

Title (en)

DIFFERENTIAL PRESSURE SENSOR FOR DETERMINING THE DIFFERENTIAL PRESSURE BETWEEN TWO PRESSURES

Title (de)

DIFFERENZDRUCKMESSAUFNEHMER ZUR BESTIMMUNG DES DIFFERENZDRUCKS VON ZWEI DRÜCKEN

Title (fr)

CAPTEUR DE PRESSION DIFFÉRENTIELLE PERMETTANT DE DÉTERMINER LA PRESSION DIFFÉRENTIELLE ENTRE DEUX PRESSIONS

Publication

EP 4078128 A1 20221026 (DE)

Application

EP 20835747 A 20201216

Priority

- DE 102019135476 A 20191220
- DE 102020110728 A 20200420
- DE 102020121585 A 20200817
- EP 2020086461 W 20201216

Abstract (en)

[origin: WO2021122775A1] The invention relates to a differential pressure sensor (1) for determining the differential pressure between two pressures (p1, p2), comprising a measuring unit (2) and a converter chamber (3), wherein a differential pressure measuring cell (12) with a pressure-sensitive element (13) is arranged in the converter chamber (3), and a coplanar double-membrane system with two double membranes (4a, 4b) is provided in the measuring unit on an end region facing the process. Each of the two double membranes (4a, 4b) consists of a separating membrane (5a, 5b) and an overload membrane (6a, 6b) arranged behind the separating membrane (5a, 5b) in the direction of action of the pressure. A first pressure chamber (7a) is formed between the first separating membrane (5a) and the first overload membrane (6a), and a first additional pressure chamber (8a) is formed between the first overload membrane (6a) and the main part (9) of the measuring unit (2). A second pressure chamber (7b) is formed between the second separating membrane (5b) and the second overload membrane (6b), and a second additional pressure chamber (8b) is formed between the second overload membrane (6b) and the main part (9) of the measuring unit (2). Each of the two pressure chambers (7a, 7b) is paired with a capillary connection (10, 11), and each of the two additional pressure chambers (8a, 8b) is paired with at least one capillary connection (10, 11). The capillary connections (10, 11) are designed and connected/coupled such that the pressure (p1, p2) applied to the separating membranes (5a, 5b) is hydraulically transmitted to the pressure-sensitive element during a normal measuring operation, and in the event of an overpressure, the overpressure is hydraulically transmitted from the high-pressure side (4b) to the low-pressure side (4a) by means of a hydraulic fluid (16) such that the overpressure membrane (6a) and the separating membrane (5a) are deflected and the hydraulic fluid (16) displaced from the high-pressure side (4b) is received in the additional pressure chamber (8a) on the low-pressure side (4a) before the overpressure reaches the pressure-sensitive element (13). The main part of the measuring unit (2) is designed as a single piece and has a substantially completely symmetrical design at least up to the connections/couplings of the capillary connections (10, 11).

IPC 8 full level

G01L 13/02 (2006.01); **G01L 19/00** (2006.01); **G01L 19/06** (2006.01)

CPC (source: EP US)

G01L 13/026 (2013.01 - EP); **G01L 13/06** (2013.01 - US); **G01L 19/0046** (2013.01 - EP); **G01L 19/0618** (2013.01 - EP US); **G01L 19/141** (2013.01 - US)

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA ME

Designated validation state (EPC)

KH MA MD TN

DOCDB simple family (publication)

WO 2021122775 A1 20210624; CN 115151801 A 20221004; EP 4078128 A1 20221026; US 2024068895 A1 20240229

DOCDB simple family (application)

EP 2020086461 W 20201216; CN 202080097289 A 20201216; EP 20835747 A 20201216; US 202017908646 A 20201216