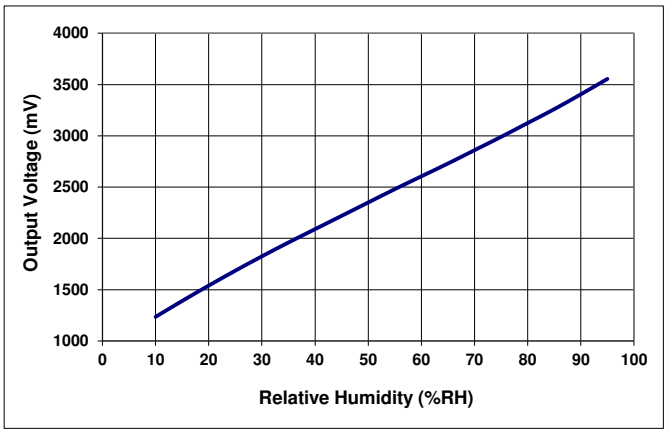
TYPICAL PERFORMANCE CURVES

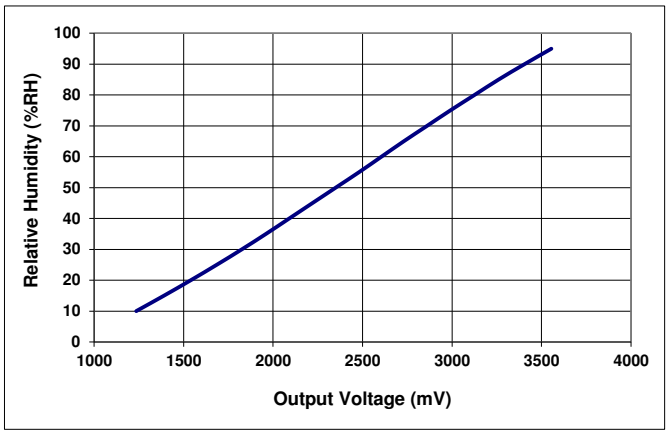
HUMIDITY SENSOR

Typical response look-up table (Vs = 5V)

RH (%)	Vout (mV)	RH (%)	Vout (mV)
10	1235	**55**	2480
15	1390	**60**	2605
20	1540	**65**	2730
25	1685	**70**	2860
30	1825	**75**	2990
35	1960	**80**	3125
40	2090	**85**	3260
45	2220	**90**	3405
50	2350	**95**	3555

Modeled linear voltage output (Vs = 5V)





Linear Equations

Vout = 26.65 * RH + 1006
RH = 0.0375 * Vout – 37.7
with Vout in mV and RH in %

Polynomial Equations

$Vout = 1.05E^{-3} * RH^3 - 1.76E^{-1} * RH^2 + 35.2 * RH + 898.6$
$RH = -1.92E^{-9} * Vout^3 + 1.44E^{-5} * Vout^2 + 3.4E^{-3} * Vout – 12.4$
with Vout in mV and RH in %

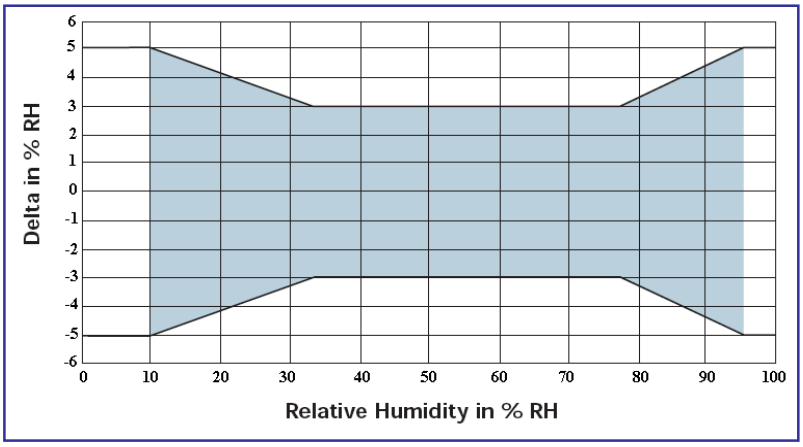
Measurement Conditions

HTM2500LF is specified for accurate measurements within 10 to 95% RH.

Excursion out of this range (<10% or >95% RH, including condensation) does not affect the reliability of HTM2500LF characteristics.

Error Budget at 23°C

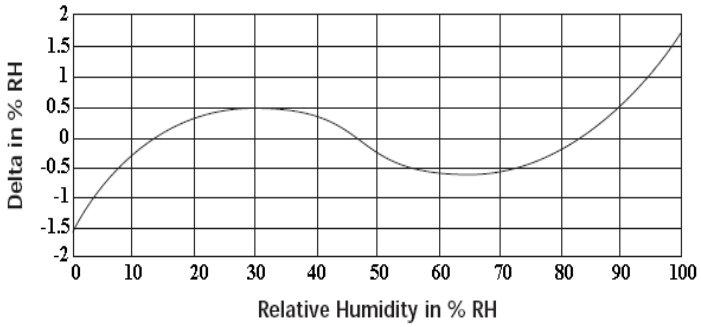
HTM2500LF Error Limits:



Temperature coefficient compensation:

$$RH_{Cor}\% = RH_{read}\% \times \left(1 - \left(T_a - 23\right) \times 2.4\, E^{-3}\right)$$

HTM2500LF Linearity Error:



Non-linearity and temperature compensation:

$$RH\% = \frac{-1.9206\, E^{-9} V_{out}{}^{3} + 1.437\, E^{-5} V_{out}{}^{2} + 3.421\, E^{-3} V_{out} - 12.4}{1 + \left(T_a - 23\right) \times 2.4\, E^{-3}}$$

with Vout in mV, RH in % and Ta in °C