

# Calibration Sheet



Instrument: CONTROS HydroC CO<sub>2</sub> FT Date of calibration: 16.10.2018  
Serial number: CO2FT-0918-001 Date of delivery: 19.10.2018  
Customer: 4H-Jena PO number: 452-100028-3

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## Sensor characteristics

**Note!** For proper handling please check our manual, esp. chapter "Important Notices"!

### Energy consumption

(CONTROS HydroC® FT standard, general values):

Current	20 °C	During warm-up**
@ 12 V	440 mA	710 mA
@ 24 V	280 mA	1060 mA

\* measured during calibration

\*\* warm-up time decreases with increasing voltage

[consumption during zeroing: +330 mA @ 12 V]

### Warm-up time

(T<sub>control</sub>, general values of standard CONTROS HydroC® FT):

Warm-up time at 7 °C water temperature		Voltage	
		12 V	24 V
Ambient temperature	14 °C	31 min	
	20 °C	19 min	3 min
	25 °C	16 min	

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## Sensor specifications

Operating depth:	Surface, flow through sensor
Gas tension (abs.):	800 mbar to 1100 mbar (defined through measuring range of the internal pressure sensors p_NDIR and p_in)
Measuring range:	200 µatm to 1000 µatm
Resolution – digital signal:	<1 µatm
Initial accuracy:	± 0.5 % reading (as total sum of all error)
Water temperature range:	1 °C to 30 °C
Calibration optimised for:	1 °C to 30 °C ( <i>as requested by customer</i> )
Ambient temperature:	1 °C to 35 °C (The instrument should not be operated at ambient temperatures lower than 8 °C compared to the water to avoid condensation within the gas stream.)
Dimensions:	325 x 240 x 136 mm (L x W x H)
Weight:	5.3 kg
Output connector:	Hirschmann-plug CA6LD
Voltage:	11 to 24 V
RS232/ EIA-232 output signal:	See “CONTROS HydroC® On-line data”
RS485/ EIA-485 output signal:	See “CONTROS HydroC® On-line data”
Baud rate (preset):	115200 Bd
Interval settings (preset):	Warm-up: 0 min; Zero: 2 min; Flush: 0 min; Measure: 718 min
Data logger:	None
Storage space:	None
Analog output (voltage, current):	None

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## Calibration details

### Setup and parameters

Calibration unit:	KM Contros CO <sub>2</sub> calibration tank #1
RS232 protocol unit:	DETECT-2 software package on CO-CALIB2
Voltage:	12.0 VDC
Temperature:	15.5 °C
Ambient temperature:	22.0 °C
Water:	Deionised water with carbonate additives
Salinity:	0 ‰
Reference gases:	102.18 ppm, 445.57 ppm, 798.20 ppm CO <sub>2</sub> in natural air
Reference system:	SPRINK underway instrument with LiCOR LI7000
Calibration steps:	(200, 400, 600, 800) µatm
Pump Flow rate:	approx. 6.5 L/min
Pressure in water stream:	+110 mbar with respect to ambient pressure

### Sensor

Sensor configuration:	BD-00
Membrane:	Silicone composite membrane
Control temperature (NDIR detector):	50 °C
PWM of internal pump:	During Zero: 50
	During Flush: 70
	During Measure: 70