Setting up the probe tool

The probe tool is currently being sold as part of some myCNC kits. The main sensor looks like the image below:



This manual covers the basic setup of the probe that can be used in a number of myCNC profiles and applications in order to determine an exact position of the part on a milling machine. The probe can find edges, corners, hole centers, and more.

Calibration/Adjustment of the probe sensor

In order to properly adjust the probe before starting the measurement procedure, it is necessary to eliminate any deviation that might be otherwise present in the probe. For this purpose, an indicator is used, as shown in the image below. This indicator should be sensitive to small forces of about 0.3-0.5H.

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The spindle axis is moved by hand, and the amplitude of the sensor deviation is recorded using the indicator.

The deviation is eliminated by turning the M2.5 adjustment screws (shown in the image below) with the 2mm hex key provided in the probe kit:



It is recommended to hold the hex key by its short lever as shown in the image below, in order to prevent excessive force application. It might be necessary to perform several cycles of spindle calibration to adjust the probe to have the minimum acceptable deviation.



Connection to the myCNC board

In order to set up this probe sensor with a myCNC controller, please consult the diagrams below. Note that while the setup is shown in one particular configuration on the ET7 myCNC control board, it can be replicated on other boards and in other connection configurations as well:





NOTE: The IN group of connectors used in this example is Group 4, as shown in the diagram below. Therefore, in this particular example, Jumper 4 is closed in order to supply power to Group 4. In your particular setup, please close the proper jumper for each respective group.



Probing Wizard Setup in Mill profile

In order to properly set up a probe system on a mill profile from scratch on your machine (especially if the software has not, for any reason, been updated to its latest version) please check the following:

1. In **CNC Settings > PLC > Hardware PLC**, check that the command **TRIG04** is created. The program should contain the following code:

```
main()
{
    gvarset(9122,1); timer=30;do{timer--;}while(timer>0); //show message
    if (gvarget(6060)!=0x57)
    {
```

```
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```

```
message=PLCCMD MOTION BREAK;
        timer=30;do{timer--;}while(timer>0);
    };
    exit(99);
};
SYS
                             Info Support Cutchart Config
        PLC
               Log
                      Stat
                                                                                                                                                              Ø
         Ö
               11111
                       19999
                              013333
                                       \bigcirc
                                             ×
                                      PLC Sources
CNC Settings
                                                                              Name: TRIG04
                                                                                                        Aliases:
  Axes/Motors
                                                                         Build
                                      M288
                                                                              main()
   Inputs/Outputs/Sensors
                                      M397
     Alarms
                                      M398
                                                                         +
                                                                               gvarset(9122,1); timer=30;do{timer--;}while(timer>0); //show message
     X-Alarms
                                      M399
     Limits
                                      M62
                                                                         if (gvarget(6060)!=0x57)
     Triggers/Timers
                                      M63
     MPG through binary inputs
                                      M71 (:)
                                                                                message=PLCCMD_MOTION_BREAK;
     Jog through ADC inputs
                                      M74 (;)
                                                                                timer=30;do{timer--;}while(timer>0);
     I/O Expand cards mapping
ADC Mapping
                                      M79
                                                                               };
                                      M80
     Connections
                                      M81
                                                                               exit(99);
  Network
                                      M82
  Motion
                                      M85
  PLC
                                      M87
                                      M88
            re PL
     Hardware PLC: XML configs
                                      M89
     PLC Configuration
                                      OFF
     Software PLC
                                      SPN
   G-codes settings
                                      ST001
   DXF import settings
                                                                         പ
   Macro List
  Macro Wizard
                                      PLC Includes
   Probing Wizard
                                      func.h
     Probing Config
                                                                         +
                                                                              M81: OK
                                      mill-func.h
                                                                              M82: OK
     Probing Macro Wizard
  Preferences
                                      pins.h
                                                                              M85: OK
                                                                         .
probe_func.h
  Screen
Work Offsets
                                                                              М87: ОК
                                      vars.h
                                                                              M88: OK
   Parking Coordinates
                                                                              м89: ок
  Technology
                                                                              OFF: OK
SPN: OK
  Camera
   5 axes RTCP
                                                                               ST001: OK
```

2. In CNC Settings > Probing Wizard > Probing Macro Wizard, click Generate All Probing Macros and Generate PLC Probing procedure M288. Among other settings, this generates the

TRIG04: OK

necessary windows for the popup screens of the probe sensor (popups 20, 21 and 22).

SYS PLC Log Stat Info S	ipportCutchart Config
CNC Settings ▲ Axes/Motors ▲ Alarms ▲ X-Alarms ↓ Limits Triggers/Timers MP6 through binary inputs Jog through ADC inputs Jog through ADC inputs ↓/O Expand cards mapping ADC Mapping Connections Network Motion * PLC Hardware PLC Hardware PLC Configuration Software PLC G-codes settings DXF import settings MAcro Wizard * Probing Macro Wizard Probing Macro Wizard Preferences > Screen Work Offsets Parking Coordinates > Technology Camera S axes RTCP Panel/Pendant	Macro preview Macro footer Macro fo

Panel/Pendant

3. After generating the M288 probing procedure, head into CNC Settings > Config > PLC > Hardware PLC and click the Save All, Build All and Send buttons to trigger the PLC disk image reflashing process:

SYS PLC Log	Config Info Support Camera Image: Config Image: Config Image: Config Image: Config Image: Config	Config
CNC Settings Axes/Motors Inputs/Outputs/Sensors Network Motion V PLC Hardware PLC Templates Hardware PLC Itemplates Hardware PLC Configuration Software PLC G-codes settings DXF import settings Macro List Parobing Wizard Probing Wizard Probing Wizard Proferences Screen Work Offsets Parking Coordinates Parking Coordinates Parking Coordinates Parking Coordinates Parking Coordinates Parking Coordinates Parking Coordinates Parking Coordinates Parking Coordinates Panel/Pendant Hardware Advanced	PLC Sources M181 Image: Control of the second s	Name: M288 Aliases: ///// FILE GENERATED AUTOMATICALLY. DO NOT EDIT IT. ////// Image: Construct of the sensor of the

4. In order to specify the particular port that you are using for your sensor, go to Go to **CNC Settings** > **Probing Wizard** > **Probing Config** and click the **Enable Probe sensor protection** button after setting the particular port desired (Port 9 for this example). This setting will be automatically mirrored in the **CNC Settings** > **Triggers/Timers** window.

SYS PLC Log Stat Info S	supportCutchart Config
Alarms	Probe Sensor edge sensing correction
X-Alarms	Y+ 0
Limits	
Triggers/Timers	
MPG through binary inputs	Y- 0
Jog through ADC inputs	Broke Senser Bell diameter contra concertion
I/O Expand cards mapping	
ADC Mapping	D 0 dX 0
Connections	dV D
Network	
Motion	Sensor number/type 9 🔷 Normally opened 💌
▼ PLC	Enable Probe Sensor protection via Triggers/M109
Hardware PLC	
Hardware PLC: XML configs	
PLC Configuration	
Software PLC	
G-codes settings	
Macro List	
Macro Wizard	
Probing Wizard	
Probing Config	
Probing Macro Wizard	
Preferences	
Screen	
Work Offsets	
Parking Coordinates	
Technology	
Camera	
5 axes RTCP	
Panel/Pendant	
Hardware	
P Advanced	

5. Double-check the TRIG04 procedure from Step 1, and edit it back to the code above if it had been changed (this can occur on older versions of the software).

The probe wizard setup should now be complete.

Using the probe sensor in myCNC software

After the probe has been successfully connected, it can be used from within myCNC software. The probe sensor window can be opened from the main profile screen, and looks like this:



The full description of buttons for this window can be found in the screen description manual.

Probe tools currently available

The currently available CNC touch probe tools are the Wired Probe Sensor (SEN-PR-WR01), the Wireless Probe Sensor (SEN-PR-WL01), and the Wired Tool Setter (SEN-TS-WR01). The specifications and technical characteristics for each of these tools can be found below. All sizes are for reference. The diameter of the ball tip of the sensor is approximate within ± 0.02 mm, with the spherical irregularity < 0.003 mm.

Wired Probe Sensor (SEN-PR-WR01)

- Unilateral repeatability: <0.003 mm
- Search directions: ±X, ±Y, -Z
- Deflection in XYZ directions: ±4mm
- Force to decouple in XY direction: from 0.5 to 0.8 H
- Force to decouple in Z direction: 2H
- Power supply: +5V
- Current consumption: <4mA



Wireless Probe Sensor (SEN-PR-WL01)

- Unilateral repeatability: <0.003 mm
- Search directions: ±X, ±Y, -Z
- Deflection in XYZ directions: ±4mm
- Force to decouple in XY direction: from 0.5 to 0.8H
- Force to decouple in Z direction: 2H
- Latency delay: < 2 ms
- Error detection delay: < 0.33 ms
- Probe power supply: CR2032 3V
- Probe current consumption: <0.6mA
- Receiver power supply: 5-12V
- Receiver current consumption: 35 mA
- Radio channel radius: 6 meters
- Radio frequency: 2.4 GHz



Wired Tool Setter (SEN-TS-WR01)

The tool setter is designed to determine the exact coordinates of the tool mounted on a CNC milling machine using the contact method. The CNC system generates these coordinates as the tool comes into contact with the tool setter measurement platform, and uses them to calculate the height and diameter of the tool, to link the machining program to the work tool location.

- Unilateral repeatability: <0.003 mm
- Search directions: ±X, ±Y, -Z
- Deflection in XYZ directions: ±2mm
- Force to decouple in XY direction: from 0.5 to 2H
- Body diameter and length: D=28mm, L=60mm
- Base size: 28x28mm
- Diameter and height of the ceramic pad: D=10mm, h=2.5mm

- Power supply: +5V
- Current consumption: >4mA
- Features dust and splash protection
- Features a brittle safeguard fuse

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