EM 27 Remote Sensing System

The EM 27 is an FT-IR Remote Sensing System. Providing highest performance, the EM 27 can easily be deployed in the field for various applications. Contamination of air, emissions from smoke stacks, diffuse emissions from waste disposals or hazardous emissions from chemical accidents can be observed with an operating range of up to several kilometers. The ethernet enabled system displays analysis results in real time. With optional detectors, beamsplitters the capabilities of the system can be adapted to the application.

The EM 27 SUN features a solar tracker for measurements of atmospheric gases by solar absorption spectroscopy. The tracker is controlled using an innovative camera-based feedback system (CAMTracker). The outstanding tracking accuracy is the basis for high-precision quantification.

Applications

- Remote sensing of hazardous gases
- Fire brigade operation
- Remote sensing of aircraft emissions
- Control of diffuse emissions of waste disposals
- Fence-line monitoring at chemical factories and stocks
- Surveillance of waste disposal facilities
- Observation of stack gas plumes
- Ambient air monitoring

Key features

- Several detector options available
- Telescopic sight available
- Highest performance in the field
- Real-time analysis
- Ethernet connectivity to analysis PC
- Operation from battery pack (option)
- CAMTracker with outstanding tracking accuracy

Technical data:

Sensor module

Type	Michelson type RockSolid™ interferometer
Size	400 mm x 360 mm x 270 mm
Weight	18 kg
Power supply	110 V-240 VAC input voltage
	24 V battery pack (option)
Power consumption	40 W (average), 80 W (maximum)
Data interface	Ethernet

Optics

Field of View (FOV)	30 mrad (1.7 °)
	with 3:1 telescope: 10 mrad (0.57°)
Optical throughput	0.0082 sr cm^2
f-number	0.9
Entrance window	ZnSe
Beam splitter	KBr or ZnSe (option)
Detector	Liquid nitrogen cooled MCT detector, closed cycle cryo-cooled MCT detector (option)
Spectral resolution	$\Delta\sigma$ = 1 cm^{-1} (0.5 cm^{-1} optional)
Scan speed	
at $\Delta\sigma$ = 4 cm^{-1}	4.6 spectra per second (two-sided interferograms)
	9 spectra /s with split of interferograms
at $\Delta\sigma$ = 4 cm^{-1} with	16 spectra per second (two-sided interferograms)
ultrafast scanning option	32 spectra /s with split of interferograms
at $\Delta\sigma$ = 0.5 cm^{-1}	0.5 spectra per second
	1.3 spectra /s with split of interferograms
at $\Delta\sigma$ = 0.5 cm^{-1} with	2.6 spectra per second
ultrafast scanning option	5 spectra /s with split of interferograms
NETD* for a single spectrum	0.02 K at Tb = 30 °C and σ = 1,000 cm^{-1}
NESR* for a single spectrum	0.033 mW / (m^2 sr cm^{-1}) at Tb = 30 °C and σ = 1,000 cm^{-1}
Spectral range	σ = 700 – 5000 cm^{-1} (active mode)
	σ = 700 – 3800 cm^{-1} (active mode with ultrafast scanning)
	σ = 700 – 2200 cm^{-1} (passive mode)
Internal black body (BB)	Peltier cooled BB: temperature range from dew point up to
	80 °C (accuracy +/- 1 K), stabilized

(*) NETD: Noise Equivalent Temperature Difference, NESR: Noise Equivalent Radiance calculated from a double sided forward backward interferogram at dv = 4 cm^{-1}, narrow band MCT detector

Bruker Optics is ISO 9001 certified.

Technologies used are protected by one or more of the following patents:
US 5923422; DE 19704598

Laser class 1

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