

HYDAC INTERNATIONAL

Portable Data Recorder HMG 3000

Description:

The HMG 3000 is a stylish, top performance portable measuring unit.

It enables the user to carry out measurement tasks and pinpoint problems in the quickest possible time and in a cost and time effective way through the use of automated setting procedures, simple operation and extensive functions. Once in use the HMG 3000 will soon become a reliable and useful companion.

Areas of application are primarily in servicing, maintenance, development, test rig technology, quality assurance or in the commissioning of machines and systems.

The range of functions and the operation of the unit are equally appropriate for those users who take measurements only occasionally as for professionals for whom measuring and documentation is routine.

The update capability of the HMG 3000 via USB interface makes it possible to take advantage of future further developments.



Special features:

- Simple, user-friendly operation
- Design suitable for practical applications
- Large, full-graphical colour display
- Quick and independent basic setting of the unit through the use of automatic sensor recognition
- 10 input channels
 - 8 analogue inputs
 - 2 frequency inputs
- Measurement rates up to 0.1 ms
- Extended voltage measurement
 - 10 .. +10V and 0 .. 50 V
- Very large data memory for archiving measurement curves
- Various measurement modes:
 - normal measuring
 - fast curve recording
 - long term measurements
- 4 independent triggers, can be interconnected logically
- PC connection
 - USB interface
 - RS 232 interface
- Convenient visualisation, archiving and data processing using the HMGWIN 3000 software supplied

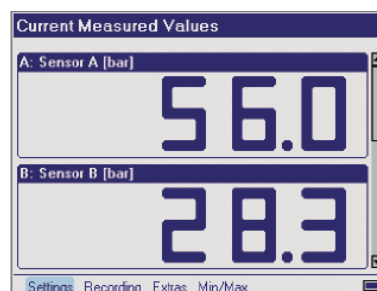
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Function:

- Clear and graphical selection menus guide the operator very simply to all the unit functions available. A navigation pad on the keypad ensures rapid performance.
- The HMG 3000 can monitor signals from up to 10 sensors simultaneously. For this there are 5 robust standard input sockets. By using Y-adaptors, the number of inputs can be doubled individually to make a total of between 6 and 10.
- The unit has 8 analogue inputs
- Sensors (e.g. for pressure, temperature etc) with the special digital HSI interface (HYDAC Sensor Interface) are immediately recognised by the unit and the basic settings are automatically adapted accordingly. Older versions of HYDAC sensors or other makes of sensor available commercially can also be connected.
- Frequency measurements, counter functions or triggers for data recording can be implemented via 2 digital inputs.
- For extended voltage measurement, the HMG 3000 offers the possibility of being able to record signals of 0 ... 50 V on two inputs and a signal of -10 ... +10V on one input (e.g. proportional valve control)
- All input channels can operate simultaneously at a measurement rate of 0.5 ms. To record highly dynamic processes, 2 analogue inputs are capable of recording measured values at a rate of 0.1 ms.
- The most exciting feature of the HMG 3000 must surely be its ability to record dynamic processes in real-time as measurement curves and to render them as graphs in the field.

- The data memory used for recording curves and logs can hold up to 500,000 measurement values. At least 60 such full length data records can be stored in an additional archive memory.
- For specific, event-driven curves or logs, the HMG 3000 has 4 independent triggers which again can be linked together logically.
- It is also possible to determine differential values between different input signals from sensors. Particularly when measuring flow rate by means of differential pressure measurement across a measuring orifice, the accuracy can be significantly improved by using a stored calibration curve. To generate such calibration curves, the HMG 3000 has an easy-to-use recording function.
- User-specific unit settings can be stored and re-loaded at any time as required. This means that repeat measurements can be carried out on a machine again and again with the same unit settings.

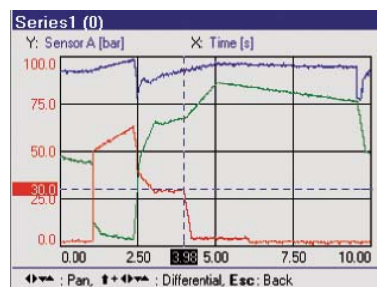
- Measurement values, curves or texts are visualised on a full-graphical colour display in different selectable formats and display forms.



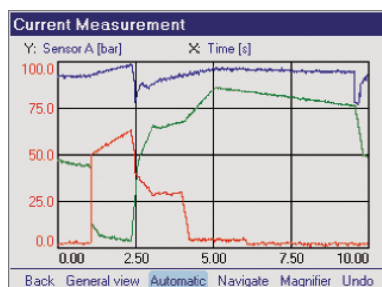
- Numerous useful and easy-to-use auxiliary functions are available e.g. zoom, ruler tool, creating differential value graphs, individual scaling, particularly when analysing the recorded measurement curves.

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power unit 10	28.06.05 12:44:58
injection machine 17	28.06.05 12:44:41
hydraulic press	28.06.05 12:43:04
power unit	28.06.05 12:42:03
injection machine 12	28.06.05 12:41:14

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- The HMG 3000 communicates with a PC via a USB interface. An RS 232 interface is also available.



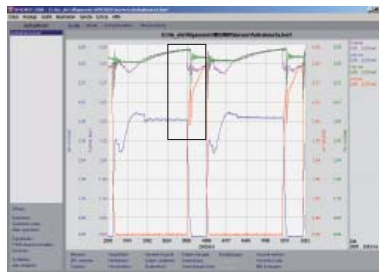
HMGWIN 3000:

The PC software HMGWIN 3000 is supplied with the HMG 3000. This software is a convenient and simple package for analysing and archiving curves and logs which have been recorded using the HMG 3000, or for exporting the data for integration into other PC programs, if required. In addition it is also possible to operate the HMG 3000 directly from the computer. Basic settings and measurements can be started on-line and displayed directly on the PC screen in real-time as measurement curves progress.

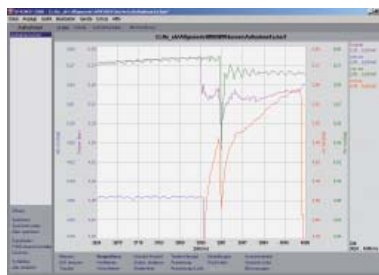
HMGWIN 3000 will run on PCs using Windows XP/2000 operating systems.

Some examples of the numerous useful additional functions:

- Transfer and archiving of measurements recorded using the HMG 3000.
- Display of the measurements in graph form or as a spreadsheet.

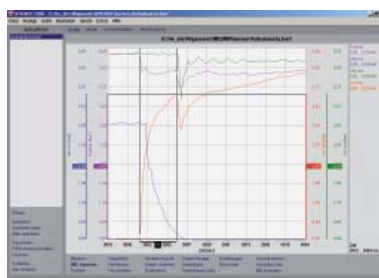


- Zoom function: using the mouse a frame is drawn around an interesting section of a measurement curve which is then enlarged and displayed.

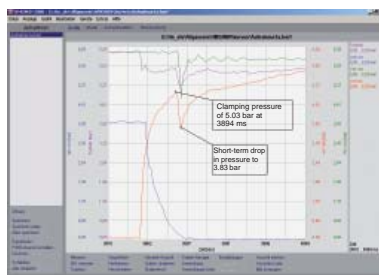


Zoomed section of measurement curve

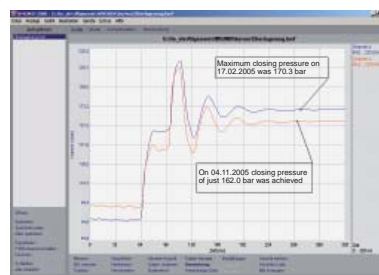
- Accurate measurement of the curves using ruler tool (time values, amplitude values and differentials).



- Individual comments and measurement information can be added to the graph.



- Overlay of curves, for example to document the wear of a machine (new condition / current condition).



- Using mathematical operations (calculation functions, filter functions), new curves can be added.
- Snap-shot function: comparable to the function of a digital camera, a picture can be taken immediately of any graph and saved as a jpg file.
- A professional measurement report can be produced at the click of a mouse: HMGWIN 3000 has an automatic layout function. Starting with a table of contents, all recorded data, descriptions and graphs and/or spreadsheets are combined into a report and saved as a pdf file.
- Real-time function: Start, record and display measurements in real-time (similar to the function of an oscilloscope)



- Change of the axis assignment of the recorded measurement parameters in graph mode e.g. to produce a p-Q graph.

Technical specifications:

Measurement inputs	8 analogue inputs 2 digital inputs
Channel A and B (accuracy)	4 .. 20 mA ($\leq \pm 0.1\%$ FS max.) 0 .. 20 mA ($\leq \pm 0.1\%$ FS max.) 0 .. 10 V ($\leq \pm 0.1\%$ FS max.) 0 .. 5 V ($\leq \pm 0.2\%$ FS max.) 1 .. 5 V ($\leq \pm 0.2\%$ FS max.) 1 .. 6 V ($\leq \pm 0.2\%$ FS max.) 0.5 .. 4.5 V ($\leq \pm 0.1\%$ FS max.) 0.5 .. 5.5 V ($\leq \pm 0.2\%$ FS max.)
Channel C and D (accuracy)	4 .. 20 mA ($\leq \pm 0.1\%$ FS max.) 0 .. 20 mA ($\leq \pm 0.1\%$ FS max.) 0 .. 10 V ($\leq \pm 0.5\%$ FS max.) 0 .. 50 V ($\leq \pm 0.1\%$ FS max.) 0 .. 5 V ($\leq \pm 1\%$ FS max.) 1 .. 5 V ($\leq \pm 1\%$ FS max.) 1 .. 6 V ($\leq \pm 1\%$ FS max.) 0.5 .. 4.5 V ($\leq \pm 0.1\%$ FS max.) 0.5 .. 5.5 V ($\leq \pm 1\%$ FS max.)
Channels E to G (accuracy)	4 .. 20 mA ($\leq \pm 0.1\%$ FS max.) 0 .. 20 mA ($\leq \pm 0.1\%$ FS max.) 0.5 .. 4.5 V ($\leq \pm 0.1\%$ FS max.)
Channel H (accuracy)	4 .. 20 mA ($\leq \pm 0.1\%$ FS max.) 0 .. 20 mA ($\leq \pm 0.1\%$ FS max.) -10 .. +10 V ($\leq \pm 0.5\%$ FS max.) 0.5 .. 4.5 V ($\leq \pm 0.1\%$ FS max.)
Channel I and J (accuracy)	Frequency range: 1 .. 30 000 Hz ($\leq \pm 0.1\%$ FS max.) Switching /switch-back threshold: 2V/1V Max. input voltage: 50 V
Differential channels	A - B C - D Differential channel for flow rate measuring orifice (display on channel B)
Measuring rate (dependent on the number of active channels)	0.1 ms, max. 2 analogue input channels 0.2 ms, max. 4 analogue input channels 0.5 ms, all 10 input channels
Resolution	12 bit
Memory	At least 60 measurement curves, each with up to 500,000 measured values
Display	3.5" colour display, 7 segment display
Interfaces	1 USB interface, 1 serial interface
CE mark	EN61000-6-1, EN61000-6-2, EN61000-6-3, EN61000-6-4
Safety	EN61010
Protection	IP40
Ambient conditions	Operating temperature: 0 .. 50 °C Storage temperature: -20 .. 60 °C Relative humidity: 0 .. 70 %
Dimensions	246 x 174 x 58 mm
Weight	1100 g

FS (Full Scale) = relative to the full measuring range

Order details:

HMG 3000 - 000 - X

Operating manual and documentation

D = German
E = English
F = French

Items supplied

- HMG 3000
- Charger for 90 .. 230 V AC
- Operating manual
- CD-ROM with PC software HMGWIN 3000

Accessories:

For detailed information on accessories, please see separate datasheet.

Examples of important accessories:

- **Y adaptor**
to double the input sockets on the HMG 3000
- **Pressure transmitter**
HDA 4000 with HSI interface
Pressure ranges: -1 .. 9 bar, 0 .. 16 bar, 0 .. 60 bar,
0 .. 100 bar, 0 .. 250 bar, 0 .. 400 bar, 0 .. 600 bar
- **Temperature transmitter**
ETS 4000 with HSI interface
Measuring range: -25 .. 100 °C
- **Flow rate transmitter**
EVS 3000 with HSI interface
Measuring ranges: 6 .. 60 l/min, 40 .. 600 l/min,
15 .. 300 l/min, 1.2 .. 20 l/min
- **RPM probe**
HDS 1000
- **Sensor simulator**
SSH 1000, ideal for training purposes
- **Hydraulic adaptors**

Note:

The information in this brochure relates to the operating conditions and applications described.

For applications or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.