

相对湿度模块

HM1500 湿度传感器

基于硬质封装的 HS1101 电容湿度传感器，HM1500 是专门适用于需要精确可靠检测湿度的 OEM 用户。它的特点是有很小的易于安装的接头，可以非常节省成本的机械自动安装。由于它是线性的电压输出湿度检测模块，因此能直接与微控制器相接。

主要特点

- 小尺寸
- 浸水无影响
- 全互换性
- 高可靠性与长时间稳定性
- 在 5VDC 供电，0~100%RH 典型输出 1~4VDC
- 标定 $\pm 2\%RH@55\%RH$
- 非常低的温度依赖性
- 比例输出于电源电压
- 适合 3~10V 供电



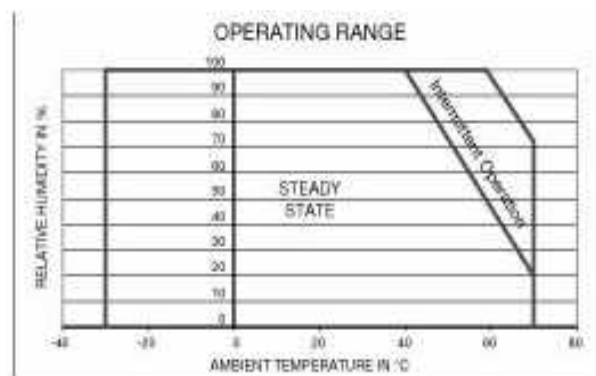
湿度传感器的特点

- 在长时间处于饱和状态后快速脱湿
- 反应时间快
- 对化学品的高抵抗性
- 专利的固态聚合物结构

最大参数 (Ta=25°C, 除非特别注明)

参数	符号	参数值	单位
储存温度	Tstg	-30~70	°C
供电电压 (峰值)	Vs	12	Vdc
湿度工作范围	RH	0~100	%RH
温度工作范围	Ta	-30~60	°C

峰值环境: 少于 10%的工作时间

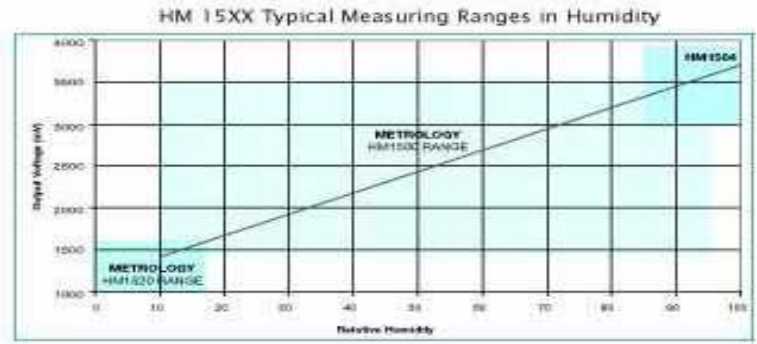


特性参数 (Ta=23°C, Vs=5.0VDC, RL>1M, 除非特别注明)

参数	符号	最小值	典型值	最大值	单位
湿度量程	RH	1		99	%RH
相对湿度精度 (10~95%)	RH		± 3	± 5	%RH
供电电压	Vs	4.75	5.00	5.25	VDC
典型输出 @RH=55%	Vout	2.42	2.48	2.54	V
消耗电流	Ic		0.4	0.8	mA
温度效应 (0~60°C)	Tcc		± 0.1		%RH/°C
平均灵敏度 (33~75%RH)	$\Delta mV/\%RH$		+25		mV/%RH
吸收电流容量	Is			300	微安
150小时结露的恢复时间	t		10		S
湿度迟滞			± 1.5		%RH
长时间稳定性			0.5		%RH/yr
输出阻抗	Z		70		欧
反应时间 (33~76%RH,static,@63%)	t		5		S

测量环境

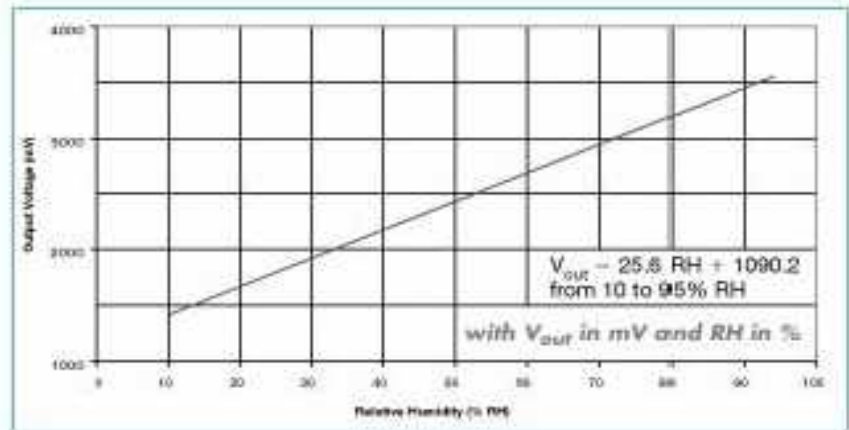
- HM1500 特别适用于在 10~95%RH 精确测量的环境
- 超过范围 (<10%, >95%, 包括饱和) 不会影响可靠性
- 专用的 HM15xx 产品可用于测量极端湿度环境, (HM1520 测量低露点), 更详细的信息请与 HUMIREL 联系。



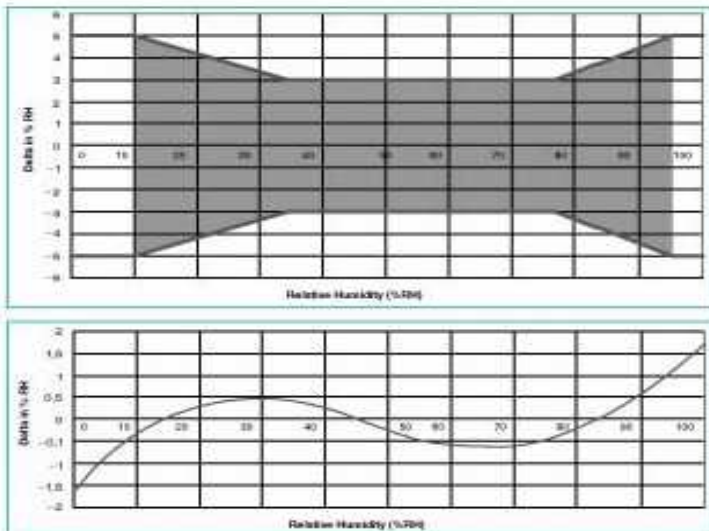
HM1500 模拟电压输出曲线 (Vs=5V)

单位: mV

RH%	Vout	RH%	Vout
10	1330	55	2480
15	1475	60	2600
20	1610	65	2730
25	1740	70	2860
30	1870	75	2980
35	1995	80	3115
40	2120	85	3250
45	2235	90	3390
50	2360	95	3530



误差预算 (23°C)



HM1500 ERROR LIMITS

如果需要, 可以用如下的关系式做补偿:
温度效应:

$$RH\% = V_{out} 10^{-3} (39.1 - 0.056 T_a) - 38.5$$

非线性:

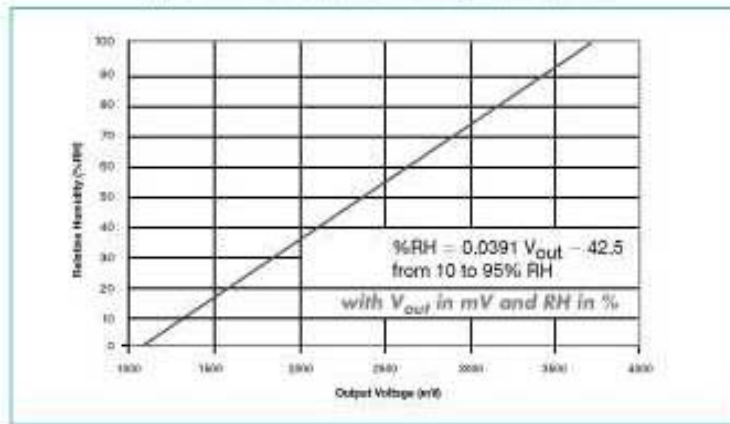
$$RH\% = -1.95E^{-9} V_{out}^3 + 1.36E^{-5} V_{out}^2 + 8.97E^{-3} V_{out} - 21.5$$

所有的 Vout 为 mV, RH 为%, Ta 为°C

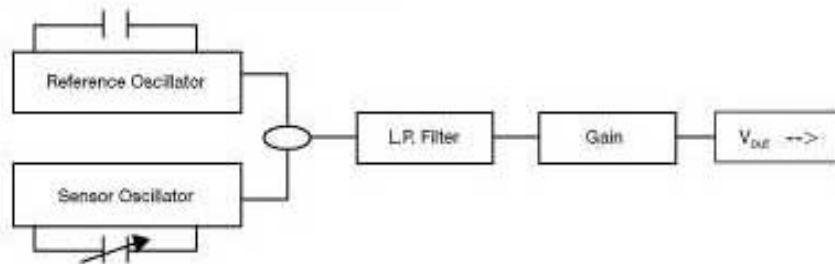
LINEARITY ERROR OF HM1500 MODULE

HUMIDITY MEASUREMENT USING HM1500

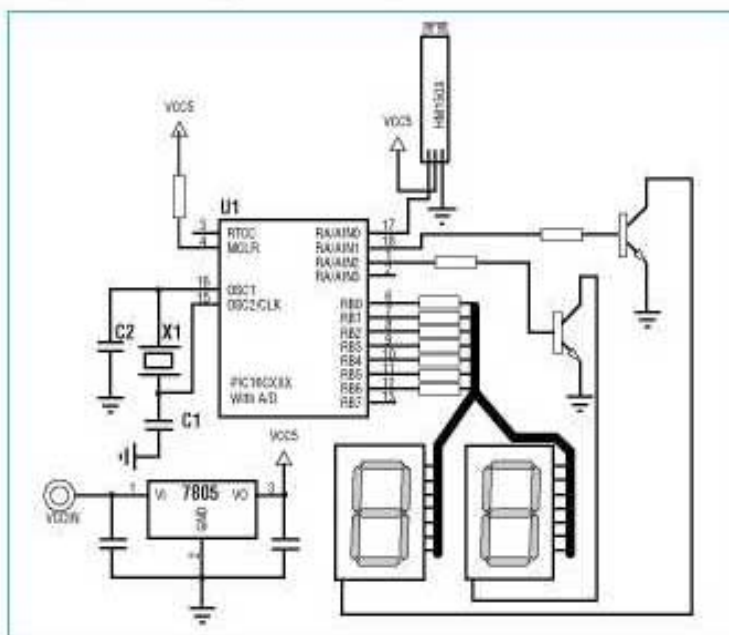
Typical HM 1500 relative Humidity measurement



Internal block diagram of HM1500

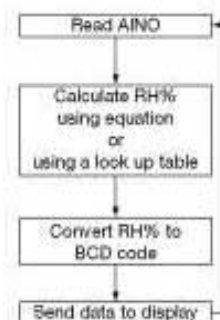


Suggested applications for HM1500



Steps of 1% RH are achievable by using 8-bit A/D.

If more resolution is required a 10-bit A/D needs to be used and a third display will be added, giving steps of 0.2% RH

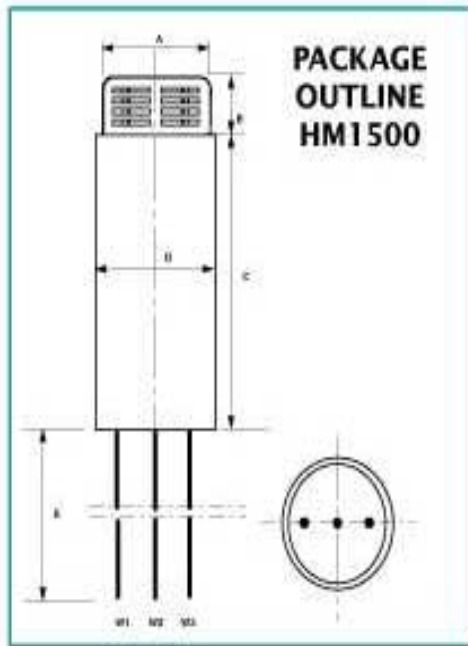


- **物理化学抵抗力**

1. HM1500 已通过 HUMIREL 的品质认证处理包括震动、冲击、存储、高温高湿、静电等。
2. 另外, HM1500 经过额外的恶劣的化学品测试, 证明 HM1500 可以很好的工作于如下的环境: 有盐空气、SO₂ (0.5%)、H₂S (0.5%)、O₃、No_x、NO、CO、CO₂、软化剂、肥皂、甲苯、酸 (H₂SO₄, HNO₃、HCL)、HMDS、杀虫剂、香烟, 还有其他没有完全列出。
3. HM1500 对光不敏感。

- **特别注意事项**

1. HM1500 没有电极保护, 接线时请仔细。
2. 如果把 HM1500 用于含有没有在表中列出来的化学品的空气中, 请与我们联系确认。



Dim	Min (mm)	Max (mm)
A	9.70	10.20
B	5.00	5.50
C	52	54
D	11.2	11.6
E*	200	250

* specific length available on request

Wire	Color	Function
W1	White	GROUND
W2	Blue	SUPPLY VOLTAGE
W3	Yellow	OUTPUT VOLTAGE

**ORDERING INFORMATION (MULTIPLE PACKAGE QUANTITY OF 10 PIECES).
HM1500: HUMIDITY ANALOG VOLTAGE OUTPUT MODULE.**



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