

USER MANUAL

Data Loggers Class 320

TABLE OF CONTENTS

1 SAFETY INSTRUCTIONS.....	4
1.1 Precautions.....	4
1.2 Symbols.....	4
2 DEVICE COMPONENTS.....	5
2.1 Use.....	5
2.2 Applications.....	5
2.3 Selection.....	5
2.4 Layout.....	6
2.5 Buttons.....	6
2.6 LEDs.....	6
2.7 Connections.....	6
2.8 Mounting.....	6
3 TECHNICAL FEATURES.....	7
3.1 Devices.....	7
3.2 Programmed units.....	9
3.3 Free units.....	9
3.4 Housing.....	10
3.5 Directive: FCC part 15.....	10
3.6 Optional probes and cables for KT 320 data loggers.....	11
3.7 Thermocouple probes for KTT 320 data loggers.....	12
3.8 Connect a probe to the universal input.....	12
3.9 Connect a probe to the thermocouple input.....	12
3.10 Dimensions.....	13
3.10.1 Devices.....	13
3.10.2 Wall mount (option).....	13
3.11 Warranty period.....	13
4 USE OF THE DEVICE.....	14
4.1 Display.....	14
4.2 Function of LEDs.....	14
4.3 Configuration, data logger download and data processing with the KILOG software.....	15
4.4 Function of buttons.....	15
4.4.1 Groups organization.....	17
4.4.2 Measurements scroll.....	17
4.5 PC communication.....	18
5 BLUETOOTH® FUNCTION.....	19
6 MAINTENANCE.....	19
6.1 Replace the batteries.....	19
6.2 Device cleaning.....	19
6.3 Safety lock wall mount with padlock.....	19
7 CALIBRATION.....	20
7.1 KCC 320: perform a CO ₂ measurement verification.....	20
7.2 KP 320 – KP 321: perform an auto-zero.....	20
8 ACCESSORIES.....	21
9 TROUBLESHOOTING.....	21

1 SAFETY INSTRUCTIONS

1.1 Precautions

Please always use the device in accordance with its intended use, and within the parameters described in the technical features page 7 in order not to compromise the protection ensured by the device.

1.2 Symbols

For your safety and in order to avoid damage to the device, please follow the procedures described in this user manual and carefully read the notes that are preceded by the following symbol:



The following symbol will also be used in this user manual:

Please carefully read the information notes indicated after this symbol.



2 DEVICE COMPONENTS

2.1 Use

The class 320 Sauermann data loggers measure several parameters:

- KT 320: internal measurement of temperature with two universal inputs for probe
- KCC 320: internal measurement of temperature, humidity, atmospheric pressure and CO₂
- KP 320 – KP 321: internal measurement of differential pressure with two measuring ranges
- KPA 320: internal measurement of temperature, humidity and atmospheric pressure
- KTT 320: model with four thermocouple inputs

Communication between device and PC is carried out with a USB cable with a micro-USB female connector.

The low-energy Bluetooth® communication (option to deactivate this function) for communication with smartphones and tablets, operating with Android and IOS.

2.2 Applications

The Sauermann data loggers are ideal for multiple surveillance parameters (temperature, humidity, light, current, voltage, pulse, relative pressure). They ensure traceability in the food industry environment, as well as validate that industrial installations are functioning properly.



2.3 Selection

Part No.	Display	Internal sensors		External sensors		Parameters	Number of recording points
		Number	Type	Number	Type		
KT 320	✓	1	Temperature	2	Inputs for smart plug* probes	Temperature, humidity, current, voltage & pulse	2,000,000
KCC 320		4	Temperature, humidity, atmospheric pressure & CO ₂	N/A		Temperature, humidity, atmospheric pressure & CO ₂	
KP 320		1	Differential pressure			Differential pressure	
KP 321							
KPA 320		3	Temperature, humidity & atmospheric pressure			Temperature, humidity & atmospheric pressure	
KTT 320		N/A		4	Inputs for thermocouple** probes	Temperature	


* Input allows compatibility with multiple probes with automatic recognition and the adjustment parameters storage which make them 100% interchangeable. Reference page 11 for further information.


** More details about thermocouple probes on page 11.

2.4 Layout



2.5 Buttons

 **OK button:** start and stop the dataset, or switch between scrolling group, see page 15.

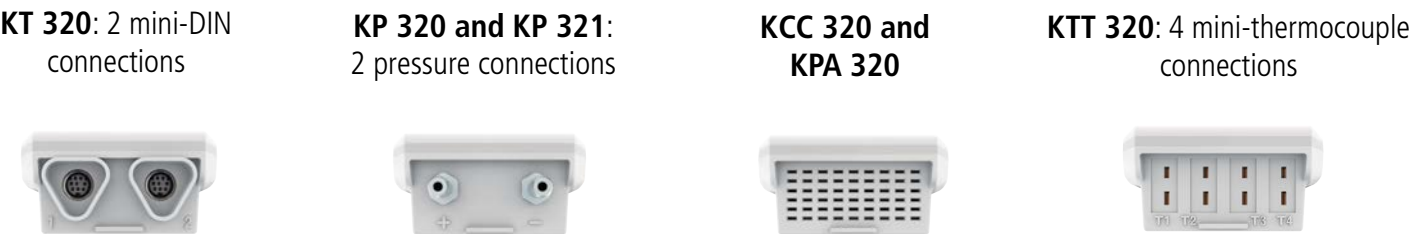
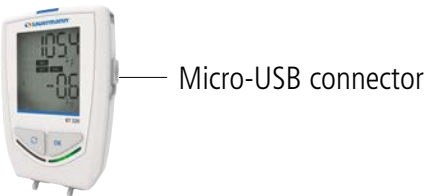
 **Selection button:** select between values in a scrolling group, see page 15.

2.6 LEDs



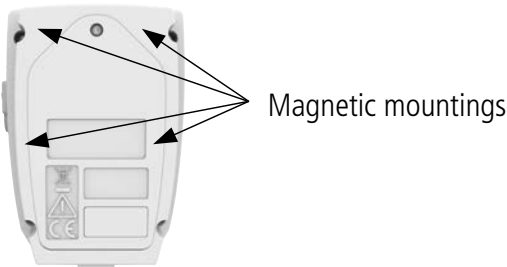
2.7 Connections

The communication between the device and the computer is carried out via a USB cable with a female micro-USB connector.



2.8 Mounting

The class 320 data loggers are equipped with a magnetic case for easy mounting.



3 TECHNICAL FEATURES

3.1 Devices

	KT 320	KTT 320
Parameter	Temperature, humidity, current, voltage, pulse	Temperature
Units displayed¹	$^{\circ}\text{F}$, $^{\circ}\text{C}$, $^{\circ}\text{F}_{\text{td}}$, $^{\circ}\text{C}_{\text{td}}$, %RH, mV, V, mA, A Programmed units: please see the class 320 data loggers user manual. Free units: for the free units creation, please see the KILOG software user manual.	$^{\circ}\text{F}$, $^{\circ}\text{C}$ The KTT 320 data loggers require optional thermocouple probes, reference page 12 for further information.
Resolution	0.1 $^{\circ}\text{F}$, 0.1 $^{\circ}\text{C}$, 0.1%RH, 1 mV, 0.001 V, 0.001 mA, 0.1 A	0.1 $^{\circ}\text{F}$, 0.1 $^{\circ}\text{C}$
External input	Micro-USB female connector	Micro-USB female connector
Input for probe	2 smart-plug ² inputs	4 inputs for thermocouple ³ probes (K, J, T, N, S)
Internal sensor	Temperature	N/A
Type of sensor	Thermistor (NTC)	Thermocouple
Measuring ranges	Internal sensor ⁴ : -40 to 158 $^{\circ}\text{F}$ (-40 to 70 $^{\circ}\text{C}$)	K: -328 to 2372 $^{\circ}\text{F}$ (-200 to 1300 $^{\circ}\text{C}$) J: -148 to 1382 $^{\circ}\text{F}$ (-100 to 750 $^{\circ}\text{C}$) T: -328 to 752 $^{\circ}\text{F}$ (-200 to 400 $^{\circ}\text{C}$) N: -328 to 2372 $^{\circ}\text{F}$ (-200 to 1300 $^{\circ}\text{C}$) S: 32 to 3200 $^{\circ}\text{F}$ (0 to 1760 $^{\circ}\text{C}$)
Accuracies⁵	$\pm 0.8^{\circ}\text{F}$ from -4 to 158 $^{\circ}\text{F}$ $(\pm 0.4^{\circ}\text{C}$ from -20 to 70 $^{\circ}\text{C})$ $\pm 1.5^{\circ}\text{F}$ below -4 $^{\circ}\text{F}$ $(\pm 0.8^{\circ}\text{C}$ below -20 $^{\circ}\text{C})$	K, J, T, N: $\pm 0.8^{\circ}\text{F}$ from 32 to 2372 $^{\circ}\text{F}$ $(\pm 0.4^{\circ}\text{C}$ from 0 to 1300 $^{\circ}\text{C})$ $\pm (0.3\%$ of the reading $+0.8^{\circ}\text{F})$ below 32 $^{\circ}\text{F}$ $(\pm (0.3\%$ of the reading $+0.4^{\circ}\text{C})$ below 0 $^{\circ}\text{C})$ S: $\pm 1.1^{\circ}\text{F}$ ($\pm 0.6^{\circ}\text{C}$)
Alarm set points	2 alarm set points per channel	2 alarm set points per channel
Frequency of measurement	1 s to 24 h	1 s to 24 h
Operating temperature	-40 to 158 $^{\circ}\text{F}$ (-40 to 70 $^{\circ}\text{C}$)	-4 to 158 $^{\circ}\text{F}$ (-40 to 70 $^{\circ}\text{C}$)
Storage temperature	-40 to 185 $^{\circ}\text{F}$ (-40 to 85 $^{\circ}\text{C}$)	-40 to 185 $^{\circ}\text{F}$ (-40 to 85 $^{\circ}\text{C}$)
Battery life	7 years ⁶	7 years ⁶
Warranty	1 year	1 year
Directives	2011/65EU RoHS II; 2012/19/EU WEEE; FCC part 15 ⁷ ; UL 61010	

¹ Some units are available only with optional probes.

² Input allows compatibility with multiple probes. Reference page 11 for further information.

³ The KTT 320 data loggers require optional thermocouple probes, reference page 12 for further information.

⁴ Other measuring ranges are available according to the connected probe: see optional probes and cables page 11.

⁵ All accuracies specified in this document were conducting in laboratory conditions and can be guaranteed for measurement carried out in the same conditions, or carried out with calibration compensation.

⁶ On the basis of 1 measurement each 15 minutes at 77 $^{\circ}\text{F}$ (25 $^{\circ}\text{C}$).

⁷ More details about FCC part 15 directive on page 10.

	KCC 320	KPA 320
Units displayed	°F, °C, %RH, hPa, ppm	°F, °C, %RH, hPa
Resolution	0.1 °F, 0.1 °C, 1 ppm, 0.1 %RH, 1 hPa	0.1 °F, 0.1 °C, 0.1%RH, 1 hPa
External input	Micro-USB female connector	Micro-USB female connector
Input for probe	N/A	N/A
Internal sensor	Humidity, temperature, atmospheric pressure, CO ₂	Humidity, temperature, atmospheric pressure
Type of sensor	Capacitive, piezoresistive, NDIR	Capacitive, piezoresistive
Measuring ranges	Temp.: -4 to 158°F (-20 to 70°C) Humidity: 0 to 100 %RH Atm. pressure: 800 to 1100 hPa CO ₂ : 0 to 5000 ppm	Temp.: -4 to 158°F (-20 to 70°C) Humidity: 0 to 100%RH Atm. pressure: 800 to 1100 hPa
Accuracies¹	Temp.: ±0.8°F from 32 to 122°F (±0.4°C from 0 to 50°C) ±1.5°F below 32°F or above 122°F (±0.8°C below 0°C or above 50°C) Humidity ² : ±2%RH from 5 to 95% @ 59 to 77°F (15 to 25°C) Atm. pressure: ±3 hPa CO ₂ : ±50 ppm ±3% of the reading	Temp.: ±0.8°F from 32 to 122°F (±0.4°C from 0 to 50°C) ±1.5°F below 32°F or above 122°F (±0.8°C below 0°C or above 50°C) Humidity ² : ±2%RH from 5 to 95% @ 59 to 77°F (15 to 25°C) Atm. pressure: ±3 hPa
Alarm set points	2 alarm set points per channel	2 alarm set points per channel
Frequency of measurements	15 s to 24 h	1 s to 24 h
Operating temperature	32 to 122°F (0 to 50°C)	32 to 122°F (0 to 50°C)
Storage temperature	-40 to 185°F (-40 to 85°C)	-40 to 185°F (-40 to 85°C)
Battery life	3 years ³	7 years ³
Warranty	1 year	1 year
Directives	2011/65EU RoHS II; 2012/19/EU WEEE; FCC part 15 ⁴ ; UL 61010	

¹ All accuracies specified in this document were conducted in laboratory conditions and can be guaranteed for measurement carried out in the same conditions, or carried out with calibration compensation.

² Factory calibration tolerance: ±0.88 %RH. Temperature dependence: $\pm 0.04 \times [(T - 32) \times 5/9] - 20$ %RH (if $T \leq 59^\circ\text{C}$ or $T \geq 77^\circ\text{F}$) / $\pm 0.04 \times (T - 20)$ %RH (if $T \leq 15^\circ\text{C}$ or $T \geq 25^\circ\text{C}$)

³ On the basis of 1 measurement each 15 minutes at 77°F (25°C).

⁴ More details about FCC part 15 directive on page 10.

	KP 320	KP 321
Units displayed	Pa	Pa
Measuring range	±1000 Pa	±10,000 Pa
Resolution	1 Pa	1 Pa
Accuracies ¹	±0.5% of the reading ±3 Pa	±0.5% of the reading ±30 Pa
External input	Micro-USB female connector	Micro-USB female connector
Input for probe	2 pressure connections	2 pressure connections
Internal sensor	Differential pressure	Differential pressure
Operating temperature	41 to 122°F (5 to 50°C)	41 to 122°F (5 to 50°C)
Storage temperature	-40 to 185°F (-40 to 85°C)	-40 to 185°F (-40 to 85°C)
Alarm set points	2 alarm set points per channel	2 alarm set points per channel
Frequency of measurements	1 s to 24 h	1 s to 24 h
Battery life	7 years ²	7 years ²
Warranty	1 year	1 year
Directives	2011/65EU RoHS II; 2012/19/EU WEEE; FCC part 15 ³ ; UL 61010	

¹ All accuracies specified in this document were conducted in laboratory conditions and can be guaranteed for measurement carried out in the same conditions, or carried out with calibration compensation.

² On the basis of 1 measurement each 15 minutes at 77°F (25°C).

³ More details about FCC part 15 directive below.

3.2 Programmed units

The available programmed units for KT 320 and KTT 320 data loggers are:

- m/s • °F • PSI • mmHg • °C_{td} • mA • tr/min • ppm
- fpm • °C • Pa • mbar • °F_{td} • A • rpm
- m³/s • %HR • mmH₂O • g/Kg • °C_{tw} • mV
- K • inWg • bar • °F_{tw} • V
- kPa • hPa • kJ/kg
- daPa

3.3 Free units

For the free units creation, please see the **KILOG software** user manual.

3.4 Housing

Dimensions	KT320: 4.5" x 3.11" x 1.39" (113.2 x 79 x 35.4 mm) KTT 320, KCC 320, KPA 320: 4.34" x 3.11" x 1.39" (110.2 x 79 x 35.4 mm) KP 320, KP 321: 4.7" x 3.11" x 1.39" (119.7 x 79 x 35.4 mm)
Weight	KT 320, KCC 320, KP 320, KP 321: 7.27 oz (206 g) KTT 320 and KPA 320: 7.05 oz (200 g)
Display	2-line LCD screen Screen: 1.94" x 1.77" (49.5 x 45 mm) 2 indication LEDS (red and green)
Control	1 OK button 1 Selection button
Material	Compatible with food industry environment ABS housing
Protection	IP 65: KT 320, KP 320 and KP 321 ¹ IP 54: KTT 320 ² IP 40: KCC 320 and KPA 320
PC communication	Micro-USB female connector USB cable
Battery power supply	2 double AA lithium 3.6 V batteries
Environmental conditions of use	Non-corrosive or combustible gases Hygrometry: in non condensing conditions Altitude: 6561' (2000 m)

¹ With the pressure connectors plugged for KP 320 and KP 321.

² With all the thermocouple probes connected.

3.5 Directive: FCC part 15



Changes or modifications not expressly approved by Sauermann could void the user's authority to operate the equipment.




This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception which can be determined by turning the equipment off and on, the user is encouraged to try to correct interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

3.6 Optional probes and cables for KT 320 data loggers









All the probes for the **KT 320** data loggers have the **smart plug** technology. An automatic recognition and the adjustment parameters storage make them 100% interchangeable.

Part No.	Description	Measuring ranges	Accuracies*	Image & dimensions
<i>External or ambient thermo-hygrometric probes</i>				
KITHA	Interchangeable hygrometry and ambient temperature probe	0 to 100%RH -4 to 158°F (-20 to 70°C)	±2%RH from 5 to 95%RH @ 59°F to 77°F (15 to 25°C) Temp: ±0.8°F from 32 to 122°F (±0.4°C from 0 to 50°C) ±1.5°F below 32°F or above 122°F (±0.8°C below 0°C or above 50°C)	 3.7" (94.5 mm)
KITHP-130	Remote interchangeable hygrometry and temperature probe	0 to 100%RH -4 to 158°F (-20 to 70°C)	±2%RH from 5 to 95%RH @ 59°F to 77°F (15 to 25°C) Temp: ±0.8°F from 32 to 122°F (±0.4°C from 0 to 50°C) ±1.5°F below 32°F or above 122°F (±0.8°C below 0°C or above 50°C)	 5.12" (130 mm)
KITHI-150	Remote interchangeable hygrometry and temperature probe	0 to 100% RH -40 to 356°F (-40 to 180°C)	±1.5%RH from 5 to 95%RH @ 59 to 77°F (15 to 25°C) ±0.6°F from -40 to 32°F ±(0.2% of reading +0.6°F) from 32 to 356°F (±0.3% of reading ±0.25°C)	 5.9" (150 mm)
<i>General use or insertion Pt100 temperature probes</i>				
KIRGA-50	Immersion probe (IP 65)	-40 to 248°F (-40 to 120°C)	±0.6°F from -40 to 32°F ±(0.3% of reading +0.5°F) from 32 to 248°F (±0.4% of the reading +0.3°C) from -40 to 120°C)	 Ø0.24" x 1.97" (Ø6 x 50 mm)
KIRGA-150	Immersion probe (IP 65)	-40 to 248°F (-40 to 120°C)	±0.6°F from -40 to 32°F ±(0.3% of reading +0.5°F) from 32 to 248°F (±0.4% of the reading +0.3°C from -40 to 120°C)	 Ø0.24 x 5.9" (Ø6 x 150 mm)
KIRAM-150	Ambient probe	-40 to 248°F (-40 to 120°C)	±0.6°F from -40 to 32°F ±(0.3% of reading +0.5°F) from 32 to 248°F (±0.4% of the reading +0.3°C from -40 to 120°C)	 Ø0.24 x 5.9" (Ø6 x 150 mm)
KIRPA-150	Penetration probe (IP 65)	-58 to 482°F (-50 to 250°C)	±0.6°F from -58 to 32°F ±(0.3% of reading +0.5°F) from 32 to 482°F (±0.4% of the reading +0.3°C from -50 to 250°C)	 Ø0.24 x 5.9" (Ø6 x 150 mm)
KIPI3-150-E	Penetration probe with handle (IP 68)	-58 to 482°F (-50 to 250°C)	±0.6°F from -58 to 32°F ±(0.3% of reading +0.5°F) from 32 to 482°F (±0.4% of the reading +0.3°C from -50 to 250°C)	 Ø0.12" x 5.9" (Ø3 x 150 mm)
KICA-320	Smart adapter for Pt100 probe	-328 to 1112°F according to the probe (-200 to 600°C)	N/A	 Ø0.12" x 5.9" (Ø3 x 150 mm)
<i>Input current, voltage and impulsion cables</i>				
KICT	Voltage input cable	0 to 5V or 0 to 10V	±0.2% of the measurement ±1mV	
KICC	Current input cable	0 to 20 mA or 4 to 20 mA	±0.2% of the measurement ±1µA	
KICI	Pulse input cable	Maximal voltage: 5V Type of input: TTL frequency counting Maximal frequency: 10 KHz		

* All accuracies specified in this document were conducted under laboratory conditions and can be guaranteed for measurements carried out in the same conditions, or carried out with compensation.

3.7 Thermocouple probes for KTT 320 data loggers

All the thermocouple temperature probes for the KTT 320 data loggers have a class 1 sensitive element as per IEC 584-1, 2 and 3 standards.

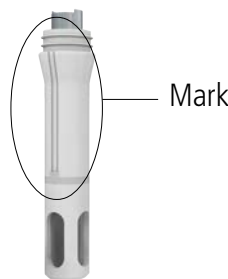
Part No.	Description	Measuring ranges	Accuracies*	T ₉₉ **	Image & dimensions
<i>Pipes</i>					
SKV 150	Contact probe with velcro Velcro fixing for Ø 3.94" (Ø 100 mm) maxi pipes with cable (Tc K)	-4 to 194°F (-20 to 90°C)	±2.7°F (±1.5°C)	50 s	
SKCT	Contact probe with lamella for Ø 0.34" to 1.97" pipes (Ø 10 to 50 mm) with spring handle and straight cable (Tc K)	-40 to 302°F (-40 to 150°C)	±2.7°F (±1.5°C)	15 s	
<i>Contact</i>					
SCLK 150	Contact probe with lamella with handle and coiled cable (Tc K)	-40 to 482°F (-40 to 250°C)	±2.7°F (±1.5°C)	5 s	 5.9" (150 mm) Ø0.59" (Ø15 mm)
SCLCK 150	Contact probe with lamella, angled at 90° with handle and coiled cable (Tc K)	-40 to 482°F (-40 to 250°C)	±2.7°F (±1.5°C)	5 s	 5.9" (150 mm) Ø0.59" (Ø15 mm)
<i>Penetration</i>					
SPK 150	Penetration probe. Stainless steel contact tip with pointed contact tip, handle and coiled cable (Tc K)	-40 to 482°F (-40 to 250°C)	±2.7°F (±1.5°C)	30 s	 5.9" (150 mm) Ø0.12" (Ø3 mm)
<i>Immersion</i>					
SIT 300 BT	Very low temperature immersion probe. Deformable lined contact tip with handle and coiled cable. (Tc T)	-328 to 122°F (-200 to 50°C)	±1.5% of reading from -328 to -88.6°F (±1.5% of reading from -200 to -67°C) ±1.8°F from -88.6 to -40°F (±1°C from -67 to -40°C) ±0.9°F from -40 to 122°F (±0.5°C from -40 to 50°C)	2 s	 11.81", Ø0.06" (300 mm, Ø1.5 mm)

* All accuracies specified in this document were conducted under laboratory conditions and can be guaranteed for measurements carried out in the same conditions, or carried out with compensation.

** Response time. Under application condition.

3.8 Connect a probe to the universal input

- Open the mini-DIN connection cap on the bottom of the data logger.
- Connect the probe in such a way the mark on the probe is facing the user.



3.9 Connect a probe to the thermocouple input

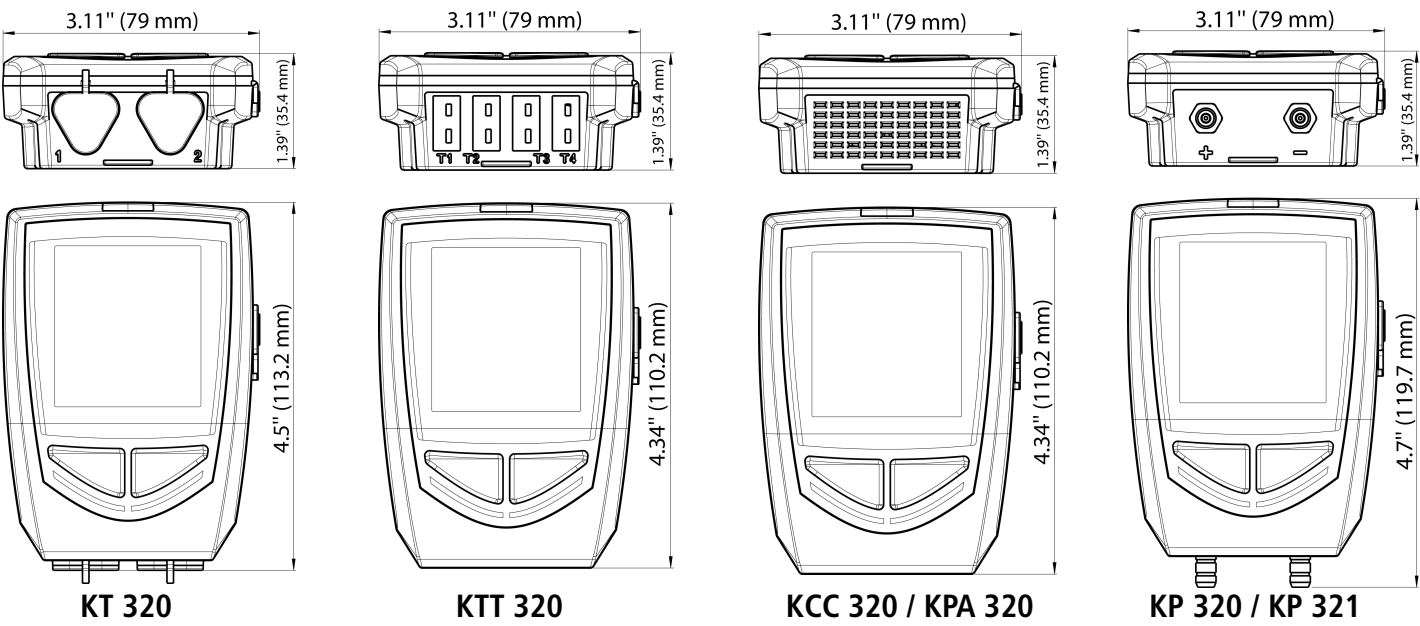
- To connect the thermocouple probe to the bottom of the device, the smallest thermocouple connection must be placed on top and the largest on the bottom of the plug.

Small thermocouple connection
Large thermocouple connection

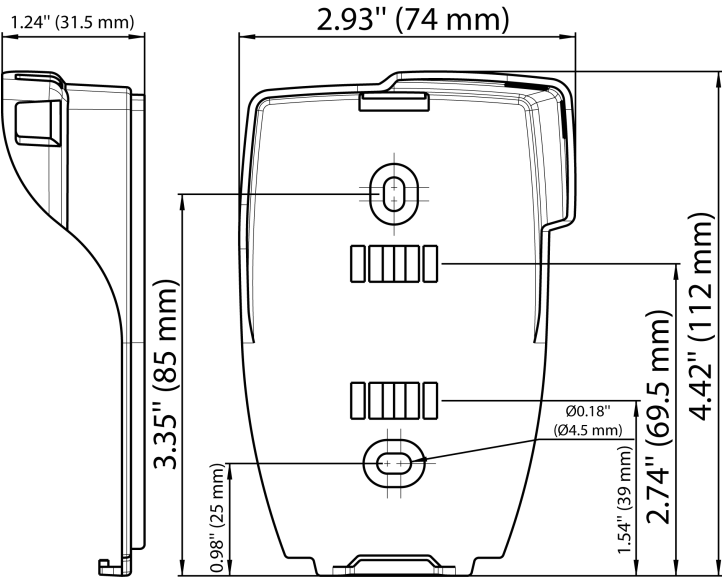


3.10 Dimensions

3.10.1 Devices



3.10.2 Wall mount (option)

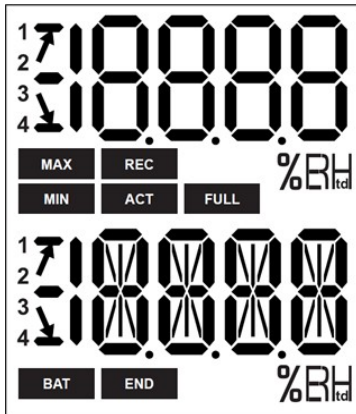


3.11 Warranty period

Sauermann data loggers have a 1-year warranty for any manufacturing defect (warranty returns must be processed through Sauermann's After-Sale Service Department).

4 USE OF THE DEVICE

4.1 Display



END DATASET is finished.

REC Indicates that one value is being recorded.
Flashing: the DATASET did not start.

FULL Flashing slowly: DATASET is between 80% and 90% of the storage capacity.
Flashing quickly: DATASET is between 90% and 100% of the storage capacity.
Constant: storage capacity full.

BAT Constant: indicates that the batteries have to be replaced.

ACT Screen actualization of measured values.

MIN
MAX The displayed values are the maximum/minimum values recorded for the channels displayed.

 Indicates the alarm action type: rising or falling.


 Temperature in °Fahrenheit.


 Temperature in °Celsius.

 Relative humidity

1 Indicates the channel number which is
2 measuring.
3
4

 The selected values to display during the configuration with the KILOG software will scroll on the screen every 3 seconds.

 The display can be activated or deactivated via the KILOG software.

 At extreme temperatures, the display can become difficult to read and the display speed can slow down at temperatures below 32°F (0°C). This has no effect on the measurement accuracy.

4.2 Function of LEDs



Alarm LED

If the red "Alarm" LED has been activated, it has 3 states:

- **Always OFF:** no setpoint alarms has been exceeded
- **Flashing quickly (5 seconds):** a threshold is currently exceeded on at least one channel
- **Flashing slowly (15 seconds):** at least one threshold has been exceeded during the dataset

Operating LED

If the green "ON" LED has been activated, it flashes every 10 seconds during the recording period.

4.3 Configuration, data logger download and data processing with the KILOG software

Please see the KILOG software user manual: "KILOG-classes-50-120-220-320".



The date and time updates automatically when a new configuration is loaded.












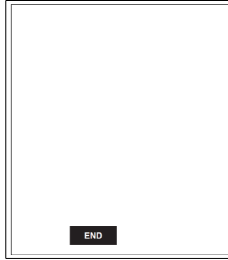

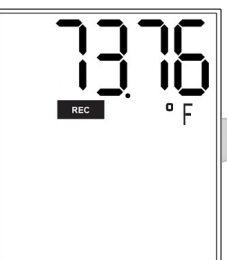





4.4 Function of buttons









OK button: start, stop the dataset or change of scrolling group like described in the following tables.



Selection button: scroll values in the scrolling group like described in the following tables.

Device state	Type of start/stop selected	Button used	Action generated	Illustration	
Waiting for start  flashes	Start: by button	 Hold for 5 seconds	Start of dataset		
	Stop: Not relevant in this mode.		Inactive		
	Start: by PC, date/time		Inactive		
	Stop: Not relevant in this mode.				
	Start: not relevant		Measurements scroll (group 1)*		
Dataset in progress	Start: Not relevant in this mode.	 Hold for 5 seconds	Stop of the dataset		
	Stop: by button				
	Start: Not relevant		Group change (groups 2 and 3)*	 	   
	Stop: Not relevant to change groups				


* Please see the summary table of the groups organization page 17.










Device state	Type of start/stop selected	Button used	Action generated	Illustration
REC			Group scrolling (groups 1, 2 and 3)*	
Dataset finished	There is no restart after the data set has ended.		Inactive	
	END		Measurements scroll*	

* Please see the summary table of the groups organization on page 17.


4.4.1 Groups organization

The table below summarizes the groups organization and measured values available during a measurement dataset.



	Group 1	Group 2	Group 3
	Measured temperature*	Max. value in temperature Min. value in temperature	High alarm threshold in temperature Low alarm threshold in temperature
	Measured humidity*	Max. value in humidity* Min. value in humidity*	High alarm threshold in humidity* Low alarm threshold in humidity*
	Measured CO ₂ *	Max. value in CO ₂ * Min. value in CO ₂ *	High alarm threshold in CO ₂ * Low alarm threshold in CO ₂ *
	Measured differential pressure*	Max. value in differential pressure* Min. value in differential pressure*	High alarm threshold in differential pressure* Low alarm threshold in differential pressure*
	Measured atmospheric pressure*	Max. value in atmospheric pressure* Min. value in atmospheric pressure*	High alarm threshold in atmospheric pressure* Low alarm threshold in atmospheric pressure*
	Parameter 1 of probe 1*	Max. value in Parameter 1 of probe 1* Min. value in Parameter 1 of probe 1*	High alarm threshold in Parameter 1 of probe 1* Low alarm threshold in Parameter 1 of probe 1*
	Parameter 2 of probe 1*	Max. value in Parameter 2 of probe 1* Min. value in Parameter 2 of probe 1*	High alarm threshold in Parameter 2 of probe 1* Low alarm threshold in Parameter 2 of probe 1*
	Parameter 1 of probe 2*	Max. value in Parameter 1 of probe 2* Min. value in Parameter 1 of probe 2*	High alarm threshold in Parameter 1 of probe 2* Low alarm threshold in Parameter 1 of probe 2*
	Parameter 2 of probe 2*	Max. value in Parameter 2 of probe 2* Min. value in Parameter 2 of probe 2*	High alarm threshold in Parameter 2 of probe 2* Low alarm threshold in Parameter 2 of probe 2*

Press  to switch group.

Press  to scroll values in the group.

4.4.2 Measurements scroll

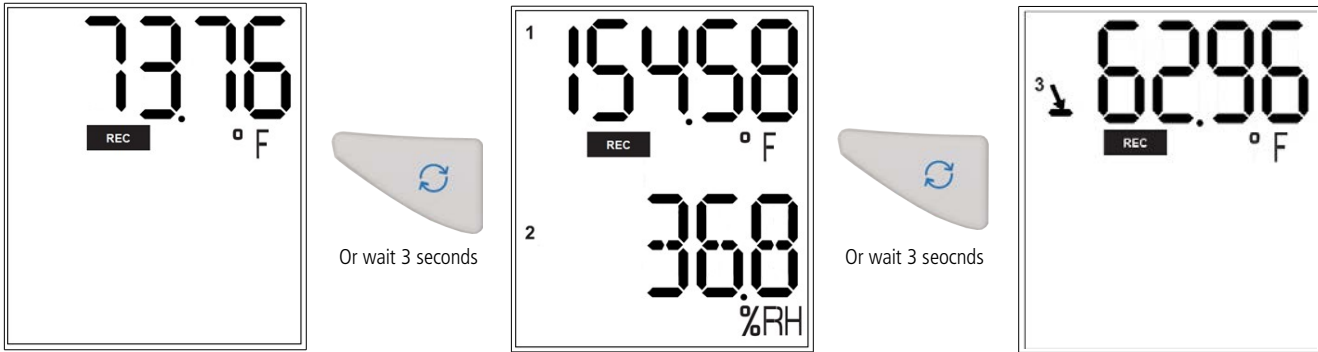
According to the selected parameters during the configuration and according to the type of device, the measurement scroll is carried out as follows:

Temperature* ➡ Humidity* ➡ CO₂* ➡ Differential pressure* ➡ Atmospheric pressure* ➡ Parameter 1 probe 1* ➡ Parameter 2 probe 1* ➡ Parameter 1 probe 2* ➡ Parameter 2 probe 2*

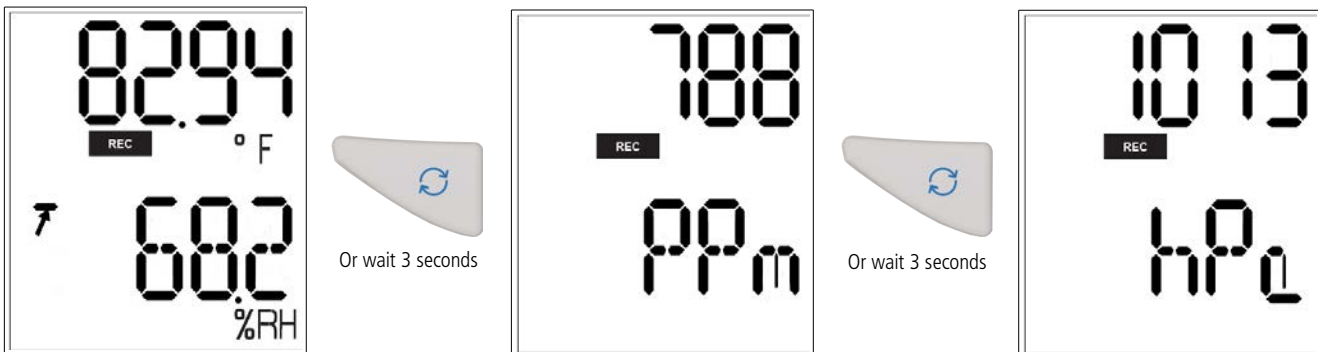
* Parameters available according to the device and probe type

Examples:

- KT 320 data logger with a thermo-hygrometric probe (channel 1) and a temperature probe (channel 2):



- KCC 320 data logger:



 The measurements scroll can be carried out by pressing the "Select" button of the data logger or wait about 3 seconds and the display scrolls automatically.

4.5 PC communication

- Insert the CD-ROM in the computer reader and follow the installation procedure of the **KILOG** software. More details about the installation procedure in the Kilog user manual.
1. Plug the male USB connector of the cable to the computer USB connection*.
 2. Open the USB cap on the right side of the data logger.
 3. Connect the male micro-USB connector of the cable to the female micro-USB connector of the device.



*The computer must be in compliance with the IEC60950 standard.

5 BLUETOOTH® FUNCTION

Data loggers of the class 320 have the Bluetooth® function to communicate with a smartphone or a tablet (Android or iOS) via the Mobile application. The data logger is named **"Data logger 320"** in the list of available devices to the tablet or smartphone. By default, Bluetooth® is deactivated on class 320 data loggers. Please see the Kilog software applications user manuals to activate it.

6 MAINTENANCE

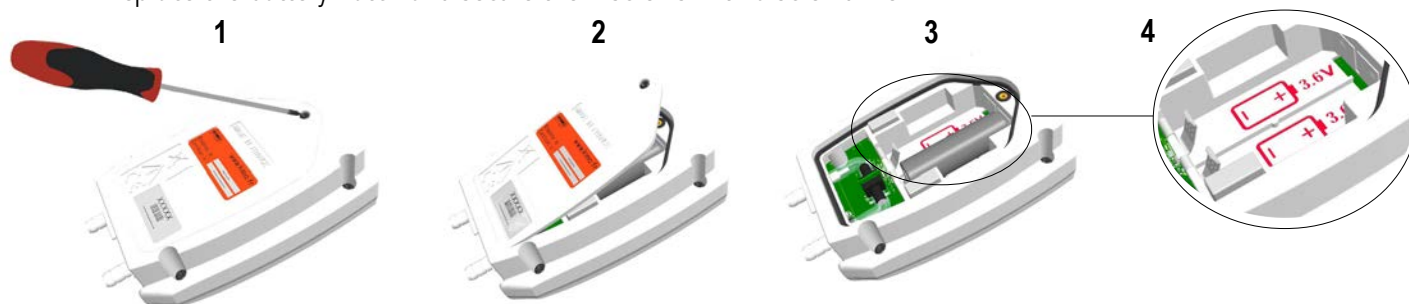
6.1 Replace the batteries



With a 3 to 7 years of battery life*, the data logger guarantees long-term measurement.

To replace batteries:

1. Unscrew the battery hatch on the backside of the data logger with a cross-head screwdriver.
2. The battery hatch opens. Remove the old batteries.
3. Insert the new batteries and check the polarity.
4. Replace the battery hatch and secure the 4 screws with a screwdriver.



Only use trademark or high quality batteries in order to guarantee proper battery life.



After the battery replacement, the device must be reconfigured.

6.2 Device cleaning

Please avoid any aggressive solvent.

Please protect the device and probes from any cleaning product containing formaldehyde, that may be used to clean rooms and ducts.

6.3 Safety lock wall mount with padlock

- Mount the safety lock support on the desired place.
- 1. Set the data logger on the support **starting with the bottom part**
- 2. Clip the data logger on the support by placing the logger into the mount
- 3. Insert the padlock to ensure the safety lock function



The padlock can be replaced by a safety sealed
The data logger can be placed on the screw-mount without the safety lock function

- To remove the data logger from the support, proceed on reverse order.



* On the basis of 1 measurement each 15 minutes at 77°F (25°C).

7 CALIBRATION

Calibration certificates are available (contact the Sauermann office for more information).
We recommend annual calibration.

7.1 KCC 320: perform a CO₂ measurement verification

To avoid potential drifts, it is recommended to regularly perform a CO₂ measurement verification.

- Before checking the CO₂ measurement, verify the atmospheric pressure values measured by the device: launch a dataset with a measurement interval of 15 seconds, or press  to scroll the measurements.
- If the atmospheric pressure values are not compliant, it is possible to carry out a measurement correction with the **KILOG** software (please see the **KILOG** software user manual, "**Measurement correction**" chapter).
- Once the atmospheric pressure is checked, verify the CO₂ measurement: launch a dataset with a measurement interval of 15 seconds, or press  to scroll the measurements.
- Connect a bottle of CO₂ standard gas on the gas connection on the back of the **KCC 320** device with the supplied Tygon® tube. (see picture)
- Generate a gas flow of 30 l/h.
- Wait for the measurement stabilization (about 2 minutes).
- Check the CO₂ values measured by the **KCC 320**.
- If these values are not compliant, it is possible to carry out a measurement correction with the **KILOG** software (please see the **KILOG** software user manual, "**Measurement correction**" chapter).



7.2 KP 320 – KP 321: perform an auto-zero



It is possible to reset the device during a dataset recording:

- Unplug the pressure tubes from the device.
- Hold  for 5 seconds to carry out the auto-zero.

The instrument resets. The screen displays "... "

- Plug in the pressure tubes.
The device continues the measurements and the dataset recording.







It is possible to reset the device when values are measured but not recorded:

- Unplug the pressure tubes from the device.
- Press  to display the measurement.
- Hold  for 5 seconds to carry out the auto-zero.

The instrument resets. The screen displays "... "

- Plug in the pressure tubes.
The device continues the measurements.

8 ACCESSORIES

Part No.	Description	Image
KILOG-LITE	Free basic software for configuration, and data download (tabular & graphical).	
KILOG-3-N	Premium software for configuration, data download, and fast and easy data saving, processing, and calculations.	
KBL-AA	1 AA lithium 3.6 V battery (2 batteries are required for class 320 data loggers)	
KAV-320	Safety lock wall mount with padlock	
KRB-320	Wired extension for KT 320 data loggers probes In polyurethane, 16' (5 m) length with male and female mini-DIN connectors (up to 5 extensions can be wired together for greater length requirements)	
CK-50	USB / micro-USB cable (connects the data logger to a PC)	



Recommended accessories to be used with the data loggers

9 TROUBLESHOOTING

Problem	Probable cause and possible solution
No value is displayed, only the icons are present.	The display is set "OFF". Set it on "ON" with the KILOG software (see page 15).
The display is completely off* and there is no communication with the computer.	The battery has to be replaced (see page 19).
The display indicates "- - - -" instead of the measured value.	The probe is disconnected. Plug it again to the data logger.
There is no Bluetooth® communication with the data logger.	The Bluetooth® is deactivated. Activate Bluetooth® with the KILOG software (see page 15).

* Only with the KT 320 and KTT 320 data loggers.



BE CAREFUL! Material damages can happen, so please apply the precautionary measures indicated.