

REV.	REVISION DESCRIPTION	ECO NO.	DATE
A	INITIAL RELEASE FOR PRODUCTION; DK	ECO-157659	05-APR-2017

PRODUCT SPECIFICATION 81CP26-01 **PRESSURE AND TEMPERATURE SENSOR** **FOR CNG/LPG RAIL PRESSURE APPLICATIONS**

General



"CONFIDENTIAL COMMERCIAL INFORMATION EXEMPT FROM DISCLOSURE UNDER EXEMPTION 4 OF THE FREEDOM OF INFORMATION ACT 5 U.S.C. 552 (B) (4)."

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1. GENERAL DATA

1.1 PRODUCT USE

Sensata Technologies products are developed for automotive applications. They may only be used within the parameters of these Product Specifications. Sensata Technologies products are provided with the express understanding that there is no warranty of fitness for a particular purpose. They are not fit for use other than specified, tested and validated within the release process during product launch. Fit for use warranty claims will be compared with the provided PPAP release package. Warranty claims that goes beyond of what is agreed in that PPAP package will not be awarded. The resale and or use of our products are at the Purchaser's own risk and his own responsibility. The examination of fitness for the intended use is the sole responsibility of the Purchaser. The Purchaser shall indemnify Sensata Technologies from all third party claims, including any claims for incidental or consequential damages, arising from any product use not covered by the Product Specifications and PPAP release status or not approved by Sensata Technologies and reimburse Sensata Technologies for all costs in connection with such claims. The Purchaser must monitor the market where the products are used, particularly with regard to product safety and inform Sensata Technologies without delay of all safety relevant incidents.

1.2 DESCRIPTION

This specification covers a solid state pressure transducer with NTC temperature element to sense the pressure and temperature in an automotive Compressed Natural Gas or LPG inlet rail system. The sensor shall provide a ratio metric output proportional to the pressure and supply voltage and a NTC resistance value in dependency of temperature. The sensor should not be used with a medium which contain sulfur as a composite in combination with water or water vapor higher than specified in this specification.

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1.3 GENERAL

The Product doesn't contain lead, mercury, cadmium or chromium six other than in cases listed in directive 2000/53/CE- annex II under the conditions specified therein.

Certificate numbers are

:

E4

110R-000095 (CNG)

67R-010179 (LPG)

1.4 CONFIGURATION

Housing

screw thread

external O-ring

Electrical Connector

The shape, material and the dimensions of the sensor are in accordance with

: Hexagon 24 mm with

: M12x1.25 and

: MQS key code A

: Envelope DWG T-678419-ENV

1.5 SENSOR CODING

Sensata Technologies type number

Date code

: 81CP26-01

: DDDYS

DDD = Day of the year.

Y = Last digit of the year

S = Shift number

Country of origin

Sensata Technologies brand name

: MX

: SENSATA

ISO15500 / R110 / R67 certificate number

:

E4

10R-000095

67R-010179

1.6 REQUIREMENTS

The performance of the sensor should comply with the requirements as defined in the product specification

Test Climate unless specified otherwise is according to

: Normal, 23/50-2 DIN 50014

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2. CHARACTERISTICS

2.1 OPERATING ENVIRONMENT

2.1.1 Operating Temperature Range

The minimal respectively maximal operating temperatures are : -30 °C to +130 °C
being the lowest respectively highest temperature at which the sensor will perform according to the characteristics listed in §2.2.
Sensor certified under ISO15500/ R110 and R67 conditions.

2.1.2 Storage Temperature Range

Minimal respectively maximal storage temperature are : -40 °C to +140 °C
being the lowest respectively highest ambient temperature allowed during storage or transportation without affecting the sensor performance under normal operating conditions.

2.1.3 Working medium

The working medium Natural gas : With a maximum of 30 ppm H₂S gas
and a maximum of 150 kg/MSCM water vapor
LPG : In accordance with EN589 and directive 70/220/EC
Type A, B annex 10.

2.1.4 Operating Pressure Range

The operating pressure range is : 50 to 1200 kPa abs

2.1.5 Proof Pressure

After being subjected to : 2400 kPa abs
the sensor will return to normal operation, conform
the characteristics as described in §2.2.

2.1.6 Burst Pressure

The burst pressure is : 3000 kPa abs
The sensor cannot be expected to return to normal operation after having been subjected to the burst pressure. The sensor will not cause leakage of the pressure medium when exposed to pressures up to the burst pressure.

2.1.7 Leak rate

Leak rate at 20 °C and at 1200 kPa should be less : 1 cc/hr

2.1.8 Environmental IP Protection Code

According to : DIN 40 050
the Sensor will comply to : 6K9K

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2.2 ELECTRICAL CHARACTERISTICS

2.2.1 Supply Voltage (Vcc)

The sensor requires a transient protected and regulated voltage supply. The sensor will operate properly at any supply voltage in the range : $5.0 \pm 5\%$ VDC.

2.2.2 Supply Current

The sensor will draw less than : 10 mA

2.2.3 Over voltage protection

The sensor is protected for voltages up to : 16 V

2.2.4 Output Noise Pressure signal

The output noise of the sensor, measured as RMS. noise will be less than : 0.2 % of Vcc

2.2.5 Electric scheme

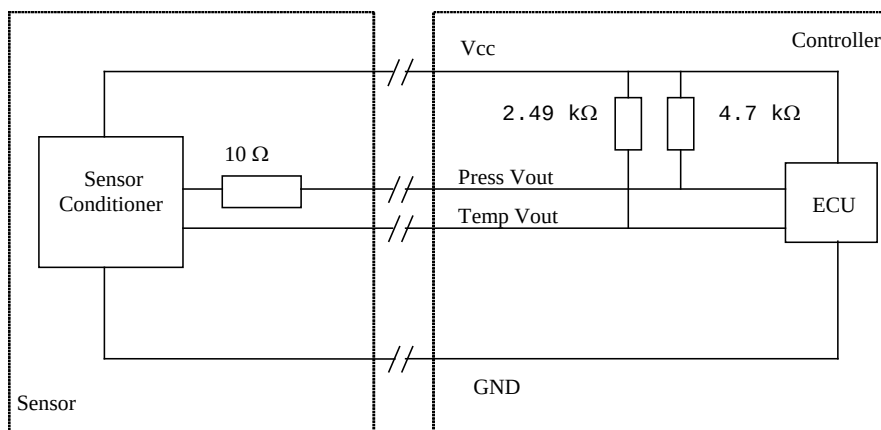


Figure 1: Operating schematic

2.2.6 Pressure Output Transfer Curve.

The nominal transfer curve will be expressed by : $V_{out} = V_{cc} * (K1 * P + K2)$
 With: V_{out} : Output voltage in [Vdc]
 V_{cc} : Supply voltage in [Vdc]
 $K1$: Slope transfer curve = 0.000696
 $K2$: Offset transfer curve = 0.0652
 P : Pressure in [kPa abs]

V_{cc} is described in section 2.2.1, $K1$ and $K2$ are defined to provide the desired transfer curve. The sensor shall be connected to the operating schematic according to Figure 1.

2.2.7 NTC Resistance curve.

The NTC resistance at 25 °C is : 10 kΩ nominal

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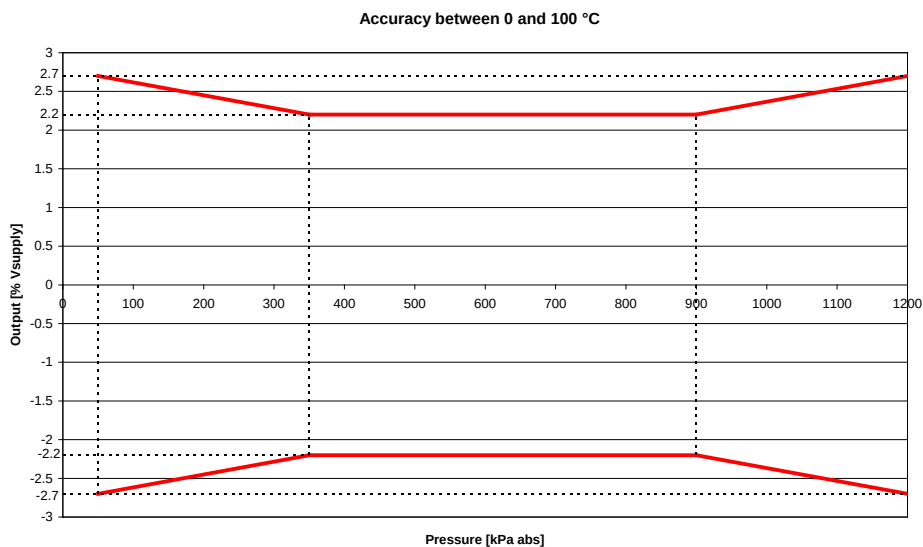
For T = function (R) see table page 16

2.2.8 Accuracy Pressure

The pressure output tolerance between 0 and 100 °C

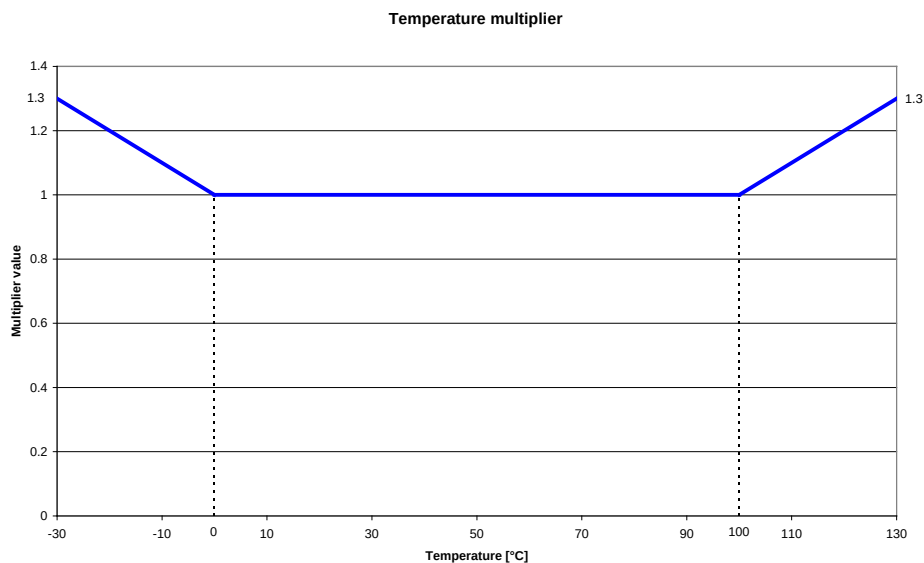
is

: see graph below



For the accuracy outside the above specified temperature range, the accuracy graph values above must be multiplied with

: see graph below



The output tolerance includes errors as hysteresis, repeatability, linearity and life.

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2.2.9 Accuracy Temperature

Temperature output accuracy between -30 to 130 °C
is : ± 3 °C
Temperature output accuracy between -10 to 80 °C
is : ± 1.5 °C

2.2.10 Response Time

Pressure signal
The time needed for the output to de-increase from : 250 kPa abs
to : 1000 kPa abs
of its final value after an applied step pressure input
of the maximum pressure shall be less then : 10 ms

Temperature signal
τ63 (T step response) in air is typical : 15 s.

2.3 MECHANICAL CHARACTERISTICS

2.3.1 Dimensions

The sensor will conform to the Envelope drawing : T-678419-ENV
Connector Pin Sequence
For the connector pin sequence : Ref. to Envelope DWG

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3. TESTS

The sensor will conform to the characteristics as described in chapter 2 after been subjected to the following tests.

3.1 MECHANICAL TESTS

3.1.1 Vibration

Sensor will be exposed to sinusoidal vibration sweep : 0.3175 mm peak-to-peak
in the frequency range from : 20 to 250 Hz
and : 35 g
in the frequency range : 250 to 350 Hz
and : 30 g
in the frequency range : 350 to 450 Hz
and : 25 g
in the frequency range : 450 to 550 Hz
and : 20 g
in the frequency range : 550 to 650 Hz
and : 15 g
in the frequency range : 650 to 2000 Hz
for the duration of : 24 hr
Sweep rate of : 1 octave per min
for each perpendicular axis.

3.1.2 Mechanical Shock

Sensor will be exposed to mechanical shocks
with a shock shape : half sinus
and an acceleration of : 30 g
for : 10 ms
Number of shocks : 2 times
For each perpendicular axis (6 shocks in total)

3.1.3 Fall test

Sensor will be exposed to a fall on concrete from a
height of : 1 m
For each perpendicular axis (3 falls in total)
If the sensor is affected, the damage must be visible.

3.1.4 Connector Axial Load

The sensor's integral connector will not break or
have functional defects when subjected to the
following:
Force parallel to the terminals of the connector
in connector push on direction : 200 N
and in connector pull off direction : 100 N

3.1.5 Terminal Push/Pull

The sensor's terminals will not break or have
functional defects when subjected to the following:

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Axial compression force of : 40 N
 Axial tension force of : 40 N

3.1.6 Connector fixing load

The sensor's integral connector fitting must be able
 to support a tensile load in the main axis of : 20 N
 And loads in both directions of the other two
 perpendicular sensor axis (4 times) of : 40 N

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3.2 ENVIRONMENTAL TESTS

3.2.1 Thermal Shock

The sensor will be subjected to fast temperature changes according to : DIN IEC 68 Part 2-14 Na

With the following characteristics:

Maximum temperature : 130 °C

Minimum temperature : -40 °C

Dwell time each temperature : 30 min.

Transition time : ≤ 30 s.

NR. of Cycles : 250

3.2.2 Salt Spray

With pressure port plugged and mating connector installed the sensor is exposed to a salt spray test according to : DIN 50 021 SS 5%

during : 240 hours

Visual criteria:

After test no oxidation of basic material, which can affect the sensor robustness and functionality.

3.2.3 High Pressure Water Jet

With pressure port plugged and mating connector installed the sensor is exposed to the water jet test according to : DIN 40 050

with IP Code : xx9K

3.2.4 Humidity and Temperature cycle

With pressure port plugged and mating connector installed the sensor is exposed to humidity / temperature test with the following characteristics:

Temperature : 80 ± 2 °C

Humidity : 90 + 5 %

Cycle time : 96 hours

3.2.5 Temperature storage cycle

The sensor is exposed to a temperature cycle with the following characteristics:

1. According to standard : CEI 60068-2-2

Temperature : 150 ± 2 °C

During : 100 hours

2. According to standard : CEI 60068-2-1

Temperature : -40 ± 2 °C

During : 100 hours

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3.2.6 Fluid Compatibility

With pressure port plugged and mating connector installed the sensor will be subjected to following automotive fluids:

1. No-lead gasoline.
2. Gasohol (premium no-lead gasoline (90-95%) and ethyl alcohol (5-10%))
3. Sour Gas (no-lead gasoline 50% and Toluene 50%)
4. Diesel fuel.
5. Salt (5%) Tap water.
6. Brake fluid.
7. Windshield solvent (Ethyl or Methyl based)
8. Engine coolant.
9. Power steering fluid.
10. Transmission fluid.
11. Engine oil.

By proceeding following procedure:

1. Sensor should be heated to 100 °C for 30 min.
2. Submerge sensor in one of above mentioned room temperature fluid for 30 min.
3. Repeat step 1 and 2 two times for a total of three heat/ submerge cycles, for each fluid mentioned.
4. Blow sensors dry and perform after 24 hours a functional test.

3.2.7 Dust

With pressure port plugged and mating connector installed the sensor is exposed to the dust test according to
with IP Code

: DIN 40 050

: 6Kxx

"CONFIDENTIAL COMMERCIAL INFORMATION EXEMPT FROM DISCLOSURE UNDER EXEMPTION 4 OF THE FREEDOM OF INFORMATION ACT 5 U.S.C. 552 (B) (4)."

DEVICE: APT PROJECT:	TITLE PRODUCT SPECIFICATION 81CP26-01	PRODUCTION	FIRST ISSUE DATE 05-APR-2017
BY: M. Herink	 JAN TINBERGENSTRAAT 80 7559 SP HENGEL THE NETHERLANDS	DWG. NO.	REV.
ENG: M. Herink		T-678478-PSP	A
APPR: A.Martinov		SIZE:	PAGE 13 OF 26
APPR:			

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3.3 ELECTRICAL TESTS

3.3.1 Electro Magnetic Compatibility

The sensors will be exposed to the following EMC disturbances according to:

- ISO 11452-4: Bulk current injection, Freq. range 20 MHz to 400 MHz : 60 mA/ Class A; 100 mA/ Class B; 200 mA/ Class C
- ISO 7637-3: Immunity to voltage spikes on signal lines : 1000 pulses / Class A
- ISO 11452-3: Immunity to radiated field (GTem) Freq. range 400 MHz to 2 GHz : Test level 80 V/m; Class B
Test level 200 V/m; Class C
- ISO 10605: ESD (Direct contact; 2000 Ω / 330 pF) : 10 times +/- 4 kV on pins and +/- 8 kV housing.

Class A : Output variation < $\pm$ 3%)
Class B : Output variation < $\pm$ 5%)
Class C : Output variation > $\pm$ 5%
After exposure no permanent damage allowed.

3.3.2 Output Short Circuit

While functioning with a : +5 V supply voltage
the sensor will be shorted from : Output to ground
followed by a short from : Output to supply
for a duration of : 10 minutes each

3.3.3 Over Voltage and reverse polarity

The sensor will be exposed to a continuous voltage of : +16 V supply voltage
During a time period of : 1 hour
The sensor will be exposed to a continuous voltage of : -14 V supply voltage
During a time period of : 1 hour

3.3.4 Dielectric strength

Sensor is exposed to an AC voltage between with all three sensor pins connected and housing with a voltage level of : 25 V
With a frequency of : 50 Hz
for a duration of : 1 minute
Requirement: No flash-over, corona discharge, disruptive breakdown or crackling.

3.3.5 Insulation resistance

Sensor is exposed to an AC voltage between with all three sensor pins connected and housing with a voltage level of : 25 V
for a duration of : 1 minute
Requirement: Insulation resistance : >500 k Ω

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ENG: M. Herink		REV. A
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3.4 PRESSURE TESTING

3.4.1 Pressure Cycling

Sensor is exposed to the following pressure cycle:

Low pressure : 100 kPa abs
High pressure : 1200 kPa abs
Frequency : 1 Hz
for a duration of : 500 hours

During the pressure cycling the temperature will
varies between : -20 °C (0.1 hr) and 130 °C (2 hr)

3.4.2 Leakage

Three sensor, mounted in a typical counterpart with
a torque of : 6 Nm
and filled with air and connected according to
specification, will be pressurized at : 1200 kPa abs
then the pressure source will be cut off and after a
stabilization period of 50 s + 10 s the measurement
starts.

Pressure drop should not exceed : 15 kPa during 1 hr
with volume of : 100 cm³

3.4.3 Response Time

The sensor will be de-pressurized from : 250 kPa
to : 1000 kPa
as : step response
After : 10 ms
the output should have reached its final value.

3.4.4 Proof Pressure Pulse

The device will be pressure cycled during : 1 hours
from : 100 kPa to 2400 kPa
with a frequency of : 2 Hz
After the test no cracks or plastic deformations
affecting the function of the device are allowed.

3.4.5 Burst Pressure

The device will be pressurized during : 2 minute
at : 3000 kPa

During and after the test the sensor must not rupture
or show signs of leakage. The sensor does not have
to be operative after exposure.

After above visual inspection the devices will be
exposed to increasing pressure, with oil as medium,
until burst. The pressure at which the device burst
will be monitored.

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4. TEST PLAN

4.1 CHARACTERIZATION& INSPECTION

A characterization and inspection of the sensor will be performed before and after the tests. Characterization will consist of a function test of the sensor. At following temperatures

: 23 ± 3 °C, -30 ± 3 °C, 100 ±3 °C, 130 ± 3 °C

On following pressure points

: 50, 350, 650, 900, 1200 kPa abs

Inspection will be a visual check for changed appearances.

4.2 DESIGN VALIDATION TESTS

Design Validation tests will be performed according to the test matrix in

: Chapter 6, Page 16

5. IN-LINE TESTS

During production, the following functional checks will be performed on every sensor:

Functional test

: at Room temperature

Functional test

: at 130°C

Helium leak test

: at Room temperature

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6. TEST MATRIX

Test description	Section of T-678476-PSP	No. of samples	Branch																	
Function Test	4.1		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Pressure Cycling	3.4.1	10	B																	
Leakage	3.4.2	3		B																
Response time	3.4.3	3		C																
Proof pressure pulses	3.4.4	5			B															
Burst pressure test	3.4.5	3		F																
Thermal shock	3.2.1	5				B														
Salt spray	3.2.2	3					B													
High pressure water jet	3.2.3	2						B												
Humidity an temperature cycle	3.2.4	5							B											
Temperature storage	3.2.5	5								B										
Fluid compatibility	3.2.6	11 X 2									B									
Dust	3.2.7	5										B								
EMC requirement	3.3.1	4 X 2											B							
Output short circuit	3.3.2	2												B						
Overvoltage reverse polarity	3.3.3	2													C					
Dielectric strength	3.3.4	2														D				
Insulation resistance	3.3.5	2														E				
Vibration	3.1.1	3															B			
Mechanical shock	3.1.2	2																B		
Fall test	3.1.3	2																	B	
Connector axial load	3.1.4	2																		B
Terminal push/pull	3.1.5	2																		B
Connector fixing load	3.1.6	2																C		
Visual inspection			C	D	C	C	C	C	C	C	C	C	C	C	F	C	D	G	C	E
Function test			D	E	D	D	D	D	D	D	D	D	D	D	G	D	E	H	D	F

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ENG: M. Herink		SIZE:	PAGE 17 OF 26
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7. NTC TEMPERATURE / RESISTANCE TABLE

T [°C]	R_nom [Ω]	R_min [Ω]	R_max [Ω]	dR/R [±%]	dT [±°C]	a [%/K]
-40.0	316180.80	301182.71	331178.89	4.74	0.73	6.47
-39.5	306132.59	291722.12	320543.06	4.71	0.73	6.45
-39.0	296444.60	282597.19	310292.01	4.67	0.73	6.43
-38.5	287086.06	273779.00	300393.13	4.64	0.72	6.41
-38.0	278060.90	265271.70	290850.10	4.60	0.72	6.39
-37.5	269340.92	257048.79	281633.05	4.56	0.72	6.37
-37.0	260929.60	249113.95	272745.25	4.53	0.71	6.35
-36.5	252800.79	241442.57	264159.00	4.49	0.71	6.33
-36.0	244957.90	234038.26	255877.54	4.46	0.71	6.31
-35.5	237376.91	226878.40	247875.42	4.42	0.70	6.29
-35.0	230060.90	219966.24	240155.56	4.39	0.70	6.28
-34.5	222987.34	213280.55	232694.14	4.35	0.70	6.26
-34.0	216159.50	206824.73	225494.27	4.32	0.69	6.24
-33.5	209556.58	200579.16	218533.99	4.28	0.69	6.22
-33.0	203181.60	194547.02	211816.18	4.25	0.69	6.20
-32.5	197015.48	188710.26	205320.69	4.22	0.68	6.18
-32.0	191060.90	183071.72	199050.08	4.18	0.68	6.16
-31.5	185300.14	177614.65	192985.63	4.15	0.68	6.14
-31.0	179735.80	172341.76	187129.84	4.11	0.67	6.12
-30.5	174351.37	167237.44	181465.30	4.08	0.67	6.10
-30.0	169149.40	162304.34	175994.46	4.05	0.67	6.08
-29.5	164101.34	157515.28	170687.41	4.01	0.66	6.06
-29.0	159223.70	152886.26	165561.14	3.98	0.66	6.04
-28.5	154505.29	148406.73	160603.84	3.95	0.66	6.02
-28.0	149945.10	144075.92	155814.28	3.91	0.65	6.01
-27.5	145532.71	139883.97	151181.45	3.88	0.65	5.99
-27.0	141267.30	135830.26	146704.34	3.85	0.64	5.97
-26.5	137139.04	131905.50	142372.58	3.82	0.64	5.95
-26.0	133147.40	128109.33	138185.47	3.78	0.64	5.93
-25.5	129283.38	124433.23	134133.53	3.75	0.63	5.91
-25.0	125546.40	120876.79	130216.01	3.72	0.63	5.89
-24.5	121928.01	117432.01	126424.00	3.69	0.63	5.87
-24.0	118427.80	114098.63	122756.97	3.66	0.62	5.86
-23.5	115038.00	110869.27	119206.73	3.62	0.62	5.84
-23.0	111758.20	107743.67	115772.73	3.59	0.62	5.82
-22.5	108580.98	104714.78	112447.18	3.56	0.61	5.80
-22.0	105506.20	101782.58	109229.82	3.53	0.61	5.78
-21.5	102527.07	98940.63	106113.51	3.50	0.61	5.76
-21.0	99643.38	96188.83	103097.93	3.47	0.60	5.75

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ENG: M. Herink		REV. A
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-20.5	96848.78	93521.14	100176.42	3.44	0.60	5.73
-20.0	94143.13	90937.53	97348.73	3.41	0.60	5.71
-19.5	91506.00	88418.34	94593.67	3.37	0.59	5.69
-19.0	88952.69	85978.43	91926.95	3.34	0.59	5.67
-18.5	86477.86	83612.75	89342.98	3.31	0.59	5.65
-18.0	84081.19	81321.04	86841.34	3.28	0.58	5.64
-17.5	81757.63	79098.50	84416.75	3.25	0.58	5.62
-17.0	79506.97	76945.03	82068.91	3.22	0.58	5.60
-16.5	77324.55	74856.16	79792.94	3.19	0.57	5.58
-16.0	75210.17	72831.78	77588.56	3.16	0.57	5.57
-15.5	73159.46	70867.73	75451.19	3.13	0.56	5.55
-15.0	71172.29	68963.94	73380.64	3.10	0.56	5.53
-14.5	69244.62	67116.56	71372.67	3.07	0.56	5.51
-14.0	67376.29	65325.51	69427.07	3.04	0.55	5.50
-13.5	65563.49	63587.13	67539.85	3.01	0.55	5.48
-13.0	63806.16	61901.43	65710.89	2.99	0.55	5.46
-12.5	62100.70	60264.97	63936.43	2.96	0.54	5.44
-12.0	60447.10	58677.79	62216.41	2.93	0.54	5.43
-11.5	58842.00	57136.68	60547.33	2.90	0.54	5.41
-11.0	57285.41	55641.69	58929.13	2.87	0.53	5.39
-10.5	55774.21	54189.85	57358.56	2.84	0.53	5.37
-10.0	54308.39	52781.19	55835.59	2.81	0.52	5.36
-9.5	52844.75	51373.76	54315.75	2.78	0.52	5.34
-9.0	51425.88	50008.96	52842.80	2.76	0.52	5.32
-8.5	50049.64	48684.79	51414.50	2.73	0.51	5.31
-8.0	48715.22	47400.46	50029.98	2.70	0.51	5.29
-7.5	47420.58	46154.06	48687.10	2.67	0.51	5.27
-7.0	46165.02	44944.93	47385.11	2.64	0.50	5.26
-6.5	44946.66	43771.27	46122.04	2.62	0.50	5.24
-6.0	43764.83	42632.49	44897.17	2.59	0.50	5.22
-5.5	42617.78	41526.89	43708.68	2.56	0.49	5.21
-5.0	41504.91	40453.92	42555.90	2.53	0.49	5.19
-4.5	40424.56	39412.01	41437.11	2.50	0.48	5.18
-4.0	39376.19	38400.66	40351.72	2.48	0.48	5.16
-3.5	38358.27	37418.40	39298.15	2.45	0.48	5.14
-3.0	37370.29	36464.75	38275.83	2.42	0.47	5.13
-2.5	36410.82	35538.37	37283.27	2.40	0.47	5.11
-2.0	35479.39	34638.81	36319.97	2.37	0.47	5.09
-1.5	34574.63	33764.76	35384.51	2.34	0.46	5.08
-1.0	33696.15	32915.85	34476.45	2.32	0.46	5.06
-0.5	32842.69	32090.90	33594.49	2.29	0.45	5.05

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0.0	32013.86	31289.53	32738.19	2.26	0.45	5.03
0.5	31221.86	30523.70	31920.02	2.24	0.45	5.02
1.0	30452.23	29779.29	31125.17	2.21	0.44	5.00
1.5	29703.65	29055.05	30352.26	2.18	0.44	4.98
2.0	28976.10	28350.96	29601.24	2.16	0.43	4.97
2.5	28268.32	27665.80	28870.83	2.13	0.43	4.95
3.0	27580.29	26999.60	28160.98	2.11	0.43	4.94
3.5	26910.86	26351.22	27470.50	2.08	0.42	4.92
4.0	26260.01	25720.67	26799.35	2.05	0.42	4.91
4.5	25626.60	25106.85	26146.36	2.03	0.41	4.89
5.0	25010.67	24509.80	25511.54	2.00	0.41	4.88
5.5	24411.19	23928.55	24893.83	1.98	0.41	4.86
6.0	23828.15	23363.09	24293.21	1.95	0.40	4.85
6.5	23260.56	22812.46	23708.66	1.93	0.40	4.83
7.0	22708.44	22276.70	23140.18	1.90	0.39	4.82
7.5	22170.87	21754.93	22586.82	1.88	0.39	4.80
8.0	21647.88	21247.16	22048.60	1.85	0.39	4.79
8.5	21138.58	20752.56	21524.60	1.83	0.38	4.77
9.0	20643.00	20271.16	21014.84	1.80	0.38	4.76
9.5	20160.31	19802.16	20518.47	1.78	0.37	4.75
10.0	19690.56	19345.61	20035.51	1.75	0.37	4.73
10.5	19233.29	18901.08	19565.50	1.73	0.37	4.72
11.0	18788.19	18468.28	19108.10	1.70	0.36	4.70
11.5	18354.53	18046.48	18662.57	1.68	0.36	4.69
12.0	17932.34	17635.74	18228.94	1.65	0.35	4.67
12.5	17520.92	17235.37	17806.47	1.63	0.35	4.66
13.0	17120.33	16845.45	17395.21	1.61	0.35	4.65
13.5	16729.91	16465.33	16994.50	1.58	0.34	4.63
14.0	16349.71	16095.06	16604.36	1.56	0.34	4.62
14.5	15979.10	15734.04	16224.15	1.53	0.33	4.60
15.0	15618.13	15382.33	15853.93	1.51	0.33	4.59
15.5	15266.22	15039.36	15493.08	1.49	0.32	4.58
16.0	14923.41	14705.18	15141.64	1.46	0.32	4.56
16.5	14589.15	14379.24	14799.06	1.44	0.32	4.55
17.0	14263.49	14061.62	14465.36	1.42	0.31	4.53
17.5	13945.90	13751.79	14140.00	1.39	0.31	4.52
18.0	13636.43	13449.81	13823.05	1.37	0.30	4.51
18.5	13334.59	13155.20	13513.98	1.35	0.30	4.49
19.0	13040.43	12868.02	13212.84	1.32	0.30	4.48
19.5	12753.48	12587.81	12919.15	1.30	0.29	4.47
20.0	12473.79	12314.63	12632.95	1.28	0.29	4.45

CONFIDENTIAL COMMERCIAL INFORMATION EXEMPT FROM DISCLOSURE UNDER EXEMPTION 4 OF THE FREEDOM OF INFORMATION ACT 5 U.S.C. 552 (B) (4).

DEVICE: APT PROJECT:	TITLE PRODUCT SPECIFICATION 81CP26-01	FIRST ISSUE DATE 05-APR-2017
BY: M. Herink ENG: M. Herink APPR: A.Martinov APPR:	 JAN TINBERGENSTRAAT 80 7559 SP HENGELO THE NETHERLANDS	DWG. NO. T-678478-PSP REV. A
	SIZE:	PAGE 20 OF 26

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REV.	REVISION DESCRIPTION	ECO NO.	DATE
A	INITIAL RELEASE FOR PRODUCTION; DK	ECO-157659	05-APR-2017

T [°C]	R_nom [Ω]	R_min [Ω]	R_max [Ω]	dR/R [±%]	dT [±°C]	a [%/K]
20.5	12197.26	12044.43	12350.09	1.25	0.28	4.44
21.0	11927.77	11781.04	12074.50	1.23	0.28	4.43
21.5	11664.97	11524.13	11805.81	1.21	0.27	4.41
22.0	11408.82	11273.66	11543.98	1.18	0.27	4.40
22.5	11159.00	11029.33	11288.67	1.16	0.26	4.39
23.0	10915.47	10791.09	11039.85	1.14	0.26	4.38
23.5	10677.91	10558.64	10797.18	1.12	0.26	4.36
24.0	10446.30	10331.96	10560.64	1.09	0.25	4.35
24.5	10220.34	10110.75	10329.93	1.07	0.25	4.34
25.0	10000.00	9900.00	10100.00	1.00	0.23	4.32
25.5	9786.22	9681.30	9891.15	1.07	0.25	4.31
26.0	9577.71	9472.90	9682.51	1.09	0.25	4.30
26.5	9374.16	9269.51	9478.80	1.12	0.26	4.29
27.0	9175.59	9071.15	9280.04	1.14	0.27	4.27
27.5	8981.74	8877.53	9085.94	1.16	0.27	4.26
28.0	8792.60	8688.67	8896.52	1.18	0.28	4.25
28.5	8607.92	8504.30	8711.54	1.20	0.28	4.24
29.0	8427.71	8324.44	8530.99	1.23	0.29	4.22
29.5	8251.73	8148.83	8354.62	1.25	0.30	4.21
30.0	8079.98	7977.48	8182.47	1.27	0.30	4.20
30.5	7912.23	7810.16	8014.29	1.29	0.31	4.19
31.0	7748.50	7646.89	7850.11	1.31	0.31	4.18
31.5	7588.56	7487.43	7689.69	1.33	0.32	4.16
32.0	7432.44	7331.81	7533.06	1.35	0.33	4.15
32.5	7279.91	7179.80	7380.01	1.38	0.33	4.14
33.0	7130.99	7031.43	7230.55	1.40	0.34	4.13
33.5	6985.49	6886.49	7084.49	1.42	0.34	4.12
34.0	6843.41	6744.99	6941.83	1.44	0.35	4.10
34.5	6704.57	6606.74	6802.39	1.46	0.36	4.09
35.0	6568.98	6471.76	6666.20	1.48	0.36	4.08
35.5	6436.47	6339.87	6533.06	1.50	0.37	4.07
36.0	6307.04	6211.08	6403.00	1.52	0.37	4.06
36.5	6180.53	6085.22	6275.83	1.54	0.38	4.05
37.0	6056.95	5962.31	6151.60	1.56	0.39	4.04
37.5	5936.14	5842.17	6030.12	1.58	0.39	4.02
38.0	5818.12	5724.82	5911.41	1.60	0.40	4.01
38.5	5702.72	5610.12	5795.33	1.62	0.41	4.00
39.0	5589.98	5498.07	5681.89	1.64	0.41	3.99
39.5	5479.73	5388.52	5570.94	1.66	0.42	3.98
40.0	5372.00	5281.50	5462.49	1.68	0.42	3.97
40.5	5267.39	5177.59	5357.18	1.70	0.43	3.96

"CONFIDENTIAL COMMERCIAL INFORMATION EXEMPT FROM DISCLOSURE UNDER EXEMPTION 4 OF THE FREEDOM OF INFORMATION ACT 5 U.S.C. 552 (B) (4)."

DEVICE: APT PROJECT:		TITLE PRODUCT SPECIFICATION 81CP26-01				PRODUCTION		FIRST ISSUE DATE 05-APR-2017	
BY: M. Herink		 JAN TINBERGENSTRAAT 80 7559 SP HENGEL THE NETHERLANDS				DWG. NO.		REV.	
ENG: M. Herink						T-678478-PSP		A	
APPR: A.Martinov									
APPR:						SIZE:	PAGE 21 OF 26		

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REV.	REVISION DESCRIPTION	ECO NO.	DATE
A	INITIAL RELEASE FOR PRODUCTION; DK	ECO-157659	05-APR-2017

T [°C]	R_nom [Ω]	R_min [Ω]	R_max [Ω]	dR/R [±%]	dT [±°C]	a [%/K]
41.0	5165.13	5076.05	5254.22	1.72	0.44	3.95
41.5	5065.08	4976.71	5153.46	1.74	0.44	3.93
42.0	4967.28	4879.63	5054.94	1.76	0.45	3.92
42.5	4871.57	4784.64	4958.51	1.78	0.46	3.91
43.0	4778.00	4691.79	4864.21	1.80	0.46	3.90
43.5	4686.43	4600.95	4771.91	1.82	0.47	3.89
44.0	4596.89	4512.13	4681.64	1.84	0.48	3.88
44.5	4509.24	4425.22	4593.26	1.86	0.48	3.87
45.0	4423.54	4340.25	4506.83	1.88	0.49	3.86
45.5	4339.64	4257.09	4422.19	1.90	0.49	3.85
46.0	4257.59	4175.77	4339.41	1.92	0.50	3.84
46.5	4177.26	4096.17	4258.34	1.94	0.51	3.83
47.0	4098.69	4018.34	4179.04	1.96	0.51	3.82
47.5	4021.75	3942.14	4101.37	1.98	0.52	3.81
48.0	3946.50	3867.61	4025.38	2.00	0.53	3.80
48.5	3872.80	3794.65	3950.95	2.02	0.53	3.79
49.0	3800.71	3723.29	3878.13	2.04	0.54	3.77
49.5	3730.10	3653.41	3806.79	2.06	0.55	3.76
50.0	3661.02	3585.05	3736.98	2.07	0.55	3.75
50.5	3592.66	3517.43	3667.88	2.09	0.56	3.74
51.0	3525.78	3451.29	3600.27	2.11	0.57	3.73
51.5	3460.31	3386.55	3534.06	2.13	0.57	3.72
52.0	3396.25	3323.23	3469.27	2.15	0.58	3.71
52.5	3333.53	3261.23	3405.83	2.17	0.59	3.70
53.0	3272.15	3200.58	3343.73	2.19	0.59	3.69
53.5	3212.06	3141.20	3282.91	2.21	0.60	3.68
54.0	3153.24	3083.10	3223.38	2.22	0.61	3.67
54.5	3095.65	3026.22	3165.08	2.24	0.61	3.66
55.0	3039.27	2970.55	3108.00	2.26	0.62	3.65
55.5	2984.06	2916.04	3052.08	2.28	0.63	3.64
56.0	2930.01	2862.69	2997.34	2.30	0.63	3.64
56.5	2877.07	2810.44	2943.71	2.32	0.64	3.63
57.0	2825.25	2759.30	2891.19	2.33	0.65	3.62
57.5	2774.48	2709.21	2839.74	2.35	0.65	3.61
58.0	2724.77	2660.18	2789.35	2.37	0.66	3.60
58.5	2676.06	2612.15	2739.97	2.39	0.67	3.59
59.0	2628.38	2565.13	2691.62	2.41	0.67	3.58
59.5	2581.65	2519.07	2644.23	2.42	0.68	3.57
60.0	2535.89	2473.97	2597.81	2.44	0.69	3.56
60.5	2491.31	2430.03	2552.58	2.46	0.69	3.55
61.0	2447.64	2387.00	2508.28	2.48	0.70	3.54

"CONFIDENTIAL COMMERCIAL INFORMATION EXEMPT FROM DISCLOSURE UNDER EXEMPTION 4 OF THE FREEDOM OF INFORMATION ACT 5 U.S.C. 552 (B) (4)."

DEVICE: APT PROJECT: TITLE PRODUCT SPECIFICATION 81CP26-01	FIRST ISSUE DATE 05-APR-2017
BY: M. Herink ENG: M. Herink APPR: A.Martinov APPR:	JAN TINBERGENSTRAAT 80 7559 SP HENGELO THE NETHERLANDS DWG. NO. T-678478-PSP SIZE: PAGE 22 OF 26 REV. A
FOR REFERENCE ONLY, CHECK LATEST REVISION BEFORE USE. PARTS MADE TO THIS PRINT MUST CONFORM TO QMS01106181 REV. E. SENSATA TECHNOLOGIES PROPRIETARY AND CONFIDENTIAL. NEITHER THIS PRINT NOR THE INFORMATION CONTAINED HEREON IS TO BE USED AGAINST THE INTERESTS OF SENSATA TECHNOLOGIES OR AGAINST THE INTERESTS OF ANY OF ITS AFFILIATED COMPANIES OR WHOLLY OWNED SUBSIDIARIES.	

REV.	REVISION DESCRIPTION	ECO NO.	DATE
A	INITIAL RELEASE FOR PRODUCTION; DK	ECO-157659	05-APR-2017

T [°C]	R_nom [Ω]	R_min [Ω]	R_max [Ω]	dR/R [±%]	dT [±°C]	a [%/K]
61.5	2404.84	2344.84	2464.84	2.49	0.71	3.53
62.0	2362.91	2303.54	2422.28	2.51	0.71	3.52
62.5	2321.80	2263.06	2380.55	2.53	0.72	3.51
63.0	2281.53	2223.40	2339.66	2.55	0.73	3.50
63.5	2242.05	2184.53	2299.56	2.57	0.73	3.49
64.0	2203.36	2146.46	2260.26	2.58	0.74	3.49
64.5	2165.42	2109.13	2221.72	2.60	0.75	3.48
65.0	2128.25	2072.55	2183.95	2.62	0.75	3.47
65.5	2091.80	2036.69	2146.91	2.63	0.76	3.46
66.0	2056.08	2001.56	2110.60	2.65	0.77	3.45
66.5	2021.04	1967.11	2074.98	2.67	0.78	3.44
67.0	1986.71	1933.35	2040.07	2.69	0.78	3.43
67.5	1953.03	1900.24	2005.82	2.70	0.79	3.42
68.0	1920.02	1867.79	1972.24	2.72	0.80	3.41
68.5	1887.63	1835.97	1939.29	2.74	0.80	3.40
69.0	1855.89	1804.78	1907.00	2.75	0.81	3.40
69.5	1824.75	1774.19	1875.30	2.77	0.82	3.39
70.0	1794.22	1744.21	1844.23	2.79	0.82	3.38
70.5	1764.17	1714.70	1813.64	2.80	0.83	3.37
71.0	1734.72	1685.79	1783.65	2.82	0.84	3.36
71.5	1705.82	1657.41	1754.22	2.84	0.85	3.35
72.0	1677.48	1629.60	1725.35	2.85	0.85	3.34
72.5	1649.66	1602.31	1697.02	2.87	0.86	3.34
73.0	1622.39	1575.55	1669.23	2.89	0.87	3.33
73.5	1595.62	1549.29	1641.95	2.90	0.87	3.32
74.0	1569.37	1523.55	1615.20	2.92	0.88	3.31
74.5	1543.61	1498.28	1588.93	2.94	0.89	3.30
75.0	1518.34	1473.50	1563.17	2.95	0.90	3.29
75.5	1493.53	1449.18	1537.87	2.97	0.90	3.29
76.0	1469.19	1425.34	1513.05	2.99	0.91	3.28
76.5	1445.30	1401.93	1488.68	3.00	0.92	3.27
77.0	1421.87	1378.97	1464.77	3.02	0.93	3.26
77.5	1398.86	1356.43	1441.30	3.03	0.93	3.25
78.0	1376.29	1334.32	1418.26	3.05	0.94	3.25
78.5	1354.13	1312.61	1395.64	3.07	0.95	3.24
79.0	1332.38	1291.32	1373.44	3.08	0.95	3.23
79.5	1311.03	1270.42	1351.64	3.10	0.96	3.22
80.0	1290.07	1249.91	1330.24	3.11	0.97	3.21
80.5	1269.48	1229.76	1309.20	3.13	0.98	3.21
81.0	1249.27	1209.98	1288.56	3.14	0.98	3.20
81.5	1229.42	1190.57	1268.28	3.16	0.99	3.19

"CONFIDENTIAL COMMERCIAL INFORMATION EXEMPT FROM DISCLOSURE UNDER EXEMPTION 4 OF THE FREEDOM OF INFORMATION ACT 5 U.S.C. 552 (B) (4)."

DEVICE: APT PROJECT: TITLE PRODUCT SPECIFICATION 81CP26-01	FIRST ISSUE DATE 05-APR-2017
BY: M. Herink ENG: M. Herink APPR: A.Martinov APPR:	JAN TINBERGENSTRAAT 80 7559 SP HENGELO THE NETHERLANDS DWG. NO. T-678478-PSP SIZE: PAGE 23 OF 26 REV. A
FOR REFERENCE ONLY, CHECK LATEST REVISION BEFORE USE. PARTS MADE TO THIS PRINT MUST CONFORM TO QMS01106181 REV. E. SENSATA TECHNOLOGIES PROPRIETARY AND CONFIDENTIAL. NEITHER THIS PRINT NOR THE INFORMATION CONTAINED HEREON IS TO BE USED AGAINST THE INTERESTS OF SENSATA TECHNOLOGIES OR AGAINST THE INTERESTS OF ANY OF ITS AFFILIATED COMPANIES OR WHOLLY OWNED SUBSIDIARIES.	

REV.	REVISION DESCRIPTION	ECO NO.	DATE
A	INITIAL RELEASE FOR PRODUCTION; DK	ECO-157659	05-APR-2017

T [°C]	R_nom [Ω]	R_min [Ω]	R_max [Ω]	dR/R [±%]	dT [±°C]	a [%/K]
82.0	1209.94	1171.51	1248.38	3.18	1.00	3.18
82.5	1190.81	1152.80	1228.82	3.19	1.01	3.17
83.0	1172.03	1134.44	1209.63	3.21	1.01	3.17
83.5	1153.58	1116.40	1190.77	3.22	1.02	3.16
84.0	1135.48	1098.70	1172.25	3.24	1.03	3.15
84.5	1117.69	1081.32	1154.06	3.25	1.04	3.14
85.0	1100.23	1064.26	1136.20	3.27	1.04	3.14
85.5	1083.07	1047.49	1118.65	3.28	1.05	3.13
86.0	1066.23	1031.04	1101.42	3.30	1.06	3.12
86.5	1049.68	1014.88	1084.48	3.32	1.07	3.11
87.0	1033.43	999.01	1067.85	3.33	1.07	3.11
87.5	1017.47	983.42	1051.51	3.35	1.08	3.10
88.0	1001.79	968.12	1035.46	3.36	1.09	3.09
88.5	986.39	953.08	1019.69	3.38	1.10	3.08
89.0	971.26	938.32	1004.20	3.39	1.10	3.08
89.5	956.39	923.81	988.97	3.41	1.11	3.07
90.0	941.79	909.57	974.01	3.42	1.12	3.06
90.5	927.43	895.56	959.30	3.44	1.13	3.05
91.0	913.33	881.81	944.85	3.45	1.13	3.05
91.5	899.47	868.29	930.65	3.47	1.14	3.04
92.0	885.85	855.02	916.69	3.48	1.15	3.03
92.5	872.47	841.97	902.97	3.50	1.16	3.02
93.0	859.32	829.16	889.49	3.51	1.16	3.02
93.5	846.40	816.56	876.24	3.53	1.17	3.01
94.0	833.70	804.19	863.22	3.54	1.18	3.00
94.5	821.22	792.03	850.41	3.55	1.19	3.00
95.0	808.96	780.09	837.83	3.57	1.19	2.99
95.5	796.90	768.34	825.46	3.58	1.20	2.98
96.0	785.05	756.81	813.30	3.60	1.21	2.97
96.5	773.40	745.46	801.34	3.61	1.22	2.97
97.0	761.96	734.32	789.59	3.63	1.23	2.96
97.5	750.70	723.36	778.04	3.64	1.23	2.95
98.0	739.64	712.60	766.68	3.66	1.24	2.95
98.5	728.76	702.01	755.51	3.67	1.25	2.94
99.0	718.07	691.61	744.53	3.68	1.26	2.93
99.5	707.55	681.38	733.72	3.70	1.26	2.93
100.0	697.22	671.33	723.11	3.71	1.27	2.92
100.5	687.18	661.56	712.79	3.73	1.28	2.91
101.0	677.30	651.96	702.64	3.74	1.29	2.91
101.5	667.59	642.52	692.66	3.76	1.30	2.90
102.0	658.04	633.24	682.84	3.77	1.30	2.89

"CONFIDENTIAL COMMERCIAL INFORMATION EXEMPT FROM DISCLOSURE UNDER EXEMPTION 4 OF THE FREEDOM OF INFORMATION ACT 5 U.S.C. 552 (B) (4)."

DEVICE: APT PROJECT: TITLE PRODUCT SPECIFICATION 81CP26-01 FIRST ISSUE DATE 05-APR-2017	BY: M. Herink ENG: M. Herink APPR: A.Martinov APPR: JAN TINBERGENSTRAAT 80 7559 SP HENGELO THE NETHERLANDS DWG. NO. T-678478-PSP SIZE: PAGE 24 OF 26 REV. A
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REV.	REVISION DESCRIPTION	ECO NO.	DATE
A	INITIAL RELEASE FOR PRODUCTION; DK	ECO-157659	05-APR-2017

T [°C]	R_nom [Ω]	R_min [Ω]	R_max [Ω]	dR/R [±%]	dT [±°C]	a [%/K]
102.5	648.65	624.11	673.19	3.78	1.31	2.89
103.0	639.42	615.14	663.70	3.80	1.32	2.88
103.5	630.33	606.31	654.35	3.81	1.33	2.87
104.0	621.40	597.63	645.17	3.83	1.33	2.87
104.5	612.61	589.09	636.13	3.84	1.34	2.86
105.0	603.97	580.70	627.24	3.85	1.35	2.85
105.5	595.47	572.45	618.50	3.87	1.36	2.85
106.0	587.11	564.33	609.89	3.88	1.37	2.84
106.5	578.89	556.34	601.43	3.89	1.37	2.83
107.0	570.80	548.49	593.10	3.91	1.38	2.83
107.5	562.84	540.76	584.91	3.92	1.39	2.82
108.0	555.01	533.17	576.85	3.93	1.40	2.81
108.5	547.30	525.69	568.91	3.95	1.41	2.81
109.0	539.72	518.34	561.11	3.96	1.41	2.80
109.5	532.26	511.10	553.43	3.98	1.42	2.80
110.0	524.93	503.99	545.87	3.99	1.43	2.79
110.5	517.67	496.95	538.39	4.00	1.44	2.78
111.0	510.53	490.03	531.03	4.02	1.45	2.78
111.5	503.50	483.21	523.79	4.03	1.45	2.77
112.0	496.58	476.51	516.66	4.04	1.46	2.76
112.5	489.78	469.91	509.64	4.06	1.47	2.76
113.0	483.08	463.42	502.74	4.07	1.48	2.75
113.5	476.49	457.04	495.94	4.08	1.49	2.75
114.0	470.00	450.75	489.25	4.10	1.50	2.74
114.5	463.61	444.57	482.66	4.11	1.50	2.73
115.0	457.33	438.48	476.18	4.12	1.51	2.73
115.5	451.14	432.49	469.80	4.13	1.52	2.72
116.0	445.06	426.59	463.52	4.15	1.53	2.72
116.5	439.06	420.79	457.33	4.16	1.54	2.71
117.0	433.16	415.08	451.24	4.17	1.54	2.70
117.5	427.35	409.46	445.24	4.19	1.55	2.70
118.0	421.63	403.93	439.34	4.20	1.56	2.69
118.5	416.00	398.48	433.53	4.21	1.57	2.69
119.0	410.46	393.12	427.81	4.23	1.58	2.68
119.5	405.00	387.84	422.17	4.24	1.59	2.67
120.0	399.63	382.64	416.62	4.25	1.59	2.67
120.5	394.38	377.56	411.20	4.26	1.60	2.66
121.0	389.21	372.57	405.86	4.28	1.61	2.66
121.5	384.12	367.64	400.60	4.29	1.62	2.65
122.0	379.11	362.80	395.42	4.30	1.63	2.64
122.5	374.17	358.03	390.32	4.31	1.64	2.64

"CONFIDENTIAL COMMERCIAL INFORMATION EXEMPT FROM DISCLOSURE UNDER EXEMPTION 4 OF THE FREEDOM OF INFORMATION ACT 5 U.S.C. 552 (B) (4)."

DEVICE: APT PROJECT:		TITLE PRODUCT SPECIFICATION 81CP26-01		PRODUCTION		FIRST ISSUE DATE 05-APR-2017	
BY: M. Herink		 JAN TINBERGENSTRAAT 80 7559 SP HENGELO THE NETHERLANDS		DWG. NO.		REV.	
ENG: M. Herink				T-678478-PSP		A	
APPR: A.Martinov				SIZE:		PAGE 25 OF 26	
APPR:							
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REV.	REVISION DESCRIPTION	ECO NO.	DATE
A	INITIAL RELEASE FOR PRODUCTION; DK	ECO-157659	05-APR-2017

T [°C]	R_nom [Ω]	R_min [Ω]	R_max [Ω]	dR/R [±%]	dT [±°C]	a [%/K]
123.0	369.31	353.33	385.29	4.33	1.64	2.63
123.5	364.52	348.70	380.34	4.34	1.65	2.63
124.0	359.81	344.15	375.47	4.35	1.66	2.62
124.5	355.16	339.66	370.66	4.37	1.67	2.62
125.0	350.59	335.24	365.93	4.38	1.68	2.61
125.5	346.07	330.90	361.25	4.38	1.69	2.60
126.0	341.62	326.63	356.64	4.39	1.69	2.59
126.5	337.25	322.42	352.11	4.40	1.70	2.58
127.0	332.93	318.27	347.64	4.40	1.71	2.58
127.5	328.68	314.18	343.24	4.41	1.72	2.57
128.0	324.51	310.15	338.91	4.43	1.73	2.56
128.5	320.39	306.18	334.64	4.44	1.73	2.56
129.0	316.33	302.26	330.44	4.45	1.75	2.55
129.5	312.33	298.40	326.29	4.46	1.76	2.55
130.0	308.39	294.60	322.21	4.47	1.76	2.54

"CONFIDENTIAL COMMERCIAL INFORMATION EXEMPT FROM DISCLOSURE UNDER EXEMPTION 4 OF THE FREEDOM OF INFORMATION ACT 5 U.S.C. 552 (B) (4)."

DEVICE: APT PROJECT:	TITLE PRODUCT SPECIFICATION 81CP26-01 PRODUCTION	FIRST ISSUE DATE 05-APR-2017
BY: M. Herink ENG: M. Herink APPR: A.Martinov APPR:	JAN TINBERGENSTRAAT 80 7559 SP HENGELO THE NETHERLANDS  Sensata Technologies	DWG. NO. T-678478-PSP REV. A SIZE: PAGE 26 OF 26

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