Brewer Calculation of Temperature and Relative Humidity

Relative Humidity

- *Humidity sensor on the Comptus board has a 0-5VDC output i.e 2.66 VDC*
- *Comptus Board puts the signal through a voltage divider circuit to supply 0-2.5 VDC to Channel 9 of the A/D board i.e. 1.33 VDC*
- *A/D board converts voltage to 0-255 number*
  *i.e. 1.33/2.5*255=136*
- *A/D number gets calculated back to a 0-2.5VDC value and is divided by 2.5 to get a percent.*
  *i.e   136*2.5/255=1.33/2.5 = 0.532*100 =53.2%*

In the Brewer software a factor "C" is calculated to a value of 3.92 to convert the VA (bit value) to RH%:

2.5 VDC / 255 Bit Value = 0.00980
*0.00980*1000 / 2.5 = 3.9215*
(100%/255 = 0.39215%/bit)

Temperature

Old Temperature Circuit

Temp (°C) = −30 + TE%×15.93

Temperature range 79.69°C from -30 °C to 49.69°C

  -- 0.3125 °C/bit

New Temperature Circuit

Temp (°C) = −33.27 + TE%×18.64

Temperature range 92.31°C from -33.27°C to 59.07°C

  -- 0.3620 °C/bit

TE% = Temperature in Volts