PITSID INCREASE EFFICIENCY

Operation Manual
NIP CON SMART

Innovative measuring system for fast adjustment of the nip width between hard and soft rollers



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Made in Germany

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Subject to technical modifications.

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1 General Information

These operating instructions support you during the initial start-up, operation and maintenance of the contact zone measuring system NIP CON SMART.

It contains important information, the observance of which ensures safe use. Familiarize yourself with this documentation carefully before using the measuring system to avoid personal injury and material damage. Always keep the documentation close to the measuring system so that it can be referred to for its entire service life.

Any application that deviates from or uses the measuring system beyond that specified in the operating instructions shall be deemed improper. Modifications, bypassing or decommissioning of individual components of the measuring system are prohibited.

If the measuring system is not used as intended, the manufacturer accepts no liability. General safety and accident prevention regulations remain valid in addition to these operating instructions.

1.1 Symbols

 **Warning**	**Warning** Severe to life-threatening personal injuries can occur
 **Attention**	**Attention** Slight to moderate personal injury can occur
IMPORTANT	Property damage can occur
	Important information for operating the measuring system
	**NOTE!** Note or tip on using the measuring system
	**Cross Reference** See also!
Save	Label for views, fields, buttons

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2 Intended Use and Restrictions on Use

What is nip width?
In order to transfer ink and fountain solution evenly and in sufficient quantities onto the medium to be printed, pressure between the hard / soft rollers pairs involved is required. A measure of the pressure is the width of the contact zone or the contact strip width (NIP width).

The Contact Zone Measuring System NIP CON SMART was developed for determining the NIP width in printing presses. It is used for setting and checking the inking and dampening unit hard / soft paired rollers.

	The diameter of the soft roller can have values between up to 300 mm. The diameter of the hard roller can be any size. It can be used for a rubber hardness of 20 – 60 Shore A with rubber blanket thicknesses of 5 – 20 mm.

The intended use of the measuring system also includes the use of the sensors supplied by PITSID. The hand-held device is neither water nor dustproof and is therefore only suitable for use in dry interiors.

IMPORTANT	If the application limits of the device are exceeded, sensor failures and markings on cylinder surfaces can result.

3 Safety Instructions

The safety instructions will be supplemented with additional safety information throughout the text.

 **Attention**	Deviating usage from the intended application can cause property damage and personal injury.
 **Attention**	Failure to follow these operating instructions can result in property damage and personal injury.
 **Attention**	Improperly opening individual system components can lead to property damage and personal injury.
 **Attention**	If safe operation of the device is not possible, the measuring system must be taken out of operation or not started up. If necessary, secure the device against unintentional start-up.

 **Attention**	A lithium-ion battery is built into the device. The guidelines for handling lithium-ion batteries apply.
IMPORTANT	The device belongs to protection class II. The device has degree of protection IP 20.

4 Technical Data

Measurement range	0 ...35 mm
Resolution	0.1 mm
Scope of application	Roller pairing hard/soft Roller diameter hard: Any size Roller diameter soft: ≤ 300 mm Rubber hardness: 20 Shore A ... 60 Shore A Rubber thickness: 5 mm ... 20 mm
Environmental conditions	Temperature: 15 °C ... 30 °C
Storage	Temperature: -20 °C ... 30 °C
Dimensions (length x width x height)	Hand-held device: 150 mm x 80 mm x 40 mm Sensor: 140 mm x 22 mm x 3 mm Tablet: 260 mm x 175 mm x 15 mm
Protection class	IP 20
Weight	Total: 1645 g
Sensor cable length	1.7 m
Power supply hand-held device	max. 5.0 V DC (Lithium-ion/Polymer 1 cell battery: 3.7 V / 1260 mAh)
Power consumption hand-held device	max. 300 mA
Automatic shutdown	After 5 min of operation
System requirements operating system	Tablet: starting from Android 16 PC: starting from Windows 11
Scope of delivery	Hand-held device, two sensors, USB cable, carrying case, operation manual, installation software, tablet (11") with protective case

5 Measuring Principle

To determine the contact strip width (NIP width), sensors are positioned between the rollers to be measured. By creating pressure in the active sensor area, the width of the contact zone is detected.

ℹ	This value depends on the roller diameters, the rubber hardness and the rubber thickness. By entering these roller parameters, these influences on the contact strip width is taken into account

6 The Measuring System

6.1 Scope of Delivery

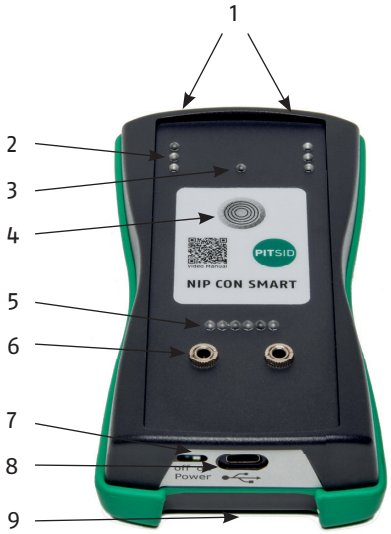
- Hand-held device
- 2 Sensors
- USB-cable
- Carrying case
- Operation manual
- Installation software on a USB stick
- Tablet (11") with protective case

☞	The measuring system was checked before delivery. Please check the delivery for completeness and transport damage after unpacking. In the event of damage or missing system components, contact the supplier or manufacturer.

6.2 Operation and Control Elements, Connections

The measuring system is generally operated with a PC or tablet. Operating and control elements are an essential part of the software.

☞	The necessary functionality on the hand-held device (Figure 1) was supplemented by information elements.



1 Attachment ring
2 Optical set point indicators
3 Wireless connection indicator
4 ON/OFF button
5 Charge level indicator
6 Sensor jack
7 Sliding switch for the battery
8 USB jack
9 Mounting magnet on the back (installed inside the housing)

Fig. 1. Hand-held device

ℹ	The hand-held device is secured against unintentional start-up with the slide switch (9) set to **OFF** during shipping. Set the slide switch to **ON** before the initial start-up.

6.3 Sensor

The sensors used are foil potentiometers. The sensors are connected to the jacks (6) on the hand-held device and measure the nip width in the active sensor area. *(↷ Chapter 7.3.1 Measurement Preparation)*

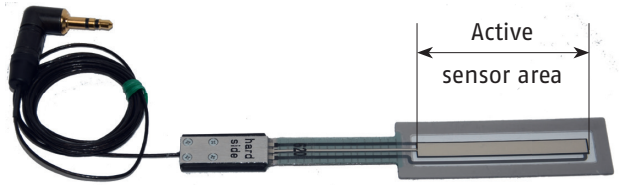


Fig. 2. NIP-Sensor

7 Operation

7.1 Software Installation

The necessary software for the tablet and PC is found on the USB stick. If the tablet is included in the scope of delivery, the software has already been pre-installed.

	To run the software on the PC, at least the operating system Windows 11 is required. At least Android 16 must be installed on the tablet.

7.1.1 PC

For installation, the file **NIPCON.exe** must be copied to the desktop of the PC and executed once. After starting the software, the folder **.../NipCon** is created under the directory **C:/User/Public/Public Documents**. The folder **.../NipCon** has the following structure

Folder	Contents
Data	Measurement data as a *.csv file
DataExport	Export files (PC → mobile device)
DataImport	Import files (mobile device → PC)
DataStore	Archived measurement data (sorted by year, month and day)
Protocols	Measurement data as a *.csv file, which should be printed out as a report
Service	Software configuration settings
Temp	Help
Templates	Templates as *.txt files and images of roller schemes as *.bmp; *.jpg files

7.1.2 Tablet

The software is preinstalled on the tablet.

Should an installation nevertheless become necessary (system recovery/replacement of the tablet), proceed as follows:

1. Copy the installation files **Nip.Droid.Nip.Droid-Signed.apk, Gboard.apk** to the internal memory of the tablet.
2. Execute the **Nip.Droid.Nip.Droid-Signed.apk** file.
3. Activate in the security settings
   ⊙ Allow installation of apps from unknown sources.
4. Install the app.
5. Allow the app to access photos, media and files after launch. This is necessary for data exchange with the PC or hand-held device.
6. Execute the file **Gboard.apk**.

	After opening the app, the internal memory under **.../My Documents/Documents** creates only the folder **/NipCon**. This folder contains the system files, measurement data and templates.

7.2 Connecting the System Components

A connection between the hand-held device and the user device is required to control the measuring system.

	Known Bluetooth devices are automatically paired. A new pairing is not necessary

Pair PC or Tablet to Hand-held Device

1. Switch on the hand-held device by pressing the **ON/OFF** button.
2. Activate Bluetooth on the device to be paired.
3. Open the list of available devices.
4. Select the hand-held device.

	The display name is: **NIPCON XXXXX** (hand-held device serial number, 5 digits) (e.g. **NIPCON 00400**)
	Under Windows 11, the extended Bluetooth device discovery must be selected in the Bluetooth menu under the device settings so that the measuring devices are listed.

5. Pair the hand-held device.

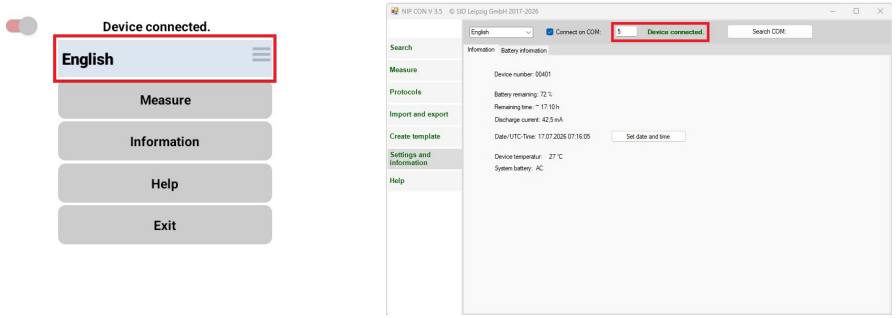
Connect Software to Hand-held Device

Each time the program is started, an automatic attempt is made to establish a connection between the hand-held device and the software.

	The automatic connection attempt can be activated in the start menu of the tablet version (app) or under the menu item **Settings and Information** of the PC software. (↷ *Figure 3 Establishing a connection)*

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App PC software

Fig. 3. Establishing a connection

	Connected hand-held devices cannot establish any further connections.
	Newly connected devices are not automatically connected in the PC software.

How to connect the software and hand-held device in the PC version:

1. Check the connection to the user device
2. Start **Nipcon.exe**
3. Select the settings and information menu item
4. Remove the checkmark from the control field ☐ **Connect on COM**
5. Start the Search **COM button**

	With the action button **Search COM**, the connection is selected automatically.
	For the connection, the checkmark is set in the control field ☑ **Connect on COM.**
	An activated connection is identified by the green lettering **Device connected** (↗ *Connection status).*
	The status of the connection can also be found in the measured value display window or the wireless connection indicator (3) on the hand-held device (↗ *Section 6.2 Operation and Control Elements*).

Connection status

Event	Status
Software **Measurement: Measurement view: Measurement value display**	
	No connection
Software **Settings and information**	
Device connected	Active connection
Device disconnected	No connection
Event	**Status**
Hand-held device	
●	Active connection
✹	Establishing connection

● LED on ✹ LED flashing

	The hand-held device always tries to establish a connection to the user device during operation.

7.3 Measurement

7.3.1 Measurement Preparation

The following steps must be carried out before measuring:

1. Switch on all components of the measuring system.
2. Make sure that the hand-held device and the user device are connected.

	The wireless link indicator (3) must be continuously lit. (↗ *Section 7.2 Connecting the System Components)*

3. Connect the sensors to the sensor jacks (6) on the hand-held device.

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	The measured values are assigned to the jacks: • left jack („drive“): drive side (DS) • right jack („operator“): operator side (OS)
	The connection cables have different colours in order to easily differentiate the measured values to the corresponding sensor osition.

4. Start the software.
5. In the selection menu, select **Measure** (➚ *Section 7.4.3 Measure)*.
6. From the overview, select the template associated with the planned measuring task (➚ *Template Simple Measurement*, ➚ *Template Roller Diagram)*.
7. Confirm the selection by pressing the Start **measuring button**.

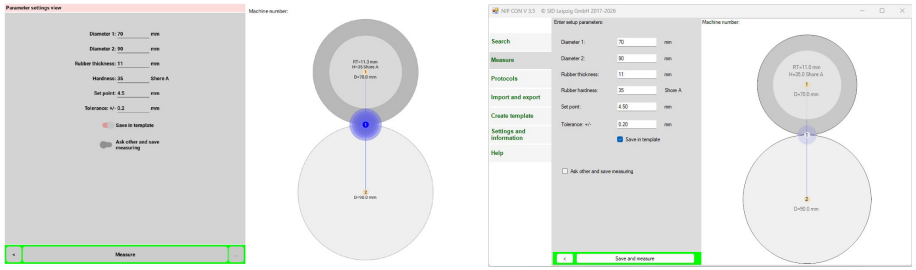
Template Simple Measurement

The **Template Simple measurement** is used to measure individual pairs of rollers. It is generated by the program

	It is not necessary to create a template for simple measurements.

The parameters for the measuring points can be entered directly.

	The **Template Simple measurement** offers a good opportunity to familiarize yourself with the software and the measurement process.



App PC software

Fig. 4. Parameter input Template Simple measurement

Parameter

In addition to the roller parameters, the software also records set-point and tolerance values for the contact strip width of the roller pairing. Additional information can be stored by selecting **Ask other and save measuring.** (➚ *Table of parameters*).

Measuring point parameters	Additional information
Roller parameters	Machine parameters
Diameter1 Diameter2 Rubber thickness Rubber hardness	Machine number Printing unit
Comparative values	**Other**
Setpoint NIP width Tolerance range NIP width Delta-Tolerance NIP values Marking	Operator Comment

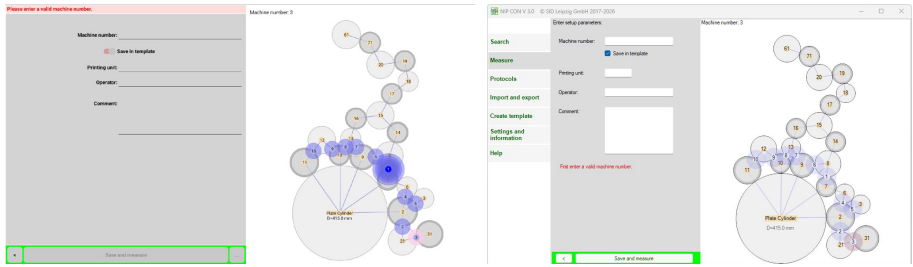
Table of parameters

The parameter input is completed with the **Measure** or **Parameter and measure** button.

	The difference between the recorded NIP values on the drive and operating side is referred to as the delta tolerance.
	By activating ☑ **Save in template**, the entered values are permanently assigned to **Template Simple measurement.**

Template Roller Diagram

For complex measuring tasks e.g. the roller adjustment on entire printing units or printing presses can be created with the help of the PC software and can be transferred to the respective mobile device. This makes it possible to prepare a large number of roller pairs in advance and to use the graphical representation to guide you through the measuring process.



App PC software

Fig. 5. Entering parameters for the roller diagram template

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Machine parameters

	The machine number and printing unit must be entered for assigning the measured values to the template of the roller diagram. This information cannot be changed later!

Additional information can be entered in the operator and comment field. The parameter input is completed with the **Save and measure** button.

	The parameters of the individual measuring points were already created when the template was created (➚ *Chapter 7.4.6 Create Template)* on the PC.

7.3.2 Recording the Measured Values

After completing the parameter entry, the software changes to the measurement view. The measurement view shows the list of all measurement points, the preview window with the roller diagram and the measured value display of the current measured values (➚ *Figure 6 Measurement view)*.

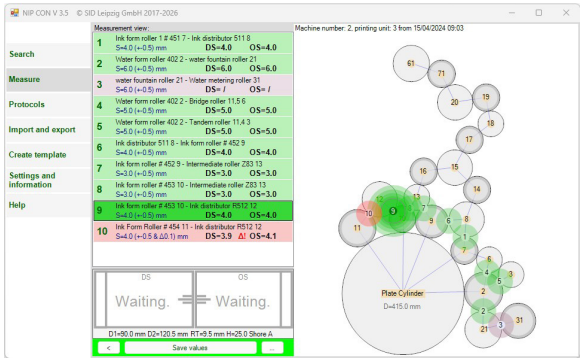


Fig. 6. Measurement view

Proceed as follows to record the measured values:

1. Select the desired measuring point in the list or in the roller diagram.

	This is now highlighted in colour.

(Details on the list of measuring points and roller diagram ➚ *Chapter 7.4.3 Measure*)

2. Position the sensors between the rollers at the appropriate location in your machine. Depending on the machine, this can be done by engaging and disengaging the rollers or in inching mode.

	Follow the instructions for positioning the sensor!

3. Check the current measured values.
   (Details on the measured value display ➚ *Chapter 7.4.3 Measure*)
4. Set the NIP width to the desired value (set-point).
5. Save the set measured values by pressing the button Save values or the **ON/OFF** button on the hand-held device.

	After saving the measured values and relieving the sensors, the program automatically selects the next available unmeasured roller pairing. Alternatively, the operator can select another measuring point.
	The measurement can be interrupted at any time and continued at a later time.
	Existing measured values are overwritten when the measurement is repeated.

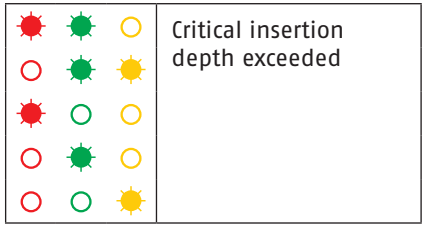
Positioning the Sensors

The sensors must be positioned between stationary rollers. For this purpose, machine functions such as engaging and disengaging the rollers or running the machine in creep speed (inching mode) can be used for this purpose.

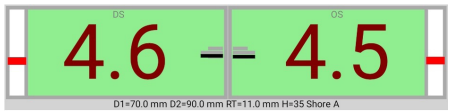
IMPORTANT	When positioning the sensors, an accidental reversal of the drive and operator side must be carefully avoided.
Warning	Observe the safety regulations of the printing press manufacturer!
Warning	Secure the machine with **EMERGENCY STOP** during the measuring process!

When two sensors are used, they should be inserted at the same time, whereby the sensors must be aligned perpendicularly to the roller contact line. The sensor side marked with **hard side** must always face the hard roller.

IMPORTANT	If the sensor is inserted too deeply, it can falsify the measurement by touching the rollers behind it (bending error) and cause damage. Observe the indicators for the **critical insertion depth** of the optical setpoint control (2) on the hand-held device (➚ *Chapter 7.4.3 Measure*) or the flashing of the value in the measured value display of the software control.



Critical insertion depth exceeded



a) Hand-held device

b) Software

Fig. 7. Notifications for **critical insertion depth**

	If the sensors were inserted before the device was switched on or if they are under pressure after being reconnected, only **relieving the sensors** leads to operational readiness.

7.3.3 Measurement Evaluation and Protocols

Evaluation

The measurement results are automatically evaluated based on the set-point and tolerance values of the individual roller pairs.

Results and evaluation are shown in the list of measuring points as well as in the roller diagram and marked in colour (➚ *Chapter 7.4.3 Measure*) so that the current status of the measurement can be recognized quickly even with extensive measuring tasks.

Protocols

The creation and printing of the measurement protocol can be carried out both in the PC software and in the App. It contains the measured roller diagrams with the measuring points and associated measured values.

	Measurements made with the tablet can be imported from the PC. (➚ *Chapter 7.4.4. Protocols;* ➚ *Chapter 7.4.5. Import/Export*)

7.4 Software

The software guarantees the functionality of the measuring device. Some functions are not available in the tablet version.

Menu	PC	Tablet
Search	√	x
Measure	√	√
Protocols	√	√
Import and export	√	x
Create template	√	x
Settings and information	√	√
Help	√	√

7.4.1 General Remarks

Software Structure

The software is menu-driven. The respective view of the selected menu item is characterized by the following functional fields:

- Menu
- Enter parameters
- Lists of measurements, measuring points and templates
- Preview entire measurement task
- Actions fields
- Measured value display

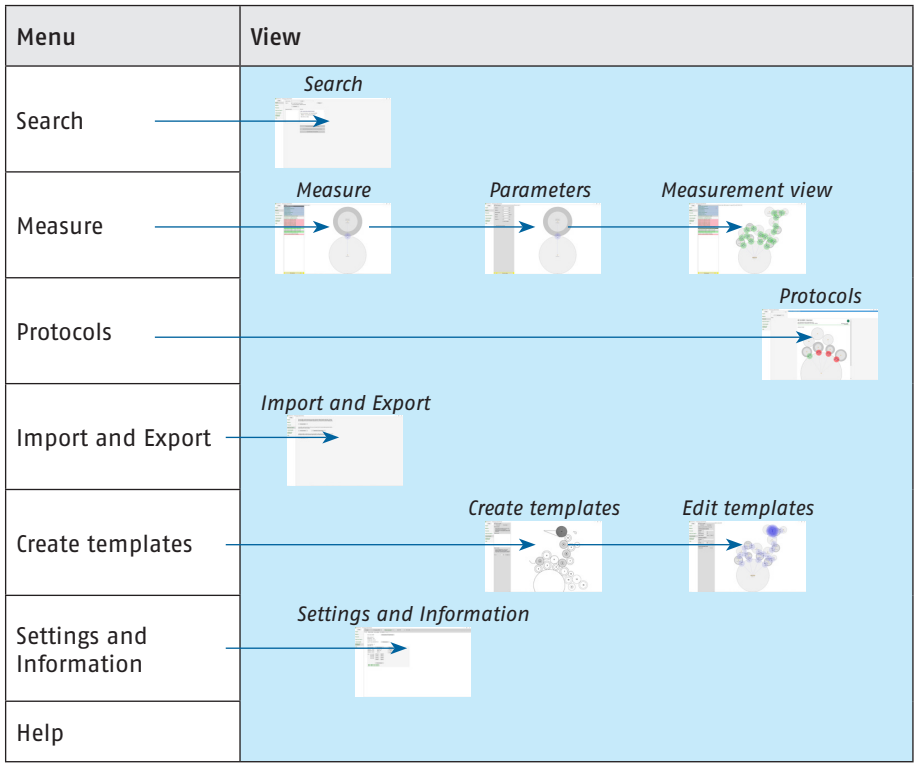
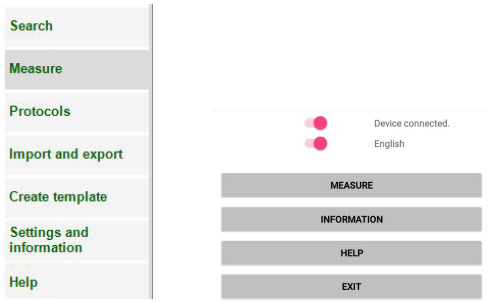


Fig. 8. Software structure of PC-Software

Menu

While the menu is permanently available in the PC version, the tablet version does not show the menu.

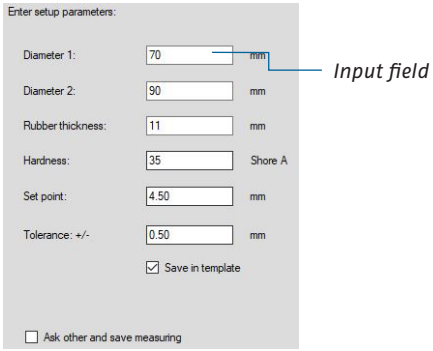
☞	After the start screen in the tablet version, you can switch between the menu items and the views using the **Back** button in the action field. (↗ *Action Fields)*



PC software App

Fig. 9. Menu

Parameters



After selection, parameters are entered directly in the parameter field.

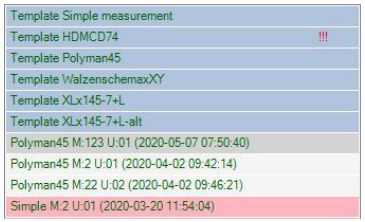
When entering real numbers . or , are recognized equally only as a decimal separators.

Fig. 10. Parameter input

☞	All entries are only recorded in a reasonable parameter-specific resolution.

Lists of Templates, Measurements and Measuring Points

List fields provide the selectable items. Associated status information for the list entries is highlighted in colour (↗ *Section 7.4.3. Measure)*.



List of available templates



List of all measuring points of the selected template

Fig. 11. Lists

	In the tablet version, you can choose between a list and a roller diagram (geometry view).

Preview of the Entire Measurement Task

The preview window provides an overview of the measurement progress. The colour coding of the status information and measured values of individual roller pairs are taken from the list field (↗ *Lists of Templates, Measurements and Measuring Points)*.

	In the tablet version, you can choose between the roller diagram (geometry view) and the list.

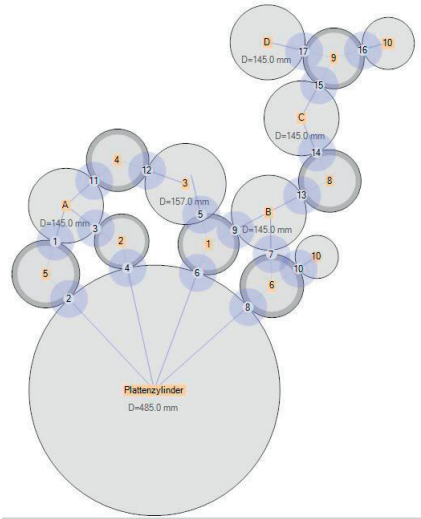
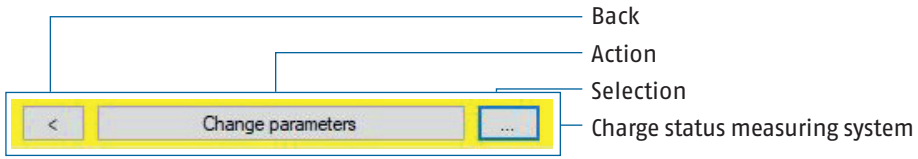


Fig. 12. Preview of the measurement task

Action Fields



Action fields are used to process the data selected in the list field.
With the **Selection** button, the desired function is determined. The changing **Action** button executes this. Different functions are provided in the different views.
(↗ *Section 7.4.3 Measure)*
The **Back** button allows you to switch between views.

	With an existing connection between the system components, the charge status of the measuring system is visualized in the background of the action field. (↗ *Section 8.1 Lithium-ion Polymer Battery)*

Measurement Display

The measurement display shows the values of both measurement inputs simultaneously. With a symmetrical structure, it combines measured values and additional information:

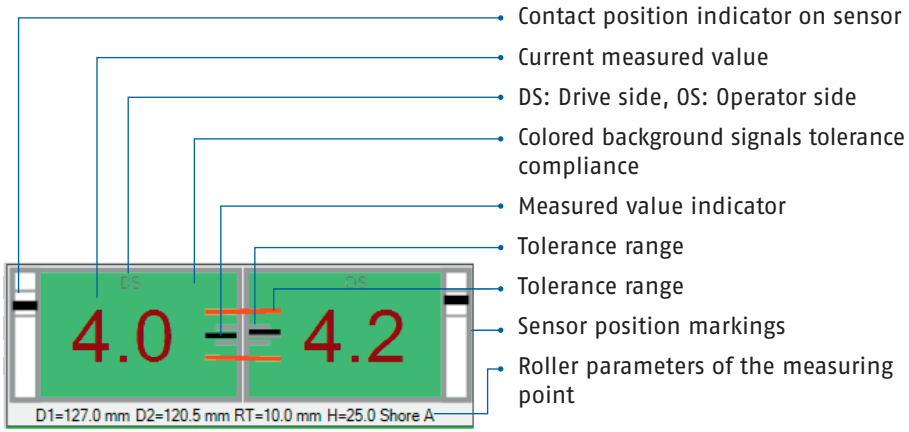


Fig. 13. Measurement display showing a chosen measuring point

	Error messages are shown in text form. (↗ *Attachment: Error Messages)*

Files

Image, templates and measurement files are the carriers of the different information.

	These files have their own data format and are summarized in the NipCon file structure. (↗ *Section 7.1 Software Installation)*
	Changes (including the file name) or processing the files with other programs can lead to data loss and/or functional restrictions.

File Names

The program specifies the names and formats of the templates and measurement files. The image file of the roller diagram defines the name of the template. (➚ *Section 7.4.6 Create Template)*

Names and formats of image, template and measurement files

Image	Format	bmp, jpg
	Name	Freely selectable (➚ *Section 7.4.6 Create Template)*
	Example	*HDMXL75.jpg*
	Content	Image of roller diagram
Template	Format	txt
	Name	Name of the image file used
	Example	*HDMXL75.txt*
	Content	Measuring point parameters, additional information
Measurement file	Format	csv
	Name	Measuring system_measurement date_time_template_ machine_printing unit_ sequential no.
	Example	*00401_20191128_075411_HDMXL75 _M229_U5_N33.csv*
	Content	Measured values, measuring point parameters, additional information

Measuring Time / Archiving

The archiving of the measurement data is based on the time of the measurement contained in the file name. This is set once when the measurement file is created.

ℹ	If the file is changed, the original measurement time is always retained.

7.4.2 Search

The **Search** menu item helps you edit and manage your measurement data. It is only available on the PC.

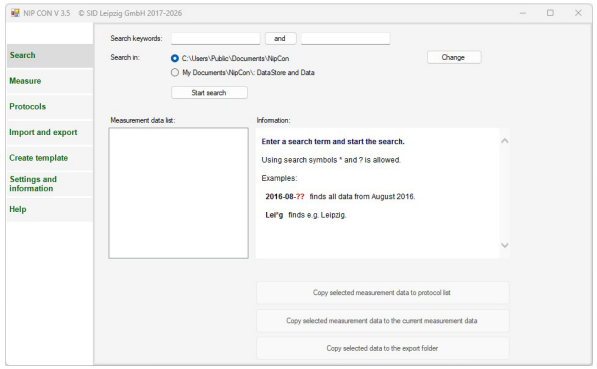


Fig. 14. Menu window search

The database can be searched in the directories (**...\Public Documents\NipCon\ DataStore** (archive) and **...\Public Documents\NipCon \Data** (measurement data)) or by using the **Change** button in a freely selectable directory. In addition to the file name and time of the measurement, the additional information (machine number, printing unit, operator, comment) can also be search criteria.

☞	Search criteria may contain the search symbols * and ?.
☞	2 Search criteria can be linked using the active link button **and** or **or**.

All search results are listed under **measurement data**. Additional information about the search or results selected in the list are displayed in the **Information** window.

With the help of the action fields, the selected measurement data can now be added to

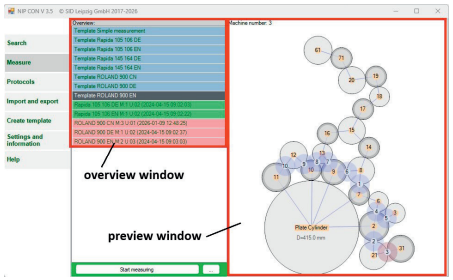
- the protocol list (➚ *Section 7.4.4 Protocols)*,
- the current measurement data (➚ *Section 7.4.3 Measure)* or
- the export directory (➚ *Section 7.4.5 Import/Export)*

for editing.

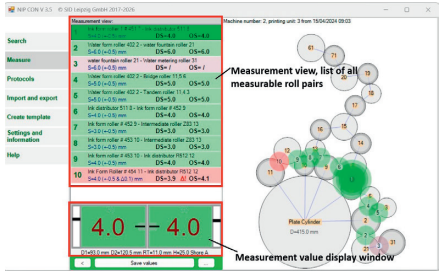
☞	The search includes **all** *.csv files in the selected directory
ℹ	The proper handling of *.csv files is only possible for NipCon's own files. (➚ *Chapter 7.4.1 General Remarks)*

7.4.3 Measure

The **Measure** menu contains all functions for preparing and performing measurements. The functionality in the views is determined by lists (overview), preview, action field and measured value display.



View menu **Measure**



Measurement view

Fig. 15 Selected views **Measure** menu

Lists

The list in the view **Measure** contains all templates and measurements.
The following information is reflected in the list entry:

- Time of measurement (e.g. 14.02.2020 07:18:30)
- Printing unit number U: (e.g. 6)
- Machine number or designation M: (e.g. 232)
- Name of the template used (e.g. XLx145-7+L)

Example: XLx145-7+L M:232 U:06 (2020-02-14 07:18:30)

The list in the **measurement view** contains all measurement points defined in a measurement file. The following information is contained in the list entry:

- Measured values (e.g. 4.0mm)
- Roller names (e.g. Cylinder 1)
- Delta-Tolerance (e.g. Δ0,1mm)
- Tolerance (e.g. +-0.5mm)
- Set point (e.g. 4,0mm)
- Measuring point number (e.g. 8)

Example: 10 Ink Form Roller # 454 11 - Ink distributor R512 12
S=4.0 (+-0.5 & Δ0.1) mm AS=4.0 Δ! BS=4.2

	Associated status information for the list entries is highlighted in color.
	The measuring point only turns green in the preview window when both the tolerance of the NIP values to be set and the delta tolerance of the two NIP values meet the target values.

Status information

Color	Status information
Templates and measurements (Measure view)	
Blue	Template
Blue !!!	Incomplete template
Green	Completed measurement, all measured values within tolerance
Red	Completed measurement, at least one measured value outside the tolerance
Grey	Incomplete measurement, not all measurement points processed
Light grey	Empty measurement, no measuring points processed
Light grey !!!	Empty measurement (non-system file)
Measurement points (Measurement view)	
Green	Measured values within the tolerance
Red	Measured values outside the tolerance
Purple	No measured value saved
Pink	Optional measuring point (not active)

	Archived measurements are not listed in the list fields.
	Using the Search menu, measurements archived in **.../NipCon/Datastore** can be added to the current measurement data **(.../NipCon/Data)**.

Action Fields

Via the selection and action buttons, a **measurement template** is started or deleted, **older measurements** can be viewed, continued, printed, archived or deleted (➚ *Functions)*.

With the action field in the **Measurement view,** the **current measured values in the measured value display** are saved or the **target values and tolerances of the roller pairing parameters** can be changed.

Function	Action
Measure view	
Start measuring	Starts measurement based on a template or continues an existing measurement
Print measurement	Copies the file to the protocol list and opens the protocol menu
Archive measurement	Moves the file from the overview to the archive folder
Delete measurement	Deletes the file
Delete template	Deletes the file
Measurement View	
Save values	Saves current measured values for the selected measure-ment point
Change parameters	Opens the parameter window for the selected measure-ment point

Preview

After selecting a template or measurement from the list, the roller diagram with the measurement points is displayed in the preview window.
Measured values and status information from the list field are adopted.
The current measuring point is highlighted in color in the measurement view.

☞	In the tablet version, you can choose between the **roller diagram preview** (geometry view) and the **list view** (➚ *Section 7.4.1 General Remarks)*.
☞	The roller diagram can be moved as desired in the preview window. If you select it again, the roller diagram will appear centered again. (➚ *Section 7.4.6 Create Template)*

☞	Detailed information on the measurement points can be shown using the zoom function of the preview field. (➚ *Section 7.4.6 Create Template)*

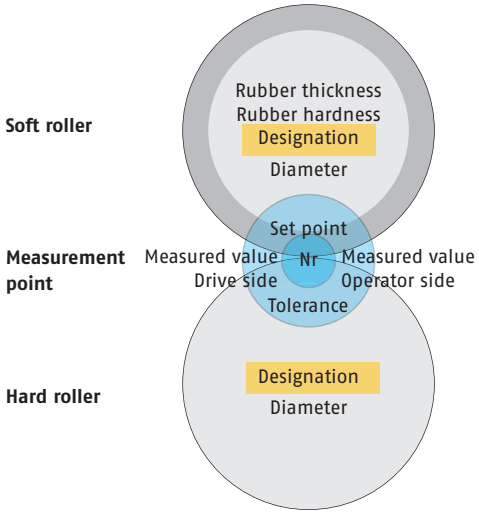


Fig. 16. Systematic representation of a measurement point and all associated parameters in the preview window

☞	The (active) roller pairing to be measured can be selected both in the list and in the roller diagram.
ℹ	If a delta tolerance (difference between the recorded NIP values on the drive and operating side) was defined during template creation, any delta tolerance exceedance is displayed in both the preview window and the measurement view.

Measured Value Display

Current values and information of the measurement point are displayed and analysed in the measured value display window. (➚ *Chapter 7.4.1 General Remarks)*

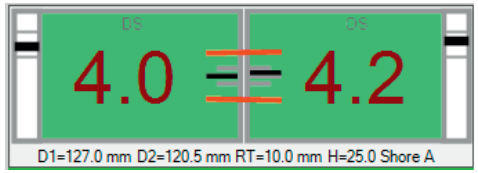


Fig. 17. Measured value display

	A red bar in the central measured value indicator in the measurement display window symbolizes when the NIP values are outside a delta tolerance previously defined in the template.
	If the measured value display window is reddish, there is no connection to the hand-held device.

Measured Values/Set Point Comparison

In addition to the digital display of the current measured values, the result of the set point comparison is shown in color in the background.

	The result of the set point comparison is also visible on the hand-held device's **optical set point indicators** (2). (➚ *Section 6.2 Operating and Control Elements)*
	The position of the measured value in relation to the setpoint and tolerance can also be assessed using the **measured value position** indicators. (➚ *Section 7.4.1 General Remarks)*

Set point comparison

Color	Result
Software	
Yellow	Measured value too small (out of tolerance)
Green	Measured value (within tolerance)
Red	Measured value too large (out of tolerance)
Hand-held device	
○ ○ ●	Measured value far too small
○ ● ●	Measured value too small (out of tolerance)
○ ● ○	Measured value (within tolerance)
● ● ●	Measured value too large (out of tolerance)
● ○ ○	Measured value far too large

	In the event of deviations > 0.5 mm from the tolerance range, the measured value on the hand-held device is marked with "far too small" or "far too large".

Sensor Position

The external indicators of the **contact position** in the window (as "active sensor area") realistically shows the contact area of the sensors with the rollers (width of the indicator bar).

IMPORTANT	If the *critical insertion depth* of the sensors is exceeded, touching the rollers behind can falsify the measurement (bending errors) and cause damage.
	When critical use of the sensors is recognized, the indicator bar turns red.

In addition to critical sensor positions:

- not deep enough
- too deep
- critical insertion depth exceeded

the exceeded measurement range is also shown in red.

	Error messages are shown in text form in the measured value display. (➚ *Attachment: Error Messages)*
	If markers for the sensor position were defined in the template creation (➚ chapter 7.4.6 Template creation), these are also entered.

7.4.4 Protocols

The measurement data can be printed in the PC-software in the menu item **Protocols**.

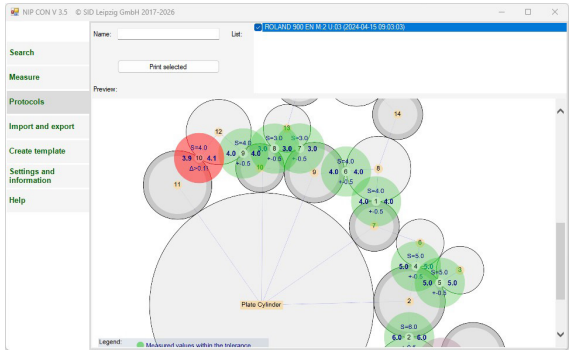


Fig. 18. Protocol view of the PC software

All measurement data from the **...NipCon/Protocols** directory are in the list box.

☞	Additional data can be added to the list in the **Search** menu (➚ *Section 7.4.2 Search)* or **Measure** (➚ *Section 7.4.3 Measure)*.
ⓘ	Appropriate processing of measurement data can only be guaranteed for NipCon files

The contents of the protocols are the values of the measuring points in the roller diagram, entered parameters (type, machine number, printing unit) as well as additional information (operator, comment, time of measurement).

The test protocol can be named individually in the **Name** input field. All files marked with a tick in the control fields (☑ with a blue background) are summarized in the protocol.

The protocol is displayed in the preview window and can be printed using the **Print selection** action button.

In the app, the measured values can be protocolled using action field **Print measurement** in the **Measure** view. A specific protocol name can be assigned to the printout before the protocol is saved as PDF or sent to a printer.

7.4.5 Import/Export

The menu item **Import/Export** is used for the targeted data exchange between PC and tablet. It is only available on the PC.

☞	A direct connection via USB is recommended for data exchange

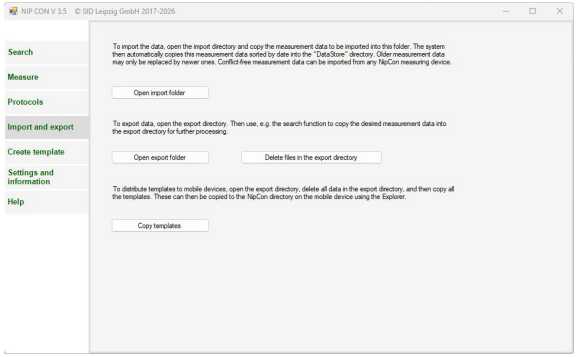


Fig. 19. Import/Export view

Templates and measurement data must be exported as well as recorded measurement data imported for further processing. The separate directories **... / dataimport** (import directory) and **... / dataexport** (export directory) *(➚ Section 7.1.1 PC)* allow easy organisation.

These directories can be viewed using the action buttons of the same name. Windows Explorer can be started.

- Measurement data is copied to the export directory under the menu item **Search** *(➚ Section 7.4.2 Search)*.
- Templates are transferred with the action button **Copy templates** to the export directory

The selected files can be moved from the open export directory to the target folder.

ⓘ	The target folder of the tablet is the directory **... My Documents/ Documents/NipCon/.**

Collected measurement data e.g. from the tablet, are copied to the import directory.

☞	Collected measurement data are saved on the tablet in the directory **... My Documents/Documents/NipCon/** *(➚ Section 7.1.2 Tablet)*

The software continuously scans the import directory and automatically sorts measurement data by year, month and day (the time of measurement) in the directory **... / Public documents/NipCon/DataStore/Year/Month/Day** (archive).

7.4.6 Create Template

The **Simple Measurement** template is provided by the software after the program starts.

In the **Create template** menu item, more complex tasks such as roller adjustments on complete printing units or printing presses can be prepared. It is only available on the PC. The starting point is the roller diagram of your printing press

☞	You can find the roller diagrams of your printing press in the corresponding documentation from the manufacturer.

Digitalization of the Roller Diagram

- Photograph or scan the roller diagram with as little distortion as possible.

ⓘ	Permitted image formats are *.jpg und *.bmp

- Move the image file to your PC.

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	The name of the image file defines the name of the template. Do not use special characters or separators such as _ or - when renaming.

- If necessary, crop the image so that only essential information is retained.

To Create a Template:

- Open the image of the roller scheme

	The action button **Open picture** in the template view starts Windows Explorer and enables the selection of the image file of the roller diagram from any directory.
	The picture is shown in the drawing area. While holding down the mouse button, the image can be moved or zoomed in and out using the scroll wheel. *(➚ Section 7.4.3 Measure)*

- Trace the circumference of all rollers.

	Start with the largest roller of the machine or on the plate cylinder.
	By setting 3 points along the circumference, the position and diameter of the rollers are determined. After setting the 3rd point, the roller is shown in the picture.
	With the left mouse button, a point is set, with the right mouse button the last set point is undone.
	Blue connecting lines between the centers of the circles mark contact points (possible measuring points), which now appear in the template preview.

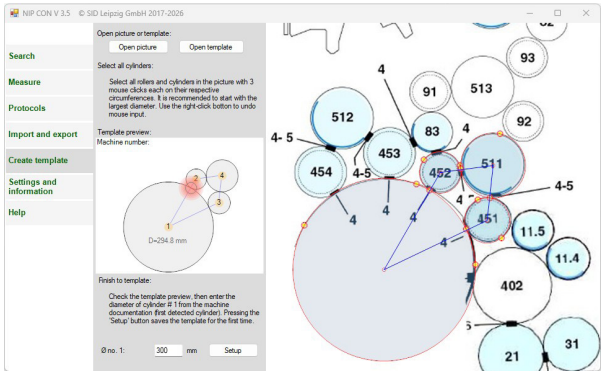


Fig. 20. Creation of a template, geometric representation

- Enter the roller diameter of roller 1 of the template.
- Use the action button Setup to save the template.

	The template file with the same name as that of the picture is saved **(„PictureName“.txt)**.
	The saved template file is incomplete with regards to the roller parameters and cannot yet be used for measurement purposes. It is marked with !!!.

Edit Templates

You can edit a template in the menu item Create template.

- Open the template

	Template files are stored in the directory **..../NipCon/Templates** *(➚ Section 7.1.1 PC)*.
	The action button **Open template** starts Windows Explorer and allows you to select the template to be edited.

- Change roller parameters, roller rotation directions, descriptions and sequences of the measuring points

	All rollers and contact points in the preview window are actively linked to the parameter input. Select the roller or contact point with the mouse pointer and activate the input field with the left mouse button.
	Activated rollers or contact points are highlighted in color.
	Only entries within valid limits are taken into account.
	The roller rotation direction can be defined in the **Description** field by preceding the name with “<” counterclockwise or “>” clockwise. The rotation direction may only be entered for one roller, preferably the plate cylinder.
	The drive and operating sides can be swapped at the measuring point, e.g. if the sensors are inserted from the rear of the printing unit. To do this, insert the symbol "<>" in the Description field. In the measurement view, the measurement results are assigned to the new drive or operating side accordingly.

	If specific measuring points are to be ignored, they can be defined as optional.
	In the measurement display window, up to 2 markers can be set for the sensor position in the template to visualise a defined insertion depth of the sensor.
	The difference between the recorded NIP values on the drive and operating side is referred to as the delta tolerance and can be stored as a parameter for the measuring point.
	Only contact points defined with a set point and tolerance are taken into account as measurement points.

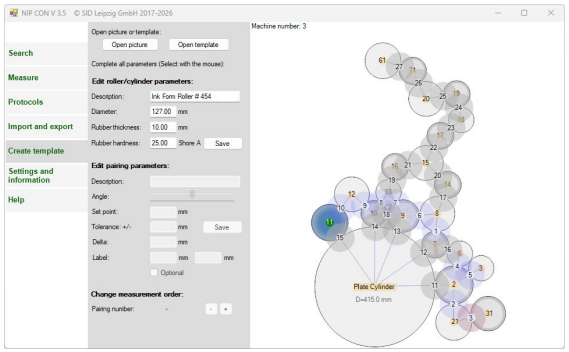


Fig. 21. Creation of a template, geometric representation

- Save the changes

	Changes to roller parameters and measurement points only become effective by pressing the respective **Save** action buttons.
	Changes to the measurement order placement are always saved.

7.4.7 Settings and Information

The menu item Settings and Information is used to modify the language and system, to control the establishment of a connection and to communicate status information.

- Language options: German ☐ / English ☑
- Establishing a connection: **Connect on COM**: not active ☐ / active ☑

	An active connection is disconnected when deactivated.

	The action button **Search COM:** supports the connection establishment (➚ *Section 7.2 Connecting the System Components)*

- Serial port number: information

	The parameter defines the standard serial via Bluetooth connection

- Date/time: information (hand-held device)

	The action button **Set date and time** synchronizes the system time of the hand-held device.

- Device number: Information (hand-held device)
- Battery capacity: Information on charge status (hand-held device)
- Time remaining: Information (hand-held device)
- Battery discharge current: Information (hand-held device)
- Device temperature: Information (hand-held device)
- System battery: Information (user device)

	AC denotes the connection of the user device to a continuous power supply.

7.4.8 Help

In the **Help** menu item, you will find explanations for handling and operating the device.

	The active table of contents provides quick access to help arranged according to menu items

8 Maintenance

8.1 Lithium-ion Polymer Battery

The measuring system is equipped with lithium-ion polymer batteries. These batteries are low-maintenance and have a long service life when used accordingly.

Please note:

- The batteries are charged via standard USB connections.
- It is recommended to charge batteries with a remaining charge of 75 % to 30 % of the battery capacity.

☞	The remaining charge of the hand-held device is monitored. The battery can only be recharged after it has been discharged to 75 % of the battery capacity (<3.95 V).

- The battery should never be completely discharged.

IMPORTANT	Deep discharge can destroy the battery.

- The temperature of the battery during the charging process should not exceed 5... 40° C.

IMPORTANT	Extreme temperatures can cause damage. Charging capacity and battery life are reduced.
☞	The temperature of the hand-held device is monitored. In the temperature range (<0° C, >50° C), the hand-held device cannot be switched on or switches off automatically.

- During the charging of the hand-held device, the blinking of the respective LED of the charge status indicator (5) allows monitoring of the charging progress.

☞	When the device is switched off, it may take approx. 20 s until the charging progress is displayed.

- After disconnecting the charging (USB) cable, the LEDs on the charging status indicator light up.

Display on hand-held device	Display in the measured value window	Battery level
●●●●●●	Green	>83%
●●●●●○		>66%
●●●●○○	Yellow	>50%
●●●○○○		>33%
●●○○○○	Salmon red	>16%
●○○○○○	Red	< 16 %

Battery charge level

- The hand-held device is in charging mode. It can now be individually switched ON or OFF.

☞	It switches off automatically after 5 minutes.
☞	The battery level of the measured value display window **always** identifies the battery with the lowest remaining charge in the system (battery level of the measuring system).

- Never use a damaged or defective charger (or USB cable) when charging

⚠ **Warning**	Damaged or broken chargers can cause an electric shock!
IMPORTANT	Damaged or defective chargers can cause damage to the device.

- Removing the battery is not intended for the user.

IMPORTANT	Improper opening can damage the device.
☞	If necessary, the manufacturer will replace the battery!

8.2 Cleaning

The measuring system, especially the sensors, should be cleaned when dirty.
Please note:

⚠ **Warning**	The hand-held device is not waterproof and not dustproof (protection class IP20). Warning There is danger due to short circuit
IMPORTANT	Penetrating liquids can damage the device.
IMPORTANT	The use of unsuitable chemicals or solvents can damage the exterior and interior of the device. Note the chemical resistance of the materials.
☞	Coarse contamination of the measuring system should be avoided.
☞	The tablet should always be used with the protective case included in the scope of delivery.

If necessary, clean the sensors (PET/stainless steel) and protective cover (TPU/PC) of the tablet with a soft cloth and common, not too aggressive cleaning agents.

Dirt on the hand-held device can be removed with a dry, lint-free cloth.

If the tablet is still contaminated despite the protective cover, please note the manufacturer's instructions (➚ *Tablet: Safety Information)*.

9 Storage, Transportation

The practical device case included in the scope of delivery ensures that the device can be transported safely.

Always store the measuring system in a dry place. Avoid strong impacts and vibrations on the device. The general safety instructions for the transport and storage of batteries apply.

	The hand-held device can be secured against unintentional start-up during transport using the slide switch (9) (➚ *Section 6.2 Operation and Control Elements)* (IATA VA967 Teil II).

10 Repair

	Repairs and service measures to the measuring system may only be carried out by the manufacturer.
	To avoid unnecessary questions, send the device with a short description of the error to:

PITSID Polygraphische innovative Technik Leipzig GmbH
Mommsenstraße 2
D-04329 Leipzig

Tel: +49 341 25942-0
Fax: +49 341 25942-99
E-Mail: info@pitsidleipzig.com
Web: www.pitsidleipzig.com

If the replacement of parts (e.g. sensors) becomes necessary after a longer period of use, contact the above address

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11 Disposal

PITSID Polygraphische innovative Technik Leipzig GmbH takes over the disposal of sent in old devices of the NIP CON SMART Measuring System.

In the case of independent disposal, the current safety regulations for the disposal of lithium-ion polymer batteries must also be observed.

	The NIP CON SMART Measuring System must be disposed of as electronic waste in accordance with the applicable laws. PITSID Polygraphische innovative Technik Leipzig GmbH is registered in the WEEE directive (Waste Electrical and Electronic Equipment) register under WEEE reg. No. DE73410149.

Attachment

CE Declaration of Conformity

The PITSID – Polygraphische
Innovative Technik Leipzig GmbH
Mommsenstraße 2
D-04329 Leipzig

declares, as manufacturer and distributor for the product:

Name: Contact Zone Measuring System NIP CON SMART
Series: 36-0010.0/0
As of device number: KSM-00400

on the basis of

- EMC Directive 2014/30/EU of the European Parliament and of the Council of February 26, 2014 on the harmonization of the laws of the member states relating to electromagnetic compatibility
- Radio Equipment Directive (RED) 2014/53/EU of the European Parliament and of the Council of April 16, 2014 on the harmonization of the laws of the member states regarding the provision of radio equipment on the market and to repeal Directive 1999/5/EC
- RoHS Directive 2011/65/EU of the European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

that the product described above corresponds in its design and construction as well as in the version placed on the market to the provisions of the EU directives mentioned. If the product is changed without knowledge from the manufacturer, this declaration becomes invalid.

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Compliance with the following harmonized standards is confirmed:

EN 61326-1:2013: Electrical measuring, control, regulating and laboratory devices – EMC requirements – Part 1: General requirements

ETSI EN 300 328 v2.1.1 (2016-11): Broadband transmission systems – Data transmission devices that operate in the 2.4 GHz ISM band and use broadband modulation techniques – Harmonized EN that contains the essential requirements according to Article 3.2 of EU Directive 2014/53 / EU

IEC 61010-1:2010: Safety regulations for electrical measuring, control, regulating and laboratory devices – Part 1: General requirements

Complete technical documentation is available. The operation manual for the product is available in German (original) and English.



Leipzig, 05.08.2025

Dr.-Ing. Thomas Kaulitz
Managing Director

Warranty

There is a guarantee for the product within the framework of the contractual agreements. There is no warranty claim in the following cases:

- Accidental or wilful damage
- Damage due to failure to observe the documentation
- Unauthorized changes to hardware or software

The warranty claim expires if changes to the product by the customer or by third parties are not agreed upon with PITSID – Polygraphische Innovative Technik Leipzig GmbH and go beyond the activities described in this product. This also applies to repair measures carried out independently or carried out by third parties.

Malfunctions

Troubleshooting

If the measuring system malfunctions, observe the information on operation (action).

☞	If the following errors cannot be eliminated, contact the manufacturer.

Error	Cause	Action
Hand-held device cannot be turned on	Slide switch (9) in position OFF	Slide switch (9) in position ON
	Battery discharged	Charge hand-held device
	Temperature: (∂<0° C; ∂>50° C)	Hand-held device in temperature range [0...50°C]
Hand-held device cannot be turned off	Device error	Slide switch (9) in position OFF
Device does not charge	Defective USB charging cable	Change USB cable
	Defective USB port (7)	Check USB port (7)
	Defective USB adapter	Check the USB adapter
Program sequence disrupted	Software damaged	Restart the program/app
		New software installation (↗ *Section 7.1 Software Installation)*
	Interrupted data transmission	Stop and restart (data loss)
Gboard keyboard not available on tablet	Keyboard not installed or damaged	Installation on the tablet (↗ *Section 7.1.2 Tablet)*
No connection to sensors	Defective film sensor	Contact manufacturer
	Line break	
	Sensor not connected	Connect sensor to socket (6)
Connection cannot be established	Hand-held device in charging mode	Switch off the device and try again

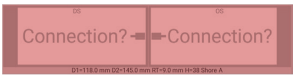
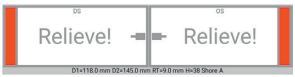
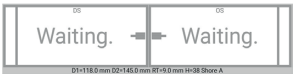
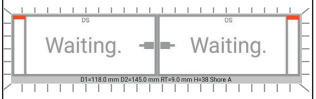
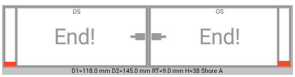
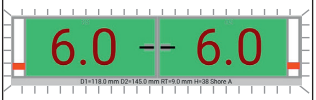
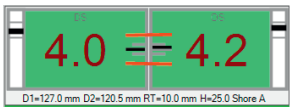
Error Messages

If no measured values can be determined, error messages provide information on operation.

☞	Error messages are also visible on the hand-held device via the operating and control elements. (↗ *Chapter 6.2 Operating and Control Elements)*

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Information		Cause	Action	Referral
Software	Hand-held device			
		No connection to the hand-held device	Connect PC or tablet and hand-held device	Chapter 7.2
		No sensor	Connect sensor	Chapter 6.2
		Missing comparison values	Relieve the sensor	
		No or too little sensor pressure	Check sensor position	Chapter 7.3.2
		Sensor not inserted far enough	Check sensor position	Chapter 7.3.2
		Sensor inserted too far	Check sensor position	Chapter 7.3.2
		Measurement range exceeded	Reduce the pressure	
	➚ *Fig. 7*	Critical insertion depth exceeded	Check sensor position	Chapter 7.3.2
		Delta tolerance not achieved	Maintain delta tolerance	Chapter 7.4.3

	If the above errors cannot be eliminated, contact the manufacturer.