

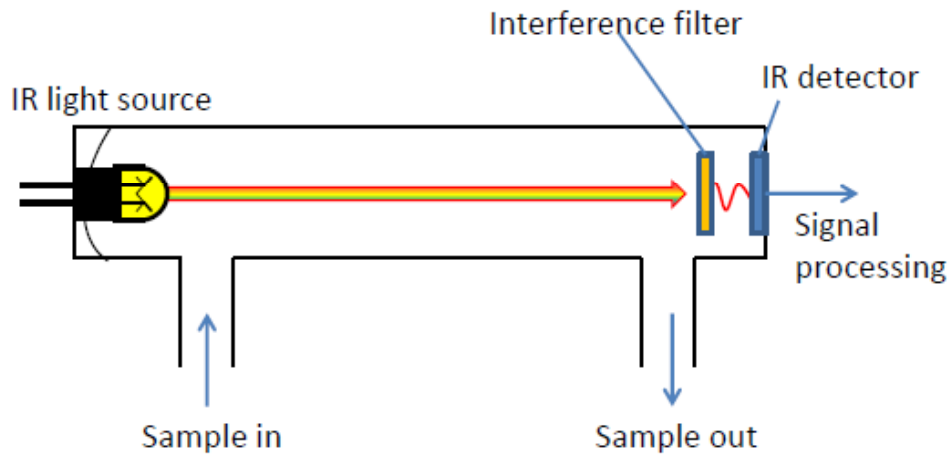


Next Generation of Thermo Scientific 新一代的Thermo Scientific

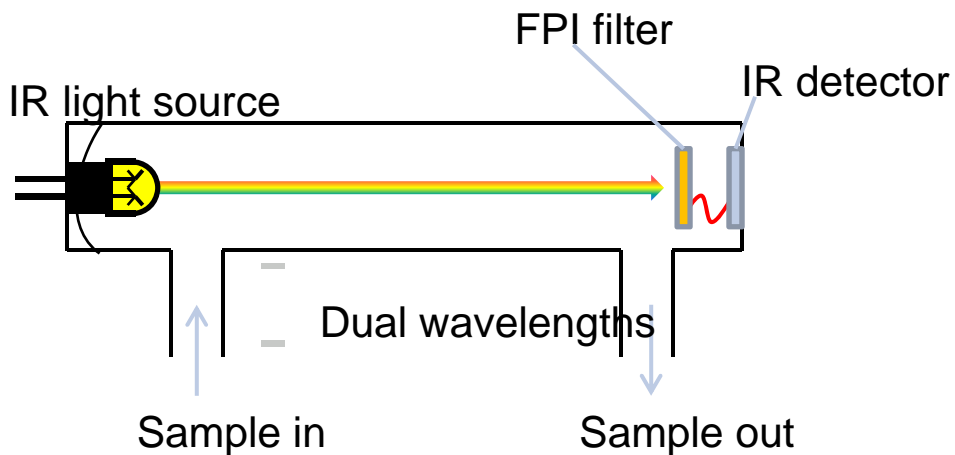
NEW CO2 SENSORS

新CO2探头

Different IR Sensors Have Different Challenges 不同类型的红外探头有不同的挑战



Basic IR Sensor – Single Wavelength
基本红外探头-单波长



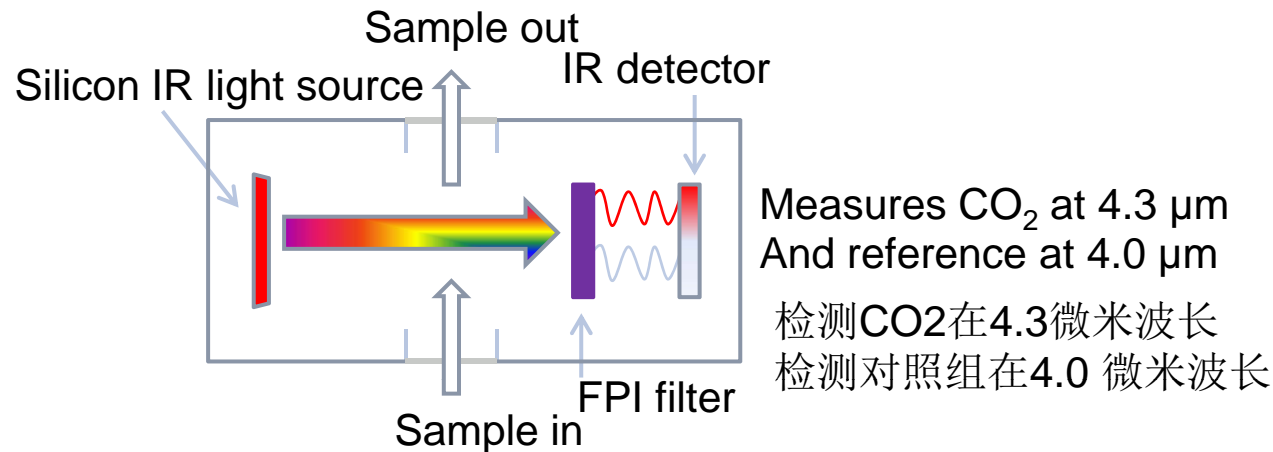
Single beam, dual wavelength-单光束，双波长

Introducing new IR CO2 Sensor 新红外CO2探头

IR180Si replaces the incandescent bulb with silicon MEMS emitter technology as the IR source IR180Si用硅MEMS发射技术代替传统的红外灯泡作为红外光源

- **Stable** – not affected by changes in temperature, humidity, oxygen, or barometric pressure 稳定-温度、湿度、氧气或大气压力的变化对其无影响
 - Auto-calibrates to a reference wavelength to eliminate drift 自动校准可利用参考波长消除漂移
 - Specification is +/- 0.2% for 1 year 一年的波动不超过+/- 0.2%
- Highly responsive with **recovery under 5 minutes** from door openings 快速反应-开门后的回复时间少于5分钟
- **Robust design** allows maintenance-free, *in situ* location, eliminating the need for removal during sterilization 高鲁棒性设计使其无需维护，并且在高温灭菌时无需移出。
 - Incandescent light sources cannot withstand 180C 红外光源在180C时无需移出
 - **Longer service life** because no light bulb 因为无灯泡所以长使用寿命

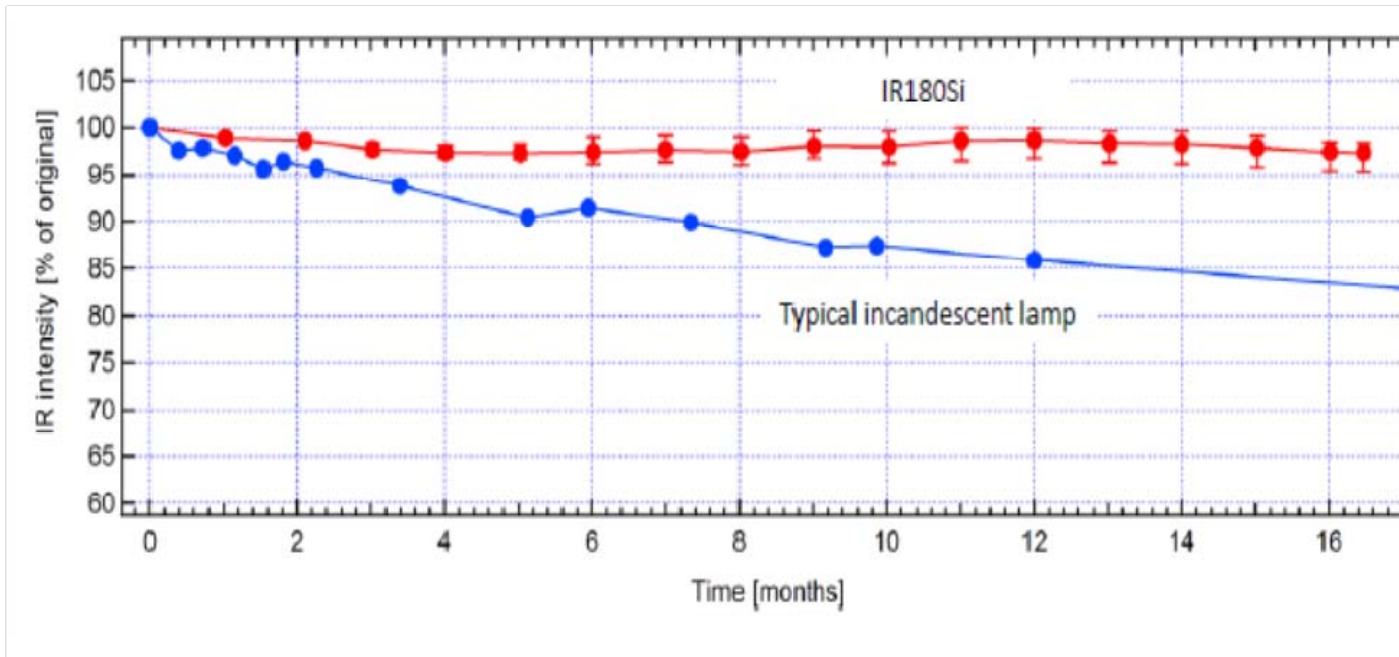
New IR180Si 新IR180Si



One IR source with one optical path and detector to eliminate variability 红外光源和检测器均为一个消除差异

FPI, tuning filter, continuously switches from measuring and referencing wavelength, continuously calibrating
FPI, 调谐滤波器, 连续切换从测量到参考波长反复, 连续校准

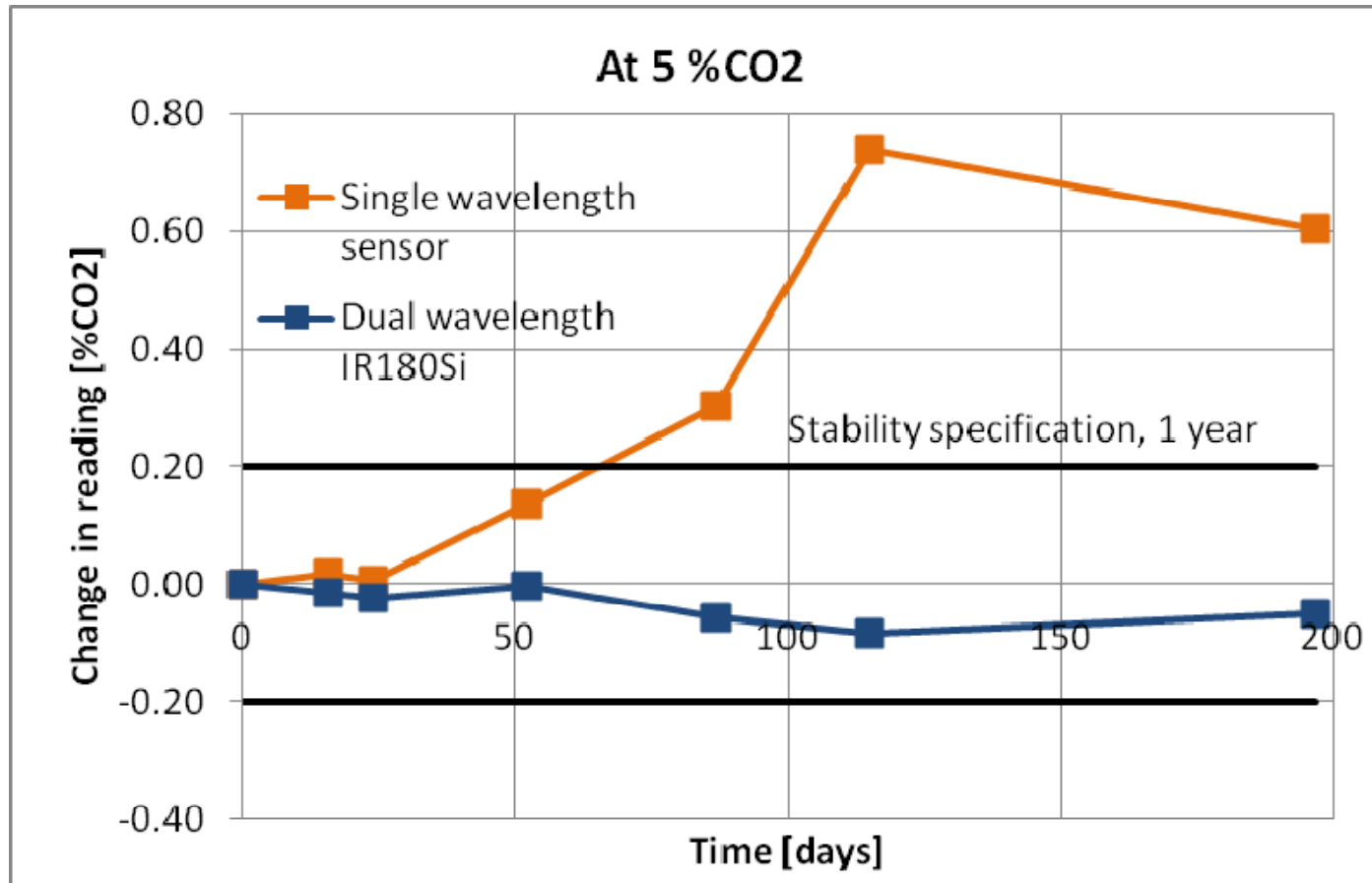
Introducing new CO2 Sensors 新CO2探头



Traditional IR sensor contains an incandescent bulb that puts out less light as it ages, resulting in sensor drift. 传统的红外传感器包含一个白炽灯泡，因为长时间使用会逐渐变暗，导致传感器漂移。

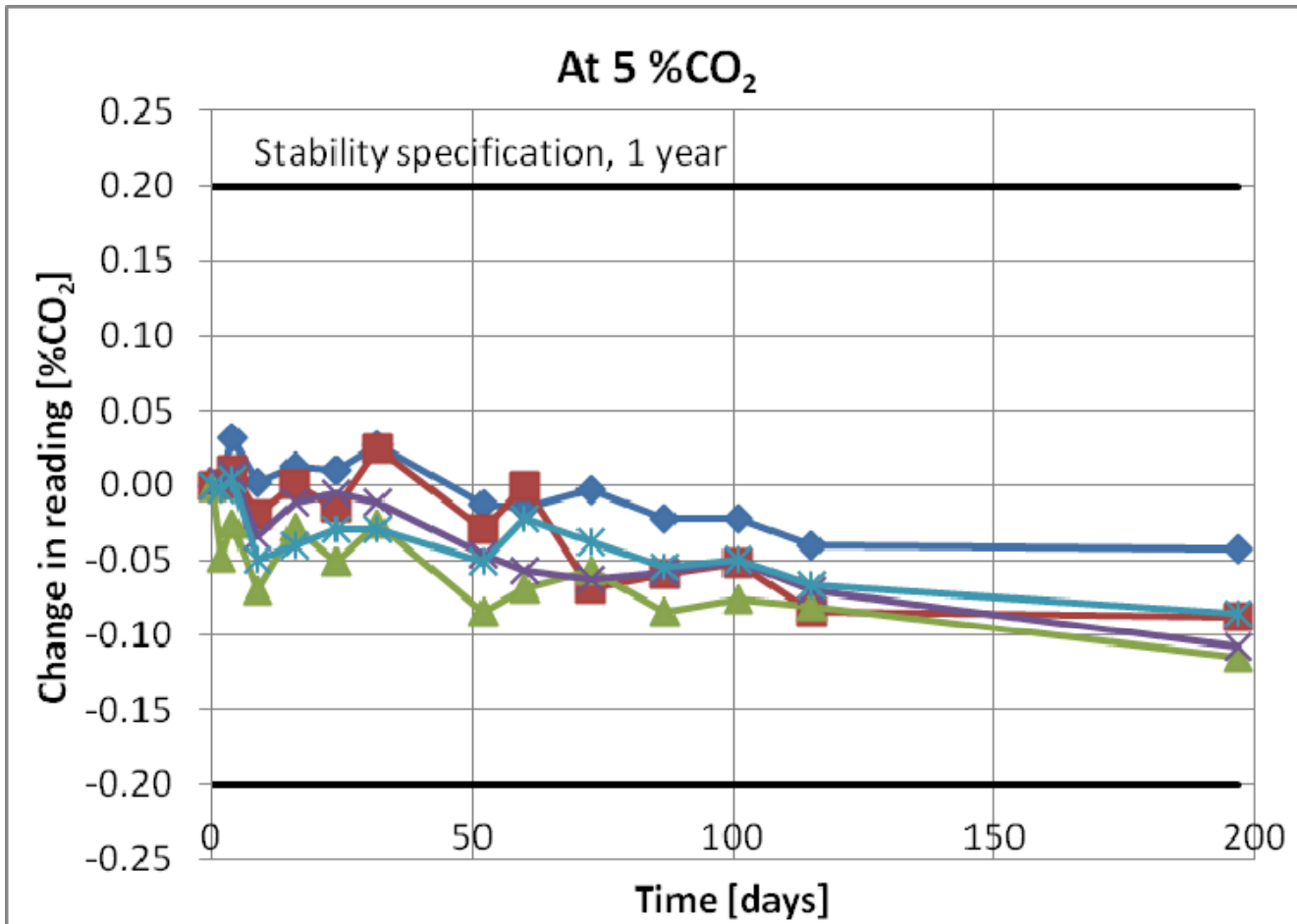
Our silicon MEMS emitter is designed to not lose intensity over time, lasting up to 50% longer than ordinary IR sensors. 我们的硅MEMS发射器因为设计原因不会随着时间的推移而失去强度，所以比传统红外探头使用寿命延长50%以上。

Stability of IR180Si IR180Si稳定性



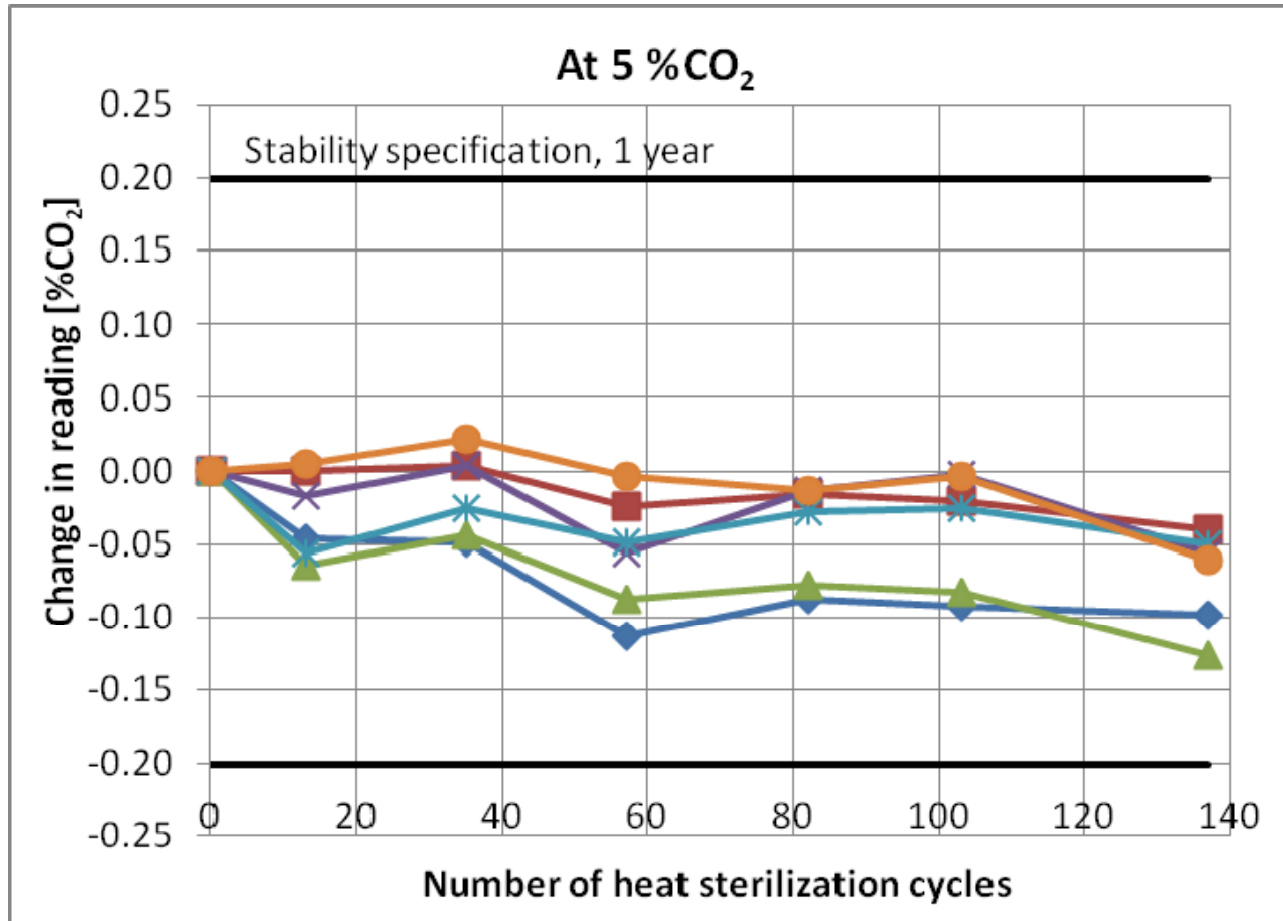
Stability comparison over 200 days between a single wavelength IR sensor and the Thermo Scientific IR180Si dual wavelength sensor 稳定性比较-普通单光束红外探头和IR180Si双波长探头。

Outstanding Stability 卓越的稳定性



The IR180Si CO₂ sensor shows outstanding stability over time, fall well within 0.2% drift at 5% IR180Si探头显示随着时间推移，5%浓度的波动不超过0.2%

Outstanding Stability 卓越的稳定性



The IR180Si CO₂ sensor shows outstanding stability at 5% even after withstanding 137 sterilization cycles at 180 °C. 即使经过137次高达180度的灭菌程序，IR180Si仍旧显示了卓越的稳定性

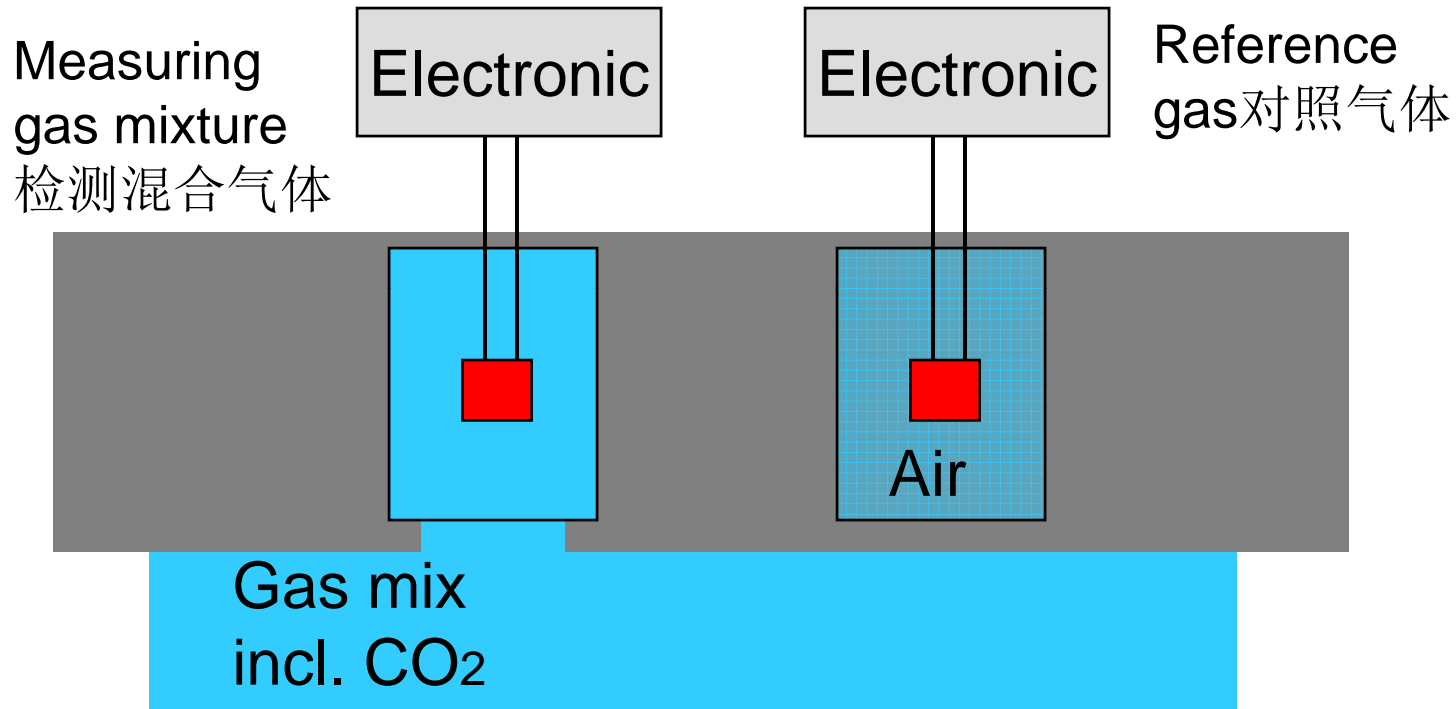
CO2 Sensor Positioning CO2探头定位

IR180Si provides the best in IR technologies

	Single wavelength IR 单波长红外	Dual wavelength IR 双波长红外	IR180Si
Stable, independent measurement 非校准情况下稳定性	No, drift from age & climate change 有变化, 随时间和其后变化	Yes, internal calibration 无, 内部校准	Yes, internal calibration 无, 内部校准
Long Service Life 长使用寿命	No, limited by bulb 较短, 受灯泡限制	No, limited by bulb 较短, 受灯泡限制	Yes, no light intensity lost 较长, 无光强损失
Robust, withstand high temperatures 高温条件下的稳定性	No, needs removable or bypass chamber 无, 需要移出或者放在腔体旁路	No, needs removable or bypass chamber 无, 需要移出或者放在腔体旁路	Yes, withstand 180C 可以耐受180C高温
Recovery 回复	5-16 minutes 5-16分钟	Avg 5 minutes 平均5分钟	4.5 minutes 4.5 分钟

#1 choice for labs wanting the “best” for demanding culturing and advance GMP applications
对于希望最好的培养和符合GMP要求的应用的**第一选择**

CO2 – TC Sensor - schematic CO2 TC探头示意图



Result = measuring value reference gas – measuring value gas mix
结果 = 对照气体检测结果 - 待测气体检测结果

Introducing New TC sensor 新TC探头

TC180 incorporates humidity compensation for independent operation TC180采用独立运作的湿度补偿

- CO2 values **unaffected by changes in humidity** CO2的检测值不受湿度变化的影响
 - Humidity compensation minimizing drift between calibrations 湿度补偿最小化校正之间的漂移
 - Recommend an AutoStart when change temperature or run sterilization cycle 推荐做一个AutoStart当改变温度或运行灭菌程序后
- **Faster recovery under 6 minutes** from a 30 second door opening 开门30秒后的回复时间缩短到6分钟。
- **Robust design** that can withstand 180C Steri-Run; no removal required 180度Steri-Run灭菌时不需要移出
- **Economical, long service life** 经济，长寿命
 - Reduced replacement cost because separated from fan/sensor block in today's Heracell 减少配件成本，风扇和探头座和现在的Heracell共用。

CO2 sensor Positioning CO2探头定位

New TC 180 removes the inherent disadvantages 新的TC 180消除固有的缺点

	TC传统TC	Traditional Single wave IR 传统单波长红外探头	TC180 TC180
Stable, independent measurement 非校准情况下稳定性	No, affected with swings in temperature and humidity 不稳定, 受温湿度波动影响	No, drift from age & climate change 不稳定, 随使用时间和其后变化而变化	Yes 稳定
Long Service Life 长使用寿命	Yes 长时间使用	No, limited by bulb 短, 受灯泡寿命限制	Yes 长时间使用
Robust, withstand high temperatures 高温条件下的稳定性	Up to 140C 可耐受140度	No 不可以	Yes, withstand 180C 可耐受180度
Recovery 回复	16-40 minutes 16-40分钟	5-16 minutes 5-16分钟	5.5 minutes 5.5分钟

Perfect for everyday culturing in general research and clinical applications 完美的应用于一般研究和临床应用中日常培养



Next Generation of Thermo Scientific 新一代的Thermo Scientific

ACTIVE CONTAMINATION CONTROL 持续的污染控制

Complete Contamination Control 完善的污染控制

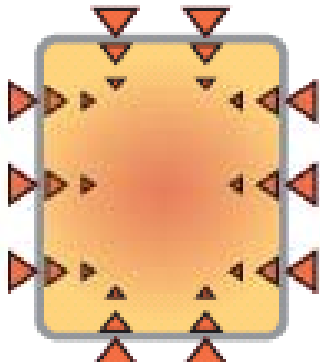
Protections cells in all directions – Air and Surfaces
全方位的保护细胞-空气中和表面上



**100% solid copper
kills contamination
on contact**
100%纯铜杀死表面
的污染



**HEPA filtration cleans air of
microbes and particles**
HEPA滤器清除空气中的微生物
和颗粒物

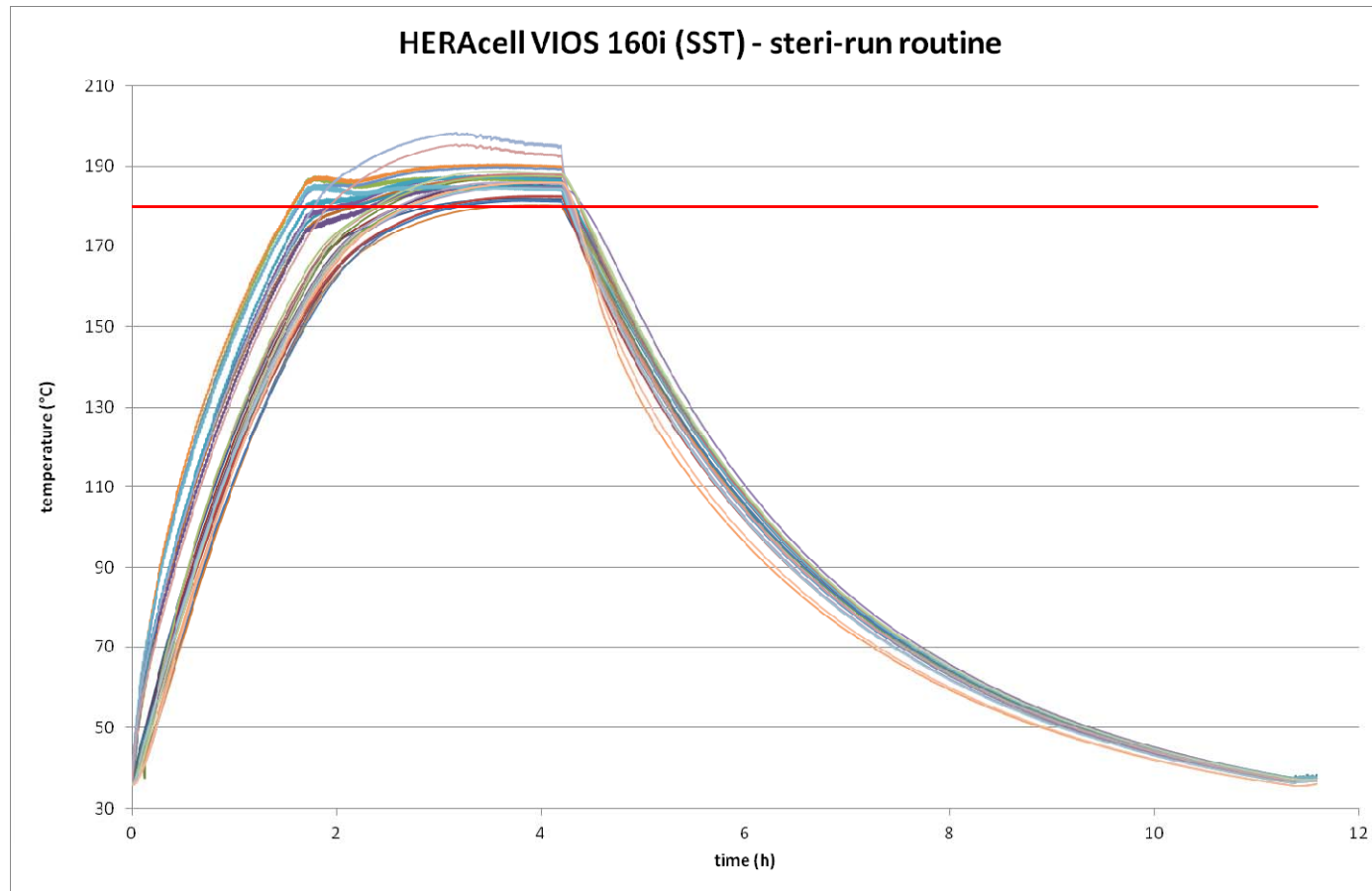


**Steri-Run, high temperature cycle for
on-demand disinfection**
Steri-Run, 高温灭菌当有消毒需求时

Introducing Steri-Run 介绍Steri-Run

- The U.S. and E.U. Pharmacopeias no longer recommend a given temperature and time for sterilization. **Instead, they require proof of performance.** 美国和欧盟药典不再推荐一个给定的灭菌温度和时间。相反，他们需要可验证的结果。
- **All chamber surfaces must be proven to reach sterilization temperature.** 所有内表面温度必须达到灭菌程序表明的温度。
- Independently validation of duration to be **twice the time required to eliminate standard biological indicator organisms**, meeting the 12D true standard of sterilization, according to the U.S., EU, DIN and other Pharmacopeias 根据美国、欧盟、德国以及其它药典描述的12D真灭菌标准，独立的稳定性差异检测必须使用两倍于标准的生物标记物去除的标准时间。

Introducing Steri-Run 介绍Steri-Run



Achieves 180C on all chamber surfaces verified by testing
30 locations 30个腔体表面检测位点均达到180C

Benefits of Steri-Run Steri-Run灭菌程序的价值

- **Faster** - Overnight, under 12 hours on-demand dry heat sterilization cycle with 90 minutes at 180C
快-过夜，共12小时的干热灭菌程序，其中90分钟温度持续达到180度。
- **Proven effective** - Proven 6 log reduction on all chamber surfaces.
确认的效果-确定所用表面的微生物数均下降 10^6 以上
- **Safe & Economical**– No hazardous chemicals or poisonous gas required
安全和经济-无需化学毒性物质和有毒气体
- **Convenient** – Ability to culture in one incubator in a stack with running Steri-run in the other unit
便宜性-灭菌不影响叠放的箱体

Logistics of Steri-Run Steri-Run的运行



**Today's HEPA
requires removal**
目前HEPA需要移出

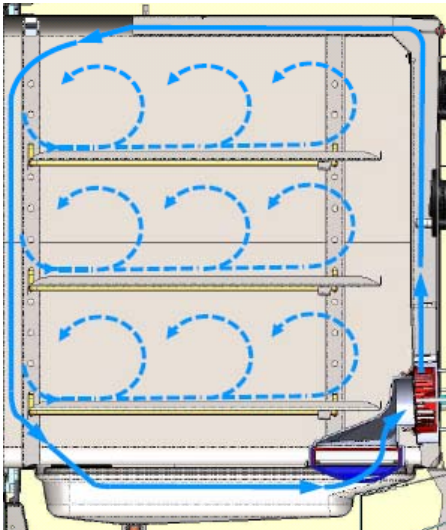
**Water Removal
Required**
水库中水需要移出



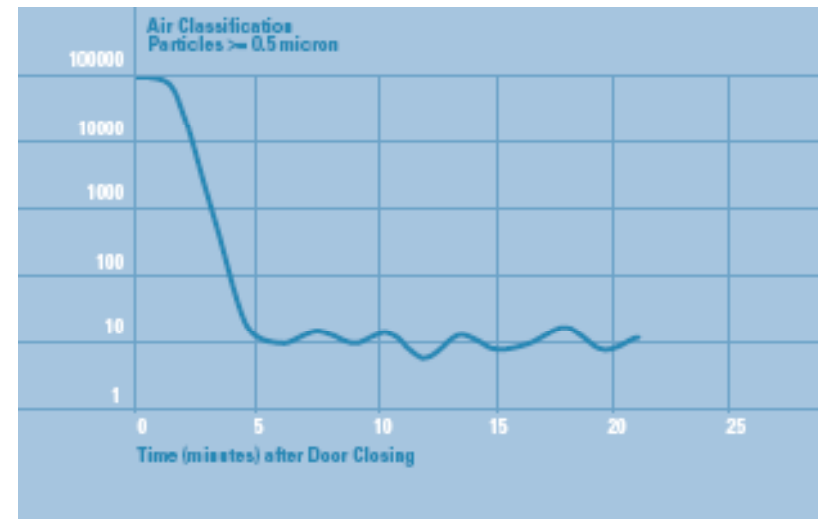
**No removal
sensors 探头无
需移出**

Continuous Contamination Prevention: HEPA Filtration 持续的污染防护：HEPA 滤器

- **Surround Cultures with Continuous Clean Room-like Air Quality 培养物被类似洁净室内的洁净空气环绕**
 - Provides ISO-5 (Class 100) air quality in unsurpassed 5 min. after door opening 开门后5分钟内即可提供达到ISO-5级的空气质量
 - System filters the entire chamber volume every 60 sec. 每60秒系统会过滤全部空气一次
 - Validated by independent 3rd party laboratory 独立第三方检测
 - HEPA filters snap in and out easily - no tools required HEPA滤器安装简单，无需工具
 - VOC filter coming soon VOC滤器即将上市



Upon door opening incoming air is processed by in-chamber HEPA
开门后，进入的空气被腔内HEPA过滤



100% Solid Copper 100%纯铜

- **Proven effective against bacteria, fungi, mycoplasmas** 对于细菌，真菌，支原体确实有效
 - Higher percentage copper, faster effect
 - 更高的铜含量更有效
- **Always working** 持续有效
 - 24/7 active decontamination
- **Improves with Age** 随时间增加有效性
 - Tarnishing improves the germicidal effect
 - 氧化变色提高灭菌效果
- **Easy to use/clean** 便于使用、清洁
 - No special cleaning required 无需特别清洁
- **Safe for cells** 对细胞无害
 - Must come in contact, not airborne



Competition Alert – Panasonic InCuSafe 竞争警告-松下InCuSafe .

Mycoplasma Survival Results

MYCOPLASMA STRAIN	POSITIVE CONTROL	CONVENTIONAL TYPE 304 STAINLESS STEEL	PANASONIC InCu-SaFe®	CONVENTIONAL COPPER C1100
MYCOPLASMA FERMENTANS PG18	✓	✓	✗	✗
MYCOPLASMA ORALE CH19299	✓	✓	✗	✗
MYCOPLASMA ARGININI G230	✓	✓	✗	✗
MYCOPLASMA HOMINIS PG21	✓	✓	✗	✗

Chart summarizes test results with four strains of mycoplasma. Results demonstrate how Panasonic inCu-saFe® copper enriched stainless steel alloy offers germicidal properties of conventional C1100 copper while maintaining both corrosion-proof and discoloration-resistant properties of conventional Type 304 stainless steel. Detailed test results are available from Panasonic.

Mycoplasma were chosen for this study because they are the smallest organisms that are most responsible for contamination in a laboratory. Traditional methods of contamination control, such as heat or HEPA filters, do not prevent mycoplasma growth.

InCuSafe Reality InCuSafe实际

- No published percentage of copper, 55% required for antimicrobial
55%是抗菌需要的，没有低于这一比例的文献发布。
- No proof or data indicating effectiveness against spores, fungi, bacteria and even mycoplasma 没有证据或数据表明对孢子，真菌，细菌和支原体有效



Next Generation of Thermo Scientific 新一代的Thermo Scientific

ENHANCED SIMPLICITY

增加便宜性

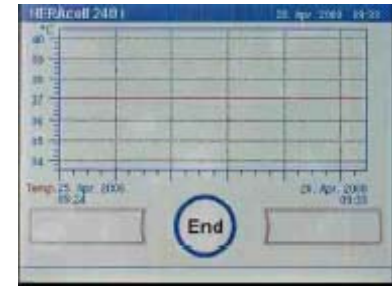
Enhanced Simplicity- Upgraded iCAN 升级的iCAN



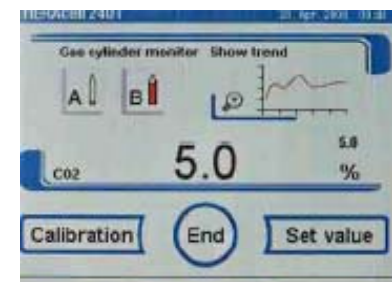
- **iCAN provides a new level of control and data management** iCAN提供了一个新水平的控制和数据管理
 - Simple, no manual needed 简单, 无需手册
 - Multiple views unlike ordinary CO2 incubators 多个视图不同于普通的CO2培养箱
 - Customer can see all the information they need 客户可以看到他们需要的所有信息
- **Door mounted iCAN control is easy to access** 门上安装的iCAN易于访问
 - Bright VGA display may be viewed easily from anywhere 明亮的VGA显示器易于从任何地方观看
 - Easy to see even when stacked 甚至叠放时也易于观察

Enhanced Simplicity- Upgraded iCAN升级的iCAN

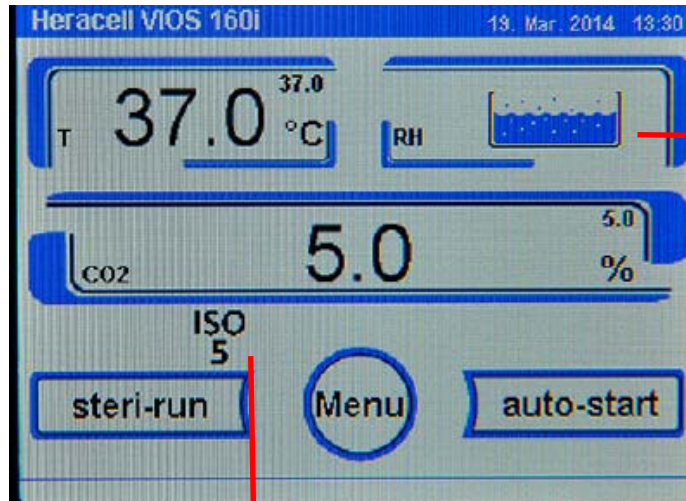
- **Obtain historical performance data upon request**可以获得历史性能数据
 - On-board graphic capability 图形显示能力
 - Configurable day / week / month可配置的日/周/月
 - Assists in culture growth dynamics and usage patterns 辅助提供生长动力学和使用模式
- **Review historical usage patterns**回顾历史模式
 - Logs user activities (door openings, parameter changes)登陆使用者信息（开门，参数变化）
 - Identify important changes in the culture environment 确定重要的培养参数变化
- **Convenient prompts prevent errors**方便的提示防止错误
 - Built-in reminders and prompts内置的提醒和提示
 - Logs error messages generated, for subsequent study 日志生成的错误消息，为后续的研究参考



Date	Time	Process	001826
25.04.08	08:05	Set value change O2	
25.04.08	08:05	Set value change CO2	
25.04.08	08:05	Set value change I	
24.04.08	15:59	auto-start successfully completed	
24.04.08	12:56	Door closed	
24.04.08	12:56	Door open	
24.04.08	12:54	Start auto-start	
24.04.08	12:55	Power reset	
24.04.08	11:55	CO2 Gas mtr. changeover	
24.04.08	11:55	CO2 Gas mtr. cylinder: A empty	
24.04.08	11:52	Door closed	



More Information at Fingertips 指尖更多的信息



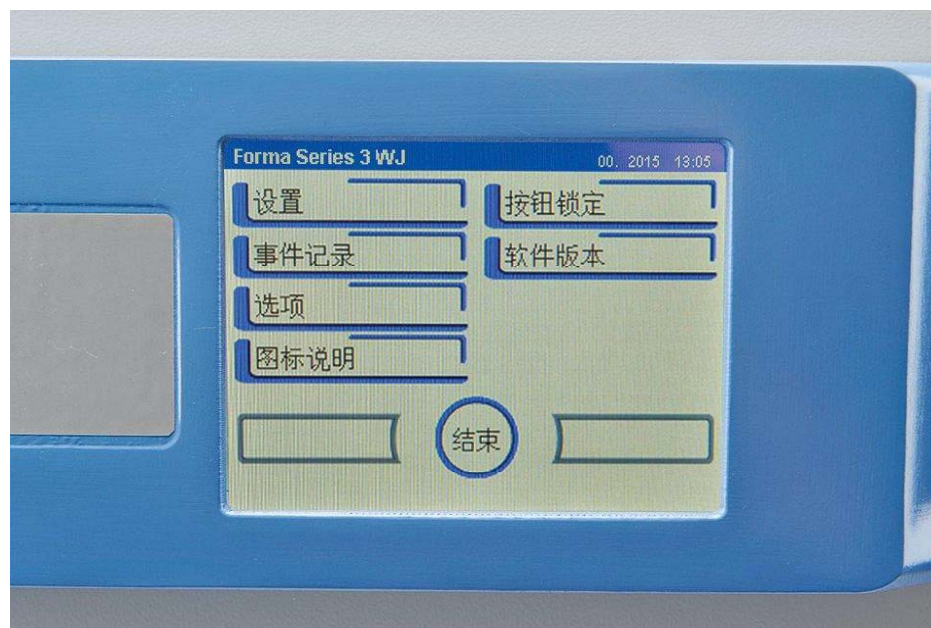
New rH monitoring displays the proper humidity level with blue, full line icon 新的监测显示适当的湿度RH与蓝色的水平线，全图标

Low water alarm indicates critical low humidity levels requiring fill in next 2-3 days 低水位报警指示临界湿度水平，未来2-3天需要加水

ISO 5 icon indicates that chamber has reached clean room air quality ISO 5 iCAN的提示表明腔体内已达洁净室的空气质量

More languages 更多语言

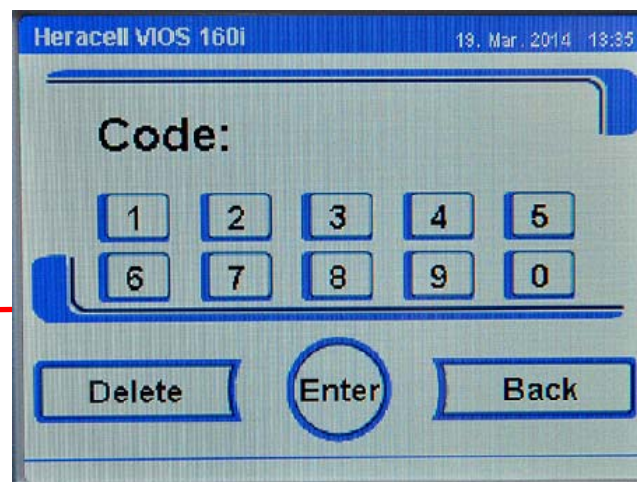
- **Selectable languages simplify use for everyone** 可选的语言方便不同使用者
 - Prevent risk of user error to important cultures 防止重要培养中用户错误的风险
 - Choose from multiple languages, including now Chinese and Japanese 可选多种语言，包括中文和日文
- ✓ English 英文
 - ✓ Spanish 西班牙文
 - ✓ German 德文
 - ✓ French 法文
 - ✓ Italian 意大利文
 - ✓ Japanese 日文
 - ✓ Mandarin 中文



Customization 客户化

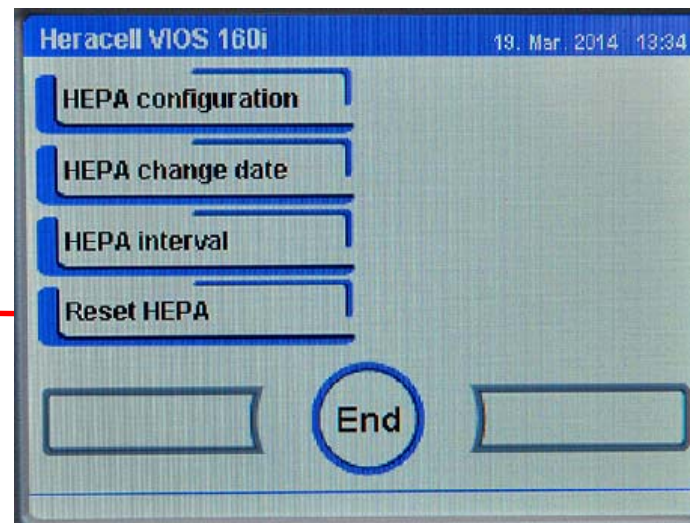
Additional security of your settings and information with an programmable access code

可编程的访问代码设置和额外的信息安全



Ability to set reminder levels for changing the HEPA filter and activating Steri-Run and Autostart

可以设定HEPA滤器跟换提醒和启动Steri-Run和Autostart



Enhanced simplicity- Water Handling 水盘控制



No pump required! Easy quick connect tubing to drain humidity reservoir through copper drain 无需水泵，通过连接水管和阀门可以通过通关放水



Built-in water sensor alerts user low water level for filling. 内置水位报警可提醒使用者低水位时加水



Easy filling without disturbing cultures through an access door on bottom shelf. 加水容易，不需中断培养，只要通过最底部隔板的加水门加水即可

USB Downloadable Data USB 下载数据

HERAcell 150i/240i COM: 10

MAIN GENERAL

PRESETTING TEST COM DATE & TIME ERROR LOGGER DATA LOGGER SERVICEFILE PASSWORD

Error logger

date	time	Control loop	Loop message
26.09.08	15:31:44	Error Temp	actual value overstepping
26.09.08	14:30:47	Error global	error ContraCon
26.09.08	13:25:11	Error global	error ContraCon
15.09.08	14:53:09	Error rH	no water remaining
15.09.08	14:52:44	Error global	error ContraCon
15.09.08	13:54:26	Error global	error ContraCon
15.09.08	13:27:07	Error global	error ContraCon
15.09.08	13:14:18	Error global	safety loop activated
15.09.08	11:44:26	Error rH	no water remaining
15.09.08	11:23:34	Error global	error during autostart
15.09.08	11:20:55	Error global	error ContraCon
15.09.08	10:57:04	Error global	error during autostart
15.09.08	10:54:03	Error global	error ContraCon
15.09.08	10:32:56	Error rH	no water remaining

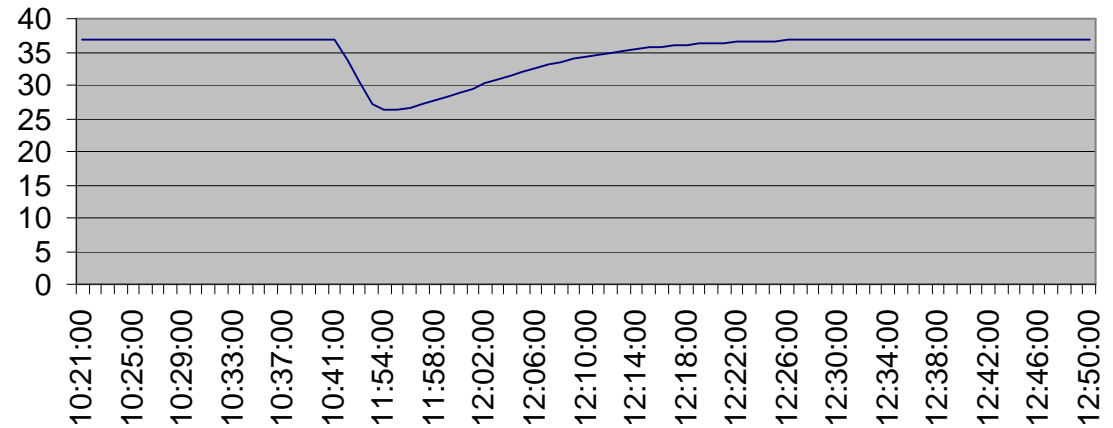
save to file

Documentation Software 文件管理软件

• Reports & Results

Date	Time	Comment	Temp Act.	CO2 Act.	O2 Act.	rH Act.	Temp Set	CO2 Set	O2 Set	rH Set
16.09.2008	10:41:00	ok	37	0	20,8	0	37	0	21	0
16.09.2008	10:42:00	Door open	33,8	3,6	21,8	0	37	0	21	0
16.09.2008	10:43:00	Door open	30,6	3,8	21,8	0	37	0	21	0
16.09.2008	11:53:00	ok	27,1	3,2	999,9	0	37	0	5	0
16.09.2008	11:54:00	ok	26,3	3	999,9	0	37	0	5	0
16.09.2008	11:55:00	Error active	26,3	2,8	999,9	0	37	0	5	0
16.09.2008	11:56:00	Error active	26,6	2,7	999,9	0	37	0	21	0
16.09.2008	11:57:00	Error active	27,1	2,6	999,9	0	37	0	21	0
16.09.2008	11:58:00	Error active	27,6	2,5	999,9	0	37	0	21	0
16.09.2008	11:59:00	Error active	28,2	2,4	999,9	0	37	0	21	0
16.09.2008	12:00:00	Error active	28,8	2,3	999,9	0	37	0	21	0
16.09.2008	12:01:00	Error active	29,5	2,3	21,5	0	37	0	21	0
16.09.2008	12:02:00	Error active	30,2	2,2	21,5	0	37	0	21	0
16.09.2008	12:03:00	Error active	30,9	2,1	21,5	0	37	0	21	0
16.09.2008	12:04:00	Error active	31,5	2	21	0	37	0	21	0
16.09.2008	12:05:00	Error active	32,1	1,9	21	0	37	0	21	0
16.09.2008	12:06:00	Error active	32,6	1,9	21	0	37	0	21	0
16.09.2008	12:07:00	Error active	33,1	1,8	21	0	37	0	21	0
16.09.2008	12:08:00	Error active	33,5	1,8	21	0	37	0	21	0
16.09.2008	12:09:00	Error active	33,9	1,8	21	0	37	0	21	0
16.09.2008	12:10:00	Error active	34,3	1,9	21	0	37	0	21	0
16.09.2008	12:11:00	Error active	34,6	1,9	21	0	37	0	21	0
16.09.2008	12:12:00	Error active	34,9	1,9	21	0	37	0	21	0
16.09.2008	12:13:00	Error active	35,1	1,9	21	0	37	0	21	0
16.09.2008	12:14:00	Error active	35,4	1,9	21	0	37	0	21	0
16.09.2008	12:15:00	Error active	35,6	1,8	21	0	37	0	21	0
16.09.2008	12:16:00	Error active	35,7	1,8	21	0	37	0	21	0
16.09.2008	12:17:00	Error active	35,9	1,8	21	0	37	0	21	0
16.09.2008	12:18:00	Error active	36	1,7	21	0	37	0	21	0
16.09.2008	12:19:00	Error active	36,2	1,7	21	0	37	0	21	0
16.09.2008	12:20:00	Error active	36,3	1,7	21	0	37	0	21	0
16.09.2008	12:21:00	Error active	36,4	1,6	21	0	37	0	21	0
16.09.2008	12:22:00	Error active	36,5	1,6	21	0	37	0	21	0
16.09.2008	12:23:00	Error active	36,6	1,6	21	0	37	0	21	0
16.09.2008	12:24:00	Error active	36,6	1,5	21	0	37	0	21	0
16.09.2008	12:25:00	Error active	36,7	1,5	21	0	37	0	21	0
16.09.2008	12:26:00	Error active	36,8	1,5	21	0	37	0	21	0
16.09.2008	12:27:00	Error active	36,8	1,4	21	0	37	0	21	0
16.09.2008	12:28:00	Error active	36,9	1,4	21	0	37	0	21	0
16.09.2008	12:29:00	Error active	36,9	1,3	21	0	37	0	21	0
16.09.2008	12:30:00	Error active	36,9	1,3	21	0	37	0	21	0
16.09.2008	12:31:00	Error active	37	1,3	21	0	37	0	21	0

**Temperature Performance Sept. 16th
10:21 - 12:50**



Customers Can Have it All... Complete Approach 客户拥有一切，完整解决方法

Stable Homogeneous Incubation 稳定均一的培养

Fast Recovery = 10 min or less 快速回复，时间少于10分钟

Tight Temperature Uniformity 温度均一性波动范围减小

In Situ Measurement 内部检测

93% Humidity, Dry chamber 93%湿度和无冷凝水内腔

Active Contamination Control 持续的污染控制

Steri-Run, overnight, validated sterilization
Steri-Run, 过夜经验证的灭菌程序

100% Solid Copper 100% 纯铜

ISO 5 HEPA Filtration
ISO 5 级HEPA过滤

Enhanced Simplicity and Connectivity 易用性和连接

iCAN, interactive, intuitive, and intelligent
iCAN, 互动，直观和智能

Easy water handling and monitoring 方便的水盘管理和监测

Standard USB for data download 标准USB用于数据下载