

ESCO

WORLD CLASS. WORLDWIDE.

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 Cycler,
Spectrum 96 Real-Time
PCR Detection System**



Provocell™ Shaking Micro Incubator

Aeris™

Conventional PCR Thermal Cyclers



Aeris™ Thermal Cyclers

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 that 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 internal memory that can store up to 250 individual protocols and unlimited data using 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

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

*The parameters are tested under optimized lab environments.

ORDERING INFORMATION

Ordering Information, Aeris™ Thermal Cycler

Model Code	Item Code	Description
AERIS-MB	2210003	Aeris™ Thermal Cycler Main Body (100-240 VAC)
AERIS-BG096	2210004	Aeris™ Thermal Cycler Block (96 x 0.2 ml)
AERIS-B4830	2210005	Aeris™ Thermal Cycler Combined Block (48 x 0.2 ml + 30 x 0.5 ml)
AERIS-BG384	2210006	Aeris™ Thermal Cycler Block (384 wells)
AERIS-BD048	2210007	Aeris™ Thermal Cycler Dual Block (48 x 0.2 ml)
AERIS-B4076	2210008	Aeris™ Thermal Cycler (4 slides <i>in situ</i>)

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-BG384 G-384 WELL

Applicable consumables: 384-well microplate



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-B4076 4 IN SITU SLIDES

For In Situ PCR

Applicable consumables: 4 slides *in situ*



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

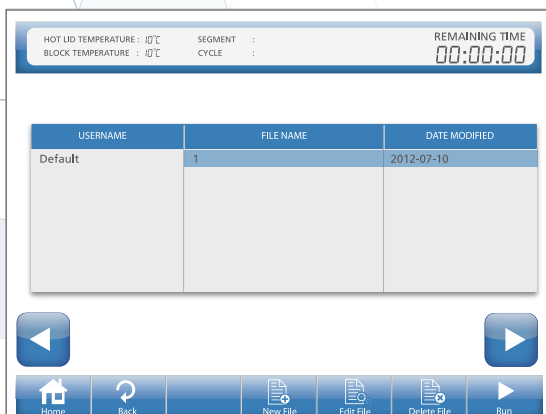
EASIER PROGRAMMING



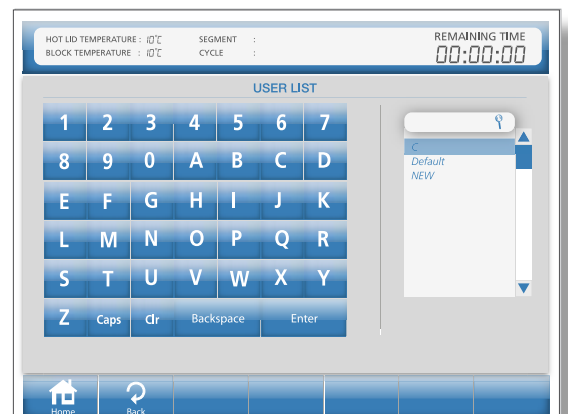
Main Interface



New Protocol



Shortcut



Run

WIDER APPLICATION



Why Use Nested PCR?

Nested PCR is a modification of a polymerase chain reaction technique intended to reduce PCR product contamination due to the amplification of non-specific primer binding sites.



Why Use Long PCR?

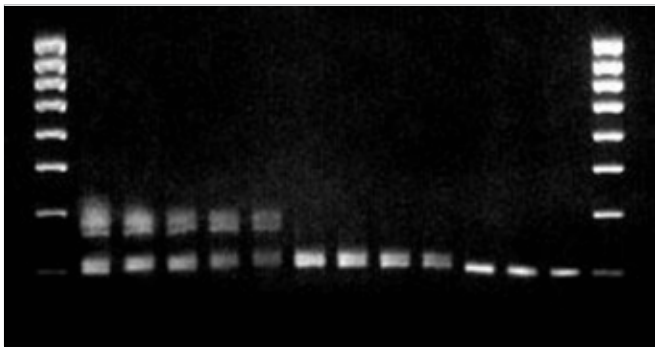
Long PCR, a new technique based on ordinary PCR, applied to amplify the PCR template longer than 5 Kb.



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.

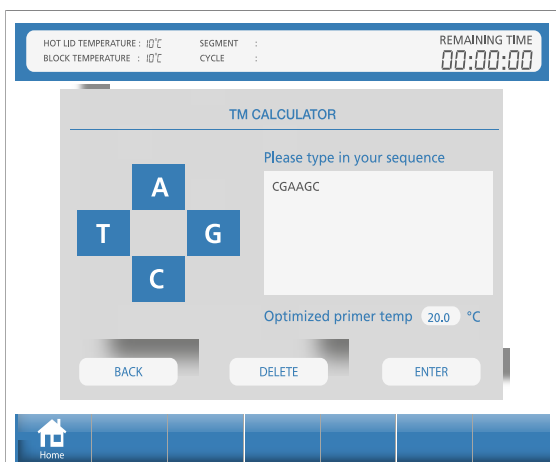
Simple

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.

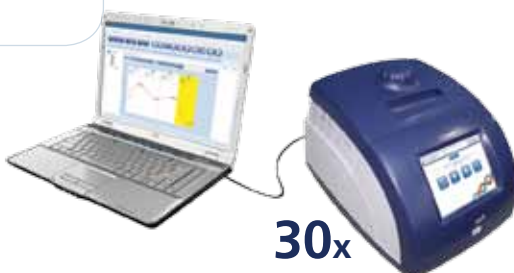
THREE MODES OF OPERATION



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



- 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



Touch Pen



Black Cable



For single unit connecting to AerisLine™ PC software

White Cable



For multiple units connecting to AerisLine™ PC software

Fuse



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



There are up to 250 protocols that can be saved in the internal memory; unlimited with use of USB memory stick and PC. Save as many of your commonly used programs as you want

RJ45



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

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 lifespan
- Tm calculator for optimized primer annealing temperature
- Flexibility for extensive applications such as 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



Swift™ MiniPro®

Conventional PCR Thermal Cyclers



Swift™ Series Thermal Cyclers, MiniPro®

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

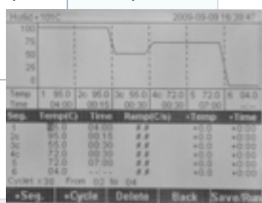
Unique IsoHeat™ temperature control technology guarantees extremely uniform temperature between central and edge wells. Block temperature uniformity is $<0.3^{\circ}\text{C}$.

High Temperature Precision

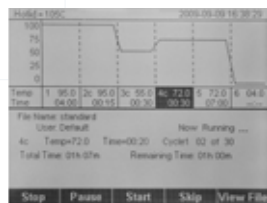
Precisely tuned and tested AeonStar™ peltier, temperature sensor, and proprietary control algorithms provide highest temperature accuracy. Block temp. accuracy is $<0.3^{\circ}\text{C}$.

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 $5.0^{\circ}\text{C} / \text{sec}$.



Protocol Setting Display



PCR Running Display

CONVENIENCE

Compact Footprint

User-friendly ergonomic design, small footprint to conserve available bench top space. Lightweight - only 3.5 Kg (7.7 lbs).

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 in 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 $5.0^{\circ}\text{C} / \text{sec}$. 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.

Certified Quality

ISO 9001:2000 Certificate

ISO 14001:2004 Certificate

CE & EMC Certificate

General Specifications, Swift™ MiniPro® Thermal Cycler

Model Code	SWT-MIP-0.2-__	SWT-MIP-0.5-__
Sample Capacity	24 x 0.2 ml	18 X 0.5 ml
Applicable Consumables	0.2 ml tubes, 3 X 8 strips, 24-well microplates	0.5 ml tubes
Temperature Range	4-99°C	
Maximum Heating Rate	5.0°C / sec	4.0°C / sec
Maximum Cooling Rate	4.0°C / sec	3.0°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

Model Code	Item Code	Description
SWT-MIP-0.2-1	2210009	Swift™ MiniPro® Thermal Cycler With 24 x 0.2 ml Block 110 VAC 50/60 Hz
SWT-MIP-0.2-2	2210010	Swift™ MiniPro® Thermal Cycler With 24 x 0.2 ml Block 220 VAC 50/60 Hz
SWT-MIP-0.5-1	2210011	Swift™ MiniPro® Thermal Cycler With 18 x 0.5 ml Block 110 VAC 50/60 Hz
SWT-MIP-0.5-2	2210012	Swift™ MiniPro® Thermal Cycler With 18 x 0.5 ml Block 220 VAC 50/60 Hz
SWT-MIP-BLC-1	2210013	Swift™ MiniPro® Block 1 (24 x 0.2 ml)
SWT-MIP-BLC-2	2210014	Swift™ MiniPro® Block 2 (18 x 0.5 ml)

Swift™

Spectrum 48 Real-Time PCR Detection System



Swift Spectrum™ 48 Real Time Thermal Cycler

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 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: $<\pm 0.1$ °C
- 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. Maximum reproducibility and highest quality results are ensured.
- Temperature uniformity: $<\pm 0.3$ °C
- 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 °C to 99.9 °C, with infinity hold function that allows PCR products to be stored at 4 °C overnight.
- Open platform chemistry and consumables ensure compatibility with commonly used protocols.
- The block can be divided into a 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 °C.
- Global wide range power supply with PFC function improves thermal efficiency and reduces power consumption by 30%.

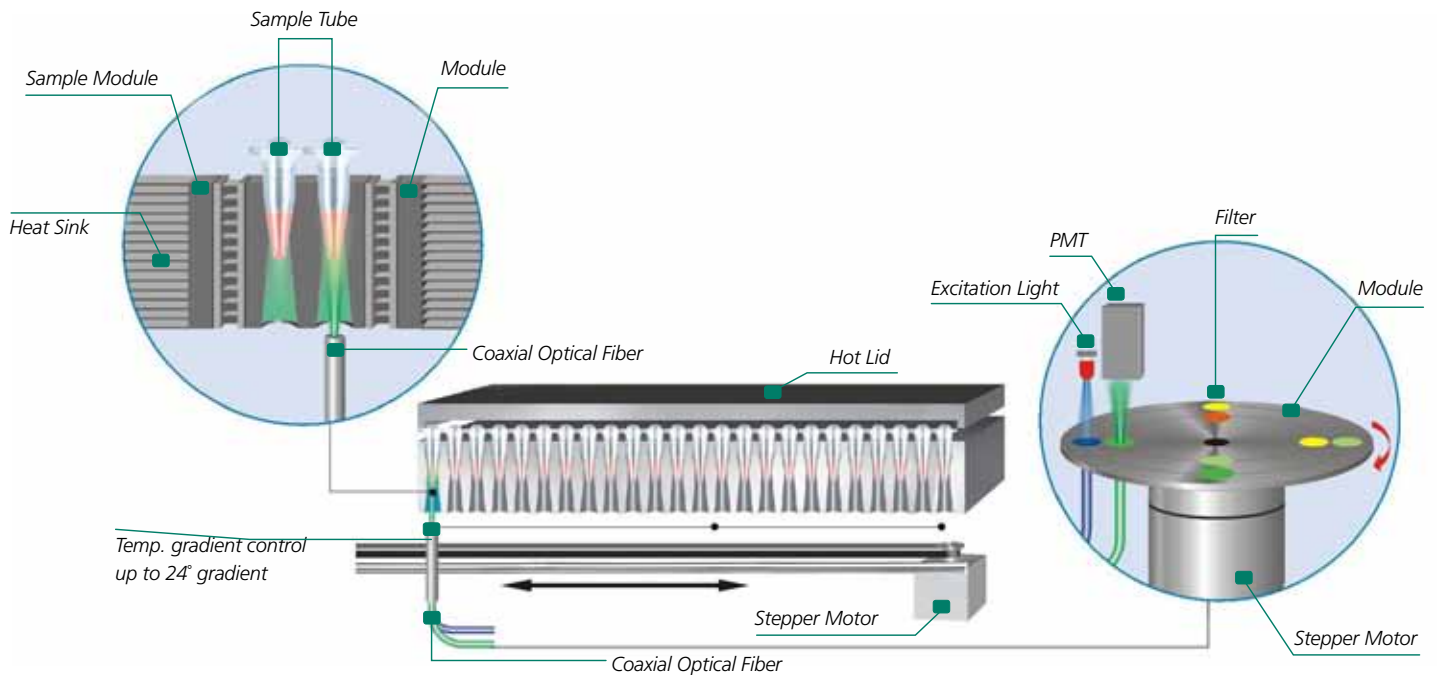
General Specifications, Swift™ Spectrum 48 Real Time PCR Detection System

Model Code	SWT-SPT-RT-48
Sample Capacity	48 × 0.2 ml PCR tubes (Bottom Transparent), 6 × 8 strips,
Optical module	
Excitation	LEDs
Detection	1 photo-multiplier tube for 4 channels
Excitation Wavelength	450-590 nm
Emission Wavelength	500-630 nm
Channel And Fluorescence	F1: FAM, SYBER Green I F2: VIC, HEX F3: JOE, Cy3, TAMRA F4: ROX, TEXAS-RED
Thermal Cycler	
Maximum Block Heating Rate*	4.0°C / sec
Maximum Block Cooling Rate*	4.0°C / sec
Temperature Accuracy	±0.1°C
Temperature Uniformity	±0.3°C
Temperature Range	4-99.9°C
Hot Lid Temperature Range	80-110°C (Adjustable, Default 105°C, Automatic Hot-lid)
Spectrum PC software	
Operation System	Windows XP / Windows Vista / Windows 7 / Windows 8
PC Configuration	Memory: 512M, Hard Disk: 10GB, CPU: Pentium 4, Minimum Virtual Memory: 1000MB
Data Analysis Methods	Absolute Quantification, Standard Curve, Relative Quantification, Melting Curve, SNP Genotyping
Complete System	
PCR Sample Volume	5-100 µL (10-40 µL recommended)
Interface	RS232C for PC control
Dimensions (W × D × H)	450 x 520 x 320 mm (17.7" x 20.5" x 12.6")
Power Supply, Consumption	100-240 VAC, 50/60 Hz, 650 W
Electrical Approvals	CE
Warranty	2 years
Net Weight	25 Kg (55.1 lbs)
Shipping Weight	26 Kg (57.3 lbs)
Shipping Dimensions (W × D × H)	590 x 680 x 470 mm (23.2" x 26.8" x 18.5")

ORDERING INFORMATION

Ordering Information, Swift™ Spectrum 48 Real Time PCR Detection System Specifications

Model Code	Item Code	Description
SWT-SPT-RT-48	2210031	Swift™ Spectrum RT Cycler 48 110-220 VAC



OUTSTANDING DESIGN, THUS EXCELLENT PERFORMANCE

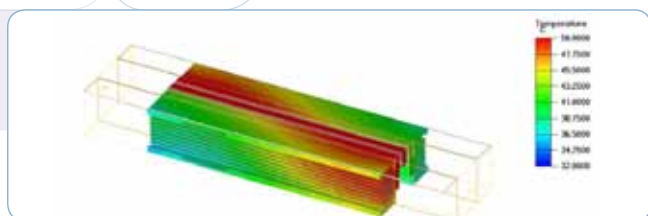
- The LED in AccuFluore™ Detection System provides a wide range of stable excitation, allowing more dye flexibility. It has a longer lifespan in contrast to halogen lamps without the need for calibration.
- Photomultiplier tube (PMT) is used as detection sensors, covering up to 4 channels. The PMT, manufactured by the world's top PMT manufacturer, is almost noise free, with superior sensitivity and reproducibility. Its high signal-to-noise ratio allows detection of even a single molecule.
- 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. Over a linear dynamic range, the system can detect over 10 levels of magnitude.

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, equal 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 dependent 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.



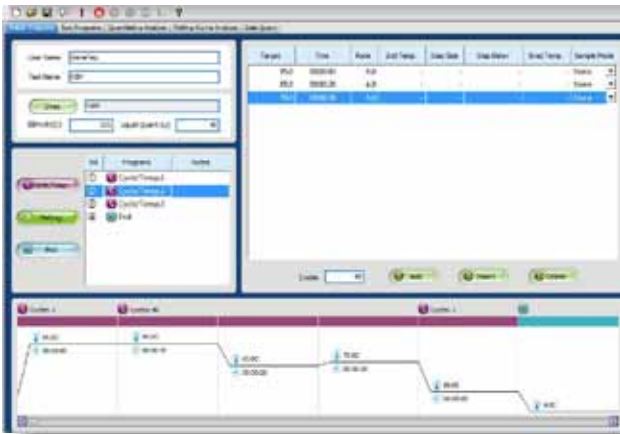
Sandwich Design Linear Block



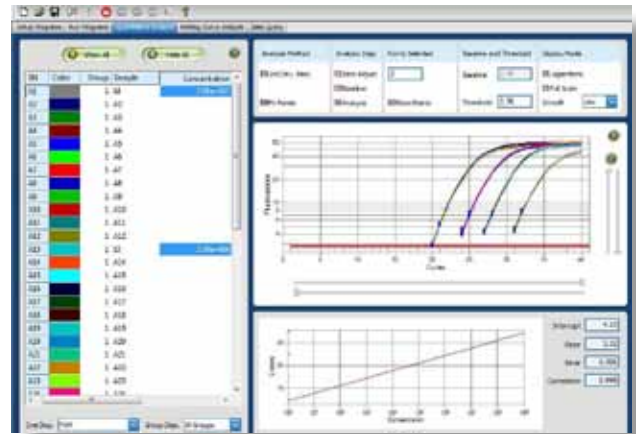
Sample Grouping

POWERFUL SOFTWARE, SIMPLE TO OPERATE

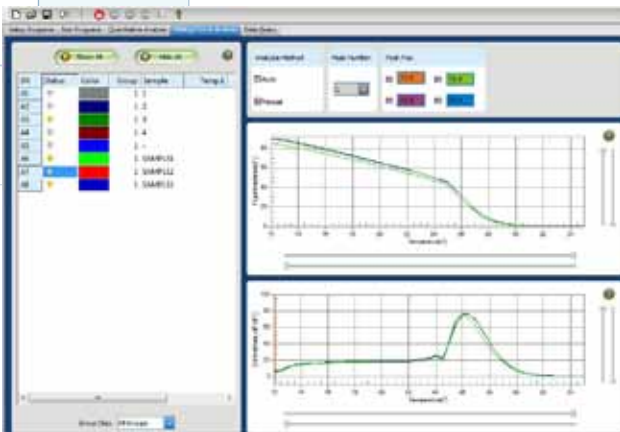
Spectrum PC software's simple intuitive navigation makes it easy to set up sample data, PCR protocols and get excellent real time PCR results. Real-time amplification can be monitored and data file will be automatically saved when a run is finished. Data files can also be exported to Microsoft Excel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



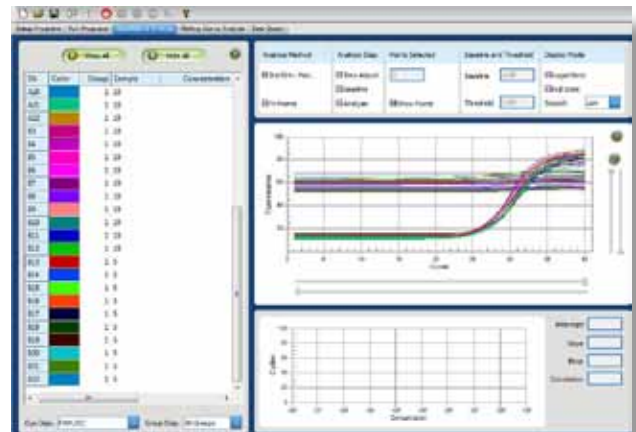
Protocol Setup



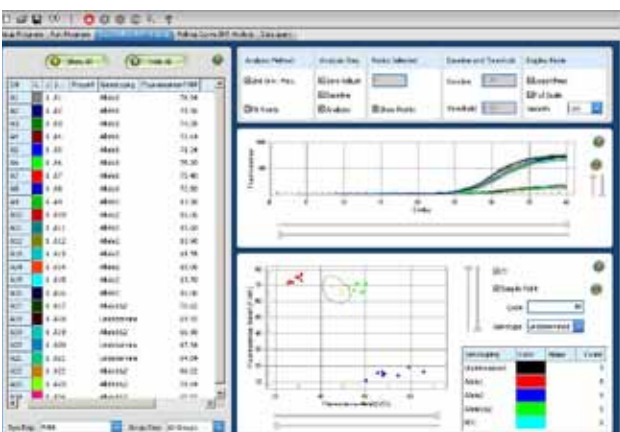
Quantification and Standard Curve



Melting Curve Analysis



Multiplex Analysis



SNP Genotyping Analysis



Relative Quantification

Swift™

Spectrum 96 Real-Time PCR Detection System



*Swift™ Series Thermal Cyclers,
Spectrum 96 Real-Time PCR Detection System*

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

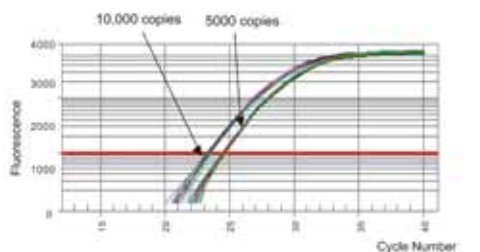
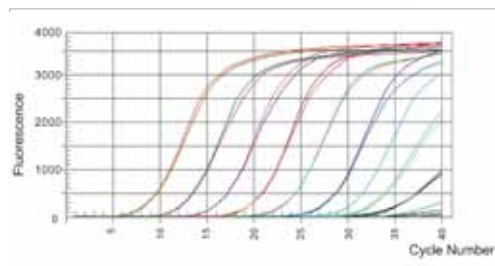
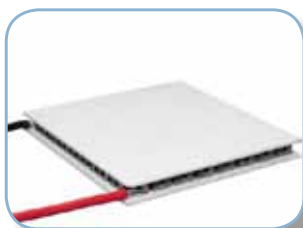
- With up to 4/8 groups of filters, the instrument covers all wavelengths of commonly used dyes.
- Unique bottom detection design with coaxial fiber optics avoids crosstalk among wells, increases the signal-to-noise ratio and ensures reliable results.
- Precisely tuned peltier module + proprietary temperature control algorithms = excellent temperature accuracy + industry-leading reliability. Temperature accuracy: $<\pm 0.1$ °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: $<\pm 0.3$ °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 allowing 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		
Model	SWT-SPT-RT-96-4	SWT-SPT-RT-96-8
Sample Capacity	96 x 0.2 ml PCR tubes (Bottom Transparent), 12 x 8 strips, 96-Well PCR plate (full-skirted)	
Optical module		
Excitation	LEDs	
Detection	1 photo-multiplier tube for 4 channels	2 photo-multiplier tubes for up to 8 channels
Excitation Wavelength	300-800 nm	
Emission Wavelength	500-800 nm	
Channel And Fluorescence	F1: FAM, SYBER Green I; F2: VIC, HEX, TET, JOE; F3: CY3, NED, TAMRA; F4: ROX TEXAS-RED	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	
Spectrum PC software		
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		
PCR Sample Volume	5-100 µL	
Interface	1 x RS232C, 1 x USB, 1 x Bluetooth for PC control	
Dimensions (W x D x 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 x D x H)	590 x 680 x 470 mm (23.2" x 26.8" x 18.5")	

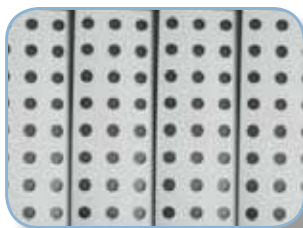
*Measurements on the block.

ORDERING INFORMATION

Ordering Information, Swift™ Spectrum 96 Real Time PCR Detection System		
Model Code	Item Code	Description
SWT-SPT-RT-96-8	2210001	Swift™ Spectrum RT Cycler 96 110-220 VAC 8 channels
SWT-SPT-RT-96-4	2210002	Swift™ Spectrum RT Cycler 96 110-220 VAC 4 channels

High Precision*SNPs Detection***Wide Detection Range***Analysis of SNPs***OUTSTANDING DESIGN, THUS EXCELLENT PERFORMANCE***Reliable Performance Peltier***Specially Designed Peltier Elements for Bottom Detection System**

Spectrum is the only real-time PCR that 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.

*4 Segments Heating Cooling Block***Proprietary FastCool™ Block Heat Dissipation Technology**

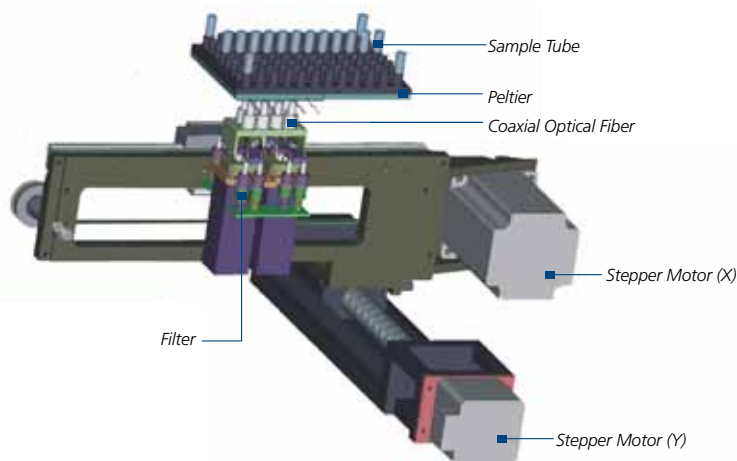
Unlike conventional peltier based cyclers which use heat sinks to remove the heat, Spectrum real-time PCR uses heat pipes in addition to active fan-based heat sinks to provide fast, even heat dissipation and minimize the footprint of the cycler to save limited bench top space in the lab. Heat pipes have 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.

*FastCool™ Block Heat Dissipation Technology*

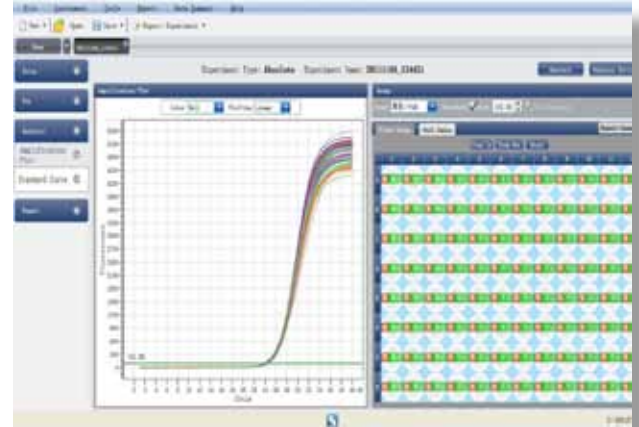
- With the AccuFluore™ detection system, the Spectrum 96 is a multi-channel instrument with up to 4/8 usable channels. The excitation wavelength range is from 300 nm to 800 nm and the emission wavelengths are between 500 nm and 800 nm. Up to 6 channels are fixed for the most current commercially available dyes, and optional 7th and 8th channels are available if required.

POWERFUL SOFTWARE, SIMPLE TO OPERATE

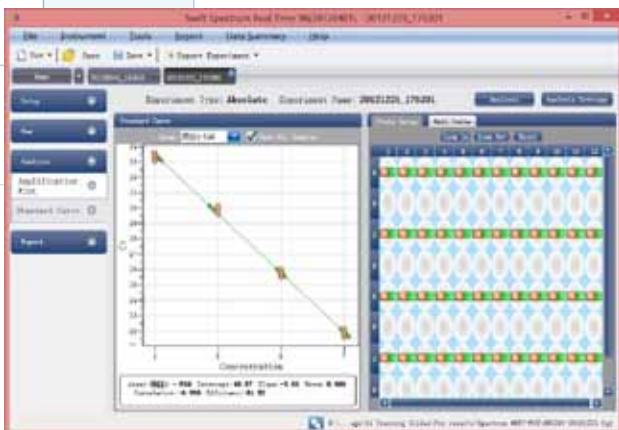
Spectrum PC software's simple intuitive navigation makes it easy to set up sample data, PCR protocols and get excellent real time PCR results. Real-time amplification can be monitored and data file will be automatically saved when a run is finished. Data files can also be exported to Excel for further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



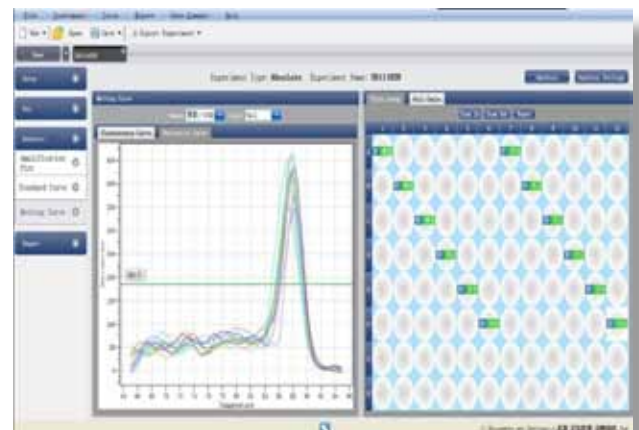
Well and Dye Setting



Quantitative Analysis



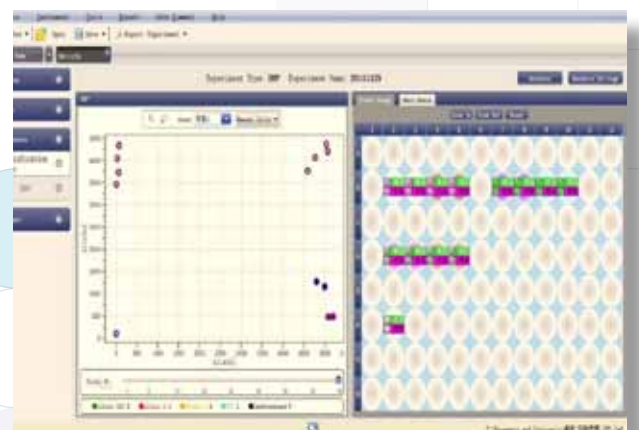
Standard Curve



Melting Curve



Relative Quantification Analysis



SNP Interface

ProvoCell™

Shaking Micro Incubator



ProvoCell™ Shaking Micro Incubator

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 orbital rotation creating a steady 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.

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, ΔT 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.

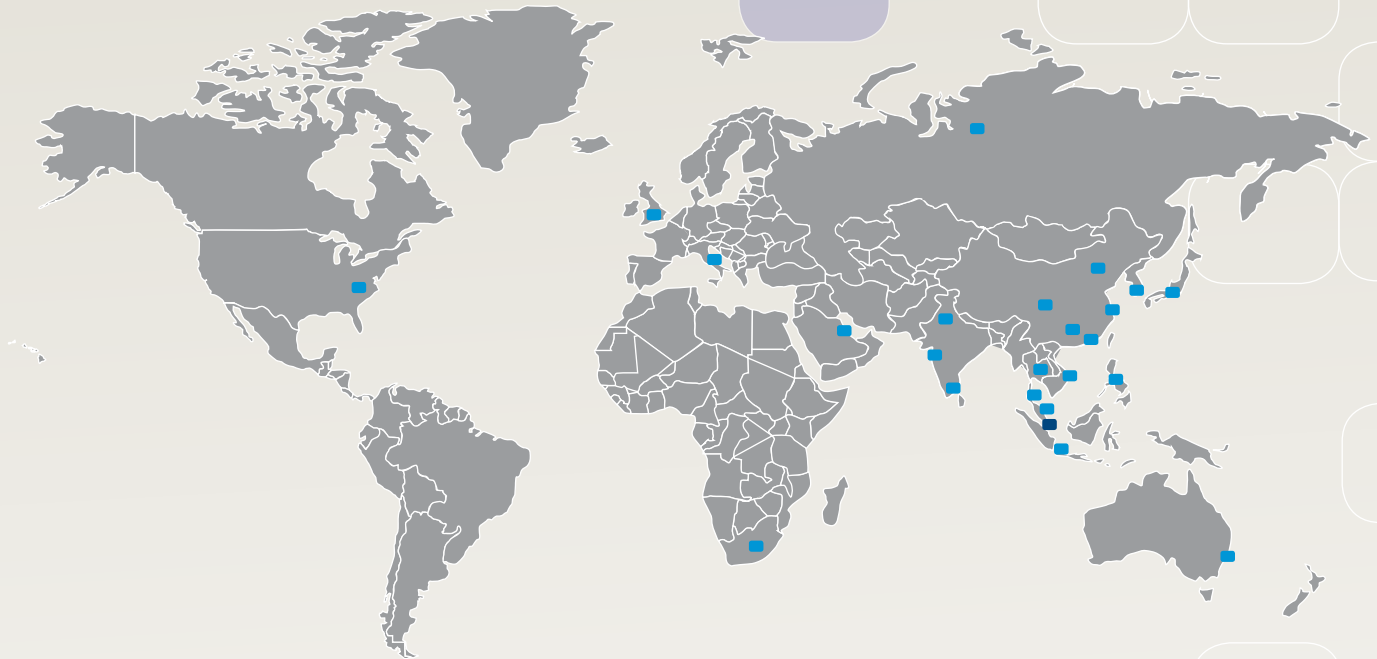
General Specifications, ProvoCell™ Shaking Micro Incubator		
Available Blocks*	Order Number	Capacity/Size
	BLC-1	1.5 ml x 40 (Standard)
	BLC-2	0.2 ml x 96
	BLC-3	0.5 ml x 54
	BLC-4	Ø15 mm x 24
	BLC-5	96 wells ELISA board
	BLC-6	0.5 ml x 26 + 1.5 ml x 24
BLC-7	2 ml x 40	
Temperature Setting Range	0-105°C	
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	Model	Voltage
	ESC-PVC-2	110 VAC±11V, 50/60 Hz, 150 W
	ESC-PVC-1	220 VAC±22V, 50/60 Hz, 150 W
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		
Model Code	Item Code	Description
ESC/PV-PVC-2	2210029	ProvoCell™ Micro Incubator 110 VAC
ESC/PV-PVC-1	2210030	ProvoCell™ Micro Incubator 220 VAC
ESC/PV-BLC-1	2210022	ProvoCell™ Incubator Block 1 (1.5 ml x 40)
ESC/PV-BLC-2	2210023	ProvoCell™ Incubator Block 2 (0.2 ml x 96)
ESC/PV-BLC-3	2210024	ProvoCell™ Incubator Block 3 (0.5 ml x 54)
ESC/PV-BLC-4	2210025	ProvoCell™ Incubator Block 4 (15 mm x 24)
ESC/PV-BLC-5	2210027	ProvoCell™ Micro Incubator Block 5 96 Well ELISA Board
ESC/PV-BLC-6	2210028	ProvoCell™ Micro Incubator Block 6 26 x 0.5 ml + 24 x 1.5 ml
ESC/PV-BLC-7	2210026	ProvoCell™ Incubator Block 7 2 ml x 40

ESCO GLOBAL NETWORK



- ART Equipment
- Biological Safety Cabinets
- CO₂ Incubators
- Compounding Pharmacy Equipment
- Containment / Pharma Products
- Ductless Fume Hoods
- Lab Animal Research Products
- Laboratory Fume Hoods
- Laboratory Ovens and Incubators
- Laminar Flow Clean Benches
- PCR Cabinets
- PCR Thermal Cyclers
- Powder Weighing Balance Enclosures
- Ultra-low Freezers

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Life Science • Chemical Research • Assisted Reproductive Technology (ART) • Pharmaceutical Equipment • General Equipment

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