

## How to Solder Gold Leads of N-Series Semiconductor Strain Gauges (SG)

### 1. General Information

The N-series semiconductor SG manufactured by BCM SENSOR has no backing layer, which is called naked gauges. The leads of these naked gauges are made from gold (Au).

According to metallographic theory, the eutectic temperatures of both gold and tin (Sn) are low, and their melting points are very close. If tin is used as solder for gold leads, the gold leads will be melted by the tin solder.

Therefore, soldering gold leads to the solder pads of sensor terminals, any ordinary tin solder cannot be used. One must use Ø2mm pure indium solder or Ø2mm Au-Sn alloy solder, e.g., WAS solder from BCM SENSOR. If necessary, one can use 20% ZnCl<sub>2</sub> solution as flux, e.g., WCF flux from BCM SENSOR.

Moreover, it is also important to set the soldering iron at a proper temperature which should be 200°C~240°C but not over 240°C, so it is suggested use the soldering iron of 25W power.

### 2. Soldering Steps

Step-1: On the sensor terminal, pre-solder the indium solder or Au-Sn solder, to form a bright solder dot.

Step-2: If flux is used, apply small amount of flux on the solder dot. To control the amount, one can use a bamboo toothpick to dip the flux and apply it on the solder dot.

Step-3: Set the soldering iron at the proper temperature.

Step-4: Use a tweezer to hold the gold leads and keep the end of leads close to the solder dot. Put the soldering iron tip on the solder dot. Once the solder dot is melting, quickly insert the gold leads into the solder. Once the leads are in the solder dot, keep the position of gold leads and remove the soldering iron. One can slightly blow the solder dot in order to cool down the solder dot more quickly.

Step-5: After the solder dot get solid and the leads are firmly held by the solder dot, the leads can be released.