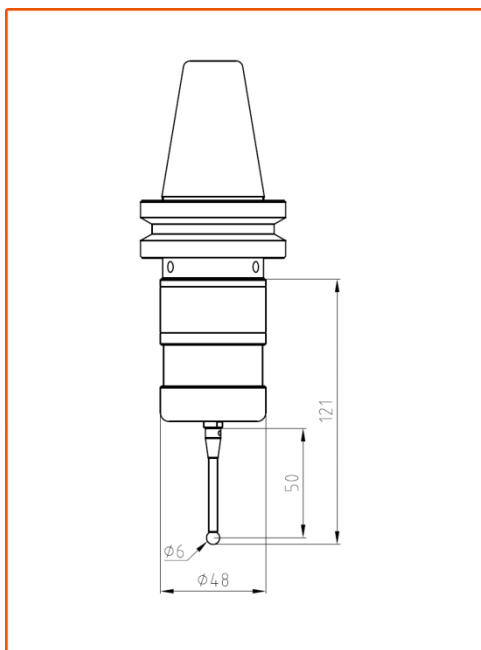


OPS-20 Series Optical Probe System

Composition of Probe System

OPS-20 series optical probe system include two pieces of hardware and one software package; The software package model is SP-W10, the two pieces of the hardware are:

- 1) OP500 series optical probe (including optional shank and stylus);
- 2) OSI-20 series optical receiver(the standard cable length 8m/the optional lengthened cable).



Application

- ◆ Setting work-piece coordinate system and machining zero points automatically before processing;
- ◆ Detect and control the key dimensions, position coordinates and their precision automatically between two processes;
- ◆ Detect precision of the key dimensions, shapes, position after processing.

Technical Parameters

- 1) The technical parameters of OP500 series optical probe :
 - ◆ Stylus sensing direction: $\pm X, \pm Y, +Z$;
 - ◆ Stylus sensing over-travel : $X-Y \pm 15^\circ, Z +5 \text{ mm}$;
 - ◆ The adjusting range of trigger force in Z direction: 500-1000 g;
 - ◆ Trigger force in X-Y surface: 50g-100g;
 - ◆ Unidirectional repeatability (2σ) : $\leq 2 \mu\text{m}$;
 - ◆ Optical signal receiving/sending distance : $\geq 5 \text{ m}$;
 - ◆ Working days of new batteries (5% utilization rate in a single shift): 140 days;
 - ◆ Seal grade: IP68.
- 2) The technical parameters of OSI-20 series optical receiver:
 - ◆ Optical signal receiving/sending distance: $\geq 5 \text{ m}$;
 - ◆ Input voltage: $24 \pm 10\% \text{ V DC}$;
 - ◆ Output load current: 50 mA;
 - ◆ Seal grade: IP68.

Technical Characteristics

- ◆ Probe switch on/off method: Rotate on/off, M code on/off;
- ◆ Infrared coded signals are used to transmit information between the probe and the receiver;
- ◆ Output four kinds of SSR signals to machine control system when probe is in the states of trigger, error, probe batteries low and output pulse;
- ◆ The OSI-20 series receiver can change its logical state of the output signal by setting;
- ◆ Double infrared signal receiving and transmitting devices are used to increase the reliability of the equipment;
- ◆ The LED lights in the receiver show the working status of the probe system.

Applicable equipment

- ◆ Various specifications of machine center, CNC boring-milling machine, drilling machine center and so on.
- ◆ Various specifications of CNC lathes, turning machine center, CNC turning-milling machine center.

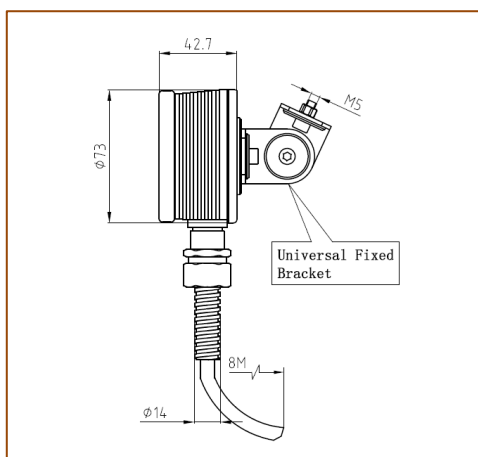
Subdivision model and function

1) OPS-20 probe system

- ◆ OP500 optical probe (Rotate on/off) ;
- ◆ OSI-10E optical receiver (with 13 cores' shielded cable) / OSI-10E1 optical receiver (with 4 cores' shielded cable) .

2) OPS-20M probe system

- ◆ OP500M optical probe (M code on/ off);
- ◆ OSI-20M13 optical receiver (with 13 cores' shielded cable)/ OSI-20M6 optical receiver (with 6 cores' shielded cable) .



Basic configuration of the probe system

1) OP500 Series probe

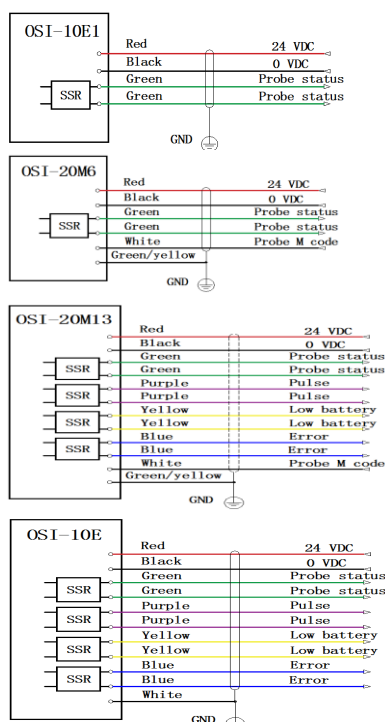
- ◆ Standard stylus model: M4-P50-RB6-S36;
- ◆ Battery specification: 14250, 3.6V, 1000mAh; 2 ps.;
- ◆ Usually, the probe shank is 7:24 taper shank with the BT or ISO standards , the common models are 30#,40#,50# and etc.; the shank with the HSK or other standards can also be used.

2) OSI-20 Series receiver

- ◆ The cable length usually is 8 meters;
- ◆ Fixed bracket with universal adjustment function is equipped.

Notes:

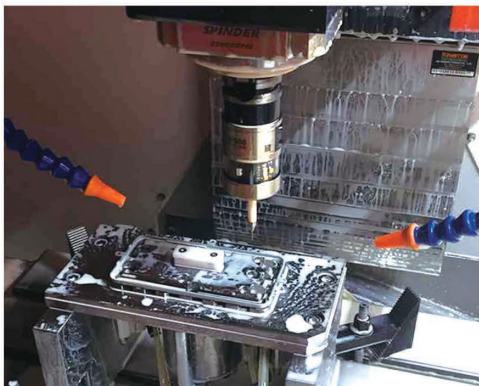
- ◆ As for the software package, please consult the our sales staff about whether the CNC system of the machine tool can be equipped with probe; Some CNC systems needs,additional settings to use probe;
- ◆ As for the probe's taper shank, verify the standards and specifications of the spindle taper hole for the machine tool before ordering the probe; The taper shank with unusual standard or specification will lead to the probe price increase and the delivery time extend, The tapered shank we provided for the probe does not include the pull stud;
- ◆ As for function of the M code on/off, when purchasing the OPS-20 probe system, you should figure out whether there are two spare M codes in the CNC control system cabinet for the probe to use;
- ◆ As for special stylus, checking whether the standard stylus equipped with the OP500 series probe can meet the requirements and thinking whether it is necessary to order a special stylus;
- ◆ As for the cable length, verify if the 8-meter cable equipped with the OSI-20 receiver is enough for installing it in the machine tool. If it is not, the additional instruction is required when ordering the product;
- ◆ As for the installation of the OSI-20 receiver, if user does not want to drill a hole on the machine tool cover when installing the receiver, an additional magnetic sucker can be ordered to install the receiver without hole. But buying magnetic sucker may affect the product delivery time.



测头系统的组成

OPS-20系列红外通讯测头系统由两个硬件部分和一个测量软件包组成；其中，测量软件包的型号为SP-W10，两个硬件部分为：

- 1) OP500系列红外通讯测头（包括可选购的测头锥柄和测针）；
- 2) OSI-20系列红外接收器（标准电缆长度8米/可选购加长电缆）。



测头系统技术参数

1) OP500系列红外测头的技术参数：

- ◆测针触发方向： $\pm X$ ， $\pm Y$ ， $+Z$ ；
- ◆测针各向触发保护行程： $X-Y \pm 15^\circ$ ， $Z +5\text{ mm}$ ；
- ◆测针Z向触发力调整范围：500-1000 g；
- ◆测针X-Y平面触发力：50g-100g；
- ◆测针任意单向重复触发精度（ 2σ ）： $\leq 2\text{ }\mu\text{m}$ ；
- ◆红外信号发射范围： $\geq 5\text{ m}$ ；
- ◆新电池（单班5%使用率）的工作天数：90-140 天（不同电池品牌差异）；
- ◆防护等级：IP68。

2) OSI-20系列红外接收器的技术参数：

- ◆红外信号接收/发射距离： $\geq 5\text{ m}$ ；
- ◆输入电压： $24 \pm 10\%$ V DC；
- ◆输出负载电流：50 mA；
- ◆防护等级：IP68。

测头系统的技术特征

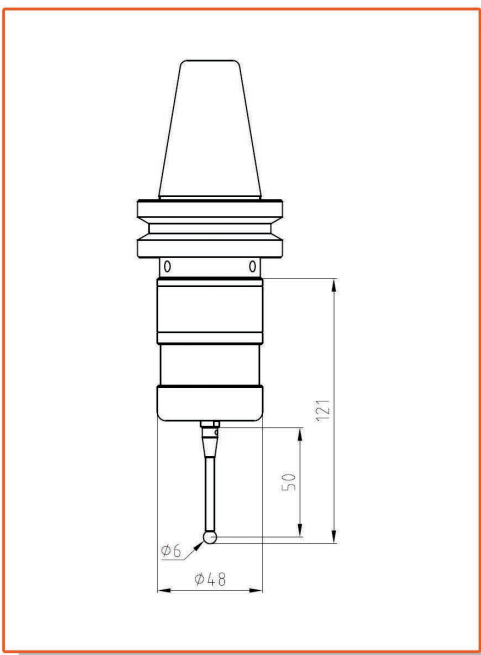
- ◆测头启动/关闭方式：旋转启动/关闭、M代码启动/关闭；
- ◆测头与接收器之间采用红外编码信号传输信息；
- ◆向机床数控系统输出测头触发、错误、测头电压低和脉冲四种SSR信号；
- ◆OSI-20系列接收器通过设置可实现输出信号逻辑状态的翻转；
- ◆采用双倍的红外信号接收和发射器件，增加了设备工作的可靠性；
- ◆测头系统的工作状态由接收器上的LED指示灯显示。

测头系统的应用

- ◆在数控加工工序之前自动设定工件坐标系和加工基准点；
- ◆在数控加工工序之间自动对关键尺寸和位置坐标及其精度的检测和控制；
- ◆在数控加工工序之后对工件的关键尺寸、形状和位置精度的检测。

测头系统适用的设备

- ◆各种规格的加工中心，数控镗、铣床，钻攻中心等；
- ◆各种规格的数控车床，车削中心，车铣复合机床。



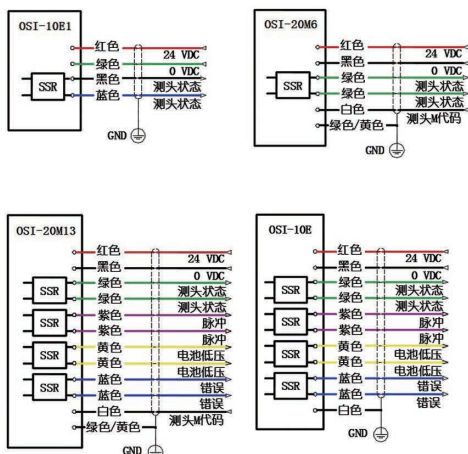
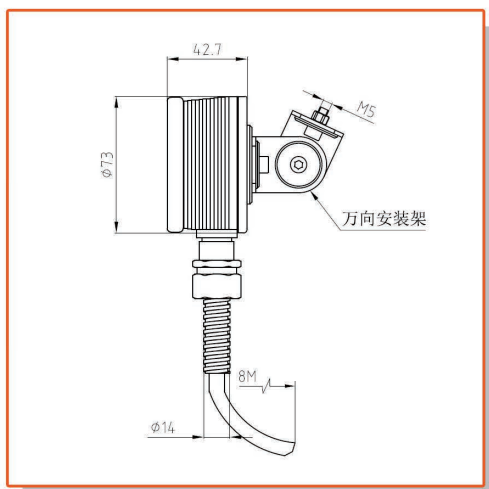
OPS-20系列测头系统的细分型号及功能

1) OPS-20测头系统

- ◆OP500 型红外通讯测头（采用旋转启动/关闭）；
- ◆OSI-10E 型红外接收器（配13芯屏蔽电缆）/ OSI-10E1 型红外接收器（配4芯屏蔽电缆）。

2) OPS-20M测头系统

- ◆OP500M 型红外通讯测头（采用M代码启动/关闭）；
- ◆OSI-20M13 型红外接收器（配13芯屏蔽电缆）/ OSI-20M6型红外接收器（配6芯屏蔽电缆）。



测头系统的基本配置

1) OP500系列测头

- ◆标准测针型号为：M4-P50-RB6-S36；
- ◆电池规格：14250，3.6V，1000mAh；数量，两只；
- ◆锥柄通常是BT或ISO标准的 30#，40#，50#的7：24工具锥柄；也可以采用 HSK或其它标准的工具锥柄；

2) OSI-20系列接收器

- ◆电缆的长度通常为8米；
- ◆配备具有万向调节功能的固定支架。

选购注意事项

- ◆关于测量软件，请向本公司销售人员咨询要用测头的机床的数控系统是否能够加装测头；某些数控系统需要额外的设置以后才能使用测头；
- ◆关于测头锥柄，在订购测头前先核实要用测头的机床主轴工具锥孔的标准和规格；不常用的锥柄标准或规格将导致测头产品价格的增加和交货期的延长，本公司为测头配的锥柄不包括拉钉；
- ◆关于M代码启动和关闭，选购OPS-20M测头系统时，应先确定要用测头的机床的数控系统控制柜内是否有多余的M代码可供测头使用；
- ◆关于特殊测针，核实OP500系列测头配备的标准测针是否能满足需要，是否需要订购特殊规格的测针；
- ◆关于电缆长度，核实OSI-20系列接收器配备的8米长电缆是否能满足自己机床的安装要求；如果需要加长电缆，需要在订购产品时特别说明；
- ◆关于OSI-20系列接收器的安装，如果用户不希望安装接收器时在机床防护罩上钻孔，可以额外订购一个磁力吸盘以便实现免打孔安装接收器。但是选购磁力吸盘将影响产品交货周期。