DBK100™ & DBK101™

In-Vehicle Thermocouple Measurement Pod

NEW

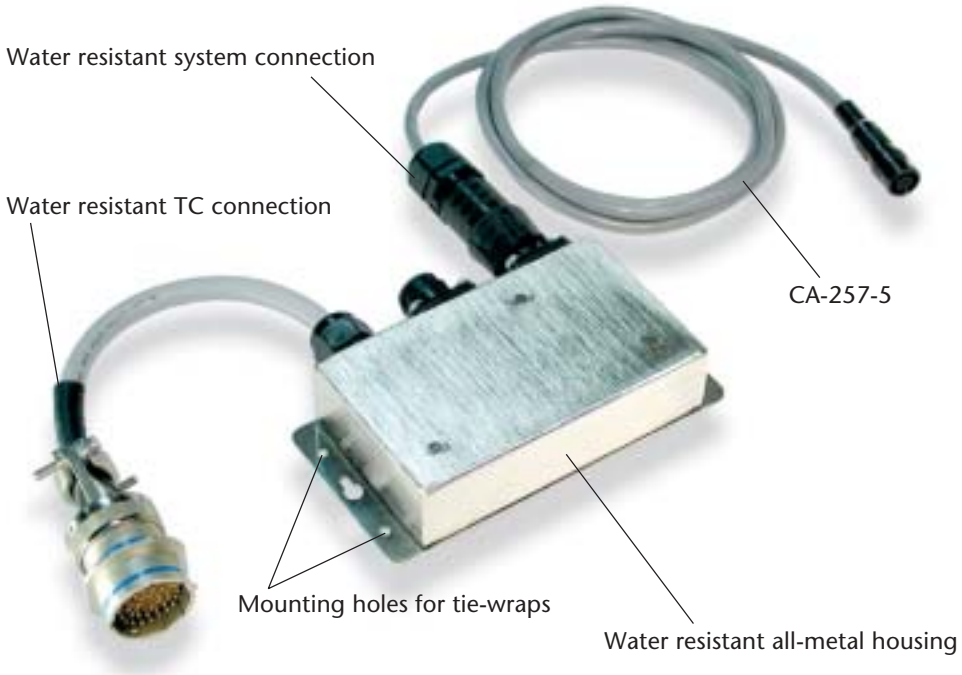
CE†

Compatibility: ✔ DaqBook

Features

- **Measure vehicle engine temperatures with remote DBK100 pods**
- **One cable transmits up to 56 channels of TC measurements from the engine compartment to the data acquisition system**
- **Up to 896 TCs per system**

Note: Contact factory for additional versions of the DBK100 with different TC connection options.

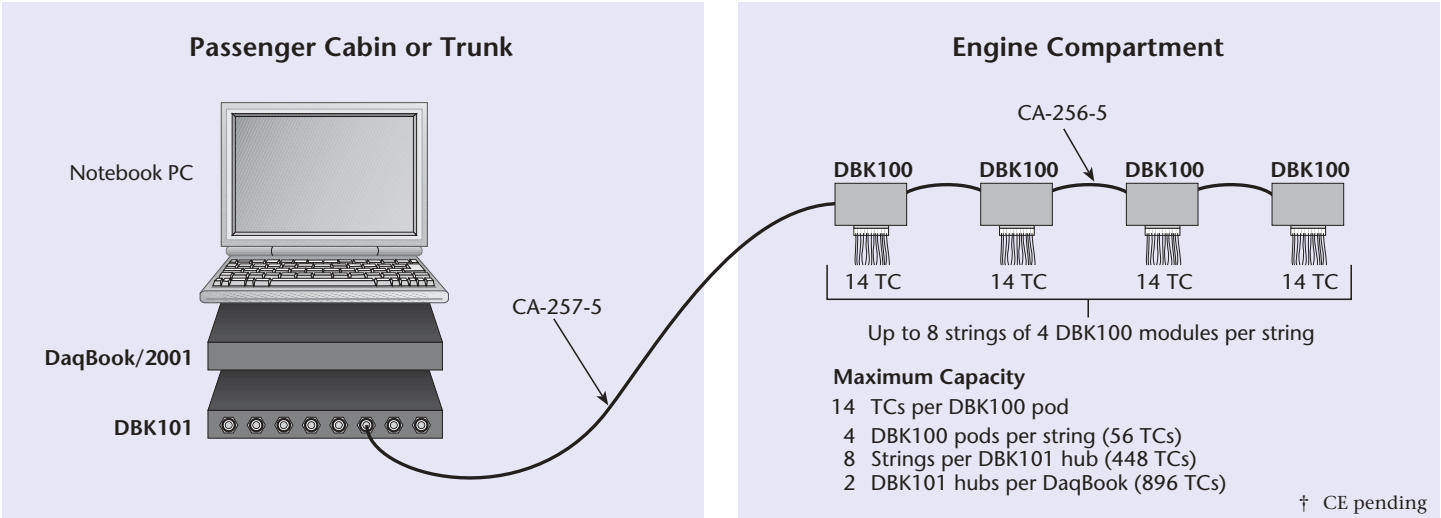


Water resistant thermocouple pod mounts under the hood or interior of the vehicle allowing up to 448 TC (DBK100) or 896 TC (DBK101) channels to be measured

The DBK100™ provides thermocouple measurement capability for in-vehicle applications, and is particularly well suited for TC measurements in proximity to a vehicle engine. With operating temperature of -40˚ to +125˚C, and water resistant packaging and cabling, the DBK100 is ideally suited for applications where engine compartment temperature measurements are required. The DBK100 pods are housed in a rugged and water resistant, all-metal package designed specifically for harsh environments. TC and system connections to each pod are water resistant, and are all accessible from one direction, enabling the pod to be mounted and its I/O accessed without having to remove the pod.

Each DBK100 pod accepts 14 channel TC inputs, and up to 4 pods can be daisy-chained for a total channel capacity of 56 channels per string of 4 pods. Up to 8 strings of 4 pods can be connected to one DBK101™ hub, for a total channel capacity of 448 TC channels per hub. The DBK101 hub attaches to a DaqBook/2000™ series A/D module, which can accept two DBK101 hubs, for a total system channel capacity of 896 channels per DaqBook/2000 system (see diagram). The DBK100 Series can also be used with IOtech WaveBook systems, where it attaches to a WBK40 or 41, and has the same channel capacity as with a DaqBook/2000™.

The benefit of a DBK100 system is that for every 56 TC input channels, only a single cable is required back to the measurement equipment in the passenger cabin. Thus the length of the TC wire can be much shorter, and the number of long cables back to the passenger cabin is reduced by a factor of 56. Besides reducing the length of TC wire, this system substantially reduces the opening between the engine compartment and the passenger compartment.



† CE pending

DBK100™ & DBK101™

Specifications & Ordering Information

The DBK100 supports any TC type attached to any channel. All linearization and cold-junction compensation is automatically corrected in the system, resulting in stable and accurate temperature measurements with typical accuracy of better than 2˚C. All 56 TC channels can be measured in 64 ms. A maximum channel system of 896 TCs can be measured in about 1 second.

The DBK101 module is a hub for up to 8 strings of DBK100 pods. Each DBK101 includes a P1 connector for attaching to a DaqBook or WBK40/41, plus connectors for attaching up to 8 strings of DBK100 pods (up to 4 pods per string). The maximum channel capacity of one DBK101 module is 448. If more than 448 channels are required, an additional DBK101 is powered directly from the DaqBook or WBK40/41 module, and thus no additional power source is required.

DBK101

TC Accuracy* at Measurement Temperature in ˚C (±˚C)											
Type	Min	Max	-100	0	100	300	500	700	900	1100	1400
J	-200	760	1.2	1.0	1.0	1.2	1.4	1.4	—	—	—
K	-200	1200	1.4	1.2	1.2	1.4	1.6	1.6	1.8	2.0	—
T	-200	400	1.4	1.2	1.2	1.2	—	—	—	—	—
E	-270	650	1.2	1.0	1.0	1.0	1.2	—	—	—	—
S	-50	1768	—	4.6	3.6	3.0	3.0	2.8	3.0	3.2	3.2
R	-50	1768	—	4.6	3.2	3.0	2.8	2.8	2.6	2.8	3.0
B	50	1780	—	—	—	7.4	4.8	4.2	3.6	3.4	3.0
N28	-270	400	1.8	1.4	1.4	1.4	—	—	—	—	—
N14	0	1300	—	1.4	1.4	1.4	1.6	1.6	1.8	2.0	—

* Accuracy conditions:
- Exclusive of thermocouple errors
- Exclusive of noise
- VCM=0
- 25˚C ambient temperature, stabilized for 1 hour

** For applications where higher common-mode TC measurements are required, the DaqBook and WaveBook systems offer high-isolation options up to 500V. These options would reside at the DaqBook or WaveBook, and require running the TC wire from the engine to the passenger compartment.

Specifications

System Compatibility: Attaches to DaqBook/2000 Series, or to a WBK40 or WBK41. Requires DBK101 hub
System Cabling
Total cabling length for one string of DBK100s should not exceed 20 ft.
DBK100 to DBK100: CA-256-5, 5 ft.
DBK100 to DBK101: CA-257-5, 5 ft.
DBK101 to DaqBook: CA-255-xT
TC Connectors: 1 pigtail cable assembly to Deutsch MS3471L20-41P military style connector; CJC thermistor assembled onto connector
Inputs: 14 differential TC inputs, open TC detection per channel
TC Types: J, K, T, E, S, R, B, N28, N14
Speed: Maximum TC measurement rate:
1 TC channel in 3 ms
14 TC channels in 16 ms
56 TC channels in 64 ms
896 TC channels in 1024 ms
Dimensions
DBK100: 127 mm W x 76 mm D x 31 mm H (5" x 3" x 1.2")
DBK101: 285 mm W x 220 mm D x 45 mm H (11" x 8.5" x 1.75")
Weight
DBK100: 0.3 kg (0.66 lbs.)
DBK101: 1.13 kg (2.5 lbs.)
Power Requirements
DBK100: 10 mA from +15V, 10 mA from -15V, 300 mW total
DBK101: 40 mA from +15V, 40 mA from -15V, 300 mA from +5V, 2700 mW total
Input Impedance: 4M Ohm (differential) in parallel with 400 pF
Input Bandwidth: 1 kHz
Minimum Resolution: 0.1°C for all TC types
TC Accuracy*: Valid for one year 25°C ambient, see table below
Operating Temperature:
DBK100: -40° to +125°C
DBK101: -30° to +70°C
Storage Temperature: -40° to +125°C
Relative Humidity: 0 to 95% non-condensing
Unit is water resistant.
Temperature Coefficient of Accuracy for Type T TC: ±0.05°C for every °C away from 25°C
Channel-to-Channel Crosstalk: -90 dB typ (0 to 100 Hz)
DC CMRR: -80 dB typ
AC CMRR: -80 dB typ (0 to 60 Hz)
Maximum Common Mode Voltage: ±5V**
Over-Voltage Protection: ±40V

Ordering Information

Description	Part No.
14-channel thermocouple input pod	DBK100
8-port hub for DBK100 pod	DBK101

Accessories & Cables

Rack mount kit	RackDBK3
Shielded P1 T cable for use with DaqBook/2020, LogBook/360, and WBK40/41	CA-255-4T
Shielded P1 T cable for use with DaqBook/2001, DaqBook/2005, LogBook/300, DaqLab/2001, and DaqLab/2005	CA-255-2T
Ribbon cable for use with DaqScan	CA-37-x
DBK100 to DBK100 cable, 5 ft.	CA-256-5
DBK100 to DBK101 cable, 5 ft.	CA-257-5

Note: The CA-37-x ribbon cable can also be used in lieu of the CA-255-x molded T cables.

For complete information on accessories and cables, visit **www.iotech.com/acc**