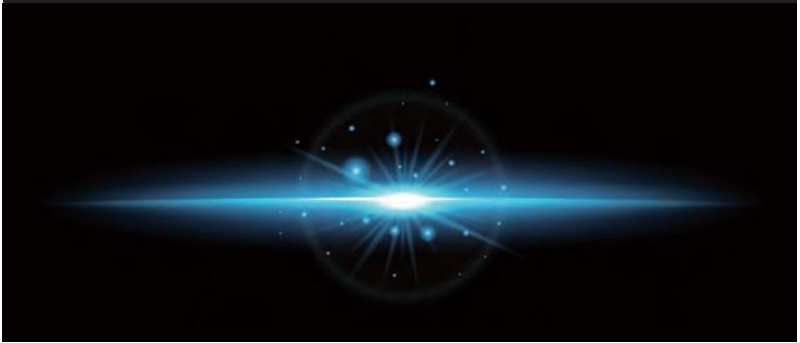
Tel：+86 180 9892 0890
Http：//www. silvercnc.com

SOMP40

Installation guide



Contents

Before you begin

First of all, thank you for buying our CNC machine tool special measurement products SOMP40 probe.

From now on, you can use advanced automated measurement tools to solve production problems. Especially suitable for processing incoming deformation or unstable size of batch products.

Important: Before you start installing and using the purchased product, please read through this User Manual and other instructions sent along with the product before you start any operation!

In addition, if you encounter any difficulties, comments and suggestions in the process of using our products, you are welcome to contact us at any time through the company's telephone, you can also visit our website to learn about the products or contact us by email.

Disclaimer

OUR COMPANY HAS MADE CONSIDERABLE EFFORTS TO ENSURE THE CONTENT OF THIS DOCUMENT IS CORRECT AT THE DATE OF PUBLICATION BUT MAKES NO WARRANTIES OR REPRESENTATIONS REGARDING THE CONTENT. OUR COMPANY EXCLUDES LIABILITY, HOWSOEVER ARISING, FOR ANY INACCURACIES IN THIS DOCUMENT.

Warranty

Products under warranty must be sent to the equipment supplier for repair. Unless you have expressly entered into a written agreement with Instruments, if you have purchased equipment from Oriental Instruments, the warranty clauses contained in the Oriental instrument sales contract shall apply. The equipment is not covered by warranty if:

- Negligence, improper operation or improper use;
- The appearance has obvious defects such as collisions, bruises, cracks, etc;
- Make any modification or change to the product without the authorization of Our Company.

Changes to equipment

Our company reserves the right to change equipment specifications without notice.

CNC machines

CNC machine tools must always be operated by fully trained personnel in accordance with the manufacturer's instructions.

Care of the probe

Keep system components clean and treat the probe as a precision tool.

EC declaration of conformity

Our company declares that the OMP40-2 complies with the applicable standards and regulations.

Safety

The use of this symbol on the batteries, packaging or accompanying documents indicates that used batteries should not be mixed with general household waste. Please dispose of the used batteries at a designated collection point. This will prevent potential negative effects on the environment and human health which could otherwise arise from inappropriate waste handling. Please contact your local authority or waste disposal service concerning the separate collection and disposal of batteries. All lithium and rechargeable batteries must be fully discharged or protected from short circuiting prior to disposal.
Please ensure replacement batteries are of the correct type and are fitted in accordance with the instructions in this manual, and as indicated on the product. For specific battery operating, safety and disposal guidelines, please refer to the battery manufacturer’ s literature.

- Ensure that all batteries are inserted with the correct polarity.
- Do not store batteries in direct sunlight or rain.
- Do not heat or dispose of batteries in a fire.
- Avoid forced discharge of the batteries.
- Do not short-circuit the batteries.
- Do not disassemble, pierce, deform or apply excessive pressure to the batteries.
- Do not swallow the batteries.
- Keep the batteries out of the reach of children.
- Do not get batteries wet.

If a battery is damaged, exercise caution when handling it.
Please ensure that you comply with international and national battery transport regulations when transporting batteries or the products.

Information to the machine supplier

It is the machine supplier’ s responsibility to ensure that the user is made aware of any hazards involved in operation, including those mentioned in our product literature, and to ensure that adequate guards and safety interlocks are provided.
Under certain circumstances, the probe signal may falsely indicate a probe seated condition. Do not rely on probe signals to halt the movement of the machine.

Optical safety

This product contains LEDs that emit both visible and invisible light.
OMP40-2 is ranked Risk Group: Exempt (safe by design).
The product was evaluated and classified using the following standard:
BS EN 62471:2008 The photobiological safety of lamps and lamp systems.
We recommends that you do not stare at or look directly into any LED device, irrespective of its risk classification.

SOMP40

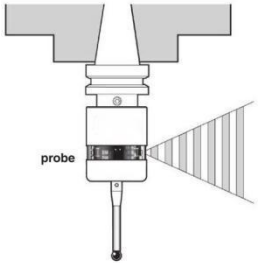
Introduction to SOMP40 probe

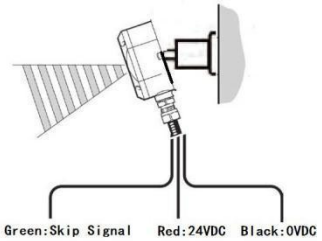
SOMP40 trigger probe is a new design and a compact designed and developed by our company. It aSOMPts optical signal transmission and is used for workpiece alignment and workpiece detection in small and medium NC machining center. It has the following advantages:

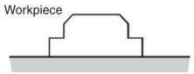
1. Compact structure and wide applicability. The head diameter of the probe is only 40 mm, and the length is only 58 mm.
2. Use disposable battery, easy to replace. Replace the battery without removing the body, do not affect the accuracy of the ball center.
3. 360° Fully enclosed sealing design, more reliable and stable.
4. AB dual channel design is aSOMPted, and the A channel and B channel can be distinguished by blue / green lamp tube.
5. By remote control can switch the AB channel, easy to operate.
6. ASOMPt ultra-low power design, continuous standby time up to 2 years, continuous number of times more than 10 million trigger times.
7. Do not need M code to open and close the probe, the stylus reset automatically into standby state.

SOMP40 Specification

	SOMP40
Repeatability	≦0.001 with a 50 mm stylus
Unidirectional repeatability	≦0.0005 test velocity ≦3m/min ≦0.001 test velocity ≦5m/min
Sense directions	±X、±Y、+Z
Stylus overtravel	XYplane：±13° +Zplane：6.2mm
Spindle speed	2000 rev/min (maximum)
test velocity	≦5m/min
IP rating	IP68
Operating temperature	10°- 40°
Storage temperature	-20°- 70°
Material	Stainless Steel 316
Transmission type	360° infrared optical transmission
Operating range	Up to 5 m (16.4 ft)
Battery types	2 x ½AA 3.6 V lithium Battery
Standby life	700days
Continuous use	>10million trigger times







Work area:

SOMP40 cooperate with the SIR-1 system to use infrared optical transmission. The natural reflector on the machine tool may expand the signal transmission range.

The coolant and cutting residue accumulated on the probe or receiver / interface window will adversely affect the transmission performance. Always wipe to ensure that signal transmission is not affected.

Note: if two or more systems are working close to each other, make sure that the signal transmitted by the receiver on one machine tool is not received by the receiver of another machine tool. If this happens, it is recommended that the adjacent 2 machine tools be set into different channels to avoid mutual interference of signals.

SOMP40 Probe Installation:

1. Mounting pins, handle and stylus:

2. Adjust concentricity:

2.1 Put the probe into the spindle of the CNC, the radial highest point of the stylus needs to touch the meter. And rotate the spindle 360° observe the circumferential runout of the measuring rod.

2.2 The probe is fixed to the handle surface by 2 tip screws on the handle. It is recommended to use torsion not more than 2 N*M.

2.3 Adjust the radial runout of the stylus through 4*M5 flat head screws on the top of the probe. (Adjustment method: the screw in the maximum direction of swing should be loosened, and the opposite screw should be locked immediately, check the value again, loosen the screw in the maximum direction of swing, and lock the opposite screw immediately. So cycle until swing <0.02 mm.)

2.4 When the swing value is less than 0.02 mm, there is no need to loosen the screw in the direction of the maximum swing. The direction screw with the minimum swing can be locked slightly until the swing is less than 0.01 mm. If the measurement accuracy is high, it is recommended to control to 0.002 mm.)

2.5 At this time, the handle above the two m5*12 pointed screws again locked. Rotate the spindle 360° observe whether the circumferential runout of the measuring rod is within the ideal range.

2.6 For ruby needles, the micrometer must touch the maximum diameter of the ruby sphere; for cylindrical flat needles, the micrometer is generally aligned with the position of moving up 1-2 mm at the bottom of the needle.

3. Probe tool length setting:

3.1 According to the tool face of the machining program, select the appropriate tool point. First use the handwheel 100 gear, the stylus to the knife point above 5-10 mm. Slowly move the stylus down until the green light (or blue light) of the probe lights up and flashes, and lift the stylus up to the head within 5 seconds.

3.2 Switch the handwheel to 10 gear and move the stylus down slowly until the green light (or blue light) of the probe lights up and flashes. Lift the stylus to the headlight out within 5 seconds.

3.3 Switch the handwheel to the 1 gear, move the stylus down slowly until the green light (or blue light) of the probe lights up and flashes, and lift the needle slowly within 5 seconds.

(Note: When the stylus is pressed for more than 5 seconds, the green/blue light flashes at the same time, and the probe enters configuration mode unless a remote signal is input or the stylus leaves the workpiece.)

SIR-1 Reciever

SIR-1 Introduction to Infrared Receiver

SIR-1 infrared probe receiver is our company's new design and development of measurement products, with the following advantages:

1. Compact structure and wide applicability. Receiver diameter only 52 mm, product installation is more convenient.

2 The universal adjusting mechanism is convenient to align the probe . direction and is more flexible than the traditional mechanism.

3 Use strong magnets to install metal parts of machine tools to avoid the . trouble of disassembling screws.

4 AB dual channel design is aSOMPted, and the A channel and B channel can be . distinguished by blue / green lamp tube.

5.By the remote control can switch the ab channel, easy to operate。

6 Use positive and negative power protection design to avoid problems . caused by wiring errors.

7.ASOMPt 4 core installation mode, greatly simplify installation difficulty and risk.

SIR-1 Reciever

	SIR-1
Principal applicatio	Machine tool processing area
Output signal	Power On signal Trigger Signal
Mounting	Strong Magnetic Base / Universal Support
Supply voltage	24VDC +/-4VDC
Cable	5.0mm
IP rating	IP68
Operating temperature	10°- 60°
Storage temperature	-20°- 70°

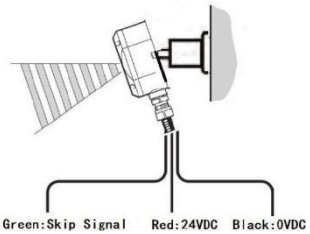
SIR-1 Installation

Red：+24V DC

Black：0V DC

Green：Skip signal to CNC

Yellow：Low Battery signal



SOMP40 led light display:

LED with the following display features:

- Installed battery: blue/green/yellow lights flashing:
- Low battery: yellow light:
- A channel trigger: blue light flash:
- B channel trigger: green light flash:
- Pressed for 5 seconds:blue / green light flashes:
- Switch to A channel : blue light flashes 4 times:
- Switch to B channel : blue light flashes 4 times:

SIR-1 led light display:

The receiver led uses 2 colors (blue / green) led display. It has the

following display functions:

- Turn on : blue / green light flashes:
- A channel standby: blue light always on:
- A channel receives signal: the blue light flashes:
- B channel standby: blue light always on:
- B channel receives signal: the blue light flashes:
- A channel switch B channel: blue light to green light:
- B channel switch A channel: green light to blue light:

Installation and Replacement of Stylus

1. In order to avoid damage to the probe and stylus during transportation, the company has removed the probe from the probe and packaged it separately before delivery; therefore, after the user receives the probe, Please install the stylus according to the following instructions.
2. When installing the stylus, the special wrench of the product should be used; the opening wrench should be fixed on the stylus seat with screw hole to avoid the torsion during the tightening of the stylus; then the stylus should be rotated into the stylus seat. When the stylus is screwed to a fixed position, tighten it properly with a matching cylindrical wrench.
3. The probe can be fitted with a variety of stylus with M4 coarse thread. After each replacement of the stylus, we must readjust the fine adjustment between the main body of the probe and the mounting handle, so that the position accuracy of the needle can reach a reasonable state.

Battery installation and replacement

1. The SOMP40 probe uses two LS14250 lithium batteries as the power supply, which is a disposable battery of industrial standard specifications. When the power is exhausted, the yellow lamp of the probe will flicker slowly and remind that the battery should be replaced.
2. When replacing the battery, use coins as a wrench to remove and install the battery bin cover. Special note: the positive and negative direction of the battery do not install errors. Do not mix new and old batteries or different types of electricity, as this will shorten battery life and damage the battery.
3. During installation of the battery bin cover, special attention should be paid to the O sealing ring on its edge to prevent loss or damage during installation.

Calibrating the SOMP40

Why calibrate a probe?

A spindle probe is just one component of the measurement system which communicates with the machine tool. Each part of the system can introduce a constant difference between the position that the stylus touches and the position that is reported to the machine. If the probe is not calibrated, this difference will appear as an inaccuracy in the measurement. Calibration of the probe allows the probing software to compensate for this difference.

During normal use, the difference between the touch position and the reported position does not change, but it is important that the probe is calibrated in the following circumstances:

- when a probe system is to be used for the first time;
- when the enhanced trigger filter delay is changed;
- when a new stylus is fitted to the probe;
- when it is suspected that the stylus has become distorted or that the probe has been crashed;
- at regular intervals to compensate for mechanical changes of your machine tool;

Calibrating in a ring gauge

Calibrating a probe either in a ring gauge with a known diameter automatically stores one or more value for the radius of the stylus ball. The stored values are then used automatically by the measuring cycles to give the true size of the feature. The values are also used to give true positions of single surface features.

Calibrating the probe length

Calibrating a probe on a known reference surface determines the length of the probe, based on the electronic trigger point. The stored value for length is different from the physical length of the probe assembly. Additionally, the operation can automatically compensate for machine and fixture height errors by adjusting the probe length valuethat is stored.

Fault-finding

Symptom	Cause	Action
Light touch stylus, probe indicator light not on	Dead batteries.	Change batteries.
	Unsuitable batteries.	Change batteries.
	Batteries inserted incorrectly.	Check battery insertion/polarity.
	Poor connection of battery.	Remove any dirt and clean.
Light touch stylus, probe indicator light on bot the reviever light not on	A/B channel do not match.	Check the color of the Lights.
	Dead batteries.	Change batteries.
	Machine power supply fault.	Check the machine power supply.
The measurement does not start the machine tool to alarm (such as obstacle alarm)	The skip signal fault.	Check the skip signal.
	False probe trigger.	Check machine tool's abnormal jitter.
	Receiver/machine fault.	Refer to machine user's guide.
Accidental stop and alarm during measurement cycle (e.g. probe fail alarm)	Dead batteries.	Change batteries.
	Probe unable to find target.	Check workpiece position.
	Optical/magnetic interference.	Check the interference.
	Receiver/machine fault.	Check the Reciever.
Probe crashes.	Workpiece obstructing probe path.	Review probing software.
	Probe length offset missing.	Review probing software.
Poor probe repeatability and/or accuracy.	Debris on part or stylus.	Clean part and stylus.
	Poor tool change repeatability.	Redatum probe after tool change.
	Loose probe mounting on shank.	Check and tighten as appropriate.
	Probing speed too high/slow.	Review probing software.

Daily maintenance and maintenance

SOMP40 main body and stylus of the probe are made of antirust material, only the installation and positioning surface of the handle of the probe is a precision grinding surface, so special attention should be paid to the moisture-proof and rust-proof of this part. In the process of using the probe, the contact between the cutter handle and the liquid which can produce rust should be avoided; if it can not be avoided, the surface of the probe should be cleaned in time after use. When storing the probe, apply antirust oil to the above important surface.

Fault maintenance for stylus reset:

The trigger probe may have a pin reset fault, that is, the stylus has been separated from the workpiece surface, but the stylus has not been reset normally. When the stylus reset is abnormal, the work should be suspended, the stylus should be triggered several times by hand wrench, and the reset of the stylus should be observed. If normal, it can continue to work, otherwise, it can be tried several times. If the failure frequency is very high, it may be serious wear of the internal parts of the probe, please contact our sales department.

Battery maintenance:

Battery bin cover of probe is the main part that may let cutting fluid and other liquids into battery bin. When replacing battery, it is necessary to rotate the bin cover into a reasonable position and check whether the o rubber ring on the cover is in good condition. If you do not use the probe for a long time, take out the battery.

Warranty description

一. Warranty commitments

If the warranty conditions are met, the company shall carry out 12 months free warranty for the failure of the SOMP40/SIR-1 probe system under normal operation; the warranty period shall be calculated from the date of delivery completed on the warranty form at the time of delivery of the company. The warranty period is 12 months. If the user receives the product and finds that the date of receipt is more than 20 days apart from the date of delivery, the user shall notify the company by telephone within 3 days of receipt of the product in order to extend the warranty period.

二. Warranty conditions

1. Customer did not remove SOMP40 probe body except battery bin cover; 2.No visible impact marks on the outer surface of the probe body;

3. The indicator light on the main body of the probe is not damaged or loosened ;(high speed rotation may cause damage to the circuit board!)

4. The fault of the probe was not caused by the inlet of the battery bin cover, and the rubber sealing ring of the battery cover was not damaged or lost;

5. The axial reset elastic force of the stylus does not decrease or disappear obviously (only the phenomenon caused by impact).

Finally, thank you again for using our products!

Shenzhen silvercnc Technology Co., Ltd