



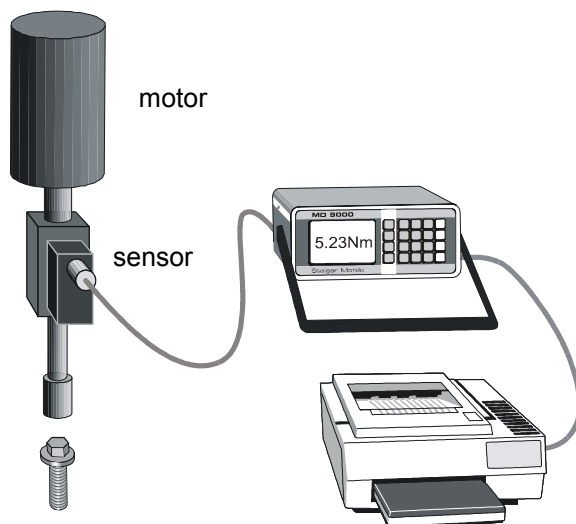
## Portable Torque / Force Monitor & Data Collection Instrument



### Applications

- Continuous dynamic monitoring of all torque controlled power tools.
- Evaluation and control of screw drivers for „turn-off screwers“ via logic or relay outputs or off line set up and verification of power tools.
- Fastener assembly troubleshooting.
- Testing and recalibrating torque wrenches.
- Product quality audits.
- Control of nutrunner equipment (controlled by torque and/or rotation angle).

- Quality Assurance and Assembly Plant
- Research and Development Labs
- Maintenance Facilities



### Special features

- Connection of all static or dynamic strain gauge transducers. Even load cells (traction and compression) can be connected.
- Connection of rotational brushless torque transducers acc. to data sheet 0170 and slipping transducers acc. to data sheet 0143.
- Easy to handle by menu guidance via LCD graphics display switchable background light.
- Charger for NiCd battery is part of delivery. The level of charging is indicated. An adapter for operating on power line is optionally available.

15.01.2001

Portable Torque Analyzer Type MD 9000

4110/04

## Technical Data

Inputs: - strain gauge (0.5 / 1.0 / 2.0 mV/V)  
 - analog (- 5 V ... + 5 V)  
 - incremental (TTL)  
 - digital control signals

Outputs: - relay and logic outputs  
 - data output RS 232  
 - printer interface (Centronics)

Resolution: 12 bits

Measurement deviation:  $\leq \pm 0.25 \%$

Dimensions (WxHxD in mm): 205 x 90 x 230

Operating temperature range: + 5 ... + 45 °C

Accumulator supplied operation  
 (with strain gauge sensor): > 6 hours

## Measuring procedures

- Torque: peak value (single / plural measuring).
- Torque: continuous measuring.
- Torque - angle measurement
- Measuring curves:  $Md = f(\text{time})$   
 $Md = f(\text{angle})$ .

## Additional features

- 10 parameter sets with 200 values each can be stored.
- Statistic evaluation.
- External control of up to 10 setpoint sets.
- Presentation of torque vs.time and torque vs. angle diagrams on display.
- Automatic range detection, electric calibration and zero adjustment of transducer is possible.

## Output example:

```

MEASUREMENT REPORT
=====
Date : 10.01.96                               Time : 11:27
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Parameter set      : 1                        Tester-ID-number : 1111
Rated value MWA   : 100.0 Nm
Start delay time  : 500 ms
Md OGW           : 80.3 Nm                   Measured value in Nm
Md UGW           : 50.6 Nm                   NOK-values marked with *
Target number     : 59 values

No.  Md      Date      Time      No.  Md      Date      Time      No.  Md      Date      Time
1    40.4 *  11.01.96  12:22    2    50.9    11.01.96  12:23    3    70.9    11.01.96  12.24
4    40.9 *  11.01.96  12:25    5    60.3    11.01.96  12:26    6    71.9    11.01.96  12.26

Statistics of all values
Md min. value : 40.4 Nm
Md max. value : 71.9 Nm
X - Dia.      : 55.3 Nm
Standard deviat. : 3.49 Nm
IO values     : 4
NOK values    : 2

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## Example of order specification:

