

**SIMPLE HANDLING  
NO NEED FOR INSTALLATION**

# Digital Pressure Indicator DPI



## Cylinder Pressure Monitoring

The Digital Pressure Indicator DPI measures dynamic pressures. It is designed to analyze the internal combustion curve of large two and four stroke diesel engines. The measurement is performed via an indicator valve.

## Description

The electronic pressure indicator DPI, also known as pressure mean indicator, is designed to measure dynamic cylinder pressures of large two- and four-stroke Diesel and gas engines.

It is a state-of-the-art MIP-system with a very convincing price-performance ratio. The high accuracy data collected by the DPI is essential for optimizing engines' performance and reducing emissions.

The self-explanatory handling of the Leutert pressure indicator allows even unexperienced operators to take successful measurements in few minutes.

Following values can be monitored by using the DPI:

- Power/MIP calculation
- P-Max
- PV-plot
- P-comp
- DP (Derivative plot)
- RPM

The DPI is the most straightforward solution to reach optimum performance of your engine.

Every single device is being tested and calibrated according to our ISO 9001 quality standards and will be supplied with a calibration certificate proving the accuracy of the device.

## Features

- No need to install TDC sensors on the engine for power calculation
- Easy handling and Plug'n'Play installation of the software and hardware results in less user related problems
- Excellent price-performance ratio
- No copy limitations of the software
- Usage of standard batteries (easily replaceable by user)
- Continuous operation of more than 6 hours
- High accuracy
- Usage of a high quality sensor

## Pressure sensor

The heart of the instrument is the pressure sensor. It is characterized by a high level of precision and rugged design. Using the latest technology its accuracy and lifetime are setting the standard.

The type of quartz sensor used for the DPI has passed trials of 16,000 hours non-stop operation and is accepted world wide by all engine manufacturers. Furthermore the sensor has a calibration interval of approx. 8,000 hours.



Pressure sensor

## Hand-held data acquisition unit

A battery powered hand-held provides important data for engine diagnostics and condition monitoring directly at the point of use. Its electronics are incorporated in a tough water resistant body.



Hand-held data acquisition unit

## Measuring process

The pressure sensor is connected to the DPI hand-held by an armoured cable. The sensor is temporarily mounted to the indicator valve (Thompson connection). After the measurement has been completed, basic data can be read off the LC display of the hand-held unit. Afterwards, the data sets are saved to the internal memory and may be transferred to any computer.

## Analyzing software

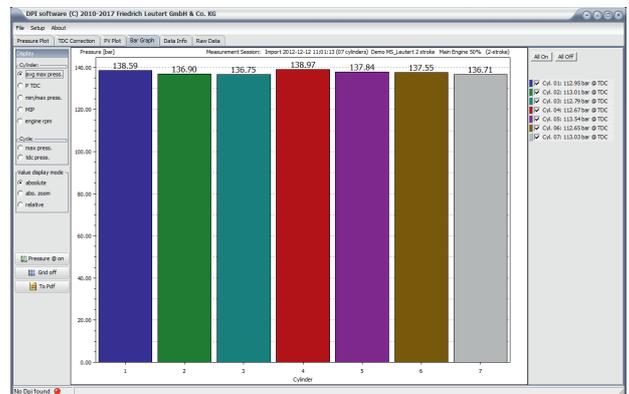
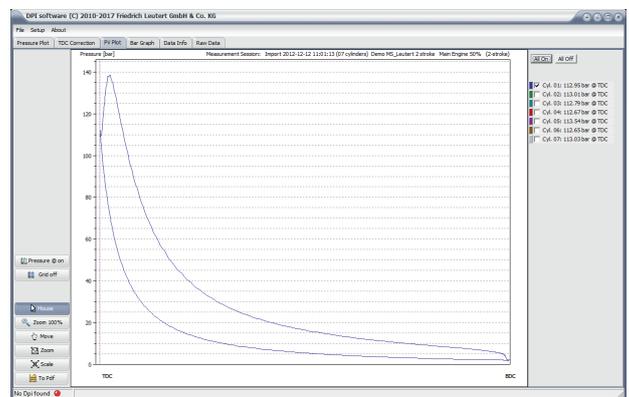
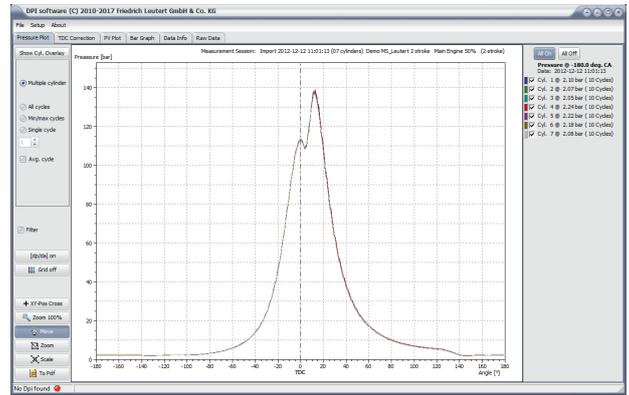
The simple, self-explanatory, and sophisticated software is saved on the internal memory of each handheld unit and has no copy limitations. This means that it is not necessary to purchase a second or even more licences for the computer(s) in the Engine Control Room and/or superintendents' office.

Once the hand-held unit is connected to any computer, the software will automatically recognize new measuring files. There is no need to install any drivers ("Plug'n'Play").

After the new files have been imported, there are different visualization modes available (pressure plot, pv plot, bar graphs, summarizing data info) which allow easy evaluation of the measuring data.

The software allows evaluation transmitting (to superintendency), archiving, and much more with only a few clicks. Besides, the software offers the possibility for easy data sharing by e-mail by just one click.

Future firmware and software updates can be done by the operator by simply copying one file.



Date	Cyl 1	Cyl 2	Cyl 3	Cyl 4	Cyl 5	Cyl 6	Cyl 7	Mean	Total
11:20:47	11:22:08	11:23:46	11:24:41	11:25:36	11:26:29	11:28:09	11:28:09	---	---
Average cycles	10	10	10	10	10	10	10	---	---
Pressure [bar]	138.59	136.90	136.75	138.97	137.84	137.55	136.71	137.62	---
Power [bar]	141.19	140.76	139.25	140.45	139.85	139.87	138.22	139.94	---
Power_max [bar]	137.11	135.39	134.99	137.29	136.57	135.94	135.12	136.24	---
MP [bar]	123.29	121.19	121.11	121.76	121.22	121.21	121.22	121.22	---
Deviation [bar]	0.97	-0.72	-0.87	1.35	0.22	-0.67	-0.91	139.94	---
PK [bar]	132.95	133.01	132.79	132.67	133.54	132.65	133.03	132.95	---
MPV [kWh]	72.19	72.39	72.19	72.29	72.29	72.19	72.19	72.19	---
Power [bar]	2.91	2.96	2.99	2.97	2.98	2.97	2.95	---	---
Ind. power [kW]	174.66	170.59	170.23	174.15	174.23	174.67	172.47	17043.29	---
Boiler pressure [bar]	1.70	1.70	1.70	1.70	1.70	1.70	1.70	---	---
Boiler temp. [deg C]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	---	---
Ambient temp. [deg C]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	---	---
Exhaust gas temp. [deg C]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	---	---
Feed track setting	0.00	0.00	0.00	0.00	0.00	0.00	0.00	---	---
VET setting	0.00	0.00	0.00	0.00	0.00	0.00	0.00	---	---
Additional information	0.00	0.00	0.00	0.00	0.00	0.00	0.00	---	---

Screenshots of the DPI software

## Technical Specifications

Pressure range	0 to 300 bar
Engine range	50 to 5,000 rpm
Battery capacity	> 6 hrs
Operating temperature	0 to 55°C hand-held unit 0 to 350°C pressure sensor (short-term higher)
Weight (approx.)	440 gr handheld unit 470 gr pressure sensor
Dimensions	211 x 100 (81) x 45 (26) mm hand-held unit Ø = 60 mm , L = 210 mm pressure sensor
Accuracy	< 0.5%
A/D sampling precision	16 bit (0.0092 bar/sample)
Memory capacity	50 engines, 24 cylinders each
Battery type	Standard AA (4 pcs.), rechargeable
Battery charging	via USB or adapter
Display	20 x 4 alphanumeric, backlight, high contrast
Standard connection	W 27 x 1/10"

## Comparison of Leutert Indicators

	DPI	Type50	MSI-3
Software based power/MIP calculation	✓	○ <sup>1)</sup>	–
Analyzing Software	✓	–	–
Electronic data transfer & sharing	✓	–	–
P-Max	✓	✓	✓
PV-Plot	✓	✓	–
P-comp	✓	✓	–
DP (Derivative plot)	✓	–	–
RPM	✓	–	–
Suitable for 2- & 4-stroke engines	✓	✓ <sup>2)</sup>	✓

<sup>1)</sup> Using Planimeter with manual calculation, and engines fitted with an indicator drum drive

<sup>2)</sup> Choose correct indicator type according to RPM range



Manual available in English, Russian, Mandarin, and Spanish