Soundbook™ & SAMURAI™
Option: PASS-BY MEASUREMENT

GPS System for Pass-by measurements according to ISO 362/08, 2001/43CE

The best way to simplify your Pass-by measurement

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Option: PASS-BY MEASUREMENT
Innovative system with Dynatrack hardware & Starpass software

Dynatrack is a special system for pass-by tests based on high-accuracy GNSS technology. The Dynatrack system has been specifically designed to allow a single operator to carry out the tests.

Starpass, the management and measurement application software, is an easy-to-use tool provided with an intuitive user interface.

This new pass-by system offers you the possibility of gathering, from the perspective of the driver, all the information required to perform the homologation tests according to ISO 362/98, ISO 362/08 and 2001/43CE standards.

The hardware consists of the **base station** and the **onboard unit**. The **base station** is designed to acquire and analyze the sound pressure level signals through Soundbook, the multi-channel analyzer, and to transfer them to the mobile unit by means of an optimized WLAN technology.

The **onboard unit** has been developed to acquire the data concerning vehicle speed, position and RPM in real time. Moreover, by sharing the information with the base station, the position of the vehicle with reference to the input and output virtual barriers is measured highly accurately.

Through the combined features of Dynatrack and Starpass, the driver can handle all the information required to perform the test rapidly and cost effectively.

A perfect compliance with the current standards

All acoustic parameters are acquired and analyzed with the Soundbook analyzer, the multi-channel sound level meter based on a Windows operating system platform.

The Soundbook analyzer, type approved by the German PTB, complies with IEC 61651 and IEC60804 regulations and is the only multi-channel sound level meter with IEC 61672 homologation for each of the 2, 4 or 8 acquisition channels. The 1/3 octave filters of each channel fulfil the IEC 61260 standards.

Thanks to the high quality of the GNSS device and to the differential correction of the position (that can be calculated from 20 Hz up to 100 Hz in RTK mode), the Dynatrack system is the sole GPS solution on the market that can meet the degree of uncertainty on the speed required by ISO 362/08 standard **<0,2 km/h**.
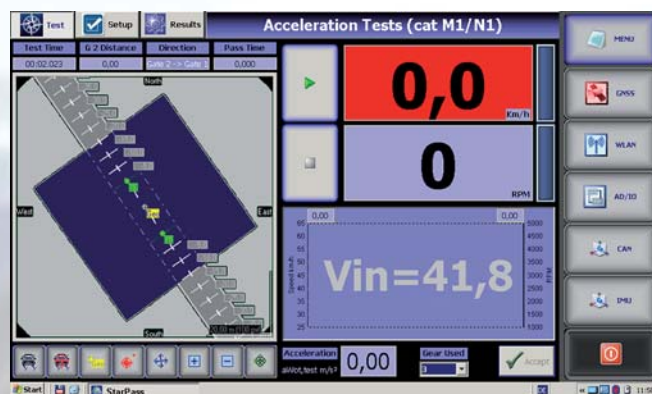
Advanced GPS technology

The acoustic measurements performed by Soundbook are synchronized through the base station with the data from the onboard unit, using GNSS Universal Time Clock, and with the data concerning vehicle position, speed and RPM.

Dynatrack is based on 'state-of-the-art' GNSS technology: the receiver uses both the code and phase signals to determine the vehicle position (carrier Phase Doppler technique), while the speed calculation is refined via a Kalmann filter optimized for dynamic performance.

The receiver can manage multiple constellations of the navigation system, which makes use of a considerable number of parallel receiving channels (up to 50 satellites, including GPS, GLONASS and EGNOS signals).

In-field easy-to-use application

Just 5 minutes and the system is ready to give you the first results!

The simplicity of the connections and the absence of light barriers enable you to install the system very easily and to prepare the vehicle on trial quickly, giving you the possibility of carrying out your tests on various vehicles efficiently.

By changing a few parameters you can load the characteristics of the vehicle and of the trial tracks you usually employ from a user-defined database. In short, you can file measurement data in a highly customisable way, process the results, and save them into the most common file formats.

A single test operator is able to generate the necessary data easily and in a short time, thus increasing the productivity of the testing sessions.

Designed around the test driver

The Starpass application is controlled by the test driver through Flybook, the smallest and lightest mini-PC available on the market.

Its task is to process in-vehicle mobile module data, and to supply the driver with all the test data by means of a clear and effective user interface.

Starpass guides the driver through the procedure necessary in order to perform the test correctly according to the standard.
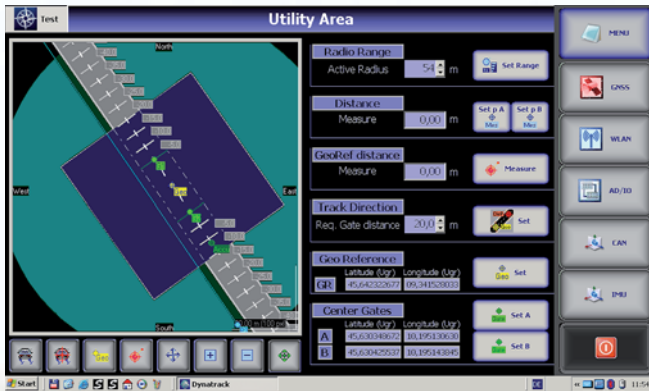
Dynatrack base station   Soundbook analyzer   Dynatrack onboard unit   Flybook test driver interface

The test driver is able to:
- plan the characteristics and the serviceability of the test
- check the background noise and other environmental parameters
- check the condition and the quality of the measurement subsystems in real-time (remote connection, GPS solution, signal analyzer)
- acquire speed, RPM and sound pressure level data at the microphones or at other positions within the measurement area
- carry out the acceleration tests and compare with previous ones

Thanks to the mutual checking of the two units and to the WLAN high-performance transmission (extended range, adjustable power), the driver can control in real time the 1/3 octave spectra acquired by the base station. Immediately after carrying out the test, he is able to select only the relevant data, accepting or refusing the test, all without leaving his seat.

This system also offers the possibility of performing the tests in both directions: both the right and left microphones are recognized automatically according to the run direction.

Finally, a prediction model establishes whether the test result is acceptable according to the class of the tested vehicle and the limits established by the selected standards (including the new ISO 362/08).

**Open to meet user's requirements**
The system has been developed not only to be used for individual pass-by tests complying with a single standard, but also for carrying out different in-field tests according to various standards: SAE J 1470, 2001/43CE, ISO 13335, ISO 5130 and others on request.

It is also possible to share both speed and position with the data coming from the auxiliary channels provided by the onboard unit for other uses. By using the optional modules connected with the system expansion ports, you can acquire:
- information from the vehicle through OBD II
- acceleration data on 3 axes with IMU (Inertial Measurements Unit)
- DC channels: 3 or more channels at 20 Hz
- Digital channels: 2 fast inputs and 2 TTL outputs

It is possible to use a second Soundbook analyzer connected to the onboard unit in the vehicle for parallel inside and outside noise measurement.

GPS-based pass-by noise measurement setup

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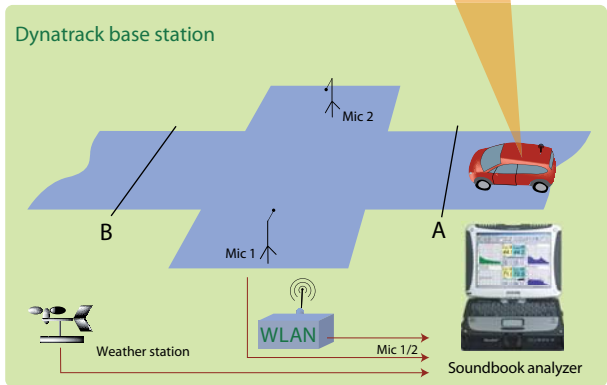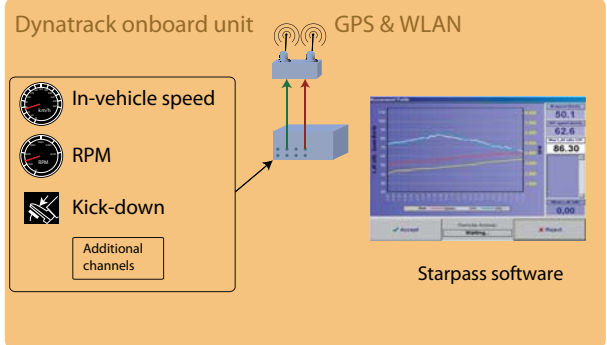
DYNATRACK onboard-unit

GNSS Unit - Receiver:
- Data rate 20 Hz (standard) up to 100 Hz (Option)
- High performance GPS receiver, using carrier and phase signals
- Position precision: 10 mm code, 0.1 mm phase
- Absolute position accuracy: 10 cm (differential mode)
- Speed accuracy 0.02 m/s (0.072 km/h)

Radio Unit:
- Optimized WLAN technology
- Range: 500 m (line-of-sight)
- Adjustable output power

GPS & WLAN antenna integrated in magnetic aerodynamic unit

Channels and Connections:
- 3 x 12bit DC channels, 20 Hz (throttle, etc.)
- 2 ch TTL input, 2 ch TTL output
- 1 ch RPM: 1-20 kHz, adjustable threshold
- Ethernet port for connecting Flybook mini-PC
- 2 expansion ports for external modules, 1 GPS expansion port

General:
- Dimensions: 220 x 170 x 45 mm
- Weight: 0.750 kg
- Power supply: 12 VDC / 0.4 A max

DYNATRACK base-unit

Radio Unit:
- Optimized WLAN technology
- Range: 500 m (line-of-sight)
- Adjustable output power
- Omni-directional antenna
- Signal range coverage expandable by diversity antenna

Channels and Connections:
- 1 Ethernet port for connecting Soundbook
- 2 expansion ports

General:
- Integrated meteo station (optional)

General:
- Dimensions: 220 x 170 x 45 mm
- Weight: 0.350 kg
- Tripod support
- Battery power supply 12V / 7.5 Ah (24 h battery runtime)

STARPASS Software

- User interface oriented towards 'in-field' use
- Virtual gates for the measurement area
- Subsystem quality control in real-time: radio link, satellite solution, signal acquisition
- Real-time connection with Soundbook analyzer
- Time synchronization of measurements by GNSS clock
- Adaptive information interface for measurement parameters
- Complies with the new ISO 362/08 standard
- Acceleration pre-test
- ISO 362/98 pass-by test
- ISO 13335 coast-down test
- Customized project for each kind of test
- On-line conditional tests during trial sessions
- Final assessment values computed over session results
- Customized vehicle database for all sensitive data
- Interactive test guidance
- Acoustics and visual guidance warnings
- Exporting features (.csv file format)
- Remote control of Soundbook analyzer
- Management of auxiliary inputs/outputs (OBD, IMU) - optional

SOUNDBOOK

Basic unit of the measurement system based on Toughbook™ CF-19.
- Multi-channel analyzer (2/4/8 ch) with 2 trigger/tacho channels and up to 5 service channels
- 80 GByte HDD, PCMCIA, Express, USB
- High-contrast, touch-screen display - 10.4" TFT (1024 x 768)
- Shock, vibration, humidity and dust resistant magnesium case with IP54 protection and shock resistance according to MIL-STD 810F
- Temperature range from -10 °C to +50 °C
- Lithium ion battery pack with 4 hours of autonomy
- Dimensions: 280 x 220 x 65 mm
- Weight: 3.1 kg
- Tripod support

SAMURAI

- Sound Level Meter according to following standards: IEC 60651/804 type 1, IEC 61672 class 1
- Digital filters in real-time from 0.04 Hz to 40 kHz according to IEC 61260 standard class 0 (1/1 and 1/3 octaves)
- THD + Noise > 85 dB in standard mode and more than 120 dB in 'Extended Range'
- 'Multi-analysis': all channels of the instrument can measure in parallel and in real-time SLM values, FFT, 1/3 octaves together with time signal recording (.wav)
- Weighting filters A, C, Z and time weightings Fast, Slow, Impulse in parallel
- Software option PASS-BY Noise necessary

Noise & Vibration Works for Windows

Recommended post processing software package for Soundbook.
- Report generator
- A - B test comparison
- Software option PASS-BY Noise necessary

Options

We offer many further options such as weather stations, 2nd Soundbook in the vehicle and also customized adaptation of hard- and software. Please ask our technical support or our local representatives.

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