

# BLS450

EDITION 2012

## Large Aperture Scintillometer

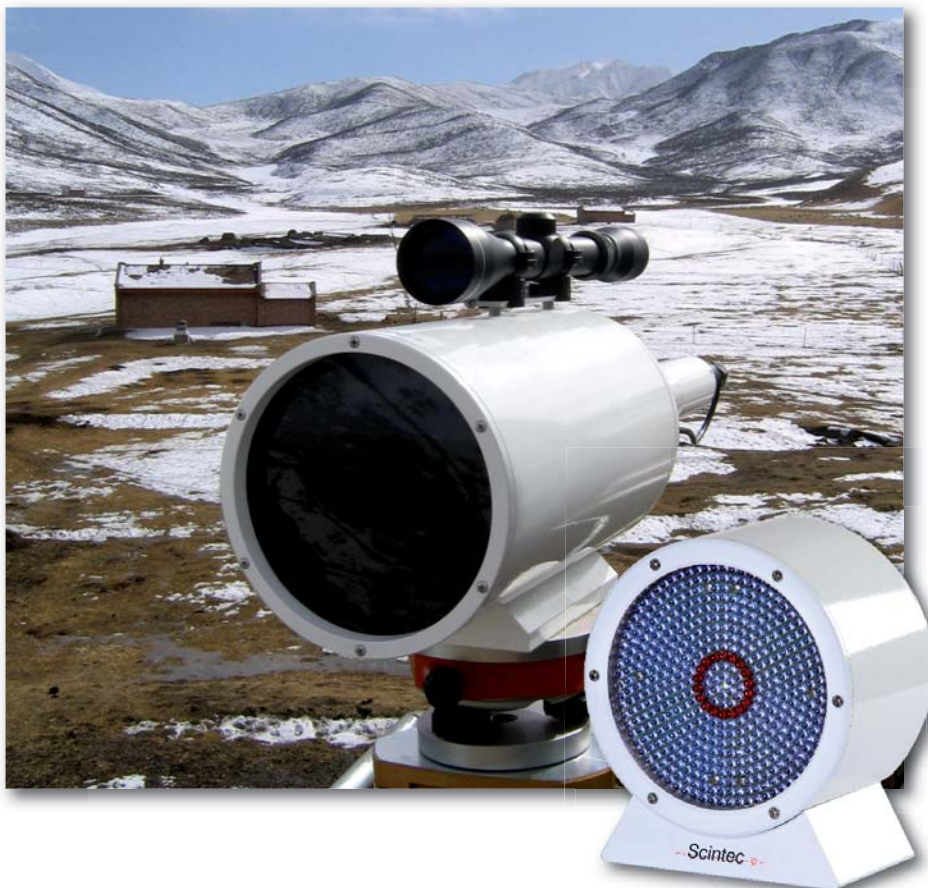


Photo courtesy of Cold and Arid Environmental and Engineering Research Institute, China

### FEATURES

- measures turbulence over large spatial scales
- maximum path length 6000 m
- LED array eases transmitter alignment
- LED array allows transmitter to be mounted on vibrating towers
- built-in Receiver Alignment Monitor
- Signal Processing Unit performs all calculations
- 6 GB built-in data storage
- remote access

### APPLICATIONS

- surface energy balance
- satellite data ground truth
- plant evapotranspiration
- agrometeorology, forestry
- hydrology, water management
- turbulence studies
- atmospheric dispersion
- optical propagation conditions
- defence weather

The Scintec BLS450 Large Aperture Scintillometer measures atmospheric turbulence and heat flux over path lengths between 250 m and 6000 m. As part of a meteorological station it can also be used to determine the evapotranspiration over extended areas.

A scintillometer senses turbulence between an optical transmitter and a receiver. The operation principle is based on the modulation of light by atmospheric refractive index fluctuations in the air. The phenomenon is called scintillation and is the reason why stars twinkle at night.

Compared to conventional turbulence measurements with point sensors, scintillometers gather spatially representative results with lower statistical scatter and shorter averaging times. As a double-ended remote sensing system, scintillometers also allow access to terrains like forest or water without need to install in-situ sensors.

Unlike other large aperture scintillometers, the Scintec BLS Series uses LED arrays which produce wide emission angles. The wide emission angle virtually eliminates the need for transmitter alignment and provides more accurate measurement results. In addition, it facilitates the use on towers which are often prone to vibration.

**Scintec** 



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## Data output

Data output includes (but is not limited to):

- structure parameter of refractive index fluctuations ( $C_n^2$ )
- structure parameter of temperature fluctuations ( $C_T^2$ )
- sensible heat flux
- mean, standard deviation, minimum and maximum of intensity
- scintillation index (at user-defined wavelength and path length)
- Fried diameter (at user-defined wavelength and path length)
- raw intensity data
- data quality code

Description	Specifications	Remarks
No. of transmitting disks	1	horizontally spaced
No. of LEDs	444 / 18	infrared / visible
Optical output power	6 W peak	at 880 nm wavelength
Transmitter divergence	16°	full width at half maximum
Receiver field of view	8.4 mrad	receiver alignment automatically monitored
Corrections for absorption fluctuations and outer scale effect	no	
Crosswind measurement capability	no	
Path length	250 / 500 to 6000 m	with / without Path Reduction Aperture
Pulse repetition rates	1, 5, 25 Hz or continuous mode	
Integration time	1 s to 60 min	
Output ports	Ethernet, RS232, analogue	ASCII
Data Storage Capacity	6 GB	
Internal clock	date and time	
Operating voltage	12 to 24 VDC	AC power supply available
Power consumption: Transmitter	30 W / 6.5 W / 1.5 W / 1 W	continuous mode / 25 Hz / 5 Hz / 1 Hz pulse repetition rate
Power consumption: Receiver and SPU	15 W	
Operating temperature	-35 to +50 °C (-30 to +120 °F)	
Dimensions and weight: Transmitter	18 x 18 x 14 cm / 4.5 kg	
Dimensions and weight: Receiver	61 x 32 x 16 cm / 7.6 kg	
Dimensions and weight: SPU	37 x 23 x 17 cm / 7.0 kg	

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Specifications are subject to change without notice.  
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