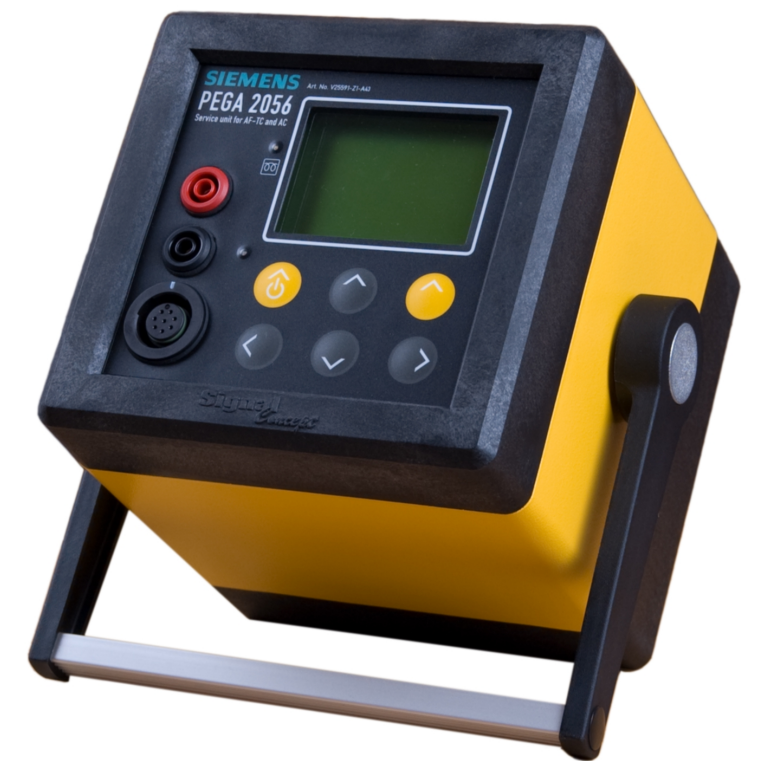


***Service Unit for Siemens  
Audio Frequency Track Circuits  
and Axle Counters***

---

***SICO 2056 PEGA***

**M A N U A L**





7.3 Accuracy Specification

Function	Range of indication	Accuracy		Conditions
		Measuring error: ± (% of measuring result + % of full scale)		
U DC U60   U24 Ur1   Ur2 U12   Uv1  Uv2	200 mV ... 1.999 V	0.2 + 0.3		via 4 mm sockets: U <sub>meas</sub> ≥ 0.7 V via counting point adapter <sup>2)</sup> : 0.7 V ≤ U <sub>meas</sub> ≤ 75 V
	2.00 ... 19.99 V	0.3 + 0.1		
	20.0 ... 200.0 V	0.3 + 0.1		
U AC	50 mV ... 260.0 V	1.5 + 0.05		U <sub>meas</sub> ≥ 18 V 50 Hz ≤ f <sub>meas</sub> ≤ 60 Hz
Frequency   fs   f1   f2	50 Hz ... 99 kHz	01 + 0.01		f <sub>meas</sub> > 100 Hz via 4 mm sockets: 50 mV ≤ U <sub>meas</sub> ≤ 200 V via counting point adapter <sup>2)</sup> : 50 mV ≤ U <sub>meas</sub> ≤ 60 V
GLS		f <sub>meas</sub> = 9.5 kHz	f <sub>meas</sub> = 10.5 ... 14.5 kHz	1)
	20.0 mV ... 199.0 mV	1.0 + 0.1	1.0 + 0.2	U <sub>meas</sub> ≥ 100 mV
	200 mV ... 1.999 V	1.0 + 0.05	1.0 + 0.05	
	2.00 V ... 19.99 V	1.0 + 0.05	1.0 + 0.05	
	20.0 V ... 200.0 V	1.0 + 0.05	1.0 + 0.05	
FTGS / TCM		f <sub>meas</sub> = 4.75 kHz ... 9.5 kHz	f <sub>meas</sub> = 10.5 ...19.5 kHz	1)
	20.0 mV ... 199.9 mV	1.5 + 0.1	1.5 + 0.2	U <sub>meas</sub> ≥ 100 mV Modulation: Δf = ±64 Hz f <sub>shift keying</sub> = 51.75 Hz
	200 mV ... 1.999 V	1.5 + 0.05	1.5 + 0.05	
	2.00 V ... 19.99 V	1.5 + 0.05	1.5 + 0.05	
	20.0 V ... 200.0 V	1.5 + 0.05	1.5 + 0.05	
uE1   uE2		f <sub>meas</sub> = 43 kHz ± 1.5 kHz for ZP43 f <sub>meas</sub> = 9.83 kHz ± 0.3 kHz for ZP70		50 mV ≤ U <sub>meas</sub> ≤ 20 V
	50.0 mV ... 199.9 mV	0.5 + 0.5		
	200 mV ... 1.999 V	0.8 + 0.1		
	2.00 V ... 20.00 V	0.8 + 0.1		
uL <sup>2)3)</sup>		2 kHz ≤ f <sub>meas</sub> ≤ 10 kHz applies to sinusoidal signals only		Interference suppression: A <sub>LP</sub> > 40 dB for f < 100 Hz
	50.0 mV ... 200.0 V	2.0 + 0		0.4 V ≤ U <sub>meas</sub> < 3.5 V

1)

	f <sub>meas</sub> = 4.75 ... 19.5 kHz Channel spacing ≥ 500 Hz
Adjacent channel attenuation	> 46 dB
Attenuation for 2 channel spacing	> 54 dB

<sup>2)</sup> The accuracy specifications apply not only when using the 4 mm sockets (L, K) but also when connecting the counting point adapter (SICO 2056 PEGA Counting Point Adapter ZP43 E/M resp. SICO 2056 PEGA Counting Point Adapter ZP70 E/M) to the socket for peripheral devices (J).

<sup>3)</sup> The measuring result shown in the SICO 2056 PEGA can vary by up to 11 % compared to the PEGA 1211, since the SICO 2056 PEGA has a RMS indication and the PEGA 1211 an ARV indication (average rectified value).

Dear customer,

Thank you for choosing the Service unit for Siemens audio frequency track circuits and axle counters SICO 2056 PEGA. You have purchased a high quality technical device used in the industrial field. We hope that all of your expectations are met and that we are able to support your work.



Signal Concept GmbH confirms the conformity of the device according to the directives given by the European Parliament and Council 2004/108/EC (EMC-Directive), 2006/42/EC (Machinery Directive), 2006/95/EC (Low Voltage Directive), 85/374 EEC (Product Liability Directive), 2002/95/EC (RoHS Directive) and 2002/96/EC (WEEE Directive).



Signal Concept GmbH holds a Quality Management (DIN EN ISO 9001:2015), which is checked annually by TÜV Rheinland as accredited organization.



The service unit SICO 2056 PEGA complies with the regulations and requirements of the German Federal Railway Authority Eisenbahnbundesamt (EBA).

Type approval number: 3335958/0/15  
-refers to the original German edition-

This manual serves as an introduction to your new device. Please read it carefully for your own protection. Furthermore, it enables you to use all functions properly. Please follow all directions and hints to avoid accidents with persons and damages of the device.

The manual is part of the device. The user has to keep it until the disposal of the device. When handing the device to other users, the manual must be given too.

Gross weight 3.7 kg  
Commodity code 9030 3100  
Country of origin Germany

Document no.:	2056 B	Copyright © 2025, Signal Concept GmbH All rights reserved. All data, properties and descriptions given in this operating manual may be changed at any time without giving notice.
Siemens order no.:	V25591-Z1-A43	
Version:	13	
Date:	15/05/2025	
Author:	Kleinstück / Wendt / Chemnitzer	

Accessory

Included in the delivery are the following parts. Please check if all of these components were supplied. If parts are missing or damaged, please contact your reseller.

If you wish to purchase spare parts or additional accessory, you can order the items via Siemens (applies for products with a Siemens order number) or Signal Concept GmbH. Please find the manufacturer’s address on page 20.

Pieces	Item name	Order number Siemens AG	Order number Signal Concept GmbH
1	SICO 2056 PEGA Service unit for AF-TC and AC	V25591-Z1-A43	105060
1	SICO 2056 PEGA Counting Point Adapter ZP43 E/M	L25010-A2-L736	105061
1	SICO 2056 PEGA Accessory set:	L25010-A2-L737	100584
	1 Connecting line 4 mm, blue, 100 cm		
	1 Connecting line 4 mm, red, 100 cm		
	1 Adapter cable, 2 mm to 4 mm, blue, 60 cm		
	1 Adapter cable, 2 mm to 4 mm, red, 60 cm		
	2 Reducing plug 4 mm to 2,3 mm		
1	Accumulator Li-Ion PA-LH201.K01.R001	L25010-A2-L738	105010
1	SICO 5007 Charger for Lithium-Ion Cells type PA-LH201.K01.R001, manual included	L25010-A2-L739	105050
1	Transport case	---	100507
1	SICO 2056 PEGA Manual	---	105065
1	SICO 2056 PEGA Acceptance test certificate 3.1 to BS EN 10204	---	On request
1	SICO 2056 PEGA Data cable USB	L25010-A2-L740	105063

Optional Accessory

Furthermore, we recommend the easy to use Rail Clip Contacts SZ 1103 for connecting the measuring lines to the rail.

Item name	Order number Siemens AG	Order number Signal Concept GmbH
Rail Clip Contacts SZ 1103	L25010-A2-G503	100182
SICO 2056 PEGA Counting Point Adapter ZP70 E/M	L25010-A2-L741	105062
Accessory kit for FTGS / GLS	W25533-W4-A3	---
SICO 2056 PEGA Data cable RS232	A2V00001222354	105064

7 Technical Data

7.1 General

Input resistance	≥ 1 MΩ
Connections	4 mm safety sockets (L, K) 8 pole socket on front (J)
Power supply	1 accumulator Li-Ion type PA-LH201.K01.R001 or 3 batteries / accumulators size AA; Please consider the battery’s temperature range regarding its area of operation.
Charging time of accumulator Li-Ion	approx. 3 hours
Protection class	II
Overvoltage category	III
Permissible maximum input voltage	300 V <sub>eff</sub> (4 mm sockets) / 100 V <sub>eff</sub> (8 pole socket)
IP code display unit	IP 54
Operating time	> 8 hours (at 20 °C, accumulator Li-Ion type PA-LH201.K01.R001, fully charged)
Operating temperature range	-40 °C ... +70 °C When operating the tester at temperatures less than -20 °C a doubling of the specified measuring errors is permissible. When operating the tester at temperatures less than -25 °C the function of the display is reduced. Please consider the battery’s temperature range regarding its area of operation.
Storage temperature range	-40 °C ... +70 °C Please consider the battery’s temperature range regarding its area of operation.
Voltage resistance to conducting parts of housing	2,5 kV
Dimensions with handle	170 x 145 x 155 mm
Weight with accumulators	max. 1.5 kg

7.2 Inspection

It is recommended to have the device inspected every 2 years.

6 Failures

The unit inspects itself regularly regarding its correct functioning. In case of failures information will be shown in the display.

Further possible failures and their causes:

Failure	Solution	Page
Unit cannot be switched on.	Check the batteries for charging and the contacts for cleanliness.	9
Unit does not display data during measurement.	Check the tester's connecting plug for fouling. Check if the cables going to the counting point adapter possibly are broken.	8
Status LED indicates an error (fig. 2.1 / I).	In case of failures in the tester's functioning, please contact the manufacturer.	19

This product was designed, produced and tested with due care and according to the applicable European Standards. If the device is yet not working correctly under the conditions given in this operating manual, please contact the manufacturer:

**Signal Concept GmbH**  
**Suedring 11**  
**04416 Markkleeberg**  
**GERMANY**  
  
Phone: +49 (0) 34297 14390  
Fax: +49 (0) 34297 143913  
E-mail: info@signalconcept.de

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1 Safety Instructions

The Tester SICO 2056 PEGA is to be used exclusively according to the description in this manual. Otherwise, the protection given by the tester can be limited.

**! Warning !**

To avoid the damage of persons or products, mind the following guidelines:

Consider the valid guidelines for working on railway facilities when operating the tester SICO 2056 PEGA.

The junction box and the cables attached must be regarded as energised!

Do not use the SICO 2056 PEGA when it shows a malfunction or when it is damaged. Before using the tester, check the housing for outer damages.

Before opening the battery compartment, remove all connected cables from the tester.

Check accessories (connecting lines, reducing plugs, and counting point adapters) concerning visible insulation faults. Replace damaged accessory before using the tester.

Please consider that for safety reasons you must not put the 4 mm plug and the round plug simultaneously.

Before every single measurement make sure to use the correct socket. Do not exceed the input limit to avoid a damage of the tester.

The manufacturer or a company authorized by the manufacturer are the only ones being responsible for repairing.

Do not use the tester in environments with explosive gases, steam or dust.

Voltages higher than 42 V occur at some parts inside the tester. For that reason, do not start or run the tester while it is opened.

Qualified professionals only may use the SICO 2056 PEGA.

Do not drop or shock the SICO 2056 PEGA.

Store and transport Lithium Ion accumulators well protected against shunt fault.

**Disposal**  
Electric and electronic devices must not be given to the general rubbish, since they mostly contain noxious elements. Instead, dispose them at the collecting points for special waste.

The heating activity is indicated by the Status LED (fig. 2.1 / I, upper left in the display). Pre-heating can be stopped by pressing any key (except the on/off key).

5.3 Functions of the Status LED

The Status LED (I) indicates the operating condition of the display heating. Furthermore, it informs about system errors during switch on and off of the device. In case of repeating error indication, please contact the manufacturer (see page 20).

LED condition	Function	Explanation
Switch on		
Flashes 1 x	Self-test	When switching on the tester
Flashes 3 x	Heating is deactivated.	Heating foil is defective or not present.
Flashes 5 x	Heating is deactivated.	Sensor for temperature is defective.
In operation		
Flashes in short intervals	Display is preheated.	<b>The tester is yet not ready for operation!</b> The flashing frequency lowers with rising display temperature.
Flashes in wide intervals	Display is heated.	<b>The tester is now ready for operation.</b>
Permanently illuminated	Preheating was cancelled and display is heated.	Depending on temperature the display is well, badly or non-readable.
Switch off		
Flashes 1 x short 1 x long	Storage error	During operation an error occurred with the internal flash memory.
Flashes 2 x short 1 x long	RTC error	During operation an error occurred with the real time clock.
Flashes 3 x short 1 x long	Communication error	During operation an internal communication error occurred.

month, year, hour and minute in the same manner. Choose the categories with the arrow keys ◀ and ▶. The entry ends with the confirmation ✓ or cancel it with ↵.

5.1.5 Recording

The SICO 2056 PEGA can be used for long-term measurements and ballast recording. The measuring result is stored automatically in defined intervals or in case of changes in the result in a scheduled period.

The files generated by the tester are stored in the root directory. The file name consists of the date and additionally of a consecutive number to enable several recordings per day (JJMMTT\_0.LOG). The first line of the file contains the date of recording. Every following line consists of the current time and the measuring result to be stored.

A recording can be started anytime during displayed measuring result. Please press the left multi-use function key (B) and select recording from the menu item setting. In the menu displayed afterwards you can do more settings like date/time, recording period, and trigger mode. In the trigger mode *time* you set the interval for storing the results. In the trigger mode *value* the deviance to the previous result is set, which determines when the current result shall be stored.

Finally, confirm the selection with “Start measurement” and the recording starts. The note “REC” in the left upper corner of the display informs you about the running recording. The recording stops as soon as a key is pressed, “REC” disappears.

5.1.6 Device Information

The following details are shown when selecting this menu item

- Serial number (SN),
- Software (SW) edition, and
- Last calibration date (D).

5.1.7 Service

For calibration purposes measuring data can be transferred in real time via the interface RS232 (cable can be ordered as optional accessory). The selection has to be confirmed (selection ON, then ✓). Format means to format the internal storage.

5.2 Display Heating

LC displays are hardly readable at temperatures below -20 °C. Therefore, the SICO 2056 PEGA display is equipped with a display heating. The display is preheated at temperatures below -10 °C after switching on the tester. Moreover, it heats with less power at temperatures below 0 °C to secure the legibility.

2 Working Principle



Fig. 2.1 Overview of the tester

- |             |   |          |   |
|-------------|---|----------|---|
| <b>A</b>    | Display   | <b>I</b> | Status LED (see page 19)                      |
| <b>B</b>    | On / Off and Multi-use function key (follow notes given in display) | <b>J</b> | Socket for peripheral devices (i. e. adapter) |
| <b>C</b>    | Multi-use function key (follow notes given in display)              | <b>K</b> | 4 mm measuring socket, negative input         |
| <b>D..G</b> | Menu navigation   | <b>L</b> | 4 mm measuring socket, positive input         |
| <b>H</b>    | Sensor for brightness used for display lighting                     | <b>M</b> | Handle release button (press on both sides)   |
|             |   | <b>N</b> | Carrying handle / Put up handle               |

## 2.1 Fields of Application

The Tester SICO 2056 PEGA is used to do adjustments, control measurements and testing on both audio-frequency track circuits of the types FTGS 46, FTGS 917, GLS 9/15, and TCM and on counting point ZP43 E/M respectively ZP70 E/M.

To connect the tester to the counting point, use the appropriate counting point adapter. For details, please read chapter 4.2 Axle Counter.

## 2.2 Display Unit

The sturdy and stand alone plastic housing has a carrying handle, which can be latched (fig. 2.1 / M) every 30 deg. or set upright. On the front there are keypad, display, connections, the sensor for brightness, and the indication for display heating. The tester is operated via six keys: four grey keys for navigation (arrow keys) and two yellow multi-use function keys. The display is illuminated automatically, depending on the light incidence to the sensor (fig. 2.1 / H).

The user operates the tester and enters data via the four grey arrow keys and the two yellow multi-use function keys. The left multi-use function key additionally is the on/off key.

Generally, all settings and selection are realized by the four arrow keys. At the display's bottom all keys which can be pressed are indicated. As long as the user can follow the menu downward the arrow ▼ is visible.

The present function of the multi-use function keys is always indicated.

On the front side of the tester are two 4 mm laboratory safety sockets used to connect single measuring lines with 4 mm safety plugs and an 8 pole round socket used to connect measuring adapters (ZP43 E/M and ZP70 E/M) or to connect the tester via the data cable to a PC.

The electrical connection of the tester to indoor or outdoor plants of track circuits is made by means of the leads supplied. On the tester's left side there are two 4 mm safety sockets (fig. 2.1 / L+K), in which 4 mm pin plugs fit. At the equipment to be tested, the connection can be made with 4 mm or 2 mm plugs. If direct contact with the rail is necessary, this can be conveniently done with the Rail Clip Contacts (see p. 4, Optional Accessory). If DC voltage is to be measured, the red socket (fig. 2.1 / L) denotes the positive input.

### Attention!

The maximum permitted input voltage is given on page 21. It must not be exceeded.

## 5.1.3 Display

### 5.1.3.1 Display – Start SLOW

You can turn on the display actualisation when measuring track circuits. In this setting you determine if the measurement starts in mode <slow on> (fast) or <slow off> (slow).

### 5.1.3.2 Display – Bar

In the operation mode track circuits you can decide to display a bar in the lower part of the display during the indication of measurement results. It can be useful when adjusting track circuit signals to amplitude maximum. The given percentage is the maximum deviation from the initial value. The bar moves to the middle when pressing the right multi-use function key (C).

### 5.1.3.3 Display – RMS / Freq

Switch on the RMS / Freq function in mode Multimeter to get the following displayed additional to the measuring result: when measuring voltage AC the corresponding frequency and when measuring frequency the corresponding voltage result.

**This setting is not saved after switching off the tester.**

### 5.1.3.4 Display – Limit Values

The limit values for the axle counting points can be switched on and off.

There will be no limit value inspection in automatic mode when the function is switched off.

**This setting is not saved after switching off the tester.**

### 5.1.3.5 Display – Automatic stop

Switch on automatic stop in automatic mode and the SICO 2056 PEGA pauses when identifying measuring results beyond the limit values and waits for confirmation by the user. Switch off automatic stop and the SICO 2056 PEGA marks the exceeding measurement result with "Attention!" and then continues with the measurement in automatic mode.

### 5.1.3.6 Display – Switch off (Automatic Shutdown)

For a long-term measurement it could be useful to deactivate the automatic shutdown. Thus, you can monitor a measuring value over a longer period of time without operating the SICO 2056 PEGA.

**This setting is not saved after switching off the tester.**

## 5.1.4 Date / Time

The display shows date and time. If you wish to update them, press the button "set". First, you set the *day* with the arrow keys ▲ and ▼. Confirm the day with ✓. Afterwards you set



5 Functions

5.1 Menu – Settings

By pressing the left multi-use function key (B) you can realize certain settings on the device.

- Contrast
- Brightness
- Display
  - Start SLOW
  - Bar
  - RMS / freq
  - Limit value
  - automatic stop
  - switch off
- Time / date
- Language
  - German
  - English
  - French
  - Spanish
- Recording
- Device Information
- Service
  - RS232
  - Format

Press ◀ to leave the menu.  
Press ↶ to return to the last measurement.

5.1.1 Contrast

In “Contrast” you can set the display’s contrast. At temperatures below 0 °C the contrast is adjusted automatically, since LC displays respond more slowly at lower temperatures.

5.1.2 Brightness

You can set the brightness of the background light. The background light turns on automatically when the sensor (H) diagnoses dark surroundings. Please note, that setting the brightness too light causes higher battery consumption.

2.3 Power Supply

The Li-Ion accumulator type PA-LH201.K01.R001, which is included in the accessory, supplies the tester with power. Otherwise, you can also use three batteries or accumulators size AA (see chapter 7.1 General).

The Li-Ion accumulator needs to be charged with the supplied Charger SICO 5007 before the start-up of the device. In case you use accumulators type NiMH, you have to charge them with a standard charger, which are commercially available.

Attention!

Do not replace the supplied accumulator Li-Ion, type PA-LH201.K01.R001 for other or similar accumulators.

For charging the supplied Li-Ion accumulators PA-LH201.K01.R001 only use the Charger for Lithium-Ion Cells type PA-LH201.K01.R001 SICO 5007 (included in delivery).

Primary cells must not be recharged (risk of explosion).

Disconnect all measuring lines from the device before opening the battery compartment. Open the battery compartment, which is located on the tester’s backside, with a coin. When inserting the Li-Ion accumulator for the first time or changing completely discharged batteries you might have to set date and time.

During operation the battery icon in the display’s right upper corner informs you about the remaining capacity of the inserted batteries/accumulators. If batteries/accumulators are low, a notice appears in the display. The tester has an automatic shutdown mode to avoid irreversible discharge of the accumulator. Date and time will remain for approx. 24 hours.

Even in case of sufficient battery charge the device turns off automatically. When not pressing a button within five minutes, a flashing icon appears in the display. Otherwise, press any button to avoid the shutdown. The automatic shutdown mode shall prevent the discharging of the batteries to enable a long-term availability of the tester. The user can deactivate the shutdown mode as described in chapter 5.1.3.6.

In extreme cold temperatures batteries and accumulators lack capacity. For the best possible measurement carry them in the warmer pockets of your clothing and do not insert them in the tester before you have reached the measuring site. For the operation at temperatures lower than -10 °C (14 °F) we recommend Lithium batteries (LiFeS<sub>2</sub>, size AA).



Please remove batteries/accumulators from the battery compartment when you plan to store the device for a longer period.

2.4 Used Icons


The tester operates menu-driven. The functions of the two yellow multi-use function keys (fig. 2.1 / B+C) located in the upper line are always shown in the display. The four grey arrow keys serve for navigating the menu, for cursor control or for changing the displayed values:

✓	Confirm entry
↶	Back (in menu) or cancellation
▲	Selection, up
▼	Selection, down
◀	Selection, left
▶	Selection, right

Following big icons can flash in the display:

	Automatic shutdown mode (see 2.3 Power Supply)
	Under voltage, (see 2.3 Power Supply), Change batteries!

2.5 Shutdown the Unit

 Press this button until “Good bye“ appears in the display.  
A shutdown is possible at any time.

2.6 Maintenance

It is recommended to clean the device after use with a damp, solvent-free cloth.

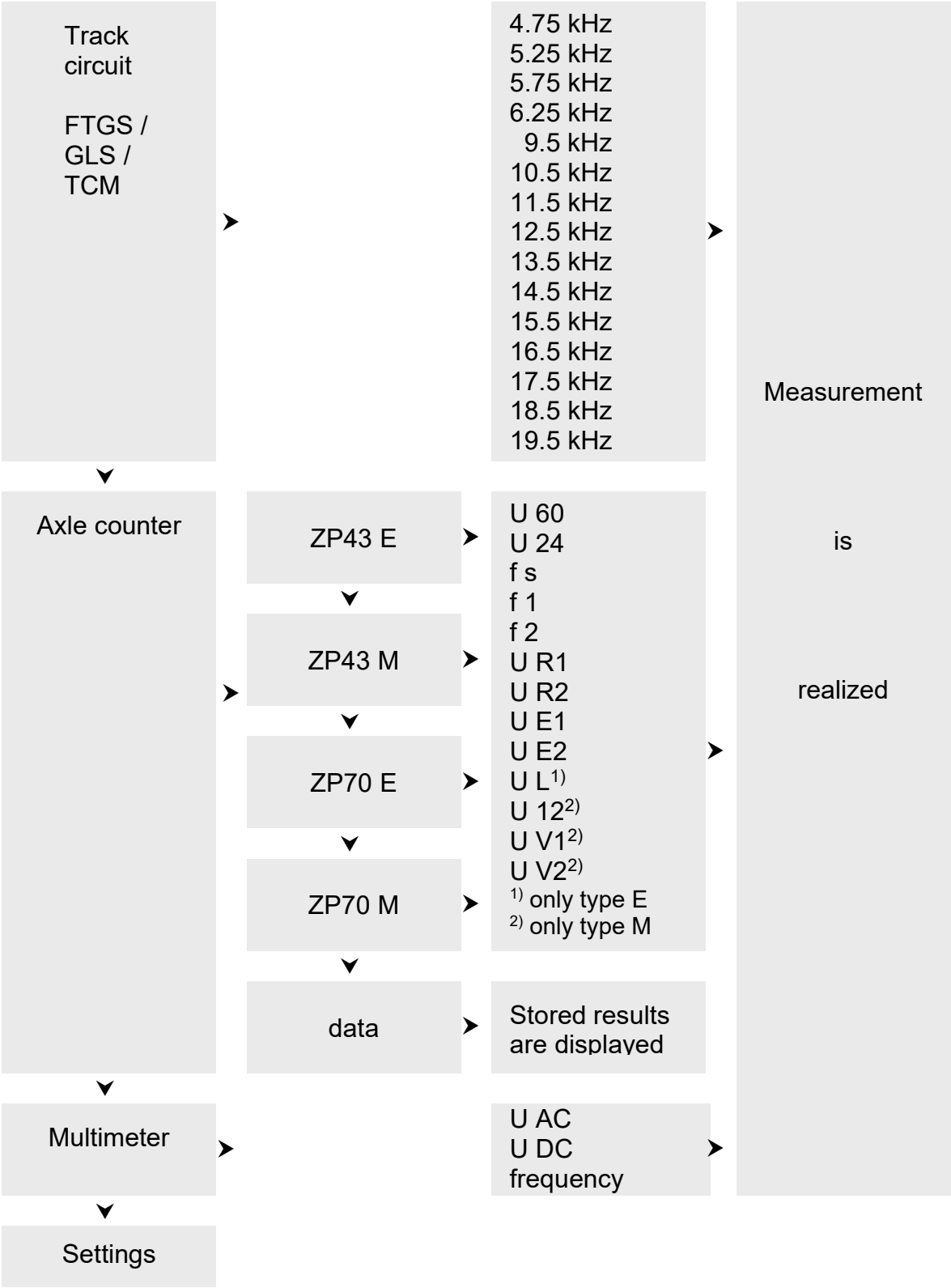
2.7 Transport and Storage

To protect the tester from dust and dirt as well as from shakes, use the supplied transport case.

Storage should be in a cool and dry place.

4.4 Menu

After switching on the tester the SICO 2056 PEGA starts with the measuring menu. Select the operation mode and the function with the arrow keys and start the measurement. The table below shows how to start a measurement.



To enter data press the arrow key ► (E). A window opens. A maximum of 18 characters can be entered in this line. After confirming the entry the window opens again and the next line can be edited.

You can also update date and time within this window. Select the first line and press the arrow key ► (E).

To store all entries finally, press the right multi-use function key (C) ✓. Afterwards the measurement file is stored internally. The file contains the set date, the four edited lines, the type of counting point, and all measured results.

You can cancel the process at any time by pressing the left multi-use function key (B) ↵.

**Note:** The root directory has to contain the file NAMEN.TXT. The file name should be written in capital letters. Displayed in the tester are the first 30 lines. A line must not exceed 15 characters. All characters and lines, which exceed the limit won't be displayed.

You can store a maximum of 1,000 measurement reports in the tester. Beginning with the 900<sup>th</sup> measurement report the user is informed about "Attention! Memory almost full." For safety reasons we recommend to copy the reports in regular intervals to your PC and to delete them from the SICO 2056 PEGA.

#### 4.2.3.2 Reading of Stored Measurement Reports

Stored measurement reports can be directly displayed in the tester. Displayed are the last 30 measurement reports in descending order. Select *data* in the menu axle counter. After pressing the arrow key ► (E) you can select the applying measurement with the arrow keys ▲ and ▼ (D / F) and again ► (E) to get it displayed.

#### 4.2.3.3 Copying and Deleting of Stored Measurement Files

The provided data cable USB serves to copy the generated measurement reports to your PC. Before copying the reports you have to switch off the SICO 2056 PEGA (batteries are not needed). When connecting the SICO 2056 PEGA to a PC via the data cable USB a new drive is displayed on your PC (removable medium). No installation of driver is needed. This drive functions as a USB flash drive. Measuring reports can be copied, cut, or deleted. During reading and writing access the tester's front side LED (I) flashes.

Measurement reports can be deleted directly in the SICO 2056 PEGA or at the PC. In the SICO 2056 PEGA reports are deleted by formatting / quick formatting (see chapter 5.1.7 Service).

### 4.3 Multimeter

In the operation mode you can measure

- Voltage AC (mains alternating voltage),
- Voltage DC (direct voltage) or
- Frequency.

Both 4 mm safety sockets serve as measurement input. When measuring voltage DC connect the red socket (L) with the positive measuring point to avoid a measuring result with negative sign.

## 3 Start-up

---

Your SICO 2056 PEGA will work correctly when you follow the steps in this manual and mind the notes.

- Insert the supplied accumulator in the battery compartment. Ensure the correct polarity (see chapter 2.3 Power Supply).
- Press the on/off key briefly (fig. 2.1 / B, left yellow multi-use function key).

The start screen appears directly after switching on the device. It switches automatically to the first selection menu. Select operation mode and function with the arrow keys ▲ (D), ▼ (F) and ► (E). The measuring result is displayed after pressing the arrow key ► (E).

**Note:** When inserting the Li-Ion accumulator or the batteries for the first time or after a long storage without power supply you are asked to set date and time (see chapter 5.1.4 Date / Time). Afterwards, the first menu appears.

Chapter 4 informs you about its operation, the single operating modes and the realization of measurements.

## 4 Operating Modes

### 4.1 Track Circuits – FTGS GLS TCM

This mode is used for testing and measuring on audio frequency track circuits type FTGS, GLS, and TCM.

Connect the measuring lines with the tester by inserting them into the two 4 mm sockets. Since AC voltage is measured, the polarity at the input sockets is not important.

Select **FTGS GLS TCM** with the arrow keys ▲ and ▼ (D / F) and confirm with ► (E). That directs you to the menu of the corresponding measuring frequencies. In the same way you select the measuring frequency with the arrow keys. Afterwards press the arrow key ► (E) to get the measuring result displayed.

With the arrow key ◀ (G) you get back to the previous menu.

#### Display actualisation

The actualisation rate of the display can be changed during track circuit measurements. With the right multi-use function key (C) you can switch to the measuring mode **<slow>** or **<fast>**. The menu “Display” gives information about the mode, the measurement starts in. With every new measurement the measuring mode switches automatically to the mode chosen as basic setting.

You can't change the measuring mode when the bar indication is activated (to be selected in the menu “Display”).

### 4.2 Axle Counter – ZP43E/M ZP70E/M

In this mode, measurements can be made at counting points ZP43 E/M and ZP70 E/M. Depending on the model either the counting point adapter ZP43 E/M or the ZP70 E/M is needed. Connect the counting point adapter to the tester SICO 2056 PEGA via the 8 pole round socket on the tester's front. The adapter is an additional part, which switches on the testing points depending on the selected mode. Power supply, controlling and transfer of the measuring signals are realized via the cable between adapter and tester. Alternatively, for fault finding etc., there are still the two 4 mm measuring sockets as additional input. Please note for safety reasons not to connect the 4 mm plugs at the same time as the round plug.

In case you want to realize measurements and the counting point adapter is not connected to the SICO 2056 PEGA a note appears in the display, which needs to be confirmed with the right multi-use function key (C). In this case all measurements can be done via the 4 mm sockets. When using the 4 mm sockets for measuring a note appears in the display's upper left corner. But you can't realize an automatic measurement followed by data storage.

In order to avoid electric shock, connect the round plug first and then the adapter. After finishing the measurements, first remove the adapter and then the round plug.

After selecting the type of axle counting point with the arrow keys (D, F) and confirmation with ► (E) the counting point adapter connected to SICO 2056 PEGA is ready for operation and can be put into the corresponding space at the counting point. Based on the chosen function the adapter automatically switches on the appropriate counting points.

### 4.2.1 Axle Counter – Limit Values

The corresponding limit values for every type of axle counter according to Siemens installation manual are stored in the SICO 2056 PEGA. In automatic mode the user can switch on/off the report on the limit values and the comparison with these results: Settings → Display → Limit value. Please make sure that the limit values stored in the SICO 2056 PEGA correspond with the values of the axle counting point to be tested.

### 4.2.2 Axle Counter – Automatic Mode

After choosing the counting point press the right multi-use function key (C) **<auto>** to start an automatic run of all points to be tested. A connected counting point adapter is needed to measure in automatic mode. We recommend the automatic mode for daily inspections on axle counting points to receive the measured results promptly. SICO 2056 PEGA realizes all required measurements for the chosen type of axle counting point and compares the measured results with the limit values stored in the tester (see chapter 4.2.1 Axle Counter – Limit Values). In case a measured result is beyond the limit values, the automatic mode is interrupted and the measured result is displayed accompanied by “Attention”. Now the user can do adjustments at the axle counting point to regulate the result. After adjusting the value or confirming the note “Attention” with the arrow key ► (E), the measurement in automatic mode continues.

In case you do not want to interrupt the automatic mode for an identified fault, you can deactivate the function in Menu → Display → **Automatic STOP** (see chapter 5.1.3.5 Display – Automatic ).

The automatic mode is cancelled when you press the right multi-use function key (C) **<STOP>** during the automatic measurements.

### 4.2.3 Axle Counter – Measuring Results

#### 4.2.3.1 Storage of Measuring Results

After finishing the counting point measurement you can store the measured result in the measured data storage of the tester. If necessary a warning informs you about exceeded limit values. Please confirm them first.

After all counting points have been measured, press the multi-use function key (C) **<save>** to open the menu for data storage.

In case there is a file “NAMEN.TXT” in the root directory of the SICO 2056 PEGA's memory the file content will be displayed. Select a line and the chosen text will be copied in the first of the four editable lines in the protocol.

A new window opens, which enables you to complete the measurement report with individual specifications as measuring position. The window is structured as followed:

- Centre at upper screen: file name
- First line: date and time
- Line 2 to 5: to be completed individually