



Screwdriving technology

Automation

Air motors

Air tools

DEPRAG

**NEW
MEASURING
ELECTRONIC**

Torque Measuring Electronic ME 1000

Fully automated measurement acquisition on
Pneumatic Measuring Screwdrivers

- torque and angle acquisition
- piezo electric and strain-gage (DMS) torque measuring technique
- based on micro-processor
- highly dynamic and extremely accurate
- software for statistical processing
- easy and safe to use
- large scope of documenting possibilities



The DEPRAG measuring electronic ME 1000 is a completely new design and intended to be used for fully automatic torque data logging of the DEPRAG pneumatic measuring screwdrivers.

Its principal features include: the latest processor technology, laminated keypad, construction in accordance with EMC standards, high protection class, simple and safe handling, expanded software functions and extensive network possibilities.

The torque value sensed by the respective torque transducer of the screwdriver is the basic measuring unit. The degree of precision necessary for the correct registration of the highly dynamic screw tightening operations in cases of hard screw joints is possible only with the combination of an analog peak value memory and the high scan rate of the A/D converter of the ME 1000. Signal processing is done in accordance with the new VDI-2647 guideline. Of course, all relevant measuring values of the ME 1000 are based on national standards. Every measuring unit will be supplied with the relevant calibration certificate as per DIN 17025.

The new ME 1000 is available in three versions:

ME 1000 QC

The ME 1000 QC is intended for use in connection with our new QC screwdrivers. These hand-held pneumatic shut-off screwdrivers with integrated torque sensor allow the complete monitoring and documentation of relevant process units at a manual work station. In detail, the integrated software provides the following functions:

- Languages available for the display: German, English, French, Italian, Spanish and other languages on special request
- Measuring values shown in metric, or imperial unit or kg
- Monitoring of limit values with teaching function
- Setting of calibration values and gear ratios (for add-on gearings)
- Counting function for assemblies with allocation to a part to be assembled (up to 99 measurements)
- Storing of up to 5 complete sets of parameters for dealing with different workpieces.

ME 1000 DMS

The ME 1000 DMS is meant to be used for fully automatic data logging in screw assembly stations in conjunction with pneumatic measuring screwdrivers and integrated DMS transducers. For this, a fast A/D converter turns the analog signal produced by the transducer immediately

into respective measuring values. Additionally, it is also possible to monitor and document the angle, provided the screwdriver is equipped with a suitable angle encoder.

ME 1000 PE

The ME 1000 PE is intended for fully automatic data logging in screw assembly stations with pneumatic C-spindles and integrated piezo-electric torque transducer.

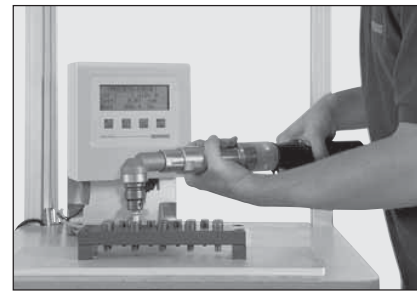
First, the charge produced by the transducer is converted into electrical voltage via a highly precise amplifier and then turned into respective measuring values via an A/D converter. Here too, the angle may be registered and evaluated, provided the screwdriver used is equipped with the necessary encoder.

Both the ME 1000 DMS and the ME 1000 PE include some extensive software for recording and evaluating data. Upper and lower limit values are set per channel and measuring unit enabling the control to make O.K. (correct) or N.O.K. (incorrect) decisions. The measuring units are to be used in extensive network operations.

Together with a standard PC and the respective network software (optionally available) some extensive statistics and control functions may be realized.

All measuring units are connected to the systems' PLC via galvanically separated in-/outputs. The necessary signal exchange can be achieved by using only a few lines, so that the connection and start-up is in fact quite simple. Of course, it is also possible to use the measuring unit for independent operations. Incorrect assemblies will be shown on the unit itself. The software allows the setting of several different user languages and different measuring systems (metric, imperial). We can also provide suitable printers as output units for all measuring electronics. Thus, both individual as well as series measurements with statistics evaluation may be printed out on some appropriate measuring protocol.

We also offer a complete range of services for verification of measuring devices for the new ME 1000 similar to all other measuring equipment: Checking at customers' sites, checking at the manufacturers' site, works calibration with corresponding measuring protocol as well as recalibration of a specific complete measuring series.



Example ME 1000 QC

Factory-Calibration on special order

- Calibration of a piezo-electric measurement-transducer (measurement-platform or torque-wrench).
- Calibration of a torque-measuring instrument.
- Calibration of a measurement-chain (a piezo-electric or DMS measurement-transducer and one torque-measuring instrument).
- The factory-calibration includes testing, calibration, a calibration-certificate or a measuring-protocol, which is traceable to national standards in accordance with DIN EN ISO 9001:2000.

Technical Data

Measuring Electronic type order no.	ME 1000 QC 385439 A	ME 1000 DMS 385438 A	ME 1000 PE 385437 A
measurement acquisition	torque	torque and angle	torque and angle
measuring channels	1	1	1
transducers	QC-Screwdriver (DMS)	Pneumatic Measuring Screwdriver (DMS) with angle encoder measuring platform and torque-wrench (DMS)	Pneumatic Measuring Screwdriver (piezo-electric) with angle encoder measuring platform and torque-wrench (piezo-electric)
measurement receiving	automatically	automatically by PLC manually by key pad or external switch	automatically by PLC manually by key pad or external switch
operating mode	peak value / measurement-series	peak value	peak value
total measuring-range number of measuring-ranges	0.1 - 400 Nm (0.9 - 3540 in.lbs) adapted to transducers	0.1 - 400 Nm (0.9 - 3540 in.lbs) adapted to transducers	0.01 - 400 Nm (0.09 - 3540 in.lbs) 6
LCD-display	alphanumeric, 4-lines, 20 digits per line	alphanumeric, 4-lines, 20 digits per line	alphanumeric, 4-lines, 20 digits per line
output data data output (printer or PC)	– RS 232 9600 Baud	network (standard PC) RS232 9600 Baud	network (standard PC) RS232 9600 Baud
PLC-connection input (PLC-output) output (PLC-input)	24 V, DC-isolated in- and outputs – –	24 V, DC-isolated in- and outputs start measurement single measurement-data O.K. single measurement-data not O.K. ready	24 V, DC-isolated in- and outputs start measurement single measurement-data O.K. single measurement-data not O.K. ready
transducer connection	4-pin socket board	4-pin socket board	BNC receptacle
linearity accuracy (over the complete measurement range) scan rate	≤ ± 1 % ≤ ± 1 % analog peek memory	≤ ± 1 % ≤ ± 1 % analog peek memory	≤ ± 1 % ≤ ± 1 % analog peek memory
voltage power consumption current protection	24 VDC 30 VA IP 54	24 VDC 30 VA IP 54	24 VDC 30 VA IP 54
dimensions (w x h x d)	205 x 200 x 90 mm / 8 5/64 x 7 7/8 x 3 35/64 in.	205 x 200 x 90 mm / 8 5/64 x 7 7/8 x 3 35/64 in.	205 x 200 x 90 mm / 8 5/64 x 7 7/8 x 3 35/64 in.
weight	2.8 kg / 6.2 lbs	2.8 kg / 6.2 lbs	2.8 kg / 6.2 lbs
Required accessories Power supply ME 1000 QC-EU-SWITCH order no. ME 1000 QC-US-SWITCH order no.	385473 A 385473 B	– –	– –
Optional equipment network-software (for PC) order no. interface converter (for PC) order no.	on request 825382	on request 825382	825381 825382
connector cable (network) 2 m / 6.6 ft. order no. 4 m / 13 ft. order no. 10 m / 33 ft. order no. 20 m / 66 ft. order no. 50 m / 164 ft. order no. 100 m / 328 ft. order no.	349961 A 349961 B 349961 C 349961 D 349961 E 349961 F	349961 A 349961 B 349961 C 349961 D 349961 E 349961 F	349961 A 349961 B 349961 C 349961 D 349961 E 349961 F
connecting cable (ME 1000 - PC /RS 232) order no.	385471 A	385471 A	385471 A
printer*) type order no.	ND 40 200715 A	ND 40 200715 A	ND 40 200715 A
	ND 100 823476	ND 100 823476	ND 100 823476
Additionally required equipment for printer:			
printer cable (Measuring Electronic-printer) order no.	385470 A	385470 A	385470 A
	on request	on request	on request

*) for additional technical data please refer to catalog D 3022 E

Process Plan of the ME 1000..

Example for an "okay" (o.k.) assembly



Process data version 1:
Display of the status counter



Process data version 2:
Display of cycle time, torque and status counter

Display of the Network Software 825381

suitable for the electronic type ME 1000 PE
(see optional accessories)



Main Display:

- display of actual data
- setting of the output file
- activating automatic data collection
- listing of the registered data



Network Setup:

- recognizing connected modules
- activate / de-activate modules



ME 1000 Setup:

- displaying the basic setting of the electronic and change it, such as calibration value, measuring range, upper and lower limits for torque, angle, etc.



Software Setup:

- setting of the language for the PC-software
- selection of the com interface

DEPRAG

DEPRAG SCHULZ GMBH u. CO.

P.O. Box 1352, D-92203 Amberg, Germany
Kurfürstenring 12-18, D-92224 Amberg
Phone (0 96 21) 371-0, Fax (0 96 21) 371-120
www.deprag.com
info@deprag.de



CERTIFIED AS PER DIN EN ISO 9001