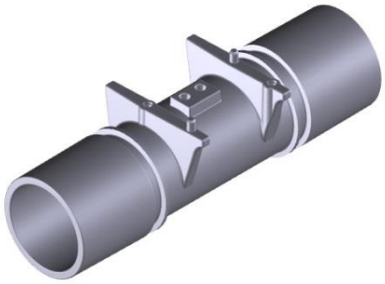
Flow Element - EK-P4 Evaluation Kit

For SDP3x Differential Pressure Sensors



Preface

Sensirion's differential pressure sensors are commonly used for measuring the air flow in a bypass configuration. Especially for high volume and cost sensitive applications the differential pressure sensor in bypass is the ideal solution. If the flow element (also known as: flow body, main pass, orifice or pressure drop element), is produced with small dimensional tolerances, no recalibration of every single device is required. This reduces costs even more.

For more information about using Sensirion's differential pressure sensor in a bypass configuration, read the technical white paper: "Efficient Flow measurement in bypass", which can be found on our website.

1 Introduction

The EK-P4 is the evaluation kit for Sensirion's ultra-small differential pressure sensor SDP3x. The small size and low weight of the SDP3x make new applications possible. Its small size also comes with its challenges for integration and evaluation. The EK-P4 evaluation kit includes a flow element to make easy flow measurement evaluation in bypass of the SDP3x possible, and is an example on how to design the SDP3x into a target application.

The flow elements are produced for evaluation purposes only.

2 Differential Pressure to Flow Conversion

The SDP3x is calibrated for differential pressure. For flow measurements with the flow element the differential pressure (DP) needs to be converted to Standard Liters per Minute (slm). The values in the table below can be used for this conversion.

Disclaimer: These values are for information purpose only. The flow-elements are not tested and calibrated on a single device basis, and therefore no guarantee on accuracy can be given.

DP (Pa)	Flow (slm)	DP (Pa)	Flow (slm)	DP (Pa)	Flow (slm)	DP (Pa)	Flow (slm)	DP (Pa)	Flow (slm)
0.00	0.0	6.65	17.2	35.70	45.1	82.38	73.0	258.42	141.3
0.15	1.1	8.09	19.3	38.76	47.2	86.52	75.1	274.74	146.5
0.32	2.1	9.65	21.5	41.94	49.4	97.57	80.5	304.68	155.6
0.54	3.2	11.35	23.6	45.21	51.5	109.38	85.9	322.50	161.0
0.79	4.3	13.18	25.8	48.59	53.7	121.82	91.2	340.83	166.3
1.07	5.4	15.15	27.9	52.06	55.8	134.98	96.6	359.43	171.7
1.39	6.4	17.26	30.1	55.62	58.0	148.59	102.0	378.05	177.1
1.75	7.5	19.51	32.2	59.24	60.1	162.57	107.3	397.91	182.4
2.13	8.6	21.92	34.3	62.92	62.2	183.30	115.1	419.05	187.8
2.52	9.7	24.43	36.5	66.67	64.4	197.59	120.3	439.32	193.2
2.93	10.7	27.07	38.6	70.48	66.5	212.03	125.6	461.50	198.5
4.08	12.9	29.84	40.8	74.38	68.7	226.90	130.8	484.33	203.9
5.32	15.0	32.71	42.9	78.35	70.8	242.51	136.0	507.99	209.3

Typical device to device variation is estimated to be around 10% m.v (3sigma).

3 Form Factor

The flow element is designed to fit on the SDP3x evaluation kit: EK-P4. The EK-P4 includes two screws to fix the flow element to the PCB.

The 22mm medical cones provide the pneumatic connections to the flow element. The medical cones might not be within specifications and can have leaks because of small molding imperfections.

4 Flow Element Availability

The flow element has been included in the EK-P4 evaluation kit for demonstration and quick evaluation purposes, and is not for sale separately.

In case the target application needs a flow element it is important to consider the following points:

- Making a custom and reliable flow element is doable, but not necessarily cheap and easy, because of injection molding tooling.
- It is estimated that for volumes below 2000 pieces per year it is probably not economical to develop a flow element. In this case Sensirion's complete flow sensor solutions are advised, for example the SFM3000 or SFM4100.
- For yearly volumes above 2000 pieces a custom flow element could be the most cost effective solution, but the development, which is often iterative and trial and error, should not be underestimated.
- The STEP file of the flow element is available on request.

For more information on how to integrate the SDP3x in your system, consult the SDP3x Engineering Guidelines in the download center on www.sensirion.com or contact Sensirion.

Revision History

Date	Version	Author	Changes
Oct 2016	V0.1	ANB	Initial Draft

SENSIRION AG
Laubisruetistr. 50
CH-8712 Staefa ZH
Switzerland

phone: +41 44 306 40 00
fax: +41 44 306 40 30
info@sensirion.com
www.sensirion.com

Sensirion Taiwan Co. Ltd.
phone: +41 44 306 40 00
info@sensirion.com

Sensirion Inc., USA
phone: +1 805 409 4900
info-us@sensirion.com
www.sensirion.com

Sensirion Japan Co. Ltd.
phone: +81 3 3444 4940
info-jp@sensirion.com
www.sensirion.co.jp

Sensirion Korea Co. Ltd.
phone: +82 31 337 7700~3
info-kr@sensirion.com
www.sensirion.co.kr

Sensirion China Co. Ltd.
phone: +86 755 8252 1501
info-cn@sensirion.com
www.sensirion.com.cn

To find your local representative, please visit www.sensirion.com/contact

LifeElectronics
Живое партнерство

ООО «ЛайфЭлектроникс» **“LifeElectronics” LLC**

ИНН 7805602321 КПП 780501001 Р/С 40702810122510004610 ФАКБ "АБСОЛЮТ БАНК" (ЗАО) в г.Санкт-Петербурге К/С 30101810900000000703 БИК 044030703

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- *Конкурентоспособные цены и скидки постоянным клиентам.*
- *Специальные условия для постоянных клиентов.*
- *Подбор аналогов.*
- *Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.*

- *Приемлемые сроки поставки, возможна ускоренная поставка.*
- *Доставку товара в любую точку России и стран СНГ.*
- *Комплексную поставку.*
- *Работу по проектам и поставку образцов.*
- *Формирование склада под заказчика.*

- *Сертификаты соответствия на поставляемую продукцию (по желанию клиента).*
- *Тестирование поставляемой продукции.*
- *Поставку компонентов, требующих военную и космическую приемку.*
- *Входной контроль качества.*
- *Наличие сертификата ISO.*

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- *Регистрацию проекта у производителя компонентов.*
- *Техническую поддержку проекта.*
- *Защиту от снятия компонента с производства.*
- *Оценку стоимости проекта по компонентам.*
- *Изготовление тестовой платы монтаж и пусконаладочные работы.*

Тел: +7 (812) 336 43 04 (многоканальный)
Email: org@lifeelectronics.ru

www.lifeelectronics.ru