Rodee Sensors Today, Sensing Tomorrow 专注传感，感知未来

技术规格书 Datasheet

RS PM350-DV 数字型压力和温度双输出带诊断功能智能传感器

RS PM350-DV Digital Pressure and Temp. Dual Output Sensor with Diagnostics





RS PM350-DV 系列是一款低功耗带智能诊断的数字型压力和温度双输出高稳定性智能传感器，产品采用模块化及可选无密封圈结构设计制造。

测量压力范围 0-100bar …350bar，有密封表压和绝压可选。

电缆输出的型号，可选择 I²C 和模拟电压双信号输出。

RS PM350-DV

It's a digital pressure and temperature Dual output Sensor with diagnostics, use silicon piezoresistive technology with compact designed.

Pressure Range, 0-100bar … 350 bar, Gauge (sealed) and Absolute available.

Sensor Outputs with cable, I²C and Voltage dual output are available upon request.

功能和应用 Features & Applications

PM350-DV 系列产品采用数字运算补偿标定，I²C，SPI 数字压力和温度双输出：

在-20°C~85°C 温度区间内产品总精度 TEB≤ ±0.25%(典型值)。

I²C, SPI 压力和温度双数字输出；

产品具有故障诊断，经过严苛测试反复验证，专为物联网时代低功耗数据采集应用需求设计，产品具有长期可靠的稳定性。

产品压力介质接触部分采用 SUS316L 不锈钢密封设计,有内置脉冲压力缓冲器设计可选，保证压力传感器的可靠性和耐用性，该系列产品具有最高 IP68 等级防护，以及 EMI 防护能力，能满足大多数应用环境。

PM350-DV pressure transmitter are digital compensated and with I²C, SPI digital output for pressure and temperature;

TEB ≤±0.25%(Typical) between -20°C ~85 °C.

I²C，SPI Interfaces for pressure and temperature;.

Products are designed for lower power consumption applications, sensor are with diagnostics and have a long-term stabilities.

Material contacts with Media are SUS316L S. steel. Pressure buffer are available for enhancing the product reliability and durability; IP68 and EMI protection.

产品特点：
Product Highlights:

- ✓ 压力和温度双信号数字输出(I^2C, SPI)；
- ✓ 温度输出为检测介质温度
- ✓ 数字信号(I^2C)与电压信号双输出；
- ✓ TEB≤±0.25%FS（温度补偿范围内典型值）
- ✓ IP68 防护等级;
- ✓ 可选无密封圈设计，产品尺寸小至 22A/F;
- ✓ 具有故障诊断功能;
- ✓ 高过载，全系列≥2x 过载设计；

- ✓ Digital Interface (I^2C, SPI), dual output for pressure and temperature;
- ✓ Temperature output Measured on Media
- ✓ Digital (I^2C) and Voltage Dual outputs;
- ✓ TEB≤±0.25%FS(Typical) within compensated temperature range
- ✓ IP68 Enclosure;
- ✓ No ring designed are available with 22A/F size
- ✓ Diagnostics Functions;
- ✓ ≥2x FS Pressure Overload;

技术参数
Technical Data

参数指标 Parameters

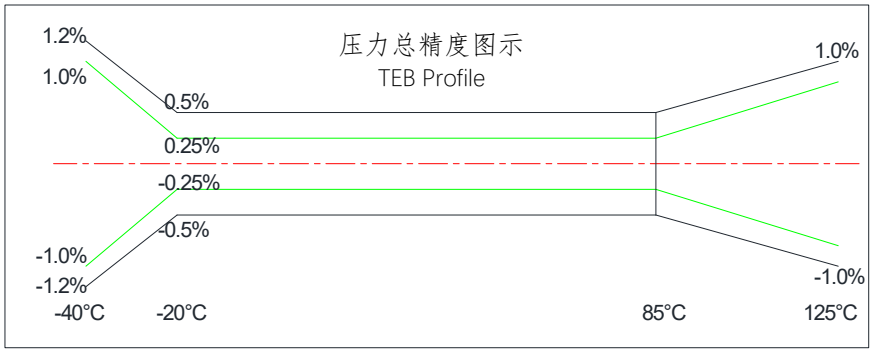
除非另有说明，电压 3.3VDC,环境温度 25°C;
Unless otherwise stated: Supply Voltage: 3.3VDC, Ambient Temperature 25°C.

参数表 Parameter	最小 Min	典型值 TYP.	最大 Max	单位 Units	备注 Notes
压力输出 0 点值(10% ~ 90%) Zero Pressure Output		0CCCCC		HEX counts	1
压力输出 0 点值(5% ~ 95%) Zero Pressure Output		066666		HEX counts	1
满量程压力输出值(10% ~ 90%) Full Scale Pressure Output		733332		HEX counts	1
满量程压力输出值(5% ~ 95%) Full Scale Pressure Output		799998		HEX counts	1
25°C 时精度 Accuracy @25°C		±0.10		% FS	
总误差 Total Error Band(-20°C ~ 85°C)	-0.5	±0.25	0.5	% FS	2
压力分辨率 Pressure Resolution		0.001		% FS	
温度测量范围 Temperature Measurement Range	-40		100	°C	3
温度测量精度 Temperature Accuracy	-2.0		2.0	°C	4
温度分辨率 Temperature Resolution		0.0079		°C	
工作电压范围 Input Voltage Range	3.0	3.3	5.5	V_{DC}	5
供电电流 – 连续工作模式/2.4K Supply Current – Continuous Mode/2.4K		1.95		mA	
供电电流 – 单次工作模式 Supply Current – Single Mode		1.1		mA	
供电电流 – 睡眠工作模式 Supply Current – Sleep Mode		115		uA	6
绝缘电阻 Insulation Resistance (500Vdc)	100			MΩ	7
负载电阻 Load Resistance (RL)	2			KΩ	
上拉电阻推荐值 Pull-up on SDA and SCL		10		KΩ	R_{PU}
长期稳定性（零点和满量程） Long Term Stability (Offset & Span)		±0.15		%FS/Year	
补偿温度范围 Compensated Temperature	-20		85	°C	

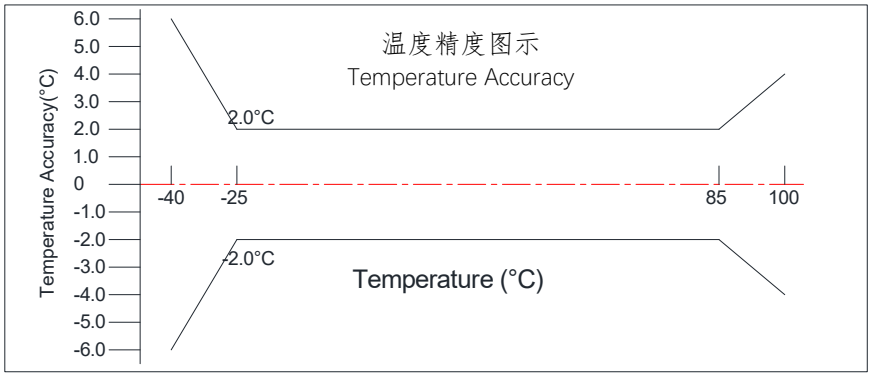
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Continuous

工作温度范围 Operating Temperature	-40		125	°C	8
存储运输温度 Storage Temperature	-50		125	°C	8
输出压力分辨率 Output Pressure Resolution	16		24	Bits	9
输出温度分辨率 Output Temperature Resolution			24	Bits	9
响应时间 Response Time	0.8		2.5	ms	
加电后数据准备时间 Start Time to Data Ready		10	15	ms	10
耐用性 Durability， 压力 P：10~90% FS	>10 x 10^6 次循环 cycles				
输出类型 Output Type	10%-90% or 5%-95%				1
连接方式 Interface Type	I^2C (ADDR,0x6DH) (WRITE:0xDAH;READ:0xDBH)				
压力适用媒介 Media – Pressure Contact	适合对 316/316L 无腐蚀的液体或者气体 Liquids and gases compatible with 316/316L Stainless Steel				

1. 绝压类型抽真空测量，表压和密封表压对大气测量，输出比例跟实际供电电压没有比例关系。
   Measured at vacuum for absolute(A), ambient for gauge(G) and sealed gauge(S). Output is not ratiometric to supply voltage.
2. TEB 总误差包括补偿范围内的校准误差和温度影响，细节见“压力总精度图示”。
   Total Error Band: includes calibration errors and temperature effects over the compensated range. See “TEB Profile”.
3. 此温度为检测媒介介质的温度，超出该温度范围，温度精度误差会很大。
   Temperature measured on media, temperature data will not be accurate if it’s out of range -40°C to 100°C.
4. 在补偿范围内，温度偏差依据最优线性直线比计算出来，补偿范围外温度精度，见“温度精度图示”。如有更高温度精度需求，请联系罗迪传感销售。
   Within the compensated temperature range, the deviation is measured from a best fit straight line (BFSL) fitted to the output. For errors beyond the compensated temperature range, See “Temperature Accuracy” Profile.
   More Temperature Accuracy version is available upon request.
5. 为了保证产品精度，建议选用 3.3V 供电的产品，使用 3.3±5%VDC 的供电；5V 供电的产品选用 5.0±5%VDC 的供电。
   For product accuracy purpose, recommend to supply 3.3±5% VDC for 3.3V supply version and 5.0±5%VDC for 5V supply version separately.
6. 需要压力传感器持续待机的环境应用，请联系罗迪传感获取低功耗版本。
   For applications where need pressure sensors working continuously, please contact Rodee Sensor for lower power versions.
7. 芯体引线和外壳之间的电阻值。
   Resistance measured between case and sensing element.
8. 用红灰白排线和单线排线的连接器产品，工作温度为-20°C – 85°C，更大温度范围产品，请选择 M12 连接器或不带连接器特氟龙线缆。
   Max. temperature range for product with standard cable and cable with connector is -20°C to +85°C, products with M12 connector and Teflon wires the operating temperatures are -40°C to +125°C
9. 24Bits 包含带符号位，有效位 23Bit.
   24Bits include 1 bit for symbol indicate, valid bits are 23Bits.
10. 加电后数据准备时间为断电再加电后第 1 次运行的时间，后续持续工作的数据准备时间见传感器响应时间。
    Start time to data ready is the time to get valid data after POR (Power on Reset). The time to get subsequent valid data is then specified by the response time specification.
11. 避免硬接触压力膜片，防止膜片在操作或者运输过程中碰伤或损坏，影响产品工作性能。
    Don’t direct mechanical contact with Diaphragm, Diaphragm surface must remain free of defects (scratches, punctures, dents, fingerprints, etc.) for device to operate properly. Caution is advised Always protect diaphragm not be damaged during handing or transportation.



1). TEB (Total Error Band), 包括准确性、线性度、迟滞性、重复性和热影响误差；
TEB includes accuracy, Linearity, Hysteresis. Repeat and Thermal affects;



过载与爆裂压力(静态) Overload and Burst Pressure (Static)

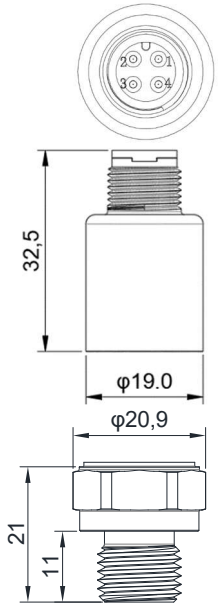
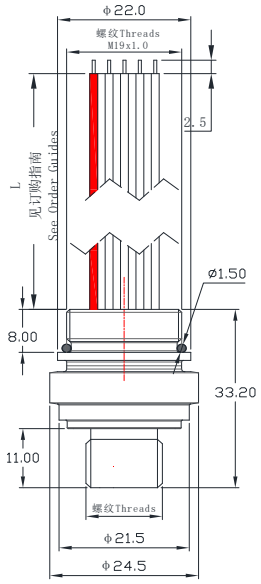
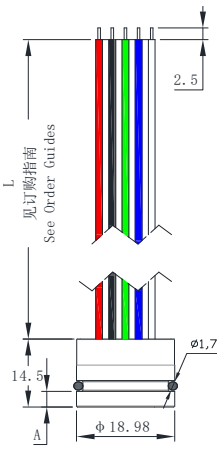
标定压力 (bar) Pressure Range	100	160	250	350
过载压力 (bar) Overload Pressure	400	480	750	800
过载倍数 (times) Overload (x)	4x	3x	3x	2x
爆裂压力 (bar) Burst Pressure	640	640	1050	1050

*可以定制其他压力类型或更大过载需求，请联系罗迪传感销售。
Other pressure range or more pressure overload requirement are available upon request.

环境条件 Environment

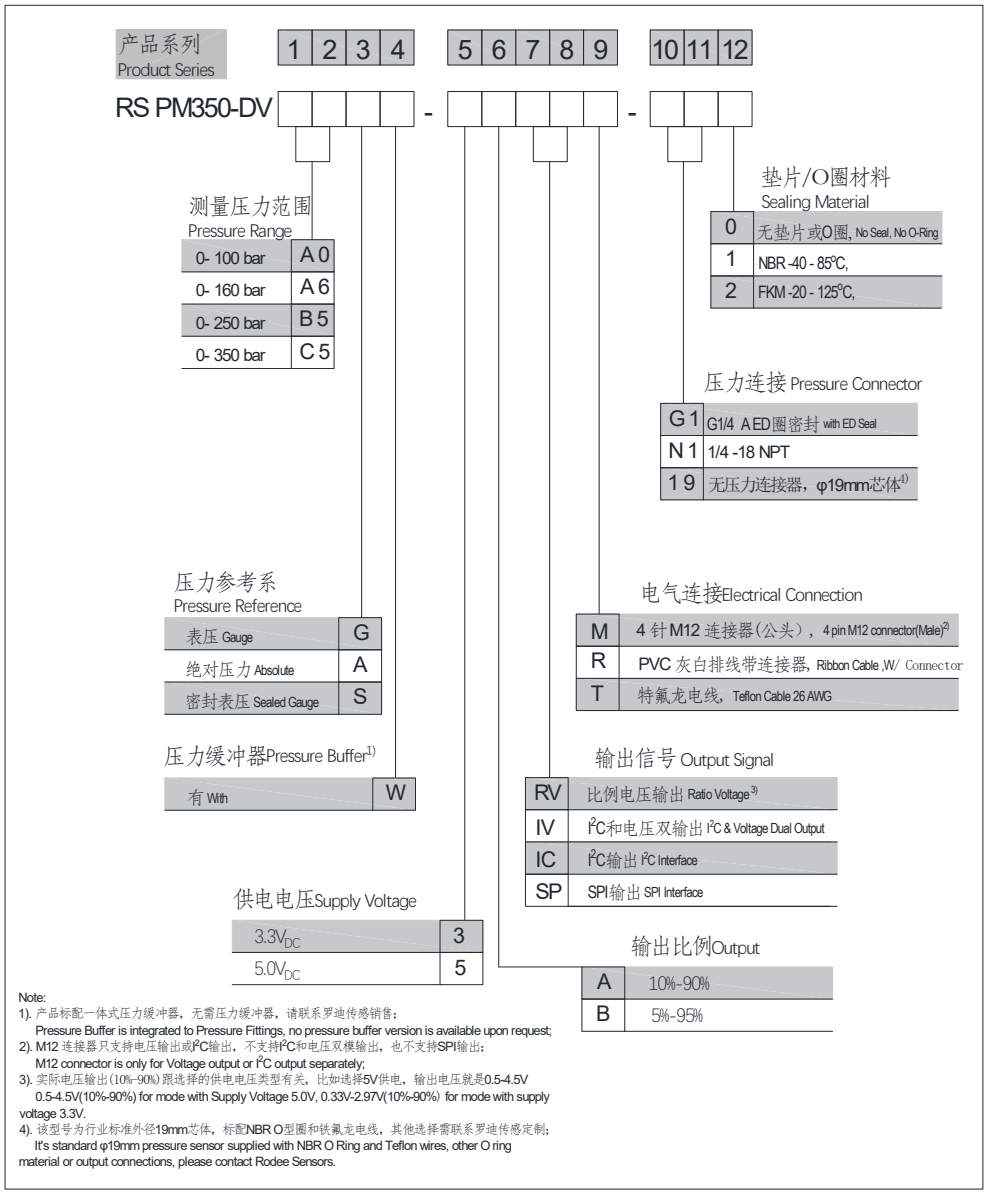
EMC – 发射 Emission	EN55032 Class A & B
EMC – 静电防护 ESD	Contact: 8KV, Air 15KV
EMC- 射频干扰度 EM Filed	IEC 61000-4-3, 10V/m (80-2000MHz)
EMC- 快速脉冲群抗扰度 Electrical Fast Transient	IEC 61000-4-4, 1KV
EMC- 传导抗扰度 Conducted RF	IEC 61000-4-6, 10V (150KHz – 80MHz)
电压输出端过电压保护 Over voltage for Vout	最大保护至 Protected to 6.5V
错接线保护 Miswiring	电源+/-接错有保护 Protected(V+ and V-)
机械冲击 Shock IEC 60068-2-27	峰值 Peak: 100G
机械震动 Vibration IEC 60068-2-6 (正弦, Sinus) IEC 60068-2-64 (随机,Random)	正弦 Sinus: 20G, 10-2000Hz 随机 Random: 7.5G rms, 5-1000Hz

电气连接 Electrical Connection

型号 Connections	M12 4 针 连接器 M12x1, 4 pins connector	灰白排线 PVC 26 AWG PVC Ribbon Cable	φ19mm 标准芯体，带 26AWG Teflon 线
接线图示 及外形 Connection Figure & Profile			
压力连接 Pressure Fittings	标配螺纹: G1/4 平垫密封 Standard Fitting G1/4 ED Seal 其他类型螺纹可定制; Other fittings are available upon request.	标配螺纹: G1/4 平垫密封 Standard Fitting G1/4 Flat Seal 其他类型螺纹可定制; Other fittings are available upon request.	通用 φ19 型: Standard φ19 O Ring Sealing P< 40 Bar A:2.85 P≥ 40 Bar A:3.35
电压输出 [1] Voltage output	Pin 1: 电源+ V+ Pin 2: 输出+ Vout Pin 3: 电源- V- Pin 4: 不接 N/C	#1 红色 Red: 电源 V+ #2: 电源 V- #3: 不接 N/C #4: 不接 N/C #5: 输出 Vout	红色 Red: 电源 V+ 黑色 Black: 电源 V- 绿色 Green: 不接 N/C 蓝色 Blue3: 不接 N/C 白色 White: 输出 Vout
I²C 和模拟电压双输出 I²C&Voltage dual output	不适用 N/A	#1 红色 Red: 电源 V+ #2: 电源 V- #3: SDA #4: SCL #5: 输出 Vout	红色 Red: 电源 V+ 黑色 Black: 电源 V- 绿色 Green: SDA 蓝色 Blue3: SCL 白色 White: 输出 Vout
I²C 输出 I²C Interface	Pin 1: 电源+ V+ Pin 2: SCL Pin 3: 电源- V- Pin 4: SDA No SDO/DRYB	#1 红色 Red: 电源 V+ #2: 电源 V- #3: SDA #4: SCL #5: N/C	红色 Red: 电源 V+ 黑色 Black: 电源 V- 绿色 Green: SDA 蓝色 Blue3: SCL 白色 White: N/C
SPI 输出 SPI Interface	不适用 N/A	#1 红色 Red: 电源 V+ #2: 电源 V- #3: SDI #4: SCLK #5: CSB	红色 Red: 电源 V+ 黑色 Black: 电源 V- 绿色 Green: SDI 蓝色 Blue3: SCLK 白色 White: CSB
材料 Material	316L 不锈钢 S. Steel 304L 不锈钢 S. Steel PBT+30%玻纤 PBT+30%GR 针镀金 Gold Plated Pins	316L 不锈钢 S. Steel 304L 不锈钢 S. Steel PVC Cable NBR Oring	316L 不锈钢 S. Steel Teflon Cable 线头镀锡 Tin Plated Ends, NBR O Ring
防护等级 Enclosure	IP68(绝压和密封表压) IP68 for Abs. and Sealed Gauge	N/A	N/A
工作温度 [3] Operating Temperature	-40°C ~ 125°C	-20°C ~ 85°C	-40°C ~ 125°C

1) 电压输出型不能输出温度信号。 It is no temperature output on voltage output model.
2) 其他螺纹规格压力连接头，请联系罗迪传感销售。Other pressure connectors, please contact Rodee Sensors.
3) 除了工作温度限制外，温度测量范围为-40°C-100°C。Temperature measurement range is -40°C to 100°C.
灰白排线的耐温为-20°C-85°C。PVC Ribbon Cable operation temperature limited to -20°C to 85°C

产品订购指南
Ordering Guides



Note:
1). 产品标配一体式压力缓冲器，无需压力缓冲器，请联系罗迪传感销售；
Pressure Buffer is integrated to Pressure Fittings, no pressure buffer version is available upon request;
2). M12 连接器只支持电压输出或I²C输出，不支持I²C和电压双模输出，也不支持SPI输出；
M12 connector is only for Voltage output or I²C output separately;
3). 实际电压输出(10%-90%)跟选择的供电电压类型有关，比如选择5V供电，输出电压就是0.5-4.5V
0.5-4.5V(10%-90%) for mode with Supply Voltage 5.0V, 0.33V-2.97V(10%-90%) for mode with supply voltage 3.3V.
4). 该型号为行业标准外径19mm芯体，标配NBR O型圈和铁氟龙电线，其他选择需联系罗迪传感定制；
It's standard φ19mm pressure sensor supplied with NBR O Ring and Teflon wires, other O ring material or output connections, please contact Rodee Sensors.

例如：
RS PM350-DV A0GW-3AIVR-G12
代表：
测量压力范围 **0-100 bar,**
表压,
带压力缓冲器,
3.3V 供电版本，
10%-90%输出
I2C 数字输出,
灰白排线带连接器,
G1/4 外螺纹,
氟胶密封垫片。

Order Example:
RS PM350-DV A0GW-3AIVR-G12
Represented;
Pressure range 0-100 bar,
Gauge (Relative),
With pressure buffer,
3.3V Supply Voltage,
10%-90% output
I²C Interface
Ribbon Cable with connector
G1/4 Fitting with FKM ED seal;

* 其它测量压力量程、压力连接器和信号连接型号；
* 其它温度范围密封垫片；
* 以及其它电压输出范围；
请联系罗迪传感销售

* Other pressure ranges, pressure connectors and electrical connections;
* Other pressure sealing material;
* Other voltage modes requested, please contact **Rodee Sensors.**

销售联系方式

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