

Amplify

Eppendorf Mastercycler®—best conditions for PCR



Mastering PCR is easy—if you have the right equipment.

»Eppendorf—designing instruments that fit the needs of today’s scientist.«

Do not let poor instruments compromise your PCR results. Eppendorf blocks show excellent homogeneity and accuracy. Fast ramp rates are precisely controlled allowing fast and reproducible PCR runs. Programming is easy and protocols can be password protected. All this supports your constant strive for reproducible and meaningful results.

Reproducibility

- > In PCR, precise and accurate block control is paramount
- > The Eppendorf blocks feature SteadySlope® gradient technology to ensure that ramp rates are identical in both gradient and normal mode.



Intuitivity

- > The graphic programming is quick, easy and intuitive.
- > Find all your protocols in your individual folder and protect them with a password.
- > Pause function, variable ramp rates and block modes and a lot more is at your disposal.



Reliability

- > Specially designed lids reduce the evaporation during PCR and help to accommodate a wide variety of PCR consumables.
- > The solid handles allow one hand operation of the instrument. No turning knobs are needed to lower the heated lid.



The Mastercycler® nexus X2

The Mastercycler nexus X2 gives you the ability to run two totally independent protocols at the same time. Smaller assays fit nicely on the 32-well-block—larger assays can exceed 48 samples and run on the 64-well-block. The larger block is available with a gradient function.

As every member of the Mastercycler nexus family, the Mastercycler nexus X2 can be combined with all other family members in a network of up to 3 units. That allows you to install the best solution for your needs and benefit from the same intuitive software on all your PCR devices.

In combination with Eppendorf's PCR Tubes, PCR Strips or divisible plates, the Mastercycler nexus X2 will give you consistent and publishable results—every day!

Product features

- > Large block for large assays—small block for small assays.
- > Universal block for strips, 0.2 mL and 0.5 mL PCR tubes
- > Intuitive graphic programming (optional mouse use)
- > Optional gradient for PCR optimization
- > E-mail notification
- > Combine up to 3 units for maximum throughput!





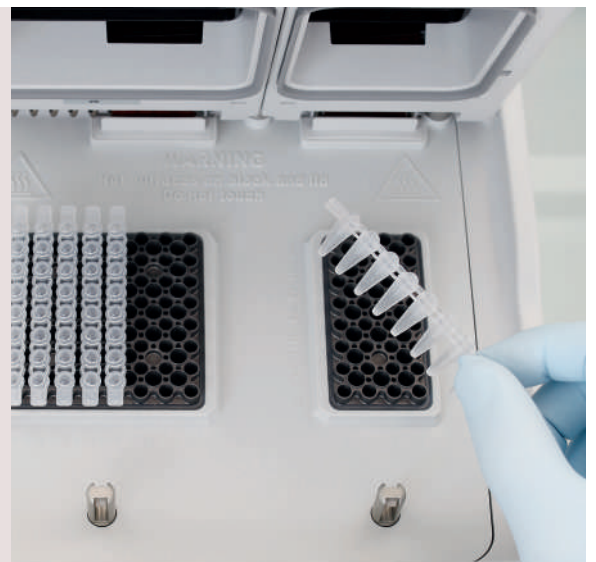
Benefits at your fingertips:

Two independent blocks of different sizes provide a lot of flexibility.
 Combine up to 3 units for higher throughput.
 Low noise, low power consumption, intuitive software.

Technical Specifications

Block homogeneity:	
20 °C–72 °C	≤ ±0.3 °C
95 °C	≤ ±0.4 °C
Heating rate*	ca. 3 °C/s
Cooling rate*	ca. 2 °C/s
Max. power consumption	700 W
Block temperature accuracy	± 0.2 °C
Sound power levels	< 40 dB[A]
Temperature control range of the block	4–99 °C
Temperature control mode	Fast, Standard, Safe
Gradient range	12 °C
Gradient temperature range	30–99 °C
Lid temperature range	37–110 °C
Dimensions (W × D × H)	25 × 41.2 × 33 cm
Weight	11 kg (24.2 lbs)

* Heating and cooling rates measured at block



Mastercycler® nexus



Individual features:

Mastercycler nexus

- > Universal block for plates, 0.1 mL, 0.2 mL and 0.5 mL PCR tubes

Mastercycler nexus X1

- > 96 well silver block for increased speed with 0.1 mL and 0.2 mL tubes and plates

Mastercycler nexus flat

- > Special consumables like slides can be heated and cooled without an adapter

PCR next to me

In the age of networking, the new Mastercycler nexus with its four different block versions is your reliable companion when it comes to the daily routine of PCR. Depending on the block, it can accommodate 96-well PCR plates, 0.2 mL and 0.1 mL PCR tubes and strips, 0.5 mL PCR tubes and even slides.

It is easy to use, does not need much space or energy and sends you an e-mail when it is done.

Combine, Connect, Control

- > Combine up to 3 units for maximum throughput!
- > Connect your Mastercycler nexus to your computer network and get a status e-mail to your desk!
- > Control all the relevant parameters of your PCR through the intuitive software

Product features

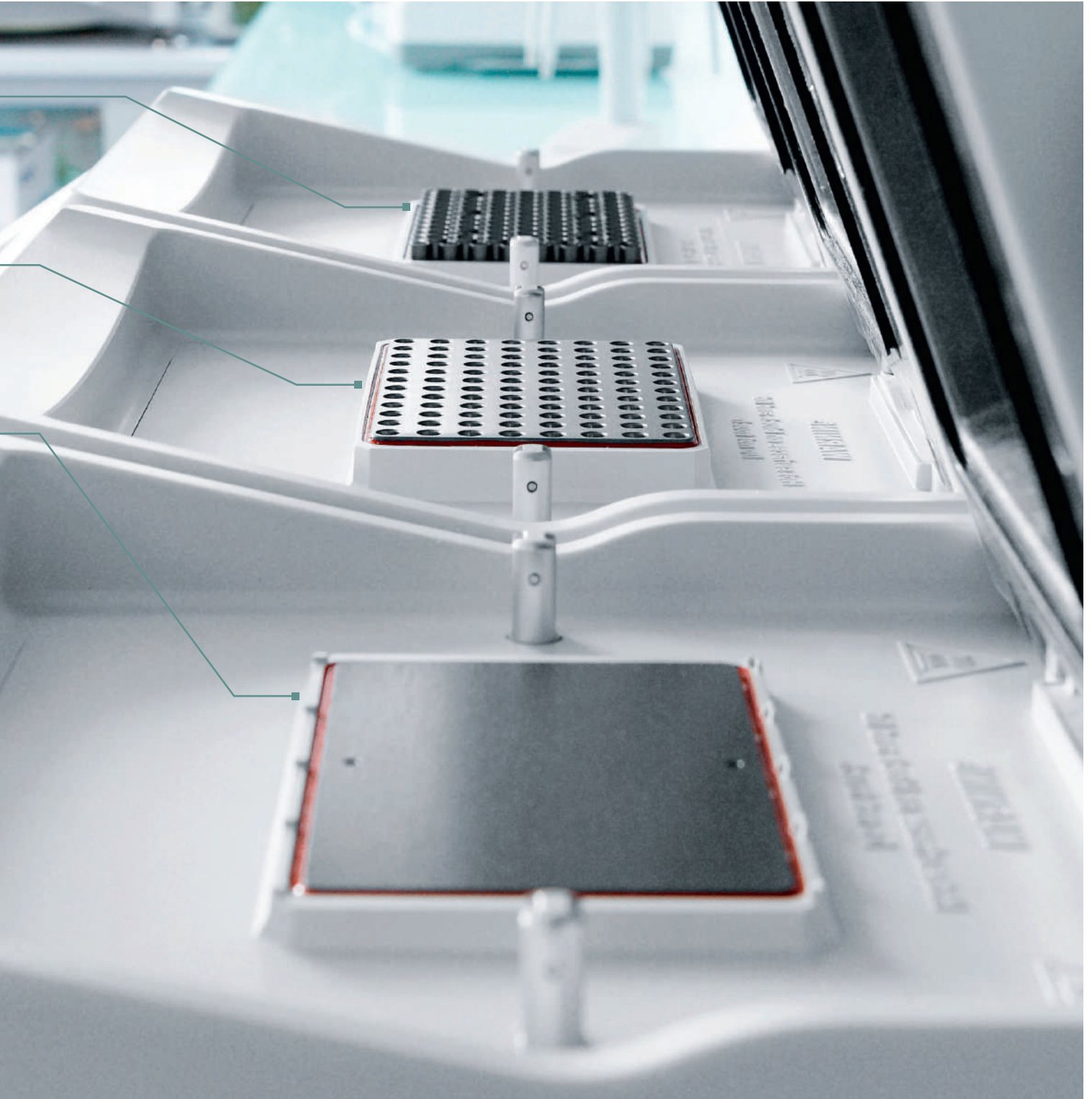
- > Extreme consumables flexibility
- > Small footprint
- > Intuitive graphic programming (optional mouse use)
- > Optional gradient for PCR optimization
- > Up to two other units can be connected to a central unit
- > E-mail notification
- > flexlid® concept: automatic height adjustment of the lid allows you to use all types of consumables
- > 2-year warranty
- > Optional self-test functionality

Applications

- > Standard PCR
- > Cycle sequencing
- > *In situ* PCR

Mastercycler nexus X2

- > Run two independent protocols on the two blocks
- > Large block for large assays—
small block for small assays



Mastercycler[®] nexus

»To raise new questions, new possibilities, to regard old problems from a new angle, requires creative imagination and marks real advance in science.«

Albert Einstein



Certified Quality

All Eppendorf cyclers follow these quality guidelines:

- > Individual, documented quality control certificates
- > Calibration accordingly to national and international standards: NIST[®] (USA), DKD/PTB (Germany), UKAS/NPL (UK)
- > UL/cUL listed

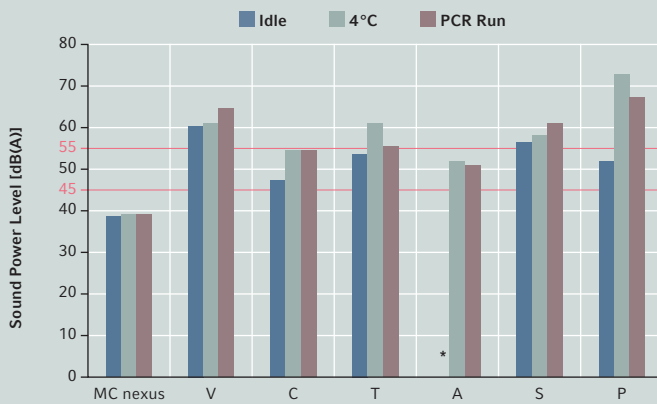
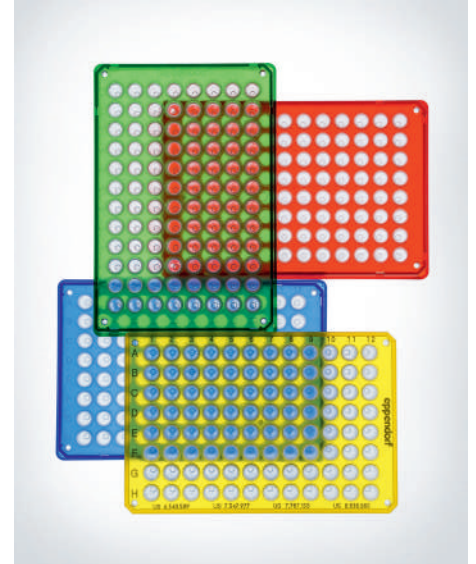
PCR Consumables

In good company—high quality consumables

Every researcher doing PCR always wonders about the best instrument, the best master mix, the best polymerase. Also when it comes to choosing the plastic consumables that build the connection between PCR instruments and your precious sample, the same rationality and prudence should be applied.

Different consumables can make a huge difference in the quality and reproducibility of your PCR results. Wall thickness, thermal conductivity of the material, mechanical stability and many other technical characteristics will have a direct impact on your experiment and subsequently the results. Make sure you use the best fitting PCR consumables for your application!

- > 96-well and 384-well PCR plates for high and medium throughput
- > Divisible plates, PCR tubes and tube strips for lower throughput
- > Sealing options, racks and other accessories for an optimized workflow



* The fan is switched off in idle state of A. Thus, a relevant differentiation of the operating noise to the surrounding sound level (ca. 32 dB(A)) was not possible.

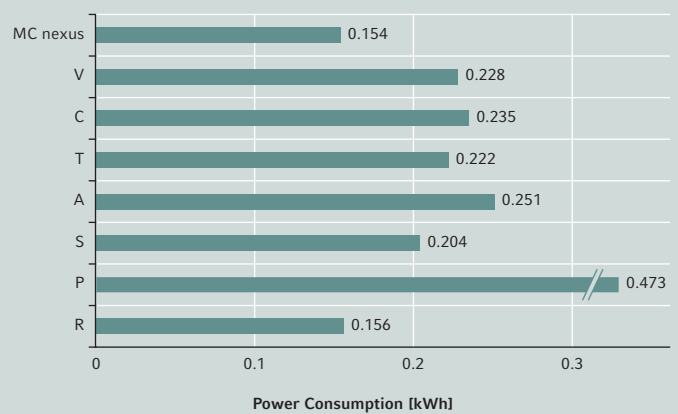
Low Noise Emission

The Mastercycler nexus is a whisper quiet PCR machine. Low noise levels make working in your lab more pleasant and enjoyable, particularly when you are thinking about your next big breakthrough findings....

With its ultra quiet ventilation, noise levels of < 40 dB[A] are achieved. Enjoy it!

Source: Eppendorf Application Note 243, December 2011, »The Mastercycler® nexus combines high energy efficiency with very low noise generation«

Power Consumption of a Typical PCR Run



Low Energy Consumption

Do you pay for electricity or is your lab held accountable for the electricity bill? Eppendorf's Mastercycler nexus is optimized for low power consumption—regardless if the PCR is running, idle or in standby mode.

- > For more information, visit www.eppendorf.com/pcr

Mastercycler® pro

Reproducibility at its best

Getting reproducible results quickly—that is vital for PCR in any application. The Mastercycler pro has been designed and developed to fulfill this requirement. The **vapo.protect®** concept reduces evaporation to a minimum. Therefore, concentrations in your PCR master mix remain consistent—minimizing non-specific binding beyond importance. The high heating and cooling rates of the Mastercycler pro S give you the speed you need. Even higher speed can be achieved with Impulse PCR, a hot-start function that increases heating rates to 8 °C/s.

Stop evaporation effectively!

The flexible fit of the fluid cushion minimizes evaporation of your reaction considerably. Only 0–3 % of the reaction volume evaporates using the new **vapo.protect** technology.

Thermocyclers of other suppliers show evaporation of up to 10 % in the center and up to >50 % at the corner positions of the block.

Thus, the **vapo.protect** technology leads to improved reproducibility and specificity at the rim and in the corners of the block.

Product Features Mastercycler pro

- > Ultimate reduction of evaporation
- > Extremely fast heating and cooling rates
- > Intuitive graphic programming
- > Gradient blocks with SteadySlope technology
- > Up to 5 units can be networked using a Control Panel
- > Up to 30 units can be networked using a PC software
- > Display indicates cyclers number in a network
- > 2 year warranty
- > Optional self-test functionality



Quality is timeless



The Mastercycler gradient was Eppendorf's first gradient cycler. Today the gradient function remains critical for many PCR labs.

The next generation Mastercycler pro is still one of the fastest cyclers around. Its **vapo.protect** concept is the latest in evaporation reduction technology.

Lately, Eppendorf has introduced the Mastercycler nexus, Mastercycler nexus X1 and Mastercycler nexus X2. E-mail notification, booking schedule, low noise levels and low energy consumption are only a few of the features ...



1990

Microcycler: Eppendorf introduces its first thermal cycler using water to heat and cool.



1993

Mastercycler 5330: Eppendorf introduces the first Mastercycler based on peltier technology.



1997

Mastercycler gradient: the first gradient thermal cycler on the market.



2003

Mastercycler ep: Fast heating/cooling rates and ultra quiet operation—in a compact design.



2008

Mastercycler pro: New **vapo.protect** technology reduces evaporation.



2012

Mastercycler nexus: Low noise, low energy consumption, e-mail notification



2013







Mastercycler nexus X1: Speed, low energy consumption, low noise and e-mail notification



2014








Mastercycler nexus X2: Two blocks, low energy consumption, low noise and e-mail notification

> to be continued ...

Technical Specifications	Mastercycler® pro	Mastercycler® pro S	Mastercycler® pro 384	Mastercycler® nexus gradient	Mastercycler® nexus	Mastercycler® nexus eco**
						
Thermoblock	Aluminum	Silver	Aluminum	Aluminum	Aluminum	Aluminum
Sample Capacity	96 × 0.2 ml PCR tubes or 1 × 96-well PCR plate		1 × 384-well PCR plate	96 × 0.2 mL PCR tubes or 1 × 96-well PCR plate or up to 71 × 0.5 mL PCR tubes		
Temperature control range of the block	4–99 °C			4–99 °C		
Temperature control mode	Fast, Standard, Safe			Fast, Standard, Safe		
Heating technology of the block	Peltier elements, Triple Circuit Technology			Peltier elements, Triple Circuit Technology		
Gradient block	over 12 columns		over 24 columns	over 12 columns	–	–
Gradient range	1–20 °C	1–24 °C	1–20 °C	1–20 °C	–	–
Gradient temperature range	30–99 °C			30–99 °C	–	–
Lid temperature range	37–110 °C			37–110 °C		
Lid descent and closing pressure	vapo.protect technology with Thermal Sample Protection			flexlid technology with Thermal Sample Protection		
Block homogeneity: 20 °C–72 °C 95 °C	≤ ±0.3 °C ≤ ±0.4 °C			≤ ±0.3 °C ≤ ±0.4 °C		
Block temperature accuracy	± 0.2 °C			± 0.2 °C		
Heating rate*	ca. 4 °C/s	ca. 6 °C/s	ca. 4 °C/s	ca. 3 °C/s		
Cooling rate*	ca. 3 °C/s	ca. 4.5 °C/s	ca. 3 °C/s	ca. 2 °C/s		
Interfaces	Centronics, USB, CAN in, CAN out			USB, Ethernet, CAN in, CAN out		CAN in, CAN out
Dimensions (W × D × H)	26 × 41.5 × 37 cm			25 × 41.2 × 32.1 cm		
Weight	18.5 kg (40.8 lbs)			11 kg (24.2 lbs)		10.5 kg (23.1 lbs)
Power supply	230 V, 50–60 Hz			230 V, 50–60 Hz		
Max. power consumption	950 W			700 W		700 W
Sound power levels	≤ 56 dB[A]			< 40 dB[A]		

* Heating and cooling rates measured at block





** Unit can only be operated via a Mastercycler nexus unit (including flat, X1 versions) with control and display panel
Product appearance and/or specifications are subject to change without notice.

Mastercycler® nexus gradient eco**	Mastercycler® nexus flat	Mastercycler® nexus flat eco**	Mastercycler® nexus GSX1	Mastercycler® nexus SX1	Mastercycler® nexus GSX1e**	Mastercycler® nexus SX1e**
						
Aluminum	Aluminum	Aluminum	Silver	Silver	Silver	Silver
96 × 0.2 mL PCR tubes or 1 × 96-well PCR plate or up to 71 × 0.5 mL PCR tubes	4 slides or equivalent		96 × 0.2 ml PCR tubes or 1 × 96-well PCR plate			
	4–99°C		4–99°C			
Fast, Standard, Safe			Fast, Standard, Safe			
Peltier elements, Triple Circuit Technology			Peltier elements, Triple Circuit Technology			
over 12 columns	–	–	over 12 columns	–	over 12 columns	–
1–20 °C	–	–	1–20 °C	–	1–20 °C	–
30–99 °C	–	–	30–99 °C	–	30–99 °C	–
	37–110 °C		37–110 °C			
flexlid technology with Thermal Sample Protection			flexlid technology with Thermal Sample Protection			
	≤ ±0.3 °C		≤ ±0.3 °C			
	≤ ±0.4 °C		≤ ±0.4 °C			
	± 0.2 °C		± 0.2 °C			
	ca. 3 °C/s		ca. 5 °C/s			
	ca. 2 °C/s		ca. 3.5 °C/s			
CAN in, CAN out	USB, Ethernet, CAN in, CAN out	CAN in, CAN out	USB, Ethernet, CAN in, CAN out		CAN in, CAN out	
	25 × 41.2 × 32.1 cm		25 × 41.2 × 32.1 cm			
10.5 kg (23.1 lbs)	11 kg (24.2 lbs)	10.5 kg (23.1 lbs)	11.2 kg (24.7 lbs)		10.7 kg (23.6 lbs)	
	230 V, 50–60 Hz		230 V, 50–60 Hz			
700 W	700 W	700 W	540 W		540 W	
	≤ 40 dB[A]		≤ 40 dB[A]			

G: Gradient block

S: Silver block

e: Eco version, needs to be connected to a Mastercycler nexus with control and display panel

Mastercycler® nexus GX2	Mastercycler® nexus X2	Mastercycler® nexus GX2e**	Mastercycler® nexus X2e**
			
Aluminum	Aluminum	Aluminum	Aluminum
64/32 × 0.2 mL PCR tubes or up to 64 × 0.5 mL PCR tubes			
4–99 °C			
Fast, Standard, Safe			
Peltier elements, Triple Circuit Technology			
over 8 columns	–	over 8 columns	–
1–20 °C	–	1–20 °C	–
30–99 °C	–	30–99 °C	–
37–110 °C			
flexlid technology with Thermal Sample Protection			
≤ ±0.3 °C			
≤ ±0.4 °C			
± 0.2 °C			
ca. 3 °C/s			
ca. 2 °C/s			
USB, Ethernet, CAN in, CAN out		CAN in, CAN out	
25 × 41.2 × 33 cm			
11 kg (24.2 lbs)		10.7 kg (23.6 lbs)	
230 V, 50–60 Hz			
700 W		700 W	
< 40 dB[A]			



Frost & Sullivan® European PCR Instrumentation Green Excellence Award 2012

»Based on its recent analysis of the PCR instrumentation market, Frost & Sullivan recognizes Eppendorf with the 2012 European Green Excellence Award for its Mastercycler nexus. This eco-friendly instrument offers exceptional power-saving capability, e.g. by a standby feature and the amount of power consumed overall.«

Ordering information	International Order no.	North America Order no.
Mastercycler® nexus 2		
Mastercycler® nexus GX2	6336 000.015	6336000023
Mastercycler® nexus X2	6337 000.019	6337000027
Mastercycler® nexus GX2e*	6338 000.012	6338000020
Mastercycler® nexus X2e*	6339 000.016	6339000024
Mastercycler® nexus with silver block		
Mastercycler® nexus GSX1	6345 000.010	6345000028
Mastercycler® nexus SX1	6346 000.013	6346000021
Mastercycler® nexus GSX1e*	6347 000.017	6347000025
Mastercycler® nexus SX1e*	6348 000.010	6348000029
Mastercycler® nexus with universal block		
Mastercycler® nexus gradient	6331 000.017	6331000025
Mastercycler® nexus	6333 000.014	6333000022
Mastercycler® nexus gradient eco*	6334 000.018	6334000026
Mastercycler® nexus eco*	6332 000.010	6332000029
Mastercycler® nexus with flat block		
Mastercycler® nexus flat	6335 000.011	6335000020
Mastercycler® nexus flat eco*	6330 000.013	6330000021
Complete Mastercycler® pro packages		
Mastercycler® pro and Control Panel	6321 000.515	950040015
Mastercycler® pro S and Control Panel	6325 000.510	950040025
Mastercycler® pro 384 and Control Panel	6324 000.516	950040035
Individual Mastercycler® pro modules		
Control Panel, incl. connection cable	6320 000.007	950030050
Mastercycler® pro**	6321 000.019	950030010
Mastercycler® pro S**	6325 000.013	950030020
Mastercycler® pro 384**	6324 000.010	950030030
Accessories		
CAN_BUS connection cable, 50 cm	5341 612.006	950014008
CAN_BUS connection cable, 150 cm	5341 611.000	950014016
Self test dongle	6320 071.001	950030040
Temperature Verification System with 96 well sensor plate	6328 000.006	6328000006
Temperature Verification System with 384 well sensor plate	6328 000.014	6328000014
CycleManager pro, incl. installation manual, online help, and connection cable	5349 810.001	950017007
CycleManager pro, incl. installation manual, online help	5349 820.007	950017202

* To run a Mastercycler® nexus with the suffix »eco« or »ek«, a Mastercycler® nexus model without such a suffix is needed. Up to 2 units with the suffix »eco« or »ek« can be connected to a Mastercycler® nexus without such a suffix.

** A Control Panel or CycleManager pro software (both sold separately) is required for operation. CAN_Bus connection cables are required to link cyclers together as a network.

Ordering information	International Order no.	North America Order no.
0.1 mL Eppendorf PCR Tubes		
PCR Tube Strips 0.1 mL, without caps (10 × 12 pieces)	0030 124.804	0030124804
PCR Tube Strips 0.1 mL + Cap Strips, domed (10 × 12 pieces each)	0030 124.812	0030124812
PCR Tube Strips 0.1 mL + Cap Strips, flat (10 × 12 pieces each)	0030 124.820	0030124820
0.2 mL Eppendorf PCR Tubes		
0.2 mL PCR Tubes, thinwalled with hinged lid (1000 tubes)	0030 124.332	951010006
8tube strip, for 0.2 mL PCR Tubes (10 × 12 pieces)	0030 124.359	951010022
0.5 mL Eppendorf PCR Tubes		
0.5 mL PCR Tubes, thinwalled with lid (500 tubes)	0030 124.537	0030124537
Cap Strips, Racks, Films & Foils		
Cap Strips, domed (10 × 12 pieces)	0030 124.839	0030124839
Cap Strips, flat (10 × 12 pieces)	0030 124.847	0030124847
PCR Rack, 10 pcs.	0030 124.545	0030124545
Heat Sealing Film, 100 pcs.	0030 127.838	0030127838
Heat Sealing Foil, 100 pcs.	0030 127.854	0030127854
PCR Film (adhesive), 100 pcs.	0030 127.781	0030127781
PCR Foil (adhesive), 100 pcs.	0030 127.790	0030127790
twin.tec PCR Plates		
Eppendorf twin.tec® PCR Plate 96, skirted, clear 25 pcs.	0030 128.648	951020401
Eppendorf twin.tec® PCR Plate 96, semi-skirted, clear 25 pcs.	0030 128.575	951020303
Eppendorf twin.tec® PCR Plate 96, unskirted low profile, clear 20 pcs.	0030 133.307	0030133307
Eppendorf twin.tec® PCR Plate 96, unskirted low profile, clear (divisible) 20 pcs.	0030 133.358	0030133358
Eppendorf twin.tec® PCR Plate 96, unskirted low profile, blue (divisible) 20 pcs.	0030 133.382	0030133382
Eppendorf twin.tec® PCR Plate 96, unskirted (250 µL), clear, 20 pcs.	0030 133.366	0030133366
Eppendorf twin.tec® PCR Plate 96, unskirted (250 µL), clear (divisible) 20 pcs.	0030 133.374	0030133374
Eppendorf twin.tec® PCR Plate 96, unskirted (250 µL), blue (divisible) 20 pcs.	0030 133.404	0030133404
Eppendorf twin.tec® PCR Plate 384, clear, 25 pcs.	0030 128.508	951020702
Eppendorf twin.tec® <i>microbiology</i> PCR Plate 96, skirted, clear, 10 pcs.	0030 129.300	0030129300
Eppendorf twin.tec® <i>microbiology</i> PCR Plate 96, semi-skirted, clear, 10 pcs.	0030 129.326	0030129326
Eppendorf twin.tec® <i>microbiology</i> PCR Plate 384, clear, 10 pcs.	0030 129.342	0030129342
Eppendorf twin.tec® PCR Plates 96 LoBind, semi-skirted, colorless, 25 pcs.	0030 129.504	0030129504
Eppendorf twin.tec® PCR Plates 96 LoBind, skirted, colorless, 25 pcs	0030 129.512	0030129512

For order numbers of additional twin.tec PCR Plates, please visit www.eppendorf.com/pcr

Your local distributor: www.eppendorf.com/contact

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www.eppendorf.com/mastercycler