

Update : 12/13/2022



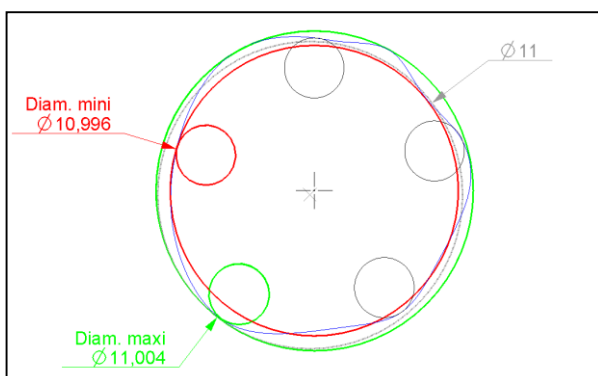
- Micrometric resolution
- Inspected diameter from 6 to 30mm
- Inspected depth up to 50mm (through hole)
- High accuracy measurement in industrial environment

1 - Description

The **HSID (Hole or Shaft Inspection Device)** is an OEM product developed by ISP SYSTEM for the measurement of automatic cylindrical shapes. The internal micrometer has a measuring finger fitted with 3 to 5 independent contacts, according to the model. The contacts' positions are measured by an integrated camera.

Compact, the automatic micrometer HSID is mounted on a manipulator arm or it can be integrated on a machining center. It performs measurements with a micrometric accuracy in real time during machining process.

Thanks to the independent movement of each contact provided by the extensible membrane, angle errors during approach phase do not impact the measurement. Radial and axial misalignments are tolerated.



Example of min/max diameter measurement

In configuration with 3 contacts, the bore diameter can be measured with high accuracy.

In configuration with 5 contacts, the HSID micrometer is able to determine automatically the maximum and minimum diameter on the 5 points.

The HSID algorithm provides rapidly the deviation from circular form calculated by least-squares method.

Associated to a measuring linear axis*, the HSID can perform measurements at various depths in order to provide a spatial representation of the inspected bore or shaft. These measurements allow the calculation of deviation from cylindrical form or perpendicularity.

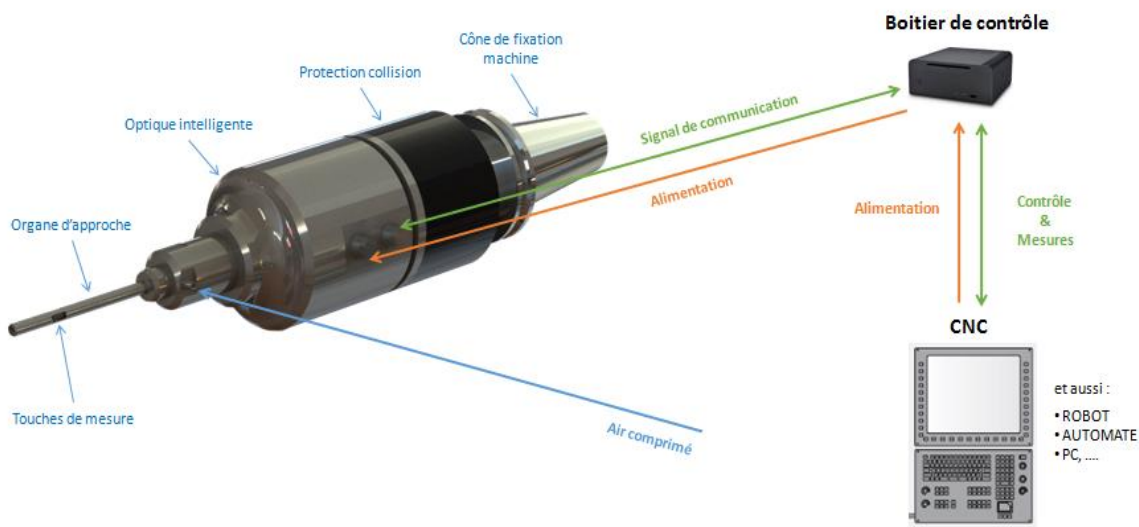
** Righteousness of measuring linear axis is about 0.2µm for 100mm stroke.*

A text file containing all information is generated in order to ensure the controls traceability.

The automatic bore inspection device can be equipped with exchangeable gauges to inspected diameter. By this way it is possible to get a measurement range from Ø6mm up to Ø30mm with the same equipment, only by using the adapted gauge.



Integration scheme



2 - Datasheet

	CHARACTERISTICS	SPECIFICATIONS
Micrometer	Measurement diameter	from Ø6mm up to Ø30mm
	Measurement contacts quantity	3 or 5
	Depth if inspection	50 mm
	Measurement repeatability	± 0,004 mm
	Measurement duration	1 s
	Compressed-air pressure	1 bar
	Display	1 LED Power ON 1 LED Measurement in progress
	Dimensions	See drawings
	Protection Class	IP 65
	Mass	400 g
Electronic Control Unit	Power supply	230V 50-60Hz
	Communication protocol	TCP/IP

The HSID is supplied with an Electronic Control Unit for data processing (calculation algorithm) and Power supply management. The ECU is connected to a CNC machine (or a robot, a computer, ...)

The automatic micrometer can also be fixed to the machine thanks to a clamping cone and it can be equipped with a safety system in case of collision (as options).

3 - Applications example



Automatic on-line control of various bores on a plate.

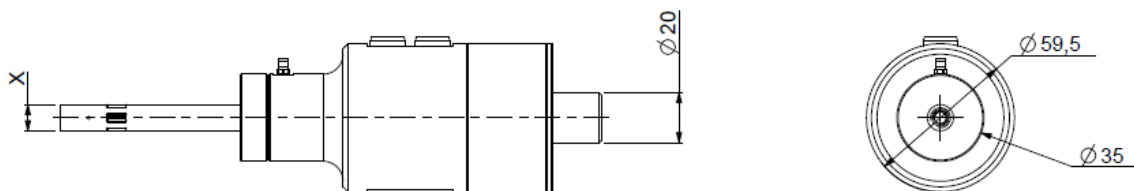
The HSID allows the easy and quick control of several bore diameters.

It can be fixed directly on the machine-tool thanks to a clamping cone compatible with machining centers, drilling machines, boring machines, milling machines...

The 100% dimensional control is possible on-line just after machining.

The operator can check in real time the conformity of parts directly through the proposed MMI.

4 - Drawings



X: à définir suivant alésage à mesurer

