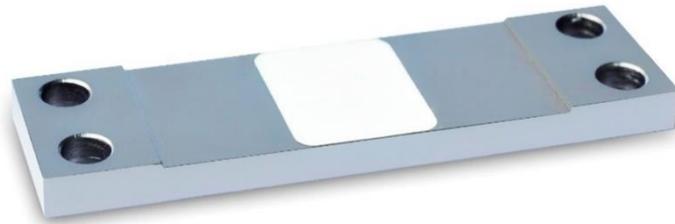


Installation Manual



H2B Force Sensor

Warranty Information

Under normal conditions, the warranty period of the sensor is 1 year. If the product has been changed or damaged due to misuse, negligence, natural accidents or transportation, it will not be covered by warranty.

Note: the sensor is a high precision unit, therefore it is very sensitive. Installation, testing, disassembly and other processes are to be performed strictly according to the instructions.

Application

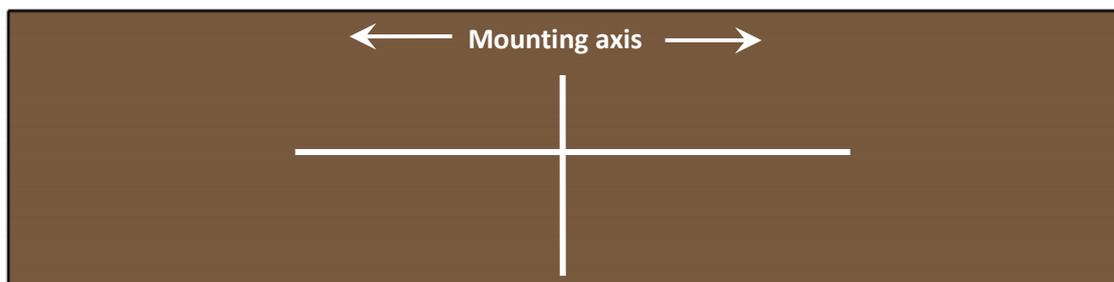
H2B sensors are widely used to measure the surface strain of various steel structures or concrete structures in the fields of bridges, buildings, railways, traffic, hydropower and dams. The sensors are also used to measure the linear deformation and stress of installation points.

The sensor is made of an alloy steel material, after special processing and forming, and the installation of high precision resistance strain gauges on a strain sensitive element the sensor is able to be connected to a static data acquisition system. Through several acquisition systems and their software functions, the strain value of the tested structure surface can be measured.

The sensor has the advantages of good linearity, good stability, simple structure and easy installation in the field.

Line Positioning:

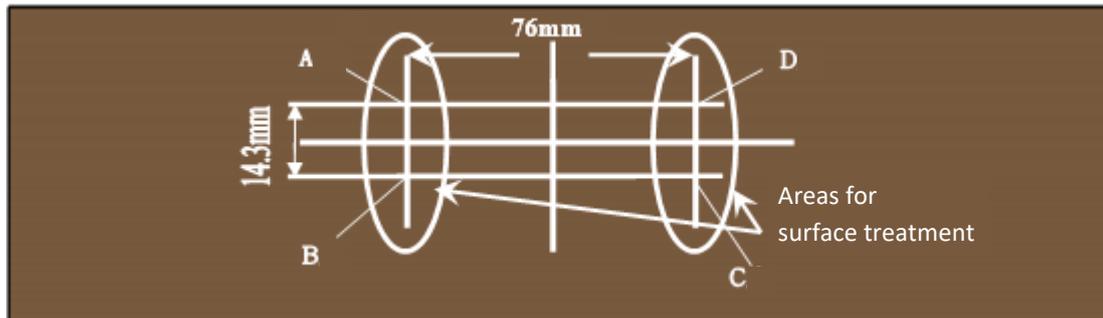
H2B is a high-precision sensor, accurate installation and positioning is essential to achieve accurate measurement results. Therefore, the location of the datum line before installation is very important. In the measured area, draw out two lines as below. The transverse line is about 200mm, and the longitudinal line is about 100mm. The intersection of the two lines is the central location of the sensor installation.



H2B positioning guide 1

From the center of the longitudinal line measure 38mm out of the center on the transverse line, draw two other longitudinal lines at this distance of 38mm on both sides. Draw two lines parallel to the longitudinal line at a distance of 7.15mm on each side. There will be 4 intersection points for bolt installation, marked A, B, C and D on the H2B positioning guide 2.

Around the two longitudinal lines, there is an area of approximately 10 × 26mm marked in oval shapes as you can see on the following page. This interval is required for surface treatment. These round markings on drawing 2 of the positioning guide mark the area which has to be abraded, cleaned, made free of imperfections, corrosion or paint and flattened.



H2B positioning guide 2

Installation on Different Measuring Areas

Installation on steel structures:

When the sensor is required to be installed on a steel structure (steel structure bridge, building component, large mechanical equipment, liquid storage tank, etc.), the following installation method can be used:

After the line location, drill the $\varnothing 5\text{mm}$ holes in the 4 intersection points, then use the M6 drill to make screw holes, and fix the sensor directly to the structural part with the socket head M6 screw.

⚠ Note: The application and the sensor contact surface should be separated by a washer to prevent the abrasion or damage or impairment of free movement of the sensor.

In the installation process, it is necessary to pay attention to the need to clean the surface, make it smooth and free of impurities, corrosion or paint.

Installation on reinforced concrete:

First, mark the location on the measured structure (refer to the **Line Positioning** section).

In the correct fixed position, drill $\varnothing 6.2\text{mm}$ holes for studs, put the studs into the holes, and seal them with concrete, ensure the surface of the concrete is smooth. After the concrete is solidified, fix the sensor directly to the studs installed in the concrete with the socket head M6 screw.

⚠ Note: The concrete and the sensor contact surface should be separated by a washer to prevent the abrasion or damage or impairment of free movement of the sensor.

Attention during installation:

If the sensor is fixed with bolts, the location of two fixed holes must be ensured accurately. There is a certain allowance on the fixed holes distance of the sensor, which allows the fixture hole spacing to have a small tolerance.

If the surface of the installation is not flat, the application may need to be grinded by a portable polishing machine.

After the sensor is fixed, the cable also needs to be fixed. Operator can use tape or glue or other ways of fastening to prevent the cable from entanglement and damaged.

Connection

During installing, the cable connection length can be adjusted according to the site conditions, the connection junction joints should not be buried underground.

After welding, measure the resistance between different wires of the sensor. The red and black core lines resistance is usually about 375 ± 20 Ohm, and the resistance between the green and white core lines is about 350 ± 15 Ohm, and the insulation resistance between the red, black, green, white core and shielding lines should be more than 2000M Ohm (50V DC should be used for measuring the insulation resistance).

Note: If, in any case the core wires have to be soldered it is advised to check the resistance between the core wires afterwards. This way you can avoid a short circuit and open circuit due to poor soldering work.

Temperature Effect

After the sensor is installed, the two ends of the sensor are fixed and it will be forced to have the same deformation as the measured structure. As the temperature increases (or decreases), the measured structure expands (or contracts), and the same deformation occurs on the sensor. The deformation of the measured structures caused by temperature changes will be reflected through sensors.

If the sensor is exposed to direct sunlight, the temperature drift will change very quickly in a short time. Adding certain covers on the surface of the sensor can usually reduce or eliminate this problem.

Attention

This product should work within the range of rated measurement.

To guarantee the ingress protection it is important that when a wire is soldered, the part which is soldered is covered and made waterproof.

Cables can be laid directly on the site. In order to protect the cable, it is better to use protection tubes. The cables should as far away from the sources of electrical noise, such as power lines, generators, motors, transformers, arc welders, etc. as possible to prevent the electrical noise from interfering with the signal.