

huber

Dynamic Temperature Control Systems • Chillers • Bath Circulators • Specials • Accessories



Pilot ONE® Touchscreen Controller

Catalogue 2013/2014

high precision thermoregulation

in Laboratory, Pilot Plant and Production



high precision thermoregulation in Laboratory, Pilot Plant and Production

We are the technology leader for high precision thermoregulation solutions in research and industry. Our products ensure precise temperature control throughout the whole world in laboratories, pilot plants and production processes. Our product range offers temperature control solutions for applications from -125 to +425 °C.

We have been driving technological development in the field of liquid temperature control with continuous innovations since 1968. The introduction of the Unistat technology was a revolution in temperature control, setting the tone for thermodynamics and accuracy today. In addition to dynamic temperature control systems, our product range includes chillers, classic heating & cooling circulators and a range of special solutions and bespoke systems.



For the fourth year running we have been presented with the TOP 100 award for being one of the hundred most innovative small and medium sized companies in Germany. In 2012 we were additionally awarded the prize for 'Innovator of the year'.





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What's new at Huber?

new

Pilot ONE® – One for all!

In our latest temperature control catalogue, we are pleased to present the new **Pilot ONE** controller. Under the motto „one for all and all for one!“ **Pilot ONE** offers the latest touchscreen technology with the look and feel of current smart phones. The **Pilot ONE** is fitted on all Unistats, Unichillers and Compatible Control circulators. Our unique Plug & Play technology means that virtually the entire port folio of Huber units will be modernised through increased functionality and new features. It is fully backwards compatible with older units that use the “CC-Pilot” or “Unistat-Pilot”.



The Managing Directors Daniel and Joe Huber

Website shines in new splendour



Our website www.huber-online.com has been given a makeover and has many improvements to help access important product information. Equipment pictures now have a zoom function and the product information has also been improved. New symbol buttons characterise the features of the equipment and provide information on control technology. The download section has been expanded with technical articles and white papers. Other new features are the “Wish List” function for storing and comparing products and the newsroom which provides all new product and company information.

Now we are on Facebook!

You will now also find all of the most up-to-date news from Huber on Facebook. Through the fan page we wish to inform customers, partners and interested parties even quicker and more directly. Apart from current information about products, services we offer and scheduled dates you will also find, at irregular intervals, questionnaires, competitions and practical tips on our Facebook page.

Visit us at: www.facebook.com/HuberGMBH



Hello, I'm Hubear!

Hello, my name is Hubear. I am the mascot of Huber Kältemaschinenbau and I am happy to travel all over the world! Therefore my friends at Huber take me along on their holiday trips and business trips. You are able to see in my picture album on Facebook and/or in the picture gallery where I have already been. By the way, I am also available to take away as a cuddly soft toy. Simply visit the Huber team at an exhibition and ask for me!





Modern technology, easy operation – the new Pilot ONE®

Pilot ONE®

The new touchscreen controller for Unistats®, Unichillers® and circulators

The new **Pilot ONE** controller offers comfortable navigation, new features and advanced control technology for new and old Huber temperature control systems. The introduction of new **Pilot ONE** gives a complete solution to the entire Huber product range. Now one controller offers all the previous advantages of the Unistat-Pilot or CC-Pilot with many more features and benefits. Depending on requirements and budget, Huber now offers complete solutions for control from the new **Pilot ONE** or the lower cost controller MPC. The **Pilot ONE** offers the same unique E-grade as its predecessors, offering easy functionality upgrade at anytime via an activation code.

- ▶ Convenient touchscreen operation
- ▶ Plug & Play, backwards compatible
- ▶ USB and Ethernet interfaces
- ▶ Extended language support



Chic design and comfortable touchscreen



Connections for LAN and USB (Host, Device)



Extended language support (11 languages)

Innovator of the year 2012

Germany's most innovative small and medium-sized enterprises (SMEs) possess outstanding inventive capabilities, use exemplary innovation processes and are highly adept at translating ideas into market success. Ranga Yogeshwar presented these companies with the prestigious TOP 100 award in Friedrichshafen on 22 June 2012. This is the fourth time that we have won this accolade „Innovator of the Year“.

Customer contact is also maintained by sharing information and ideas – at meetings such as the Tango Club where major users of Huber machines dance the tango in the truest sense of the word. Discussions in the club draw them elegantly into the pro-

duct-development process at an early stage. „After all, it takes two to tango“, quotes Daniel Huber. The introduction of touch screens for using the thermostats on the machines – an idea that emerged at the club – shows how successful this can be.



Ranga Yogeshwar presented the company with the prestigious TOP 100 Award



Materials planning and Construction



Award ceremony on 22 June 2012

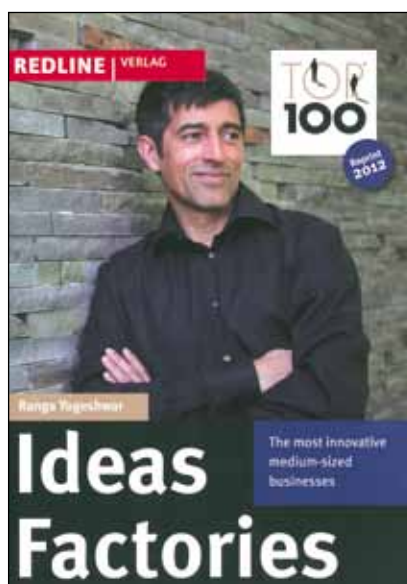


The new Multitouch Controller Pilot ONE®

The innovative strength impressed the TOP 100 panel of judges. Edelgard Bulmahn, Federal Minister of Education and Research (off-duty) and „TOP 100“ member of the jury, said: „Peter Huber succeeds impressively in combining an informal culture of innovation with systematic innovations management. The vibrant innovation culture extends across all levels of the company and the network this creates promotes a productive exchange of ideas among different functions in the company.“

Professor Nikolaus Franke and his team from the Vienna University of Economics and Business

Administration have examined the innovations management systems used by 281 medium-sized German companies. The best of them receive the prestigious TOP 100 award. Daniel Huber was delighted to have won this accolade and emphasised that this achievement had been a team performance. „I see this award as a recognition of the work done by our staff. Their enthusiasm and efforts are the key driver behind our innovation. At the same time we have put in place the right processes to ensure that this creativity can unleash its full productive potential. Our success is a combination of these two factors.“



Environmentally friendly temp

Our customers were the first who could purchase environmentally friendly refrigeration down to -125°C . As the prohibition of CFCs came into force, there were already thousands of environmentally friendly Huber machines in operation. As a result of this advantage whilst other suppliers were working on producing CFC free systems, we were able to concentrate on reducing energy requirements. Today a large proportion of our product lines are available with natural refrigerants.

Behind our environmental commitment, stand both business and ideological considerations. In our view, worsening environmental conditions make action essential. We see the development of environmentally friendly temperature control machines as active environmental protection.

Take one look at our manufacturing facilities, it can be seen that we take environmental protection seriously. The Tango factory is a thermodynamic master-

piece, and an energy saving wonder. Massive concrete, triple glazed windows, a thick layer of insulation and 40 km of plastic tubing in the floor, ceiling and walls give a massive heat exchanger. As a result of this we heated a volume of around 60000 m^3 with minimum consumption of energy. The majority of the required heat energy comes directly from our production – mainly from the test run of our products.



erature control

Natural
Refrigerant!

ECO
FRIENDLY



The Huber action "Environment plus"

1982 **MISSION Environment plus:** First intelligent cooling circulator with cooling power adjustment and water cooled refrigeration with water saving energy management.

1993 **MISSION Environment plus:** First to convert to non CFC refrigerants. 7 years before the legal phase out.

1994 **MISSION Environment plus:** First to convert to non H-CFC refrigerants. 6 years before the legal phase out.

2006 **MISSION Environment plus:** Refrigeration circulators with the option „natural refrigerant“ in accordance with the regulations of the global green house policy of F. Hoffmann-La Roche AG.

2009 **MISSION Environment plus:** Environmental friendly cooling with CO₂ refrigeration machines in accordance with the guidelines regarding the global green house policy of F. Hoffman-La Roche AG.

2010 **MISSION Environment plus:** Process heat coupling: Unistats are combined with already available primary energy sources such as steam, cooling brine or liquid Nitrogen.

Controller and Functions

Depending on requirements and budget units with two different types of controllers are available. The MPC offers simple 3-button operation, LED temperature display and low prices therefore it is the first choice for many routine tasks. The **Pilot ONE** touchscreen controller is the controller of choice for more

demanding applications. Unique Plug & Play technology guarantees highly precise results with professional features, simplifying daily work. Thanks to the electronic upgrade system, functionality expansion is possible at any time – even retrospectively on existing equipment.



The arctic fox lives in temperatures as low as -80 °C. Apart from a highly insulating fur, the compact nose, small ears and short legs ensure a small body area and minimise unnecessary heat loss – a clever way to regulate body temperature.

Advantages & Functions

- Two types of controllers: **Pilot ONE** & MPC
- Advanced temperature control
- Easy to operate
- Electronic upgrade for the expansion of features and functionality
- Colour TFT touchscreen (**Pilot ONE**)
- Extensive security features
- Integrated programmer
- Digital and analogue interfaces
- Multiple options for data communication
- Removable controller which can be used as a remote control
- Remote operation via network and Internet

Practical Examples:

- » Automatic execution of temperature profiles
- » Data recording via RS232 or USB interface
- » Activation of additional functions via electronic upgrade for more complex applications
- » Integration in a process control system via analogue interface
- » Remote control when operated under a fume hood
- » Automatic adjustment of the control parameters under heavily changing system conditions



For more information
scan this QR-Code



One for all and all for one —



Temperature control is as simple as making a call: Chic design and comfortable operation via a touchscreen, just like a smartphone.

The new **Pilot ONE** is a further milestone in the history of Huber's innovative temperature control systems. This new generation controller, with pioneering technology and advanced control functions, brings numerous advantages to routine work. The extensive features list includes: a brilliant 5.7" TFT touchscreen display, USB and network connections and additional languages. User operation is, as always, at the forefront of our designs and the **Pilot ONE** has a convenient navigation system with icons – making routine work simpler. Software wizards also help you set up, ensuring correct settings and an optimal combination of application and temperature control unit.

Thanks to USB ports, data can now be easily stored directly on a USB stick. The USB port also allows connection of the system to a PC or notebook. Together with the spy software, requirements such as remote control or data transmission are easily achieved in a cost-effective manner. Network integration is easy with the Ethernet port.



Advantages

- User interface with smartphone-like touchscreen
- Bright TFT display with brilliant colours
- Clear, legible display even in bright environments and visible from oblique angles
- Backwards compatible with many Huber systems (models with Nuevo technology, approximately 2006 onwards)
- Extended language support, now offering a range of European and Asian languages
- Extensive integrated help functions
- Built-in glossary of technical operating terms & information
- Wizard support for easy start-up, filling, conversion, adjustment, etc.
- Individually configurable favourites menu
- USB and Ethernet interfaces for communication and remote control
- Process data logging direct to USB stick
- Storing and loading temperature control programs to/from USB stick
- Graphic display of temperature gradients
- Display switching using finger swipe
- Security concept with multi-level user options
- Integrated service recorder allows retrospective storing of data protocols and loggings to USB stick, for process analysis or service purposes
- Free firmware updates

the new Pilot ONE® controller

On the home screen, all the necessary information can be seen at a glance. All important operating parameters and temperature values are neatly displayed and the temperature profile is represented as a real time graph curve. A variable status bar will keep you up to date.

The **Pilot ONE** offers the same easy to use comfort features in familiar "smart-phone" and "Tablet" style icons: scalable temperature display, customisable online help and the ability to present text in 11 languages are useful examples of the ease of use this technology brings.



Touchscreen technology with the look and feel of a smartphone

- ▶ 5,7" TFT touchscreen
- ▶ Graphic with 480 x 640 Pixel
- ▶ Navigation in 11 languages
- ▶ USB and Ethernet
- ▶ Process data logging

new



The appropriate controls

An easy decision:

The modern **Pilot ONE®**, and the simple MPC® offer a range of functionality to suit all temperature control requirements.

The two controllers mean that all applications requirements are covered. Depending on budget and application, a controller can be selected that meets the applications requirements. If only a basic functionality is required, an inexpensive model with an MPC could be chosen. If the application requires

more extensive features, a unit that has the powerful **Pilot ONE** controller could be the best choice. **Pilot ONE** models offer the added advantage of functionality upgrades with "E-grades" where the software can be updated by entering a unit specific upgrade code.

MPC® Controller:

- ▶ Simple operation with three keys
- ▶ LED display
- ▶ Basic functions

Economic, low cost, robust:
MPC®-Controller for
simple applications



for each application

Our unique Plug & Play technology means that all models are equipped with easily replaceable controllers. This technology allows rapid progress in the development of operator comfort and control. Since the 1980s Huber systems have had removable controllers allowing the basic components of our products to be

easily interchanged. Thanks to backwards compatibility, it is even possible to retrofit old equipment with modern technology. The base unit and controllers are matched automatically – simply remove the old controller, fit the new one and go!

Pilot ONE® Controller:

- ▶ Comfortable touchscreen operation
- ▶ 5,7" TFT colour display
- ▶ Professional features
- ▶ USB & Ethernet
- ▶ 11 languages

User friendly, many functions
and exchangeable thanks to
Plug & Play technology:
Pilot ONE®

Plug & Play Controller	Cat.No.	G	Price
Unistat®-Control ONE	503.0010	3	
Pilot ONE®	503.0011	3	





Controller Functions



Which controller for which product?	Pilot ONE®	MPC®
Unistat® Temperature Control Systems		
• Unistat® Petite Fleur®	✓	
• Unistat® tango®	✓	
• Unistat® 405 – 1015w	✓	
• Unistat® T300 – T350	✓	
• Unistat® TR401 – TR402	✓	
Chiller		
• Minichiller®		✓
• Unichiller® 006 – 025		✓
• Unichiller® 017T – 500T	✓	
• RotaCool®		✓
• Immersion Cooler TC®45-E – TC®100-E		✓
Bath Circulators		
• Immersion Circulators	✓	✓
• Bath Circulators, Polycarbonate and stainless steel	✓	✓
• Bath Circulators, stainless steel	✓	✓
• Visco Baths	✓	
• Bridge Circulators	✓	
• Cooling Circulators to -30°C	✓	✓
• Cooling Circulators to -90°C	✓	
• Ministats®	✓	
• Variostat®	✓	
Specials		
• Beer Force-Ageing-Test Bath	✓	
• Hotbox	✓	
• Heat Transfer Station	✓	

All Unistats® have the E-grade® „Professional“ factory fitted as standard. Chillers, Bath Circulators and Specials have the E-grade® „Basic“.

Function-Upgrade at any time

Adaptable and a good investment, thanks to the E-grade electronic upgrade function

All circulators and circulation chillers, fitted with the **Pilot ONE** controller, benefit from the unique flexibility offered by the electronic upgrade function. Even in the basic version these machines have easy to use

functionality for mastering most temperature control requirements. Using E-grade, the range of functions can be expanded in order to adapt to special applications. An electronic upgrade is very simple. The user only has to enter a machine specific activation code in order to activate the additional functions. The activation code can be retroactively ordered at any time, and will be sent by E-mail. As well as the standard "Basic" version there are the "Exclusive" and "Professional" to choose from. The upgrades activate additional functions such as the ramp function, programmer, TAC cascade control, adjustable user menus, calendar start, 2nd set point, graphical display and external temperature control.

The E-grade offers an easy and flexible way to adapt an existing machine to growing requirements or more complex applications.



The electronic upgrade allows the functionality to grow with your requirements

Pilot ONE®	Functionality	Cat.No.
Basic	Functions see pages 18/19	
Exclusive (additional to Basic)	<ul style="list-style-type: none"> + Temperature control mode (Internal / Process) + Process data logging direct to USB stick + Display resolution 0,1°C / 0,01°C + Programmer with 3 programs / 5 steps each (max. 15 steps) + Ramp function (linear) + TAC (True Adaptive Control) + Saving / loading via USB 	9495
Professional* (additional to Exclusive)	<ul style="list-style-type: none"> + Programmer with 10 programs / 10 steps each (max. 100 steps) + Calendar start + Ramp function (linear and non-Linear) + User menus can be customised (Administrator Level) + 2nd set point 	9496

* Installed as standard on all Unistats®



Controller functions comparison



Function / Features		Pilot ONE® with E-grade® „Professional“	Pilot ONE® with E-grade® „Exclusive“	Pilot ONE® with E-grade® „Basic“
Thermoregulation	Controller parameter tuning	TAC (True Adaptive Control)	TAC (True Adaptive Control)	predefined ¹
	Calibration program for control sensor (Internal, Process)	5 Point	5 Point	2 Point
	Monitoring (Level protection, Over temperature protection ²)	✓	✓	✓
	Adjustable limit alarms	✓	✓	✓
	VPC (Variable Pressure Control) ³	✓	✓	✓
	Venting program	✓	✓	✓
	Compressor automatic control	✓	✓	✓
	Set point limits	✓	✓	✓
	Programmer	10 prg. / 10 steps each (max. 100 steps)	3 prg. / 5 steps each (max. 15 steps)	
	Ramp function	linear, non-linear	linear	
	Temperature control mode (Internal, Process)	✓	✓	
	Maximum heating / cooling power adjustable	✓	✓	
Display & Operation	Temperature display NEW	5,7" Touchscreen	5,7" Touchscreen	5,7" Touchscreen
	Display mode	graphic, numeric	graphic, numeric	graphic, numeric
	Display resolution	0,1 °C / 0,01 °C	0,1 °C / 0,01 °C	0,1 °C
	Graphic display of temperature curves NEW	Window, full screen, scalable	Window, full screen, scalable	Window, full screen, scalable
	Calendar, Date, Time	✓	✓	✓
	Language: D / E / F / IT / ESP / PT / CZ / PL / RUS / CN / JP NEW	✓	✓	✓
	Temperature format (°C / °F / K)	✓	✓	✓
	Display mode (screen) switch by swiping NEW	✓	✓	✓
	Favourites menu NEW	✓	✓	✓
	User menus (Administrator level)	✓		
	2 nd set point	✓		
Connections	Digital interface RS232	✓	✓	✓
	USB interfaces (Host and Device) NEW	✓	✓	✓
	Ethernet RJ45 interface NEW	✓	✓	✓
	Pt100 external sensor connection	✓	✓	✓
	External control signal / ECS STANDBY ⁶	✓	✓	✓
	Programmable volt-free contact / ALARM ⁶	✓	✓	✓
	AIF (Analogue interface) 0/4-20 mA or 0-10 V ⁷	✓	✓	✓
	Digital interface RS485 ⁷	✓	✓	✓
Various	Alarm signal optical / acoustic	✓	✓	✓
	AutoStart (Mains failure automatic)	✓	✓	✓
	Plug & Play technology	✓	✓	✓
	Technical glossary NEW	✓	✓	✓
	Remote control / Data visualisation via Spy Software	✓	✓	✓
	E-grade Evaluation versions available (valid for 30 days) NEW	✓	✓	✓
	Service data recorder (flight recorder) NEW	✓	✓	✓
	Saving/loading of temperature control programs via USB NEW	✓	✓	
	Process data logging direct to USB stick NEW	✓	✓	
	Calendar start	✓		

Process-relevant data is always in view

The new Pilot ONE® is plain talking, gives user confidence, is easy to operate and keeps the user continuously informed of all relevant process data

The colourful TFT display shows all **Pilot ONE** information in plain text. Process temperature, internal (flow or jacket) temperature, pump pressure and all

TFT Display

Graphical Colour Display

safety-relevant information can be read easily and quickly. The display can be varied as required

and in addition to a concise but comprehensive list of data, the most important information (set-point, actual, and internal/process temperature and Over Temperature limit) are shown in a larger format, making the essentials easier to read from a distance. The temperature resolution can be displayed to 0.1 °C or 0.01 °C and the temperature can be viewed in Celsius or Fahrenheit format.

Depending on the configuration of the system, the pressure is variable using the "VPC" (Variable Pressure Control) feature protecting against breakage, e.g. glass reactor. The parameters of the PID control system can be manually adjusted or with intelligent "TAC" (True Adaptive Control) – the self-optimizing cascade control is fully automated, ensuring tight control and the best results through highly dynamic responses. The "set-point limit" function, "Programmable alarms" and the user-defined alarm actions



add further dimensions to safe working practices. In the event of a problem, visual and audible alarms can be activated. The clock and calendar functions allow individual settings for "auto-start" in the event of power failure or a timed automatic commencement of a program.

A calibrated function facilitates both off-set and span calibrations of the internal and (optional) process sensors. Depending on the software version, a digital and/or analogue interface records data.

E-grade® – Functionality on demand

E-grade® – innovative activation keys for functionality upgrades to suit your budget and process requirements

Every application requires specific functions. If the circulator is to be used in a range of applications it will generally require greater functionality. The required functionality grows with the complexity of the application. The innovative E-grade (Electronic Upgrade) has the answer. Units with the **Pilot ONE**,

E-grade®

Extended Functionality

supplied with the basic version, have a comprehensive range of functions suited to classic temperature control applications. The E-grade allows the functionality to be extended at any time to suit new process requirements and budget. E-grade is simple to do! To extend functionality, a unit specific code is entered via

the controller. This code is specific to the serial number of the unit and can be pre-ordered (entered at the factory) on new units or activated at a later date by the user. The code is sent by email and there are no hardware or software updates required.

See page 18/19 for the table of functions offered by each E-grade.

E-grade®	Cat.No.	Price
Basic > Exclusive	9495	
Exclusive > Professional	9496	
Basic > Professional	9496	

Easy Control

Easy Control – because simple is simply better

You always have everything under control with Easy Control. A simple and intuitive user interface allows quick access to all major system functions and settings. And because simple is better, the **Pilot ONE**

Easy Control

User friendly operation

offers coloured icons to indicate the menu categories. Interactive guides can help you start with

all the messages appearing in plain text on the large colour display – in German, English, French, Italian, Spanish, Portuguese, Czech, Polish, Russian, Chinese and Japanese.

Plug & Play

Plug & Play technology – unique operation since 1982

The modular concept of the controllers facilitates easy field repairs and thanks to the unique Plug & Play technology, both Pilots are easily upgradeable

Plug & Play

Controller

using modern flash technology, as new software versions become available. Circulators and

chillers all operate with a standard user interface; an advantage for users of multiple Huber temperature control systems. The **Pilot ONE** controller can be mounted remotely to control the unit via a data cable, offering unprecedented levels of functionality and flexibility.



MPC® – Simple Low Cost Thermoregulation

Microprocessor Control MPC®

Simple – Low Cost – and only what you need!

The modern low cost controllers do without the unique benefits of the Plug & Play technology. They are the

MPC®

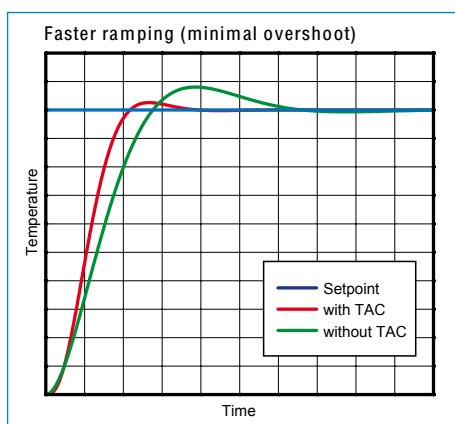
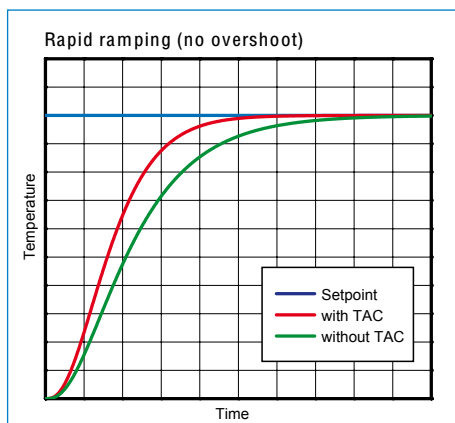
Low-Cost Controller

low cost solution for the Mini-chillers, Unichillers and for combinations of the immersion circulators with baths

made of polycarbonate, stainless steel or with refrigerated baths. When safety is being considered nothing

is compromised, with only three keys required to operate the unit, the display is simple to understand.

Unichillers with MPC controller are optionally available with an RS232 interface. The model name has the „plus“ extension. All combinations of MPC immersion circulators are already fitted with a digital RS232 interface as standard.



True Adaptive Control

Self-optimising temperature control

Varying research criteria and process demands change the thermal load on the temperature control system. What does not change is the requirement for good control.

TAC True Adaptive Control

The solution is „TAC“ which has the capability to automatically change with those demands. By building a multi-dimensional model of the process, the TAC is able to automatically adjust its PID parameters to cope with and respond rapidly to sudden changes in the process.

Operating in both „Jacket“ and „Process“ control, TAC provides responsive and close control. Rapid changes with no overshoot, that is what TAC brings to the process – automatically and under all conditions. User defined ramp rates allows for faster or slower response. If TAC is not required, the user can manually adjust the PID parameters.

| VPC Bypass |





With kind permission of
Roche AG (CH)

Variable Pressure Control (VPC)

Pressure control with controllable soft-start

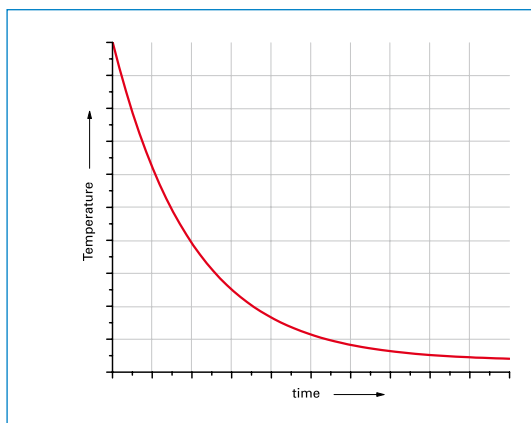
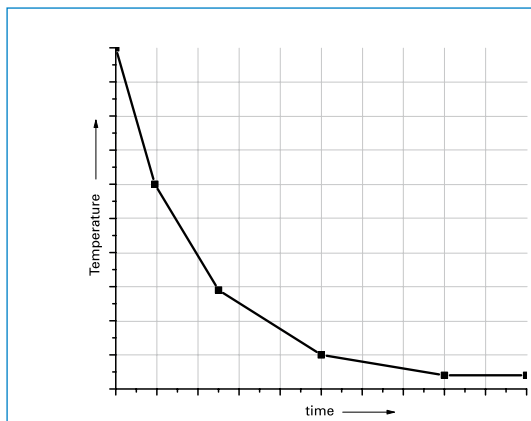
VPC was developed to protect glass reactors from damage caused by high fluid pressure. VPC also compensates for changes in viscosity as heat transfer fluid is heated and cooled. Unistats for typical laboratory applications have a variable speed pump with soft-start, and using a pressure sensor can control their maximum fluid pressure. Unistats with larger capacities can control the pressure using a pressure sensor and a stepless bypass (option). Minimal pressure and maximum flow encourages optimal heat transfer. The VPC enables the best performance to be achieved while remaining within the defined pressure limits of the application.



Maximum HTF flow

Improved pump design together with reduced internal flow resistance gives higher HTF flows with lower HTF pressures meaning more efficient thermal transfer and faster ramping of the process for the same power.

Bench-top and floor standing Unistats that use the new „M24“ pump connections are supplied with „M16“ adapters to allow for convenient fitting to existing systems using „M16“ fittings.



Programmer

Programmer with linear ramp function

Single temperature changes can be achieved using the linear ramp function. The easy to use programmer, with 100 steps, is available for more complex temperature requirements. Individual steps can be pieced together to form a profile. Each step of the program can be selected to be either temperature or time stable. For each step, additional functions (Potential Free contact, Analogue Interface, temperature control mode) can be activated or deactivated.

Programmer
with Ramp Functions

Non-linear Ramp Function (NLR)

Designed for crystallisation processes, non-linear temperature profiles allow higher purity crystals to be produced. Instead of using the temperature programmer to piece together rectangular or linear ramps, e-functions can be used to define a continuous setpoint form. The diagrams show the high precision of the e-function (below) in contrast to a linear ramp (above, with 6 steps).

CoolNet®

CoolNet® – unique valve control

In refrigeration equipment, refrigerant is controlled by a metering valve. Unistat refrigeration works with a CoolNet stepper-motor controlled expansion valve, that has been produced in the Tango Factory since 2002. The valve opening is precisely controlled at between 0 and 600 steps, with a resolution of 0,005 mm/step. This allows the CoolNet to achieve the optimal evaporator flow, and highest possible cooling capacity at each working temperature. Precise and reproducible control for temperatures down to -130 °C.

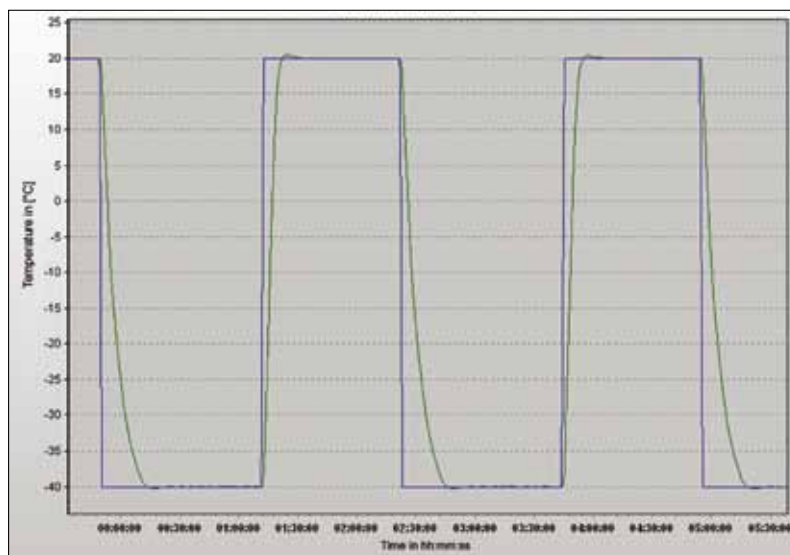
CoolNet®
max. Cooling Power





Reproducibility

Unistats guarantee reproducible thermoregulation results with the highest possible dynamics.



Environmental Protection



90% of all Huber units are supplied with natural refrigerants. This makes us one of the pioneers of ecological and resource-efficient temperature control. We are the only manufacturer which offers large parts of the product range with climate-friendly refrigerants. The current models protect the environment by using refrigerants such as R290, R600a or R1270. In practice the best efficiencies can be achieved and excellent temperature control results.



Firmware Updates

Firmware updates keep your units with **Pilot ONE** controller at the forefront of technology. Free updates allow you to benefit from technical advances and new functions even after the purchase. The software „Pilot ONE Flasher“ is all that is required (download from www.huber-online.com). After the installation the latest firmware can be automatically downloaded from the server and transmitted to the **Pilot ONE** controller.

Safety

Unistats have many features for handling temperature control applications remotely and safely during continuous operation. Over-temperature, setpoint and alarm limits can be adjusted according to the conditions of the application. The temperature and pressure sensors can be calibrated and the microprocessor controller monitors the operating status. VPC (Variable Pressure Control) monitors the maximum pressure in the fluid loop.

Protection+
Level / Overtemperature

Passive components ensure an extraordinarily high level of reliability.

In case of emergency, Unistats can be electrically isolated. For critical processes Unistats offer emergency cooling.

„**Process safety over-temperature protection**“: This unique user-activated feature disables the heater while initiating 100 % cooling should an over-temperature condition be caused by a thermal runaway in the process.

Ex-Protection

Two ATEX compliant solutions are available for ATEX areas:

The Unistat can be placed in a Stainless Steel Ex-p pressure enclosure. Compressed air is pumped in purging the cabinet of any potentially dangerous vapours and creating a pressure slightly above atmospheric to keep potentially explosive vapours out.

ATEX Version available

Alternatively an ATEX certified remote control (II 2G Ex ib IIC T4) is located in the ATEX zone, controlling the Unistat situated in the safe zone.

Heating Power

Many Huber machines can be optionally factory fitted with increased heating power. In practice this can produce shorter heating times even with larger process volumes.

Heating Power
Options available

Communication

The **Pilot ONE** temperature controller has USB and LAN interfaces fitted as standard:

Data can easily be stored directly onto a USB stick via the USB ports on the **Pilot ONE**. The USB port also allows connection to a PC or notebook. Together with the spy software, requirements such as remote control or data transmission are easy and cost-effective.

USB Ports

Remote control & storage

The built-in RJ45 Ethernet connection on the **Pilot ONE** controller allows easy integration of Huber temperature control systems into LAN networks. Remote control, data logging, or integration into process control systems is also straightforward.

Ethernet

Communication via LAN

Where the application requires additional connections, depending on the model, the following optional interface module is available:

Com.G@te®

The Com.G@te has connections which comply with the NAMUR Standard. It has the following interfaces integrated:

- RS232 / RS485 (bi-directional)
- Volt free contact (programmable)
- AIF Analog-Interface 0/4-20mA or 0-10 V
- ECS external control signal

SpyControl®-Software

SpyControl is software which offers all the functions of SpyLight. In addition it allows the user to control one or more machines with a programmer. The user can provide temperature programs for the machines, which then automatically run. Segments of a temperature control program can be entered easily using the Temperature control-Xplorer which is a module of SpyControl. The temperature control programs produced can be modified or changed and archived. The basic course of a temperature control program can also be displayed graphically.

SpyControl®

Control, Visualize, Record

RS232 Digital Interface

Unichillers with MPC controller are optionally available with an RS232 interface. The model name has the „plus“ extension. All combinations of MPC immersion circulators and machines using the **Pilot ONE** controller are fitted with an RS232 interface as standard.

RS232

Data Interface

DV E-grade

DV E-grade allows data access to additional readings and operating parameters of our temperature control systems. This makes it possible, for example, to meet increased technical process requirements or implement a complete record for quality assurance purposes. Another application is the analysis of calorimetric process conditions. These are among others the following: the return temperature, an estimate of the actual temperature, PID, auto compressor, process temperature, coolant temperature and pressure values and the serial number of the unit.

new



Dynamic Thermoregulation

For more than 20 years, the dynamic thermoregulation of the Unistat range introduced a revolution in fluid temperature control. Unistats are the ideal solution for fast and precise thermal control of externally connected applications. In comparison to other circulators, the Unistats offer rapid temperature change and a

wide temperature range without fluid change. There are over 60 models to choose from with cooling powers from 0,7 to 130 kW. What ever the application, Unistats provide professional scale-up offering the same stable process conditions from the development lab to production systems.

TFT Touch
5,7" Colour Display

Plug & Play
Controller

TAC True Adaptive Control

VPC Variable Pressure Control

Easy Control
User friendly operation

Programmer
with Ramp Functions

Protection+
Level / Overtemperature

Heating Power
Options available

CoolNet
max. Cooling Power

huber Natural Refrigerant

ATEX Version available

USB Ports
Remote control & storage

Ethernet
Communication via LAN

SpyControl®
Control, Visualize, Record



The Puma has a so called wonder net, which is a fine spongy tissue filled with blood vessels in its nose and mouth. Evaporation during breathing causes the blood flowing in the brain to be cooled, so the Puma keeps a cool head even during periods of great effort.

Advantages & Functions

- Working temperatures from -125 °C to +425 °C
- Previously unachievable performance
- Highly accurate, intelligent temperature control
- Maximum process stability and reproducibility
- The fastest heating and cooling rates
- High Cooling Power from 0,7 to 130 kW
- Large temperature range without fluid change
- Increased thermal fluid life
- Incredibly compact
- Brilliant 5.7" TFT touchscreen with graphic display
- Comprehensive warning and safety functions

Typical Applications:

- » Reactor systems Autoclaves
- » Pilot systems
- » Miniplant systems
- » Scale up for operational development
- » Double wall reactors
- » Reaction calorimeter
- » Distillation systems
- » Test rigstands
- » Material testing
- » Combinational chemistry
- » Semiconductor industry
- » Kilo labs
- » Vacuum chambers

Functions and features depend on the model, see chapter „Controllers & Functions“ for details.



For more information
scan this QR-Code



Unistats® – Highly dynamic ther

Unistats® should not be compared to conventional technology. Thermodynamically there is no alternative.



Tango® and the big Unistats® for -125 to 425 °C for laboratory and production

Safety is a priority

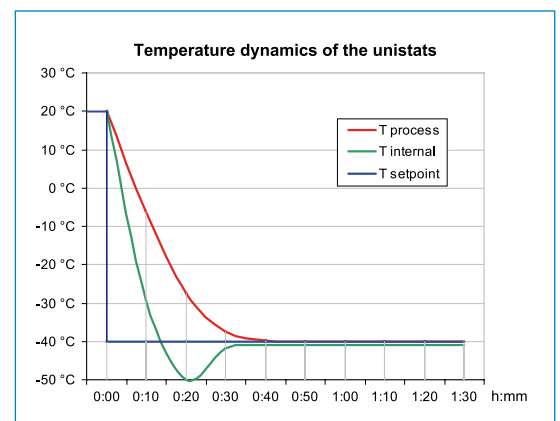
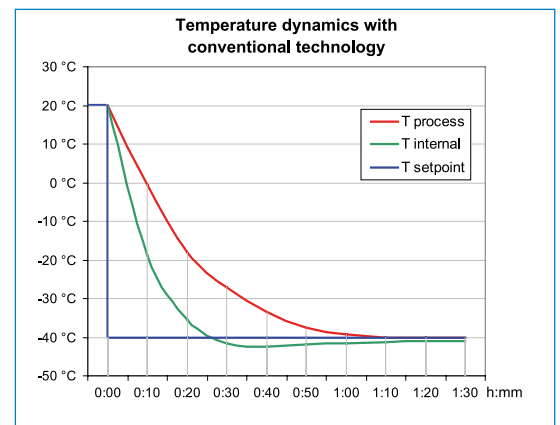
Our engineers know what is required in research and production: **PROCESS SAFETY!**

The security that the critical process temperatures in your laboratory or production facility run exactly as required, with no compromises, every time. Unistats bring peace of mind whilst delivering **PROCESS STABILITY** in high end quality!

Pump technology

Our improvements in pump technology have increased HTF flow rates and resulted in tangible improvements in heat transfer to and from the application.

Predictable, repeatable results and a previously unachievable response to changing thermal loads, provide a much faster return on investment, further improved by the minimal operating costs of the Unistat principle!



moregulation

Conventional baths and circulating chillers operate with a hydraulically open bath.

With open bath technology (picture 1) the bath fluid is un-pressurised and open to atmosphere, regardless of whether the temperature control is internal (A), or external (B). During external temperature control (B) the level must be controlled in two locations. In typical externally closed temperature control (picture 2) where the object is directly (D) or indirectly (C) in contact with the heat transfer medium, the atmospherically open bath is also used to contain the expansion and contraction in HTF volume as the fluid heats and cool.

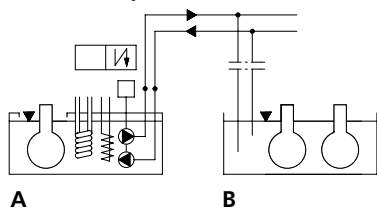
Unistats® embody capacity and dynamics.

Small in size, big in power.

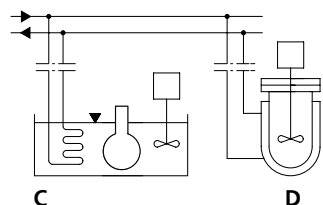
The Unistat System (Pic. 3) combines the efficiencies of effective thermodynamics and modern microelectronics, making it a highly efficient alternative to open bath temperature control technology. Unistats are circulators without a bath. An expansion vessel for thermal expansion and contraction replaces the conventional bath. The expansion vessel is isolated from the thermoregulation of open baths (F). Being hydraulically sealed they can be located below or above the application.

The Unistat principle uses minimal heat transfer fluid (HTF) volume and increased thermal transfer abilities through higher HTF flow rates, reduced HTF pressure and highly efficient heat exchange surfaces. This increases the systems speed of response to changes in demand. Unistats have the most rapid ramping rates, and are capable of cooling rates of more than 100 K/hr. For comparisons in cooling power densities (Watt/litre) please refer to DIN 12876.

Picture 1: Open Baths



Picture 2: Closed Circuits

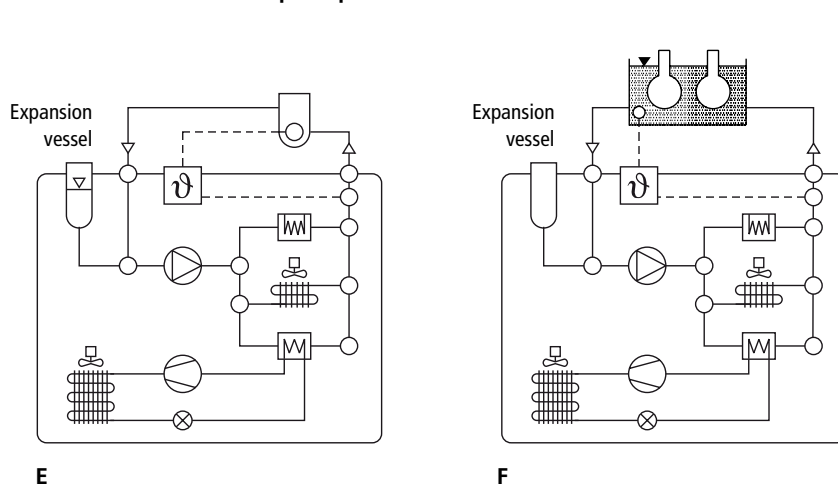


Tango Cub

In 1988 the first generation proved the concept of the Unistat technology. The second generation consolidated and led the growth of Unistat technology into industry. The Third Generation is refined, more efficient and more responsive, gives tighter control and is easier to use.

The international Tango Club (Unistat users across the world) sheds light on the trends of tomorrow. As a result, the range of functions has been increased, and simple control has eased operation. Every function of the Unistat has been subjected to uncompromising tests on applications under industry conditions the quality spotlight of experienced users focused on results.

Picture 3: The Unistat® principle



Large Unistats® in tower cases have small footprints and require little floor space



Unistats[®] – for professional Sc

Predestined for process and chemical engineering

Unistats are predestined for applications in process and chemical engineering, such as temperature control of reactors, autoclaves, Miniplant/Pilot systems, reactor blocks and calorimeters.

Unistat temperature control systems with their unique thermodynamics provide highly accurate and reproducible results, guaranteeing the shortest heating and cooling times and a wide temperature range without fluid change. Environmentally and economically Unistats stand out, offering natural refrigerants and an efficient energy management system for reduced operating costs.



ale-up

Professional Scale-Up

The Unistat range offers temperature control solutions from the smallest process up to production volumes with temperatures from -125 up to 425 °C and cooling capacities from 0,7 to 130 kW. The range offers over 60 models, in sleek tower housings, or flat-build, for flexible scale-up in Research, Kilo-labs, Mini-plant, Pilot-Plant, and Production. Whilst the Unistats grow with the application, their operation and the Unistat principle remain the same.



Unistat®-Advantages

- **The fastest heating and cooling rates**
ideal for isothermal chemical processes
- **Highly responsive**
the first choice for operational safety with exothermic reactions
- **Reproducible precision**
for demanding temperature applications from -125 to 425 °C
- **Incredibly compact**
"volume cooling power" truly powerful, truly compact
- **Wide temperature ranges with no oil change**
DW-Therm thermal fluid offers a temperature range from -90 to 200 °C
- **Large and full colour 5,7" TFT touchscreen**
with graphic capabilities, multilingual, interactive and easy to use
- **The highest cooling power density [Watts/l]**
for dynamic and rapid temperature changes
- **Flexible Communication**
with USB and Ethernet interfaces



Unistats® create space

A compact machine is one that is small with no loss of power. This is measured with the ratio watts/dm³. At every temperature the Unistat is the most compact.

Petite Fleur® – the baby Tango®

The Petite Fleur® is the entry level model for temperature control applications in the mid-range -40 °C to 200 °C.

Plug & Play
3 years warranty

Natural
Refrigerant!

ECO
FRIENDLY

The smallest Unistat®
E-grade professional is included as standard.
Natural refrigerant to protect the environment.



The Tango was the original and smallest circulator of the Unistat range and had been the benchmark for many years. The Petite Fleur in comparison with the Tango, is $\frac{2}{3}$ the size, $\frac{2}{3}$ the power and $\frac{2}{3}$ the price.

The Tango and the Unistats are suitable for externally open baths or closed applications, e.g. reactors. With the expansion tank and the large illuminated sight glass, it is instantly recognisable as a Unistat with all the advantages of the Unistat range.

„Good Day“

All Unistat Models are now fitted with the new touchscreen controller **Pilot ONE**. The picture left shows the usual configuration with the expansion tank and sight glass on the left and on the right the automatic controller and control panel.

Functionality for all Applications

As with the large Unistats, the Petite Fleur, comes with full controller functionality. The powerful variable speed pump combined with the VPC pressure control and the TAC adaptive internal and cascade control ensure the best possible results.

Lift and Roll

Just 260 mm wide the baby Tango is ideally suited to fit in extract hoods. The casters fitted at the back of the unit allow it to be easily manoeuvred into the required position, just lift and roll.



View from the back:
Com.G@te® (optional), M16x1 pump connections

Ready for action

If the application is regularly changed, residual water in hoses and reactors can be a problem. The water mixes with the thermal fluid and inhibits the heat transfer process. The new water separation system allows water to be removed from the thermal fluid during thermal regulation.

More Power

DIN 12876 requires that cooling powers are measured at full pump speed. Decreasing the pump speed reduces the heat energy entering the system. This leads to higher cooling powers and lower end temperatures. The Petite Fleur has an unusually powerful pump. Decreasing the pump speed can make additional cooling power available – an extra 30 to 50 Watts can be achieved. We always quote cooling at maximum pump speed.

Unistat® for Professional Scale-Up and Process Development

The introduction of the Petite Fleur now means that the Unistat temperature control systems are available with cooling capacity from 480 Watts at 20 °C. With a temperature range of -125 to +425 °C and cooling and heating powers up to 130 kW, the Unistat temperature control systems can be combined with customer steam and brine systems and are therefore suitable for applications beyond the 10 m³ class.

Unistats are the only temperature control system in the world which offers professional scale-up from small scale laboratory R&D through to production plant.

**VPC**

Variable Pressure Control

DIN 12876

Our cooling powers are always quoted at full pump speed

Model	Working Temperature Range (°C)	Pump max. VPC		Heating Power (kW)	Cooling Power (kW) at (°C)					Dimensions WxDxH (mm)	Cat.No.	G	Price
		(l/min)	(bar)		200	20	0	-20	-30				
Petite Fleur®	-40...200	33	0,9	1,5	0,48	0,48	0,45	0,27	0,16	260x450x504	1030.0001.01	3	
Petite Fleur® w	-40...200	33	0,9	1,5	0,48	0,48	0,45	0,27	0,16	260x450x504	1030.0003.01	3	
Petite Fleur®-eo	-40...200	33	0,9	1,5	0,48	0,48	0,45	0,27	0,16	260x450x504	1030.0004.01	3	

eo = for external open operation

All units use natural refrigerant as standard



| Unistat® 510w |

| Unistat® 430 |

| Unistat® 520w |



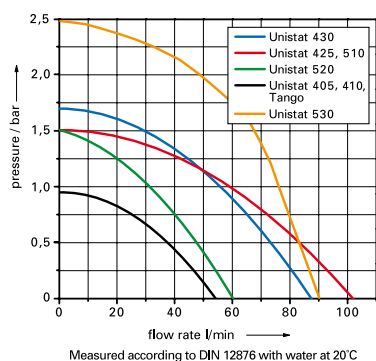
-55 °C

Models
from 0,7 to 21 kW



| Unistat® tango® |

pump curves



VPC
Variable Pressure Control

ATEX
ATEX Solutions (Option)

Additional Heating
(Option)

Model	Working Temperature Range (°C)	Pump max. VPC (l/min) (bar)	Heating Power (kW)	Cooling Power (kW) at (°C)						Dimensions WxDxH (mm)	Cat.No.	G	Price
to -55 °C				250	200	100	0	-20	-40				
Unistat® tango®	-45...250	55 0,9 ¹	1,5/3,0	0,7	0,7	0,7	0,7	0,4	0,06	426 x 270 x 631	1000.0016.01	3	
Unistat® tango® w*	-45...250	55 0,9 ¹	1,5/3,0	0,7	0,7	0,7	0,7	0,4	0,06	426 x 270 x 631	1000.0021.01	3	
Unistat® tango® wl	-45...250	55 0,9 ¹	1,5/3,0	0,7	0,7	0,7	0,7	0,4	0,06	426 x 270 x 631	1000.0017.01	3	
Unistat® 405	-45...250	55 0,9 ¹	1,5/3,0	1,0	1,0	1,0	1,0	0,6	0,15	426 x 307 x 631	1002.0021.01	3	
Unistat® 405w	-45...250	55 0,9 ¹	1,5/3,0	1,3	1,3	1,3	1,3	0,7	0,15	426 x 307 x 631	1002.0022.01	3	
Unistat® 410	-45...250	55 0,9 ¹	1,5/3,0	1,7	2,5	2,5	1,5	0,8	0,2	460 x 554 x 1200	1031.0010.01	3	
Unistat® 410w	-45...250	55 0,9 ¹	1,5/3,0	1,7	2,5	2,5	1,5	0,8	0,2	425 x 360 x 636	1031.0005.01	3	
Unistat® 425	-40...250	105 1,5 ²	2,0	2,0	2,0	2,0	2,5	1,8	0,2	460 x 554 x 1453	1005.0057.01	35	
Unistat® 425w	-40...250	105 1,5 ²	2,0	2,8	2,8	2,8	2,5	1,9	0,2	460 x 554 x 1453	1005.0058.01	35	
Unistat® 430	-40...250	90 1,7 ²	4,0	3,5	3,5	3,5	3,5	2,2	0,3	460 x 554 x 1453	1005.0059.01	35	
Unistat® 430w	-40...250	90 1,7 ²	4,0	3,5	3,5	3,5	3,5	2,2	0,3	460 x 554 x 1453	1005.0060.01	35	
Unistat® 510	-50...250	105 1,5 ²	6,0	5,3	5,3	5,3	5,3	2,8	0,9	1100 x 755 x 1370	1005.0082.01	35	
Unistat® 510w	-50...250	105 1,5 ²	6,0	5,3	5,3	5,3	5,3	2,8	0,9	460 x 554 x 1453	1005.0061.01	35	
Unistat® 515w	-55...250	105 1,5 ²	6,0	7,0	7,0	7,0	5,0	2,8	0,9	460 x 554 x 1453	1032.0006.01	4	
Unistat® 520w	-55...250	60 1,5 ²	6,0	—	6,0	6,0	6,0	4,2	1,5	540 x 604 x 1332	1006.0020.01	4	
Unistat® 525	-55...250	60 1,5 ²	6,0	10,0	10,0	10,0	7,0	4,2	1,5	1290 x 736 x 1596	1033.0015.01	4	
Unistat® 525w	-55...250	60 1,5 ²	6,0	10,0	10,0	10,0	7,0	4,2	1,5	540 x 604 x 1332	1033.0008.01	4	
Unistat® 527w	-55...250	90 2,5 ²	6,0	7,0	12,0	12,0	12,0	6,0	2,0	540 x 704 x 1491	1034.0014.01	4	
Unistat® 530w	-55...250	90 2,5 ²	12,0	7,0	19,0	21,0	16,0	9,0	3,0	540 x 704 x 1491	1034.0015.01	4	

¹ integrated VPC pressure control

² VPC pressure control via optional bypass

*Model uses natural refrigerant as standard, for all other models available on request

Flat built models available on request



| Unistat® 950w |

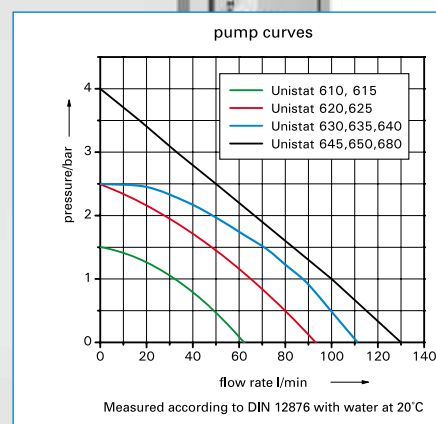
 **-60 °C**

Models
from 7 to 130 kW

**Natural
Refrigerant!**




| Unistat® 615w |



Model to -60 °C	Working Temperature Range (°C)	Pump max. VPC		Heating Power (kW)	Cooling Power (kW) at (°C)						Dimensions W x D x H (mm)	Cat.No.	G	Price
		(l/min)	(bar)		200	100	0	-20	-40	-60				
Unistat® 610	-60...200	60	1,5 ²	6,0	7,0	7,0	7,0	6,4	3,3	0,8	1290 x 735 x 1600	1007.0040.01	4	
Unistat® 610w	-60...200	60	1,5 ²	6,0	7,0	7,0	7,0	6,4	3,3	0,8	630 x 704 x 1520	1007.0031.01	4	
Unistat® 615w	-60...200	60	1,5 ²	12,0	9,5	9,5	9,5	8,0	4,8	1,2	630 x 704 x 1520	1007.0032.01	4	
Unistat® 620w	-60...200	90	2,5 ²	12,0	12,0	12,0	12,0	12,0	6,5	1,8	730 x 804 x 1520	1008.0040.01	4	
Unistat® 625w	-60...200	90	2,5 ²	12,0	16,0	16,0	16,0	15,0	7,4	2,2	730 x 804 x 1520	1008.0041.01	4	
Unistat® 630w	-60...200	110	2,5 ²	24,0	22,0	22,0	21,0	20,0	14,0	5,0	950 x 1005 x 1650	1009.0021.01	5	
Unistat® 635w	-60...200	110	2,5 ²	24,0	27,0	27,0	27,0	25,0	18,0	6,0	950 x 1005 x 1650	1009.0022.01	5	
Unistat® 640w	-60...200	110	2,5 ²	30,0	32,0	32,0	35,0	30,0	18,0	6,0	950 x 1005 x 1650	1010.0007.01	5	
Unistat® 645w	-60...200	130	4,0 ²	36,0	45,0	45,0	45,0	42,0	22,0	7,0	1830 x 1200 x 1830	1011.0006.01	5	
Unistat® 650w	-60...200	130	4,0 ²	48,0	65,0	65,0	65,0	56,0	30,0	11,0	1830 x 1200 x 1830	1012.0005.01	5	
Unistat® 680w	-60...200	130	4,0 ²	96,0	130,0	130,0	130,0	80,0	60,0	20,0	4500 x 2000 x 2000	1013.0003.01	5	

² VPC pressure control via optional bypass

Options: natural refrigerant, additional heating capacity, air cooled units available on request

 **-85 °C**
Air- or
water-cooled



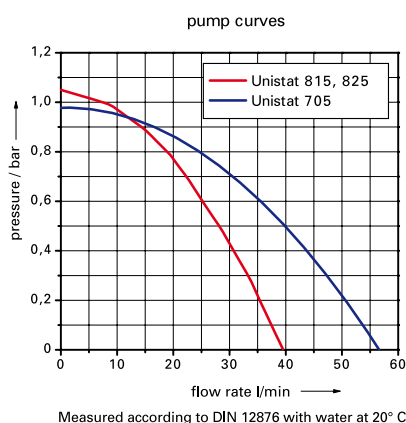
| Unistat® 815w |



| Unistat® 825 |



| Unistat® 705w |



**Natural
Refrigerant!**

**ECO
FRIENDLY**

VPC

Variable Pressure Control

ATEX

ATEX Solutions (Option)

Additional Heating

(Option)

	Model	Working Temperature	Pump max. VPC		Heating Power	Cooling Power (kW) at (°C)								Dimensions	Cat.No.	G	Price
	to -85 °C	Range (°C)	(l/min)	(bar)	(kW)	250	200	100	0	-20	-40	-60	-80	WxDxH (mm)			
	Unistat® 705	-75...250	55	0,9 ¹	1,5/3,0	0,6	0,6	0,6	0,65	0,6	0,6	0,3	—	425x400x720	1001.0020.01	3	
	Unistat® 705w	-75...250	55	0,9 ¹	1,5/3,0	0,6	0,6	0,6	0,65	0,6	0,6	0,3	—	425x400x720	1001.0021.01	3	
	Unistat® 815	-85...250	40	0,9 ¹	2,0	1,3	1,3	1,3	1,5	1,5	1,4	1,2	0,2	460x604x1465	1014.0049.01	35	
	Unistat® 815w	-85...250	40	0,9 ¹	2,0	1,5	1,5	1,5	1,5	1,5	1,4	1,2	0,2	460x604x1465	1014.0050.01	35	
	Unistat® 825	-85...250	40	0,9 ¹	3,0	2,3	2,3	2,3	2,2	2,0	2,0	1,4	0,3	460x604x1465	1014.0051.01	4	
	Unistat® 825w	-85...250	40	0,9 ¹	3,0	2,3	2,3	2,3	2,4	2,4	2,4	1,5	0,3	460x604x1465	1014.0052.01	4	

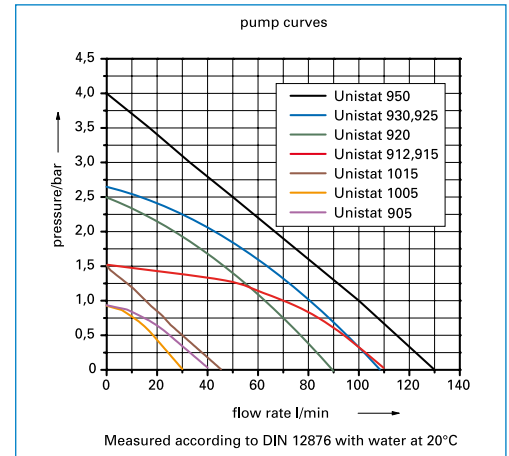
¹ Integrated VPC pressure control

Option: natural refrigerants available on request



| Unistat® 930w |

| Unistat® 915w |



90 °C
- 120 °C

Models
from 5,2 to 36 kW

Model	Working Temperature Range (°C)	Pump max. VPC (l/min) (bar)	Heating Power (kW)	Cooling Power (kW) at (°C)								Dimensions WxDxH (mm)	Cat.No.	G	Price
to -90 °C				250	200	100	0	-20	-40	-60	-80				
Unistat® 905	-90...250	40 0,9 ¹	6,0	4,0	4,0	3,8	3,6	3,5	3,5	2,2	0,7	540x654x1500	1035.0011.01	4	
Unistat® 905w	-90...250	40 0,9 ¹	6,0	4,5	4,5	4,5	4,5	4,5	4,0	2,5	0,7	540x654x1500	1035.0012.01	4	
Unistat® 912w	-90...250	110 1,5 ²	6,0	7,0	7,0	7,0	7,0	7,0	6,0	3,5	0,9	630x704x1565	1016.0027.01	4	
Unistat® 915w	-90...250	110 1,5 ²	6,0	11,0	11,0	11,0	11,0	11,0	8,0	4,0	1,1	630x704x1565	1036.0006.01	4	
Unistat® 920w	-90...200	90 2,5 ²	12,0	—	11,0	11,0	11,0	11,0	10,0	8,0	2,0	950x1205x1650	1017.0025.01	4	
Unistat® 925w	-90...200	110 2,5 ²	12,0	—	16,0	16,0	16,0	16,0	15,0	13,5	3,5	950x1205x1650	1017.0026.01	4	
Unistat® 930w	-90...200	110 2,5 ²	24,0	—	19,0	19,0	20,0	20,0	20,0	15,0	5,0	950x1205x1650	1017.0027.01	5	
Unistat® 950	-90...200	130 4,0 ²	36,0	—	30,0	30,0	30,0	30,0	30,0	24,0	10,0	3315x1485x3030	1018.0008.01	5	
Unistat® 950w	-90...200	130 4,0 ²	36,0	—	36,0	36,0	36,0	36,0	36,0	25,0	10,0	2630x1300x1930	1018.0009.01	5	

¹ integrated VPC pressure control² VPC pressure control via bypass

Option: natural refrigerants available on request

Model	Working Temperature Range (°C)	Pump max. VPC (l/min) (bar)	Heating Power (kW)	Cooling Power (kW) at (°C)								Dimensions WxDxH (mm)	Cat.No.	G	Price
to -120 °C				100	0	-20	-40	-60	-80	-100					
Unistat® 1005w	-120...100	30 0,9 ¹	2,0	1,5	1,5	1,5	1,5	1,4	1,4	1,0		700x804x1520	1019.0006.01	4	
Unistat® 1015w	-120...100	44 1,5 ²	4,0	2,5	2,5	2,5	2,5	2,5	2,0	2,0		950x1205x1650	1020.0010.01	5	

¹ integrated VPC pressure control² VPC pressure control via bypass

Option: natural refrigerants available on request

High Temperature Circulators

High-precision and space saving temperature control up to +425 °C. The new HT circulators of the Unistat TR401 range set new standards in safety, easy operation, and rapid, dynamic temperature control. The Unistat TR401w HT model features an integral stepper motor to control the HT-Cooling, level protection and configurable overtemperature protection. Its minimal internal volume allows the shortest heat-up times to be achieved, while at the same time the maximum expansion tank temperature is limited to +60 °C. The working life and properties of the thermal fluid are also protected, by avoiding direct contact between the hot fluid and atmosphere.

The HT circulators with controlled HT-Cooling are suitable for temperature control applications up to +425 °C, e.g. a double jacketed reaction vessel (reac-

tor), and pilot plants, as well as the semiconductor Industry and high temperature distillation. They are suitable for maintaining constant high temperatures, or to contain an exothermic reaction at high temperature.

Advantages:

- Small space required
- Low fill-volume
- High Pump capacity
- Rapid, efficient filling of the complete application – with venting
- +60 °C max. expansion tank temperature
- Plug & Play technology
- Simple operation
- High level of safety through constant monitoring





Plug & Play
3 years warranty

Model	Temperature Range	Pump max. VPC		Heating Power (kW)	Cooling Power (kW) at (°C)				Dimensions W x D x H (mm)	Cat.No.	G	Price
	(°C)	(l/min)	(bar)		400	300	200	100				
Unistat® TR401	50...400	31	0,9 ¹	3,0/9,0	—	—	—	—	288 x 379 x 890	1028.0007.01	3	
Unistat® TR401w HT	(15) 50...400	26	0,8 ¹	3,0/9,0	10,0	10,0	10,0	10,0	288 x 379 x 890	1028.0008.01	3	
Unistat® TR402	80...425	31	1,0 ¹	3,0/9,0	—	—	—	—	288 x 332 x 870	1028.0006.01	3	

Model	Temperature Range	Pump max. VPC		Heating Power (kW)	Cooling Power (kW) at (°C)				Dimensions W x D x H (mm)	Cat.No.	G	Price
	(°C)	(l/min)	(bar)		400	300	200	100				
Unistat® T305	(15) 65...300	45	0,9 ¹	3,0/6,0	—	—	—	—	425 x 250 x 635	1003.0010.01	3	
Unistat® T305 HT	65...300 ³	45	0,9 ¹	3,0/6,0	—	3,2	2,3	0,6	425 x 250 x 635	1003.0011.01	3	
Unistat® T305w HT	(15) 65...300	45	0,9 ¹	3,0/6,0	—	10,0	10,0	10,0	425 x 250 x 635	1003.0012.01	3	
Unistat® T320w HT	(15) 65...300	60	1,5 ²	12,0	—	10,0	10,0	6,0	460 x 554 x 1332	1004.0019.01	35	
Unistat® T330w HT	(15) 65...300	60	2,5 ²	24,0	—	10,0	10,0	6,0	460 x 554 x 1332	1004.0025.01	35	
Unistat® T340w HT	(15) 65...300	60	2,5 ²	48,0	—	10,0	10,0	6,0	600 x 704 x 1517	1024.0007.01	35	
Unistat® T402	80...425	45	0,9 ²	3,0/6,0	—	—	—	—	505 x 400 x 765	1038.0003.01	3	

¹ integrated VPC pressure control² VPC pressure control via bypass³ Lowest working temperature 15 K above ambient temperature

Unistat® Hybrid: High performance industrial solution

Large scale pharmaceutical and chemical manufacturing plants traditionally use a centralised system of heating and cooling with

inaccurate temperature control and a restricted temperature range. The disadvantages of these traditional methods are:

Method	Heating / Cooling type	Process temperature	Disadvantages
1	Heating by steam	Typically limited to +180°C (depending on stream pressure)	Limited temperature range
2	Heating by electrical heater	+400°C	Very high cost of consumed electricity
3	Cooling by water (water/glycol, brine) with the help of cooling tower or powerful Chiller	Ambient ... down to -20°C	Limited temperature range
4	Cooling by liquid nitrogen (dispensing into the chemical process directly)	-196°C	Difficult to control temperature, handling, consumption, running cost, safety

The Unistat Hybrid allows improvements of existing temperature control solutions by linking them with a hydraulically sealed temperature control system from the Unistat range (Fig 1).

The advantage of the Huber Unistat Hybrid system is the partial modernisation of an existing central heating and cooling system, as a result an expensive and time consuming complete renovation of the system is no longer required. The Unistat Hybrid system increases the present cooling and heating power and expands the temperature range in already existing systems. The Unistat Hybrid ensures fast, precise temperature control for the entire chemical engineering process.

Advantages

- Higher heating and cooling power through use of existing resources such as steam, cooling water, liquid Nitrogen etc.
- Temperature range extension with existing systems
- Highly accurate control of the process temperature
- Reliable compensation of thermal reactions
- Reasonably priced modernisation of existing systems
- Minimises expensive and time consuming system replacement exchange

Fig. 1: The Unistat® range offers a large choice of thermal control systems in various power classes

Max. cooling capacity: (2-3 stage cooling system)

150 kW at 0 °C
10 kW at -80 °C
4 kW at -100 °C

Max. heating capacity: 100 kW



Utilise existing energy sources

■ **Method 1:** The heat is transferred from the steam to the thermal fluid through the external heat exchanger. If necessary, the Unistat can raise temperatures up to +400 °C.

■ **Method 2:** The use of electrical heaters is inadvisable because of the high cost of consumed electricity. We consider electrical heating to be limited to 200 kW, because of high installation (infrastructure) and running costs.

■ **Method 3:** The cooling system works in a similar method to system 1; cooled heat transfer fluid (down to -20 °C) is transferred from the plant chiller* through the external heat exchanger, and lower temperatures (-90 °C ... -120 °C) can be achieved with the Unistat.

*If required, Huber can supply a powerful chiller with a cooling capacity of up to 400 kW @ 0 °C.

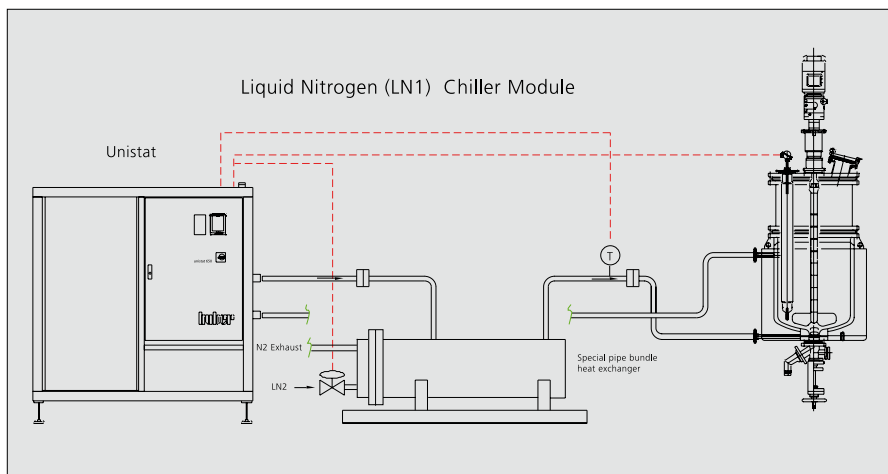
■ **Method 4:** Liquid nitrogen enters the external (LN2/thermal fluid) heat exchanger conducts cooling capacity at low temperatures.

The Unistat controls and regulates the dosing of nitrogen into the heat exchanger. The Unistat controls all systems (steam module, chiller, nitrogen) automatically and monitors reactor temperature by means of an external Pt100 sensor.



Pic. 2: External heat exchanger for steam

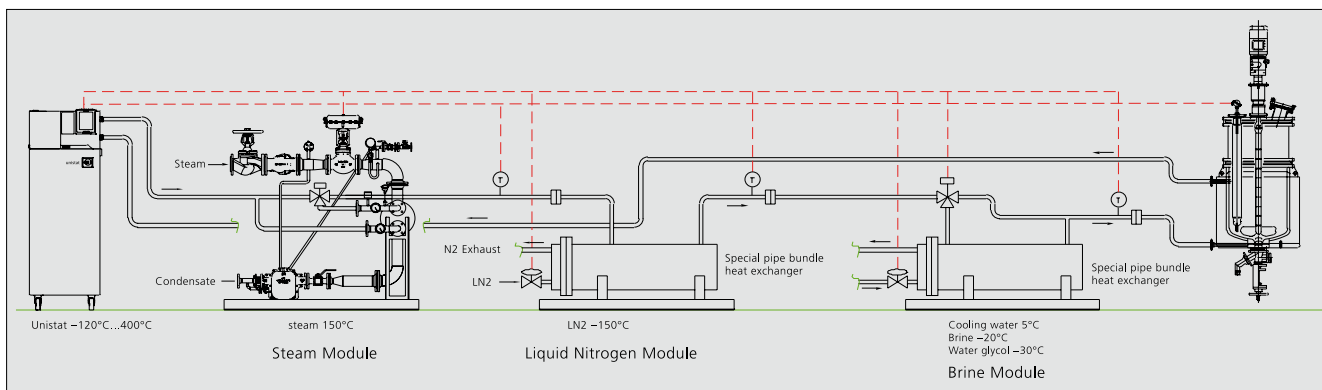
Installation diagram



System 1

The Unistat® (left) and external heat exchanger unit (center) connect to the reactor jacket (right).

The Unistat® thermal control system and external heat exchanger unit is connected to the reactor jacket. The heat transfer oil flows through the Unistats®, heat exchanger and reactor jacket.



System 2

Complete solution: The Unistat® Hybrid thermal control system with external heat exchangers for the various energy sources serves for an optimum combination. The individual external energy sources (steam, cooling water, liquid Nitrogen) are precisely controlled from the Unistat® and the reactor temperature is monitored using an external Pt100. Depending on the application, the heat exchanger can be built into the Unistat®.

Unistats® in practice

In comparison to other thermal control systems, Unistats differ sometimes considerably in their thermodynamic characteristics. In practice Unistats offer definite advantages in your work: noticeably shorter

heating and cooling times, better stability and reproducibility through the entire process chain, greater safety for expensive glass reactors and the contained substances, together with simple and easy operation.

Advantages:

Heat Transfer

Powerful circulation pumps and a large hose cross section ensure maximum flow rates and optimum heat transfer.

10

Space saving design

Unistats have a compact design requiring little space. The power to volume ratio (Watts/cm³) according to DIN 12876 documents the extremely small space requirement of the Unistats.

9

Power / Volume

Unistats have a high power to volume ratio (Watts/Litre). In practice, Unistats offer a very high speed of temperature change in the region of several hundreds of Kelvin per hour.

8

Pressure Control

The pressure control VPC continuously monitors the pressure in the connected application and therefore protects the sensitive glass reactor from breakage.

7

Temperature Control

The intelligent temperature control TAC analyses the controlled fluid circuit continuously, and adjusts the control parameters automatically. The result is the best control results even with difficult applications.

6

Process Safety

Unistats provide an option to allow the circulation pump and compressor to continue to work despite an over temperature trip. This allows controlled heat removal and protects your thermally controlled products from being destroyed.

1

De-Gassing

Unistats only require de-gassing after each application set up. As a result uncontrolled conditions during normal operation will be minimised.

2

Hydraulically sealed

Volume changes due to fluid temperature fluctuations are equalised by the expansion vessel. The fluid in the expansion vessel hydraulically seals the fluid circuit and prevents early Oxidation.

3

Touchscreen Colour Display

The large, graphic touchscreen aids operation and shows convenient display of temperature runs directly on the machine. Therefore essential application parameters are always in view.

4

Data-Communication

Unistats offer numerous possibilities for data communication. RS232, Ethernet and USB interfaces are fitted as standard, as well as various analogue interfaces.

5



Explosion proof installations

Two solutions are available for ATEX areas:

The Unistat can be placed in a Stainless Steel Ex-p pressure enclosure. Compressed air is pumped in purging the cabinet of any potentially dangerous vapours and creating a pressure slightly above atmospheric to keep potentially explosive vapours out.

An ATEX certified remote control (II 2G Ex ib IIC T4) is located in the ATEX zone, controlling the Unistat situated in the safe zone.



Dynamic Temperature Control Systems



Description:

Ex-p enclosure for zone 1 with pressure encapsulation to EN 60079-2

Type:

Ex II 2G pxb sib seb IIC T4

Features:

- Stainless steel construction
- 1 breakout with safety film for installation of the controller (standard operability and functionality are not impaired)
- Conductive rollers
- Redundant temperature monitoring with compressed air cooling
- Internal monitoring via gas sensor
- Connection options 1x Pt100 and 1x Analogue input

Please advise us of the zone, explosion sub-group and temperature class when requesting information.

Ex-p Enclosure	for Unistat® model	Cat.No.	G	Price
Ex-p Enclosure I	425w, 430w, 510w, 515w, 520w, 525w, 527w, 530w, 610w, 615w, 620w, 625w, 815w, 825w, 905w, 912w, 915w, 1005w, T320w HT	on request	—	
Ex-p Enclosure II	630w, 635w, 640w, 920w, 925w, 930w	on request	—	
Ex-p Enclosure IV	tango® wl, 405w, 410w, 705w, T305w HT	on request	—	
Remote Control Unistat® II 2G Ex ib IIC T4	all Unistats®	on request	—	
Ex ia Process Temperature Measurement	all Unistats®	on request	—	

Circulating Chillers / Immersion Coolers

Many applications depend on a reliable source of cooling. Circulating chillers in the Unichiller range offer an ideal solution for environmentally friendly and economical cooling in laboratory and industry. There are over 50 air and water cooled models to choose from, with cooling

powers from 0,3 to 50 kW. Efficient energy management in all Huber chillers ensures low operating costs and reduced usage of valuable fresh water. Huber circulating chillers are a resource saving solution with a quick return on investment.

TFT Touch
5,7" Colour Display

Plug & Play
Controller

TAC True Adaptive Control

VPC Variable Pressure Control

Easy Control
User friendly operation

Programmer
with Ramp Functions

Protection+
Level / Overtemperature

Heating Power
Options available

CoolNet
max. Cooling Power

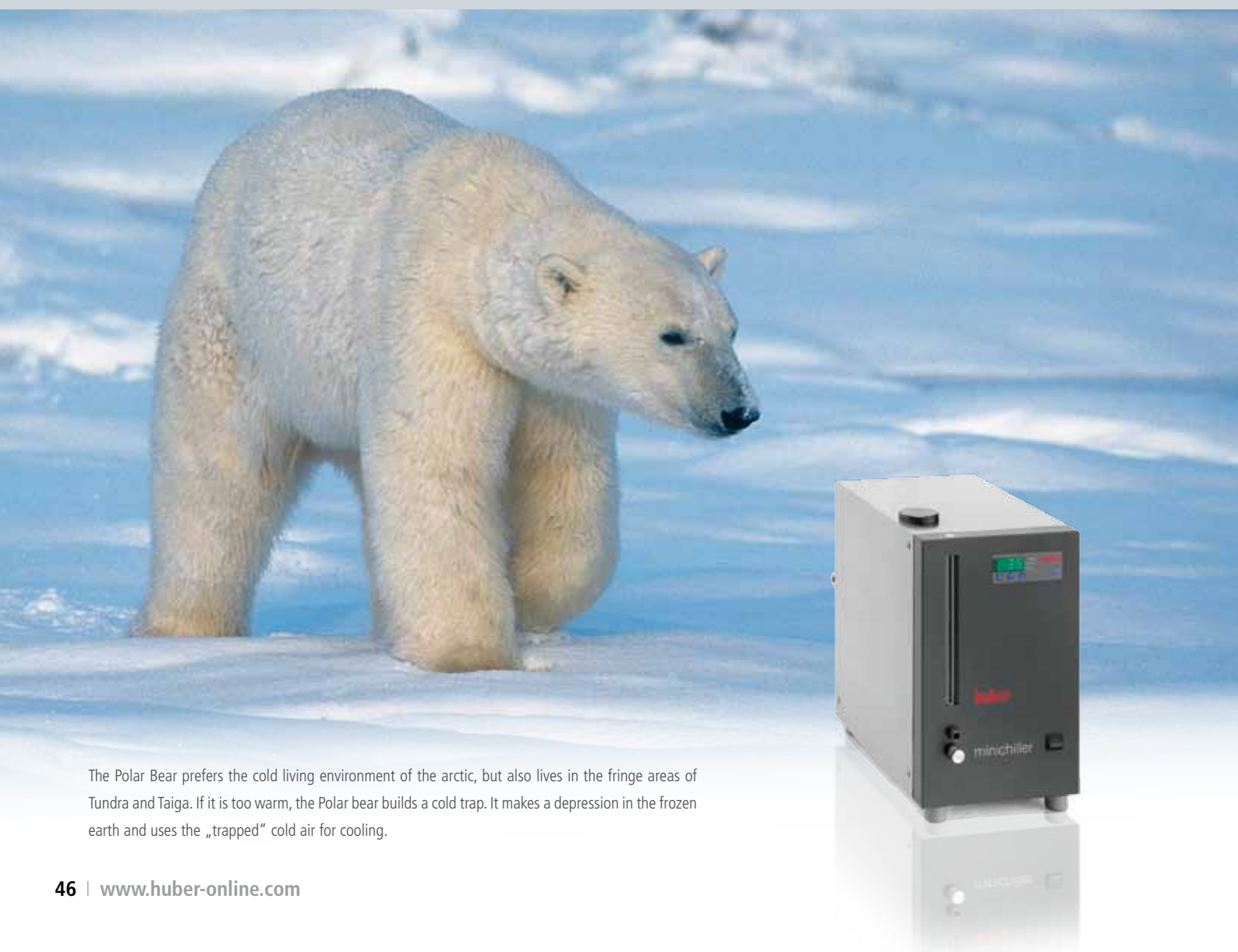
huber Natural Refrigerant

ATEX Version available

USB Ports
Remote control & storage

Ethernet
Communication via LAN

SpyControl®
Control, Visualize, Record



The Polar Bear prefers the cold living environment of the arctic, but also lives in the fringe areas of Tundra and Taiga. If it is too warm, the Polar bear builds a cold trap. It makes a depression in the frozen earth and uses the „trapped“ cold air for cooling.

Advantages & Functions

- Working temperatures from -20 °C to +40 °C
- High cooling powers up to 50 kW
- Powerful circulation pumps up to 220 l/min
- Modern energy management
- Space saving tower design
- Robust stainless steel construction
- Safe for continuous operation, with alarm and warning functions
- Highly accurate temperature control
- Option for heating / temperatures up to +100 °C
- Extensive features (depending on model) with Pt100 sensor connection, RS232, 5 point calibration, heating, etc.

Typical Applications:

- » Cooling of analysis machines
- » Electron microscopes
- » Distillation systems
- » Rotary evaporators
- » Soxhlet systems
- » X-Ray machines
- » Refractometer
- » Spectrometers
- » Vacuum systems
- » Semiconductor industry
- » Cooling water supplies
- » Gas Chromatographs
- » Lasers, optics, LED

Functions and features depend on the model, see chapter „Controllers & Functions“ for details.



For more information
scan this QR-Code



Huber chillers are called Minic

Simple to use, Huber chillers have small footprints, are robust, with modern energy management, flexible functionality and modular technology – these are the results of designs without compromise.



Unichillers are intelligent chillers which can be used as an environmentally friendly and economic alternative to tap water for process cooling. Low temperatures increase efficiency and recovery rates in gas condensation processes. In contrast to tap water a desired setpoint can be selected between -10/-20 °C to 40 °C and controlled with a temperature stability of $\pm 0,5$ K. The product range includes 27 air cooled and 26 water cooled models, with cooling powers from 0,3 kW to 50 kW. Most models can be factory fitted with a heater. The casings are made of high quality stainless steel to ensure long life.

Natural
Refrigerant!



Minichiller® and
Unichiller® for
environmental-
ly friendly
refrigeration

hiller® or Unichiller®

Unichiller® with Pilot ONE®

The tower models offer power with small footprints. These models are now fitted with the new exchangeable **Pilot ONE**, and are used in both research and production.

Features

- Space saving tower design: small dimensions, high powers
- Robust stainless steel construction
- Reliable continuous operation with alarm and early warning functions
- **Pilot ONE** with Plug & Play technology
- Splash protection of display
- Large and full colour 5,7" TFT touchscreen
- Digital level indicator
- Simple to fill and drain
- Connections for RS232, USB and Ethernet
- Strong pumps for systems with large pressure drops
- High flow rates for optimal heat transfer
- External Pt100 sensor via 4-wire Lemo connector
- 5-Point calibration
- IP-class to IEC EN 60529: 21
- Options (factory fitted)
 - Heater and adjustable over temperature protection
 - VPC (Variable Pressure Control) with steplessly variable bypass and pressure sensor
 - Winter operation for use in low temperature external environments
 - Weather protection
 - Tropical versions for environmental temperature up to 45 °C
 - Stronger pumps

Unichiller® with MPC®-Controller

Compact, value-for-money units; Unichillers are available with cooling powers up to 2,5 kW for applications in the lab. The models ranging from the Minichiller to Unichiller 025w-MPC are suitable for on or under the lab bench.

Options for Heating and Temperatures to +100 °C

With the exception of the two models Unichiller 006Tw-MPC and Unichiller 009Tw-MPC all units can be factory fitted with optional heating and independent over-temperature protection. Increasing the maximum working temperature to 100 °C and the temperature stability to $\pm 0,2$ K. The new construction allows constant operation in ambient temperatures up to 40 °C. The water-cooled models are especially quiet and require little cooling water even at full cooling power. Despite the increasing costs of water the ROI is exceptionally short. All models with maximum pump pressure of 2,5 bar have an adjustable bypass and a pressure gauge.

Pump Options

We offer alternative pumps for applications with higher pressure drops. Models with Pump A are only suitable for externally closed systems. Models with Pumps B, C and D can also be configured for operation with external open systems. The quoted technical data is indicative, and will vary slightly depending on the model. Pump type can be found in the technical details from page 122.

Pump options	Pump max. (l/min) at (bar)						
	0,2	0,5	1,0	2,0	2,5	3,0	4,0
B1 for Unichiller® Desktop	27	25	22	14	11	8	2
B1 for Unichiller® Tower	47	45	41	34	30	27	19

Other pumps available on request

Note: Fitting a more powerful pump can lead to a reduction in the cooling power. The loss of performance (dependent on several factors) is as follows:

Pump B1 (in place of B): max. 300 W

Pump C4 (in place of C3): max. 400 W

In a few cases it may be necessary to use larger machine housing.

Minichiller®

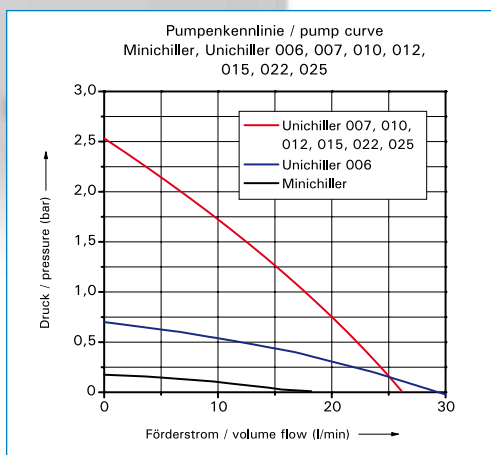
Small, robust and cost effective with a stainless steel casing, the Minichiller is the smallest Unichiller in the world.

Minichillers are available with air or water-cooled refrigeration systems. They are fitted with an illuminated level indicator, overflow and drain on the front. The filling port is on the top of the unit.



| Minichiller® |

| Unichiller® 006-MPC® |



Model	Working Temp. Range (°C)	Pump max. (l/min)	Pump max. (bar)	Cooling Power (kW) at (°C)			Dimensions WxDxH (mm)	Mobile with trolley	Cat.No.	G	Price
				15	0	-10					
Minichiller®*	-20...40	20	0,2	0,3	0,2	0,14	225x360x380	—	3006.0015.99	2	
Minichiller® w*	-20...40	20	0,2	0,3	0,2	0,14	225x360x380	—	3006.0022.99	2	
Unichiller® 006-MPC®*	-20...40	30	0,7	0,6	0,5	0,35	280x490x414	—	3007.0007.99	3	
Unichiller® 007-MPC®	-20...40	25	2,5	0,7	0,55	0,4	350x430x622	Height: 700	3012.0001.99	3	
Unichiller® 010-MPC®	-20...40	25	2,5	1,0	0,8	0,5	350x430x622	Height: 700	3012.0002.99	3	
Unichiller® 012-MPC®	-20...40	25	2,5	1,2	1,0	0,7	420x480x579	Height: 660	3009.0002.99	3	
Unichiller® 012w-MPC®	-20...40	25	2,5	1,2	1,0	0,7	350x430x622	Height: 700	3012.0003.99	3	
Unichiller® 015-MPC®	-20...40	25	2,5	1,5	1,0	0,7	420x480x579	Height: 660	3009.0001.99	3	
Unichiller® 015w-MPC®	-20...40	25	2,5	1,5	1,0	0,7	350x430x622	Height: 700	3012.0004.99	3	
Unichiller® 022-MPC®	-10...40	25	2,5	2,2	1,6	1,0	460x590x743	incl.	3010.0001.99	3	
Unichiller® 022w-MPC®	-10...40	25	2,5	2,2	1,6	1,0	420x480x579	Height: 660	3009.0003.99	3	
Unichiller® 025-MPC®	-10...40	25	2,5	2,5	2,0	1,2	460x590x743	incl.	3010.0002.99	3	
Unichiller® 025w-MPC®	-10...40	25	2,5	2,5	2,0	1,2	420x480x579	Height: 660	3009.0004.99	3	

Option: Heating for Minichiller® 1 kW, for Unichiller® models 2 kW (additional cost)

*Units use natural refrigerant as standard, for all other models available on request

EO Models (for externally open applications) from Unichiller® 007-MPC® on request



| Unichiller® 007-MPC®-H |

| Unichiller® 022-MPC® |



Natural
Refrigerant!



Minichiller®, Unichiller® with MPC® plus (Further information page 18-21)

Model	Working Temp.	Pump max. (l/min)	(bar)	Cooling Power (kW) at (°C)			Dimensions WxDxH (mm)	Mobile with trolley	Cat.No.	G	Price
	Range (°C)			15	0	-10					
Minichiller® plus*	-20...40	20	0,2	0,3	0,2	0,14	225x360x380	—	3006.0039.99	2	
Minichiller® w plus*	-20...40	20	0,2	0,3	0,2	0,14	225x360x380	—	3006.0040.99	2	
Unichiller® 006-MPC® plus*	-20...40	30	0,7	0,6	0,5	0,35	280x490x414	—	3007.0011.99	3	
Unichiller® 007-MPC® plus	-20...40	25	2,5	0,7	0,55	0,4	350x430x622	Height: 700	3012.0062.99	3	
Unichiller® 010-MPC® plus	-20...40	25	2,5	1,0	0,8	0,5	350x430x622	Height: 700	3012.0063.99	3	
Unichiller® 012-MPC® plus	-20...40	25	2,5	1,2	1,0	0,7	420x480x579	Height: 660	3009.0042.99	3	
Unichiller® 012w-MPC® plus	-20...40	25	2,5	1,2	1,0	0,7	350x430x622	Height: 700	3012.0064.99	3	
Unichiller® 015-MPC® plus	-20...40	25	2,5	1,5	1,0	0,7	420x480x579	Height: 660	3009.0043.99	3	
Unichiller® 015w-MPC® plus	-20...40	25	2,5	1,5	1,0	0,7	350x430x622	Height: 700	3012.0065.99	3	
Unichiller® 022-MPC® plus	-10...40	25	2,5	2,2	1,6	1,0	460x590x743	incl.	3010.0024.99	3	
Unichiller® 022w-MPC® plus	-10...40	25	2,5	2,2	1,6	1,0	420x480x579	Height: 660	3009.0044.99	3	
Unichiller® 025-MPC® plus	-10...40	25	2,5	2,5	2,0	1,2	460x590x743	incl.	3010.0025.99	3	
Unichiller® 025w-MPC® plus	-10...40	25	2,5	2,5	2,0	1,2	420x480x579	Height: 660	3009.0045.99	3	

plus = with digital interface RS232 Option: Heating for Minichiller® 1 kW, for Unichiller® models 2 kW (additional costs)

EO Models (for externally open applications) from Unichiller® 007-MPC® plus on request

*Units use natural refrigerant as standard, for all other models available on request

Unichiller® (bench top) with water cooled refrigeration

The models Unichiller 006Tw and Unichiller 009Tw have a footprint of only 230x280 mm and are therefore suitable for installation in laboratory furniture or

in extraction hoods. The water-cooled chillers emit almost no heat and only require minimal amounts of cooling water.

[W]
900W

On top: pump and cooling water connections, filling port.
Front: illuminated sightglass, drain, overflow and operation panel

| Unichiller® 009Tw-MPC® |

Natural
Refrigerant!



Model	Working Temp.	Pump max.			Cooling Power (kW) at (°C)				Dimensions WxDxH (mm)	(W/dm³) at		Cat.No.	G	Price
	Range (°C)	Type	(l/min)	(bar)	15	0	-10	-20		15°C	0°C			
Unichiller® 006Tw-MPC®	-20...40	A	30	0,7	0,6	0,45	0,4	0,25	230x280x540	16,9	12,7	3022.0007.99	3	
Unichiller® 006Tw-MPC® plus	-20...40	A	30	0,7	0,6	0,45	0,4	0,25	230x280x540	16,9	12,7	3022.0010.99	3	
Unichiller® 009Tw-MPC®	-25...40	A	30	0,7	0,9	0,7	0,4	0,2	230x280x540	25,4	22,6	3022.0002.99	3	
Unichiller® 009Tw-MPC® plus	-25...40	A	30	0,7	0,9	0,7	0,4	0,2	230x280x540	25,4	22,6	3022.0011.99	3	

plus = with digital interface RS232

All units use natural refrigerant as standard

Unichiller® in Tower Housings with Pilot ONE®

Chillers with state-of-the-art technology

All standard models have the new comfortable touchscreen controller **Pilot ONE** now. The cooling power is regulated by an automatic stepper motor controlled valve to adapt to the actual requirements. The intelligent and environmentally friendly energy management system minimises heat emissions and reduces the operating costs (cooling water and electricity) of the water cooled models. The sound levels of the air-cooled models have been minimised through the use of speed controlled condenser fans. The refrigeration systems are exceptionally robust and can operate in environmental temperatures up to 40 °C. CANBUS technology allows connection to a range of power and control components and is therefore suitable for this wide ranging product group. The new Unichillers with air or water cooled refrigeration systems are available with cooling powers from 1,7 kW for typical laboratory applications. The powerful Unichillers with cooling powers up to 100 kW are also used as a central supply of cooling water for labs or complete buildings.

Process circulators with heating

Unichillers with a optional heating become powerful process circulators for the mid temperature range -10/-20 up to 100 °C with a temperature stability of $\pm 0,2$ K.

For the highest quality and flexibility requirements

For quality and a long operational life the casings are all made from stainless steel. The options for weather protection and/or winter operation allow the big Unichillers to be located outdoors and controlled remotely by the **Pilot ONE** at the application. Stronger pumps are available for systems with high pressure drops, a maximum delivery pressure of 6 bar and flow rates of over 200 litre per minute are available.



Unichiller® with air cooled refrigeration

[kW]
to 40 kW

air cooled models
from 1,7 to 40 kW

| Unichiller® 045T |



| Unichiller® 110T |



Model	Working Temp. Range (°C)	Pump max.			Cooling Power (kW) at (°C)				Dimensions WxDxH (mm)	(W/dm³) at		Cat.No.	G	Price
		Type	l/min	(bar)	15	0	-10	-20		15°C	0°C			
Unichiller® 017T	-10...40	B	25	3,0	1,7	0,9	0,4	—	450x510x1231	6,4	3,4	3013.0001.01	3	
Unichiller® 020T	-20...40	B	25	3,0	2,0	2,0	1,5	0,8	450x510x1231	7,5	7,5	3013.0002.01	3	
Unichiller® 025T	-10...40	B	25	3,0	2,5	1,2	0,6	—	450x510x1231	9,4	4,5	3013.0003.01	3	
Unichiller® 040T	-10...40	B	26	3,0	4,0	2,5	1,5	—	500x552x1451	11,0	6,9	3014.0001.01	3	
Unichiller® 045T	-20...40	B	26	3,0	4,5	4,5	2,9	1,5	500x552x1451	12,4	12,4	3014.0002.01	3	
Unichiller® 055T	-10...40	C3	57	5,6	5,5	3,0	1,3	—	600x632x1610	9,1	5,0	3015.0001.01	3	
Unichiller® 060T	-20...40	C3	80	5,6	6,0	6,0	3,9	2,0	600x632x1610	9,9	9,9	3015.0002.01	3	
Unichiller® 080T	-10...40	C3	84	5,6	8,0	4,8	2,5	—	600x790x1614	11,4	6,5	3016.0001.01	3	
Unichiller® 100T	-20...40	C3	96	5,6	10,0	10,0	6,5	2,5	600x790x1614	13,1	13,1	3017.0001.01	4	
Unichiller® 110T	-10...40	C3	90	5,6	11,0	6,0	2,7	—	600x790x1614	14,4	7,9	3017.0002.01	4	
Unichiller® 130T*	-10...40	C3	90	5,6	13,0	7,0	4,5	—	904x1392x1820	6,8	4,4	3018.0001.01	4	
Unichiller® 150T*	-20...40	D3	220	4,7	15,0	15,0	9,7	3,7	904x1392x1820	6,2	6,2	3019.0001.01	4	
Unichiller® 160T*	-10...40	C3	96	5,6	16,0	8,8	4,0	—	904x1392x1820	8,3	4,6	3018.0002.01	4	
Unichiller® 200T*	-10...40	D3	220	4,7	20,0	11,0	5,0	—	904x1392x1820	8,3	4,6	3019.0002.01	4	
Unichiller® 210T*	-20...40	D3	220	4,7	21,0	21,0	13,6	5,2	874x1985x1855	6,6	6,6	3020.0001.01	4	
Unichiller® 250T*	-10...40	D3	220	4,7	25,0	14,0	6,2	—	874x1985x1855	7,8	4,4	3020.0002.01	5	
Unichiller® 260T*	-20...40	D3	220	4,7	26,0	26,0	13,6	5,2	874x1985x1855	8,0	8,0	3020.0003.01	5	
Unichiller® 300T*	-10...40	D3	220	4,7	30,0	16,5	7,5	—	874x1985x1855	9,3	5,1	3020.0004.01	5	
Unichiller® 400T*	-10...40	D3	220	4,7	40,0	22,0	10,0	—	2500x1685x1785	5,3	2,9	3021.0001.01	5	

* without trolley

Option: Heating 2 kW to 100 °C (additional cost)

EO Models (for externally open applications) on request

Option: natural refrigerant available on request

Unichiller® with water cooled refrigeration

Natural
Refrigerant!

ECO
FRIENDLY

[kW]
to 50 kW

water cooled models
from 1,7 to 50 kW



| Unichiller® 025Tw |



| Unichiller® 130Tw |

Model	Working Temp. Range (°C)	Pump max.			Cooling Power (kW) at (°C)				Dimensions W x D x H (mm)	(W/dm³) at		Cat.No.	G	Price
		Type	(l/min)	(bar)	15	0	-10	-20		15°C	0°C			
Unichiller® 017Tw	-10...40	B	25	3,0	1,7	0,9	0,4	—	400x440x1100	8,8	4,6	3024.0001.01	3	
Unichiller® 020Tw	-20...40	B	25	3,0	2,0	2,0	1,5	0,8	400x440x1100	10,3	10,3	3024.0002.01	3	
Unichiller® 025Tw	-10...40	B	25	3,0	2,5	1,2	0,6	—	400x440x1100	12,9	6,2	3024.0003.01	3	
Unichiller® 030Tw	-20...40	B	26	3,0	3,0	3,0	2,0	1,0	400x440x1100	15,5	15,5	3025.0001.01	3	
Unichiller® 040Tw	-10...40	B	26	3,0	4,0	2,5	1,5	—	400x440x1100	20,7	12,9	3025.0002.01	3	
Unichiller® 055Tw	-10...40	C3	57	5,6	5,5	4,0	2,0	—	500x552x1261	15,8	11,5	3026.0001.01	3	
Unichiller® 060Tw	-20...40	C3	80	5,6	6,0	6,0	3,8	2,1	500x552x1261	17,2	17,2	3026.0002.01	3	
Unichiller® 080Tw	-10...40	C3	84	5,6	8,0	4,65	2,35	—	500x552x1261	23,0	13,4	3026.0003.01	3	
Unichiller® 100Tw	-20...40	C3	96	5,6	10,0	10,0	6,3	3,0	600x600x1450	19,2	19,2	3027.0001.01	4	
Unichiller® 110Tw	-10...40	C3	90	5,6	11,0	5,8	2,55	—	600x600x1450	21,1	11,1	3027.0002.01	4	
Unichiller® 130Tw	-10...40	C3	96	5,6	13,0	7,0	4,5	—	600x600x1450	24,9	13,4	3027.0003.01	4	
Unichiller® 150Tw	-20...40	D3	200	4,7	15,0	15,0	10,0	5,0	760x800x1560	15,8	15,8	3028.0001.01	4	
Unichiller® 160Tw	-10...40	C3	90	5,6	16,0	9,5	5,5	—	600x600x1450	30,7	18,2	3027.0004.01	4	
Unichiller® 200Tw	-10...40	D3	200	4,7	20,0	10,7	4,7	—	760x800x1560	21,1	11,3	3028.0002.01	4	
Unichiller® 210Tw	-20...40	D3	200	4,7	21,0	21,0	15,5	9,5	760x800x1560	22,1	22,1	3028.0003.01	4	
Unichiller® 250Tw	-10...40	D3	200	4,7	25,0	14,0	6,2	—	760x800x1560	26,4	14,3	3028.0004.01	5	
Unichiller® 260Tw	-20...40	D3	210	4,7	26,0	26,0	20,0	12,0	760x800x1560	27,4	27,4	3028.0005.01	5	
Unichiller® 300Tw*	-10...40	D3	210	4,7	30,0	16,0	7,1	—	760x900x1560	28,1	15,0	3029.0001.01	5	
Unichiller® 400Tw*	-10...40	D3	210	4,7	40,0	21,0	10,0	—	760x900x1560	37,5	19,7	3029.0002.01	5	
Unichiller® 500Tw*	-10...40	D3	220	4,5	50,0	26,0	—	—	1070x760x1625	37,8	19,7	3030.0001.01	5	

* without trolley

Option: Heating 2 kW to 100 °C (additional cost)

EO Models (for externally open applications) on request

Option: natural refrigerant available on request

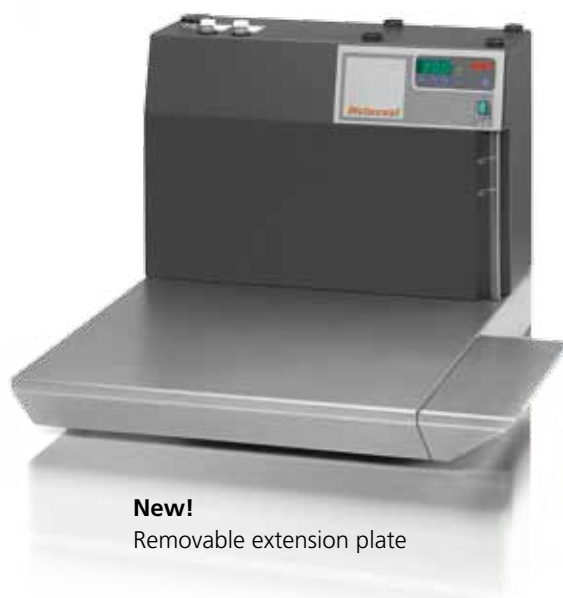
RotaCool®

This chiller is unique on the global market due to its space saving L-form. The additional space required on the laboratory table is zero! Abracadabra: placed on rotary evaporator the RotaCool virtually disappears completely.

The RotaCool is a product to provide a dedicated cooling service to all small bench top Rotary Evaporators.

Natural
Refrigerant!

ECO
FRIENDLY



New!
Removable extension plate

Model	Working Temp. Range (°C)	Cooling Power (kW) at (°C)			Pump Data				Dimensions W x D x H (mm)	Cat.No.	G	Price
		15	0	-10	Pump max. (l/min)	max. Suction (bar)	(l/min)	(bar)				
RotaCool®	-10...40	0,42	0,35	0,22	20	0,2	17	0,18	470 (582*) x 580 x 420	3033.0005.99	3	

* with removable extension plate (112 mm)

Option: natural refrigerant available on request

Dimensions subject to change



| DC®30 |

Flow-through Chillers

Flow-through Chillers are designed for simple, low demand cooling applications. They are commonly used in combination with the CC-202C or CC-205B series to remove heat in order to cool a process back to room temperature.

Model	Working Temp. Range (°C)	Cooling Power (kW) at			Dimensions W x D x H (mm)	Cat.No.	G	Price
		15°C	0°C	-20°C				
DC®30	-30...50	0,2	0,15	0,07	190x250x360	3000.0001.99	2	
DC®31	-30...50	0,4	0,35	0,10	250x310x400	3001.0001.99	2	
DC®32	-30...50	0,6	0,47	0,12	280x340x460	3002.0001.99	2	

All units use natural refrigerant as standard

Immersion Coolers

"Dip" or "Immersion" coolers are ideal for simple cooling applications when low temperatures are required such as vapour traps or for cooling individual flasks. They are also commonly used to remove heat from the baths in the "A" and "B" series. The units with an "E" have the capability to control the temperature to a stability of +/- 0,5 K to DIN 12876. All models can be delivered with a flexible evaporator coil (no extra cost). The model name and Cat.No. have the suffix "F". Flexible probes & custom probes available.



| TC®100E |

| TC®50 |

| TC®45-F |

Model	Working Temperature Range (°C)	Cooling Power (kW) at				Dimensions WxDxH (mm)	Cat.No. „Standard“	Cat.No. with flexible evaporator	G	Price
		0°C	-20°C	-30°C	-90°C					
TC®45	-45...100	0,24	0,18	0,1	—	190x295x360	3003.0001.99	3003.0003.99	2	
TC®45E	-45...100	0,24	0,18	0,1	—	190x295x360	3003.0002.99	3003.0004.99	2	
TC®50	-50...50	0,3	0,26	0,2	—	260x330x415	3004.0001.99	3004.0003.99	2	
TC®50E	-50...50	0,3	0,26	0,2	—	260x330x415	3004.0002.99	3004.0004.99	2	
TC®100	-100...40	0,16	0,15	0,14	0,07	295x500x570	3005.0043.99	3005.0045.99	2	
TC®100E	-100...40	0,16	0,15	0,14	0,07	295x500x570	3005.0044.99	3005.0046.99	2	

All units use natural refrigerant as standard

Heating and Cooling Circulators

The circulators are split into two product lines, the Compatible Control models and the simpler MPC models. Both product lines represent classically constructed laboratory circulators with open baths. Baths and circulators for heating applications up to +300 °C are available, as well as models for heating and cooling applications

from -90 °C to +200 °C. Immersion or bridge circulators are suitable for thermal control of existing baths. The Ministat, the smallest cooling and heating circulator in the world, is the first choice for operation in fume-hoods or integrating into systems.

TFT Touch
5,7" Colour Display

Plug & Play
Controller

TAC True Adaptive Control

VPC Variable Pressure Control

Easy Control
User friendly operation

Programmer
with Ramp Functions

Protection+
Level / Overtemperature

Heating Power
Options available

CoolNet
max. Cooling Power

huber Natural Refrigerant

ATEX Version available

USB Ports
Remote control & storage

Ethernet
Communication via LAN

SpyControl®
Control, Visualize, Record



Arctic hares' ears have evolved to suit the climatic conditions of its living environment. As hares control the blood circulation mostly with their ears, and compensate for heat loss with them, the ears are shorter in the regions where the climate is colder.

Advantages & Functions

- Working temperatures from -90 °C to +300 °C
- Models for internal and external temperature control
- High heating and cooling powers up to 7 kW
- Powerful controllable circulation pumps
- Function expansion with the E-grade system is available at any time
- High precision cascade temperature control
- Large and full colour 5,7" TFT touchscreen
- Programmer with calendar / clock function
- Extended range of languages including a selection of European and Asian
- Comprehensive warning and safety functions

Typical Applications:

- » Temperature control of samples
- » Materials testing
- » Analysis, life sciences, medicine
- » Distillation systems
- » Miniplant
- » Autoclaves
- » Calibration
- » Petroleum tests
- » Temperature control of test equipment
- » Quality control
- » Process technology
- » Cosmetics, foodstuffs

Functions and features depend on the model, see chapter „Controllers & Functions“ for details.



For more information
scan this QR-Code



Modern Classics: Bath

Compatible Control Circulators are modern classics.
Plug & Play technology has spread throughout the
world since 1980.



Circulators

Compatible Control circulators are classic constructions. The pump, control sensor, heater and evaporator are all located at the back part of the bath. This allows the use of both, optional calibration inserts for high precision calibration and also displacement inserts for increasing system temperature dynamics.

MPC-circulators waive the advantages of Plug & Play technology and are therefore a low cost alternative to the **Pilot ONE**.

State of the art pump technology: The top range models with the **Pilot ONE** have powerful pressure and suction pumps. The pump speed can be controlled steplessly to suit the bath configuration.

Robust construction: The thermoregulation bath is welded to the unit cover plate. This means that no seal is required and offers lifelong protection to the insulation. The cover plate is also thermoregulated to avoid condensation or ice formation.



Chic: Circulator with stainless steel casing with exchangeable **Pilot ONE**®, or, as low-cost alternative with the **MPC**®-Controller.



Hot and Cold: Compatible Control heating circulators operate up to 300 °C and with heating powers up to 4 kW.

Refrigerated bath circulators are available with working ranges between -90 °C and 200 °C. The Mini-stat is the smallest refrigerated circulator in the world that actively cools at 200 °C.

Active Cooling Control – permanent operation of the refrigeration system at the maximum working temperature. This has been a feature of all Compatible Control refrigerated circulators since 1976.

Environmentally friendly refrigeration: All refrigeration machines have automatic cooling power control and thereby reduce energy consumption and heat emission to an absolute minimum. Water-cooled models typically use approximately one third of the cooling water required by other circulators. Huber refrigeration machines stopped using CFCs and HCFCs (R22) years before the prohibition and therefore have an ozone depletion potential (ODP) of zero. In addition, to bring the greenhouse effect to zero, Compatible Control circulators are available with natural refrigerants.

Natural
Refrigerant!



Plug & Play

3 years warranty

The facts are convincing!

Large power to HTF volume ratio (W/dm³): Unusually large cooling powers, even at low temperatures, and a compact form result in large power to HTF volume ratios.

High cooling power density (W/L): Many bath circulators are suitable for displacement inserts allowing unusually high cooling power density and corresponding rapid temperature changes even at low temperatures.

Stainless steel casings: Quality and chic – stainless steel and little paint.

Air-cooled or water-cooled: The larger water-cooled units use typically two thirds the amount of cooling water used by conventional units. Introduced in 1997 the CC-410wl was the first refrigeration circulator in the world that offered an automatic change over from air or water cooling. In summer economic use of water – in winter air-cooled operation for heating the lab.

Safety first: No compromise with safety! The requirements of the highest safety classification (III/FL) to DIN 12876 are achieved through level protection and an adjustable independent overtemperature protection.

Infinitely variable: The simple versions are typical bath circulators, and as the name suggests mostly used for direct thermoregulation in the bath. They comprise of an immersion circulator and a bath. The bath is available in different sizes and materials. The polycarbonate baths (A) are transparent with operating temperatures up to 100 °C. The insulated stainless steel baths (B) have a maximum working temperature of 200 °C. The simple refrigeration circulators comprise of an immersion circulator (CC-E or MPC-E) and a refrigerated bath (K).

VPC
Variable Pressure Control

**Pilot ONE® with
TFT-display and
Plug & Play
technology**



Heating Circulators with Polycarbonate bath

The transparent polycarbonate baths are suitable for use up to 100 °C. An Immersion circulator is mounted on the bath bridge for all models. With a pump adapter, this combination can also be used with external, closed applications. The models with the **Pilot**

ONE have a variable speed pressure/suction pump and are therefore also suitable for externally open applications. The temperature stability, in accordance with DIN 12876, is 0,02 K for the Compatible Control models and 0,05 K for the MPC models.



| CC®-E |

Immersion Circulators

Immersion circulators are the basis of many combinations of polycarbonate and stainless steel baths. Together with a cooling bath it is possible to get exact and reproducible temperatures down to -30 °C.



| CC®-118A |



| MPC®-E |

Model	Temperature Range (°C)	Temperature Stability ¹ (K)	Heating Power (kW)	Pump Data				Safety Class ²	Dimensions WxDxH / ID ³ (mm)	Cat.No.	G	Price
				max. Pressure (l/min)	max. Pressure (bar)	max. Suction (l/min)	max. Suction (bar)					
MPC®-E	(-30) 25...200	0,05	2,0	20	0,2	17	0,18	FL, III	132x153x312/150	2035.0005.99	1	
CC®-E	(-30) 25...200	0,01	2,0	27	0,7	25	0,4	FL, III	132x159x315/150	2000.0001.01	1	
CC®-E xd	(-30) 25...200	0,01	2,0	22	0,4	22	0,4	FL, III	132x159x360/195	2000.0005.01	1	

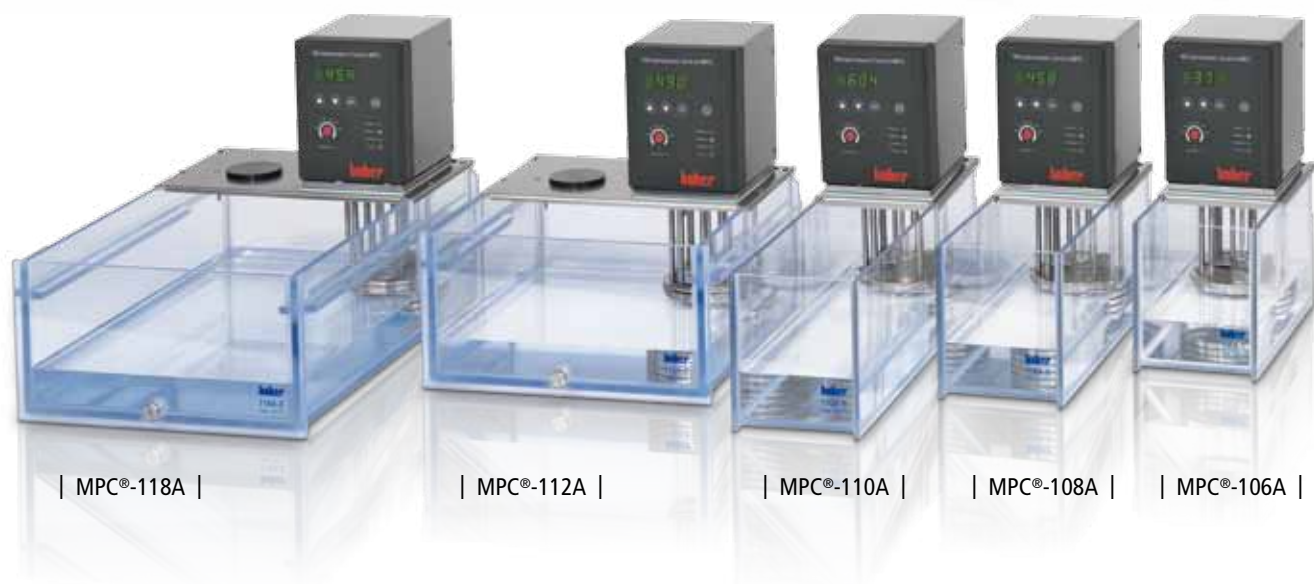
¹ to DIN 12876, measured in a stainless steel tank 12 litres

² FL for flammable liquids, III = adjustable overtemperature protection and addition low-liquid level protection

³ Immersion Depth

Plug & Play

3 years warranty



Model	Temperature Range (°C)	Heating Power (kW)	Opening (mm)	Bath Depth (mm)	Volume (ltr)	Pump Data				Dimensions WxDxH (mm)	Cat.No.	G	Price
CC®-106A	(15) 25...100	2	130x110	150	6	27	0,7	25	0,4	147x307x330	2001.0001.01	1	
MPC®-106A	(15) 25...100	2	130x110	150	6	20	0,2	17	0,18	147x307x330	2037.0021.99	1	
CC®-108A	(15) 25...100	2	130x210	150	8	27	0,7	25	0,4	147x407x330	2001.0002.01	1	
MPC®-108A	(15) 25...100	2	130x210	150	8	20	0,2	17	0,18	147x407x330	2037.0022.99	1	
CC®-110A	(15) 25...100	2	130x310	150	10	27	0,7	25	0,4	147x507x330	2001.0003.01	1	
MPC®-110A	(15) 25...100	2	130x310	150	10	20	0,2	17	0,18	147x507x330	2037.0023.99	1	
CC®-112A	(15) 25...100	2	303x161	150	12	27	0,7	25	0,4	333x360x335	2001.0004.01	1	
MPC®-112A	(15) 25...100	2	303x161	150	12	20	0,2	17	0,18	333x360x335	2037.0024.99	1	
CC®-118A	(15) 25...100	2	303x321	150	18	27	0,7	25	0,4	333x520x335	2001.0005.01	1	
MPC®-118A	(15) 25...100	2	303x321	150	18	20	0,2	17	0,18	333x520x335	2037.0025.99	1	

Safety class III/FL



| CC®-208B |

| CC®-212B |

| CC®-215B |

| CC®-220B |

Heating Circulators with stainless steel baths

The insulated stainless steel baths are suitable for use up to 200 °C. All models have a bridge mounted CC-E and MPC-E immersion circulator. With a pump adapter, this combination can also be used with externally closed and externally open* applications. The temperature stability is 0,02 K for CC-E and 0,05 K for MPC-E to DIN 12876.

The models with the **Pilot ONE** have a variable speed pressure/suction pump and are therefore also suitable for external open applications.

*with option level control



| MPC®-225B |

| MPC®-220B |

| MPC®-215B |

| MPC®-212B |

| MPC®-208B |

Model	Temperature Range (°C)	Heating Power (kW)	Opening (mm)	Bath Depth (mm)	Volume (ltr)	Pump Data				Dimensions W x D x H (mm)	Cat.No.	G	Price
						max. Pressure (l/min)	max. Pressure (bar)	max. Suction (l/min)	max. Suction (bar)				
CC®-208B	(-30) 25...200	2	230 x 127	150	8,5	27	0,7	25	0,4	290 x 350 x 375	2002.0001.01	1	
MPC®-208B	(-30) 25...200	2	230 x 127	150	8,5	20	0,2	17	0,18	290 x 350 x 375	2038.0021.99	1	
CC®-212B	(-30) 25...200	2	290 x 152	150	12	27	0,7	25	0,4	350 x 375 x 375	2002.0002.01	1	
MPC®-212B	(-30) 25...200	2	290 x 152	150	12	20	0,2	17	0,18	350 x 375 x 375	2038.0022.99	1	
CC®-215B	(-30) 25...200	2	290 x 152	200	15	27	0,7	25	0,4	350 x 375 x 425	2002.0003.01	1	
MPC®-215B	(-30) 25...200	2	290 x 152	200	15	20	0,2	17	0,18	350 x 375 x 425	2038.0023.99	1	
CC®-220B	(-30) 25...200	2	290 x 329	150	20	27	0,7	25	0,4	350 x 555 x 375	2002.0004.01	1	
MPC®-220B	(-30) 25...200	2	290 x 329	150	20	20	0,2	17	0,18	350 x 555 x 375	2038.0024.99	1	
CC®-225B	(-30) 25...200	2	290 x 329	200	25	27	0,7	25	0,4	350 x 555 x 425	2002.0005.01	1	
MPC®-225B	(-30) 25...200	2	290 x 329	200	25	20	0,2	17	0,18	350 x 555 x 425	2038.0025.99	1	

| CC®-225B |



| MPC®-104A |



| CC®-202C |

Heating Circulators

Good things come in small packages! Thanks to their low bath volumes the models CC-104A and MPC-104A (with polycarbonate bath) as well as the CC-202C and MPC-202C (with stainless steel bath) are especially suitable for controlling the temperature of small external applications. All models are fitted with

rear mounted M16x1 pump connections as standard. Models with the **Pilot ONE** have a speed regulated pressure/suction pump. The temperature constancy, in accordance with DIN12876, is 0,02 K with the Compatible Control models and 0,05 K for the MPC models.

Model	Temperature Range (°C)	Opening (mm)	Bath Depth (mm)	Volume (ltr)	Heating Power (kW)	Pump Data		max. Suction		Dimensions WxDxH (mm)	Cat.No.	G	Price
						max. Pressure (l/min) (bar)		max. Suction (l/min) (bar)					
CC®-104A	(15) 25...100	Ø25	150	4	2,0	27	0,7	25	0,4	147 x 235 x 330	2001.0016.01	1	
MPC®-104A	(15) 25...100	Ø25	150	4	2,0	20	0,2	17	0,18	147 x 235 x 330	2037.0026.99	1	
CC®-202C	(-30) 45...200	Ø25	150	2	2,0	27	0,7	25	0,4	178 x 260 x 355	2003.0001.01	1	
MPC®-202C	(-30) 45...200	Ø25	150	2	2,0	20	0,2	17	0,18	178 x 260 x 355	2039.0005.99	1	

Models CC®-202C and MPC®-202C are fitted with an integrated cooling coil as standard. With the models CC®-104A and MPC®-104A the cooling coil is an optional extra.



| CC®-130A Visco 3 |



| Holder for Ubbelohde Viscosimeter for Visco 3 (Cat.No. 9586) |

Visco Baths

The "viscosity baths" are designed for capillary viscometry and density measurements. They are constructed from transparent polycarbonate and are suitable for temperatures up to 100 °C. They have a cooling coil for connection to a cooling source (e.g. a Minichiller) to provide cooling. Various functions can be activated via E-grade.

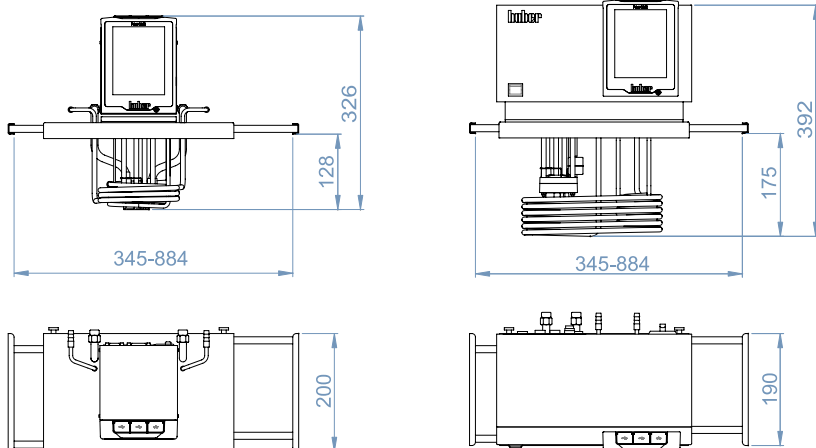
The Visco 3-Model features a steel cover to facilitate three measurement inserts of 90 x 90 mm.

The Visco 5-Model is fitted with a steel cover with five Ø 51 mm openings.

Model	Temperature Range (°C)	Heating Power (kW)	Opening WxD (mm)	Bath Depth (mm)	Volume (ltr)	Pressure (l/min)	Pressure pump max. (bar)	Dimensions WxDxH (mm)	Cat.No.	G	Price
CC®-130A Visco 3	(15) 28...100	2	90x90	310	30	27	0,7	500x240x490	2001.0006.01	1	
CC®-130A Visco 5	(15) 28...100	2	Ø 51	310	30	27	0,7	500x240x490	2001.0007.01	1	

(without accessories)

VPC
Variable Pressure Control



Bridge Circulators

The bridge circulators are suitable for use with a range of baths. The variable speed pressure/suction pump with VPC technology is ideal for external thermoregulation applications. Models with bigger heating capacities are suitable for larger baths. The telescopic arms can be extended up to 884 mm.

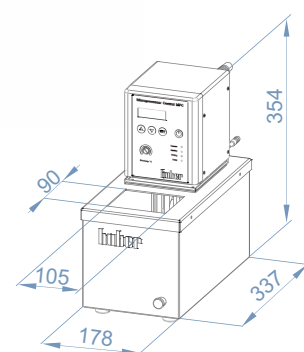
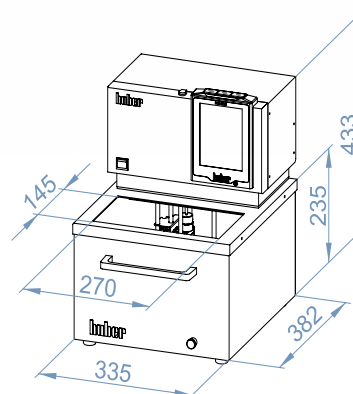
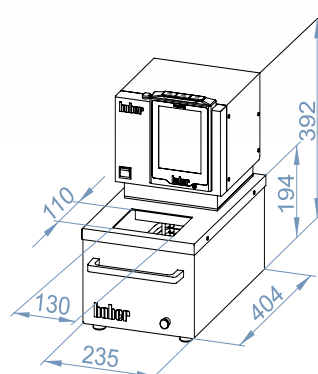
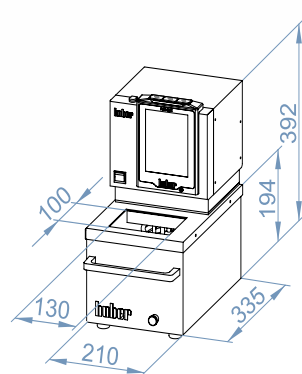
Model	Temperature Range (°C)	Heating Power (kW)	Temperature Stability* (K)	Pump Data				Cat.No.	G	Price
				max. Pressure (l/min)	max. Pressure (bar)	max. Suction (l/min)	max. Suction (bar)			
CC®-200BX	(-20)28...200	2,0	0,02	27	0,7	25	0,4	2000.0003.01	1	
CC®-300BX	(-20)28...300	3,0/4,0	0,02	27	0,7	25	0,4	2007.0002.01	1	

* to DIN 12876

Heating bath circulators

Heating bath circulators are suitable for temperatures up to 200 °C or 300 °C depending on model. The Compatible Control models have a continuously variable pressure and suction pump. The pump pressure can be controlled with an optional pressure sensor, and so can protect your valuable glass-ware from

breakage. The machines are preferred and used for temperature control of externally connected applications. Additionally there is the possibility to control the temperature of objects placed directly in the open bath.



Model	Temperature Range (°C)	Bath Volume (ltr)	Bath Depth (mm)	Heating Power (kW)	Temperature Stability to DIN 12876 (K)	Pump Data				Cat.No.	G	Price
						max. Pressure (l/min)	(bar)	max. Suction (l/min)	(bar)			
CC®-205B	(-30) 45...200	5,0	150	2,0	0,02	27	0,7	25	0,4	2004.0001.01	1	
MPC®-205B	(-30) 45...200	5,0	150	2,0	0,05	20	0,2	17	0,18	2040.0005.99	1	
CC®-304B	(-20) 28...300	5,0	155	2,0	0,02	33	0,7	22	0,4	2005.0001.01	1	
CC®-308B	(-20) 28...300	8,5/5,2*	155	3,0	0,02	33	0,7	22	0,4	2006.0001.01	1	
CC®-315B	(-20) 28...300	15/8,5*	200	3,0/4,0	0,02	33	0,7	22	0,4	2007.0001.01	1	

* with displacement insert

▶ **Plug & Play**
3 years warranty



Natural
Refrigerant!

ECO
FRIENDLY

Cooling Circulators

Combinations of immersion circulators and insulated refrigeration baths are a low-cost solutions for direct thermoregulation for the temperature range -20/-30 °C to 200 °C. The refrigeration baths operate with natural refrigerants. A pump adapter (optional) can be fitted for thermoregulation of externally closed and externally open* applications. Models

with the **Pilot ONE** have a variable speed pressure/suction pump and are suitable for externally open thermoregulation applications. The temperature stability is 0,02 K for the Compatible Control models and 0,05 K for the MPC models.

*with optional level control

Model	Working Temp. Range (°C)	Heating Power (kW)	Bath Opening (mm)	Bath Depth (mm)	Volume (ltr)	Pump Data				Cooling Power (kW) at			Dimensions W x D x H (mm)	Cat.No.	G	Price
						max. Pressure (l/min)	max. Pressure (bar)	max. Suction (l/min)	max. Suction (bar)	0°C	-10°C	-20°C				
CC®-K12	-20...200	2	290 x 152	150	12	27	0,7	25	0,4	0,2	0,12	0,05	350 x 560 x 430	2009.0002.01	2	
MPC®-K12	-20...200	2	290 x 152	150	12	20	0,2	17	0,18	0,2	0,12	0,05	350 x 560 x 430	2009.0011.99	2	
CC®-K15	-20...200	2	290 x 152	200	15	27	0,7	25	0,4	0,2	0,12	0,05	350 x 560 x 430	2010.0002.01	2	
MPC®-K15	-20...200	2	290 x 152	200	15	20	0,2	17	0,18	0,2	0,12	0,05	350 x 560 x 430	2010.0010.99	2	
CC®-K20	-30...200	2	290 x 329	150	20	27	0,7	25	0,4	0,35	0,27	0,16	350 x 555 x 615	2011.0002.01	2	
MPC®-K20	-30...200	2	290 x 329	150	20	20	0,2	17	0,18	0,35	0,27	0,16	350 x 555 x 615	2011.0009.99	2	
CC®-K25	-30...200	2	290 x 329	200	25	27	0,7	25	0,4	0,35	0,27	0,16	350 x 555 x 615	2012.0002.01	2	
MPC®-K25	-30...200	2	290 x 329	200	25	20	0,2	17	0,18	0,35	0,27	0,16	350 x 555 x 615	2012.0009.99	2	

Safety class III/FL

All units use natural refrigerant as standard

Compatible Control Refrigeration Circulators

The K6 models are compact refrigeration bath circulators for temperatures from -25 to 200 °C. These units are a combination of a refrigerated bath and immersion circulator, in combination with an integrated pump they are suitable for external open* or closed applications.

The CC-E immersion circulator with its suction/pressure pump is suitable for externally open and closed applications. The temperature stability is 0,02 K for the Compatible Control models and 0,05 K for the MPC models.

*with optional level control



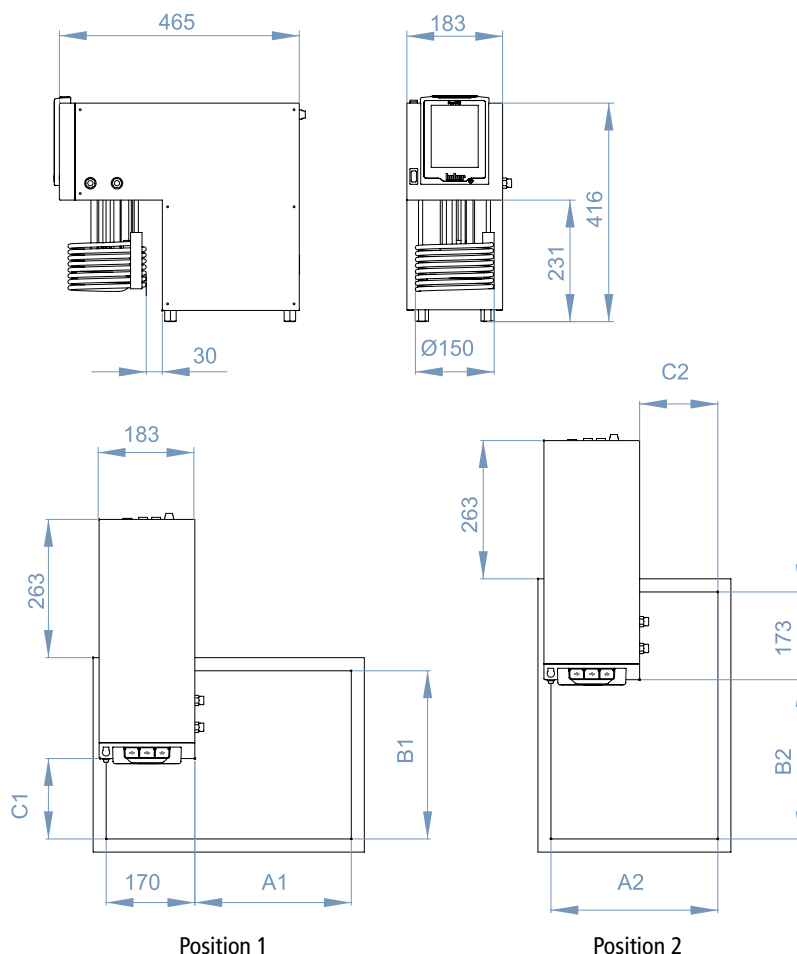
| CC®-K6 |
| CC®-K6s |



| MPC®-K6 |
| MPC®-K6s |

Model	Working Temperature Range (°C)	Heating Power (kW)	Bath Opening (mm)	Bath Depth (mm)	Volume (ltr)	Pump Data				Cooling Power (kW) at (°C)			Dimensions WxDxH (mm)	Cat.No.	G	Price
						max. Pressure (l/min) (bar)	max. Suction (l/min) (bar)			20	0	-20				
CC®-K6	-25...200	2	140x120	150	4,5	27	0,7	25	0,4	0,20	0,15	0,05	210x400x546	2008.0005.01	2	
MPC®-K6	-25...200	2	140x120	150	4,5	20	0,2	17	0,18	0,20	0,15	0,05	210x400x546	2008.0019.99	2	
CC®-K6s	-25...200	2	140x120	150	4,5	27	0,7	25	0,4	0,26	0,21	0,05	210x400x546	2008.0002.01	2	
MPC®-K6s	-25...200	2	140x120	150	4,5	20	0,2	17	0,18	0,26	0,21	0,05	210x400x546	2008.0020.99	2	

All units use natural refrigerant as standard



Variostat® – the cooling circulator for a variety of baths

This unique immersion circulator can thermoregulate a wide range of baths between -30 °C and 150 °C. The innovative construction allows the user ultimate flexibility. The circulation can be adjusted to suit the bath size using the stepless variable speed suction/pressure pump. The pump can also be controlled with an optional pressure sensor for external applications.

Insulated stainless steel baths are available in three standard sizes or can be made to measure. A drain is fitted as standard on the short side (or on request this can be fitted on the long side). The order number has the suffix L to indicate the drain on the long side (Example 6052-L).

Natural
Refrigerant!



Volume (Litre)	End Temp. (°C)	Cooling Time* (min) with Ethanol to			free Bath Opening (mm)					
		0°C	-10°C	-20°C	Position 1			Position 2		
5,5	-30	15	30	55	85	160	—	160	85	—
11,0	-25	30	60	110	200	200	28	200	198	30
22,0	-20	65	130	240	300	320	148	320	298	150

*Cooling time, measured with 2/3 of bath covered

Insulated baths see Page 99

Model	Working Temperature Range (°C)	Bath Volume (litr)	Heating Power (kW)	Pump Data				Cooling Power (kW) at (°C)					Cat.No.	G	Price
				max. Pressure (l/min)	max. Suction (bar)	max. Pressure (l/min)	max. Suction (bar)	100	20	0	-20	-30			
Variostat®	-30...150	variable	1,0	27	0,7	20	0,4	0,3	0,3	0,2	0,12	0,03	2013.0003.01	2	

Function version available by E-grade®

Temperature Stability to DIN 12876: 0,02 K

Natural refrigerant as standard

All stainless steel Ministats® set the standard in the compact class

Natural Refrigerant!

ECO FRIENDLY

Exceptionally compact and powerful, Ministats have been the smallest cooling circulators in the world since 1976. Their compact form allows them to be placed in small spaces, e.g. in a laboratory extraction hood. All three Ministats are now available with air or water cooling. Compliance with DIN 12876, class 3 allows them to be used unsupervised in continual operation. The maximum ambient temperature is 40 °C.

The powerful variable speed pressure/suction pump can thermoregulate objects in the bath or external applications. The maximum pressure can be controlled using an optional pressure sensor – VPC (Variable Pressure Control) – which protects delicate glassware. The small volume and high power of the Ministats means exceptionally rapid heating and cooling rates are achieved. Optional displacement inserts reduce the bath volume by approximately 50 % amplifying this effect and reducing moisture absorption in the thermal fluid. All models have Active Cooling Control for cooling power control at the maximum working temperature and an automatic cooling power regulation for energy saving operation and reduced heat dissipation into the lab. The bath opening is large enough to allow small objects to be thermoregulated within. All parts in contact with

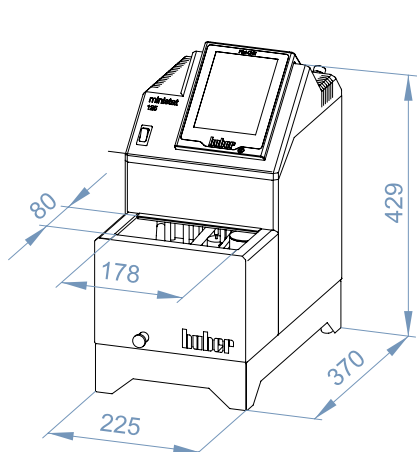
the thermal fluid are made of stainless steel or Polycarbonate.

Ministats have the **Pilot ONE** with Plug & Play technology (proven since 1980). In the event of service the controller can be simply swapped. Using a data cable the Ministat can be remotely controlled. The **Pilot ONE** has a state of the art microprocessor controller and a high precision temperature measurement system for exact and reproducible temperature control. The functionality and TFT-display are supported by Easy Control. Ministats can be fitted with a Com.G@te (NAMUR Standard) allowing them to be integrated into a process control system.

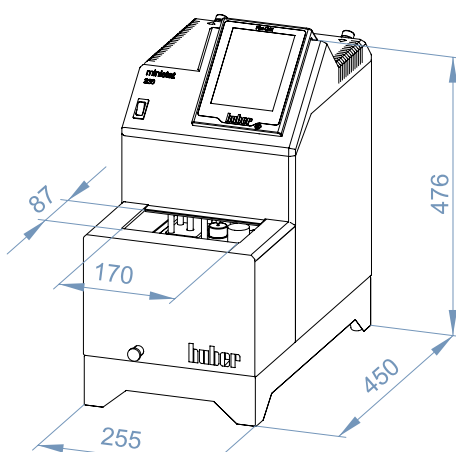
Typical applications for the smallest cooling circulator in the world are external closed systems e.g. photometer, refractometer and viscosimeter.

Increased functionality with optional accessories:

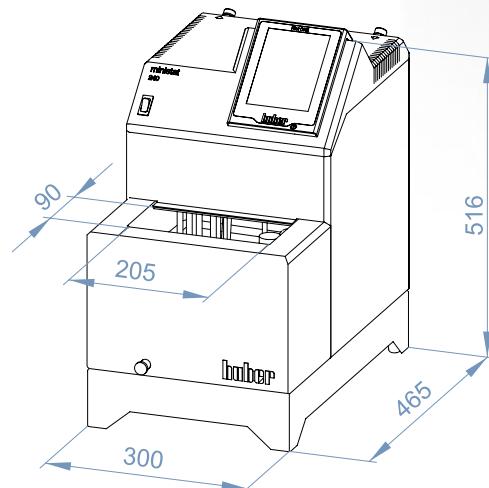
- External pressure sensor for VPC pressure control
- Com.G@te (NAMUR Standard): RS232, RS485, programmable volt-free contact, ECS (external control signal), Level monitoring
- Calibration and displacement inserts



| Ministat® 125 |



| Ministat® 230 |



| Ministat® 240 |

Model	Working Temperature Range (°C)	Bath		Heating Power (kW)	Pump Data				Cooling Power (kW) at (°C)				Cat.No.	G	Price
		Volume (ltr)	Depth (mm)		max. Pressure (l/min) (bar)	max. Suction (l/min) (bar)			20	0	-20	-30			
Ministat® 125	-25...150	2,75/1,3*	120	1,0	27	0,7	20	0,4	0,30	0,21	0,05	–	2014.0011.01	2	
Ministat® 125w	-25...150	2,75/1,3*	120	1,0	27	0,7	20	0,4	0,30	0,20	0,10	–	2014.0006.01	2	
Ministat® 230	-40...200	3,2/1,7*	135	2,0	27	0,7	20	0,4	0,42	0,38	0,25	0,14	2015.0005.01	2	
Ministat® 230w	-40...200	3,2/1,7*	135	2,0	27	0,7	20	0,4	0,42	0,38	0,25	0,14	2015.0007.01	2	
Ministat® 240	-45...200	4,9/2,8*	157	2,0	27	0,7	20	0,4	0,60	0,55	0,35	0,125	2016.0005.01	2	
Ministat® 240w	-45...200	4,9/2,8*	157	2,0	27	0,7	20	0,4	0,60	0,55	0,35	0,125	2016.0006.01	2	

* with displacement insert

Temperature Stability to DIN 12876: 0,02 K

All units use natural refrigerant as standard



| Ministat® 240 |

| Ministat® 230 |

| Ministat® 125** |

Features

- Compact ergonomic design
- **Pilot ONE** with Plug & Play technology
- Large and full colour 5,7" TFT touch-screen, EASY Control
- Connections for RS232, USB and Ethernet
- Steplessly variable pump speed for homogeneous temperature distribution in bath or optimal circulation and heat transfer in external applications
- Active Cooling Control
- Pt100 External-Sensor
- Calibratable temperature sensor
- Adjustable over temperature and level protection
- Compliant with DIN12876-1 class 3
- Pump connections for external applications
- Bath opening for thermoregulation of objects in bath
- Drain tap on front (option)**

VPC

Variable Pressure Control

DIN 12876

Our cooling powers are always quoted at full pump speed

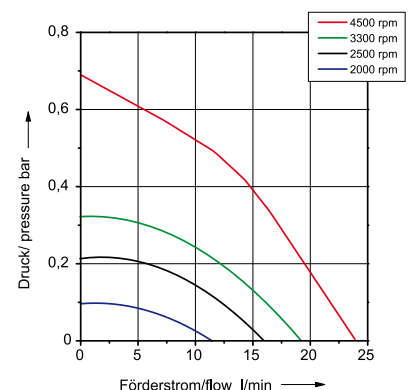
Plug & Play

3 years warranty

Cooling Power to DIN

DIN – Deutsches Institut für Normung, is the national standards body for Germany. The standard, DIN 12876, demands that the quoted cooling capacity is to be measured during full pump power. Reducing the pump power reduces the heat entering the system. This leads to more net cooling capacity and makes lower temperatures possible. Ministats have an unusually strong pump. Reducing the pump speed increases in cooling power can be obtained from 30 to 50 Watts and over up to 5 °C lower end temperatures. We always quote the cooling power at full pump power.

Pumpenkennlinie/ pump curve Ministat 125, 230, 240

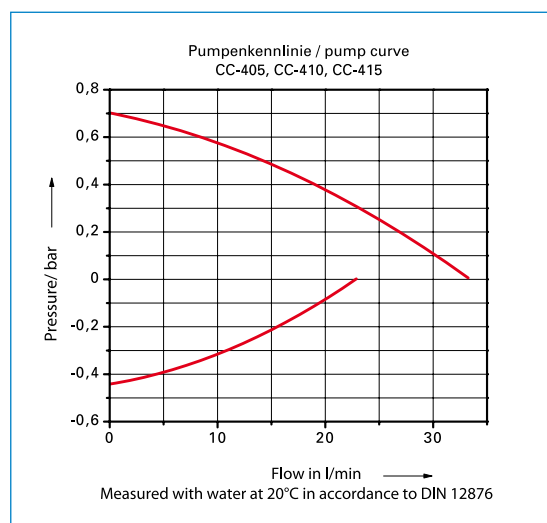


Refrigeration Bath Circulators

Huber refrigerated bath circulators perform safe and repeatable heating and cooling tasks in the lab. 22 models covering the range -90 to 200 °C with a selection of heating and cooling powers are available with air or water cooling (w). Natural refrigerants for environmentally friendly operation are available on request. A powerful variable speed pressure/suction pump allows the thermoregulation of objects directly in the bath or can be used to control external applications. The pump speed is stepless and when used in combination with an optional pressure sensor the maximum pressure can be controlled. VPC (Variable Pressure Control) ensures the best circulation and protects delicate glass apparatus from breakage caused by overpressure.

Small volume and high heating and cooling powers result in the shortest heating and cooling rates. Optional displacement inserts reduce the bath volume by half increasing this effect. Additionally the bath surface area is reduced, lowering moisture absorption. The optional calibration insert allows all Huber refrigeration circulators to be used as calibration baths.

The calibration insert ensures an even temperature distribution with a temperature stability of $\pm 0,01$ K. All models have Active Cooling Control for cooling power control at the maximum working temperature and an automatic cooling power regulation for energy saving operation and reduced heat dissipation into the lab. Depending on the model carry handles or castors are fitted for easy transportation. The drain is located on the front of the unit to enable simple drainage of the bath. The cover plate is thermoregulated to avoid condensation. All models have the **Pilot ONE** with Plug & Play technology which can be simply swapped in the event of a service.



| CC®-405 |



Model	Working Temperature Range (°C)	Bath		Heating Power (kW)	Pump Data				Cooling Power (kW) at (°C)						Cat.No.	G	Price
		Volume (litr)	Depth (mm)		max. Pressure (l/min)	max. Pressure (bar)	max. Suction (l/min)	max. Suction (bar)	100	20	0	-20	-30	-40			
CC®-405	-40...200	5	150	1,5	33	0,7	22	0,4	0,7	0,7	0,7	0,45	0,18	0,03	2017.0001.01	2	
CC®-405w	-40...200	5	150	1,5	33	0,7	22	0,4	0,7	0,7	0,7	0,45	0,18	0,03	2017.0002.01	2	
CC®-410	-45...200	22/8,5*	200	3,0	33	0,7	22	0,4	0,8	0,8	0,8	0,5	0,15	0,1	2019.0004.01	2	
CC®-410wl	-45...200	22/8,5*	200	3,0	33	0,7	22	0,4	0,8	0,8	0,8	0,5	0,15	0,1	2019.0001.01	3	
CC®-415	-40...200	5	150	1,5	33	0,7	22	0,4	1,2	1,2	1,0	0,6	0,2	0,05	2018.0001.01	2	
CC®-415wl	-40...200	5	150	1,5	33	0,7	22	0,4	1,2	1,2	1,0	0,6	0,2	0,05	2018.0002.01	3	

* with displacement insert

Option: natural refrigerant available on request

Temperature Stability to DIN 12876: 0,02 K

The **Pilot ONE** can be used as a remote control (with data cable). The **Pilot ONE** is a high tech microprocessor based controller with a high precision measurement system for exact and reproducible results. The wide ranging functionality is supported by a large TFT display and simple operation. Huber refrigeration circulators can be equipped with a Com.G@te to the NAMUR standard to enable integration in a process control system. Depending on the bath dimensions objects can be thermoregulated within the bath. Typical applications for these classics are the thermoregulation of externally closed systems, e.g. photometer, refractometer, viscosimeter, double-jacketed reactors and autoclaves. They are used in miniplants, kilo labs, for stock point measurement, for low temperature calibration, for petroleum tests and many more applications.



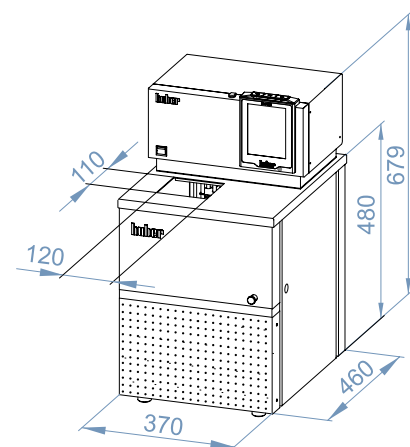
Variable Pressure Control



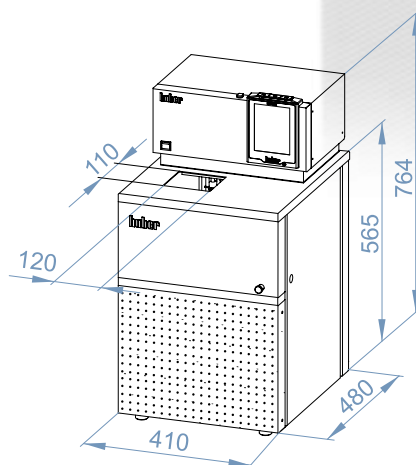
3 years warranty

Natural
Refrigerant!

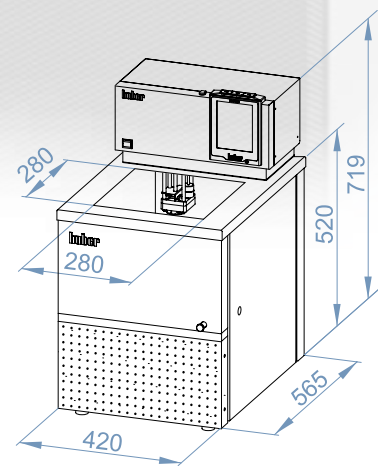
ECO
FRIENDLY



| CC®-405, CC®-405w |



| CC®-415, CC®-415wl |



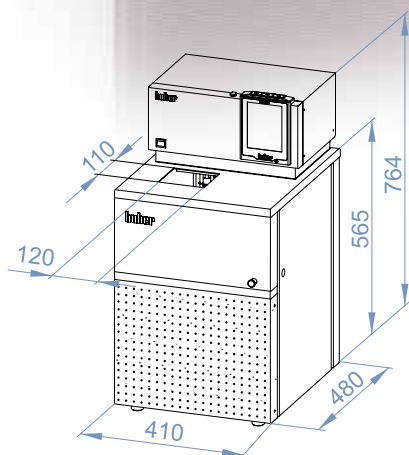
| CC®-410, CC®-410wl |

| CC®-415wl |





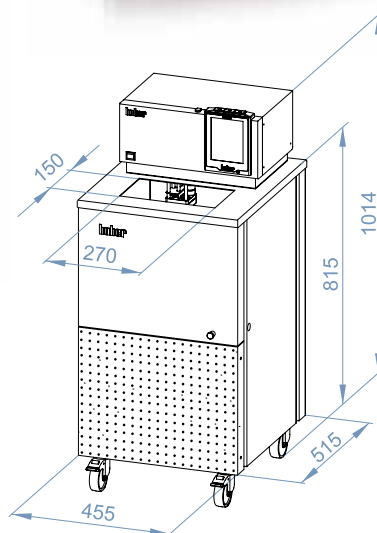
| CC®-505 |



| CC®-505, CC®-505wl, CC®-508, CC®-508w |



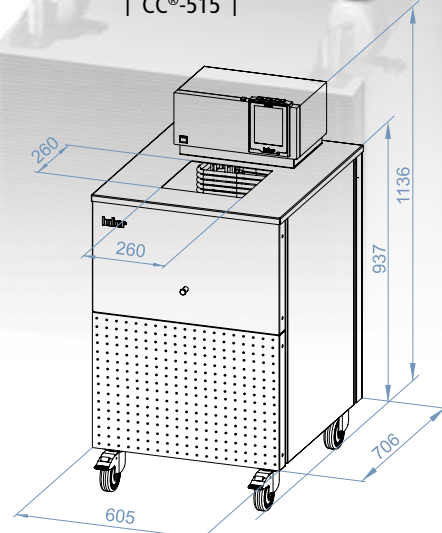
| CC®-510 |



| CC®-510w, CC®-515w |



| CC®-515 |



| CC®-510, CC®-515 |

Model	Working Temp. Range (°C)	Bath		Heating Power (kW)	Pump Data				Cooling Power (kW) at (°C)					Cat.No.	G	Price
		Volume (ltr)	Depth (mm)		max. Pressure (l/min)	max. Pressure (bar)	max. Suction (l/min)	max. Suction (bar)	100	20	0	-20	-40			
CC®-505	-50...200	5	150	1,5	33	0,7	22	0,4	1,2	1,2	1,0	0,6	0,15	2018.0003.01	2	
CC®-505wl	-50...200	5	150	1,5	33	0,7	22	0,4	1,2	1,2	1,0	0,6	0,15	2018.0004.01	3	
CC®-508	-55...200	5	160	3,0	33	0,7	22	0,4	1,5	1,5	1,5	1,0	0,3	2018.0013.01	2	
CC®-508w	-55...200	5	160	3,0	33	0,7	22	0,4	1,5	1,5	1,5	1,0	0,3	2018.0016.01	2	
CC®-510	-50...200	26/15*	200	3,0	31	0,6	24	0,35	2,1	2,1	2,1	1,0	0,4	2020.0010.01	2	
CC®-510w	-50...200	18/11*	200	3,0	31	0,6	24	0,35	2,4	2,4	2,4	1,0	0,4	2020.0002.01	2	
CC®-515	-55...200	26/15*	200	3,0	31	0,6	24	0,35	3,3	3,3	3,3	1,6	0,6	2021.0001.01	2	
CC®-515w	-55...200	18/11*	200	3,0	31	0,6	24	0,35	3,3	3,3	3,3	1,6	0,6	2020.0003.01	2	
CC®-520w	-55...200	17/10*	200	3,0	31	0,6	24	0,35	5,0	5,0	5,0	3,0	1,5	2022.0001.01	3	
CC®-525w	-55...100	17/10*	200	3,0	31	0,6	24	0,35	7,0	7,0	5,0	3,0	1,5	2023.0001.01	3	

* with displacement insert

Function version available by E-grade®

Option: natural refrigerant available on request

Temperature Stability to DIN 12876: 0,02 K

Features

- Compact ergonomic design
- **Pilot ONE** with Plug & Play technology
- Display protected against splashing
- Large and full colour 5,7" TFT touchscreen
- Connections for RS232, USB and Ethernet
- Steplessly variable pump speed for homogeneous temperature distribution in bath or optimal circulation and heat transfer in external applications
- Active Cooling Control – mechanical cooling up to maximum working temperature
- Intelligent energy management with cooling power control for energy saving, environmentally friendly operation and reduced heat emissions
- Pt100 External-Sensor connection via 4-wire Lemo plug
- Calibratable temperature sensor
- Adjustable over temperature and level protection
- Low level early warning system
- Compliant with DIN12876-1 safety class III/FL
- Pump connections for external applications
- Bath opening for direct thermoregulation of objects
- Temperature controlled bath housing to prevent the formation of ice or condensation
- Drain on front (for regular fluid change: optional drain valve)

■ Increased functionality with Pilot ONE®

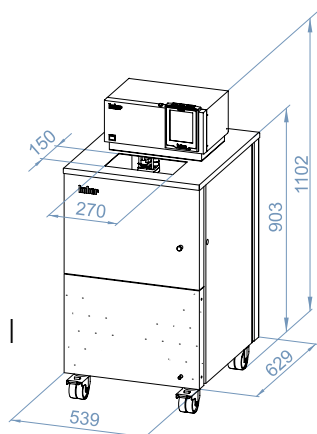
E-grade® (Optional):

- True Adaptive Control – self optimising internal and cascade control
- Display resolution 0,01 K
- Integrated programmer with 3 programs each with 5 segments or up to 100 segments distributed over 10 programs
- Ramp function for quick temperature changes
- Multi point calibration of temperature sensor

■ Increased functionality with accessories (Optional):

- External pressure sensor for VPC pressure control
- Com.G@te acc. to NAMUR Standard RS232, RS485, programmable volt-free contact, ECS (external control signal), level monitoring
- Calibration and displacement inserts

Natural
Refrigerant!



| CC®-520w, CC®-525w |

| CC®-520w |

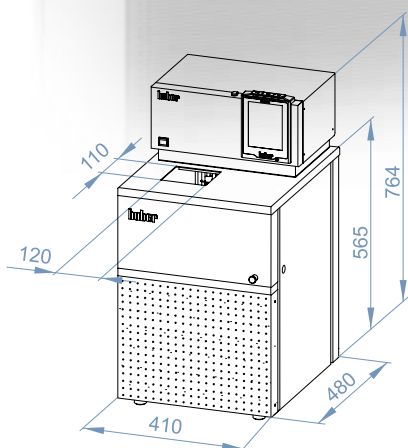


The CC-805 is a low cost alternative for low temperature applications when low power is required.

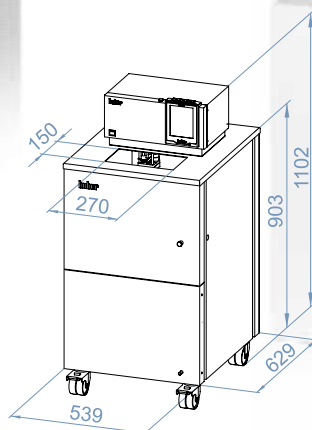


| CC®-805 |

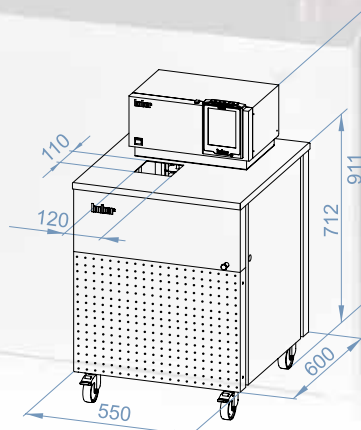
| CC®-820w |



| CC®-805 |



| CC®-820, CC®-820w |



| CC®-902 |

Model	Working Temp. Range (°C)	Bath		Heating Power (kW)	Pump Data				Cooling Power (kW) at (°C)						Cat.No.	G	Price
		Volume (litr)	Depth (mm)		max. Pressure (l/min)	max. Suction (bar)	(l/min)	(bar)	100	20	0	-20	-40	-60			
CC®-805	-80...100	5	150	1,5	33	0,7	22	0,4	0,5	0,5	0,5	0,4	0,3	0,3	2024.0001.01	2	
CC®-820	-80...100	17/10*	200	3,0	31	0,6	24	0,35	1,2	1,2	1,2	1,1	0,9	0,6	2025.0001.01	3	
CC®-820w	-80...100	17/10*	200	3,0	31	0,6	24	0,35	1,2	1,2	1,2	1,1	0,9	0,6	2025.0002.01	3	
CC®-902	-90...200	5	150	1,5	33	0,7	22	0,4	1,2	1,2	1,2	1,1	0,9	0,6	2026.0005.01	3	
CC®-905	-90...200	26/15*	200	3,0	31	0,6	24	0,35	2,0	2,0	2,0	1,9	1,7	1,0	2027.0001.01	3	
CC®-905w	-90...200	26/15*	200	3,0	31	0,6	24	0,35	2,0	2,0	2,0	1,9	1,7	1,0	2027.0002.01	3	
CC®-906w	-90...200	30/19*	200	3,0	31	0,6	24	0,35	3,0	3,0	3,0	2,8	2,4	1,6	2036.0001.01	3	

* with displacement insert

Function version available by E-grade®

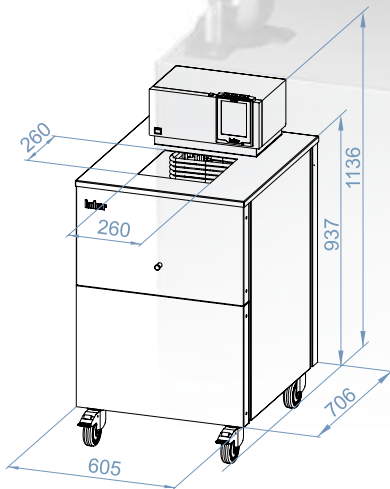
Option: natural refrigerant available on request

Temperature Stability to DIN 12876: 0,02 K



| CC®-902 |

| CC®-905w |

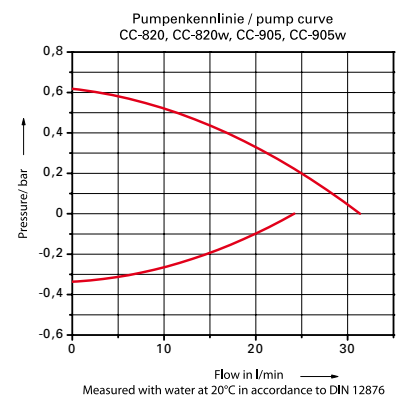
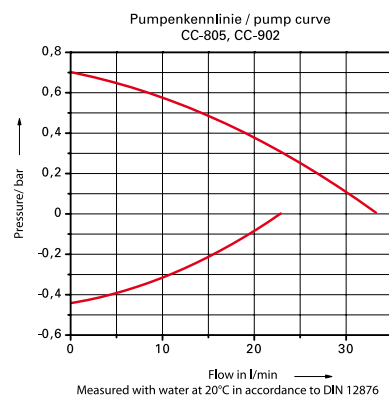


| CC®-905, CC®-905w, CC®-906w |

Pump Data

Natural
Refrigerant!

ECO
FRIENDLY



Special Products

A range of „Special“ products have been developed, offering temperature control solutions for special applications. This includes, for example, a force-ageing-test bath for beer production (to establish the storage time).

A special solution for integration into systems is

the “Hotbox” – a product line of compact heating circulators for externally open temperature control applications.

The calibration bath Cal 700 enables, in combination with a Unistat, the highly precise calibration of sensors and test equipment.



Penguins possess a highly developed heat exchanger in their flippers and legs. The warmer blood flowing in, gives up its heat to the cooler blood flowing back. The heat loss is minimised. In temperature control technology this is called the counter flow principle.



For more information
scan this QR-Code



Beer Force-Ageing-Test Bath

We offer a special air cooled circulator for the Beer Force-Ageing-Test. It is equipped with a programmer for the change between 0 °C / 40 °C and 0 °C / 60 °C in a 24 hour cycle. Casings and bath parts are made of stainless steel.



| BFT®5 |

Model	Working Temperature Range (°C)	Bath Opening W x D (mm)	Bath Depth (mm)	Heating Power (kW)	Cooling Power at 20°C (kW)	Dimensions W x D x H (mm)	Cat.No.	G	Price
BFT®5	-40...80	350x410	270	2,0	1,2	460x710x911	2041.0001.01	3	

Safety class III/FL



Flexible solutions for calibration
in production

Cal 700 – Calibration bath for
measurement and control sensors



High Precision Calibration

Calibration is a comparison between a measurement system and a reference or standard. During the comparison it is established how large the deviation between the two values or if the value lies within the specified limits. Calibration is normally carried out in accordance with rigorous national or international standards. Meaningful and comparable measurements around the world require calibrated instruments. The quality of measurements is defined in terms of tolerance and repeatability, and is only achievable with the use of calibrated measurement devices or by adjusting sensors. Calibration baths are used in quality management departments of industry and research. The modular concept based on the combination of a calibration bath with a Unistat, which dictates the temperature range and speed of temperature change. The stainless steel calibration bath is designed in a similar format to a calorimeter to ensure temperature homogeneity. Baths with a 118 mm diameter and depth of 384 mm are offered for calibration of measurement and control sensors. The calibration space is freely accessible and symmetrical. The upper edge is designed to allow exact reading of the temperature measured by glass thermometers and also offers a tight seal for the customer specific bath lid. Special calibration software in the circulator and the self-optimising controller with TAC technology mean short times between the different calibration temperatures.

The calibration space of the baths can be customised to suit specific customer requirements.

Advantages

- Highest temperature stability up to $\pm 0,002$ K
- Temperature homogeneity better than $\pm 0,01$ K
- External overflow vessel
- 5-point calibration of the control sensor

The insulated stainless steel or PTFE bath covers allow for individual data recordings for sensors and thermometers, etc. We can custom design and manufacture the covers to your specifications (additional cost).

Accessories	Temperature Range (°C)	Cat.No.	G	Price
Bath Covers stainless steel*	-100...300	6367	1	
Bath Covers PTFE*	-100...200	6365	1	

* Additional cost for holes

See page 97 for the calibration inserts for our bath circulators.

Model	Temperature Range (°C)	Pump Connection	Dimensions W x D x H (mm)	Opening (mm)	Bath Depth (mm)	Volume (ltr)	Cat.No.	G	Price
Cal 700	-100...300	M30x1,5	300 (440*) x 300 x 566	Ø118	384	7,0	9623	3	

* with external overflow vessel (140 mm)

Hotbox

The Hotbox is a heating circulator with **Pilot ONE** for thermoregulation of externally open applications. With its compact form the Hotbox is ideal for installation in production systems. The Hotbox has a stainless steel pump and adjustable over temperature protection complying with DIN 12876.



| Application example |



| HB120 |

Model	Working Temperature Range (°C)	Connection	Pump Flow Rate (l/min)	max. Pressure (bar)	Heating Power (kW)	Dimensions WxDxH (mm)	Cat.No.	G	Price
HB45	45...250	M24x1,5	55	0,9	4,5	185x440x405	2030.0001.01	3	
HB60	60...250	M30x1,5	90	2,5	6,0	323x451x498	2031.0004.01	3	
HB120	60...250	M30x1,5	100	2,5	12,0	323x451x498	2031.0003.01	3	

Heat Transfer Station (HTS)

The HTS as no mechanical refrigeration but is fitted with a circulation pump, a plate heat exchanger and the **Pilot ONE** controller*. This compact circulator provides low cost cooling with a predictably stable pressure and flow to the application. As no mechanical refrigeration system is fitted (compressor etc.), the machine is silent, efficient and energy saving. It offers an economic alternative to standard circulators when a chilled water supply is already available. The HTS heat exchanger is suited for temperature control of bio reactors, condensers, rotary evaporators, vapour traps etc.

Advantages: Models HTS PS3-PS15

- Efficient circulation pump
- **Pilot ONE** controller
- RS232 interface
- Pt100 external sensor connection
- Efficient thermal transfer
- Low cooling water usage
- Application protection with cooling stage separation

*Model HTS PS1

This model includes the heat exchanger system, but is not equipped with the **Pilot ONE** controller. This unit is suitable for less demanding applications.



| HTS PS5 |

Model	Operating Temperature Range (°C)	Pump Flow Rate (l/min)	max. Pressure (bar)	Cooling Power ² at 20°C (kW)	Heating Power OPTIONAL (max. kW) ³	Dimensions W x D x H (mm)	Cat.No.	G	Price
HTS PS1 ¹	5...80	8	0,2	0,6	—	280 x 427 x 414	3011.0008.99	2	
HTS PS3	3...95	33	0,7	3,0	2	280 x 491 x 414	3011.0001.01	3	
HTS PS5	3...95	25	2,5	5,0	2	280 x 491 x 414	3011.0006.01	3	
HTS PS6	3...95	25	2,5	6,0	10	400 x 491 x 529	3011.0002.01	3	
HTS PS15	3...95	25	2,5	15,0	10	400 x 491 x 529	3011.0024.01	4	

¹ air cooled

² Cooling power data measured with cooling water-inlet temperature of 10 °C and 2 bar

³ Optionally available on request with heating and over temperature protection

Accessories

All accessories are designed to optimise the operation of your Huber temperature control unit. The highest material quality and tested functionality guarantee reliability and the best temperature control results.

The range of accessories allow you to find all you need to operate your temperature control system. Stainless steel baths, hoses, thermal fluids, adapters, Pt100 sensors, software, interfaces and much more.



The seal can dive for an extensive time, but must always return to the surface to breathe. In order to extend the dive time, the seal slows down its metabolism and actively lowers the body temperature so that less Oxygen is required.



For more information
scan this QR-Code





| Pilot ONE® |

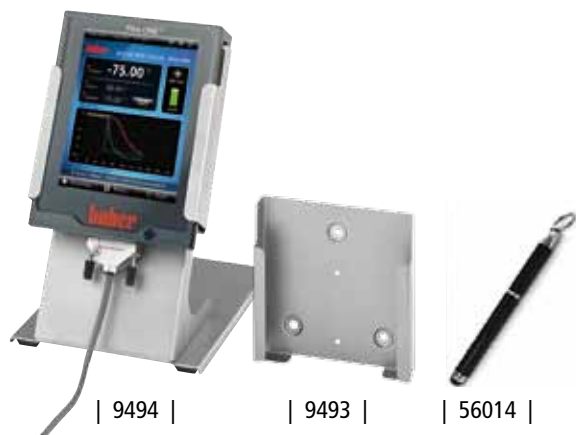
Plug & Play Controller

Controller with E-grade function to upgrade or as a replacement for an existing temperature control machine.

Controller	Cat.No.	G	Price
Pilot ONE® controller for CC® Circulators, Unichiller®, Unistats®	503.0011	3	

Accessories for Controller

Holder and extension cable for using the Plug & Play controller as a remote control.



| 9494 |

| 9493 |

| 56014 |

Controller	Cat.No.	G	Price
Table stand for Pilot ONE®	9494	1	
Wall mounting bracket for Pilot ONE®	9493	1	
Side mounting bracket for Pilot ONE®	10072	1	
Extension cable for controller Pilot ONE® for using the controller as remote control, length 3 m	16160	1	
USB connection cable for controller Pilot ONE® to PC	54949	1	
Touchpen set for Pilot ONE®	56014	1	

External Pt100 sensors

For external thermoregulation applications a range of sensors are available. Special versions can be made on request.



Sensors (Standard cable length 1,5 m)	Cat.No.	G	Price
Closed, Ø 6 mm, 180 mm	6138	1	
Closed with handle Ø 6 mm, 200 mm	6105	1	
Closed Ø 8 mm, 400 mm	6064	1	
Open in protective pipe Ø 8 mm, 170 mm	6205	1	
M16x1 sensor for flow or return	6352	1	
M16x1 sensor for flow or return double	6353	1	
M30x1,5 sensor for flow or return	6509	1	
M30x1,5 sensor for flow or return double	6510	1	
G3/4 sensor for flow or return	10142	1	
G1 1/4 sensor for flow or return	9937	1	
Extension cable Pt100, length 3 m	6292	1	

Calibration bend

Calibration bend mounted on the machine outlet. The calibration bend has a sensor pocket for sensor which has to be calibrated by the user. The measured value appears on the display as reference for the internal flow temperature sensor.



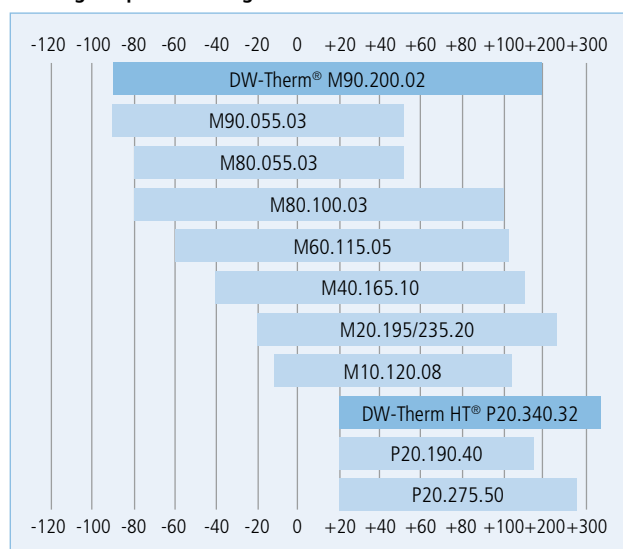
Calibration bend	Cat.No.	G	Price
for calibration of the internal flow temp. sensor (Ø 4mm)	M16x1	9914	1
for calibration of the internal flow temp. sensor (Ø 6mm)	M24x1,5	10005	1
for calibration of the internal flow temp. sensor (Ø 6mm)	M30x1,5	9779	1
for calibration of the internal flow temp. sensor (Ø 6mm)	M38x1,5	9925	1

More dimensions and configurations on request

Thermal Fluids

Huber thermal fluids are recommended because they have the best possible thermodynamic and environmental characteristics. Safe reliable operation relies on compliance with safety standards to ensure optimal results. Safety datasheets are available to download at www.huber-online.com.

Working temperature Range for Thermal Fluids



The product name gives information about the characteristics, e.g.:

Thermal Fluid	Temperature Range	Viscosity at 25 °C
P20.340.32	plus 20 °C ... +340 °C	32 mm ² /s
M40.165.10	minus 40 °C ... +165 °C	10 mm ² /s

Thermal Fluid	Litre	Cat.No. (G1)	Price
DW-Therm®*	M90.200.02	10	6479
DW-Therm HT®*	P20.340.32	5	6672
		10	6673
MinOil	P20.190.40	5	6155
		20	6156
SynOil	M10.120.08	5	9684
		10	9685
SilOil	P20.275.50	5	6157
		10	6158
SilOil	M20.195/235.20	5	6161
		10	6162
SilOil	M40.165.10	5	6163
		10	6164
SilOil	M60.115.05	5	6165
		10	6166
SilOil	M80.055.03	5	6167
		10	6168
SilOil	M80.100.03	5	6275
		10	6276
SilOil	M90.055.03	5	6258
		10	6259
Drain valve for thermal fluid		31735	
Antifreeze (Ethylenglykol)	10	6170	
	50	6171	
Algae Protection	0,1	6172	

* exclusive for Unistats®

DW-Therm® and DW-Therm HT® – exclusive for Unistats® (closed systems)

Specifications:

Temperature Range:

DW-Therm®

-90 °C ... +200 °C

Appearance:

transparent, colourless or yellow liquid

Silane content:

≥ 99 %

Viscosity:

2,0 – 2,2 mm²/sec at 20 °C

Density:

0,88 g/cm³ at 15 °C

Boiling Range:

228 – 235 °C

Solidification at:

-137 °C

Flash Point:

101 °C

Ignition temperature:

265 °C

Properties:

DW-Therm is a mixture of isometric triethoxysilanes and has been developed for hydraulically systems.

Notes:

- excellent stability at high temperatures
- low viscosity at low temperatures
- low volatility and pleasant odour
- easy handling (no creeping like silicone oils)
- good compatibility with silicone oils
- insoluble in water, environmentally friendly, nontoxic

DW-Therm HT®

+20 °C ... +340 °C

clear, orange coloured liquid

≥ 99,5 % partially hydrogenated terphenyls

32 mm²/sec at 25 °C

1,004 g/cm³ at 20 °C

approx. 350 °C

-33 °C

approx. 190 °C

approx. 390 °C

DW-Therm HT is a mixture of partially hydrogenated terphenyls. It is for use exclusively in high temperature Unistats.

- long lifetime at high temperatures under inert atmosphere: 3-4 years
- good thermal properties for heat transfer
- favourable heat transfer characteristics
- high thermal oxidation stability
- nontoxic

Hoses, insulated

Inner material PTFE* for optimum thermal transfer				Temperature Range	Length	Cat.No.	G	Price
NW 12	AD 37 mm	M24x1,5		-60...260 °C	100 cm	9325	1	
NW 12	AD 37 mm	M24x1,5		-60...260 °C	150 cm	9326	1	
NW 12	AD 37 mm	M24x1,5		-60...260 °C	200 cm	9327	1	
NW 12	AD 37 mm	M24x1,5		-60...260 °C	300 cm	9328	1	
NW 20	AD 44 mm	M30x1,5		-60...260 °C	100 cm	9612	1	
NW 20	AD 44 mm	M30x1,5		-60...260 °C	150 cm	9613	1	
NW 20	AD 44 mm	M30x1,5		-60...260 °C	200 cm	9614	1	
NW 20	AD 44 mm	M30x1,5		-60...260 °C	300 cm	9615	1	
NW 25	AD 56 mm	M38x1,5		-60...260 °C	100 cm	9616	1	
NW 25	AD 56 mm	M38x1,5		-60...260 °C	150 cm	9617	1	
NW 25	AD 56 mm	M38x1,5		-60...260 °C	200 cm	9618	1	
NW 25	AD 56 mm	M38x1,5		-60...260 °C	300 cm	9619	1	

* Inner material is PTFE with a smooth internal bore for best flow characteristics and optimum heat transfer

Inner material metal* for large temperature ranges				Temperature Range	Length	Cat.No.	G	Price
NW 12	AD 33 mm	M16x1		-50...200 °C	100 cm	9608	1	
NW 12	AD 33 mm	M16x1		-50...200 °C	150 cm	9609	1	
NW 12	AD 33 mm	M16x1		-50...200 °C	200 cm	9610	1	
NW 12	AD 33 mm	M16x1		-50...200 °C	300 cm	9611	1	
NW 12	AD 44 mm	M16x1		-100...350 °C	100 cm	6084	1	
NW 12	AD 44 mm	M16x1		-100...350 °C	150 cm	6085	1	
NW 12	AD 44 mm	M16x1		-100...350 °C	200 cm	6136	1	
NW 12	AD 44 mm	M16x1		-100...350 °C	300 cm	6255	1	
NW 12	AD 44 mm	M24x1,5		-100...350 °C	100 cm	9274	1	
NW 12	AD 44 mm	M24x1,5		-100...350 °C	150 cm	9275	1	
NW 12	AD 44 mm	M24x1,5		-100...350 °C	200 cm	9276	1	
NW 12	AD 44 mm	M24x1,5		-100...350 °C	300 cm	9277	1	
NW 12	AD 56 mm	M24x1,5		-120...400 °C	100 cm	6784	1	
NW 12	AD 56 mm	M24x1,5		-120...400 °C	150 cm	6785	1	
NW 12	AD 56 mm	M24x1,5		-120...400 °C	200 cm	6786	1	
NW 12	AD 56 mm	M24x1,5		-120...400 °C	300 cm	6787	1	
NW 20	AD 56 mm	M30x1,5		-100...350 °C	100 cm	6426	1	
NW 20	AD 56 mm	M30x1,5		-100...350 °C	150 cm	6386	1	
NW 20	AD 56 mm	M30x1,5		-100...350 °C	200 cm	6427	1	
NW 20	AD 56 mm	M30x1,5		-100...350 °C	300 cm	6428	1	
NW 25	AD 63 mm	M38x1,5		-100...350 °C	100 cm	6655	1	
NW 25	AD 63 mm	M38x1,5		-100...350 °C	150 cm	6656	1	
NW 25	AD 63 mm	M38x1,5		-100...350 °C	200 cm	6657	1	
NW 25	AD 63 mm	M38x1,5		-100...350 °C	300 cm	6658	1	

* Inner material is corrugated metal for especially high and low working temperatures

AD = External diameter

Hoses

Hose*			Temperature Range	Length	Cat.No.	G	Price/m
NW 3,2	PVC		-20...60 °C	variable	6072	1	
NW 8	PVC		-20...60 °C	variable	6071	1	
NW 12	PVC		-20...60 °C	variable	6070	1	
NW 8	NBR		-30...80 °C	variable	6075	1	
NW 12	NBR		-30...80 °C	variable	6073	1	
NW 8	Silicone		-40...180 °C	variable	6077	1	
NW 12	Silicone		-40...180 °C	variable	6076	1	
NW 8	FKM		-20...180 °C	variable	6079	1	
NW 12	FKM		-20...180 °C	variable	34322	1	
NW 8	PTFE		-60...180 °C	variable	6350	1	
NW 12	PTFE		-60...180 °C	variable	6351	1	

* As protection against condensation or for high temperatures, we recommend our listed insulated hoses

Flexible Braided Hoses

Hose (EPDM)	Temperature Range	Length	Cat.No.	G	Price
G½	-30...100 °C	100 cm	16851	1	
G½	-30...100 °C	150 cm	16852	1	
G½	-30...100 °C	200 cm	16853	1	
G¾	-30...100 °C	100 cm	16854	1	
G¾	-30...100 °C	150 cm	16855	1	
G¾	-30...100 °C	200 cm	16856	1	
G1	-30...100 °C	100 cm	16857	1	
G1	-30...100 °C	150 cm	16858	1	
G1	-30...100 °C	200 cm	16859	1	
G1 ¼	-30...100 °C	100 cm	18021	1	
G1 ¼	-30...100 °C	150 cm	18022	1	
G1 ¼	-30...100 °C	200 cm	18023	1	



Accessories

Hose Insulations

Insulation for	Thickness	Internal-Ø	Cat.No.	G	Price/m
Hose 8 mm	7 mm	13 mm	6083	1	
Hose 12 mm	7 mm	17 mm	6082	1	
Hose 12 mm	12 mm	17 mm	3968	1	
Metal hose, insulated M16x1	22 mm	42 mm	6375	1	
Metal hose, insulated M30x1,5	23 mm	57 mm	6377	1	
Metal hose G½	13 mm	22 mm	1782	1	
Metal hose G¾	13 mm	28 mm	1889	1	
Metal hose G1¼	22 mm	50 mm	6376	1	
Flexible braided hose G½, self-adhesive	19 mm	19 mm	10067	1	
Flexible braided hose G¾, self-adhesive	19 mm	28 mm	10068	1	
Flexible braided hose G1, self-adhesive	19 mm	35 mm	10069	1	
Flexible braided hose G1¼, self-adhesive	19 mm	42 mm	10070	1	



Unipump® Pressure Booster

Designed to compensate for pressure loss in external systems the Unipump is made of stainless steel for temperatures from -120 to 300 °C. The Unipump is connected in series with the pump of compatible control circulator and can be controlled via the voltfree contact of the Com.G@te.

Unipump®	Pressure Increase max. (bar)	Cat.No.	G	Price
Unipump® I DC® M24x1,5	1,0	527.0008	2	
Unipump® II M30x1,5	1,5	527.0019	2	
Unipump® II, 2-stage M30x1,5	2,5	527.0020	2	
Unipump® III M38x1,5	1,5	527.0021	2	
Unipump® III, 2-stage M38x1,5	2,5	527.0022	2	
Control Cable Unipump® / Unistat® (3 m)		6221	1	
Control Cable Unipump® I / CC® (3 m)		6222	1	



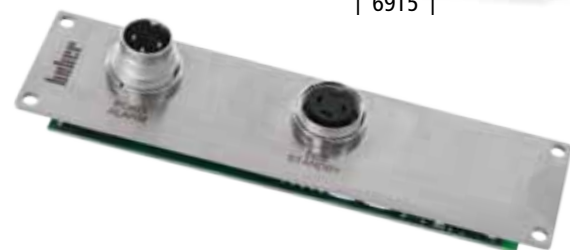
Com.G@te® and POKO/ECS Interface



| 31217 |



| 6915 |



| 10003 |

Units with the **Pilot ONE** controller have USB and LAN connections fitted as standard. For applications where additional connections are required, depending on the model, the following optional interface modules are available:

Com.G@te®

The Com.G@te has connections complying with the NAMUR Standard and is fitted as standard on all Unistats. The following interfaces are integrated: RS232 (bi-directional), RS485 (bi-directional), ECS external control signal, Volt free contact (programmable), AIF Analogue-Interface 0/4-20 mA or 0-10 V (bi-directional).

POKO/ECS Interface

The POKO/ECS Interface has connections complying with the NAMUR Standard and is fitted as standard on all Unistats. The following interfaces are integrated: ECS external control signal, POKO Volt free contact (programmable).

Com.G@te® (NAMUR)	Cat.No.	G	Price
Com.G@te®, internal version for Petite Fleur®, Ministats®, CC®	31217	1	
Com.G@te®, external version for Unistats®, CC®	6915	1	
POKO/ECS Interface for Ministats®, CC®	10003	1	
Holder for Com.G@te® for Unistats® (tower housing models)	10018	1	
Holder for Com.G@te® for Unistats® (bench top models)	10019	1	

Control cables



A range of control cables is available for USB, RS232, RS485 or analogue interfaces (AIF). Cables are also available for external control signal (ECS), a potential-free contact (POKO) or by an external float switch (LEVEL).

Control Cables (Standard length 3 m)	Cat.No.	G	Price
from			
Pilot ONE® , Mini-USB	54949	1	
Units with RS232 (9 pol.) / Com.G@te®	6146	1	
Units with RS232 (15 pol.)	55018	1	
Com.G@te® RS485	6279	1	
Com.G@te® AIF	9353	1	
Com.G@te® ECS	9491	1	
Com.G@te® POKO	9490	1	
Com.G@te® LEVEL	9492	1	



Profibus

The Profibus gateway enables the connection of Huber temperature control machines to Profibus systems, offering comprehensive facilities for data communication within SPS and process control systems.

Model	Cat.No.	G	Price
Profibus Gateway SE for units with Pilot ONE®	10074	3	

SpyLight®

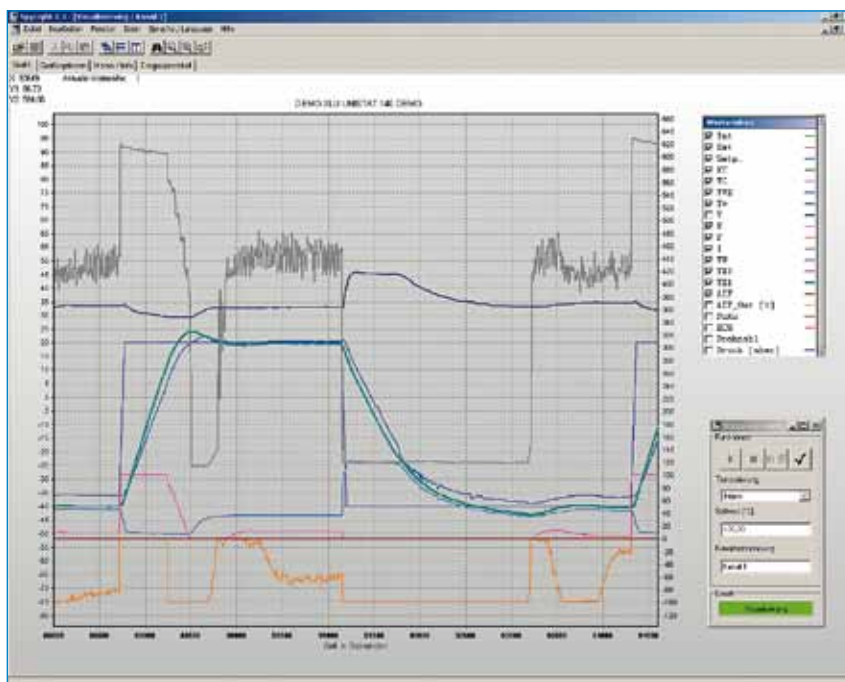
The SpyLight software (free of charge) enables process relevant data to be visualised and documented. The communication options are RS232, RS485, USB (virtual COM-Port) or TCP/IP. SpyLight is easy to install, is economic with computer resources and child's play to use. The recorded data is displayed to a base of time; the axes are freely scalable and a zoom function helps the evaluation of individual segments.

SpyControl®

SpyControl is based on the SpyLight software but offers more features. Installation and operation is identical. SpyControl can operate up to 10 channels simultaneously. Each channel is independently documented and the graphic options can be configured as required. SpyControl allows the user to issue the following instructions to the unit:

- Set point
- Change from jacket to process temperature
- Start/Stop

In addition the software offers the option of controlling one or more machines with a programmer. The user can provide temperature programs for the machines, which then automatically run. Segments of a temperature control program can be entered easily using the Temperature control-Xplorer which is a module of SpyControl. The temperature control programs produced can be modified or changed and archived. The basic course of a temperature control program can also be displayed graphically.



Test with a 20 litre reactor filled with DW-Therm



Temperature with ramp function in a 20 litre reactor filled with DW-Therm

Huber Software	Cat.No.	G	Price
SpyLight® (1 Channel)	6790	1	—
SpyControl® (10 Channel)	6792	1	

Trolleys

The stainless steel trolleys make the Compatible Control circulators mobile.

Model	Cat.No.	G	Price
Trolley for Unistat® tango®, 405w, T305/HT/w HT	9350	2	
Trolley for Unistat® 705, 705w, 410w	6263	2	
Trolley for Unistat® 405	9392	2	
Trolley for Unichiller®007, 010, 012w, 015w, 023w	9564	2	
Trolley for Unichiller®012, 015, 022w, 025w	9607	2	
Trolley for TC®100, TC®100-F, TC®100E, TC®100E-F	9442	2	
Trolley for K20, K25	6334	2	
Trolley for CC®-405	6715	2	
Trolley for CC®-410wl	6295	2	
Trolley for CC®-805, CC®-415, CC®-505, CC®-508	6235	2	
Trolley for Ministat® 125 / 125w	9596	2	
Trolley for Ministat® 230 / 230w	9597	2	
Trolley for Ministat® 240 / 240w	9598	2	



VPC Bypass for pressure reduction

Stepless controlled VPC Bypass				Cat.No.	G	Price
Stepless controlled VPC bypass (<u>not</u> mounted on unit) -90...+200°C	for Unistats®	M24x1,5		9819	4	
		M30x1,5		9726	4	
		M38x1,5		9820	4	
	for Unichiller®	G3/4		9767	4	
		G1 1/4		9757	4	
If VPC bypass is to be mounted <u>directly</u> on unit, please contact your local distributor with machine type.						

Manual bypass				Cat.No.	G	Price
For Unistats®	M16x1	-20...+140°C	6415	1		
	M24x1,5	-10...+150°C	9339	1		
	M30x1,5	-10...+150°C	6417	1		
	M38x1,5	-10...+150°C	9340	1		
For Unichiller®	G3/4	-20...+110°C	6933	1		
	G1 1/4	-20...+110°C	9414	1		

Manual bypass with pressure gauge				Cat.No.	G	Price
For Unistats®	M16x1	-20...+140°C	9889	1		
	M24x1,5	-10...+150°C	9969	1		
	M30x1,5	-10...+150°C	9890	1		
	M38x1,5	-10...+150°C	9970	1		
For Unichiller®	G3/4	-10...+110°C	9888	1		
	G1 1/4	-20...+110°C	9622	1		

External pressure sensors for VPC

External pressure sensors for VPC				Cat.No.	G	Price
For units with VPC bypass (Cable length 3m)	M24x1,5		9338	4		
	M30x1,5		9336	4		
	M38x1,5		9337	4		
For units with VPC variable speed pumps (Cable length 3m)	M16x1		9792	4		
	M24x1,5		9794	4		
	M30x1,5		9795	4		

Safety Devices

Safety Devices				Cat.No.	G	Price
Float switch in sight glass, leak monitoring (highest safety class).				Float switch	6152	1
Atmospheric sealing kit for sight glass and expansion vessel, e.g. for inert gas blanketing.				Sealing kit for Petite Fleur®	9738	2
				Sealing kit for Unistats®	9402	2

Options for weather protection and winter operation

Safety Devices				Cat.No.	G	Price
Weather protection and winter operation for outside siting and low environmental temperatures				Weather protection for Unistats® and Unichillers®	on request	
				Winter operation for Unistats® and Unichillers®	on request	

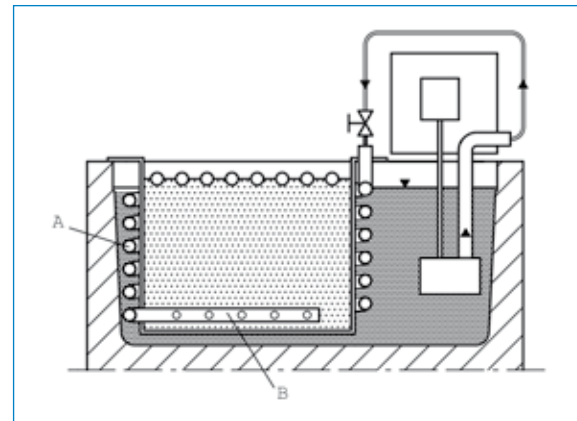
Calibration inserts

Calibration insert	Cat.No.	G	Price
Ministat® 125, Ministat® 125w	6806	2	
Ministat® 230, Ministat® 230w	6807	2	
Ministat® 240, Ministat® 240w	6808	2	
CC®-405, CC®-405w, CC®-415, CC®-415wl, CC®-505, CC®-505wl, CC®-508, CC®-508w CC®-805, CC®-902	10020	2	
CC®-410, CC®-410wl	6294	2	
CC®-510, CC®-510w, CC®-515w, CC®-520w, CC®-525w, CC®-820, CC®-820w	6496	2	
CC®-515, CC®-905, CC®-905w, CC®-906w	6150	2	
CC®-308B	9355	1	
CC®-315B	6126	1	

Function principle

The thermal fluid at constant temperature flows through the heat exchanger (A) and via the distributor pipe (B) down into the calibrating bath. Temperature fluctuations in the circulator are evened out in (A). The entire system acts as a calorimeter. There are virtually no gradients and no delay in the case of swift ramps. Temperature stability can be improved by a factor of 5 to 10.

The calibration baths in combination with Unistats (page 85) work in the same principle.



Displacement inserts

Displacement insert	Cat.No.	G	Price
Ministat® 125, Ministat® 125w	6818	2	
Ministat® 230, Ministat® 230w	6819	2	
Ministat® 240, Ministat® 240w	6820	2	
CC®-410, CC®-410wl	6293	2	
CC®-510, CC®-510w, CC®-515w, CC®-520w, CC®-525w, CC®-820, CC®-820w	6049	2	
CC®-515, CC®-905, CC®-905w, CC®-906w	6050	2	
CC®-308B	31973	1	
CC®-315B	6043	1	
CC®-205B	6041	1	

Simple options to boost performance

Displacement inserts:

- Reducing the bath volume reduces the thermal load and leads to faster ramping times.
- Reduce the liquid's exposed surface area, which reduces moisture absorption.
- Contain the expansion volume HTF and prevent the bath from overflowing.





Polycarbonate Baths

All models are designed to operate up to a maximum temperature of 100 °C.

Model	Dimensions	Opening (mm)	Bath Depth (mm)	Volume (ltr)	Cat.No.	G	Price
	WxDxH (mm)						
106A-E	142x305x161	130x290	150	6	30527	1	
108A-E	142x405x161	130x390	150	8	30528	1	
110A-E	142x505x161	130x490	150	10	30529	1	
112A-E	333x358x166	303x342	150	12	30523	1	
118A-E	333x518x166	303x502	150	18	30526	1	
130A-E	500x200x322	480x180	312	30	17098	1	



| 225B |

| 215B |

| 208B |

Stainless Steel Baths (insulated)

All models are designed to operate up to a maximum temperature of 200 °C.

Model	Dimensions	Opening (mm)	Bath Depth (mm)	Volume (ltr)	Cat.No.	G	Price
	WxDxH (mm)						
208B	290x350x206	235x290	150	8,5	6683	1	
212B	350x375x206	290x320	150	12	6684	1	
215B	350x375x256	290x320	200	15	6012	1	
220B	350x555x206	290x500	150	20	6685	1	
225B	350x555x256	290x500	200	25	6013	1	



| K20, K25 |

| K12, K15 |

Refrigerated Baths

The refrigerated baths K12 to K25 use natural refrigerants. In combination with an immersion circulator these refrigerated bath systems offers active cooling, in continuous operation over the complete working range.

Model	Temperature Range (°C)	Opening WxD (mm)	Bath Depth (mm)	Volume (ltr)	Cooling Power (kW) at			Dimensions WxDxH (mm)	Cat.No.	G	Price
					0°C	-10°C	-20°C				
K12	-20...200	290x320	150	12	0,2	0,12	0,05	350x560x263	2009.0001.99	2	
K15	-20...200	290x320	200	15	0,2	0,12	0,05	350x560x263	2010.0001.99	2	
K20	-30...200	290x500	150	20	0,35	0,27	0,16	350x555x448	2011.0001.99	2	
K25	-30...200	290x500	200	25	0,35	0,27	0,16	350x555x448	2012.0001.99	2	



| Double-wall version, with inlet and outlet connections |

| with inlet and outlet connections |

Stainless steel baths

Insulated stainless steel baths are available in 3 standard sizes and can be customised to suit requirements. The drain is on the short side as standard but can be fitted on the long side on request. The order number has the suffix -L (e.g. 6052-L).

These insulated stainless steel baths can be fitted with inlet and outlet connections directly into the bath (direct temperature control) or into the double-wall for indirect temperature control are available.

Stainless Steel Bath	Depth (mm)	Opening WxD (mm)	Dimensions W x D x H (mm)	Cat.No.	G	Price
5,5 litre	165	160x232	210x282x205	6052	2	
11 litre	165	200x370	250x420x205	6053	2	
22 litre	165	320x470	370x520x205	6054	2	
Drain valve with cap				6839	1	
Insulated Cover for:				Cat.No.	G	Price
Stainless steel bath	5,5 litre			6176	2	
Stainless steel bath	11 litre			6178	2	
Stainless steel bath	22 litre			6180	2	

Custom sizes on request



Bath Bridges

Model	Cat.No.	G	Price
Polycarbonate bath 106A-E, 108A-E, 110A-E	19592	1	
Polycarbonate bath 112A-E, 118A-E	19593	1	
Stainless steel bath 208B	19594	1	
Stainless steel bath 212B, 215B, 220B, 225B	19595	1	
Refrigerated bath K12, K15, K20, K25	19596	1	



Adjustable Bases

for stainless steel, polycarbonate and refrigerated baths with CC-E, MPC-E

Model	Cat.No.	G	Price
Adjustable base for 112A	40764	1	
Adjustable base for 212B, 215B, K12, K15	40763	1	
Adjustable base for 118A, 220B, 225B, K20, K25	40681	1	



Bath Covers

for stainless steel, polycarbonate and refrigerated baths with CC-E, MPC-E

Model	Cat.No.	G	Price
Bath cover back 220B, 225B, K20, K25	6024	1	
Bath cover 208B	19597	1	
Bath cover front 212B, 215B, 220B, 225B, K12, K15, K20, K25	19598	1	
Bath cover one piece 220B, 225B, K20, K25	19599	1	
Bath cover 106A	37533	1	
Bath cover 108A	37552	1	
Bath cover 110A	37572	1	
Bath cover 112A	37653	1	
Bath cover one piece 118A	9579	1	
Bath cover front 118A	41313	1	
Bath cover back 118A	41336	1	

18 litre and larger can be in one or two parts



Bath Covers

Suitable for use with adjustable bases for stainless steel, polycarbonate and refrigerated baths with CC-E, MPC-E

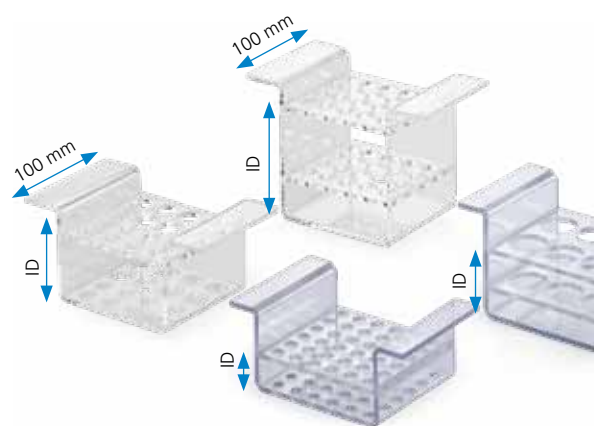
Model	Cat.No.	G	Price
Bath cover 212B, 215B, K12, K15	41279	1	
Bath cover front 220B, 225B, K20, K25	19598	1	
Bath cover back 118A, 220B, 225B, K20, K25	41280	1	
Bath cover 112A	41291	1	
Bath cover front 118A	41313	1	

18 litre and larger can be in one or two parts

Polycarbonate test tube racks

for 106A-E to 110A-E

Type	Holes	Immersion Depth (mm) ID	Cat.No.	G	Price
A	12 x Ø22	50	6028	1	
B	20 x Ø17	55	6029	1	
C	20 x Ø17	95	6030	1	
D	30 x Ø13	45 (Hemolyse)	6031	1	
E	6 x Ø31	50	6032	1	
F	36 x Ø11	25 (Eppendorf)	6033	1	



Stainless steel test tube racks

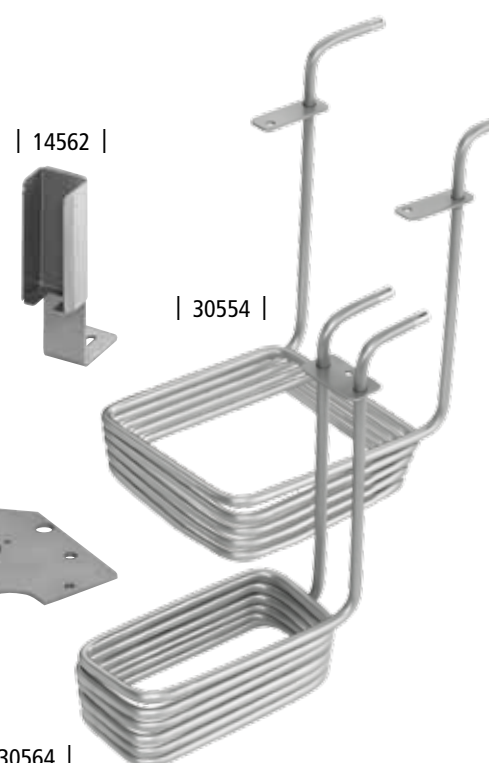
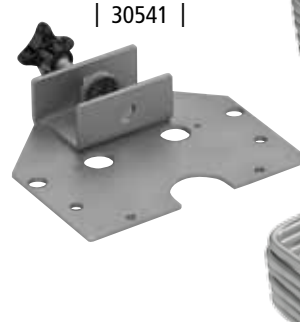
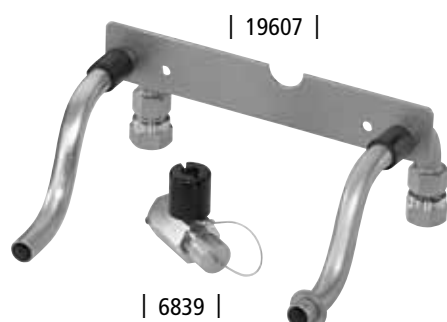
for 112A-E, 118A-E, 212B to 225B and refrigerated baths K12-K25

Type	Holes	Immersion Depth (mm)	Cat.No.	G	Price
1	36 x Ø17	100	6037	1	
2	45 x Ø13	70	6038	1	
3	46 x Ø17	100	6039	1	
4	58 x Ø13	70	6040	1	



Other Accessories



	Cat.No.	G	Price
Holder for immersion coolers TC®45(E), TC®50(E), TC®100(E) for mounting on bath	14562	1	
Drain valve with cap (not for baths 112A, 118A and 130A)	6839	1	
Drain valve without cap (for baths 112A, 118A and 130A)	6026	1	
Pump adapter for MPC®-E, CC®-E with baths 106A to 118A	19606	1	
Pump adapter for MPC®-E, CC®-E with baths 208B to 225B and K12 to K25	19607	1	
Pump adapters with screw clamp for open baths	10030	1	
Cooling coil for MPC®-E, CC®-E with baths 104A to 118A	30554	1	
Cooling coil for MPC®-E, CC®-E with baths 208B to 225B	30564	1	
Pump discharge pipe (for diverting flow in bath) for bath circulators with MPC®-E, CC®-E	33288	1	
Screw clamp for MPC®-E, CC®-E	30541	1	
Stand for MPC®-E and CC®-E	6302	1	
DS level controller for external open baths, only suitable for units with pressure and suction pump and Minichiller®. Useable for baths with a maximum wall thickness of 26 mm.	9580	1	
Holder for Ubbelohde-Viscosimeter for Visco 3	9586	2	





Adapter for M16x1	Thread	(G1) to	Cat.No.	Price
	male	M16x1 male	6278	
	female	M16x1 female	6359	
	male	G1/2 male	6299	
	male	G1/2 female	6364	
	female	R1/2 male	6360	
	female	G1/2 female	6229	
	male	G3/4 female	5443	
	female	G3/4 female	6361	
	female	M30x1,5 male	6431	
	male	M30x1,5 male	6449	
	male	M30x1,5 female	6454	

Adapter for M24x1,5	Thread	(G1) to	Cat.No.	Price
	female	M30x1,5 male	6723	
	female	M16x1 male	6724	
	female	3/4 NPT female	6874	
	male	M16x1 female	6945	
	male	R1/2 female	9243	
	female	R1/2 male	9244	
	male	M24x1,5 male	9386	

Adapter for M30x1,5	Thread	(G1) to	Cat.No.	Price
	male	M30x1,5 male	6448	
	female	G3/8 male	6445	
	male	G1/2 male	6393	
	male	R1/2 female	6394	
	female	G1/2 male	6391	
	female	G1/2 female	6392	
	male	G3/4 male	6447	
	male	R3/4 female	6442	
	female	G3/4 female	6452	
	female	3/4 NPT male	6472	
	male	G1 male	6444	
	female	G1 female	6453	
	male	M38x1,5 female	6612	

Adapter for R1/2	Thread	(G1) to	Cat.No.	Price
	female	R1/2 female	6358	
	female	3/4 NPT female	6356	





Adapter for M38x1,5	Thread	(G1) to	Cat.No.	Price
	female	1 NPT male	6600	
	female	R3/4 male	6665	

More adapters on request

M16x1	(G1)	Cat.No.	Price
	Hose Connector NW 8 Hose Connector NW 12	6086 6087	
	Blank Plug	6088	
	Nut	6089	
	Micro Hose Connector NW 3,2	6090	
	90° Adapter	6195	
	Ball Valve* Ball Valve**	6091 328240	
	2-way Header 3-way Header 4-way Header 5-way Header	6194 6193 6187 6815	
	2-way Valve System* 3-way Valve System* 4-way Valve System* 5-way Valve System*	6284 6285 6286 6816	

* Temperature range: -20...+140°C (max. 6 bar at +140°C)





** Temperature range: -60...+200°C (max. 20 bar at +175°C)

M24x1,5	(G1)	Cat.No.	Price
	90° Adapter	9256	
	Ball Valve* Ball Valve**	9236 328184	
	2-way Header 3-way Header 4-way Header	9233 9234 9235	
	2-way Valve System* 3-way Valve System* 4-way Valve System*	9245 9246 9247	

* Temperature range: -10...+150°C (max. 20 bar at +80°C)





** Temperature range: -60...+200°C (max. 20 bar at +175°C)

Connections for Mettler Toledo „LabMax“, „RC1“	Adapter (G1)	Cat.No.	Price
For use with the LabMax or the RC1 in variations	Unistat® 40x Metal hose NW20 / M30x1,5:		
High temp, Mid temp and low temp, use the adapters listed here.	M30x1,5 male - R1/2 female	6394	
	M30x1,5 male - R3/4 female	6442	
	M16x1 female - M30x1,5 male	6431	

M30x1,5	(G1)	Cat.No.	Price
	90° Adapter	6461	
	Ball Valve* Ball Valve**	6451 328203	
	2-way Header 3-way Header 4-way Header	6420 6421 6422	
	2-way Valve System* 3-way Valve System* 4-way Valve System*	6423 6463 6464	




* Temperature range: -10...+150°C (max. 20 bar at +80°C)

** Temperature range: -60...+200°C (max. 20 bar at +175°C)

M38x1,5	(G1)	Cat.No.	Price
	90° Adapter	6699	
	Ball Valve* Ball Valve**	6700 328191	
	2-way Header 3-way Header 4-way Header	6706 6707 6708	
	2-way Valve System* 3-way Valve System* 4-way Valve System*	6709 6710 6711	

* Temperature range: -10...+180°C (max. 10 bar at +180°C)

** Temperature range: -60...+200°C (max. 20 bar at +175°C)

G1/2, G3/4 and R1/2	(G1)	Cat.No.	Price
	Hose connections G1/2 for 3/8 hose	2294	
	Hose connections G3/4 for 1/2 hose	2295	
	90° Adapter R1/2 to M30x1,5 female	9323	



Service Agreements

Regular checking and servicing of your unit is the best protection for minimising down time, and also serves for long life and maintains the value of the unit. A regular professional check of your system also ensures control accuracy and economy.

Service Agreements	Cat.No.	G	Price
Service Agreements for circulators A standard agreement with regular checking of all safety arrangements and machine functions, as well as checking of cooling and heating performance for any visible wear. Inclusive service protocol and data logging with every service. Service interval and work performed can be individually customised to suit individual requirements. For more information contact your local distributor.			



Certificates / Calibration

If required, you can obtain a factory calibration certificate. Test protocol and other certification for your Huber unit is available on request.

Document	Cat.No.	G	Price
Factory calibration certificate – temperature stability to DIN12876	6252		
Factory calibration certificate – absolute accuracy	6905		
Testing protocol FAT (Final Acceptance Test)	9778		
Analysis certificate for thermal fluid	9669		



3-2-1 Warranty Benefits

With the 3-2-1 warranty you receive additional guarantee benefits without extra costs. To get the benefits of the warranty extension, visit the website and complete the online registration form.

The warranty is then automatically extended:

- **3 years for plug and play electronic components**
- **2 years for refrigeration components**
- **1 year for mechanical and electrical components**

Online-Registration at www.huber-online.com/register

IQ/OQ-Documentation

IQ/OQ documentation is available for your Huber unit, within the framework of quality management or validation. You can obtain comprehensive IQ/OQ documentation for many models.

For more information contact your local distributor

User Training

In our user training courses we communicate technical information about temperature control units and their practical application. You receive valuable information which enable optimum machine use. The course coverage and contents is matched to the requirements and prior knowledge of the participants.

For more information contact your local distributor

Technical Service on site

Our technical on site service can resolve many problems directly with you on site. Our qualified technical personnel can support you if required for machine installations, or carry out small repairs on site repairs. Lost time can often be minimised and transport costs avoided.

For more information contact your local distributor



Case Studies in practice

Huber case studies demonstrate the superior performance of the Unistats. The case study examples show actual results from practical tests and offer help with your purchase decision. The following pages contain a small selection. More than 200 case studies can be found on our web-

site www.huber-online.com. When your focus is process stability, reproducibility and dynamics for your temperature control requirements, then our case studies are a useful source of information and provide a fair basis of comparison.

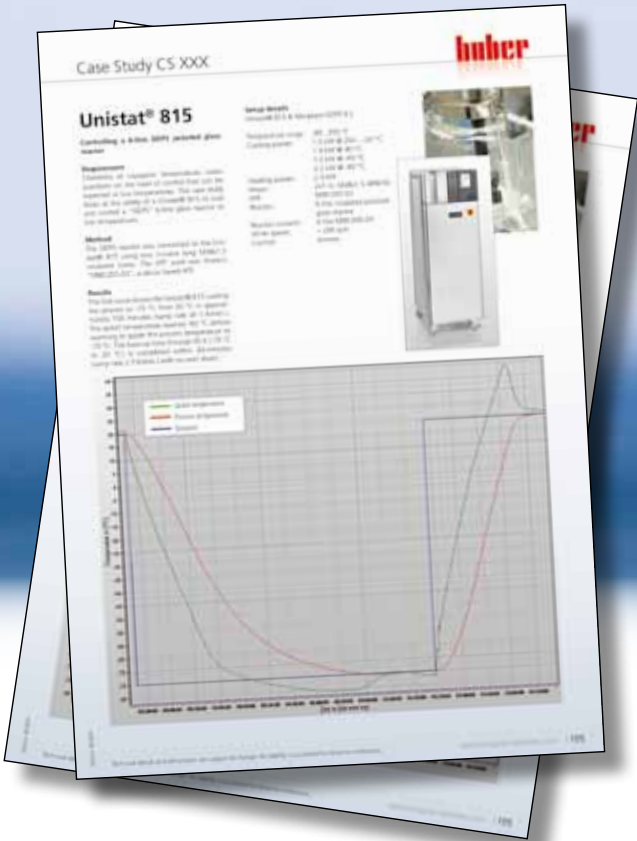


**More than 200 Case Studies
at www.huber-online.com**

The sea eagle uses an adjustable feather covering for thermal regulation of the body temperature. By fluffing up the feathers it forms an effective insulation air buffer for low temperatures. Whereas in summer, outstretched feathers provide good air circulation and heat dissipation.



For more information
scan this QR-Code



Case Study: Unistat® Petite Fleur®

Baby Tango – Petite Fleur® – controlling Syrris 2-litre triple wall reactor

Requirement

This case study demonstrates the closeness of the temperature control and the minimum process temperature achievable in the process mass.

Method

The 2-litre Syrris reactor was connected to Petite Fleur using two M16x1 1-meter flexible hoses. The thermal fluid used in the system was "M90.055.03". "Process" control was carried out via a Pt100 sensor located in the "process" mass. Stirrer speed was set to 450 rpm.

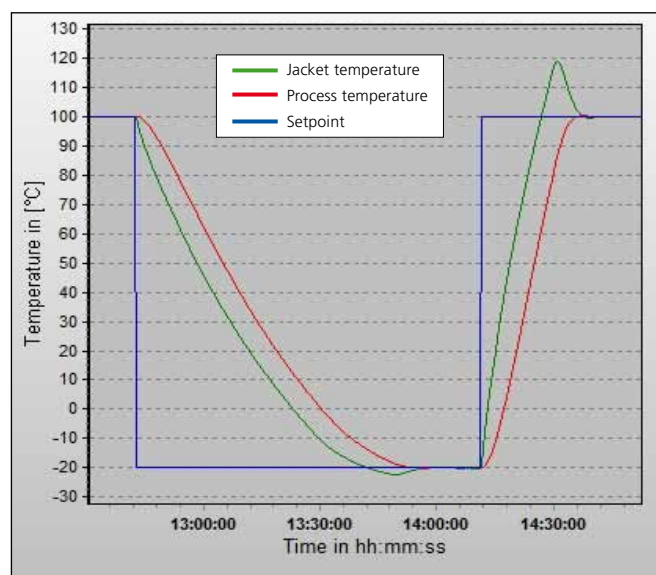
Setup details:

Temperature range:	-40 °C...+200 °C
Cooling power:	0.48 kW @ +20 °C
	0.48 kW @ +200 °C
	0.45 kW @ 0 °C
	0.27 kW @ -20 °C
	0.16 kW @ -30 °C
Heating power:	1.5 kW
Hoses:	M16x1; 2x1 m
Thermal fluid:	M90.055.03 (#6259)
Reactor:	Syrris 2-litre insulated reactor
Reactor content:	1 litre M40.165.10
Stirrer speed:	450 rpm
Control:	process

Results

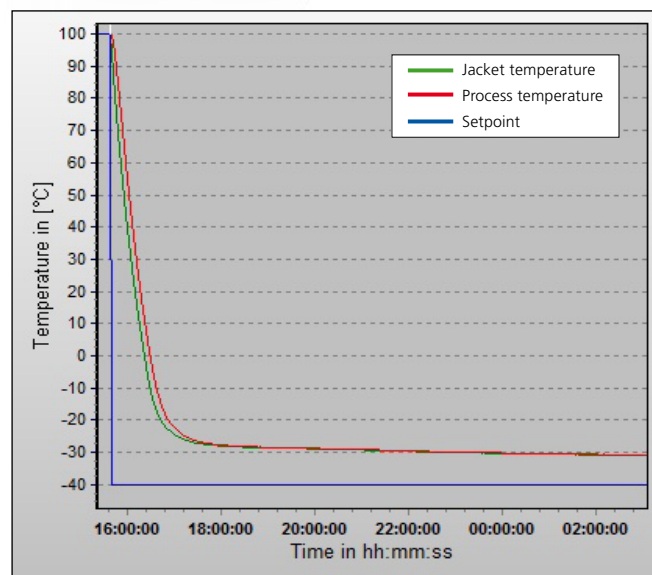
Performance:

To demonstrate the efficient performance of the Petite Fleur, this graphic shows that it can cool the process in a 2-litre glass reactor from 100 °C to -20 °C in approximately 70 minutes, hitting and stabilizing exactly on the set-point. A rapid heat-up time of less than 30 minutes from -20 °C to 100 °C with the same accuracy can also be seen.



Lowest achievable temperature:

Once stable at +100 °C under "Process" control, a set-point of -40 °C is entered. The Petite Fleur cools the reactor down to the minimum achievable process temperature of -31 °C.





Case Study: Unistat® Tango® Nuevo

Heating and Cooling ramps with a 1-litre Buchi Glas Uster reactor

Requirement

This case study looks at the speed at which the Unistat Tango Nuevo can heat and cool the process in a 1-litre un-insulated glass pressure reactor.

Method

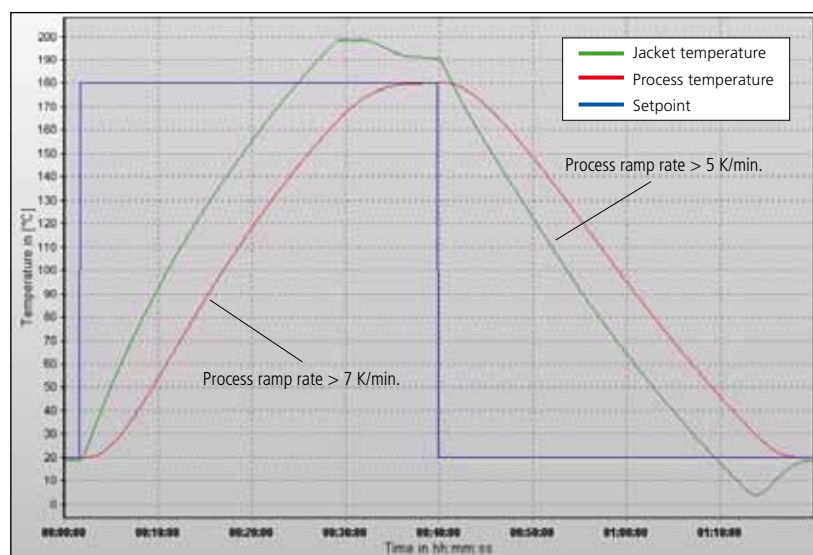
Using two large diameter (M24x1,5 DN12) insulated metal hoses, the reactor was connected to the Unistat Tango Nuevo. The reactor was filled with 0.75-litre of "M90.055.03", a Huber supplied silicon based HTF.

Results

Efficient thermal transfer made possible by the low flow resistance of the wide bore tubing coupled with the highly efficient thermal transfer capabilities of the Unistat Tango technology results in a rapid ramping rate and extremely stable control. The diagram illustrates a heating curve from 20 °C to 180 °C in a time of 37 minutes and back to 20 °C in 38 minutes. The process temperature reached both set-points without any overshoot demonstrating the capability of the controller to ramp temperatures with speed and accuracy.

Setup details:

Temperature range: -45...+250 °C
 Cooling power: 0.7 kW @ +250...0 °C
 0.4 kW @ -20 °C
 Heating power: 1.5 kW
 Hoses: 2x1 m; M24x1.5 (#9325)
 HTF: DW-Therm (#6479)
 Reactor: 1-litre un-insulated glass pressure reactor
 Reactor content: 0.75 litre M90.055.03 (#6259)
 Stirrer speed: 500 rpm
 Control: process





Case Study: Unistat® 510w

Cooling a Chemglass 50-litre jacketed glass reactor from 120 °C to -30 °C

Requirement

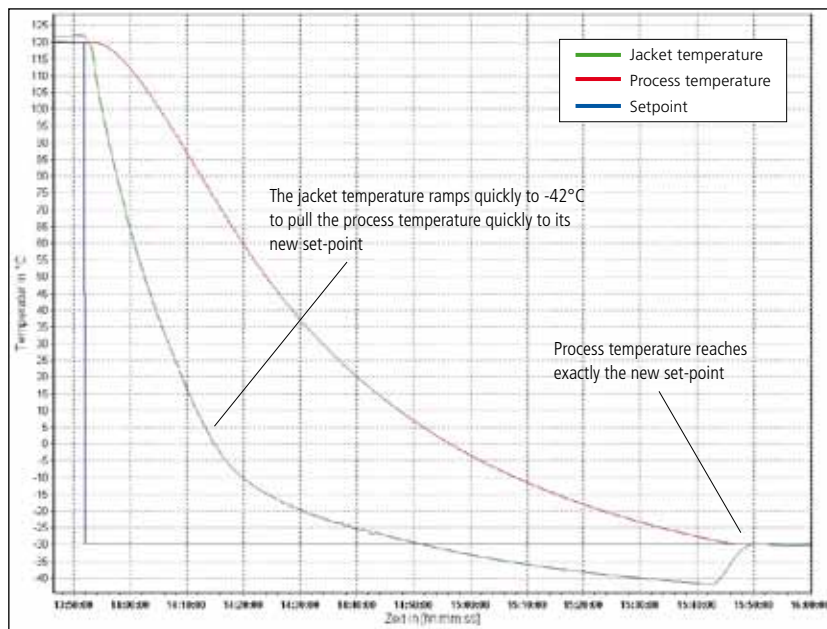
This case study looks at the speed of response to cool a Chemglass 50-litre jacketed glass reactor to -30 °C from 120 °C (150 K).

Method

The Unistat and reactor were connected using two 1.5 m insulated metal hoses. The reactor was filled with 37 litre of "M90.055.03", a Huber supplied silicon based HTF.

Results

It can be seen that the jacket rapidly cools to -42 °C pulling the process temperature towards its new set-point before heating slightly to guide the process to -30 °C with negligible under-shoot.



Setup details:

Temperature range: -50...+250 °C
 Cooling power: 5,3 kW @ +250...0 °C
 2,8 kW @ -20 °C
 0,9 kW @ -40 °C
 Heating power: 6,0 kW
 Hoses: 2x1,5 m; M38x1,5 (#6659)
 HTF: DW-Therm (#6479)
 Reactor: 50-litre Chemjacketed glass reactor (un-insulated)
 Reactor content: 37 litre M90.055.03 (#6259)
 Stirrer speed: 80 rpm
 Control: process

Case Study:

Unistat® 615w

Heating and cooling a Buchi 250-litre glass lined stainless steel reactor through 60 K

Requirement

This case study shows the remarkable power transfer capabilities of the Unistat range in using a Unistat 615w to heat and cool a 250-litre Buchi Glas Uster GLSS reactor.

Method

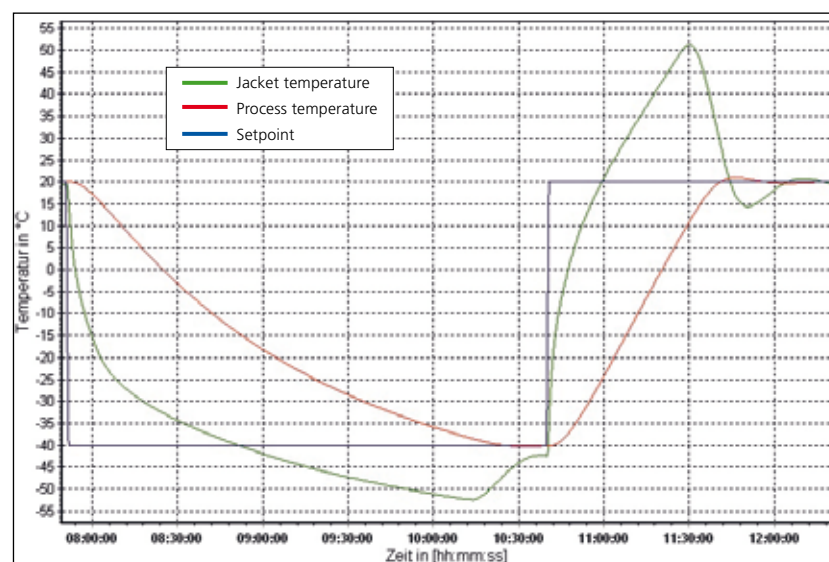
The Unistat was connected to the reactor using two 2-metre insulated metal hoses. The reactor was filled with 200 litre of Ethanol.

Results

The Unistat cools the process from 20 °C to -40 °C (60 K) in approximately 150 minutes. It can be seen from the jacket temperature that the system is "comfortable" with this load. The heat up time back to 20 °C takes approximately 60 minutes.

Setup details:

Temperature range:	-60...+200 °C
Cooling power:	9.5 kW @ +200...0 °C
	8.0 kW @ -20 °C
	4.8 kW @ -40 °C
	1.2 kW @ -60 °C
Heating power:	12 kW
Hoses:	M38x1,5; 2x2 m
HTF:	DW-Therm (#6479)
Reactor:	Buchi Glas Uster CR252
	250-litre glass-lined (enameled) steel reactor
Reactor content:	200 litre Ethanol
Reactor stirrer speed:	90 rpm
Control:	process



Case Study: Unistat® 815

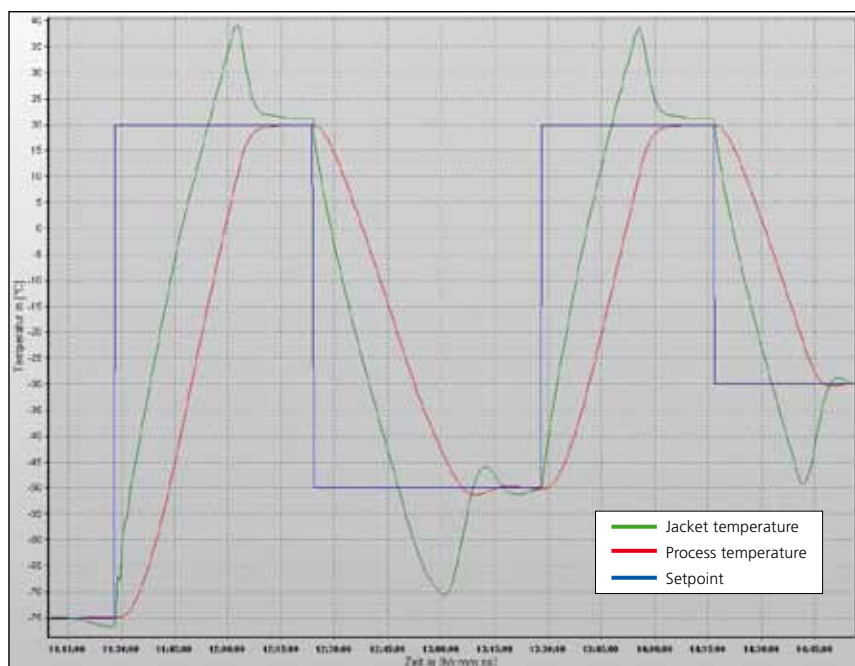
Controlling a 6-litre DDPS jacketed glass reactor

Requirement

Chemistry at cryogenic temperatures raises questions on the level of control that can be expected at low temperatures. This case study looks at the ability of a Unistat 815 to cool and control a "DDPS" 6-litre glass reactor to low temperatures.

Method

The DDPS reactor was connected to the Unistat 815 using two 1-metre long M38x1.5 insulated hoses. The HTF used was Huber's "M90.055.03", a silicon based HTF.



Results

The second and third curves demonstrate the pin point and repeatable control made possible through "TAC" control as the Unistat 815 ramps the process temperature between 20 °C and -50 °C and back then from 20 °C to -30 °C.



Setup details:

Temperature range:	-85...+250 °C
Cooling power:	1.5 kW @ +250...-20 °C 1.4 kW @ +40 °C 1.2 kW @ -60 °C 0.2 kW @ -80 °C
Heating power:	2.0 kW
Hoses:	2x1 m; M38x1.5 (#9616)
HTF:	M90.055.03
Reactor:	6-litre insulated jacketed glass reactor
Reactor content:	4 litre M90.055.03
Stirrer speed:	~ 200 rpm
Control:	process

Case Study: Unistat® 905w

Unistat® 905w cycling a 50-litre Chemglass un-insulated glass jacketed reactor between 20 °C and -60 °C.

Requirement

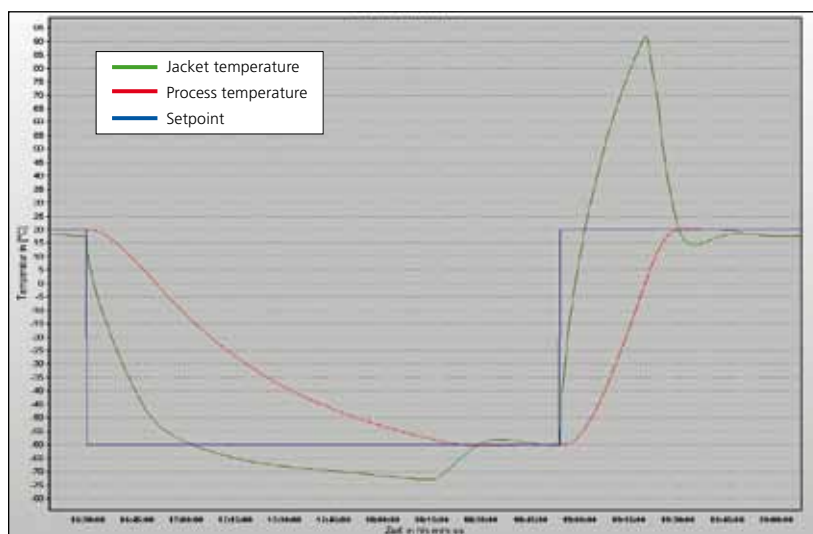
The Unistat 905w is designed to operate with smaller reactors (15 to 20 litre) at low temperatures. This case study looks at how well the Unistat 905w controls process temperature inside a relatively larger, un-insulated 50-litre glass jacketed reactor when cycling the process temperature between 20 °C and -60 °C.

Method

The reactor was filled with 34.5 litre of M90.055.03 as a thermal load. The stirrer was set to 100 rpm and the control set to "Process". The results were recorded using the Huber "SpyLight" software. The HTF (Heat Transfer Fluid) used was M90.055.03.

Results

It can be seen from the graphic how quickly the jacket ramps creating a wide difference in temperature between the jacket and process in the cool down phase resulting in the process reaching -60 °C from 20 °C (60 K) in approximately 2-hours and 20-minutes.



The heat-up rate demonstrates the remarkable level of control with the jacket ramping to 92 °C to pull the process back towards 20 °C. As the process temperature approaches the target temperature the jacket rapidly cools to approximately 23 °C to bring the process to 20 °C in approximately 45 minutes.

Setup details:

Temperature range:	-90...+250 °C
Cooling power:	3.6 kW @ 0 °C 2.2 kW @ -60 °C 0.7 kW @ -80 °C
Heating power:	6 kW
Hoses:	1x2 m; M30x1.5 (#6427) 1x1 m; M30x1.5 (#6426)
HTF:	M90.055.03 (#6259)
Reactor:	50-litre un-insulated jacketed glass reactor
Reactor contents:	34.5 litre M90.055.03 (#6259)
Reactor stirrer speed:	100 rpm
Control:	process



Case Study: Unistat® 912w

Unistat® 912w cycling a 63 litre De Dietrich jacketed reactor

Requirement

This case study demonstrates the ability of Unistat 912w to cycle the process temperature in a range from +80°C to -50°C, the closeness of the temperature control and the minimum process temperature achievable in the process mass.

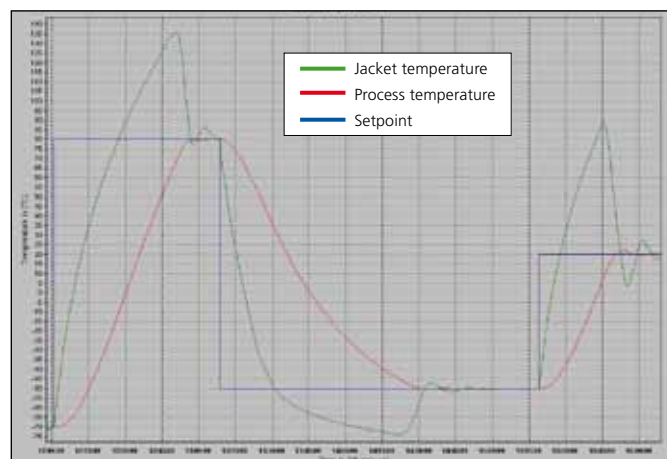
Setup details:

Temperature range:	-90 °C...+250 °C
Cooling power:	7.0 kW @ +250 °C
	7.0 kW @ +200 °C
	7.0 kW @ +100 °C
	7.0 kW @ 0 °C
	7.0 kW @ -20 °C
	7.0 kW @ -40 °C
	6.0 kW @ -60 °C
	0.9 kW @ -80 °C
Heating power:	6.0 kW
Hoses:	M30x1.5; 2x1 m
HTF:	M90.055.03 (#6259)
Reactor:	De Dietrich 63 litre jacketed reactor
Reactor content:	80 litre Ethanol
Stirrer speed:	85 rpm
Control:	process

Results

Performance:

The following heating up and cooling down curves demonstrates the performance of the Unistat 912w. For heating up from -70 °C to +80 °C the Unistat needs approximately 60 minutes. To cool down the reactor from +80 °C to -50 °C the Unistat needs only approximately 80 minutes and another 36 minutes to heat it up again to +20 °C.



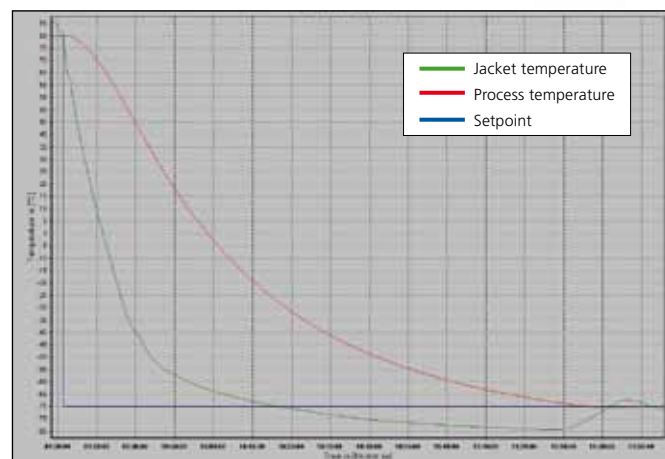
Method

The 63 litre De Dietrich reactor was connected to Unistat 912w using two M30x1.5 1-meter flexible hoses. The reactor has a nominal capacity of 63 litres but the jacket design allows thermal transfer for a filling volume of 80 litres. For the measurements in this case study the reactor was filled with 80 litre Ethanol as a thermal load. The thermal fluid used in the system was "M90.055.03". "Process" control was carried out via a Pt100 sensor located in the "process" mass.



Cool down in a very wide temperature range:

Once stable at +80 °C under "Process" control, a set-point of -70 °C is entered. The Unistat 912w needs approximately 3 hours and 20 minutes to cool down the overloaded reactor with a content of 80 liters to the new set-point temperature.



Case Study: Unistat® 930w

Controlling simulated exothermic reactions of 1 kW (860 kcal / hr) and 2 kW (1720 kcal / hr) in a Diehm 100-litre reactor

Requirement

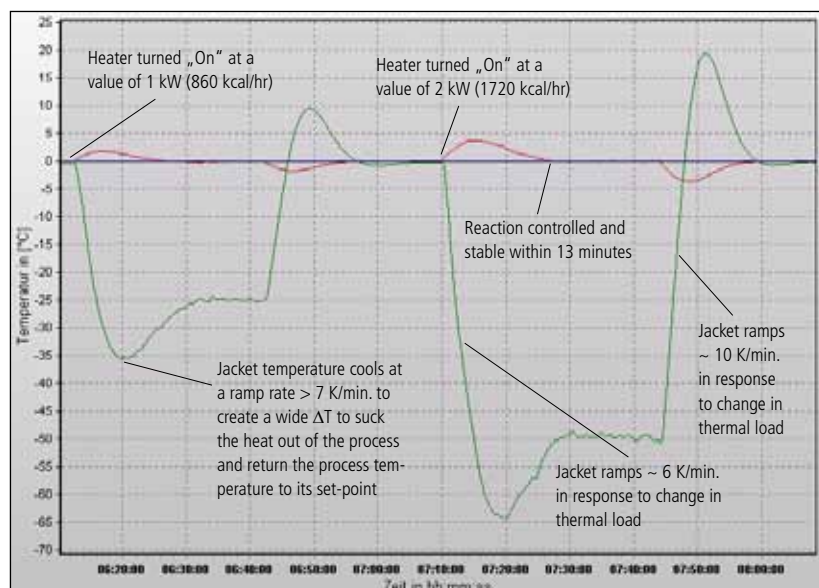
This case study is to see the performance of a Unistat 930w as it works to control simulated exothermic reactions in a 100-litre reactor.

Method

The Unistat and reactor are connected using two 1.5-metre insulated metal hoses. The reactor is filled with 75 litre of "M90.055.03", a Huber supplied silicon based HTF.

Results

The response of the Unistat 930w can be seen in the graphic below. The jacket temperature is rapidly changed to control the "reaction" and maintain process temperature at its set-point.



Setup details:

Temperature range:	-90...+200 °C
Cooling power:	20 kW @ 0...-40 °C 15 kW @ -60 °C
Heating power:	24 kW
Hoses:	2x1.5 m; M38x1.5 (#6656)
HTF:	DW-Therm (#6479)
Reactor:	100-litre un-insulated glass reactor VPC Bypass installed
Reactor content:	75 litre M90.055.03 (#6259)
Stirrer speed:	400 rpm
Control:	process

Case Study: Unistat® 1005w

Controlling an Asahi 10-litre triple wall reactor

Requirement

This case study demonstrates the ability of the Unistat 1005w to cool the contents of an Asahi vacuum insulated 10-litre reactor to -100 °C.

Method

The Asahi reactor was connected to the Unistat 1005w using two M30x1.5 2-meter insulated metal flexible hoses. The HTF used was "Kryothermal S", a dedicated low temperature HTF with a minimum operating temperature of -120 °C.



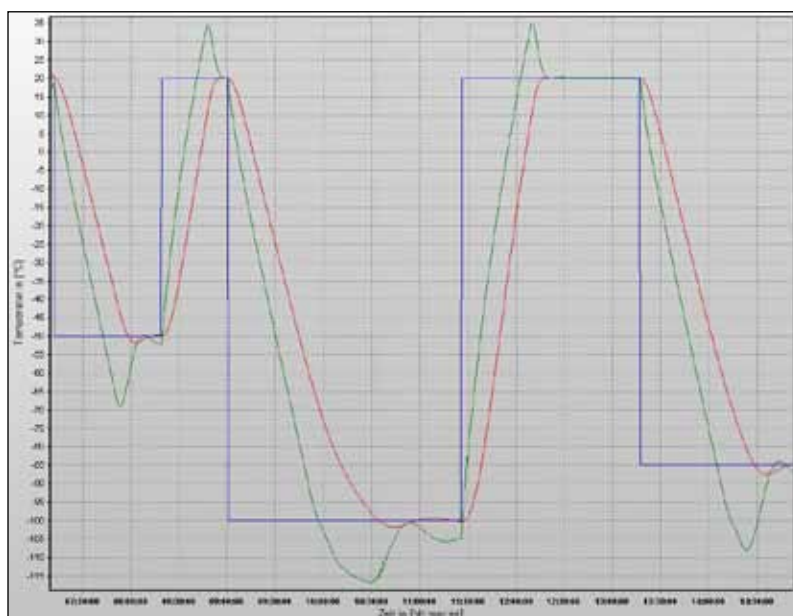
Setup details:

Temperature range: -120...+100 °C
Cooling power: 1.5 kW @ +100...-40 °C
1.4 kW @ -60... -80 °C
1.0 kW @ -100°C
Heating power: 2.0 kW
Hoses: 2x2 m; M30x1.5 (#6386)
HTF: Kryothermal S
Reactor: 10-litre insulated jacketed glass pressure reactor
Reactor content: 10 litre M90.055.03 (#6259)
Stirrer speed: ~ 200 rpm
Control: process

Results

Once stable at 20 °C under "Process" control, a set-point of -50 °C is entered. The jacket rapidly cools to approximately -68 °C to pull the process to -50 °C in approximately 1-hour.

The second curve shows the process stable at 20 °C before a new set-point of -100 °C is entered. Again the jacket rapidly cools to -116 °C pulling the process to -100 °C in just over 1.5 hours.





Case Study: Ministat® 230-cc®-NR

Ministat® 230-cc®-NR controlling a vacuum insulated Syrris 2-litre glass jacketed reactor between 20 °C and -20 °C.

Requirement

This case study demonstrates the lowest achievable temperature, speed of cooling and heating and level of control when connected with a Syrris "Atlas" system configured with a 2-litre reactor.

Method

The reactor was filled to 1.4 litre with M90.055.03, the HTF used was Ethanol, the stirrer set to 700 rpm and the control to "process". The results were recorded using the "Spyware" software.

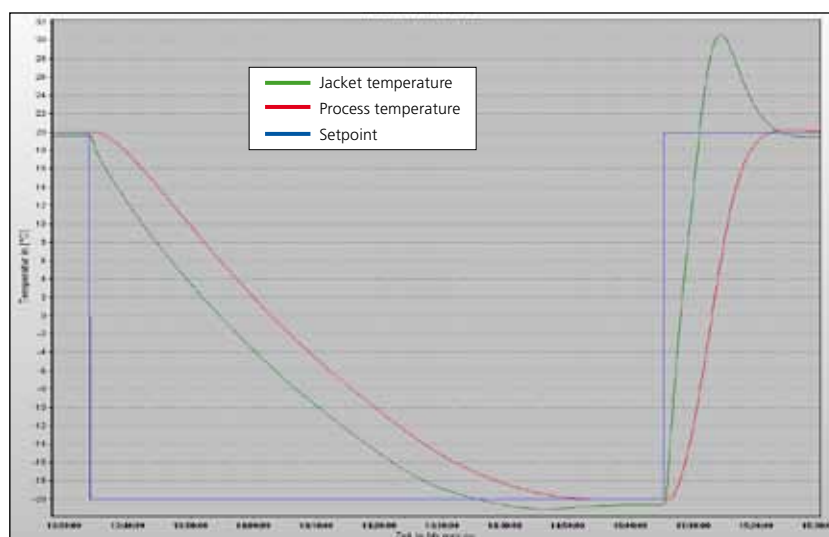
Results

It can be seen from the graphic that the Ministat 230-cc-NR cools the jacket to a -20 °C within approximately 1 hour and 20 minutes. The graphic shows the precise control and stability.

The heat up curve shows the precise control made possible by the Ministat 230-cc-NR as the process temperature reached exactly 20 °C from -20 °C in approximately 15 minutes.

Setup details:

Temperature range: -40...+200 °C
 Cooling power: 0.38 kW @ 0 °C
 0.25 kW @ -20 °C
 0.14 kW @ -30 °C
 Heating power: 2 kW
 Hoses: 2x1 m; M16x1 (#9608)
 HTF: Ethanol
 Reactor: 2-litre jacketed glass reactor
 Reactor content: 1.4 litre M90.055.03 (#6259)
 Reactor stirrer speed: 700 rpm
 Control: process



Case Study: Unistat® Petite Fleur®

Petite Fleur® cycling a 2-litre Radleys jacketed reactor between +100 °C and -20 °C

Requirement

This case study demonstrates the closeness of the temperature control and the minimum process temperature achievable in the process mass.

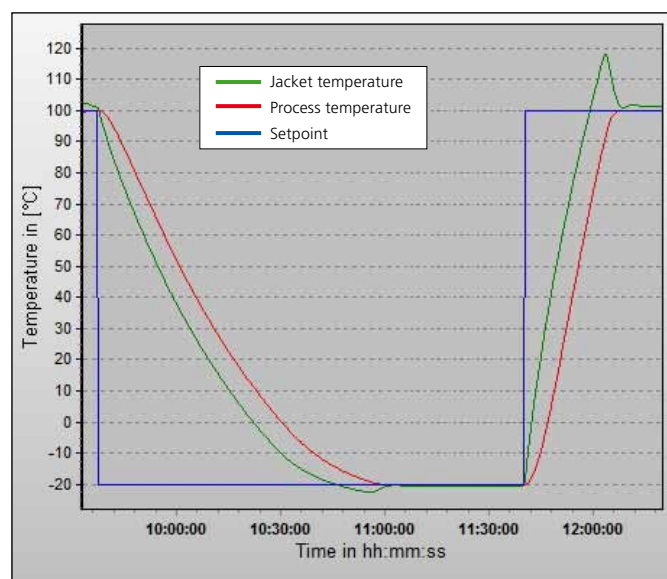
Setup details:

Temperature range:	-40 °C...+200 °C
Cooling power:	0.48 kW @ +20 °C 0.48 kW @ +200 °C 0.45 kW @ 0 °C 0.27 kW @ -20 °C 0.16 kW @ -30 °C
Heating power:	1.5 kW
Hoses:	M16x1; 2x1 m
Thermal fluid:	M90.055.03
Reactor:	Radleys 2-litre jacketed reactor
Reactor content:	1 litre M40.165.10
Stirrer speed:	200 rpm
Control:	process

Results

Performance:

This graphic shows the Petite Fleur cooling the process in a 2-litre glass jacketed reactor from 100 °C to -20 °C in a time of approximately 80 minutes, hitting and controlling at -20 °C with no overshoot. Heating back to 100 °C from -20 °C takes only 26 minutes with the same tight control at the target temperature.

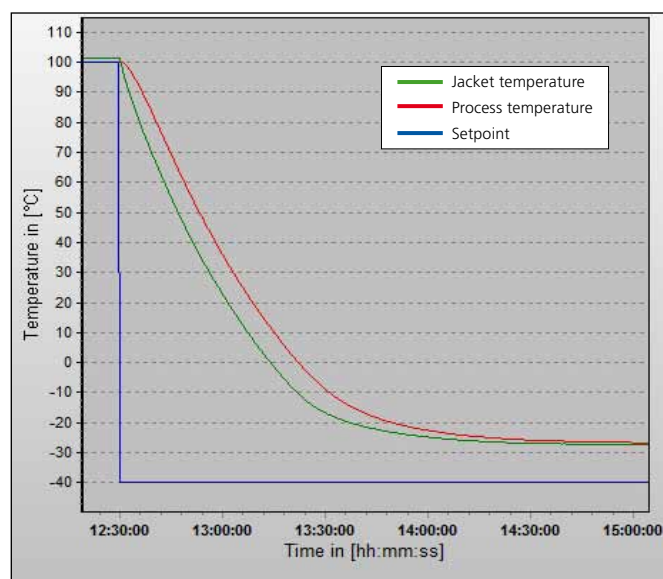


Method

The 2-litre Radleys reactor was connected to Petite Fleur using two M16x1 1-meter flexible hoses. The thermal fluid used in the system was "M90.055.03". "Process" control was carried out via a Pt100 sensor located in the "process" mass. Stirrer speed was set to 200 rpm.

Lowest achievable temperature ("T_{min}"):

To demonstrate the working range of the Petite Fleur when connected to a 2-litre reactor, this graphic shows that the Process temperature asymptotes at -27 °C.





Case Study: Unistat® 410w

Unistat® 410w cycling a 50-litre Chemglass un-insulated glass jacketed reactor between 100 °C and -15 °C

Requirement

The Unistat 410w is a bench top model with small dimensions but has 2.5 kW of cooling at 100 °C and 1.5 kW at 0 °C. Heating power of 3 kW makes this compact unit a good choice for comparatively large reactors above 0 °C as this case study shows.

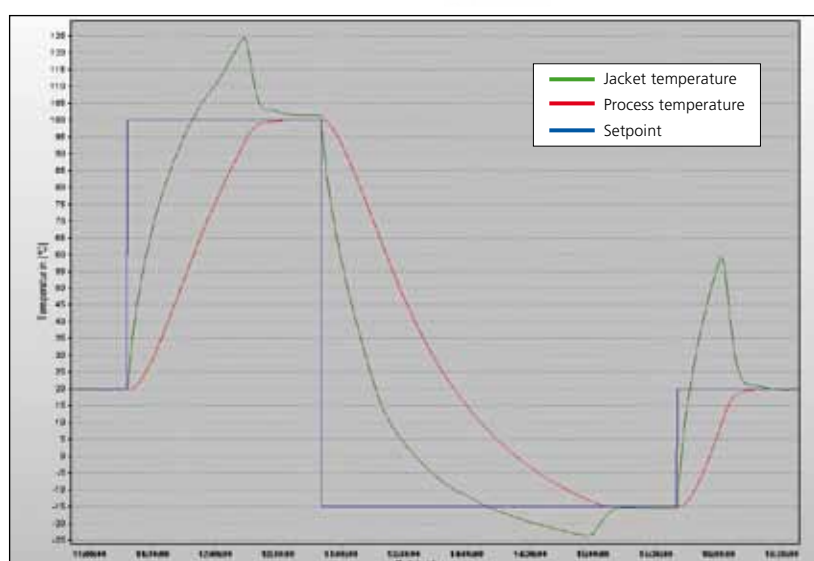
Method

The reactor was filled with 34.5 litre of Huber's silicon based Heat Transfer Fluid (HTF) "M90.055.03", the stirrer speed was set to 100 rpm and control to "Process" control. The unit was cycled between 20 °C to 100 °C then to -15 °C before being returned to 20 °C.

Results

It can be seen in the graphic that the Unistat 410w heats the process from 20 °C to 100 °C in approximately 1 hour. Cooling from 100 °C to -15 °C takes approximately 2.5 hours.

Given the physical size of the Huber Unistat 410w, its performance on a 50-litre un-insulated reactor is remarkable. The tightness of control as the process temperature reaches set point and the stability can clearly be seen.



Setup details:

Temperature range:	-45...+250 °C
Cooling power:	1.5 kW @ 0 °C 0.8 kW @ -20 °C 0.2 kW @ -40 °C
Heating power:	1.5 / 3.0 kW
Hoses:	1x2 m; M30x1.5 (#6427) 1x1 m; M30x1.5 (#6426)
HTF:	M90.055.03 (#6259)
Reactor:	50-litre un-insulated jacketed glass reactor
Reactor contents:	34.5 litre M90.055.03 (#6259)
Reactor stirrer speed:	100 rpm
Control:	process

Model	Catalogue Page	Temperature Range		T _{min} with Cooling	T _{min} with Water Cooling	Heating Power		Bath Volume	min. Filling Capacity	Bath Volume with Displacement Insert	Bath Opening WxDxH	Resolution of Display		Temperature Stability		Cooling Power at									
		°C	°C	°C	°C	kW	l	l	l	mm	K	K	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW			
		°C	°C	°C	°C	kW	l	l	l	mm	K	K	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW			
Unistats® to -55°C																									
Petite Fleur®	35	-40...200				1,5		1,5			0,01	0,01		0,48	0,48	0,48	0,45	0,27	0,04						
Petite Fleur® w	35	-40...200				1,5		1,5			0,01	0,01		0,48	0,48	0,48	0,45	0,27	0,04						
Petite Fleur®-eo	35	-40...200				1,5		1,5			0,01	0,01		0,48	0,48	0,48	0,45	0,27	0,04						
Unistat® tango®	36	-45...250				1,5 / 3,0		1,5			0,01	0,01		0,7	0,7		0,7	0,4	0,06						
Unistat® tango® w	36	-45...250				1,5 / 3,0		1,5			0,01	0,01		0,7	0,7		0,7	0,4	0,06						
Unistat® tango® wl	36	-45...250				1,5 / 3,0		1,5			0,01	0,01		0,7	0,7		0,7	0,4	0,06						
Unistat® 405	36	-45...250				1,5 / 3,0		1,5			0,01	0,01		1,0	1,0		1,0	0,6	0,15						
Unistat® 405w	36	-45...250				1,5 / 3,0		1,5			0,01	0,01		1,3	1,3		1,3	0,7	0,15						
Unistat® 410w	36	-45...250				1,5 / 3,0		1,5			0,01	0,01		2,5	2,5	2,5	1,5	0,8	0,2						
Unistat® 425	36	-40...250				2,0		3,6			0,01	0,01		2,0	2,0	2,0	2,5	1,8	0,2						
Unistat® 425w	36	-40...250				2,0		3,6			0,01	0,01		2,8	2,8	2,8	2,5	1,9	0,2						
Unistat® 425w-FB	36	-40...250				2,0		5,0			0,01	0,01		2,8	2,8	2,8	2,5	1,9	0,2						
Unistat® 430	36	-40...250				4,0		3,9			0,01	0,01		3,5	3,5	3,5	3,5	2,2	0,3						
Unistat® 430w	36	-40...250				4,0		3,9			0,01	0,01		3,5	3,5	3,5	3,5	2,2	0,3						
Unistat® 430w-FB	36	-40...250				4,0		4,1			0,01	0,01		3,5	3,5	3,5	3,5	2,2	0,3						
Unistat® 510	36	-50...250				6,0		5,3			0,01	0,01		5,3	5,3		5,3	2,8	0,9						
Unistat® 510w	36	-50...250				6,0		4,7			0,01	0,01		5,3	5,3		5,3	2,8	0,9						
Unistat® 510w-FB	36	-50...250				6,0		5,0			0,01	0,01			5,0		5,0	2,8	0,9						
Unistat® 515w	36	-55...250				6,0		4,7			0,01	0,01		7,0	7,0	7,0	5,0	2,8	0,9						
Unistat® 520w	36	-55...250				6,0		5,1			0,01	0,01		6,0	6,0		6,0	4,2	1,5						
Unistat® 520w-FB	36	-55...250				6,0		6,4			0,01	0,01		5,0	5,0		6,0	4,2	1,5						
Unistat® 525	36	-55...250				6,0		5,1			0,01	0,01		10,0	10,0	10,0	7,0	4,2	1,5						
Unistat® 525w	36	-55...250				6,0		5,1			0,01	0,01		10,0	10,0	10,0	7,0	4,2	1,5						
Unistat® 527w	36	-55...250				6,0		7,2			0,01	0,01		12,0	12,0	12,0	12,0	6,0	2,0						
Unistat® 530w	36	-55...250				12,0		7,2			0,01	0,01		19,0	21,0	21,0	16,0	9,0	3,0						
Unistats® to -75°C																									
Unistat® 610	37	-60...200				6,0		5,65			0,01	0,01		7,0	7,0		7,0	6,4	3,3	0,8					
Unistat® 610w	37	-60...200				6,0		5,65			0,01	0,01		7,0	7,0		7,0	6,4	3,3	0,8					
Unistat® 615w	37	-60...200				12,0		5,65			0,01	0,01		9,5	9,5		9,5	8,0	4,8	1,2					
Unistat® 620w	37	-60...200				12,0		5,2			0,01	0,01		12,0	12,0		12,0	12,0	6,5	1,8					
Unistat® 625w	37	-60...200				12,0		3,4			0,01	0,01		16,0	16,0	16,0	16,0	15,0	7,4	2,2					
Unistat® 630w	37	-60...200				24,0		11,4			0,01	0,01		22,0	22,0		21,0	20,0	14,0	5,0					
Unistat® 635w	37	-60...200				24,0		21,0			0,01	0,01		27,0	27,0		27,0	25,0	18,0	6,0					
Unistat® 640w	37	-60...200				30,0		17,0			0,01	0,01		32,0	32,0	35,0	35,0	30,0	18,0	6,0					
Unistat® 645w	37	-60...200				36,0		30,0			0,01	0,01		45,0	45,0		45,0	42,0	22,0	7,0					
Unistat® 650w	37	-60...200				48,0		28,0			0,01	0,01		65,0	65,0		65,0	56,0	30,0	11,0					
Unistat® 680w	37	-60...200				96,0		40,0			0,01	0,01		130,0	130,0		130,0	80,0	60,0	20,0					
Unistat® 705	38	-75...250				1,5 / 3,0		1,5			0,01	0,01		0,6	0,6		0,65	0,6	0,6	0,3					
Unistat® 705w	38	-75...250				1,5 / 3,0		1,5			0,01	0,01		0,6	0,6		0,65	0,6	0,6	0,3					
Unistats® to -85°C																									
Unistat® 815	38	-85...250				2,0		3,8			0,01	0,01		1,3	1,3		1,5	1,5	1,4	1,2	0,2				
Unistat® 815w	38	-85...250				2,0		3,2			0,01	0,01		1,5	1,5		1,5	1,5	1,4	1,2	0,2				
Unistat® 815w-FB	38	-85...250				2,0		4,5			0,01	0,01		1,5	1,5		1,5	1,5	1,4	1,2	0,2				
Unistat® 825	38	-85...250				3,0		2,9			0,01	0,01		2,3	2,3		2,2	2,0	2,0	1,4	0,3				
Unistat® 825w	38	-85...250				3,0		3,0			0,01	0,01		2,3	2,3		2,4	2,4	2,4	1,5	0,3				
Unistat® 825w-FB	38	-85...250				3,0		4,0			0,01	0,01		2,3	2,3		2,4	2,4	2,4	1,5	0,3				
Unistats® to -90°C																									
Unistat® 905	39	-90...250				6,0		3,5			0,01	0,01		4,0	3,8		3,6	3,5	3,5	2,2	0,7				
Unistat® 905w	39	-90...250				6,0		3,5			0,01	0,01		4,5	4,5		4,5	4,5	4,0	2,5	0,7				

max. Flow Rate – Pressure		max. Press – Pressure Pump		max. Flow Rate – Suction Pump		max. Press – Suction Pump		Pump Connection		Circulation Pump		Safety Class		Overtemperature Protection		Low Level Protection		Dimensions WxDxH		Weight		Power Supply ¹		Refrigeration Machine Cooling		min. Ambient Temperature		max. Ambient Temperature		Cooling Water Connection		Natural Refrigerant ²		Cat. No.		Model	
l/min	bar	l/min	bar							mm	kg		V; Hz					°C	°C																		
33	0,9			M16x1	Yes, vpc	III/FL	Yes	Yes	260 x 450 x 504	45,0		230;1~;50	AIR	5	40		S	1030.0001.01	Petite Fleur®																		
33	0,9			M16x1	Yes, vpc	III/FL	Yes	Yes	260 x 450 x 504	45,0		230;1~;50	WATER	5	40	G1/2	S	1030.0003.01	Petite Fleur® w																		
33	0,9			M16x1	Yes, vpc	III/FL	Yes	Yes	260 x 450 x 504	45,0		230;1~;50	AIR	5	40		S	1030.0004.01	Petite Fleur®-eo																		
55	0,9			M24x1,5	Yes, vpc	III/FL	Yes	Yes	426 x 270 x 631	56,0	230;1~;50 / 400;3~N;50	AIR	5	40		O	1000.0016.01	Unistat® tango®																			
55	0,9			M24x1,5	Yes, vpc	III/FL	Yes	Yes	426 x 270 x 631	56,0	230;1~;50 / 400;3~N;50	WATER	5	40	G1/2	S	1000.0021.01	Unistat® tango® w																			
55	0,9			M24x1,5	Yes, vpc	III/FL	Yes	Yes	426 x 270 x 631	56,0	230;1~;50 / 400;3~N;50	AIR+WATER	5	40	G1/2	O	1000.0017.01	Unistat® tango® wl																			
55	0,9			M24x1,5	Yes, vpc	III/FL	Yes	Yes	426 x 307 x 631	62,0	230;1~;50 / 400;3~N;50	AIR	5	40			1002.0021.01	Unistat® 405																			
55	0,9			M24x1,5	Yes, vpc	III/FL	Yes	Yes	426 x 307 x 631	56,0	230;1~;50 / 400;3~N;50	WATER	5	40	G1/2	O	1002.0022.01	Unistat® 405w																			
55	0,9			M24x1,5	Yes, vpc	III/FL	Yes	Yes	425 x 360 x 636	67,5	230;1~;50 / 400;3~N;50	WATER	5	40	G1/2	O	1031.0005.01	Unistat® 410w																			
105	1,5			M30x1,5	Yes	III/FL	Yes	Yes	460 x 554 x 1453	155,0		400;3~N;50	AIR	5	40			1005.0057.01	Unistat® 425																		
105	1,5			M30x1,5	Yes	III/FL	Yes	Yes	460 x 554 x 1453	159,0	400;3~N;50 / 440;3~N;60	WATER	5	40	G1/2	O	1005.0058.01	Unistat® 425w																			
105	1,5			M30x1,5	Yes	III/FL	Yes	Yes	920 x 639 x 740	175,0		400;3~N;50	WATER	5	40	G1/2	O	1021.0015.01	Unistat® 425w-FB																		
90	1,7			M30x1,5	Yes	III/FL	Yes	Yes	460 x 554 x 1453	161,0		400;3~N;50	AIR	5	40			1005.0059.01	Unistat® 430																		
90	1,7			M30x1,5	Yes	III/FL	Yes	Yes	460 x 554 x 1453	159,0		400;3~N;50	WATER	5	40	G1/2	O	1005.0060.01	Unistat® 430w																		
70	1,5			M30x1,5	Yes	III/FL	Yes	Yes	920 x 639 x 740	153,0		400;3~N;50	WATER	5	40	G1/2	O	1021.0016.01	Unistat® 430w-FB																		
105	1,5			M30x1,5	Yes	III/FL	Yes	Yes	1100 x 755 x 1370	324,0		400;3~N;50	AIR	5	40			1005.0082.01	Unistat® 510																		
105	1,5			M30x1,5	Yes	III/FL	Yes	Yes	460 x 554 x 1453	163,0		400;3~N;50	WATER	5	40	G1/2	O	1005.0061.01	Unistat® 510w																		
105	1,5			M30x1,5	Yes	III/FL	Yes	Yes	920 x 639 x 740	177,0		400;3~N;50	WATER	5	40	G1/2	O	1021.0017.01	Unistat® 510w-FB																		
105	1,5			M30x1,5	Yes	III/FL	Yes	Yes	460 x 554 x 1453	163,0		400;3~N;50	WATER	5	40	G1/2	O	1032.0006.01	Unistat® 515w																		
60	1,5			M30x1,5	Yes	III/FL	Yes	Yes	540 x 604 x 1332	203,0		400;3~N;50	WATER	5	40	G1/2	O	1006.0020.01	Unistat® 520w																		
60	1,5			M30x1,5	Yes	III/FL	Yes	Yes	920 x 639 x 740	201,2		400;3~N;50	WATER	5	40	G1/2	O	1022.0006.01	Unistat® 520w-FB																		
60	1,5			M30x1,5	Yes	III/FL	Yes	Yes	1290 x 736 x 1596	400,0		400;3~N;50	AIR	5	40			1033.0015.01	Unistat® 525																		
60	1,5			M30x1,5	Yes	III/FL	Yes	Yes	540 x 604 x 1332	203,0		400;3~N;50	WATER	5	40	G1/2	O	1033.0008.01	Unistat® 525w																		
90	2,5			M30x1,5	Yes	III/FL	Yes	Yes	540 x 704 x 1491	288,0		400;3~N;50	WATER	5	40	G3/4	O	1034.0014.01	Unistat® 527w																		
90	2,5			M30x1,5	Yes	III/FL	Yes	Yes	540 x 704 x 1491	288,0		400;3~N;50	WATER	5	40	G3/4	O	1034.0015.01	Unistat® 530w																		
60	1,5			M30x1,5	Yes	III/FL	Yes	Yes	1290 x 735 x 1600	488,0		400;3~N;50	AIR	5	40			1007.0040.01	Unistat® 610																		
60	1,5			M30x1,5	Yes	III/FL	Yes	Yes	630 x 704 x 1520	348,0		400;3~N;50	WATER	5	40	G1/2	O	1007.0031.01	Unistat® 610w																		
60	1,5			M30x1,5	Yes	III/FL	Yes	Yes	630 x 704 x 1520	358,0		400;3~N;50	WATER	5	40	G1/2	O	1007.0032.01	Unistat® 615w																		
90	2,5			M30x1,5	Yes	III/FL	Yes	Yes	730 x 804 x 1520	440,0		400;3~N;50	WATER	5	40	G3/4	O	1008.0040.01	Unistat® 620w																		
90	2,5			M30x1,5	Yes	III/FL	Yes	Yes	730 x 804 x 1520	448,0		400;3~N;50	WATER	5	40	G3/4	O	1008.0041.01	Unistat® 625w																		
110	2,5			M38x1,5	Yes	III/FL	Yes	Yes	950 x 1005 x 1650	679,0		400;3~;50	WATER	5	40	G3/4	O	1009.0021.01	Unistat® 630w																		
110	2,5			M38x1,5	Yes	III/FL	Yes	Yes	950 x 1005 x 1650	734,0		400;3~;50	WATER	5	40	G3/4	O	1009.0022.01	Unistat® 635w																		
110	2,5			M38x1,5	Yes	III/FL	Yes	Yes	950 x 1005 x 1650	734,0		400;3~;50	WATER	5	40	G3/4	O	1010.0007.01	Unistat® 640w																		
130	4,0			M38x1,5	Yes	III/FL	Yes	Yes	1830 x 1200 x 1830	1400		400;3~;50	WATER	5	40	G1 1/2	O	1011.0006.01	Unistat® 645w																		
130	4,0			M38x1,5	Yes	III/FL	Yes	Yes	1830 x 1200 x 1830	1400		400;3~;50	WATER	5	40	G1 1/2	O	1012.0005.01	Unistat® 650w																		
130	4,0			M38x1,5	Yes	III/FL	Yes	Yes	4500 x 2000 x 2000	3500		400;3~N;50	WATER	5	40	G2	O	1013.0003.01	Unistat® 680w																		
55	0,9			M24x1,5	Yes, vpc	III/FL	Yes	Yes	425 x 400 x 720	90,0	230;1~;50 / 400;3~N;50	AIR	5	40		O	1001.0020.01	Unistat® 705																			
55	0,9			M24x1,5	Yes, vpc	III/FL	Yes	Yes	425 x 400 x 720	90,0	230;1~;50 / 400;3~N;50	WATER	5	40	G1/2	O	1001.0021.01	Unistat® 705w																			
40	0,9			M30x1,5	Yes, vpc	III/FL	Yes	Yes	460 x 604 x 1465	186,0		400;3~N;50	AIR	5	40			1014.0049.01	Unistat® 815																		
40	0,9			M30x1,5	Yes, vpc	III/FL	Yes	Yes	460 x 604 x 1465	190,0		400;3~N;50	WATER	5	40	G1/2	O	1014.0050.01	Unistat® 815w																		
40	0,9			M30x1,5	Yes, vpc	III/FL	Yes	Yes	1200 x 654 x 742	177,0		400;3~N;50	WATER	5	40	G1/2	O	1023.0011.01	Unistat® 815w-FB																		
40	0,9			M30x1,5	Yes, vpc	III/FL	Yes	Yes	460 x 604 x 1465	208,0		400;3~N;50	AIR	5	40			1014.0051.01	Unistat® 825																		
40	0,9			M30x1,5	Yes, vpc	III/FL	Yes	Yes	460 x 604 x 1465	204,0		400;3~N;50	WATER	5	40	G1/2	O	1014.0052.01	Unistat® 825w																		
40	0,9			M30x1,5	Yes, vpc	III/FL	Yes	Yes	1200 x 654 x 742	226,0		400;3~N;50	WATER	5	40	G1/2	O	1023.0012.01	Unistat® 825w-FB																		
40	0,9			M30x1,5	Yes, vpc	III/FL	Yes	Yes	540 x 654 x 1500	238,0		400;3~N;50	AIR	5	40			1035.0011.01	Unistat® 905																		
40	0,9			M30x1,5	Yes, vpc	III/FL	Yes	Yes	540 x 654 x 1500	238,0		400;3~N;50	WATER	5	40	G1/2	O	1035.0012.01	Unistat® 905w																		

FL = Suitable for inflammable and non-inflammable liquids

¹ Voltage can be changed, must be specified with order² S = Standard, O = Option, A = On Request³ Option

Model	Catalogue Page	Temperature Range		T _{min} with Cooling	T _{min} with Water Cooling	Heating Power	Bath Volume	min. Filling Capacity	Bath Volume with Displacement Insert	Bath Opening WxDxH	Resolution of Display	Temperature Stability										Cooling Power at					
		°C											300°C	200°C	100°C	20°C	0°C	-20°C	-40°C	-60°C	-80°C	-100°C					
		°C	°C	°C	kW	l	l	l	mm	K	K	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW				
Unistat® 912w	39	-90...250			6,0		5,2			0,01	0,01		7,0	7,0		7,0	7,0	6,0	3,5	0,9							
Unistat® 915w	39	-90...250			6,0		5,2			0,01	0,01		11,0	11,0		11,0	11,0	8,0	4,0	1,1							
Unistat® 920w	39	-90...200			12,0		12,0			0,01	0,01		11,0	11,0	11,0	11,0	11,0	10,0	8,0	2,0							
Unistat® 925w	39	-90...200			12,0		12,0			0,01	0,01		16,0	16,0	16,0	16,0	16,0	15,0	13,5	3,5							
Unistat® 930w	39	-90...200			24,0		12,0			0,01	0,01		19,0	19,0	19,0	20,0	20,0	20,0	15,0	5,0							
Unistat® 950	39	-90...200			36,0		11,0			0,01	0,01		30,0	30,0	30,0	30,0	30,0	30,0	24,0	10,0							
Unistat® 950w	39	-90...200			36,0		30,0			0,01	0,01		36,0	36,0	36,0	36,0	36,0	36,0	25,0	10,0							
Unistats® to -120°C																											
Unistat® 1005w	39	-120...100			2,0		3,6			0,01	0,01			1,5	1,5	1,5	1,5	1,5	1,4	1,4	1,0						
Unistat® 1015w	39	-120...100			4,0		7,0			0,01	0,01			2,5	2,5	2,5	2,5	2,5	2,5	2,0	2,0						
Unistat® High Temperature Circulators, Unistat® Heating Circulators																											
Unistat® TR401	41	50...400			3,0 / 9,0		2,3			0,01/0,1	0,05																
Unistat® TR401w HT	41	50...400		15	3,0 / 9,0		2,3			0,01/0,1	0,05	10,0	10,0	10,0													
Unistat® TR402	41	80...425			3,0 / 9,0		3,0			0,01/0,1	0,05																
Unistat® T305	41	65...300		15	3,0 / 6,0		1,45			0,01	0,02																
Unistat® T305 HT	41	65...300			3,0 / 6,0		1,9			0,01	0,01	3,2	2,3	0,6													
Unistat® T305w HT	41	65...300		15	3,0 / 6,0		1,9			0,01		10,0	10,0	10,0													
Unistat® T320w HT	41	65...300		15	12,0		3,5			0,01		10,0	10,0	6,0													
Unistat® T330w HT	41	65...300		15	24,0		3,5			0,01		10,0	10,0	6,0													
Unistat® T340w HT	41	65...300		15	48,0		3,5			0,01		10,0	10,0	6,0													
Unistat® T402	41	80...425		15	3,0 / 6,0		1,45			0,01	0,02																
Unichillers® (Bench top)																											
Minichiller®	50	-20...40					1,4			0,1	0,2					0,2	0,07										
Minichiller® plus	51	-20...40					1,4			0,1	0,2					0,2	0,07										
Minichiller® w	50	-20...40					1,4			0,1	0,2					0,2	0,07										
Minichiller® w plus	51	-20...40					1,4			0,1	0,2					0,2	0,07										
Unichiller® 006-MPC	50	-20...40					1,25			0,1	0,2					0,5	0,15										
Unichiller® 006-MPC plus	51	-20...40					1,25			0,1	0,2					0,5	0,15										
Unichiller® 007-MPC	50	-20...40					3,8			0,1	0,2					0,55	0,20										
Unichiller® 007-MPC plus	51	-20...40					3,8			0,1	0,2					0,55	0,20										
Unichiller® 010-MPC	50	-20...40					3,8			0,1	0,2					0,8	0,15										
Unichiller® 010-MPC plus	51	-20...40					3,8			0,1	0,2					0,8	0,15										
Unichiller® 012-MPC	50	-20...40					3,8			0,1	0,2					1,0	0,25										
Unichiller® 012-MPC plus	51	-20...40					3,8			0,1	0,2					1,0	0,25										
Unichiller® 012w-MPC	50	-20...40					3,8			0,1	0,2					1,0	0,25										
Unichiller® 012w-MPC plus	51	-20...40					3,8			0,1	0,2					1,0	0,25										
Unichiller® 015-MPC	50	-20...40					3,8			0,1	0,2					1,0	0,30										
Unichiller® 015-MPC plus	51	-20...40					3,8			0,1	0,2					1,0	0,30										
Unichiller® 015w-MPC	50	-20...40					3,8			0,1	0,2					1,0	0,30										
Unichiller® 015w-MPC plus	51	-20...40					3,8			0,1	0,2					1,0	0,30										
Unichiller® 022-MPC	50	-10...40					3,8			0,1	0,2					1,6											
Unichiller® 022-MPC plus	51	-10...40					3,8			0,1	0,2					1,6											
Unichiller® 022w-MPC	50	-10...40					3,8			0,1	0,2					1,6											
Unichiller® 022w-MPC plus	51	-10...40					3,8			0,1	0,2					1,6											
Unichiller® 025-MPC	50	-10...40					3,8			0,1	0,2					2,0											
Unichiller® 025-MPC plus	51	-10...40					3,8			0,1	0,2					2,0											
Unichiller® 025w-MPC	50	-10...40					3,8			0,1	0,2					2,0											
Unichiller® 025w-MPC plus	51	-10...40					3,8			0,1	0,2					2,0											
Unichillers® (Tower)																											
Unichiller® 006Tw-MPC	52	-20...40					1,25			0,1	0,5					0,45	0,25										

max. Flow Rate – Pressure		max. Press – Pressure Pump		max. Flow Rate – Suction Pump		max. Press – Suction Pump		Pump Connection		Circulation Pump		Safety Class		Overtemperature Protection		Low Level Protection		Dimensions WxDxH		Weight		Power Supply ¹		Refrigeration Machine Cooling		min. Ambient Temperature		max. Ambient Temperature		Cooling Water Connection		Natural Refrigerant ²		Cat. No.		Model	
l/min	bar	l/min	bar							mm	kg							V; Hz		°C	°C			°C	°C												
110	1,5			M30x1,5	Yes	III/FL	Yes	Yes	Yes	630 x 704 x 1565	384,0							400;3~N;50		WATER	5	40	G1/2	O					1016.0027.01	Unistat® 912w							
110	1,5			M30x1,5	Yes	III/FL	Yes	Yes	Yes	630 x 704 x 1565	384,0							400;3~N;50		WATER	5	40	G3/4	O					1036.0006.01	Unistat® 915w							
90	2,5			M38x1,5	Yes	III/FL	Yes	Yes	Yes	950 x 1205 x 1650	995,0							400;3~;50		WATER	5	40	G3/4	O					1017.0025.01	Unistat® 920w							
110	2,5			M38x1,5	Yes	III/FL	Yes	Yes	Yes	950 x 1205 x 1650	995,0							400;3~;50		WATER	5	40	G3/4	O					1017.0026.01	Unistat® 925w							
110	2,5			M38x1,5	Yes	III/FL	Yes	Yes	Yes	950 x 1205 x 1650	991,0							400;3~;50		WATER	5	40	G3/4	O					1017.0027.01	Unistat® 930w							
130	4,0			M38x1,5	Yes	III/FL	Yes	Yes	Yes	3315 x 1485 x 3040	3000							400;3~;50		AIR	5	40							1018.0008.01	Unistat® 950							
130	4,0			M38x1,5	Yes	III/FL	Yes	Yes	Yes	2630 x 1300 x 1930	1950							400;3~;50		WATER	5	40	G1 1/4	O					1018.0009.01	Unistat® 950w							
30	0,9			M30x1,5	Yes, vpc	III/FL	Yes	Yes	Yes	700 x 804 x 1520	355,0							400;3~;50		WATER	5	40	G1/2	O					1019.0006.01	Unistat® 1005w							
44	1,5			M30x1,5	Yes	III/FL	Yes	Yes	Yes	950 x 1205 x 1650	685,0							400;3~;50		WATER	5	40	G1/2	O					1020.0010.01	Unistat® 1015w							
31	0,9			M24x1,5	Yes, vpc	III/FL	Yes	Yes	Yes	288 x 379 x 890	37,0							230;1~;50/60 / 400;3~N;50/60			5	40	G1/2						1028.0007.01	Unistat® TR401							
26	0,8			M24x1,5	Yes, vpc	III/FL	Yes	Yes	Yes	288 x 379 x 890	47,0							230;1~;50/60 / 400;3~N;50/60			5	40	G1/2						1028.0008.01	Unistat® TR401w HT							
31	1,0			M24x1,5	Yes, vpc	III/FL	Yes	Yes	Yes	288 x 332 x 870	48,0							230;1~;50/60 / 400;3~N;50/60			5	40	G1/2						1028.0006.01	Unistat® TR402							
45	0,9			M24x1,5	Yes, vpc	III/FL	Yes	Yes	Yes	425 x 250 x 635	35,0							230;1~;50/60 / 400;3~N;50/60			5	40	G1/2						1003.0010.01	Unistat® T305							
45	0,9			M24x1,5	Yes, vpc	III/FL	Yes	Yes	Yes	425 x 250 x 635	36,0							230;1~;50/60 / 400;3~N;50/60			5	40							1003.0011.01	Unistat® T305 HT							
45	0,9			M24x1,5	Yes, vpc	III/FL	Yes	Yes	Yes	425 x 250 x 635	41,5							230;1~;50/60 / 400;3~N;50/60			5	40	G1/2						1003.0012.01	Unistat® T305w HT							
60	1,5			M30x1,5	Yes	III/FL	Yes	Yes	Yes	460 x 554 x 1332	124,0							400;3~N;50			5	40	G1/2						1004.0019.01	Unistat® T320w HT							
60	2,5			M30x1,5	Yes	III/FL	Yes	Yes	Yes	460 x 554 x 1332	138,0							400;3~N;50			5	40	G1/2						1004.0025.01	Unistat® T330w HT							
60	2,5			M30x1,5	Yes	III/FL	Yes	Yes	Yes	600 x 704 x 1517	163,0							400;3~N;50			5	40	G1/2						1024.0007.01	Unistat® T340w HT							
45	0,9			M24x1,5	Yes, vpc	III/FL	Yes	Yes	Yes	505 x 400 x 765	54,0							230;1~;50/60 / 400;3~N;50/60			5	40	G1/2						1038.0003.01	Unistat® T402							
20	0,2	17	0,18	M16x1	Yes	I/NFL	No	No	No	225 x 360 x 380	23,0							230;1~;50/60		AIR	5	40		S		S			3006.0015.99	Minichiller®							
20	0,2	17	0,18	M16x1	Yes	I/NFL	No	No	No	225 x 360 x 380	23,0							230;1~;50/60		AIR	5	40		S		S			3006.0039.99	Minichiller® plus							
20	0,2	17	0,18	M16x1	Yes	I/NFL	No	No	No	225 x 360 x 380	23,0							230;1~;50/60		WATER	5	40	G1/2	S		S			3006.0022.99	Minichiller® w							
20	0,2	17	0,18	M16x1	Yes	I/NFL	No	No	No	225 x 360 x 380	23,0							230;1~;50/60		WATER	5	40	G1/2	S		S			3006.0040.99	Minichiller® w plus							
30	0,7			M16x1	Yes, A	I/NFL	No	Yes	Yes	280 x 490 x 414	37,0							230;1~;50/60		AIR	5	40		S		S			3007.0007.99	Unichiller® 006-MPC							
30	0,7			M16x1	Yes, A	I/NFL	No	Yes	Yes	280 x 490 x 414	37,0							230;1~;50/60		AIR	5	40		S		S			3007.0011.99	Unichiller® 006-MPC plus							
25	2,5			G3/4	Yes, B	I/NFL	No	No	No	350 x 430 x 622	56,0							230;1~;50/60		AIR	5	40		O		O			3012.0001.99	Unichiller® 007-MPC							
25	2,5			G3/4	Yes, B	I/NFL	No	No	No	350 x 430 x 622	56,0							230;1~;50/60		AIR	5	40		O		O			3012.0062.99	Unichiller® 007-MPC plus							
25	2,5			G3/4	Yes, B	I/NFL	No	No	No	350 x 430 x 622	49,0							230;1~;50/60		AIR	5	40							3012.0002.99	Unichiller® 010-MPC							
25	2,5			G3/4	Yes, B	I/NFL	No	No	No	350 x 430 x 622	49,0							230;1~;50/60		AIR	5	40							3012.0063.99	Unichiller® 010-MPC plus							
25	2,5			G3/4	Yes, B	I/NFL	No	No	No	420 x 480 x 579	52,0							230;1~;50		AIR	5	40							3009.0002.99	Unichiller® 012-MPC							
25	2,5			G3/4	Yes, B	I/NFL	No	No	No	420 x 480 x 579	52,0							230;1~;50		AIR	5	40							3009.0042.99	Unichiller® 012-MPC plus							
25	2,5			G3/4	Yes, B	I/NFL	No	No	No	350 x 430 x 622	52,0							230;1~;50		WATER	5	40	G1/2	O		O			3012.0003.99	Unichiller® 012w-MPC							
25	2,5			G3/4	Yes, B	I/NFL	No	No	No	350 x 430 x 622	52,0							230;1~;50		WATER	5	40	G1/2	O		O			3012.0064.99	Unichiller® 012w-MPC plus							
25	2,5			G3/4	Yes, B	I/NFL	No	No	No	420 x 480 x 579	52,0							230;1~;50		AIR	5	40							3009.0001.99	Unichiller® 015-MPC							
25	2,5			G3/4	Yes, B	I/NFL	No	No	No	420 x 480 x 579	52,0							230;1~;50		AIR	5	40							3009.0043.99	Unichiller® 015-MPC plus							
25	2,5			G3/4	Yes, B	I/NFL	No	Yes	Yes	350 x 430 x 622	52,0							230;1~;50		WATER	5	40	G1/2	O		O			3012.0004.99	Unichiller® 015w-MPC							
25	2,5			G3/4	Yes, B	I/NFL	No	Yes	Yes	350 x 430 x 622	52,0							230;1~;50		WATER	5	40	G1/2	O		O			3012.0065.99	Unichiller® 015w-MPC plus							
25	2,5			G3/4	Yes, B	I/NFL	No	Yes	Yes	460 x 590 x 743	78,0							230;1~;50		AIR	5	40							3010.0001.99	Unichiller® 022-MPC							
25	2,5			G3/4	Yes, B	I/NFL	No	Yes	Yes	460 x 590 x 743	78,0							230;1~;50		AIR	5	40							3010.0024.99	Unichiller® 022-MPC plus							
25	2,5			G3/4	Yes, B	I/NFL	No	Yes	Yes	420 x 480 x 579	93,0							230;1~;50		WATER	5	40	G1/2	O		O			3009.0003.99	Unichiller® 022w-MPC							
25	2,5			G3/4	Yes, B	I/NFL	No	Yes	Yes	420 x 480 x 579	93,0							230;1~;50		WATER	5	40	G1/2	O		O			3009.0044.99	Unichiller® 022w-MPC plus							
25	2,5			G3/4	Yes, B	I/NFL	No	Yes	Yes	460 x 590 x 743	88,0							230;1~;50		AIR	5	40							3010.0002.99	Unichiller® 025-MPC							
25	2,5			G3/4	Yes, B	I/NFL	No	Yes	Yes	460 x 590 x 743	88,0							230;1~;50		AIR	5	40							3010.0025.99	Unichiller® 025-MPC plus							
25	2,5																																				

Model	Catalogue Page	Temperature Range		T _{min} with Cooling	T _{min} with Water Cooling	Heating Power	Bath Volume	min. Filling Capacity	Bath Volume with Displacement Insert	Bath Opening WxDxH	Resolution of Display	Temperature Stability										Cooling Power at							
		°C	°C									°C	kW	l	l	mm	K	K	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	
		°C	°C	°C	kW	l	l	mm	K	K	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW								
Unichiller® 006Tw-MPC plus	52	-20...40					1,25				0,1	0,5						0,45	0,25										
Unichiller® 009Tw-MPC	52	-25...40					1,25				0,1	0,5						0,7	0,2										
Unichiller® 009Tw-MPC plus	52	-25...40					1,25				0,1	0,5						0,7	0,2										
Unichillers® air-cooled in Tower Housings with Pilot ONE®																													
Unichiller® 017T	54	-10...40					2,5				0,01/0,1	0,5						0,9											
Unichiller® 020T	54	-20...40					2,5				0,01/0,1	0,5						2,0	0,8										
Unichiller® 025T	54	-10...40					2,5				0,01/0,1	0,5						1,2											
Unichiller® 040T	54	-10...40					3,5				0,01/0,1	0,5						2,5											
Unichiller® 045T	54	-20...40					3,5				0,01/0,1	0,5						4,5	1,5										
Unichiller® 055T	54	-10...40					5,0				0,01/0,1	0,5						3,0											
Unichiller® 060T	54	-20...40					5,0				0,01/0,1	0,5						6,0	2,0										
Unichiller® 080T	54	-10...40					5,0				0,01/0,1	0,5						4,8											
Unichiller® 100T	54	-20...40					8,36				0,01/0,1	0,5						10,0	2,5										
Unichiller® 110T	54	-10...40					8,36				0,01/0,1	0,5						6,0											
Unichiller® 130T	54	-10...40					17,0				0,01/0,1	0,5						7,0											
Unichiller® 150T	54	-20...40					17,0				0,01/0,1	0,5						15,0	3,7										
Unichiller® 160T	54	-10...40					17,0				0,01/0,1	0,5						8,8											
Unichiller® 200T	54	-10...40					17,0				0,01/0,1	0,5						11,0											
Unichiller® 210T	54	-20...40					17,0				0,01/0,1	0,5						21,0	5,2										
Unichiller® 250T	54	-10...40					20,0				0,01/0,1	0,5						14,0											
Unichiller® 260T	54	-20...40					20,0				0,01/0,1	0,5						26,0	5,2										
Unichiller® 300T	54	-10...40					25,0				0,01/0,1	0,5						16,5											
Unichiller® 400T	54	-10...40					25,0				0,01/0,1	0,5						22,0											
Unichillers® water-cooled in Tower Housings with Pilot ONE®																													
Unichiller® 017Tw	55	-10...40					2,5				0,01/0,1	0,5						0,9											
Unichiller® 020Tw	55	-20...40					2,5				0,01/0,1	0,5						2,0	0,8										
Unichiller® 025Tw	55	-10...40					2,5				0,01/0,1	0,5						1,2											
Unichiller® 030Tw	55	-20...40					2,5				0,01/0,1	0,5						3,0	1,0										
Unichiller® 040Tw	55	-10...40					2,5				0,01/0,1	0,5						2,5											
Unichiller® 055Tw	55	-10...40					5,9				0,01/0,1	0,5						4,0											
Unichiller® 060Tw	55	-20...40					5,9				0,01/0,1	0,5						6,0	2,1										
Unichiller® 080Tw	55	-10...40					5,9				0,01/0,1	0,5						4,65											
Unichiller® 100Tw	55	-20...40					6,5				0,01/0,1	0,5						10,0	3,0										
Unichiller® 110Tw	55	-10...40					6,5				0,01/0,1	0,5						5,8											
Unichiller® 130Tw	55	-10...40					6,5				0,01/0,1	0,5						7,0											
Unichiller® 150Tw	55	-20...40					12,7				0,01/0,1	0,5						15,0	5,0										
Unichiller® 160Tw	55	-10...40					6,5				0,01/0,1	0,5						9,5											
Unichiller® 200Tw	55	-10...40					12,7				0,01/0,1	0,5						10,7											
Unichiller® 210Tw	55	-20...40					13,0				0,01/0,1	0,5						21,0	9,5										
Unichiller® 250Tw	55	-10...40					5,5				0,01/0,1	0,5						14,0											
Unichiller® 260Tw	55	-20...40					12,3				0,01/0,1	0,5						26,0	12,0										
Unichiller® 300Tw	55	-10...40					9,5				0,01/0,1	0,5						16,0											
Unichiller® 400Tw	55	-10...40					9,5				0,01/0,1	0,5						21,0											
Unichiller® 500Tw	55	-10...40					12,7				0,01/0,1	0,5						26,0											
RotaCool®	56	-10...40					1,5				0,1	1,0						0,35											
Immersion Coolers, Flow-through Chillers																													
TC®45	57	-45...100																0,24	0,18	0,05									
TC®45E	57	-45...100									0,1	0,5						0,24	0,18	0,05									
TC®50	57	-50...50																0,3	0,26										
TC®50E	57	-50...50									0,1	0,5						0,3	0,26										

max. Flow Rate – Pressure		max. Press – Pressure Pump		max. Flow Rate – Suction Pump		max. Press – Suction Pump		Pump Connection		Circulation Pump		Safety Class		Overtemperature Protection		Low Level Protection		Dimensions WxDxH		Weight		Power Supply¹		Refrigeration Machine Cooling		min. Ambient Temperature		max. Ambient Temperature		Cooling Water Connection		Natural Refrigerant²		Cat. No.		Model	
l/min	bar	l/min	bar							mm	kg							V; Hz		°C	°C																
30	0,7			M16x1	Yes, A	I/NFL	No	No	No	230 x 280 x 540	30,0	230;1-;50	WATER	5	40	G1/2	S	230;1-;50	WATER	5	40	G1/2	S	3022.0010.99	Unichiller® 006Tw-MPC plus												
30	0,7			M16x1	Yes, A	I/NFL	No	No	No	230 x 280 x 540	32,0	230;1-;50	WATER	5	40	G1/2	S	230;1-;50	WATER	5	40	G1/2	S	3022.0002.99	Unichiller® 009Tw-MPC												
30	0,7			M16x1	Yes, A	I/NFL	No	No	No	230 x 280 x 540	32,0	230;1-;50	WATER	5	40	G1/2	S	230;1-;50	WATER	5	40	G1/2	S	3022.0011.99	Unichiller® 009Tw-MPC plus												
25	3,0			G3/4	Yes, B	I/NFL	No	Yes	Yes	450 x 510 x 1231	114,0	230;1-;50	AIR	5	40			230;1-;50	AIR	5	40			3013.0001.01	Unichiller® 017T												
25	3,0			G3/4	Yes, B	I/NFL	No	Yes	Yes	450 x 510 x 1231	130,0	230;1-;50	AIR	5	40			230;1-;50	AIR	5	40			3013.0002.01	Unichiller® 020T												
25	3,0			G3/4	Yes, B	I/NFL	No	Yes	Yes	450 x 510 x 1231	119,0	230;1-;50	AIR	5	40			230;1-;50	AIR	5	40			3013.0003.01	Unichiller® 025T												
26	3,0			G3/4	Yes, B	I/NFL	No	Yes	Yes	500 x 552 x 1451	164,0	400;3-N;50	AIR	5	40			400;3-N;50	AIR	5	40			3014.0001.01	Unichiller® 040T												
26	3,0			G3/4	Yes, B	I/NFL	No	Yes	Yes	500 x 552 x 1451	164,0	400;3-N;50	AIR	5	40			400;3-N;50	AIR	5	40			3014.0002.01	Unichiller® 045T												
57	5,6			G1 1/4	Yes, C3	I/NFL	No	Yes	Yes	600 x 632 x 1610	175,0	400;3-N;50	AIR	5	40			400;3-N;50	AIR	5	40			3015.0001.01	Unichiller® 055T												
80	5,6			G1 1/4	Yes, C3	I/NFL	No	Yes	Yes	600 x 632 x 1610	199,0	400;3-N;50	AIR	5	40			400;3-N;50	AIR	5	40			3015.0002.01	Unichiller® 060T												
84	5,6			G1 1/4	Yes, C3	I/NFL	No	Yes	Yes	600 x 790 x 1614	234,0	400;3-N;50	AIR	5	40			400;3-N;50	AIR	5	40			3016.0001.01	Unichiller® 080T												
96	5,6			G1 1/4	Yes, C3	I/NFL	No	Yes	Yes	600 x 790 x 1614	230,0	400;3-N;50	AIR	5	40			400;3-N;50	AIR	5	40			3017.0001.01	Unichiller® 100T												
90	5,6			G1 1/4	Yes, C3	I/NFL	No	Yes	Yes	600 x 790 x 1614	230,0	400;3-N;50	AIR	5	40			400;3-N;50	AIR	5	40			3017.0002.01	Unichiller® 110T												
90	5,6			G1 1/4	Yes, C3	I/NFL	No	Yes	Yes	904 x 1392 x 1820	375,0	400;3-N;50	AIR	5	40			400;3-N;50	AIR	5	40			3018.0001.01	Unichiller® 130T												
220	4,7			G1 1/4	Yes, D3	I/NFL	No	Yes	Yes	904 x 1392 x 1820	481,0	400;3-N;50	AIR	5	40			400;3-N;50	AIR	5	40			3019.0001.01	Unichiller® 150T												
96	5,6			G1 1/4	Yes, C3	I/NFL	No	Yes	Yes	904 x 1392 x 1820	480,0	400;3-N;50	AIR	5	40			400;3-N;50	AIR	5	40			3018.0002.01	Unichiller® 160T												
220	4,7			G1 1/4	Yes, D3	I/NFL	No	Yes	Yes	904 x 1392 x 1820	481,0	400;3-N;50	AIR	5	40			400;3-N;50	AIR	5	40			3019.0002.01	Unichiller® 200T												
220	4,7			G1 1/4	Yes, D3	I/NFL	No	Yes	Yes	874 x 1985 x 1855	430,0	400;3-N;50	AIR	5	40			400;3-N;50	AIR	5	40			3020.0001.01	Unichiller® 210T												
220	4,7			G1 1/4	Yes, D3	I/NFL	No	Yes	Yes	874 x 1985 x 1855	430,0	400;3-N;50	AIR	5	40			400;3-N;50	AIR	5	40			3020.0002.01	Unichiller® 250T												
220	4,7			G1 1/4	Yes, D3	I/NFL	No	Yes	Yes	874 x 1985 x 1855	430,0	400;3-N;50	AIR	5	40			400;3-N;50	AIR	5	40			3020.0003.01	Unichiller® 260T												
220	4,7			G1 1/4	Yes, D3	I/NFL	No	Yes	Yes	874 x 1985 x 1855	450,0	400;3-N;50	AIR	5	40			400;3-N;50	AIR	5	40			3020.0004.01	Unichiller® 300T												
220	4,7			G1 1/4	Yes, D3	I/NFL	No	Yes	Yes	2500 x 1685 x 1785	480,0	400;3-N;50	AIR	5	40			400;3-N;50	AIR	5	40			3021.0001.01	Unichiller® 400T												
25	3,0			G3/4	Yes, B	I/NFL	No	Yes	Yes	400 x 440 x 1100	96,0	230;1-;50	WATER	5	40	G1/2	O	230;1-;50	WATER	5	40	G1/2	O	3024.0001.01	Unichiller® 017Tw												
25	3,0			G3/4	Yes, B	I/NFL	No	Yes	Yes	400 x 440 x 1100	109,0	230;1-;50	WATER	5	40	G1/2	O	230;1-;50	WATER	5	40	G1/2	O	3024.0002.01	Unichiller® 020Tw												
25	3,0			G3/4	Yes, B	I/NFL	No	Yes	Yes	400 x 440 x 1100	109,0	230;1-;50	WATER	5	40	G1/2	O	230;1-;50	WATER	5	40	G1/2	O	3024.0003.01	Unichiller® 025Tw												
26	3,0			G3/4	Yes, B	I/NFL	No	Yes	Yes	400 x 440 x 1100	115,0	400;3-N;50	WATER	5	40	G1/2	O	400;3-N;50	WATER	5	40	G1/2	O	3025.0001.01	Unichiller® 030Tw												
26	3,0			G3/4	Yes, B	I/NFL	No	Yes	Yes	400 x 440 x 1100	110,0	400;3-N;50	WATER	5	40	G1/2	O	400;3-N;50	WATER	5	40	G1/2	O	3025.0002.01	Unichiller® 040Tw												
57	5,6			G1 1/4	Yes, C3	I/NFL	No	Yes	Yes	500 x 552 x 1261	168,0	400;3-N;50	WATER	5	40	G1/2	O	400;3-N;50	WATER	5	40	G1/2	O	3026.0001.01	Unichiller® 055Tw												
80	5,6			G1 1/4	Yes, C3	I/NFL	No	Yes	Yes	500 x 552 x 1261	173,0	400;3-N;50	WATER	5	40	G1/2	O	400;3-N;50	WATER	5	40	G1/2	O	3026.0002.01	Unichiller® 060Tw												
84	5,6			G1 1/4	Yes, C3	I/NFL	No	Yes	Yes	500 x 552 x 1261	225,0	400;3-N;50	WATER	5	40	G1/2	O	400;3-N;50	WATER	5	40	G1/2	O	3026.0003.01	Unichiller® 080Tw												
96	5,6			G1 1/4	Yes, C3	I/NFL	No	Yes	Yes	600 x 600 x 1450	230,0	400;3-N;50	WATER	5	40	G1/2	O	400;3-N;50	WATER	5	40	G1/2	O	3027.0001.01	Unichiller® 100Tw												
90	5,6			G1 1/4	Yes, C3	I/NFL	No	Yes	Yes	600 x 600 x 1450	370,0	400;3-N;50	WATER	5	40	G1/2	O	400;3-N;50	WATER	5	40	G1/2	O	3027.0002.01	Unichiller® 110Tw												
96	5,6			G1 1/4	Yes, C3	I/NFL	No	Yes	Yes	600 x 600 x 1450	370,0	400;3-N;50	WATER	5	40	G1/2	O	400;3-N;50	WATER	5	40	G1/2	O	3027.0003.01	Unichiller® 130Tw												
200	4,7			G1 1/4	Yes, D3	I/NFL	No	Yes	Yes	760 x 800 x 1560	370,0	400;3-;50	WATER	5	40	G3/4	O	400;3-;50	WATER	5	40	G3/4	O	3028.0001.01	Unichiller® 150Tw												
90	5,6			G1 1/4	Yes, C3	I/NFL	No	Yes	Yes	600 x 600 x 1450	235,0	400;3-N;50	WATER	5	40	G3/4	O	400;3-N;50	WATER	5	40	G3/4	O	3027.0004.01	Unichiller® 160Tw												
200	4,7			G1 1/4	Yes, D3	I/NFL	No	Yes	Yes	760 x 800 x 1560	430,0	400;3-N;50	WATER	5	40	G3/4	O	400;3-N;50	WATER	5	40	G3/4	O	3028.0002.01	Unichiller® 200Tw												
200	4,7			G1 1/4	Yes, D3	I/NFL	No	Yes	Yes	760 x 800 x 1560	430,0	400;3-;50	WATER	5	40	G3/4	O	400;3-;50	WATER	5	40	G3/4	O	3028.0003.01	Unichiller® 210Tw												
200	4,7			G1 1/4	Yes, D3	I/NFL	No	Yes	Yes	760 x 800 x 1560	430,0	400;3-;50	WATER	5	40	G3/4	O	400;3-;50	WATER	5	40	G3/4	O	3028.0004.01	Unichiller® 250Tw												
210	4,7			G1 1/4	Yes, D3	I/NFL	No	Yes	Yes	760 x 800 x 1560	430,0	400;3-N;50	WATER	5	40	G3/4	O	400;3-N;50	WATER	5	40	G3/4	O	3028.0005.01	Unichiller® 260Tw												
210	4,7			G1 1/4	Yes, D3	I/NFL	No	Yes	Yes	760 x 900 x 1560	450,0	400;3-N;50	WATER	5	40	G3/4	O	400;3-N;50	WATER	5	40	G3/4	O	3029.0001.01	Unichiller® 300Tw												
210	4,7			G1 1/4	Yes, D3	I/NFL	No	Yes	Yes	760 x 900 x 1560	450,0	400;3-;50	WATER	5	40	G3/4	O	400;3-;50	WATER	5	40	G3/4	O	3029.0002.01	Unichiller® 400Tw												
210	4,7			G1 1/4	Yes, D3	I/NFL	No	Yes	Yes	1070 x 760 x 1625	520,0	400;3-;50	WATER	5	40	G3/4	O	400;3-;50	WATER	5	40	G3/4	O	3030.0001.01	Unichiller® 500Tw												
20	0,2	17	0,18	M16x1	Yes	I/NFL	No	Yes	Yes	470 x 580 x 420	32,0	230;1-;50/60	AIR	5	40		O	230;1-;50/60	AIR	5	40		O	3033.0005.99	RotaCool®												
					No	I/NFL	No	No	No	190 x 295 x 360	16,0	230;1-;50	AIR	5	40		S	230;1-;50	AIR	5	40		S	3003.0001.99	TC®45												
					No	I/NFL	No	No	No	190 x 295 x 360	16,0	230;1-;50	AIR	5	40		S	230;1-;50	AIR	5	40		S	3003.0002.99	TC®45E												
					No	I/NFL	No	No	No	260 x 330 x 415	25,0	230;1-;50/60	AIR	5	40		S	230;1-;50/60	AIR	5	40		S	3004.0001.99	TC®50												
					No	I/NFL	No	No	No	260 x 330 x 415	25,0	230;1-;50/60	AIR	5	40		S	230;1-;50/60	AIR	5	40		S	3004.0002.99	TC®50E												

FL = Suitable for inflammable and non-inflammable liquids

¹ Voltage can be changed, must be specified with order

² S = Standard, O = Option, A = On Request

³ Option

Model		Catalogue Page	Temperature Range		T _{min} with Cooling	T _{min} with Water Cooling	Heating Power	Bath Volume	min. Filling Capacity	Bath Volume with Displacement Insert	Bath Opening WxDxH	Resolution of Display	Temperature Stability		Cooling Power at									
			°C	°C									300°C	200°C	100°C	20°C	0°C	-20°C	-40°C	-60°C	-80°C	-100°C		
			°C	°C	°C	kW	l	l	l	mm	K	K	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	
TC®100	57	-100...40														0,16	0,15		0,12	0,12	0,01			
TC®100E	57	-100...40									0,1	0,5				0,16	0,15		0,12	0,12	0,01			
DC®30	57	-30...50														0,15	0,07							
DC®31	57	-30...50														0,35	0,10							
DC®32	57	-30...50														0,47	0,12							
Compatible Control Heating Circulators and MPC® Heating Circulators																								
CC®-E	64	25...200	-30	20	2,0						0,01/0,1	0,01												
MPC®-E	64	25...200	-30	20	2,0						0,1	0,05												
CC®-E xd	64	25...200	-30	20	2,0						0,01/0,1	0,01												
CC®-106A	65	25...100	15	20	2,0	6,0	4,9		130 x 110 x 150		0,01/0,1	0,02												
MPC®-106A	65	25...100	15	20	2,0	6,0	4,9		130 x 110 x 150		0,1	0,05												
CC®-108A	65	25...100	15	20	2,0	8,0	6,6		130 x 210 x 150		0,01/0,1	0,02												
MPC®-108A	65	25...100	15	20	2,0	8,0	6,6		130 x 210 x 150		0,1	0,05												
CC®-110A	65	25...100	15	20	2,0	10,0	8,4		130 x 310 x 150		0,01/0,1	0,02												
MPC®-110A	65	25...100	15	20	2,0	10,0	8,4		130 x 310 x 150		0,1	0,05												
CC®-112A	65	25...100	15	20	2,0	12,0	12,0		303 x 161 x 150		0,01/0,1	0,02												
MPC®-112A	65	25...100	15	20	2,0	12,0	12,0		303 x 161 x 150		0,1	0,05												
CC®-118A	65	25...100	15	20	2,0	18,0	18,0		303 x 321 x 150		0,01/0,1	0,02												
MPC®-118A	65	25...100	15	20	2,0	18,0	18,0		303 x 321 x 150		0,1	0,05												
CC®-208B	66	25...200	-30	20	2,0	8,5	8,5		230 x 127 x 150		0,01/0,1	0,02												
MPC®-208B	66	25...200	-30	20	2,0	8,5	8,5		230 x 127 x 150		0,1	0,05												
CC®-212B	66	25...200	-30	20	2,0	12,0	12,0		290 x 152 x 150		0,01/0,1	0,02												
MPC®-212B	66	25...200	-30	20	2,0	12,0	12,0		290 x 152 x 150		0,1	0,05												
CC®-215B	66	25...200	-30	20	2,0	15,0	15,0		290 x 152 x 200		0,01/0,1	0,02												
MPC®-215B	66	25...200	-30	20	2,0	15,0	15,0		290 x 152 x 200		0,1	0,05												
CC®-220B	66	25...200	-30	20	2,0	20,0	20,0		290 x 329 x 150		0,01/0,1	0,02												
MPC®-220B	66	25...200	-30	20	2,0	20,0	20,0		290 x 329 x 150		0,1	0,05												
CC®-225B	66	25...200	-30	20	2,0	25,0	25,0		290 x 329 x 200		0,01/0,1	0,02												
MPC®-225B	66	25...200	-30	20	2,0	25,0	25,0		290 x 329 x 200		0,1	0,05												
CC®-104A	67	25...100	15	20	2,0	4,0	3,6		Ø 25 x 150		0,01/0,1	0,02												
MPC®-104A	67	25...100	15	20	2,0	4,0	3,6		Ø 25 x 150		0,1	0,05												
CC®-202C	67	45...200	-30	20	2,0	2,0			Ø 25 x 150		0,01/0,1	0,02												
MPC®-202C	67	45...200	-30	20	2,0	2,0			Ø 25 x 150		0,1	0,05												
CC®-130A Visco 3	68	28...100	15	15	2,0	30,0	25,5		90 x 90 x 310		0,01/0,1	0,01												
CC®-130A Visco 5	68	28...100	15	15	2,0	30,0	25,5		Ø 51 x 310		0,01/0,1	0,01												
CC®-200BX	69	28...200	-20	20	2,0						0,01/0,1	0,02												
CC®-300BX	69	28...300	-20	20	3,0 / 4,0						0,01/0,1	0,02												
CC®-205B	70	45...200	-30	20	2,0	5,0			105 x 90 x 150		0,01/0,1	0,02												
MPC®-205B	70	45...200	-30	20	2,0	5,0			105 x 90 x 150		0,1	0,05												
CC®-304B	70	28...300	-20		2,0	5,0	3,2		130 x 100 x 155		0,01/0,1	0,02												
CC®-308B	70	28...300	-20		3,0	8,5	6,0	5,2	130 x 110 x 155		0,01/0,1	0,02												
CC®-315B	70	28...300	-20		3,0/ 4,0	15,0	11,5	8,5	270 x 145 x 200		0,01/0,1	0,02												
Compatible Control Cooling Bath Circulators and MPC® Cooling Bath Circulators																								
CC®-K12	71	-20...200				2,0	12,0		290 x 152 x 150		0,01/0,1	0,02				0,25	0,2	0,05						
MPC®-K12	71	-20...200				2,0	12,0		290 x 152 x 150		0,1	0,05				0,25	0,2	0,05						
CC®-K15	71	-20...200				2,0	15,0		290 x 152 x 200		0,01/0,1	0,02				0,25	0,2	0,05						
MPC®-K15	71	-20...200				2,0	15,0		290 x 152 x 200		0,1	0,05				0,25	0,2	0,05						
CC®-K20	71	-30...200				2,0	20,0		290 x 329 x 150		0,01/0,1	0,02				0,4	0,35	0,16						
MPC®-K20	71	-30...200				2,0	20,0		290 x 329 x 150		0,1	0,05				0,4	0,35	0,16						
CC®-K25	71	-30...200				2,0	25,0		290 x 329 x 200		0,01/0,1	0,02				0,4	0,35	0,16						

max. Flow Rate – Pressure		max. Press – Pressure Pump		max. Flow Rate – Suction Pump		max. Press – Suction Pump		Pump Connection	Circulation Pump	Safety Class	Overtemperature Protection	Low Level Protection	Dimensions WxDxH	Weight	Power Supply ¹	Refrigeration Machine Cooling	min. Ambient Temperature	max. Ambient Temperature	Cooling Water Connection	Natural Refrigerant ²	Cat. No.	Model
l/min	bar	l/min	bar			mm	kg															
					No	I/NFL	No	No	No	295 x 500 x 570	57,0	230;1~;50	AIR	5	40		S	3005.0043.99	TC®100			
					No	I/NFL	No	No	No	295 x 500 x 570	57,0	230;1~;50	AIR	5	40		S	3005.0044.99	TC®100E			
				M16x1	No	I/NFL	No	No	No	190 x 250 x 360	16,0	230;1~;50	AIR	5	40		S	3000.0001.99	DC®30			
				M16x1	No	I/NFL	No	No	No	250 x 310 x 400	25,0	230;1~;50/60	AIR	5	40		S	3001.0001.99	DC®31			
				M16x1	No	I/NFL	No	No	No	280 x 340 x 460	30,0	230;1~;50	AIR	5	40		S	3002.0001.99	DC®32			
27	0,7	25	0,4	M16x1 ³	Yes, vpc	III/FL	Yes	Yes	Yes	132 x 159 x 315/150	4,0	230;1~;50/60		5	40			2000.0001.01	CC®-E			
20	0,2	17	0,18	M16x1 ³	Yes	III/FL	Yes	Yes	Yes	132 x 153 x 312/150	3,4	230;1~;50/60		5	40			2035.0005.99	MPC®-E			
22	0,4	22	0,4	M16x1 ³	Yes, vpc	III/FL	Yes	Yes	Yes	132 x 159 x 360/195	4,8	230;1~;50/60		5	40			2000.0005.01	CC®-E xd			
27	0,7	25	0,4	M16x1 ³	Yes, vpc	III/FL	Yes	Yes	Yes	147 x 307 x 330	5,0	230;1~;50/60		5	40			2001.0001.01	CC®-106A			
20	0,2	17	0,18	M16x1 ³	Yes	III/FL	Yes	Yes	Yes	147 x 307 x 330	5,0	230;1~;50/60		5	40			2037.0021.99	MPC®-106A			
27	0,7	25	0,4	M16x1 ³	Yes, vpc	III/FL	Yes	Yes	Yes	147 x 407 x 330	6,0	230;1~;50/60		5	40			2001.0002.01	CC®-108A			
20	0,2	17	0,18	M16x1 ³	Yes	III/FL	Yes	Yes	Yes	147 x 407 x 330	6,0	230;1~;50/60		5	40			2037.0022.99	MPC®-108A			
27	0,7	25	0,4	M16x1 ³	Yes, vpc	III/FL	Yes	Yes	Yes	147 x 507 x 330	6,0	230;1~;50/60		5	40			2001.0003.01	CC®-110A			
20	0,2	17	0,18	M16x1 ³	Yes	III/FL	Yes	Yes	Yes	147 x 507 x 330	6,0	230;1~;50/60		5	40			2037.0023.99	MPC®-110A			
27	0,7	25	0,4	M16x1 ³	Yes, vpc	III/FL	Yes	Yes	Yes	333 x 360 x 335	8,0	230;1~;50/60		5	40			2001.0004.01	CC®-112A			
20	0,2	17	0,18	M16x1 ³	Yes	III/FL	Yes	Yes	Yes	333 x 360 x 335	8,0	230;1~;50/60		5	40			2037.0024.99	MPC®-112A			
27	0,7	25	0,4	M16x1 ³	Yes, vpc	III/FL	Yes	Yes	Yes	333 x 520 x 335	8,0	230;1~;50/60		5	40			2001.0005.01	CC®-118A			
20	0,2	17	0,18	M16x1 ³	Yes	III/FL	Yes	Yes	Yes	333 x 520 x 335	8,0	230;1~;50/60		5	40			2037.0025.99	MPC®-118A			
27	0,7	25	0,4	M16x1 ³	Yes, vpc	III/FL	Yes	Yes	Yes	290 x 350 x 375	10,0	230;1~;50/60		5	40			2002.0001.01	CC®-208B			
20	0,2	17	0,18	M16x1 ³	Yes	III/FL	Yes	Yes	Yes	290 x 350 x 375	10,0	230;1~;50/60		5	40			2038.0021.99	MPC®-208B			
27	0,7	25	0,4	M16x1 ³	Yes, vpc	III/FL	Yes	Yes	Yes	350 x 375 x 375	11,0	230;1~;50/60		5	40			2002.0002.01	CC®-212B			
20	0,2	17	0,18	M16x1 ³	Yes	III/FL	Yes	Yes	Yes	350 x 375 x 375	11,0	230;1~;50/60		5	40			2038.0022.99	MPC®-212B			
27	0,7	25	0,4	M16x1 ³	Yes, vpc	III/FL	Yes	Yes	Yes	350 x 375 x 425	12,0	230;1~;50/60		5	40			2002.0003.01	CC®-215B			
20	0,2	17	0,18	M16x1 ³	Yes	III/FL	Yes	Yes	Yes	350 x 375 x 425	12,0	230;1~;50/60		5	40			2038.0023.99	MPC®-215B			
27	0,7	25	0,4	M16x1 ³	Yes, vpc	III/FL	Yes	Yes	Yes	350 x 555 x 375	14,0	230;1~;50/60		5	40			2002.0004.01	CC®-220B			
20	0,2	17	0,18	M16x1 ³	Yes	III/FL	Yes	Yes	Yes	350 x 555 x 375	14,0	230;1~;50/60		5	40			2038.0024.99	MPC®-220B			
27	0,7	25	0,4	M16x1 ³	Yes, vpc	III/FL	Yes	Yes	Yes	350 x 555 x 425	16,0	230;1~;50/60		5	40			2002.0005.01	CC®-225B			
20	0,2	17	0,18	M16x1 ³	Yes	III/FL	Yes	Yes	Yes	350 x 555 x 425	16,0	230;1~;50/60		5	40			2038.0025.99	MPC®-225B			
27	0,7	25	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	147 x 235 x 330	5,0	230;1~;50/60		5	40			2001.0016.01	CC®-104A			
20	0,2	17	0,18	M16x1	Yes	III/FL	Yes	Yes	Yes	147 x 235 x 330	5,0	230;1~;50/60		5	40			2037.0026.99	MPC®-104A			
27	0,7	25	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	178 x 260 x 355	8,0	230;1~;50/60		5	40			2003.0001.01	CC®-202C			
20	0,2	17	0,18	M16x1	Yes	III/FL	Yes	Yes	Yes	178 x 260 x 355	8,0	230;1~;50/60		5	40			2039.0005.99	MPC®-202C			
27	0,7			M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	500 x 240 x 490	11,0	230;1~;50/60		5	40			2001.0006.01	CC®-130A Visco 3			
27	0,7			M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	500 x 240 x 490	11,0	230;1~;50/60		5	40			2001.0007.01	CC®-130A Visco 5			
27	0,7	25	0,4	M16x1 ³	Yes, vpc	III/FL	Yes	Yes	Yes	345 x 200 x 326	12,0	230;1~;50/60		5	40			2000.0003.01	CC®-200BX			
27	0,7	25	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	345 x 190 x 392	13,0	230;1~;50/60 / 400;3–N;50		5	40			2007.0002.01	CC®-300BX			
27	0,7	25	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	178 x 337 x 355	9,0	230;1~;50/60		5	40			2004.0001.04	CC®-205B			
20	0,2	17	0,18	M16x1	Yes	III/FL	Yes	Yes	Yes	178 x 337 x 355	9,0	230;1~;50/60		5	40			2040.0005.99	MPC®-205B			
33	0,7	22	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	210 x 335 x 392	13,0	230;1~;50/60		5	40			2005.0001.01	CC®-304B			
33	0,7	22	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	242 x 404 x 392	18,0	230;1~;50/60		5	40			2006.0001.01	CC®-308B			
33	0,7	22	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	335 x 382 x 433	22,0	230;1~;50/60 / 400;3–N;50		5	40			2007.0001.01	CC®-315B			
27	0,7	25	0,4	M16x1 ³	Yes, vpc	III/FL	Yes	Yes	Yes	350 x 560 x 430	28,0	230;1~;50/60	AIR	5	40		S	2009.0002.01	CC®-K12			
20	0,2	17	0,18	M16x1 ³	Yes	III/FL	Yes	Yes	Yes	350 x 560 x 430	28,0	230;1~;50/60	AIR	5	40		S	2009.0011.99	MPC®-K12			
27	0,7	25	0,4	M16x1 ³	Yes, vpc	III/FL	Yes	Yes	Yes	350 x 560 x 430	28,0	230;1~;50/60	AIR	5	40		S	2010.0002.01	CC®-K15			
20	0,2	17	0,18	M16x1 ³	Yes	III/FL	Yes	Yes	Yes	350 x 560 x 430	28,0	230;1~;50/60	AIR	5	40		S	2010.0010.99	MPC®-K15			
27	0,7	25	0,4	M16x1 ³	Yes, vpc	III/FL	Yes	Yes	Yes	350 x 555 x 615	36,0	230;1~;50/60	AIR	5	40		S	2011.0002.01	CC®-K20			
20	0,2	17	0,18	M16x1 ³	Yes	III/FL	Yes	Yes	Yes	350 x 555 x 615	36,0	230;1~;50/60	AIR	5	40		S	2011.0009.99	MPC®-K20			
27	0,7	25	0,4	M16x1 ³	Yes, vpc	III/FL	Yes	Yes	Yes	350 x 555 x 615	36,0	230;1~;50/60	AIR	5	40		S	2012.0002.01	CC®-K25			

FL = Suitable for inflammable and non-inflammable liquids

¹ Voltage can be changed, must be specified with order² S = Standard, O = Option, A = On Request³ Option

Model	Catalogue Page	Temperature Range		T _{min} with Cooling	T _{min} with Water Cooling	Heating Power	Bath Volume	min. Filling Capacity	Bath Volume with Displacement Insert	Bath Opening WxDxH	Resolution of Display	Temperature Stability										Cooling Power at						
		°C	°C									°C	kW	l	l	l	mm	K	K	kW	kW	kW	kW	kW	kW	kW	kW	kW
				300°C	200°C	100°C	20°C	0°C	-20°C	-40°C	-60°C																	
MPC®-K25	71	-30...200				2,0	25,0			290 x 329 x 200	0,1	0,05					0,4	0,35	0,16									
CC®-K6	72	-25...200				2,0	4,5			140 x 120 x 150	0,01/0,1	0,02					0,2	0,15	0,05									
MPC®-K6	72	-25...200				2,0	4,5			140 x 120 x 150	0,1	0,05					0,2	0,15	0,05									
CC®-K6s	72	-25...200				2,0	4,5			140 x 120 x 150	0,01/0,1	0,02					0,26	0,21	0,05									
MPC®-K6s	72	-25...200				2,0	4,5			140 x 120 x 150	0,1	0,05					0,26	0,21	0,05									
K12-NR	99	-20...200					12,0			290 x 320 x 150							0,25	0,2	0,05									
K15-NR	99	-20...200					15,0			290 x 320 x 200							0,25	0,2	0,05									
K20-NR	99	-30...200					20,0			290 x 500 x 150							0,4	0,35	0,16									
K25-NR	99	-30...200					25,0			290 x 500 x 200							0,4	0,35	0,16									
Compatible Control Cooling Bath Circulators																												
Variostat®	73	-30...150				1,0					0,01/0,1	0,02				0,3	0,3	0,2	0,12									
Ministat® 125	74	-25...150				1,0	2,75	2,0	1,3	178 x 80 x 120	0,01/0,1	0,02				0,3	0,3	0,21	0,05									
Ministat® 125w	74	-25...150				1,0	2,75	2,0	1,3	178 x 80 x 120	0,01/0,1	0,02				0,3	0,3	0,2	0,1									
Ministat® 230	74	-40...200				2,0	3,2	2,8	1,7	170 x 87 x 135	0,01/0,1	0,02				0,42	0,42	0,38	0,25	0,05								
Ministat® 230w	74	-40...200				2,0	3,2	2,8	1,7	170 x 87 x 135	0,01/0,1	0,02				0,42	0,42	0,38	0,25	0,05								
Ministat® 240	74	-45...200				2,0	4,9	4,5	2,8	205 x 85 x 157	0,01/0,1	0,02				0,6	0,6	0,55	0,35	0,05								
Ministat® 240w	74	-45...200				2,0	4,9	4,5	2,8	205 x 85 x 157	0,01/0,1	0,02				0,6	0,6	0,55	0,35	0,05								
CC®-405	76	-40...200				1,5	5,0			120 x 110 x 150	0,01/0,1	0,02				0,7	0,7	0,7	0,45	0,03								
CC®-405w	76	-40...200				1,5	5,0			120 x 110 x 150	0,01/0,1	0,02				0,7	0,7	0,7	0,45	0,03								
CC®-410	76	-45...200				3,0	22,0		8,5	280 x 280 x 200	0,01/0,1	0,02				0,8	0,8	0,8	0,5	0,1								
CC®-410wl	76	-45...200				3,0	22,0		8,5	280 x 280 x 200	0,01/0,1	0,02				0,8	0,8	0,8	0,5	0,1								
CC®-415	76	-40...200				1,5	5,0			120 x 110 x 150	0,01/0,1	0,02				1,2	1,2	1,0	0,6	0,05								
CC®-415wl	76	-40...200				1,5	5,0			120 x 110 x 150	0,01/0,1	0,02				1,2	1,2	1,0	0,6	0,05								
CC®-505	78	-50...200				1,5	5,0			120 x 110 x 150	0,01/0,1	0,02				1,2	1,2	1,0	0,6	0,15								
CC®-505wl	78	-50...200				1,5	5,0			120 x 110 x 150	0,01/0,1	0,02				1,2	1,2	1,0	0,6	0,15								
CC®-508	78	-55...200				3,0	5,0			120 x 110 x 160	0,01/0,1	0,02				1,5	1,5	1,5	1,0	0,3								
CC®-508w	78	-55...200				3,0	5,0			120 x 110 x 160	0,01/0,1	0,02				1,5	1,5	1,5	1,0	0,3								
CC®-510	78	-50...200				3,0	26,0		15,0	260 x 260 x 200	0,01/0,1	0,02				2,1	2,1	2,1	1,0	0,4								
CC®-510w	78	-50...200				3,0	18,0		11,0	270 x 150 x 200	0,01/0,1	0,02				2,4	2,4	2,4	1,0	0,4								
CC®-515	78	-55...200				3,0	26,0		15,0	260 x 260 x 200	0,01/0,1	0,02				3,3	3,3	3,3	1,6	0,6								
CC®-515w	78	-55...200				3,0	18,0		11,0	270 x 150 x 200	0,01/0,1	0,02				3,3	3,3	3,3	1,6	0,6								
CC®-520w	78	-55...200				3,0	17,0		10,0	270 x 150 x 200	0,01/0,1	0,02				5,0	5,0	5,0	3,0	1,5								
CC®-525w	78	-55...100				3,0	17,0		10,0	270 x 150 x 200	0,01/0,1	0,02				7,0	7,0	5,0	3,0	1,5								
CC®-805	80	-80...100				1,5	5,0			120 x 110 x 150	0,01/0,1	0,02				0,5	0,5	0,5	0,4	0,3	0,3	0,06						
CC®-820	80	-80...100				3,0	17,0		10,0	270 x 150 x 200	0,01/0,1	0,02				1,2	1,2	1,2	1,1	0,9	0,6	0,14						
CC®-820w	80	-80...100				3,0	17,0		10,0	270 x 150 x 200	0,01/0,1	0,02				1,2	1,2	1,2	1,1	0,9	0,6	0,14						
CC®-902	80	-90...200				1,5	5,0			120 x 110 x 150	0,01/0,1	0,02				1,2	1,2	1,2	1,1	0,9	0,6	0,2						
CC®-905	80	-90...200				3,0	26,0		15,0	260 x 260 x 200	0,01/0,1	0,02			2,0	2,0	2,0	2,0	1,9	1,7	1,0	0,34						
CC®-905w	80	-90...200				3,0	26,0		15,0	260 x 260 x 200	0,01/0,1	0,02			2,5	2,0	2,0	2,0	1,9	1,7	1,0	0,34						
CC®-906w	80	-90...200				3,0	30,0		19,0	260 x 260 x 200	0,01/0,1	0,02			3,0	3,0	3,0	3,0	2,8	2,4	1,6	0,55						
Specials																												
BFT®5	84	-40...80				2,0	40,0			350 x 410 x 270	0,01/0,1	0,03					1,2											
HB45	86	45...250				4,5		3,5			0,01/0,1	0,5																
HB60	86	60...250				6,0		3,5			0,01/0,1	0,5																
HB120	86	60...250				12,0		3,5			0,01/0,1	0,5																
HTS PS1	87	5...80															0,6**											
HTS PS3	87	3...95				2,0*					0,01/0,1						3,0**											
HTS PS5	87	3...95				2,0*					0,01/0,1						5,0**											
HTS PS6	87	3...95				10,0*					0,01/0,1						6,0**											
HTS PS15	87	3...95				10,0*					0,01/0,1						15,0**											

*Option available on request: Heater, over-temperature protection and safety class II/FL

**Cooling power data measured with cooling water-inlet temperature of +10 °C and 2 bar

max. Flow Rate – Pressure		max. Press – Pressure Pump		max. Flow Rate – Suction Pump		max. Press – Suction Pump		Pump Connection	Circulation Pump	Safety Class	Overtemperature Protection	Low Level Protection	Dimensions WxDxH	Weight	Power Supply ¹	Refrigeration Machine Cooling	min. Ambient Temperature	max. Ambient Temperature	Cooling Water Connection	Natural Refrigerant ²	Cat. No.	Model
l/min	bar	l/min	bar			mm	kg															
20	0,2	17	0,18	M16x1 ³	Yes	III/FL	Yes	Yes	Yes	350 x 555 x 615	36,0	230;1~;50/60	AIR	5	40		S	2012.0009.99	MPC®-K25			
27	0,7	25	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	210 x 400 x 546	25,0	230;1~;50/60	AIR	5	40		S	2008.0005.01	CC®-K6			
20	0,2	17	0,18	M16x1	Yes	III/FL	Yes	Yes	Yes	210 x 400 x 546	25,0	230;1~;50/60	AIR	5	40		S	2008.0019.99	MPC®-K6			
27	0,7	25	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	210 x 400 x 546	25,0	230;1~;50/60	AIR	5	40		S	2008.0002.01	CC®-K6s			
20	0,2	17	0,18	M16x1	Yes	III/FL	Yes	Yes	Yes	210 x 400 x 546	25,0	230;1~;50/60	AIR	5	40		S	2008.0020.99	MPC®-K6s			
					No		No	No	No	350 x 560 x 263	20,0	230;1~;50/60	AIR	5	40		S	2009.0001.99	K12			
					No		No	No	No	350 x 560 x 263	20,0	230;1~;50/60	AIR	5	40		S	2010.0001.99	K15			
					No		No	No	No	350 x 555 x 448	30,0	230;1~;50/60	AIR	5	40		S	2011.0001.99	K20			
					No		No	No	No	350 x 555 x 448	30,0	230;1~;50/60	AIR	5	40		S	2012.0001.99	K25			
27	0,7	20	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	183 x 465 x 416	24,0	230;1~;50/60	AIR	5	40		S	2013.0003.01	Variostat®			
27	0,7	20	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	225 x 370 x 429	25,0	230;1~;50/60	AIR	5	35		S	2014.0011.01	Ministat® 125			
27	0,7	20	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	225 x 370 x 429	25,0	230;1~;50/60	WATER	5	40	G1/2	S	2014.0006.01	Ministat® 125w			
27	0,7	20	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	255 x 450 x 476	35,0	230;1~;50/60	AIR	5	40		S	2015.0005.01	Ministat® 230			
27	0,7	20	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	255 x 450 x 476	35,0	230;1~;50/60	WATER	5	40	G1/2	S	2015.0007.01	Ministat® 230w			
27	0,7	20	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	300 x 465 x 516	41,0	230;1~;50/60	AIR	5	40		S	2016.0005.01	Ministat® 240			
27	0,7	20	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	300 x 465 x 516	41,0	230;1~;50/60	WATER	5	40	G1/2	S	2016.0006.01	Ministat® 240w			
33	0,7	22	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	370 x 460 x 679	55,0	230;1~;50/60	AIR	5	40		O	2017.0001.01	CC®-405			
33	0,7	22	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	370 x 460 x 679	55,0	230;1~;50/60	WATER	5	40	G1/2	O	2017.0002.01	CC®-405w			
33	0,7	22	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	420 x 565 x 719	72,0	230;1~;50/60	AIR	5	40	G1/2	O	2019.0004.01	CC®-410			
33	0,7	22	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	420 x 565 x 719	72,0	230;1~;50/60	AIR+WATER	5	40	G1/2	O	2019.0001.01	CC®-410wl			
33	0,7	22	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	410 x 480 x 764	60,0	230;1~;50/60	AIR	5	40			2018.0001.01	CC®-415			
33	0,7	22	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	410 x 480 x 764	61,0	230;1~;50/60	AIR+WATER	5	40	G1/2	O	2018.0002.01	CC®-415wl			
33	0,7	22	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	410 x 480 x 764	60,0	230;1~;50/60	AIR	5	40			2018.0003.01	CC®-505			
33	0,7	22	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	410 x 480 x 764	62,0	230;1~;50/60	AIR+WATER	5	40	G1/2	O	2018.0004.01	CC®-505wl			
33	0,7	22	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	410 x 480 x 764	60,0	230;1~;50	AIR	5	40		O	2018.0013.01	CC®-508			
33	0,7	22	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	410 x 480 x 764	60,0	230;1~;50	WATER	5	40		O	2018.0016.01	CC®-508w			
31	0,6	24	0,35	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	605 x 706 x 1136	98,0	400;3~N;50	AIR	5	40			2020.0010.01	CC®-510			
31	0,6	24	0,35	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	455 x 515 x 1014	96,0	400;3~N;50	WATER	5	40	G1/2	O	2020.0002.01	CC®-510w			
31	0,6	24	0,35	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	605 x 706 x 1136	98,0	400;3~N;50	AIR	5	40			2021.0001.01	CC®-515			
31	0,6	24	0,35	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	455 x 515 x 1014	98,0	400;3~N;50	WATER	5	40	G1/2	O	2020.0003.01	CC®-515w			
31	0,6	24	0,35	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	539 x 629 x 1102	141,0	400;3~N;50	WATER	5	40	G1/2	O	2022.0001.01	CC®-520w			
31	0,6	24	0,35	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	539 x 629 x 1102	142,0	400;3~N;50	WATER	5	40	G1/2	O	2023.0001.01	CC®-525w			
33	0,7	22	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	410 x 480 x 764	80,0	230;1~;50/60 / 400;3~N;50	AIR	5	40		O	2024.0001.01	CC®-805			
31	0,6	24	0,35	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	539 x 629 x 1102	150,0	400;3~N;50	AIR	5	40			2025.0001.01	CC®-820			
31	0,6	24	0,35	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	539 x 629 x 1102	150,0	400;3~N;50	WATER	5	40	G1/2	O	2025.0002.01	CC®-820w			
33	0,7	22	0,4	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	550 x 600 x 911	139,0	230;1~;50	AIR	5	40			2026.0005.01	CC®-902			
31	0,6	24	0,35	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	605 x 706 x 1136	162,0	400;3~N;50	AIR	5	40			2027.0001.01	CC®-905			
31	0,6	24	0,35	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	605 x 706 x 1136	170,0	400;3~N;50	WATER	5	40	G1/2	O	2027.0002.01	CC®-905w			
31	0,6	24	0,35	M16x1	Yes, vpc	III/FL	Yes	Yes	Yes	605 x 706 x 1136	185,0	400;3~N;50	WATER	5	40	G1/2	O	2036.0001.01	CC®-906w			
22	0,4	22	0,4		Yes, vpc	III/FL	Yes	Yes	Yes	460 x 710 x 911	95,0	230;1~;50/60	AIR	5	40			2041.0001.01	BFT®5			
55	0,9			M24x1,5	Yes, vpc	II/FL	Yes	Yes	Yes	185 x 440 x 405	19,0	400;3~N;50		5	40			2030.0001.01	HB45			
90	2,5			M30x1,5	Yes	II/FL	Yes	Yes	Yes	323 x 451 x 498	44,0	400;3~N;50		5	40			2031.0004.01	HB60			
100	2,5			M30x1,5	Yes	II/FL	Yes	Yes	Yes	323 x 451 x 498	44,0	400;3~N;50		5	40			2031.0003.01	HB120			
8	0,2			M16x1	Yes	I/NFL		Yes	Yes	280 x 427 x 414	21,0	230;1~N;50/60		5	40			3011.0008.99	HTS PS1			
33	0,7			M16x1	Yes, vpc	I/NFL*	Yes*	Yes	Yes	280 x 491 x 414	21,0	230;1~N;50/60		5	40			3011.0001.01	HTS PS3			
25	2,5			G3/4	Yes	I/NFL*	Yes*	Yes	Yes	280 x 491 x 414	21,0	230;1~N;50/60		5	40			3011.0006.01	HTS PS5			
25	2,5			G3/4	Yes	I/NFL*	Yes*	Yes	Yes	400 x 491 x 529	39,0	230;1~N;50/60		5	40			3011.0002.01	HTS PS6			
25	2,5			G3/4	Yes	I/NFL*	Yes*	Yes	Yes	400 x 491 x 529	39,0	230;1~N;50/60		5	40			3011.0024.01	HTS PS15			

FL = Suitable for inflammable and non-inflammable liquids

¹ Voltage can be changed, must be specified with order² S = Standard, O = Option, A = On Request³ Option

A Ambient Temperature Range

is the permissible temperature range of the environment in which the unit will function. It is 5...40 °C for all Huber units in this catalogue. The quoted cooling powers are for an ambient temperature of 20 °C.

B Bath Opening

is the usable surface that is available for direct thermoregulation, as a rule over the entire usable depth.

Bath Circulator

is a circulator which is equipped with a pump and a bath that contains the object to be thermoregulated. The built-in circulating pump is used to mix the bath liquid, but can also be used if necessary to circulate the thermal fluid through an externally connected circuit, e.g. connection of a flow-through cooler to allow the cooling of heating circulators.

Bath/Circulation Circulator

is a circulator with a bath opening which allows objects to be directly thermoregulated in the bath, but also includes a pump for external closed or open applications. Note: pressure & suction pump is required for open applications. Compatible Control circulators have pressure & suction pump.

Bath Volume (also fill volume)

is the volume of the bath liquid that is required for adequate operation of the circulator, but without considering the volume of thermal fluid in the external circuit. If two values are given, the lower value indicates the minimum required volume with displacement insert, the upper value the permissible maximum amount. The difference is the so-called expansion volume. Especially in the case of external applications, the size of the expansion tank must be considered, since the circulator must also take up the expansion of the liquid in the external circuit. The smaller the surface area of the expansion tank the lower is the area of thermal fluid open to attack from oxidation and air humidity absorption.

C Calibration Bath (CAL)

is a bath circulator with especially high temperature stability and especially consistent temperature distribution through the bath.

Chiller (Unichiller®)

is a special cooling circulator which is designed exclusively as a circulator. Circulation chillers have evolved from circulators and form a separate range of units in terms of their type of construction (DeskTop, Tower), the cooling and pump capacities. Generally they have no accessible bath. They are often used as a substitute for cooling with tap water. (exception: Minichiller).

Clear-view Bath

is a bath circulator with transparent walls for direct observation of the object being thermoregulated.

D Discharge Pressure

is the positive pressure of the circulating pump of a circulator directly at the pump discharge. If only one value is given in the tables, then this involves the maximum delivery pressure for flow rate zero. Pump curves illustrate discharge in relation to the flow rate.

E E-grade®

stands for electronic upgrade. E-grade can extend the functionality of the **Pilot ONE**. A unit specific activation code is required. This can be carried out in the factory. If ordered at a later date the activation code can be sent by E-Mail.

Extended Working Temperature Range

is the temperature range that can be attained when using a factory-fitted cooling coil when operating with cooling water.

F Flow Rate

is the volume of liquid delivered per time unit by the circulating pump measured with water. If only one value is given in the table, this is the maximum flow rate for a zero discharge pressure. Pump curves illustrate discharge in relation to the flow rate.

Flow-through Chiller (DC®)

is an add-on cooler which is connected into an external circuit to upgrade a heating circulator to a heating/cooling circulator. Flow-through chillers are used to replace water cooling, and also to extend the lower operating temperature.

H Heat Load

is the maximum capacity of the installed electric heater. The heating is controlled proportionally. The heating is continually controlled, and as the set point temperature is approached the power is reduced automatically.

Heating Circulator

is a circulator whose working temperature range is primarily above the ambient temperature adds heat to the thermal fluid.

Hydraulically Sealed Circulator (Unistats®)

is a circulator in which thermal fluid is pumped through an open or closed external circuit. Hydraulically sealed circulators e.g. the Unistats can have a thermally decoupled expansion vessel, whose surface temperature is not the operating temperature. They do not have an accessible bath.

Unistats have a thermally decoupled active surface (expansion vessel), where by the surface temperature is not necessarily the same as the operating temperature.

I Immersion Cooler

is an additional chiller with a flexible tube and a cooling coil (evaporator) for immersion cooling of any desired bath.

Immersion Circulator

is a circulator that can be combined with a bath and to form a complete unit. Immersion circulators are equipped with a screw clamp to attach them to any desired bath wall or can be fixed on a stand. Immersion circulators can also be fitted to a bridge and mounted permanently in a bath.

Industrial Circulator (Unichiller®-H)

is a refrigerated circulator (Unichiller range) with factory fitted heating. Industrial circulators have high cooling, heating and pump powers which allow quick cooling and heating rates due to the small internal volumes. They are ideal for temperature control in process technology, within a smaller temperature range (-20 to 120 °C).

Interface, analogue

is used to input the set value or to output the actual value of temperature in analogue form, generally in the form of a current (0/4–20 mA or 0–10 V).

Interface, digital

is used to transfer data between connected units in digital form via data cable. The set and actual temperature values are the main items transferred. The serial RS232 interface allows a point-to-point connection. This means that at any one time only two participants such as the circulator and the PC can communicate with each other via the interface. The RS485 interface is an addressable interface where up to 32 participants can be connected. Each participant of the bus system has its address.

Intrinsic Temperature

is the operating temperature of a heating circulator that is reached when the heating is switched off. It depends on the pump power, thermal fluid (viscosity and density) used and the insulation of the circulator, e.g. with or without a cover on the bath.

N Net Cooling Capacity

is the effective capacity available in refrigeration circulators or circulating chillers. This is the net cooling power of the unit after the frictional heat produced by the circulating pump and the heat entering as a result of non-ideal insulation has been subtracted.

O Operating Temperature Range

is the temperature range that is limited by the permissible lowest and highest operating temperatures.

P Pressure/Suction Pump

has a pressure and a suction stage which are driven by the same motor. The thermal fluid is delivered from the pressure stage from the circulator into the circuit, and the suction stage draws the liquid back into the circulator. A pressure/suction pump can be used in just the same way as a pressure pump for a closed circuit. It has the advantage compared to a pressure pump that the pressure in the external circuit falls from positive values (pressure) in the flow line to negative values (suction) in the return line and is almost zero in the application itself. Thus it is suitable for the thermoregulation of pressure-sensitive glass vessels. Additionally it is possible to thermoregulate an open external circuit (e.g. a bath) with the aid of a pressure/suction pump. This cannot be done with a pure pressure pump, since this delivers thermal fluid to the bath. The thermal fluid can only be returned to the bath via a suction stage. In any case a so-called constant level device is required to maintain a constant level in the bath and this ensures that the flows of both pump stages are controlled so that they are equal. This is the only way that the level in the external bath can be maintained constant.

Process Control

Often cascade control, is when the temperature control is dictated by the temperature of the connected external application. A temperature sensor (often a Pt100 4 wire configuration with a Lemos plug) is therefore required in the external application, which is connected to the circulator. The actual value measured at the external application is measured and a set point for the circulator is continually calculated. Depending on the operating temperature, insulation losses and exothermic reactions, the bath temperature and thus the flow temperature of the circulator can be considerably above or below the set point. (Always consider the safety limits of the fluid!!)

R Refrigerated/Heating Circulator

is a circulator whose working temperature range is above and below the ambient temperature, and which can either add heat to or extract heat from the thermal fluid.

Refrigerant

is used in the refrigeration unit within the circulator and extracts the heat from the thermal fluid, when the compressed gas expands in the evaporator. Huber has been completely CFC free since 1992 and HCFC (e.g. R22) free since 1994. Huber uses only refrigerants which do no da-

mage to the ozone layer (ODP Ozone Depletion Potential, ODP=0), and minimal Global warming potential (GWP, i.e. Green house effect).

Refrigerated Circulator

is a circulator whose working temperature range is below the ambient temperature and draws heat from the thermal fluid. Huber refrigerated circulators are strictly speaking cooling/heating circulators, since their working temperature range is above and below the ambient temperature. Heat can be extracted from and added to the thermal fluid.

S Safety Classes

It is possible to use non-flammable or flammable bath liquids with circulators. The relevant safety requirements are given in DIN EN 61010-2-010. There is a distinction made between the NFL classes with built-in over-heating protection that are exclusively for non-flammable liquids and FL (Flammable) with adjustable overtemperature protection and low level protection for flammable liquids (all Huber circulators).

Standards

The safety requirements for electrical laboratory equipment, and especially also those for circulators, have been defined in European standards EN 61010-1 and EN 61010-2-01 0, replacement for DIN 12879, among others. The terms and characteristic of characteristic data is defined in DIN 12876-1 and DIN 12876-2.

Suction Pressure

is the negative pressure of the circulating pump of a circulator directly at the pump suction. If only one value is given in the tables, then this is the maximum suction pressure for zero flow rate. Pump curves illustrate suction pressure in relation to the flow rate.

T Temperature Homogeneity

is the temperature difference between the highest and the lowest measured temperature in a bath tank. In comparison with temperature stability it is determined not only over a defined time period, but also the spatial distribution of temperature within the bath. The temperature uniformity depends on various factors and is influenced for example by the nature and the viscosity of the thermal fluid, the level of circulation or by objects in the bath.

Temperature Stability

is the temperature difference between the highest and the lowest measured temperature divided by two. This value is determined at one point (e.g. the geometric centre of a bath tank or pump output) within a defined period of time (e.g. 30 min.). According to DIN 12876 the measurement

must be made at 70 °C (with water) for a heating circulator and at -10 °C (ethanol) for a cooling circulator.

True Adaptive Control (TAC)

is a Huber designed dynamic adaptive controller that continually updates its PID parameters. The TAC controller constructs a virtual multidimensional model of the application in real time to cope with sudden changes in thermal load such as during an exothermic reaction.

V Variable Pressure Control VPC

VPC is an active pressure control capability that allows the operator to control to either a maximum set pressure or pump speed. Through this feature it is possible to maintain the highest HTF flow rates within application pressure limitations (e.g. glass reactors).

W Working Temperature Range

is the temperature range which can be attained at an ambient temperature of 20 °C by the circulator alone and with the exclusive use of electrical energy. In the case of a heating circulator the working temperature begins above room temperature (as a result of the energy introduced by the pump and the effective insulation) and ends at the upper limit of the operating temperature. The WTR of a refrigeration circulator begins with the lowest operating temperature of the unit and finishes with the upper temperature at which the refrigeration machine can permanently operate.

3-2-1 Warranty

Thank you for your interest in Huber temperature control systems. Our free of charge 3-2-1 warranty extension offers many extra benefits. All you have to do is to fill in the free online registration form on our website.

Your advantages when registering for free

The guarantee for all Huber products is 12 months from the day of delivery. When registering the machine giving the end customer address and the serial number, Huber will give an extended guarantee as listed below:



3 years for plug and play electronic components

2 years for refrigeration components (including compressor)

1 year for mechanical and electrical components which are subject to the regular abrasion (e.g. pumps)

Register your product online now under:

▶ www.huber-online.com/register

Hotline

Do you have a thermoregulation problem or questions relating to our products? You can contact us Monday to Friday from 7:30 to 18:00 (CET).

Sales: +49-781-9603-123
 Technical Support: +49-781-9603-244
 Order Processing: +49-781-9603-109

Terms and Conditions (Extract)

Validity, defence clause

All deliveries and services of the Peter Huber Kältemaschinenbau GmbH (supplier) are exclusively according to these general business terms and conditions (conditions) and any possible special contractual agreements. Other (purchasing etc.) conditions of the buyer are not a part of the contract, even if not specifically rejected in the order confirmation.

Prices

Unless otherwise agreed, the price is ex works, not including packing, transport, insurance, customs costs and other various incidental expenses accruing. In addition to the price, the sales tax must be added at the appropriate legally valid rate.

Payment Terms

If pre-payment has not been agreed, invoices are all payable within 30 days net, no discount.

Retention of ownership

The goods remain the property of the supplier (title is retained) until the fulfilment of all outstanding financial claims against the buyer.

The buyer may offer the (title retained) goods within the framework of normal business, however now all resulting demands for securing payment to the supplier up to the indebted sum (inclusive sales tax) passes to the new purchaser. The supplier acknowledges this.

Delivery times and delivery delays

The delivery time is calculated under the agreement of the contractual parties. Compliance on the part of the supplier is under the condition that all business and technical questions between the contracted parties are explained, and that the buyer has fulfilled all his obligations within the allotted time. If this is not the case, then the delivery time is extended appropriately. The delivery time is when items for delivery, have left the suppliers works or are ready for pick-up. An article can be offered for selling on by the buyer is allowed.

Transport and liability transfer

The order for the transport of the goods must be placed by the buyer.

The risk is passed to the buyer as soon as the items to be delivered have left the factory. This is also valid for part deliveries or when the supplier is contracted to perform other work (e.g. delivery, assembly and installation).

If the delivery is delayed, or omitted due to circumstances outwith the control of the supplier or because the buyer has so requested, then the risk passes to the buyer from the day the buyer is notified that the goods are ready for collection. This is also true for any delay in acceptance of the goods by the buyer due to other reasons.

Trials

If goods are supplied for testing, then it is classed as being bought by the buyer, if it is not returned within the agreed return time frame. If no return time has been agreed, this is to be taken as 4 weeks. The date of the invoice is decisive. In case of return, the buyer bears the cost of transport, checking and any other costs incurred by the supplier (Cleaning, servicing, repairs etc).

Warranty claims

The supplier is liable for Material and defective title of the delivery, under exception from further liability as follows: The place of repair is exclusively decided by the supplier. Normally, the repairs take place at the registered office of the supplier, or at another place deemed suitable by the supplier.

The buyer has the right under the legal regulations to wi-

thdraw from the contract, when the supplier, under consideration of the legal exceptions, has given a reasonable date for repair or replacement due to a manufacturing defect, which has now elapsed without success. If it is only a minor complaint, then the buyer has the right of a reduction in the contract price.

Further demands (damages etc) from the buyer are excluded. The seller is not liable for any problems resulting from an alteration to the unit made by the purchaser or any third party. The seller is also not responsible for any alterations to equipment which have not been authorised in writing in advance. Repairs which have not been authorised in writing by the supplier, outsourced work and modifications of any kind, non intended use, the changing or removal or manipulation of the machine label or the serial number. All rule out supplier responsibility for defects.

The supplier is not under any circumstances liable for damages to the buyer or end customer caused by the non availability of parts or through production stoppage (e.g. due to late parts deliveries).

Returns according to the (German) electrical and electronic equipment regulation (ElektroG)

The sale price excludes the cost for return and disposal of old equipment. The buyer is considered to be different than private households in the sense of this regulation. If required, the supplier can organise the return and recycling or disposal of such equipment as is distributed by the supplier, on payment of all charges so arising.

Severability Clause

If a clause in these conditions is invalid, it does not change the validity of the other clauses. If a clause is partially invalid, then the other parts of the clause remain valid. The parties are bound to replace the invalid clause with a valid replacement clause, which comes as close as possible to the economic use of the invalid clause.

Note

Please note that the terms and conditions described here are only valid for direct business with Peter Huber Kältemaschinenbau GmbH. Please consult your distributor for their terms of business.

Technical details and dimensions are subject to change. No liability is accepted for errors or omissions.

The following trademarks and the Huber logo are registered trademarks of Peter Huber Kältemaschinenbau GmbH in Germany and/or other countries worldwide: BFT®, CC®, CC-Pilot®, Com.G@te®, COOLNET®, DC®, E-grade®, Minichiller®, Ministat®, MP®, MPC®, Petite Fleur®, Pilot ONE®, RotaCool®, Rotostat®, SpyControl®, SpyLight®, SpyWatch®, Tango®, TC®, UC®, Unical®, Unichiller®, Unipump®, Unistat®, Unistat-Pilot®, Variostat®

The following trademarks are registered in Germany to DWS Synthesetechnik: DW-Therm®, DW-Therm HT®

The new multi-touch controller **Pilot ONE®**





TOP 100: Innovator of the Year 2012

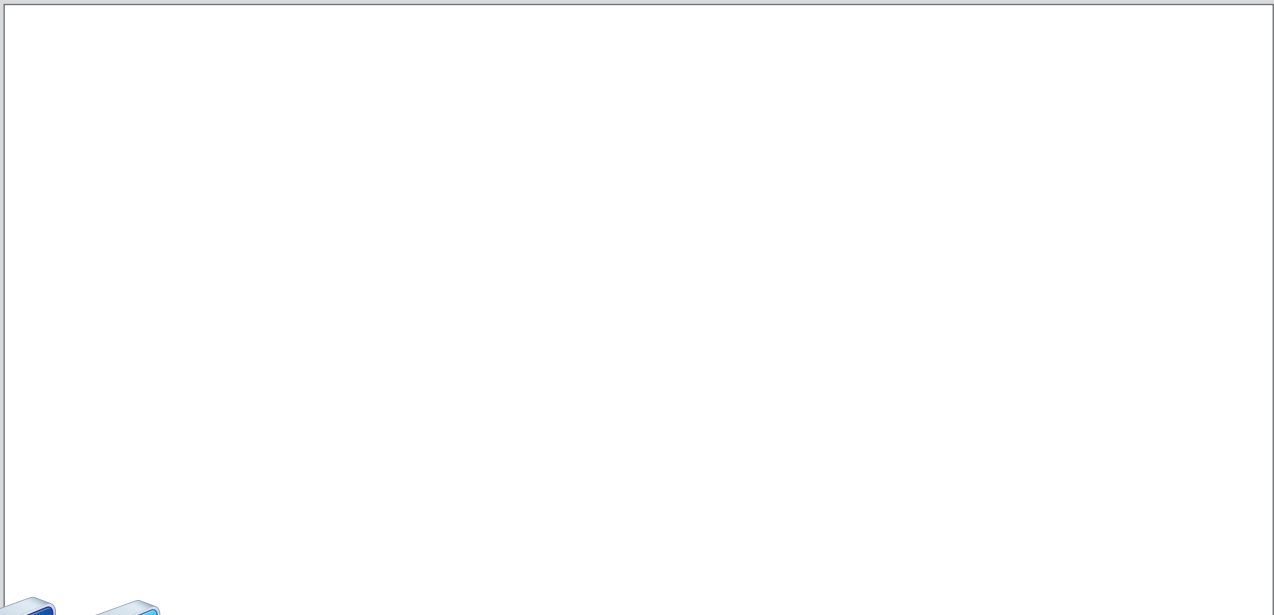


This is the fourth time that we won this accolade and as the „Innovator of the Year 2012“ we are the main prize-winner in the category B for companies with up to 250 employees.

Our innovative strength impressed the TOP 100 panel of judges. Edelgard Bulmahn, Federal Minister of Education and Research (off-duty) and „TOP 100“ member of the jury, said: „Peter Huber succeeds impressively in combining an informal culture of innovation with systematic innovations management. The vibrant innovation culture extends across all levels of the company and the network this creates promotes a productive exchange of ideas among different functions in the company.“

More information can be found at www.huber-online.com.

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