



# TGMmini.com

email@glasmacher-electronic.de

TGMmini is an easy way to measure the speed of a closing car door or any other ferromagnetic edge passing.



The measurement result is shown on the display with a resolution of 0.01m/s and an accuracy of  $\pm 0.05$ m/s.



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4 cm display **(1)** on each side of the device.

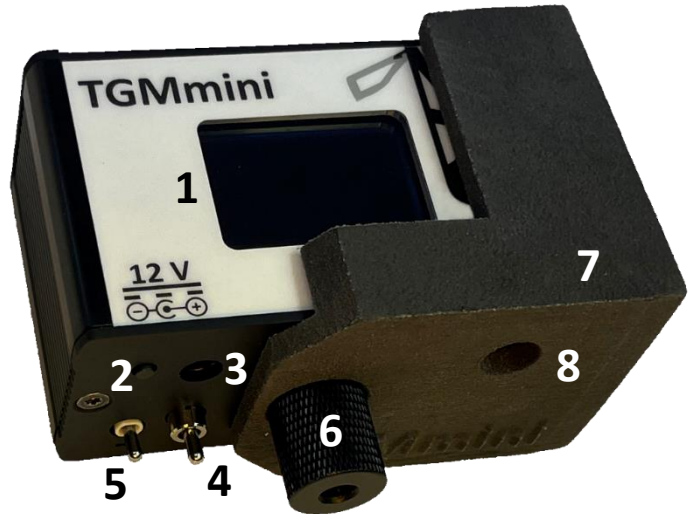
ON and OFF push button **(2)**.

Charging connection 12 Volt power jack **(3)**.

Switch **(4)** for mode selection

Switch **(5)** to insert result of closure.

Magnetic and protective rubber holder **(7)** to attach device to vehicle.



1/4"-20 UNC tripod thread **(6)**.

A 3.5mm jack socket **(8)** for data export via cable to a PC-Com Port“



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Turn the TGMmini ON by pressing the pushbutton (#2 on picture at page 2)

recessed in the back of the housing.

You can turn OFF the TGMmini the same way.

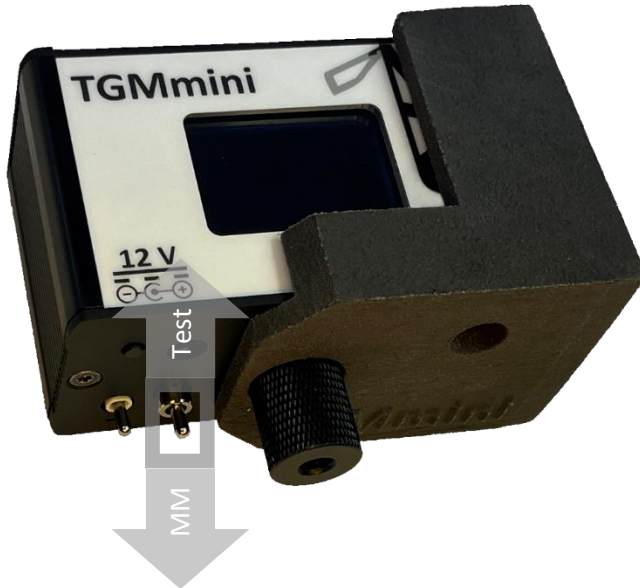
For power saving reason:

- The TGMmini turns OFF after 8 minutes without a new measurement result – the TGMmini has to be turned ON again by pressing the push button



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Use Switch **(4)** to select the mode:

- **Up: Test Mode** to measure the speed of the closing door
- **Down: Measuring Mode (MM)** to determine the minimum required speed for a safe closure.

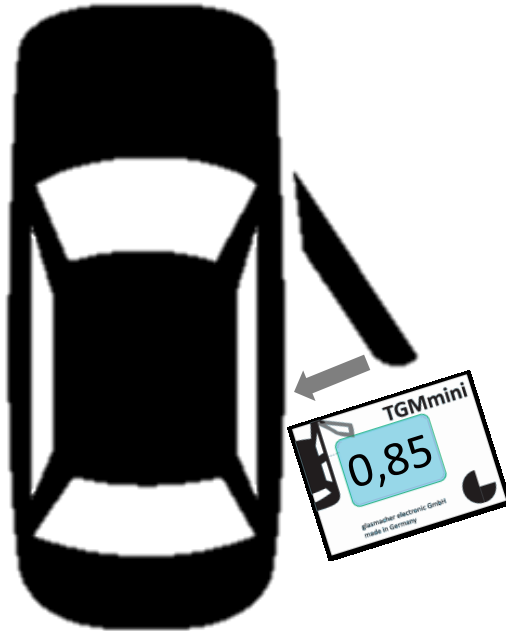


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## Test Mode:

TGMmini measures the speed of a passing ferromagnetic edge, for example a car door or a trunk lid.

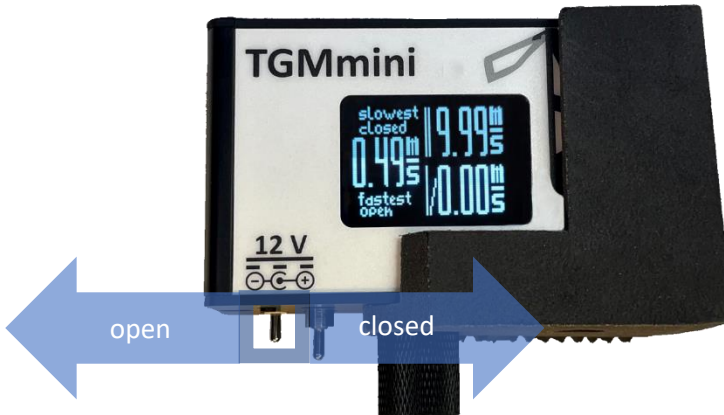


The edge has to pass in the right direction and with a maximum distance of 10mm. The speed of the passing edge is shown on the display in metres per second.



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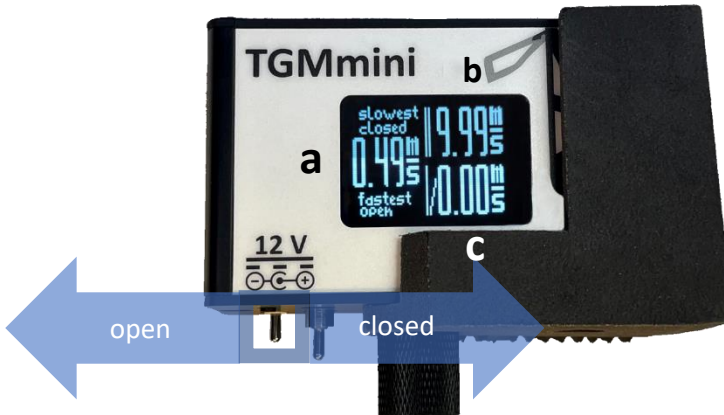
In Measuring Mode: Use Switch (5) to insert the result of the closure:

- **Away from the vehicle** (here left): door open
- **Towards the vehicle** (here right): door closed



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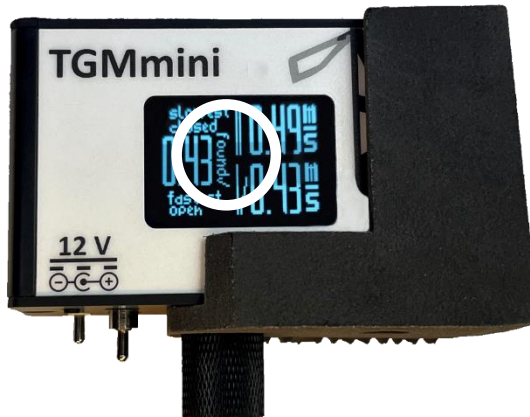
In Measuring Mode, the display indicates:

- Speed of last closure (**a**)
- Slowest speed closed (**b**)
- Fastest speed open (**c**)



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When the difference between the

slowest measured speed closed and the  
fastest measured speed open

is below 0,1 m/s, the display will indicate „found“ and  
will make a „beep“ sound.





closing process	measured speed [m/s]	door condition	slowest speed closed [m/s]	fastest speed open [m/s]
1	0.65	open	-	0.65
2	0.72	open	-	0.72
3	1.03	closed	1.03	0.72
4	0.70	open	1.03	0.72
5	0.95	closed	0.95	0.72
6	0.85	closed	0.85	0.72
7	0.77	closed	0.77	0.72
<b>0.77m/s = is the slowest speed necessary for a safe closure of the measured car door</b>			delta between fastest speed open and slowest speed closed is below 0.10 m/s ( $0.77 - 0.72 = 0.05$ m/s)	


The aim of a typical measurement sequence is to get the unique value of the slowest speed necessary for a safe closure of this specific car door use this unique slowest safe closure speed for:

- target value for quality control and end of line testing
- benchmarking, marketing and comparison
- duration and wear testing




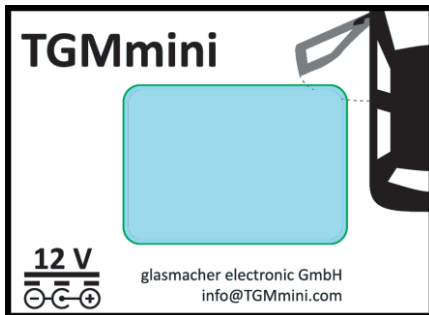
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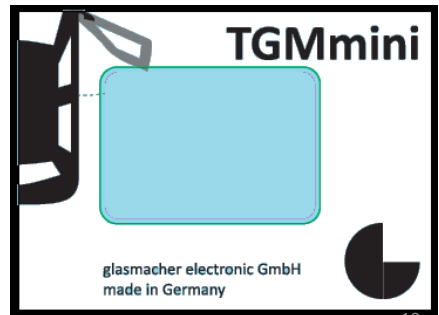
Flip the TGMmini around to measure driver and passenger side door. The measurement direction is from the the „ TGMmini **TGMmini** Logo“ → to the → „  car symbol“

The cardoor as the ferromagnetic measuring Edge

direction of the door 



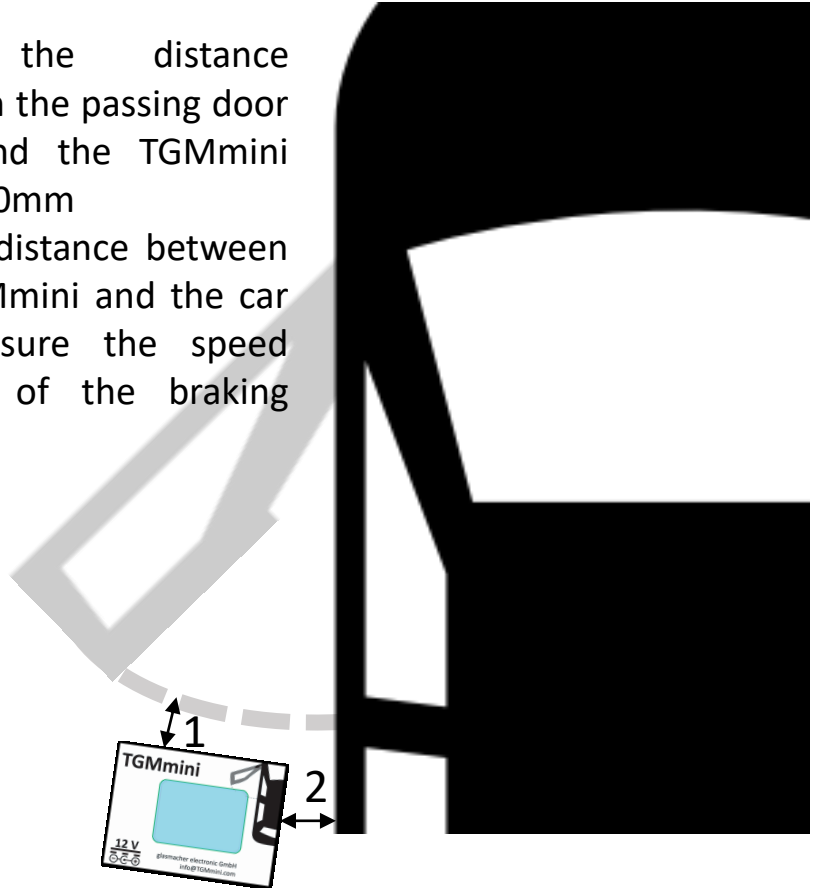
direction of the door 



10



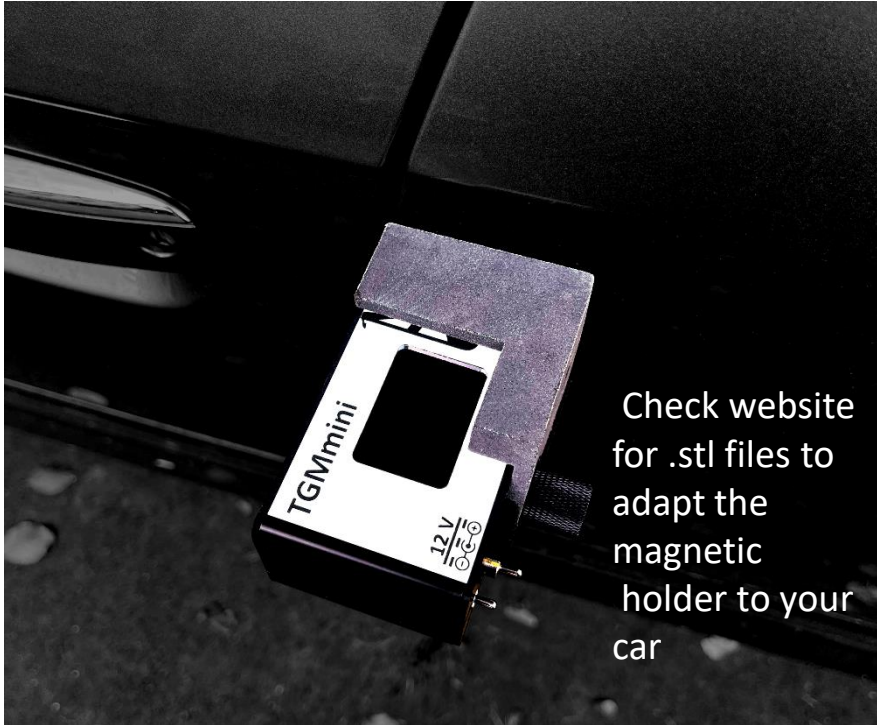
1. Keep the distance between the passing door edge and the TGMmini below 10mm
2. Keep a distance between the TGMmini and the car to measure the speed outside of the braking area.





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Use the magnetic holder to mount the TGMmini near the car door on flat surface car bodies.



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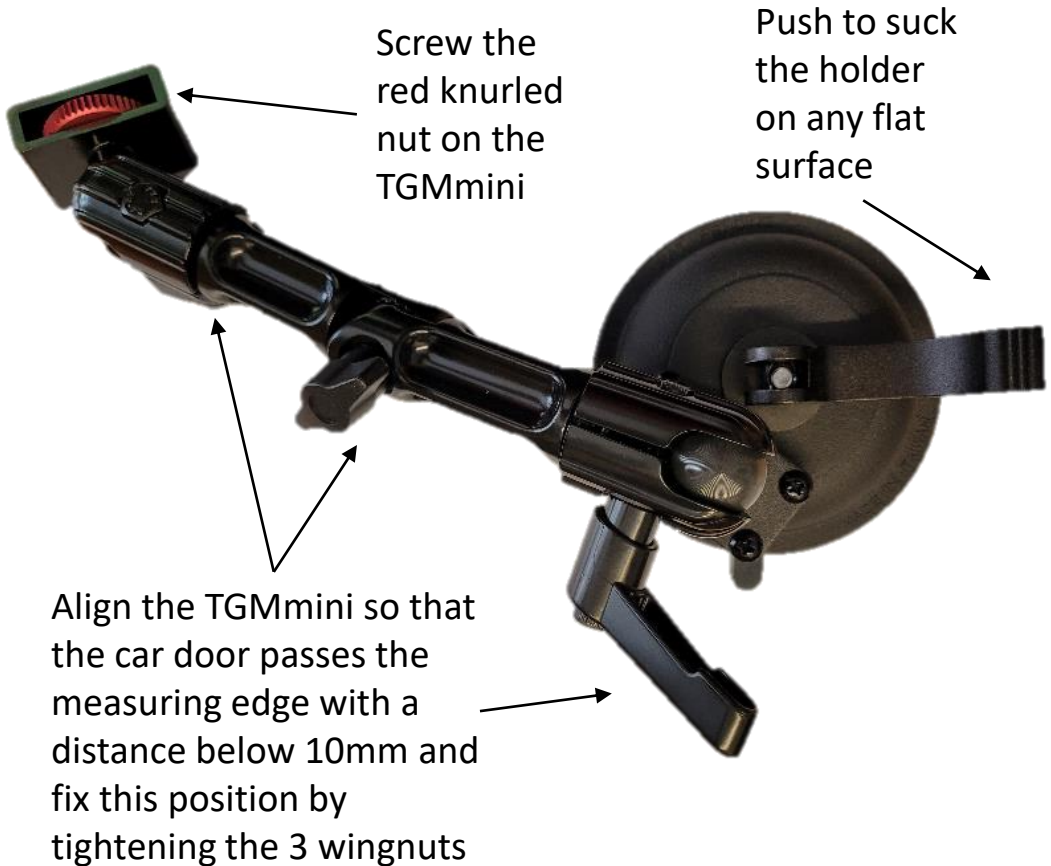


Use the 1/4"-20 UNC tripod thread (*#4 on picture at page 2*) to mount the TGMmini to any available camera mounting systems or tripods. For example the [Skier Pro System](#) 3d Vari Arm.



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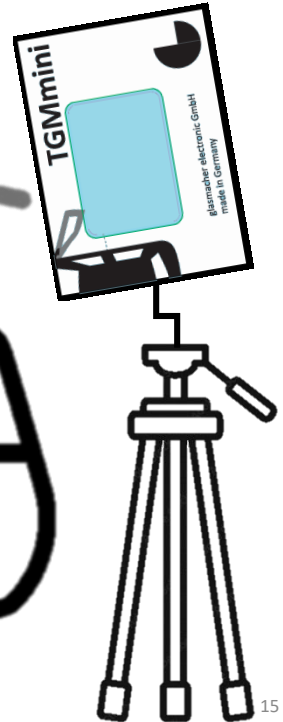


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Use the supplied articulating camera arm or any camera mounting system to install the TGMmini on a tripod to measure e.g. Trunks, hoods, hatches...





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M5

1

1/4" 20 UNC

2

The screw in the backcover of the TGMmini is an M5 screw. All other screws and internal threads (converter piece(1); articulating camera arm (2)) are 1/4" 20 UNC (standard camera /tripod screw size).

Therefore nearly all common tripods and camera arms available on the market can be used to mount the TGMmini on a vehicle or other objects.





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If the measured car door is not ferro magnetic, you need a measuring edge.

Any small ferro magnetic piece, attached to the door, will work.

You can also use the measurement edge with a suction cup provided.



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To mount and dismount the magnetic holder, unscrew the 1/4"- UNC Adapter and pull the device off the holder. You can then use the 1/4"- UNC Adapter or the M5 thread to mount the TGMmini.



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**12 V**  
⎓  
⊖ ⊕

*AC/DC power plug with 12 Volts DC min.  
500 mA Output and a 2.1mm/5.5mm  
connector is part of the scope of supply*



Information about the battery and power supply is shown on the display:



The TGMmini is charging with a Charger Controller which controls current, voltage and temperature of the accus. An LED over the toggle switches will show any charging problems.

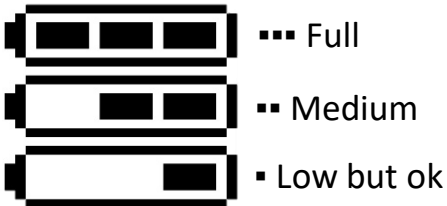


The used power charger is not providing 12 Volt DC. The TGMmini does not charge. Please use the provided proper 12 Volt DC charger.



Information about the battery and power supply is shown on the display:

The voltage of the accus is shown in Test Mode on the lower part of the display in 3 Steps:



Only in Test-Mode



Please charge the TGMmini. The accu voltage is not sufficient for a proper operation. The TGMmini will turn OFF automatically.



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The TGMmini is powered by two Lithium Ion accu with 3.6 Volt nominal voltage. The accus size is 16340 or (equivalent to CR123A) and you can use any commercial available 16340 Lithium Ion accus with 3.6 Volt nominal. When delivered a Ansmann 16340 Lithium Ion accu with 850 mAh and a safety protection against short-circuit, deep discharge, overload or overstrain are installed. Please check the safety information before use.



**Never charge  
Lithium accus in  
non suitable chargers**





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To change the batteries you can open the TGMmini on the side where the push button, the switches and the power plug are located. Use a Torx 10 screwdriver to open the casing. **Do not open the other side. The aluminum screws are very delicate.**



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The TGMmini has two PCBs connected with a cable.  
Remove the PCBs gently from the casing.

When reassembling, the „G“ on the PCB has to be placed  
under the „G“ Logo on the case.





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Before removing the batteries you can disconnect the PCBs by pulling the plug on the battery PCB.



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Use the TGMmini App, to use the TGMmini combined with your mobile android device. Please check the short film and the Q&A on our homepage about how to use the app.

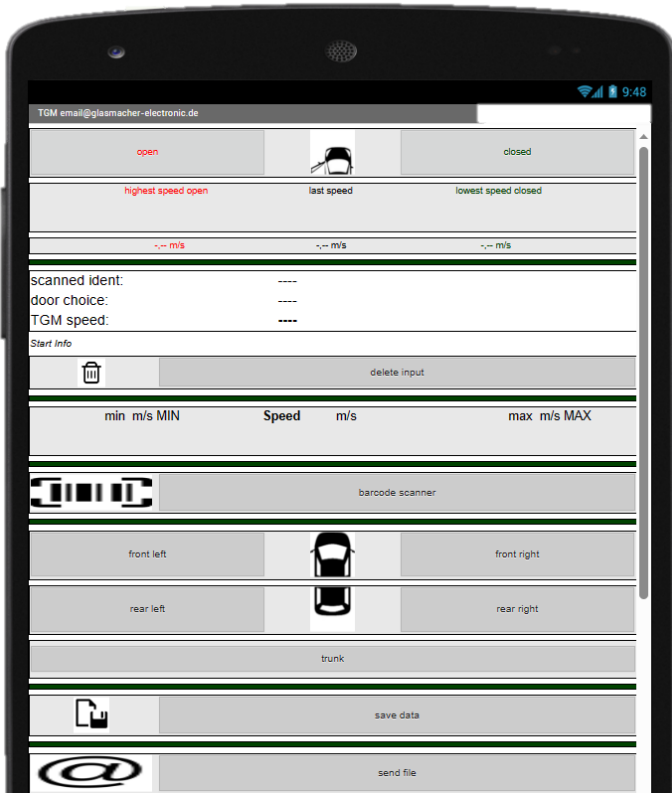
[https://www.youtube.com/  
@glasmacherelectronic](https://www.youtube.com/@glasmacherelectronic)





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Use the TGMmini App to assign more information to the measurement result:

- opening state
- Scanned vehicle identity
- door type
- target range

save these information as .csv file on the phone or share it via email or other Apps.



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18:27 85%  
TGM email@glasmacher-electronic.de

open closed  
highest speed open last speed lowest speed closed

~ m/s ~ m/s ~ m/s

scanned ident:  
door choice:  
TGM speed: m/s  
please measure TGM speed

delete input

m/s MIN	Speed m/s	m/s MAX
------------	-----------	------------

barcode scanner

front left	front right
rear left	rear right
trunk	

save data

send file

bluetooth devices scan

bluetooth connection stopped

connect disconnect

close app

config

help tutorial

0 file:///storage/emulated/0/Documents/TGMscan-2023-11-30 12:30:45.csv

Date;Time;Speed;Door;Scan;MeasuringMode



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## **What is the TGMscan app?**

The TGMscan app enables you to use the TGMmini (and TGM 5) in different modes, to detect different indicated values. Furthermore it enables you to assign the measured data to a certain door of the car, to assign the data to an individual car via Barcode scan and to save and send the measured data to other devices.

## **How to install the app?**

Search “tgmscan” in the Google Play Store. Download the app. After opening the app for the first time, give the requested permissions. It is necessary to close and open the device again, to give more necessary permissions.

## **How do I connect the mobile device with the TGMmini?**

To connect the devices, activate Bluetooth on your mobile device. Choose “scan” in the app. Press “bluetooth devices” and then select your TGMmini. Press “connect”. The TGMmini should now be connected to your mobile device.



## **How do I choose the operation mode in the TGMscan app?**

Press “config”. The configuration window opens. Choose now, in which mode you want to work. You can either choose the measuring mode or the test mode.

## **What else does the app feature?**

Furthermore, the TGMscan includes the scan mode to assign the measurement results to a specific vehicle. Additionally you can assign the measurement results to a specific door of this vehicle. Choose “Scan the car identity” and/or “choose a car door” in configurations. Press “safe config”. You can not use the barcode scanner and insert the door you are measuring. These informations will then be saved accordingly with the measurement results.

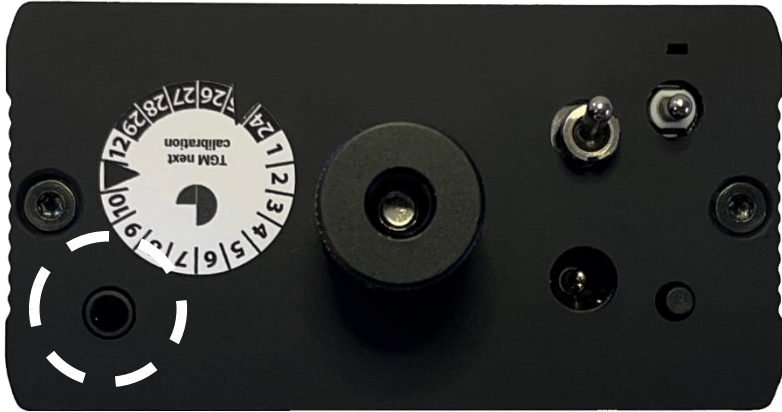
## **What happens with the collected data?**

The app allows you to save the collected data on your mobile device or export it via various available ways of data transfer to other devices. No data is transmitted to or saved by glasmacher electronic or any other third parties. Any data you do not save locally on your device or export to other devices will be deleted automatical.



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One way to export the results to your PC is via serial jack-cable. You find the serial cable jack at the bottom side of the TGMmini.



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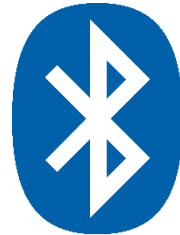
Connect the Serial jack-cable to the TGMmini and to the USB Adapter to connect the TGMmini with your PC.





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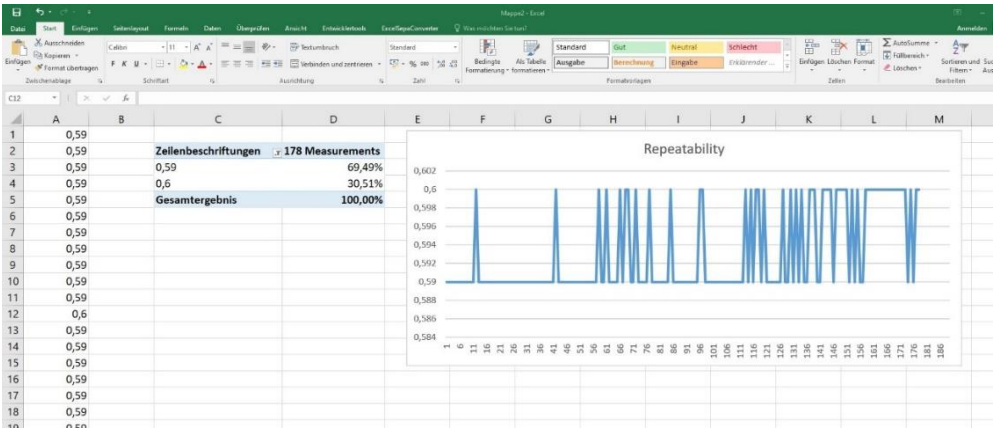
email@glasmacher-electronic.de



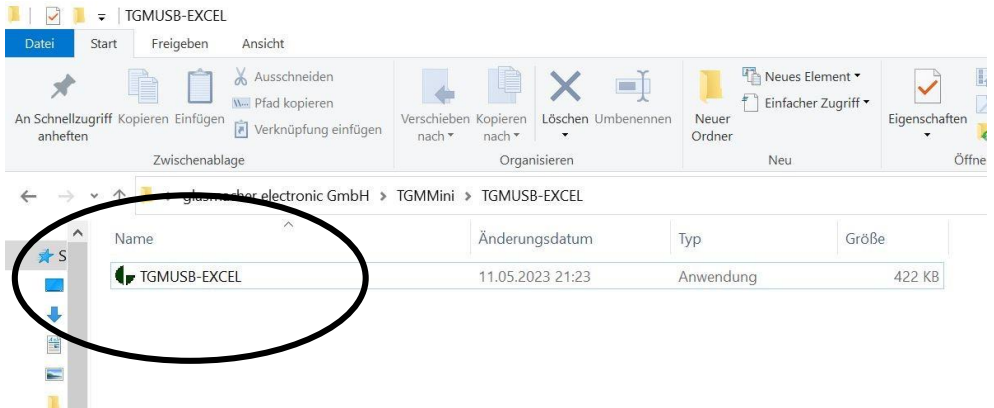
Alternatively you can use the USB Bluetooth receiver to get the TGMmini results to the COM Port of your PC (4800 Baud). The green LED shows a successful connection and you can search for your TGMmini by pressing the push button.

The USB Bluetooth receiver is factory paired to a specific TGMmini (in this case TGMmini-23453) and can only be used with this TGMmini.

The results are received the same way as with the jack cable connector. You can only have one Bluetooth connection at a time so USB Bluetooth receiver and TGMscan App can not be used simultaneously.



You can plot them with any terminal program or you can use our TGMusb.exe [www.glasmacher-electronic.com/TGMUSB.exe](http://www.glasmacher-electronic.com/TGMUSB.exe) to get the results as a keystrok to insert the measurement data in (for example) Excel.



Download the TGMUSB-EXCEL Windows program from the [glasmacher-electronic.com](http://glasmacher-electronic.com) Homepage or copy it to your PC from the supplied USB-Stick. TGMUSB-EXCEL is a .exe file so a lot of systems will not allow such a download. Please find the program on the USB-Stick or contact us.

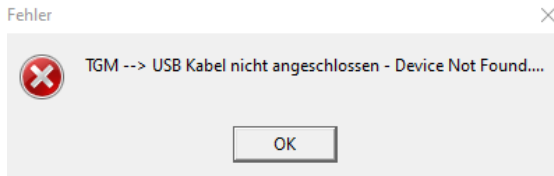


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Open the program „TGMUSB-EXCEL.exe“. The window above will be displayed on your Desktop. The TGMmini and your PC are now connected.



If you get this Error first try to restart the TGMUSB-EXCEL program a short moment between plugging the USB-Receiver and starting the program is needed or replug the USB connector.



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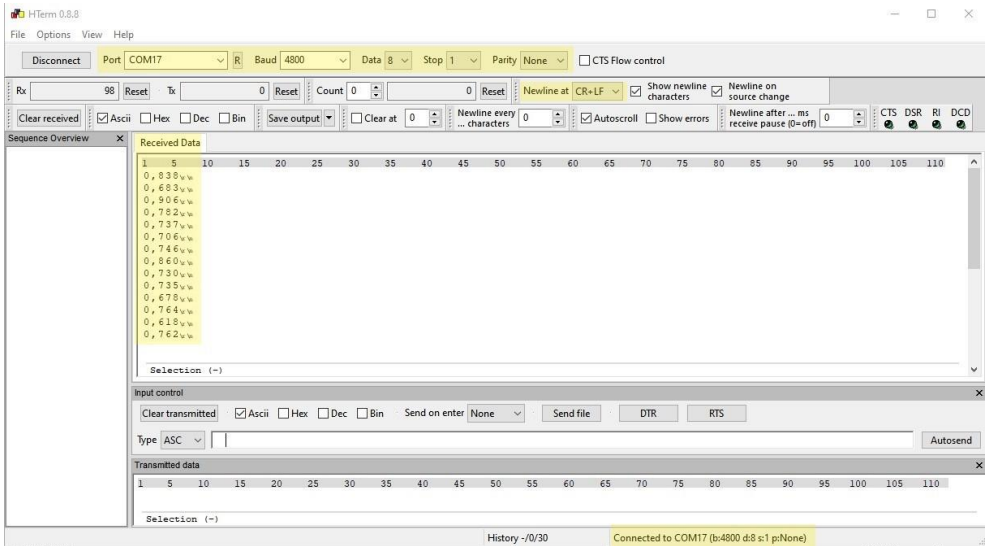
The screenshot shows the Microsoft Excel interface with a table of measurement results. The table has three columns: a numerical value, a time in hh:mm:ss format, and a date in dd.mm.yyyy format. The data is as follows:

	A	B	C
1	0,39	20:34:54	28.11.2023
2	0,62	20:34:57	28.11.2023

Open Microsoft Excel and click on a field to start the listing of the measuring results. The Export to Microsoft Excel is now set and starts in the field clicked (here A1). The results of every measurement will now be shown in the open Excel sheet. The first column will be the TGM result then the Time (hh:mm:ss) and then the date.



To export the Data to a terminal program for serial communication (Hterm; Microsoft Data Streamer etc.) first identify the TGMmini COM-Port in the device manager (here COM17).



Open the terminal program and indicate the COM-Port (Page 31). To receive the UART Data, the Baud Rate has to be set at 4800, Data 8, Stop 1, Parity None. Set newline at carriage return and line feed (CR+LF). The Data comes in ASCII. The data export from the TGMmini to your terminal program is now set.



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1. Connect the „USB type A“ Receiver with a Com Port of the PC



2. Start the TGMmini check for „BLT“ in the bottom line after connection

```
TGMmini:$BLT 
```

3. Start TGMUSB – it should show „USB o.k.“ if not please check USB Receiver connection



4. Start Excel and click in the field the data should start. It will jump automatically in the next row giving date, time and speed







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The TGMmini is calibrated by delivery and there are no altering parts. However, we recommend a factory calibration and check at glasmacher electronic every 2 years or use the TGMimpuls tester to check the TGMmini at your place.

We offer support via email, phone or video conference and provide spare parts or offer repair service.

Do not hesitate to contact us for any questions, problems, improvements, new measurement ideas or your experience with the TGMmini. Thank you!



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Measurement range: 0.13...5.00 m/s  
Measurement tolerance: +/- 0,05 m/s  
Section of measurement: 55 mm  
Measurement frequency: 1 MHz

Door speed $v$ [m/s]	0,13	1,00	5,00
Measurement time $t$ [s]	0,423	0,05	0,011
Resolution +/- $\Delta v$ [m/s]	0,01	0,01	0,01
$\Delta t$ [ $\mu\text{s}$ ]	4230	550	110

max. distance between the measurement sensor and the edge of the door: 10 mm  
Display: 3 digit LED 25mm\*35mm  
Display unit: m/s



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Processor:	TI MSP FR2476
Program/Data memory:	56 kB / 4 kB
Operating voltage:	3,3 V= / 5 V=
Current consumption:	ca. 15 mA
Accumulator:	2x 3,6V Lithium Ion
Type:	Ansmann 16340
Voltage:	7,2 V=
Capacity:	850 mAh
Charging current:	up to 500 mA full in 4h
Power adapter:	100 – 230 V~ / 12 V=
Temperature min:	-20°C (accu is limit)
Temperature max:	+60°C (accu is limit)
Size:	42x54x80mm
Weight (incl. Accu):	235g



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