

Environmental Simulation



- ▶ Cold, heat and humidity
- ▶ Shock test and burn-in
- ▶ Vibration and stress screening
- ▶ Customized products

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CTS GmbH is one of the world's leading experts in the manufacture and distribution of environmental simulation devices. Our test cabinets and chambers simulate various

The more people expect in terms of technology, reliability and precision, the more they expect from the testing process. Our employees' considerable experience gives us a strong lead in that respect.

We are CTS

environmental factors such as cold, heat, humidity, light, vibration, corrosive gas and pressure. Our customer base appreciates the high quality, reliability and ease of use of our products, which are all made in Germany.

Our service network in Germany and abroad is an excellent example of speed and competence. As a sought-after service provider, we also calibrate environmental simulation devices, including those made by other manufacturers.

Our success is based on a philosophy of long-term partnerships with customers,



suppliers and employees. This is how we strengthen our relationships with our partners. We source almost all of our components from regional suppliers. Together, we develop solutions and strategies for a successful future.

CTS temperature test cabinets, T series

CTS temperature test chambers are characterized by maximum control accuracy and easy programmability

Cold/Heat

via our modern multi-touch panel. Due to the innovative control system and careful selection of all components,

the CTS temperature test chambers are among the most energy-efficient devices on the market. Temperature control, either via the supply air or exhaust air sensor, allows optimal adaptation to your tests and the test material. Our temperature chambers are also available with increased compressor and heating power for higher change rates of up to 30K/min. This allows stress limits or weak points of the test specimen to be determined more quickly in fast motion.



Benchtop unit with a test volume of 25 or 50 litres

Cabinets with a test volume of 100, 200, 350, 600, 1000, 1500, 2000 litres

Special sizes on request

Examples of additional standard options:

- ▶ Door with window incl. LED lighting
- ▶ Notch
- ▶ Entry ports with diameter NW 50 – 200 mm
- ▶ Movable temperature sensor, optionally switchable as control sensor
- ▶ CID software for programming and documentation
- ▶ Adjustable air quantity
- ▶ Air-/water-cooled condenser
- ▶ Mobile design
- ▶ Compressed air dryer

Temperature range:

- ▶ -46 to +180°C (Benchtop with CO₂ cooling)
- ▶ -48 to +180°C (Cabinets with CO₂ cooling)
- ▶ -70 to +180°C (Cabinets with conventional cooling system)

Temperature change rates:

- ▶ From 3 to 30 K/min possible

CTS climatic test cabinets, C series

In addition to temperature, CTS climate test chambers can also simulate the stress factor of humidity. Humidity is measured

Humidity

using a capacitive humidity sensor, which is characterized by high accuracy, maintenance-free operation and long-term stability.

Of course, the advantages of the CTS temperature test chambers described above also apply here.



**Cabinets with a test volume of
100, 200, 350, 600, 1000, 1500,
2000 litres**

Special sizes on request

Examples of additional standard options:

- ▶ Door with window incl. LED lighting
- ▶ Notch
- ▶ Entry ports with diameter
NW 50 – 200 mm
- ▶ Movable temperature sensor,
optionally switchable as control sensor
- ▶ CID software for programming
and documentation
- ▶ Adjustable air quantity
- ▶ Air-/water-cooled condenser
- ▶ Mobile design
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Temperature range:

- ▶ -48 to +180°C
(Cabinets with CO₂ cooling)
- ▶ -70 to +180°C
(Cabinets with conventional
cooling system)

Temperature change rates:

- ▶ From 3 to 30 K/min possible

Humidity range:

- ▶ 10 to 98% relative humidity in
the temperature range from +10°C
to 95°C

CTS temperature shock test cabinets, TSS series

The innovative technology of our CTS standard shock test chambers enables extremely fast temperature changes

Shock test

and maximum temperature change gradients on the test specimen. The compressed air dryer system used as standard enables up to 3000 test cycles without defrosting. The most common national and international standards (DIN, IEC, MIL) can be met. Also available as a 1-chamber system with larger test chamber volumes.



**Cabinets with a test volume of
66, 130, 350 and 500 litres.**

Other sizes on request

Examples of additional standard options:

- ▶ Extended temperature range up to 250° C
- ▶ Higher test specimen weights
- ▶ Air-/water-cooled condenser
- ▶ Additional entry ports
- ▶ Additional wire mesh shelves and protective grids for the basket

Temperature range:

- ▶ -70 to +250° C

CTS Walk-in test chambers for the simulation of temperature and humidity, TW/CW series

The walk-in or drive-in CTS temperature/ climate test chambers are designed by our experienced sales and project engineers to meet your testing requirements. A standardized modular system

performance levels. Ex-proof versions in accordance with ATEX, extensions for hazard levels in accordance with EUCAR for testing Li-batteries, combination with vibration, equipment with irradiation devices, for testing photovoltaic modules and much more. For the automotive testing sector, we have the perfect solution with CO2 refrigeration technology for the global reduction of fluorinated refrigerants.

Walk-In

is available for this purpose. Available as a compact chamber or with on-site installation and in all sizes and



Examples of additional standard options:

- ▶ lighting modules
- ▶ vibration tests
- ▶ airbag shoots
- ▶ explosion-proof design
- ▶ design for battery testing

Temperature range:

- ▶ -45 to +150° C or higher
- ▶ -70 to +150° C or higher

Humidity range:

- ▶ from 10 to 95% relative humidity

**CTS temperature/climatic
vibration test cabinets,
TV/CV series**

Test chambers for combination with shaker systems.

Regardless of whether a combination with vertical or horizontal vibration is required, the modular and standardized series can be combined with all common shaker types and adapted to your testing requirements. Thanks to precise temperature control and stable construction, the test chambers ensure high reproducibility of results. Intelligent control systems enable easy operation and integration into existing test environments.

Vibration

Our standard series of CTS vibration test chambers as temperature or climate test versions for combination with shaker systems offers you not only extensive standard equipment but also many additional extensions and options.

Cabinets with a test volume of 700, 1100, 1700, 2300 and 2800 litres.

Special sizes also possible based on walk-in chambers.



Examples of additional standard options:

- ▶ Mobile design
- ▶ Horizontal and/or vertical vibration
- ▶ Height-adjustable test space module
- ▶ Increased drive-over height
- ▶ many more options available

Temperature range:

- ▶ -48 to +180° C
- ▶ -70 to +180° C

Humidity range:

- ▶ from 10 to 95% relative humidity



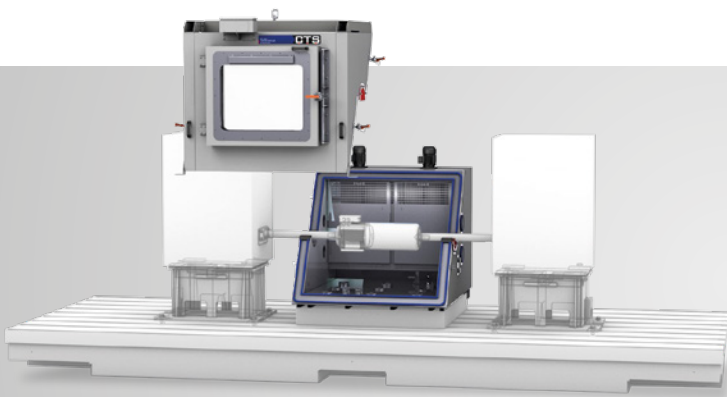
Customized test units

In addition to the standard programme already described, our experienced engineers and technicians are also available to assist you with special and complex tasks in the field of environmental simulation.

Simply contact us and we will be happy to advise you.

A short overview:

- ▶ Explosion-proof devices
- ▶ Chambers with light modules
- ▶ Chest units
- ▶ Cold/Heat Tunnels
- ▶ Air-conditioning equipment with test box
- ▶ Test systems for e-mobility components
- ▶ Water/Glycol temperature control devices
- ▶ And much more



CTS control system
with userfriendly C-Touch-Screen



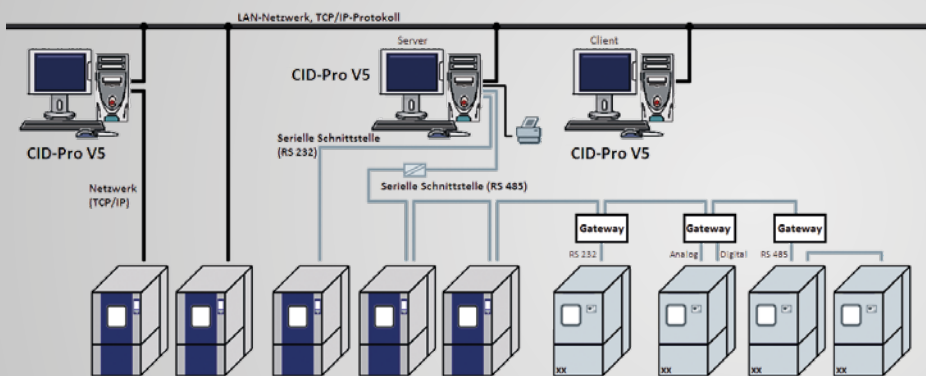
C-Touch-Screen-Display

- ▶ Full-surface, backlit glass front
- ▶ 7" colour display
- ▶ Intuitive multi-touch operation via tap, slide and swipe gestures
- ▶ Customer-specific favourites bar
- ▶ Connection option for USB stick for independent measurement data storage
- ▶ Graphical curve displays
- ▶ Data interfaces: Ethernet, RS232, RS485, USB
- ▶ Error messages in plain text

The CID software is a highly powerful data communication system to program and record the data of up to 32 devices. With the CID software you can monitor

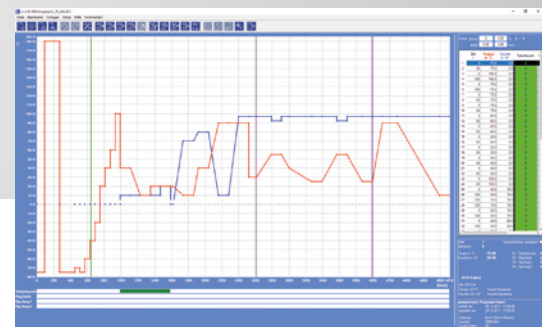
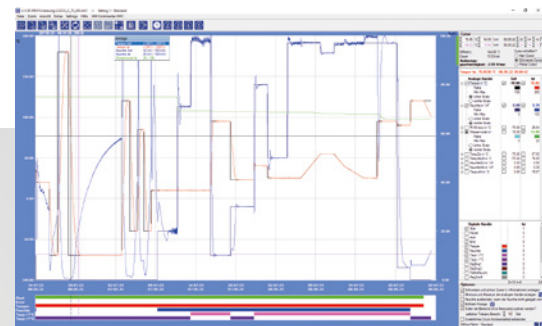
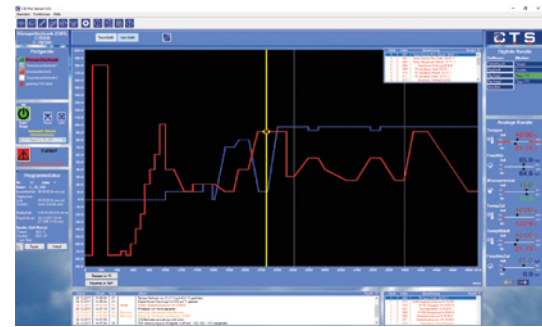
CID Software

the status of the test cabinets on various computers connected to your in-house network. Equally, the CID software can send event-driven e-mails to always inform you about your device's functions.



Your advantages:

- ▶ All important data at a glance
- ▶ Comprehensive communication options
- ▶ Display of all ongoing tests in your laboratory for efficient test planning
- ▶ Comfortable input of test cycles
- ▶ Clear evaluation of measurement results
- ▶ Communication with the device via RS 232, RS 485, or network
- ▶ Online monitoring function for other computers in the network



Very simple programming and documentation of your test cycles



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