SYSTEM AND PROCESS ASSESSMENT RESEARCH LABORATORY

SPAR Lab

MISSOURI S&T

NEUBRESCOPE NBX-7020

Description of Equipment

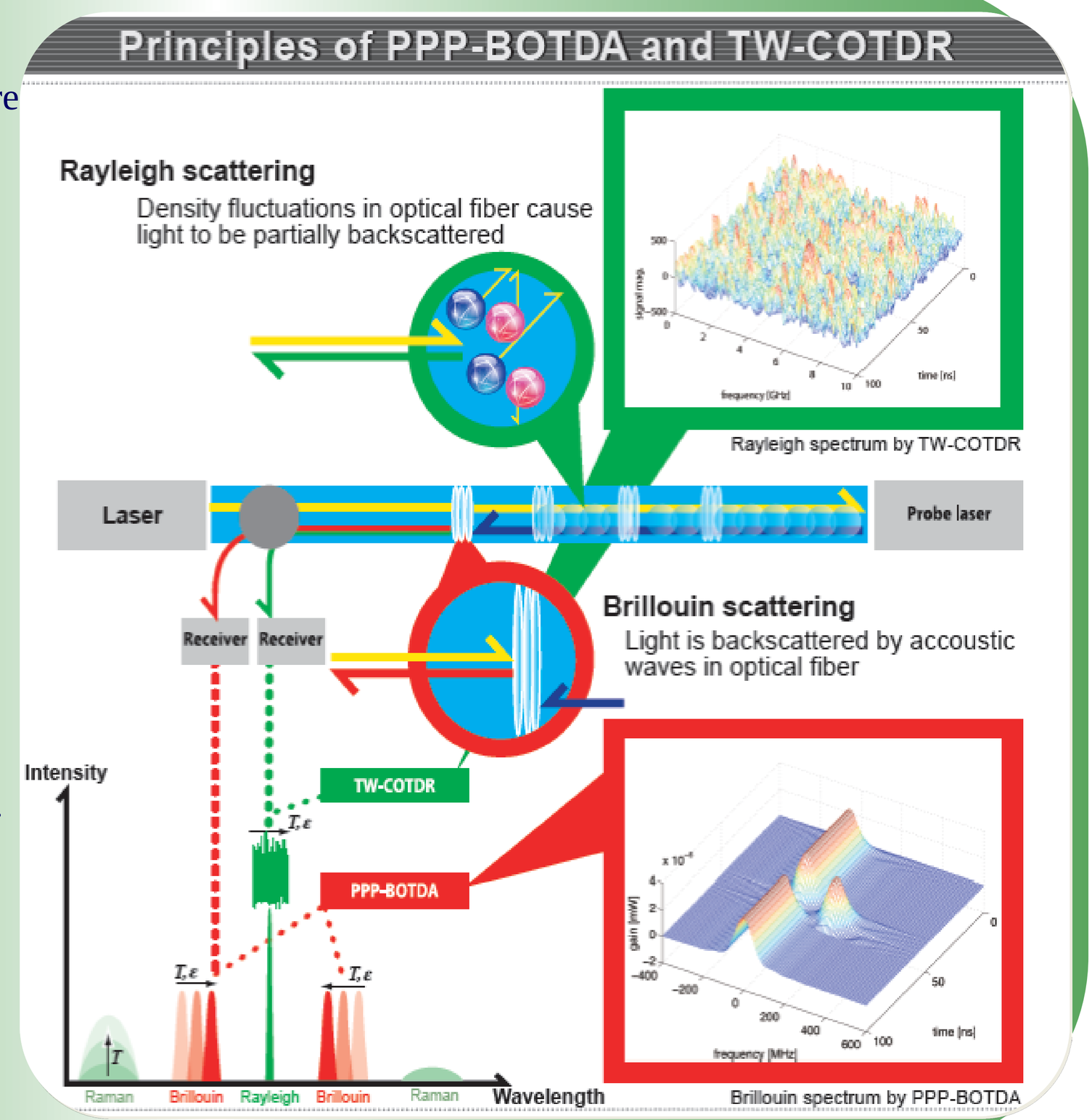
- Neubrescope NBX-7020 combines four distributed optical fiber sensing technologies: Pulse Pre-Pump Brillouin Optical Time Domain Analysis (PPP-BOTDA), Brillouin Optical Time Domain Reflectometry (BOTDR), Tunable Wavelength Coherent Optical Time Domain Reflectometry (TW-COTDR), and Coherent Optical Time Domain Reflectometry (COTDR).

Key Features

- Discrimination of strain and temperature distributions in one single mode fiber.
- Up to 2 cm spatial resolution.
- Up to 25 km measurement distance.
- Strain measurement: -3~4% with PPP-BOTDA; -1.5~2% with TW-COTDR.
- Strain and temperature measurement accuracies: 7.5με / 0.35ºC with PPP-BOTDA; 0.5με / 0.05ºC with TW-COTDR.
- Real-time dynamic measurement.

Representative Applications

- Large-scale civil infrastructure monitoring: bridges, buildings, dams, nuclear reactors, pipelines, and tunnels.
- Large-scale power infrastructure monitoring: transmission lines and towers, and wind turbines.
- Transportation: aircraft, ship, train
- Optical fiber fault detection, crack distributions, and pipeline leaking.



Specifications

	PPP-BOTDA	TW-COTDR
Laser Wavelength	1550 ±2 nm	1530 nm ~ 1560 nm
Distance Range	50m, 100m, 250m, 500m, 1km, 2.5km, 5km, 10km, 25 km	
Measurement Frequency Range	9~13 GHz	192300~196000 GHz
Measurement Frequency Scan Step	1, 2, 5, 10, 20, 50 MHz	100, 200, 250, 500 MHz
Measurement Time	5 seconds (minimum)	60 seconds (minimum)
Operating Temperature	10~40 ºC, Humidity below 85% (no dew condensation)	
Power Supply	AC100~240V 50/60Hz 250VA	
Fiber Connector	FC-APC / SC-APC (factory option)	
Input-output Fiber	Single mode optical fiber	

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