Principle of Dual-Fiber Optic Liquid Level Sensor

Overview

The proposed system detects environmental characteristics along the length of the optical fiber and determines liquid levels in real-time using a Dynamic Time Warping (DTW) algorithm. Sensors are devices or instruments that convert a measured physical quantity (such as velocity, temperature, sound, or light) into another physical quantity convenient for transmission and processing, typically an electrical signal. These devices are often referred to as probes or detectors. 2–17 Liquid level sensors can be classified into two main cat-egories: continuous evel sensors and discrete level sensors. Several continu us level sensors. Honeywell Sensing and Control (S&C) offers fiber optic sensors manufactured with SERCOS (Serial Real-time Communication System) transmitters and receivers, duplexers, even liquid level sensors. Based on Rayleigh backscattering coherent optical frequency.

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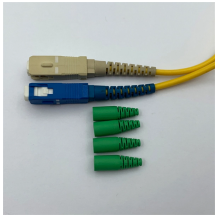
In this study, we propose a distributed fiber optic liquid level sensing system that overcomes these limitations by utilizing Optical Frequency Domain Reflectometry (OFDR).

Abstract: This paper presents a portable dual-point optical fiber sensor system for continuous liquid level measurement using polymer optical fibers (POFs). The system contains sensor design and ...

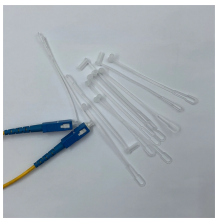


In conclusion, an optical liquid level sensor based on SCIT has been investigated. The sensor is constructed by just twining two twisted POFs around the racetrack column, which is simple ...

The proposed sensor design utilizes the twisted coupling technique, where two optical fibers are twisted and coupled, leading to power coupling from the illumination fiber (IF) to the coupled fiber. The ...

Abstract This paper presents a liquid level sensor with a double-fiber Fabry-Perot (F-P) cavity and a diaphragm serving as the sensing element.

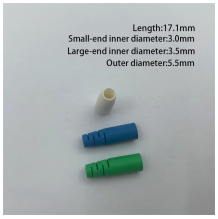
Used to multiplex two signals to a single fiber or where a dual fiber solution is neither possible nor economical. Fiber optic technology provides minimum data corruption and EMI/RFI immunity.



This paper presents a portable optical fiber sensor (OFS) design for continuous liquid level measurement, fabricated using two pieces of bare polymer optical fibers (POFs).

An intensity-based fiber-optic liquid-level sensor for point measurement is described. The sensing principle is based on the total internal reflection of light, which is disturbed by contact with a ...

In this paper, a dual-parameter liquid level and refractive index (R.I.) sensor is fabricated using three pieces of bare polymer optical fibers (POFs), which can independently and...



A fiber laser outputs intensity-modulated light that is coupled into the optical fiber via an optical coupler. When no liquid is present at the fiber tip, the light undergoes total internal reflection ...

Optical fiber-based liquid level sensor T 1Z4, Ca aped silica optical fibers is presented. The optical transmission o the sensor depends on the liquid level. The sensor can be realized as a continuous ...

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