by F. Hoffman-La Roche Ltd.**