Adicor Photonics Europe S.A.

Fiber Optic Liquid Level Sensor Assembly Circuit

AI Overview

A fiber optic liquid level sensor assembly uses LED emitters, fiber optic cables, and detectors to sense liquid presence and actuate an electrical switch for control or alarm purposes.Overview of the AssemblyA typical fiber optic liquid level sensor assembly consists of:LED Emitting Component: Converts electrical signals into light, which is transmitted through a fiber optic cable toward the sensing point inside the liquid-containing vessel .LED Detecting Component: Receives light reflected from the glass or sensing interface. The presence or absence of reflected light indicates whether the vessel contains gas or liquid at the designated level .Fiber Optic Cables: Two separate fibers are used—one to transmit light from the LED emitter to the sensing glass, and another to carry reflected light back to the detector .Sight Window Assembly: A glass component mounted in the vessel wall allows light to interact with the liquid or gas. Its apex is positioned near the inner wall to optimize reflection and detection .Electrical Switch: Changes state based on the detector's signal. It can trigger alarms, control valves, or interrupt pumps to maintain or adjust liquid levels .Circuit FunctionalityLight Transmission: The LED emits light into the first fiber optic cable, which directs it through the glass component into the vessel.Reflection Detection: If gas is present at the sensing level, light reflects back through the second fiber to the LED detector. If liquid is present, light is absorbed or refracted, and minimal reflection reaches the detector .Switch Activation: The electrical switch responds to the detector's signal:First Position: Reflected light detected (gas present)Second Position: No reflected light detected (liquid present) This switch can control external devices such as valves, alarms, or pumps .Advantages and ApplicationsNon-contact sensing: The fiber optic system avoids direct electrical con...

Article Content

An Optical Fiber Liquid Level Sensor Based on Side Coupling

An optical fiber liquid level sensor based on two twisted polymer optical fibers twining around a racetrack column is demonstrated in this study. The side-coupling power of the passive

High Accuracy and Cost-Effective Fiber Optic Liquid Level Sensing ...

In this paper, a novel liquid level sensing system is proposed to enhance the capacity of the sensing system, as well as reduce the cost and increase the sensing accuracy.

US6801678B2

The fiber optic liquid level detector in accordance with claim 2 in which said signal processor is a comparator circuit comparing the detector output from said second fiber optic line to a predetermined

Polymer Optical Fiber Liquid Level Sensor: A Review

Polymer optical fiber (POF) level sensors have a lot of potential in liquid level sensing because of their inherent safety, chemical corrosion resistance, anti-electromagnetic interference,

Plastic fiber optic sensor for continuous liquid level monitoring

In addition, the fiber optic level sensor shows a stable and reproducible response over several cycles of 30 min duration at different liquid levels. The results demonstrate that this fiber optic

Portable Optical Fiber Sensor for Continuous Liquid Level Sensing

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

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As long as a given prism is exposed to air, a large amount of light is transmitted (by reflection within the prism) from a transmission optical fiber to a receiving optical fiber.

Fiber-optic liquid-level sensor

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

Liquid Level Fiber Sensor Based on Fully Connected Neural Network

An innovative fiber optic liquid level sensor based on a peanut-shaped fiber structure has been designed and fabricated for use in micro-buoy systems. This sensor features two cascaded peanut-shaped

Fiber Optic Liquid-Level Sensor System for Aerospace Applications

This chapter reports optical fiber-based sensors for liquid-level detection in aerospace environment. It discusses preliminary experimental work to investigate an optical fiber liquid-level detection system

Schematic of a liquid level sensor, whose working ...

Download scientific diagram | Schematic of a liquid level sensor, whose working principle is based on frustrated total internal reflection as described in the text. from publication: Optical Fiber ...

High Accuracy and Cost-Effective Fiber Optic Liquid Level ...

In circumstances that needed contactless liquid level sensing, radio frequency radar-based sensors were considered as a solution. Nevertheless, the polluted environment between the

Optical Fiber Sensing for Sub-Millimeter Liquid-Level Monitoring: A ...

Fiber optic-based liquid-level sensors (FOLLSs) can work in harsh environments with inherent advantageous features that only optical fiber offers, such as intrinsic safety, resistance to

High-precision fiber optic liquid level sensor based on fast Fourier ...

Abstract This study presents a fiber optic liquid level sensor (FOLLS) by acquiring information from the amplitude of spectral fast Fourier transform (FFT) in a specified narrow

Fiber-Optic Liquid Level Sensor

A fiber-optic liquid level sensor based on multimode interference (MMI) effects is proposed and demonstrated. We show that MMI and self-image effects can be effectively applied for

Hydrostatic Fiber-Optic Liquid Level Sensor with a Position-Sensitive ...

Commercial accounting for petroleum products requires more precise measurements and more stable operation of the liquid level gauges set up for factory conditions and spark-explosion

Sensor With Fiber Optic Liquid Level Switch, Assembly, and Methods

A fiber optic liquid level switch assembly is described herein which can be used to detect levels of fluids, such as a refrigerant or oil, in a system that is subjected to high temperatures and/or pressures, as

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Fiber Optics and liquid level Sensors line Guide

Used in potential applications requiring fiber-optic medium but looking to reduce cabling costs such as CCTV/video surveillance, data communications, test equipment, and remote sensing and control.

Schematics of fiber optic liquid level sensor system

We present a fiber-optic liquid level sensor that is conducted by a combination of optical interferometry and lever principle. The sensing unit is a Mach–Zehnder

Liquid level sensor based on dynamic Fabry–Perot ...

In this work, a novel optical fiber sensor capable of measuring both the liquid level and its refractive index is designed, manufactured and demonstrated through simulations and...

High-Resolution Portable Dual-Point Liquid Level Measurement

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

The working schematic diagram of the optical fiber liquid level sensor ...

We demonstrated a high-sensitivity liquid level sensor based on the balloon-shaped fiber Mach-Zehnder interferometer (MZI). To make an optical fiber MZI sensor, a bare single mode fiber (SMF) is ...

Design and modeling of a fiber optical sensor for liquid level

In this paper, a microbend-based fibre optical sensor, which is used for continuous monitoring of liquid level, and related signal processing circuit was designed and tested.

Liquid level sensor using fiber bundle

New method to detect liquid level using fiber bundle. The sensor mechanism is simple which is based on hydrostatics pressure principle. Liquid level sensors can be constructed using a

Design and operation of a fiber optic sensor for liquid level detection ...

Design and construction of an optical fiber sensor for liquid level detection are reported. This sensor operates based on light intensity modulation, and such modulation results from alteration

Microphone

Fiber-optic microphones are robust, resistant to environmental changes in heat and moisture, and can be produced for any directionality or impedance matching.

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