

Model 820D Near-Vertical Incidence Ionospheric Sounder

The fully-automatic TCI Model 820D Near-Vertical Incidence Ionospheric Sounder System provides accurate real-time measurement of ionospheric height. This enables an HFDF/SSL system to calculate distance from a single DF site to a target transmitter, eliminating the need for multi-site triangulation. Real-time sounding reduces SSL range error by replacing one of the largest unknowns in the DF calculation (ionospheric height) with precise real-time measurements. The sounder employs TCI FMCW Chirpsounder® technology to provide high-resolution sounding while transmitting at low power to minimize interference.

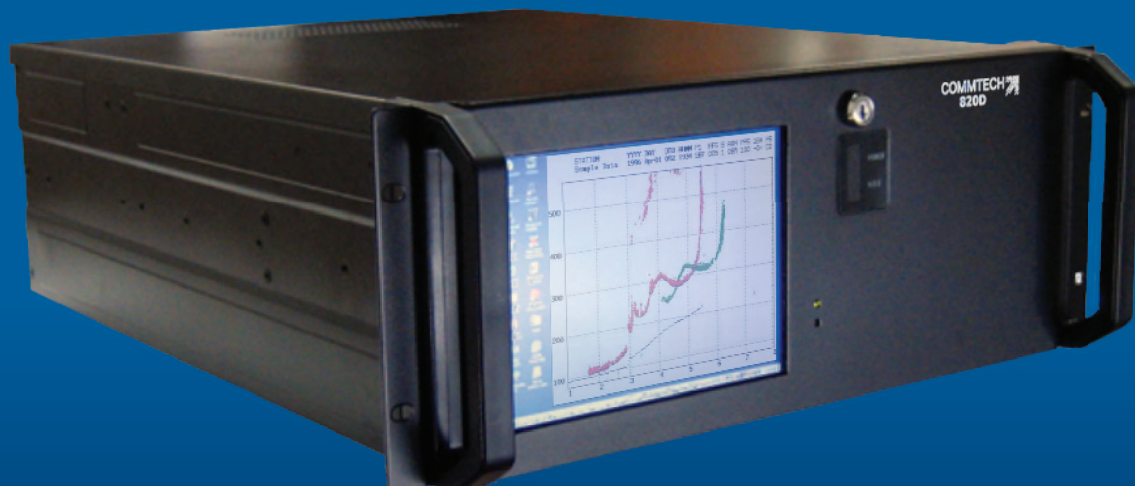
High-performance components include a bi-static, near-vertical incidence ionospheric sounder based on the Chirpsounder® transmitter and receiver, a GPS receiver for timing synchronization, and sounder control and signal analysis software that runs in the HF/DF processor of the 802W system.

It is easy to use. An operator simply selects the operating parameters, and the sounder automatically takes measurements at the programmed interval, frequency, and power level. The sounder measures, in real time, the virtual height of the ionospheric layers (E , E_s , F_1 , F_2) and generates a table of true height versus frequency for identified modes. This table is then made available through the sounder's remote interface to any external device requiring ionospheric layer height data, such as an SSL DF system.

It operates locally or remotely over an Ethernet LAN interface to a remote terminal. Designed for direct interface with the TCI Model 802W system, the 820D is easily adapted for other DF/SSL systems. The 820D mounts in a standard 19-inch equipment rack.

KEY FEATURES

- > Real-time NVIS measurement
- > Enhanced SSL DF accuracy
- > Fully automatic
- > Compatible with TCI Model 802W system
- > Remote or local operation
- > GPS timing synchronization
- > Bi-static, low-power FMCW operation minimizes interference
- > Auxiliary ionogram data output for external propagation analysis
- > Automatic self-test & calibration
- > Includes TCI Model 656 antenna



Summary Specifications

General	
Frequency Range	2.0 to 30.0 MHz
Sweep Rate	100 kHz/s
Virtual Height Measurement Range	80 to 1500 km
Virtual Height Measurement Accuracy	2 km (typical)
Virtual Height Sensitivity Variation	±3 dB
Height Reporting Resolution	1 km
Ionogram Refresh Rate	5 to 60 minutes, selectable
Tx RF Power Output	25 W CW
Tx Antenna Allowable VSWR	4:1 max for calibrated data, no damage at infinite VSWR
Rx Input VSWR	3:1 max
Rx Sensitivity	-135 dBm
Rx AGC Range	-125 to -10 dBm
Multi-Mode Analysis Differential Amplitude Range	40 dB
Receiver Bandwidth	500 Hz
Operating	
Operator Selectable Parameters	Stop sweep frequency Ionogram update rate
Blanker Frequencies	200 channels
BIST	System and module level self-test with built-in test equipment
Ionogram Database	672 ionograms (168 hours, 4 per hour)
Ionogram Selection	Fully automatic or operator-selectable
Mode Scaling	Automatic scaling of E, E _s , F ₁ and F ₂ modes with O and X identification
Remote Control	Ethernet LAN
True Height	Automatic true height analysis on virtual height measurement data
Antenna Type	Broadband Delta (Model 656)
Antenna Height	21 m
Antenna Area	60 x 60 m

Summary Specifications

Physical	
AC Line Input: Transmitter	115V/230V, 50/60 Hz, 300 W max
Receiver	115V/230V, 50/60 Hz, 250 W max
Size: (Rack-Mount Equipment) Transmitter & Receiver	19w x 18d x 6.93h (inches) 48w x 46d x 17.6h (centimeters)
Weight: Transmitter Receiver	40 kg 35 kg
Environmental	
Operating Temperature: Equipment Antenna	0 to 50° C -40° to +70° C
Operating Humidity: Equipment	0 to 95%, non-condensing
Antenna Wind Survival: (Fixed Installation)	160 km/hour, no ice 96 km/hour, with ice
TCI Model 820D System	
Transmit System	Receive System
<ul style="list-style-type: none"> · Sounder Transmitter · 656 Antenna 	<ul style="list-style-type: none"> · Sounder Receiver · 656 Antenna

Specialized Expertise in a Global Family

Communications Technology (“CommTech”) is a global supplier of turnkey solutions for Communications Intelligence, (COMINT), ITU-compliant spectrum monitoring and management, direction-finding and geolocation, and antennas for communications and high-power radio broadcasting. Under the TCI brand, CommTech systems and solutions have been delivered to national defense departments, intelligence agencies, law enforcement bureaus, and spectrum regulators in more than 100 countries.

CommTech team members collaborate across business segments and borders to deliver greater efficiencies and better ideas for helping customers succeed. This commitment to innovation supports an array of customers whose missions depend on having a clear picture of their electromagnetic environment. For over 50 years, TCI’s technical developments and advanced production capabilities have earned it a reputation for excellence in high-performance communications, spectrum monitoring, and signals intelligence systems.

TCI is a wholly owned subsidiary of SPX Technologies (NYSE:SPXC), a publicly traded firm based in Charlotte, North Carolina. SPX Technologies is a global, multi-industry manufacturing leader committed to operational excellence and execution. Learn more about TCI at www.tcibr.com and SPX Technologies at www.spx.com.



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