

Instructions: Data interfaces for G & G scales

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1 Introduction

In this manual you will find a short explanation about the connection as well as the data transmission of our scales by means of the RS232 or Bluetooth interface installed in many G & G scales for connection to your Android smartphone, laptop or PC.

Both types (Bluetooth and serial transmission) use the same protocol and are compatible. If your G & G scale has an RS232 interface, you can use the balance with an RS232-> Bluetooth adapter and wirelessly with your smartphone.

2 General information about weight processing in programs

The scale sends the weight to the computer, much like a keyboard sends the typed letters to the computer. This data can only be usefully used if you use a program that can process these letters. On a keyboard, these can be simple word processors, such as the editor preinstalled on every Windows PC. With which you save the keyboard input on the PC as a .TXT file. For special applications, you may need a paid program such as Microsoft Word, which not only lets you save the text of the keyboard, but also converts it into an attractive format. With programs like Excel, you can combine typed numbers from 0 through 9 into numbers to create calculations and statistics.

Also for the scale, there are various applications that can vary greatly in terms of functions and price.

For the PC: On our website www.GandG.de you will find under "Download" a free software with which you can check the connection or record the weight in a .TXT file.

You can then import this .TXT file into many programs, e.g. in Microsoft Excel to create statistics on long-term measurements.

For mobile devices, the free app "Bluetooth spp tools pro" allows saving the weight. Both programs offer similar benefits as the editor on the PC and save the weight in the same .TXT format.

In addition, we ask for your understanding that we are a scale manufacturer, not a software developer or IT service provider.

We are happy to help connect the scale to your computer, but what you do with the values on the PC (or smartphone, Rasperry, PLC module, ...), we can only help you as much as the manufacturer Your keyboard could advise you to software.

Many programs that are designed to take on a weight offer the option of controlling a scale, for example from shipping service providers to which the package weight is automatically transmitted, or from merchandise management / warehouse management systems.

If this is not the case with your planned application, we recommend that you contact TEC-IT. Among other things, this software developer specializes in the development of data acquisition programs and, with the TWedge program, offers the possibility of the results of scales (cross-vendor, as well as other measuring and data acquisition devices), to any application, office applications, ERP systems and To transmit databases. The weight of the

scale can be typed directly into an Excel spreadsheet or transferred to your ERP system, even if your ERP system "from house" is not designed to control an external device. Modification of existing applications is not necessary.

For mobile applications, TEC-IT makes extensive use possible with the Android app BluePiano. With one click you can retrieve the weight from the scale and insert it directly into a text box of any app, e.g. in a web-based ERP that you control from the browser.

Here's an example of how to save the weight of the scale with a free program, as well as an example of a larger paid software from TEC-IT.

3 Bluetooth connection (General Technical Features)

For scales like DJ-SA or DJ-KL Series. If you use a Bluetooth-USB Stick, this may vary. The scale is connected via Bluetooth BR / EDR (Basic Rate / Enhanced Data Rate) and controlled with SPP (Serial Port Profile).

You can connect the balance to older devices with Bluetooth Classic, 4.0 or Bluetooth 5.0, there is compatibility. Even devices with "dual-mode" interface can be connected.

This corresponds to compatibility with all known Android smartphones or computers (from small devices like the Rasperry PI to normal Windows desktops).

4 Bluetooth connection to Apple devices & Bluetooth LE

Unfortunately, the manufacturer Apple in current devices installed only the Bluetooth connection Bluetooth LE (Low Energy). **This type of connection is not compatible with our balance.** Also, the transmission profile SPP with which a scale is controlled (for example, to retrieve the weight) Apple does not support the current iOS unfortunately.

In the specialized trade are e.g. special adapters for iPhones available, which enable an SPP interface via detours. However, we have no experience reports from our own hands.

Unfortunately, this also applies to other devices that are only equipped with Bluetooth LE.

5 Description of the data transfer

5.1 How it works;

The transfer is done once when the scale gets the command to send the data.

You can start the transfer by two ways, one is to press the „print“-key on the scale, the second way is to send the print-command from the computer to the scale.

Now the scale will send the current weight (that would also be shown in the display) through the interface.

With an automatic query of the weight every for example 1 second it is also possible to analyse the weight over a longer period of time.

Symbols and composition of the data

-/+	2 bit	Negative-sign, if the value is positive a space is transmitted.
Data	7 bit	Value for weight / decimal point
Unit	3 bit	Weight unit
CR	1 bit	Carriage Return
LF	1 bit	Line Feed

Example:

The output-value / weight shown in the Display: -12,345 g

Output data, displayed as ASCII code

-/+	Data							UNIT	CR	LF
-		1	2	.	3	4	5	g	\r	\n

5.1 Remote control instructions

The computer can use the data interface to control the balance with commands.

Following are the commands for scales that have a Bluetooth interface from factory.

Command as ASCII character (input on the keyboard)	Command as HEX CODE	Description
p	70	Requesting the scale for data transmission (printing)
q	71	Calibration function is activated (IMPORTANT: Accidental calibration leads to the wrong results of the balance!)
r	72	Counting function is activated
s	73	Weight unit change (Kg / lb - key)
t	74	Tare function is activated (TARE key)
u	75	Backlight is activated (LIGHT button)

The following are the commands for scales that have an RS232 interface and which you control via RS232-> Bluetooth adapter or via RS232 null modem cable.

Command as ASCII character (input on the keyboard)	Command as HEX CODE	Description
ESC p	1B 70	Requesting the scale for data transmission (printing)
ESC q	1B 71	Calibration function is activated (IMPORTANT: Accidental calibration leads to the wrong results of the balance!)
ESC r	1B 72	Counting function is activated
ESC s	1B 73	Weight unit change (Kg / lb - key)

ESC t	1B 74	Tare function is activated (TARE key)
ESC u	1B 75	Backlight is activated (LIGHT button)

***Important NOTE:**

The following instructions only explain the control commands of the balances that have Bluetooth as standard. RS232 scales connected via Bluetooth adapter or RS232 cable require different control commands (e.g., for the print command instead of the "p" command, command "ESC p").

Scales with RS232 interface also have a PRINT button. With this you can send the weight once immediately (without query from the PC).

The first control character (ESC) is the factory setting of the RS232 scales. You can set this control range to a different value (for example, from "ESC p" to "! P"), for details refer to the manual of the respective scale.

6 RS232 interface with data cable

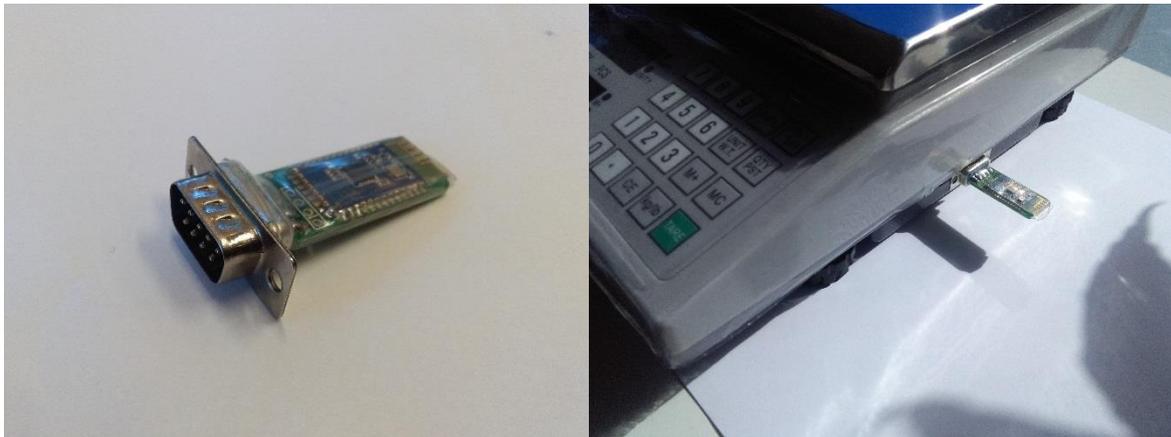
If you want to connect your balance to an RS232 cable, be sure to use a NULL MODEM CABLE.

A normal RS232 cable (such as an extension cable) will not transmit data. This also applies to connections with a USB-> RS232. Between the RS232 port of the adapter and the balance, you must either use a null modem cable RS232 null modem adapter.

7 RS232 interface with Bluetooth adapter

If you want to connect an RS232 scale wirelessly to an Android smartphone or a computer, we offer an RS232 Bluetooth adapter as an optional accessory.

You can simply plug this stick into the RS232 interface of the scale:



Note: The power supply of the adapter is done by the RS232 interface of the balance. There is no need for a separate power supply, but the RS232 interface must be compatible and have a power source.

For G & G scales produced from 2019, the interface is factory-fitted as standard. For older scales we ask you to contact us with your your serial number and the production date before buying the adapter to check compatibility.

If you would like to control an older scale wirelessly, we recommend an aftermarket adapter with a separate energy source.

Our adapter is expressly NOT compatible with scales or measuring instruments from other manufacturers.

8 Connection to the smartphone (Android)

The general transmission

The transfer takes place as soon as the balance receives the corresponding command.

To do this, transfer the print command, or alternatively all commands that you normally enter via the keyboard (for example TARA), to the balance via the interface. The scale "answers" with the current weight.

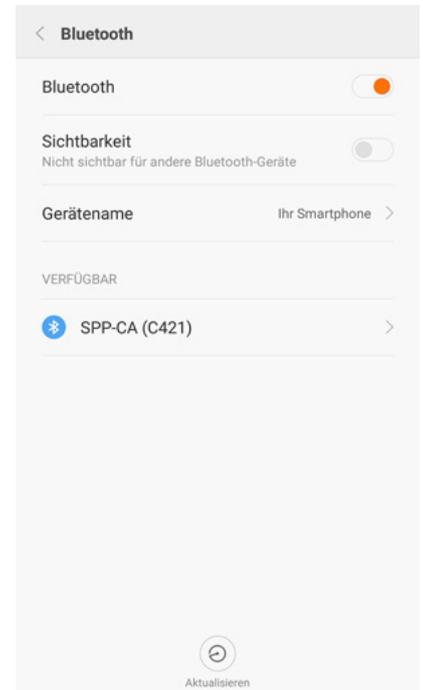
Connection from the smartphone to the scale

Activate the Bluetooth interface in your phone's settings.

After a short while, the list of available devices will refresh and the device "SPP-CA" * will be displayed. Click on this to start the pairing. An input mask opens in which you enter the device password. This is 1234

The device "SPP-CA" * is now included in the list of active pairing devices.

*** Note: The name corresponds to your balance and may differ. If you e.g. a scale from the series DJ-KL have this indicated as a name.**



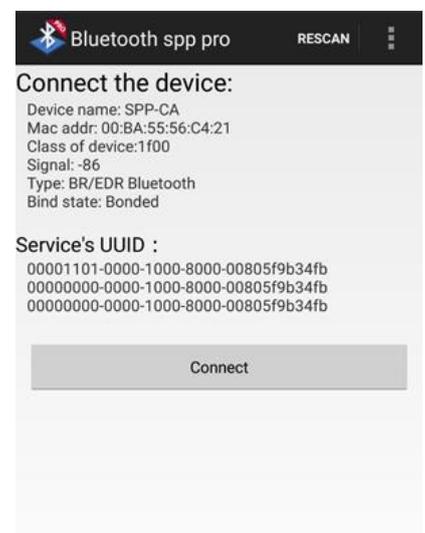
9 Mobile Device: Free app for data transfer

Your smartphone needs an app to control and manage the scale from the smartphone. Suitable for this is any Bluetooth app that can control devices via SPP (Transmission and Control Protocol), e.g. the app "Bluetooth spp tools pro", available for free in the Android Appstore, on the basis of which we have set up this manual. Scan the QR code for a direct link to download:



Start the app, after a few seconds the display shows "SPP-CA" (This may differ, device name see "Connection to the smartphone") for our balance.

Click on it and in the following window on the button [Connect].



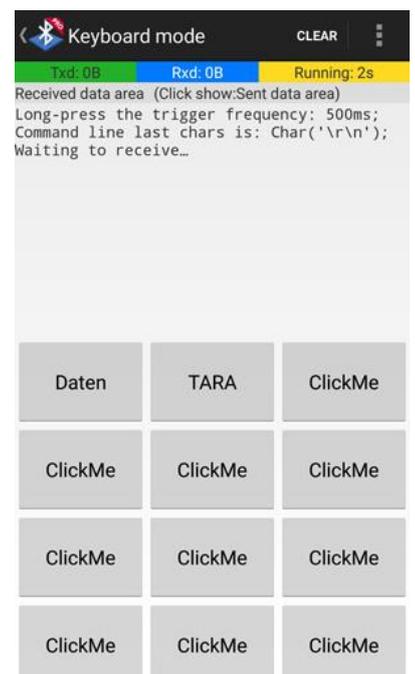
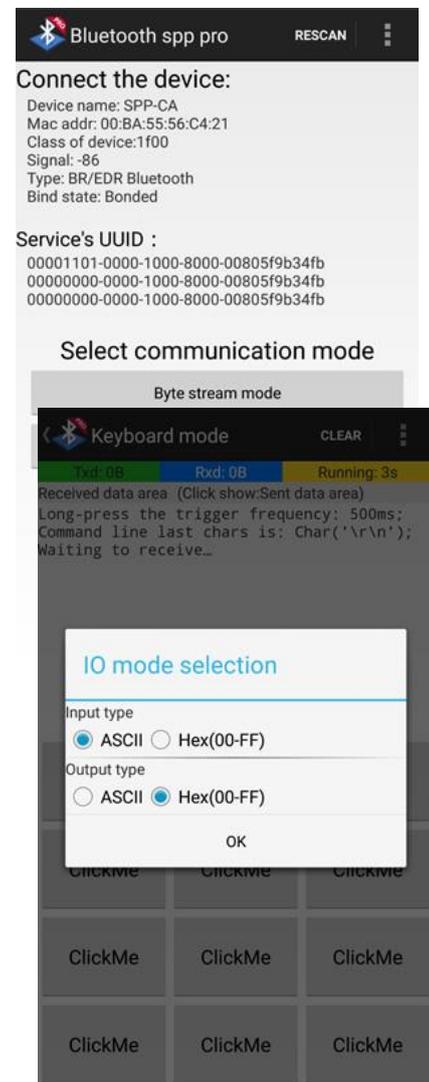
In the following window, the tool asks for the type of data transfer. Click on the [Keyboard mode] button to be able to operate the balance later like a remote control with corresponding button.

You are now in the following overview. You can open the option overview via the "three dots" at the top right. Then click on the [Buttons set] button and then again on the "three points" and on the button [Set IO mode]. Fill in the opening menu as follows to indicate that the received information is displayed as normal text (ASCII letters) and the data sent by the mobile phone is sent as hexadecimal code:

You can now click on one of the 12 gray buttons and all buttons labeled as [ClickMe] in the lower half. You will see a window in which you can choose between the name of "BTN Name" and below the desired option which should be executed as soon as you press the key. In this case, enter "data" as the name and "70" as the function, be sure to use uppercase letters for the latter. Following this pattern, you can assign the buttons all to one of the functions required by the phone. The complete overview:

- 70: data (send)
- 71: Start calibration of the balance (an adjustment started by mistake without matching reference weights will adjust the scale!)
- 72: counting function
- 73: change weight unit (kg -> lb)
- 74: TARA

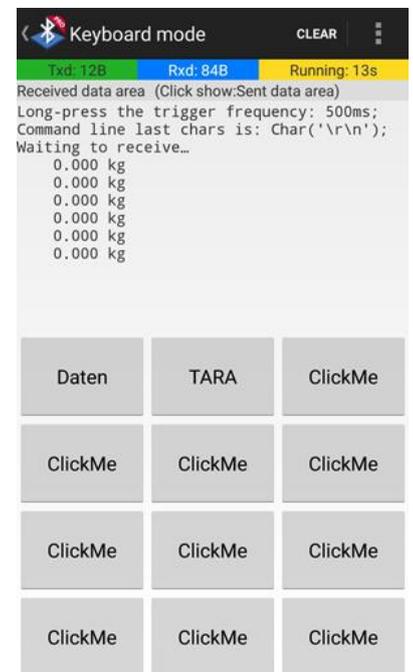
In our example we are only interested in the function "send data" and "TARA" and have set the app as follows. Now click on the three dots in the upper right corner and then on "Buttons Set complete" to complete the setting.



Now click on the "Data" button, the balance transfers the weight currently displayed in the display to your smartphone with each click. With the "TARE" key you can control the scale remotely and set it to "0".

Via the "three dots" you can open the menu and save the received data (which is currently shown in the display) as a TXT file.

Of course, this setting also allows you to set up any other app in which you can set the control commands.



10 Mobile device: Data transfer and transfer to other programs via TEC-IT BluePiano

*NOTE: Unfortunately, we was just able to implement the apps screenshot only from the German version, but the software itself is of course available in English as well.

In order to not only save the readings, but to pass them on immediately to other programs, you need a "wedge software" such as the Android Appstore app "BluePiano", on the basis of which we have set up this manual. Scan the adjoining code for a direct link to download (free demo version available).

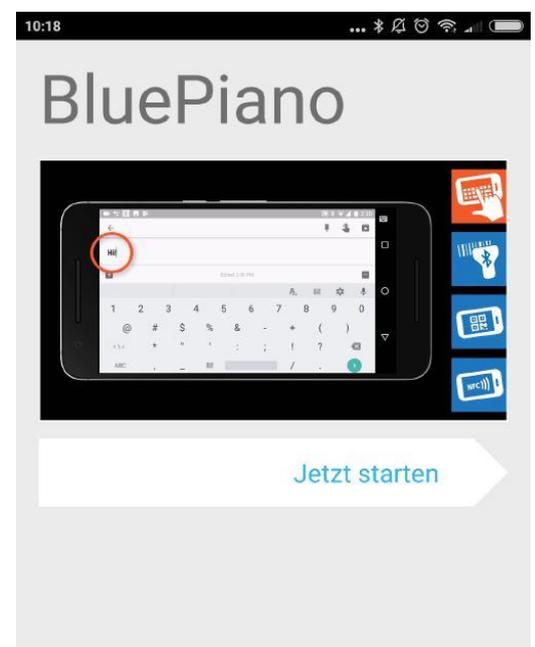
This program sends the print command to the scale, receives the weight value and types the text into a currently active text field on your mobile device.



10.1 Installation

Install the app from the Google Play Android App Store and start the application.

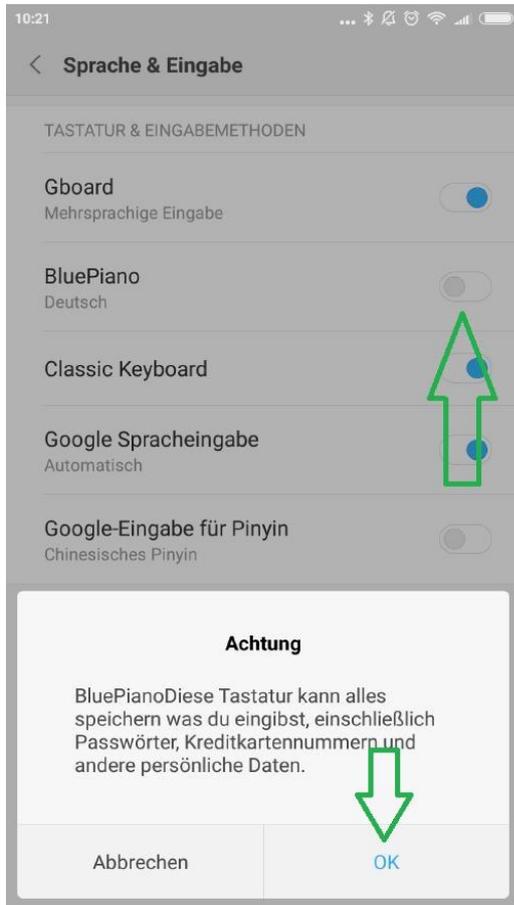
You will see a short video explaining the most important functions, then click on "Start now".



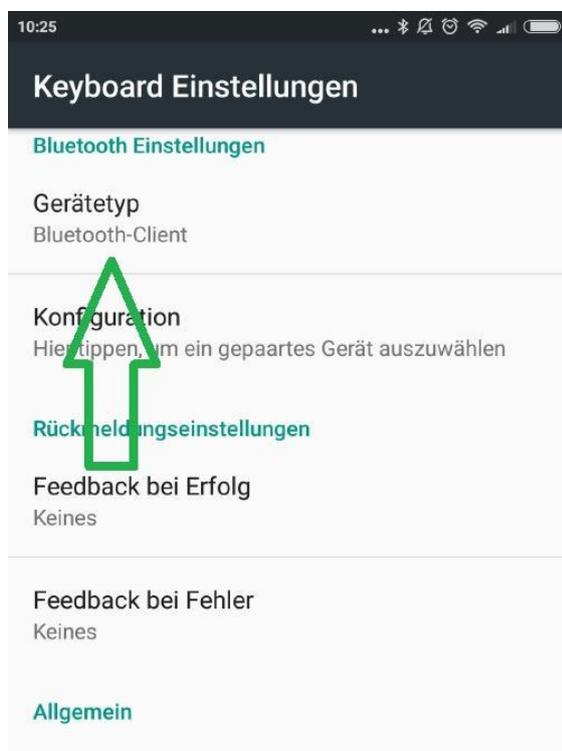
10.1 Settings

The simple and self-explanatory setup of BluePiano will guide you through all the steps you need.

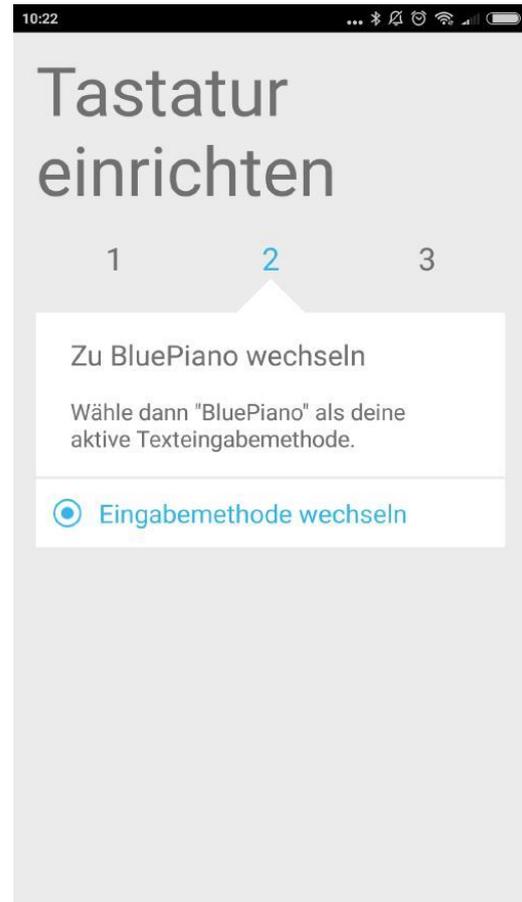
1. Activate BluePiano as keyboard in the Android system.



3. After the setup, you will be taken to the actual menu of the app. In the Bluetooth Settings section, select "Bluetooth Client" as the device type.



2. Select BluePiano as the active keyboard.

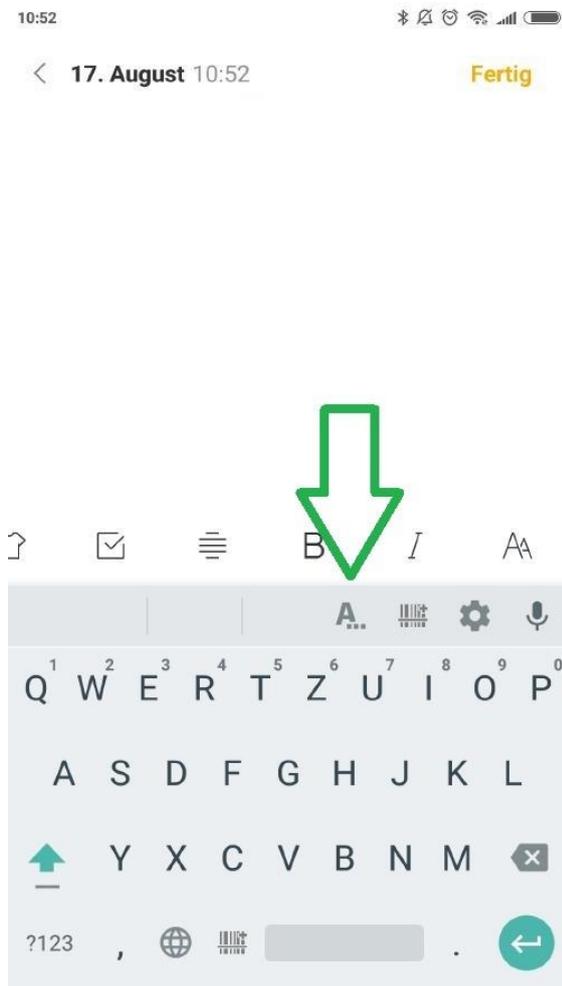


4. Click on the "Configuration" button underneath and select the balance connected to the Android device under point 5 of the manual as a device, in our case a DJ balance.

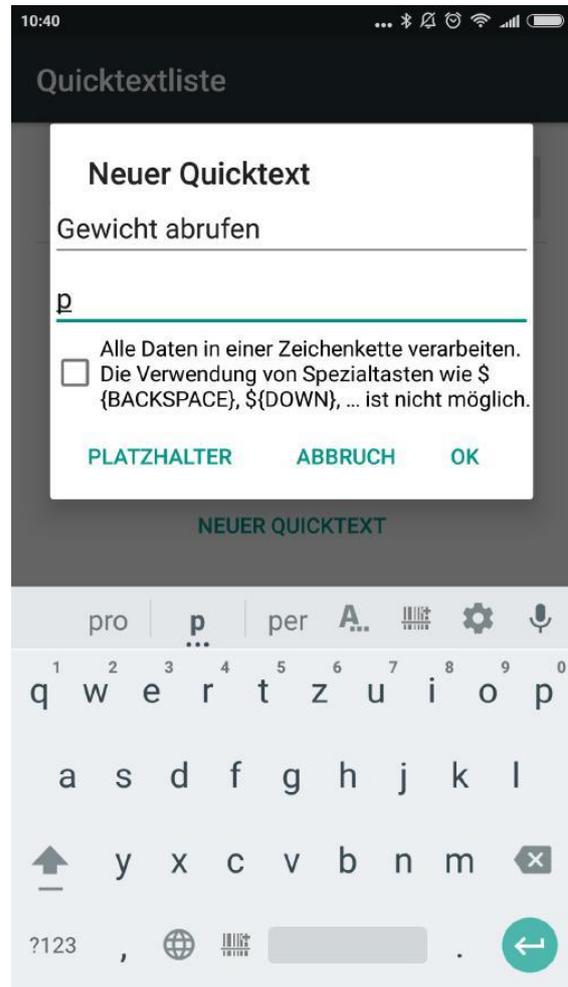
5. Save the settings and go to a normal app in which you can type in text, such as the browser or a notebook.

As soon as you touch the text box, you will receive the message (if not already given during the installation) that BluePiano needs further rights from Android to be able to work. "Save" is required, others are optional.

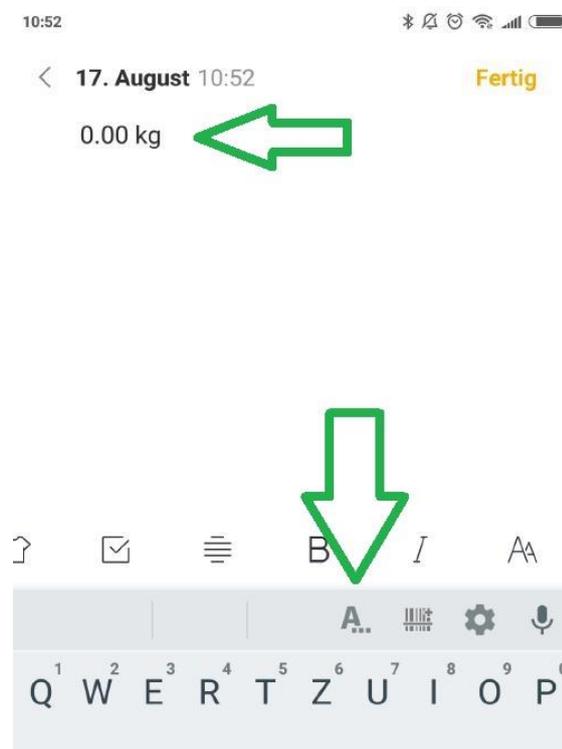
6. Back in the text app you'll see that your Android keyboard has changed and additional information added. Press and hold the "A ..." icon for a few seconds until the "quick text list" appears as the app's new menu



7. Add a new Quicktext. Name = retrieve weight, text = p, then click OK.



9. You can now send the print command to Libra in any app with a short tap on the symbol "A ...", the balance responds with the weight. In our case, the text is typed in the notebook.



10. If the pure input as a simulated keyboard is not enough you will get further possibilities with the app "GetBlue".

GetBlue automatically collects device data in the background. The received data is displayed, saved (file, Google Docs) or forwarded to other devices (HTTP, TCP, Bluetooth SPP, USB serial). Bi-directional communication is supported, manual functions for sending or receiving data are also available.

11 Connection scale to your PC PC

PLEASE NOTE: We was only able to screenshot the pictures below on our German Windows Computers, sorry for that. The icons still will look the same on all languages, if you are not able to find the correct buttons just give us a short contact.

11.1 Bluetooth connection – Scale to PC

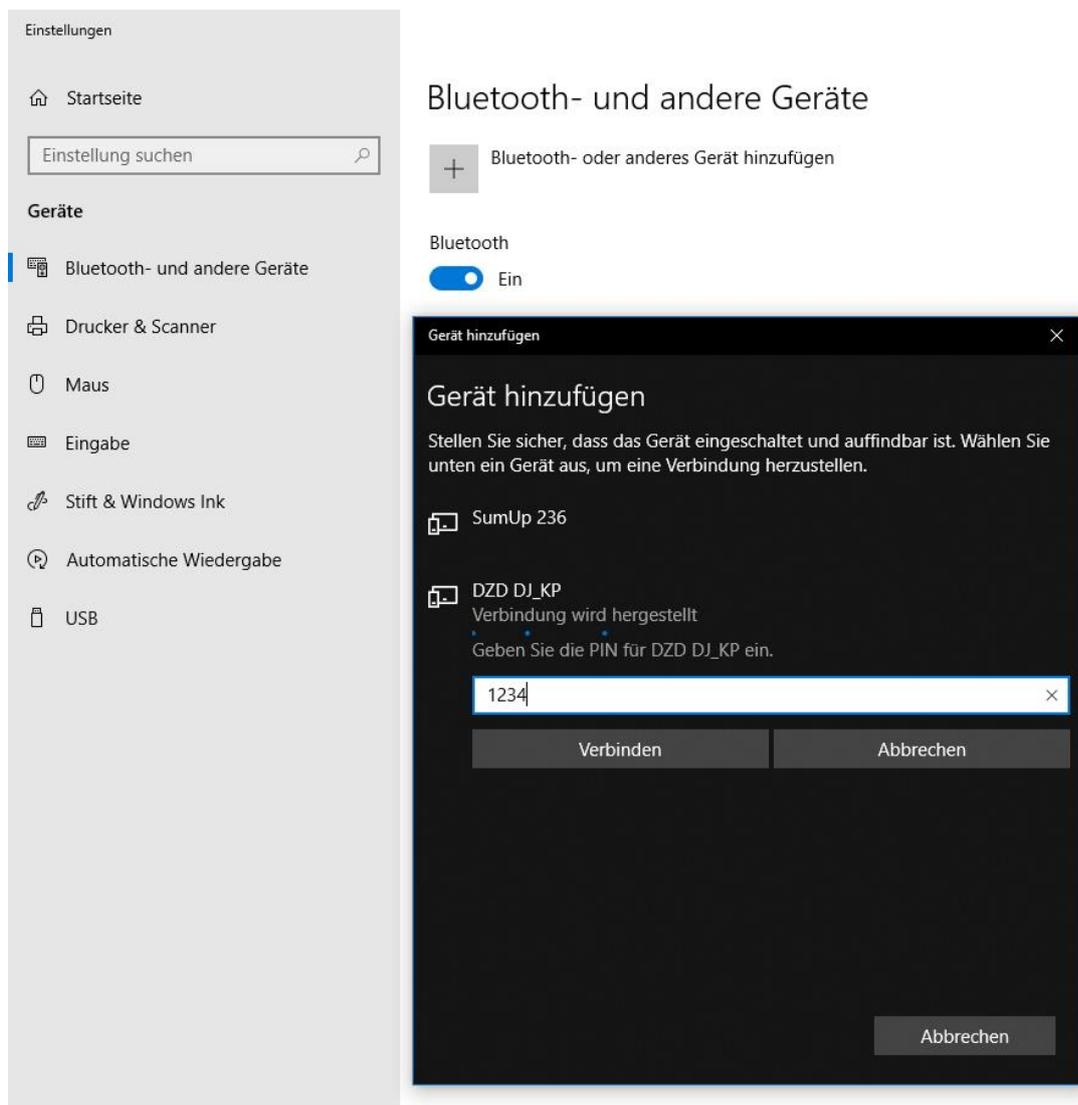
First, you need to install and activate the Bluetooth interface on the PC according to the manufacturer's instructions. In some cases, these are already integrated into laptops, if not you can any (all current, as of 2018, available on the market sticks could be used) plug in Bluetooth USB stick and control the connection.

Open the connection overview according to the manufacturer's instructions and connect to the balance.

Device name: According to your balance. (e.g., DJ-SA on a scale of this series)

Pairing password / pairing code: 1234).

Once the connection is made you can treat the scale like a conventional serial connected device.



Once the device is added, click once on the device. In this case a BT04-A balance. At the far right under WIN10 you will see the setting "Additional Bluetooth Options". Click on it and go to the middle tab "COM Ports".

In our case, the balance occupies two COM ports, COM3 as the incoming port and COM4 as the outgoing port. This depends among other things in which USB slot you insert a Bluetooth stick. Only the second is important, remember or write down the outgoing port (COM4 in our example).

Bluetooth- und andere Geräte



- Aktivieren Sie Bluetooth noch schneller
- Um Bluetooth ohne Öffnen der Einstellungen einzuschalten, öffnen Sie das Info-Center und wählen dort das Symbol „Bluetooth“. Gleiches gilt für das Deaktivieren von Bluetooth.
- [Weitere Informationen zu Bluetooth](#)
- Verwandte Einstellungen
- [Geräte und Drucker](#)
- [Soundeinstellungen](#)
- [Anzeigeeinstellungen](#)
- 2.** [Weitere Bluetooth-Optionen](#)
- [Dateien über Bluetooth senden oder empfangen](#)
- Haben Sie eine Frage?
- [Hilfe anfordern](#)
- Verbessern Sie Windows
- [Feedback senden](#)

11.2 RS232-Connection – Scale to PC

Connect the balance to the RS232 interface of your computer, either a direct interface or a USB-> RS232 adapter of your choice.

IMPORTANT: A NULL MODEM CONNECTION is mandatory. You can either use a null-modem cable, an adapter or, in the case of a USB-> RS232 adapter, a correspondingly polarized one. Without null modem connection no signals are transmitted!

After the scale is plugged in, go to the Windows setting "Bluetooth and other devices" (See screenshot above, identical to the Bluetooth connection). In the lower left corner, click on the scale * at "Other devices", then on the right side "More options" and note the outgoing port in the section "COM ports".

* If you are using a USB to RS232 adapter, click on the name of the adapter to which the balance is connected.

11.3 Saving the weights on the PC – Free G&G Software

On our website www.gandg.de you find under "Download" a free test software with which you control the connection and the data manually (once click = the current weight appears) or automated (query every 10 seconds with a current timestamp) in one Record a .txt file.

Direct link to download:

<https://gandg.de/download/G>EST.zip>

Manual:

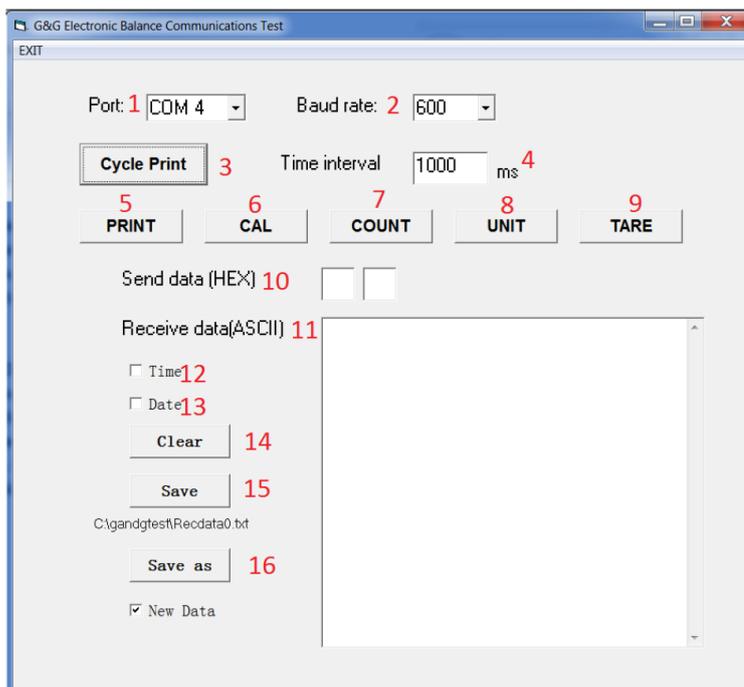
1. Download the "G & GTEST" file.
2. Extract the complete folder with an unpacking program (Win-Rar, 7-Zip or others) to any folder (can be deleted after installation)
3. You will find the three files in the folder: setup.exe, SETUP.LST and tptest14e.cab
4. Start the installation program by double-clicking on "setup.exe"
5. In the first window that opens, confirm that you want to install the scale.
6. If necessary: Change the folder where the program will be installed.
7. Click the small button that represents a computer to start the installation.
8. Select the name under which the program will be displayed in the start menu. Standard selection is "G & G Electronic Balance Communications Test". confirm with OK
9. The installation is complete.

NOTE:

The program can only be started if a COM port is assigned to the PC (whether with an active Bluetooth connection or with an RS232 cable).

Start the program via the start menu.

You will now see the following screen:



1. COM port selection
2. Selection of the baud rate
3. Automatic weight query
4. Interval for automatic polling in ms (1000 ms = 1 second)
5. One-time query
6. calibration
7. counting
8. Change unit
9. TARA
10. Control Window: The command sent to the scale by the program
11. Display window: The weight "transmitted" by the balance
12. Selection: Timestamp received weight
13. Selection: Date the received weight with a date stamp

14. Delete window11

15. Save all data currently displayed in window 11 as a TXT file

16. Select the location where the TXT file will be saved.

Use:

You can use the tool to remotely control the scale and save the measured values if necessary. For this, ask the weight with the scale all e.g. every 1 second (note: value must be given in milliseconds, 10 seconds = 10000 ms) and if necessary add a date or time.

It builds up a long list, which you can save at the end of the measurement as a TXT file (the faster the query, the larger the file). When you open the TXT file, you will see this data:

31.07.2018 16:01:22 - 500 g

31.07.2018 16:02:22 0 g

31.07.2018 16:03:22 0 g

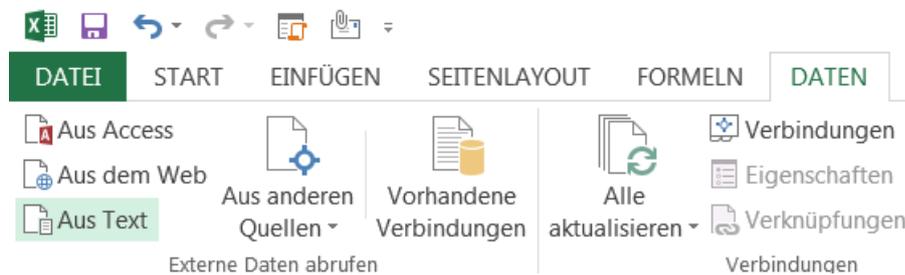
31.07.2018 16:04:22 0 g

11.4 Import saved weights into Excel

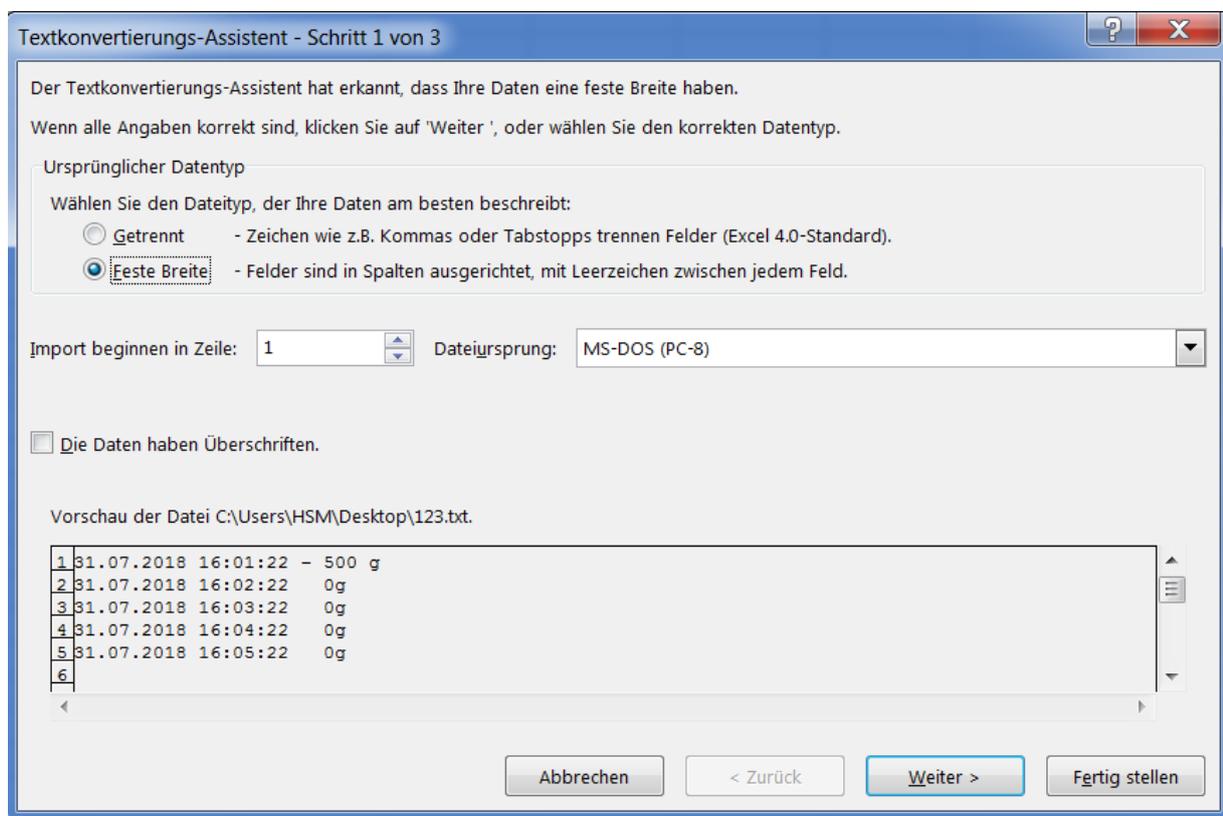
You can easily import this saved text file into Microsoft Excel if you need it.

Explanation for Excel 2013:

Click on the "Data" button above -> "Import from text"



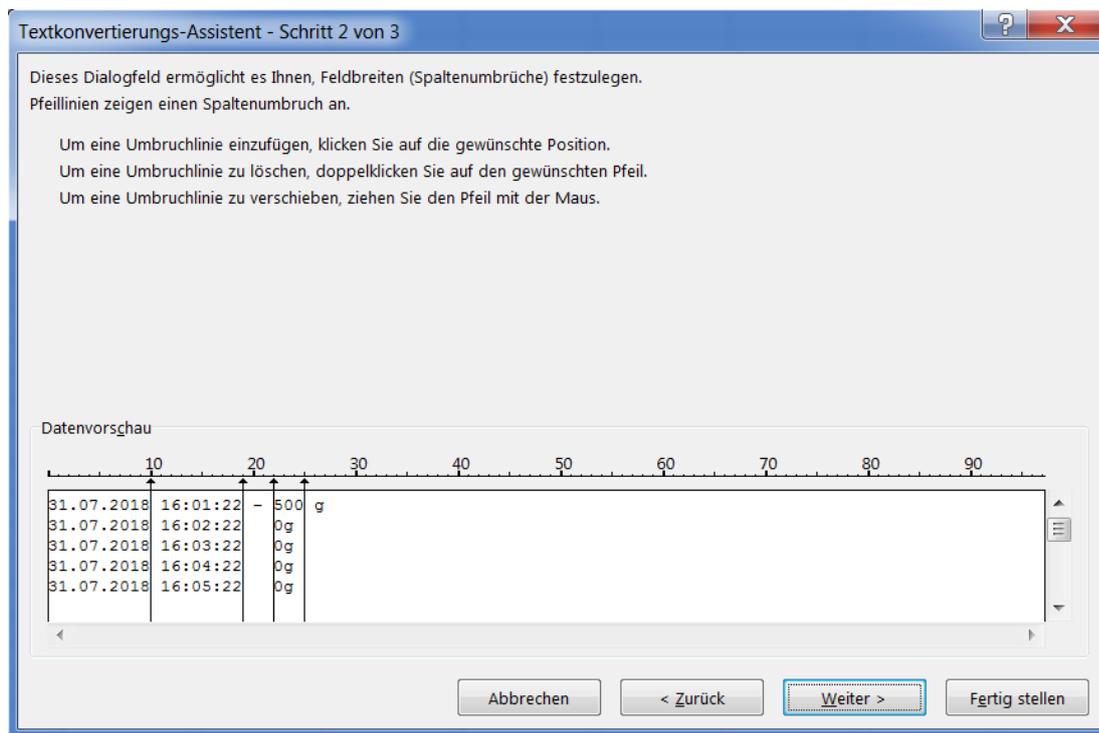
Select the TXT file. The conversion wizard opens:



Select that the data is separated by a fixed width.

Click on Continue.

In step 2, drag the arrows to each section. There is one block each for the time and date (if stored) as well as several subdivisions of the measured values into the sign (positive or negative indication), the weight and the unit (grams or ounces, for example). In the final step, you can give Excel the correct format so that the date stored as text can also be "understood" as a date.



At the end, you will see this result in Excel in separate tables.

	A	B	C	D	E	F
1	Datum	Uhrzeit	Positiv / Negativ	Gewicht	Einheit	
2	31.07.2018	16:01:22	-	500	g	
3	31.07.2018	16:02:22		0	g	
4	31.07.2018	16:03:22		0	g	
5	31.07.2018	16:04:22		0	g	
6	31.07.2018	16:05:22		0	g	
7	31.07.2018	16:06:22		0	g	
8	31.07.2018	16:07:22		0	g	

From this you can, for example, create a chart, clear statistics in a measurement with long-term history.

11.5 Direct weight transfer with TWedge to other programs:

The following instructions were created with the paid program TWedge by TEC-IT. Among other things, TEC-IT specializes in the development of software for data acquisition and, with the TWedge program, it is possible to transmit the results from our scales and other measurement and data acquisition programs to any application, office application, ERP system and database. The weight of the balance may e.g. are transmitted directly to your merchandise management, even if your merchandise management "from house" is not

designed for the control of an external device. Modification of existing applications is not necessary.

The following instructions explain how to set the program so that the weights can be retrieved with a hotkey (any key on the keyboard) and typed into a running program, in the form of a "simulated keyboard".

Alternatively, TWedge could also store the data directly in e.g. Type in Excel or insert ODBC access with SQL commands into a database.

The complete manual with additional functions can be found on the website of TEC-IT.
www.tec-it.com

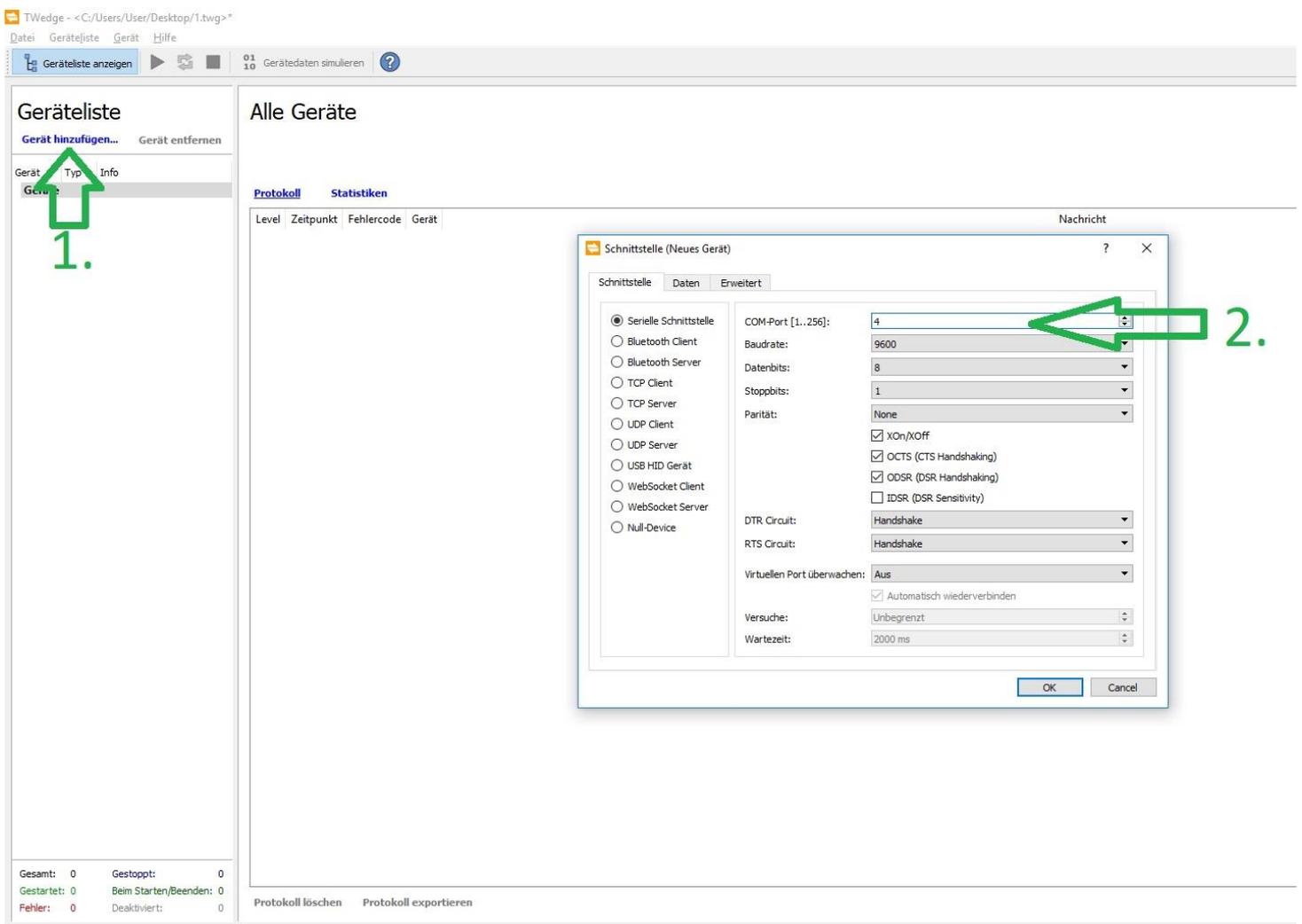
Connection of the scale:

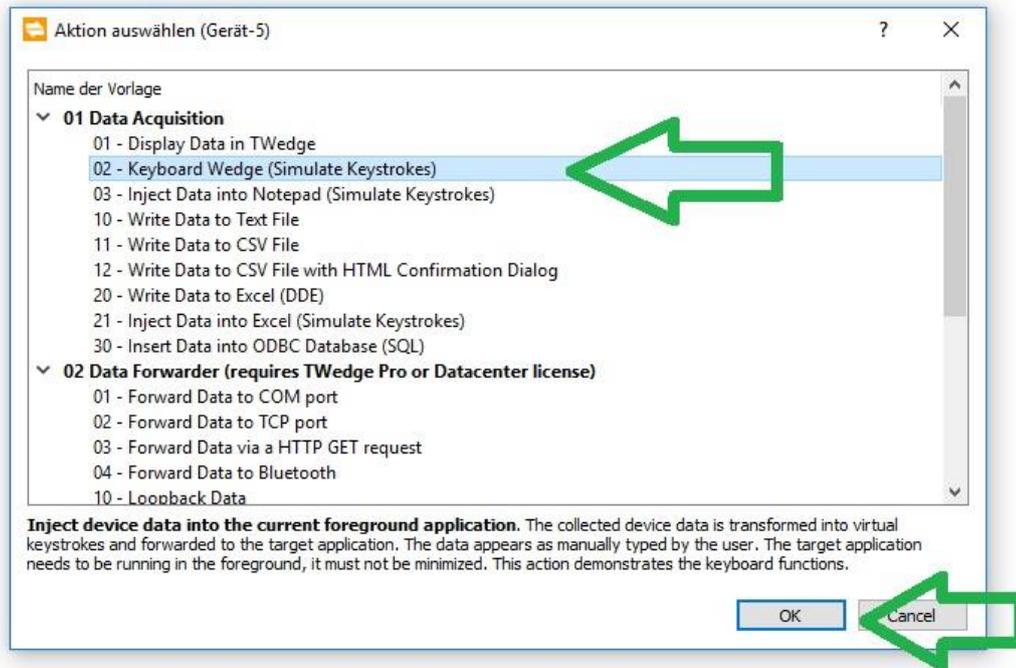
Connect the balance as described at the beginning.

Start T-Wedge and follow the green arrow of the following explanation:

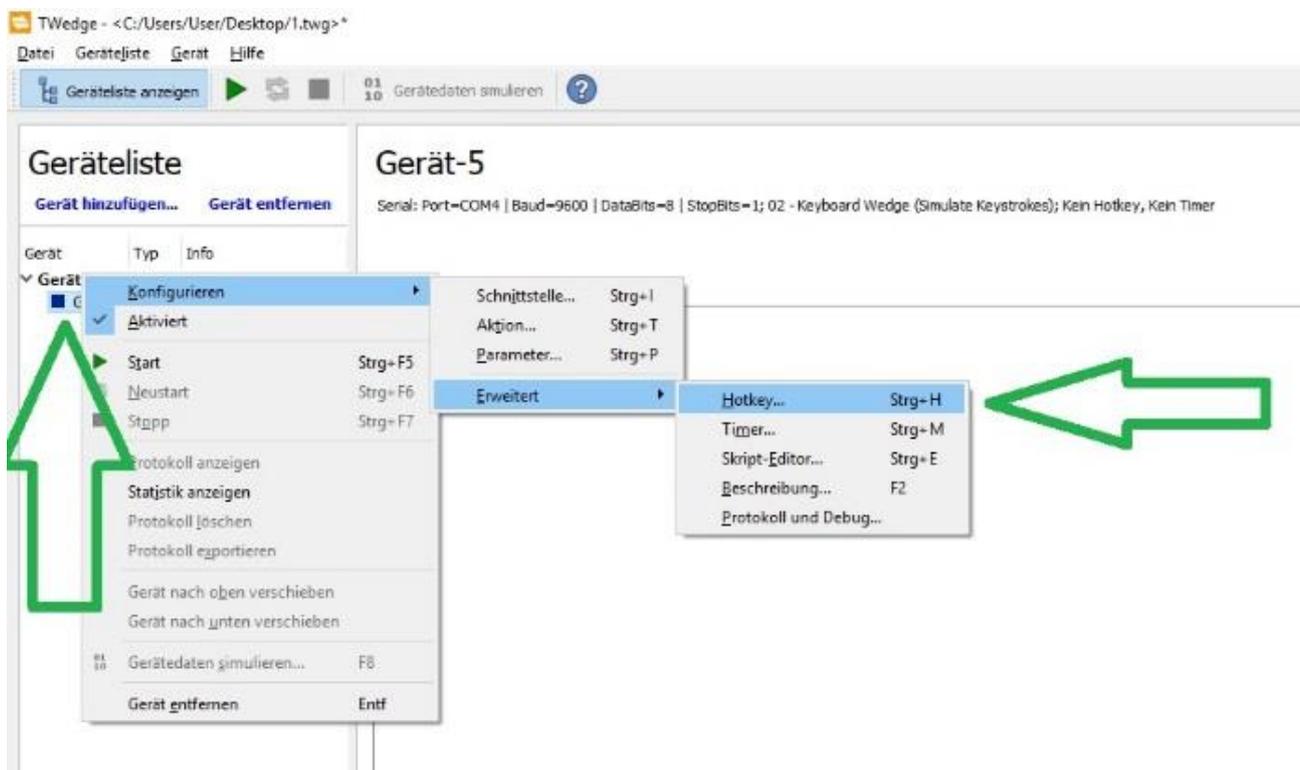
1. Add a new device. Select this is a serial interface which is controlled via port 4 (see chapter 8). Confirm with OK.

2. In the following window you can choose what the device should be used for, e.g. only display the weight in the program itself, transfer it to Excel or type it as a keyboard wedge into other programs. This option is interesting for our example, click on it and confirm with OK.

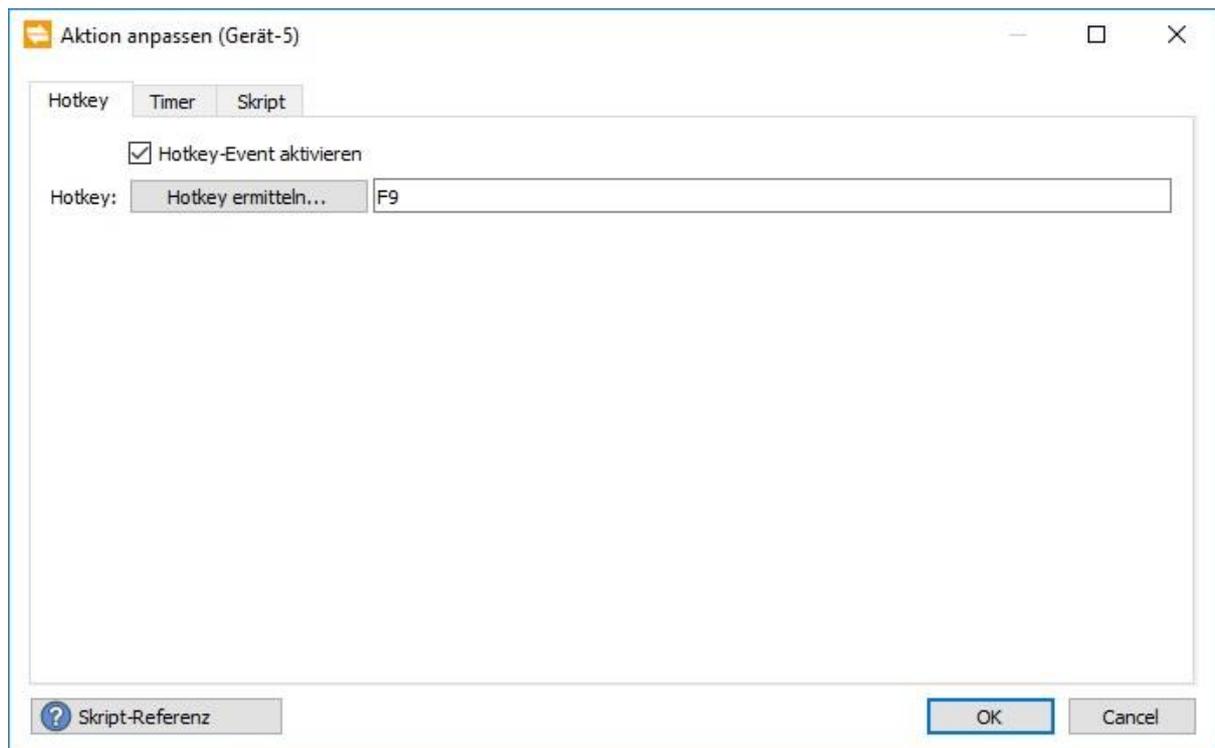




3. On the left side of the device list you can see the added scale. Click with the right mouse button on it and go over "Configure" -> "Advanced" to "Hotkey".



4. Select "Activate Hotkey Event" and then use "Detect Hotkey" to select any key on your keyboard that will control the scale. In our case, I have chosen [F9], this button is not used or occupied by other programs.



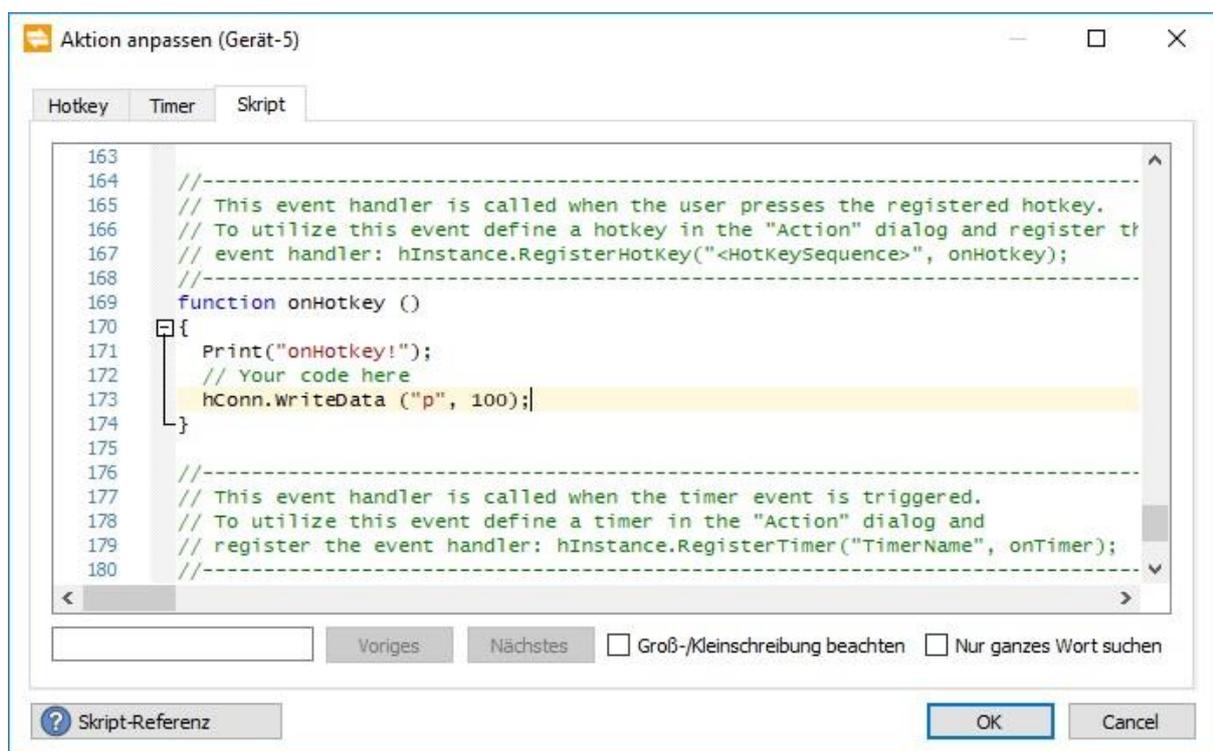
5. Go to the "Script" tab and scroll down to the text line in the text box:

`function onHotkey ()`

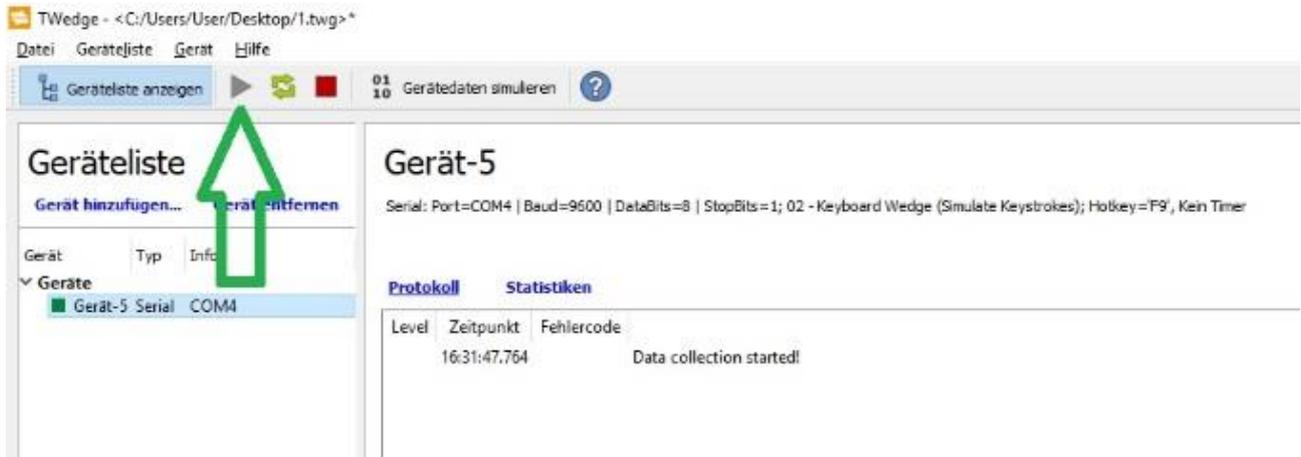
Under the line `// Your code here` enter **exactly** the following text:

`hConn.WriteData ("p", 100);`

This script sends the text "p" (print command) to the current device (scale) when the hotkey (previously assigned F9 key) is activated. Then confirm with OK.

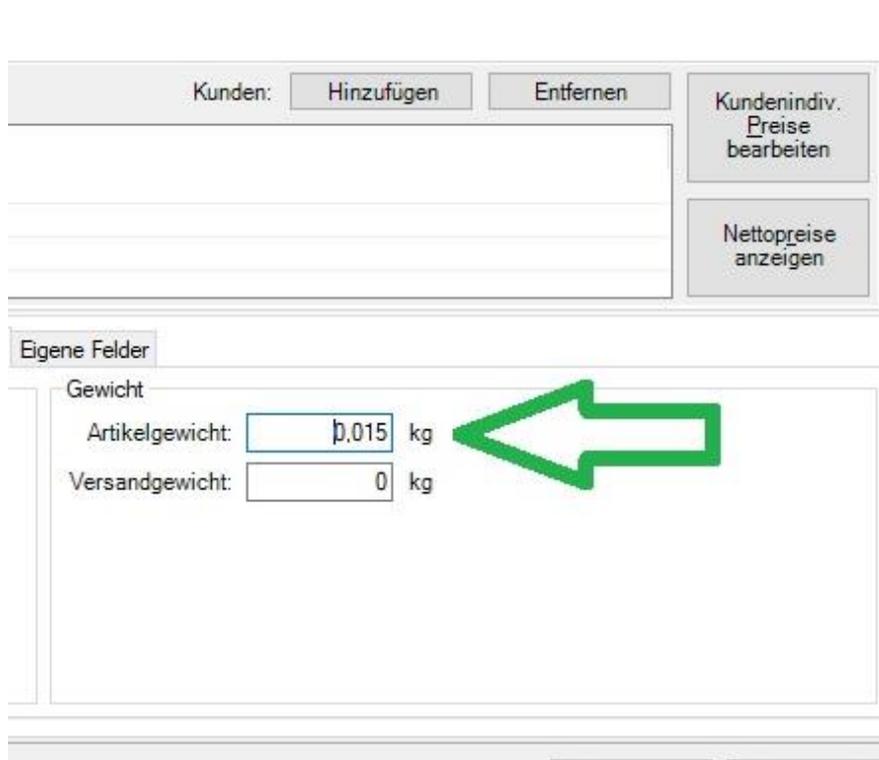


6. Start the connection between TWedge and Libra by clicking on "Play".



7. You can now minimize the program, it runs "silently" in the background.

Go into the program in which you want to work with the weight, in our case in our inventory management program. When creating the data of a new article, the weight had to be manually read from the scale and typed in, error-prone and a corresponding effort for larger numbers. Now it is sufficient if you tap the F9 key in the text field.



8. Note on further setup and scripts:

Any administrator or IT service provider will be able to customize the program to suit your needs using the instructions and script reference provided by TEC-IT. Individual solutions are available on request directly from TEC-IT.

www.tec-it.com

12 Software that can communicate directly with a balance

As a last option, any software that can be used "by default" for weighing can be set for successful transmission of a G & G scale. The scale works with the same protocol as a serial interface. Each program designed for connection to an RS232 balance can be connected to the Bluetooth balance (exception: in-house software from other balance manufacturers that you can not individualize). Here you will find a template of the settings for the DHL Easylog shipping software:

Settings in Easylog: First click on "System", then on "Balance settings" and finally on "New balance". Just fill in the opening menu according to the following pictures.

The image shows two screenshots of the 'Waageeigenschaften' (Scale Properties) dialog box in Easylog software. The left screenshot shows the 'Anschluß-Einstellungen' (Connection Settings) tab with fields for Baud Rate (9600), Stop Bits (1), and Byte Größe (8). The right screenshot shows the 'Waage-Einstellungen' (Scale Settings) tab with fields for Gewichtskommando (lp), Format der Gewichtsangabe, and other options like Null-Funktion and Tara-Funktion.

The "Timeout" window remains unchanged.

If you want to use the tare function, the command is: t

The port (COM7 in the picture) must be inserted in the port of your balance (see chapter 8).

14 Conclusion

We hope you have a good overview of the possibility of connecting the scale to your device. If you have further questions about the connection between scale and device, we look forward to your contact, but as mentioned above we are scales manufacturer, not an IT service provider. We do not know what to do with the weight on your PC as soon as it has received the weight and unfortunately can not help.

The possibilities are unlimited, in addition to the described software you will find numerous other tools on the net, which you can configure with the help of this manual.

If you find nothing suitable, you can use the information from chap. 5 enable programming according to your ideas.

If you have technical questions about the connection, for example, if the results are not transmitted by the balance despite all attempts, you are welcome to contact us at any time.

Ihr G&G Team