SCAL
THERMAL SHOCK

ENVIRONMENTAL SIMULATION

Spirale 3

ENERGY® SAVING

Climats
a schunk company

A STEP FURTHER®

SCAL
THERMAL SHOCK

THE CLIMATIC THERMAL SHOCKS HAVE BEEN DESIGNED AND DEVELOPED TO MEET THE STRICTEST TEST STANDARDS WITH EXTREME THERMAL CONDITIONS FROM -90 °C TO +220 °C.

2 or 3 zones,
vertical or horizontal
from 70 to 1500 dm^3,
7 FAMILIES
OF THERMAL SHOCK

The transfer between cabinets is carried out in **less than 10 seconds** and the samples are subjected to thermal shocks as many times as necessary because the entire SCAL line has a standard fitting of **automatic defrosting.**
The baskets for the vertical shocks are moved using their own linear cylinders fitted with a brake for precise and protected positioning, without any external excess size. Guides are used to avoid any vibration during the movements between cabinets.
All our thermal shocks use the latest technological innovations.
ESS Mode + 180 to -90 °C: In addition to thermal shock tests, the entire SCAL line makes it possible to use the cold cabinet or the basket independently for Environmental Stress Screening. The variation speeds are between 10 and 30 °C/minute depending on the models. It is possible to combine ESS and thermal shock tests within a single cycle.

Every customer has their **aspirations...**

Standard or customised? The different proposed volumes and powers are adapted to different applications. The vertical SCAL CTR line, because of its foot print, its mobility and its low sound levels, is perfectly adapted to laboratories, whereas the SCAL CTH horizontal line is more adapted to production sites requiring heavy loads combined with continuous operation.
An ingenious design makes it possible for you to carry out 3 cabinets shocks tests using 2 cabinets shocks.
SCAL thermal shocks are entirely manufactured on our site in Bordeaux. This production unit manufactures over 700 environmental chambers per year and **makes it possible for us to design and adapt our models to your constraints.**

... and they are all as **demanding!**

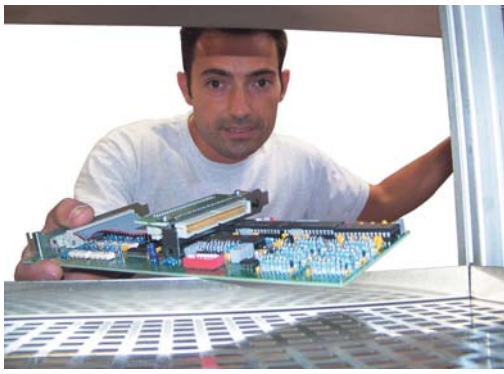
The samples to be tested are positioned on the shelf or shelves in the basket that passes alternatively from a cold cabinet to a hot cabinet, thus creating thermal shocks.
Several regulation systems are available, either on the "air" sensor, or on the "basket" sensor, or even, optionally, on a sensor directly placed in proximity to the product ("product" sensor).
A double flow air ventilation guarantees perfect homogeneity in each cabinet and guarantees the heating/cooling to reach the required temperature more quickly.

Thermal shocks designed to carry out tests compliant with standards:
DIN-IEC-60068-2-14 / JESD22-A104D /
MIL-STD-202G / MIL-STD-750E/ MIL-STD-810G / MIL-STD-883H.

We design thermal shocks
helping you to push the boundaries further
every day...

Safety: work in peace of mind!

In compliance with European regulations, user safety and sample safety is serially optimised using an emergency stop located on the front face and a mode selection switch (ESS/Shock), locked by a key.
All our equipments protect users when the door is opened by blocking the basket transfer.

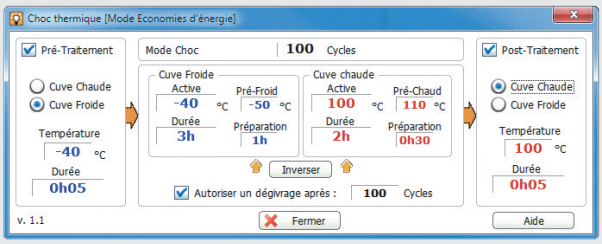


Spirale 3: reference driving software

Spirale 3 allows you to control all your equipments. As standard supply you have:
– an extra wide touch screen (15"),
– 3 use levels: Production: simple, clear and functional
Standard: a multi-purpose level
Laboratory: oriented towards advanced tests
– a monitoring alarm in Shock or ESS mode guaranteeing that your tests can be reproduced.
– programmable pre-treatment/post-treatment on **Spirale 3** in order to condition the temperature, or even dry your samples at the start and/or end of the cycle.
– an automatic defrosting function: **Spirale 3** optimises the cycle so that the defrosting can be run correctly without disturbing the tested sample temperature.

REVOLUTIONARY THANKS TO ITS 3 PROGRAMMING WIZARDS:

- The **Standard** mode used to very easily create programmes.
- The **Optimised Time** mode or "Guaranteed segment time" (Wait for mode) making it possible to guarantee a programme segment time whatever the quantity of samples loaded.
- In **Energy Saving** mode only the cabinet containing the samples is running, thus **reducing energy consumption by 40 to 70%.**



All of our environmental test chambers are controlled by the software Spirale 3

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SCAL
THERMAL SHOCK

EQUIPMENT COMMON TO ALL OUR LINES

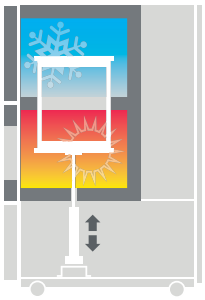
		Standard	Optional
Software		**Spirale 3 + Energy Saving**	
"Use in ESS mode" function		+180 °C to -90 °C depending on the models	
Cold cabinet calibration points		10 points (-70/-60/-40/-10/20/40/60/100/125/150 °C) Homogeneity from +/-0.5 to +/-2 °C	
Hot cabinet calibration points		5 points (+80/+100/+120/+150/+180 °C)	
Programming (3 different modes)		Standard Shock Guaranteed segment time shock (wait for) Energy saving shock	
ESS Mode		ESS (Environmental Stress Screening)	
Regulation		Air sensor/basket sensor/product sensor	
Automatic defrosting		•	
"Use in manual mode" function		•	
SAFETY	Function indications on the door, on the front face "Mains/On/Fault"	•	
	Automatic door locking coupled to the temperature	•	
	Locking in ESS mode using a key switch	•	
	Emergency stop	•	
	When running, door opening safety switch	•	
	Secure 2A / 230V plug	•	
	Phase controller	•	
	Double temperature thermostatic control	•	
1 shelf		•	•
1 basket shelf			•
Mobile chamber on wheels		•	
Porthole on hot cabinet (2 cabinets shocks) or on ambient cabinet (3 cabinets shocks)		•	
Deferred start-up		•	
Customer logical outputs on a terminal block (0.5A/230V)		•	
RS 232/USB/Ethernet		•	
Web Server		•	
Programmable logical inputs / outputs		•	
Heated porthole on cold cabinet			•
Intermediate cabinet temperature (3 cabinet shocks) from -30 °C to +20 °C			•
Temperature extension to +220 °C in the hot cabinet			•
Hinges on the right			•
Onboard air drier			•
Nitrogen sweep with flow meter			•
Sound alarm on functions (end of cycle or fault)			•
Light column			•
Independent min/max double safety			•
Variable ventilation speed drive in the cold cabinet (ESS mode)			•
Additional product sensor regulation (mobile)			•
Additional measurement card (24 channel PT100 / 16 channel thermocouples / HP 20 central channels, 16 input-output dry contacts)			•
Type IEEE488 digital communication			•
Supervision			•
Cable guide			•
Notched cabinet passage			•

The core line

SCAL CTR

The central series in the line.
Meets the majority
of laboratory tests.

Basket volume
from 65 to 220 l



Technical data **SCAL CTR**	SCAL 70CTR3	SCAL 70CTR4	SCAL 120 CTR4	SCAL 120CTR5	SCAL 120CTR 7.5	SCAL 120CTR10	SCAL 220CTR4	SCAL 220CTR5	SCAL 220CTR7.5	SCAL 220CTR10
Basket size W x D x H ***(mm)***	365 x 440 x 415		545 x 550 x 415				705 x 650 x 415			
Basket volume ***(litre)***	66		124				190			
Cold cabinet size W x D x H ***(mm)***	650 x 640 x 545		870 x 800 x 545							
Cold cabinet volume ***(litre)***	226		379							
Outer size W x D x H ***(mm)***	1020 x 1700 x 2175		1170 x 2125 x 2195				1170 x 2125 x 2195			
Min cold cabinet temperature ***(°C)***	-70	-80	-75	-80	-80	-85	-75	-80	-80	-90
Max cold cabinet temperature ***(°C)***	+180									
Min/Max hot cabinet temperature ***(°C)***	+50 /+180 (Option +220 °C)									
Maximum authorised load on the basket ***(kg)***	30		40							
Number of cabinets	2 (hot/cold)									
Available power at 20 °C ***(kW)***	4	6	6	8	10	14	6	8	10	14
Maximum recovery time in thermal shock mode ***(min)*** (basket sensor)										
from +150 °C to -65 °C when empty	10	7	11	7	7	6	11	8	7	7
from +150 °C to -65 °C with a 10 kg load	15	10	15	11	10	9	15	11	10	9
from +150 °C to -65 °C with a 40 kg load	20	14	21	14	14	13	21	15	14	13
from +150 °C to -40 °C when empty	7	5	8	5	5	4	8	6	5	4
from +150 °C to -40 °C with a 10 kg load	10	7	11	7	7	6	11	8	7	6
from +150 °C to -40 °C with a 40 kg load	14	10	15	10	10	9	15	11	10	9
ESS mode in cold cabinet from +150 °C to -40 °C ***(°C/min)***										
Speed according to standard IEC 60068-3-5	11	20	11	20	21	30	11	20	21	30
Actual point to point speed	10	17	10	17	18	24	10	17	18	24
ESS mode in cold cabinet from +150 °C to -60 °C ***(°C/min)***										
Speed according to standard IEC 60068-3-5	9	16	9,5	16	17	22	9,5	16	17	22
Actual point to point speed	7,5	13	10	13,5	14,5	20	10	13,5	14,5	20

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Some of our projects...

Technical data

	SCAL CTK			
	SCAL 230CTK7,5	**SCAL 300CTK7,5**	**SCAL 400CTK15**	**SCAL 500CTK15**
Basket size W x D x H ***(mm)***	730 x 485 x 670	750 x 600 x 670	800 x 800 x 670	1400 x 600 x 600
Basket volume ***(litre)***	237	301	428	504
Cold cabinet size W x D x H ***(mm)***	950 x 700 x 820	950 x 800 x 870	1070 x 900 x 870	1570 x 800 x 800
ESS Cold cabinet volume ***(litre)***	545	661	837	1004
Outside size W x D x H ***(mm)*** (830 mm in height can be dismantled)	1450 x 2950 x 2950	1450 x 2950 x 3080	1560 x 3400 x 3080	2050 x 3400 x 2900
Min/Max cold cabinet temperature ***(°C)***	-80/+180	-85/+180	-85/+180	-90/+180
Min/Max hot cabinet temperature ***(°C)***	+60 /+180 (Option +220 °C)			
Maximum authorised load on the basket ***(kg)***	40	40	60	80
Number of cabinets	2 (hot/cold)			
Available power at 20 °C ***(kW)***	10	14	20	20
Maximum recovery time in thermal shock mode ***(min)*** (basket sensor)				
from +150 °C to -65 °C when empty	11	11	7	8
from +150 °C to -65 °C with a 10 kg load	15	15	10	11
from +150 °C to -65 °C with a 40 kg load	21	21	14	15
from +150 °C to -40 °C when empty	8	8	5	6
from +150 °C to -40 °C with a 10 kg load	11	11	7	8
from +150 °C to -40 °C with a 40 kg load	15	15	10	11
ESS mode in cold cabinet from +150 °C to -60 °C ***(°C/mn)***				
Speed according to standard IEC 60068-3-5	9	12	15	14
Actual point to point speed	8	10	13	12

Technical data

	SCAL CTH2			SCAL CTY		
	SCAL 300CTH2-5	**SCAL 500CTH2-10**	**SCAL 1000CTH2-15**	**SCAL 65CTY4**	**SCAL 120CTY5**	**SCAL 120CTY10**
Basket size W x D x H ***(mm)***	750 x 600 x 670	800 x 800 x 800	1000 x 1000 x 1000	370 x 440 x 410	550 x 550 x 400	550 x 550 x 400
Basket volume ***(litre)***	301	512	1000	66	121	121
Outer size W x D x H ***(mm)***	2640 x 2270 x 2100	2720 x 2460 x 2140	3140 x 2360 x 2285	2070 x 1840 x 2420	2155 x 1875 x 2420	2155 x 1875 x 2420
Min/Max cold cabinet temperature ***(°C)***	-85/+180			-75/+180	-80/+180	-85/+180
Min/Max hot cabinet temperature ***(°C)***	+60 /+180 (Option +220 °C)			+60 /+180 (Option +220 °C)		
Maximum authorised load on the basket ***(kg)***	100			30	40	40
Number of cabinets	2 (hot/cold)			3 (hot/room temp/cold)		
Intermediate cabinet (surrounding temp. of +5 to +20 °C standard) is either inert, ventilated or cooled.						
Available power at 20 °C ***(kW)***	9	14	14	6	8	12
Maximum recovery time in thermal shock mode ***(min)*** (basket sensor)						
from +150 °C to -65 °C when empty	11	7	10	7	7	6
from +150 °C to -65 °C with a 10 kg load	15	10	14	10	11	9
from +150 °C to -65 °C with a 40 kg load	21	14	20	14	14	13
from +150 °C to -40 °C when empty	8	5	7	5	5	4
from +150 °C to -40 °C with a 10 kg load	11	7	10	7	7	6
from +150 °C to -40 °C with a 40 kg load	15	10	10	10	10	9
ESS mode in cold cabinet from +150 °C to -60 °C ***(°C/min)***						
Speed according to standard IEC 60068-3-5	11	12	10	15	15	21
Actual point to point speed	10	10	9	12	13	19

Technical data

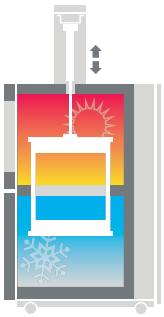
	SCAL CTH3			SCAL CTZ	SCAL CTHZ
	SCAL 300CTH3-10	**SCAL 500CTH3-15**	**SCAL 1000CTH3-22**	**SCAL 200CTZ5**	**SCAL 500CTHZ15**
Basket size W x D x H ***(mm)***	750 x 700 x 700	800 x 800 x 800	1000 x 1000 x 1000	700 x 700 x 400	800 x 800 x 800
Basket volume ***(litre)***	367	512	1000	196	512
Outer size W x D x H ***(mm)***	3540 x 2155 x 2310	3540 x 2155 x 2310	3540 x 2560 x 2420	1400 x 3020 x 3070	3540 x 2155 x 2310
Min/Max cold cabinet temperature ***(°C)***	-85/+180			-80/+180	-85/+180
Min/Max hot cabinet temperature ***(°C)***	+60/+180 (Option +220 °C)			+60 /+180 (Option +220 °C)	+60/+180 (Option +220 °C)
Maximum authorised load on the basket ***(kg)***	100			2 x 40	2 x 50
Number of cabinets	3 (hot/room temp/cold)			3 (hot/cold/hot)	3 (hot/cold/hot)
Intermediate cabinet (surrounding temp. of +5 to +20 °C standard) is either inert, ventilated or cooled.					
Available power at 20 °C ***(kW)***	14	20	14	9	20
Maximum recovery time in thermal shock mode ***(min)*** (basket sensor)					
from +150 °C to -65 °C when empty	7	6	10	8	6
from +150 °C to -65 °C with a 10 kg load	10	8	14	12	8
from +150 °C to -65 °C with a 40 kg load	14	11	20	15	11
from +150 °C to -40 °C when empty	5	4	7	6	4
from +150 °C to -40 °C with a 10 kg load	7	6	10	8	6
from +150 °C to -40 °C with a 40 kg load	10	8	14	11	8
ESS mode in cold cabinet from +150 °C to -60 °C ***(°C/min)***					
Speed according to standard IEC 60068-3-5	10	20	10	13	20
Actual point to point speed	9	18	9	11	18

Performances indicated with a water condenser (air condenser on some models).

SCAL CTK

Developed for high capacity **laboratory tests.**

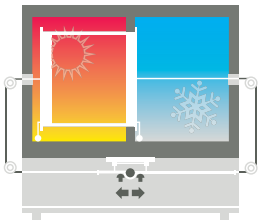
Basket volume
from 300 to 500 l



SCAL CTH2

The only line to offer such high capacity thermal shocks. Especially used in the automotive industry.

Basket volume
from 250 to 1500 l

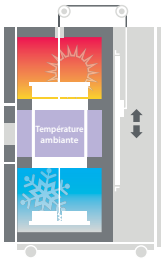


2 CABINETS
1 BASKET
HIGH CAPACITY

SCAL CTY

For tests requiring a passage **to ambiant temperature.**

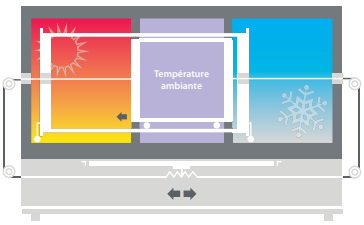
Basket volume
≤ 120 l



SCAL CTH3

Its original design, with two trolleys one inside the other, guarantees a perfect seal.

Basket volume
from 70 to 1500 l

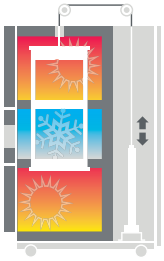


3 CABINETS
1 BASKET
PASSAGE to SURROUNDING TEMP.

SCAL CTZ

Double basket thermal shocks are used **to double the test volume capacity.**

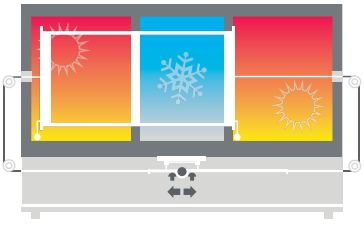
Basket volume
≤ 350 l



SCAL CTHZ

The horizontal version, with 3 cabinets and 2 baskets, doubles your test volume and **makes very high capacity thermal shock tests possible.**

Basket volume
from 250 to 1500 l



3 CABINETS
2 BASKETS
DOUBLE THE VOLUME

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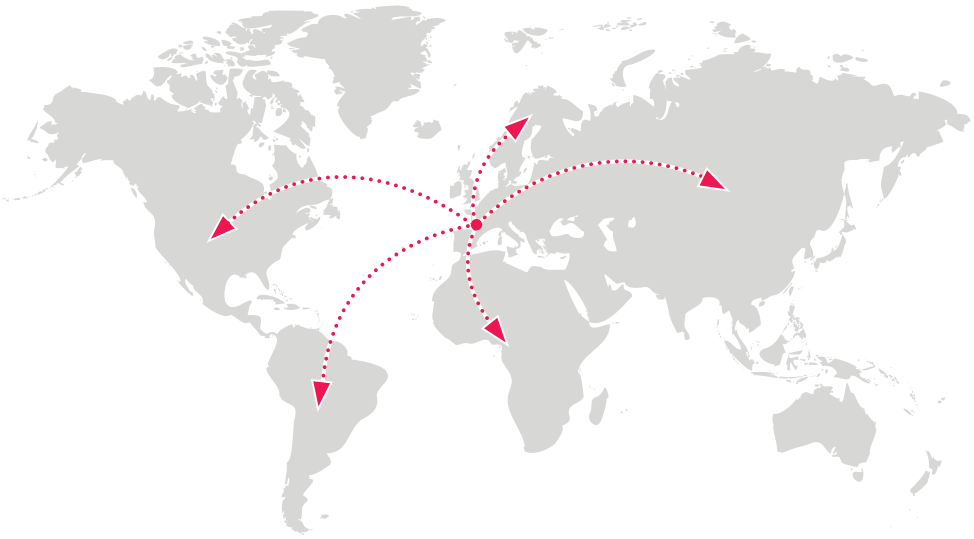
PLEASE ENQUIRE FOR OTHER VOLUMES OR PERFORMANCES

A STEP FURTHER®

AN **INTERNATIONAL** PRESENCE



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Our partners market and service Climats equipment all over the world ; they are fully skilled in our technology and fully committed to a long-term relationship.

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