

# Inspired by temperature

High precision temperature control solutions  
for research and industry

**huber**



Unistat – the original:  
high precision temperature control  
since 1989



## Our mission

**High precision temperature control technology to make your work easier:  
that is our mission.**

Our temperature control technology makes work in research and industry easier and more efficient. This is our mission and our products and services follow this concept.

Our products have proved themselves through experience and are recognised as technology leaders in the field of Temperature Control in experimental, research facilities and industrial production processes. A typical application is process temperature control in the chemical and pharmaceutical industry.

In other industries, our temperature control units are used to carry out material and stress tests, temperature-dependent testing of food and beverage, cosmetic products and building materials and the simulation of environmental conditions and ageing processes.

Please do not hesitate to contact us if you need an individual temperature control solution. We would be happy to advise you personally and show you suitable solutions or completed reference projects.

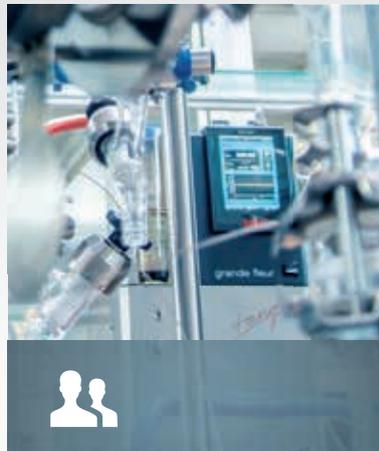
# Our services

We develop, build and supply temperature control solutions from -125 to +425 °C for applications in all industries. Our products are used in countless market sectors and diverse applications where temperature control is a key part of the process.



## Advance with innovation

Our awards from Top 100 as “Innovator of the Year” and as “Craft enterprise of the Year” emphasise that we are one of the most innovative medium-sized companies in Germany.



## Customer specific solutions

Our expertise and abilities facilitate the design and build of special and customised units to address challenging applications. We have successfully implemented custom projects in numerous industrial sectors. Our customers appreciate our flexibility and strength in innovation.



## Committed to the environment

With our “Environment plus” project, we have committed ourselves to an intensive effort to develop even more environmentally-friendly, energy-efficient and resource-saving refrigeration technology.



IQ/OQ documentation



Rental equipment



User training



Maintenance contracts



Technical on-site service



Certifications / Calibration



Unistats are quickly and easily filled and put into operation – thanks to their automatic functions for venting and degassing



Results can be documented via USB or LAN



Remote control made easy with the detachable controller

# Our discipline: Temperature control

## **Unistats are predestined for demanding temperature control applications in all industries**

Unistats embody responsive performance and fast dynamics for demanding applications. Our engineers recognise that process reliability is a primary concern in research and production.

When you need the certainty that your temperature-dependent laboratory and production processes will run as intended and without compromise at any time, Unistats give you that reassuring feeling of being on the safe side.

Unistats are circulators without a bath. This principle reduces the masses to be temperature-controlled enabling dramatically faster temperature changes. Unistats have a very small mass themselves which contributes to the extremely dynamic cooling and heating speeds of several hundred Kelvin per hour. For externally closed systems, an expansion vessel allows for temperature related changes in volume of the circulating fluid. For externally open applications, the expansion vessel can be easily closed off. This allows the Unistat to be placed above or below the application without "flow-back".

The Unistat system combines the possibilities of effective thermodynamics and intelligent microelectronics, making it a highly efficient alternative to open bath temperature control technology. In addition, modern pump technology and optimised circulation keep flow rates to a maximum leading to significantly improved heat transfer at the object under control.

Because it has proven itself to be such a powerful concept, the Unistat principle has not changed significantly since 1989.

Predictable and reproducible results and unrivalled rates of change in the course of temperature control result in a significantly improved performance leading to a rapid return on investment, further reinforced by minimised operating costs made possible by the Unistat principle.

Unistats improve performance and dynamics: compact dimensions, great performance!



# Environmentally-friendly and resource-efficient

**Our customers were the first to have the option to purchase environmentally friendly refrigeration systems capable of temperature control 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 whilst other manufactures were working to catch up in producing CFC free systems, we were able to concentrate on reducing energy requirements.**



Since the founding of the company, our focus has always been on the environment. One of the first corporate goals was the development of alternatives to cooling with fresh water widespread at that time. Another measure was the voluntary phasing out of CFC/HCFC refrigerants long before a statutory regulation.

We are pioneers in the temperature control industry when it comes to using environmentally-friendly hydrocarbons as refrigerants. Today almost all models in our product range are available with natural refrigerants – often as standard at no extra charge.

Our premises also show that we take environmental protection seriously. The “Tango factory” is an energy-saving marvel, with special heat insulation measures and concrete core activation we have significantly reduced CO<sub>2</sub> emissions.

Consisting of a solid concrete structure, triple glazed windows, a thick insulation layer and around 40 km of plastic pipes in floors, ceilings and walls it is a gigantic heat exchanger with minimal energy requirements. In production we recover the heat created during product testing, a photovoltaic system generates electricity ecologically, a ground water cooling system saves water and the entire premises are illuminated with power-saving LED technology.

In 2013 we successfully participated in the “ECOfit” programme in the state of Baden-Württemberg and implemented/initiated different environmental measures. In 2016 we introduced an energy management system based on EN16247 that identified energy saving potentials even better and so were able to derive appropriate measures and further improvements. In 2016 we were awarded the environmental award for companies from the state of Baden-Württemberg.

## Missions "Environment plus"



**1982**

First intelligent cooling circulator with cooling power adjustment and water cooled refrigeration with water saving energy management.



**1993**

First to convert to non CFC refrigerants. 7 years before the legal phase out.



**2006**

Cooling circulators with the option "natural refrigerant" in accordance with the regulations of the global green house policy of F. Hoffmann-La Roche AG.



**2009**

Environmental friendly cooling with CO<sub>2</sub> refrigeration machines in accordance with the guidelines regarding the global green house policy of F. Hoffmann-La Roche AG.



**2010**

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



**2014**

Certification according to the ECOfit programme of Baden-Württemberg for industrial environmental protection.



**2016**

Introduction of the energy management system based on EN 16247 to recognize the saving possibilities. We were honoured with the Environmental Award of Baden-Württemberg.



**2018**

Introduction of climate-friendly chillers with CO<sub>2</sub> as natural refrigerant.



With our mission  
"Environment plus" we are an  
ecological pioneer in industry.

# History and milestones

The 50-year anniversary of Peter Huber Kältemaschinenbau was celebrated in 2018. The anniversary year was devoted entirely to the founder and visionary Peter Huber. His innovation in refrigeration technology and the continuous development of the products have always shaped the company's future!



## 1976

Market introduction of the **Ministat**®, the smallest cooling circulator in the world and the **Variostat**®.



## 1984

Foundation of the Peter Huber Kältemaschinenbau GmbH. The five children of Peter Huber become shareholders.

## 1968

Peter Huber Kältemaschinenbau was founded in 1968 by **Mr. Peter Huber** (†2018). As a "remote student" he taught himself refrigeration technology and did it so thoroughly well that he became the second Master in refrigeration plant construction in southern Germany. In the industry he was quickly called the "**Kältepapst**" (Pope of Refrigeration).

## 1980

Introduction of **Plug & Play** technology. The first replaceable controllers for all laboratory thermostats.



## 1986

Presentation of the **Dr.-Rudolf-Eberle Innovation Award** of the state of Baden Württemberg for the development of the **Rotostat**® a workplace for rotary evaporators.





# With innovations to the future

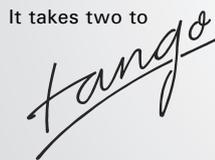
## 1989

Starting signal for the **Unistat Tango®**. The Unistat technology unites thermodynamics and micro-electronics and thus revolutionised the entire industry.



## 1994

Foundation of the Tango Club. In Switzerland, the legendary "**Tango Club**" for active exchange of views is founded by 40 users of this revolutionary technology.



## 2005

**Tango® Nuevo**  
The advancement of the successful Unistat Tango sets new standards with "TAC" (True Adaptive Control) to continually and automatically tune the PID control parameters.

## 2009

**Petite Fleur®**  
The "small Tango" extends the Unistat range downwards and now enables a professional scale-up.



## 2012

New controller generation **Pilot ONE®** with trendsetting technology and state-of-the-art operating function.



## 2014

The international orientation of the company is strengthened with the foundation of Huber USA.

## 2016

Conversion into a stock company.

## 1998

Construction of the **Tango factory** at the new location in the industrial area of Offenburg-Elgersweier.



## 2009

Foundation of Huber India in Bangalore.

## 2010

Huber Swiss GmbH is founded at Möhlin in Switzerland.

## 2017

Acquisition of the company Van der Heijden Labortechnik and foundation of Huber UK & Ireland.

## 2018

Foundation of Huber China in Guangzhou.

“ We do not need to be the biggest, we want to be the best. ”

Daniel Huber



## Innovations and awards

**We would like to measure ourselves against the best and continuously improve our performance – corporate competitions help us achieve this.**

“Innovator of the Year”, a grand award of medium-sized enterprises, “Trade Business of the Year”, “Top Employer”, the “Environmental Award of the state of Baden-Württemberg” and an inclusion in the “Lexicon of German World Market Leaders”: these are the most recent successes we have won in various competitions.

Every competition has its own focus: Innovation at Top 100 and economic development, creation of jobs and social

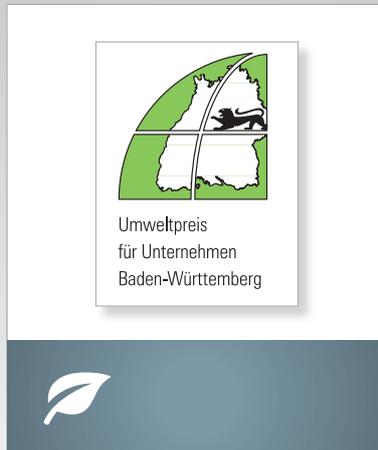
commitment for the Grand award for medium-sized enterprises. At the “Top Job” it is about the quality and attractiveness as employer and for the “Lexicon of German World Market Leaders” a technological pioneer role is required.

Therefore, our successes make one thing clear: We have a proven track record in all business areas with above-average performance – and we are proud of it!



## Trade

The craft company of the year 2015. Another great award and motivation for our team.



## Environmental award

For companies in the state of Baden-Württemberg in the trade category for exemplary environmental policy.



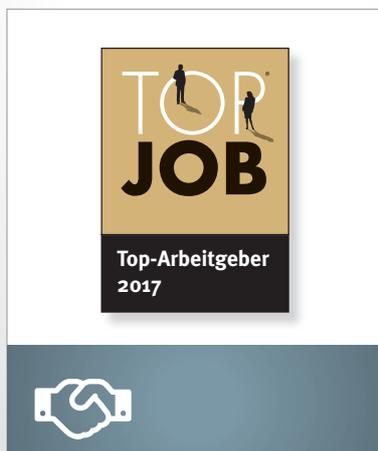
## World market leader

Included for the first time as specialist for high-precision temperature control technology in the "Lexicon of German Global Market Leaders".



## Award for medium-sized enterprises

Award winner at the "Grand award for medium-sized enterprises" 2016. Awarded as finalist in 2015.



## Top employer

Repeated award in 2017. The employees enjoy a comfortable and agreeable working environment and satisfying work.



## Top 100 Innovator

Awarded for the 7th time as one of the most innovative enterprises among German medium-sized enterprises.



Petite Fleur, Grande Fleur  
and Tango for the  
research laboratory



Unistats for  
process  
technology



Unistats  
for  
industry



# Dynamic temperature control

-125 °C ... +425 °C





Unistats are predestined for demanding temperature control applications in all industries



Unistats embody responsive performance and fast dynamics for demanding applications

## Unistat<sup>®</sup> – The Original

**Unistats cannot be compared with conventional temperature control technology. Thermodynamically, there is no better solution.**

The introduction of the Unistat technology in 1989 has initiated a revolution in fluid temperature control. Unistats are the ideal solution when it comes to fast and highly precise temperature control of externally connected applications. Compared to traditional circulation thermostats, Unistats impress with extremely fast temperature changes over and broad temperature ranges without liquid change.

Unistats were developed for demanding applications in the Chemical and Pharmaceutical industries such as the temperature control of reactors, autoclaves, miniplant/pilot systems, reactor blocks and calorimeters. They are now equally at home providing temperature control solutions across the industrial spectrum. You can select from over 70 models with cooling capacities from 0,48 to 130 kW. Unistats provide consistently stable process conditions at any time.

# Dynamic temperature control systems



Responsive thermodynamics for fast control behaviour for chemical processes



Extremely fast heating and cooling rate due to small internal volumes



Broad working temperature ranges without liquid change and long life



Process stability and reproducible results at any time for solid research work



Intelligent TAC function continually monitors performance and automatically tunes the PID parameters for optimum control

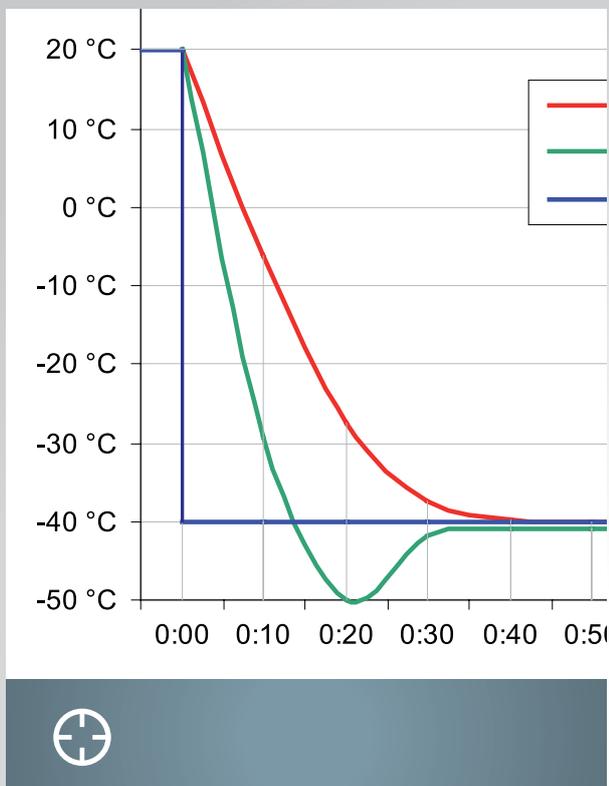


Wide range of models with covering different temperature ranges and cooling capacities of up to 130 kW for laboratory and production



# Unistats®

## Functions and features in detail



### True Adaptive Control

Compared to most automatic PID controllers, True Adaptive Control (TAC) even goes one step further. TAC analyses the control loop over the entire temperature range and creates a multidimensional model of the temperature control system.

The temperature controller's PID parameters are continually updated to give the best control parameters. This enables the controller to always achieve the shortest "time to temperature" with minimal over/undershoot. If required, the PID controller parameters can also be adjusted manually.

### Pressure Control VPC

Variable Pressure Control (VPC) reliably protects glass reactors against damage caused by excessive pressure. The risk of rupture of expensive glass apparatus is avoided. Changes in viscosity of the heat transfer fluid (HTF) during heating and cooling are automatically compensated for by VPC.

Some Unistats have a speed-controlled pump with soft start that regulate the pressure via an integrated pressure sensor. Unistats with a constant speed pump motor can control the pressure with an optional "VPC-Bypass".



## Programming

The integrated programmer with linear ramp function allows the implementation of individual temperature set-points or more complex temperature requirements with up to 100 programme steps. Either temperature-stable or time-stable, optional with additional actions such as the control of a floating contact, analogue output, temperature control mode etc.



## Maximum flow

The minimisation of internal pressure losses along with the large pump connections improve the flow. This results in higher flow rates and a significant optimisation of the heat transmission for increased dependability and an even faster reaction time to control the process. M16x1 adapter are included for table models.



## Interfaces

As standard, Unistats have RS232, USB Host, USB Device and LAN connections. Measurement data can be saved directly on a USB stick. A PC or notebook can be connected via USB, RS232 or LAN interfaces.

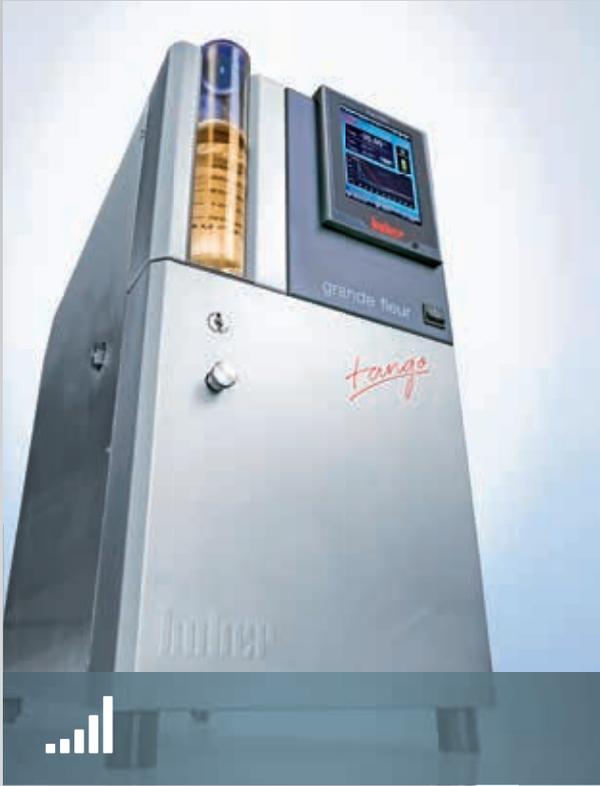


## E-grade® Explore

The optional E-grade "Explore" turns your Unistat into a development tool for process and chemical engineering. With the E-grade, viewing and/or recording further information on temperature, heating/cooling capacity and pump capacity in the system is possible. Typical applications are process development and scale-up trials.

# Unistats®

## Functions and features in detail



### Performance and dynamics

Unistats combine effective thermodynamics and intelligent microelectronics. The introduction of the Unistat technology in 1989 represented the birth of a complex alternative to the known temperature control technology. Unistats are circulators without a bath. For externally closed systems, an expansion vessel allows for and contains thermally induced changes in volume of the circulating fluid. The expansion vessel can be simply isolated when the temperature control of an application where the application is an open bath allowing the Unistat to be placed above or below the application without "flow-back".

This principle reduces the masses to be temperature-controlled enabling dramatically faster temperature changes. Unistats have a very small mass themselves which contributes to the extremely dynamic cooling and heating speeds of several hundred Kelvin per hour. For a comparison of dynamics, let's look at the cooling performance density [watt/litre] according to DIN 12876.

### High 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. Passive components ensure an extraordinarily high level of reliability.



## Scale-up for professionals

Unistats can thermally control small quantities just as well as production quantities. Models with cooling capacities of 0,7 to 130 kW permit flexible scale-up in research, kilo-laboratory, mini-plant, pilot plant and in production. Unistats rise to the challenge of scale-up because their performance is uniformly good from smallest to largest units and the user interface is common to all units.



## Explosion protection (ATEX)

If Unistats are to be operated in connection with explosion-proof systems, there are two alternatives: Using the ATEX-compliant remote control, the Unistat is set up outside the explosion zone. Alternatively, the Unistat can be installed inside a pressurised, enclosed Ex px cabinet (available from us as part of a complete solution) and set-up within the explosion zone.



## Low operating costs

The focus is always on the temperature control task when working with Unistats. Excellent heat transfer, reproducible results and very high temperature change speeds result in a significantly improved return on investment. The longevity of the thermal fluid and the low consumption values for cooling water and energy also ensure low operating costs.



## Save space

The space requirements of Unistats are really low. The volume cooling capacity  $[W/dm^3]$  according to DIN 12876 permits a comparison and describes the relationship of the cooling capacity to the housing volume.

# Unistats®

## Functions and features in detail



### Process optimisation made easy

The E-grade "Explore" turns a Unistat into a development tool for process and chemical engineering. This E-grade is an advanced development of the previous Unistat abilities and uses the equipment features of the Unistats to represent important process and performance data on the device display/output via interfaces.

E-grade "Explore" provides temperature, HTF pressure and

(with an optional Flow Sensor) HTF flow rates. When a Flow Sensor is used, Flow Rates can also be controlled. This measurement and control of various parameters and the display of process data makes this E-grade ideally suited for the development and optimisation of processes, the determination of heat balances and abort criteria, use tests of raw materials and for the advance data collection for scale-up trials.



### Measure and control flow

Measurement and control of the flow rate is easily possible with Unistats. For this we offer different measuring devices for installation in the fluid circuit. The heat transfer fluid (HTF) flow rate can be displayed directly on the temperature control unit and can be requested and/or displayed through the digital interfaces. (USB, RS232, LAN and, optionally, RS485, Profibus) It is also possible to regulate flow rate using flow sensor.

A Unichiller or Unistat equipped with an integrated VPC bypass or external VPC bypass as an accessory is required.

The flow measurement devices can be used to complete basic tasks, such as determining kinetic/dynamic features of reaction syntheses and crystallisation, inspections of heat quantities and scale-up testing.



## OPC-UA compatible

The -UA (OPC Unified Architecture) communication protocol describes data semantically and thus enables data exchange between automation systems without having to programme a driver for this purpose. Using the E-grade OPC-UA, Huber temperature control unit can communicate with Pilot ONE via the modern OPC-UA protocol.



## More pump pressure

For most applications the circulation is paramount for good heat transfer. Some applications, however, have narrow cross-sections due to their design and high pressure drops and therefore require more pump pressure. Higher pressure pumps are available on request e.g. flow-through chemistry and semicon applications.



## Quickly coupled

For frequent changes of applications at the temperature control unit we recommend our quick couplings. The quick couplings meet the special requirements in temperature control technology and reliably prevent the leaking of temperature liquid. The quick couplings ensure only minor pressure losses and thus ensure good performance of the overall system.



## Record data

Process data can be saved directly on a USB stick. The storage is carried out at a time interval of 5 seconds as universally usable CSV file, which can easily be evaluated with e.g. Microsoft Excel® and processed further. Also new is the storage and loading of temperature control programmes to a USB stick.

# Unistats®

## Controller features at a glance

As standard, Unistats® are equipped with the intuitive icon-driven Pilot ONE® controller with E-grade® "Professional".



### Plug & Play technology

The modular controller concept permits easy service and the use of the controller as remote control.



### Everything at a glance

All relevant temperatures can be viewed numerically and/or graphically on the Pilot ONE's screen.



### Interfaces

As standard, the Pilot ONE is equipped with RS232, USB Device, USB Host, Ethernet and a Pt100 external sensor connection.



### Integrated programme function

An integrated programmer capable of storing 10 different and individually named programs and also includes the ability to program linear and exponential ramps. Programs can be uploaded or downloaded from a USB drive.



### 5,7" touch screen

The operation of the Pilot ONE is easy and intuitive in 13 languages using the large colour touch display.



### Record process data

If a USB drive is connected, process and service data can be recorded directly onto it in real time.



<sup>1</sup> For units with integrated over-temperature protection

<sup>2</sup> For models with variable-speed pump or an external bypass

Function/Feature		Pilot ONE E-grade "Professional" in the scope of delivery with Unistats	Pilot ONE E-grade "Explore" Cat.No. 10495
Thermoregulation	Controller parameter tuning	TAC (True Adaptive Control)	
	Calibration for control sensor (Internal, Process)	5-Point	
	Monitoring (Level protection, Over temperature protection <sup>1</sup> )	✓	✓
	Adjustable limit alarms	✓	✓
	VPC (Variable Pressure Control) <sup>2</sup>	✓	✓
	Venting program	✓	✓
	Compressor automatic control	✓	✓
	Set point limits	✓	✓
	Programmer	10 programmes / max. 100 steps	
	Ramp function	linear, non-linear	
	Temperature control mode (Internal, Process)	✓	✓
	Maximum heating / cooling power adjustable	✓	✓
Display and Operation	Temperature display	5,7" touch screen	
	Display mode	graphic, numeric	
	Display resolution	0,1 °C / 0,01 °C	
	Graphic display of temperature curves	Window, full screen, scalable	
	Calendar, Date, Time	✓	✓
	Languages menu navigation: DE, EN, FR, IT, ES, PT, CZ, PL, RU, CN, JP, KO, TR	✓	✓
	Temperature format (°C / °F / K)	✓	✓
	Display mode (screen) switch by swiping	✓	✓
	Favourites menu	✓	✓
	User menus (Administrator level)	✓	✓
	2. set point	✓	✓
Connections	Digital interface RS232	✓	✓
	USB interface	✓	✓
	Ethernet RJ45 interface	✓	✓
	Pt100 control probe connection (external control)	✓	✓
	External control signal / ECS STANDBY <sup>3</sup>	✓	✓
	Programmable volt-free contact / ALARM <sup>3</sup>	✓	✓
	AIF (analog interface) 0/4-20 mA or 0-10 V <sup>4</sup>	✓	✓
Digital interface RS485 <sup>4</sup>	✓	✓	
Various	Alarm signal optical / acoustic	✓	✓
	AutoStart (Mains failure automatic)	✓	✓
	Plug & Play technology	✓	✓
	Technical glossary	✓	✓
	Remote control / Data visualisation via Spy Software	✓	✓
	E-grade Evaluation versions available (30 days)	✓	✓
	Service data recorder (flight recorder)	✓	✓
	Saving/loading of temperature control programs	✓	✓
	Process data logging direct to USB stick	✓	✓
Calendar start	✓	✓	
Process data	Display of process data directly on the device display		✓
	Query of process data via interfaces		✓
	Current heating and cooling capacity of the system		✓
	Temperature setpoint, internal, process, return		✓
	Temperature differences $\Delta T$ internal, process, return		✓
	Pump output pressure / speed (depending on model)		✓

<sup>3</sup> Standard on Unistats, otherwise via optional Com.G@te or POKO/ECS Interface

<sup>4</sup> Via optional Com.G@te

# Unistats®

## ▶ Petite Fleur®, Grande Fleur® and Tango®

The entry level in the world of Unistats. The compact dimensions and excellent thermodynamics make the Petite Fleur, Grande Fleur and Tango ideal for precise temperature control of research reactors.

➔ **Down to -45 °C**  
Working temperature

➔ **Up to 0,7 kW**  
Cooling power

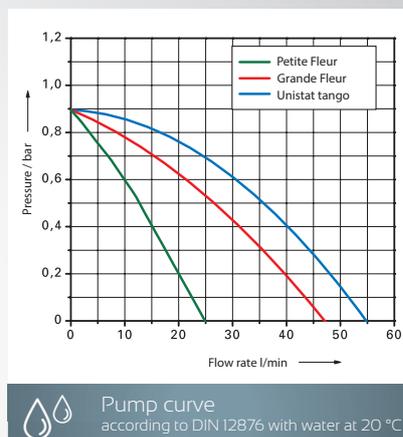
➔ **Up to 55 l/min**  
Pump capacity

➔ **Pilot ONE**  
Touch screen controller

➔ Unistat tango



➔ Petite Fleur, Grande Fleur



Model	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
		(l/min)	(bar)		200	20	0	-20	-30			
Petite Fleur	-40...200	25	0,9 <sup>1</sup>	1,5	0,48	0,48	0,45	0,27	0,16	260 x 450 x 504	1030.0001.01	3
Petite Fleur w	-40...200	25	0,9 <sup>1</sup>	1,5	0,48	0,48	0,45	0,27	0,16	260 x 450 x 504	1030.0003.01	3
Petite Fleur-eo	-40...200	25	0,9 <sup>1</sup>	1,5	0,48	0,48	0,45	0,27	0,16	260 x 450 x 504	1030.0004.01	3
Grande Fleur	-40...200	47	0,9 <sup>1</sup>	1,5	0,60	0,60	0,60	0,35	0,20	295 x 530 x 570	1041.0001.01	3
Grande Fleur w	-40...200	47	0,9 <sup>1</sup>	1,5	0,60	0,60	0,60	0,35	0,20	295 x 530 x 570	1041.0007.01	3
Grande Fleur-eo	-40...200	47	0,9 <sup>1</sup>	1,5	0,60	0,60	0,60	0,35	0,20	295 x 530 x 570	1041.0004.01	3
Grande Fleur w-eo	-40...200	47	0,9 <sup>1</sup>	1,5	0,60	0,60	0,60	0,35	0,20	295 x 530 x 570	1041.0010.01	3
Unistat tango	-45...250	55	0,9 <sup>1</sup>	3,0	0,70	0,70	0,70	0,40	0,40	426 x 327 x 631	1000.0037.01	3
Unistat tango w	-45...250	55	0,9 <sup>1</sup>	3,0	0,70	0,70	0,70	0,40	0,40	426 x 327 x 631	1000.0039.01	3
Unistat tango wl	-45...250	55	0,9 <sup>1</sup>	3,0	0,70	0,70	0,70	0,40	0,40	426 x 327 x 631	1000.0040.01	3

<sup>1</sup> integrated VPC pressure control

w = water-cooled | eo = externally open | wl = air-/water-cooled

## ► Series 400

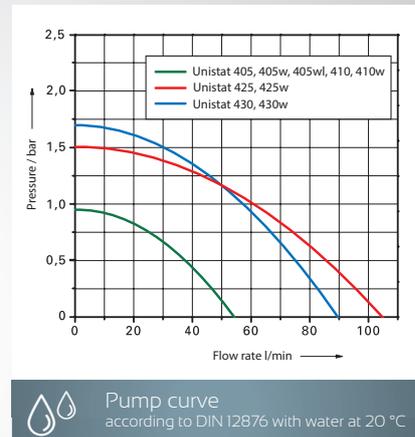
The Unistats of the series 400 are ideal for applications in process and chemical engineering, such as temperature control of reactors, autoclaves, minipilot/pilot systems, reactor blocks and calorimeters.

➔ **Down to -45 °C**  
Working temperature

➔ **Up to 3,5 kW**  
Cooling power

➔ **Up to 105 l/min**  
Pump capacity

➔ **Pilot ONE**  
Touch screen controller



Model	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
		(l/min)	(bar)		250	100	0	-20	-40			
Unistat 405	-45...250	55	0,9 <sup>1</sup>	3,0	1,00	1,00	1,00	0,60	0,15	426 x 327 x 631	1002.0045.01	3
Unistat 405w	-45...250	55	0,9 <sup>1</sup>	3,0	1,30	1,30	1,30	0,70	0,15	426 x 327 x 631	1002.0046.01	3
Unistat 405wl	-45...250	55	0,9 <sup>1</sup>	3,0	1,30	1,30	1,30	0,70	0,15	426 x 327 x 631	1002.0049.01	3
Unistat 410	-45...250	55	0,9 <sup>1</sup>	3,0	1,70	2,50	1,50	0,80	0,20	460 x 554 x 1200	1031.0010.01	3
Unistat 410w	-45...250	55	0,9 <sup>1</sup>	1,5/3,0	1,70	2,50	1,50	0,80	0,20	425 x 360 x 636	1031.0005.01	3
Unistat 425	-40...250	105	1,5 <sup>2</sup>	2,0	2,00	2,00	2,50	1,80	0,20	460 x 554 x 1453	1005.0057.01	35
Unistat 425w	-40...250	105	1,5 <sup>2</sup>	2,0	2,80	2,80	2,50	1,90	0,20	460 x 554 x 1453	1005.0058.01	35
Unistat 430	-40...250	90	1,7 <sup>2</sup>	4,0	3,50	3,50	3,50	2,20	0,30	460 x 554 x 1453	1005.0059.01	35
Unistat 430w	-40...250	90	1,7 <sup>2</sup>	4,0	3,50	3,50	3,50	2,20	0,30	460 x 554 x 1453	1005.0060.01	35

Options on request: natural refrigerant, Flat build models

<sup>1</sup> integrated VPC pressure control

<sup>2</sup> VPC pressure control via optional bypass

w = water-cooled | wl = air-/water-cooled

# Unistats®

## ► Series 500

Unistats of model 500 series with cooling capacities up to 21 kW are ideally suited for temperature control applications in process and chemical engineering as well as for demanding material testing and temperature simulations in different industry sectors.

➔ **Down to -55 °C**  
Working temperature

➔ **Up to 21 kW**  
Cooling power

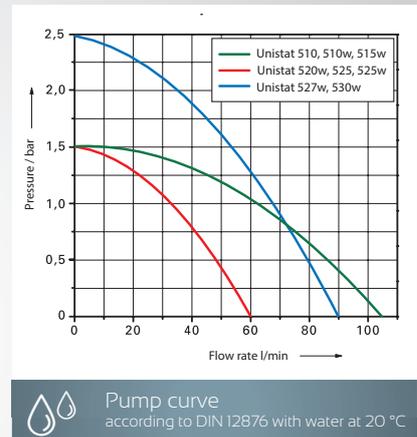
➔ **Up to 105 l/min**  
Pump capacity

➔ **Pilot ONE**  
Touch screen controller



➔ Unistat 510

➔ Unistat 520w



Model	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
		(l/min)	(bar)		250	100	0	-20	-40			
Unistat 510	-50...250	105	1,5 <sup>2</sup>	6,0	5,3	5,3	5,3	2,8	0,9	1100x755x1370	1005.0082.01	35
Unistat 510w	-50...250	105	1,5 <sup>2</sup>	6,0	5,3	5,3	5,3	2,8	0,9	460x554x1453	1005.0061.01	35
Unistat 515w	-55...250	105	1,5 <sup>2</sup>	6,0	7,0	7,0	5,3	2,8	0,9	460x554x1453	1032.0006.01	4
Unistat 520w	-55...250	60	1,5 <sup>2</sup>	6,0	6,0	6,0	6,0	4,2	1,5	540x604x1332	1006.0020.01	4
Unistat 525	-55...250	60	1,5 <sup>2</sup>	6,0	10,0	10,0	7,0	4,2	1,5	1290x736x1596	1033.0015.01	4
Unistat 525w	-55...250	60	1,5 <sup>2</sup>	6,0	10,0	10,0	7,0	4,2	1,5	540x604x1332	1033.0008.01	4
Unistat 527w	-55...250	90	2,5 <sup>2</sup>	6,0	7,0	12,0	12,0	6,0	2,0	540x704x1491	1034.0014.01	4
Unistat 530w	-55...250	90	2,5 <sup>2</sup>	12,0	7,0	21,0	16,0	9,0	3,0	540x704x1491	1034.0015.01	4

Options on request: natural refrigerant, Flat build models <sup>2</sup>VPC pressure control via optional bypass

w = water-cooled

## ► Series 600

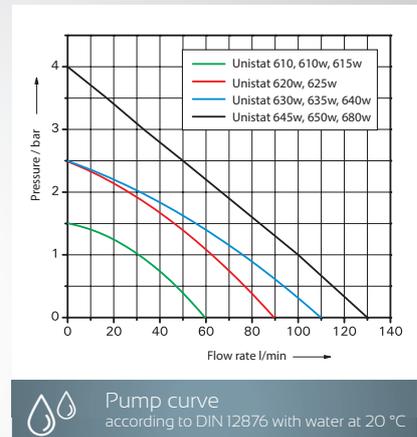
The Unistats of 600 series are our most powerful devices and offer very high cooling capacities of up to 130 kW. These devices are the first choice for applications with high cooling requirements for temperatures down to -60 °C.

➔ **Down to -60 °C**  
Working temperature

➔ **Up to 130 kW**  
Cooling power

➔ **Up to 130 l/min**  
Pump capacity

➔ **Pilot ONE**  
Touch screen controller



Model	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
		(l/min)	(bar)		200	0	-20	-40	-60			
Unistat 610	-60...200	60	1,5 <sup>2</sup>	6,0	7,0	7,0	6,4	3,3	0,8	1290x735x1600	1007.0040.01	4
Unistat 610w	-60...200	60	1,5 <sup>2</sup>	6,0	7,0	7,0	6,4	3,3	0,8	630x704x1520	1007.0031.01	4
Unistat 615w	-60...200	60	1,5 <sup>2</sup>	12,0	9,5	9,5	8,0	4,8	1,2	630x704x1520	1007.0032.01	4
Unistat 620w	-60...200	90	2,5 <sup>2</sup>	12,0	12,0	12,0	12,0	6,5	1,8	730x804x1520	1008.0040.01	4
Unistat 625w	-60...200	90	2,5 <sup>2</sup>	12,0	16,0	16,0	15,0	7,4	2,2	730x804x1520	1008.0041.01	4
Unistat 630w	-60...200	110	2,5 <sup>2</sup>	24,0	22,0	21,0	20,0	14,0	5,0	950x1005x1650	1009.0021.01	5
Unistat 635w	-60...200	110	2,5 <sup>2</sup>	24,0	27,0	27,0	25,0	18,0	6,0	950x1005x1650	1009.0022.01	5
Unistat 640w	-60...200	110	2,5 <sup>2</sup>	30,0	32,0	35,0	30,0	18,0	6,0	950x1005x1650	1010.0007.01	5
Unistat 645w	-60...200	130	4,0 <sup>2</sup>	36,0	45,0	45,0	42,0	22,0	7,0	1830x1200x1830	1011.0006.01	5
Unistat 650w	-60...200	130	4,0 <sup>2</sup>	48,0	65,0	65,0	56,0	30,0	11,0	1830x1200x1830	1012.0005.01	5
Unistat 680w	-60...200	130	4,0 <sup>2</sup>	96,0	130,0	130,0	80,0	60,0	20,0	4500x2000x2000	1013.0003.01	5

Options on request: natural refrigerant, Flat build models, additional heating capacity, air cooled units

<sup>2</sup>VPC pressure control via optional bypass

w = water-cooled

# Unistats®

## ► Series 700 / 800

Unistats of the 700 and 800 series are characterised by low-end working temperatures down to -85 °C with compact dimensions. These devices are suited mainly for temperature applications with moderate cooling capacity requirements.



➔ Unistat 825



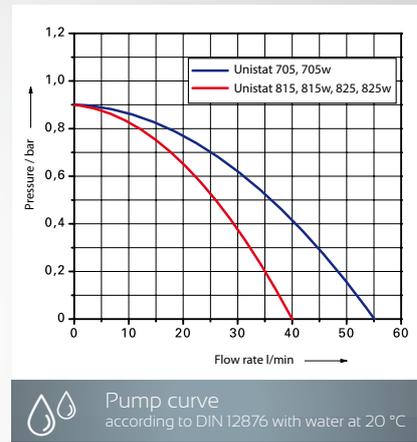
➔ Unistat 705w

➔ **Down to -85 °C**  
Working temperature

➔ **Up to 2,4 kW**  
Cooling power

➔ **Up to 55 l/min**  
Pump capacity

➔ **Pilot ONE**  
Touch screen controller



Model	Working temperature range (°C)	Pump max. VPC		Heating power (kW)	Cooling power (kW) at (°C)					Dimensions WxDxH (mm)	Cat.No.	G
		(l/min)	(bar)		250	0	-20	-40	-80			
Unistat 705	-75...250	55	0,9 <sup>1</sup>	1,5/3,0	0,6	0,65	0,6	0,6	-	425x400x720	1001.0041.01	3
Unistat 705w	-75...250	55	0,9 <sup>1</sup>	1,5/3,0	0,6	0,65	0,6	0,6	-	425x400x720	1001.0042.01	3
Unistat 815	-85...250	40	0,9 <sup>1</sup>	2,0	1,3	1,5	1,5	1,4	0,2	460x604x1465	1014.0049.01	35
Unistat 815w	-85...250	40	0,9 <sup>1</sup>	2,0	1,5	1,5	1,5	1,4	0,2	460x604x1465	1014.0050.01	35
Unistat 825	-85...250	40	0,9 <sup>1</sup>	3,0	2,3	2,2	2,0	2,0	0,3	460x604x1465	1014.0051.01	4
Unistat 825w	-85...250	40	0,9 <sup>1</sup>	3,0	2,3	2,4	2,4	2,4	0,3	460x604x1465	1014.0052.01	4

Options on request: natural refrigerant

<sup>1</sup> integrated VPC pressure control

w = water-cooled

## ► Series 900 / 1000

The Unistats of 900 and 1000 series are optimised for low temperature applications down to -120 °C. These devices are suited for temperature syntheses as well as material tests and temperature simulations with very low temperatures.

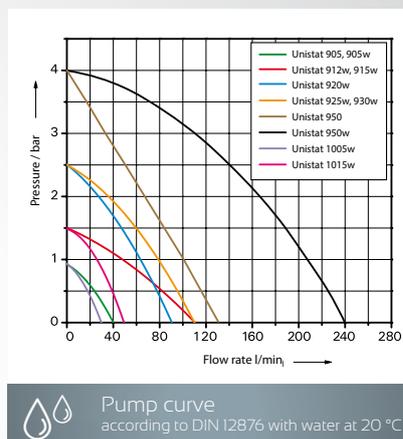


➔ **Down to -120 °C**  
Working temperature

➔ **Up to 36 kW**  
Cooling power

➔ **Up to 130 l/min**  
Pump capacity

➔ **Pilot ONE**  
Touch screen controller



Model	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
		(l/min)	(bar)		250	100	0	-60	-80			
Unistat 905	-90...250	40	0,9 <sup>1</sup>	6,0	4,0	3,8	3,6	2,2	0,7	540x654x1500	1035.0011.01	4
Unistat 905w	-90...250	40	0,9 <sup>1</sup>	6,0	4,5	4,5	4,5	2,5	0,7	540x654x1500	1035.0012.01	4
Unistat 912w	-90...250	110	1,5 <sup>2</sup>	6,0	7,0	7,0	7,0	3,5	0,9	630x704x1565	1016.0027.01	4
Unistat 915w	-90...250	110	1,5 <sup>2</sup>	6,0	11,0	11,0	11,0	4,0	1,1	630x704x1565	1036.0006.01	4
Unistat 920w	-90...200	90	2,5 <sup>2</sup>	12,0	–	11,0	11,0	8,0	2,0	950x1205x1650	1017.0025.01	4
Unistat 925w	-90...200	110	2,5 <sup>2</sup>	12,0	–	16,0	16,0	13,5	3,5	950x1205x1650	1017.0026.01	4
Unistat 930w	-90...200	110	2,5 <sup>2</sup>	24,0	–	19,0	20,0	15,0	5,0	950x1205x1650	1017.0027.01	5
Unistat 950	-90...200	130	4,0 <sup>2</sup>	36,0	–	30,0	30,0	24,0	10,0	3315x1485x3040	1018.0008.01	5
Unistat 950w	-90...200	240	4,0 <sup>2</sup>	36,0	–	36,0	36,0	25,0	10,0	2630x1300x1980	1018.0014.01	5
Unistat 1005w	-120...100	30	0,9 <sup>2</sup>	2,0	–	1,5	1,5	1,4	1,4	700x804x1520	1019.0009.01	4
Unistat 1015w	-120...100	44	1,5 <sup>2</sup>	4,0	–	2,5	2,5	2,5	2,0	950x1205x1650	1020.0010.01	5

Options on request: natural refrigerant

<sup>1</sup> integrated VPC pressure control

<sup>2</sup> VPC pressure control via optional bypass

w = water-cooled

# Unistats® high temperature

## ► Series T300 / T400

Unistats of the T300 and T400 series control temperatures in a highly precise and space-saving manner up to +425 °C. They set the standard for safety, ease of use and temperature control speed.

HT models are equipped with stepper motor controlled water cooling.

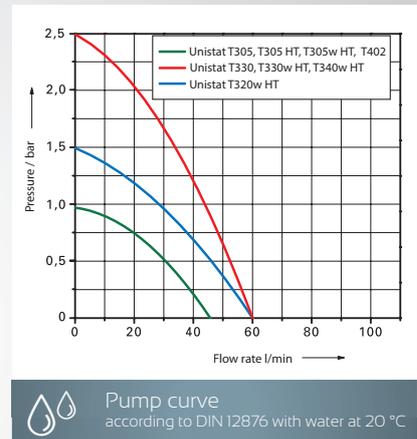


➔ **Up to +425 °C**  
Temperature range

➔ **Up to 48 kW**  
Heating power

➔ **Up to 60 l/min**  
Pump capacity

➔ **Pilot ONE**  
Touch screen controller



➔ Unistat T320w HT

➔ Unistat T305

Model	Temperature range (°C)	Pump max. VPC		Heating power (kW)	Cooling power (kW) at (°C)				Dimensions W x D x H (mm)	Cat.No.	G
		(l/min)	(bar)		400	300	200	100			
Unistat T305	65...300	45	0,9 <sup>1</sup>	3,0/6,0	–	–	–	–	425 x 250 x 631	1003.0021.01	3
Unistat T305 HT	65...300 <sup>3</sup>	45	0,9 <sup>1</sup>	3,0/6,0	–	3,2	2,3	0,6	425 x 250 x 631	1003.0020.01	3
Unistat T305w HT	(15) 65...300	45	0,9 <sup>1</sup>	3,0/6,0	–	10,0	10,0	10,0	425 x 250 x 631	1003.0017.01	3
Unistat T320w HT	(15) 65...300	60	1,5 <sup>2</sup>	12,0	–	10,0	10,0	6,0	460 x 554 x 1330	1004.0019.01	35
Unistat T330	65...300	60	2,5 <sup>2</sup>	24,0	–	–	–	–	460 x 554 x 1330	1004.0031.01	35
Unistat T330w HT	(15) 65...300	60	2,5 <sup>2</sup>	24,0	–	10,0	10,0	6,0	460 x 554 x 1330	1004.0025.01	35
Unistat T340w HT	(15) 65...300	60	2,5 <sup>2</sup>	48,0	–	10,0	10,0	6,0	600 x 704 x 1520	1024.0007.01	35
Unistat T402	80...425	45	0,9 <sup>2</sup>	3,0/6,0	–	–	–	–	505 x 400 x 765	1038.0003.01	3

<sup>1</sup> Integrated VPC pressure control

<sup>2</sup> VPC pressure control via optional bypass

<sup>3</sup> lowest working temperature 15 K above ambient temperature

w = water-cooled | HT = controlled cooling

## ► Series TR400

Unistats of the TR400 series impress with a compact and space-saving round design. Thanks to the minimised internal volume short heat-up times can be realised. A direct contact of the hot thermal fluid with the atmosphere is avoided protecting the thermal fluid. These devices are ideally suited for high-temperature applications such as double-walled reaction vessels, pilot plants and for high-temperature distillation.

HT models are equipped with controlled cooling with stepper motor controlled water cooling.

➔ **Up to +425 °C**  
Temperature range

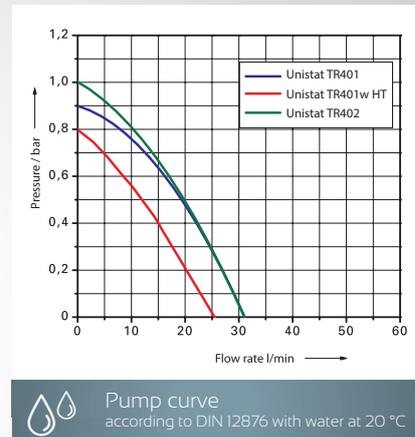
➔ **Up to 10 kW**  
Cooling power

➔ **Up to 31 l/min**  
Pump capacity

➔ **Pilot ONE**  
Touch screen controller



➔ Unistat TR401



Model	Temperature range (°C)	Pump max. VPC		Heating power (kW)	Colling power (kW) at (°C)				Dimensions W x D x H (mm)	Cat.No.	G
		(l/min)	(bar)		400	300	200	100			
Unistat TR401	50...400	31	0,9 <sup>1</sup>	3,0/9,0	–	–	–	–	288x379x890	1028.0007.01	3
Unistat TR401w HT	(15) 50...400	26	0,8 <sup>1</sup>	3,0/9,0	10,0	10,0	10,0	10,0	288x379x890	1028.0018.01	3
Unistat TR402	80...425	31	1,0 <sup>1</sup>	3,0/9,0	–	–	–	–	288x332x870	1028.0006.01	3

<sup>1</sup> Integrated VPC pressure control

w = water-cooled | HT = controlled cooling

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