July 2017

Bioscience Tools

系统& 配件

动物生理学&细胞生物学 成像&录像:

小型活样本培养箱 单细胞 & 组织灌注 CO2、O2 & 温度控制 流体输送 & 流体应用

美国biosciencetools原装进口-全系列现货促销 中国代理商——世联博研(北京)科技有限公司 电话: 010-67529703 手机: 18618101725(微信) QQ:736597338 联系人: 李胜亮

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IVI1CTOSC	Operation Samples

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精确控制实验过程中的温度 长时间成像无漂变No driff during Long Term Imaging 与 in vivo条件相似 CO2,缺氧条件(O2),湿度控制 可加温至 150℃ 浸没式物镜加热器可达 0.01℃稳定性

封闭式环境控制

现在共有两种可用的封闭培养箱:110×110 mm规格的TC-MIS型(通常用于机械显微载物台)与 160×110 mm规格型(适用于电动及K型机械载物台,注意一些较大的电动载物台需要安装适配器,见下表)。TC-MIS培养箱带有显微镜载物台适配器(如有需要也可以定制),可以在大多数显微镜上使用。下表列出了标准显微镜上使用的适配器货号。

TC-MIS 培养箱显微镜适配器

货号	描述/显微镜
IMA-74- 128x86	128 x 86 mm 适配器,标准多孔板尺寸,板架固定于机械显微 镜载物台
IMA-74-110	110 mm 适配器,Olympus显微镜接口尺寸
IMA-74-108	108 mm 适配器, Nikon 显微镜接口尺寸
IMA-74-108	108 mm 适配器, Meiji 显微镜接口尺寸
IMA-74-M	M 型适配器, M 型 Zeiss 和 Leica 显微镜接口尺寸

- 使用: 50mm与35mm培养皿、培养 腔、培养室玻璃盖和载玻片。
- 防浓缩罩: 使用内置的温度传感器 独立连接温度控制器的第二通道,

(算上3mm长挂载口则为10mm),

空隙: 20mm, 低侧面盖 TC-MIL

可使用 3mm 垫圈进行调高。

- 气体端口: 鲁尔锁连接器连接至 混合气体源 (CO2-O2-MI 控制 器)。
- 储水器:控制湿度。可通过外部 端口装水。
- · 培养基交换和灌注: Mul-tiple sealed 多个密封的内流/外流端口,带有多 种可调管架以定位样本室内的内流/ 外流管。

现货销售电话: 010-67529703, 18618101725 (微信同)

电动&K型载物台培养箱

货号	载物台类型
Not required	Ludl、Prior、ASI、Marhauser、Zeiss和K型载物台
TC-MI-THOR	ThorLabs 载物台适配器,170 x 130 mm
TC-MI-NIK	电动载物台适配器, 236 x 155 mm
TC-MI-LUDL	Ludl Bioprecision II 载物台, 172 x 116 mm

TC-MI-20×46 小型培养箱 这种培养箱用于长时程成像,可以与50和35mm (接变径接 口TC-PA50和TC-PA-C, -N, -F, -W)培养室玻璃盖、盖玻片架 CSC和 UTIC、培养皿、玻璃底皿配 合使用。 底部开放孔径为 20x46 mm。对于较大的培养皿、培养腔和多个样本,可以使用配有合 适接口的 TC-MWP 培养箱。培养箱带有鲁尔接口进行气体混合(控制 CO2 或 O2浓度),带有内置 储水器控制湿度,还带有热罩阻止蒸发浓缩(热盖需单独购买);内置多个密封端口来连接管路 和其它配件、探针及传感器;可配备浸没式物镜加热器;具有多种可选管架 MH-MIS来固定灌注 管以持续交换培养基。这款产品需要一个温度控制器、与所有品牌的带160x110 mm接口的电动载 物台和K型载物台兼容,还配有多种适配器来连接 ThorLabs (170x130mm cutout) 和Nikon (236x 155mm cutout) 及 Ludl Bioprecision 载物台 Item#: TC-MI







65x75mm低光窗口







小型培养箱 TC-MIL低侧面盖 用于遮盖电动载物台上的小培养箱,低侧面。较低的高度可以在用微分干涉显微镜和相差显微镜观察时使用冷凝器:从箱罩到样本平面是 20 mm。注意:不推荐在培养箱内使用灌注及培养基交换管架。可使用TC-I-E垫圈调高 9.5 mm。盖子或培养基底部可添加多个垫圈。Item#: TC-MIL

MWP 培养箱盖, TC-MWPL TC-MWP 培养箱使用的标准盖子。适用于 TC-MI培养 箱。盖子高 24mm,可用 TC-I-E 垫圈调高9.5 mm。 **Item#: TC-MWPL**

电动显微镜载物台和 Zeiss K 型载物台专用小型培养箱 货号 描述

†€ -MI-20x46	小型培养箱电动载物台,底部为20x46 mm窗口,含盖子
TC-MIL	电动载物台小型培养箱盖,低侧面
TC-MI-THOR	ThorLabs电动载物台适配器, 170x130 mm
TC-MI-NIK	Nikon 电动载物台适配器, 236x155 mm
TC-I-E	9.5mm 高垫圈
MH-MIS	小型可调节管及传感器架, x3, 含 4-40 个螺柱
TC-PA-C	Corning 及 Mattek培养皿适配器
TC-PA-N	Nunc 培养皿适配器
TC-PA-W	Willco 培养皿适配器
TC-PA-F	WPI Fluo 培养皿适配器
TC-PA-G	Greiner Bio-One 玻璃底培养皿适配器
TC-PA50	50mm 变径适配器环,用于 35mm 培养皿 (与 TC-MI-30/45 和 TC-MIS-30/45连用)。



ThorLabs 载物台 TC-MI-THOR 适配器 在电动载物台上放到培养箱的底部可将 培养箱固定于 ThorLabs 170x130mm 载物台内,两连各含有两块。Item#: TC-MI-THOR

Nikon 电动载物台 TC-MI-NIK适配器 在电动载物台上放到培养箱的底部可将培养箱 固定于 Nikon 236x155mm 载物台内,两连各含有两块。Item#: TC-MI-NIK





多孔培养板、培养皿及载玻片TC-MWP培养箱 这种培养箱用于长时程细胞成像和延时显微术,可以与标准的多孔板配合使用。具有多种可选接口:TC-I-20x30、TC-I-30x50和TC-I-SL载玻片/微流控设备接口,TC-I-35/TC-I-60标准35mm及60mm培养皿接口,TC-I-3-载玻片及培养室玻璃盖板(x3)和TC-I-4-CSC盖玻片架及培养皿(x4)接口。这些接口可通过可调管架MTH和NH-MIS来固定灌注管进行持续的培养基交换。培养箱带有鲁尔接口连接混合气体(控制CO2或O2浓度),还带有热罩阻止蒸发浓缩(热盖需单独购买);内置多个密封端口来连接管路和其它配件、探针及传感器;适用于各种品牌的电动载物台和K型Zeiss/Leica载物台(有些需要配备扩展适配器后才能使用)。这款产品需要一个温度控制器。底部透光,可通过物镜进行观察(对封闭加热底部型的培养箱需用TC-MWPHB型的显微镜)。可附加物镜加热器进行级,用于浸没光学系统。Item#:TC-MWP

- 外尺寸:可放置于Ludl、Prior、 Marhauser、Zeiss和ASI电动载物台的160x110 mm cutout内;底部相对于载物台顶部凹进10 mm (cutouts内挂载平面下方7 mm),可用3 mm垫圈调高。
- 光学窗口和 间隙:底部有112x72 mm 光学窗口;底部和顶部之间的 距离为 34 mm;加装垫圈后可将 上表面抬高 9.5 mm,以增加孵箱 内的空间。
- **使用:**标准多孔板、35-60 mm 培养 皿和 1x3in.玻璃盖玻片/载玻片 (需

- 配备可替换插头)。
- 防蒸发罩:使用内置温度传感器独 立连接温度控制器的第二通道、 81x121 mm 光学窗口。
- **导气孔**:鲁尔锁连接器连接到混 合气源: CO2-O2-MI 控制器
- 培养基交换和灌注:具有多个密封的内流/外流孔,有多种可调式管架 来定位样品腔内的内流/外流管



低侧面 MWP 孵箱盖 TC-MWPL TC-MWP 孵箱使用的低侧面盖。高 24 mm,可用 TC-I-E 垫圈调高 9.5 mm。 Item#: TC-MWPL



磁性插口, MA-128x86 这种插口可在进行高分辨活样本成像和录像时提供更灵活的空间 来定位各种装置,如培养基交换管、溶液输送管、各种传感器和电极等。插头的不锈钢磁表面经过 了特殊处理,可以很好地固定在可调式小型磁架上。左图所示为 ZMM 无死体积多支管和 MTH-S 不 锈钢吸管及管架。配有可调式夹子来固定各品牌的 35 mm 培养皿和 CSC 腔、玻璃底培养皿 (35 和 50 mm)及加热元件。Item#: MA-128x86



标准载玻片插口, TC-I-20x30 可安装标准的 1x3 载玻片, 并有多个流体管路入口。光学观察口为 20x30 mm, 边缘 1 mm 厚, 可安装 76x26 mm载玻片。含可调节式夹子及螺 丝。Item#: TC-I-20x30



定制设备插口, TC-I-30x50 可安装 101x51mm大小的定制设备,并有多种定制零件接口。光学观察口为 50x30 mm。含可调节式夹子及螺丝。Item#: TC-I-30x50



载玻片及微流控设备插口, TC-I-SL 用于定位定制微流控设备和载玻片, 有多种 微流控管路接口-80x70 mm 凹陷区域。光学观察口大小为 72x24mm, 边缘 1 mm 厚, 可安装 76x28 mm载玻片。含可调节式夹子及螺丝。Item#: TC-I-SL



50-60mm 培养皿插口, TC-I-60 用于定位较大的(可达 60 mm 直径)培养皿,有 多个定制零件及微流控管路入口。光学观察口为 30 mm,含可调节式夹子及螺丝。Item#: TC-I-60



Insert for 35mm dishes, **TC-I-35** 用于定位标准 35 mm 培养皿, 有多个定制零件及微流控管路入口。光学观察口为 25 mm, 含可调节式夹子及螺丝。**Item#: TC-I-35**



MWP 孵箱 x4 盖玻片架和培养皿插口, TC-I-4 可在MWP孵箱内放置四个培养 皿或 CSC 腔 - 盖玻片架。有些品牌(如Corning TC-PA-C)的培养皿可能需要缩径接头。可与 MH-MIS 支架配合使用来定位灌注管。Item#: TC-I-4



MWP 孵箱载玻片插口, TC-I-3 可在孵箱内放置三个盖玻片。Item#: TC-I-3



电动载物台小型孵箱		
目录号	描述	
TC-MWP	多孔板孵箱和插口	
TC-MWPHB	1mm 加热玻璃底孵箱	
TC-MWP-6	x6 30mm 观察底孵箱	
TC-MIW	微流控设备孵箱及培养腔	
TC-MWPL	低侧面小型孵箱盖	
TC-I-E	9.5mm厚罩垫圈	
TC-MI-LUDL	Ludl Bioprecision II 载物台接头	
TC-MI-THOR	ThorLabs 载物台接头, 170x130 mm	
TC-MI-NIK	Nikon 电动载物台接头,236x155mm	
TC-1-35	35 mm 培养皿插口	
TC-I-60	50-60 mm 培养皿插口	
TC-I-20x30	载玻片插口, 20x30 mm 观察口	
tc-I-Sl	载玻片和微流控设备插口, 24x72 观察口	
TC-I-30x50	定制设备插口, 30x50 mm 观察口	
MA-128x86	磁性插口	
TC-I-4	x4 培养皿和 CSC 腔插口	
TC-I-3	载玻片和盖玻片插口	
TC-I-100	金属插口系列,定位可调节式支架,可用于最大直径为90mm 的培养皿和培养腔	
MH-MIS	小型可调节式管路及传感器架, x3, 含 4-40 螺栓	
PS-KIT	管路系列,卡套式和鲁尔锁装置及倒钩连接器	
TC-PA-C	Corning 及 Mattek培养皿接头	
TC-PA-N	Nunc 培养皿接头	
TC-PA-W	Willco 培养皿接头	
TC-PA-F	WPI Fluo培养皿接头	
TC-PA-G	Greiner Bio-One 培养皿接头	

1mm加热玻璃底孵箱 TC-MWPHB 与标准多孔板及定制设备配合使用。可用于长时程成像。适用于各品牌的电动载物台。具有加热底、混合气体鲁尔锁端口(控制 CO2 或低氧)和加热罩(单独购买)以防止蒸发。内置多个管路、配件、探针和传感器端口。底部用1mm玻璃密封(对于用于浸入式物镜的无底孵箱,请使用 TC-MWP 型号)。若需固定管路来输送培养基和测试溶液,使用改进型的 TC-MIW 孵箱。Item#: TC-MWPHB







- **外部尺寸:** 适用于 160x110 mm 电动载物台;底部在电动载物台上表面以下 10 mm(挂载表面以下 7 mm)、可用3 mm 垫圈调高。
- 光学窗口和 间隙:底部有112x72 mm 光学窗口;底部和顶部之间的 距离为 33 mm;加装垫圈后可将上 表面抬高 9.5 mm,以增加孵箱内的 空间
- 防蒸发罩:使用内置温度传感器独 立连接温度控制器的第二通道、 81x121 mm 光学窗口。

- **导气孔**: 鲁尔锁连接器连接到混 合气源: CO2-O2-MI 控制器
- 培养基交换和灌注:具有多个密封
 的内流/外流孔,有多种可调式管架
 来定位样品腔内的内流/外流管
- 加热底: 1 mm 玻璃

• 稳定性: 0.01°C

加热玻璃底孵箱 TC-MWP-6 这类金属加热底孵箱具有圆形的cutouts,不会阻挡光路 (x66孔板,可制作不同数量和模式的 cutouts来匹配不同的培养板)。可用于长时程活细胞成像 及延时显微术。适用于各品牌的电动载物台。具有加热底、混合气体鲁尔锁端口(控制 CO2 或低 氧)和加热罩(单独购买)以防止蒸发。内置多个管路、配件、探针和传感器端口。底部厚2 mm,观察口直径30 mm(用于6孔板)。推荐用于长距离显微观察,因为较宽的物镜可能不能伸 进cutouts内。Item#: TC-MWP-6

定制微流体设备和培养腔专用小型孵箱 TC-MIW 与定制培养腔和培养板配合 使用。可用于长时程成像。具有加热底、混合气体鲁尔锁端口(控制 CO2 或低氧)和加热罩(单 独购买)以防止蒸发。内置多个管路、配件、探针和传感器端口。可直接在玻璃底上形成培养腔 室。具有一个可拆卸边,为管路提供了多个开口。适用于各品牌的电动载物台和Zeiss K型载物 台。可与可调节式管架连用来定固定灌注管,以连续进行培养基交换,内有可选插口并连接有 MH-MIS管架。底部封闭。Item#: TC-MIW

90mm 培养皿专用小型孵箱 TC-MI-100 用于90 mm直径的各种培养皿和培养腔,也可容纳标准的 86x128mm 多孔培养板。具有加热底、混合气体鲁尔锁端口(控制 CO2



或低氧)和加热罩(单独购买)以防止蒸发。可通水以控制湿度。插口可用于定位可调式管架、 电极及附件。内置多个密封端口来连接管路和其它配件、探针及传感器;适用于各种品牌的电动 载物台。可与可调式管架MH-MIS配合使用来定位灌注管以连接进行培养基交换。底部密封(对 底部开放型的孵箱,要用浸没式物镜进行观察时,需用 TC-MWP 型的显微镜)。可用于长时程成 像。Item#: TC-MI-100





机械载物台专用小型孵箱

载玻片、盖玻片和培养皿专用小型孵箱 TC-MIS 这种培养箱用于长时程细胞成像和延时显微术,可以与35 mm和50 mm培养皿、玻璃盖板腔、盖玻片架和玻璃底培养皿配合使用。培养箱带有鲁尔接口连接混合气体(控制 CO2 或 O2浓度),内附水箱以控制湿度,还带有热罩阻止蒸发浓缩(热盖需单独购买)。内置多个端口来连接管路和配件(探针和传感器)。这款产品需要一个温度控制器,利用STAGE传感器来保持温度恒定,并使用BATH探针(可选)来监测内部温度。适用于各种显微镜(购买时请说明显微镜类型,会安装在相应的显微镜接头上一起运过来;一些显微镜如Zeiss等需要凹底插口-K型和另外一种160x100 mm小型孵箱。可添加具有微注射工具连接口的热盖进行升级,便于对细胞进行操作。

可用物镜加热器进行升级以用于浸没光学观察。若用于长距离目镜,请选择 TC-MIS-65x75-HB 型带1mm 加热玻璃底的孵箱,以便使用载玻片、培养皿和定制设备。可用于多通道溶液切换和 灌注系统。配有可调式管架 MH-MIS 以定位内流和外流管进行连续的培养基交换。所有孵箱要 求单独购买热盖。

22x46mm 底部观察口通用型孵箱 TC-MIS-20x46 可用于 50mm 培养皿、培养腔、载玻片/盖板玻璃,加装有 50mm 缩径插口 TC-PA50 (及 TC-PA-C, -N, -F, -W),也可放置盖玻片架 CSC/UTIC.









Incubator with 35mm bottom aperture for use with petri dishes and 培养皿和盖玻片架 CSC/ UTIC专用 35mm 底部观察口孵箱, TC-MIS-35 底部开放,便于浸没式光学观察。

培养皿专用 15mm 底部观察口孵箱, TC-MIS-15 底部具有较小的15mm观察口, 热分布性更好。不同品牌的培养皿需配有缩径插口 TC-PA-C/F/N/W。

培养皿专用11mm 底部观察口孵箱,TC-MIS-11 底部具有较小的11 mm观察口,热分布性更好。不同品牌的培养皿需配有缩径插口 TC-PA-C/F/N/W。

50mm 培养皿和培养室专用45 mm底部观察口孵箱,TC-MIS-45 配备 50 mm 缩径插口 TC-PA50,也可用于 35mm 培养皿和盖玻片架 CSC/UTIC。

50 mm 培养皿和培养室专用30 mm底部观察口孵箱,TC-MIS-30 底部具有较小的30 mm观察口,热分布性更好。不同品牌的培养皿需配有缩径插口 TC-PA-C/F/N/W。配备 50 mm 缩径插口 TC-PA50 后也可用于 35 mm 培养皿和盖玻片架 CSC/UTIC。

载玻片、培养皿专用 65x75mm 底部观察口 (1mm 加热密封底) 孵箱, TC-MIS-80x70-HB 仅 用于长距离物镜,底部用1mm玻璃密封,具有 80x70mm 均匀加热表面。

- 外尺寸: 110x110 mm, 样本平面 到罩顶距离34mm (低侧面孵箱 距 离为25mm)
- 光学观察口(底部): TC-MIS-20x46: 20 x 46 mm, TC-MIS-65x75-HB: 65 x 75 mm, TC-MIS-45: 45mm, TC-MIS-35: 35mm, TC-MIS-30: 30mm, TC-MIS-15: 15mm, TC-MIS-11: 11mm
- 用途: 50mm (TC-MIS-40 和TC-MIS-30)、35mm 培养皿和玻璃底培 养皿, 1x3in.玻璃盖板/载玻片、可 拆卸式玻璃盖板 CSC/UTIC 培养室
- 防蒸发罩:使用内置温度传感器 独立连接温度控制器的第二通道, 70x70 mm 光学窗口。

- CO2气孔: 鲁尔锁连接器连接到混 合气源: CO2-O2-MI或PC-MI控制器; CO2-MI控制器需要进行CO2-UP 修改
- **水箱**:控制湿度。可用外置端口 进行补充
- 培养基交换和灌注:具有多个密封的内流孔,有多种可调式管架来定位样品腔内的内流/外流管
- 加热底 (TC-MIS-65x75-HB): 1mm玻璃



低侧面配置 (/L) 仅有 25mm 高,可用于要求低垂直距离的显微镜聚光镜来获得相差和微 分干涉明场图像。具有四个 CO2 输入端口,并可加水控制内部湿度。此产品有两个管路入口, 但内部空间有限,不推荐用于灌注。

密闭环境控制培养室



目录号	描述
TC-MIS-20x46	载玻片和培养皿专用小型孵箱,20x46mm 观察口
TC-MIS-20x46-L	载玻片和培养皿专用小型孵箱,20x46mm 观察口,低侧面
TC-MIS-45	50 mm培养皿专用小型孵箱,45 mm观察口
TC-MIS-45-L	50 mm培养皿专用小型孵箱,45 mm观察口,低侧面
TC-MIS-30	50 mm培养皿专用小型孵箱, 30 mm观察口
TC-MIS-30-L	50 mm培养皿专用小型孵箱, 30 mm观察口,低侧面
TC-MIS-35	35 mm培养皿和盖玻片架CSC/UTIC专用小型孵箱,35mm 观察口
TC-MIS-35-L	35 mm培养皿和盖玻片架CSC/UTIC专用小型孵箱,35mm 观察口,低侧面
TC-MIS-15	35 mm培养皿专用小型孵箱, 15 mm观察口
TC-MIS-15-L	35 mm培养皿专用小型孵箱, 15 mm观察口, 低侧面
TC-MIS-11	35 mm培养皿专用小型孵箱,11 mm窗口
tc-mis-11-l	35 mm培养皿专用小型孵箱,11 mm窗口,低侧面
TC-MIS-65x75-HB	75X65 mm底部窗口孵箱,具有1 mm封闭加热底,用于 定制培养室
TC-MIS-65x75- HB-L	75X65 mm底部窗口孵箱,具有1 mm封闭加热底,用于定 制培养室,低侧面
tc-mis-lid	小型孵箱 TC-MIS盖
MH-MIS	可调式管路及传感器架, x3, 含 4-40 螺柱
IMA-74	小型孵箱显微镜接头



精确小剂量泵, CFPS-1U, 8 µl/min - 7.3 ml/mi

本泵可在340 nl/min - 22 ml/min范围内实现精确的线性流量控制。流量范围由管路内径和驱动配置 共同确定。精准的设计和较小的尺寸最大限度地减少了脉动性,使灌注更加平稳。本产品常用于 稳定输送溶液、灌注、注入,也可用于显微成像、录像、钙和其它离子的测量及生化检测过程中 的物质输送。本品尺寸很小,可将泵放置在样品旁边,减少了管路的长度。在灌注时可使用使用 大流量进行吸吮,以防溶液溢出。本品也可用于盖玻片培养室、芯片实验室、迷你孵箱、小型器 官和动物灌注实验。

本泵可用远程遥控器、模拟信号、数字信号RS232端口软件进行手动控制。可用内置定时器进行编程,以特定的周期精确地进行物质输送。连接到自动灌注系统后,通过编程按不同顺序输送溶液,可实现多种溶液灌注。泵体由金属制作,消除了电子噪声。同一个终端可控制多达16个泵。

本泵带有一个 100-240VAC 电源,还带有 X-block 用于挂载标准的 0.5" post。有多种管路可选,以 实现多种流量范围: 0.015" I.D. - 8-170 µl/min; 0.020" I.D. - 20-340 µl/min; 0.031" I.D. - 50-920 µl/ min; 0.062" I.D. - 170-3400 µl/min; 0.093" I.D. -370-7300 µl/min。Item#: CFPS-1U

- 流动控制: 手动拨号, RS232 端口, 模 拟-对数信号 (0-+10V),反向
- 远程控制:无线 ON/OFF 控制程序开 始与关闭
- 定时器:1秒分辨率;输送时间与周期 均可编程
- **可编程体积:**可编程输送体积最高可达 999.9 ml
- 连续输送: 可编写具有特定体积/时间和周期

的循环来连续输送液体

- 尺寸: 4W x 3.5H x 3.5D in.
- 电源:外接 110/230VAC 电源
- **挂载:** 0.5in. 杆和 x-block
- 配件:带倒钩鲁尔锁或可选 CFPS-FIT 工具盒
- 脉动管路: 0.015in. I.D.; 0.020in. I.D.;
 0.031in I.D.; 0.062in. I.D.; 0.093in. I.D.

精确小剂量泵,340 nanol - 275 µl/min 具有多种管路来实现不同的流量, 配有一个 0.30 W 电源。Item#: CFPS-1U10K

精确小剂量泵 30µl/min - 22 ml/min

具有多种管路来实现不同的流量,配有一个 1.4 W 电源。此产品为高流量单元,可从开放灌注室中吸吮溶液。Item#: CFPS-1U66

精确小剂量泵 4µl/min - 3.3 ml/mi 具有多种管路来实现不同的流量, 配有 一个 0.30 W 电源。Item#: CFPS-1U9





4通道可编程投放系统、CFPS-2

- 流动控制:手动拨号,模拟信号 (-5-+5V),通过 RS232/USB 端口进行软件控 制,反向
- 远程控制:无线 ON/OFF 控制程序开始 与关闭
- 定时器: 1 s 精度, 每通道可超过24 h
- 可编程体积:可编程输送体积最高可达 999.9 ml
- 可顺序编程:可编程以一定的时间延迟

依次激活各通道

- Continuous Delivery: 连续输送: 可编写具 有特定体积/时间和周期的循环来连续输送 液体
- 尺寸: 4x2.5x1.85 in.
- 电源: 110/230VAC
- **挂载:** 0.5in.1 ft. 杆和 x-block
- 配件:带倒钩鲁尔锁
- 脉动管路: 0.015in. I.D.; 双0.015in. I.D.; 0.020in. I.D.; 0.031in I.D.; 0.062in. I.D.; 0.093in. I.D.





本泵为2通道灌注系统,可在8 ul/min - 7.3 ml/min (或选择下述升级版产品以达到22 ml/min的最大 流量)范围内实现精确流量控制。本泵带有4通道可编程控制器,可升级至4通道系统。本品设计 精准,较小的尺寸最大限度地减少了脉动性,使灌注更加平稳。本产品常用于稳定输送溶液、灌 注、注入,也可用于显微成像、录像、钙和其它离子的测量及生化检测或小型器官和动物灌注实 验过程中的物质输送。

本泵带有数字界面,可使用模拟信号来独立校准各通道,还可以手动或通过数据采集及成像软件 切换通道来输送一种或多种物质。控制器可以使用定时器编程来控制各个通道、或者输送预先设 定的体积。本泵还允许通过编程连续性地输送各种溶液,以补充长时程实验中消耗掉的培养基。 本品还可精确地混合不同溶液或仅仅使用两种溶液 (缓冲液和测试化合物母液) 来得到剂量-应答 曲线。

每个通道都可通过无线遥控器、手动、模拟信号、TTL进行控制,也可通过RS232端口连接第三 方软件包 (具有多种USB接口) 进行全自动设置控制。

本系统升级后可并行操作四个通道。可连接溶液切换迷你系统来按顺序交换和混合溶液。可选用 鲁尔锁多支管来将多种溶液从一个出口流出。双通道系统的尺寸为4x2.5x1.85 in (与控制器单独 分开)。多个系统可以彼此连接组成一个多通道系统。含 1 ft.. 持载杆和 X-block 来连接标准的 0.5in. 柱。自带多种管路来实现不同的流量: 0.015" I.D. - 8-170 µl/min; 0.020" I.D. - 20-340 µl/ min; 0.031" I.D. - 50-920 µl/min; 0.062" I.D. - 170-3400 µl/min; 0.093" I.D. -370-7300 µl/min; 双 0.015" I.D. x2 8-170 μl/min (要实现不同流量请选择以下选项进行升级)。点击图片放大查看。 Item#: CFPS-2



流量,ml/min

答山久	CFPS-2/1U	升级			
官内住		10K	900	66	
.015"	0.008-0.17	0.34-6.7 µl/min	0.004-0.08	0.03-0.6	
.020''	0.017-0.34	0.59-12 µl/min	0.007-0.14	0.05-1.0	
.031"	0.046-0.92	1.6-34 µl/min	0.020-0.40	0.15-3.0	
.062"	0.17-3.4	6.7-145 µl/min	0.08-1.7	0.5-10	
.093''	0.37-7.3	13.5-275 µl/min	0.16-3.3	1.1-22	

流量控制

目录号	描述
CFPS-1U	流量控制单元, 8µl/min - 7.3ml/min
CFPS-1U10K	流量控制单元, 0.34-275 µl/min
CFPS-1U66	流量控制单元, 30µl/min - 22 ml/min
CFPS-1U9	流量控制单元,4µl/min - 3.3 ml/min
CFPS-2	可编程两通道可控流量灌注系统
CFPS-UC2	可编程四通道流量控制器
CFPS-2U	附加两通道升级
CFPS-10K	0.34-275 µl/min 流量升级
CFPS-900	4-3300 μl/min 流量升级
CFPS-66	30-22000 µl/min 流量升级
USB-RS232	USB 接头
CFPS-FIT	零件套装
CFPS-MB	安装支架套装
CFPS-ST-15	管组, 0.015", x5
CFPS-ST-20	管组, 0.020", x5
CFPS-ST-31	管组, 0.031", x5
CFPS-ST-162	管组, 0.062", x5
CFPS-ST-93	管组, 0.093", x5
CFPS-ST-15	双管组, 0.015", x5
CFPS-S	复位保护带



包含: 一套带鲁尔锁固定装置的管路和不锈钢针, x8 可与可调式管架 MH-MIS 连用对孵箱内的 小室和培养皿提供内流和外流。管架附带可选插口 TC-1-60, TC-1-SL, TC-1-4/3 或 TC-1-100。管路 穿过孵箱侧面的开孔。管端连有不锈钢针,可以弯曲进入培养室和培养皿内部。本品用于灌注和 连续培养基交换系统。

聚四氟乙烯接续和鲁尔锁端口灌注管, x2 中部薄接续乙烯管, 穿过 TC-MIS 孵箱对流动池提供 内流和外流。可与鲁尔接头连用。

倒刺弯管接头, x8系列 适用于 1/16in I.D. 软管, 可插入微流控设备中。

灌注管和鲁尔锁端口配件,x8系列聚乙烯管(50 feet),带一系列带螺纹鲁尔锁配件(x8),用于TC-MWP,TC-MIW和TC-MWPHB孵箱,还有一系列鲁尔配件(x8)来连接PETRI-FLOW top,足以为四个培养皿提供内流和外流。可与各种培养室的凹面鲁尔接头相连。凹面鲁尔接头可嵌入孵箱壁,提供了便捷的灌注端口。

穿过孵箱开孔的薄灌注管, x8在 TC-MIS 孵箱内使用。含缩径内流/外流端口用管路,带有不锈钢 针以延伸至培养皿底部。管路带有鲁尔锁装置,可接通孵箱侧面端口。

















培养皿插口 PDI 和自粘贴垫圈 此插口可将一个培养皿转换为一个灌注室。垫圈具有生物相容性,与培养皿底形成一个气密性的防漏接触面,即使培养皿充满培养基或者表面不平时也能防漏。简单地将插口压在培养皿底数秒即可在皿中形成一个灌注系统。高度很低,仅有3mm,可以使用记录电极和带浸水式物镜的垂直显微镜。工作体积小:底部为11mm内径的锥形开口,顶部为19mm开口。培养室有两个独立开口,一个用于内流,一个用于外流,从而防止了气泡的进入。层流的形成有利于灌注,能更快地交换溶液。可于50mm玻璃底培养皿配合使用,以便于用浸水式物镜观察。Item#: PDI

- 外径: 35mm
- 高度: 3mm

• 工作体积: 11mm 直径,约 100 µl

FLOW-PETRI和培养皿插口

目录号	描述
PDI	培养皿专用低侧面培养腔插口
FLOW-PETRI	35mm 培养皿灌注罩
PS-KIT	灌注配件套装





"行相仰加松牧10日マ历474

目录号	描述
TC-PA-C	Corning培养皿专用接头
TC-PA-N	Nunc培养皿专用接头
TC-PA-W	Willco培养皿专用接头
TC-PA-F	Fluoro培养皿专用接头
TC-PA-G	Greiner Bio-One玻璃底培养皿 专用接头
TC-PA50	35 mm培养皿专用 50mm 缩径接头环







显微注射及细胞操纵迷你孵箱盖

可用于培养皿、盖板玻璃腔、盖玻片架和35/50 mm玻璃底培养皿。在操纵细胞时,可以通过玻璃 窗口的开孔插入微注射工具,同时用温度控制器进行加热。本产品需要温度控制器,适用于各种 显微镜,可用于长里程成像、多通道溶液切换和灌注系统。操作完成之后可关闭开孔。Item# TC-MIS-INJECT

显微注射和细胞操纵专用孵箱盖

目录号	描述
TC-MIS-INJECT	显微注射和细胞操纵专用孵箱盖



制冷孵箱

培养皿和盖玻片室专用制冷 & 加热显微镜孵箱, BTC-S /-35

- 尺寸: 120x120x23mm
- 光学孔径: BTC-S-35 载物台, 直径为 22mm / 35mm
- 最小物镜工作距离: 0mm (倒置显微 镜)
- 温度稳定性: 0.1°C, 内置传感器
- **散热片:可选**极低温水冷却,需要 BTC-W 单元
- **显微镜接头:**适用于标准显微镜接头 IMA-74 的74 mm cutout

可用于:标准 35mm 一次性培养皿 (可能需要培养皿接头 TC-PA)、玻璃底培养皿 (需要TC-PA-W,-C,-G,-F 接头)和 可替换式盖玻片室 CSC。内置温度传感器以稳定操作。可与带进气端口的高光学质量玻璃罩连用来控制 CO2 或低氧环境。内置深度降温冷却槽线。对于矩形载玻片可考虑使用不同的冷却载物台。需要一个温度控制器和一个显微镜接头(依显微镜类型而定)。 Item#: BTC-S









- 尺寸: 120x160 mm, 80x40 mm 冷却/加热区域
- **观察孔:** 10 mm 直径
- 最小物镜工作距离: 0mm (正置显微 镜) / 3mm (倒置显微镜)
- **温度稳定性:** 0.1°C, 内置传感器
- **散热片:可选**极低温水冷却,需要 BTC-W 单元
- **显微镜接头:**适用于标准显微镜接头 IMA-74 的74 mm cutout

可用于:标准 35mm 一次性培养皿、玻璃底培养皿、一次性载玻片和盖板玻璃。可将样本冷却 至-2°C (或加热至 150°C)。加热面积为 40x80mm,中间具有 10mm 观察孔。载物台高度很低, 便于操作样品。带有原位样品固定夹。可放置于正置显微镜上,也可挂载在显微镜载物台上(视 载物台 cutout 大小而定,例如 Nikon显微镜需要 108mm 直径)。需要散热片冷却和一个温度控制 器。Item#: BTC-L



载玻片制冷 & 加热显微镜孵箱, BTC-SL

- 尺寸: 120x120x23mm
- 观察孔: 20x46mm
- **最小物镜工作距离:** 0mm (倒置显微 镜)
- 温度稳定性: 0.1°C, 内置传感器
- 散热片:可选极低温水冷却,需要 BTC-W 单元
- **显微镜接头:**适用于标准显微镜接头 IMA-74 的74 mm cutout

可用于:标准1in. (25mm) 宽一次性载玻片和盖板玻璃腔。内置温度传感器来保持操作稳定。 可与带进气端口的高光学质量玻璃罩连用来控制 CO2 或低氧环境。内置深度降温冷却槽线。对 于矩形载玻片可考虑使用不同的冷却载物台。需要一个温度控制器和一个显微镜接头(依显微镜 类型而定)。 Item#: BTC-SL



电动载物台载玻片和盖板玻璃腔制冷 & 加热, BTC-SLM

- 尺寸: 110x160x18mm, 26x79mm冷却/ 加热区域
- 观察孔: 20x46mm
- 最小物镜工作距离: 0mm (倒置显微 镜)
- 温度稳定性: 0.1℃,内置温度传感器
- 散热片:可选极低温水冷却、需要 BTC-W 单元
- 显微镜接头:适用于标准显微镜接头 IMA-74 的74 mm cutout

可用于: 定制设备、一次性载玻片和盖板玻璃。可将样本冷却至-5°C (或加热至150°C)。适用 于电动载物台和K型Zeiss载物台的160x110 mm cutout。制冷面积为26x29mm的内部cutout(适于放 置标准载玻片),中部有20x40mm观察孔。内部cutout深17mm,有一个1mm盖来支持样品。需 要散热片制冷和一个温度控制器。Item#: BTC-SLM

载玻片和盖板玻璃培养室专用低侧面制冷 & 加热载物台, BTC-SL-128x86

这种低侧面加热/制冷载物台可放置于 128x86mm 标准多孔板架内。可用于: 定制设备、一次性 载玻片和盖板玻璃。固定在两侧 #4-40 螺孔后可用于挂载 IMA-MH 管路(可选)和探针架。可 将样本冷却至 0℃ (结合 BTC-W 热交换单元) 或加热至 150℃。制冷面积为26x79mm的内部

- 尺寸: 128x86mm, 29x79mm 制冷/加热 区域
- 观察孔: 20x46mm

- 散热片:可选极低温水冷却,需要 BTC-W 单元
- 显微镜接头:适用于 128x86mm 标准 多孔板架
- **最小目镜工作距离:**0mm (倒置和正置 显微镜)
- 温度稳定性: 0.1℃,内置传感器

光学窗口: 44mm 双玻璃窗口

- cutout(适于放置标准载玻片),中部有20x40mm观察孔。需要一个温度控制器。Item#: BTC-SL-128x86 培养皿和盖玻片培养室制冷&加热显微镜载物台专用孵箱,BTC-SI • 尺寸: 63mm 直径
 - 厚度: 3mm
 - 端口: x2 倒钩气体端口

放在 BTC-100 载物台上方后会形成一个控制内部气体组成的封闭系统。带有两个高光学质量 玻璃罩和气体输入端口来控制 CO2 或低氧环境。Item#: BTC-SI

Cover-incubator for Cooling & Heating microscope stages for slides, **BTC-SLI**

- THE R. L.
- Dimensions: 38x88mm •
- Optical window: 22x57mm double glass window
- Thickness: 3mm
- Ports: x2 barbed gas ports

Can be used with BTC-SL stages for standard 1 in. (25mm) wide disposable slides and chambered coverglasses. Incorporates two high optical quality glass covers and ports for gas input, to control CO2 or hypoxia. Item#: BTC-SLI

Cooling & Heating Microscope Objective, BTC-O

- Dimensions: custom cooling/heating area (22.5x10mm for example)
- 0mm (for upright microscopes)/ 0mm (for inverted microscopes)

- **Optical aperture:** custom ٠
- Stability: 0.1°C, built-in sensor ٠
- **Objective working distance, minimum:** •
- Heat Sink: optional water cooling for low •
- Can be used with any microscope objective (or any cylindrical object). Can cool the objective down to -6°C (or heat up to 150°C). The cooling area should be specified when ordering, for example 22.5mm diameter and 10mm wide for x40 Zeiss objective (technical drawings are required). Built-in clamp will fix the objective in place. Can be placed on upright and inverted microscopes. Requires sink cooling and a temperature controller Item#: BTC-O

Cooling Incubators

Catalog No.	Description
BTC-S	Heating & Cooling microscope stage for 35mm petri dishes, 22mm diameter clearance on the bottom
BTC-S-35	Heating & Cooling microscope stage for coverslip cham- bers CSC, 35mm diameter clearance on the bottom
BTC-SL	Heating & Cooling microscope incubator for slides
BTC-L	Heating & Cooling plate for slides and dishes, low profile
BTC-SLM	Heating & Cooling stage for slides, 160x110mm
BTC-SL-128x86 L	ow Profile Heating & Cooling stage for slides, 128x86mm
BTC-O- 22.5x10mm	Heating & Cooling attachment for Microscope objective, 22.5x10x40mm
BTC-O- 34x10mm	Heating & Cooling attachment for Microscope objective, 34x10x40mm
TC-PA-C	Reducing adapter-ring, for Corning type dishes
TC-PA-N	Reducing adapter-ring, for Nunc type dishes
TC-PA-W	Reducing adapter-ring, for Willco dishes
TC-PA-F	Petri Dish Adapter, for Fluo dishes from WPI
TC-PA-G	Petri Dish Adapter, for Greiner Bio-One dishes, glass bot- tom
IMA-74	Microscope adapter
BTC-SI	Cover-incubator for Cooling & Heating microscope stage for petri dishes and coverslip chambers
BTC-SLI	Cover-incubator for Cooling & Heating microscope stages for slides





Microscope Adapters for Miniature Incubators TC-MIS, and cooling stages BTC-S & BTC-SL

This is a microscope stage adapter to provide exact fit and center miniature incubators and cooling stages on mechanical microscopes. Fits both TC-MIS incubators and cooling stages. Adapters for all brands of microscopes and isolation tables/platforms are available. Motorized stages usually require different models TC-MI or BTC-SLM for example. Choose the size appropriate for your microscope. **Item#: IMA-74**

• Inside opening: 74mm

cooling stages

• Use with: TC-MIS; BTC-S and BTC-SL

Microscope Adapters with 74mm cutout

Catalog No.	Description
IMA-74-110	Microscope Adapter for Olympus microscopes, Applied Precision stages, Burleigh Gibraltar stages, Narishige stages 110mm
IMA-74-108	Microscope Adapter for Nikon microscopes, SISKIYOU stages, Burleigh Gibraltar stages 108mm
IMA-74-LM	Microscope Adapter for Leica microscopes and Zeiss type M stages
IMA-74-150x150	Microscope Adapter for Leica 150x150mm stages
IMA-74-90	Microscope Adapter for stereo microscopes, 90mm

Incubator-Covers for coverslips, petri dishes and slides

Incubator-cover for 35mm coverslip holders CSC and petri dishes, TC-I

- Outside diameter: 45 mm
- Top Optical window: 28mm

Height: 25 mm

- CO2 control: x2 barbed ports
- Can be used for imaging of samples on coverslips and in Petri dishes. Fits on top of heating elements for 35mm chambers and dishes, after removal inline pre-heater tubing (also fits cooling stages). Double optical quality glass top. Barb fitting to connect to a CO2/O2 controlle . Simply put the coverslip chamber or a petri dish inside the heating element and place the incubator-cover on top. Can be used on any microscope with an appropriate microscope adapters. **Item#: TC-I**





Incubator-cover for slides and chambered cover glasses, IMA-ISL

- Outside dimensions: 28 x 78 mm
- Top Optical window: 23 x 57 mm

• Height: 25mm

• CO2 control: x2 barbed ports

Can be used for imaging of samples on rectangular coverslips, standard slides, and chambered cover glasses. Fits on top of universal microscope adapter for standard microscopes IMA, after removal the fitting ring for 35mm chambers (also fits heating & cooling stages for slides). Double optical quality glas top. Barb fitting to connect to CO2 controlle. Simply put the sample inside the microscope adapter and place the incubator-cover on top. Can be used on any microscope with an appropriate microscope adapters IMA. Item#: IMA-ISL

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Incubator-covers

Catalog No.	Description
TC-I	Incubator-cover for coverslip holders and petri dishes
IMA-ISL	Incubator-cover for slides and cover glasses
TC-E35	Replacement Heating Element, 35mm bottom window
TC-E35x15	Heating Element for 35mm dishes, 15mm window
TC-E35x11	Heating Element for 35mm dishes, 11mm window
CSC	Round Coverslip Holder Specify coverslip diameter when ordering
TC-PA-C	Reducing adapter-ring, for Corning type dishes
TC-PA-N	Reducing adapter-ring, for Nunc type dishes
TC-PA-W	Reducing adapter-ring, for Willco dishes
TC-PA-F	Petri Dish Adapter, for Fluo dishes from WPI
TC-PA-G	Petri Dish Adapter, for Greiner Bio-One dishes, glass bot- tom
IMA	Microscope adapter



Sealed Chambers for High Resolution Imaging

Ultra-Thin Sealed Imaging Chamber for 25mm Coverslips UTIC

The chamber is formed by putting a thin spacer between two 25mm coverslips. The minimum thickness is 150 micron. You can change thickness by using a number of spacers. The inside opening is 21mm. Smaller openings are available upon request The adhesive gaskets form sealed chambers if used with smooth surfaces, even with cell media on top. The adhesive is easy to remove after use. Procedure: put the coverslip into the holder; remove one protective layer from adhesive gasket; position the gasket above the coverslip; remove the second protective layer; put your sample inside the opening; cover with the second coverslip. These ultra-thin chambers can be used with heated chambers and regular glass slides. Can be used with oil-immersion optics and for multi-photon imaging.. **Item#: UTIC-21, UTIC-13**



- Optical clearance: 21, 20, 13 mm
- Thickness: 150 micron
- Working volume: 52, 47, 20 microl



High Resolution Imaging Chambers

Catalog No.	Description
UTIC-25	Holder for Ultra-Thin Imaging Chambers, fits 25mm CoverSlips, microscope adapters or heated stage are required
UTIC-21	Adhesive ultra-thin Gaskets for 25mm round coverslips, 21mm optical clearance, pack of 100
UTIC-13-24x24	Adhesive Ultra-thin Gaskets 24x24mm with 13mm optical clearance, pack of 100
CS-No1-25	Glass Cover Slip, box of 100, 25mm diameter.
CS-No1.5- 22x22	Glass Coverslips, 22x22mm, No 1.5, box of 100





Micro-Incubators

Chamber-incubator for replaceable round coverslips, CSC

Can be used for imaging and recording. Consists of a bottom base, and a silicone O-ring to seal the coverslip. There is no contact between solution and the chamber base to prevent ions leakage. The included top glass coverslip can be used to seal your sample from top as well - to from a micro-incubator. The top can be secured using the included metal ring, or using flat springs of microscope adapters. The bottom part has a recessed profile to fit round coverslips. Overall diameter is the same as standard Petr dishes. The included O-rings allows using different thickness coverslips. Simply put the coverslip inside and seal it with silicone ring by a snap-in action. Can be secured with a top metal ring. The silicone ring can be also secured by flat springs of microscope adapters. For low-profile chambers, consider CSC-2 design, where no top clamps are required. Can be used as a perfusion chamber, if combined with miniature tubing holders. The metal base facilitates heat transfer. Fits to heating stages and non-heated stages. **Item#: CSC**

- Outside diameter: 36 mm
- Height: 8.5mm (with top metal ring)
- Working volume:

25mm coverslip - 21mm, approx. 350 microl 22x22mm coverslip - 19mm, approx. 280 microl 20mm coverslip - 16mm, approx. 200 microl 18mm coverslip - 14mm, approx. 150 microl 13mm coverslip - 9mm, approx. 50 microl 12mm coverslip - 8mm, approx. 50 microl 10mm coverslip - 6mm, approx. 30 microl



Coverslip Holders and Chambers

Catalog No.	Description
CSC-25	Chamber for replaceable 25m round coverslips
CSC-20	Chamber for replaceable 20mm round coverslips
CSC-18	Chamber for replaceable 18mm round coverslips
CSC-13	Chamber for replaceable 13mm round coverslips
CSC-12	Chamber for replaceable 12mm round coverslips
CSC-22x22	Chamber for replaceable 22x22mm square coverslips
CS-No1-25	Glass Coverslips, 20mm, No 1, box of 100
CS-No1-20	Glass Coverslips, 25mm, No 1, box of 100
CS-No1-18	Glass Coverslips, 18mm, No 1, box of 100
CS-No1-13	Glass Coverslips, 13mm, No 1, box of 100
CS-No1-12	Glass Coverslips, 12mm, No 1, box of 100
CS-No1-10	Glass Coverslips, 10mm, No 1, box of 100
CS-30	Replacement top glass cover for CSC holders, 30mm diameter

High precision cover glasses, No.1.5, CSHP

Cover glasses for high performance microscopes, made of chemically resistant borosilicate glass of the first hydrolytic class with precision thickness No. 1.5 (0.170 mm \pm 0.005 mm), suitable for in-vitro dia - nostic applications. **Item#: CSHP**

- for objectives with high numerical aperture and resolution
- accurate thickness of 0.170 mm with tolerance reduced to \pm 0.005 mm
- non-corroding borosilicate glass
- refractive index ne: 1.524-1.527 at 546.07 nm
- Abbe coefficient ve=55

High precision cover glasses

- recommended for the following objectives:
- dry objective: N.A. 0.7
- water immersion: N.A. 1.0
- glycerol immersion: N.A. 1.2
- oil immersion: N.A. 1.3
- developed in cooperation with Zeiss and Schott

Catalog No.	Description
CSHP-No1.5-25	High Precision Glass Cover Slip, box of 100, 25mm diameter
CSHP-No1.5-10	High Precision Glass Cover Slip, box of 100, 10mm diam- eter
CSHP-No1.5-12	High Precision Glass Cover Slip, box of 100, 12mm diam- eter
CSHP-No1.5-13	High Precision Glass Cover Slip, box of 100, 13mm diam- eter
CSHP-No1.5-18	High Precision Glass Cover Slip, box of 100, 18mm diameter
CSHP-No1.5-22x22	High Precision Glass Cover Slip, box of 200, 22x22mm
CSHP-No1.5-18x18	High Precision Glass Cover Slip, box of 200, 18x18mm









Heating Elements for Microincubators CSC, UTIC and TC-I

Heating element for 35mm Coverslip Chambers and Petri dishes

TC-E35 Ready to use heated system for samples cultured/placed on coverslips. Used with bath chambers for replaceable coverslips CSC and UTIC. Replaceable coverslips allow to culture cells before performing experiments. The heater preheats perfusion solution before it enters the chamber. This keeps temperature stable even if used with perfusion systems. Inline heated Teflon tubing fits manifolds include with perfusion systems. Can be used for imaging and recording. Can be used with 35 mm petri dishes. Since some brands of petri dishes have different diameter, reducing adapters TC-PA might be required. Requires a microscope adapter (specify microscope model when ordering, ships installed inside the microscope adapter). Requires a temperature controller TC2-80-150-C. Item# TC-E35

- Dimensions: 50mm diameter
- Temperature stability: 0.01°C, built-in sen-• sor

Optical aperture: 35mm, 15mm, 11mm

Use with: Coverslips and Petri dishes,

- including 35mm glass bottom dishes
- Solution Pre-heater: Replaceable/Remov-٠ able Teflon tubing, easy to was
- Microscope adapter: Fits to 50mm cutout of standard microscope adapters MA and IMA

Heating Elements

Catalog No.	Description
TC-E35	Replacement Heating Element, 35mm bottom window
CSC	Round Coverslip Holder Specify coverslip diameter when ordering
TC-I	Incubator-cover for coverslip holders and petri dishes
TC-PA-C	Reducing adapter-ring, for Corning type dishes
TC-PA-N	Reducing adapter-ring, for Nunc type dishes
TC-PA-W	Reducing adapter-ring, for Willco dishes
TC-PA-F	Petri Dish Adapter, for Fluo dishes from WPI
TC-PA-G	Petri Dish Adapter, for Greiner Bio-One dishes, glass bot- tom
IMA	Microscope adapter

Heated Microincubators TC-CSC and TC-CSC-I

Heated chamber-incubator for replaceable coverslips, TC-CSC

Can be used for imaging and recording. Consists of a heated bottom base, and a silicone O-ring to seal the coverslip. The metal base facilitates heat transfer. There is no contact between solution and the chamber base to prevent ions leakage. The included top glass coverslip can be used to seal your sample from top as well - to from a micro-incubator. The top can be secured using the included metal ring, or using flat springs of microscope adapters. The bottom part has a recessed profile to fit round or square coverslips The included O-rings allows you to use different thickness coverslips. Simply put the coverslip inside and seal it with silicone ring by a snap-in action, then secure with a top metal ring (the silicone ring can be also secured by flat springs of microscope adapters). For low-profile chambers, conside TC-CSC -L design, where no top clamps are required. Can be used as a perfusion chamber, if combined with miniature tubing holders. The heating element incorporates replaceable Teflon perfusion tubing inside, which makes the element to work as inline pre-heater. Requires a microscope adapter and a temperature controller TC2-80-150-C. **Item# TC-CSC**

- Dimensions: 50mm diameter
- Temperature stability: better than 0.01°C, built-in sensor
- Solution Pre-heater: Replaceable/Removable Teflon tubing, easy to was
- Microscope adapter: Fits to 50mm cutout of standard microscope adapters MA and IMA

• Working volume:

25mm coverslip - 21mm, approx. 350 microl 22x22mm coverslip - 19mm, approx. 280 microl 20mm coverslip - 16mm, approx. 200 microl 18mm coverslip - 14mm, approx. 150 microl 13mm coverslip - 9mm, approx. 50 microl 12mm coverslip - 8mm, approx. 50 microl 10mm coverslip - 6mm, approx. 30 microl

Heated micro-incubators

Catalog No.	Description
TC-CSC-25	Heated chamber for replaceable 25m round coverslips
TC-CSC-20	Heated chamber for replaceable 20mm round coverslips
TC-CSC-18	Heated chamber for replaceable 18mm round coverslips
TC-CSC-13	Heated chamber for replaceable 13mm round coverslips
TC-CSC-12	Heated chamber for replaceable 12mm round coverslips
TC-CSC- 22x22	Heated chamber for replaceable 22x22mm square coverslips
CS-30	Replacement top glass cover for CSC holders, 30mm diameter

Heated Micro incubator with CO2 and hypoxia control for cov-

erslips, **TC-CSC-I** The incubator can be used with round replaceable coverslips for long-term time-lapse high resolution imaging. Comes with thin high optical quality glass cover to prevent evaporation (can be removed). Easy to use: simply drop the sample coverslip into the holder, seal with silicon chamber, and secure with the top ring. There is no contact between solution and the chamber base to prevent ions leakage. The bottom part has a recessed profile to fit round coverslips The air-tight seal will prevent media evaporation for hours. Incorporates a temperature sensor and a heating element for







temperature control TC2-80-150-C. Requires a CO2 controller. Requires a microscope adapter. Specify microscope model when ordering. Can be upgraded with an objective heater for immersion optics. **Item# TC-CSC-I**





- Dimensions: 50mm diameter
- Height: 30mm
- Top Optical window: 28mm
- Temperature stability: 0.01°C, built-in sensor
- CO2 control: x2 barbed ports
- Microscope adapter: Fits to 50mm cutout of standard microscope adapters MA and IMA

• Working volume:

25mm coverslip - 21mm, approx. 350 microl 22x22mm coverslip - 19mm, approx. 280 microl 20mm coverslip - 16mm, approx. 200 microl 18mm coverslip - 14mm, approx. 150 microl 13mm coverslip - 9mm, approx. 50 microl 12mm coverslip - 8mm, approx. 50 microl 10mm coverslip - 6mm, approx. 30 microl

Heated micro-incubators

Catalog No.	Description
TC-CSC-I-25	Heated chamber for replaceable 25m round coverslips
TC-CSC-I-20	Heated chamber for replaceable 20mm round coverslips
TC-CSC-I-18	Heated chamber for replaceable 18mm round coverslips
TC-CSC-I-13	Heated chamber for replaceable 13mm round coverslips
TC-CSC-I-12	Heated chamber for replaceable 12mm round coverslips
TC-CSC-I- 22x22	Heated chamber for replaceable 22x22mm square coverslips
CS-30	Replacement top glass cover for CSC holders, 30mm diameter



Temperature Controller TC-1-100i

Low electrical noise, heating 2-channel temperature controller for incubators. Flexible self-adjusting controls for stable operation. The second channel is connected to the incubator lid to prevent condensation. An optional external temperature probe might be used to monitor bath temperature. External probes are plastic-encapsulated: no metal ions leakage into solutions. Includes the incubator connecting cables. Built-in power supply (120-240VAC).

- Range up to 150°C with accuracy 0.1°C
- Stability: 0.01°C, self-adjusting
- Temperature Set manually or externally
- Built-in overheating protection
- **Temperature probes:** miniature 0.87mm (fits small volume chambers
- RS232 port for programmed temperature changes
- Analog Input to set temperature changes

- Analog Output to monitor temperature
- Standby mode activated manually or by external TTL signal
- No vibrations during imaging and recording
 no internal fan
- Dimensions: 6.5 x 5 x 9in.
- Settings: flexible, allow to stabilize temper ture in different sample volumes and heating stage sizes

2-Channel Temperature Controller for incubators, with rs232 interface

Catalog No.	Description
TC-1-100-I	Incubator version of 2-Channel Temperature Controller, high stability, no electrical noise, includes power supply and cables
TC-TP	External temperature probe, 0.87mm



Objective Heater

Objective Heater with temperature controller A flexible silicone heater for any objective. Used with oil or water immersion optics. Includes easy disconnect cable and incorporates a temperature sensor. Easy to attach and remove. Simply wrap the heater around objective and secure it with included Velcro tape. The heater is usually attached to a cylindrical surface of the objective, closer to the sample. Dimensions: 0.5 x 5 in., less than 1mm thick. **Item#: MTC-HLS-025**

• **Dimensions:** 0.5in. wide x 5in long

Temperature stability: better than 0.01°C,

- self-adjusting, built-in sensor, dual overheating protection
 - Easy to install: Fits any objective

Objective heaters

Catalog No. Description

MTC-HLS-025 Objective Heater with temperature controller, 0.5x5in

CO2 & O2 Controllers

CO2 and hypoxia controller - CO2-O2-MI

For use with miniature incubators. Connects to a cylinders with compressed CO2 gas and balance gas -Nitrogen usually. The output connects directly to a gas port of the incubator or a humidifie . The controller makes 0-20% CO2 and 0-20% O2 mixture to supply inside the incubator. CO2 control at 5% level keeps pH of media constant. Simple to use: the controller ships calibrated for 5% CO2 level requirement. Can be adjusted to fill incubators of di ferent volumes. The instrument not only controls gas content inside the incubator, but also brings the gas consumption to the minimum. **Item#: CO2-O2-MI**

- Inputs: max 150PSI
- Output: 750 sccm max
- Connectors: Easy-connect, 5/32in.
 (4mm) O.D. input tubing; 1/8in. output tubing; or 1/4in. O.D. tubing, or #10-32 threaded connectors
- Indicators: digital display of CO2, O2 and flow level
- Controls:
 CO2 level 0-20%
 O2 level 0-20%
 FLOW up to 750 sccm
 INPUT PRESSURE regulators 0-25PSI,
 CLOSE switches for CO2 and N2,
 Dimensions: 12 x 6 x 9in.,
- Power: 100-230VAC 25W

CO2 controller CO2-MI

For use with miniature incubators. Connects to a cylinder with compressed CO2 gas. The output connects directly to a gas port of the incubator or to a humidifie . The controller continuously senses CO2 concentration inside the incubator through CO2-UP attachment. CO2 control at 5% level keeps pH of media constant. Simple to use. A digital indicator will display the actual CO2 concentration inside incubator. Can be adjusted to fill incubators of di ferent volumes. The instrument not only controls gas content inside the incubator, but also brings the gas consumption to the minimum. Note: if using pre-mixed 5% CO2/95% O2 gas source - a different PC-MI controller is required. Item#: CO2-MI

- Inputs: max 150PSI
- Output: max 750sccm
- Connectors: Easy-connect, 5/32in.
 (4mm) O.D. input tubing; 1/8in. output tubing; 10-32 threaded; includes fitting for 1/4in. 0.D. tubing;
- Controls: SET CO2 1-20% INPUT PRESSURE regulator 0-25PSI, CLOSE/OPEN input, FLOW 100-750sccm DC and AC levels 0-100%
- Power: 100-230VAC 35W

CO2 Controller and Accessories

Catalog No.	Description
CO2-O2-MI	CO2/O2 Hypoxia Controller for Miniature Incubators
CO2-MI	CO2 Controller for Miniature Incubators
CO2-UP	CO2 Upgrade for Miniature Incubators - incubator modi- fication, connects to CO2 Controller
CO2-500ML	Heated Humidifier.







Gas regulator PC-MI

The controller is used to deliver gas mixture inside miniature incubators. Connects to a cylinder with compressed pre-mixed (5% CO2/95% O2 or any other, including nitrogen and low O2) gas. The output connects directly to a gas port of the incubator or a humidifie. The controller regulates output gas flow to provide continuous slow stream of gas mixture, to replace residual gases inside the incubator. Can be used as a source of regulated pressure to saturate solutions with gases and to control flow of solutions. Simple to use. Can be adjusted to fill incubators of di ferent volumes. Balanced CO2 content inside the incubator not only controls pH of cell media, but also brings the gas consumption to the minimum. If using a source of pure CO2, a different CO2-MI controller is required. **Item#: PC-MI**

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- Inputs: max 150PSI
- Output: 750 sccm max
- Connectors: Easy-connect input, 5/32in. (4mm) O.D. tubing; 10-32 threaded; includes fitting for 1/4in O.D. tubing;
- Controls: INPUT PRESSURE regulator 0-25PSI, SET OUTPUT % pressure, CLOSE/OPEN input, FLOW rate up to 750 sccm max
- Indicators: digital display
- Power: 100-230VAC 35W



CO2 Controller and Accessories

Catalog No.	Description
PC-MI	Gas Controller for Miniature Incubators
CO2-500ML	Heated Humidifier.

Petri Dish Inserts



Temperature Control & Perfusion in Petri Dishes

- Minimize working volume
- Use with any petri dishes
- Use with any perfusion system
- Compatible with Temperature Controlled stations



Petri Dish Insert PDI and Self-Adhesive Gaskets The insert converts a regular petri dish into a perfusion chamber. The biocompatible gasket form airtight and leak-proof contact with the bottom surface of the dish, even if the dish is filled with media or has an uneven surface. Simply press the insert to the bottom of the dish for a few seconds to form a perfusion system right in your dish. The low 3 mm profile allows you to use recording electrodes, upright microscopes with water immersion objectives as well. It has small working volume: conical opening with 11 mm I.D. on the bottom and 19 mm on the top. The chamber has two separate openings for solution inflow and outflow to prevent bubble from entering the working compartment. The laminar profile facilitates perfusion and provides faster solution exchange. Can be used with 50mm glass bottom dishes for easy access with water immersion objectives. Item#: PDI

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- Outside diameter: 35mm
- Height: 3mm

Working volume: 11mm diameter, approx. 100 microl









Low Profile Perfusion Set for Petri dishe Comes with PDI insert and 50 selfadhesive biocompatible gaskets, which allow to use the assembly with regular 35 mm petri dishes.

Cells cultured in 35 mm Petri dishes are a popular research tool used in numerous applications, including patch clamping and intracellular ion probe imaging. However, true perfusion (continuous inflow and ou - flow) of solutions can be difficult to configure. Drug delivery without an outflow requires a spri -type microinjector, but ultimately results in contamination of the entire dish after only a few applications. This forces scientists to plate cells on cover slips for placement into specially designed perfusion chambers. However, such transfer is a time consuming process which introduces the potential for contamination plus additional expense.



The PDI chamber was designed by scientists after several years of patch clamp research combined with external perfusion of single cells cultured in Petri dishes. The chamber has separate openings for solution inflow and outflow that dump the fluctuations of the liquid level in the working compartment and preven bubbles from entering the chamber. The laminar profile facilitates perfusion and provides faster solution exchange. An adjustable metal suction tube (included) controls the level of liquid in the dish. The chamber was designed for use with perfusion systems and magnetic holder with miniature ball-joint, which can accommodate perfusion manifolds. Can be used with glass bottom dishes for imaging. In fact, some glass bottom dishes are made from standard petri dishes like Corning 35 mm, for example. Can be used with temperature controlled systems. The suction tubing requires connection to an outflow source CFPS-1U

Includes three magnetic tubing/electrode holders, and stainless suction tubing. A microscope adapter MA is required. Can be used with both magnetic and non-magnetic microscope adapters. If used with non-magnetic adapters, a IMA-MH set of miniature holders is required. **Item#: LPPCP1**

Petri Dish Inserts

Catalog No.	Description
PDI	Low Profile Chamber-Insert for Petri Dishes
LPPCP1	Low Profile Perfusion Set for Petri Dishes
TC-E35x15	Heating Element for 35mm dishes with 15mm aperture
TC-E35x11	Heating Element for 35mm dishes with 11mm aperture
TC-PA-C	Petri Dish Adapters, for Corning and Mattek petri dishes
TC-PA-N	Petri Dish Adapters, for Nunc for Nunc dishes
TC-PA-W	Petri Dish Adapters, for Willco dishes
TC-PA-F	Petri Dish Adapters, for FluoroDishes
TC-PA-G	Petri Dish Adapter, for Greiner Bio-One dishes, glass bot- tom



Shown here is a Corning petri dish with PDI insert inside. It is placed into a TC-PA-C adapter to fit a TC-E35 heating element, which is mounted into a magnetic MA type microscope adapter. The magnetic adapter allows to position miniature holders from MA-MTH set.





Perfusion cover for 35mm petri dishes, FLOW-PETRI

Can be placed on a standard petri dish to form a flow cell. Incorporates two inflow/outflow ports th extend down to the bottom of the dish. Glass optical window in the middle: 12mm. Can be used with perfusion systems and PDI inserts. Can be sterilized with ethanol solution or autoclaved (100°C max). **Item#: FLOW-PETRI**

Perfusion tubing and luer-lock ports fitting set x8, part of PS-KIT

Tygon tubing (50 feet), a set of threaded luer-lock fitting (x8) for use with TC-MIS, TC-MWP, TC-MIW, and TC-MWPHB incubators, and a set of luer fitting (x8) to connect PETRI-FLO top, enough to provide inflow and outflow for four dishes **Item#: PS-KIT**



FLOW-PETRI and Petri Dish Inserts

Catalog No.	Description
FLOW-PETRI	Perfusion cover for 35mm petri dishes, with luer-lock ports
PS-KIT	Perfusion tubing and luer-lock ports fitting set



Petri Dish adapters for incubators and heating stages		
Catalog No.	Description	
TC-PA-C	Petri Dish Adapters, for Corning and Mattek petri dishes	
TC-PA-N	Petri Dish Adapters, for Nunc for Nunc dishes	
TC-PA-W	Petri Dish Adapters, for Willco dishes	

Petri Dish Adapters, for FluoroDishes

Petri Dish Adapter, for Greiner Bio-One dishes, glass bot-

Petri Dish ada	pters for incubators and hea	ting stages
Cataloa No.	Description	





Perfusion Insert for 50mm Glass Bottom dishes, PCCS2

Can be used with 50mm dishes to form perfusion chamber around your sample placed on glass bottom. Facilitates perfusion inside the dish. Separate inflow and outflow compartments prevent bubbles fro entering the working compartment and provide smooth perfusion. Can be used with perfusion systems and cooling / heating stages for 60-50mm dishes. Can be used with adhesive layers PCCS2-PDI Item#: PCCS2

50mm reducing adapter-ring for 35mm dishes.

Petri Dish Adapter, 38mm easy-grip Falcon dishes

Insert for 50mm dishes

tom

TC-PA-F

TC-PA-G

TC-PA50

IMA-E

Catalog No.	Description
PCCS2	Small Volume Laminar Perfusion Chamber-insert
	Adhesive layers, pack of 50, for use with PCCS2 perfusion
	chambers
Coverslip hambers

Open Chamber Advantages:

- Local substance application to single cells and small tissue
- Access for electrodes during recording from single cells
- Easy sample placement
- Replaceable coverslips to culture cells before the experiment
 Use with inverted microscopes
- Use with water immersion objectives of upright microscopes Use with any perfusion system
- Compatible with Imaging setups and Electrophysiology Workstations

Chambers for Round Coverslips

Low Profile Open Chamber for Coverslips CSC-25 Consists of a metal base to facilitate heat transfer, and a silicone O-ring to seal the coverslip. There is no contact between solution and the metal part to prevent ions leakage. The bottom part has a recessed profile to fit round coverslips. I contrast to regular CSC chambers, it does not need the top ring to keep the assembly together. Instead, the silicone ring holds the coverslip leak-proof, which makes it low-profile. The chamber has x4 threaded holes, #0-80, to attach custom miniature accessories if required. Overall diameter is the same as standard Petri dishes. The O-rings allows using different thickness coverslips. Simply put the coverslip inside and seal it with silicone ring by a snap-in action. Can be used as a perfusion chamber, if combined with miniature tubing holders. Fits to heating stages and non-heated stages. Can be used for imaging and recording. **Item#: CSC-25L**

- Outside diameter: 36.8 mm
- Optical clearance/Working volume (25mm coverslips: 21.5mm / approx. 350 microl
- Height: 6mm from sample to the chamber top

Open Chamber for Coverslips CSC

Can be used for imaging and recording. Consists of a bottom base, and a silicone O-ring to seal the coverslip. There is no contact between solution and the chamber base to prevent ions leakage. The included top glass coverslip can be used to seal your sample from top as well - to from a micro-incubator. The top can be secured using the included metal ring, or using flat springs of microscope adapters. The bottom part has a recessed profile to fit round coverslips. Overall diameter is the same as standard Petri dishes The included O-







rings allows using different thickness coverslips. Simply put the coverslip inside and seal it with silicone ring by a snap-in action. Can be secured with a top metal ring. The silicone ring can be also secured by flat springs of microscope adapters. For low-profile chambers, consider CSC-25 design, where no top clamps are required. Can be used as a perfusion chamber, if combined with miniature tubing holders. The metal base facilitates heat transfer. Fits to heating stages and non-heated stages. Item#: CSC

- Outside diameter: 36 mm
- Height: 8.5mm (with top metal ring)
- Working volume:

25mm coverslip - 21mm, approx. 350 microl 20mm coverslip - 16mm, approx. 200 microl 18mm coverslip - 14mm, approx. 150 microl 13mm coverslip - 9mm, approx. 50 microl 12mm coverslip - 8mm, approx. 50 microl 10mm coverslip - 6mm, approx. 30 microl





Ultra-Thin Live Imaging Chamber The chamber is formed by putting a thin spacer between two 25mm coverslips. The minimum thickness is 150 micron. You can change thickness by using a number of spacers. The inside opening is 21mm. Smaller openings are available upon request The adhesive gaskets form sealed chambers if used with smooth surfaces. The adhesive is easy to remove after use. Procedure: remove one protective layer from adhesive gasket; position the gasket above the coverslip; remove the second protective layer; put your sample inside the opening; cover with the second coverslip. These ultra-thin chambers can be used with heated chambers and regular glass slides. Can be used with oil-immersion optics and for multi-photon imaging These adhesive layers can be attached to any smooth surface. Can be used with UTIC-25 holder for 25mm coverslips (see on the right). Item#: UTIC-21, UTIC-20-24x24, UTIC-13-24x24

Optical clearance: 21, 20, 13 mm

• Working volume: 52, 47, 20 microl

Thickness: 150 micron •











Perfusion Chambers

coverslips

Small Volume Perfusion Chamber for 10mm Coverslips Consists of

Adhesive Gaskets, pack of 100, for use with 25mm

two parts. The bottom part has a special profile to fit No 2, 10 mm O.D., coverslip The top part has 8 mm round working compartment with slanted edges for easy access to your sample and two separate compartments for solution inflow and outfl . This prevents bubbles from coming into the chamber. **Item#:** CSC-10P

• Outside diameter: 35mm

UTIC-21

Working volume: 11mm diameter, approx. 100 microl

Laminar Profile Perfusion Chambe Reusable soft plastic chamber with laminar cutout to provide smooth perfusion. Can be attached to 22x40 glass coverslip for use during imaging. Thin 3mm profile allows you to use water immersion optics and access samples for recordings, injection and local substance application. Separate inflow and outflow compartments prevent bubbles from entering th working volume during perfusion. Incorporated channel for reference electrodes or temperature probes. Optional accessories: a mounting adapter PLD-A and a microscope adapter MA with magnetic perfusion set MA-MTH. Consider adding an outflow unit for suction to remove solution during perfusion. Item#: PLD22x40

Adapter for Laminar Perfusion Chamber This adapter allows you to use laminar flow chamber PLD22x40 with microscope adapters M or IMA, which can be used to mount miniature holders for different accessories. If ordered together with a microscope adapter, comes with for sets of clamps and mounting thumb screws to fix the chambe . Item#: PLD-A





Inside diameter is only 10 mm. The chamber has two separate openings for solution inflow and outflo to provide smooth perfusion and prevent bubbles from coming in. Low profile permits easy access with electrodes, pipettes and immersion optics. Combined with miniature holders, forms a perfusion system. Easy to use, simply release adhesive layer on the coverslip (even with media still present), and attach the chamber from the top. Coverslip is flashed on the bottom of the chambe .

The chamber is made out of polycarbonate. It is only 5.5 mm thick (high). The bottom of the chamber is a replaceable 30mm round coverslip. The coverslip is attached to the chamber by using adhesive layers (or any adhesive, even melted wax). Easy to clean after use. Note: Can be used with any thickness 30mm coverslips.

The chamber fits inside microscope stage adapte, specify microscope model when ordering. The chamber can be rotated inside the stage to provide required orientation of the sample. Custom stages for non-standard microscopes are available upon request.

Screw-type or magnetic tubing/electrode holders extend this flexibility even furthe . They can be positioned anywhere around the chamber, so that tubing is not in the way of objectives or recording electrodes. Furthermore, the holders can adjust the angle and, as a result, tubing can approach the sample from any direction. The holders fit to perfusion manifolds. They also can be used to position reference electrodes or temperature probes, or even tubing to deliver gases, for example oxygen, over the sample. MTH-S stainless suction tubing provides smooth perfusion. If you are planning to use this system during perfusion experiments, all you need is a outflow unit for suction to remove solution during perfusion. Can be used for imaging and recording. Can be also used with 50mm BD Falcon and Willco glass bottom dishes. **Item#: PCCS2**

• Outside diameter: 35mm

Height: 4mm

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 Working volume: 11mm diameter, approx. 100 microl

Perfusion Chambers

Catalog No.	Description
PCCS2	Small Volume Perfusion Chamber for 30mm Glass Cov- erslips or 50mm Glass Bottom dishes
PCCS2-PDI	Adhesive layers, pack of 50, for use with PCCS2 perfusion chambers.
PLD22x40	Laminar Profile Perfusion Chamber
PLDA	Adapter for Laminar Perfusion Chamber
MA-MTH	Miniature Magnetic Holders Set, x3. Includes stainless suction tubing.
MA	Magnetic microscope adapter. Specify microscope model when ordering.
IMA	Microscope Adapter, specify microscope model
IMA-MH	Miniature Adjustable Holders Set, x3





Chambers for Rectangular Coverslips

Chamber for Replaceable Square 22x22mm Coverslip Consists of

two parts. Similar to CSC chamber, but for square 22x22mm coverslip, and parts are threaded into each other. The coverslip is sealed with O-ring between two threaded parts. Bottom part is aluminum, for use in temperature controlled applications. Inside opening is 19mm diameter. Fits to heating stages and non-heated stages. Can be used for imaging and recording. **Item#: CSC-22x22**

•	Outside diameter: 36.7mm	•	Working volume: 19mm, approx. 280
•	Height: 8.5mm		microl

Chambers for Rectangular Coverslips

Catalog No.	Description
CSC-22x22	Chamber for Replaceable Square 22x22mm Coverslip
CS-No1.5-22x22	Glass Coverslips, 22x22mm, No 1.5, box of 100.

Flow Cell for High Resolution Imaging

This is a glass bottom perfusion dish for high resolution imaging. The same size as a regular Petri dish. Fits to our temperature controlled stages and miniature incubators. No. 1.5 glass top and bottom for high resolution imaging. Working volume (15.5mm diameter) is small enough for fast solution exchange. Luerlocks on the top for laminar perfusion. Can be used to culture your samples before imaging. The cover can be removed for independent access to the working volume. **Item#: Flow-Cell**

• Outside diameter: 35mm

Working volume: 11mm diameter, approx. 100 microl

Flow cell for High Resolution Imaging

Catalog No.	Description
FLOW-CELL	Perfusion Dish, Laminar Profile, Glass Bottom and Top, with Luer-Lock Ports



Insert for x4 coverslip holders and Petri dishes, **TC-I-4** Designed to hold x4 CSC coverslip holders (shown on the picture) and Petri dishes (up to 36.8mm diameter) dishes. Some brands of Petri dishes require reducing rings (TC-PA-C, -F, -W, -N). Provides wide access for custom accessories. Optical aperture is 34mm. Includes adjustable clumps and thumb screws. **Item#: TC-I-4**





Glass Coverslips

Glass CoverSlips, **No 1**, **CS-No1** High optical quality No.1 (0.13 – 0.16 mm, unless different thickness is specified), glass coverslips. Select diameter when ordering

These cover glasses meet the requirements of DIN ISO 8255 and are made of pure, perfectly clear and chemical resistant borosilicate glass of the first hydrolytic class (refractive index ne (546.07 nm) = 1.524 to 1.527 / Abbe coefficient ve = 55). Made in German . Item#: CS-No1

High precision cover glasses, No.1.5, CSHP-No1.5 Cover glasses for high performance microscopes, made of chemically resistant borosilicate glass of the first hydrolytic class with precision thickness No. 1.5 (0.170 mm \pm 0.005 mm), suitable for in-vitro diagnostic applications. Developed in cooperation with Zeiss and Schott. **Item#: CSHP-No1.5**

- for objectives with high numerical aperture and resolution
- accurate thickness of 0.170 mm with tolerance reduced to \pm 0.005 mm
- non-corroding borosilicate glass
- refractive index ne: 1.524-1.527 at 546.07 nm
- Abbe coefficient ve=55
- recommended for the following objectives:

dry objective: N.A. 0.7 water immersion: N.A. 1.0 glycerol immersion: N.A. 1.2 oil immersion: N.A. 1.3



Glass Coverslip)S
Catalog No.	Description
CS-No1-25	Glass Cover Slip, box of 100, 25mm diameter
CS-No1-20	Glass Cover Slip, box of 100, 20mm diameter
CS-No1-18	Glass Cover Slip, box of 100, 18mm diameter
CS-No1-13	Glass Cover Slip, box of 100, 13mm diameter
CS-No1-12	Glass Cover Slip, box of 100, 12mm diameter
CS-No1-10	Glass Cover Slip, box of 100, 10mm diameter
CSHP-No1.5- 18x18	High Precision Glass Cover Slip, box of 200, 18x18mm
CSHP-No1.5- 22x22	High Precision Glass Cover Slip, box of 200, 22x22mm
CSHP-No1.5- 24x50	High Precision Glass Cover Slip, box of 100, 24x50mm
CSHP-No1.5- 24x60	High Precision Glass Cover Slip, box of 100, 24x60mm
CSHP-No1.5-10	High Precision Glass Cover Slip, box of 100, 10mm diameter
CSHP-No1.5-12	High Precision Glass Cover Slip, box of 100, 12mm diameter
CSHP-No1.5-13	High Precision Glass Cover Slip, box of 100, 13mm diameter
CSHP-No1.5-18	High Precision Glass Cover Slip, box of 100, 18mm diameter
CSHP-No1.5-25	High Precision Glass Cover Slip, box of 100, 25mm diameter



Microscope Adapters

Most of the microscope adapters are based on two standard sizes (bases): 128x86mm the size of standard multi-well plates, which fits most sample holders on mechanical microscope stages; and 160x 10mm insert that fits most motorized stages and type K stages (IMA-motor), which also can be used with exte - sions to fit la ger motorized stages. 128x86mm base plates fit inside IMA-motor base adapte , which also is used with different inserts to hold various samples. Both IMA-type and MA-type adapters with 50mm opening in the middle are used with Petri dishes, CSC and UTIC chambers and small heating elements TC-E35-xx. IMA-74-xx adapters with 74mm cutout are used with incubators TC-MIS, cooling stages and larger heating elements: TC-E50-xx. Magnetic adapters MA-xx are constructed by attaching magnetic plates to IMA-74-type bases and are used to attach miniature magnetic holders.



Microscope Adapter IMA-128x86 This adapter fits in place for standard multi-well plates. Can be used with glass bottom (35/50mm) and standard petri dishes, as well as with slides and cover glasses. You can form imaging and perfusion chambers directly on the surface of standard microscope glass slides or rectangular 25x60mm coverslips and position the chamber on an upright or inverted microscope using this adapter. Can be used with chambered cover glasses. Fits glass bottom dishes, both 35 and 50mm, chambers for replaceable coverslips, and heating stages. Miniature screw-type holders can be attached directly to the surface to fix perfusion tubing, electrodes and sensors. Includes fixing clamps and thumb screws. **Item#: IMA-128x86**

- Inside opening: 50mm, & 75x25mm
- Reducing Ring and Clamp: to fit all brand of 35mm dishes (including glass bottom dishes)
- Height: 3 mm
- Use with: 35mm dishes, chambers, 50mm dishes, glass slides, and heating stages

This plate is also used to make IMA-type adapters for microscopes with different stages by attaching to an appropriate IMA-74-type insert to the bottom. For motorized stages and type K stages, IMA-128x86 plate goes inside IMA-motor insert. You can form imaging and perfusion chambers directly on the surface of standard microscope glass slides or rectangular 25x60mm coverslips and position the chamber on an upright or inverted microscope using this adapter.

Miniature Adjustable Holders Set for IMA Adapters The set includes three miniature screw-type holders to arrange micro-accessories around your sample: from electrodes and sensors to media exchange and test solution application tubing. The set includes two miniature ball-joints to fix tubing, including perfusion manifolds; and double-clamp to fix fragile electrodes and sensors, incl - ing glass micro-pipettes. The holders are mounted on provided stand-off, which fit threaded holes in IM adapters. **Item#: IMA-MH**

Microscope Adapters, Magnetic Stainless Steel, MA A microscope stage adapter to provide flexible working area for positioning accessories required for high resolution live sample imaging: from media exchange and test solution delivery tubing, to sensors and electrodes. Specially treated stainless magnetic surface of the adapter provides ideal means to mount miniature adjustable magnetic holders. Adapters for all brands of microscopes, including motorized stages, are available. Incorporates adjustable clamp to fix all brands of 35mm petri dishes and chambers, glass bottom dishes (both 35 and 50mm), and heating stages. Choose the size appropriate for your microscope.

- Inside opening: 50mm
 - **Reducing ring and clamp:** to fit all brands of 35mm dishes
- Use with: 35mm dishes (including glass bottom dishes), chambers, 50mm glass bottom dishes, and heating stages.

Adjustable Magnetic Holders Set Simplified set of three miniature magnetic hol ers to configure solution exchange lines, electrodes, sensors, and even glass micropipettes around your sample. Includes adjustable stainless steel suction tubing for perfusion chambers, adjustable holder with miniature ball-joint to fix inflow tubing and manifolds of solution application systems, and a double clam to fix tubing, sensors, electrodes or glass pipettes. The miniature holders were designed not to obstruct optical path. Item#: MA-MTH

Adapter for PI Piezo Stages IMA-PI To use with imaging and perfusion chambers. Fits glass bottom dishes, both 35 and 50mm, chambers for replaceable coverslips, and heating stages. Miniature screw-type holders can be attached directly to the surface to fix perfusion tubing, electrodes and sensors. Includes fixing clamps and thumb screws

- Inside opening: 50mm
- **Clamp:** to fix all brands of 35mm dishes (including glass bottom dishes)
- Height: 3 mm
- Use with: 35mm dishes, chambers, and heating stages











Catalog No.	Description
MA-110	Microscope Adapter, stainless steel, for Olympus micro- scopes, Narishige stages, Burleigh Gibraltar stages, Ap- plied Precision stages, 110mm
MA-MTH	Miniature Magnetic Holders Set
MA-108	Microscope Adapter, stainless steel, for Nikon micro- scopes, SISKIYOU stages, Burleigh Gibraltar stages, 108mm
MA-LM	Microscope Adapter, stainless steel, for Leica micro- scopes and Zeiss type M stages
MA-motor	Microscope Adapter, stainless steel, for motorized stages
MA-150x150	Microscope Adapter, stainless steel, for Leica, 150x150mm
MA-128x86	Microscope Adapter, 128x86mm

Universal Microscope Adapters

Catalog No.	Description
IMA-MH	Miniature Adjustable Holders Set, x3
IMA-128x86	Microscope Adapter, 128x86mm
IMA-LM	Microscope Adapter for Leica microscopes and Zeiss type M stages
IMA-motor	Microscope Adapter for motorized stages from Ludl, ASI, Prior, Marhauser, Zeiss
IMA-150x150	Microscope Adapter for Leica 150x150mm stages
IMA-piezo	Microscope Adapter for PI piezo stages
IMA-SUT	Microscope Adapter for SUTTER stages
IMA-UP	Microscope Adapter for upright microscopes



Catalog No.	Description
IMA-74-110	Microscope Adapter for Olympus microscopes, Applied Precision stages, Burleigh Gibraltar stages, Narishige stages 110mm
IMA-74-108	Microscope Adapter for Nikon microscopes, SISKIYOU stages, Burleigh Gibraltar stages 108mm
IMA-74-LM	Microscope Adapter for Leica microscopes and Zeiss type M stages
IMA-74-128x86	Microscope Adapter with 74mm cutout, 128x86mm
IMA-74-150x150	Microscope Adapter for Leica 150x150mm stages
IMA-74-90	Microscope Adapter for stereo microscopes, 90mm







Adapter for motorized and type K stages, IMA-motor This standard

160x110mm insert fits most motorized and type K stages. Extensions to fit 1 ger motorized stages from Nikon, ThorLabs and Ludl Bioprecision, for example, are available (see the table below). Standard multiwell 128x86mm plates fit inside this base. The base can be used with various 128x86mm inserts, including MA-128x86 magnetic insert, for heating elements, glass bottom (35/50mm) and regular different size Petri dishes, as well as coverslip CSC holders and cover glasses. Miniature magnetic and screw-type holders can be attached to the surface of these inserts to fix perfusion tubing, electrodes, and sensors. Most inserts include fixing clamps and thumb screws, plus the reducing ring for 35mm dishes. Shown on the picture is IMA-motor adapter with IMA-74-128x86 insert and 50mm heating element attached.. **Item#: IMA-motor**

Adapters for motorized stages

	Catalog No.	Stage Model
	Not required	Ludl, Prior, ASI, Marhauser, Zeiss, and type K stages
	TC-MI-THOR	Adapter for ThorLabs stages, 170x130mm
	TC-MI-NIK	Adapter for Nikon motorized stages, 236x155mm
	TC-MI-LUDL	Adapter for Ludl Bioprecision II stages, 172x116mm

- Outside dimensions: Fits 160x110mm cutout of motorized stages; height 10mm; the bottom is recessed 7mm below the mounting surface; comes with 3mm spacers to reduce this recessed profile to 5mm; can be leveled by set screws positioned in the corners of base.
- Optical aperture: 112x72mm
- Use with: plates, and optional inserts for coverslip holders, 35-60mm dishes, and 1x3in. glass coverglasses/slides.
- Media exchange and perfusion: Two optional side bars with inflow/outflow port and openings can be attached on both sides of the base; optional tubing fitting kit for the threaded ports; luer-lock or barbed connectors to sources of liquid media; optional sets of adjustable tubing holders to position inflow and outflow tubing inside sampl chambers.

Insert IMA-128x86 This insert fits in place for standard multi-well plates. Can be used with glass bottom (35/50mm) and standard petri dishes, as well as with slides and cover glasses. You can form imaging and perfusion chambers directly on the surface of standard microscope glass slides or rectangular 25x60mm coverslips and position the chamber on an upright or inverted microscope using this adapter. Can be used with chambered cover glasses. Fits glass bottom dishes, both 35 and 50mm, chambers for replaceable coverslips, and heating stages. Miniature screw-type holders can be attached directly to the surface to fix perfusion tubing, electrodes and sensors. Includes fixing clamps and thumb screws **Item#: IMA-128x86**

IMA-74-128x86 insert This insert with 74mm opening is to attach larger heating elements and magnetic plates. Shown on the picture at the right is IMA-74-128x86 insert, with 50mm heating element attached, inside IMA-motor base. **Item#: IMA-74-128x86**





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Magnetic insert, MA-128x86 This insert provides flexible working area for positioning accessories required for high resolution live sample imaging and recording: from media exchange and test solution delivery tubing, to sensors and electrodes. Specially treated stainless magnetic surface of the adapter provides ideal means to mount miniature adjustable magnetic holders. Incorporates adjustable clamps to fix all brands of 35mm Petri dishes and CSC chambers, glass bottom dishes (both 35 and 50mm), and heating elements. Item#: MA-128x86

Insert for standard slides, **TC-I-20x30** Designed to hold standard 1x3in. slides. Provides wide access for fluidics tubing. Optical aperture is 20x30mm, 1mm thick lip to hold slides up to 76x26mm. Includes adjustable clumps and thumb screws. **Item#: TC-I-20x30**

Insert for custom devices, **TC-I-30x50** Designed to position custom microfluidics d - vices and slides. Provides wide access for fluidics tubing. Optical aperture is 70x20mm. Includes adjustable clumps and thumb screws. **Item#: TC-I-30x50**

Insert for slides and microfluidics devices, **TC-I-S** Designed to position custom microfluidics devices and slides. Provides wide access for fluidics tubing - 80x70mm recessed area Optical aperture is 72x24mm, 1mm thick lip to hold slides up to 76x28mm. Includes adjustable clumps and thumb screws. **Item#: TC-I-SL**

Insert for 35mm dishes, **TC-I-35** Designed to position standard 35mm Petri dishes. Provides wide access for custom accessories and fluidics tubing. Optical aperture is 25mm. Includes adjustable clumps and thumb screws. **Item#: TC-I-35**

Insert for 50-60mm dishes, **TC-I-60** Designed to position larger (up to 60mm diameter) dishes. Provides wide access for custom accessories and fluidics tubing. Optical aperture is 30mm. Includes adjustable clumps and thumb screws. **Item#: TC-I-60**

Side bar with threaded ports, IMA-9 This bar incorporates x9 threaded 1/4x28 ports to provide connectors for tubing to deliver liquid media. An optional fitting kit includes x8 1/4x28 threaded luer fitting with barbed end, plus x8 mating luer/barbed connecto .. **Item#: IMA-9**



Side bar tubing holder, **IMA-23** Allows you to fix multiple tubing for microfluidic devices simply by placing the tubing into provided openings (x23) from the top. **Item#: IMA-23**

Insert for x4 coverslip holders and Petri dishes, **TC-I-4** Designed to hold x4 CSC coverslip holders and Petri dishes (up to 36.8mm diameter) dishes. Some brands of Petri dishes require reducing rings (TC-PA-C, -F, -W, -N). Provides wide access for custom accessories. Optical aperture is 34mm. Includes adjustable clumps and thumb screws. **Item#: TC-I-4**

Insert for x3 slides/coverglasses, TC-I-3 Designed to hold x4 coverglasses and custom slides. Optical aperture is 70x20mm. **Item#: TC-I-3**

Catalog No.	Description
TC-I-35	128x86mm insert for 35mm dishes
TC-I-60	Insert for 50-60mm dishes
MA-128x86	Magnetic insert, stainless steel, 128x86mm
TC-I-20x30	128x86mm insert for standard slides, 20x30mm aperture
TC-I-30x50	128x86mm insert for custom devices, 50x30mm aperture
TC-I-SL	Insert for slides and fluidics devices, 24x72mm aperture
TC-I-4	Insert for x4 dishes and chambers up to 38mm diameter
TC-I-3	Insert for slides and coverglasses
IMA-9	Side bar with threaded ports
IMA-23	Side bar tubing holder
TC-MI-LUDL	Adapter for Ludl Bioprecision II stages, 172x116mm
TC-MI-THOR	Adapter for ThorLabs stages, 170x130mm
TC-MI-NIK	Adapter for Nikon motorized stages, 236x155mm

Inserts for IMA-motor adapter

Miniature Holders

Adjustable Clamps for Fragile Accessories

Modular Design

- Holds Sensors, Electrodes, Tubing and Pipettes
- Use with any perfusion system
- Use with any microscope
- Compatible with Imaging setups and Electrophysiology stations



Miniature Multi-Holder MH-2

Holds multiple tubing, electrodes and pipettes around your sample chamber. This miniature holder can be attached to microscope adapters or any magnetic surfaces. It can be also attached to any surface using included standoffs (M3 or 4-40 thread). The holder includes a number of extension arms, each 1 in. long, two double clamps for fragile accessories, and two ball joints. The extensions are attached using thumb screws, which allow easy configurations and adjustments of tilt, swing, and rotation angles in multiple axes. On the next page are possible configurations made using the included parts, plus all configuration possible with MTH and MH-1 holders. **Item#: MH-2**

- Foot print: 12mm
- Extensions: x4 1in. long and x2 right-angle
- Ball-joints: x2
- **Tubing clamps:** x2, and x2 double-clamps
- **Mounting:** Magnetic, M3, #4-40, M6 and #1/4-20 threaded surfaces, and surfaces with through holes (optional MH-SCR adapter might be required).

Adjustable Tubing/Electrode Holder MTH

Position multiple tubing, probes, glass capillaries and electrodes around your sample chamber. This miniature holder can be attached to a microscope adapter or any magnetic surfaces. Several holders can be placed on the same adapter. The holder includes a number of extension arms, ball joint and double-clamp for fragile accessories (electrodes for example). Each arm adds approx. 1 in. to extend. The extensions are attached using thumb screws, which allow easy configurations and adjustments of tilt, swing, and rotation angles in multiple axes. Below are possible configurations. No extra tools are needed. Simply put the holder on any iron surface and the strong magnet will keep the tubing and other accessories firmly in place



anywhere around your sample. The base of the holder is only 0.75in. diameter. The magnetic bottom is covered with Teflon film to move the holder easily along metal surfaces. Comes with stand fs to mount on M6 or 1/4-20 threaded surfaces without magnet. Comes with adhesive magnetic strip to attach the holders even to non magnetic and plastic surfaces. Can be used with perfusion, controlled flow and micro perfusion systems as well as to hold electrodes. On the next page are possible configurations made using the included parts, plus all configurations possible with MH-1 holders **Item#: MTH**

- Foot print: 18mm
- Extensions: x2 lin. long, x1 right-angle, x1 mounting 4mm rod. with double clamp.
- Ball-joint: x1
 - Tubing clamp: x1 and x1 double-clamp

Magnetic Holder with Suction Tubing MTH-S

Comes with stainless steel suction tubing to provide smooth solution removal from perfusion chambers, if connected to an outflow unit. Two thumb screws adjust tubing height (tilt) and length. No extra tools are needed. Simply put the holder on any iron surface and the strong magnet will keep the tubing firmly in place anywhere around your sample. If you do not have suitable surface available, use a magnetic adhesive strip provided or accessories below. The suction tubing can be replaced with any custom tubing up to 4mm diameter. Can be used with perfusion systems. Can be mounted on M6 and 1/4-20 threaded surfaces using included adapters. **Item#: MTH-S**

required).

- Foot print: 18mm
- Tilt: Adjustable
- Length: Adjustable, up to 1.5in..
- Fit: Designed to work with any bath chamber, including petri dishes.
- **Mounting:** Magnetic, M6, and #1/4-20, M3, and #4-40 threaded surfaces, and surfaces with through holes (optional MH-SCR adapter might be required).

Mounting: Magnetic, M6, and #1/4-20

threaded surfaces, and surfaces with through

holes (optional MH-SCR adapter might be

Miniature Manifold on Adjustable Micropositioner, MMH-MM

This 8-channel micro-manifold for single cell/small tissue superfusion comes mounted on 3-D fine micr - positioner with 12mm working distance in all axes and micron resolution. If you do not have a magnetic surface, the assembly can be mounted using provided screws adapters.

Micro-manifolds are used to achieve fast solution application to small samples (single cells, for example). Due to the small size of the sample, solution exchange around the sample can happen in as fast as few ms. The micro-manifolds also offer advantage of not contaminating the whole bath chamber, but applying the substances locally (provided that perfusion chamber is used with frequent wash). Comes with three replaceable threaded tips of 360 and 250 micron I.D. for single cell and small tissue superfusion. Incorporates 2 ft. long Teflon tubing for direct connection to perfusion systems. Inside Teflon tubing is easy to wash. The threaded replaceable tips are washable and allow you to use the manifold with solutions under higher pressure. The length of tips is around 1 in., and can be cut to the required length. Incorporates 10cm long 4mm O.D. rod to mount on miniature manipulators and 7mm O.D. adapter to mount on regular manipulators. Incorporates eight separate channels. If used with less than 8 different solutions, multiple channels can be filled with small volume delivery systems, SVDS1. Includes two nozzles to use with small volume chambers as a regular manifold (the rod fits inside magnetic holders MTH). **Item#: MMH-MM**

- · Channels: 8-channel, 360 micron
- **Output:** replaceable 250 and 360 micron tips, and two barbed nozzles
- 3-D adjustment: 12mm in all three axes, micron resolution, tilt adjust for Z-axis





The Smallest Holder, MH-1

The base of this ultra-small magnetic holder is only 8mm wide. Includes extensions arms and a ball joint. Thumb screws are used to adjust height, tilt and angle. Extends up to 2in. long. Can be used with perfusion, controlled flow and micro-perfusion systems, as well as to hold temperature sensors and electrodes. Includes screw-type adapters to mount on any surface with M3 or 4-40 threaded holes. **Item#: MH-1**

- Foot print: 12mm
- Extensions: x1 lin. long, and x1 right-angle
- Ball joint: x1.

- Tubing clamp: x1
- **Mounting:** Magnetic, M3, and #4-40 threaded surfaces.

Configurations Made Using Parts Included with MTH System



Configurations Made Using Parts Included with MH-2 System



Zero-Dead Volume Manifold, ZMM



Zero-dead volume facilitates solution exchange inside small volume perfusion chambers. The output channels can be adjusted at a different height to prevent contamination of solutions. The outputs for lower concentration solutions, for example, can be positioned higher so that they do not mix with other solutions. The upper channels can be also used to provide suction of excess of solution from small volume perfusion chambers.

Incorporated magnetic holder allows you to position the manifold anywhere around your sample. Two thumb screws fix the manifold in required position: height, angle, length. Comes with 2 ft. long Teflon tubing, attached to polyimide 250/360 micron I.D. channels. All tubing is replaceable and washable. Perfusion system or/and pressurized Small Volume Delivery System SVDS1 is required. Can be used with small volume PCCS2, CSC chambers and petri dish inserts. Consider microbore tubing fitting PS-kit. Ships configured with six 360micron channels, which allow you do make from 1 to 6-channel manifolds. Specify if 8-channel 250 micron I.D. channels are required. Item#: ZMM

- Channels: removable 6-channel, 360 micron
- **Connecting tubing:** incorporates 2ft. tubing per channel, with luer connector





Miniature Accessories For Custom Adjustable Holders

The sets below allow you build adjustable holders for any purpose. The example on the left is an adjustable magnetic stand-holders for an in vivo heated plate constructed using x4 MTH1 bases, x4 1in. extensions, x4 right-angle clamps MH-RA, and a threaded rods set, MH-TRDS. The stands can be elevated to the required heights to accommodate different size animals.

Mounting Adapter Allows you to attach MTH, MMH and ZMM miniature holders to unthreaded non-magnetic surfaces with through holes. **Item#: MTH-SCR**

Microscope Adapter, Stainless Steel, MA A microscope stage adapter to provide flexible working area for positioning accessories required for high resolution live sample imaging: from media exchange and test solution delivery tubing, to sensors and electrodes. Specially treated stainless magnetic surface of the adapter provides ideal means to mount miniature adjustable magnetic holders. Adapters for all brands of microscopes, including motorized stages, are available. Incorporates adjustable clamp to fix all brands of 35mm petri dishes and chambers, glass bottom dishes (both 35 and 50mm), and heating stages. Choose the size appropriate for your microscope. **Item#: MA**

- Inside opening: 50mm
- Reducing ring and clamp: to fit all brands of 35mm dishes
- Use with: 35mm dishes (including glass bottom dishes), chambers, 50mm glass bottom dishes, and heating stages.

Adjustable Tilt Miniature Magnetic Base, MTH1 This adjustable base can be used to fix your miniature accessories, from tubing and manifolds to electrodes and sensors, right on your microscope stage. Measures only 3/4in. diameter and height. Removable tilting part allows you to attach different extensions. Requires a magnetic microscope adapter. The magnet can be removed to mount on included screw-type adapters for M6 and 1/4-20 threaded surfaces. This is a part of MTH system. Item#: MTH1

Extension with Double Tubing/Electrode Clamp, MTH-T This exten-

sion fits inside MTH1 base to provide means to fix your electrodes, tubing and sensors around you sample. Extends up to 3in. This is a part of MTH system. **Item#: MTH-T**

Miniature Ball-Joint with Right-Angle Extension, MH-RB

This adjustable extension can be used to position your miniature accessories in any direction and angle. The right angle attachment provides extra freedom to adjust height and length. Ideal to fix tubing above your sample. Incorporates tubing clamp. Can be used to attach double tubing/electrode holder/clamp of MTH-T as well. Extends up to 2in. Does not obstruct optical field. This is a part of MTH, MH-1 and MH-2 systems. **Item#: MH-RB**

Extensions Set, 1in. long, and Right-Angle Extension MH-E

This set of two 1in. long extensions includes thumb screws and nuts to extend your accessories to the required length. The right-angle extension provides extra flexibility for adjustment in 3-D space. **Item#: MH-E**













Miniature Right-angle clamp MH-RA

Creates flexible joint at a right-angle. Includes a tubing clamp. Ultra-miniature size allows you to fix - cessories inside small compartments.. **Item#: MH-E**

Magnetic stainless steel plate MA-180x180

Specially treated 180x180mm plate to mount magnetic holders. A 50mm cutout in the middle fits heating elements. The reducing ring and clamps allow you use the plate with standard 35mm dishes and coverslip chambers. Incorporates four set level screws in the corners. **Item#: MA-180x180**

Magnetic stainless steel plate MA-74-150x120

Specially treated 150x120mm plate to mount magnetic holders. A 74mm cutout in the middle fits 50mm heating elements to form low profile perfusion setups. Cutout on the side can be used to mount the plate on microscope stages. **Item#: MA-180x180**

Magnetic Clamps These two clamps can be positioned anywhere on the stainless steel microscope adapter or temperature controlled stages to fix the chambers firmly in place. Can be used to preven chamber elevation while working with oil immersion objectives. The surface of the clamp can be used to attach optional or custom accessories, anything that needs to be attached to the microscope stage. **Item#: M-HLD**







Catalog No.	Description
MH-2	Miniature Multi-Holder
MTH	Adjustable Holder
MH-1	Miniature Magnetic Holder
MTH-S	Magnetic Holder with Suction Tubing
ММН-ММ	Miniature Manifold and Micromanipulator on Adjustable Holder
ZMM	Zero-Dead Volume Manifold, 6-channel
ZMM-8	Zero-Dead Volume Manifold, 8-channel
M-HLD	Magnetic Clamps
MH-E	Extensions set, 1in. long and right-angle
MH-RB	Miniature Ball-Joint with Right-Angle Extension
MH-RA	Miniature Right-angle clamps
MTH-T	Extension with Double Tubing/Electrode Clamp
MTH1	Adjustable Tilt Miniature Magnetic Base
MTH-SCR	Mounting Adapter
MTH-TRDS	Set of 4-40 threaded rods, assorted length x5, and a set of plastic washers/spacers.
MA	Magnetic microscope adapter (specify microscope model)
IMA	Microscope adapter (specify microscope model)
MA-180x180	Magnetic 180x180mm plate, 50mm cutout
MA-74-150x120	Magnetic 150x120mm plate, 74mm cutout
MA-74-110	Magnetic 110mm plate, 74mm cutout
MA-74-108	Magnetic 108mm plate, 74mm cutout
MA-74-100	Magnetic 100mm plate, 74mm cutout

Miniature Magnetic Holders

Adjustable Micropositioners

Miniature positioner on magnetic holder, MMH-3

This 3-D fine positioner can be used to mount miniature accessories: from micromanifolds to small clamps and holders. It provides 12mm working distance in all axes and micron resolution. The third Z-axis can be adjusted at a tilt angle to provide easy access to samples without obstructing optical pathways. The clamp to mount rods can be removed to provide a threaded surface to attach custom accessories: holders and clamps. The micro-manipulator can be assembled for both: right-hand and left-hand configurations (Allen wrench is required). The magnetic mounting allows you to position the manipulator on a microscope adapter. If you do not have a magnetic surface, the manipulator can be mounted using provided M6 and 1/4-20 screws adapters. Item#: MMH-3D

Miniature positioner on magnetic holder, MMH-2

This 2-D fine positioner can be used to mount miniature accessories: small clamps and holders. It provides 12mm working distance in two axes and micron resolution. The micro-manipulator can be assembled for both: right-hand and left-hand configurations (Allen wrench is required). The magnetic mounting allows you to position the manipulator on a microscope adapter. If you do not have a magnetic surface, the manipulator can be mounted using provided M6 and 1/4-20 screws adapters. **Item#: MMH-2**







Miniature positioner on magnetic holder, MMH-1

This fine micro-positioner can be used to mount miniature accessories: small clamps and holders. It provides 12mm working distance and micron resolution. The micro-manipulator can be assembled for both: right-hand and left-hand configurations (Allen wrench is required). The magnetic mounting allows you to position the manipulator on a microscope adapter. If you do not have a magnetic surface, the manipulator can be mounted using provided M6 and 1/4-20 screws adapters.

•

- Tilt adjustment: for MMH-3 only, z-axis
- (included)

• Working distance: 12mm

- **Dimensions:** approx: 50 x 50 x 50 mm
- Mounting: Magnetic, M6 and 1/4-20 screws

Miniature Magnetic Micro-positioners

Catalog No.	Description
MMH-3	Miniature magnetic micropositioner, 3-D
MMH-2	Miniature magnetic micropositioner, 2-D
MMH-1	Miniature magnetic micropositioner, single-axis



Temperature Nontrol

Heated Microscope Stages

Precise Temperature Control with 0.01°C stability Conditions similar to in vivo Use with any perfusion system No electrical noise during operation High Temperature range up to 150°C



Heating Elements

100

Heating element with 35mm clearance for Coverslip Chambers

and Petri dishes TC-E35 Ready to use heated system for samples cultured/placed on coverslips. Used with bath chambers for replaceable coverslips CSC and UTIC. Replaceable coverslips allow to culture cells before performing experiments. The heater preheats perfusion solution before it enters the chamber. This keeps temperature stable even if used with perfusion systems. Inline heated Teflon tubing fits manifolds included with perfusion systems. Can be used for imaging and recording. Ca be used with 35 mm petri dishes. Since some brands of petri dishes have different diameter, reducing adapters TC-PA might be required. Requires a microscope adapter (specify microscope model when ordering, ships installed inside the microscope adapter). Requires a temperature controller. Item# TC-E35

- Dimensions: 52mm diameter, 5.5mm high
- Temperature stability: 0.01°C, built-in sensor
- Optical clearance: 35mm
- Use with: Coverslips and Petri dishes,
- including 35mm glass bottom dishes
- Solution Pre-heater: Replaceable/Removable Teflon tubing, easy to was
- Microscope adapter: Fits to 50mm cutout of standard microscope adapters MA and IMA

Heating Element with 15mm window TC-E35x15 Fits 35mm dishes. The whole bottom is heated to eliminate temperature gradient, which makes it ideal for petri dishes, including glass bottom dishes. Wide 15mm optical clearance to access your sample with immersion optics from the bottom. Built-in temperature sensor. Since some brands of petri dishes have different diameter, reducing adapters TC-PA might be required. Incorporates Teflon perfusion tubing, which makes the element







to work as inline preheater. Requires a microscope adapters with 50mm mounting opening. Requires a temperature controller. This element is a part of TC-PCP-15 heating stages. If wider clearance is required, use TC-E35 with 35mm clearance. **Item#: TC-E35x15**

Heating Element with 11m window TC-E35x11 Fits 35mm dishes. The whole

bottom is heated to eliminate temperature gradient, which makes it ideal for petri dishes, including glass bottom dishes with small optical clearance. Wide 11mm optical clearance to access your sample with immersion optics from the bottom. Built-in temperature sensor. Since some brands of petri dishes have different diameter, reducing adapters TC-PA might be required. Incorporates Teflon perfusion tubing, which makes the element to work as inline preheater. Requires a microscope adapters with 50mm mounting opening. Requires a temperature controller. This element is a part of TC-PCP-11 heating stages. If wider clearance is required, use TC-E35 with 35mm clearance. **Item#: TC-E35x11**

Heating Element for 50mm dishes with 40mm window TC-E50x40

Fits 50mm dishes and chambers. The bottom has 40mm optical clearance, which makes it ideal for 50x40 glass bottom dishes. Wide 40mm optical clearance allows you to access your sample with immersion optics from the bottom. Built-in temperature sensor. Incorporates Teflon perfusion tubing, which makes the element to work as inline preheater. Requires a microscope adapters with 74mm mounting opening IMA-74. Requires a temperature controller. This element is a part of TC-PD-50x40 heating stages. **Item#: TC-E50x40**

Heating Element for 50mm dishes with 30mm window TC-E50x30

Fits 50mm dishes. The whole bottom is heated to eliminate temperature gradient, which makes it ideal for 50x30 glass bottom dishes. Wide 30mm optical clearance to access your sample with immersion optics from the bottom. Built-in temperature sensor. Incorporates Teflon perfusion tubing, which makes the el - ment to work as inline preheater. Requires a microscope adapters with 74mm mounting opening. Requires a temperature controller. This element is a part of TC-PD-50x30 heating stages. **Item#: TC-E50x30**

- **Dimensions:** 52mm diameter, 5.5mm high (76mm for 50mm dish heaters)
- Use with: Petri dishes, including glass bottom dishes
- Temperature stability: 0.01°C, built-in sensor
- able Teflon tubing, easy to was
 Microscope adapter: Fits to 50mm/74mm cutout of standard microscope adapters

Solution Pre-heater: Replaceable/Remov-

• Optical aperture: 15mm, 11mm, 40mm and 30mm

Heating Elements

Catalog No.	Description
TC-E35x15	Heating Element for 35mm dishes with 15mm aperture.
TC-E35x11	Heating Element for 35mm dishes with 11mm aperture.
TC-E50x40	Heating Element for 50mm dishes with 40mm aperture.
TC-E50x30	Heating Element for 50mm dishes with 30mm aperture.
TC-E35	Replacement Heating Element with 35mm aperture.

Glass Bottom Dishes vs. Petri Dishes

Glass bottom dishes are used with short working distance, high N.A. objective in fluorescence, confocal



and image analysis experiments.

The heating elements with reduced optical window in the middle (down to 15 or 11mm) will provide better temperature stability for your sample, and are perfect for use with glass bottom dishes and long-working-distance objectives. If immersion objectives are used, however, this small window will limit access of the large immersion objective to the whole bottom surface. In this case a heating element with 35mm clearance/window TC-E35 should be used. Temperature stability still can be provided by using an objective heater.

In contrasts to glass bottom dishes, which provide good thermal contact because of fla glass bottom, standard plastic Petri dishes very often have a protruding rim alone the bottom edges of the dish. This rim elevates the dish above heating surface. Metal shims/washes can be used to eliminate this air gap, however. This will reduce access for the immersion optics to the bottom of the dish, so TC-E35x15/11 can be used with long-distance objectives only. If using immersion optics and large objectives, 35mm heating element TC-E35 should be used, combined with an objective heater. Please note, that some glass bottom dishes, Mattek dishes for example, are fabricated from standard Corning (or Falcon dishes).

Since different brands of dishes have different outside diameter, sometimes larger than 38mm, we make reducing inserts to provide better fi and thermal contact to the inside cutout of the heating elements, which is 38mm. We also make a 50mm insert to center the dishes inside incubators and larger heating elements, which have 50mm inside cutout.



Shown here is a heating element TC-E35/15/11 mounted inside a magnetic microscope adapter



Heated Glass Plate for Microscope Stages

Uniformly heated glass plate for stereo, upright microscopes, and long-distance objectives of inverted microscopes, TC-HP75x65

Large 75x65mm optical window. Allows you to heat your samples on 80x70mm glass surface. The heated glass plate provides thin profile and uniformly heated surface. Built-in temperature senso . Flat glass top surface is flashed with the mounting frame, 128x86mm 5mm thick. The frame fits mot microscope stages. Can be used to heat plates, flasks, slides and petri dishes. Open or sealed chambers can be formed directly on class surface, using self-adhesive gaskets for example. Might require a microscope adapter (specify microscope model when ordering). Can be upgraded with an objective heater and chamber-attachments (TC-DIS, TC-DIS-8, TC-WI). **Item#: TC-HP75x65**

- Optical window: 75x65 mm
- Glass thickness: 1mm
- Height (frame/adapter): 5mm/3mm
- Use with: Petri dishes, chambers, including glass bottom dishes, fluidics device
- Temperature stability: 0.01°C, built-in sensor
- Microscope adapter: specify microscope model





Uniformly heated quartz plate, TC-HPQ75x50

Fused quartz (1.1 mm thickness) for working in the UV or near infrared range of illumination, where regular glass cannot be used (because it is not transparent in these wavelength ranges of illumination). Quartz can also withstand high temperature applications without cracking. Allows you to heat your samples on 75x50mm surface. Large 70x45mm optical window. The heated quartz plate provides thin profile and uniformly heated surface. Built-in temperature senso . Flat glass top surface is flashed with the 128x86mm mounting frame (5mm thick). The frame is the size of standard multi-well plates and fits most microscope stages. Open or sealed chambers can be formed directly on class surface, using self-adhesive gaskets for example. Might require a microscope adapter (specify microscope model when ordering). Can be upgraded with an objective heater. Requires a temperature controller (TC-1-100s-24V model for high temperature applications). **Item#: TC-HPQ75x50**

- Optical window: 70x45 mm
- Glass thickness: 1.1mm
- Height (frame/adapter): 5mm/3mm
- Temperature stability: 0.01°C, built-in sen-
- sor
- Microscope adapter: specify microscope model, ships mounted inside 128x86x5mm metal frame;

Uniformly heated glass plate for motorized and type K stages TC-HP108x72



Uniformly heated glass plate provides thin profile and uniformly heated surface. Built-in temperature sensor. Large 108x72mm optical clearance allows you to heat slides and dishes samples on 118x74mm glass surface and to form open or sealed sample chambers. Electrodes and tubing can be fixed around your sample chamber using adjustable holders MH-MIS attached to optional inserts for slides, petri dishes and coverslip chambers. The holders can be used to position perfusion tubing for continuous media exchange, provided that optional inserts TC-I-100 or TC-I-4/3 are placed inside (see table below). Fits most motorized stages with 160x110mm cutout. Some larger stages might require an adapter extension. Can be upgraded with an objective heater. **Item#: TC-HP108x72**

Uniformly Heated Glass Slides TC-GSH This is a standard size 3x1 in. glass slide used as a heater from the bottom of any sample. Ideal for use with upright microscopes. Long-distance objectives of inverted microscopes can be also used. A sealed imaging chamber can be formed on top of the slide using adhesive gaskets. Any chambers and bio-chips can be placed directly on the slide and clamped by provided flat springs. Threaded surface of microscope adapter allows you to attach custom accessories. Built-in temperature sensor. Can be used with an objective heater. Requires a microscope adapter (specify a microscope model when ordering; ships installed on the adapter). Requires a temperature controller. Might require an objective heater if used with an immersion optics.

- Optical window: 75x20mm Glass thickness: 1mm
- Microscope adapter: specify microscope model
- Temperature stability: 0.01°C, built-in sensor

Item#: TC-GSH





Large Volume/Miniature Bath/Dissecting Chamber for *in vivo* imaging TC-DIS

This is a large (54x54x8mm) volume chamber for different applications, including dissecting of tissue. Can be extended up by placing additional 8mm high chambers. The chamber has a glass bottom with transparent coating, which is used as a heater to provide uniform temperature distribution throughout the entire surface. Optical clearance and heated area is 54x54mm. Mounted on a 128x86mm frame, which fits most microscope stages. Might require a microscope adapte . Built-in temperature sensor. An optional magnetic plate can be placed on top upon request. This will allow mounting optional magnetic holders for tubing, electrodes and suction: MTH-S, MTH, and MH-2.

Can be upgraded with an objective heater TC-HLS-05/025. Item#: TC-DIS/-8







Open Heated Perfusion Chamber for Water Immersion Objec-

tive This chamber has uniformly heated glass bottom with large clearance of 42mm diameter. Separate compartments for inflow and outflow prevent bubbles from entering the chamber and provide smoot perfusion. Built-in temperature probe. Includes 2-channel temperature controller, microscope adapter, two magnetic holders for suction tubing (included), and perfusion manifold (optional). Can be used with controlled flow perfusion systems. Might need an objective heater (above) if water immersion optics is used. Mounted on a 128x86mm frame, which fits most microscope stages. Might require a microscope adapte . Specify microscope model when ordering. **Item#: TC-WI**

Uniform Heaters

Catalog No.	Description
TC-HP75X65	Heated Microscope Plater
TC-HPQ75X50	Heated Quartz Plater
TC-HP108X72	Heated microscope plate for motorized stages
TC-DIS	Temperature Controller and Large Volume (Dissecting) Chamber
TC-DIS-8	Extension for Large Volume/Miniature Water Bath/Dis- secting Chamber, adds extra 8mm in height (volume)
TC-WI	Open Heated Perfusion Chamber for Water Immersion Objective
TC-GSH	Uniformly Heated Glass Slides
IMA-74	Microscope adapter
TC-SYR10x025	TC-SYR10x025 Flexible Syringe Heater, 10in. long

Syringe heater with temperature controller

The syringe heaters are used to heat different sizes syringe barrels (or any other cylindrical surfaces) for degassing solutions or maintaining solutions at temperatures above ambient (up to 150°C). Includes a temperature controller. Can be used with perfusion systems or syringe pumps. Easy to install and remove. The replaceable flexible 0.25x10in. heaters are wrapped around syringes and fixed with include Velcro straps Item#: TC-SYR10x025

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Low-Profile Heated chambers

Low Profile Heated Stage, TC-E50x3 Larger diameter of this heating element allows you to form low-profile recording and perfusion setups, suitable for use even under upright m - croscopes. The heating element accepts dishes up to 52mm diameter. Can be used with smaller chambers and 35mm dishes, if combined with reducing adapter-rings. Heating happens from the bottom to eliminate temperature gradient. Optical aperture is 28.5mm. Can be used with PCCS1 and PCCS2 low-profile coverslip chambers, which are only 4mm high. Can be used with sealed thin chambers for high resolution imaging. Can be upgraded with an objective heater for immersion optics. Can be used with CSC coverslip chambers as well. Requires a microscope adapter, specify microscope model when ordering. Item#: TC-PD-50x30

- Dimensions: 76mm diameter
- Temperature stability: 0.01°C, built-in sensor
- dishes
- Solution Pre-heater: Replaceable/Removable Teflon tubing, easy to was
- Optical clearance: 30mm
- Use with: Coverslip chambers, 50mm dishes, Petri dishes, including 35mm glass bottom
- Microscope adapter: Fits to 74mm cutout of
 - standard microscope adapters

Low Profile Heater

Catalog No.	Description
TC-E50x30	Heater for 50mm dishes with 30mm optical clearance
IMA-74	Microscope adapters, specify microscope model when ordering
TC-PA50	50mm reducing adapter-ring for 35mm dishes
UTIC-25	Holder for Ultra-Thin Imaging Chambers, fits 25mm Cover- Slips, microscope adapters and heated stages
CS-No1-25	Glass Cover Slip, box of 100. Optical quality glass cover slip for perfusion bath chambers. Box of 100. Made in Germany. No. 1 thickness.
UTIC-21	Adhesive layers, pack of 100.
PCCS2	Small Volume Perfusion System for 30mm coverslips and 50mm glass bottom dishes
PCC\$2-PDI	Adhesive layers, pack of 100, for use with PCCS2 perfusion chambers.

Adjustable Heaters for rectangular Coverglasses and Slides



Adjustable Slide Heater TC-SH A heater for chambered glass coverslips/coverglasses and slides. Can be used with any slide of standard size (width 1in., and length not more then 3in). Two adjustable heating elements can slide along the adapter to accommodate different shapes and dimensions. Can be upgraded with objective heater. Mounted on a 128x86mm frame, which fits most microscope sta - es. Might require a microscope adapter. Choose microscope adapter when ordering. Built-in temperature sensor. Comes with two holders to fix additional temperature probe and/or tubing. Requires a temperature controller. Item#: TC-SH



Low-Profile Adjustable Coversip Heater TC-C A heater for chambered

glass coverslips/coverglasses. The low profile allows you to use the heater under upright microscopes, i - cluding AFM. Two adjustable heating elements can slide along the adapter to accommodate different coverslip length. Can be used with any coverslip: width 1 in., and length not more then 3in. Can be upgraded with objective heater. Mounted on a 128x86mm frame, which fits most microscope stages. Might require a microscope adapter. Choose microscope adapter when ordering. Built-in temperature sensor. Requires a temperature controller. F **Item#: TC-CH**

Adjustable Heaters for rectangular Coverglasses and Slides

Catalog No.	Description
TC-SH	Adjustable Heater for Slides and Coverglasses.
TC-CH	Low-Profile Adjustable Heater for Coverslips.
IMA	Microscope Adapter.



Heaters for In Vivo Experiments

A temperature controlled heater to keep exposed organs at animal body temperature. This heater can be adjusted to position next to or above a small animal. Live attached organs can be placed into a silicone chamber attached to the glass surface of the heater. Easy to clean after use. Custom chambers of any shape are available. Adjustable miniature tubing holders can be used for solution exchange or to apply test compounds (the holders can be also used to fix electrodes and sensors). Magnetic stands provide solid support on the microscope table. The stands are adjustable for easy elevation change during experiments. Requires a temperature controller.

- **Dimensions:** 1x 3 in. transparent glass heater **Temperature stability:** better than 0.01°C,
- Adjustable elevation: Flexible, up to 2in. Can be custom modifie

In Vivo Heater

built-in sensor

Catalog No.	Description	

TC-invivo In Vivo transparent heater, adjustable, 1x3in.

Objective Heater with Temperature Controller



A flexibl silicone heater for any objective. Used with oil or water immersion optics. Built-in temperature sensor. Easy to attach and remove. Simply wrap the heater around objective and secure with included Velcro tape. Specify the width/height when ordering. The heater is usually attached to a cylindrical surface of the objective, closer to the sample. Item#: MTC-HLS-025

- Dimensions: 0.5in. wide x 5in long
- Temperature stability: 0.01°C, self-adjust-

•	Temperature stability: 0.01°C, self-adjust-			temperature overshoot; adjustable tempera-
	ing, built-in senso	r; dual overheating protec-		ture threshold
Objective heaters		aters	•	Easy to install: Fits any objective
C	Catalog No.	Description		
Ν	ATC-HLS-025	Objective Heater with 1-channel temperature controller		
1	IC-HLS-05	Objective Heater upgrad	de	

Heater for chambers from Culture Myograph Systems

A heating element designed for 35mm culture myograph chambers. The mounting frame is 128x86mm, the size of standard multi-well plates to fi motorized stages and type-K mechanical stages. Two set screws and two clamps to fi the chamber from two sides and the top. Recessed area for connecting tubing. Bottom aperture is 25mm, with 1mm thick lip to hold the chamber. Requires a temperature controller. The controller stores two settings in its memory for different temperatures for easy temperature jumps. Item#: TC-MYO

- Dimensions: 128x86x3mm, 25mm aperture
- Temperature stability: 0.01°C, self-adjusting, built-in sensor; dual overheating protec-
- tion
- Easy to install: Fits mechanical, motorized and type-K stages

power output down to 0W; settings eliminate

Culture Myograph Heater

Catalog No.	Description
TC-MYO	Heater for 35mm Culture Myograph chambers



Single channel High stability Precision Temperature Controller TC-1-100s

A simplifie controller suitable for application where multiple temperature probes are not required: objective heaters, syringe heaters, heated glass plates, and other simple configurations Easy to use and flexibl self-adjusting controls for stable operation. Connection to an optional external probe (bath). Stores two



settings in its memory for different sample sizes/heating elements (different size objectives, for example), which can also be used to generate fast temperature steps.

ich can also be used to generate fast temper

No electrical noise

Built-in overheating protection

No vibrations during imaging and recording - no internal fan

Standby mode

Most heating stages work as inline solution pre-heaters. Can be used with flo control and perfusion systems. Includes the connecting cable, and 100-240VAC power supply: 12V output is suitable for most small heating elements and objective heaters (18V and 24V output available).

- Temperature sensor: built-in inside heating elements
- Range from room to 150°C with accuracy 0.1°C
- Temperature stability: 0.01°C, self-adjusting, required for sensitive applications: nano/piezo positioning, confocal imaging
- Settings: flexibl & self-adjusting, allow

- to stabilize temperature in different sample volumes and heating stage sizes
- **Temperature probe (optional):** miniature 0.87mm (fit small volume chambers)
- Feedback: Stage sensor
- **Output:** 5A max, 165W

2-Channel Heating Controller, with digital RS232 interface TC-1-100

Low electrical noise, heating and cooling temperature controller for microscope stages. Flexible selfadjusting controls for stable operation. Multiple temperature probes to choose for feedback. Can be used with objective heaters. Can be used with flo control and perfusion systems. Most heating and cooling stages work as inline solution pre-heaters. Can be used with flo control and perfusion systems. The second channel is usually used for objective heaters, or incubator lids. Includes connecting cables. An external temperature probe might be needed, to monitor bath temperature for example. External probes are plastic-encapsulated: no metal ions leakage into solutions. Includes an internal power supply: 12V is suitable for most small heating elements and objective heaters, 18V is required for miniature incubators, 24V is required for cooling stages.

- Range from room to 150°C with accuracy 0.1°C
- · Built-in overheating protection
- **Temperature probes:** optional miniature 0.87mm (fit small volume chambers)
- Feedback: Stage sensor or External probe
- RS232 port for programmed temperature changes
- Analog Input to set temperature changes
- Analog Output to monitor temperature
- Standby mode activated manually or by external TTL signal

- No vibrations during imaging and recording - no internal fan
- **Dimensions**: 6.5 x 4 x 9in.
- Stability: 0.01°C, self-adjusting
- Settings: flexibl & self-adjusting, allow to stabilize temperature in different sample volumes and heating stage sizes; allow to regulate output from 0 to 96W; prevents temperature overshoot; provide dual overheating protection
- **Output:** 12V 4A max per channel (18V and 24V optional



Catalog No.	Description
TC-1-100	2-Channel Temperature Controller, high stability, no elec- trical noise (includes cables and 12 power supply)
TC-1-100s	1-Channel Temperature Controller, high stability, no elec- trical noise (includes cable and 12 power supply)
TC-TP	Replacement temperature probe
TC1-TCR	Replacement Cable Assembly for TC-1-100 controller

Temperature Controllers, low noise





Provides higher stability required for some sensitive applications, nano/piezo positioning, confocal or AFM imaging for example. Flexible controls for stable operation and easy to use through the graphical touch-screen. Can be used with objective heaters and with perfusion systems. Most heating stages work as inline solution pre-heaters. Self-tuning: does not require manual adjustments to provide stable operation.

Can be programmed through the touch screen to generate ramps and temperature steps, longer than 40min each, 10sec min.

- No drift due to high stability, 0.01°C.
- No vibrations during imaging and recording - no internal fan.
- Range from -80 to 150°C with accuracy 0.1°C. •
- Self-tuning, no adjustments are required.
- Multiple temperature sensors to choose for feedback, STAGE and BATH. •
- External probes are plastic-encapsulated: no metal ions leakage into solutions •
- Built-in overheating protection.
- Inputs for programmed temperature changes. •
- Analog and Digital Outputs to monitor and SET temperature.
- Digital interface for software control. •
- No electrical noise suitable for electrophysiology.
- Range: up to 150°C
- Dimensions: 8x1.8x11.5in.
- **Temperature probe:** miniature 0.87mm thick (fits small volume chambers)
- Settings: Self-tuning to stabilize temperature

of different sample volumes and heating stage sizes, no manual adjustments are required

- Feedback: from Stage (built-in) or External probe (Bath)
- Output: 4A per channel, 140W (with 35V input)





Catalog No.	Description
TC2-80-150	2-Channel Temperature Controller, connecting cables and 12V power supply
TC2-TCR	Connecting Cable Assembly. Can be also used to moni- tor temperature through the second channel of multi- channels controllers.
TC-TP	Replacement Temperature Probe

2-Channel Programmable Temperature Controllers





Cooling & Heating

Miniature Perfusion Cooler/Heater Unit TC-RD

Controls temperature of perfusion solutions in the range from 0 to 100°C. A small heating/cooling element is designed to mount on a manipulator next to your sample to provide fast temperature changes by streaming the solution directly onto the sample.

On the right is an example of fast temperature change inside a petri dish. Experimental conditions: TC-RD system was set at 0°C; the petri dish was set at 30°C using another TC-1 controller and TC-PCP heating stage; two flow control CFPS-1U66 units were used - one for solution suction from the dish, through PDI insert inside the dish; and another CFPS-1U66 to cool heat sink of TC-RD unit; the third CFPS-1U unit was used to perfuse the dish; a slow temperature sensor was used to simulate temperature change in the whole dish; the actual temperature change in the point of solution application is much faster. **Item#: TC-RD**

- Dimensions: 1 x 2 x 2in
- **Temperature stability:** better than 0.1°C, built-in sensor
- peratures
- Feedback: Selectable Stage, or External sensor (Bath)

Heat Sink: water cooling for very low tem-

Cooling & Heating microscope incubator for petri dishes and coverslip chambers, BTC-S /-35

- Dimensions: 120x120x23mm
- Optical aperture: 22mm diameter/ 35mm for BTC-S-35 stage
- Objective working distance, minimum:
 0mm (for inverted microscopes)
- Temperature stability: 0.1°C, built-in sen-

sor

- Sink: optional water cooling for very low temperatures, requires BTC-W unit
- Microscope adapter: Fits to 74mm cutout of standard microscope adapters IMA-74

Can be used with: Standard 35mm disposable Petri dishes (petri dish adapters TC-PA might be required), or glass bottom dishes (TC-PA-W or TC-PA-F adapter is required); and replaceable coverslip chambers CSC. Built-in temperature sensor for stable operation. Can be used with high optical quality glass cover









with ports for gas input, to control CO2 or hypoxia. Built-in lines to cool sink during deep cooling. Consider a different cooling stage for rectangular slides below. Requires a temperature controller. Requires a microscope adapter (specify microscope model). **Item#: BTC-S**

Low-Profile Cooling & Heating plate, BTC-

- **Dimensions:** 120x160mm, 80x40mm cooling/heating area
- Optical aperture: 10mm diameter
- Objective working distance, minimum: 0mm (for upright microscopes)/ 3mm (for inverted microscopes)
- Temperature stability: 0.1°C, built-in sensor
- Heat Sink: optional water cooling for low temperatures, requires BTC-W unit
- Microscope adapter: Fits to 74mm cutout of standard microscope adapters IMA-74

Can be used with: standard 35mm disposable Petri dishes, glass bottom dishes, and disposable slides and coverglasses. Can cool the sample down to -2°C (or heat up to 150°C). The cooling area is 40x80mm with 10mm aperture in the middle. The low profile of the stage allows easy access to your samples. Provided clamps will fix the sample in place. Can be placed on upright microscopes. Can be mounted on a micr - scope stage (specify dimensions of microscope stage cutout, 108mm diameter for Nikon for example). Requires sink cooling and a temperature controller. **Item#: BTC-L**

Cooling & Heating microscope incubator for slides, BTC-SL

- Dimensions: 120x120x23mm
- Optical aperture: 20x46mm

- sor
- Sink: optional water cooling for very low temperatures, requires BTC-W unit
- Microscope adapter: Fits to 74mm cutout of standard microscope adapters IMA-74
- Temperature stability: 0.1°C, built-in sen-

0mm (for inverted microscopes)

Objective working distance, minimum:

Can be used with: Standard 1 in. (25mm) wide disposable slides and chambered coverglasses. Built-in temperature sensor for stable operation. Can be used with high optical quality glass cover with ports for gas input, to control CO2 or hypoxia. Built-in lines to cool sink during deep cooling. Consider a different cooling stage for petri dishes and coverslips above. Requires a temperature controller. Requires a microscope adapter (specify microscope model). **Item#: BTC-SL**

Slides and Chambered Coverglasses Cooling & Heating stage, BTC-SLM

- Dimensions: 110x160x18mm, 26x79mm cooling/heating area
- Optical aperture: 20x46mm
- Objective working distance, minimum: 0mm (for inverted microscopes)
- sor
- Sink: optional water cooling for very low temperatures, requires BTC-W unit
- Microscope adapter: Fits to 74mm cutout of standard microscope adapters IMA-74
- Temperature stability: 0.1°C, built-in sen-

Can be used with: custom devices, disposable slides and coverglasses. Can cool the sample down to -5°C (or heat up to 150°C). Fits 160x110mm cutout of motorized stages, and type K Zeiss stages. The cooling area is an inside cutout 26x79mm (to fit standard slides), with 20x40mm aperture in the middle. The inside cutout is 17mm deep, with 1mm lip to hold the sample. Requires sink cooling and a temperature controller. **Item#: BTC-SLM**





Low Profile Cooling & Heating stage for Slides and Chambered Coverglasses, BTC-SL-128x86

- Dimensions: 128x86mm, 29x79mm cooling/heating area
- Optical aperture: 20x46mm
- Objective working distance, minimum: 0mm (for inverted and upright microscopes)
- Temperature stability: 0.1°C, built-in sen-

sor

- Sink: optional water cooling for very low temperatures, requires BTC-W unit
- Microscope adapter: Fits to 128x86mm holders for standard multi-well plates

This low profile heating/cooling stage designed to fit inside 128x86mm holders for standard multi-wel plates. Can be used with: custom devices, disposable slides and coverglasses. Positioned on both sides threaded #4-40 holes can be used to mount optional IMA-MH tubing and probes holders. Can cool the sample down to 0°C (in combination with BTC-W heat exchange unit) or heat up to 150°C. The cooling area is an inside cutout 29x79x1mm (to fit standard slides), with 20x40mm aperture in the middle. Requires a temperature controller. **Item#: BTC-SL-128x86**

Cooling & Heating microscope stage for 50mm dishes, BTC-S50

- Dimensions: 145x145x23mm
- **Temperature stability:** better than 0.1°C, built-in sensor
- tures, optional water cooler unit BTC-W
- Optical aperture: 33mm
- Microscope adapter: Fits to 74mm cutout of standard microscope adapters
- Sink: water cooling for very low tempera-

Can be used with wider up to 59mm disposable dishes, including Willco 50mm glass bottom dishes. Comes with reducing adapter for 50mm dishes. Built in lines to cool heat sink for deep cooling. 30mm clearance. Click on image to enlarge. Consider a different cooling stage for rectangular slides. Requires a microscope adapter (specify microscope model when ordering), and a temperature controller. **Item#: BTC-S50**

Cooling & Heating Microscope Objective, BTC-O

- **Dimensions:** custom cooling/heating area (22.5x10mm for example)
- Optical aperture: custom
- Objective working distance, minimum:
- 0mm (for upright microscopes)/ 0mm (for inverted microscopes)
- Stability: 0.1°C, built-in sensor
- Heat Sink: optional water cooling for low

Can be used with any microscope objective (or any cylindrical object). Can cool the objective down to -6°C (or heat up to 150°C). The cooling area should be specified when ordering, for example 22.5mm diameter and 10mm wide for x40 Zeiss objective (technical drawings are required). Built-in clamp will fix the objective in place. Can be placed on upright and inverted microscopes. Requires sink cooling and a temperature controller **Item#: BTC-O**








Heat Exchange Unit for Peltier stages, BTC-W

This liquid heat-exchange is used to bring temperature of the sink of cooling Peltier stages down by actively decreasing temperature of water running through the sink. Built-in air-cooled radiators for internal liquid cooling system and thermal electrical heat exchanges for circulating liquid (water). Able to decrease the temperature of water down to less than 12°C (if not circulating through Peltier stages). Built-in peristaltic pump to run water through the unit. Includes tubing. **Item# BTC-W**

• Dimensions: 13 x 9 x 11 in

•

- Ports: IN and OUT barbed ports, 1/8 in I.D. (10-32 thread)
 - Power supply: 100-240VAC
- Output: circulates liquid 75-100ml/min; triple heat-exchange system

neuling und	Cooling
Catalog No.	Description
TC-RD	Miniature Perfusion Heater/Cooler unit
BTC-S	Heating & Cooling Microscope Stage, 22mm optical aperture
TC-PA-C	Reducing adapter-ring, for Corning and Mattek dishes
TC-PA-N	Reducing adapter-ring, for Nunc type dishes
TC-PA-W	Reducing adapter-ring, for Willco dishes
TC-PA-F	Reducing adapter-ring, for Fluo dishes from WPI
TC-PA-G	Petri Dish Adapter, for Greiner Bio-One dishes, glass bot- tom
BTC-S-35	Heating & Cooling Microscope Stage, 35mm optical aperture, to use with CSC coverslip chambers
BTC-SL	Heating & Cooling microscope stage for slides
BTC-S50	Heating & Cooling microscope stage for 50mm dishes
BTC-L	Heating & Cooling plate for slides and dishes, low profile
BTC-SLM	Heating & Cooling stage for slides, 160x110mm
BTC-SL- 128x86	Low Profile Heating & Cooling stage for slides, 128x86mm
BTC-O- 22.5x10mm	Heating & Cooling attachment for Microscope 22.5mm diameter objective, 22.5x10x40mm
BTC-O- 34x10mm	Heating & Cooling attachment for Microscope 34mm diameter objective, 34x10x40mm
BTC-W	Liquid heat exchange unit for Peltier stages
IMA-74	Microscope adapter
TC2-80-150-C	2-Channel Programmable Temperature Controller, auto- matic cooling, includes 24V power supply and cables
BTC-TCR	Replacement Connecting Assembly an easy-disconnect cable for TC2-80-150-C and BTC cooling controllers.
BTC-1-100	Economy 1-Channel Temperature Controller, automatic cooling, includes 24V power supply and cable
BTC-2-100	2-Channel Temperature Controller, automatic cooling, includes cables

Heating and Cooling

ertus <u>/stems</u>

Programmable Systems for Liquids Application & Switching

Up to 16-Channel Complete Systems with programmable timers Modular Design to build custom configuration Compatible with Imaging & Data Acquisition systems No electrical noise during switching Automatically switch to preset solutions for easy manual operation in vivo, Bath Perfusion & Local Application Works with Temperature Controlled Systems

Multi-Channel 16 Independent Channels Controls Manual Wireless Remote Control TTL Signals (+5V) Binary Encoding Analog Input AUTO Memory Automatically switches to preset channels for uninterrupted perfusion using programmable timers SET Outputs For channel monitoring or automatic outflow control INHIBIT Mode Manual and external (+5V) to switch solutions OFF at once RS232/USB port RS232/USB

for software control

- Number of channels: up to 16 channels;
- Remote control: wireless

- Manifolds: 8-channel, can be reduced down to 1-channel
- Height: up to 3ft. adjustable, for gravity driven solution flo
- Solution cylinders: 60ml syringes
- Pressure cylinders: 10ml x8, 50ml x8
- Gas adapter/Pressure manifold: to saturate solutions with gas mixture, or pressurize solutions
- Pressurized Small volume delivery system: 8-channel, PTFE connecting tubing 2ft. per channel
- Tubing: 100ft. polyethylene tubing, fits valves and perfusion manifold directly; 50ft. Tygon tubing, fits provided barbed lue -locks to connect to syringes
- Fitting: barbed luer-locks and ferrule-type 现货销售电话: 010-67529703, 18618101725 (微信同)

to connect to solution cylinders and between Tygon & polyethylene tubing

Anti-vibration mounting:

- b. magnetic stand,
- c. M8 threaded surfaces
- Digital control, optically isolated: x16 inputs through BNC connectors; x8 through DB-9 connector; CODE mode to control 16 channels through 4 digital inputs (binary encoding)
- Analog input: from to 0 to 9V controls 16 channels;
- SET output: to switch outflow/suction unit
- Programmable Timers: for precise manual control and to generate sequences up to 16 steps (continuos loops are also possible)
- Software control: through RS232 input, or USB adapter

a. 1x1 ft. stand,



Valve Controller, Programmable

PC-16 valve controller is included with every 8- or 16-channel perfusion systems. Ships with wireless remote control. Modifications for N. O. valves are also available. Can be used with any custom solenoids or even motors.

AUTO Memory

To program individual channel timers and sequences. Allows to switch "wash" solution automatically between channels in sequence.

CODE Mode

The controller has an options for valves control by channel encoding using only 2-4 digital inputs, in case if a limited number of digital outputs is available in your system.

Analog Input

You can also use analog signal input to switch the channels by changing the voltage (0.5V increment).

USB/RS232 Input

The RS232 port allows automation of solution switching and integration with imaging systems.

SET Out 5V TTL output to switch outflow automatically.

Pinch Valves

Inhibit mode, input and output. **DIMENSIONS** Size: 5 x 12 x 9in. Includes 120/220VAC internal power supply. **OUTPUT** 12V (4A max/channel, 10A total); other outputs for custom devices are available on request; 0-15PSI pressure output (for PC-16P model only) **power supply**: 100/240VAC

Item#: PC-16

INHIBIT Mode



Complete 8-Channel Pinch Valves Perfusion System, PS-8H

Designed for animal physiology and cell research applications. The valves are mounted inside a metal box to shield your system from electrical noise. The system comes with manifold that fits to perfusion chambers for cultured cells/tissue slices, petri dish and oocytes. Includes soft Tygon, polyethylene tubing and fitting to connect to pinch tubing. Includes 60ml syringes/reservoirs. Includes easy disconnect luer fitting for tubing and included syringes. Comes with gas adapter to saturate solutions with gas mixtures, CO2 and O2 for example, or to pressurize optional PC-10/50 cylinders. Compatible with data acquisition and imaging systems. Since valves are inside the metal box and are connected to the controller through shielded cables, there is no electrical noise during switching.

The included unique flexible stand provides vibration-free operation and includes both a stand and a small magnetic base. The magnetic base does not take a lot of space from your set-up, but allows to position 现货销售电话: 010-67529703, 18618101725 (微信同)



perfusion solutions near your sample. The post consists of 0.5 in. O.D., 1 foot long aluminum parts and can be extended to 3 feet high. An 1.5 in. flowerette head screw will fix the syringes on the post, makin a traditional syringe holder. Comes with 60ml syringes, stop-cocks, and fitting. The holder can be also mounted on threaded M8 surfaces. **Item# PS-8H**

Complete 16-Channel Pinch Valves Perfusion System, PS-16H

To form a 16-channel setup, this system includes two sets of the above parts, included with the 8-channel system, which can be operated by the same 16-channel controller.. **Item#: PS-16H**

Catalog No.	Description
PS-V8	Pinch Valves, Shielded, Box of 8, for use with PC-16 controller
PS-V8S	Solenoid valves, set of 8, mounted inside an aluminum box to use with perfusion systems. For use with PC-16 controller.
PS-8SE	Economy 8-Channel Perfusion System. Includes pro- grammable 16-channel controller and solenoid valves (without SH-1A syringe holder, manifold, tubing and fitting).
PS-8S	Complete 8-Channel Perfusion System. Includes pro- grammable 16-channel controller, solenoid valves, SH-1A syringe holder, manifold, tubing and fitting.
PS-16S	Complete 16-Channel Perfusion System. Includes programmable 16-channel controller, solenoid valves, SH-1A syringe holders, manifold, tubing and fitting.
PC-16	16-Channel Valve Controller, programmable

Perfusion systems and Valve Controllers

Pinch Valve Perfusion Systems

Catalog No.	Description
PS-8H	Complete 8-Channel Pinch Valve Perfusion System with controller, Syringe Holder on Magnetic Base
PS-16H	Complete 16-Channel Pinch Valves Perfusion System. Includes programmable 16-channel controller, pinch valves, SH-1A syringe holders, manifold, tubing and fit- ting.

Accessories

Catalog No.	Description
DB9-C	Connecting Cable for PC-16 controller and valves
CFPS-USB	Adapter USB to RS232
DB9-IMG	Connecting Cable from PC-16 controller to Imaging Systems



Solenoid Valves

Designed for animal physiology and cell research applications. Easy to use solenoid valves with luer fitting. Wide orifices will maintain high flow rates The system comes with manifold that fits to perfusion chambers for cultured cells/tissue slices, Petri dish and oocytes. Includes soft Tygon, polyethylene tubing and fitting to connect to pinch tubing. Includes 60ml syringes/reservoirs. Includes easy disconnect luer fitting for tubing and included syringes. Compatible with data acquisition and imaging systems.

The included unique flexible stand provides vibration-free operation and includes both a stand and a small magnetic base. The magnetic base does not take a lot of space from your set-up, but allows to position perfusion solutions near your sample. The post consists of 0.5 in. O.D., 1 foot long aluminum parts and can be extended to 3 feet high. An 1.5 in. flowerette head screw will fix the syringes on the post, makin a traditional syringe holder. Comes with 60ml syringes, stop-cocks, and fitting. The holder can be also mounted on threaded M8 surfaces.. **Item#: PS-88**

Complete 16-Channel Pinch Valves Perfusion System, PS-16S

To form a 16-channel setup, this system includes two sets of the above parts, included with the 8-channel system, which can be operated by the same 16-channel controller. **Item#: PS-16S**

- wireless remote control; manual control, digital or TTL signals generated by a computer or other equipment
- analog signal control
- RS232 port (or USB connection) for software control
- Manifold: 8-channel, each can be reduced down to 1-channel
- Height: up to 3ft. adjustable, for gravity driven solution flo
- Solution cylinders: 60ml x16

- **Tubing:** 100ft. polyethylene tubing, fits valves and perfusion manifold directly; 50ft. Tygon tubing, fits provided barbed lue -locks
- Fitting: barbed luer-locks and ferrule-type to connect to solution cylinders and between Tygon & polyethylene tubing
- Anti-vibration mounting:
 - a. 1x1 ft.. stand,
 - b. magnetic stand,
 - c. M8 threaded surfaces

Accessories

Adapter USB to RS232 Allows you to connect through a computer USB port. Creates a virtual RS232 (COMn) port, so that you can program the controller using your standard software. Item#: CFPS-USB

Cable to Connect Perfusion Systems to Imaging Systems A custom cable to fit your imaging system. Used with imaging software to control perfusion systems for automatic liquid handling and test solution applications. Specify imaging package used or define required conne - tors. **Item#: DB9-IMG**

Digital Pressure Controllers - pumps, with RS232 port

For use with small volume delivery systems, pressure cylinders and solution switches. Generates pressure up to 15PSI (does not require an external source of pressure). The controller regulates output pressure (0.5mmHg stability) to provide defined smooth solution flow through sample chambers, microfluidi chips for example. Prevents flow blockage by bubbles inside solutions. Simple to use. This is an advanced alternative to syringe pumps (easy solution refill and unlimited volume). PC-R15/10 model provides a source of pressure for smooth flo control in sensitive fluidic devices with 0.5mmHg stability, and RS232 port to monitor and SET pressure. Item#: PC-R15/10

- Output: max pressure 7.5 / 15 PSI (385 / 775 mm Hg)
- Stability: 0.5mm Hg
- Connectors: Easy-connect, 1/8in. O.D. tubing
 Indicators: PRESSURE digital display
- **Dimensions:** 6 x 13 x 9in.

Controls: START/STOP, output CLOSE/OPEN,

• Power: internal 100/240VAC power supply

Pressure regulator For use with small volume delivery SVDS1 and pressure cylinders PC. Connects to a cylinder with a compressed gas mixture (max. input 300PSI). The controller regulates output pressure to provide consistent defined solution flow through sample chambers and microfluidics chi (prevents flow blockage by bubbles inside solutions for example). Simple to use. **Item#: PC-100-25**

- Input: max 300PSI
- Output: max 30PSI
- Connectors: Easy-connect, 5/32in. (4mm) O.D. tubing
- Indicators: PRESSURE digital indicator, output LOW, output CLOSE
- Controls: INPUT PRESSURE regulator 0-100PSI, CLOSE manual switch,

CLOSE TTL input (+5V to start), OUTPUT PRESSURE settings, MANUAL dial to SET pressure, EXTERNAL input to SET pressure, MONITOR pressure - analog output

- Dimensions: 6 x 2.5 x 9in.
- **Power:** Includes external 120/230VAC power supply

8-Channel pressure switch, PS-V8P This small manifold can deliver pressure to eight independent outputs - channels. If connected to sealed containers, small volume manifolds or cylinders, the pressure switch can deliver solutions to any custom chamber or fluidics device (no syringe pump or gravity driven perfusion is required). Can be used with any volume containers, including transfer bottles. Can be also used with zero-dead volume manifolds to deliver solutions into small chambers and dishes. Requires a pressure pump and the valve controller. The controller can be programmed to deliver solution sequences and for continuous periodic solution replenishment. The switch is rated up to 150 PSI input pressure. It has a secondary threaded input port for the balance pressure to prevent back-flo . Dimensions: 5x2x2in. If purchased together with PC-16 valve controller, the switch will ship with free SVDS1 small volume manifold. **Item#: PS-V8P**

Programmable 8-Channel liquid delivery system, PS-8P In addition to

8-channel pressure switch PS-V8P, this setup includes 16-channel programmable valve controller PC-16P, with incorporated 0-15PSI pressure controller-pump, adjustable stand SH-1A, small volume manifolds SVDS1 and SVDS2, and sets of pressure cylinders PC-10 and PC-50 (x8 each), connecting tubing and fitting. Can deliver solutions to any custom chamber or fluidics device (no syringe pump or gravity drive perfusion is required). Can be also used with zero-dead volume manifolds to deliver solutions into small





chambers and dishes. Item#: PS-8P



Small Volume Delivery System SVDS2 For use with standard 15ml tubes from Sarstedt. This system utilizes eight small plastic tubes with conical bottom and 1/16in. O.D. PTFE tubing to connect to your setup for liquid delivery. Tubes with solutions are simply threaded into the holder. Solutions are easy to refill during the experiment. Requires pressurized gas to deliver the solutions. Can be used with miniature manifolds ZMM, perfusion systems, and pressure controllers. Solutions can be also withdrawn using controlled flow or vacuum systems. Can be used to collect samples by aspiration

The system comes with all necessary tubing and fitting to connect to a single pressure source. The small size of 200x25x25mm (without tubes attached) allows to position solutions near your sample. Can be attached to a 1 ft.. rod (included). Comes with X-block to attach onto a standard 0.5 in. stand. Includes replaceable plastic tubes 15ml, PTFE tubing, fitting and tubing to connect to a pressure source

Provided fitting allows you to connect tubes directly to the valves of perfusion systems, and the output from valves directly to the manifolds or custom tubing and chambers. All our manifolds can be connected, including zero-dead volume, luer-lock, and miniature manifold for single cell perfusion. Shown on the picture, is SVDS2 system connected to the pinch valves of PS-8H setup. Output from SVDS2 then goes to ZMM manifold to provide liquid delivery and solution switching inside a Petri dish with PDI insert inside. The outflow is provided through a suction tubing of MTH-S holde . **Item#: SVDS2**

Small Volume Delivery System with pressure switch, SVDS2-P This

is the same SVDS2 manifold for 15ml tubes with incorporated pressure switch, which is controlled by PC-16 controller. It allows you to connect tubes directly to the manifolds without using valves. Ideal for use with custom fluidics devices and zero-dead volume manifolds that do not have back-fl , although the system has an input port for the secondary balance pressure. The valve controller can be programmed using built-in timers to generate solution sequences. Requires pressurized gas to deliver the solutions.

The system comes with all necessary tubing and fitting to connect to a single pressure source. The small size allows to position solutions near your sample. Comes with X-block to attach onto a standard 0.5 in. stand. Includes replaceable plastic tubes x8 15ml, PTFE tubing, fitting and tubing to connect to a pressure source, and cable to connect to the valve controller. **Item#: SVDS2-P**

Cylinder to Pressurize/Oxygenate Solutions, Set of 8 A set of autoclav-

able cylinders to pressurize your solutions. Can be used to drive solutions through 100 micron tip of MM manifold, for example. Can be also used to saturate solutions with gases (bubbling) by feeding a thin tubing inside the cylinder. Comes with stop-cocks and fitting for 1/16 in. I.D. tubing. Includes a 1-way valves to connect to a pressure source, to release the pressure, to refill the cylinde , or to connect to a source of gas mixture (oxygenation, for example). Comes with threaded cover for easy refill. Material: polypr - pylene. Specify volume when ordering. Large 650ml volumes are available upon request. Cylinders with built-in 10, 25 or 40 micron filters are also available (specify when ordering). Volumes up to 100ml fit to our SH syringe holders. **Item#: PC**



Gas Mixture Delivery Adapter - Pressure manifold

Adapter for syringe holders to connect to a gas source to saturate/bubble eight solutions during experiments (CO2 saturation or oxygenation, or pressurizing the solution.) Comes with X-block to fit 0.5 in. posts. Includes 9 stop-cocks and plugs to close unused channels or the common inlet. It also comes with tubing and fitting to connect to output barbs and thin tubing to form bubbles inside the solutions. Can be used with stones, or any other diffuser, to bubble larger volumes. Can be also used to pressurize solutions by connecting to pressure cylinders PC. Can be connected to another adapter to use the same source of gas mixture/pressure.. **Item#: SH-A**

Pressure Controllers

Catalog No.	Description
PC-R10	Pressure controller, adjustable up to 7.5PSI - 385 mm Hg - output.
PC-R15	Pressure controller, adjustable up to 15PSI - 775 mm Hg - output, unregulated vacuum
PC-100-25	Pressure regulator, adjustable up to 30PSI output
PS-V8P	8-Channel pressure manifold-switch
PS-8P	Programmable 8-channel liquid delivery system
SVDS2	Small Volume Perfusion System
SVDS2-P	Small Volume Perfusion System SVDS2 with pressure switch
PC-10	Cylinder to pressurize/oxygenate solutions, 10 ml, set of 8
PC-50	Cylinder to pressurize/oxygenate solutions, 50ml, set of 8
SH-A	Gas Mixture Delivery Adapter



Programmable pumps for Dosing and Liquid Delivery

Modular Design

- Manual Units and Computerized Systems
- Compatible with Imaging & Data Acquisition systems
- No electrical noise during operation
- Bath Perfusion & Local Application
- Works with Temperature Controlled Systems

Precision Miniature Dosing Pump, CFPS-1U, 8 µl/min to 7.3 ml/min

ontrol

This unit provides precise linear flow rate control in selectable ranges from 340 nl/min to 22 ml/min. The range is defined by tubing I.D. and the drive configuration. Precision design and miniature size minimiz pulsations to provide smooth liquid delivery. Designed for stable solution delivery, perfusion, infusion or substance application during microscope imaging, recording, calcium and other ions measurement, and bio-chemical assays. The miniature size allows to mount the pump next to the sample to minimize the connecting tubing length. High flow rate units can be used for suction to prevent solution overflow during perfusion. Ca be used with coverslip chambers, lab-on-chips, miniature incubators, small organs and animals perfusion setups.

The pump can be controlled manually, using wireless remote, analog input, digital input, and by software through RS232 port. The unit can be programmed using built-in timers to provide precise dosing at certain period. Can reverse direction of liquid flo . Can be used to apply multiple solutions, if linked to automated perfusion systems, which can be programmed to deliver sequences of different solutions.

Includes a 100-240VAC power supply, and an X-block to mount on a standard 0.5" posts. All metal body design eliminates electrical noise. Multiple units can be controlled by the same remote control, up to sixteen units. Comes with a set of tubing for different flow ranges: 0.015" I.D. - 8-170 µl/min; 0.020" I.D. - 20-340 µl/min; 0.031" I.D. - 50-920 µl/min; 0.062" I.D. - 170-3400 µl/min; 0.093" I.D. -370-7300 µl/min. Item#: CFPS-1U



- Flow control: manual dial, RS232 port, analog signal (0 +10V), reverse direction port, reverse direction
- Remote control: wireless ON/OFF and to start programmed sequences
- Timers: 1sec resolution; both delivery time and period can be programmed;
- **Programmable Volume:** Can be programmed to deliver volumes, up to 999.9ml
- Continuous Delivery: Can be programmed to deliver liquid continuously with set volume/ time and period
- **Dimensions:** 4W x 3.5H x 3.5D in.
- Power: external 110/230VAC power supply
- Mounting: 0.5in. 1 ft. rod and x-block
- Fitting: barbed luer-locks, or optional CFPS-FIT kit
- Peristaltic Tubing: 0.015in. I.D.; 0.020in.
 I.D.; 0.031in I.D.; 0.062in. I.D.; 0.093in. I.D.

Precision Miniature Dosing Pump, 340 nanol - 275 µl/min

Comes with a set of tubing for different flow ranges. Includes a power suppl . Power rating: 0.30W. Item#: CFPS-1U10K

Precision Miniature Dosing Pump, 30µl/min to 22 ml/min

Comes with a set of tubing for different flow ranges. Includes a DC power suppl . Power rating: 1.4W. This high flow rate unit can be used for solution suction/aspiration from open perfusion chambers. **Item#:** CFPS-1U66

Precision Miniature Dosing Pump, 4µl/min to 3.3 ml/min

Comes with a set of tubing for different flow ranges. Includes a power suppl . Power rating: 0.30W. Item#: CFPS-1U9

4-Channel Programmable Dosing System, CFPS-2

- Flow control: manual dial, analog signal (-5
 - +5V), software control through RS232/USB
 port, reverse direction
- Remote control: wireless channel switch
 ON/OFF and to start programmed sequences
- **Timers:** 1sec accuracy, up to more than 24hours for each channel
- **Programmable Volume:** Can be programmed to deliver volumes, up to 999.9ml
- Programmable Sequences: Can be pro-

grammed to activate channels in sequences with programmable delays

- Continuous Delivery: Can be programmed to deliver liquid continuously with set volume/ time and period
- **Dimensions:** 4x2.5x1.85 in.
- Power: 110/230VAC
- Mounting: 0.5in. 1 ft. rod and x-block
- Fitting: barbed luer-locks
- Peristaltic Tubing: 0.015in. I.D.; 0.020in.
 I.D.; 0.031in I.D.; 0.062in. I.D.; 0.093in. I.D.

This is a 2-channel perfusion system for precise control of solution flow rate from 8 µl/min to 7.3 ml/min (or choose upgrades below for different flow rates up to 22ml/min). Includes a 4-channel programmable controller, which allows upgrade to a 4-channel system. Precision design and miniature size minimize pulsations to provide smooth perfusion. Designed for stable solution flow or substance application during imaging, recording, calcium and other ions measurement, biochemical assays or small organs and animals perfusion. Used with small chambers in lab-on-chip setups, imaging and recording workstations.

Digital interface and analog inputs allow you to calibrate each channel independently and to apply one or multiple substances by switching channels manually or through data acquisition and imaging software. The controller can be programmed using timers for each channel, or to dispense preset volumes. It also





allows to program continuous sequence of solution applications, which can be used to replenish liquid media during long-term experiments. You can accurately mix different solutions or generate dose-response curves using only two solutions: buffer and concentrated test compound.

Each channel can be controlled through wireless remote, manually, by analog signal, TTL or through RS232 connection for fully automated setups controlled through third party software packages (optional USB adapters are also available).

The system can be upgraded to operate up to 4 channels in parallel. Can be connected to solution switching miniature systems for changing and mixing solutions in sequence. The optional luer-lock manifolds will combine multiple solutions into a single output. The size of the 2-channel system is 4x2.5x1.85 in (separate from the controller). Multiple systems cad be attached to each other to form a multi-channel system. Includes 1 ft. mounting rod and X-block to attach a standard 0.5in. posts. Comes with a set of tubing for different flow ranges: 0.015" I.D. - $8-170 \mu$ l/min; 0.020" I.D. - $20-340 \mu$ l/min; 0.031" I.D. - $50-920 \mu$ l/min; 0.062" I.D. - $170-3400 \mu$ l/min; 0.093" I.D. - $370-7300 \mu$ l/min; dual 0.015" I.D. $x2 8-170 \mu$ l/min (for different ranges select upgrades below). Includes 4-channel controller Item#: CFPS-2

Flow Rates, ml/min

Tube ID	CFPS-2/1U	Upgrade			
		10K	900	66	
.015"	0.008-0.17	0.34-6.7 µl/min	0.004-0.08	0.03-0.6	
.020''	0.017-0.34	0.59-12 µl/min	0.007-0.14	0.05-1.0	
.031"	0.046-0.92	1.6-34 µl/min	0.020-0.40	0.15-3.0	
.062"	0.17-3.4	6.7-145 µl/min	0.08-1.7	0.5-10	
.093''	0.37-7.3	13.5-275 µl/min	0.16-3.3	1.1-22	

Accessories

4-Channel Flow Controller This 4-channel programmable controller, which allows upgrade to 4-channel system. Designed for stable solution flow or substance application during imaging, recording, calcium and other ions measurement, biochemical assays or small organs and animals perfusion. Used with small chambers in lab-on-chip setups, imaging and recording workstations. Each channel can be controlled through wireless remote, manually, by analog signal, TTL or through RS232 connection for fully automated setups controlled through third party software packages (optional USB adapters are also available).

Digital interface and analog inputs allow you to calibrate each channel independently and to apply one or multiple substances by switching channels manually or through data acquisition and imaging software. The controller can be programmed using timers for each channel, or to dispense preset volumes. It also allows to program continuous sequence of solution applications, which can be used to replenish liquid media during long-term experiments. You can accurately mix different solutions or generate dose-response curves using only two solutions: buffer and concentrated test compound. **Item#: CFPS-UC2**





Additional 2-Channel Upgrade Adds another two independent channels. Turns ON/ OFF independently by analog signals, TTL or/and RS232 connection, or manually (depending on the controller used). Attached together to another system, forms a single unit. Can be mounted horizontally, vertically or simply left on the desktop. Includes mounting hardware. Tubing is not included. Item#: CFPS-2U

USB Adapter Converts your computer USB ports into RS232 ports. Includes cables and software drivers. **Item#: USB-RS232**

Fitting Kit

Includes a set of fitting for tubing used inside controlled flow system and microbore tubing, including ou Teflon, polyimide, and polyethylene PP tubing. **Item#: CFPS-FIT**

Mounting Brackets Kit Allows you to attach multiple flow control units together into one solid piece. Includes 2 brackets (top and bottom) and 12 screws. **Item#: CFPS-MB**

Flow Control		
Catalog No.	Description	
CFPS-1U	Flow Control Unit, 8µl/min to 7.3ml/min	
CFPS-1U10K	Flow Control Unit, 0.34-275 µl/min	
CFPS-1U66	Flow Control Unit, 30µl/min to 22 ml/min	
CFPS-1U9	Flow Control Unit, 4µl/min to 3.3 ml/min	
CFPS-2	Programmable 2-Channel Controlled Flow Perfusion System	
CFPS-UC2	Programmable 4-Channel Flow Controller	
CFPS-2U	Additional 2-Channel Upgrade	
CFPS-10K	Upgrade for flow rates 0.34-275 µl/min	
CFPS-900	Upgrade for flow rates 4-3300 µl/min	
CFPS-66	Upgrade for flow rates 30-22000 µl/min	
USB-RS232	USB Adapter	
CFPS-FIT	Fitting Kit	
CFPS-MB	Mounting Brackets Kit	
CFPS-ST-15	Tubing set, 0.015", x5	
CFPS-ST-15	Tubing set, 0.020", x5	
CFPS-ST-15	Tubing set, 0.031", x5	
CFPS-ST-15	Tubing set, 0.062", x5	
CFPS-ST-15	Tubing set, 0.093", x5	
CFPS-ST-15	Dual Tubing set, 0.015", x5	
CFPS-S	Replacement protective tape	



Small Volume Delivery Systems

Pressurized Delivery of MicroVolumes

- Flow control in microfluidics system
- Injection into single cells and tissue
- Local extracellular perfusion
- Compatible with Imaging & Data Acquisition systems
- Works with Temperature Controlled Systems

Small Volume Delivery

Small Volume Delivery System SVDS2 For use with standard 15ml tubes from Sarstedt. This system utilizes eight small plastic tubes with conical bottom and thin PTFE tubing to connect to your setup. Tubes with solutions are simply threaded into the holder. Solutions are easy to refill during the experiment. Can be used with miniature manifolds, perfusion systems, and pressure controllers. Requires pressurized gas to deliver the solutions. Solutions can be also withdrawn using controlled flow or vacuum systems. Can be used to collect samples by aspiration.

The system comes with all necessary tubing and fitting to connect to a single pressure source. The small size of 200x25x25mm (without tubes attached) allows to position solutions near your sample. Can be attached to a 1 ft. rod (included). Comes with X-block to attach onto a standard 0.5 in. stand. Includes replaceable plastic tubes 15ml, PTFE tubing, fitting and tubing to connect to a pressure source

Provided fitting allows you to connect tubes directly to valves of perfusion systems, and the output from valves directly to the manifolds or custom tubing and chambers. All our manifolds can be connected, including zero-dead volume, luer-lock, and miniature manifold for single cell perfusion. Shown on the picture, is SVDS2 system connected to the pinch valves of PS-8H setup. Output from SVDS2 then goes to ZMM manifold to provide liquid delivery and solution switching inside a Petri dish with PDI insert inside. The outflow is provided through a suction tubing of MTH-S holder. **Item#: SVDS2**







Small Volume Delivery System with pressure switch, SVDS2-P This is

the same SVDS2 manifold for 15ml tubes with incorporated pressure switch, which is controlled by PC-16 controller. It allows you to connect tubes directly to the manifolds without using valves. Ideal for use with custom fluidics devices and zero-dead volume manifolds that do not have back-fl , although the system has an input port for the secondary balance pressure. The valve controller can be programmed using built-in timers to generate solution sequences. Requires pressurized gas to deliver the solutions.

The system comes with all necessary tubing and fitting to connect to a single pressure source. The small size allows to position solutions near your sample. Comes with X-block to attach onto a standard 0.5 in. stand. Includes replaceable plastic tubes x8 15ml, PTFE tubing, fitting and tubing to connect to a pressure source, and cable to connect to the valve controller. **Item#: SVDS2-P**

Small Volume Delivery System SVDS1 For use with small chambers, lab-on-chips, and intracellular perfusion. Can be used with miniature manifolds, perfusion systems. Requires pressurized gas to deliver the solutions. Solutions can be also withdrawn using controlled flow or vacuum systems. Can be used to collect samples by aspiration.

The majority of available perfusion systems have long lines of tubing, which have to be filled before conducting experiments. However, sometimes applied substances are available only in limited quantities or are extremely expensive, prohibiting the usage of conventional perfusion. This system utilizes small plastic tubes with conical bottom and thin PTFE tubing to connect to your setup. It can be used with as little as 100 µl volumes of perfusate. Tubes with solutions are simply threaded into the holder. Solutions are easy to refill during the experiment. The system comes with all necessary tubing and fitting to connect to a single pressure source, if required. The small size of 91 x 48 x 17 mm (without tubing attached) allows to position solutions near your sample. Can be attached to a 1 ft. rod (included). Comes with X-block to attach onto a standard 0.5 in. stand. The body has 6.5 mm I.D. opening, which allows to mount the system on a micromanipulator. Includes replaceable plastic tubes 2/3.5ml, PTFE tubing, fitting and tubing to connect to a pressure source, when ordering. **Item#: SVDS1**

Small Volume Delivery Systems

Catalog No.	Description
SVDS2	Small Volume Perfusion System SVDS2
SVDS2-P	Small Volume Perfusion System SVDS2 with pressure switch
SVDS1	Small Volume Perfusion System SVDS1

Digital Pressure Controllers with RS232 port

For use with small volume delivery systems, pressure cylinders and solution switches. Generates pressure up to 15PSI (does not require an external source of pressure). The controller regulates output pressure to provide defined solution flow through sample chambers, microfluidics chips for example. Prevents flow blockage by bubbles inside solutions. Simple to use. This is an advanced alternative to syringe pumps (easy solution refill and unlimited volume). PC-R15/10 a source of pressure with stability of 0.1mmHg for smooth liquid flo in sensitive fluidic devices, and RS232 port to monitor and SET pressure. Item#: PC-R15/10

- Output: max pressure 7.5 / 15 PSI (385 / 775 mm Hg)
- Stability: 0.5 mm Hg
- **Connectors:** Easy-connect for 1/8in. O.D. tubing; 10-32 threaded
- Controls: START/STOP, CLOSE/OPEN output touch screen PRESSURE settings, RS232 port to set and monitor pressure
- **Dimensions:** 6 x 13 x 9in.
- Power: internal 120/230VAC power supply

Pressure regulator For use with small volume delivery SVDS1 and pressure cylinders PC. Connects to a cylinder with a compressed gas mixture (max. input 300PSI). The controller regulates output pressure to provide consistent defined smooth solution flow through sample chambers and microfl ics chips (prevents flow blockage by bubbles inside solutions for example). Simple to use. Di ferent output pressure ranges are available upon request. **Item#: PC-100-25**

• Indicators: PRESSURE digital display

Pressure Controllers

Catalog No.	Description	
PC-R10	Pressure controller, adjustable up to 10PSI - 510 mm Hg - output.	
PC-R15	Pressure controller, adjustable up to 15PSI - 775 mm Hg - output, unregulated vacuum	
PC-100-25	Pressure regulator, adjustable up to 30PSI output	



Digital Pico-Injectors Spritzers with RS232 port

Generate pressure up to 15PSI (higher pressure range is available upon request). Do not require an external source of pressure (unless pressures above 25PSI are required). The controller regulates output pressure to provide defined solution flow through p fer pipettes and tubing. Simple to use. Programmable timers and sequences with 1ms resolution. **RS232 port to switch, monitor and SET pressure.**

- Output: max pressure 15 PSI (775 mm Hg)
- Stability: 0.5 mm Hg
 - Connectors: Easy-connect
- Indicators: PRESSURE digital display
- Controls: wireless remote touch screen PRESSURE settings,

- RS232 port to set and monitor pressure
- **Dimensions:** 6 x 13 x 9in.
 - Power: internal 120/230VAC power supply



4-Channel pico-injector spritzer with x4 independent pressure

controls Provides independent control for each channel, even if one of the channels remains open to the air. For use with puffer pipettes, small volume delivery SVDS1 and pressure cylinders PC. The controller regulates output pressure up to 14.5PSI to provide consistent defined smooth solution flo through sample chambers and microfluidics chips (prevents flow blockage by bubbles inside solutions fo example). Simple to use. Different output pressure ranges are available upon request. **Item#: UC-4**

8-Channel pico-injector spritzer For use with puffer pipettes, small volume delivery SVDS1 and pressure cylinders PC. The controller regulates output pressure up to 14.5PSI to provide consistent defined smooth solution flow through sample chambers and microfluidics chips (prevents flow blockage by bubbles inside solutions for example). Simple to use. Different output pressure ranges are available upon request. Item#: UC-8

1-Channel pico-injector spritzer For use with puffer pipettes, small volume delivery SVDS1 and pressure cylinders PC. The controller regulates output pressure up to 14.5PSI to provide consistent defined smooth solution flow through sample chambers and microfluidics chips (prevents flow blockage by bubbles inside solutions for example). Simple to use. Different output pressure ranges are available upon request. Item#: UC-1

Pressure Controllers

Catalog No.	Description
UC-4	4-Channel pico-injector spritzer with x4 independent pres- sure pumps
UC-8	8-Channel pico-injector spritzer
UC-1	1-Channel programmable pico-injector spritzer
PC-16P	16-Channel Valve Controller, programmable, with 15PSI pressure pump, for use with PS-V8P 8-channel pressure switch
PS-V8P	8-Channel pressure switch, requires a valve controller



Perfusion . Accessones

Modular Design for Extreme Flexibility

- Miniature Manifolds for single cell superfusion
- Zero-dead volume manifolds
- Fitting to any custom systems and tubing
- Laboratory stands for vibration free operation
 - Microscope adapters
 - Pressurized solution holders
 - Compatible with Temperature controlled and Perfusion systems

Miniature Manifolds

Miniature Manifold for Single Cell Superfusion Micro-manifolds are used to achieve fast solution application to small samples (single cells, for example). Due to the small size of the sample, solution exchange around the sample can happen in as fast as few ms. The micro-manifolds also offer advantage of not contaminating the whole bath chamber, but applying the substances locally (provided that perfusion chamber is used with frequent wash). Comes with three replaceable threaded tips of 360, 250 and 100 micron I.D. for single cell and small tissue superfusion. Incorporates 2 ft. long Teflon tubing for direct connection to perfusion systems. Inside Teflon tubing is easy to wash. The threaded replaceable tips are washable and allow you to use the manifold with solutions under higher pressure. The length of tips is around 1 in., and can be cut to the required length. Incorporates 10cm long 4mm O.D. rod to mount on miniature manipulators and 7mm O.D. adapter to mount on regular manipulators. Incorporates eight separate channels. If used with less than 8 different solutions, multiple channels can be filled with the same solution, for faster wash-out for example. Requires a perfusion system. Can be used with small volume delivery systems, SVDS1. Includes two nozzles to use with small volume chambers as a regular manifold (the rod fits inside magnetic holders MTH). **Item#: MM**



- Channels: 8-channel, 360 micron
- **Output:** replaceable 250 and 360 micron tips, and two barbed nozzles
- **Connecting tubing:** incorporates 2ft. tubing per channel with luer connectors

Replacement Tip, Threaded, Set of 4 Set of four removable tips with threaded connector for the Miniature Manifold MM. The length of the tip is around 1 in. It can be cut shorter if required. Choose inside tip diameter when ordering. **Item#: TIP-MM**



Zero-Dead Volume Manifold Zero-dead volume facilitates solution exchange inside small volume perfusion chambers. The output channels can be adjusted at a different height to prevent contamination of solutions. The outputs for lower concentration solutions, for example, can be positioned higher so that they do not mix with other solutions. The upper channels can be also used to provide suction of excess of solution from small volume perfusion chambers.

Incorporated magnetic holder allows you to position the manifold anywhere around your sample. Two thumb screws fix the manifold in required position: height, angle, length. Comes with 2 ft. long Teflon tubing, attached to polyimide 250/360 micron I.D. channels. All tubing is replaceable and washable. Perfusion system or/and pressurized Small Volume Delivery System SVDS1 is required. Can be used with small volume PCCS2, CSC chambers and petri dish inserts. Consider microbore tubing fitting PS-kit. Ships configured with six 360micron channels, which allow you do make from 1 to 6-channel manifolds. Specify if 8-channel 250 micron I.D. channels are required. Item#: ZMM

• Output Channels: 6-channel, 360 micron

per channel with luer connectors





LUER-LOCK Manifold This luer-lock manifold can be used with any needle, connecting tubing, nozzle or catheters that have luer connector. Inside tubing is 360micron diameter. Incorporates 2 ft. long connecting tubing with luer connectors. Light weight design allows one to attach the manifold directly to small chambers and animals for infusion/perfusion. Can be used with regular, controlled flow or pressurized perfusion systems. Includes a set of nozzles, from 30 to 16 gauge. **Item#: PM**

- Channels: specify, from 2 to 16, 360 micron
- Output: replaceable luer nozzles
- Connecting tubing: incorporates 2ft. tubing
 per channel with luer connectors



Teflon Perfusion ManifolFor use with PS-xx perfusion systems. Comes with short piecesof Teflon tubing inserted, which fit Ptubing. Tygon tubing fits over 0.067 in. OD polyethylene tubing.Fits into MTH1 magnetic holders. This item is included with automated miniature perfusion systems. Canbe reduced to less number of channels by inserting plugs to close the unused channels. Item#: TPM

Miniature Manifolds		
Catalog No.	Description	
MM	Miniature Manifold for Single Cell Superfusion	
tipMM-360	Replacement 360 micron tips, set of 4.	
tipMM-250	Replacement 250 micron tips, set of 4.	
tipMM-100	Replacement 100 micron tips, set of 4.	
MMH-MM	Miniature manifold and micromanipulator on magnetic holder	
PM-2	Luer-Lock Manifold, 2-channel	
PM-4	Luer-Lock Manifold, 4-channel	
PM-6	Luer-Lock Manifold, 6-channel	
PM-8	Luer-Lock Manifold, 8-channel	
PM-10	Luer-Lock Manifold, 10-channel	
PM-12	Luer-Lock Manifold, 12-channel	
PM-14	Luer-Lock Manifold, 14-channel	
PM-16	Luer-Lock Manifold, 16-channel	
ZMM	Zero-Dead Volume Manifold, 6-channel	
ZMM-8	Zero-Dead Volume Manifold, 8-channel	
TPM	Teflon Perfusion Manifold	

Tubing and Fitting

Tygon Tubing 1/16 inch I.D. 50 ff. Crystal clear, flexible durometer 55 tubing of superior quality. Non-oxidizing, non-toxic, non-contaminating, odorless, tasteless. Grips tightly to glass or metal, bends to sharp radius. Complies with Federal Specifications L- -790A Type II for lab applications. . Item#: TYGON-16

Perfusion Fitting Kit This kit has everything you need to match different tubing and systems together. Compatible with 1/16in. I.D. soft tubing, and polyethylene PPT tubing. Comes in a plastic box, more than 100 pieces. **Item#: PS-KIT**

Silicone Pinch Valve Tubing 1/16 in. I.D., 1/8 in. O.D., 50 ft. Can be used with pinch valve perfusion systems. Item#: SILICON-8

Tubing and Fitting

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Catalog No.	Description
TYGON-16	Tygon Tubing 1/16 inch I.D., 50 ft.
PS-KIT	Perfusion Fitting Kit
PPT	Polyethylene Tubing, 100 ft.

Syringe Stand - Holders

Threaded Post and X-Block For use with stands, or syringe holders. These 1 foot long 0.5 in. posts can be threaded into each other to form modular constructs. They fit to our perfusion acce - sories and systems, including solution switches and flow control units. Includes X-block.. **Item#: SH-PX**

Syringe Holder, Anti-Vibration, SH-1A This is a universal 0.5in. stand. The mounting base inhibits vibrations from perfusion systems to pass through microscope tables. Several mounting options: the stand can be mounted to surfaces with M8 threaded holes. It also includes both, a stand to place the holder on non-magnetic surfaces, and a strong magnetic base. Includes three 0.5in. posts, which allow you to extend the holder up to 3 feet high. Elevated to sufficient height, this stand can be used for animal perfusion, if combined with manual flow control valves (see below). Comes with SH-10 syringe holder for 50-60ml syringes, and 16 adapters for smaller volume syringes. Includes eight stop-cocks and fitting for 1/16 in. I.D. soft tubing. The magnetic base diameter is only 2.50 in. Includes 50 feet of Tygon tubing. **Item#: SH-1A**



Syringe Holder SH-10 Syringe holder for eight 50 ml syringes. Can be fixed on a 0.5 in. post with a floweret head scre . The syringe holder has slots for tubing, so that syringes do not have to be disconnected while taking them out for refill. Comes with eight 50ml syringes and adapter rings for smaller volume syringes. Included with item SH-A1 above. **Item#: SH-10**

Cylinder to Pressurize/Oxygenate Solutions, Set of 8 A set of autoclavable cylinders to pressurize your solutions. Can be used to drive solutions through 100 micron tip of MM manifold, for example. Can be also used to saturate solutions with gases (bubbling) by feeding a thin tubing inside the cylinder. Comes with stop-cocks and fitting for 1/16 in. I.D. tubing. Includes a 3-way valve to connect to a pressure source, to release the pressure, to refill the cylinde , or to connect to a source of gas mixture (oxygenation, for example). Comes with threaded cover for easy refill. Material: polypr pylene. Specify volume when ordering. Large 650ml volumes are available upon request. Cylinders with built-in 10, 25 or 40 micron filters are also available (specify when ordering). Volumes up to 100ml fit to our SH syringe holders. Item#: PC



Gas Mixture Delivery Adapter - Pressure manifold SH-A

Adapter for syringe holders to connect to a gas source to saturate/bubble eight solutions during experiments (CO2 saturation or oxygenation, or pressurizing the solution.) Comes with X-block to fit 0.5 in. posts. Includes 9 stop-cocks and plugs to close unused channels or the common inlet. It also comes with tubing and fitting to connect to output barbs and thin tubing to form bubbles inside the solutions. Can be used with stones, or any other diffuser, to bubble larger volumes. Can be also used to pressurize solutions by connecting to pressure cylinders PC. Can be connected to another adapter to use the same source of gas mixture/pressure.. **Item#: SH-A**

Accessories

Catalog No.	Description
SH-PX	Threaded Post and X-Block
SH-1A	Syringe Holder on Magnetic Base
PC-10	Cylinder to pressurize/oxygenate solutions, 10 ml, set of 8
PC-50	Cylinder to pressurize/oxygenate solutions, 50ml, set of 8
SH-10	Syringe Holder
SH-A	Gas Mixture Delivery Adapter

Manual Flow Control

Two-ways manual valve - stop-cock Manual valve to stop inline liquid/gas flo . Female luer-lock is on one end, and male luer-lock is on the other end. Eight pieces are included in PS-FLOW kit (see table below). Mating luer-lock barbed connectors for different size tubing are included in PS-KIT.

Three-ways manual valve This manual valve redirects flow of liquid/gas between three outlets: two are female luer-locks and one is with male luer lock. Eight pieces are included in PS-FLOW kit (see table below). Mating luer-lock barbed connectors for different size tubing are included in PS-KIT.

Flow Dial Regulates liquid flow in gravity driven perfusion setups. Can be used to provide uniform flow rate in di ferent lines of multi-channel systems. Barbed connectors on both ends for 1/8in. I.D. tubing. Eight pieces are included in PS-FLOW kit (see table below).





Manual Flow Control

Catalog No.	Description
PS-FLOW	Flow control kit
PS-KIT	Perfusion Fitting Kit

Protocol Automation

Computerized Stations to Perform Routine Protocols

- From 2 to 16-Channel Complete Systems
- Can be linked together to control up to 320 channels through RS232/USB
- Compatible with Imaging & Data Acquisition Systems
- No electrical noise during switching
- Works with Temperature Controlled Systems
- Can be used to program cycle reactions, PCR for example

Multi-Channel Systems to Control and Process Samples This is a

computerized setup/robot to manipulate environment in small volumes - around live samples, for example. The miniature size allows you to process samples directly on microscope stages. Since you do not have to remove samples from the microscope stage, this can be used to relate live and processed samples before and after treatment, for example. Can be used with any cell chambers, including LabTek chambered coverglasses from Nunc and multi-well plates. The minimum 2-channel configuration includes 2-channel solution handling unit and 8-channel solution switch to mix up to eight different solutions. The system can be configured so that there is no contamination between critical components/reagents. Shipped with control software installed on a new Dell laptop/notebook computer. Can be preprogrammed for any protocol, including cell staining and labeling. Systems with temperature and gas environment control are also available.

Bioscience Tools Software Automation Package This software package can automate any protocol or process, which involve solution switching, mixing, flow and temperature control, test substance application and environment manipulation. Can be used to automate your routine sample treatment or staining procedure, by entering protocol parameters from any commercially available biochemical kit. If you contact us with specific protocol request, we will ship you the package configure and ready to use for the protocols required. This automation will save you considerable amount of time and ingredients. You do not have to dilute chemicals to the required concentrations, and software will dispense just necessary amount of solution to perform the reactions.

Using our proprietary controller, you can work with any hardware, which accepts 8-bit digital I/O or/and TTL signals. The controller can read digital and analog signals to program triggered events. This can be used to control the process by external software, imaging, for example.





The package comprises two major parts: editing and hardware control. Initially, you create or open an existing protocol. Adjust the required solution application and mixing sequences, and then, run the protocol when needed again and again.

The execution part allows you not only run the protocol automatically, but switch channels and external devices manually. With simple and user friendly interface, the protocol can be stopped at any time. The time sequence can be verified by accessing the time log

Catalog No.	Description
BT-1	Process and Treatment control software.
CFPS-2U	8-Channel Perfusion Controller
PC-16	Basic 16-Channel Valve Controller
TC2-80-150	2-Channel Bipolar Temperature Controller, with automatic cooling and R\$232 control

Automation software and controllers