



## ND122 User Guide

to accompany Vision Engineering's range of metrology products.

# Front Panel



# Back Panel



# ND 122 QUADRA-CHEK

## Setup

### Initial power up

- Press the POWER SWITCH to power the ND 122 . The startup screen is displayed.



- Press the ENTER key to display the current axis positions on the DRO screen.

### Software setup

The operating parameters of the ND 122 must be configured prior to using it for the first time, and any time part measurement, reporting or communication requirements change.

Settings will be retained until:

- The data-backup battery is changed
- The data and settings are cleared
- Software upgrades are performed

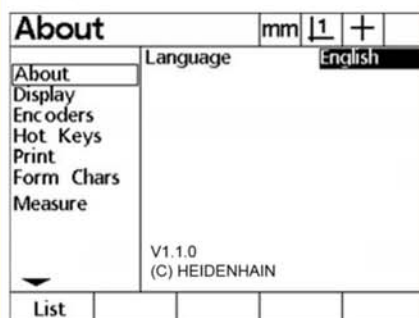


### Caution

Setup parameters control the operation of the ND 122 and are password-protected. Only qualified personnel should be given password access to setup screens.

### 1. Access setup menu

Press the MENU key and then press the SETUP soft key. The setup menu is displayed.



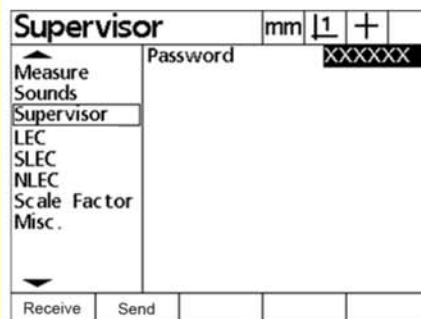
### 2. Select the language

Highlight the LANGUAGE field and press the LIST soft key. A list of languages is displayed. Highlight the desired language and press the ENTER key.



### 3. Enter Password

- Use the ARROW CURSOR keys to navigate to the SUPERVISOR setup screen.
- Highlight the PASSWORD field and enter the password.



### 4. Encoder setup

- Use the ARROW CURSOR keys to navigate to the ENCODERS setup screen.
- Select an axis and enter the required encoder parameters
- Enable STARTUP ZERO if a machine zero will be used for error correction.
- Repeat setup for all axes.

### 7. Error correction

Linear, segmented linear and nonlinear error correction methods can be used to compensate for encoder and machine measurement errors.

### 8. Measurement scaling

Linear measurement scaling can be applied when measuring parts that expand or shrink.

- Press the MENU key, press the Setup soft key and then navigate to the SCALE FACTOR screen.
- Enter the desired MULTIPLIER, highlight the ACTIVE field and press the YES soft key to enable scaling.

### 10. Display formatting

- Press the MENU key, press the SETUP soft key and then navigate to the DISPLAY SCREEN.
- Enter the desired display resolutions and other parameters.



### Note:

Many more setup functions are available beyond the minimum parameters discussed here.

# Operation

## Preparing to measure

### 1. Power up the ND 122

- Check connections to the ND 122 .
- Press the POWER SWITCH to power the ND 122 . Then press the ENTER key to display the DRO screen.

### 2. Find machine zero (optional)

Move the stage to cross reference marks or find hard stops if your system was set up to establish machine zero at startup.



#### Note:

A repeatable machine zero is required when SLEC or NLEC error correction is used.

## Probing points

Points are probed with crosshairs. The number of probed points will be displayed in the upper left corner of the LCD.

### 1. Probing with crosshairs

- Move the stage to position the crosshairs over the desired feature point.
- Press the ENTER key.

## Aligning the part

Perform a skew alignment to eliminate cosine errors resulting from misaligned parts.

### 1. Align the part on the stage

Align the reference edge of the part to a measurement axis.

### 2. Perform a skew alignment

- Press the SKEW MEASURE key to begin the alignment.
- Probe points along the part edge aligned to the reference axis.
- Press the FINISH key to complete the alignment.



## Creating a datum

Probe, construct or create a reference point and press the X and Y Axis keys to zero or preset a datum for measurements.



## Measuring Features

Features are measured by selecting the feature type probing points and then pressing the FINISH key.

### 1. Measure a point

Press the POINT MEASURE key, probe a point and press the FINISH key.



### 2. Measure a line

Press the LINE MEASURE key, probe points on the line and press the FINISH key.



### 3. Measure a circle

Press the CIRCLE MEASURE key, probe points on the circumference of the circle and press the FINISH key.



### 4. Measure a distance

Press the DISTANCE MEASURE key, probe a point on each end of the distance and press the FINISH key.



### 5. Measure an angle

Press the ANGLE MEASURE key, probe two points on each leg of the angle and press the FINISH key.



## Creating Features

Features are created by selecting the feature type to be created, entering the required feature data and then pressing the FINISH key.

### 1. Specify feature type

Press a MEASURE key to specify the type of feature to be created and then press the CREATE soft key.



### 2. Enter the feature data

Enter data into fields shown on the screen.

### 3. Complete the creation

Press the FINISH key to complete the feature creation. The new created feature will be shown in the feature list.

# Operation

## Constructing Features

Features are constructed by selecting the feature type to be constructed, selecting the parent features and then pressing the FINISH key.

### 1. Specify feature type

Press a MEASURE key to specify the type of feature to be constructed.



### 2. Enter a parent feature

Highlight a parent feature in the feature list and press the ENTER key. A check mark will be shown near the parent feature.

### 3. Enter all other parent features

Continue highlighting and entering parent features until all desired parent features show check marks.

### 4. Complete the construction

Press the FINISH key to complete the construction. The new constructed feature will be shown in the feature list.

## Applying Tolerances

Tolerances are applied by selecting a feature, pressing the TOL soft key, entering tolerance data and pressing the FINISH key.

### 1. Select a feature

Use the ARROW CURSOR keys to highlight a feature in the feature list.

### 2. Press the TOL soft key

Tolerance types are displayed at the bottom of the screen.

### 3. Select a tolerance type

Press a soft key to select the desired tolerance type.

### 4. Enter data

Enter nominal and tolerance data into data fields provided in the tolerance screen.

### 5. Apply the tolerance data

Press the FINISH key to apply the tolerance data. A check mark indicates passed tolerances. A cross indicates failed tolerances. Edit the tolerance data if desired by pressing the EDIT soft key.

### 6. Complete the tolerance

Press the FINISH key to complete the tolerance. A pass or fail indication will be shown near the TOL soft key.

## Reporting Results

Reports of results can be sent to a PC.

- Press the SEND key to report results.



## Setup

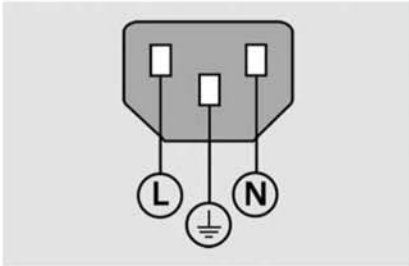
- Very important
- Please note
- For your information


### Before Power up

#### Electrical connection

Line voltage: 100 V~ to 240 V~  
(-15 % to +10 %)  
Line frequency: 43 Hz to 63 Hz  
Line fuse: T1600 mA, 250 V  
5 x 20 mm

#### Power connector wiring



L: Line voltage (brown)  
N: Neutral (blue)  
 Earth ground (yellow/green)



#### Danger of electrical shock!

- Do not open the enclosure
- Never use 3-wire to 2-wire adapters or allow the ground connection to the ND 122 to be interrupted or disconnected.



#### Caution

Changes to the power cable may be made only by an electrical technician.



#### Caution

Do not make connect encoders or other equipment to the ND 122 when the power is on.

#### Safety Considerations

General accepted safety precautions must be followed when operating the ND 122. Failure to observe these precautions could result in damage to the equipment, or injury to personnel. It is understood that safety rules within individual companies vary. If a conflict exists between the material contained in this guide or the and the rules of a company using this system, the more stringent rules should take precedence.

### Controls and Displays

<b>A</b>	<b>LCD screen</b>
<b>B</b>	<b>Soft keys:</b> Change to support functions
<b>C</b>	<b>Measure keys:</b> Initiate measurements
<b>D</b>	<b>Axis keys:</b> Zero or preset datums
<b>F</b>	<b>Command keys:</b> Control measurement
<b>G</b>	<b>Menu key:</b> Displays user menus
<b>H</b>	<b>Arrow cursor keys:</b> Menu navigation
<b>K</b>	<b>Numeric keypad:</b> Enter numeric data
<b>L</b>	<b>Send key:</b> Transmit measurement data to PC

### Connections rear side

<b>1</b>	<b>Power switch</b>
<b>2</b>	<b>Power connection with fuse</b>
<b>3</b>	<b>Ground</b> (protective ground)
<b>4</b>	<b>Encoder inputs, X, Y axis</b>
<b>10</b>	<b>USB type B interface</b> for PC connection



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