

# Product Information

Door closing force measurement **DC360N** with  
HGE - DataManager software

According to: BS EN 14752:2005, GOST 14752:2005, ABNT NBR 14752:2005, UNE-EN 14752:2005, American RAIL STANDARD APTA PR-M-S-18-10



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Version 10/21

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## Door closing force measurement device type DC360N

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The door closing force measuring device type DC360N is an outstanding instrument for the measurement and evaluation of the closing force of railway-, tram- and bus doors. The measuring device was constructed according to DIN EN 14752:2005 / BS EN 14752:2005 and VDV 111/ VDV 157.

Optionally a special measurement for doors of vehicles with repeating closing process is available - based on DIN/ BS EN 14752:2005. The door closing force measuring device type DC360N therefore corresponds to all requirements placed on the measurement of door closing forces. Due to a simple operation and to precise measured values the review process is implemented quickly and uncomplicated.

The door closing force measuring device meets the highest measuring accuracy and handling standards by the use of innovative materials and components.

The housing of the load cell has been made of special plastic which offers weight savings, high resistance to environmental factors and maximum impact resistance. High-quality, durable controls with very low friction resistance have been installed inside the load cell. The door closing force measurement device therefore has a high measuring accuracy with a discrepancy of  $\pm 3\%$  of the measured value at the range from 50 up to 360N.

The handheld computer PSION WORKABOUT is supplied with a bag and shoulder strap for ergonomic working. The user is enabled to have the other hand free during measuring.

In addition, our concept offers the advantage of the handheld computer PSION WORKABOUT by being combinable with our wheel profile measuring device. In order to reduce costs, the handheld computer PSION WORKABOUT can be used for the door closing force as well as for the for wheel profile measurement.



The measuring process is realized fast and uncomplicated. The measured data are recorded immediately and are displayed visually by our handheld computer PSION WORKABOUT device.

The menu guidance of the handheld computer PSION WORKABOUT software has consciously been kept simple in order to allow the user a fast and simple operation.

The user has the choice of several inputs: job number/vehicle number, running performance (mileage) of the vehicle, notes, signature (touch screen), number of doors, door name (4 digits, alphanumeric) and door type with the corresponding limit values and measuring points.

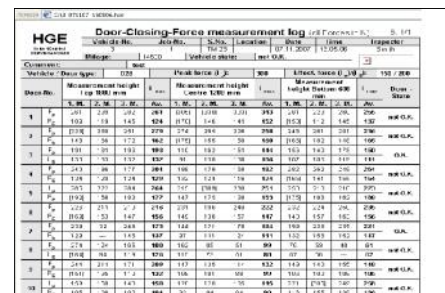
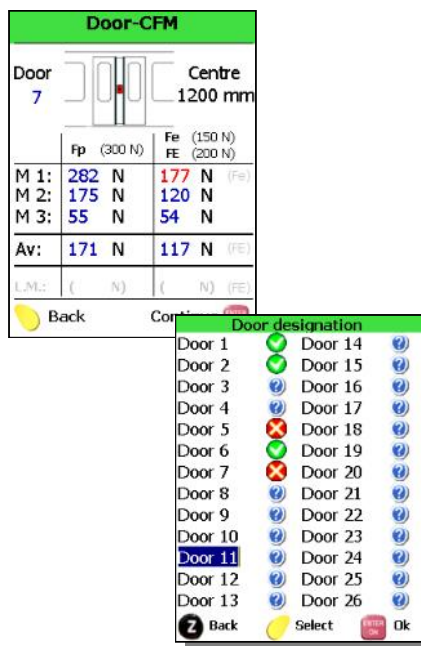
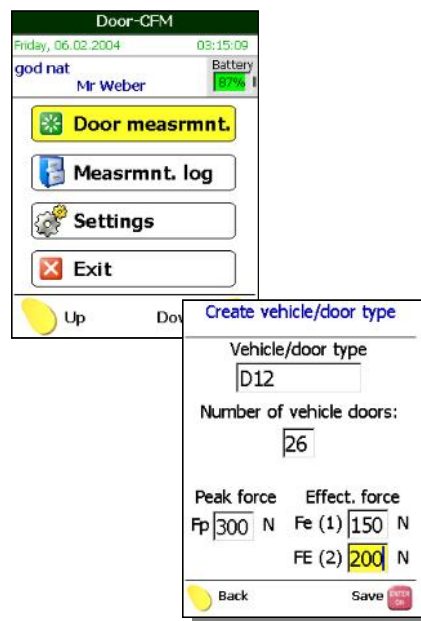
The measuring process provides information about the measured peak force and effective force. If the preset limit value is exceeded, this will be brought to the user's attention - both visually and acoustically. The door overview provides the user with an immediate overview of the status of the doors to be measured and those already measured. A tick is displayed if the door is ok. A red cross appears if a limit value has been exceeded.

An advantage of our software is that a measuring process that has been started can be interrupted and restarted later.

This enables the user to flexibly organize his work and time.

The handheld computer PSION WORKABOUT provides storage capacity for more than 1.000 vehicle measurements of 26 doors with max. 3 measuring points (3 measurements per measuring point).

At the end of each measuring process a detailed measuring log is created which can be retrieved immediately on the handheld computer PSION WORKABOUT and can be transferred to a PC in PDF, Excel or database MDB format.



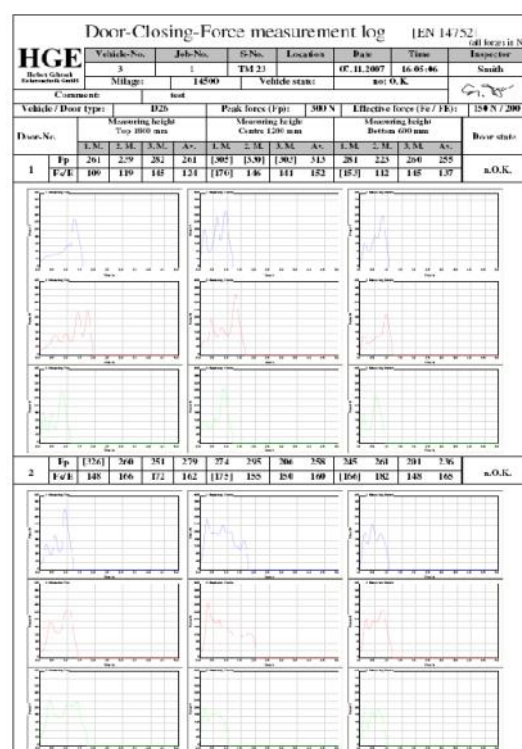
Complete view of the measuring log on the handheld computer PSION WORKABOUT

## HGE-DataManager ©

The **HGE-DataManager** © software for the door closing force measuring device offers a simple and fast data transfer from the handheld computer PSION WORKABOUT to the user's PC. A choice of several formats is available for storing the measured data (PDF, Excel and MDB).

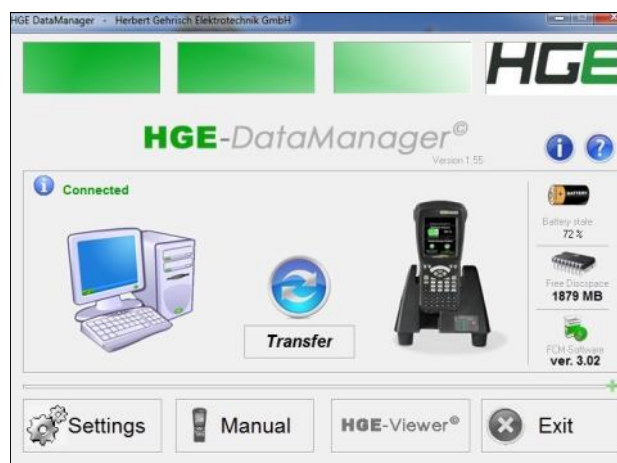


Settings, choice of several formats



View of measurement log of PDF-Format

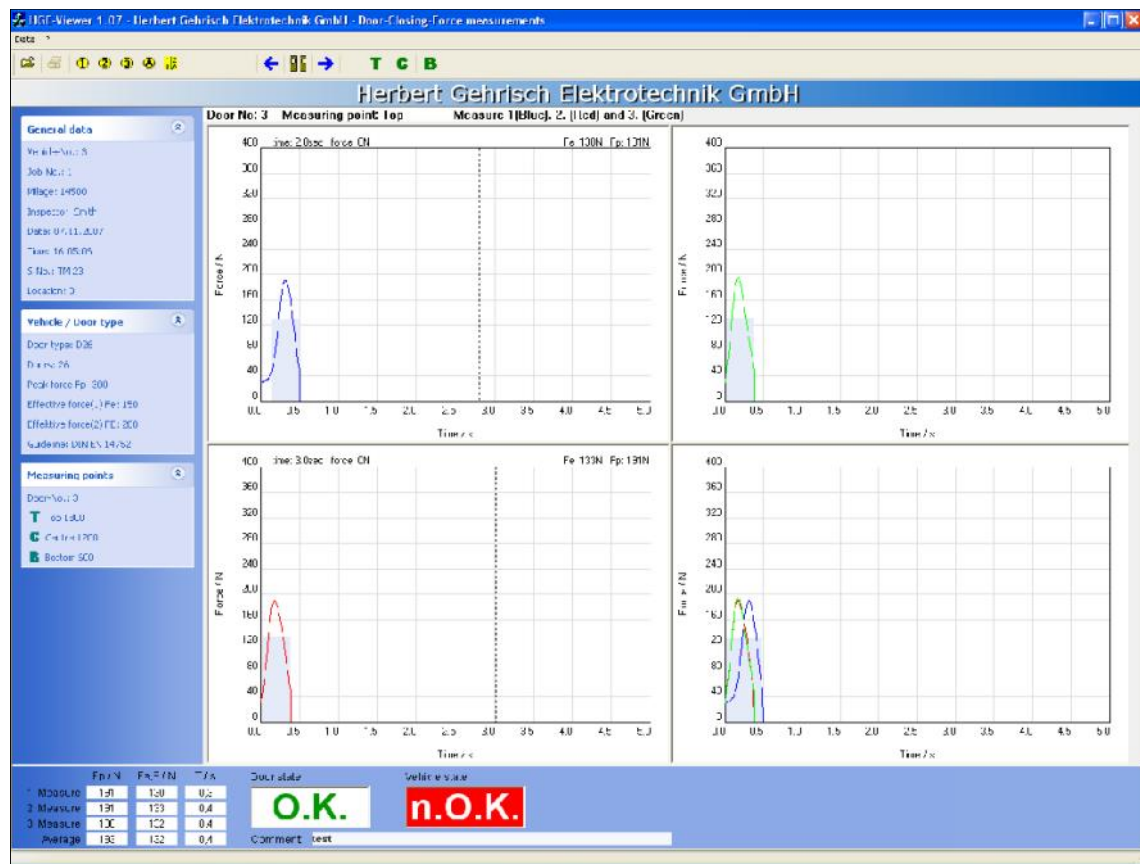
The **HGE-DataManager** © software also provides the user with additional information on the current status of the rechargeable battery and the remaining storage capacity of the handheld computer PSION WORKABOUT.



User interface of **HGE-DataManager** ©

## HGE-Viewer ©

The **HGE-Viewer** © is part of the **HGE-DataManager** ©. It enables the user to represent the measured data recorded in detail in diagrams. The measurement curves can be studied and analyzed precisely.



## HGE - Special measurement 1

### - for doors with repeating closing process

The special measurement 1 enables a measurement of the closing force of a door which deviates from DIN/BS EN 14752 – e.g. doors with a repeating closing process.

This special measurement 1 is designed for a closing process which consists of several measuring sections. Each section is evaluated like a measurement according to DIN/BS EN 14752 and is recorded over a maximum period of 15 seconds. Once the variable measuring time is exceeded, the measurement is automatically completed. The start of a measuring section begins - as in DIN/BS EN 14752 - with a value larger than 50N. The measuring section ends with a value smaller than 50N. The highest value of the peak forces occurring in all measuring sections is recorded and displayed. The effective value of each measuring section is determined and the average is calculated. After 3 such door measurements (with several sections) the overall average of these effective values is calculated (again in accordance with DIN/BS EN 14752) and displayed.

The pause times (values less than 50N) are shown in the diagram but are only used for recording the measuring time.

Maximum values which might be signalled by the device as limit values after the special measurement:

- Peak force  $F_p$  360N
- Effective force (1)  $F_e$  360N
- Effective force (2)  $F_E$  360N

Measuring range: 30 to 360N

Measuring accuracy:  $\pm 3\%$  of the measured value within the range from 50 to 360N

This special measurement 1 based on DIN/BS EN 14752 can be selected in the menu of the handheld computer PSION WALKABOUT software and can be assigned to the appropriate type of vehicle/door. In the vehicle remarks of the metrology record "Special measurement 1" is additionally registered.

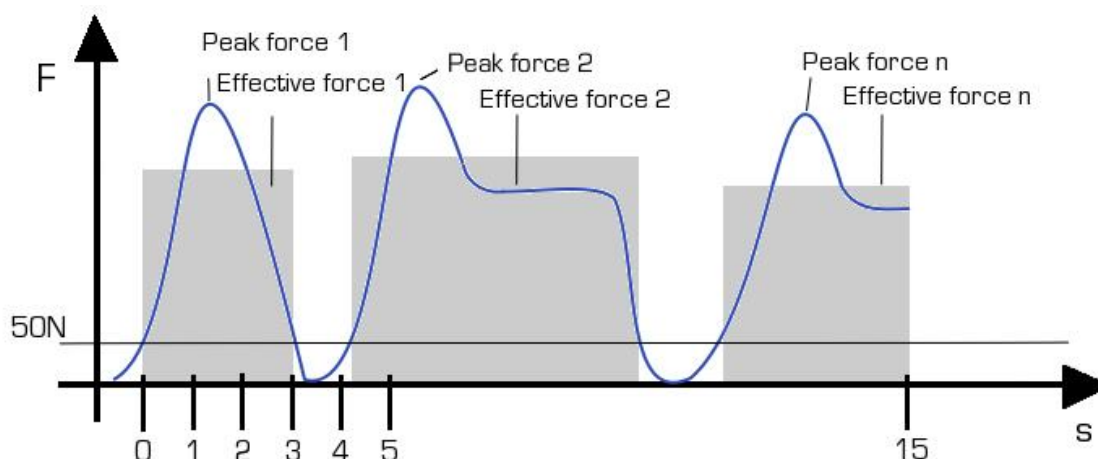


Figure: Reversing closing process, measuring time 15 sec

## HGE - Special measurement 2

- for doors with temporary force impulse at the beginning of closing process

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Special measurement 2 with a temporary force impulse (Overriding– and dropping below the minimum force height of 50N) at the beginning of closing process - according to DIN/BS EN 14752.

The special measurement 2 allows a door closing measurement in which the lower deviation of the 50N limit will not be taken into consideration regarding the variable time periode  $t_x$ . The initial force impulse e.g. caused by a rubber edge of the door, does not lead to an abort of measurement.

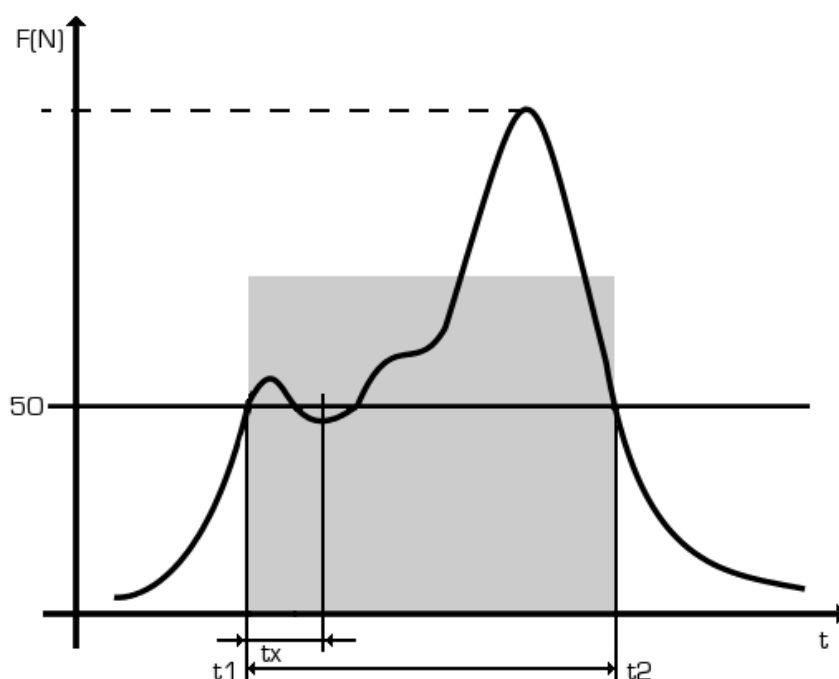


Figure: Force impulse at the beginning of a closing process

This special measurement 2 based on DIN/BS EN 14752 can be selected in the menu of the handheld computer PSION WALKABOUT software and can be assigned to the appropriate type of vehicle/door. In the vehicle remarks of the metrology record additionally "Special measurement 2" is registered.

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## Product overview: HGE-Door closing force measurement device DC360N



Load cell	
Load cell material:	Glass fiber-reinforced plastic / aluminium
Weight of the load cell:	Approx. 1.4 kg
Measuring range:	30 to 360N (Optional 500N)
Measuring accuracy:	± 3% of measuring value at the range from 50 to 360N
Spring Stiffness (compression spring):	10 ± 0,2 N/mm
Diameter:	100 mm
Gap width:	115 mm
Dimensions:	115 mm x 126 mm x 288 mm
Operating temperature range:	+ 10°C to + 30°C
Handheld Computer	
Operating time:	Without charging the battery in normal operation approx. 8 hours
Weight:	Approx. 455 g
Memory:	4 GB SD-Card
Display:	Colour-Touchscreen Display
Protection class <b>IP 65</b> – can withstand multiple drops onto smooth concrete surfaces from 1.5 meters - with a protective bag with Shoulderbelt and belt clip.	



### HGE-Door closing force measurement device with case Weight approx. 7 Kg, Guarantee 2 Years

#### Scope of delivery:

- Handheld computer PSION WORKABOUT including Battery, 4 GB SD memory card and protection bag
- Load cell DC3600N, Special measurement mode
- 1 Connecting cable
- 1 Tabletop station/docking station with A/C-adapter for charging the battery as well as for data transfer
- 1 USB transfer cable from tabletop station to the PC
- 1 User manual for handheld computer PSION WORKABOUT and tabletop station/docking station
- "Door closing force measurement device" user manual
- Enclosed sheet: "Administrator Information"
- Installation CD with the HGE DataManager software
- Company calibration document
- Other Accessories

## Set of measurement rods DIN/BS EN 14752:2005/2015 and VDV 111/ VDV 157 inclusive spring balance with calibrating service



Measurement rods according to DIN EN 14752 and VDV 111 / VDV 157 o meet the requirements in the test sequence of closing force measurement.

- Measurement rod 1 to review the pinch protection on doors (10mm x 50mm x 300mm)
- Measurement rod 2 to review the pinch protection on doors (30mm x 60mm x 300mm)
- Measurement rod 3 to review the trapping detection on doors
- Spring balance, measuring range up to 200N
- Measurement rod 4 for verification of power-operated Steps (150 N)

Measurement rod 1 (10 mm x 50 mm x 300mm)

Measurement rod 2 (30 mm x 60 mm x 300mm)

Measurement rod 3

Spring Balance



Case for measurement rods 1 to 3 with spring balance

- Spezial measurement rod (15 mm x 60 mm) on demand
- Spezial measurement rods DIN 18650 Automatic door systems type CA, CB and CC on demand

Right image:

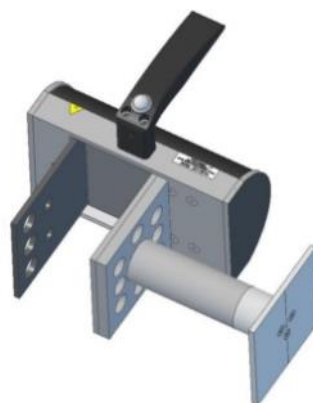
### Measurement rod 5

„Testing of area monitoring system“ according DIN EN 4752:2020, diameter 8 mm, length 300 mm, radiance 2% - 5% / > 90%



## Further products :

### HGE-Door closing force measurement device DC700N



According to: **British Standard EN 14752:2015, European Standard EN 14752:2020**

- Measuring range: **50 N to 700 N**  
Force level 1: Standard doors ( Max. 400 N)  
Force level 2: for high traffic density (Max 600 N)
- Measuring accuracy:  
Forces up to 100 N: **± 3 N**  
Forces higher than 100N: **± 3 %** from value
- Spacer for different doorways with quick-release mechanism for quick adaption (opening width: 50, 100, 200, 300, 500 mm and on requirement)
- Display of peak force (Fp), duration of closing procedure (tpeak) and lag of the door's reversing (trev).  
Optical and acoustic signals if critical value is exceeded
- Special measurement for doors with an temporary force impulse at the beginning of closing process;
- Simplified serial measurement possible



#### HGE-Door closing force measurement device with case

**Weight approx. 10 Kg, Guarantee 2 Years**

Scope of delivery:

- Handheld computer PSION WORKABOUT including Battery, 4 GB SD memory card and protection bag
- Load cell DC700N, Special measurement mode
- Spacer for different doorways according to EN 14752:2015
- 1 Connecting cable
- 1 Tabletop station/docking station with A/C-adapter for charging the battery as well as for data transfer
- 1 USB transfer cable from tabletop station to the PC
- 1 User manual for handheld computer PSION WORKABOUT and tabletop station/docking station
- "Door closing force measurement device" user manual
- Enclosed sheet: "Administrator Information"
- Installation CD with the HGE DataManager software
- Company calibration document
- Other Accessories



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