

The world's toughest legal guidelines: 21 CFR Part 11 (electronic records).

The pharmaceutical industry trusts in Lufft.

Eliminate Fatal Consequences

OPUS20 Datalogger: threshold values always under control



Lufft OPUS20 Functions



Functions	THI 8120.00	THIP 8120.10	TCO 8120.20	Lufft OPUS20 E 8120.30
Power supply battery	■	■	■	■
Power supply USB	■	■	■	■
Power supply LAN (POE)	optional	optional	optional	optional
Measured data storage	3,200,000	3,200,000	3,200,000	3,200,000
Typical battery life	> 1 year	> 1 year	> 4 months	> 4 months
LC-display	■	■	■	■
One-button operation	■	■	■	■
1-point calibration by user/operator	■	■	■	■
°C/°F switchable	■	■	■	■
Optical/acoustical alarm	■	■	■	■
Date/time	■	■	■	■
Records Min/Max/Avg.	■	■	■	■
SmartGraph 3 evaluation software	■	■	■	■
Measurement Categories	THI 8120.00	THIP 8120.10	TCO 8120.20	Lufft OPUS20 E 8120.30
Temperature				
Air temperature	■	■	■	■*
PT100				■**
Thermocouple				■**
Humidity				
Relative humidity	■	■	■	■*
Absolute humidity	■	■	■	■*
Dew point temperature	■	■	■	■*
Mixture ratio				■*
Air pressure				
Barometric air pressure		■		■*
Relative air pressure		■		■*
CO₂ Concentration				
CO ₂ Concentration			■	
External BUS-enabled digital sensor				
TFF20				■
External analog input				
Sensor input voltage				■***
Sensor input electric current				■***
Function Table Software	THI 8120.00	THIP 8120.10	TCO 8120.20	Lufft OPUS20 E 8120.30
Graphical representation	■	■	■	■
Numerical data (measured value display)	■	■	■	■
Print function	■	■	■	■
Export function for measured values (e.g. Excel)	■	■	■	■
Gathered printouts of all measurement sites	■	■	■	■
Administration of up to 255 measuring devices	■	■	■	■

* via external BUS-enabled sensor, optionally, max. 4 sensors with one OPUS20E

** via external analog sensors, optionally, 2 separate analog inputs

*** near analog/digital conversion of 0...1V, 0/4 ... 20 ma possible

THI



THIP

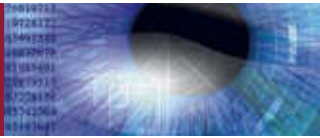


TCO



Lufft OPUS20 E





Lufft OPUS20 THI

Temperature and rel. Humidity

For climate monitoring in buildings and the control of all climate-sensitive production processes, in electronic data-processing centres, control cabinets, wind turbines, storage rooms and museums.

The OPUS20 runs on batteries or can be powered via USB. Alternatively, you have the possibility to power the device via POE (Power over Ethernet).

Lufft OPUS20 Temperature and Relative Humidity			Order-No.
Lufft OPUS20 Temperature / rel. Humidity (neutral without Lufft-Logo 8120.00N)			8120.00
Lufft OPUS20 Temperature / rel. Humidity PoE (neutral without Lufft-Logo 8120.01N)			8120.01
Technical data	Dimensions	length 166 mm, width 78 mm, depth 32 mm	
	Measurement rate	10/30s, 1/10/12/15/30min, 1/3/6/12/24h	
	Storage rate	1/10/12/15/30min, 1/3/6/12/24h	
	Construction	plastic housing	
	Operation life (battery)	> 1 Year	
	Data storage	16 MB, 3,200,000 measured values	
	LC-Display	size 90x64 mm	
	Weight	approx. 250g	
	Included in delivery	PC-Windows Software SmartGraph 3 for graphical and numerical representation of measured values / instruction manual/ data cable / battery / DIN rail bracket	
	Interface	USB, LAN	
	Power supply	4 x LR6 AA Mignon, USB, (POE opt.)	
	Max. operation temperature	-20...50°C	
	Max. rel. humidity	0...95%r.h.<20g/m ³ (non condensing)	
	Max. altitude	10,000m above sea level	
Temperature	Principle	NTC	
	Measurement range	-20 ... 50 °C	
	Accuracy	±0.3°C (0...40°C), otherwise 0.5°C	
	Resolution	0.1°C	
Rel. humidity	Principle	capacitive	
	Measurement range	0...100%r.h.	
	Accuracy	±2%r.h.,	
	Resolution	0.1%r.h.	
Accessories	4 x LR6 AA Mignon		8120.SV1
	Power supply adapter		8120.NT



The only LAN datalogger with built-in sensors and the highest precision

Lufft OPUS20 THIP Temperature, Rel. Humidity, Air Pressure



Lufft OPUS20 THIP Temperature, Relative Humidity, Air Pressure		Order-No.																												
Lufft OPUS20 THIP Temperature / Rel. Humidity / Air Pressure (neutral without Lufft-Logo 8120.10N)		8120.10																												
Lufft OPUS20 THIP Temperature / Rel. Humidity / Air Pressure PoE (neutral without Lufft-Logo 8120.11N)		8120.11																												
Technical data	<table border="1"> <tr> <td>Dimensions</td> <td>length 166 mm, width 78 mm, depth 32 mm</td> </tr> <tr> <td>Measurement rate</td> <td>10/30s, 1/10/12/15/30min, 1/3/6/12/24h</td> </tr> <tr> <td>Storage rate</td> <td>1/10/12/15/30min, 1/3/6/12/24h</td> </tr> <tr> <td>Construction</td> <td>plastic housing</td> </tr> <tr> <td>Operation life (battery)</td> <td>> 1 Year</td> </tr> <tr> <td>Data storage</td> <td>16 MB, 3,200,000 measured values</td> </tr> <tr> <td>LC-Display</td> <td>size 90x64 mm</td> </tr> <tr> <td>Weight</td> <td>approx. 250g</td> </tr> <tr> <td>Included in delivery</td> <td>PC-Windows Software SmartGraph 3 for graphical and numerical representation of measured values / instruction manual/ data cable / battery / DIN rail bracket</td> </tr> <tr> <td>Interface</td> <td>USB, LAN</td> </tr> <tr> <td>Power supply</td> <td>4 x LR6 AA Mignon, USB, (POE opt.)</td> </tr> <tr> <td>Max. operation temperature</td> <td>-20...50°C</td> </tr> <tr> <td>Max. rel. humidity</td> <td>0...95%r.h.<20g/m³ (non condensing)</td> </tr> <tr> <td>Max. altitude</td> <td>10,000 m above sea level</td> </tr> </table>	Dimensions	length 166 mm, width 78 mm, depth 32 mm	Measurement rate	10/30s, 1/10/12/15/30min, 1/3/6/12/24h	Storage rate	1/10/12/15/30min, 1/3/6/12/24h	Construction	plastic housing	Operation life (battery)	> 1 Year	Data storage	16 MB, 3,200,000 measured values	LC-Display	size 90x64 mm	Weight	approx. 250g	Included in delivery	PC-Windows Software SmartGraph 3 for graphical and numerical representation of measured values / instruction manual/ data cable / battery / DIN rail bracket	Interface	USB, LAN	Power supply	4 x LR6 AA Mignon, USB, (POE opt.)	Max. operation temperature	-20...50°C	Max. rel. humidity	0...95%r.h.<20g/m ³ (non condensing)	Max. altitude	10,000 m above sea level	
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Accessories	4 x LR6 AA Mignon	8120.SV1																												
	Power supply adapter	8120.NT																												

Finally available: Lufft's precise Climate Station for interior applications – an essential data collector for all calibration laboratories.





Lufft OPUS20 TCO

Temperature, Rel. Humidity, CO₂

The amount of carbon dioxide has been virtually constant at 280 ppm (parts per million) – i.e 280 gas molecules per million air molecules – the last ten thousand years. However in recent years, this measured value has been increasing rapidly at approx. 2 % per year.

A high level of CO₂ in the air within a room causes headaches, tiredness and lack of concentration. The regulation on CO₂ concentration was established in order to evaluate IAQ (Indoor Air Quality). Normal atmospheric air in so-called ‘clean air areas’ has a level of 360 ppm and approx. 500 ppm in urban areas. The limit of 1,000 ppm (“Pettenkofer Figure”) is still seen as being adequate indoor-air quality, which is especially important when regarding all meetings and conference rooms, as well as schools and open-plan offices.

As a guideline for school rooms in the USA the limit of 1,000 ppm applies; for workplaces the occupational exposure limit is 5,000 ppm.

Lufft OPUS20 TCO / Temperature / Relative Humidity / CO ₂			Order-No.
Lufft OPUS20 TCO / Temperature / Rel. Humidity / CO ₂ (neutral without Lufft-Logo 8120.20N)			8120.20
Lufft OPUS20 TCO / Temperature / Rel. Humidity / CO ₂ POE (neutral without Lufft-Logo 8120.21N)			8120.21
Technical data	Dimensions	length 166 mm, width 78 mm, depth 32 mm	
	Measurement rate	10/30s, 1/10/12/15/30min, 1/3/6/12/24h	
	Storage rate	1/10/30min, 1/3/6/12/24h	
	Construction	plastic housing	
	Operation life (battery)	> 4 month	
	Data storage	16 MB, 3,200,000 measured values	
	LC-Display	size 90x64 mm	
	Weight	approx. 250g	
	Included in delivery	PC-Windows Software SmartGraph3 for graphical and numerical representation of measured values / instruction manual/ data cable / battery	
	Interface	USB, LAN	
	Power supply	4 x LR6 AA Mignon, USB, (POE opt.)	
	Max. operation temperature	-20...50°C	
	Max. rel. humidity	0...95%r.F.<20g/m ³ (non condensing)	
	Max. altitude	10,000 m above sea level	
Temperature	Principle	NTC	
	Measurement range	-20 ... 50 °C	
	Accuracy	±0.3°C (0...40°C), otherwise 0.5°C	
	Resolution	0.1°C	
Rel. Humidity	Principle	capacitive	
	Measurement range	0...100%r.h.	
	Accuracy	±2%r.h.,	
	Resolution	0.1%r.h.,	
CO₂	Principle	NDIR	
	Measurement range	0 ... 5,000 ppm	
	Accuracy	± 50 ppm +3% of measured value (at 20 ° C and 1,013 mbar)	
	Resolution	1 ppm	
	Long-term stability	20 ppm/a	
Accessories	4 x LR6 AA Mignon		8120.SV1
	Power supply adapter		8120.NT



Lufft OPUS20E for External Sensors



Lufft OPUS20E for External Sensors		Order-No.
Lufft OPUS20E (neutral without Lufft-Logo 8120.30N)		8120.30
Lufft OPUS20E PoE (neutral without Lufft-Logo 8120.31N)		8120.31
Technical data	Dimensions	length 180mm, width 78mm, depth 32mm
	Measurement rate	10/30s, 1/10/12/15/30min, 1/3/6/12/24h
	Storage rate	1/10/12/15/30min, 1/3/6/12/24h
	Construction	plastic housing
	Operation life (battery)	> 1 Year
	Data storage	16 MB, 3,200,000 measured values
	LC-Display	size 90x64 mm
	Weight	approx. 250g
	Included in delivery	PC-Windows Software SmartGraph 3 for graphical and numerical representation of measured values / Instructions/ data cable/ battery/ WAGO connector / DIN rail bracket
	Interface	USB, LAN
	bus interface	RS 485
	Power supply	4 x LR6 AA Mignon, USB, (POE opt.)
	Max. operation temperature	-20...50°C
Input voltage 0-1V	Measurement range	0 ... 1V
	Accuracy	+/- 200uV +/- 0.1% of measured value
	Resolution	< 500uV
Current measurement	Measurement range	2-wires: 4 ... 20mA, 3-wires: 0 ... 20mA
	Accuracy	+/- 4uA +/- 0.1% of measured value
	Resolution	< 5uA
	Resistance	approx. 50 Ohm
Thermocouple K	Measurement range	-200°C ... 1200°C
	Accuracy	+/- 1°C +/- 0.5% of measured value at -200°C ... 0°C +/- 1°C +/- 0.2% of measured value at 0°C ... 1200°C
	Resolution	< 0.2°C

With up to 10 external channels/sensors per OPUS20E.

The OPUS20E offers the highest flexibility and is excellent value for money. It allows the connection of up to 4 external temperature and relative humidity sensors, as well as 2 further analogue sensors. Intelligent BUS sensors can be integrated via the OPUS20E's RS485 interface (e.g. particle counter).

Air flow and differential pressure sensors are typically connected to the OPUS20E via analogue inputs as opposed to the maximum of 4 external temperature or humidity sensors that can be integrated via a digital BUS protocol.

In connection with its LAN capabilities, the OPUS20E is able to realize universal measurement networks in real time. For standard applications the SmartGraph 3 comes into play, and in order to fulfil the 21 CFR 11 guidelines the well-established and proven MCPS7 software is available.



Compatible sensors for OPUS20E		Page
Temperature	PT100 surface probe	19
	PT100 immersion probe	19
	PT100 immersion probe	18
	PT100 food probe, stainless steel	18
	PT100 immersion probe	19
Temperature/ Humidity	Digitale TFF20	20

Further compatible sensors on request.

Humidity:	Transducers with display
Flow:	Flow transmitters
Differential pressure:	Differential pressure transmitters
Particle:	Particle counters
CO ₂ :	CO ₂ transmitters

With up to 10 external sensors connectable per OPUS20E



Lufft OPUS20E Configurations Examples

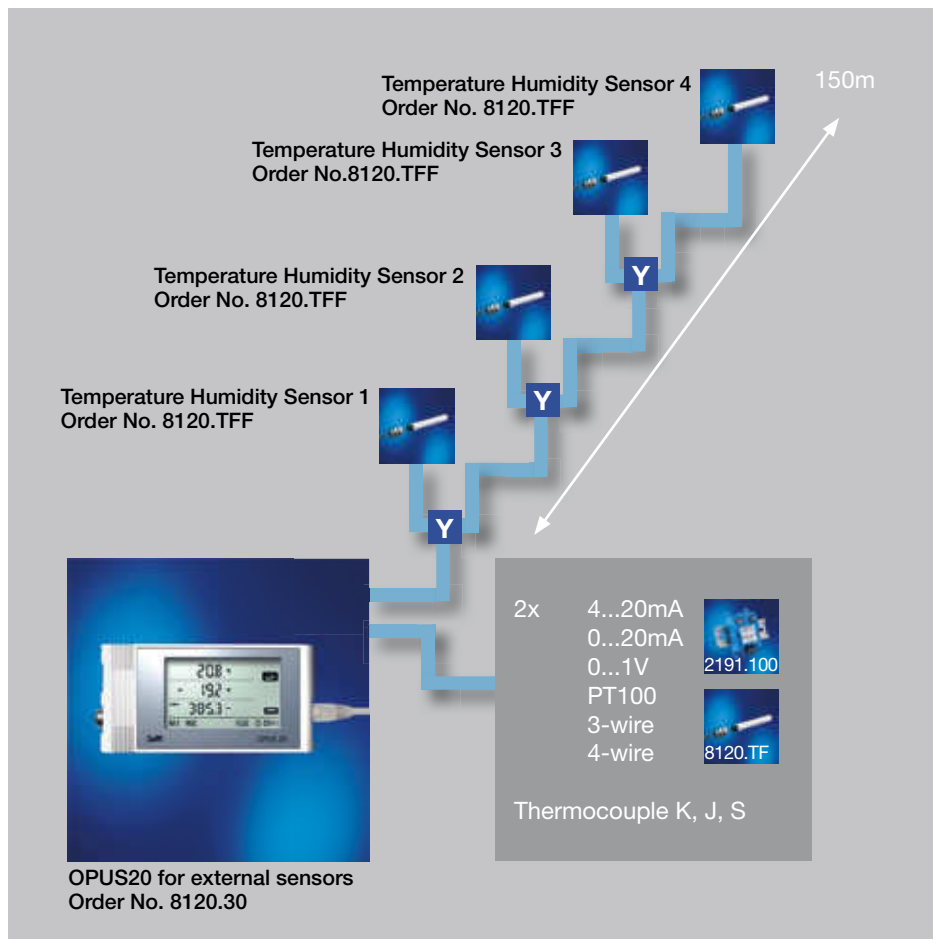
Network with up to 200 channels

The OPUS20E is equipped with an analogue input that allows the connection of 2 sensors with voltage and current output, or rather PT100 temperature sensors in 3 and 4 wire technology.

At the same time up to 4 Lufft temperature/humidity sensors can be connected to the datalogger via a serial input.

Each fully equipped OPUS20E is a 10 channel datalogger that can record various data. It also allows data to be retrieved online and offline.

Lufft OPUS20E for External Sensors			Order-No.
Technical data			
Thermocouple J	Measurement range	-200°C ... 1,200°C	
	Accuracy	+/- 1°C +/- 0.5% of measured value at -200°C ... 0°C +/- 1°C +/- 0.2% of measured value at 0°C ... 1,200°C	
	Resolution	< 0.2°C	
Thermocouple S	Measurement range	-50°C ... 1,700°C	
	Accuracy	+/- 1°C +/- 0.5% of measured value at -50°C ... 0°C +/- 1°C +/- 0.2% of measured value at 0°C ... 1,700°C	
	Resolution	< 0.2°C	
PT100	Measurement range	-200°C ... 500°C	
	Accuracy	+/- 0.2°C +/- 0.1% of measured value	
	Resolution	< 0.02°C	
Accessories	4 x LR6 AA Mignon		8120.SV1
	Power supply adapter		8120.NT
	Y Connector		8120.STY
	Cable	2m	8120.KAB2
	Cable	10m	8120.KAB10
(see page 12)	Temperature/ humidity sensor		8120.TFF
	Temperature/ humidity sensor (stainless steel sintered cap) for clean rooms		8120.TFFE



With up to 10 channels per datalogger transferring data in realtime.
Power supply via POE.