

ALM - Water sensor

Reusable Sensor for Humidity Detection in Outdoor Enclosures

ADTRAN's passive water sensing solution, integrated with the ALM fiber assurance platform, enables operators to **proactively monitor outdoor enclosures and detect water intrusion** before network performance is impacted. Designed for continuous, real-time infrastructure protection, the solution provides a simple, cost-effective, and highly reliable method for safeguarding critical fiber assets. With support for cascading multiple sensors across large deployments, network operators gain centralized visibility, faster response capabilities, reduced downtime, and enhanced long-term reliability for railway, utility, and telecom environments.

Modern fiber networks are the backbone of mission-critical communication systems, supporting **FTTH and mobile access networks to railway signaling and long-haul telecom infrastructure**. While fiber enables high-speed data transmission, outdoor network assets remain vulnerable to environmental threats such as **water ingress, humidity and flooding**. Even minor moisture exposure over time can degrade splices, connectors, and optical components, leading to increased insertion loss, unexpected failures, and costly service disruptions.

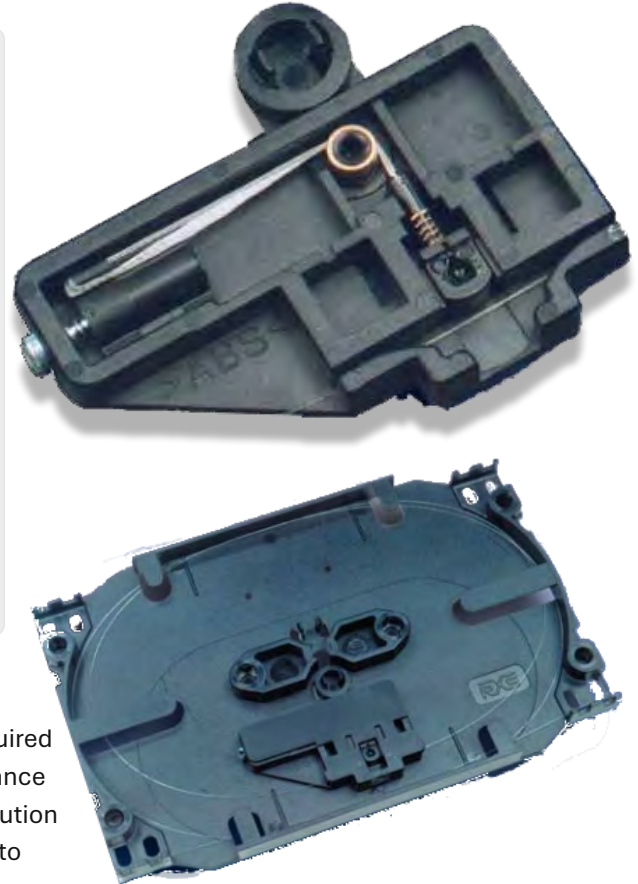
Key Features

- **Powerless Operation:** Passive monitoring. No power supply or battery required
- **Robust Solution:** Limited use of moving parts calls for little to no maintenance
- **Simplified Integration:** Seamlessly integrated with the ALM monitoring solution
- **Fast Detection Time:** Fiber degradation can be spotted before any impact to data transmission is observed
- **Multiple Use:** The sensor isn't damaged by water and so doesn't need to be replaced
- **Accurate Geographic Data:** Integrated with various geographic information systems (GIS) to easily localize flooding events

Applications

Cost-efficient solution to monitor network infrastructure and detect flooding events

- The ALM, located in the central office, continuously monitors the status of water sensors with a single OTDR trace
- If water penetrates a splice box, additional attenuation is introduced. Upon detection the ALM will generate an alarm, identifying which of the water sensors was triggered
- Events can be precisely and easily located via GIS
- Water sensors are passive. No power supply or battery is required at the site



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Technical Specifications:

Parameter	Specification
Recommended Fiber Type	ITU-T G.652
Min. Bending Radius of the Fiber	20mm
Attenuation Increase at 100% RH	Typically ~1dB*
Drying Time from Full Flooding	8 hours
Response Time	≤ 5 minutes
Splice Box Compatibility	Corning C46197-A7-A70/A66 and similar
Ordering Information	FAS/ALM/WTS 1043709867-01
Dimensions (HXWXD)	46.5mm x 36.0mm x 6.5mm

(*) Depends on the fiber type

