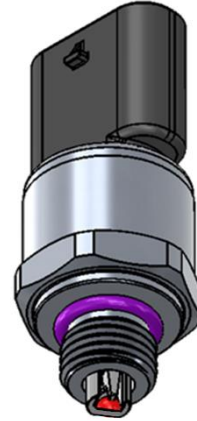


BRIMIND SENSOR, SPECIFIC FOR AUTOMOTIVE HVAC SYSTEMS, OPTIMAL FOR HYBRID AND ELECTRIC VEHICLE, IS A RATIO-METRIC PRESSURE DEVICE BASED ON A PIEZORESISTIVE CERAMIC TECHNOLOGY AND TEMPERATURE SENSOR BASED ON NEGATIVE TEMPERATURE COEFFICIENT RESISTOR.



BRIMIND PRESSURE + TEMPERATURE SENSORS ARE AVAILABLE FOR **HIGH** AND **LOW** PRESSURE APPLICATIONS.

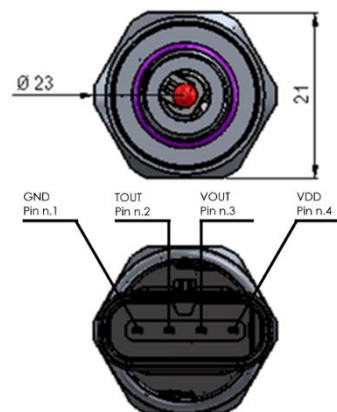
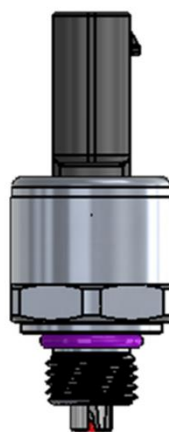
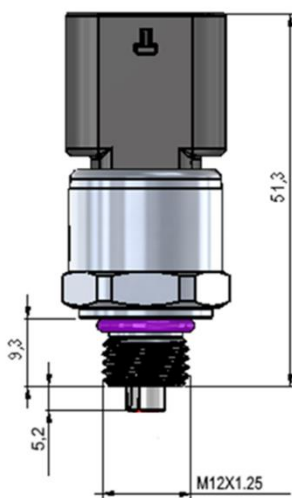


OPTION "F"
(HIGH SIDE A/C
PRESSURE TRANSDUCER)



OPTION "G"
(LOW SIDE A/C
PRESSURE TRANSDUCER)

DIMENSIONS



*External dimensions are identical for both transducers

GENERAL FEATURES		
	LOW SIDE	HIGH SIDE
Pressure ranges	0 to 11 bar abs	0,5 to 37 bar abs
Over pressure ⁽¹⁾	30 bar abs	45 bar abs
Burst pressure ⁽²⁾	36 bar abs	85 bar abs
Pressure connection	M12 x 1,25 (Male)	
Pressure connection materials	Aluminum	
Tightening torque	5.5 to 12 Nm	
Electrical connection	120-S-004-1 (Key Option G)	120-S-004-1 (Key Option F)
Electrical connection material	PPA GF40	
ELECTRICAL FEATURES		
Power supply (Vdd)	5 Vdc ± 10%	
Supply current (Idd)	15mA max	
Output voltage (Vout)	5% Vdd to 95% Vdd	7% Vdd to 95% Vdd
Output load (Pressure signal)	≥ 7,5KΩ Pull UP or Pull DOWN	
Output response time	< 10ms (typical)	
Overvoltage protection	+18 Vdc	
Reverse voltage protection	-14 Vdc	
Short circuit protected	Yes	
TEMPERATURE SENSOR		
R (25°C)	10KΩ	
B25/85°C	3977K ± 0,75%	
NTC response time	< 2,4 s typical (0 to 63,2%)	
Output load (Temperature signal)	5,9KΩ Pull UP – Reference value	
PERFORMANCE FEATURES		
Operating temperature range	-40°C to 140°C	
Storage temperature range	-40°C to 150°C	
Accuracy (Linearity, Hysteresis, Repeatability, Calibration. Static error band @25°C)	± 0,9% Vdd	
Total error band ⁽³⁾ (Over Operating Temperature range)	± 1,8% Vdd (-40...140°C)	
IP Code	IP67	
Fluids compatibility	Compressor oil either PAG or POE, R134a and/or 1234yf refrigerants	
Vacuum pressure (referred to refrigerant circuit)	0 bar (abs)	

(1) Overpressure: The absolute maximum rating for pressure which may be safely applied to the product for it to remain in specification once pressure is returned to the operating pressure range. Exposure to higher pressure may cause permanent damage to the product.

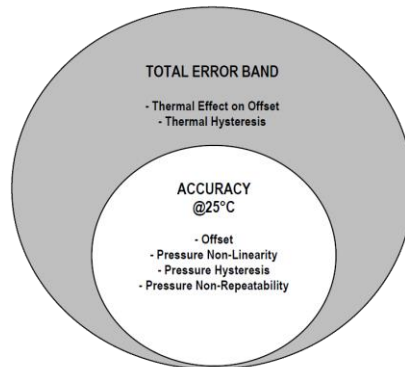
(2) Burst Pressure: The maximum pressure that may be applied to the product without causing escape of the pressure media. The product should not be expected to function after exposure to any pressure beyond the rated burst pressure. This rating is also the case burst rating of the product.

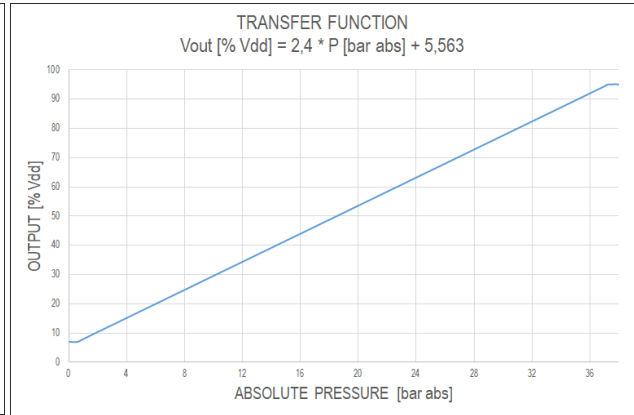
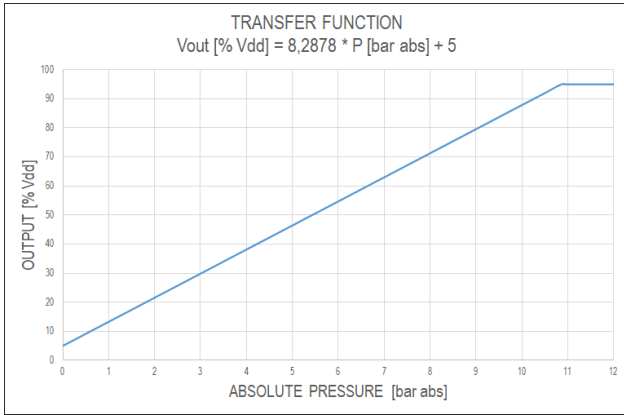
(3) Total Error Band: The maximum deviation from the ideal transfer function over the entire compensated temperature and pressure range. Includes all errors due to offset, pressure non-linearity, pressure hysteresis, repeatability, thermal effect on offset, and thermal hysteresis. See Figure 1.

EMC FEATURES (International EMC standards and major Car Makers EMC standards)	
RF Emissions – Artificial Network Measurement (AN Test) (Conducted Emissions on Supply Lines) (CISPR 25)	0,100 – 30MHz 30 – 76MHz 76 – 108MHz 108 – 174MHz
RF Emissions - Current Probe Measurement (Current on All Lines in Harness) (CISPR 25)	0,100 – 30MHz 30 – 76MHz 76 – 108MHz 108 – 174MHz
RF Emissions – Antenna Measurements (RE-Test, ALSE method)	30 – 75MHz 75 – 400MHz 400 – 1000MHz 0,100 – 0,160MHz 0,150 – 0,280MHz 0,520 – 1,730MHz 76 – 108MHz 108 – 166MHz 166 – 241MHz 310 – 320MHz 420 – 430MHz 430 – 438MHz 438 – 450MHz 717 – 728MHz 734 – 746MHz 746 – 756MHz 758 – 803MHz 791 – 821MHz 851 – 894MHz 925 – 960MHz 1452 – 1497MHz 1574 – 1577MHz 1595,5 – 1609,875MHz 1805 – 1880MHz 1880 – 1920MHz 1930 – 1990MHz 2110 – 2170MHz 2320 – 2345MHz 2402 – 2497MHz 2496 – 2690MHz 5170 – 5330MHz 5490 – 5730MHz 5735 – 5835MHz
Bulk Current Injection (BCI-Test) Test (ISO 11452-4)	0,1 – 2,38MHz 2,38 – 15MHz 15 – 88MHz 88 – 400MHz
RF Immunity – Antenna Irradiation (ALSE-Test) (ALSE with a Ground Plane) Test (ISO 11452-2)	200 – 380MHz, CW and AM, 1kHz at 80% 380 – 520MHz, CW and AM, 1kHz at 80% 520 – 806MHz, CW and AM, 1kHz at 80% 806 – 915MHz, CW and PM, 577µs duration, 217 Hz repetition rate 915 – 1200MHz, CW 1200 – 1400MHz, CW and PM, 3µs duration, 300Hz repetition rate 1400 – 1710MHz, CW 1710 – 1980MHz, CW and PM, 577µs duration, 217 Hz repetition rate 1980 – 2700MHz, CW 2700 – 3200MHz, CW and PM, 3µs duration, 300Hz repetition rate and ≤1,05µs duration, Pulse Repetition Frequency ≤1200Hz
Electrostatic Discharge – ESD Handling Test (ESDH-Test) (ISO 10605)	±15kV contact ±15kV air
Electrostatic Discharge – Indirect Discharge (ESDI Test) (Field Coupled) (ISO 10605)	±15kV field coupled contact
Electrostatic Discharge – Direct Discharge (ESDD Test) (Direct Coupled ESD, Both Air Discharge and Direct Discharge) (ISO 10605)	±8kV contact ±15kV air

ENVIRONMENTAL FEATURES (International ENVIRONMENTAL standards and major Car Makers ENVIRONMENTAL standards)	
Mechanical Shock - Collision	Shock Load: 500m/s² Shock Pulse Duration: 11 Milliseconds Shock Pulse per Axis: 10 Number of Axis Tested: 1 (Vehicle orientation) Total Number of Shock Pulses: 18
High Temperature Operation Endurance (HTOE)	Test temperature: 140°C Test duration: 240h Monitoring: Yes
Low Temperature Operation Endurance (LTOE)	Test temperature: -40°C Test duration: 96h Monitoring: Yes
Vibration Test with Thermal Cycle	Tmax: 140°C Tmin: -40°C Vibration Excitation: Wide-Band random vibration Test duration for each spatial axis: 8h RMS value of acceleration: 27,8m/s² Number of Axis Tested: 1 (Vehicle orientation)
Life Cycle Durability	Total Pressure Cycles: 2 million F.S. cycles Pressure Cycling Range: 0 to F.S. pressure Temperature Cycling Range: -40°C to 140°C
Thermal Shock	Cold Chamber Temperature: -40°C Hot Chamber Temperature: 140°C Dwell Time at each Temp. Level: 15 Minutes Transfer Time from Cold to Hot: < 30 Seconds Total Time for Cold-Hot Cycle: 30 Minutes Total Number of Cold-Hot Cycles: 250 Cycles

Figure 1.



Pressure transfer function:

NTC:

TEMPERATURE [°C]	R NOMINAL [Ω]	R MIN [Ω]	R MAX [Ω]
-40	333562	321654	345877
-30	176081	170611	181710
-20	96807	94221	99454
-10	53253	54004	56525
0	32640	32028	33260
10	19902	19601	20205
20	12493	12348	12639
25	10000	9900	10100
30	8056	7962	8150
40	5325	5247	5403
50	3601	3537	3665
60	2487	2436	2538
70	1751	1711	1792
80	1256	1224	1288
90	916	890	941
100	678	658	699
110	510	493	526
120	388	375	402
130	299	289	310
140	234	225	243
150	184	177	192

