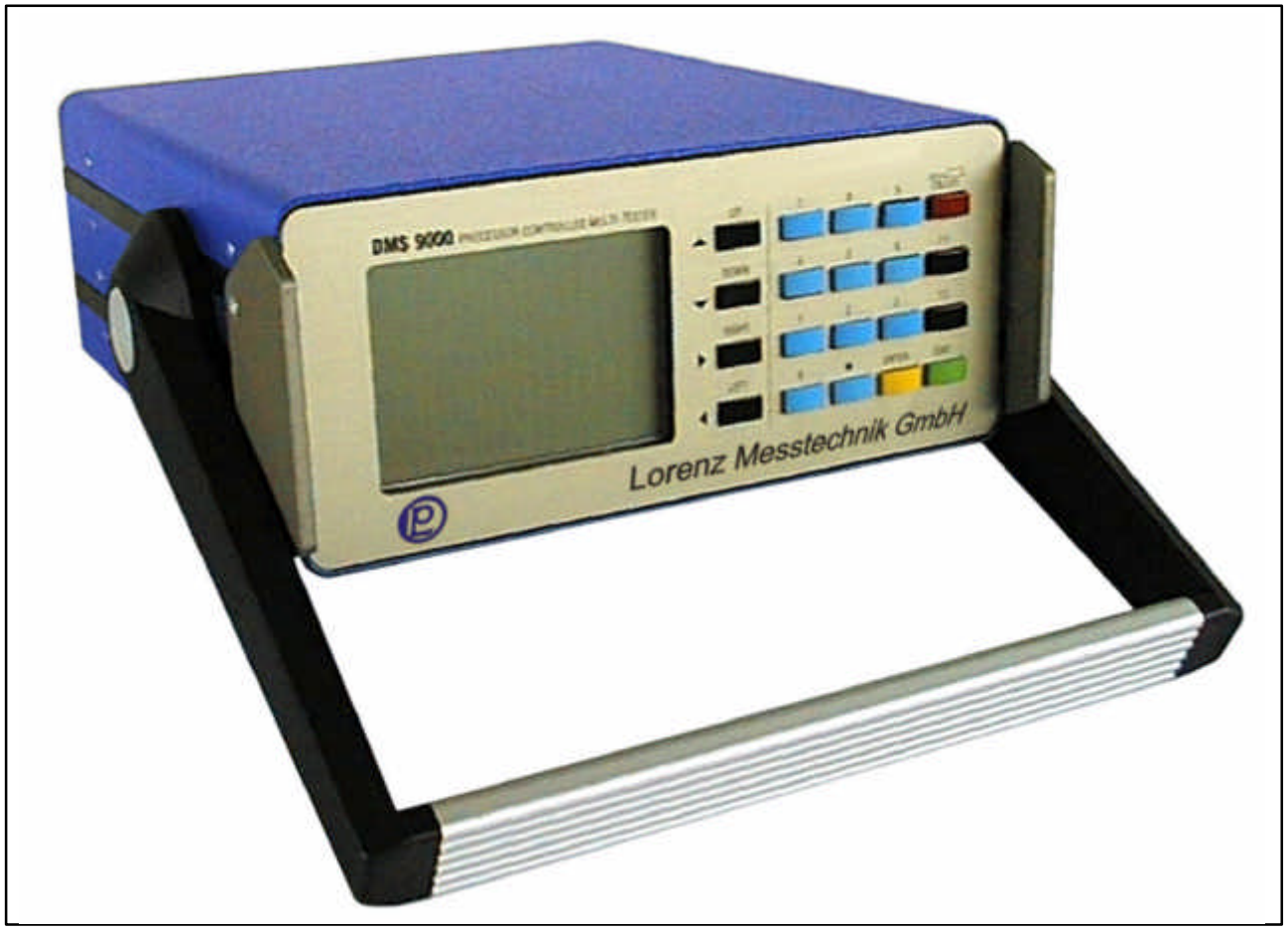
Digital measuring amplifier with graphic display

Type DMS 9000

- Evaluation of screw parameters during the development
- Quality assurance in the manufacturing with documentation
- Evaluation and analysis of screw courses
- Examination of displaying and releasing torque tools
- Testing of the mounting quality in the quality assurance



The measuring amplifier, type DMS 9000 is a universal displaying and documentation device for the bolting technique.
Complete bolting courses can be apprehended and evaluated. Furthermore the device is additionally qualified for examination of displaying and releasing torque tools (torque wrenches).

Due to the high measuring rate, the break point can be exactly registered. The graphic LCD-display allows a presentation of the curve characteristic.

Through to both documentation interfaces RS 232 and centronics the detected measuring values can be passed on to printer or a superior PC. If the printer supports the HP-PCL5 format, the curve courses can be printed directly.

A built-in rechargeable battery which guarantees an operating time of 8 hours also allows free-field measurements without 230 V mains supply.
The measuring values are being stored in a buffered memory unit and can be read at a later time. 10 different parameter sets with each 1000 measuring values can be stored. A larger measurement value memory unit is available on request.

Due to an integrated statistic program the standard deviation as well as the arithmetic mean value can be detected.

SPECIFICATIONS:

TYP	**DMS 9000**
Art.No.	**100631**
In general	
Display	192 x 8 dots, LCD back-lighted
Operation	18 keys operator guide
Level of protection	IP 21
Weight	approx. 3,8 kg
Housing dimensions (W x H x D)	approx. 250 x 9,5 x 240 mm
Signal acquisition torque	
Input signal	1mV / V; 2mV / V; ± 5V
Measuring rate	10 kHz
Resolution	± 12 bit
Signal acquisition torque angle	
Input signal	5 V TTL; 2 traces 90° displaced
Max. count rate	500 kHz
Resolution	1°
Output/Evaluation	
Parameter sets	10
Memories each parameter set	1000
Time documentation	real time clock
Parallel interface	centronics
Serial interface	RS 232, 2400...19200 baud, format 8,N,1
Supply	
Power supply	230 V AC, through external power supply
Battery operation	approx. 8 h
Sensor supply	5 V 50mA; 12 V 200mA, short circuit resistant

Examples Documentation:

Output as tabulation

MEASUREMENT-PROTOCOL

Date : 25.04.01 Time : 15:23

Parameterset : 1 ID – Number : 1234
Nominal Value : 10 Nm
Threshold Angle : 3.12 Nm NIO – Values marked with *
Md OGW : 5.34 Nm Torque values in Nm
Md UGW : 3.23 Nm Angle values in degree
Target number : 15 Readings

No.	Torque	Angle	Date	Time	No.	Torque	Angle	Date	Time
1	3.93	22	22.04.01	10:53	2	3.92	21	22.04.01	10:54
3	3.33	21	22.04.01	10:54	4	3.13	26	22.04.01	10:56
5	5.62 *	16	22.04.01	10:56	6	3.32	24	22.04.01	10:57
7	3.88	19	22.04.01	10:57	8	3.55	25	22.04.01	10:58
9	3.84	17	22.04.01	10:58	10	3.64	22	22.04.01	10:59
11	3.98	18	22.04.01	10:59	12	3.38	23	22.04.01	11:00
13	4.03	20	22.04.01	11:00	14	3.54	22	22.04.01	11:01
15	3.93	22	22.04.01	11:01					

Statistics : Md max. Value : 5.62 Nm
Md min. Value : 3.13 Nm
Arithmetical mean : 3.80 Nm
Stand. Deviation : 0.57
IO – Values : 14
NIO – Values : 1

Output as diagram (torque wrench)