

Pressure-Temperature (PT) Instrument

The PT instrument measures ambient pressure and temperature of the outside air surrounding an aircraft in flight. Since there is always a velocity-heating factor that effects the temperature measurement, ram pressure must also be measured. The PT instrument consists of two, accurate pressure transducers for measuring static and ram pressure, an accurate conditioning amplifier for the platinum resistor temperature probe, a means for tapping into the WB-57F pitot/static system, a platinum resistor temperature probe, and a computer for taking the probe measurements and recording the data. The temperature probe must mount outside the aircraft in the free air stream.

The PT instrument is a 1 cubic foot electronics box and a flat plate that mounts underneath the nose that holds the temperature sensor and the pressure transducers. The instrument has been integrated and flown successfully on the NASA WB-57F and is designed to co-exist in the nose section with the PALMS instrument. Recent deployments include the Atmospheric Chemistry of Combustion Emissions Near the Tropopause (ACCENT I & II) and CWVCS (Clouds and Water Vapor in the Climate System (CWVCS) experiments.

Accuracy:	0.1 mb (pressure); temperature accuracy 0.5 K.
Precision:	0.03 mb (pressure)/ 0.03 K (temp)
Data rate:	1 sec
Weight:	6 kg
Power:	250 W (mostly heaters)