

IMPORTANT: Read before using



Operating/Safety Instructions

Tool Length Sensor TS-32 und TS-39



Call for consumer information

Customers from outside the U.S.

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Translation of the original
Operating and Safety
Instructions

Date of: 12-19-2018

NOTICE

All instructions, warranties and other collateral documents are subject to change at the sole discretion of STEPCRAFT GmbH & Co. KG. For up-to date product literature, visit www.stepcraft.us for customers from North America and Mexico or www.stepcraft-systems.com for customers from the rest of the world and click on the service & support tab for this product.

Meaning of Special Language

The following terms are used throughout the product literature to indicate various levels of potential harm when operating this product: The purpose of safety symbols is to attract your attention to possible dangers. The safety symbols, and their explanations, deserve your careful attention and understanding. The safety warnings themselves do not eliminate any danger. The instructions or warnings they give are not substitutes for proper accident prevention measures.

NOTICE Procedures, which if not properly followed, create a possibility of physical property damage AND a little or no possibility of injury.

CAUTION Procedures, which if not properly followed, create a probability of physical property damage AND a possibility of serious injury.

WARNING Procedures, which if not properly followed, create a probability of property damage, collateral damage, serious injury or death OR create a high probability of superficial injury.



Safety Alert: Indicates caution or warning. Attention is required in order to avoid serious personal injury.

WARNING

Read the ENTIRE instruction manual in order to become familiar with the features of the product and how to operate them. Failure to operate the product correctly can result in damage to the product, personal property and cause serious injury, electric shock and/or fire.

This product is designed for private use. It is also suited for sample production in the commercial sector. The product is developed for advanced craftsmen with previous experience in the operation of tools such as electric drills, routers and computerized tools like CNC routers or 3D printers. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this product in a safe and responsible manner could result in personal injury or damage to the product or other property. This product is not intended for use by children. Do not attempt disassembly, use with incompatible components or augment product in any way without the approval of STEPCRAFT GmbH & Co. KG or STEPCRAFT, Inc. This manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or serious injury.

Age Recommendation: For advanced handcrafters ages 14 and above. This is not a toy.

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE.

Should you encounter any doubts or require any further information, please do not hesitate to contact us before commissioning of the power tool. Our contact details can be found on the front page of this manual.

The term "power tool" in the warnings refers to the wired Tool Length Sensor TS-32 and TS-39 hereafter referred to as STEPCRAFT "WLS", "TS-32" or "TS-39".

General Safety Warnings for the Use of Power Tools

Work Area Safety

NOTICE	Keep work area clean and well lit. Cluttered or dark areas invite accidents.
CAUTION	Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust. Power tools create sparks which may ignite dust or fumes.
NOTICE	Keep children and bystanders at a distance while operating a laser tool. Distractions can cause you to lose control and can result in accidents.

Electrical Safety

WARNING	The cable of the Tool Length Sensor has to be connected to the correct position at the mainboard of your STEPCRAFT CNC system or, with soldered on jack plug, inserted into the designated jack socket. The use of wrong cable clamps on the mainboard can result in errors on the control board.
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Personal Safety

⚠ CAUTION	Stay alert, watch what you are doing and use common sense when operating the power tool. Do not use the power tool while you are tired and/or under the influence of drugs, alcohol or medication. A moment of inattention while operating the power tool may result in serious personal injury.
NOTICE	All persons who operate the power tool must have read and fully understood all relevant safety and operating instructions. Misunderstanding may result in personal injury.
NOTICE	Dress properly. Do not wear loose clothing or jewelry. Keep your hair, clothing and gloves away from oscillating parts so that they cannot be caught.

Power Tool Use and Care

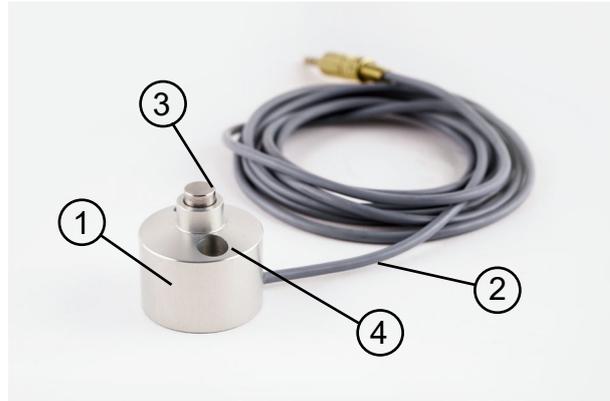
⚠ CAUTION	Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool. The Tool Length Sensor is a very sensitive tool which can be easily damaged
⚠ CAUTION	Do not alter or misuse the Tool Length Sensor. Any alteration or modification is a misuse and may result in serious personal injury.
⚠ CAUTION	When operating the Tool Length Sensor, the workpiece has always to be securely clamped. Never attempt to hold the workpiece with your hands as this can cause a loss of control resulting in serious injury.
⚠ CAUTION	Never reach in the working area of the Tool Length Sensor while it is in operation. Contact with moving parts during operation can lead to incorrect zero points and can result in personal injury or damage to property.

Additional Safety Warnings

NOTICE	Depending on the application field of the machine (private or commercial), observe the applicable occupational safety and health, safety and accident prevention and environmental regulations, too.
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Parts of the Tool Length Sensor

- (1) Body
- (2) Cable (for the connection to the mainboard or via jack plug to the jack socket Klinkenbuchse)
- (3) Touch sensor
- (4) Fastening bores



Use of the Tool Length Sensor

Use the Tool Length Sensor to precisely define the workpiece zero point of the Z-axis.

The device has been designed for the use with a STEPCRAFT CNC system but can be operated with other CNC routers as well.

The STEPCRAFT Tool Length Sensor is available in two sizes:

- T-32 for use with the D-Series
- T-39 for use with the Q-Series

Installation of the Tool Length Sensor on the STEPCRAFT D-Series

Installation of the Tool Length Sensor directly to the STEPCRAFT mainboard

Step 1 – Position the STEPCRAFT CNC system on the side and remove the two screws retaining the mainboard cover.



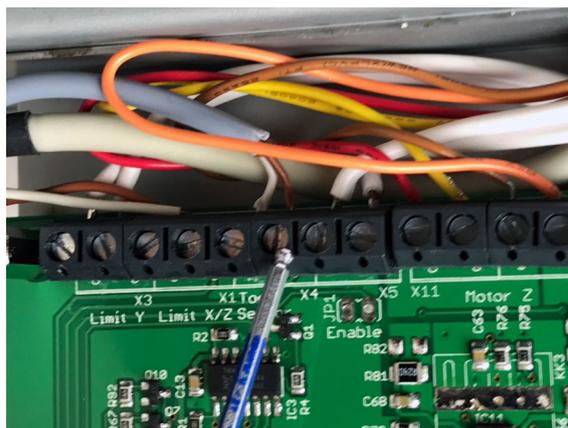
Step 2 – Remove the cover and put it aside.



Step 3 – Guide the cable of the Tool Length Sensor through the opening in the rear panel of the STEPCRAFT CNC system.



Step 4 – Feed both about 1 mm stripped cable ends into the destined connection sockets (see assembly manual STEPCRAFT D-Series point 9.6) and tighten them.



Step 5 – Mount the mainboard cover and tighten it with screws.

Installation of the Tool Length Sensor via the jack socket of the STEPCRAFT mainboard

Connection of the jack plug to the Tool Length

Disassemble the plug and pull the control cable through the lock nut as illustrated in the picture.

Take the control cable and strip it approx. 1 cm. Strip the now uncovered brown and white lines approx. 1 cm as well.

Add solder to both lines as well as to the outer pins of the jack plug and connect both parts by soldering.



The Tool Length Sensor can now easily be plugged into the jack socket of the STEPCRAFT mainboard.



Installation of the Tool Length Sensor on the STEPCRAFT Q-Series

The CNC systems of the STEPCRAFT Q-Series all have two jack sockets (Probe 1 and Probe 2) where the Tool Length Sensor can be connected to. They are positioned at machine connection terminal at the rear panel of the CNC system.

Configuration of the Tool Length Sensor in UCCNC

The Tool Length Sensor has to be configured prior to the use in UCCNC.

First, visit Configuration > I/O SETUP and define the *Probe Pin* as Pin 10 port 1.

Afterwards, the M31 macro that is included in the scope of delivery by the software manufacturer and upon which the length measurement is based upon, has to be exchanged as it is not compatible with STEPCRAFT CNC systems. Please download the correct macro from our homepage

<http://www.stepcraft-systems.com/downloads/M31.txt>

and save it in the machine profile folder of the local UCCNC folder on your hard drive.

The file path for the D.600 of the current assembly line is normally

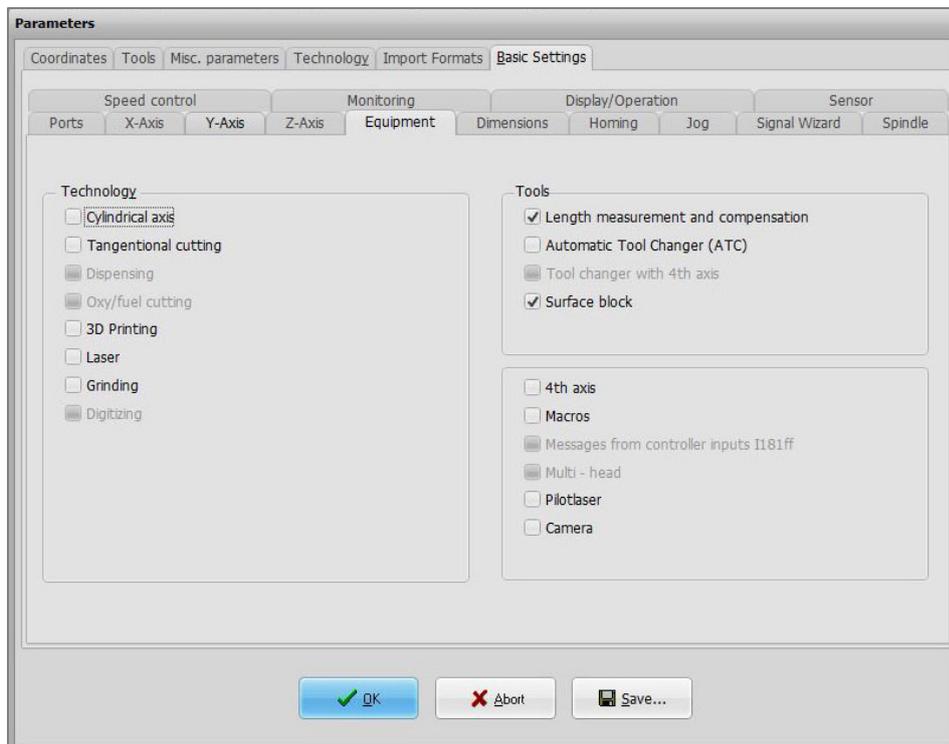
C:\UCCNC\Profiles\Macro_Stepcraft2_Model600\M31.txt.

E-stop pin:	<input type="text" value="11"/>	port:	<input type="text" value="1"/>	<input type="checkbox"/> Active low
Probe pin:	<input type="text" value="10"/>	port:	<input type="text" value="1"/>	<input type="checkbox"/> Active low
Charge p. pin:	<input type="text" value="0"/>	port:	<input type="text" value="0"/>	<input type="checkbox"/> Active low
<input type="checkbox"/> Charge pump always on				
Laser pin:	<input type="text" value="0"/>	port:	<input type="text" value="0"/>	<input type="checkbox"/> Active low

Configuration of the Tool Length Sensor in WinPC-NC

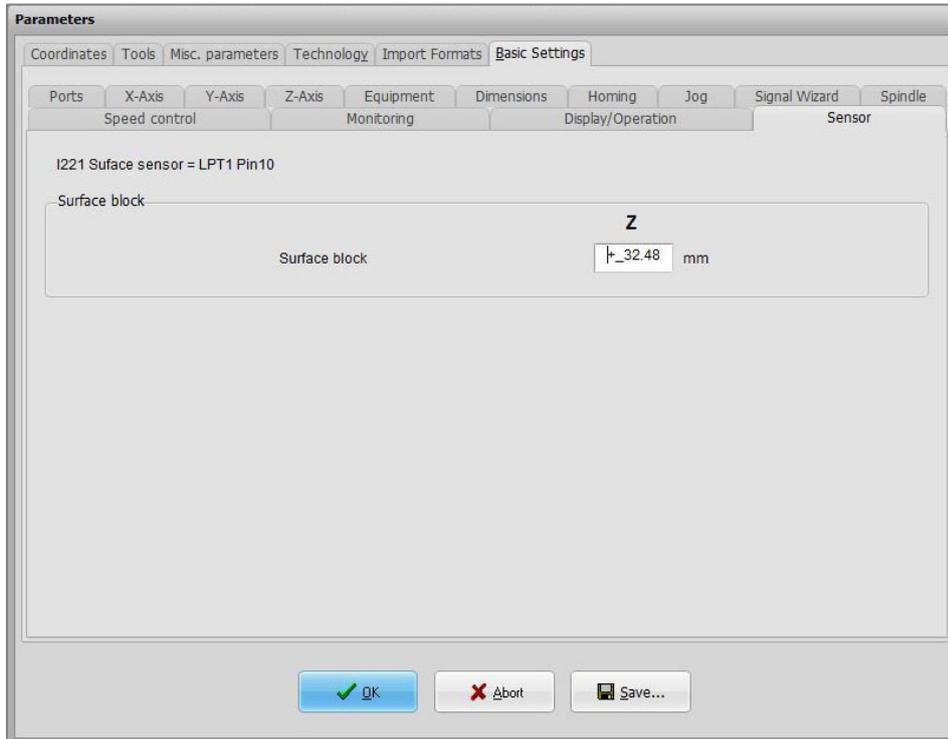
The Tool Length Sensor has to be configured prior to the use in WinPC-NC.

Step 1 – Visit *Parameters > Basic Settings > Equipment* and activate on the right side under *Tools* the two check boxes *Length measurement and compensation* and *Surface block*.

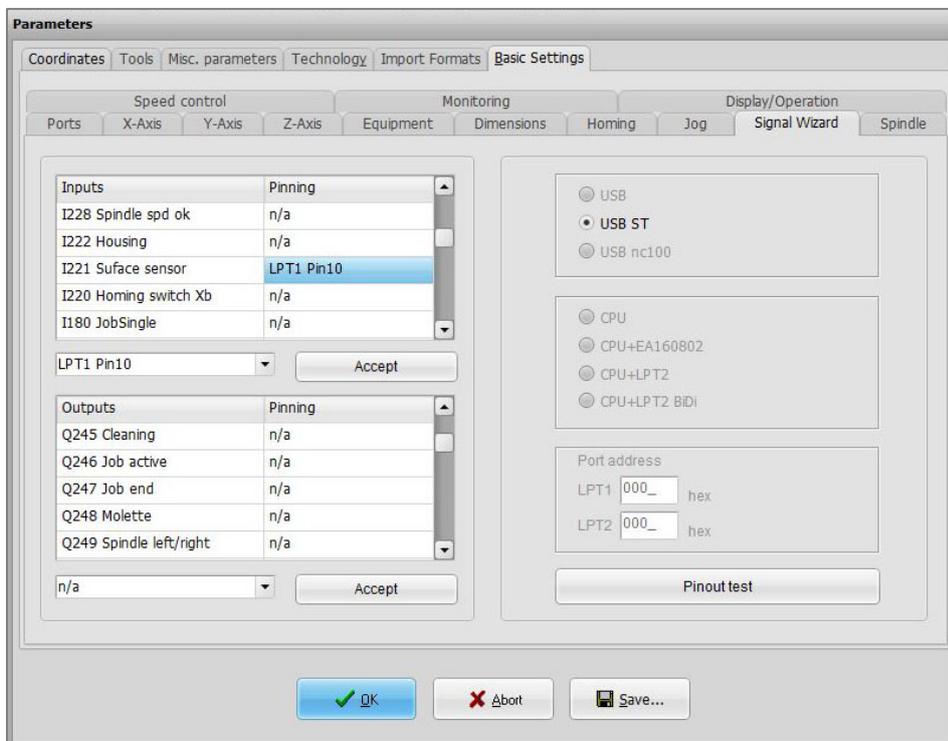


Step 2 – Close WinPC-NC and restart the program. The new tab *Sensor* will now appear under *Parameters > Basic Settings*. Select the new tab and enter the sensor value.

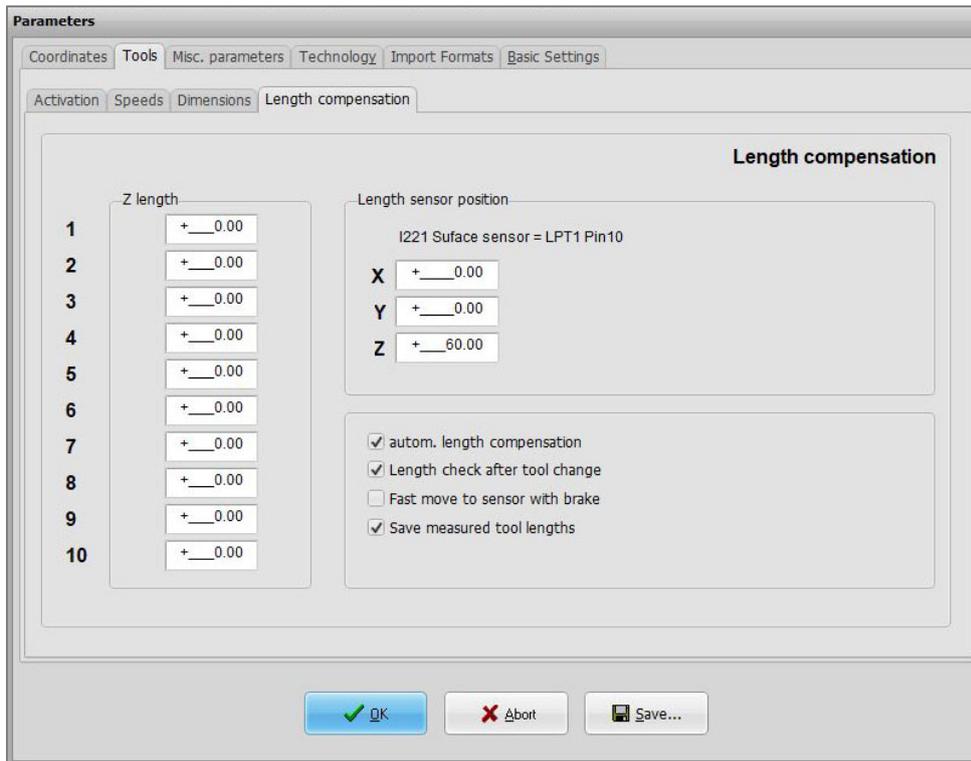
Has the signal of the sensor already been defined (delivery condition), you can directly proceed with step 4. If not (I221 Taster = n/a), please proceed with step 3.



Step 3 – Visit *Parameters > Basic Settings > Signal Wizard > Inputs* and define *I221 Surface sensor* as *LPT1 Pin 10*.

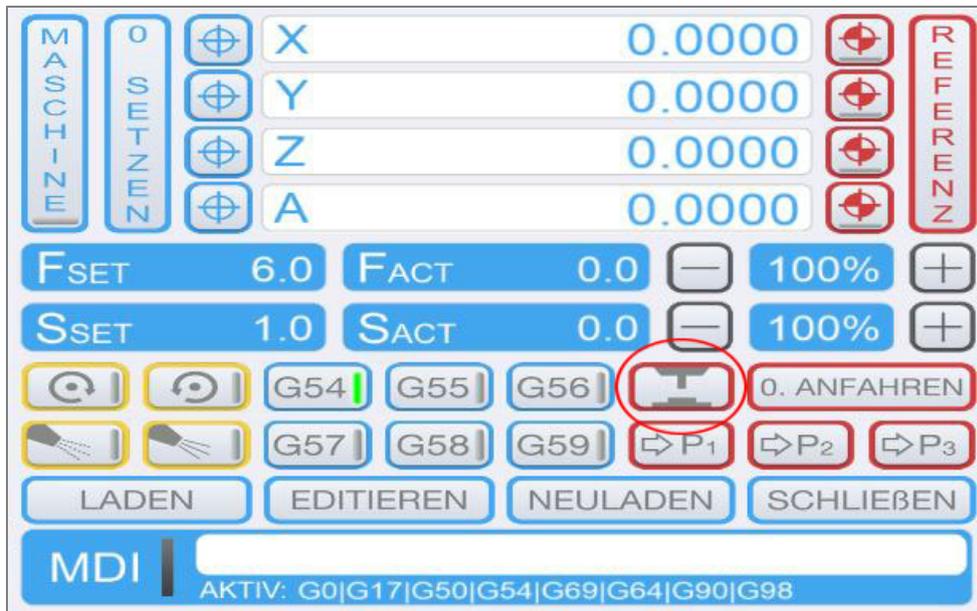


Step 4 – Visit *Parameters > Tools > Length compensation* and activate the check boxes *autom. length compensation*, *Length check after tool change* and *Save measured tool lengths* on the bottom right.



Use of the Tool Length Sensor in UCCNC

Position the Tool Length Sensor on a suitable place on your workpiece. Move the end mill above the sensor and click the respective symbol. The Z-axis moves slowly downwards until the sensor is activated and then returns to the defined safety height. Based on the defined height of the sensor, UCCNC automatically calculates the correct zero point.



Use of the Tool Length Sensor in WinPC-NC

Position the Tool Length Sensor on a suitable place on your workpiece. Move the end mill above the sensor and open the dialog *Jog*. Click *Move to...* Now, click *Sensor – Workpiece zero point* in the following pull down menu. The Z-axis moves slowly downwards until the sensor is activated and then returns to the defined safety height. Based on the defined height of the sensor, WinPC-NC automatically calculates the correct zero point.

