

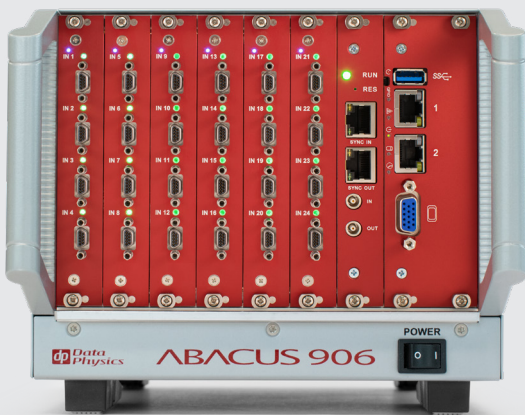
## Multi Function Bridge, Voltage and ICP Channel Card

DP900-4M

The Multi Function precision measurement card adds strain measurement to the 900 Series platform, and is an all-in-one solution for bridge, voltage and IEPE/ICP (including TEDS) signal conditioning.

Featuring 4 versatile input channels with secure micro-D9 connectors in the front-end, the Multi Function card can tackle a wide range of dynamic signal measurement applications.

The Multi Function card provides an integrated and synchronized solution for SignalCalc 900 analyzer and controller applications.



### Performance Highlights

Supports Quarter, Half and Full Bridge configurations, IEPE/ICP and bridge sensors.

Includes 120  $\Omega$  and 350  $\Omega$  completion resistors and a 100 K $\Omega$  shunt resistors for each channel.

Supplies user configurable  $\pm 5$  V bridge power with precision DACs.

Compensates high value bridge unbalance with nulling DAC during offset calibration.

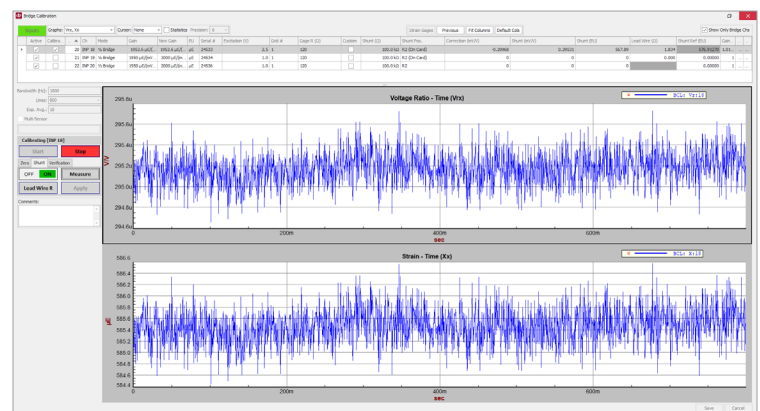
### New Software Features

Strain gauge database enables a quick and intuitive test setup.

Built in bridge balancing and shunt calibration for optimal performance.

Real-time temperature compensation of strain using thermocouple data.

Real-time principal strain and stress calculations for strain gauge rosettes.



## Specifications

### General

4 individually configurable inputs via micro-D9 connectors

Supported inputs:

- Voltage / ICP / IEPE
- Quarter, Half and Full Bridge

ADC Resolution: 24 bits Sigma Delta

Maximum Sampling Frequency: 216 kSamples/s, arbitrarily selectable

Coupling: AC (0.5 Hz) / DC, DIFF / SE

Input Range: 0.1 V, 0.31 V, 1 V, 3 V, 10 V

Impedance: DIFF: 1 M $\Omega$  / 100 pF + 1 M $\Omega$  / 100 pF  
SE: 1 M $\Omega$  / 100 pF + 50  $\Omega$

Input Common-Mode Range: 200 % FS (100% FS, 10 V)

Common-Mode Rejection Ratio: 100 dB (0.1 V input range, at 50/60 Hz)

	SNR (20 KHz BW)	SFDR (20 KHz BW)
0.1V:	-95dB	-134dB
1V:	-110dB	-147dB
10V:	-114dB	-150dB

	SNR (2 KHz BW)	SFDR (2 KHz BW)
0.1V:	-104dB	-138dB
1V:	-117dB	-150dB
10V:	-120dB	-158dB

Amplitude Accuracy:  $\pm 0.2\%$  FS at 1 KHz

Phase Accuracy:  $\pm 0.5^\circ$  at 40 KHz

CrossTalk: -100 dB at 1 KHz

Residual Offset:  $\pm 0.1\%$  FS Max

Total Harmonic Distortion (THD): -90 dB at 1 KHz

### Bridge:

Bridge Configuration:

- Full Bridge (6 Wires + Shunt line)
- Half Bridge (5 Wires + Shunt line)
- Quarter Bridge (3 Wires)

Bridge Voltage: 0 to  $\pm 5$ V arbitrarily selectable and symmetrical excitation with 0.1% accuracy with excitation sense lines.

Bridge Current: 60 mA per channel pair, with overcurrent protection.

Completion Resistors (QB): 120  $\Omega$  and 350  $\Omega$ ,  $\pm 0.02\%$ , 0.2 ppm

Completion Resistors (HB): 2.5 K $\Omega$  / 2.5 K $\Omega$ ,  $\pm 0.05\%$ , 2 ppm

Zeroing / Offset Calibration: Automatic offset compensation with nulling DAC (HW) and zeroing (SW).

Shunt Calibration Resistor: 100 K $\Omega$ ,  $\pm 0.1\%$

Gauge Resistance	Shunt Reference
120 $\Omega$	599 $\mu\epsilon$
350 $\Omega$	1744 $\mu\epsilon$

### Voltage:

ICP: 24 V, 5 mA ( $\pm 5\%$ )

Transducer identification: TEDS v1.0, IEEE 1451.4