

## Thermal Cycling



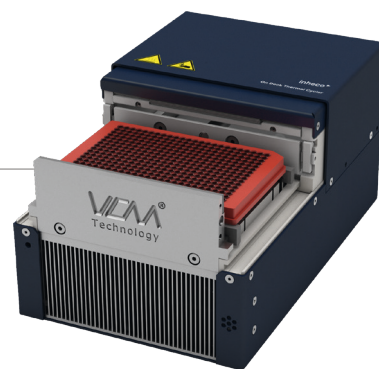
# ODTC®

On deck thermal cycler for 96 or 384 well PCR plates

# ODTC® – on deck thermal cycler

## Our motivation

Automation of molecular biological processes is in high demand for today's genomic workflows, in particular when high throughput and/or high precision is required for human genomics projects or human diagnostics. However, space in the lab is often limited and thus solutions are required that make the most out of existing liquid handling systems with minimal footprint.



ODTC® 96, Lid open, with Bio-Rad PCR plate

## World's first purpose-designed on deck thermal cycler

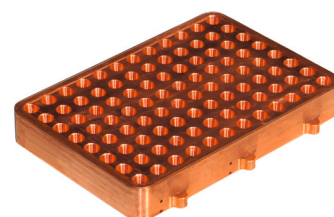
The INHECO On Deck Thermal Cycler (ODTC®) is the perfect instrument if you intend to fully automate processes containing PCR-amplification or other molecular biological routines with fast-changing heating and cooling requirements. The ODTC® fits on the deck of almost any liquid handling instrument, allowing direct pipetting into the disposable located in the ODTC®. PCR plates can be gripped from all directions, enabling continuous 24/7 mode throughput.

The heated lid of the ODTC® opens horizontally and can be operated independently from the heating block. This unique mechanism allows to completely automate multistep-workflows as „hands off“-solution. Opening of the lid has almost no influence on the thermal performance, enabling pipetting during thermal cycling or incubation steps.

## Novel technology with superior thermal performance

The outstanding thermal performance of the ODTC® is made possible by the unique 3D vapor chamber mount (VCM®) technology. The patented VCM® is the first 3D heat pipe used as super-conductive thermal cycler mount for PCR disposables, with internal heat transfer almost at the speed of sound. As in other thermal cyclers, Peltier elements provide rapid heating and cooling.

In contrast to the solid silver, aluminum, copper or gold-plated mounts in competitor instruments, the VCM® is able to distribute the applied temperature much more evenly and rapidly in the mount. The resulting superior well-to-well uniformity provided by this technology ensures consistent results over all wells, which is one of the most important criteria when doing human diagnostics, as in NGS & respective library preparation for example. The fast transient response with all wells on the same temperature level right after reaching the target plateau temperature allows a reduction of the plateau time and speeding up the whole PCR process.



3D VCM® uncoated

## BENEFITS

### On-deck integration made simple

#### Save space for integration – gain space for your assay

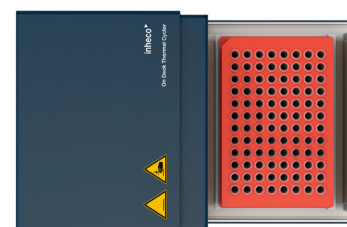
Most compact cycler integrated on deck: Footprint is equivalent to around 2.5 SBS positions only; PCU (power & control unit) separate and can be placed below or next to the deck. Ultra-flat design with a height of only 124.3 mm.

#### Fits on most liquid handling stations on the market:

Beckman i-Series, Biomek FX, NX  
Hamilton Star line, Vantage, Nimbus  
PerkinElmer Janus, Sciclone, Zephyr  
Tecan Freedom Evo, Fluent  
MGI-SP960

#### Optimize your assay setup

Flexible deck positioning solutions pre-designed: four configurations for the ODTC® 96 & ODTC® 384 with respect to the air ventilation are available. The ODTC is ideal for high density use anywhere in a liquid handling system.



ODTC® top view, open with disposable

# Automated PCR, thermal performance at its best

## Same results every day & across all wells

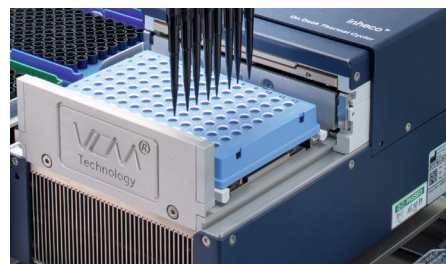
Ensured by superior well-to-well temperature uniformity of  $\pm 0.2K$  across wells @ 55°C, 72°C or 95°C, respectively.

## Save time for your workflow, or increase throughput

Very high heating & cooling rates and an ultra-rapid transition into the plateau temperature due to VCM®-based precise thermal regulation characteristics allows short PCR profiles.

## Performance guaranteed even with unequally filled wells

E.g. some full & some empty wells – enabled by the innovative 3D VCM® technology, delivering extremely robust temperature performance.



ODTC® open during pipetting

# User-friendly, flexible SiLA based software solution

## Time saving, intuitive PCR profile editing

Via one window parametrization tool or, alternatively, step by step programming possible for flexible interaction with the assay. Hands-free adding of further components/chemicals or taking out an aliquot for analysis during incubation processes possible.

# Use disposables at your choice

## State of the art accuracy

Multiple concepts exist to avoid unwanted liquid loss by evaporation. use of in-built sealing mat (easily exchangeable) or usage of disposable automated lids (like the PCR Comfort Lid from Hamilton, or the Bio-Rad Auto-Sealing Lid) or even conventionally sealed plates.

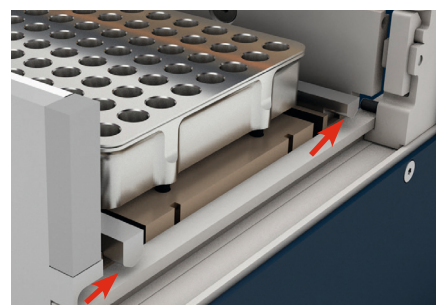
## Reduce the risk of cross contamination by avoiding condensation

The heated lid of the instrument is adjustable to any temperature from 30°C to 115°C and thus even incubations at low temperature are possible under optimal conditions.

## Comfortably select low- and high-profile plates of your choice

Full- or semi-skirted low profile PCR plates from Bio-Rad, 4titude or Hamilton reliably fit into the mount of the ODTC® 96 or ODTC® 384. Note: High-profile plates will only fit in the ODTC® 96 XL.

ODTC® 96 XL: Use your high-profile plate of choice to streamline your workflow by utilising the same plate for all PCR/cleaning/size selection steps. Same performance as in the standard device. Conveniently change between both low- and high-profile plates in the same instrument.



ODTC® plate ejection bars

## Safe plate removal

Ejection mechanism triggered upon opening of the lid at the end of the amplification process lifts the plate and avoids gripping problems. Mechanism can be adapted to any type of plate, full- semi- or non-skirted, by simple exchange of the customized ejection bars.

Name	PN	Description
Ejection bar standard <sup>1</sup>	5000071	For low profile full skirted 96 well PCR plates
Ejection bar semi-skirted	5000084	For low profile semi-skirted 96 well PCR plates
Ejection bar 384	5000100	For full skirted 384 well PCR plates
Ejection bar XL standard	5100105	For high profile skirted 96 well PCR plates
Ejection bar +0.7mm	5100121	Especially for Hamilton full skirted 96 well plates
Ejection bar +1.2mm	5000094	Especially for Biorad full skirted 96 well plates
PCR plate fixation frame <sup>2</sup>	5000099	Keeps the PCR plate in place during piercing a foil & aliquot aspiration

<sup>1</sup> Included in standard scope of delivery, <sup>2</sup> Inserted by hand, not automatable

## Sealing with horizontally moving Lid

The flexible design of the ODTC® allows the use of two different sealing options through the horizontally moving lid:

1. Pre-installed fixed ODTC® Sealing Cover, opens with lid, easily exchangeable.
2. Automation friendly Sealing Lid, e.g. Bio-Rad AutoSealing Lid, 4titude PCR lid, or Hamilton Comfort Lid instead of ODTC® Sealing Cover.

To prevent accidental contamination of the ODTC® instrument and to fully exclude any cross-contamination issues, pre-sealing of the plates in combination with sealing covers/lids may be an additional option, depending on your requirements. Please check manufacturers requirements for use of operation and cleaning



*ODTC® is optimized for certain PCR Plates, e.g.: Bio-Rad low profile plate, here shown with Bio-Rad Auto-Sealing Lid*

Product Name	Manufacturer	PN	Function
INHECO Sealing Cover	INHECO	5000066	ODTC® inbuilt, re-usable
Hamilton PCR ComfortLid	Hamilton	814300	disposable
Bio-Rad Auto-Sealing Lid	Bio-Rad	MSL2022	re-usable
Bio-Rad Auto-Sealing Lid	Bio-Rad	MSL2032	re-usable, gripper version
4titude Auto-Sealing PCR Plate Lid	4titude	4ti-0291	disposable

## Transient response & faster PCR runs

Due to the use of VCM® Technology the transient response of the ODTC® is much faster than the response of state-of-the-art thermocyclers using aluminum or silver thermal blocks. All 96 or 384 wells are on the same temperature level right after reaching the target plateau temperature. This fast transient response allows a reduction of the plateau time and speeding up the whole PCR process.



ODTC® 96 XL

## Variants (wells and ventilation outlet)

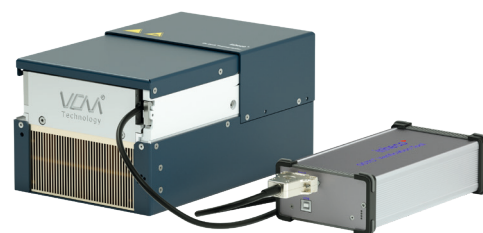
Vent outlet	ODTC® 96	ODTC® 384	ODTC® 96 XL	ODTC® 384 XL
Left	8100100	8100200	8100300	8100400
Back	8100101	8100201	8100301	8100401
Right	8100102	8100202	8100302	8100402
Down	8100103	8100203	8100303	8100403

Power & Control Unit is identical for all ODTC® versions and included in scope of supply.

## ODTC® verification tool OVT

The OVT is specially designed to test the performance of the ODTC®. Quick, easy & reliable! It's unique flat measuring head captures mount and lid temperatures while the cyclers are closed during the run of a predefined test routine. The OVT is checking heating and cooling rates and the system software automatically calculates the precision and accuracy of the mount and lid temperatures, as well as the temperature uniformity over the mount. Two versions OVT96 and OVT384, are available for verification of the respective ODTC® 96 or 384 well Cycler. The ODTC® unit & OVT System information and the test results are shown in a PDF verification document.

Use the OVT for Instrument Qualification (IQ), during Operational Qualification (OQ) and for regular checks to ensure the best performance of your equipment. The guided setup and the automated test routine make it the ideal tool for service personnel as well as for end-users.

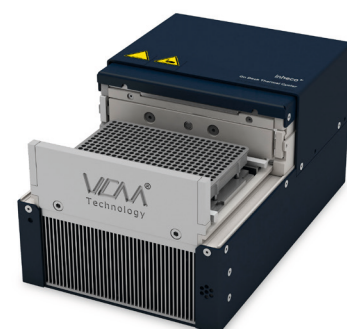


ODTC® with OVT  
(ODTC® Verification Tool)

# Main specifications

Specifications of ODTC®	ODTC® 96 / ODTC® 96XL	ODTC® 384 / ODTC® 384XL
Temperature range	4 °C to 99 °C [39 °F to 210 °F]	
Temperature accuracy	±0.3 K @ 55 °C [131 °F]	
Temperature uniformity	±0.2 K @ 55 °C [131 °F] ±0.2 K @ 72 °C [162 °F] ±0.2 K @ 95 °C [203 °F]	
Adjustable heating rate	from 0.1 to 4.4 K/s	from 0.1 to 5.0 K/s
Adjustable cooling rate	from 0.1 to 2.2 K/s	
Heating rate average	max. 4.4 K/s	max. 5.0 K/s
Cooling rate average	max. 2.2 K/s	
Heated lid temperature	adjustable between 30 °C to 115 °C	

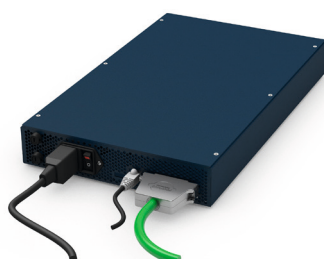
Power & Control Unit	
Interface	Web based protocol, XML files SiLA, Ethernet (RJ45 connector)
Dimensions (WxDxH horizontally placed)	256.5 mm x 414.5 mm x 58 mm Note: The ODTC® Power & Control Unit can be positioned vertically or horizontally.
AC input	100-240 V / 50-60 Hz (1250 W)
DC output	24 V / (1200W)
ODTC® cable length to PCU	3 m



ODTC® 384 open without a PCR plate

## PCR plate types tested

ODTC® 96	ODTC® 96XL	ODTC® 384 / ODTC® 384XL
Bio-Rad Hard-Shell® HSP-9xxx 4titude FrameStar 96, 4ti-0960/C Hamilton FramePlate® 814302	MicroAmp EnduraPlate Optical, 96-Well Clear 4483352 Eppendorf twin.tec® E0030128575 BioRad Hard-Shell HSS-9xxx	Bio-Rad Hard-Shell® HSP-3xxx 4titude FrameStar 384, 4ti-0384/C/IND Hamilton FramePlate® 814305
for other plates contact <a href="mailto:sales@inheco.com">sales@inheco.com</a>		

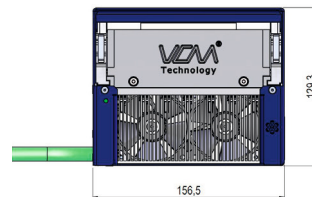
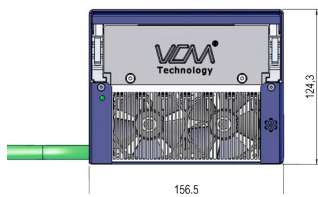


ODTC® Power & Control Unit (PCU)  
in horizontal position, alternative:  
vertical positioning of the Power & Control  
Unit is possible

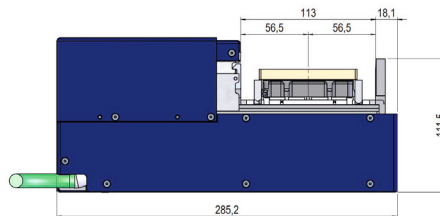
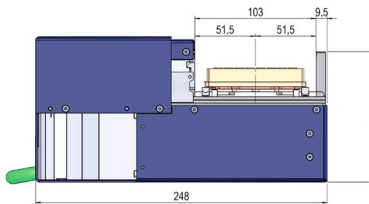
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ODTC® 96 or 384

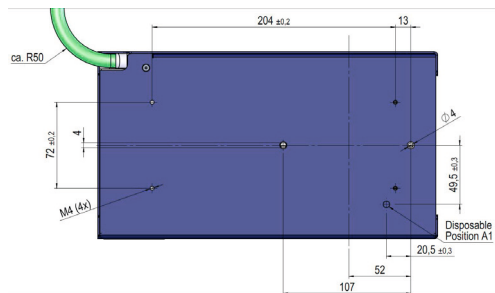
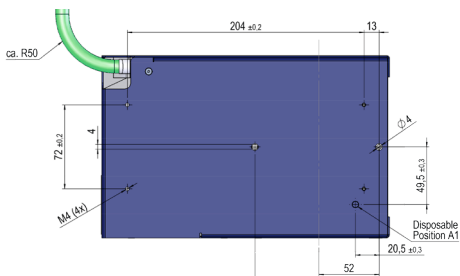
ODTC® 96 XL or 384 XL



Front view



Side view



Bottom view  
Drilling scheme