TORONTECH

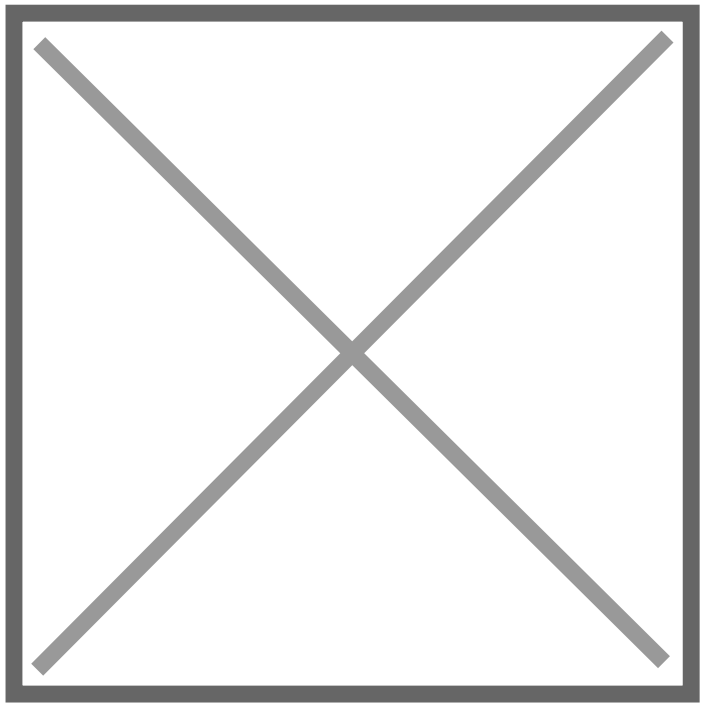
FS60/62UAV HYPERSPECTRAL MEASUREMENT SYSTEM

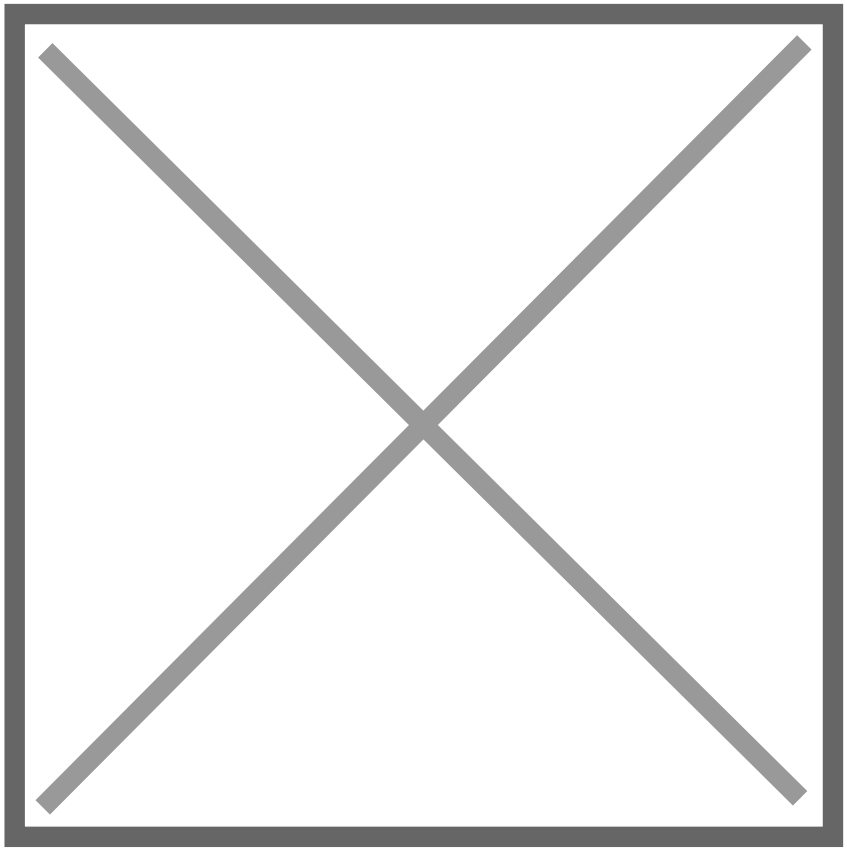
FS60/62UAV Hyperspectral Measurement System serves as the flight-bearing platform for this advanced system. An ultra-high-speed spectral scanning imaging device with a high signal-to-noise ratio ensures exceptionally stable spectral image acquisition.

Our proprietary image processing algorithm, designed for high efficiency and low power consumption, significantly extends flight time and reduces overall system power usage.

By measuring spectral image information in real time for plants, water bodies, soil, and other ground objects, this system is ideal for applications in precision agriculture, crop growth and yield assessment, forest pest and fire prevention monitoring, coastline and marine environment monitoring, as well as lake and watershed environmental monitoring.

The system features a compact design with an imaging spectrometer host that offers spectral resolution up to 2.5nm. The entire setup includes a high-stability head, hyperspectral imager, embedded data acquisition, processing and storage unit, wireless image transmission system, GPS-RTK navigation system, ground receiving workstation, ground control system, and a reflectivity calibration board.





APPLICATIONS

The Torontech FS60/62UAV Hyperspectral Measurement System provides a powerful aerial solution for large-scale, high-resolution spectral surveying. By integrating a state-of-the-art imaging spectrometer with a UAV platform, it enables the rapid collection of detailed data over extensive and often inaccessible areas. This capability is essential for the real-time mapping and analysis of ground features, providing critical insights for large-scale resource management and environmental assessment.

This aerial analysis capability is a transformative tool for:

- **Precision Agriculture:** For comprehensive, field-scale monitoring of crop health, enabling the early detection of water stress, nutrient deficiencies, and pest infestations to optimize fertilization, irrigation, and yield forecasting.
- **Forestry & Land Management:** To conduct large-area surveys for the early identification of disease outbreaks, insect infestations, and drought stress, serving as a vital instrument for fire risk assessment and sustainable forest management.
- **Environmental & Water Resource Monitoring:** Essential for mapping and monitoring coastal zones, lakes, and entire watersheds to track the extent of algal blooms, assess water quality, and monitor the health of vital aquatic and terrestrial ecosystems.
- **Mining & Geological Exploration:** For rapid, large-area mineral mapping and the environmental monitoring of mining operations, including the assessment of tailings ponds and the progress of land rehabilitation efforts.

FEATURES

Easy to operate with no need for a professional drone operator, this system enables single-person operation. The ground station can monitor the aircraft's sampling site in real-time and offers preview and correction functions for route data collected point by point. It supports radiometric correction, reflectivity correction, and area correction with batch processing capabilities.

The system also features real-time calculation of common vegetation indices and supports custom real-time analysis model input. Additionally, it is fully compatible with ENVI and multiple data formats.

TECHNICAL SPECIFICATIONS

Hyperspectral camera FS-60C	
Lighting mode	Passive lighting (without light source)
Spectroscopic method	Transmission grating
Spectral range	400-1000nm
Spectral band	1200
Spectral resolution (FWHM)	2.5 nm
Slit width	25um
Transmission efficiency	> 60%
Stray light	< 0.5%
Number of spatial pixels	Max. 1920 (software configurable)
Pixel size	5.86 um
Imaging speed	Full band 128Hz, after ROI can achieve 3300Hz
Probe	CMOS
Signal-to-noise ratio	600/1
Camera output	USB3.0 or Gigabit network
Camera interface	C-Mount

Attachment	USB3.0 or Gigabit network
ROI	Multiple regions
Embedded data acquisition Processing storage unit	Embedded processor 512GSSD storage
Dimension	20.5 cmx18.5 cmx12.9 cm
Weight	1200g
Power dissipation	40W

Hyperspectral camera FS-62C	
Spectroscopic method	Transmission grating
Spectral range	900-1700nm
Spectral channel number	1024
Spectral resolution (FWHM)	6.5nm
Slit width	25um
Transmission efficiency	□ 60%
Stray light	□ 0.5%
Number of spatial pixels	1280
Pixel size	5um
Imaging speed	Full band 70Hz, maximum 1800H
Probe	InGaAs
Signal-to-noise ratio	600/1

Exportation	Start
Camera interface	C-Mount
Attachment	Lens, USB cable, power supply
ROI	Multiple regions
Built-in processing unit	Windows operating system, 8GB of RAM 512GB SSD and camera integrated Design (optional 1TB)
Heat dissipation mode	Internal air cooling heat dissipation
Mode of operation	Easy to operate, no need for professional drone operation Hand control, can achieve single operation
Observation mode	Real-time observation of aircraft sampling sites, hyperspectral images and spectral data by ground stations
Correction mode	Radiometric correction, reflectivity correction, and area correction support batch processing
Data format	Compatible with spe, hdr, and scp formats
Camera size	Less than 135*82*100 mm (L * W * H) (Including lens and built-in embedded data acquisition and processing unit, excluding head) Less than 190*129*100 mm (L * W * H) (Including lens and built-in embedded data acquisition and processing unit, including head)
Camera weight	≤ 740g (including lens and built-in embedded data acquisition and processing unit, excluding PTZ) ≤ 1085g (including lens and built-in embedded data acquisition and processing unit, including head)
Attachments	Reflectance calibration board
Lens focal length	25mm
Camera scene	□ 25°
Application software	FIGSPEC UAV real-time flight control software, FIGSPEC Merge puzzle software, FIGSPEC Studion image analysis software

Flight unit (M300RTK)	
Size	Dimensions (unfolded, excluding propellers): 810×670×430 mm (length×width×height) Dimensions (folded, including propellers): 430×420×430 mm (length×width×height)
Symmetrical motor wheelbase	895 mm
Weight (including single gimbal bracket)	Empty weight (without battery): 3.6 kg Empty weight (including dual batteries): 6.3 kg
Single gimbal shock-absorbing ball**load	930g
**Takeoff weight	9 kg
Operating frequency	2.4000-2.4835 GHz; 5.725-5.850 GHz
Transmit power (EIRP)	2.4000-2.4835 GHz: 29.5 dBm (FCC); 18.5dBm (CE) 18.5 dBm (SRRC); 18.5dBm (MIC) 5.725-5.850 GHz: 28.5 dBm (FCC); 12.5dBm (CE) 28.5 dBm (SRRC)
Hovering accuracy (P-GPS)	Vertical: ±0.1 m (when visual positioning works normally) ±0.5 m (when GPS works normally) ±0.1 m (when RTK positioning works normally) Horizontal: ±0.3 m (when visual positioning works normally) ±1.5 m (when GPS works normally) ±0.1 m (when RTK positioning works normally)
RTK Position Accuracy	In RTK FIX: 1 cm + 1 ppm (horizontal) 1.5 cm + 1 ppm (vertical)
**Rotation angular velocity	Pitch axis: 300°/s Yaw axis: 100°/s
**Tilt angle	30° (P mode with forward vision system enabled: 25°)
**Rise speed	S mode: 6 m/s, P mode: 5 m/s
**Descent speed (vertical)	S mode: 5 m/s P mode: 4 m/s
** Inclined descent speed	S mode: 7 m/s
**Horizontal flight speed	S mode: 23 m/s, P mode: 17 m/s
**Flight altitude	5000 m (2110 blades, take-off weight ≤ 7 kg) / 7000 m (2195 high altitude silent blades, take-off weight ≤ 7 kg)

**Wind speed resistance	15m/s (12m/s during takeoff and landing)
** Flight time	55 min
Support PTZ installation	Single gimbal downward, single gimbal upward, dual gimbal downward, single gimbal downward + single gimbal upward, dual gimbal downward + single gimbal upward
IP rating	IP45
GNSS	GPS+GLONASS+BeiDou+Galileo
Operating temperature	-20°C to 50°C

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