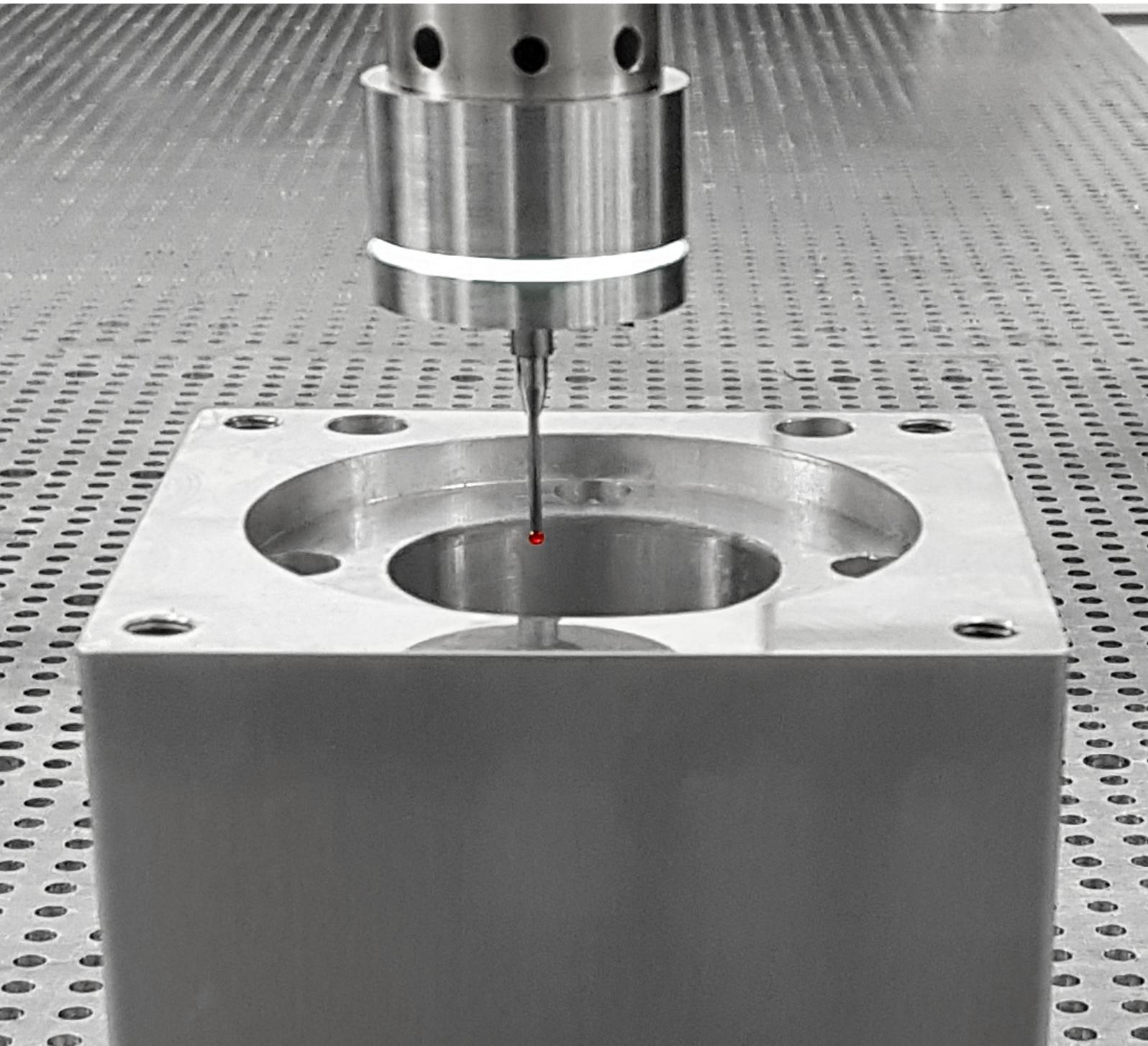


Sensor Hot-Plug Interface

SHPI Rev: 02 - ENG

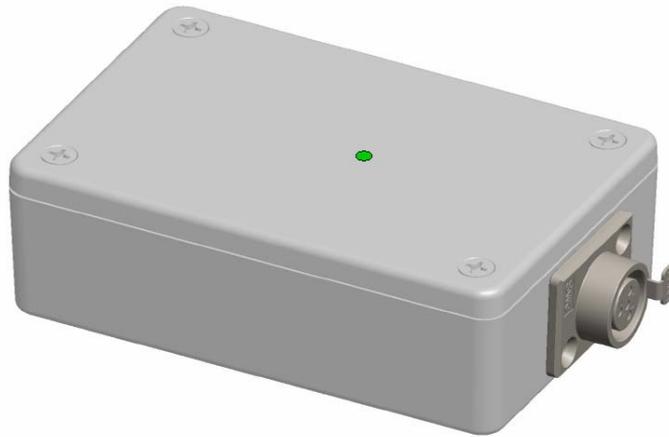


Sensor Hot-Plug Interface

During milling operations, various sensors may be required, e.g. a tool length sensor for tool length measurement, a 3D probe for workpiece measurement, etc.

However, these different sensors are never required at the same time.

Connecting all these sensors (in series) to the controller results in a lot of loose cables, which are usually in the way and are very inconvenient during the milling work.



In order to eliminate the inconvenience of long and loose cables, we have developed a sensor connection box: the **Sensor Hot-Plug Interface**.

When using the **Sensor Hot-Plug Interface**, you can connect only the sensor you need and then remove it after the measurement has been completed.

The **Sensor Hot-Plug Interface** can be mounted, for example, on the Z axis of your machine. This means that the sensor connection is available directly where it is needed, i.e. in the immediate vicinity of the milling spindle.

The cables of the sensors can be kept short, as they no longer have to be routed over the entire machine to the controller/control cabinet.

It is also often the case that different types of sensors (NPN, PNP) may be needed during milling operations. However, series connection is only possible with sensors of the same type.

You can connect all sensor types to the **Sensor Hot-Plug Interface** regardless of whether they are NPN, PNP, mechanical switches, Normally Closed or Normally Open contacts.

You only have to pay attention that all sensors have the same switching function - either all Normally Closed or all Normally Open - so you do not have to constantly invert the function of the controller input.

Technical Data

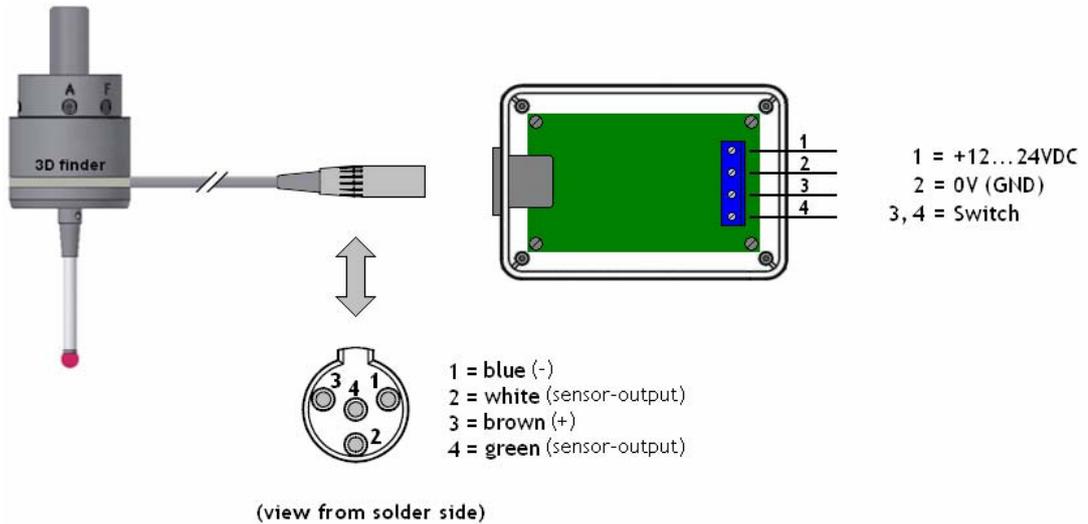
Sensor-Connection:	suitable for all types of sensors NPN, PNP, mechanical switch, Normally Closed , Normally Open Connection can be made when the machine is switched on (hot-plug)
Output function:	electronic high-speed switch freely configurable as Normally Closed, Normally Open, PNP, NPN or switch output
Switching current:	max. 30 mA
Switching voltage:	the switch output voltage must not be higher than the own supply voltage
Function display:	LED with switching point display
Operating voltage:	12 – 24V DC
Enclosure:	plastic
Dimensions:	86 x 57 x 27mm

Connecting the sensor to the hot plug interface

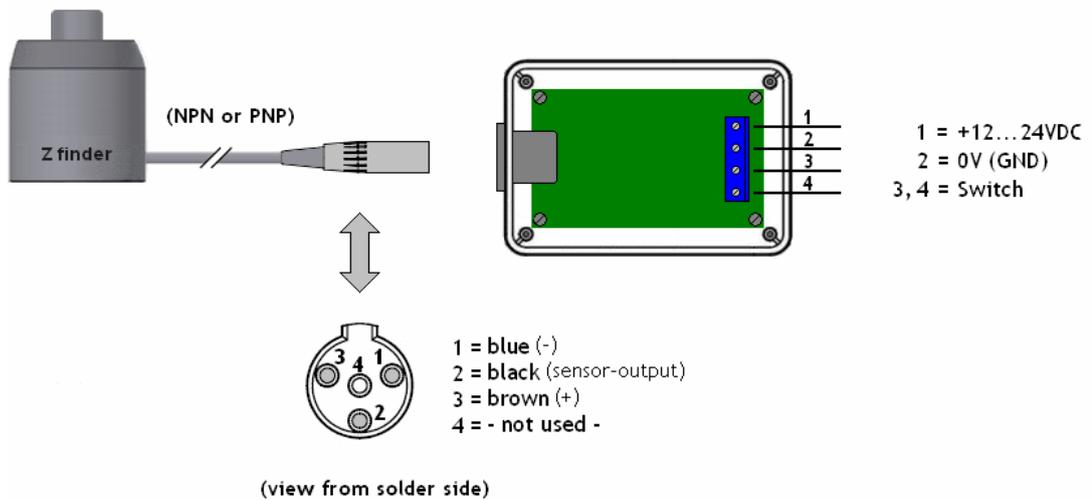
A connector of type XLR-Mini 4-pin is required to connect the sensor.

The following diagrams show how the cables of different sensor types must be soldered to the XLR mini plug/connector.

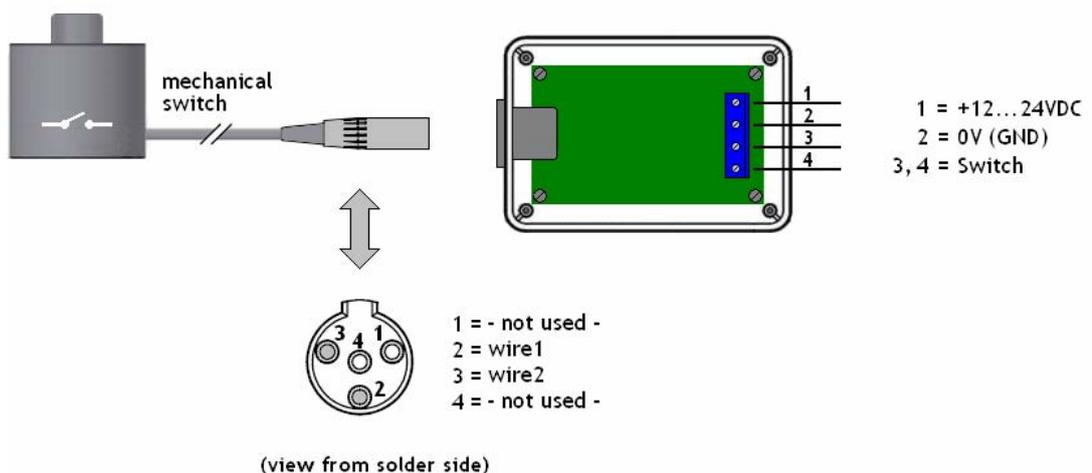
3D-finder



Z-finder PNP oder NPN



Generic mechanical switches



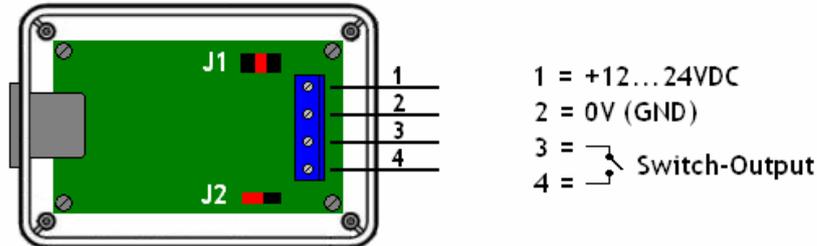
Output of the Sensor Hot-Plug Interface

The output of the **Sensor Hot Plug Interface** can be configured as a PNP, NPN or ordinary switch.

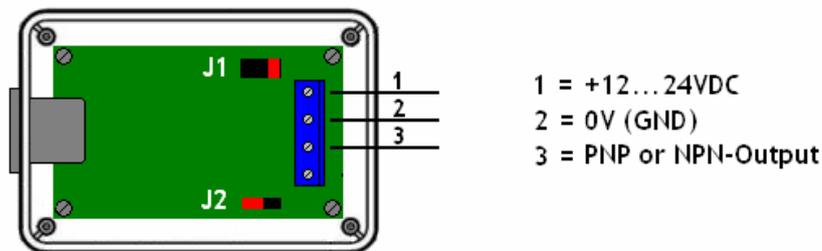
The output can also be configured as a Normally Closed or Normally Open contact.

The configuration of the output is done with the jumpers **J1** and **J2** as shown in the following diagrams.

Switch Output (J1 = SW)



PNP or NPN Output (J1 = PNP or J1 = NPN)



Set jumper **J1** as shown above to configure the desired output type: switch or PNP/NPN, respectively.

- In the SW position, the output operates as a floating/potential-free switch (terminals 3 and 4)
- In the PNP/NPN position, the output operates as a PNP or NPN transistor (terminal 4 is not used in this case)

Set jumper **J2** accordingly to configure the desired output function: Normally Closed or Normally Open.

Recommendation

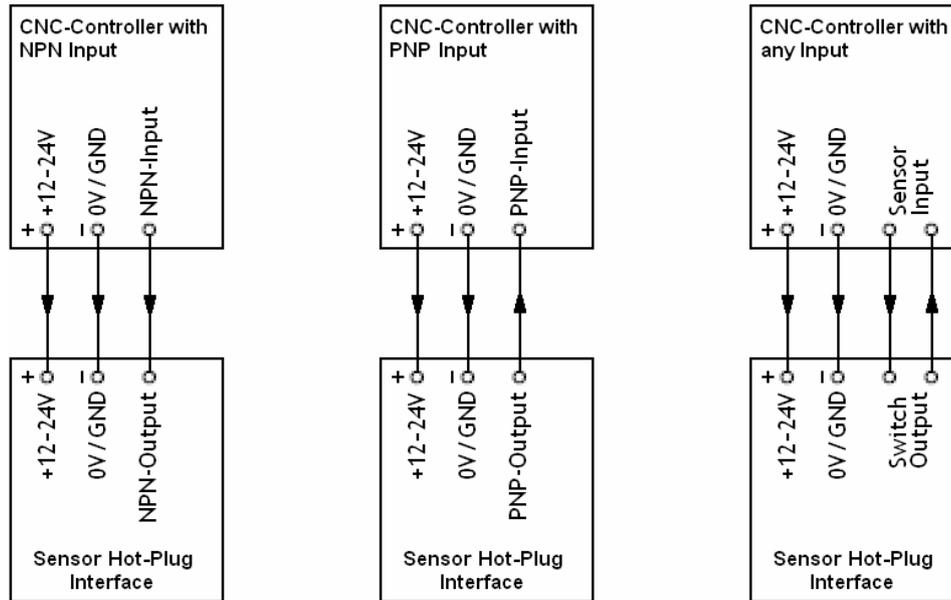
It is recommended to use Normally Closed rather than Normally Open sensors, as Normally Closed operation allows visibility over the cable connection. That is, when using a Normally Closed contact you always notice, for example, a cable interruption. Such an event is not noticeable when using a Normally Open contact, or only when it is already too late (usually during the crash of the equipment).

For the same reason, we recommend to use the output of the **Sensor Hot-Plug Interface** as a Normally Closed contact.

Attention !

- Please note that the **Sensor Hot-Plug Interface** has the same supply voltage as the controller when using it as a PNP output.
If your controller has a PNP input and only a 5V supply voltage, use the output of the **Sensor Hot-Plug Interface** in the "SW" position as a potential-free output.
- Operation of the **Sensor Hot Plug Interface** at a lower supply voltage than that of the controller is **NOT** permitted! This creates an overvoltage at the output of the **Sensor Hot-Plug** interface and destroys the internal switch.

Connection examples



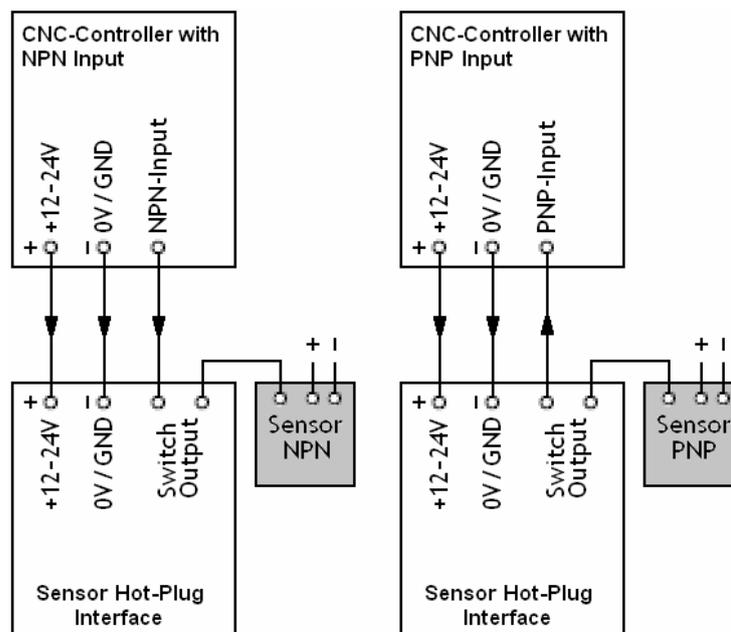
The output configured as a switch can also be used with controllers having PNP or NPN input. In this case, the respective type (PNP or NPN) is set by the controller.

Reihenschaltung mit einem Werkzeuglängensensor

If the output function of the **Sensor Hot-Plug Interface** has been set to Normally Closed contact, the output can also be used in series with other sensors.

The series connection of the output with other sensors is useful, for example, when using a tool length sensor that is mounted at fixed position of the machine bed. In this case, it makes sense to connect the tool length sensor in series directly to the output of the **Sensor Hot Plug Interface** and both to the controller input.

The following diagram shows how the output can be connected in series with another sensor (PNP or NPN). In this case jumper **J1** must be set to the position „SW“.



The supply voltage of the **Sensor Hot Plug Interface** must NOT be lower than the supply voltage of the CNC controller or that of the additional sensor !

- Improper operation caused by non-compliance with these instructions will render any warranty claim void -

Information

The information contained in this operating manual may be changed at any time by the manufacturer without prior notice. It is therefore the user's responsibility to keep up to date with any changes in the content of this manual.

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