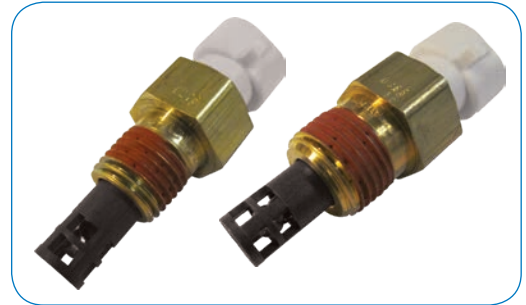


T H E R M O M E T R I C S
A C O M M I T M E N T T O E X C E L L E N C E

A-1325 / A-1326



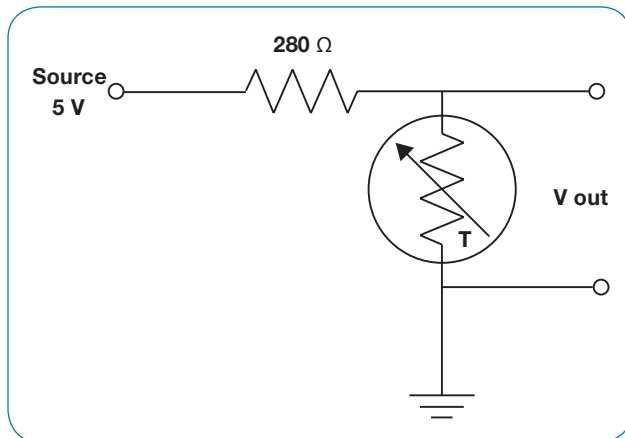
Intake Air Temperature Sensor (IAT)

Thermometrics A-1325/A-1326 Temperature Sensor monitors the temperature of the incoming intake air flow for an engine and provides a signal output that is proportional to air temperature. This signal can be used as an input to a temperature gauge, or to provide input to an Engine Control Unit (ECU). The ECU then uses this information to adjust fuel delivery and optimize the air-to-fuel ratio to produce the most efficient combustion.

Applications

- Intake Air Temperature

Typical Application Circuit



Features

- High accuracy and long-term stability
- Integrated sealed connector
- Existing field-proven design
- Alternate geometries/connection systems to meet package requirements
- 150°C max operating temperature
- Pre-applied thread sealant
- Other resistance and beta values possible

Amphenol
Advanced Sensors

A-1325 / A-1326 - Specifications

- **Operating Temperature Range**
-40°C to 150°C

- **Storage Temperature Range**
-40°C to 150°C

- **R @ 100°C**
175.3 ± 2.00%

- **Response Time**
< 10 sec in 15 m/sec air stream

- **Housing Material**
C34500 Brass

- **Housing Threads**
A-1325 = M14 x 1.5 Metric Keg
A-1326 = 3/8-18 inch NPTF

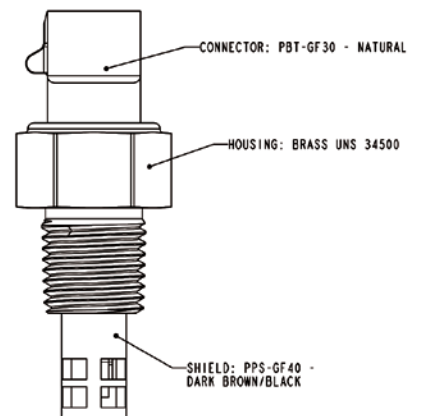
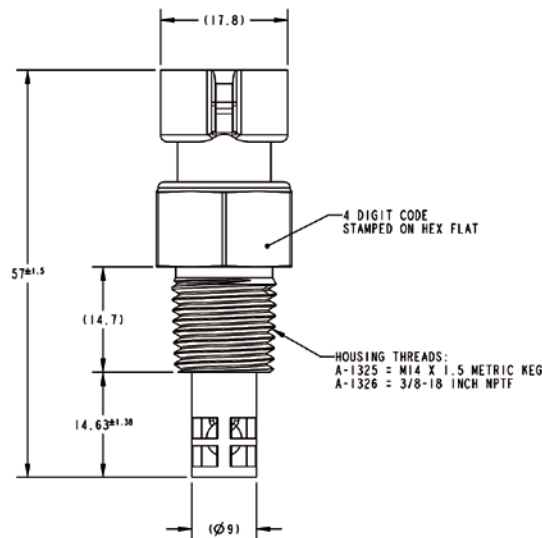
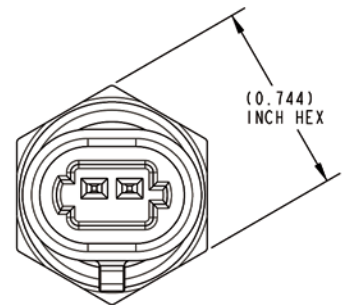
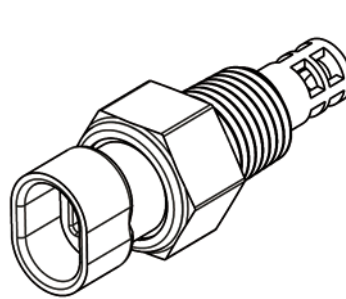
- **Weight**
A-1325 = ~26 grams
A-1326 = ~33 grams

- **Thermistor Material System**
D10.3

- **Connector**
Delphi Metri-Pack 150.2

- **Mating Connector**
Aptiv (Delphi) P/N: 12162197,
15335987 or Equivalent

R vs. T			
Temp. (°C)	Resistance (Ω)	Resistance Tolerance (±%)	Temp. Tolerance (±°C)
-40	99318	10.51	1.56
-25	37991	9.15	1.50
0	9255	7.07	1.35
15	4373	6.18	1.30
25	2752	5.61	1.25
85	279.1	2.62	0.81
100	175.3	2.00	0.67
125	86.96	2.88	1.09
150	46.74	3.20	1.37



Sensor Temperature Resistance Curves Guide

Material Type D10.3 – Available Products: RL, MS, SA, NC

Data for Material Type: D10.3

Temp. Range (°C)	Ratio	Beta
0 to 50	9.59	3991
0 to 70	20.05	4015
25 to 50	2.85	4038
25 to 85	9.86	4073
25 to 100	15.70	4085
25 to 125	31.65	4101
37.8 to 104.4	10.29	4106

To calculate Rt/R25 at temperatures other than those listed in the table, use the following equation:

$$Rt/R25 = \exp\{A + B/T + C/T^2 + D/T^3\}$$

where T = temperature in K

Temp Range (°C)	A	B	C	D
-50 to 0	-17.6313	6800.6124	-564653.7732	30877208.6155
0 to 50	-16.2931	6061.2476	-460567.9092	30338541.7656
50 to 100	-15.1730	5278.3754	-302866.9101	23332353.5560
100 to 150	-14.5560	4761.7178	-174761.3920	15412329.7326

To calculate the actual thermistor temperature as a function of the thermistor resistance, use the following equation:

$$1/T = a + b(\ln Rt/R25) + c(\ln Rt/R25)^2 + d(\ln Rt/R25)^3$$

Rt/R25 range	a	b	c	d
72.50 to 3.363	0.003356492	0.00024621	4.08364E-06	-6.10786E-08
3.363 to 0.3507	0.003354016	0.000250275	2.42945E-06	-7.3121E-08
0.3507 to 0.06370	0.003353047	0.000247928	1.08179E-06	-6.41771E-08
0.06370 to 0.0169	0.003346715	0.000243428	3.34622E-07	-4.53927E-08

†The deviation resulting from the tolerance on the material constant, Beta. The deviation must be added to the resistance tolerance of the part as specified at 25°C.

Temp. (°C)	Rt/R25 nominal	Temp Coef (%/°C)	β Deviation† (±%)
-50	72.501432	7.230837	5.657896
-45	50.836786	6.976749	5.191183
-40	36.087664	6.737576	4.734772
-35	25.916613	6.512132	4.288274
-30	18.817007	6.299345	3.851318
-25	13.804217	6.098250	3.423553
-20	10.226286	5.907973	3.004647
-15	7.646155	5.727721	2.594281
-10	5.767369	5.556775	2.192154
-5	4.386591	5.394479	1.797979
0	3.362871	5.240068	1.411484
5	2.598690	5.075845	1.122556
10	2.024289	4.919854	0.836968
15	1.588882	4.771540	0.554698
20	1.256177	4.630398	0.275718
25	1.000000	4.495962	0.000000
30	0.801305	4.367804	0.272490
35	0.646120	4.245530	0.541787
40	0.524109	4.128777	0.807930
45	0.427570	4.017209	1.070957
50	0.350720	3.902295	1.330909
55	0.289366	3.792045	1.566719
60	0.240035	3.686607	1.797403
65	0.200144	3.585701	2.023159
70	0.167707	3.489069	2.244175
75	0.141194	3.396470	2.460628
80	0.119412	3.307680	2.672687
85	0.101430	3.222490	2.880512
90	0.086516	3.140706	3.084253
95	0.074091	3.062146	3.284056
100	0.063696	2.986040	3.480056
105	0.054968	2.910168	3.700101
110	0.047613	2.837214	3.893571
115	0.041390	2.767029	4.061890
120	0.036104	2.699475	4.206385
125	0.031598	2.634420	4.328290
130	0.027742	2.571743	4.428754
135	0.024432	2.511328	4.508849
140	0.021581	2.453066	4.569578
145	0.019118	2.396857	4.611877
150	0.016982	2.342603	4.636623

