KMG-T

Force measuring device for testing the forces on the closing edges of automatically operated doors, gates, and barriers

Operating manual

Content

1 Brief Description

The KMG-T force tester measures the dynamic and static forces as well as the progression of forces over time on the closing edges of automatically operated doors, gates and barriers.

KMG-T can be used in two different operating modes:
In easy mode, it is a quick and easy-to-use tool for the mandatory annual inspection of doors, gates and barriers in accordance with the technical rules for workplaces like ASR A 1.7 or DHF.

In extended mode, it is used for the detailed inspection of safety in use according to the regulations and standards for quality assurance for manufacturers of doors, gates and barriers or for new installations: with automatic ready to measure mode for repeated measurements and measurement series as well as with manual ready to measure mode for tighter control over the measurement process.

2 About this Manual

Read the documentation carefully and familiarize yourself with the operation of the device before using it. Keep this document handy for future reference.
This manual describes how to use the force gauge KMG-T. KMG-T is equipped with a wireless module and therefore deployable with the service tool KMG-VISION.cloud.

Identification

Display	Meaning	Note
	Note	Offers helpful tips and information
	Objective	Denotes the objectives that is to be achieved via the steps descripted
	Step	Carry out steps

3 For Your Safety

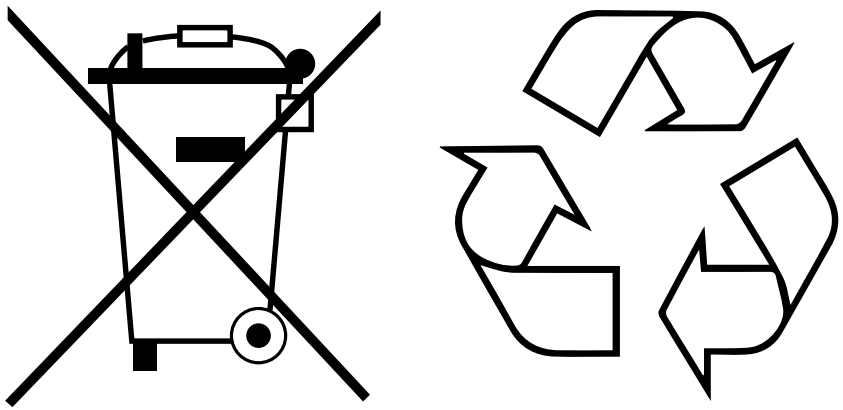
The following rules must be followed to ensure safe handling of the measuring device.

- ► Maintaining product safety/warranty claims
- ► Only operate the measuring device within the specifications given in the Technical Data (see chap. 17)
- ► Only use the measuring device properly and as intended
- ► Do not use force
- ► Do not open the measuring device
- ► Send in the measuring device for calibration every year (see chap. 14)
- ► When not in use, always store the measuring device in the case supplied and protect it from moisture and mechanical shocks
- ► The enclosed USB power supply unit must not be operated in damp rooms or outdoor areas.

➲ **Ensure correct disposal**

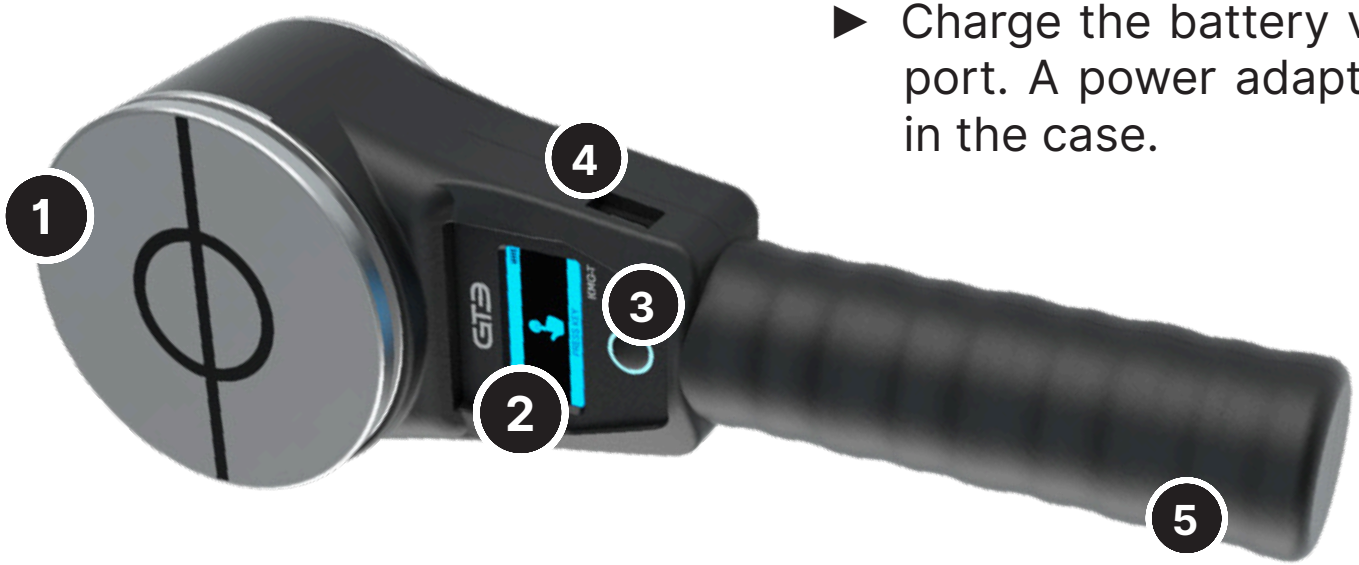
► Send the product to GTE Industrieelektronik GmbH at the end of its service life.

ⓘ We will take care of its proper and ecological disposal.



4 Setup

1. Measurement surface
2. Display
3. Key
4. USB-C port
5. Handle



For commissioning

➲ **Remove the display protective film**

► Carefully peel off the protective film

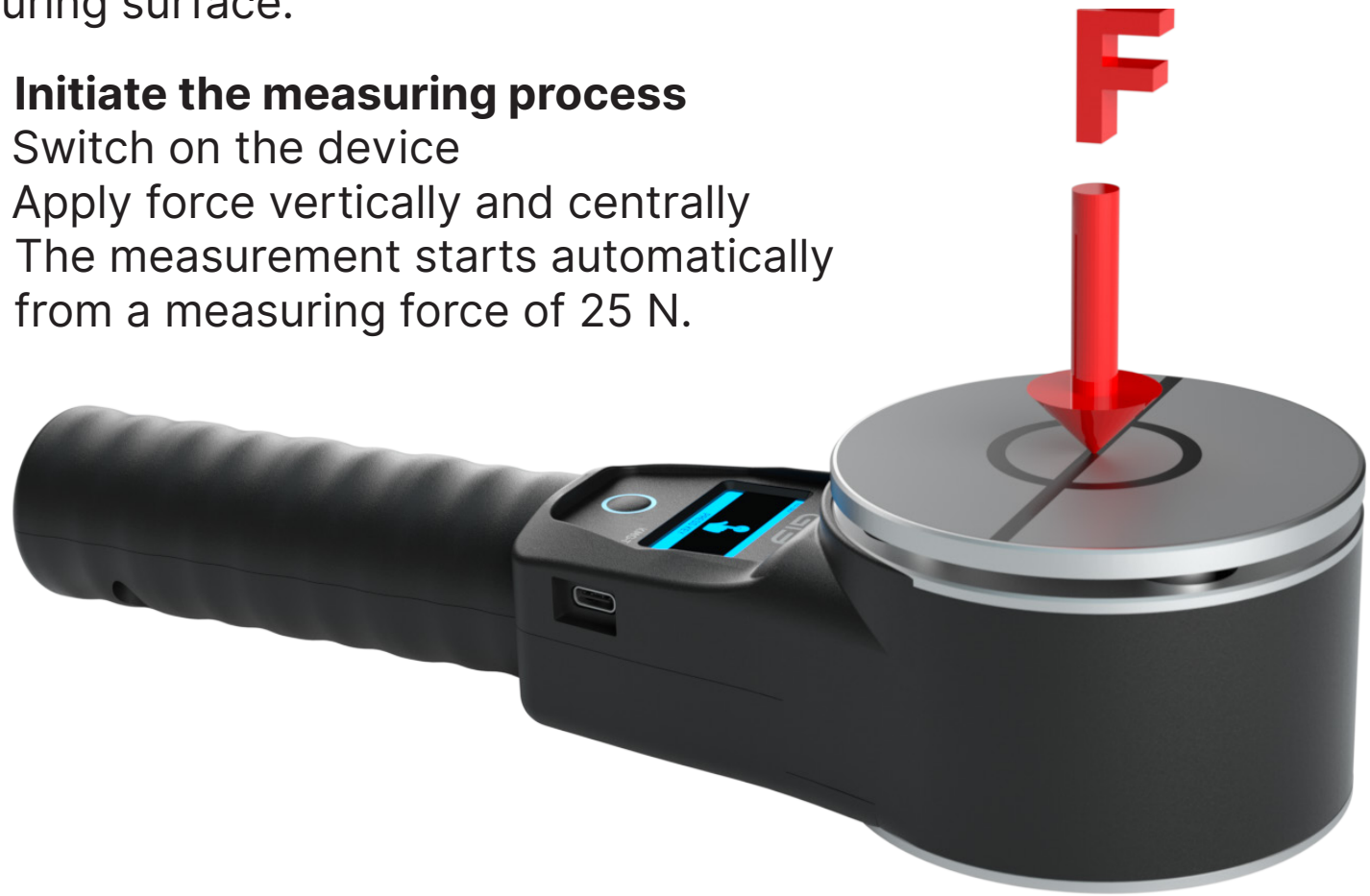
➲ **Charging the battery**

► Charge the battery via the USB-C port. A power adapter is included in the case.

5 Force Application

During the measuring process, the force must be applied correctly to the measuring surface.

➲ **Initiate the measuring process**
► Switch on the device
► Apply force vertically and centrally
ⓘ The measurement starts automatically from a measuring force of 25 N.



6 Intended Use

The KMG-T is a compact hand-held device for measuring the progression of forces over time on the closing edges of automatically operated doors, gates, and barriers, according to

- DIN EN 12453
- DIN EN 16005
- DIN EN 16361
- DIN EN 17352
- DIN EN 18650 (withdrawn)
- ASR A 1.7
- DHF protocol TS011 and TS012

The purpose is to check the safety of use of these systems and to ensure quality assurance in accordance with standards during production or annual maintenance.

► Only use the product for applications for which it was designed.
ⓘ For the maximum permissible peak force, please refer to the Technical Data (see chapter 17).

7 Force-Time Diagram

The KMG-T can measure the following dynamic and static closing forces on doors, gates, and barriers as well as the duration of the force application and displays the following:

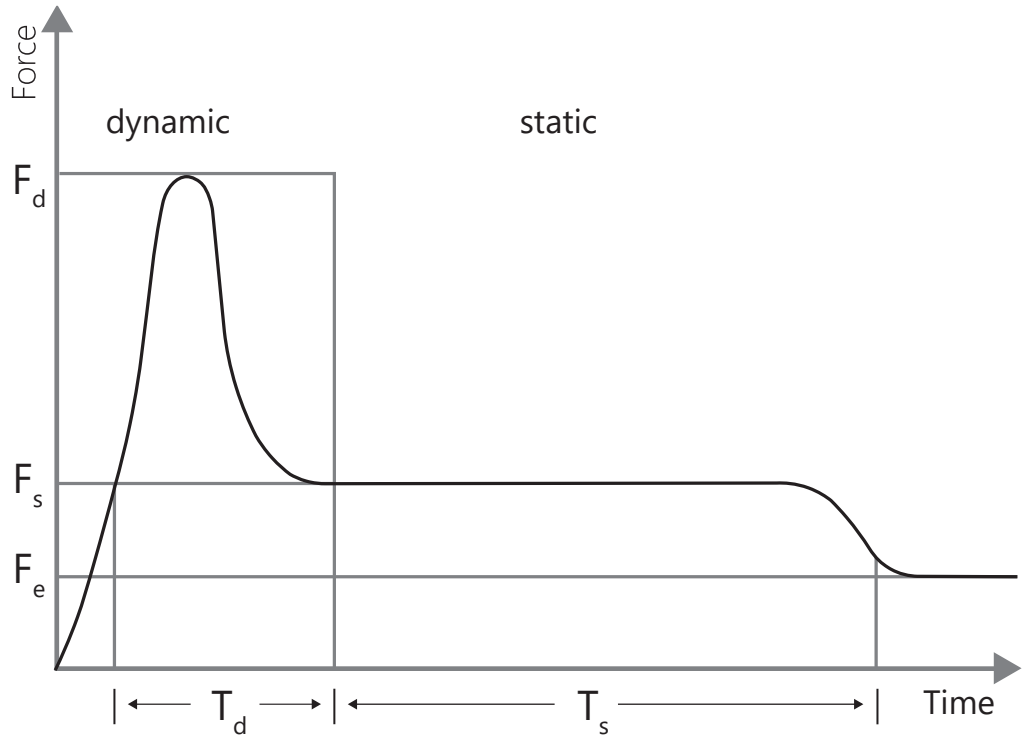
F_d maximum dynamic force (permissible peak force)

F_s maximum static force

T_d duration, in which the measured force exceeds 150 N

F_e end force

#ID measurement ID



8 Operating Mode and Ready to Measure Mode

Two different operating modes can be selected for operation:

Easy operation mode

- For maintenance service providers, fitters, tradesmen
- For annual maintenance in accordance with ASR A 1.7
- With quick large display of the maximum force applied

Extended operation mode

- For manufacturers, experts, installers, measuring service providers of door, gate or barrier systems
- In quality assurance

  Readiness to measure in the extended mode
  Automatic: For quick repeated measurement series at the same place. The device automatically switches to recording mode (REC).
  Manual: For increased control over the measuring process. The device is initially in readiness to measure before each measurement („Press key“). Only after the key is manually pressed, the device goes into recording mode (REC).

9 Key for Operation Instructions

Use the key to navigate through the menus and activate the functions. Depending on how long you press the key, the following is meant:

short	< 3 s
long	> 3 s (in the extended operation mode)
long	> 5 s (in the easy operation mode)

If you press the key for a long while, the device switches off in both cases, i. e. in the easy and in the extended operating mode.

Navigation:

Select menu item, navigate through the menu	short press
Open submenu	long press
Confirm selection	long press
Exit menu/leave measurement	long press

ⓘ Selected functions are framed with a rectangle in the submenu.

10 Switching On and Off

10.1 Switch On

➲ **Start the device by pressing the key**

► Short press	The device starts in the last operating mode used.
► Long press (> 3 s)	The device starts and changes the operating mode.

ⓘ The operating mode can only be recognized during operation.

10.2 Switch Off

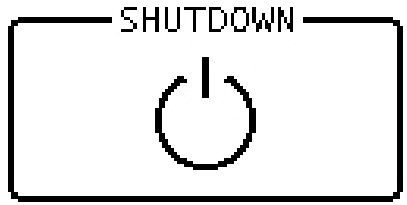
ⓘ Pressing the key continuously for at least 5 seconds switches the device off in any situation.

Easy mode:

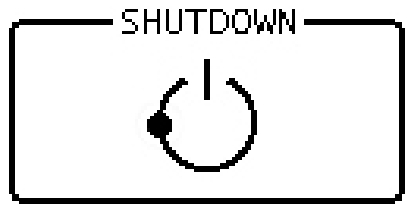
► Press key > 5 s

Extended mode:

➲ **Exit measurement**
► Long press (> 3 s),
until the menu display appears.

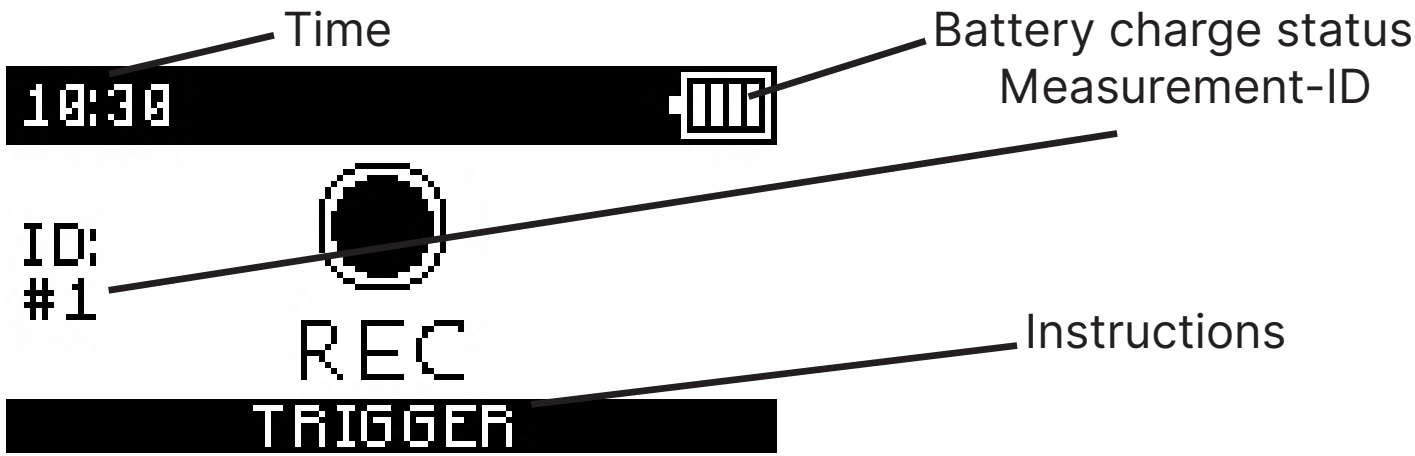


➲ **Shutting down the device**
► Long press (> 3 s),
after releasing the key the device switches off.



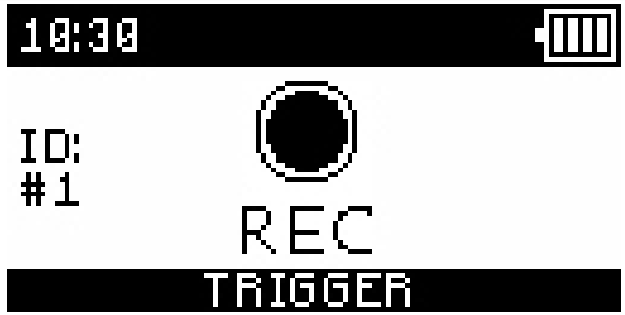
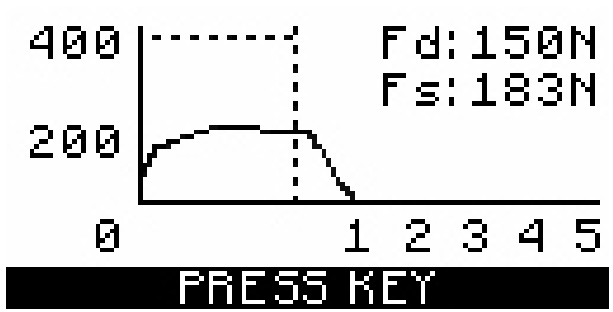
11 Display Readings During Measurement

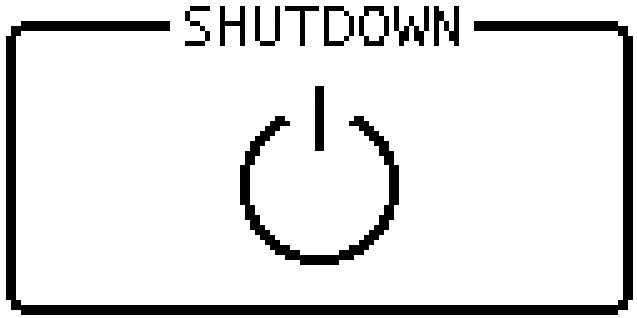
During measurements, the display shows the time, battery charge status, measurement ID and instructions:



During measurement:

Display readings	Function
SVNV1.0.0 Serial:0282222 GTE	**Starting up the device**

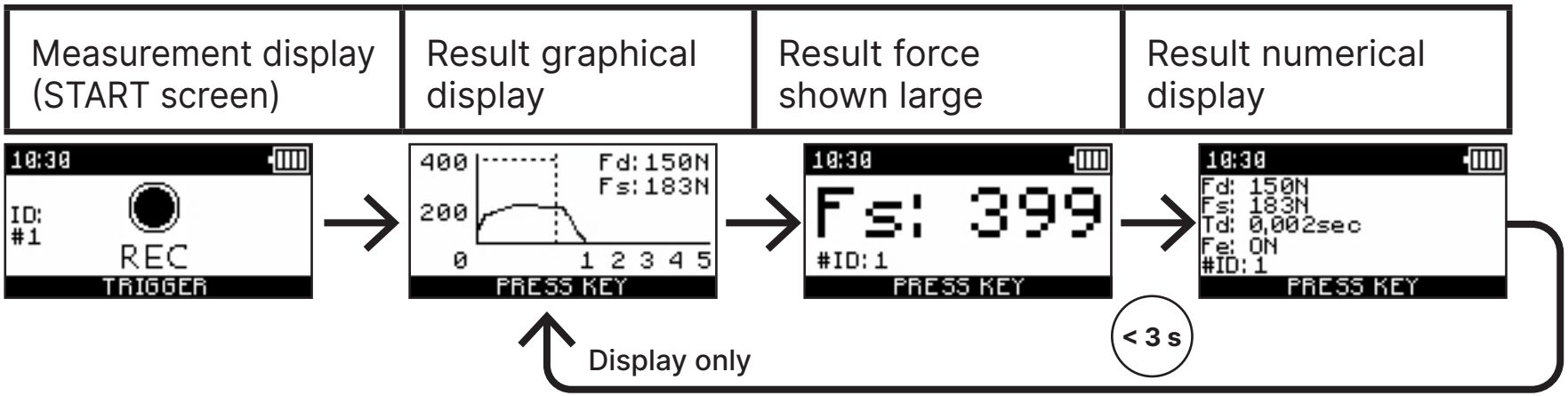
Display readings	Function
	**Ready to measure mode** Shown as start screen for measurements only when ready to measure manually in extended operating mode.
	**Recording measurement** Measurement immediately upon triggering by application of force. Start screen in easy and extended operating mode with automatic ready to measure mode.
	**Graphical display** The measurement result is displayed graphically as a force-time curve. If the display area on the screen permits, the dynamic force and/or the static force are also displayed.

Display readings	Function
	**Force shown large** Force display in large font Only in easy operating mode Displays the peak force F_s or F_d (whichever is greater)
	**Numerical display** All characteristic values are displayed: the forces F_d, F_s, and F_e as well as the time T_d and the measurement ID.
	**Display** leads to • Shutting down the device (Long press) • Menu with the device settings (short press), see chapter 13.

12 Measurement

ⓘ The device must be in the desired mode, see chapter „8 Operating Mode and Ready to Measure Mode“ and chapter „10 Switching On and Off“.

12.1 Process Steps – Easy Mode



ⓘ The measurement results can be displayed repeatedly by short press on the key.

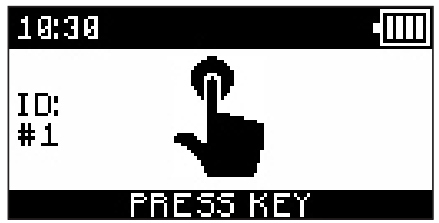
New measurement: Can be initiated at any point, at any process step. Simply apply force to the device.

12.2 Process Steps – Extended Mode

Measurement results can be displayed once, then a new measurement starts.

Ready to measure mode

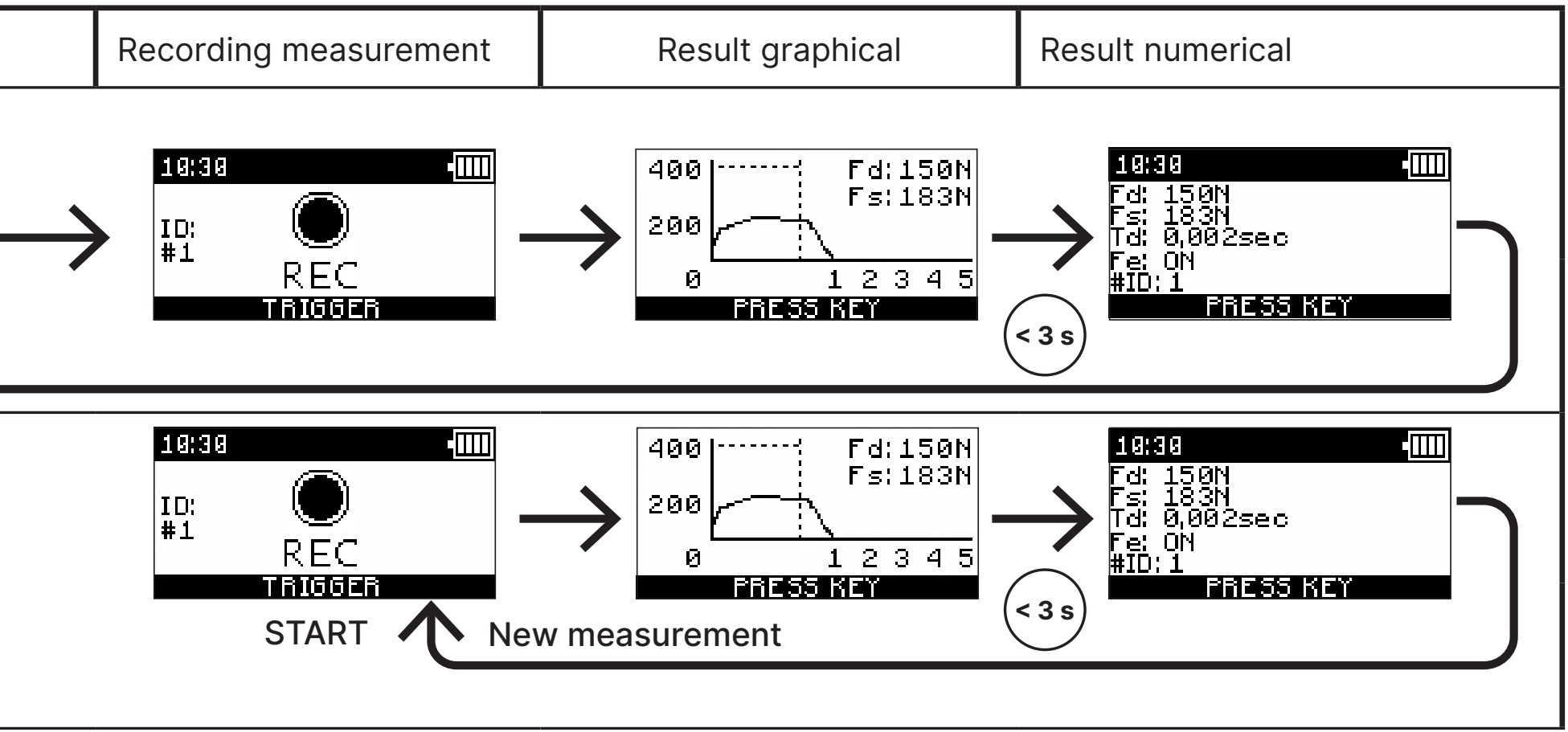
Manual



START

New measurement

Automatic


Recording measurement
Result graphical
Result numerical
10:30
ID:
#1
REC
TRIGGER
400
200
0
1 2 3 4 5
Fd:150N
Fs:183N
PRESS KEY
< 3 s
Fd: 150N
Fs: 183N
Td: 0,002sec
Fe: ON
#ID: 1
START
New measurement

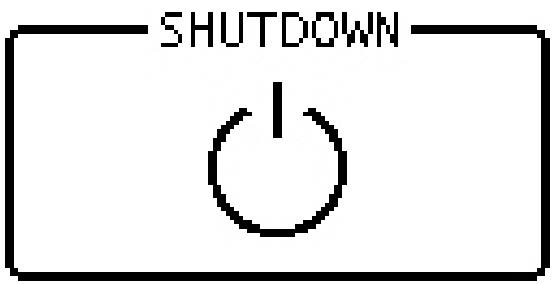
New measurement

At the end of the measurement, when the numerical result is displayed, you can return to the START by a short press on the key.

Leaving measurement

Manual measurement	Switch to the display of the ready to measure mode Exit with a long press (> 3 s)
Automatic measurement	Switch to measurement recording Exit with a long press (> 3 s)

ⓘ The menu opens. From here you can:

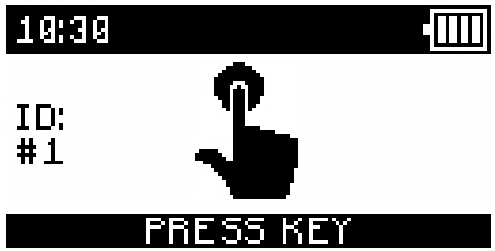
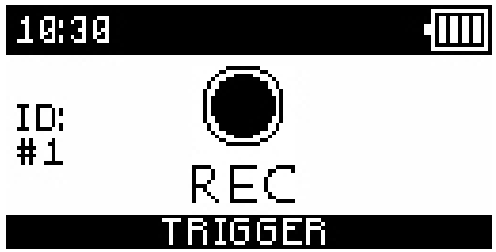


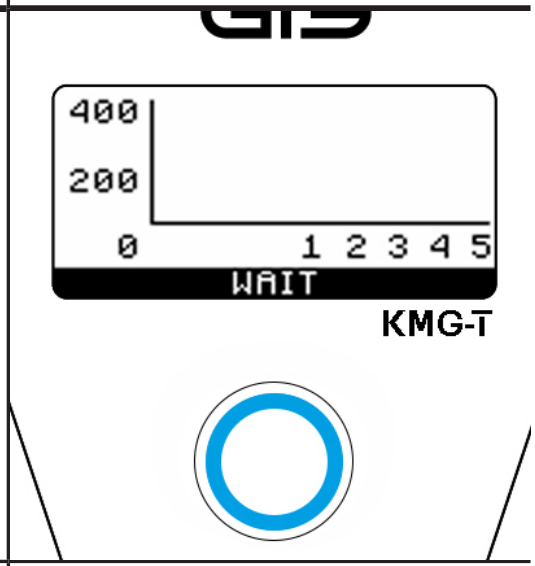
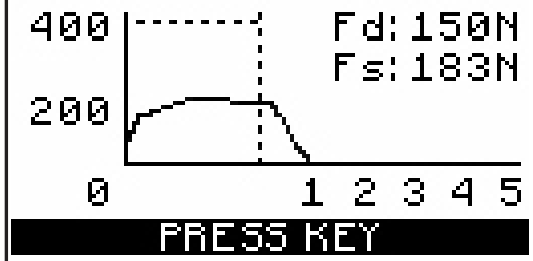
➲ **Shut down the device**
► Long press (> 3 s)

➲ **Access the menu with the settings**
► Short Press(< 3 s)

12.3 Measuring Process and Display

Measurements with the KMG-T are carried out in several successive process steps, depending on the operating mode and readiness to measure:

Step	Process steps	Display
1	➲ **START** **Manual ready to measure mode** **extended operation mode,** ► Press key	
2	➲ **START** **Automatic ready to measure mode** **in extended operation mode or** **START easy operation mode** ► Short press ⓘ The measurement is triggered	

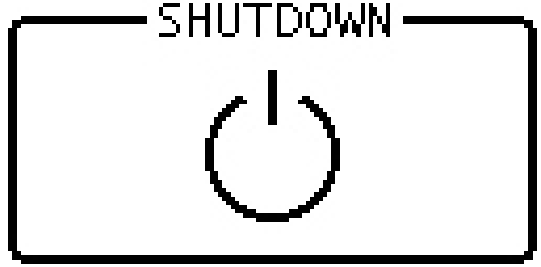
Step	Process steps	Display
3	➲ **Perform measurement** ▶ Apply force correctly ⓘ Once a threshold of 25 N has been exceeded, the force is measured over a period of 5 seconds. ⓘ The force curve is displayed during the measurement. The scaling is adjusted to the maximum force that occurs. The ring around the key flashes blue.	
4	➲ **Graphical display of the measurement** ⓘ The measurement curve is output at the end of the measurement process. The dynamic and/or static force, if available, is displayed numerically. ▶ Press the key.	

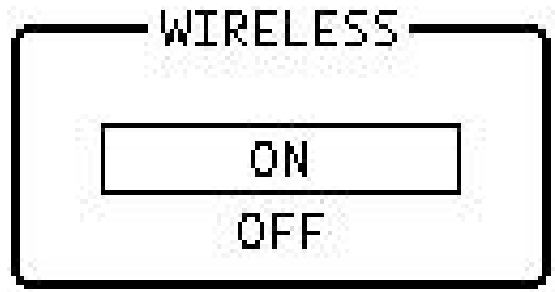
Step	Process steps	Display
5	ⓘ **This step only takes place in simple operating mode! It is otherwise skipped.** ⓘ Large display of F_d or F_s, depending on which force is greater.	
6	➲ **Numerical display of the measurement** ⓘ The following are displayed: • F_d dynamic force (if available) • F_s static force (if available) • T_d dynamic time • #ID measurement ID	

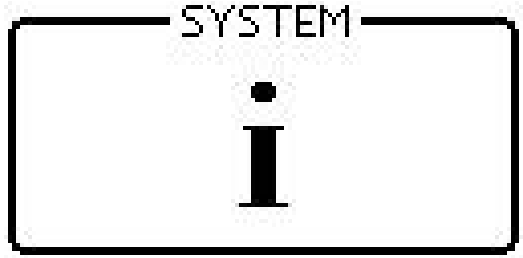
Step	Process steps	Display
7	➲ **Next measurement** ► In the extended mode: short press on the key ⓘ You reach Step 1 in „manual“ ready to measure mode. ⓘ You reach Step 2 in „automatic“ ready to measure mode. ► In easy mode: simply apply force	

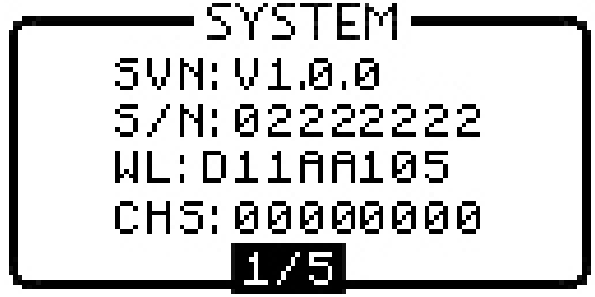
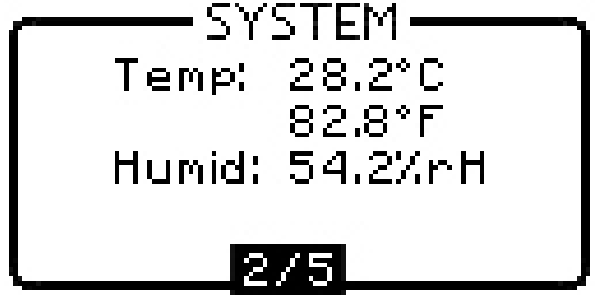
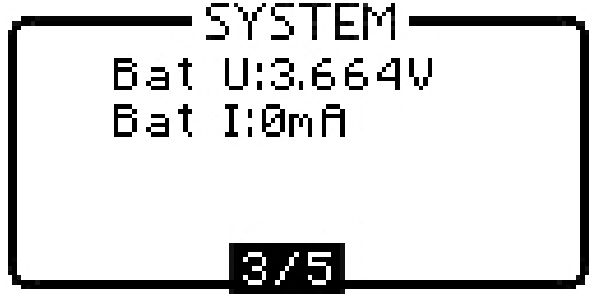
13 Settings

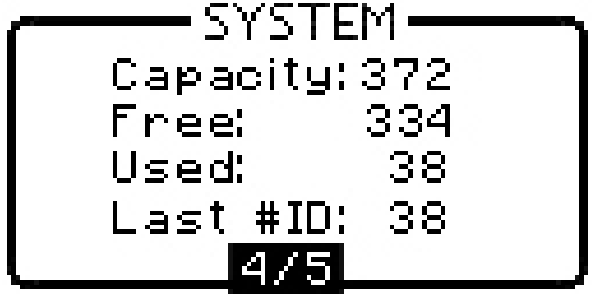
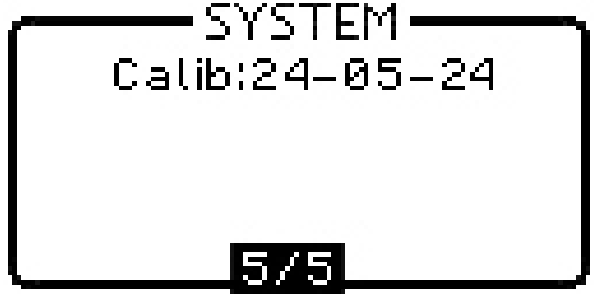
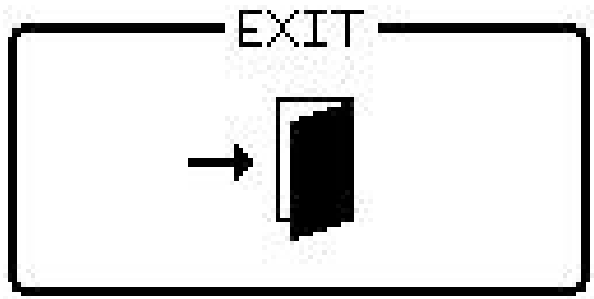
The setting options can be accessed via the menu in extended mode (long press to enter the menu, short press to continue in the menu).

Menu	Display
SHUTDOWN Purpose: Switch off the device or access the options menu **Select options 1/5 - 5/5** ► Continue with a short press on the key	
1/5 RECORD **Select operation mode** ► long press to enter the submenu (and back). Purpose: In extended mode: Switch on automatic measurement (Auto) or switch off (Manual)	

Menu	Display
„Manual“ (Modus 1) „Automatic“ (Modus 2)	
2/5 WIRELESS **Wireless module** **activate, deactivate** Purpose: Switch on or off the wireless module	
► Long press to enter to submenu (or back): On Off	

Menu	Display
3/5 DELETE **Delete data** ► long press to enter to submenu (and back)	
Purpose: Delete the memory, when it is full and no more measurements can be recorded.	
Cancel (Exit the menu without any changes) All Data (Delete all data)	
4/5 SYSTEM **View Information** ► long press to enter to submenu (and back):	

Menu	Display
SYSTEM 1/5 SVN: System version S/N: Serial number WL: D11AA105 CH5: 00000000	
SYSTEM 2/5 Ambient temperature relative humidity	
SYSTEM 3/5 Battery voltage Battery current	

Menu	Display
SYSTEM 4/5 Capacity of the measuring memory Free measuring memory Used measuring memory Latest measurement ID	
SYSTEM 5/5 next calibration date	
5/5 EXIT Exit menu long press	

14 Calibration at GTE Industrieelektronik

Your KMG device is in the best hands with us: In our laboratory, the force gauges are loaded and calibrated. As a manufacturer, we know every detail. We calibrate your instrument carefully and accurately. Of course, you will receive a factory calibration certificate for each calibration.

An order form is included in the scope of delivery of your KMG-Lite. To place an order, send us the completed order form together with your device. The KMG Service Bundle offers regular calibrations at favorable conditions.

15 KMG-VISION.cloud Service & Evaluation Software

Mit KMG-VISION.cloud can be used to prepare, manage and follow up measurements in accordance with ASR A 1.7. The KMG-VISION.cloud is composed of two components:

- KMG-VISION.cloud Manager is the PC software.
- KMG-VISION.cloud App is the application for mobile devices such as smartphones with iOS or Android operating systems.

ⓘ Please note, that the KMG-T can only be used in conjunction with the App if the wireless module is enabled.

The cloud solution allows data to be exchanged between the PC software for managing data in the back office and the App for the testers‘ mobile devices on site.

Moreover, for further evaluations and documentation the PC software KMG-VISION is available. It also allows measurements to be documented in the form of extensive projects.

16 Accessories

As additional accessory for KMG-T we offer a KMG Distance Set, which includes a measurement tripod and distance elements for typical measurement points.

Tripod
for vertical gates,
opening height:
30 cm and 50 cm

Distance elements for
horizontal gates and
doors: 30 cm
and 50 cm

17 Technical Data

Model	KMG-T
Article No.	305-2301-210
Dimensions of measurement surface	80 mm Ø, Height 50 mm
Dimensions	245 mm x 80 mm x 50 mm (L x W x H)
Weight	0.85 kg
Power supply	Internal Lithium-ion battery
Current	< 20 mA
Battery life	> 100 hours
Interface	USB-C
Memory	372 single measurements
Temperature range	0 ... 40 °C

Relative humidity	20 ... 90 % RH (non-condensing)
Measurement range	25 N ... 2000 N
Measurement accuracy	typ. ± 0,4 % of 2000 N at 20 °C
Maximum measurement error	25 N ... 200 N : ±10 N 200 N ... 2000 N : 5 %
Spring rate (mechanical filter)	500 N/mm
Rising / falling time	≤ 5 ms

Notes

Notes

Notes

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