センサ（圧力・フォース・湿度）

Sensor (Pressure • Force • Humidity)

圧力センサ　Pressure Sensor

長年の実績に基づくピエゾ抵抗技術を使用した半導体圧力センサは、確かな信頼性と高機能を有するセンサとして高く評価されています。
圧力センサモジュールはアナログ出力に対応可能で、水位検知をはじめ、各種圧力検知にお応えします。

Semiconductive pressure sensor which uses piezo-resistive technology based on long standing track record is regarded highly as a sensor which has solid reliability and high functionality. Pressure sensor modules can respond to analog output and are capable of various pressure detections including water level detection.

Features

圧力センサ Pressure Sensor /HPD

- ●小型・低価格 Small in size, low in price
- ●高感度・低消費電力 High sensitivity, low power consumption

圧力センサモジュール Pressure Sensor Module /HPM

- ●アナログ出力 Compatible with analog output
- ●EEPROM内蔵で温度特性含む各種キャリブレーション済にて高精度、高安定
  High precision, high stability through various calibrations including temperature characteristics by built in EEPROM Applications

Model No. HPD-XXXG-R03

Model No. HPM-XXX□□-BXX

Model No. HPM-XXX□□-DXX

Application

- ●ガスメーター Gas meter
- ●炊飯器 Rice cooker
- ●エアーコントロール(掃除機・エアコン)
  Air control (Cleaner and air-conditioner)
- ●水位検知 Water level detection
- ●FA用圧力計測用
  For FA measurement of pressure

Specifications

Pressure Sensor

Item	Rating	
Model No.	HPD-100G-R03	HPD-1000G-R03
Operating Temperature Range (℃)	-20～+100	
Rated Pressure (kPa)	100	1000
Drive Current (mA)	DC 1.5	
Bridge Resistance (kΩ)	5±1	
Offset Voltage (mV)	±20	
Span Voltage (mV)	100±40	
Pressure Linearity (%FS)	±0.3	±0.6

Pressure Sensor Module

Item		Min.	Typ.	Max.
Model No.		HPM-**-B**, HPM-**-D**		
Pressure Medium		Water, air, and other non-corrosive media		
Accuracy Guaranteed Temperature Range (℃)		-10		60
Measurable Pressure Range (kPa)		-90～500k Pa range is available.		
Drive Power Voltage (V)		5V / 12V		
Output Form	DC (V)	0.5		4.5
Current Consumption (mA)				2
Output Accuracy (%FS)		-2		2

Please consult us for speccification other than the above.

フォースセンサ　Force Sensor

長年培ったMEMS技術をコアテクノロジーとし、従来の方式ではなし得なかった微小荷重を高精度で検出することが可能です。

Utilizing long home-nurtured silicon MEMS technology as core technology, we made it possible to precisely detect micro force, which otherwise can not be achieved with conventional method.

Features

- ●小型・低背 外形寸法
  Small size, Low package size
- ●微小荷重を高感度、高精度で検出可能
  Capable to detect micro force with high sensitivity, high precision

Model No. HFD-500S

Application

- ●医療用輸液ポンプ Infusion pump for medical applications
- ●微小荷重計測器 Micro load measuring instrument
- ●リニア出力応用のスイッチ Switches of linear output application
- ●電子ペン等の入力装置 Input devices such as electronic pens, etc.

Specification

1. Maximum Absolute Ratings

Item	Rating HFD-500S Min.	Typ.	Max.	Remarks
Drive Voltage (V)	-	-	5.5	
Storage Temperature Range (℃)	-40	-	85	
Operating Temperature Range (℃)	-20	-	60	
Breaking Load (N)	**70**	-	-	
Life (Cycles)	1000k	-	-	5～10N 60Hz (Sine Wave)

2.Rating (Ta=25 ℃, Vcc=2.8 V)

Item	Rating HFD-500S Min.	Typ.	Max.	Remarks
Operating Force Range (N)	0	-	10	
Offset Voltage (mV)	-10	-	10	Output voltage when 0[N] is applied ※1
Full Scale Span (mV)	120	130	140	※2
Sensitivity (mV/N)	-	13	-	
Output Linearity (%FS)	-3	-	3	FS =Full scale span

※1 OUTPUT Voltage = (+OUTPUT Voltage) - (-OUTPUT Voltage)

※2 HFD-500S:(Output voltage at 10[N] application) - (Output voltage at 0[N] application)

湿度（容量式）・温度センサ
Humidty (Capacitive) & Temperature Sensor

新開発の感湿膜を使用したセンサ素子に専用ICを組み合わせ、高精度、高信頼性の湿度センサを実現しました。

Humidity sensor which uses newly-developed humidity-sensitive film combined with dedicated IC realized high precision and high reliability.

Features

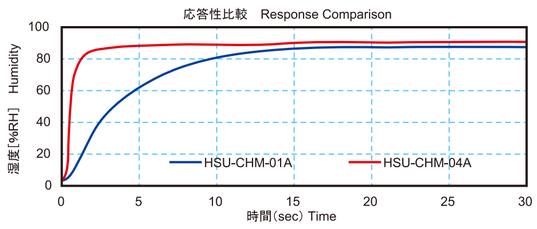
Model No. HSU-CHM-04A

Model No. HSU-CHU-41A

- ●従来の1/10の応答速度！　応答速度世界最速を実現 !(当社調べ)
  Response speed is 1/10 of the conventional one !
  Achieves world's fastest response speed ! (according to our research)
- ●広範囲の駆動電圧に対応(1.62～5.5V)　Supports a wide range of drive voltages (1.62 to 5.5V)
- ●低消費電流(スリープ時400nA(Max), 温湿度検出時10μA(Max.)
  Low current consumption (400nA (Max) during sleep, 10μA (Max.) during temperature/humidity detection)

Humidity Responsiveness

HSU-CHM-04Aは材料や構造の見直しにより、超高速応答を実現しました。
HSU-CHM-04A has achieved ultra-high-speed response by reviewing its materials and structure.



応答速度世界最速
World's fastest response speed

Applications

- ●エアコン、冷蔵庫等の一般民製品
  General consumer products such as air conditioners and refrigerators
- ●医療機器(CPAP装置(持続的気道内陽圧)、人工呼吸器)
  Medical equipment (CPAP device (continuous positive airway pressure), ventilator)
- ●車載 (曇り検知、省エネ対策)
  In-vehicle (fogging detection, energy saving measures)
- ● 温湿度計 Thermo hygrometers

Specifications

Item		Rating HSU-CHM-04A	HSU-CHU-41A	Remarks
湿度 Humidity	測定範囲 Operating Range (%RH)	0~100		
	分解能 Resolution (%RH)	0.1		10 bit data
	精度 Accuracy (%RH)	±2	±3	25 ℃/ 20~80 %RH
	応答時間　Response Time (sec.)	**1 Typ.**		τ 63% reaching
温度 Temperature	測定範囲 Operating Range (℃)	-30~+100	-20~+85	
	分解能 Resolution (℃)	0.1		11 bit data
	精度 Accuracy (℃)	± 0.3	± 0.5	5~60℃

抵抗式湿度センサ
Resistive Type Humidity Sensor

30年以上の販売実績を持つ抵抗式湿度センサ。月産数量は1Mpcs以上。回路を搭載したモジュール製品も取扱っております。

Resistive type humidity sensor with over 30 years of sales experience.Monthly production is over 1Mpcs. We also handle module products with built-in circuits.

Features

<素子Element (HIS)>

- ●高温・低温・高湿環境などで 5000hr 以上の耐久性を持つ信頼性に優れた製品です。
  This is a highly reliable product with a durability of 5000 hours or more in high temperature, low temperature and high humidity environments.
- ●製品サイズは業界最小クラス The smallest product size in the industry

Model No. HIS-06K-N

<ユニットUnit (HSU)>

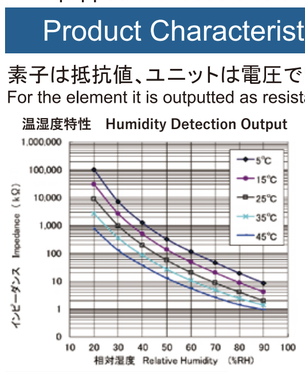
- ●トレンドに合わせて0603サイズチップコンデンサを搭載
  Equipped with 0603 size chip capacitors in line with the trend

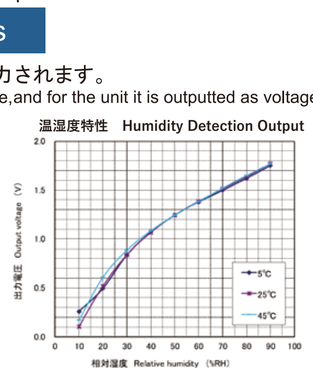
Model No. HIS-08

Model No. HSU-08F9C1A

Product Characteristics

素子は抵抗値、ユニットは電圧で出力されます。
For the element it is outputted as resistance,and for the unit it is outputted as voltage.





Applications

- ●温湿度計　Thermo hygrometer
- ●加湿器、除湿器　Humidifier, Dehumidifier
- ●プリンタ、複写機　Printer, Copier
- ●冷蔵庫　Refrigerator
- ●エアコン　Air-conditioner
- ●自動車　Car

Specifications

	HIS-06K-N	HIS-08	HSU-08F9C1A-D
製品形状 Type	素子 Element	素子 Element	ユニット Unit
検出湿度範囲 Operating Humidity Range (%RH)	20～90	20～90	10～90
検出精度 Output Accuracy (%RH)	±5 (at 25 ℃, 50 %RH)	±5 (at 25 ℃, 50 %RH)	±5 (at 25 ℃, 40/60 %RH)
定格電圧 Rated Voltage (V)	AC. 5.5 Max.	AC. 5.5 Max.	DC. 5.0

HDK HOKURIKU