

Ion Velocity Meter (IVM)

part of
Coupled Ionosphere-Neutral Dynamics Investigation (CINDI)

Rod Heelis, University of Texas at Dallas

The Ion Velocity Meter (IVM) consists of two sensors, an ion drift meter (IDM) and a retarding potential analyzer (RPA) that will directly measure the ion drift vector, the ion temperature, and the major ion composition with a spatial resolution of ~4 km along the satellite track. The IDM will also provide measurements of the local vertical and horizontal ion drift components with a spatial resolution of 500 m.

Measurement Output	Units	Estimated Accuracy	Frequency (Cadence)	Estimated Range of Output Values
Crosstrack Local Vertical Ion Drift Speed	m/s	+/- 5 m/s	8 Hz	-1000 to +1000
Crosstrack Local Horizontal Ion Drift Speed	m/s	+/- 5 m/s	8 Hz	-1000 to +1000
Intrack Local Horizontal Ion Drift Speed	m/s	+/- 7 m/s	2 Hz	-1000 to +1000
Total Ion Concentration	cm ⁻³	+/- 8%	2 Hz	1e2 to 1e6
Bulk Ion Temperature	deg K	+/- 150 K	2 Hz	500 to 10000

The Coupled Ion Neutral Dynamics Investigation (CINDI) is sponsored by NASA. This collaborative endeavor between the Air Force and NASA is designed to maximize the science and operational capabilities of the instrumentation.