PCR Thermal Cycler
Best solution for your DNA amplification needs
PCR THERMAL CYCLER PRODUCTS

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WELCOME TO ESCO

Esco’s vision is to provide enabling technologies for scientific discoveries to make human lives healthier and safer. Esco represents innovation and forward-thinking designs, which are all coupled with the highest standard quality since 1978. The Esco Group of Companies remains dedicated in delivering innovative solutions for the clinical, life sciences, research, industrial, laboratory, pharmaceutical and IVF community. With the most extensive product line in the industry, our products have passed a number of international standards and certifications. Esco operates under ISO 9001, ISO 14001 and ISO 13485.

Availability and Accessibility
Headquartered in Singapore, manufacturing facilities are located in Asia and Europe. R&D is conducted worldwide spanning the US, Europe and Asia. Sales, services and marketing subsidiaries are located in 12 major markets including the US, UK, Japan, China and India. Our regional distribution centers are located in China, UK, India, Malaysia, Philippines, Singapore, South Africa, South Korea and United States of America. Because of our worldwide presence, you can be sure that Esco is within your reach.

High Quality, Reliable and Dependable
Our customers are confident that only with the best quality, reliable and dependable products, can they be sure of the accuracy of their research and procedures. Cross functional teams from Esco Production, R&D, Quality Assurance and Senior Management, are regularly assembled to review and implement areas for improvement.

Esco Cares for Your Safety
Esco focus on providing safety not just for your samples but also for users.

Esco Cares for Your Comfort
Comfort of our users is ensured by building ergonomic designs and by reducing the noise levels of the units.

Esco Cares for the Environment
One in every four of Esco’s employees is involved in Research and Development and a number of these evaluate new components and/or designs to produce energy efficient equipment. Being GREEN is more than just modifying the parts we use to produce a new energy efficient technology, it also embodies the every aspect of our company.

Customer Service and Support
Our service does not stop once purchase has been made. Esco gives on-time customer service and offers end-user seminars, service training, and preventive maintenance, provides educational materials and informative videos.

As Esco takes the opportunity to respond to the world’s needs, we aim not just to contribute in the advancement of scientific discoveries but also in making the world a safer, healthier and a better place to live in.
GLOBAL NETWORK

THERMAL CYCLER PRODUCTS OVERVIEW

Aeris™ Thermal Cyclers
Swift™ Series Thermal Cyclers, MiniPro®
Swift™ Series Thermal
Spectrum 48 Real-Time
PCR Detection System
The Aeris™ thermal cycler offers five interchangeable blocks designed to meet critical requirements for different applications. It comes with an intuitive touch screen to deliver easy-to-use programming; AeonStar™ Peltier is qualified to deliver outstanding and precise performance and unique IsoHeat™ temperature control technology delivering high heating and cooling rates with excellent temperature accuracy and uniformity. SmartDrive™ automatic block recognition increases user convenience. AerisLine™ software enables the remote control of up to 30 individual units via one PC.

ADDITIONAL FEATURES

- Multi-block capability with automatic block recognition software minimizes the need for manual settings
- Adjustable hot lid temperature and ramp rate
- Powerful software meets a variety of experimental requirements, such as Touchdown PCR, Time Release PCR, In Situ PCR, and others
- The Peltier module, electronics, and sensors are precision tuned and tested to ensure the longest operating lifespan possible
- Pre-programmed methods provide easy choice
- Large memory stores up to 250 individual methods in equipment, with unlimited methods on USB memory stick or PC
- Password protection guarantees secure system access
- AerisLine™ allows you to control up to 30 Aeris™ thermal cyclers via one PC
### General Specifications, Aeris™ Thermal Cycler

<table>
<thead>
<tr>
<th>Model Code</th>
<th>AERIS-BG096</th>
<th>AERIS-B4830</th>
<th>AERIS-BG384</th>
<th>AERIS-BD048</th>
<th>AERIS-B4076</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sample Capacity</strong></td>
<td>96 x 0.2 ml</td>
<td>48 x 0.2 ml + 30 x 0.5 ml</td>
<td>384 wells</td>
<td>48 x 0.2 ml + 48 x 0.2 ml</td>
<td>4 slides in situ</td>
</tr>
<tr>
<td><strong>Application Consumables</strong></td>
<td>0.2 ml tubes 96-well microplates 12 x 8 strips 8 x 12 strips</td>
<td>0.2 ml tubes 0.5 ml tubes 4 x 12 strips</td>
<td>384-well microplates</td>
<td>0.2 ml tubes 6 x 8 strips</td>
<td>4 slides in situ</td>
</tr>
<tr>
<td><strong>Maximum Heating Rate</strong></td>
<td>4.0ºC/sec</td>
<td>2.8ºC/sec</td>
<td>2.8ºC/sec</td>
<td>4.0ºC/sec</td>
<td>1.8ºC/sec</td>
</tr>
<tr>
<td><strong>Maximum Cooling Rate</strong></td>
<td>4.0ºC/sec</td>
<td>2.8ºC/sec</td>
<td>2.8ºC/sec</td>
<td>4.0ºC/sec</td>
<td>1.8ºC/sec</td>
</tr>
<tr>
<td><strong>Temperature Control Mode</strong></td>
<td>Tube or Block</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Temperature Range</strong></td>
<td>4-105ºC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Over-temperature Cut-Out</strong></td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Number of Programs</strong></td>
<td>Up to 250 programs, unlimited with USB flash drive</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Maximum Hold Time</strong></td>
<td>59 min and 58 sec</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Temperature Accuracy</strong></td>
<td>≤±0.1ºC below 50ºC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Temperature Uniformity</strong></td>
<td>≤±0.2ºC below 55ºC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hot Lid Temperature Range</strong></td>
<td>30-110ºC (Adjustable, Default 105ºC, Automatic Hot-Lid)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PCR Sample Volume</strong></td>
<td>10-100 μl</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tm Calculator</strong></td>
<td>Auto</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Extensive Experiment Application</strong></td>
<td>Option setting for time up/down is between 0-9 min 59 sec, which is suitable for Long PCR. Temperature when up/down is between 0.1ºC to 9.9ºC, it is suitable for Touchdown PCR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Auto Re-start on Power Failure</strong></td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Connection to PC Control</strong></td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Software</strong></td>
<td>AerisLine™</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Operation System</strong></td>
<td>Windows XP / Windows Vista / Windows 7 / Windows 8</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Pre-Run Sample Cooling</strong></td>
<td>Yes, 4ºC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Language</strong></td>
<td>English, Chinese, Spanish</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>USB</strong></td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>6.5” Color LCD Touch Screen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dimensions (W x D x H)</strong></td>
<td>306 x 386 x 295 mm (12.0” x 15.2” x 11.6”)*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Power Supply, Consumption</strong></td>
<td>100-240 VAC, 50/60 Hz, 600 W</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Warranty</strong></td>
<td>3 years for mainbody, 2 years for blocks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Net Weight</strong></td>
<td>9 Kg (19.8 lbs) (without block)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Shipping Weight</strong></td>
<td>10 Kg (22.0 lbs)</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Shipping Dimension (W x D x H)</strong></td>
<td>420 x 540 x 370 mm (16.5” x 21.3” x 14.6”)*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The parameters are tested under optimized lab environments.*

### ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Model Code</th>
<th>Item Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AERIS-MB</td>
<td>2210003</td>
<td>Aeris™ Thermal Cycler Main Body (100-240 VAC)</td>
</tr>
<tr>
<td>AERIS-BG096</td>
<td>2210004</td>
<td>Aeris™ Thermal Cycler Block (96 x 0.2 ml)</td>
</tr>
<tr>
<td>AERIS-B4830</td>
<td>2210005</td>
<td>Aeris™ Thermal Cycler Combined Block (48 x 0.2 ml + 30 x 0.5 ml)</td>
</tr>
<tr>
<td>AERIS-BG384</td>
<td>2210006</td>
<td>Aeris™ Thermal Cycler Block (384 wells)</td>
</tr>
<tr>
<td>AERIS-BD048</td>
<td>2210007</td>
<td>Aeris™ Thermal Cycler Dual Block (48 x 0.2 ml)</td>
</tr>
<tr>
<td>AERIS-B4076</td>
<td>2210008</td>
<td>Aeris™ Thermal Cycler (4 slides in situ)</td>
</tr>
</tbody>
</table>
FLEXIBLE - YOUR APPLICATION, YOUR CYCLER
Five Interchangeable Blocks

AERIS-BG096
G-96 WELL
Applicable consumables: 0.2 ml tube, 96-well microplate, 12 x 8 strips, 8 x 12 strips

AERIS-B4830
48 x 0.2 ml + 30 x 0.5 ml WELL
Applicable consumables: 0.2 ml tubes, 0.5 ml tubes, 4 x 12 strips

AERIS-BD048
D-48 X 0.2 ml
Two in one! Two independent experiments may be carried out at the same time.
Applicable consumables: 0.2 ml tubes, 6 x 8 strips

AERIS-BG384
G-384 WELL
Applicable consumables: 384-well microplate

AERIS-B4076
4 IN SITU SLIDES
For In Situ PCR
Applicable consumables: 4 slides in situ

EASIER PROGRAMMING

Main Interface
New Protocol
Shortcut
Run
**WIDER APPLICATION**

**Why Use Nested PCR?**
Nested PCR is a modification of a polymerase chain reaction intended to reduce the contamination in products due to the amplification of unexpected primer binding sites.

**Why Use Long PCR?**
Long PCR, a new technique based on ordinary PCR, applies to amplify the PCR template longer than 5 Kb.

**Why Use Touchdown PCR?**
Touchdown PCR is a method of polymerase chain reaction by which primers avoid amplifying non-specific sequences. The annealing temperature during a polymerase chain reaction determines the specificity of primer annealing. The melting point of the primer sets the upper limit on annealing temperature. At temperatures just below this point, only very specific base pairing between the primer and the template occurs.

*End Point Analysis Result*

The best conditions are found in Well 10, where the temperature was 63.2°C.  
**Note:** Experimental determination of optimal annealing temperature. The calculated primer annealing temperature was 56.5°C. The actual annealing temperature was 63.2°C.
**AERISLINE™ PC SOFTWARE**

**Easy Setup**
Network Enabler Administrator helps you configure the instrument by IP address.

**Simple**
Once you install the software, you get easy access to set up protocols and edit the program.

**Powerful**
One PC can control up to 30 Aeris™ Thermal Cyclers.

**TM CALculator**

Tm calculator allows you to calculate the optimal PCR annealing temperature based on the sequence of a pair of primers. The Tm calculator by default calculates by the simpler GC content.

**THREE MODES OF OPERATION**

1. **Stand-Alone Unit**
   Operate with keypad directly.

2. **PC Controlled**
   Operate cycler via PC, and save programs.

3. **Satellite Function Via AerisLine™**
   Up to 30 Aeris cyclers can be controlled from one PC.
**AERIS™ COMPONENTS**

**USB Port**
- For single unit connecting to AerisLine™ PC software

**Touch Pen**
- For multiple units connecting to AerisLine™ PC software

**Black Cable**
- For single unit connecting to AerisLine™ PC software

**White Cable**
- For multiple units connecting to AerisLine™ PC software

**Fuse**
- FuseWhite Cableblack Cable

**AERIS™ BENEFITS**

- Saves time when programming with the intuitive color touch screen
- Keeps the latest operation records which deliver the proven reliability of PCR results
- Durable design to guarantee longer instrument lifetime
- Tm calculator for optimized primer temperature
- Extensive applications for researchers to do ‘Long PCR’ and ‘Nested PCR’
- Hot lid temperature adjustment to secure the temperature control on the block and to prevent condensation and water evaporation on the hot lid itself
- Better performance with temperature accuracy

There are 250 protocols in internal memory; unlimited with use of USB memory stick and PC save as many of your important methods as you want

Aeris™ Thermal Cycler and PC / Laptop (update software via RJ45 port when enhancements are available)

**USB PORT**
- User friendly
- Convenient and quick data transfer
- Convenient USB port and RJ45 port simplify data transfer and product updates between the Aeris™ Thermal Cycler and USB memory stick

**Storage**
- USB Port
- Touch Pen
- Black Cable
- White Cable
- Fuse

**RJ45**
- Aeris™ Thermal Cycler and PC / Laptop (update software via RJ45 port when enhancements are available)
The Esco Swift™ MiniPro® thermal cycler is a low cost personal thermal cycler with a compact footprint, suitable for a variety of critical experimental applications, such as Touch Down PCR, Time Release PCR and others. The Swift™ MiniPro® thermal cycler uses advanced peltier technology to achieve precise temperature control and fast ramp rates with minimal over- and under-shoot for process speed and accuracy.

**SUPERIOR PERFORMANCE**

**Excellent Temperature Uniformity**
Unique IsoHeat™ temperature control technology guarantees extremely uniform temperature between central and edge wells. Block temperature uniformity is <0.3°C.

**High Temperature Precision**
Precisely tuned and tested AeonStar™ peltier, temperature sensor, and proprietary control algorithms provide highest temperature accuracy. Block temp. accuracy is <0.3°C.

**Outstanding Ramp Rate**
Proprietary aluminium block with superior thermal conductivity properties delivers superb heating and cooling performance, equal to the gold blocks of other brands. High ramp rate of up to 5.0°C/sec.

**Convenient Setup, Fast Run**
Pre-programmed methods are available for your convenience or you can enter thermal cycling values to program your own methods.

**Friendly Interface**
Large screen shows all information on one page. Easy, graphical programming for temperature, holding time, ramp rate, pause and other functions ensures intuitive operation.

**Adjustable Hot Lid**
Prevents reagents from evaporating. Hot lid height is adjustable to suit all kinds of tubes.

**Adjustable Ramp Rate**
High ramp rate of up to 5.0°C/sec. Suits all reagents. Allows protocols to be transferred from other cyclers.

**STABILITY**

**Robust Security**
Automatic restart saves setpoints and guarantees successful PCR cycling in the event of power interruption.

**Long Warranty Period, Peace of Mind**
The peltier module, electronics and sensors are precision tuned and tested to ensure the longest operating lifespan possible. Backed by an industry leading 3 year warranty for main body, 2 year warranty for block.

**CONVENIENCE**

**Compact Footprint**
User-friendly ergonomic design, small footprint to conserve available bench top space. Lightweight - only 3.5 Kg (7.7 lbs).
General Specifications, Swift™ MiniPro® Thermal Cycler

<table>
<thead>
<tr>
<th>Model Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWT-MIP-0.2-1</td>
<td>24 x 0.2 ml, 3 X 8 strips, 24-well microplates</td>
</tr>
<tr>
<td>SWT-MIP-0.5-1</td>
<td>18 X 0.5 ml, 0.5 ml tubes</td>
</tr>
</tbody>
</table>

Sample Capacity

Temperature Range

4-99°C

Maximum Heating Rate

5.0°C/sec

5.0°C/sec

Maximum Cooling Rate

4.0°C/sec

4.0°C/sec

Temperature Uniformity

±0.3°C

Temperature Accuracy

±0.3°C

Hot Lid Temperature Range

30-110°C (Adjustable, Default 105°C, Automatic Hot-Lid)

PCR Sample Volume

10-100 μl

Temperature Control Mode

Tube or Block

Display

Graphical LCD

Protocol Capacity

100 protocols

PC Interface

RS232 for software updates

Dimension (W x D x H)

212 x 297 x 200 mm (8.3” x 11.7” x 7.9”)

Power supply, Consumption

100-120 VAC / 200-240 VAC, 50/60 Hz, 200 W

Warranty

3 years for main body, 2 years for blocks

Net Weight

3.5 Kg (7.7 lbs)

Shipping Weight

4.5 Kg (9.9 lbs)

Shipping Dimensions (W x D x H)

320 x 420 x 330 mm (12.6” x 16.5” x 13.0”)

ORDERING INFORMATION

Order Information, Swift™ MiniPro® Thermal Cycler

<table>
<thead>
<tr>
<th>Model Code</th>
<th>Item Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>SWT-MIP-0.2-1</td>
<td>2210009</td>
<td>Swift™ MiniPro® Thermal Cycler With 24 x 0.2 ml Block 110 VAC 50/60 Hz</td>
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<tr>
<td>SWT-MIP-0.2-2</td>
<td>2210010</td>
<td>Swift™ MiniPro® Thermal Cycler With 24 x 0.2 ml Block 220 VAC 50/60 Hz</td>
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<tr>
<td>SWT-MIP-0.5-1</td>
<td>2210011</td>
<td>Swift™ MiniPro® Thermal Cycler With 18 x 0.5 ml Block 110 VAC 50/60 Hz</td>
</tr>
<tr>
<td>SWT-MIP-0.5-2</td>
<td>2210012</td>
<td>Swift™ MiniPro® Thermal Cycler With 18 x 0.5 ml Block 220 VAC 50/60 Hz</td>
</tr>
<tr>
<td>SWT-MIP-BLC-1</td>
<td>2210013</td>
<td>Swift™ MiniPro® Block 1 (24 x 0.2 ml)</td>
</tr>
<tr>
<td>SWT-MIP-BLC-2</td>
<td>2210014</td>
<td>Swift™ MiniPro® Block 2 (18 x 0.5 ml)</td>
</tr>
</tbody>
</table>
Esco’s Swift™ Spectrum 48 real-time PCR detection system is specially designed to simplify and optimize your PCR work. The advanced Ferrotec peltier, proprietary linear block, unique bottom detection design and coaxial fiber optic technology provide excellent temperature performance and reliable fluorescence detection results. The Spectrum PC software offers maximum flexibility for data processing of a variety of scientific research and clinical applications, such as gene expression analysis, SNP genotyping, pathogen detection and others.

**ADDITIONAL FEATURES**

- With up to 4 groups of filters, the instrument covers most of wavelengths of commonly used dyes.
- Unique bottom detection design with coaxial fiber optics avoids crosstalk among wells, increases the signal-to-noise ratio and ensures reliable results.
- Precisely tuned Ferrotec peltier module + proprietary temperature control algorithms = excellent temperature accuracy + industry-leading reliability. Temperature accuracy: <±0.1 ºC
- The unique sandwich-design block, with peltier elements closely fit both sides of the linear sample block, delivers rapid, controlled temperature changes and reduces vertical temperature gradients. Super reproducibility and highest quality results are ensured. Temperature uniformity: <±0.3 ºC
- Volume sensor software automatically adjusts ramp rates to accommodate differences in sample volumes.
- An automatic hot lid with adjustable temperature effectively prevents reagent evaporation.
- Wide block temperature range from 4 ºC to 99.9 ºC, with infinity hold function allows PCR products to be stored at 4 ºC overnight.
- Open platform chemistry and consumables ensure compatibility with commonly used protocols.
- The block can be divided into maximum 4 segments, allowing the analysis of up to 4 different sample groups.
- The overheating protection function sounds an audible warning at excessive ambient temperature and automatically shuts down the instrument when ambient temperature reaches 40 ºC.
- Global wide range power supply with PFC function improves thermal efficiency and reduces power consumption by 30%.
## General Specifications, Swift™ Spectrum 48 Real Time PCR Detection System

<table>
<thead>
<tr>
<th>Model Code</th>
<th>SWT-SPT-RT-48</th>
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</thead>
<tbody>
<tr>
<td>Sample Capacity</td>
<td>48 x 0.2 ml PCR tubes (Bottom Transparent), 6 x 8 strips,</td>
</tr>
<tr>
<td>Optical module</td>
<td></td>
</tr>
<tr>
<td>Excitation</td>
<td>LEDs</td>
</tr>
<tr>
<td>Detection</td>
<td>1 photo-multiplier tube for 4 channels</td>
</tr>
<tr>
<td>Excitation Wavelength</td>
<td>450-590 nm</td>
</tr>
<tr>
<td>Emission Wavelength</td>
<td>500-630 nm</td>
</tr>
<tr>
<td>Channel And Fluorescence</td>
<td></td>
</tr>
<tr>
<td>F1: FAM, SYBER Green I</td>
<td></td>
</tr>
<tr>
<td>F2: VIC, HEX</td>
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</tr>
<tr>
<td>F3: JOE, Cy3, TAMRA</td>
<td></td>
</tr>
<tr>
<td>F4: ROX, TEXAS-RED</td>
<td></td>
</tr>
<tr>
<td>Thermal Cycler</td>
<td></td>
</tr>
<tr>
<td>Maximum Block Heating Rate*</td>
<td>4.0°C / sec</td>
</tr>
<tr>
<td>Maximum Block Cooling Rate*</td>
<td>4.0°C / sec</td>
</tr>
<tr>
<td>Temperature Accuracy</td>
<td>±0.1°C</td>
</tr>
<tr>
<td>Temperature Uniformity</td>
<td>±0.3°C</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>4-99.9°C</td>
</tr>
<tr>
<td>Hot Lid Temperature Range</td>
<td>80-110°C (Adjustable, Default 105°C, Automatic Hot-lid)</td>
</tr>
<tr>
<td>Spectrum PC software</td>
<td></td>
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<tr>
<td>Operation System</td>
<td>Windows XP / Windows Vista / Windows 7 / Windows 8</td>
</tr>
<tr>
<td>PC Configuration</td>
<td>Memory: 512M, Hard Disk: 10GB, CPU: Pentium 4, Minimum Virtual Memory: 1000MB</td>
</tr>
<tr>
<td>Data Analysis Methods</td>
<td>Absolute Quantification, Standard Curve, Relative Quantification, Melting Curve, SNP Genotyping</td>
</tr>
<tr>
<td>Complete System</td>
<td></td>
</tr>
<tr>
<td>PCR Sample Volume</td>
<td>5-100 μL (10-40 μL recommended)</td>
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<tr>
<td>Interface</td>
<td>RS232C for PC control</td>
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<tr>
<td>Dimensions (W x D x H)</td>
<td>450 x 520 x 320 mm (17.7” x 20.5” x 12.6”)</td>
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<tr>
<td>Power Supply, Consumption</td>
<td>100-240 VAC, 50/60 Hz, 650 W</td>
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<tr>
<td>Electrical Approvals</td>
<td>CE</td>
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<tr>
<td>Warranty</td>
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<td>Shipping Weight</td>
<td>26 Kg (57.3 lbs)</td>
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<tr>
<td>Shipping Dimensions (W x D x H)</td>
<td>590 x 680 x 470 mm (23.2” x 26.8” x 18.5&quot;)</td>
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</table>

## Ordering Information

<table>
<thead>
<tr>
<th>Model Code</th>
<th>Item Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWT-SPT-RT-48</td>
<td>2210031</td>
<td>Swift™ Spectrum RT Cycler 48 110-220 VAC</td>
</tr>
</tbody>
</table>
OUTSTANDING DESIGN, THUS EXCELLENT PERFORMANCE

- The LED in AccuFluore™ Detection System provides a wide range of stable excitation, allowing more dye flexibility. It has a longer lifespan in contrast to halogen lamps and no calibration is required.
- Photomultiplier tube (PMT) is used as detection sensors, covering up to 4 channels. The PMT, manufactured by the world’s top PMT manufacturer, is almost noise free, with superior sensitivity and reproducibility. Its high signal to noise ratio allows even single molecule detection. Over a linear dynamic range the system detects over 10 levels of magnitude.
- The coaxial fiber optic system makes sure the same amount of excitation light is received by each well and uniform signal measurement is obtained from each well, so no additional signal correction and calibrations are needed. Besides, unlike normal CCD which detects the signals from all wells at a time, the coaxial fiber optic system allows signals detection from the bottom of the tubes one by one, avoiding crosstalk among wells.

PROPRIETARY SANDWICH DESIGN BLOCK

Unlike conventional 12 x 8, 96 well block designs, Spectrum 48 real-time PCR uses a unique 48 well linear block to deliver rapid, controlled temperature changes. The Peltier elements are manufactured by the world’s top Peltier manufacturer. The heating/cooling elements are positioned along the two sides of the block, guaranteeing rapid, even, heating and cooling rates of 4°C / sec, as well as exceptional temperature accuracy and uniformity. The block design eliminates temperature overshoots and undershoots, increasing the efficiency of the reaction, resulting in high template yields and low copy number detection. Fast cycling is not dependant on the use of specific reagents and reduces the cycle run producing a result in around 1 hour.

The block allows signal detection from the bottom of the tube, reducing signal scatter through the tube cap, or from fogging of the cap from sample evaporation. Sensitivity is also enhanced because of the shorter light path between the reagent and the detector. It is also possible to divide the block into 4 segments, allowing the simultaneous analysis of up to 4 different sample groups.
POWERFUL SOFTWARE, SIMPLE TO OPERATE

Spectrum PC software’s simple intuitive navigation makes it easy to set up sample data, PCR protocols and get excellent real time PCR results. Real-time amplification can be monitored and data file will be automatically saved when a run is finished. Data files can also be exported to Microsoft Excel for further analysis. The software has built-in data analysis methods, including Absolute Quantification, Standard Curve, Relative Quantification, Melting Curve and SNP Genotyping.
Esco introduces the new Swift™ Spectrum 96 real time PCR detection system with up to 8 channels to meet all your PCR needs. The advanced top quality peltier, proprietary block dissipation technology, unique bottom detection design and coaxial fiber optic technology provide excellent temperature performance and reliable fluorescence detection results. The Spectrum PC software offers maximum flexibility for data processing of a variety of scientific research and clinical applications, such as gene expression analysis, SNP genotyping, pathogen detection and others.

**ADDITIONAL FEATURES**

- With up to 4/8 groups of filters, the instrument covers all wavelengths of commonly used dyes.
- Unique bottom detection design with coaxial fiber optics avoids crosstalk among wells, increases the signal-to-noise ratio and ensures reliable results.
- Precisely tuned peltier module + proprietary temperature control algorithms = excellent temperature accuracy + industry-leading reliability. Temperature accuracy: <±0.1 °C
- The unique TAS temperature control technology avoids the edge effect of block heat conduction and therefore guarantees extremely uniform temperature between central and edge wells. Super reproducibility and highest quality results are ensured. Temperature uniformity: <±0.3°C
- Proprietary block heat dissipation technology brings on high heating and cooling rate of up to 4.0°C / sec, allowing significantly shorter cycle times.
- Automatic temperature control mode (Tube/Block) switches based on sample volume.
- An automatic hot lid with adjustable temperature effectively prevents reagent evaporation.
- Optimal results obtained with sample volumes as low as 5 μL, minimizes the use of sample and reagents and saves cost for your laboratory.
- Wide block temperature range from 4 °C to 105 °C, with infinity hold function allows PCR products to be stored at 4 °C overnight.
- Open platform chemistry and consumables ensure compatibility with commonly used protocols.
- Entire micro-plate scan and designated line scan are available for choice. A 96-wells dual-channel scan only takes 5.5s.
- RS232 C, USB or bluetooth provide configuration flexibility and enable PC free operation.
- Global wide range power supply with PFC function.
### General Specifications, Swift™ Spectrum 96 Real Time PCR Detection System

<table>
<thead>
<tr>
<th>Model</th>
<th>SWT-SPT-RT-96-4</th>
<th>SWT-SPT-RT-96-8</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sample Capacity</strong></td>
<td>96 × 0.2 ml PCR tubes (Bottom Transparent), 12 x 8 strips, 96-Well PCR plate (full-skirted)</td>
<td></td>
</tr>
</tbody>
</table>

#### Optical module

<table>
<thead>
<tr>
<th>Excitation</th>
<th>LEDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detection</td>
<td>1 photo-multiplier tube for 4 channels</td>
</tr>
<tr>
<td>Excitation Wavelength</td>
<td>300-800 nm</td>
</tr>
<tr>
<td>Emission Wavelength</td>
<td>500-800 nm</td>
</tr>
</tbody>
</table>

#### Channel And Fluorescence

| F1: FAM, SYBER Green I; F2: VIC, HEX, TET, JOE; F3: CY3, NED,TAMRA; F4: ROX TEXAS-RED |
| F5: CY5; F6: LightCycler Red |
| F7 and F8 for customized purpose |

#### Thermal Cycler

| Maximum Block Heating/ Cooling Rate* | 4.0°C/sec |
| Temperature Accuracy | ±0.1°C |
| Temperature Uniformity | ±0.3°C |
| Temperature Range | 4-105°C |
| Hot Lid Temperature Range | 30-110°C (Adjustable, Default 105°C, Automatic Hot-Lid) |
| Temperature Control Mode | Tube or Block |

#### Operation System

| Windows 2000 / Windows XP / Windows Vista / Windows 7 / Windows 8 |

#### PC Configuration

| Memory: 512M, Hard Disk: 10GB, CPU: Pentium 4, Minimum Virtual Memory: 1000MB |

#### Multiplex Analysis

| Up to 4 targets per well | Up to 8 targets per well |

#### Scan Mode

| Entire plate or designated line |

#### Scan Time

| 5.5 s (F1/F2 full 96-well plate scan) |

#### Data Analysis Methods

| Absolute Quantification, Standard Curve, Relative Quantification, Melting Curve, SNP Genotyping |

#### Complete System

| 5-100 µL |

#### Interface

| 1 x RS232C, 1 x USB, 1 x Bluetooth for PC control |

#### Dimensions (W × D × H)

| 395 x 430 x 352 mm (15.5” x 16.9” x 13.9”) |

#### Power Supply, Consumption

| 100-240 VAC, 50/60 Hz, 600 W |

#### Electrical Approvals

| CE |

#### Warranty

| 2 years |

#### Net Weight

| 28 Kg (61.7 lbs) |

#### Shipping Weight

| 29 Kg (63.9 lbs) |

#### Shipping Dimensions (W × D × H)

| 590 x 680 x 470 mm (23.2” x 26.8” x 18.5”) |

*Measurements on the block.

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### ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Model Code</th>
<th>Item Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWT-SPT-RT-96-8</td>
<td>2210001</td>
<td>Swift™ Spectrum RT Cycler 96 110-220 VAC 8 channels</td>
</tr>
<tr>
<td>SWT-SPT-RT-96-4</td>
<td>2210002</td>
<td>Swift™ Spectrum RT Cycler 96 110-220 VAC 4 channels</td>
</tr>
</tbody>
</table>
OUTSTANDING DESIGN, THUS EXCELLENT PERFORMANCE

Specially Designed Peltier Elements for Bottom Detection System

Spectrum is the only real-time PCR which use both Peltier technology and bottom detection at the same time. The 96-well block use the unique, proprietary multi-holes peltier module, designed to deliver rapid, controlled temperature changes and allow signal detection from the bottom of the tube, reducing signal scatter through the tube cap, or from fogging of the cap from sample evaporation. Sensitivity is also enhanced because of the shorter light path between the reagent and the detector. It is also possible to divide the block into 4 segments, allowing the simultaneous analysis of up to 4 different sample groups.

Proprietary FastCool™ Block Heat Dissipation Technology

Unlike conventional peltier based cyclers which use heat sinks to remove the heat, Spectrum real-time PCR uses heat pipes in addition to active fan-based heat sinks to provide fast, even heat dissipation and minimize the footprint of the cycler to save limited bench top space in the lab. Heat pipes have a much higher effective thermal conductivity than solid materials, thus can quickly transfer heat from block to heat sink and dissipate the heat, providing high block heating and cooling rates of 4°C/sec. Fast cycling is not dependent on the use of specific reagents and reduces the cycle run producing a result in around 1 hr.

AccuFluore™ Detection System

- The LED in AccuFluore™ Detection System provides a wide range of stable excitation, allowing more dye flexibility. It has a longer lifespan in contrast to halogen lamps and no calibration is required.
- One/Two Photomultiplier tubes (PMT) are used as detection sensors, covering up to 4/8 channels. The PMT, manufactured by the world’s top PMT manufacturer, is almost noise free, with superior sensitivity and reproducibility. Its high signal to noise ratio allows even single molecule detection. Over a linear dynamic range the system detects over 10 levels of magnitude.
- The coaxial fiber optic system makes sure the same amount of excitation light is received by each well and uniform signal measurement is obtained from each well, so no additional signal correction and calibrations are needed. Besides, unlike normal CCD which detects the signals from all wells at a time, the coaxial fiber optic system allows signals detection from the bottom of the tubes one by one, avoiding crosstalk among wells.
- With the AccuFluore detection system, the Spectrum 96 is a multi-channel instrument with up to 4/8 usable channels. The excitation wavelength range is from 300 nm to 800 nm and the emission wavelengths are between 500 nm and 800 nm. Up to 6 channels are fixed for the most current commercially available dyes, and optional 7th and 8th channels are available if required.
POWERSFUL SOFTWARE, SIMPLE TO OPERATE

Spectrum PC software’s simple intuitive navigation makes it easy to set up sample data, PCR protocols and get excellent real time PCR results. Real-time amplification can be monitored and data file will be automatically saved when a run is finished. Data files can also be exported to Excel for further analysis. The software has built-in data analysis methods, including Absolute Quantification, Standard Curve, Relative Quantification, Melting Curve and SNP Genotyping.

Well and Dye Setting

Quantitative Analysis

Standard Curve

Melting Curve

Relative Quantification Analysis

SNP Interface
The Esco Provocell™ Shaking Micro Incubator is designed for a wide variety of mixing applications for accurate incubation of reactions and denaturation of nucleic acids and proteins. Provocell™ combines an advanced microprocessor-based controller with Peltier heating and cooling to deliver outstanding reliability, safety and overall performance.

- Provocell™ can be used on the benchtop or in a biological safety or laminar flow cabinet without the contamination risk associated with conventional water- or liquid-cooling baths.
- Peltier technology permits rapid switching between heating and cooling with accurate temperature control and block uniformity.
- Special, stress-release ceramics prevent block damage resulting from rapid temperature changes, prolonging block lifespan.
- The Provocell™ system is environmentally friendly, maintenance free and uses no refrigerants or coolants.

**GENERAL FEATURES**

- Smooth orbital rotation
- Digitally controlled Peltier heating and cooling
- Fully programmable with speed setting up to 1500 rpm
- User-friendly interface
- Large, easy to read display
- Easy to clean interchangeable metal blocks
- Small footprint
- Compatible for use inside biological safety cabinet
- Manufactured with top quality, laboratory-grade components

**Uniform Mixing**

The Provocell™ Shaking Micro Incubator delivers stable, even orbital rotation creating steady, even vortexing that is required to ensure even and accurate mixing conditions.

- Rotation speed can be adjusted up to 1500 rpm within a 3 mm diameter (0.11”) rotation axis.
- The sample block is mounted to the main body using 4 bolts to enhance stability.
- The long motor life minimizes maintenance costs.

**Application**

Provocell™ is designed to meet a variety of laboratory applications. Choose from a selection of accessory mixing blocks available for different tube sizes.

**User Friendly Operation**

The large Vacuum Fluorescent Display (VFD) gives the user a clear view of the current temperature, speed and time.

- Operational parameters are color coded for easy visual differentiation of the parameters.
- A state-of-the-art microprocessor with pre-programmed interface is easy to use and allows the operator to modify temperature, time and speed during operation.

**High Performance Peltier Modules**

Peltier modules are designed for rapid temperature heating or cooling response and overall temperature accuracy.

- Excellent temperature uniformity.
- Temperature control accuracy, $\Delta T$ is less than 0.1°C.
- Ceramic semiconductors eliminate moving parts and noise, reducing vibration, minimizing maintenance.
- Lightweight modules occupy a small footprint.
- An aluminum covering and powerful fan dissipates heat efficiently and quickly.
- The unique module design reduces heat loss.
- The ergonomic design is easy to use.
## General Specifications, Provocell™ Shaking Micro Incubator

### Available Blocks*

<table>
<thead>
<tr>
<th>Order Number</th>
<th>Capacity/Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLC-1</td>
<td>1.5 ml x 40 (Standard)</td>
</tr>
<tr>
<td>BLC-2</td>
<td>0.2 ml x 96</td>
</tr>
<tr>
<td>BLC-3</td>
<td>0.5 ml x 54</td>
</tr>
<tr>
<td>BLC-4</td>
<td>Ø15 mm x 24</td>
</tr>
<tr>
<td>BLC-5</td>
<td>96 wells ELISA board</td>
</tr>
<tr>
<td>BLC-6</td>
<td>0.5 ml x 26 + 1.5 ml x 24</td>
</tr>
<tr>
<td>BLC-7</td>
<td>2 ml x 40</td>
</tr>
</tbody>
</table>

### Temperature Setting Range
- 0-105°C

### Temperature Control Range
- Ambient -14°C to 100°C

### Block Temperature Uniformity
- ±0.5°C

### Temperature Accuracy
- ±0.5°C

### Temperature Uniformity
- ±0.5°C

### Heating Rate
- 6°C/min (from 20°C to 100°C)

### Heating Time, Nominal
- ≤12 mins from 20°C to 100°C

### Cooling Time, Nominal
- ≤8 mins for 10°C decrease from ambient temperature ≤15 mins from 100°C to 10°C above ambient temperature

### Timer Range
- 1 min to 99 h 59 min

### Speed
- 300-1500 rpm

### Amplitude
- 3 mm (0.11")

### Power supply, Consumption

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESC-PV-PVC-2</td>
<td>110 VAC ±11V, 50/60 Hz, 150 W</td>
</tr>
<tr>
<td>ESC-PV-PVC-1</td>
<td>220 VAC±22V, 50/60 Hz, 150 W</td>
</tr>
</tbody>
</table>

### Dimension (W x D x H)
- 295 x 265 x 170 mm
  - (11.6" x 10.4" x 6.7")

### Warranty
- 3 years for mainbody, 2 years for blocks

### Net Weight
- 9.5 Kg (20.9 lbs)

### Shipping Weight
- 10.5 Kg (23.1 lbs)

### Shipping Dimensions (W x D x H)
- 320 x 420 x 330 mm
  - (12.6" x 16.5" x 13.0")

*Note to customer: Specify block when ordering.

## ORDERING INFORMATION

### Order Information, Provocell™ Shaking Micro Incubator

<table>
<thead>
<tr>
<th>Model Code</th>
<th>Item Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESC/PV-PVC-2</td>
<td>2210029</td>
<td>Provocell™ Micro Incubator 110 VAC</td>
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<tr>
<td>ESC/PV-PVC-1</td>
<td>2210030</td>
<td>Provocell™ Micro Incubator 220 VAC</td>
</tr>
<tr>
<td>ESC/PV-BLC-1</td>
<td>2210022</td>
<td>Provocell™ Incubator Block 1 (1.5 ml x 40)</td>
</tr>
<tr>
<td>ESC/PV-BLC-2</td>
<td>2210023</td>
<td>Provocell™ Incubator Block 2 (0.2 ml x 96)</td>
</tr>
<tr>
<td>ESC/PV-BLC-3</td>
<td>2210024</td>
<td>Provocell™ Incubator Block 3 (0.5 ml x 54)</td>
</tr>
<tr>
<td>ESC/PV-BLC-4</td>
<td>2210025</td>
<td>Provocell™ Incubator Block 4 (15 mm x 24)</td>
</tr>
<tr>
<td>ESC/PV-BLC-5</td>
<td>2210027</td>
<td>Provocell™ Micro Incubator Block 5 96 Well ELISA Board</td>
</tr>
<tr>
<td>ESC/PV-BLC-6</td>
<td>2210028</td>
<td>Provocell™ Micro Incubator Block 6 26 x 0.5 ml + 24 x 1.5 ml</td>
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<tr>
<td>ESC/PV-BLC-7</td>
<td>2210026</td>
<td>Provocell™ Incubator Block 7 2 ml x 40</td>
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</table>
The Esco Group of Companies is a global life sciences tools provider with sales in over 100 countries. The group is active in lab equipment, pharma equipment and medical devices. Manufacturing facilities are located in Asia and Europe. R&D is conducted worldwide spanning the US, Europe and Asia. Sales, service and marketing subsidiaries are located in 12 major markets including the US, UK, Singapore, Japan, China and India. Regional distribution centers are located in the US, UK, and Singapore.