SWEATLOG

MICROCLIMATE AND COMFORT
AT THE HUMAN-TEXTILE INTERFACE

An optimal balance between heat and humidity is a crucial aspect for comfort around humans. *SWEATOLOG* provides insight into the heat-humidity interaction between human and surrounding textiles with intelligent sensor solutions.

Comfort is a question of perceived heat. A concept which is captured within a microclimate. In the context of textiles, this microclimate is a result of the human thermo-regulation interacting with the ambient climate. Under standardized conditions it carries a comfort blueprint which allows to differentiate ready-made textile solutions.

SWEATLOG measures and visualizes these interactions either by human heat and sweat input or by heat-sweat simulators (e.g. *SWEATOR*, see separate factsheet). It is a combination of data logging and sensors tracking temperature (T) and relative humidity (RH).

We offer *SWEATLOG BodyView, SleepView, SeatView,* and *HeadView.* (see images above)

Please contact us in case of further questions. Prices and delivery times on request.

PRODUCT FEATURES

- Simple handling
- Highly reliable technology
- Available as stand-alone sensors (flexibility)
- Available as fixed sensor arrays (short setup)
- PC independent usage
- Stationary use with PC
- USB interface
- Compatible to all *SWEATOR* products (see separate factsheet)

FIELDS OF APPLICATION

- Climate measurement in one or various layers of textile systems such as apparel, work wear, fashion wear, mattresses, helmets, socks, seating systems, and more
- Detection of heat and humidity transportation through finished products
- Optimization of heat and ventilation cycles
- Development of intelligent climate algorithms
- Comparison of the climate features of various materials
- Measurable presentation of "perceived" heat under standardized conditions

SWEATLOG *SeatView*

SeatView has been designed for seating devices of all kinds. A fixed array of sensors within a mesh structure allows for instant setup and data measurement. Placed on either the cushion or back rest areas of a seat, *SeatView* tracks and visualizes the developing microclimate live as it appears. See technical data for sensor and data logger specifications further below.


TECHNICAL DATA

Shapes:	*SeatView 24+1 M*	SWEATLOG unit with one 42 x 42 cm measurement area within a 47 x 47 cm mat, plus 1 sensor for ambient climate tracking.
	SeatView 24+1 L	Like M with one 45 x 45 cm measurement area within a 50 x 50 cm mat.
	SeatView 31+1 M	Like 24+1 L with 7 further sensors in two additional columns. Increased climate representation, higher resolution.
	SeatView 31+1 L	Like 31+1 M but stretched to a 50 x 65 cm mat size.
	Cables	On demand for power supply, logger connection, and external sensor set-off.
Data output:	T (°C), RH (%), AH (g/kg), HI (°C) = perceived T, time, visualization optional.	
Data evaluation:	MS Excel or similar. We offer custom made evaluation files based on MS Excel.	
Data visualisation:	Yes, see evaluation examples below.	

SPECIAL FIELDS OF APPLICATION

- Live microclimate tracking in car seats, agricultural vehicles, aircraft seats, wheelchairs, etc. Human occupant supported heat and sweat input. Remote usage, no PC necessary.
- Based on standardized test setups with *SWEATOR* the data is highly reproducible.
- *SWEATOR TORSO* supported measurements in lab environments on sleep systems. Several mats may be connected to track various mattress layers parallel.
- *SWEATOR SKIN* supported measurements on seating devices. In combination with BodyView the seat core may be measured parallel.
- Compatible to *SWEATOR TORSO* and *SKIN* simulation devices (see *SWEATOR* factsheet). Under standardized test conditions *SWEATOR* and *SWEATLOG* data is highly reproducible.

SWEATLOG *SleepView*
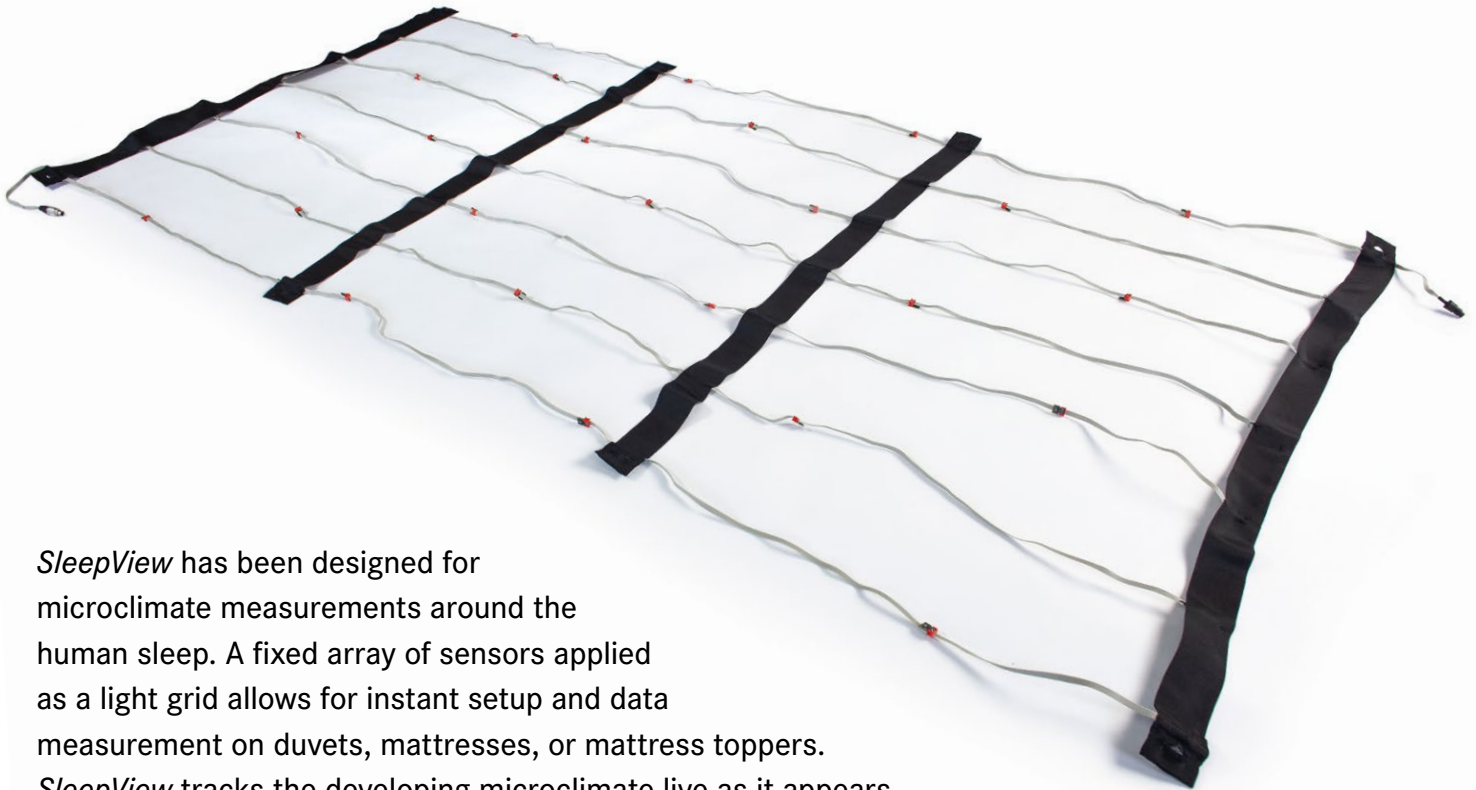
SleepView has been designed for microclimate measurements around the human sleep. A fixed array of sensors applied as a light grid allows for instant setup and data measurement on duvets, mattresses, or mattress toppers. *SleepView* tracks the developing microclimate live as it appears over the course of a night sleep or in lab simulations.
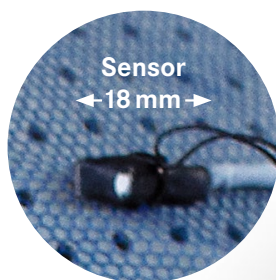
TECHNICAL DATA

Shapes:	*SleepView 31+1*	SWEATLOG unit with one approx. 180 x 70 cm measurement area shaped as a grid, plus 1 sensor for ambient room climate tracking. Designed for human borne data in live sleep tests.
	Cables	On demand for power supply, logger connection, and external sensor set-off.
Data output:	T (°C), RH (%), AH (g/kg), HI (°C) = perceived T, time, visualization optional	
Data evaluation:	TXT-file on SD-card. We offer custom made evaluation files based on MS Excel.	
Data visualisation:	*SleepView* offers an image of the given area.	

SPECIAL FIELDS OF APPLICATION

- Live microclimate tracking during sleep. Human bourne heat and sweat input. Remote usage, no PC necessary. E.g. sleep labs, home care.
- Qualitative comparison of bedding devices and sleep systems.
- Compatible to *SWEATOR TORSO* simulation devices (see *SWEATOR* factsheet).

SWEATLOG *HeadView*

HeadView is a combination of *SeatView* and *BodyView* and has been designed for head protection devices of all kinds. A fixed array of sensors applied to a wearable hood allows for instant setup and data measurement over the head area. *HeadView* tracks and visualizes the developing microclimate live as it appears.
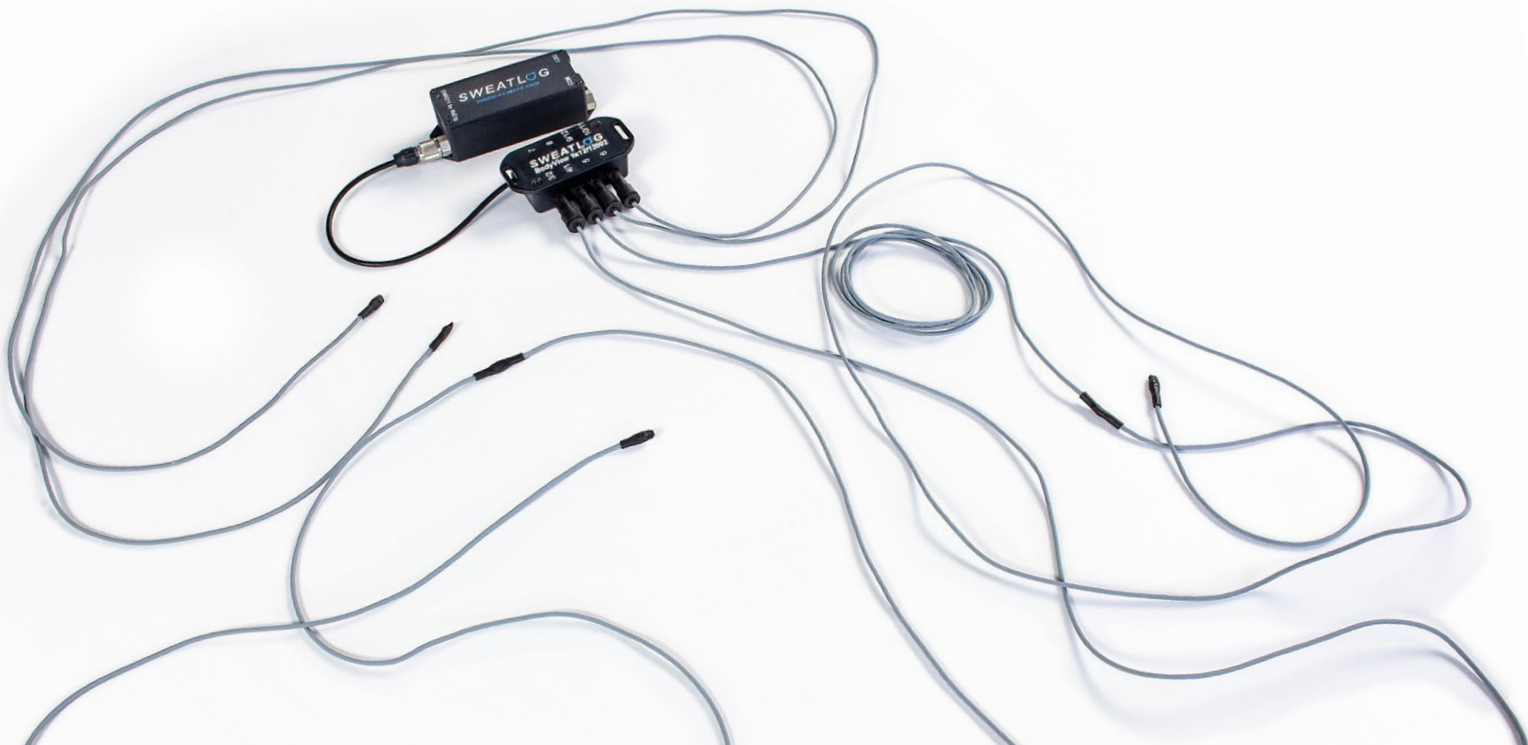
Sensor
←18 mm→

SWEATOR HEAD
Simulator of the human thermoregulation by emitting heat and water vapor
provided by: INSIDE CLIMATE GmbH · www.inside-climate.com

SWEATLOG
INSIDE-CLIMATE.COM

TECHNICAL DATA

Shapes:	*HeadView 14+1*	**SWEATLOG** unit with a hood (e. g. baclava or lighter) equipped with a fixed array of 14 sensors.
	Cables	On demand for power supply, logger connection, and external sensor set-off.
Data output:	T (°C), RH (%), AH (g/kg), HI (°C) = perceived T, time, visualization optional	
Data evaluation:	MS Excel or similar. We offer custom made evaluation files based on MS Excel.	
Data visualisation:	Yes, *HeadView* is the image of 14 sensors embedded in a 24 sensors array.	

SPECIAL FIELDS OF APPLICATION

- Live microclimate tracking in head protection devices. Human borne heat and sweat input. Remote usage, no PC necessary.
- *SWEATOR HEAD* supported measurements under standardized test conditions. Highly reproducible data (see *SWEATOR* factsheet).

SWEATLOG *BodyView*

INSIDE CLIMATE

BodyView has been designed to gain maximum flexibility with sensor placement and data tracking. It allows to equip and investigate nearly every ready-made textile or semi-textile product. Alternatively, also rooms or other spatial structures. See technical data for sensor and data logger specifications further below.
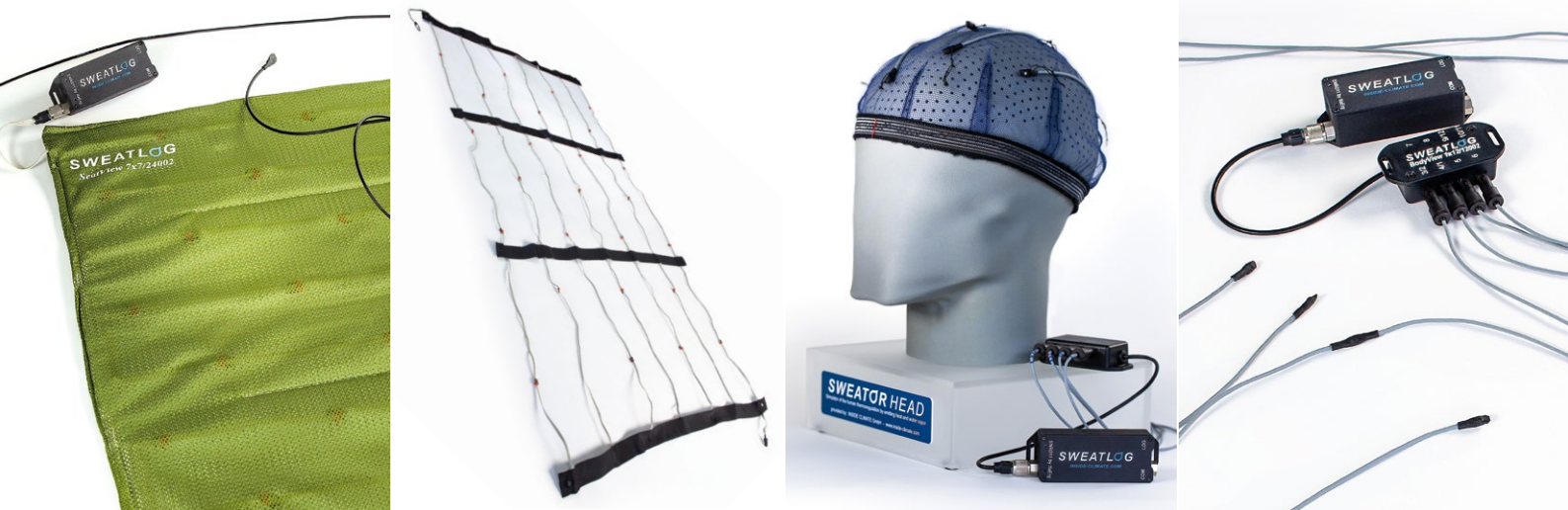

TECHNICAL DATA

Shapes:	*BodyView S*	*SWEATLOG* unit with 4 to 8 stand-alone sensors, cable lengths on demand.
	BodyView DS	*SWEATLOG* unit with 9 to 16 sensors per unit. Above 8 each cable has one additional sensor. Distance and cable lengths on demand.
	BodyView L	Up to 32 fixed sensors in one cable line with desired distances. Extensions on demand.

Data output:	T (°C), RH (%), AH (g/kg), HI (°C) = perceived T, time
Data evaluation:	TXT-file on SD-card. We offer custom made evaluation files based on MS Excel.
Data visualisation:	Not advised but optional

SPECIAL FIELDS OF APPLICATION

- Outdoor test measurements with humans, e.g. apparel, shoes, head protection, work wear, fashion wear, footwear.
- Complex products and bodies, e.g. car seats, aircraft seats, hospital mattresses, wheelchairs.
- Any larger space indicating a microclimate challenge.
- *SWEATOR* supported measurements under standardized test conditions.

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INSIDE CLIMATE

TECHNICAL SENSOR AND LOGGER DATA

Relative humidity (RH)

Measurement range:	0 – 100 % RH, fully dewable
Accuracy:	+/- 2 % RH (stand-alone sensors)
	+/- 0,3° C (fixed array sensors)
Resolution:	0,01 % RH

Temperature (T)

Measurement range:	-40°C - + 80°C
Accuracy:	+/- 0,3°C
Resolution:	0,1°C

Data logger (may vary)

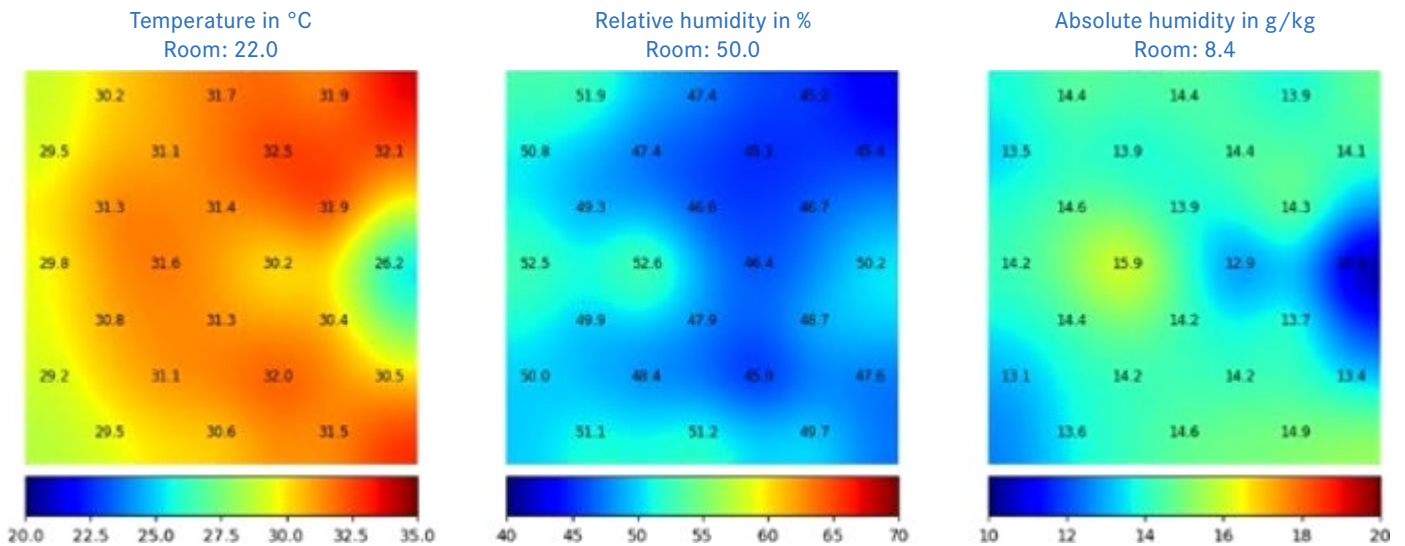|	
Size:	approx. 100 x 35 x 26 mm
Weight:	approx. 50 g
Storage:	SD card
Data format:	txt file
Interface:	USB 2.0
Measurement interval:	5, 10, 15, 20, ... sec
Modes:	Live (PC), Log (SD-card)
Energy:	Standard power bank or PC
Operating software:	SWEATLOG.exe

System requirements

Platform:	IBM compatible PC
OS:	Windows 10 or higher
Additional Software:	MS Excel 2000 or higher

Data output

General:	T (°C), RH (%), t (sec), AH (g/kg), HI (°C) = heat index = perceived heat expression
With *SWEATOR* simulation:	Q (W/m²), R (m²K/W; m²Pa/W), MVTR (g/m²/h), under standardized conditions
CE-conformity:	yes

SWEATLOG

EVALUATION EXAMPLES – Qualitative (human) and quantitative (*SWEATOR*) test results

Heat and humidity map of a human on a car seat cushion, facing right.

Temperature in °C
Room: 22.0

Relative humidity in %
Room: 50.0

Absolute humidity in g/kg
Room: 8.4

HUMAN and *SWEATOR* based microclimate development – identical set of 3 comparable duvets.

Temperature (°C) avg, HUMAN (night sleep)

Rel. Humidity (%) avg, HUMAN (night sleep)

Temperature (°C) avg, SWEATOR simulation

Rel. Humidity (%) avg, SWEATOR simulation

QZV Certified:
DIN EN ISO 9001