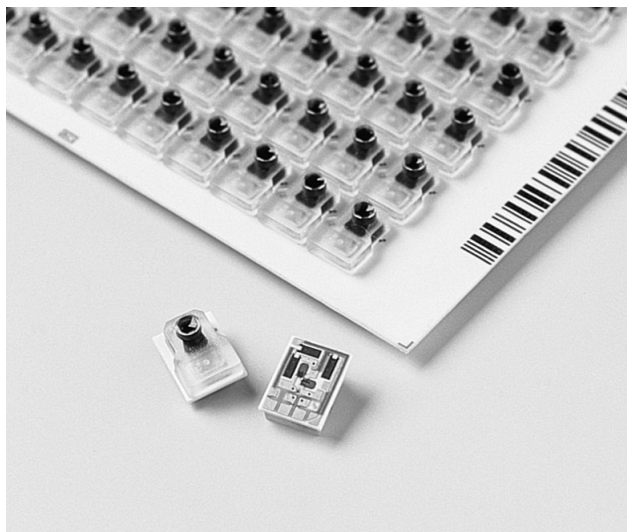


**Disposable Blood Pressure Sensor**  
**AAMI Specification**  
**Low Cost**  
**Multiple Configurations**

- ▶ Disposable Blood Pressure
- ▶ Measurements
- ▶ Kidney Dialysis Machines
- ▶ Medical Instrumentation



## DESCRIPTION

The Model 1620 is a fully piezoresistive silicon pressure sensor for use in invasive blood pressure monitoring. The sensor is designed to be used with automated assembly equipment and can be dropped directly into a customer's disposable blood pressure housing. The sensor is designed to meet the requirements as described in the Association for the Advancement of Medical Instrumentation (AAMI) specification for Blood Pressure Transducers.

The pressure sensor consists of a pressure sensing element mounted on a ceramic substrate. Thick-film resistors on the ceramic substrate are laser-trimmed for compensation and calibration.

A plastic cap is attached to the ceramic substrate to provide an easy method of attachment to the customers assembly and protection for the sensing element. A dielectric gel is placed over the sensor to provide electrical and fluid isolation.

The Model 1620 pressure sensors are batch manufactured in a 10x12 element array on a ceramic substrate (120 units per substrate). The products are shipped in anti-static shipping containers. Performance characteristics and packaging can be easily tailored on a special order basis to meet the requirements of specific customers.

## FEATURES

- ▶ Low Cost Disposable Design
- ▶ Solid State Piezoresistive Sensor
- ▶ Top Side Pressure Entry
- ▶ Compatible with Automated Assembly Equipment
- ▶ Integral Dielectric Gel Barrier
- ▶ Fully Tested and Compensated

## STANDARD RANGE

-30 to 300 mmHg

## PERFORMANCE SPECIFICATIONS

Supply Voltage: 6.0 VDC

Ambient Temperature: 25°C (Unless otherwise specified)

| PARAMETERS                                 | MIN                                    | TYP | MAX   | UNITS      | NOTES |
|--------------------------------------------|----------------------------------------|-----|-------|------------|-------|
| Operating Pressure Range                   | -30                                    |     | 300   | mmHg       |       |
| Overpressure                               | 125                                    |     |       | PSI        |       |
| Zero Pressure Offset                       |                                        |     | ±20   | mmHg       |       |
| Sensitivity                                | 4.95                                   | 5.0 | 5.05  | μV/V/mmHg  |       |
| Calibration                                | 97.5                                   | 100 | 102.5 | mmHg       | 1     |
| Linearity & Hysteresis (-30 to 100 mmHg)   |                                        |     | 1     | mmHg       |       |
| Linearity & Hysteresis (> 100 to 200 mmHg) |                                        |     | 1     | % output   |       |
| Linearity & Hysteresis (>200 to 300 mmHg)  |                                        |     | 1.5   | % output   |       |
| Input Impedance                            | 1200                                   |     | 3200  | Ω          | 2     |
| Output Impedance                           | 285                                    |     | 315   | Ω          |       |
| Output Symmetry                            | 0.95                                   |     | 1.05  | ratio      | 7     |
| Supply Voltage                             | 1                                      | 6   | 10    | VDC        |       |
| Risk Current (at 120 VAC rms 60 Hz)        |                                        |     | 2     | mA         |       |
| Warm-up Time                               |                                        | 5   |       | seconds    |       |
| Frequency Response                         | 1200                                   |     |       | Hz         |       |
| Offset Drift                               |                                        |     | 2     | mmHg       | 3     |
| Thermal Span Shift                         |                                        |     | ±0.1  | %/°C       | 4     |
| Thermal Offset Shift                       |                                        |     | ±0.3  | mmHg/°C    | 4     |
| Phase Shift (at 5 kHz)                     |                                        |     | 5     | degrees    |       |
| Light Sensitivity (3000 Foot Candle)       |                                        |     | 1     | mmHg       |       |
| Defibrillator Withstand (400 Joules)       | 5                                      |     |       | discharges | 5     |
| Sterilization (ETO)                        | 3                                      |     |       | cycles     | 6     |
| Operating Temperature                      | +10°C to +40°C                         |     |       |            |       |
| Storage Temperature                        | -25°C to +70°C                         |     |       |            |       |
| Humidity                                   | 10 - 90% (non-condensing)              |     |       |            |       |
| Operating Product Life                     | 168 hours                              |     |       |            |       |
| Shelf Life                                 | 2 years                                |     |       |            |       |
| Dielectric Breakdown                       | 10,000 VDC                             |     |       |            |       |
| Media Interface                            | Dielectric Gel                         |     |       |            |       |
| Volume Displacement                        | 4.5 x 10 <sup>-4</sup> in <sup>3</sup> |     |       |            |       |
| Weight                                     | 0.5 grams                              |     |       |            |       |

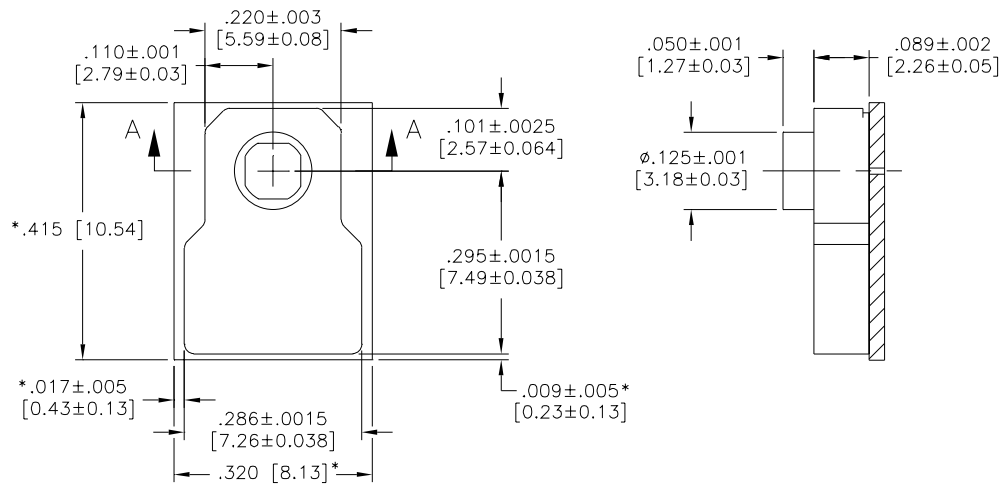
## Notes

- Output of sensor with no pressure applied and a 150kΩ resistor shorted across +VIN to +OUT.
- For input impedance of 350Ω ± 5% select pad configuration 1.
- Over an 8 hour time period and after warm-up.
- Over operating temperature range (+10°C to +40°C).
- One discharge per minute.
- Sterilization performed by customer.
- Defined as common mode symmetry between signal output and either excitation terminal.

## CONNECTIONS AND DIMENSIONS

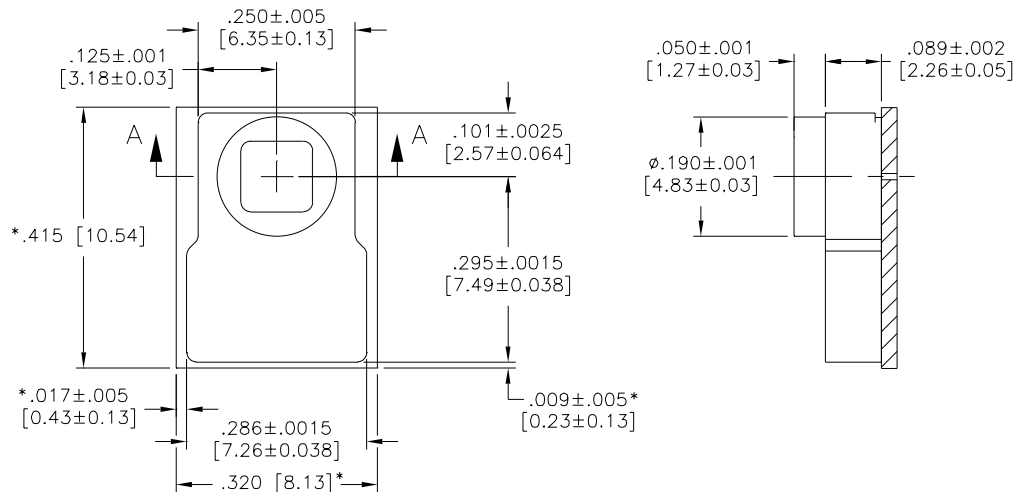
All dimensions are in inches [millimeters].

## BODY STYLE N



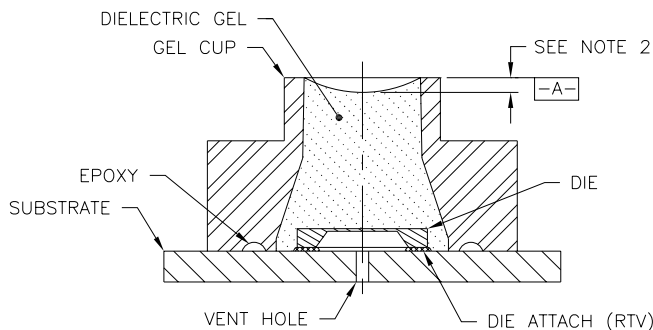
\*Dimensions indicated do not include flares.

## BODY STYLE W



\*Dimensions indicated do not include flares.

## SECTION A-A

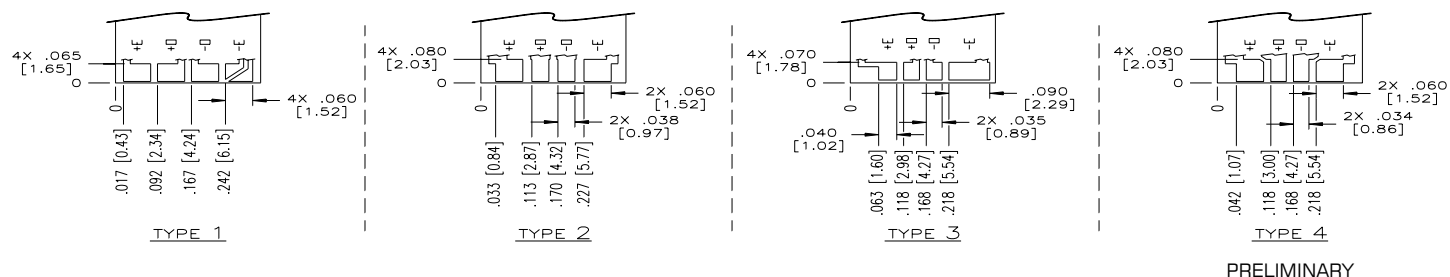


## Notes

- Materials Used:**
  - Substrate: 96% Alumina
  - Transducer (Die): Silicon
  - Die Attach Adhesive: Room Temperature Vulcanizer
  - Lid Adhesive: Medical Grade UV Curing Adhesive
  - Conductor And Contact Pads: Palladium-Silver Alloy
  - Wire Bonds And Bond Pads: Gold
  - Resistors: Ruthenium-Based Thick Film Paste
  - Solder Dams: Green Glass
  - Protective Gel Lid: Rad-Stable Poly carbonate Resin
- Miscus of Gel:**
  - Max dimension below surface A =  $.035''$  [0.89].
  - Max dimension above surface A =  $.001''$  [0.03].
- All dimensions taken at maximum draft.
- All unspecified fillets and radii are  $.015''$  [0.38].
- All draft angles  $1^\circ$  maximum.

## STANDARD PAD CONFIGURATIONS

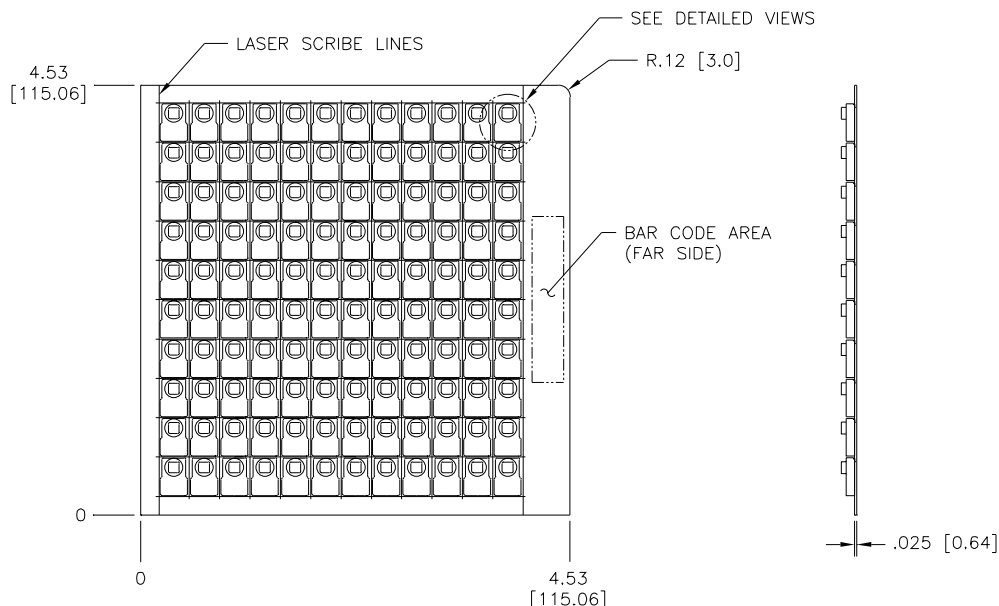
All dimensions are in inches [millimeters].



### Note

- Custom pad configurations not shown here may be special ordered. Call IC Sensors for details.

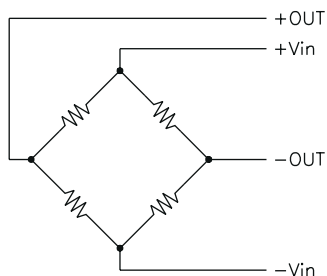
## SHIPPING INFORMATION



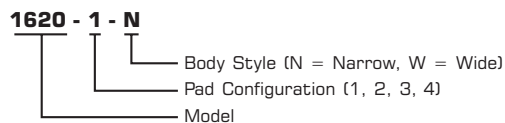
### Notes

- Sensors are shipped as 120 UP snapstrates and must be singulated by the purchaser.
- Each plate may include units that have failed visual or electrical parameters as well as good units. Bad units are identified with a dot on the backside of the cell location.
- Plates are shipped in dust free anti-static containers to prevent contamination of the gel surface.

## SCHEMATIC DIAGRAM



## ORDERING INFORMATION





# ISO Selection Guide

## 316 Stainless Steel Media Compatibility Products



**SUNSTAR 商斯达实业集团**是集研发、生产、工程、销售、代理经销、技术咨询、信息服务等为一体的高科技企业，是专业高科技电子产品生产厂家，是具有 10 多年历史的专业电子元器件供应商，是中国最早和最大的仓储式连锁规模经营大型综合电子零部件代理分销商之一，是一家专业代理和分销世界各大品牌 IC 芯片和电子元器件的连锁经营综合性国际公司，专业经营进口、国产名厂名牌电子元件，型号、种类齐全。在香港、北京、深圳、上海、西安、成都等全国主要电子市场设有直属分公司和产品展示展销窗口门市部专卖店及代理分销商，已在全国范围内建成强大统一的供货和代理分销网络。我们专业代理经销、开发生产电子元器件、集成电路、传感器、微波光电元器件、工控机/DOC/DOM 电子盘、专用电路、单片机开发、MCU/DSP/ARM/FPGA 软件硬件、二极管、三极管、模块等，是您可靠的一站式现货配套供应商、方案提供商、部件功能模块开发配套商。商斯达实业公司拥有庞大的资料库，有数位毕业于著名高校——有中国电子工业摇篮之称的西安电子科技大学（西军电）并长期从事国防尖端科技研究的高级工程师为您精挑细选、量身订做各种高科技电子元器件，并解决各种技术问题。

更多产品请看本公司产品专用销售网站：

商斯达中国传感器科技信息网：<http://www.sensor-ic.com/>

商斯达工控安防网：<http://www.pc-ps.net/>

商斯达电子元器件网：<http://www.sunstare.com/>

商斯达微波光电产品网：[HTTP://www.rfoe.net/](http://www.rfoe.net/)

商斯达消费电子产品网：<http://www.icasic.com/>

商斯达实业科技产品网：<http://www.sunstars.cn/>

传感器销售热线：

地址：深圳市福田区福华路福庆街鸿图大厦 1602 室

电话：0755-83370250 83376489 83376549 83607652 83370251 82500323

传真：0755-83376182 (0) 13902971329 MSN: [SUNS8888@hotmail.com](mailto:SUNS8888@hotmail.com)

邮编：518033 E-mail:[szss20@163.com](mailto:szss20@163.com) QQ: 195847376

深圳赛格展销部：深圳华强北路赛格电子市场 2583 号 电话：0755-83665529 25059422

技术支持：0755-83394033 13501568376

欢迎索取免费详细资料、设计指南和光盘；产品凡多，未能尽录，欢迎来电查询。

北京分公司：北京海淀区知春路 132 号中发电子大厦 3097 号

TEL: 010-81159046 82615020 13501189838 FAX: 010-62543996

上海分公司：上海市北京东路 668 号上海赛格电子市场 2B35 号

TEL: 021-28311762 56703037 13701955389 FAX: 021-56703037

西安分公司：西安高新开发区 20 所(中国电子科技集团导航技术研究所)

西安劳动南路 88 号电子商城二楼 D23 号

TEL: 029-81022619 13072977981 FAX:029-88789382