Data Processing Sheet

Instrument:	HydroC CO2 FT	Date of calibration:	16.10.2019 (pre, 15.5°C)
Serial number:	CO2FT-0918-001	Date of delivery:	19.10.2019
Customer:	4H-Jena	PO:	452-100028-3

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Note! *For more information about the HydroC calibration, please check your individual sensor Calibration Sheet.*

Note! *For data processing, apply the application note Data Processing for CONTROS HydroC CO_2.*

Sensor Specific Values

T_0	273.15 K
p_0	1013.25 mbar
F	61470
T_{sensor}	47.9°C
$f(T_{\text{sensor}})$	9849.05 (only for T_{sensor} as given above)
$S'_{\text{2beam,Z}}$	14480.82 (found during calibration)
Polynomial degree	3 (with forced zero crossing)
Regression error:	< 0.1 ppm (estimate error found during calibration)

Calibration coefficients

k_1	5.430340e-02
k_2	3.674069e-06
k_3	1.981525e-10

Calibration Data

S_{raw}	S_{ref}	T_{gas}	p_{NDIR}	S_{proc}	$x_{CO_2,\text{reference}}{}^*$
[]	[]	[°C]	[mbar]	[]	[ppm]
19765.10	15299.37	40.07	1019.16	7458.03	788.40
20707.95	15294.31	40.04	1019.04	4862.76	426.04
21535.84	15286.89	40.12	1019.46	2571.07	190.68
20192.72	15295.89	40.32	1020.26	6276.90	609.35

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Equations

Equation for $x_{CO_2,wet}$

$$x_{CO_2,wet} = \left(k_3 S_{proc}^3 + k_2 S_{proc}^2 + k_1 S_{proc}\right) \frac{p_0 T_{gas}}{T_0 p_{NDIR}}$$

Equation for p_{CO_2}

$$p_{CO_2} = x_{CO_2,wet} \frac{p_{in}}{1013.25}$$

Calibration Curve

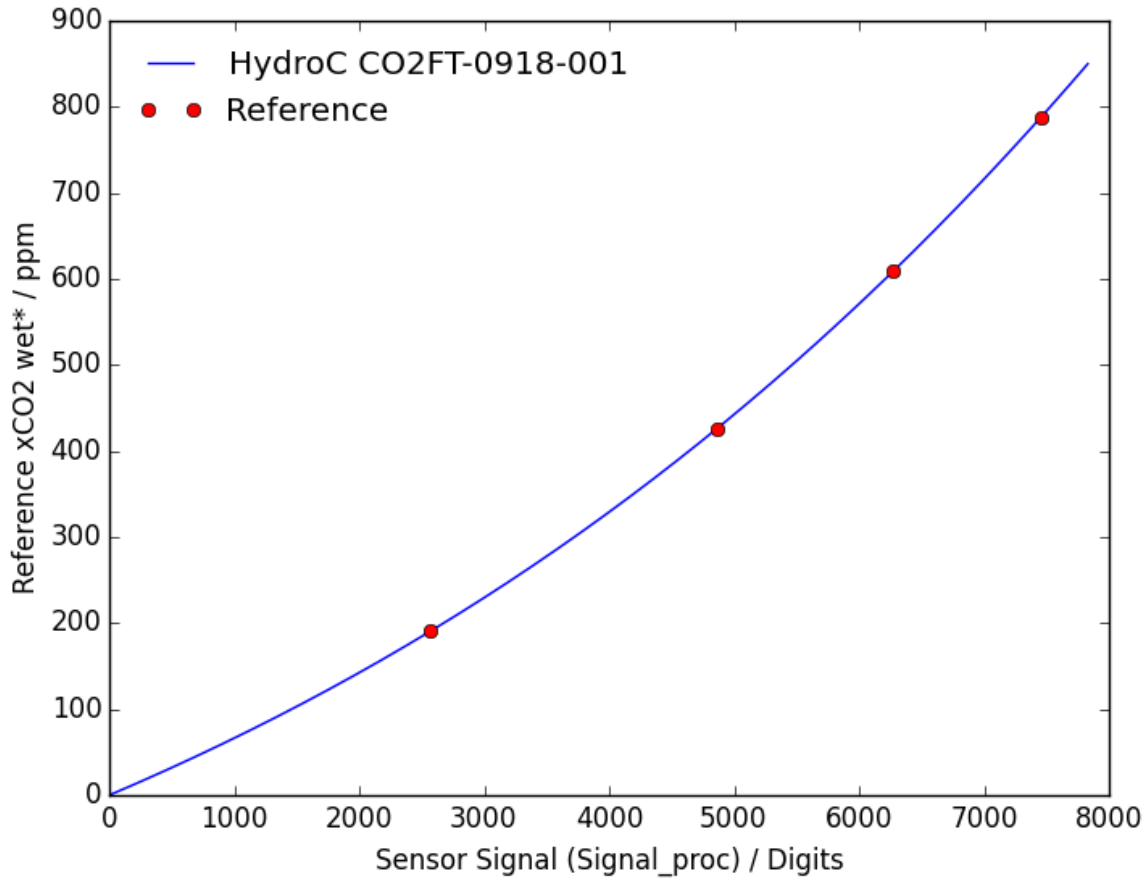

Figure 1: Calibration curve of the processed sensor signal (S_{proc}) against the x_{CO_2} of the KM Contros CO_2 reference system.

*Converted from the x_{CO_2} value in the reference system to the conditions in the gas stream of the sensor.