NUMERIK JENA

NPA
NUMERIK PWT ADAPTER

USER MANUAL

English Original Instruction

INDEX

1. FEATURES AND APPLICATIONS

NUMERIK JENA‘s encoders do allow mechanical mounting tolerances, however, it is recommended to check the function of the output signals and the reference pulse.

The NPA – Numerik PWT Adapter – is an accessory item to connect linear incremental measuring systems of the new product generation of NUMERIK JENA to the PWT101, a test device from Dr. JOHANNES HEIDENHAIN GmbH for function control and adjustment of measuring devices. For measuring instruments with pin assignment according to NUMERIK JENA standard (see page 9) the assignment adapter NPA must be used.

In combination with the free-of-charge software module of NUMERIK JENA, the adapter enables the functional range of the PWT 101 to be used in conjunction with the LIKgo and LIKselect.

Essential features:

- Checking the correct functioning of measuring systems with the PWT 101 from HEIDENHAIN
- Display of measured values, diagnostic data and evaluation numbers
- Adjustment of LIKgo and LIKselect measuring systems from NUMERIK JENA on the PWT 101

Essential Benefits:

- Economical - Cost-effective and flexible integration of new devices into an existing test process
- Use of existing measuring and testing equipment
- Simple - D-Sub connector only needs to be supplemented by the NPA
- Small - at hand - no additional peripheral devices necessary
- Convenient - Familiar display of measured values, diagnostic data and evaluation figures.
- Flexible - adjustment of LIKgo and LIKselect measuring systems from NUMERIK JENA on the PWT101 possible.

2. SAFETY

2.1 General Information

- Make sure to familiarize yourself thoroughly with the contents of these installation instructions before using this device.
- For general handling and commissioning of the PWT 101 with the NPA - NUMERIK PWT Adapter, please refer to the current operating instructions from HEIDENHAIN.
- This user manual is valid for the PWT 101 with the NPA - NUMERIK PWT Adapter from NUMERIK JENA GmbH. (You can find the current version on our homepage: www.numerikjena.de/npa)
- The NPA - Numerik PWT Adapter is compatible with the PWT 101 and can only be used with the provided module from NUMERIK JENA GmbH.
- The function of the instrument and the connected measuring systems can only be guaranteed if the mounting and operating conditions as specified in the corresponding operating instructions and data sheets are observed.
- NUMERIK JENA GmbH is not liable for damages caused by unauthorized handling of the encoders. Any unauthorized handling leads to forfeiture of all warranty claims.
- NUMERIK JENA GmbH does not assume any liability for any damages or operating errors caused by incorrect installation or operation.
- Please also consider the operating instructions, data sheets as well as safety instructions of devices of other manufacturers, which you use in combination with devices and measuring systems of NUMERIK JENA GmbH, in order to ensure a safe function.
- For additional information please contact the NUMERIK JENA GmbH or authorized representatives. You will find the relevant contact details on the NUMERIK JENA GmbH website at www.numerikjena.de.
- Please pay attention to the safety instructions and warning symbols!

Danger to the device or the function of the device!

Pull the plug!

Highly inflammable!

2.2 Notes on Legal Requirements

CE Europe

NUMERIK JENA GmbH hereby declares that this is in compliance with the essential requirements and other relevant provisions of Directive 2011/65/EU. The CE Declaration of Conformity can be requested at the following address:

NUMERIK JENA GmbH
Im Semmicht 4
07751 Jena
Germany

or www.numerikjena.de. Other countries on request.

2.3 Notes on Transport, Storage and Handling

The products of NUMERIK JENA GmbH may only be transported and stored in their original packaging!

2.4 Notes on Operation

- Comply with applicable PIN assignment if auxiliary electronic units are connected
- Only operate the device with the supply voltage stated in this product data sheet.

Only make or remove plug connections when the device is switched off - otherwise there is a risk of damage to internal components..

2.5 Environmental Protection and Disposal

Environmental damage due to incorrect disposal of the product, accessories or peripherals!

- Do not dispose in domestic waste.
- Dispose only by authorized collection points. Electrical waste and electronic components are subject to special-waste regulations.
- Observe the applicable country-specific regulations.

More detailed information on legal regulations can be obtained from competent authorities.

2.6 Scope of delivery

The scope of delivery includes the following components:

- NPA - NUMERIK PWT Adapter
- Installation Instructions

The current version of the data sheet is available in the download area at www.numerikjena.de. There you can also find the current version of the software module. Since the functional range of the software is constantly improving, we recommend checking the use of the current module.

For correct functioning, check both the current version of the PWT 101 firmware and the NUMERIK JENA - PWT - software module.

3. TECHNICAL INFORMATION

3.1 Technical Specification

- Metallized plastic housing, both sides for Sub-D connector
- Measuring device side: Sub-D plug, 2 rows, socket, 15-pin
- subsequent electronics side: Sub-D connector, 2-row, male, 15-pin
- Adapter function: Conversion of assignment

3.2 Technical drawing

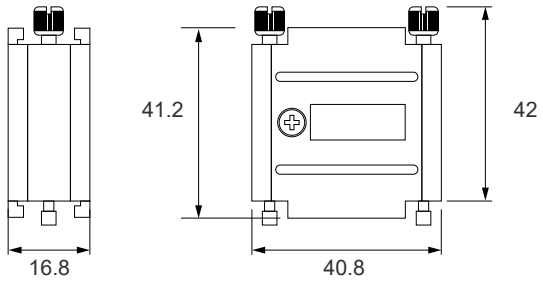


Image 1: Technical drawing (all dimensions in mm)

3.3 Nameplate

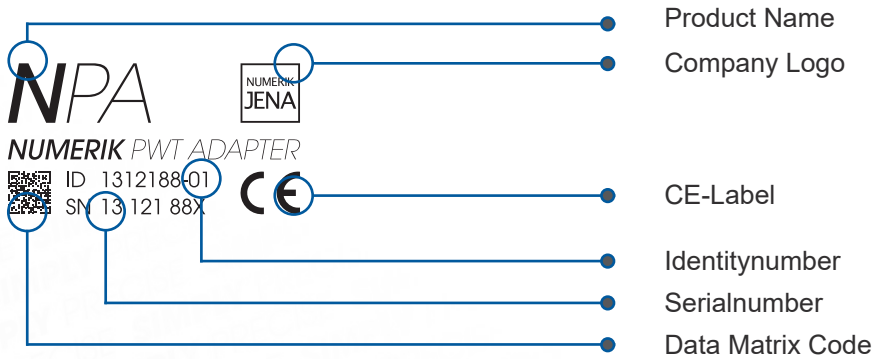


Image 2: Nameplate

4. MECHANICAL CONNECTION

4.1 Connection procedure

Encoders with a 15-pin Sub-D interface are connected to output X3 of the NPA to encoder input X1 on the right side of the device

You may only connect a measuring device to the measuring device input X1. It is not allowed to connect a measuring device to both measuring device inputs at the same time.

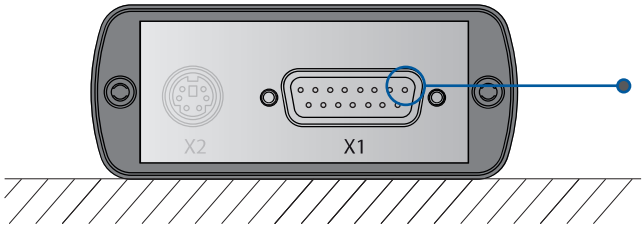


Image 3: PWT101 side view

X1 – 15-pin Sub-D socket for measuring instruments on the right side of the device
(to connect the NPA - NUMERIK PWT Adapter)

current limitation: 750 mA @ 5 V (< 5 W / U_P)

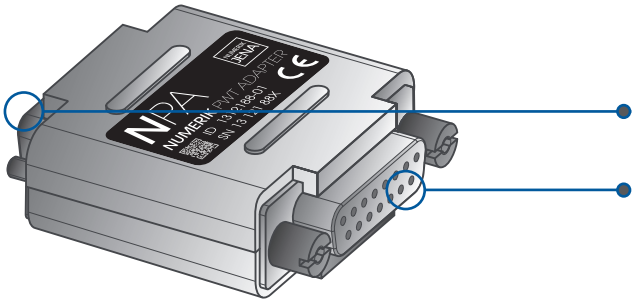


Image 4: NPA-Device view

X3 – for connection to the PWT 101

X2 – for connection to the NUMERIK JENA measuring device

4.2. Notes on connection

Note: Incorrect power supply range and incorrect wiring / pin assignment can cause damage to the device and the measuring instrument.
Pay attention to the power supply range of the connected encoder!!
Connect or disconnect the adapter between measuring device and device only when the device is disconnected from the power supply

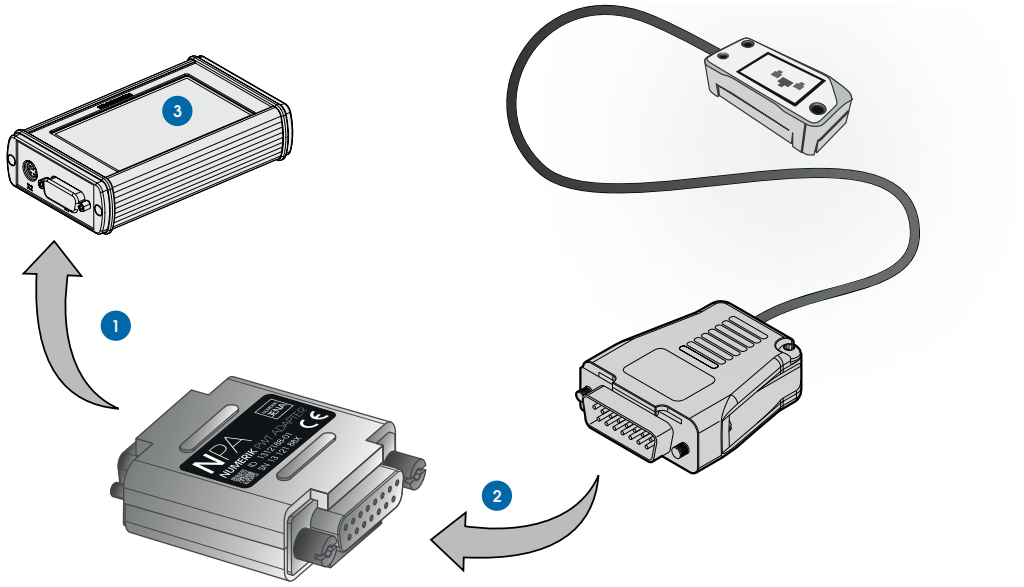


Image 4: NPA-PWT-Connection procedure

1 Step 1:

The signal adapter must be connected to PWT 101 at input X1.

2 Step 2:

The NUMERIK JENA measuring device must be connected to the signal adapter.

3 Step 3:

Then you can start via „Automatic diagnosis“ or „Manual diagnosis“ in the main menu.

Note:

- Make sure to follow the right sequence of the mounting steps during mounting.
- Do not overtighten screws
- Do not exert mechanical stress on the plug connections

4.3 PIN-Assignment

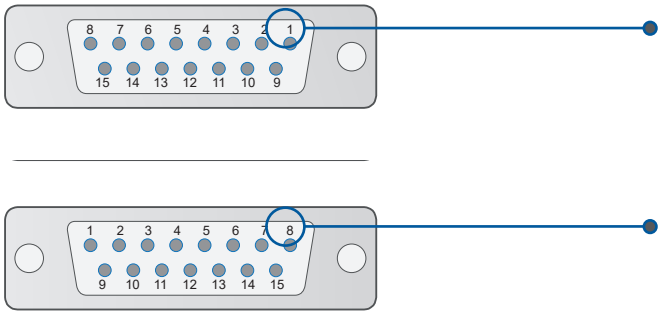


Image 5: PIN-assignment of Plugs and Sockets

JH - PWT - PIN ASSIGNMENT (X1)			NUMERIK JENA - NPA - PIN ASSIGNMENT (X2)		
Pin	**Name**		**Pin**	**Name**	
1	A+/U_{a1+}		14	U_{1+}/Z_{1+}	Counting signal 0° (sin)
2	GND/0V	Ground	9	GND	Ground
3	B+/U_{a2+}		13	U_{2+}/Z_{2+}	Counting signal 90° (cos)
4	U_P	Power supply	8	5V	Operating voltage (U_B)
5	Data+		15	PWT	
6	Homing1 Internal Shield		2	S_{11}	
7	R-/U_{a0-}		4	U_{0-}/Z_{0-}	neg. reference signal
8	Limit1		10	S_{21}	
9	A-/U_{a1-}		6	U_{1-}/Z_{1-}	Counting signal 180° (-sin)
10	U_N-Sensor / 0V		1	S_{12}	
11	B-/U_{a2-}		5	U_{2-}/Z_{2-}	Counting signal 270° (-cos)
12	U_P-Sensor	Voltage supply Sensor	7	S_{22}	
13	Data-		3	NAS/SCL	Neg. error signal/ Programming wire clock
14	R+/U_{a0+}		12	U_{0+}/Z_{0+}	Reference signal
15	Clock-		11	AS/SDA	Error signal (monitoring signal)/ Programming wire data

Table 1: PIN - Assignments

5. NUMERIK JENA SOFTWARE MODULE

To use the PWT 101 in conjunction with the NPA, the latest versions of the firmware of the PWT 101 and the NJ - NPA software module must be available on your device. These can be downloaded free of charge from the website at www.numerikjena.de/npa.

With the application of the adapter, the PWT 101 can be used as familiar. For basic handling or a more detailed description of the functions of the PWT101 reference is made to the HEIDENHAIN operating instructions (document number 1162581-05).

5.1 NJ - PWT - Software module management

A PWT 101 with module management is a basic requirement for using the NPA.

After the successful download of the module, it can be made available via SD card. Up to four modules can be loaded in the main menu under Module Management. The module management is explained in chapter 10 of the HEIDENHAIN operating manual.

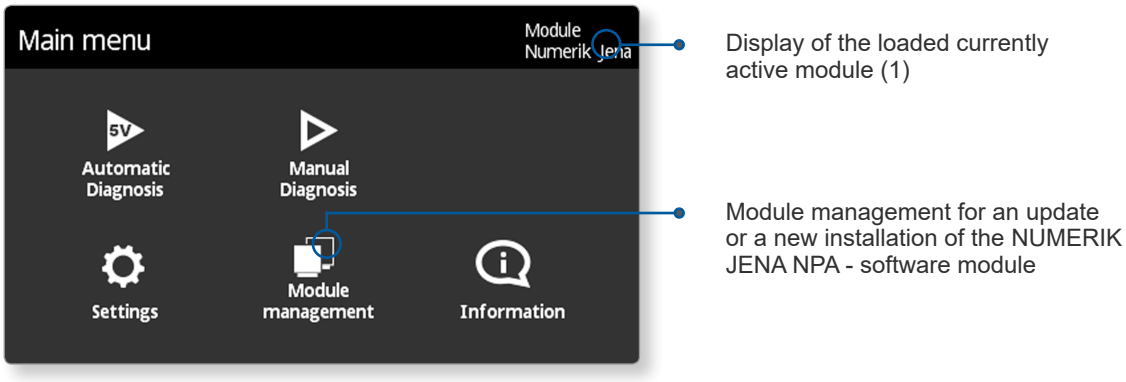


Image 6: Screen main menu

In the main menu, the successful installation of the module (1) or the module currently in use is displayed at the top right of the screen.

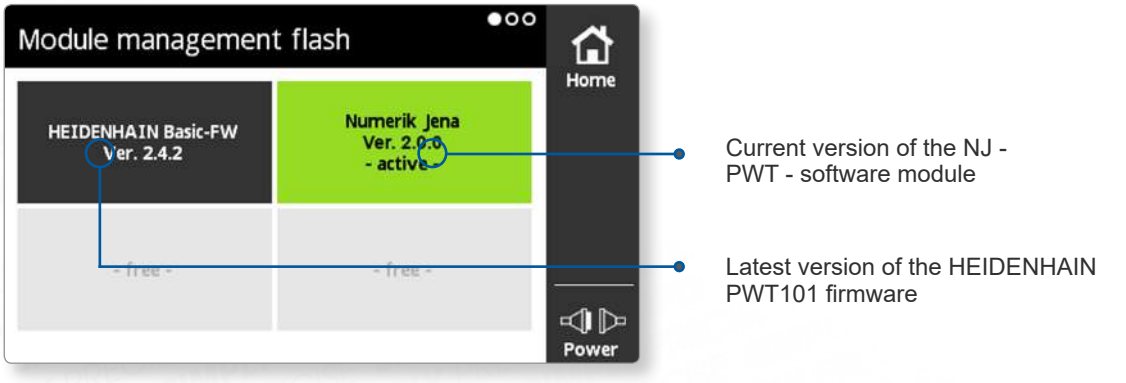


Image 7: Screen module management

5.2 NJ - PWT - Software Module - Functionality

The Numerik PWT Adapter enables the connection of devices of Numerik Jena GmbH to the PWT 101 from Heidenhain. Currently the adapter is needed to connect the product line LIKgo and LIKselect. In combination with the NPA software module, the PWT 101 can also be used for various other NUMERIK JENA measuring systems in the future.

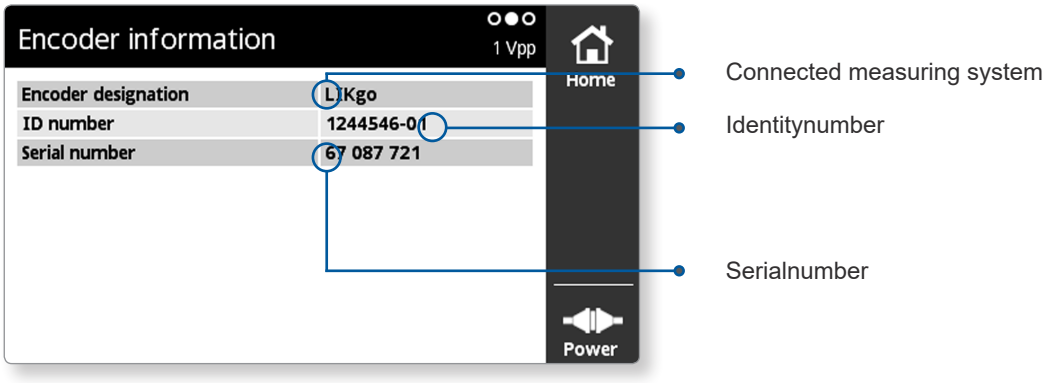


Image 8: Display of device-specific parameters

The functional range includes the following display values and adjustment options. In addition, the basic firmware functions of the PWT101 that are in general available can be used, such as:

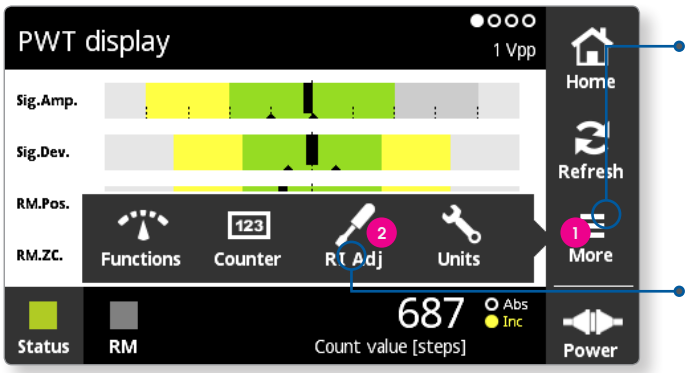
- Display of measuring device-specific information such as identification number, serial number, device type
- Bar graph view of signal amplitude and signal deviation
- Display of counting errors using the reference pulse
- The relative counter value (steps or µm)
- Status display - red for signal errors (when touched, the error status is displayed)
- As a selection option in submenus:
  - Switch nline compensation on or off
  - Selection of a basic index processing
  - Change of the counter display (from steps to angle or distance)

5.3 RI-Adjustment (Reference pulse adjustment)

The NUMERIK JENA - PWT- software module offers an additional functionality - the RI-Adjustment. This assists the user in adjusting the measuring device.

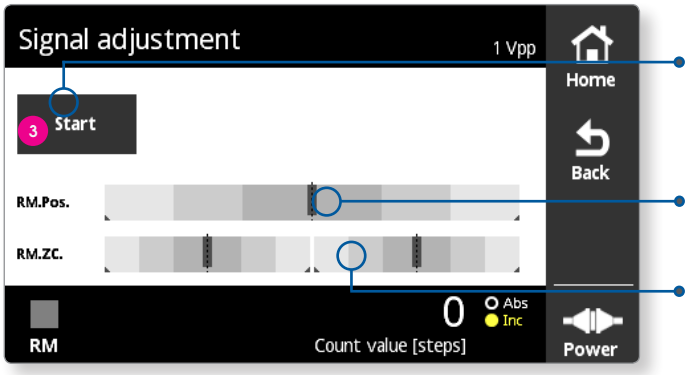
By manually traversing the reference mark, the best possible adjustment is determined which can then be stored on the measuring head. The procedure is explained in the following section.

5.3.1 RI-Adjustment - Procedure



Select the menu item More (1) in the main menu.

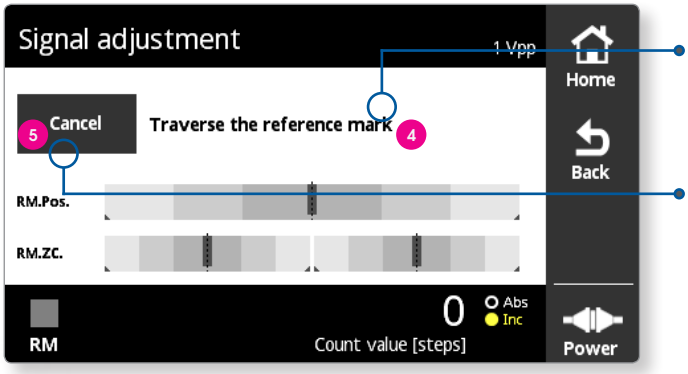
A submenu opens - select the option RI Adj (2).



Display of the signal adjustment. To start the RI adjustment, press the “Start” button (3).

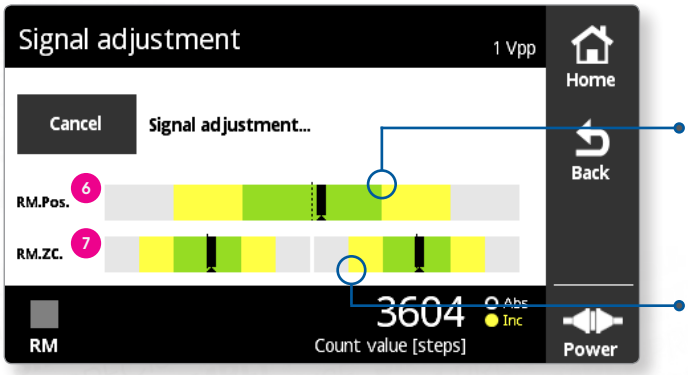
Bar graph display for adjusting the RM.Pos. center reference mark.

Bar graph of the reference-mark zero crossovers (RM.ZC.-Reference Mark Zero Count)



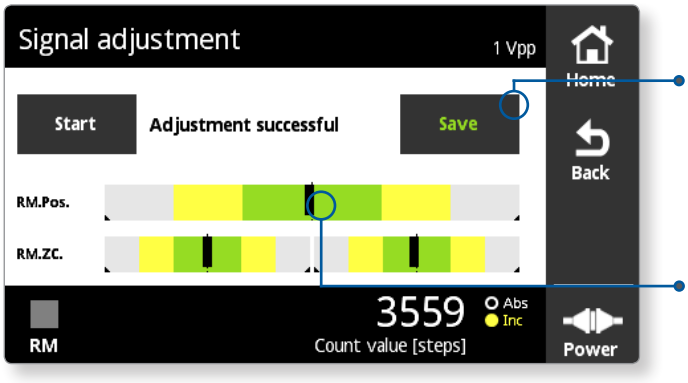
Follow the brief instructions. Traverse over the reference mark with the scanning head (4).

The signal adjustment can be cancelled and restarted by pressing the “Stop/Start” button (5) .



Adjustment of the center reference mark (6) (RM.Pos.)

Diagnostics of the reference marks zero crossings (7) (RM. ZC.-Reference Mark Zero Count)



Stores the determined values on the (8).

Caution: This action cannot be reverted!!

Display of the optimized values determined in the adjustment (9)

5.3.2 RI-Adjustment - Evaluation of the signal adjustment

The PWT 101 display view allows an evaluation of incremental and reference mark signals with bar diagrams Among them are the indications for:

- Adjustment of the center reference mark RM.Pos (6)
- Checking the reference marks zero crossings RM.ZC.(7)

To evaluate the signal adjustment:

- In the bar charts, the drag indicators (black triangles) indicate the minimum and maximum values respectively.
- The drag pointers must be in the green (good) or yellow (sufficient) range.
- If the drag pointers are not at least in the yellow range, please check the installation tolerances again! Possible actions are:
  - Turn the scanning head minimally by lightly tapping it.
  - Ensure that incremental signals do not become smaller
  - Move over the entire measuring length to check the reference marks.

In case of problems with the NJ-PWT software module, please contact the technical support of NUMERIK JENA GmbH or authorized representatives. Corresponding contact details can be found on the NUMERIK JENA Website under www.numerikjena.de

6. ORDER INFORMATION

Description	Scope of delivery	Order number
NPA NUMERIK PWT Adapter	▪ NPA NUMERIK PWT Adapter ▪ Installation Instructions	1312188-01
NPA Software Module	The NPA software module is available for free on our website www.numerikjena.de	
PWT 101 Firmware	The latest firmware for the PWT 101 is available for free download on the Heidenhain website at www.heidenhain.de	

Table 2: Overview with description, scope of delivery and order number

NUMERIK JENA

SIMPLY PRECISE

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Version 10 2020