

To get slope and offset: - (You only have to do this step once. On boot up for instance)

B806 (copy 7th page to scratch pad)
BE06FFFFFFFFFFFFFFF (read page from scratchpad)
AAAA1CC30CE7BB00 (example response)

byte0	AA	constant
byte1	AA	constant
byte2	1C	msb of offset
byte3	C3	lsb of offset
byte4	0C	msb of slope
byte5	E7	lsb of slope
byte6	BB	reserved
byte7	00	reserved

offset = &h1CC3 = 7363 : 7363/10000 = 0.74
slope = &h0CE7 = 3303 : 3303/100000 = 0.033

To get sensor values:

44 (convert temp)
B4 (convert supply volt)
B800 (copy 1st page to scratch pad)
BE00FFFFFFFFFFFFFFF (read page 0 from scratchpad)
018813D601D70100 (example response)

byte0	01	status byte
byte1	88	lsb of temp
byte2	13	msb of temp
byte3	D6	lsb of supply voltage
byte4	01	msb of supply voltage
byte5	D7	lsb of sensor voltage (humidity voltage)
byte6	01	msb of sensor voltage (humidity voltage)
byte7	00	threshold

Temp = &h1388 = 5000 : 5000 / 256 = 19.53125DegC
Supply voltage (SupV) = &h01D6 = 470 : 470 / 100 = 4.70V
Sensor voltage (SensV) = &h01D7 = 471 : 471 / 4096 = 0.115V

To calculate humidity:

Constant 1 (C1) = 85.65
Constant 2 (C2) = 1.055
Constant 3 (C3) = 0.00216

Humidity Output Voltage (HOV) = (SensV / SupV) * C1 = (0.115/4.7) * 85.65 = 2.096V

Raw Humidity (RawH) = (HOV - Offset) / Slope = (2.096 - 0.74) / 0.033 = 41.1%

=> Do Temp Compensation to get real relative humidity:

Relative Humidity (RelH) = RawH / [C2 - (C3 * Temp)]
= 41.1 / [1.055 - (0.00216 * 19.53)]
= 41.1 / 1.013
= 40.58%RH