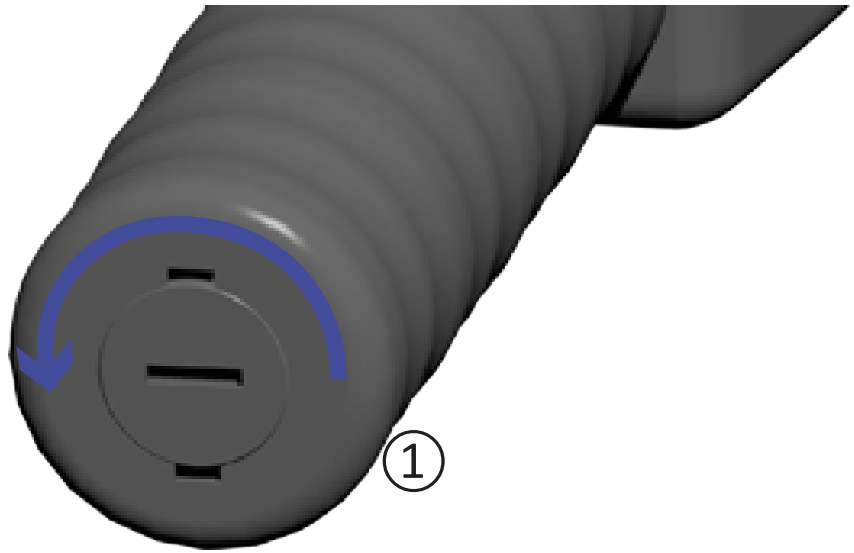
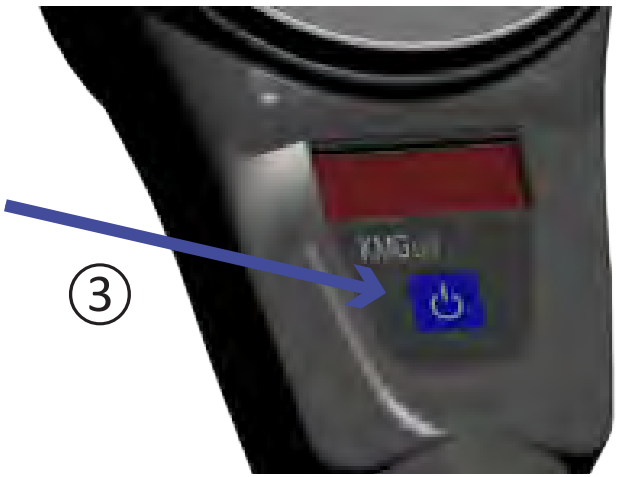
KMG-Lite

Hand-held instrument for measuring dynamic forces at closing edges of power-operated doors and gates

Operating manual

At a glance





① Open the cap

② insert 3 x AA 1,5V batteries

③ Start the device

Table of Contents

1 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-Lite including the variant KMG-Lite-BT.

The KMG-Lite-BT is equipped with a wireless module and therefore deployable with the free KMG-Lite App. Contents that are not related to the KMG-Lite app and the wireless module also apply to the KMG-Lite-BT.
KMG-Lite can be retrofitted with a wireless module.

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
	Cross reference	Refers to more extensive or detail
	Display	Shows the display output

2 Safety information

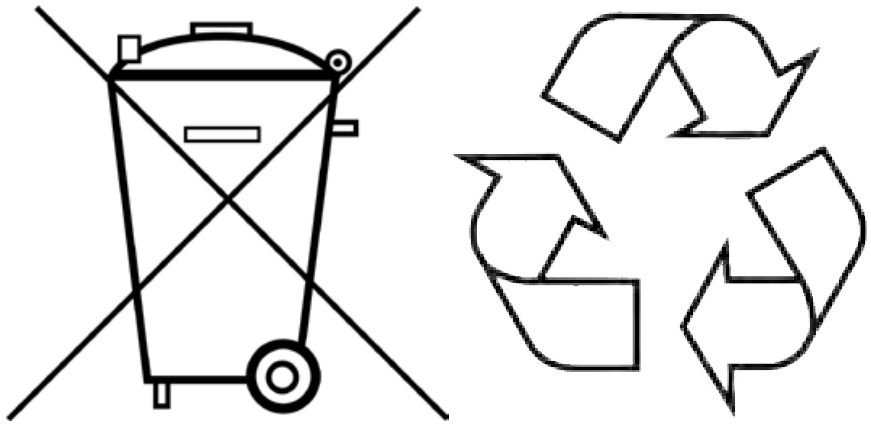
This chapter gives general rules which must be followed and observed if the product is to be handled safely.

➲ **Product safety/preserving warranty claims**

- ▶ Operate the instrument only within the parameters specified in the chapter "Technical Data". (➡Chapter. 12, S. 54)
- ▶ Always use the instrument properly and for its intended purpose.
- ▶ Do not use force.
- ▶ Do not open the instrument except for changing the batteries as instructed in chapters 5 and 9.
- ▶ The instrument must be sent for annual calibration. (➡Kap. 10, S. 51)
- ▶ When not used, keep the gauge inside its transport case und protect it from humidity and mechanical stress.

➲ Ensure correct disposal

- ► Take used batteries to the designated collection points.
- ► Send the product to GTE Industrieelektronik GmbH at the end of its service life.
- ⓘ We will take care of its proper and ecological disposal..



3 Intended Use

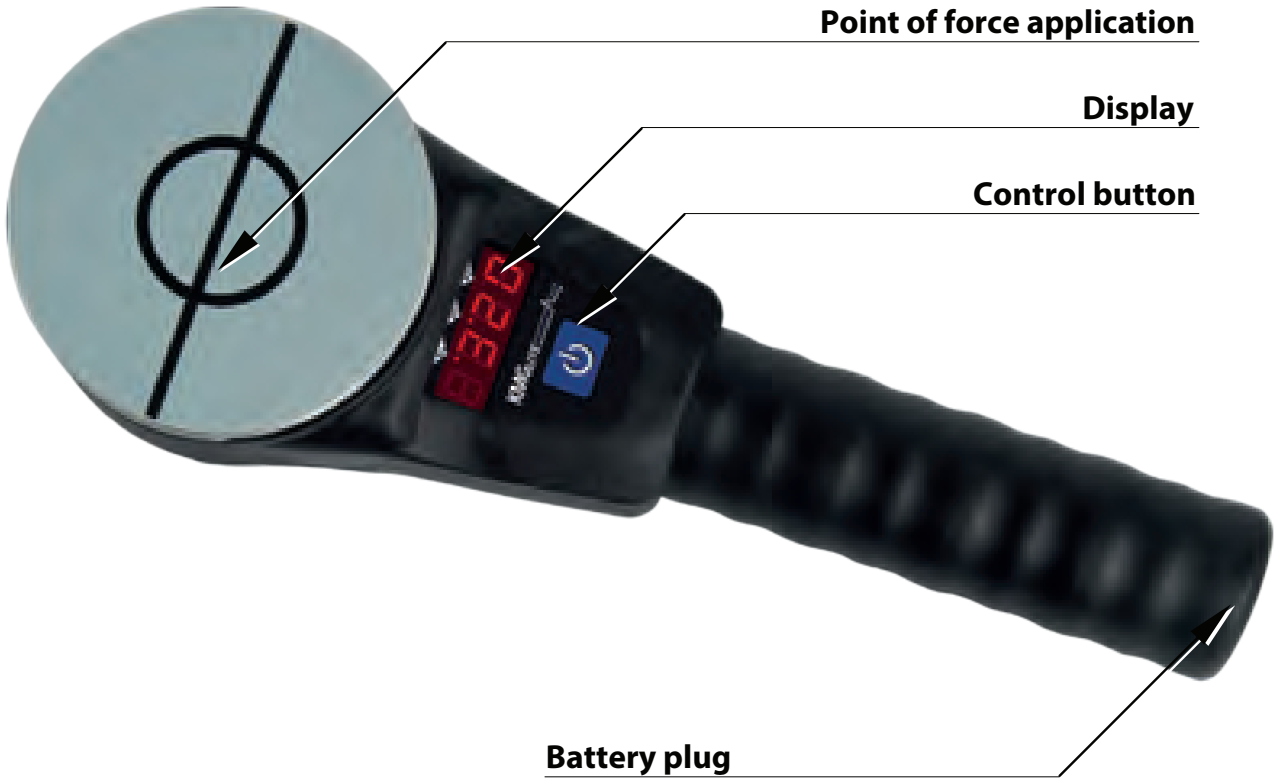
KMG-Lite and KMG-Lite-BT are compact handheld measurement instruments for determining dynamic closing forces of power-operated doors and gates, according to EN 12453, EN 16005, EN 16361:2013+A1:2016, DIN EN 17352 and ASR A1.7 as well as DHF protocol TS011 and TS012.

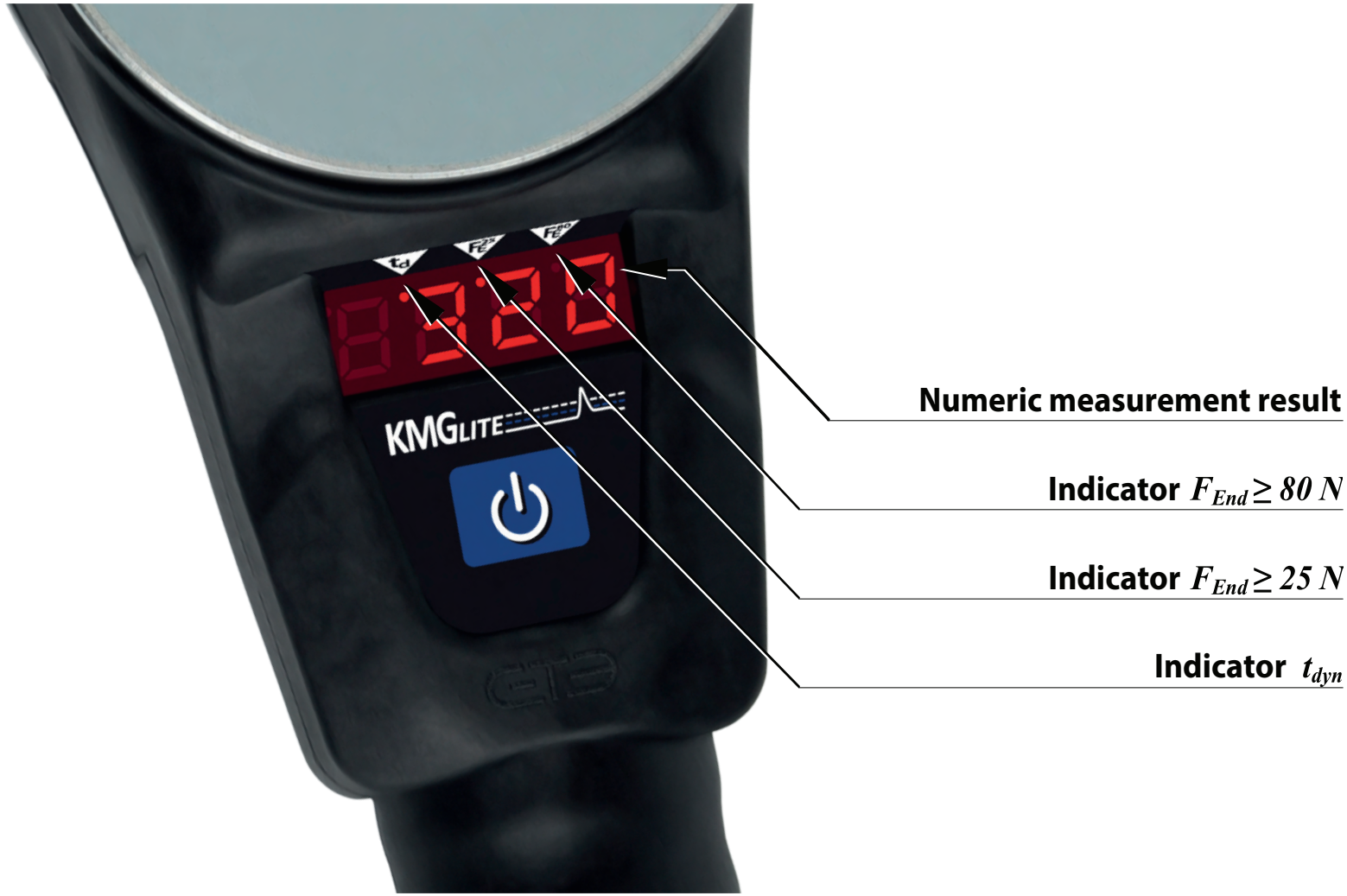
► Only use the product for those applications which it was designed for.

ⓘ Please consult „Technical Data“ for the admissible maximum force. (S.54)

4 Product description

This chapter describes the structure of the product and its display and control elements.




KMGLITE
Numeric measurement result
Indicator $F_{End} \geq 80\ N$
Indicator $F_{End} \geq 25\ N$
Indicator t_{dyn}

5 Commissioning

Follow the steps described to commission the device correctly. .

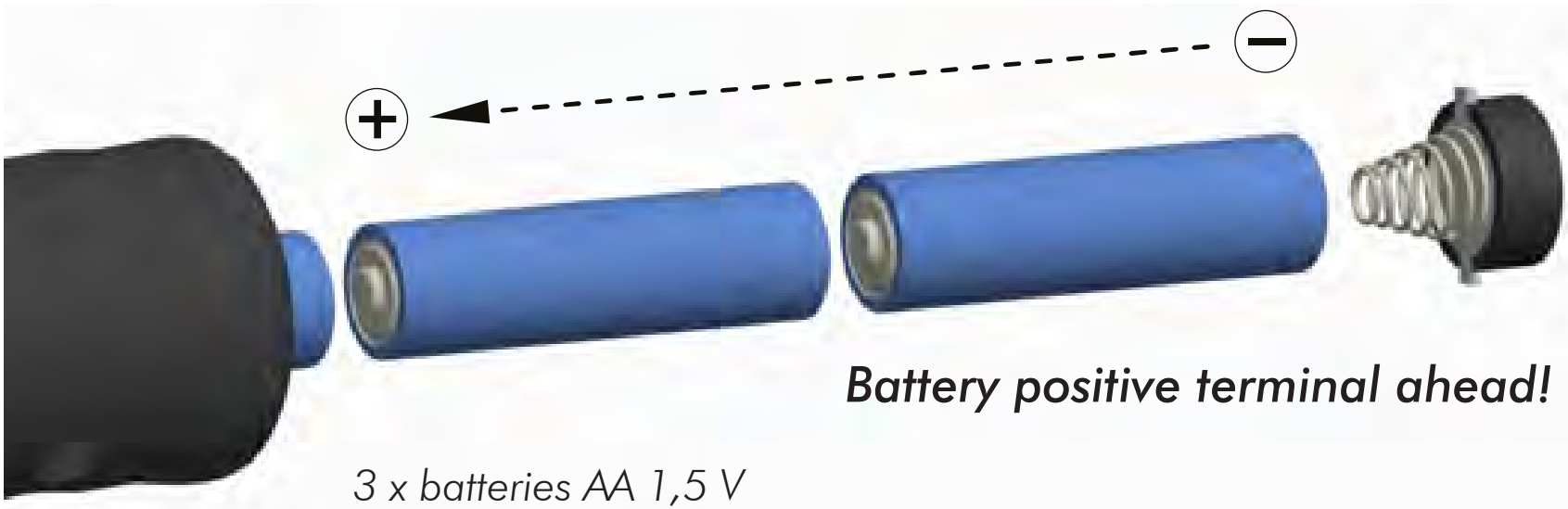
➲ **Removing the protective film on the display:**

► Peel the protective film off carefully.

➲ **Inserting batteries:**

► Remove battery plug at the end of the handle tube by twisting it counter clockwise and remove it.

- Insert three AA - type batteries with 1.5V each.
- Mind the polarity!
- Close battery plug: Press the batteries with the battery plug against the spring resistance inside the handle and lock it by twisting it clockwise.

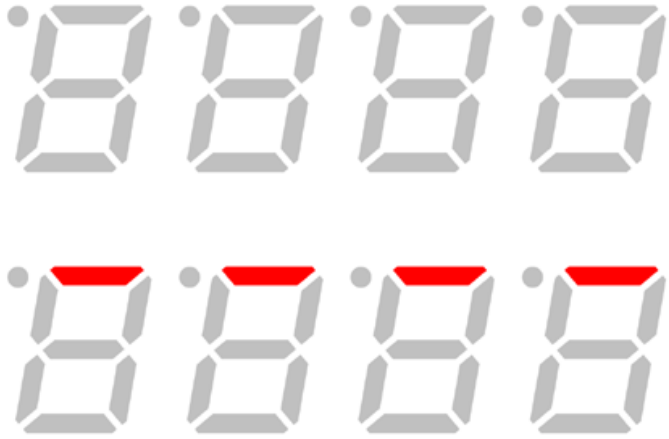


3 x batteries AA 1,5 V

➲ **Turn on the KMG-Lite:**

► Press the control button once

The device performs a self-test during start-up..



Startup test

The device is ready for measurement after the self-test (approx. 3 seconds)..

Ready for measurement

6 Measuring

This chapter describes the steps required to measure with the product. Information on the measurement process in conjunction with the KMG-Lite app can be found on page 33.

➲ **Start measurement:**

► Start device (➡S.13)

► Wait for measure attendance.

► Apply the force vertically and axial

ⓘ Measuring automatically starts at 20 N!

ⓘ Simultaneously with the measurement, the normative evaluation of the temporal force curve starts.

Measurement/Evaluation

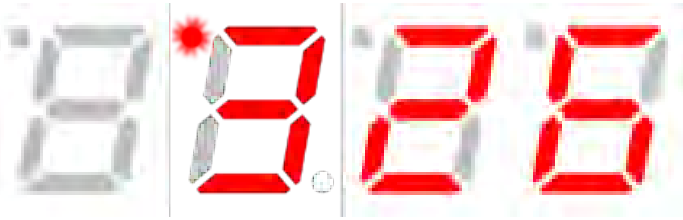
➲ **Display of the measurement results**

ⓘ After the measurement and evaluation are finished, the instrument automatically displays the dynamic peak force (F_{dyn}) that has occurred within measurement. The measurement unit for this value is Newton (N).

Measurement result:

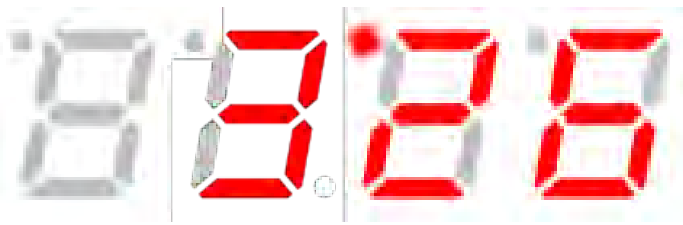
F_{dyn} = 326 N

If the dynamic time (t_{dyn}) exceeded the normative 0.75 seconds, the LED within the second display segment flashes.



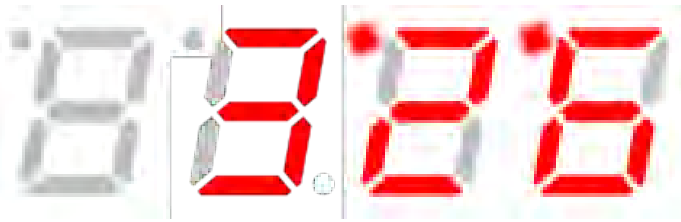
Measurement result:
$F_{dyn} = 326\ N$
$t_{dyn} > 0{,}75\ s$

If the force value at the end of the 5s measurement period (F_{End}) exceeded 25 N, the LED within the third display segment flashes.



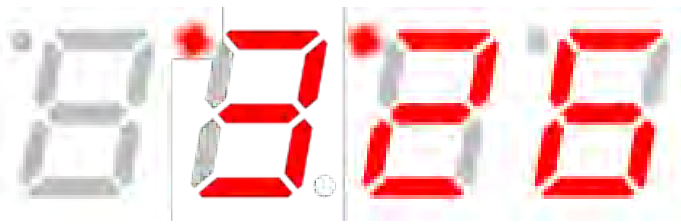
Measurement result:
$F_{dyn} = 326\ N$
$F_{End} > 25\ N$

If the force value at the end of the 5s measurement period (F_{End}) exceeded 80 N, the LED within the third display segment flashes.



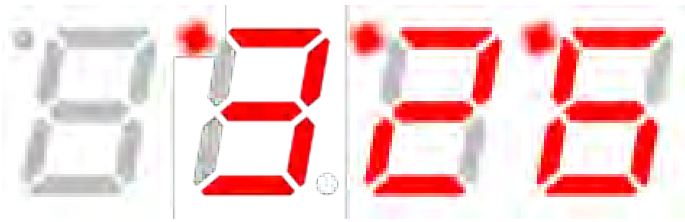
Measurement result:
$F_{dyn} = 326\ N$
$F_{End} > 80\ N$

If the force value at the end of the 5s measurement period (F_{End}) exceeded 25 N and the dynamic time (t_{dyn}) exceeded 0.75 s, the LEDs within the second and the third display segment flash.



Measurement result:
$F_{dyn} = 326\ N$
$t_{dyn} > 0{,}75\ s$
$F_{End} > 25\ N$

If the force value at the end of the 5s measurement period (F_{End}) exceeded 80 N and the dynamic time (t_{dyn}) exceeded 0.75 s, the LEDs within the second, third and fourth display segment flash.



Measurement result:
F_{dyn} = 326 N
t_{dyn} > 0,75 s
F_{End} > 80 N

➲ **Display of the value t_{dyn}:**

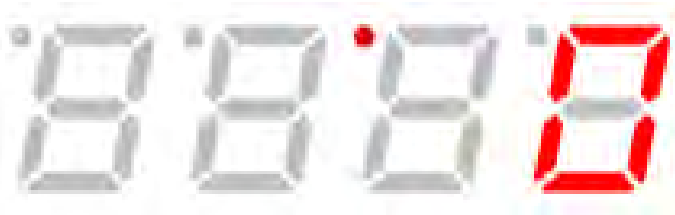
► After measurement press the control button once. The display shows the value for the dynamic time in milliseconds (ms).

t_{dyn} = 740 ms = 0,74 s

ⓘ The LED within the second display segment is lit for orientation.

➲ **Display of the value F_{End}**

► After measurement press the control button twice. The display now shows the value of the final force in Newton (N).



F_{End}= 0 N

ⓘ The LED within the third display segment is lit for orientation.

ⓘ By pressing the control button again, the display returns to the dynamic peak force with the flashing segments for indication of t_{dyn} and F_{End} standard violation.

ⓘ Regardless of the current display state the instrument is always ready to start a new measurement whenever the required trigger force > 20 N is detected.

➲ **Switch off the device**

► Keep the control button pressed for more than two seconds.

ⓘ After five minutes of inactivity the device automatically switches off.

7 Warning- and error signals

The device reports special system states via short view on the 4-digit display.

Exceedance of measurement range

If the measured dynamic peak force exceeds the specified upper limit of 1600 N, the display shows a flashing "1600". The measurement results for t_{dyn} and F_{End} are not affected.

Low battery warning

If the battery voltage falls below a critical value, the display shows the message "Batt".

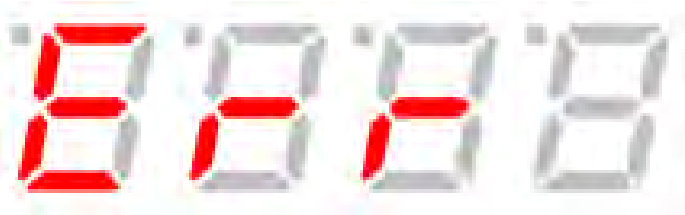
ⓘ By pressing the control button you can still continue your measurements.

► Change the batteries as soon as possible.

Error signal „Load rejection“

If the device senses a zero force offset on startup the display shows the message "Err". This message can also occur if the device is used outside the spe-

cified temperature/humidity range or if the force application plate got stuck.



- ▶ Make sure the device is unloaded while starting up.
- ▶ Make sure that all environmental conditions are within the specified range.
- ▶ Make sure that the force application plate is neither stuck or soiled. (chap. 9, page 48)
- ▶ Reboot the device.

ⓘ By pressing the control button you can continue your measurement regardless of the displayed error.

► If this error message should occurr although the instrument is used within the specified temperature range, please send it to GTE for calibration. (➡ chap.10, page 51)

Error signal “Eich“: calibrationtable missing

If the instrument’s display shows the message “Eich“ after startup, the system is unable to find its calibration reference.

► Send the device to GTE for calibration.(➡ chap.10, page 51)

8 Using ‚KMG-Lite App‘

Measurements made with the KMG-Lite-BT or a retrofitted device can be logged and edited via the KMG-Lite app. The KMG-Lite app displays the collected measurement data including additional information on a smartphone or tablet.

ⓘ Please note that the KMG-Lite app can only be used in conjunction with a KMG-Lite retrofitted with wireless modules or the KMG-Lite-BT.

► If your KMG-Lite device does not have a wireless function, contact support for an upgrade.

Updates to the KMG-Lite app

The KMG-Lite app is updated regularly.

ⓘ Updates to the KMG-Lite app are displayed under the menu item „Settings“ and can be switched on by the user on request by clicking on the respective new function.

➲ **Install the app**

▶ Download the KMG-Lite app from the App Store for iOS and Google Play Store for Android devices.

ⓘ Alternatively, this QR code can be used:

Link: www.app.kmg-lite.com

▶ Follow the instructions for installation!

➲ **Connect to KMG-Lite-BT**

▶ Switch on wireless connection on your smartphone or tablet.

ⓘ The KMG-Lite-BT only connects to the smart phone or tablet during measurement. (see also „Select device“ on page 32)

➲ **Start the KMG-Lite app**

▶ Start the KMG-Lite App for smartphone or tablet via the icon.

Symbol Explanation

Symbol	Name	Explanation
	Pen	Open user form
	Client	Select customer
	Close	Close measurement
	Save	Save measurement
	Protocol	Create a protocol
	Mail	Send protocol by mail
	Share	Sharing protocol via different channels
	Retrieving	Call up the calibration date of the device
	Delete	Delete information
	Not rated	Standard conformity is to be assessed by examiners

➲ Enter the contact details of the examiner

- ▶ Open the „menu box“ in the upper left corner.
- ▶ Use the button „Pen“ to open the input field „Name of Tester“ for data input.

- ▶ Using the „Select image“ button, you can upload a photo or a graphic with your logo from the memory of your device. The logo is then displayed in the protocol.

ⓘ The name of the examiner is stored in the measurement. Remember to update the name of the examiner before starting the measurement.

➲ Customer management/Create customer

▶ Open the „Menu field“.

▶ Select „Customer Management“ to see a list of all created customers.

▶ Use the „Create customers“ button to create a new customer. To do this, enter the name of the customer and then click the „Create“ button.

ⓘ The customer name can be deleted at any time by swiping from the right to the left.

➲ Select language

▶ Open the „Menu field“.

▶ Select „Settings“.

▶ Choose between German, English and French.

▶ Restart the app to comlpete the language change.

➲ **Select device**

▶ Open the „Menu field“.

▶ Select „Settings“.

ⓘ Under „Measurement Device“, the last connected device is displayed.

▶ Press the „Update“ button to find and save a new device. 

➲ **Reset data**

▶ Open the „Menu field“.

▶ Select „Settings“.

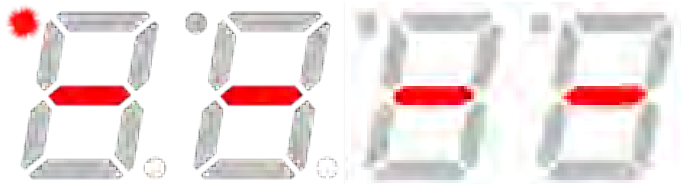
▶ Tap the „Reset app data“ button to delete all measurements, customer data and temporary files.

➲ Perform measurement

ⓘ Select this option for documentation according to ASR 1.7.

- ▶ Press the „Measure“ button on the app‘s home page. Alternatively via „Mesurement“ in the „Menu field“.
- ▶ Turn on the KMG-Lite-BT.
- ▶ Press the button „Add measure“.
- ▶ The KMG-Lite-BT connects to the KMG-Lite app.

ⓘ If the connection is successful, the dot flashes in the 1st segment of the
ⓘ KMG-Lite-BT.



ⓘ The KMG-Lite app displays the note „Ready to measure". The measurement can take place.

ⓘ If there is a connection problem between KMG-Lite-BT and the KMG-Lite app, connect the KMG-Lite-BT as a new device.
▶ Apply the force effect on the KMG-Lite-BT.
ⓘ A „Downloading" message appears. After successful measurement, the results are displayed as measurement data and measurement curves.
ⓘ Three individual measurements can be performed per measurement.

ⓘ three individual measurements can be performed per measurement.

► Start another measurement within a measurement using the „Add measure“ button.

ⓘ In the „Details“ tab you can store information about the measurement. They are shown in the protocol.

► If necessary, save the measurement using the „Save“ button A customer must be selected in advance.(see „Edit customer information of a measurement“, page 42)

ⓘ In order to start a new measurement, the current measurement must be saved.

► To do this, select the „Close“ button. 

➲ Use the measurement assistant

▶ Open the measurement assistant via the menu.

▶ Choose between a standard measurement or DHF measurement.

ⓘ The standard measurement is suitable for the documentation of 3 individual measurements of a test point according to EN 12453.

ⓘ The DHF measurement is aimed at customers from U.K. The DHF measurement carries out a measurement evaluation according to the standards DHF TS 11 and DHF TS 12.

▶ Select the door type and press the „Start“ button.

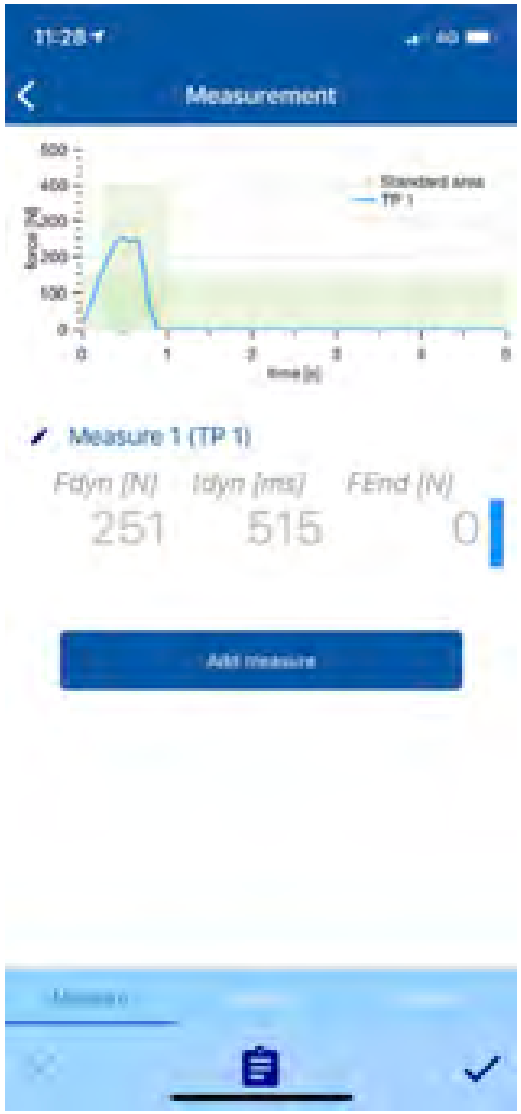
▶ Add a measuring point using the „Add measure“ button.

- ▶ Follow the further steps of the app and add measuring points as specified.
- ⓘ If there are several measurements within one measuring point, the app automatically determines an average.

Display of the measurements

- The green comfort shade shows the normal range of the force F_d and the duration T_d. The comfort shading is only displayed at the first measuring point. The comfort shading is hidden from the second measuring point.
- The measurement result is always shown as „not rated“.

ⓘ The respective measurement result must be evaluated by the examiner in the next step!



Edit measuring points

➲ **Rename or delete measuring point**

► Open the measurement and select the „pen“ icon of the measurement point; the „Edit measurement point“ window opens.

► „Save“ will take over the new name.

► „Cancel“ will leave the respective graphics window and the changes will be discarded.

► Swiping the measuring points from right to left opens the „Delete“ option.

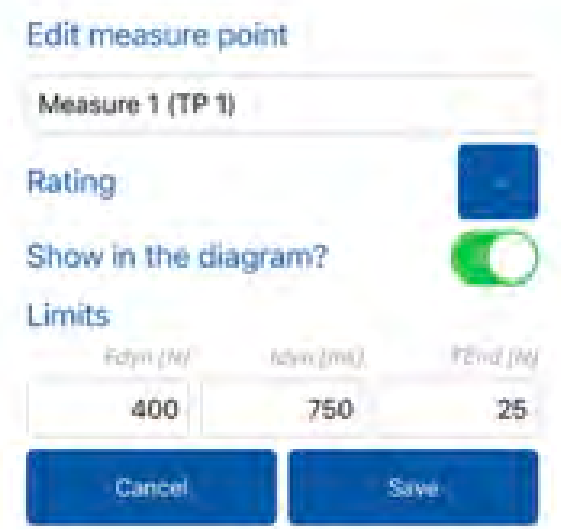
➲ **Display of measurement curves and changing limit values**

► Use the button to determine whether the selected measurement curve should be shown in the diagram.

► If necessary, enter limit values in the available fields.

➲ **Assess the measurement result**

► Use the „-“ switch to determine whether the measurement corresponds to the limit values according to standard EN 12453 and ASR A1.7 or the specifications DHF TS 011 and DHF TS 012 of a DHF measurement. This rating indicates the measurement in the protocol with „Pass“ as a valid or „Fail“ as an invalid measurement operation.



Manage measurement information

In the Measurement window or in the Measurement Wizard window, use the „Details“ tab to open an overview with detailed information on the measurement.

ⓘ The customer, object and measurement information shown in this window are only stored together with the measurement.

➲ **Set or retrieve the expiration date of the calibration**

► Open the „Details“ tab in the „Measurement“ or „Measurement Wizard“ window.

► The calibration date stored in the device can be updated via the „Retrieving“ button.

ⓘ Updating the calibration date is required after each new calibration of the KMG-Lite-BT.

➲ Edit customer information of a measurement

- ▶ Open the „Details“ tab in the „Measurement“ or „Measurement Wizard“ window.
- ▶ Use the „Contact“ button to select the desired customer from the list of created customers (see also „Customer managemant/Create customer“, page 31).
- ▶ Enter an order name for measurement (optional).
- ▶ Confirm the input via the „Save“ button.

➲ Edit object information of a measurement

- ▶ Open the „Details“ tab in the „Measurement“ or „Measurement Wizard“ window.
- ▶ Enter the object number, manufacturer, year of manufacture and description in the textboxes.
- ▶ By clicking on the text box „Object type“ open a list of gate and door

types and select the type suitable for the measurement.

▶ Confirm the information with the „Save“ button. 

➲ **Set the position of the measurement**

▶ Open the „Details“ tab in the „Measurement“ or „Measurement Wizard“ window.

▶ Select the „Use current position“ button.

ⓘ To use, your mobile device‘s GPS function must be enabled.

➲ Save measurement

- ▶ At least one measuring point is required to save.
- ▶ A customer must be selected to save. (tab „Details“ in the „Measurement“ window)

- ▶ The calibration date must be set to save.
- ▶ Use the „Save“ button to save the measurement on your device for 30 days.

➲ View saved measurements

At the start of the KMG-Lite app, the measurement history is available via the „History“ button. In use, you can reach the measurement history via the „Menu field“. Saved measurements are displayed in calendar terms.

- ▶ Tap the word „Today“ to see one of the possible filters: Today, Yesterday, Last 7 Days, Last 30 Days.
- ▶ The display of the data can be used according to „Single“ for single measurements and „Assistent“ for standard measurements or DHF measurements.
- ▶ Send the protocols promptly after the measurement!
- ⓘ The data is stored for 30 days and then deleted.

➲ Delete customer and object information

- ▶ Delete information by clicking on the, trashcan button. (A security query occurs before deleting it.)

➲ Create a protocol

▶ Open the „Protocol“ tab in the „Measurement“ or „Measurement wizard“ window.

▶ Use the switches to select which information the protocol.

ⓘ Selecting the „Position“ option requires activating the GPS function of your mobile device. You can display the position as a graphic or as a QR code in the protocol.

➲ Send protocol

▶ Use the „Mail“ button to send the protocol by e-mail. The mail client of your mobile device is used.

▶ The „Share“ button enables sending via the available „Share applications“.

8.1 Error message

➲ **Fix error massage „No device found“.**

► Reconnect your KMG-Lite-BT to the app.

► If a new error message appears, connect your KMG-Lite-BT as a new device.

9 Care and maintenance

ⓘ Proper maintenance and care of the equipment maintains its functionality and contributes to the extended life of the product.

➲ **Store device correctly:**

► When not used, keep the gauge inside its transport case and protect it from humidity and mechanical stress.

► Protect device from contamination. Dust and other pollution must not enter the field of measuring mechanics.

ⓘ A soiled instrument can cause reduced measurement accuracy.

► In case of doubt send the device to GTE for calibration. As part of the calibration sensitive parts can be cleaned from dust particles.

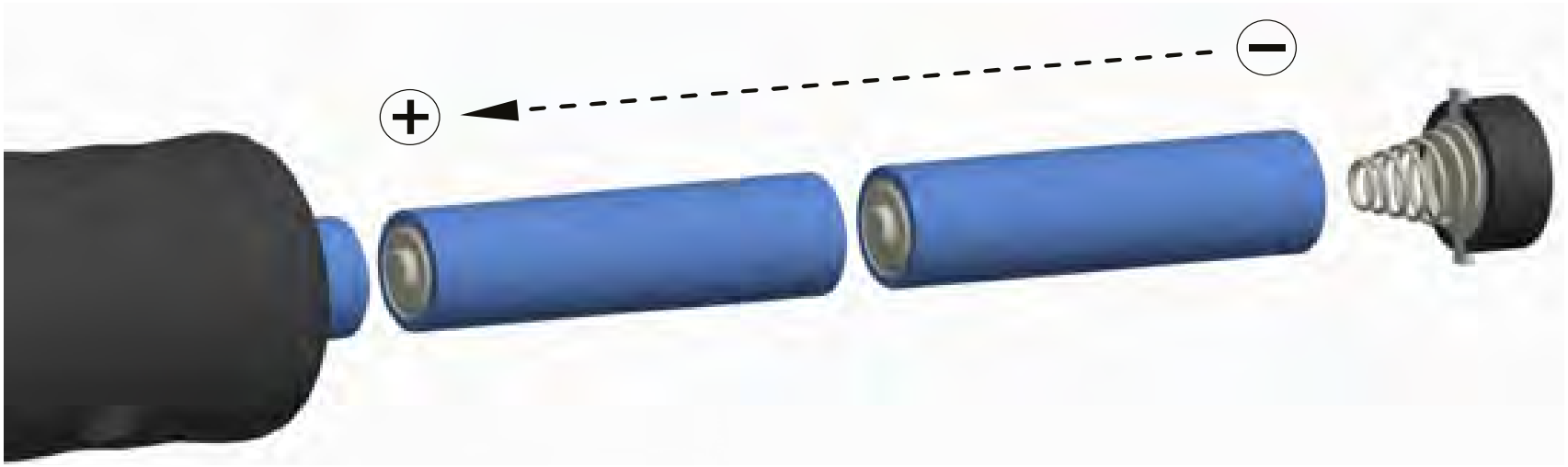
➲ **Clean housing:**

► Clean the housing with a moist cloth (soap suds) if it is dirty. Do not use aggressive cleaning agents or solvents!

➲ **Change batteries:**

► Remove battery plug at the end of the handle by twisting it counter clockwise and pulling it out.

- Remove old batteries and take care of proper disposal.
- Insert three AA - type batteries with 1.5 V each.
- Mind the polarity! Positive terminals ahead!
- Close battery plug: Press the batteries with the battery plug against the spring resistance inside the handle and lock it by twisting it clockwise.



10 Calibration

ⓘ To ensure the measurement accuracy the instrument has to be calibrated every year!

ⓘ Regular calibration is also mandatory according to EN 16005 as well as EN 12453.

ⓘ The calibration badge on the bottom of the device shows when your KMG-Lite needs to be calibrated.

Factory calibration at GTE Industrieelektronik

Your KMG device is in the best hands with us: In our laboratory, the force gauges are loaded and calibrated with a defined reference force curve. Our reference sensors are regularly traceable calibrated in accredited calibration laboratories and meet the highest quality standards. 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 advantageous conditions.

11 Accessories

As additional accessory for KMG-Lite we offer a Spacer-Set, which contains a robust measurement tripod and distance pieces for typical measurement points.

Tripod for vertical doors Opening heights: 30 and 50 cm

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

Item no.: 305-2303-001

12 Technical data

Voltage supply:	3 x 1,5 V - AA - Battery (Mignon)
Power consumption:	< 25 mA
Battery duty:	> 100 hours
Temperature range:	0 ... 40 °C
Humidity range:	20 ... 90 % r. H. (non-condensing)
Dimensions of measurement plate:	80 mm Ø, height 50 mm
Dimensions:	250 mm x 80 mm x 50 mm (L x W x H)
Weight:	1 kg
Measurement range:	25 N ... 1600 N
Measurement accuracy*:	typ. ± 0,4 % v. 2000 N @ 20 °C
Measurement error (max.):	25 N ... 200 N : ±10 N 200 N ... 1600 N : 5% of reading
Spring rate (mech. filter):	500 N/mm
Slew rate / fall time:	≤ 5 ms

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Art.-Nr.: 305-2310-200-EN-35
May 2023