

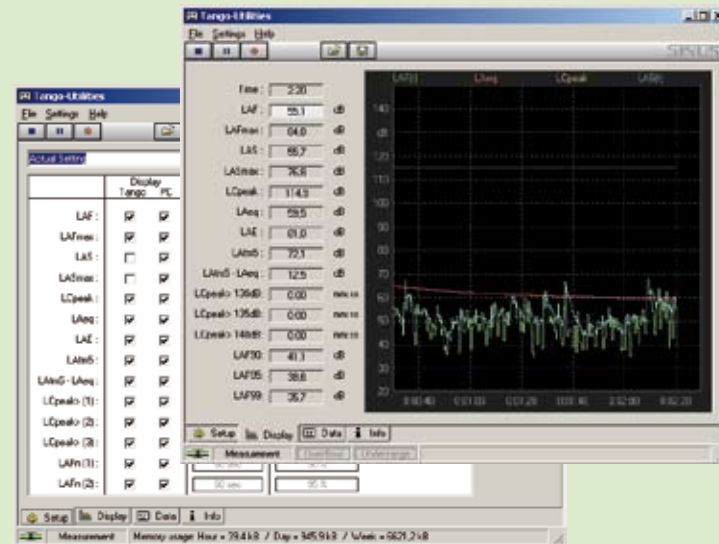


# TANGO *Plus*

Integrating Sound Level Meter class 1 according to IEC 61672  
with 1/3 octave analyser according to IEC 61260

## Technical Data

Accuracy	Class 1 according to IEC 61672 and IEC 61260
Type approval	PTB approval applied for
Meas. values	<ul style="list-style-type: none"> <li>- Sound pressure level L<sub>A</sub>F, L<sub>A</sub>S, L<sub>C</sub>F, L<sub>C</sub>S</li> <li>- 1/1 and 1/3 octave spectra (A, C, Z)</li> <li>- Maximum sound level L<sub>A</sub>F<sub>max</sub>, L<sub>A</sub>S<sub>max</sub>, L<sub>C</sub>F<sub>max</sub>, L<sub>A</sub>I<sub>max</sub></li> <li>- Minimum sound level L<sub>A</sub>F<sub>min</sub>, L<sub>A</sub>S<sub>min</sub>, L<sub>C</sub>F<sub>min</sub></li> <li>- Equivalent sound pressure level L<sub>A</sub>eq, L<sub>C</sub>eq</li> <li>- Peak value L<sub>C</sub>peak</li> <li>- Sound dose L<sub>A</sub>E</li> <li>- Takmaximal level L<sub>A</sub>FT, L<sub>A</sub>FTeq</li> <li>- 3x Statistical values L<sub>A</sub>F<sub>n</sub> (freely selectable)</li> <li>- 3x L<sub>C</sub>peak_exceedance (freely selectable)</li> <li>- L<sub>C</sub>eq - L<sub>A</sub>eq, L<sub>A</sub>FTeq - L<sub>A</sub>eq</li> </ul>
Freq. weightings	A + C
Time weightings	Fast, Slow, Impulse, Peak
Ranges	25 ... 140 dB (L <sub>A</sub> eq) 60 ... 143 dB (L <sub>C</sub> peak)
Resolution	0.1 dB
Display	<ul style="list-style-type: none"> <li>color TFT 320 x 240 dots</li> <li>- measured value with 3.5 digits</li> <li>- bar graphs, spectra, time history</li> <li>- under range / over range indicator</li> <li>- Measurement time (hh:mm:ss)</li> <li>- Battery status</li> <li>- Memory status</li> </ul>
Microphone	1/2" microphone MK255, 50 mV/Pa
Connector	<ul style="list-style-type: none"> <li>- LEMO7 1B (for Micro Extension Cable)</li> <li>- RS232 special connector (for printer)</li> <li>- 3.5 mm jack (audio output)</li> </ul>
Calibration	Automatic with external 94 dB calibrator
Storage cycles	Individually selectable for all values
Interface	USB 2.0, RS232 printer port
Batteries	2x AA (1.2 ... 1.5 V)
Operating time	> 40 h (per set of 2x batteries 2.7 Ah)
Dimensions	190mm x 70mm x 32mm
Weight	250 g (including batteries)
Scope of delivery	Sound level meter, windscreen, 1.5m USB interface cable, user manual, mains power supply, carrying case, Tango-Utilities software
Option 1	1/2" calibrator (Cal200)
Option 2	Tripod with carrying bag
Option 3	Tango Outdoor Kit
Option 4	Battery powered thermo printer
Option 5	Thermo printer (battery powered)

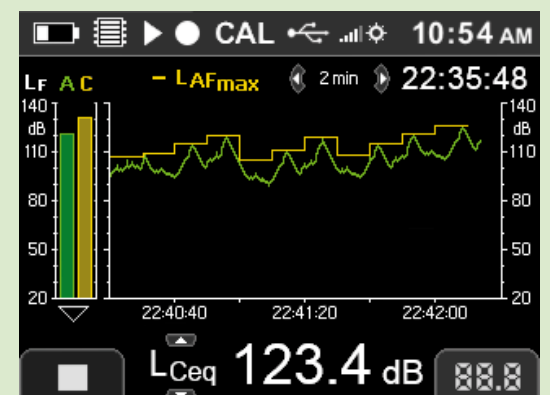
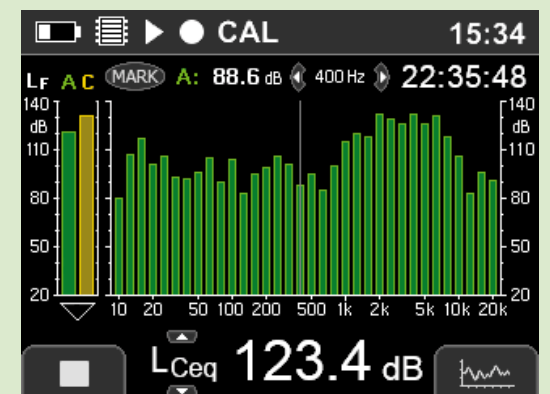


## Software Tango Utilities

The Tango-Utilities software shows all settings at a glance and allows the user to change these on the PC screen. The measurement can be controlled from the PC with the START and STOP buttons. Immediately after connecting to the PC via the USB cable, the internal clock of the Tango is automatically synchronized with that of the PC. Tango-Utilities software can be installed on all PCs with Windows7 or higher – the installation CD is included in the scope of delivery. A USB port is necessary for data exchange with Tango. After attachment to the USB interface, the sound level meter is powered from the PC.



- General sound level measurements
- Noise measurements at the workplace
- Environmental noise measurements
- Monitoring of traffic noise
- real-time 1/1 and 1/3 octave analysis





TANGO Plus - sound level meter / analyser for all measurements necessary in workplace and environmental protection

The Tango Plus sound level meter is a compact Class 1 sound level meter according to IEC 61672 with 1/1 and 1/3 octave analyser for workplace and environmental protection applications. Due to its intelligent software concept and its measuring range of 110 dB without switching to another range, Tango Plus is still very easy to operate despite its high functionality.

It is possible to use the detachable microphone & preamplifier via extension cable. An outdoor protection kit is available on request. The measured values are shown on a TFT colour display and are readable even over larger distances in sunlight or in darkness. The clearly arranged keyboard has a perceptible keystroke. Tango Plus has, based on state-of-the-art circuit technology, a very low power consumption. Two batteries (1.2 V, size AA) guarantee an operation time of 40 h and a storage time of 10 years (for lithium batteries). Therefore Tango Plus is practically always ready for use.

The Tango Plus sound level meter allows for simultaneous A- and C-frequency weightings as well as Fast, Slow, Impulse and Peak time weightings. In addition to the momentary sound level values, the instrument allows the maximum and minimum sound level values over a given period to be measured. Tango can also measure the LAeq, L1eq, LAim5 and Lmin5 LAeq values. The instrument has a real-time frequency analyser function for 1/1 or 1/3 octave values.

All measurement values chosen in the setup are computed simultaneously and one of these values is selected for display. After starting the integrating measurement, all values are saved automatically. With the help of the USB interface and the Tango-Utilities software, the measured values can be read from the memory, saved and converted to a standard office format. Additionally, the software allows a user-defined setup to be defined and transferred to the device (measured values, storage cycles, percentiles).

- Typical application of Tango Plus are:
- Traffic and industrial noise measurements
  - Neighborhood and recreation noise monitoring
  - Workplace noise measurements
  - Monitoring / logging of traffic noise
  - Frequency analysis in 1/1 or 1/3 octaves.

Modern technology combines utmost accuracy with simplest operation

The accuracy of the measurement results is considerably improved by calibrating the sound level meter before each measurement. This calibration also remains intact after switching off the device. Because of its reasonable price, easy operation and small dimensions, Tango Plus is the ideal instrument for all users whose measurement tasks require a Class 1 measuring device according to the IEC 61672 standard.

A comprehensive memory management scheme allows different storage cycles to be selected for the various measurement values. In order to prevent incorrect settings from being selected by inexperienced users, the Setup function can be disabled via the interface (Easy Operator Mode).

Type approved for use as PTB / Legal Calibrator only in Germany. Not a legal approval.

Frequency analyser in 1/1 and 1/3 octaves

The Tango Plus sound level meter includes a real-time frequency analyser function with 1/1 and 1/3 octaves according to IEC 61260 class 1 as standard.

Workplace protection applications

For labor protection applications, in addition to the C-weighted values, the exceedance times for three freely-selectable L<sub>CP</sub> thresholds can be measured. This non-standard measurement allows the degree of noise exposure at a workplace to be calculated much better than the measurement of the peak value alone.

Environmental protection applications

Tango Plus allows three freely-selectable statistical values to be measured and saved. These LAEN% percentiles express what A-weighted level was exceeded in N% of the measurement time.

Option	Beschreibung
907004.2	Tango Plus sound level meter class 1
907005.0	Tango Plus sound level meter class 2
800934.4	Option 1: Cal 200 Calibrator
800630.0	Option 2: Tripod
907300.4	Option 3: Tango Outdoor Kit (see rear page)
801282.1	Option 4: Windows software AUDITOR_light

Highest ease of use via integrated software package: TANGO-Utilities for Windows

The Tango Plus sound level meter may also be operated via USB interface. In this case the PC powers the device through the interface (the scope of delivery also includes a USB adapter for mains power supply). The included Tango-Utilities software allows the operation and configuration of the instrument via PC as well as the data transfer between the two devices. A separate window is displayed on the PC which allows easy setting of the parameters and rapid transfer of the stored measurement values. A unique feature of Tango is that several measurement values can be stored with individual sample times. The file names and sizes of the saved measurement values are displayed for transfer or deletion. The USB interface also enables the user to integrate Tango Plus easily into a PC-based measuring system.

TANGO Plus system integration with AUDITOR™ post-processing software

With the combination of the Tango Plus sound level meter and the AUDITOR\_light post-processing software we offer a powerful solution for measurement, evaluation and report generation of environmental noise. The post processing allows an effective calculation of Rating Noise Levels according to the German TA-Lärm as well as international standards and laws. The main features of AUDITOR\_light are:

- Import of Tango measurement values and markers
- graphical display of long-term measurements
- extracting, marking and marking of data
- calculation of Rating Noise Levels
- report generation

Our full version of the AUDITOR™ software allows the post-processing of all sound level meters & analyzers from SINUS Messtechnik, including Tango Plus.



Tango online display on Windows Tablet

Standard scope of delivery

two AA batteries, interface cable, windscreen, case, utility software and AC-adapter included (calibrator optional)



DPU-S245

Calibrator Cal200

Wether\_protector WS1

Optional