

Multipurpose Torque Meter Type GMV2

- Tool Testing
- Production Supervising
- Documentation conforming to DIN EN ISO 9001
- Quality Assurance
- Test Bench Evaluation



Description:

The GMV2 is a microprocessor-controlled supply and display unit for various applications in torque-measurement. In screwing sector as well as on test benches in laboratory sector, with appropriate sensors detected measurement values for torque, angle, speed and power can be displayed, evaluated conforming to pre-set limits and stored.

The handling using a self-explanatory menu is carried out in simple steps. Using a torque transducer with integrated recognition chip the sensor data will be transmitted automatically into the parameter set by connecting the transducer to GMV2.

For better distinction the parameter-sets and data-sets can be named with text. The input of data-set names can happen optional using a bar code scanner. The access to the general settings can be limited by using passwords in three levels. The measured values will be internal stored in combination with date and time and they can be printed out by an external printer or transmitted to an existing EDP. External controlling of the unit is possible using control inputs. Optical signals or for example the shut down of an electric screwdriver with a separate power section can be controlled by switched outputs. Customized functions can be realized on demand.

Standard equipment:

- Storage for 1000 measurement values
- 50 variable measurement programs
- Self-explanating menu in several languages
- Protection of settings by passwords in three levels
- Automatic recognition of transducer and checking of the parameter setting for transducers with integrated chip
- Measurement of Torque, Speed and Power
- Tracking mode with
 - adjustable filter for torque and speed
 - Power measurement from 1 mW up to 20.000 kW
 - Continuous measurement output or periodic storage of values
- Peak mode in clockwise or counter-clockwise direction with
 - Display status of measurement
 - Adjustable correction factor for pulsed tools
- Adjustable moving average for torque with averaging surveillance function

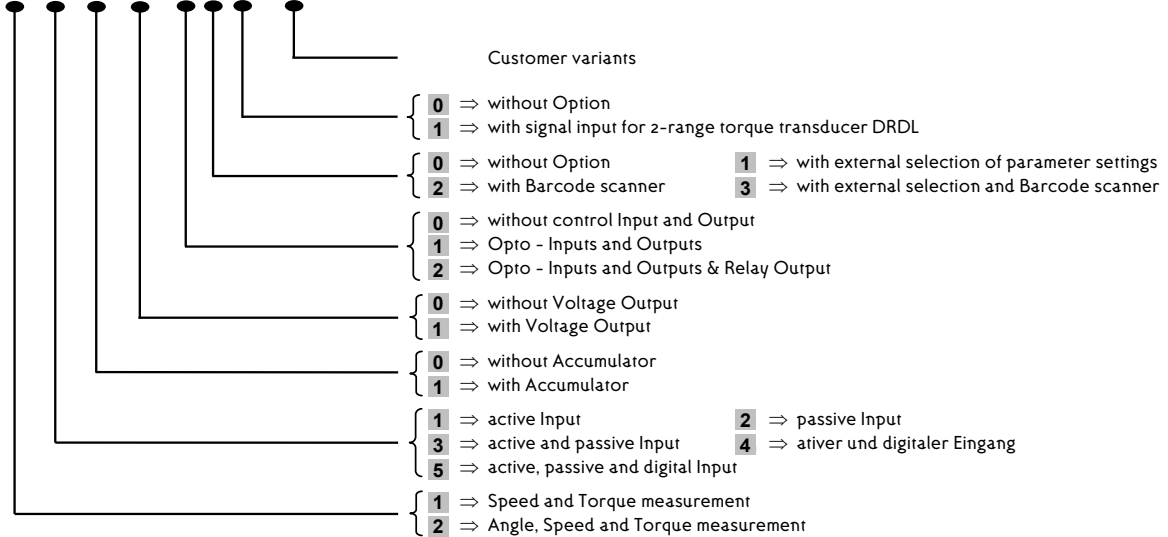
- Adjustable erasing time and suppression time
- Special measurement mode for torque wrenches
- RS232C port up to 19200 Baud
- EMC sealed housing
- Mains operation 100 to 240V

Optional additional equipment:

- external selection of parameter sets
- Input with Barcode scanner
- External control of storing, erasing and printing
- Angle measurement
- Controlling of electric screw drivers with separate power section
- Analogue output for torque signal
- Battery operation for 8 hours, internal battery charger and mains unit
- Signal input for dual range torque transducer type DRDL
- Data transfer to MS-Excel ® with Data-transfer-software GMV2-PC-Trans

Ordering code:

GMV2- XXX



Technical Data:

Supply Voltage:		Option - BATTERY OPERATION:	
mains voltage:	100V – 240V/50Hz – 60Hz	Supply Voltage:	Accu 2x6V/ 4Ah
Operating mode:	mains operating and charging simultaneously	Operating time at Continuous Operating:	ca. 8h (with sensor)
ACTIVE SENSOR FEEDING:		Option - DIGITAL INPUT	
for Torque Transducer	12V DC / 200mA		For Sensor Type DRFDxx
ACTIVE INPUT:		PASSIVE SENSOR FEEDING	
Input Sensitivity:	programmable from $\pm 1,25V$ to $\pm 10V$		7 V DC $\geq 350\Omega$
Input Resistance:	1 M Ω	Option - PASSIVE INPUT	
Zero Adjustment Range:	ca. $\pm 7\%$ of Full Scale	Input Sensitivity:	programmable from $\pm 0,5$ to ± 4 mV/V
CONVERSION:		Zero Adjustment Range:	ca. $\pm 7\%$ of Full Scale
Impulse Rise Time:	10%-90%: 0,25ms	Option - ANGLE MEASUREMENT	
Measuring Frequency:	3 KHz Sine Pulse max.	Input Signal:	2 Channels 360 Pulses / Revolution with approx. 90° Phase Shift
ACCURACY:		Resolution:	0,25°
Tracking Measurement:	$\leq 0,1\% \pm 2$ Digit	Counting Range:	$\pm 6000^\circ$
Peak Measurement:	$\leq 0,3\% \pm 2$ Digit	Option - BARCODESCANNER	
Torque Wrench Measurement:	$\leq 0,3\% \pm 2$ Digit	Manual Scanner 80 mm	Code 39
Speed Measurement:		Option - CONTROL INPUT AND OUTPUT	
n ≤ 10000 min-1 :	$\leq \pm 2$ Digit	2 Relay-Outputs:	IO; NIO
n ≤ 20000 min-1 :	$\leq \pm 3$ Digit	U max :	25 V AC / 30 V DC
Angle:	$< \pm 1^\circ$	I max :	1 A
Zero Point:	$\leq 0,05\%$	Switching Delay:	$\leq 1,6$ ms
STORE:		2 Opto-coupler Outputs:	Shut down; Customized
	50 Measurement Programs	U max :	30 V DC
	1000 Measurement values	I max :	150 mA
DISPLAY:		Saturation Voltage:	< 2 V (100 mA) $< 1,5$ V (50 mA) < 1 V (2 mA)
	Graphics-LCD with 240 x 64 Pixels	Switching Delay:	$\leq 0,2$ ms
DATA OUTPUT:		Switch Off Time:	$\leq 0,5$ ms
RS 232 Interface:	9 pin Connector (DEE) 1200 – 19200 Baud	2 Opto-coupler Inputs:	Store; Print; Clear; Zerodaj.
OPERATING TEMPERATURE:		Signal level ON:	4 V ...30 V / 3 mA
	0 - 45°C	Signal level OFF:	$< 1,5$ V
HUMIDITY :		Option – VOLTAGE OUTPUT	
	$< 75\%$	Voltage Output:	0 - $\pm 5V$ Ri = $< 1\Omega$,
PROTECTION:		Short Circuit Current:	10mA
	IP 40 conform to DIN 40050	AVAILABLE ACCESSORIES:	
DIMENSIONS:		Measuring Cables, Torque Transducers, Printers,	
	320x115x280mm (BxHxT)	Switchbox, Holder for Bits and Socket wrenches	
WEIGHT:		Software GMV2-PC-Trans	
	ca. 5,5 kg with accumulator	Seriell to USB - Converter	
COLOR:			
Housing:	RAL 7035 (light grey)		
Border:	RAL 7030 (light grey)		
Front Design:	RAL 3002 (crimson)		

Transfer of measured values to EDP with Software GMV2-PC-Trans:

Microsoft Excel - Beispiel-PC-Trans

	A	B	C	D	E	F	G	H	I	J	K	L
1	PAR	DS	SP	Drehmoment		Md-GW min	Md-GW max	Winkel /Grad	Wl.-GW min	Wl.-GW max	Uhrzeit	Datum
2	2	1	1	4,60 Nm		4,500	4,800	28,0	27	30	15:10	03.02.03
3	2	1	2	4,64 Nm		4,500	4,800	28,0	27	30	15:10	03.02.03
4	2	1	3	4,68 Nm		4,500	4,800	28,0	27	30	15:10	03.02.03
5	2	1	4	4,69 Nm		4,500	4,800	28,0	27	30	15:10	03.02.03
6	2	1	5	4,73 Nm		4,500	4,800	28,0	27	30	15:10	03.02.03
7	2	1	6	4,59 Nm		4,500	4,800	29,0	27	30	15:10	03.02.03
8	2	1	7	4,73 Nm		4,500	4,800	29,0	27	30	15:11	03.02.03
9	2	1	8	4,74 Nm		4,500	4,800	29,0	27	30	15:11	03.02.03
10	2	1	9	4,72 Nm		4,500	4,800	27,0	27	30	15:11	03.02.03
11	2	1	10	4,72 Nm		4,500	4,800	27,0	27	30	15:11	03.02.03
12	2	2	1									
13	2	2	2									
14	2	2	3									
15	2	2	4									
16	2	2	5									

Microsoft Excel - Beispiel-PC-Trans

nächste Prüfung

Messwert-Statistik

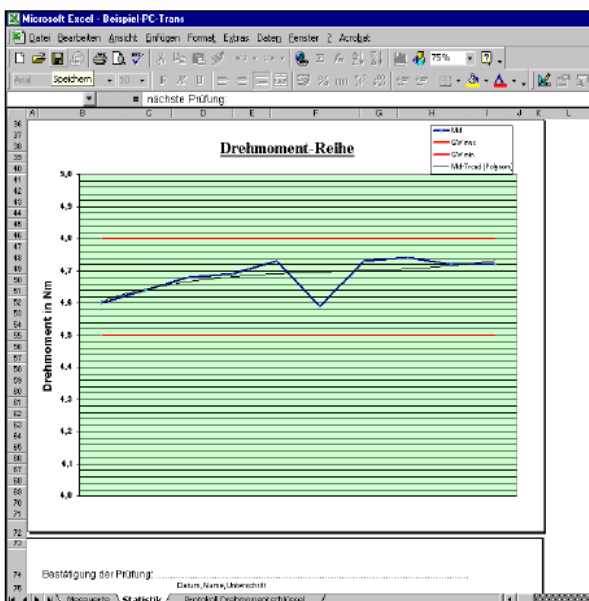
Werkzeug

Fabrikat: Pa. Hirschack Serien-Nr.: 079720002
 Typ: E-Schrauber Inventarnummer: 0815
 Geprüft Datum: 26. Dez. 01 Toleranz: 15,30%
 Prüfintervall: 1 Jahr nächste Prüfung: 24. Dez. 02

Par-Ab: 2 von 0,5 bis 0,5 Detektorstärke: 16

Anzahl n:	10	Anzahl Datenreihe:	1
Mittelwert µ:	4,604 Nm	Anzahl NG / %:	10 / 100,00%
Bereich R:	0,169 Nm	Anzahl NGmax / %:	0 / 0,00%
MS-Max:	4,740 Nm	Anzahl NGMin / %:	0 / 0,00%
MS-Min:	4,599 Nm	Anzahl NGW / %:	0 / 0,00%

Standarddev. (S): 0,053 Nm Cn / Cp: 0,800
 +3 S: + 0,158 Nm Cpk / Cpl: 0,68522
 Sigma (S): 0,059 Nm Cpk: 0,68522
 ± 3 Sigma: ± 0,167 Nm 3,6%



ETH messtechnik gmbh **Werkzeugüberprüfung**

Bezeichnung	Druckluftschrauber	Schraubertyp	Cleco 5RSA 10BQ
Werkzeugnummer	466789	Hersteller	Cooper-Tools
Einsatzort	Montageband	Seriennummer	123456
Schraubfall	Hart	Einstellbereich	0,4 - 3,5 Nm
Kalibrierintervall	Wöchentlich	Leerlaufdrehzahl	660

Messwerte

Messwerte einlesen

	Drehmoment	Drehwinkel	Messwert 1	Drehmoment	Drehwinkel
Sollwert	4,65 Nm	29 °	Messwert 1	4,60 Nm	28 °
Toleranz	3,23 %	5,3 %	Messwert 2	4,64 Nm	26 °
Oberer Grenzwert	4,80 Nm	30 °	Messwert 3	4,68 Nm	20 °
Unterer Grenzwert	4,50 Nm	27 °	Messwert 4	4,69 Nm	28 °
Maximalwert	4,74 Nm	29 °	Messwert 5	4,73 Nm	28 °
Minimalwert	4,59 Nm	27 °	Messwert 6	4,59 Nm	29 °
Cmk/Cpk	0,70	0,50	Messwert 7	4,73 Nm	29 °
Mittelwert:	4,68 Nm	28 °	Messwert 8	4,74 Nm	29 °
Abweichung	0,09 Nm	2 °	Messwert 9	4,72 Nm	27 °
± 3 Sigma	0,17 Nm	2 °	Messwert 10	4,72 Nm	27 °

Messmittel

Sensor	DRFS-I-10	Messgerät	GMV2
Inventarnummer	245912	Inventarnummer	36985
Hersteller	ETH	Hersteller	ETH
Messbereich	10 Nm	Messbereich	10 Nm
Toleranz	<0,15%	Toleranz	<0,3%
Seriennummer	369852	Seriennummer	123654
Kalibrierintervall	1 Jahr	Kalibrierintervall	1 Jahr
Kalibrierzertifikat Nr.	123456	Kalibrierzertifikat Nr.	36889
Nächste Prüfung	06.01.04	Nächste Prüfung	08.01.04

Prüfergebnis

Toleranz eingehalten: Ja

Nächste Prüfung am: 26.02.03

Datum: 19.02.03 Uhrzeit: 15:27

Name des Prüfers: Klenk

Unterschrift: _____

Order Code: GMV2-PC-Trans
System requirements: Windows 98 / ME / NT / 2000 / XP Office 2000