

OPERATION MANUAL

Photo electric scanning head

TK326



Keep for future use.

ZERA

<u>Table of Contents</u>	<u>Page</u>
1. Safety Instructions	3
1.1. Important user considerations	4
1.1.1. Danger references	4
1.1.2. User information, hints, references	4
1.1.3. Text markings	4
1. General description	5
2.1. Scanning of rotor marks	5
2.2. Scanning of LED's	6
2.3. Views of the TK326	7
2.3.1. Front view of the TK326	7
2.3.2. Rear view of the TK326	7
2.4 Technical data of TK326	8
2.5 Using the TK326 with holding arrangement	10
3. Service	12

1. Safety Instructions

The scanning head TK326 is developed only for scanning of rotor marks and LED's of electronic meters.

It is not allowed to modify the TK326 in any way.


Only electrically skilled person (older than 18 years) having relevant education and experience which enable him/her to perceive risks and to avoid hazard/damage which electricity can create, are allowed to operate the equipment.

Every person putting this equipment into operation, operating or servicing the system should read, understand and follow the user manual including all safety instructions. Use of equipment tools, cables in a manner not specified may damage the protection provided by the equipment.

Also observe the local safety regulation, general guideline for accident prevention, general guideline for safety engineering regulations.

If the units appears to be damaged or operates abnormally, protection may be impaired. Do not attempt to operate it and report the defect or damages to the supervisor in-charge immediately. The test operation has to be stopped until defects and damages have been repaired and removed.


This operation manual has to be kept close and accessible to the tester at any time.

 The protective earth conductor of the meter test system should be connected with the protective earth conductor of the main supply. This is necessary to safe against unintended contact.

1.1. Important user considerations


1.1.1. Danger references


In this manual the red box with black text is used to warn the operator that ignoring the message or action can cause hazard and/or damage to operator or property or test tools.

 Red Box with text inside means that if ignored, damage to property or person can occur.

1.1.2. User information, hints, references

The blue box with blue text is used in this manual to provide information, hints and references to further documentation to user.

 Blue box with black text provides information, hints and references to further documentation to use.

 The gray box with black text is used in this manual to provide tips

1.1.3. Text markings

1. Numbers mark activities, which are to be accomplished in the indicated order.
- Hyphens mark general enumerating

1. General description

The scanning head TK326 is developed to scan rotor marks and LED's of electronic meters.

If the TK326 is used to scan rotor marks, pulsed LED's light up the rotor disk. So the reflected light is pulsed as well and can be detected independent of the background light. The scanning heads TK326 can detect every single switching edge of a pulse and allows the automatic starting- and no load-test on ZERA test systems.

2.1. Scanning of rotor marks

For the scanning of rotor marks place the scanning head in front of the meter disk in approx. 35 mm distance. The switch on the rear side must be in the upper position (opposite to „LED“ see **chapter 2.3.2.**). Place the rotor disk in the middle of the overlapping light spots as shown in **figure 1**. The scanning head uses blue LED's to lighten the rotor mark having a much stronger intensity than other available LED's and guarantee the best contrast to detect all known black and red (even transparent) rotor marks.

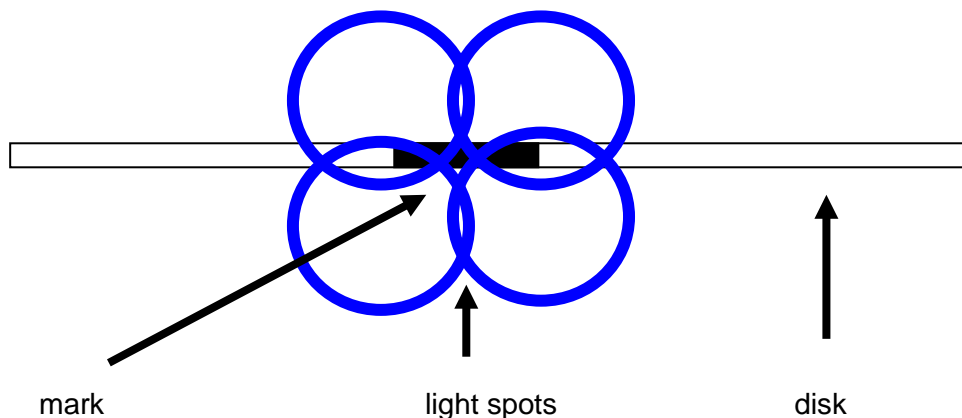


Figure 1

The sensitivity of the scanning head is adjusted by means of the potentiometer on the rear by observing the monitoring LED.

If this diode is lit and does not go out, while passing a mark, the potentiometer must be turned anticlockwise until the diode goes out, while passing a mark. Pay attention that the monitoring diode does not give double pulses. In this case turn the potentiometer a little bit clockwise.

☞ Comment for difficult scanning meters:

If the adjustment is difficult, place the scanning head a little bit closer or diagonal to the rotor disk and adjust it again.

☞ If wrong marks are detected additionally, place the scanning head a little further from the rotor disk.

☞ The density of the scanning head falls with rising of illumination of the room. It might be advantageous to darken the room. Avoid direct sunlight.

2.2. Scanning of LED's

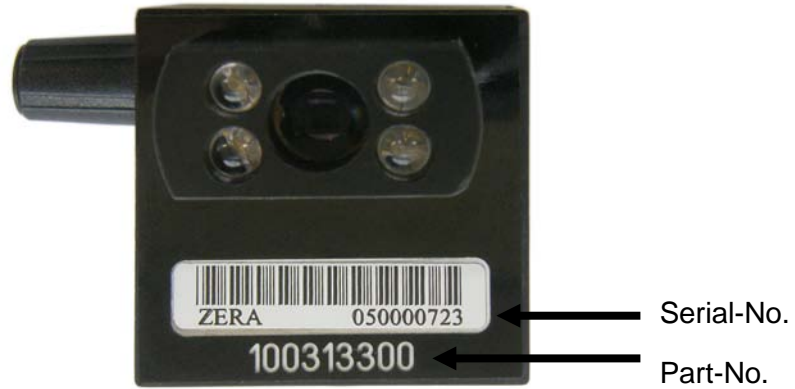
For the scanning of LED's place the scanning head in front of the LED in approx. 35 mm distance. The switch on the rear side must be in the lower position („LED“ see **chapter 2.3.2.**). The potentiometer of the TK326 has no influence on scanning. The scanning head is positioned in front of the diode to be scanned in approx. 35 mm distance. The diode on the rear of the scanning head flashes in time with the pulse transmission.

☞ For difficult scanning meters:

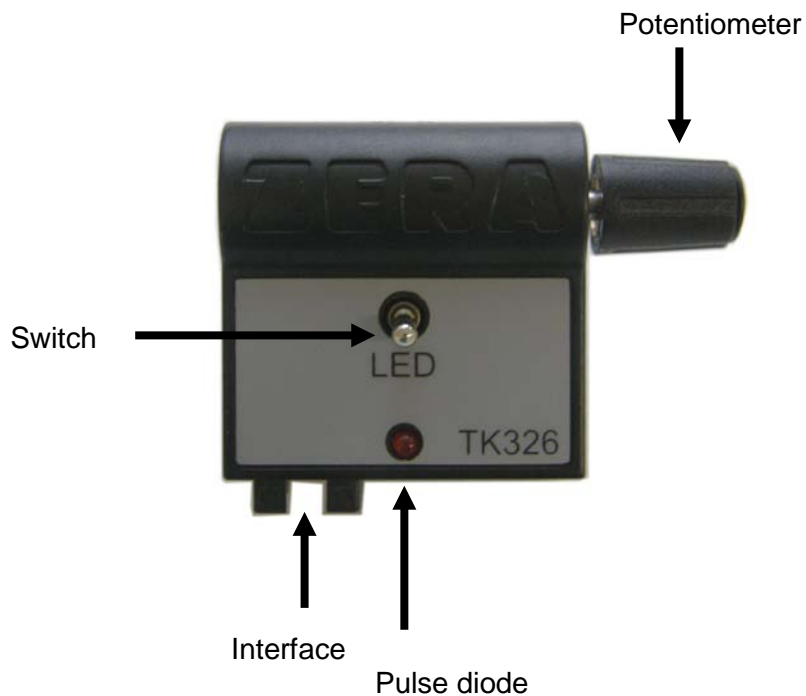
The density of the scanning head falls with rising of illumination of the room. It might be advantageous to darken the room avoid direct sunlight.

2.3. Views of the TK326

2.3.1. Front view of the TK326



2.3.2. Rear view of the TK326

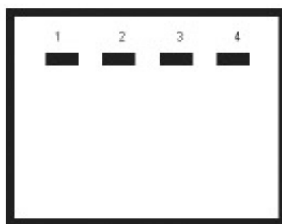


2.4 Technical data of TK326

Operating voltage: 12 V \pm 2 V DC
 Current input: approx. 60 mA
 Output: 12 V / max. 50 mA
 Temperature range: 0 ... + 70° C

Connector: RJ10 4-pole

RJ 45

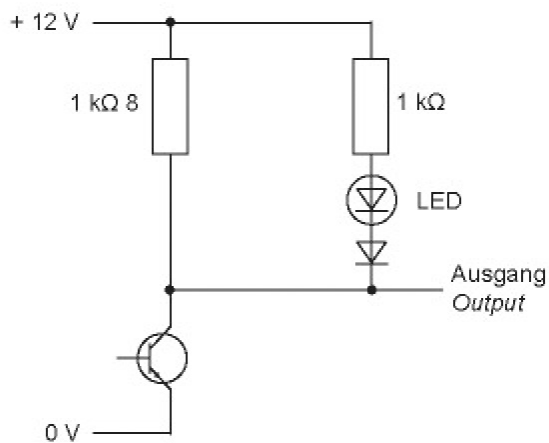


Pin 1 not used
 Pin 2 0 V
 Pin 3 Output
 Pin 4 + 12 V

View from rear side

Dimensions: 37 x 40 x 41.5 mm (W x H x L)

Output circuit:



Scanning of LED's :

Wavelength: 450 ... 950 nm
Distance to meter LED: 25 ... 50 mm

Pulse data:
max. frequency 1000 Hz
max. rising time 20 μ s
min. pulse width 100 μ s
max. falling time 20 μ s
min. pulse pause 400 μ s

Squarewave 1:1:
max. frequency 1000 Hz
max. rising time 20 μ s
max. falling time 20 μ s

Squarewave 1:1, Amplitude modulation 8 kHz:
max. frequency 500 Hz
max. rising time 20 μ s
max. falling time 20 μ s

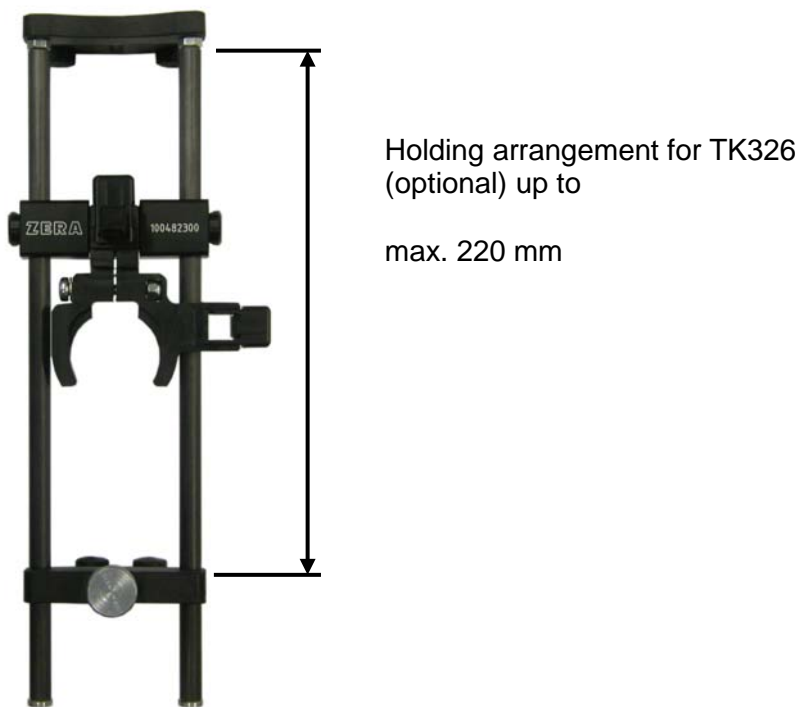
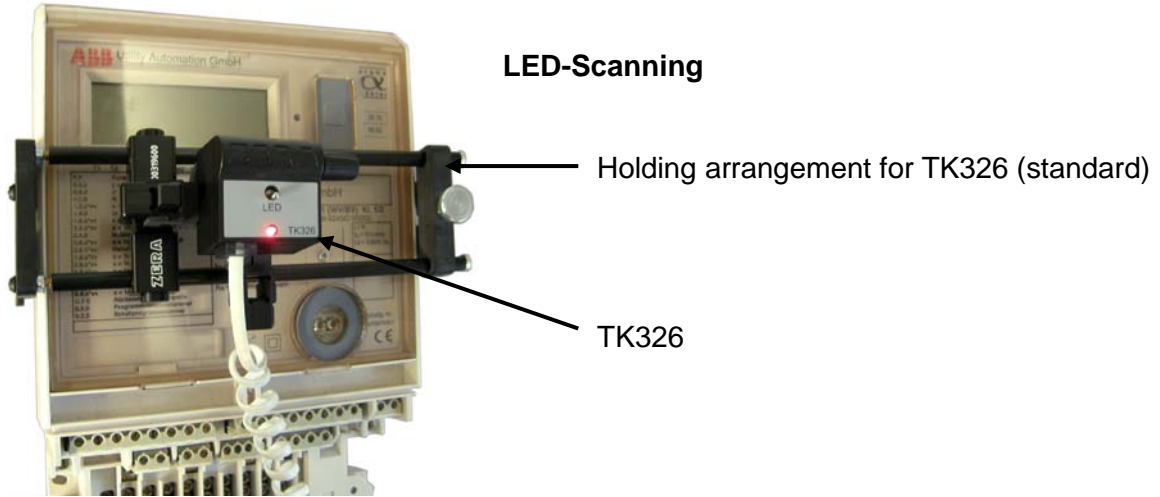
uncertainty of switching edge detection $\pm 1 \mu$ s

Rotor marks scanning:

wavelength LED in front 450 nm
distance to rotor disk 25 ... 45 mm
uncertainty of switching edge detection $\pm 1 \mu$ s

2.5 Using the TK326 with holding arrangement

Examples for horizontal and vertical fixing at the meter



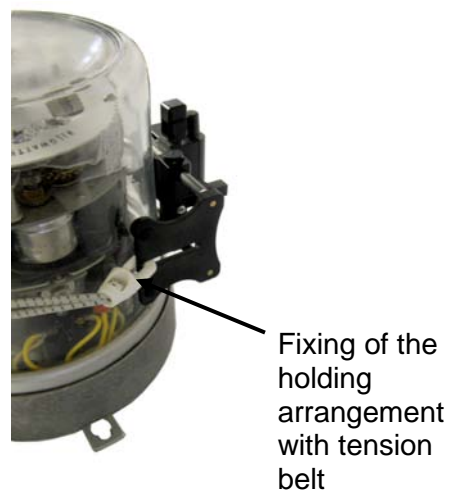
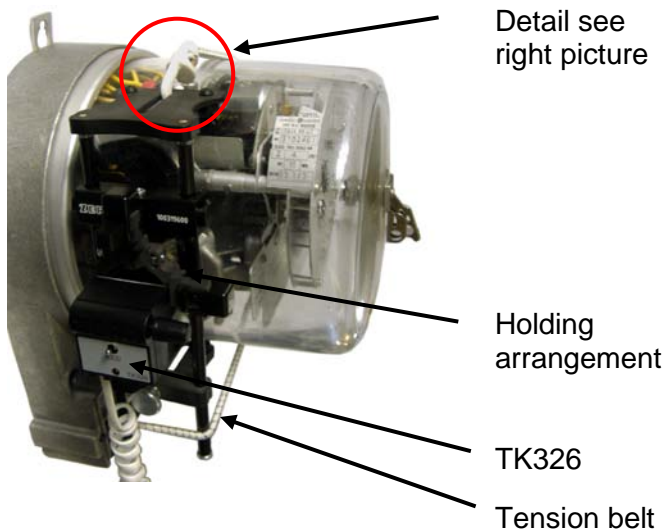


Scanning of rotor marks



Scanning of rotor marks

**Scanning of rotor marks (sideways)
at electrical meters with bell jar**



3. Service

If you have technical questions, please contact our service department along with the following information:

- serial-number of the scanning head (position see **chapter 2.3.1.**)
- commissioning number
- detailed description of the problem

