

HMP SONpro is the first automatic logging and evaluation unit for pneumatic and mechanical dynamic probing.

**Just forget annoying dotting and time-consuming evaluation!**  
HMP SONpro takes care of it completely automatically and within seconds!



## HMP SON | Measuring instrument for dynamic probing





## THE COMPANY

### HMP Magdeburger Prüfgerätebau GmbH

As a medium-sized family business in second generation we rely on continuity, reliability, confidence and innovation.

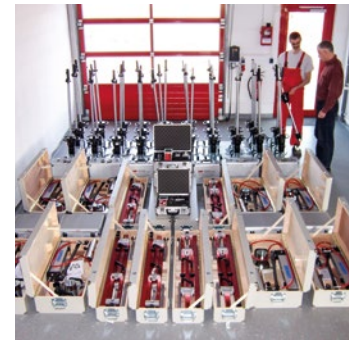
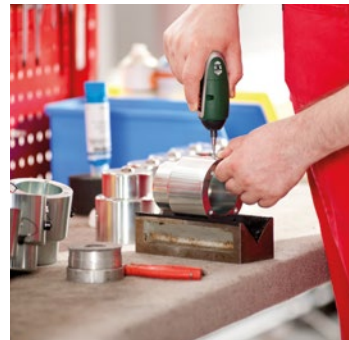
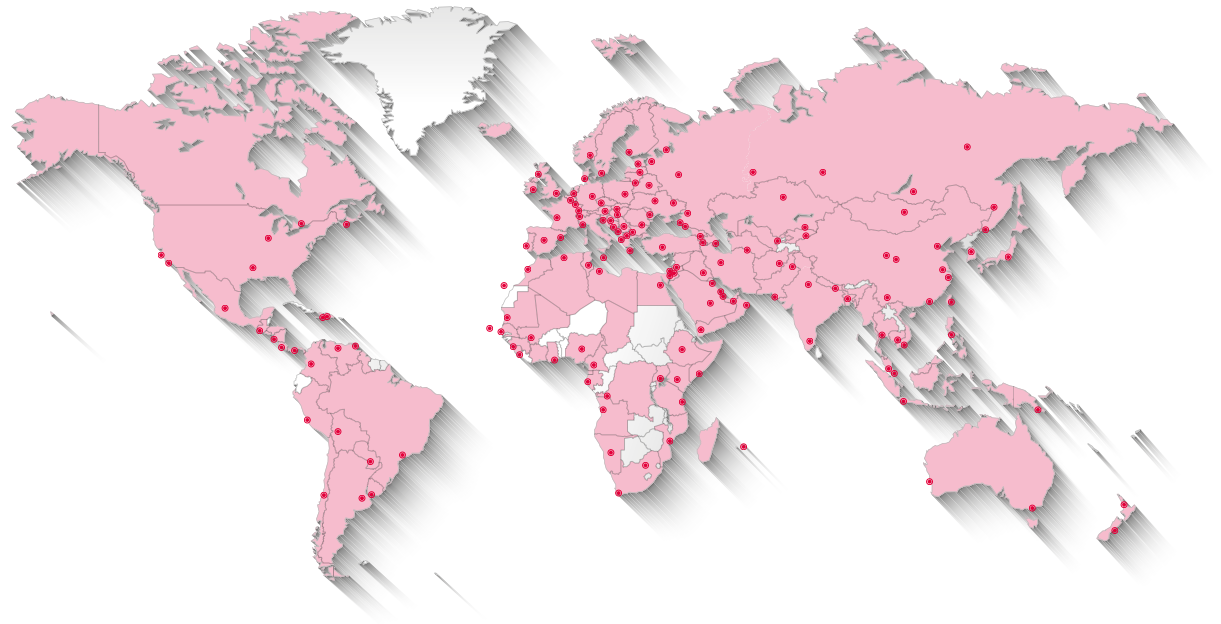
More than 30 years of experience in development, production and service, certified quality standards and latest production conditions make us a competent partner for the construction industry.

The from us developed test equipment, as the Light Weight Deflectometer HMP LFG and the Static Plate Load Tester HMP PDG are used all over the world for compaction control and bearing capacity tests at the soil examination.

Trained service- and sales partners form a reliable global network.

We only manufacture in Germany and trust in regional suppliers on the basis of strict certification guidelines.

The HMP GmbH is a from the Federal Highway Research Institute (BAST) approved calibration institute for Light Weight Deflectometer.



1990-2023  
**33**  
YEARS

*Excellence for experts.*





# THE DYNAMIC PROBING

## The test method

Dynamic probing acc. to DIN EN ISO 22476-2 is used for subsoil investigation and provides information about the bulk density of the existing soil layers. It supplies important hints on excavation resistance and possible settlements.

A distinction is made between heavy dynamic probing (DPH), medium dynamic probing (DPM) and light dynamic probing (DPL).

During dynamic probing, the probing rod, equipped with a tip and a defined cross-section, are driven into the soil by means of a standardized, constant impact

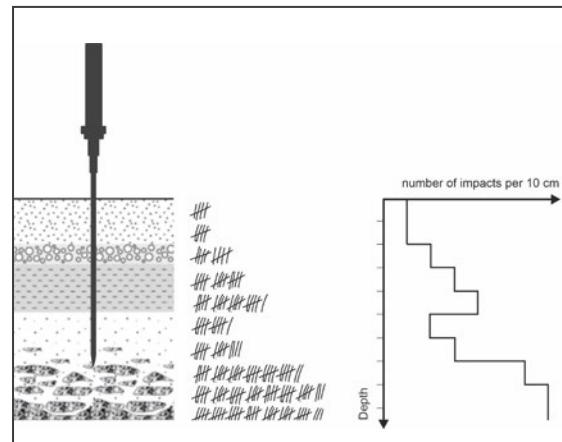
force. The penetration resistance provides a precise statement on the soil stability. The weight (ram) is lifted again by means of compressed air in the case of pneumatic penetrometer and by means of a chain hoist in the case of me-chemical penetrometer.

The penetration resistance results from the number of impacts, which is re-quired to ram the probe to a defined penetration depth.

The number of impacts per 10 cm is inserted in proportion to depth in the probing graph. No samples are taken during this measurement.

## Areas of application

- Determination of layer boundaries during examination of subsoil for buildings, bridges, roads and other construction projects
- Verification of compaction work and fills
- Determining the bedding conditions of non-cohesive soils



## HMP SONpro

HMP SON is the first automatic logging and evaluation unit for dynamic probing.

**Just forget annoying dotting and time-consuming evaluation! HMP SONpro takes care of it completely automatically and within seconds!**



## Advantages

### Enormous time savings due to automation

- › automatic logging of impacts and corresponding penetration depth
- › automatic evaluation
- › measurement result immediately available at the push of a button
- › documentation directly at the site
- › no more counting, no more tally lists

### Reliable and precise

- › fault-resistant measurement
- › objectively more precise, since it is independent of examiner and fatigue-free
- › manufactured according to latest technical standards
- › precise, robust, durable

### Automatic logging - and evaluation unit

- › low tare weight, ergonomic design
- › can be handled easily by one person
- › easily retrofittable
- › easy to assemble
- › intuitive menu navigation
- › GPS to localize the measuring point
- › automatic storage, evaluation and archiving
- › interface for printer and PC

## German test regulations

- › **TP BF-StB B 15.1**  
Dynamic Probing Light DPL-5 and Dynamic Probing Middle DPM-10

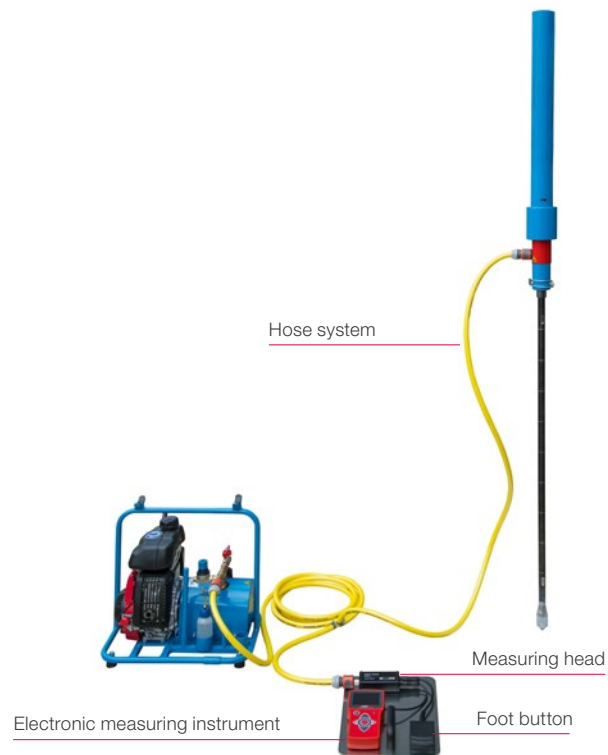
## International test regulations

- › **DIN EN ISO 22476-2**  
Geotechnical exploration and investigation – field examination



# DYNAMIC PROBING AUTOMATICALLY LOGGING + EVALUATION

## Pneumatic penetrometer



\*Implementation example

## The measuring process

### Set it up

- > assemble penetrometer
- > set up compressor
- > connect hose system with penetrometer, compressor and measuring head
- > start compressor

1



### Measure

- > switch on measuring instrument
- > confirm mode „Measuring“
- > follow the instructions in the display
- > press foot button every 10 cm
- > Automatic impact count logging

2



### Evaluate

- > automatic evaluation of penetration depths
- > store, print and transfer measurement
- > Create a professional protocol incl. impact rate diagram on PC

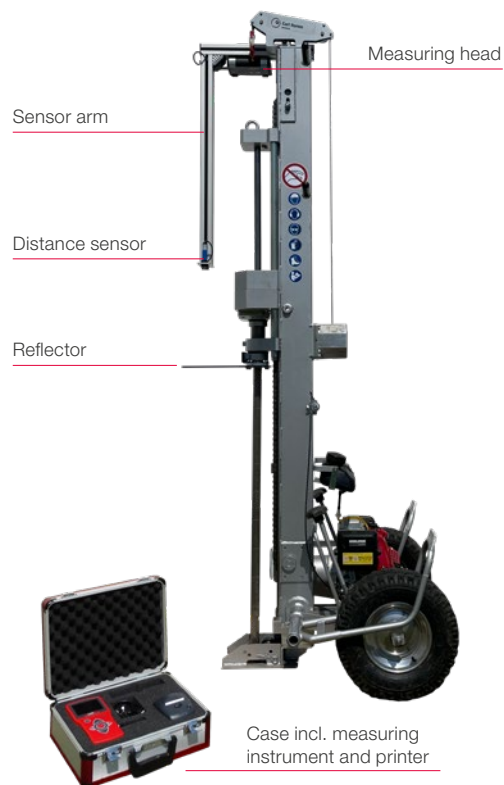
3





UNBEATABLY FAST AND  
EASY TO USE

## Mechanical penetrometer



\* Example - retrofittable for all common  
mechanical penetrometer

## The measuring process

### Set it up

- set up mechanical penetrometer
- assemble sensor arm, measuring head, reflector and distance sensor
- insert probing rod and align probing device vertically
- start motor

1



### Measure

- switch on measuring head and measuring instrument
- confirm mode „Measuring“
- follow the instructions in the display
- automatic impact count and penetration depth logging

2



### Evaluate

- automatic evaluation of penetration depths
- store, print and transfer measurements
- create a professional protocol incl. impact rate diagram on PC

3



## THE PREMIUM MODEL

### HMP SON<sup>pro</sup>



### Reliably

Due to latest technology, the measuring instrument is small, handy, unbeatably easy to use but also extremely accurate

The measuring device is of course splash-water proof to work under bad weather conditions  
All parts of the tester are also surface sealed.

### USB stick 4GB incl. movie regarding application

New user? No problem, the movie on the supplied USB stick explains the test procedure within a few minutes - always available and quickly retrievable.



To the video:  
[www.hmp-online.com](http://www.hmp-online.com)

### Latest device generation

- large colourful graphic display 3,5"
- guarantees optimum readability at all weathers!
- very comfortable menu navigation
- integrated **GPS**
- interface for **thermal printer, USB**
- efficient, fast **32 bit-Prozessor**
- internal memory for up to **250** tests
- high-performance rechargeable **lithium-polymer-battery**
  - > guarantees constant readiness for use
- Backup of measured values in case of a sudden interruption of the measurement (e.g. power shortage)







## It doesn't get any easier! Intuitive menu navigation

The menu navigation of the HMP LFGpro is very user-friendly. In order to perform the test, just follow the instructions in the display.

### Start display

Welcome. The start display shows the charging status of measuring device + printer and also the GPS activity.

### Measurement

- After activating the menu item with ENTER you will be guided through the measurement process.
- active fields are highlighted in colour, inactive fields have a grey background

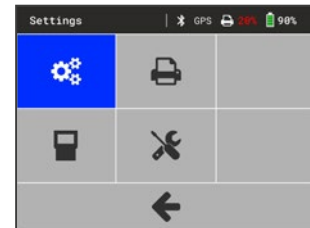
Advantage:

- Error avoidance due to objective logging of impacts per 10 cm penetration depth - no miscounting!



### Settings

Adjust the display and device configurations to your requirements. Regarding menu navigation just choose one of the various languages and select one kind of probing.



### Measured data

Here you can find all stored measurements clearly arranged for further processing and documentation.

	001	01.08.2023	10:40	112
	002	02.08.2023	09:40	98
	003	02.08.2023	11:24	67
	004	02.08.2023	13:34	105
	005	03.08.2023	10:20	45

- intuitive, language-independent menu navigation by means of symbols

After finishing the measurement, the minimum and maximum number of impacts for the measurement are displayed. You can store or reject the measurement.

Afterwards the measurement series and the corresponding GPS data can directly be viewed, printed out, rejected or exported for later processing.

Measurement 001	
01.08.2023	10:40-11:40
Min.:	25
Max.:	112
N 52°10'36.66"	
E 11°39'38.03"	

## THE EVALUATION



### Measured data

Select the single measurement series and scroll through the penetration depths with the associated number of impacts.

Measurement 001			
0.1	25	0.6	73
0.2	28	0.7	105
0.3	112	0.8	30
0.4	26	0.9	29
0.5	33	1.0	32



Measurement 001			
1.1	25	1.6	25
1.2	28	1.7	28
1.3	27	1.8	27
1.4	26	1.9	29
1.5	33	1.0	32



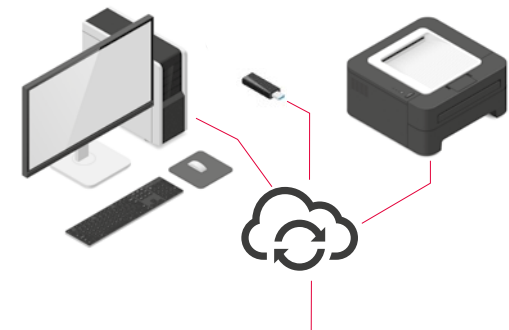
### Export

Export your measured data via USB or to your PC for archiving and further processing.

Measured data			
001	01.08.2023	10:40	112
002	02.08.2023	09:40	98
003	02.08.2023	11:24	67
004	02.08.2023	13:34	105
005	03.08.2023	10:20	45



Export	





Dynamic probing  
acc. to  
DIN EN ISO 22476-2

contact details  
contractor

Your professional  
appearance

Device type: DPL  
Device: HMP SONpro  
Nr.: 1356

Examiner

Weather/temperature

Project

Test surface/layer

Measurement: 001

Date with start-  
and end time

Start of measurement  
02.08.2023/ 11:11  
End of measurement  
02.08.2023/ 11:46

GPS coordinates

N 52°10'36.21"  
E 11°39'38.70"

Depth in m	Impacts
0.1	18
0.2	32
0.3	38
0.4	35
0.5	30
0.6	27
0.7	25
0.8	23
0.9	25
1.0	18
1.1	18
1.2	32
1.3	38
1.4	35
1.5	30
1.6	27
1.7	25
1.8	23
1.9	25
2.0	18

probing depth

number of impacts per 10 cm

## Documentation

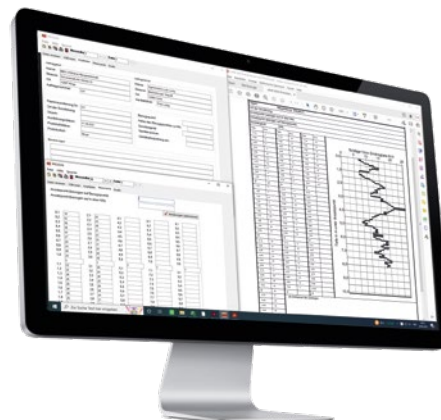
### > Print out

Document the measuring results directly on site  
my means of thermal printer.

### > Create protocols

Use the evaluation software **PROSON** in order  
to create professional protocols for each measu-  
ring point including your logo and contact details.  
The Software also enables you to store the data in  
a database with comfortable search- and editing  
options.

### > Export to all common evaluation programs



ALBRECHT					
Order number:					
Measuring protocol for dynamic probing acc. to DIN EN ISO 22476-2					
Dynamic Probing No: 9876	Execution date: 01.08.2023 Operator: Franz Albrecht				
Object: Magdeburg, Elbdeich					
Probing location:					
Starting point (referred to m above sea level):					
Starting point (referred to reference point):					
Probing Device: DPL					
Depth	N10	Depth	N10	Depth	N10
0.10	7	1.10	11	2.10	17
0.20	8	1.20	14	2.20	16
0.30	9	1.30	13	2.30	17
0.40	11	1.40	9	2.40	14
0.50	10	1.50	11	2.50	12
0.60	15	1.60	12	2.60	11
0.70	12	1.70	13	2.70	11
0.80	11	1.80	15	2.80	15
0.90	11	1.90	16	2.90	16
1.00	7	2.00	17	3.00	15
1.10	29	2.10	15	3.10	17
1.20	7	2.20	14	3.20	18
1.30	8	2.30	13	3.30	19
1.40	9	2.40	14	3.40	20
1.50	11	2.50	12	3.50	25
1.60	12	2.60	11	3.60	20
1.70	13	2.70	11	3.70	19
1.80	15	2.80	15	3.80	18
1.90	16	2.90	16	3.90	16
2.00	17	3.00	15	4.00	17
2.10	15	3.10	17	4.10	17
2.20	14	3.20	16	4.20	17
2.30	13	3.30	17	4.30	17
2.40	14	3.40	18	4.40	17
2.50	12	3.50	19	4.50	17
2.60	11	3.60	20	4.60	17
2.70	11	3.70	19	4.70	17
2.80	15	3.80	18	4.80	17
2.90	16	3.90	16	4.90	17
3.00	15	4.00	17	5.00	17
3.10	17	4.10	17	5.10	17
3.20	18	4.20	17	5.20	17
3.30	19	4.30	17	5.30	17
3.40	20	4.40	17	5.40	17
3.50	25	4.50	17	5.50	17
3.60	20	4.60	17	5.60	17
3.70	19	4.70	17	5.70	17
3.80	18	4.80	17	5.80	17
3.90	16	4.90	17	5.90	17
4.00	17	5.00	17	6.00	17
4.10	17	5.10	17	6.10	17
4.20	17	5.20	17	6.20	17
4.30	17	5.30	17	6.30	17
4.40	17	5.40	17	6.40	17
4.50	17	5.50	17	6.50	17
4.60	17	5.60	17	6.60	17
4.70	17	5.70	17	6.70	17
4.80	17	5.80	17	6.80	17
4.90	17	5.90	17	6.90	17
5.00	17	6.00	17	7.00	17
5.10	17	6.10	17	7.10	17
5.20	17	6.20	17	7.20	17
5.30	17	6.30	17	7.30	17
5.40	17	6.40	17	7.40	17
5.50	17	6.50	17	7.50	17
5.60	17	6.60	17	7.60	17
5.70	17	6.70	17	7.70	17
5.80	17	6.80	17	7.80	17
5.90	17	6.90	17	7.90	17
6.00	17	7.00	17	8.00	17
6.10	17	7.10	17	8.10	17
6.20	17	7.20	17	8.20	17
6.30	17	7.30	17	8.30	17
6.40	17	7.40	17	8.40	17
6.50	17	7.50	17	8.50	17
6.60	17	7.60	17	8.60	17
6.70	17	7.70	17	8.70	17
6.80	17	7.80	17	8.80	17
6.90	17	7.90	17	8.90	17
7.00	17	8.00	17	9.00	17
7.10	17	8.10	17	9.10	17
7.20	17	8.20	17	9.20	17
7.30	17	8.30	17	9.30	17
7.40	17	8.40	17	9.40	17
7.50	17	8.50	17	9.50	17
7.60	17	8.60	17	9.60	17
7.70	17	8.70	17	9.70	17
7.80	17	8.80	17	9.80	17
7.90	17	8.90	17	9.90	17
8.00	17	9.00	17	10.00	17
8.10	17	9.10	17	10.10	17
8.20	17	9.20	17	10.20	17
8.30	17	9.30	17	10.30	17
8.40	17	9.40	17	10.40	17
8.50	17	9.50	17	10.50	17
8.60	17	9.60	17	10.60	17
8.70	17	9.70	17	10.70	17
8.80	17	9.80	17	10.80	17
8.90	17	9.90	17	10.90	17
9.00	17	10.00	17	11.00	17
9.10	17	10.10	17	11.10	17
9.20	17	10.20	17	11.20	17
9.30	17	10.30	17	11.30	17
9.40	17	10.40	17	11.40	17
9.50	17	10.50	17	11.50	17
9.60	17	10.60	17	11.60	17
9.70	17	10.70	17	11.70	17
9.80	17	10.80	17	11.80	17
9.90	17	10.90	17	11.90	17
10.00	17	11.00	17	12.00	17
10.10	17	11.10	17	12.10	17
10.20	17	11.20	17	12.20	17
10.30	17	11.30	17	12.30	17
10.40	17	11.40	17	12.40	17
10.50	17	11.50	17	12.50	17
10.60	17	11.60	17	12.60	17
10.70	17	11.70	17	12.70	17
10.80	17	11.80	17	12.80	17
10.90	17	11.90	17	12.90	17
11.00	17	12.00	17	13.00	17
11.10	17	12.10	17	13.10	17
11.20	17	12.20	17	13.20	17
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11.60	17	12.60	17	13.60	17
11.70	17	12.70	17	13.70	17
11.80	17	12.80	17	13.80	17
11.90	17	12.90	17	13.90	17
12.00	17	13.00	17	14.00	17
12.10	17	13.10	17	14.10	17
12.20	17	13.20	17	14.20	17
12.30	17	13.30	17	14.30	17
12.40	17	13.40	17	14.40	17
12.50	17	13.50	17	14.50	17
12.60	17	13.60	17	14.60	17
12.70	17	13.70	17	14.70	17
12.80	17	13.80	17	14.80	17
12.90	17	13.90	17	14.90	17
13.00	17	14.00	17	15.00	17
13.10	17	14.10	17	15.10	17
13.20	17	14.20	17	15.20	17
13.30	17	14.30	17	15.30	17
13.40	17	14.40	17	15.40	17
13.50	17	14.50	17	15.50	17
13.60	17	14.60	17	15.60	17
13.70	17	14.70	17	15.70	17
13.80	17	14.80	17	15.80	17
13.90	17	14.90	17	15.90	17
14.00	17	15.00	17	16.00	17
14.10	17	15.10	17	16.10	17
14.20	17	15.20	17	16.20	17
14.30	17	15.30	17	16.30	17
14.40	17	15.40	17	16.40	17
14.50	17	15.50	17	16.50	17
14.60	17	15.60	17	16.60	17
14.70	17	15.70	17	16.70	17
14.80	17	15.80	17	16.80	17
14.90	17	15.90	17	16.90	17
15.00	17	16.00	17	17.00	17
15.10	17	16.10	17	17.10	17
15.20	17	16.20	17	17.20	17
15.30	17	16.30	17	17.30	17
15.40	17	16.40	17	17.40	17
15.50	17	16.50	17	17.50	17
15.60	17	16.60	17	17.60	17
15.70	17	16.70	17	17.70	17
15.80	17	16.80	17	17.80	17
15.90	17	16.90	17	17.90	17
16.00	17	17.00	17	18.00	17
16.10	17	17.10	17	18.10	17
16.20	17	17.20	17	18.20	17
16.30	17	17.30	17	18.30	17
16.40	17	17.40	17	18.40	17
16.50	17	17.50	17	18.50	17
16.60	17	17.60	17	18.60	17
16.70	17	17.70	17	18.70	17
16.80	17				

# TECHNICAL DATA & SCOPE OF SUPPLY

## Technical data

### measuring instrument

	SON <sup>pro</sup> -P	SON <sup>pro</sup> -M
> depth in m (Storage locations per measurement series)	32	32
> temperature range 0 to 40 °C	✓	✓
> very robust, splash-water proof	✓	✓
> colourful <b>graphic display</b> in mm	56 x 73	56 x 73
> fast, efficient 32-bit processor	✓	✓
> interface for Bluetooth, USB, thermal printer	✓	✓
> GPS	✓	✓
> <b>dimensions</b> in mm	210 x 100 x 31	210 x 100 x 31
> storage capacity internally in measurement series	250	250
> <b>power supply</b> with powerful lithium-polymer battery 3,7 V	✓	✓
> menu navigation selectable in many languages	✓	✓

### measuring head

> impact count logging, transfer to measuring instrument	✓	✓
> power supply		
via measuring instrument	✓	
by means of Li-polymer-accu		✓
> dimensions in mm	114 x 60 x 33	170 x 85 x 33

### Guaranteed

- > 2 years of guarantee included
- > 10 years of spare part availability guaranteed
- > competent all-round service – even after the purchase!
- > zertifizierte Produktion nach DIN EN ISO 9001:2015
- > certified production acc. to DIN EN ISO 9001:2015
- > development and production within Germany
- > trained service- and distribution partner nearby

**2 YEARS  
GUARANTEE**

**10 YEARS**  
spare parts availability



## Scope of supply

### pneumatic penetrometer HMP SON<sup>pro</sup>-P

acc. to Engineering Code for Soil and Rock in Road Construction  
DIN EN ISO 22476-2

consisting of:

- > **electronic measuring instrument HMP SON<sup>pro</sup>-P** with evaluation software **PROSON**
- > **measuring head HMP SON** with pressure sensor
- > aluminium plate with **foot button** (optional hand button)
- > **hose system** with shut-off valve
- > **USB stick with application video** and user manual, 4 GB
- > **thermal printer** (optional)

### mechanical penetrometer HMP SON<sup>pro</sup>-M

acc. to Engineering Code for Soil and Rock in Road Construction  
DIN EN ISO 22476-2

consisting of:

- > **electronic measuring instrument HMP SON<sup>pro</sup>-M** with evaluation software **PROSON**
- > **measuring head HMP SON**
- > **sensor arm with ultrasonic sensor**
- > **reflectors**
- > incl. mounting material
- > **USB stick with application video** and user manual, 4 GB
- > **thermal printer** (optional)



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info@hmp-online.de  
www.hmp-online.com

Your competent specialised dealer:

- Development, Production and Service -  
soil-mechanical test equipment

### HMP LFG

#### The Light Weight Deflectometer

TP BF-StB B 8.3 issue 2012  
ASTM E2835-21



### HMP PDG

#### Static Plate Load Tester

DIN 18134 issue 2012  
ASTM D1195/1196  
BS 1377 Part 9



### HMP SON

#### Automatic acquisition- and evaluation unit for penetration

EN ISO 22476-2



### HMP DEN

#### Determination of soil density

DIN 18125 part 2



- Distribution of tester for road construction, concrete  
construction, refurbishment of buildings, laboratory  
equipment

[www.hmp-online.com](http://www.hmp-online.com)

Revision 08/2023 Technical changes reserved