Multi Measuring System PHYSIMETER® 906 MC-E

high-tensile aluminium housing

high-quality, attractive design

testing equipment for quality management

ERICHSEN

switchable display (bar graph/curve chart)

4 measuring channels sampling rate 1 kHz

User-friendly display instrument for measuring mechanical parameters

Design

The **PHYSIMETER® 906 MC-E** has been developed to measure a variety of mechanical parameters with one instrument. The concept is similar to the measurement of electrical values with a multimeter.

The **PHYSIMETER® 906 MC-E** is equipped with storage capacity for max. 1000 measured values which can be grouped in up to 100 batches.

Special features:

- Max. response rate 1 kHz
- A variety of transducers can be connected
- Automatic recognition of the type of transducer and measuring range by means of coded plugs
- Correctly signed indications on a graphic display
- Display of measured values with the units of the corresponding transducer
- Selection of digital filters
- Peak value memory
- Limit value monitoring
- Signal line for control of external equipment
- Separate statistical calculation for each group of measured data
- Ethernet interface for data transmission (1000 measured values per second)
- Off the line by means of battery and accu operation (mobile power supply)
- Analogue output (as option)

Application

Due to its extraordinary flexibility the **PHYSIMETER®** 906 MC-E is suitable for a wide range of measuring tasks, e.g. in connection with

Force transducers 906
for determining:
- tensile and pressure forces of springs, switches, levers;
- pressing forces on joining elements and plug-in connectors;
- opening and closing forces of numerous types of closures;
- adhesive and frictional forces on sliding and joining elements.

Torque transducers 906
for determining the application and release torques:
- on threaded connections and screw-type caps;
- when controlling of dynamometric screw-drivers;
- when measuring the static and sliding friction on spindles.

Displacement transducer 906
- for determining the elongation of specimens under tensile and pressure load.

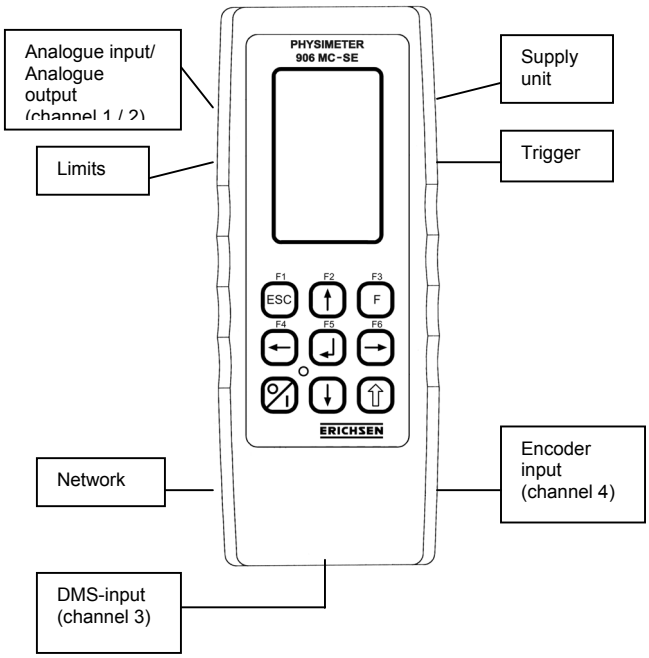
Pressure transducers 906
for testing hydraulic and pneumatic pressures:
- when servicing relevant plants;
- when adjusting pressure valves;
- when calibrating pressure gauges.

For further details please refer to the individual transducer leaflets.

Description

The ergonomically designed, high-quality aluminium housing of the **PHYSIMETER® 906 MC-E** comprises up to four measuring modules and the appertaining evaluation electronics with a graphic display. The connections for the coded transducers, the power pack, the trigger input/output, the limit/limiting value output as well as the network are located on the sides of the housing.

The **PHYSIMETER® 906 MC-E** can be used for the control of material testing machines (e.g. UNIMAT® 050 - 052). With the help of the user programme it is possible to establish the test run directly on the PC.



Portable mode
The measured data are stored on the spot. They can be grouped in batches in order to differentiate between various measuring locations.

Stationary mode
When used as stationary instrument, several additional functions are available. For the control of additional instruments, e. g. signalling devices, digital outputs can be supplied.

Technical Data

Name	Value	Remark
Power supply	7.5 V, 1 A	by plug-in power pack (115 V - 230 V, 50 Hz - 60 Hz)
Power consumption	< 1 A	
Reference temperature	(21 ± 2) °C	
Storing temperature	0 °C - 60 °C	
Operating temperature	15 °C - 25 °C	
Air humidity	max. 70%	non condensing
Max. number of channels	3/4	4, if analogue input and analogue output are equipped; specify channel type when ordering
Channel type wire strain gauge	1 - 2.2 mV/V	all usual wire strain gauge sensors 350 ohms - 1000 ohms applicable, factory calibration
Channel type analogue input	± 10 V	
Channel type analogue output	± 2,5 V	
Channel type Encoder	10 - 24 V	A/B – square wave signal
Sensor recognition		calibration data are stored in the sensor plug
Digital outputs	trigger, 2 limits, go/no-go	limits for sensor overload and adjustable by user go/no-go: limit values of user
Digital inputs	trigger	for triggering an instruction sequence
Display	graphic display, 64 x 128 pixels, lighting	edgeways
Display capacity	resolution ≤ 0.1 %	automatic switchover of the display capacity in the range of 10 % - 100 % of the measuring range
Operation	keypad / 9 keys	menu-driven
Peak memory	minimum and maximum value	for all input channels, unfiltered signal 1 ms
Data storage	1000 pairs of measured values	in max. 100 measuring data groups
Statistics	number of measurements, mean value, standard deviation	for each measuring data group
Sampling rate	1 kHz	all channels simultaneously
Filter times	by steps 1 ms to 1 s	simple averaging
Display rate	measuring values approx. 2 Hz, measuring bar approx. 10 Hz	1 Hz at a filter time of 1 s
Instruction set	1 chain of command, max. 10 instructions to be stored by user	to be fetched via key or trigger input
Housing	high-strength aluminium	with recessed grips
Dimensions	79 x 45 x 198 mm	
Weight (net)	0.9 kg	

Measuring Module Wire Strain Gauge

Name	Value	Remark
Bridge supply voltage	5 V d.c. voltage	
Bridge resistance	350 ohms - 2000 ohms	
Parameter	1 – 2. 2 mV/V	factory calibration
Range reserve	approx. 25 %	
Measuring uncertainty	0.2 %	at ambient temperature, user can zero offset error of the electronics

Measuring Module Analogue Input

Name	Value	Remark
Type of input	difference input	not electrically isolated
Input voltage	±10 V	
Deviation compared to mass	±10 V	highest voltage
Input resistance	approx. 90 k ohms	
Range reserve	approx. 10 %	
Measuring uncertainty	0.2 %	at ambient temperature

Measuring Module Encoder

Name	Value	Remark
Signal voltage	10 - 24 V	
Type of signal	A/B –square wave signal	phase discriminator
Signal	referred to mass	
Input resistance	> 4,7 kOhms	
Evaluation	4 edges	
Input frequency	max. 3.75 kHz	15 kHz edge frequency
Power supply	external supply of the encoder necessary	External power pack required

Module Analogue Output

Name	Value	Remark
Output voltage	± 2.5 V	
Signal	related to mass	
Current-carrying capacity	max. 10 mA	
Measuring uncertainty	0.2 %	at ambient temperature

Measuring Heads

The transducers for the following parameters are currently available for the **PHYSIMETER® 906 MC-E**:

Force F [N]	*Torque M [Ncm]*	*Pressure p [bar]*	*Displacement s [mm]*
20	20	20	5
50	50	50	10
100	100	100	25
200	200	200	50
500	500	500	100
1000	10000		
2000	20000		
	50000		

On consultation with ERICHSEN GMBH & CO KG, the connection of other sensors (also foreign brands) to the **PHYSIMETER® 906 MC-E** is possible**.**

Order Information	
Ord.-No.	**Product Description**
0260.01.31	**Multi Measuring System PHYSIMETER® 906 MC-E basic unit** display instrument for measuring mechanical parameters like force, torque, pressure and displacement, <u>without</u> sensors
	The scope of supply includes: 1 plug-in power pack 1 software PHYSISOFT II 1 case 1 operating manual

Necessary Accessories (as option)	
Ord.-No.	**Product Description**
0746.01.32	Wire strain gauge input for sensors (1 - 2.2 mV/V), max. 3 entries possible
0747.01.32	Analogue input (± 10 V), incl. data cable, max. 3 entries possible
0748.01.32	Analogue output (± 2,5 V), incl. data cable, max. 3 entries possible
0749.01.32	Encoder input, max. 3 entries possible
0753.01.32	Wire strain gauge input (1 - 2,2 mV/V, 15 pole socket), max. 1 entry possible, to connect the sensors suitable for Model 906 MC-E
	The fourth cannel can be seized additionally provided that both the analogue input (Ord.-No. 0747.01.32) and the analogue output (Ord.-No. 0748.01.32) have been selected.

Accessories	
Ord.-No.	**Product Description**
	Measuring and Evaluation Software PHYSISOFT II available free of charge at **<u>www.erichsen.de/download</u>**
0744.01.32	Cable for Trigger (input/output) approx. 1.5 m, for triggering of imperative macro instructions
0745.01.32	Cable for limit/limiting value outputs, approx. 1.5 m, go-and-no-go range
0750.01.32	Splitter for analogue input/output approx. 0.2 m, only with parallel accumulation of analogue input and analogue output
0751.01.32	Cable for analogue output, approx. 1.5 m, for analogue output of a force signal, measuring range scaled on ± 2.5 V
0752.01.32	Cable for analogue input, approx. 1.5 m, for acquisition of voltages in the range of ± 10 V (difference input)
0754.01.32	Data cable XRJ45, approx. 10 m, for connecting the instrument to a PC
0755.01.32	Mobile power supply (battery operation: 6 round cells type LR14)

<u>General Information</u>
Upon request we calibrate and re-calibrate your measuring instruments and sensors.
For force and torque transducers it is necessary to indicate the load direction (tensile/pressure or right/left, respectively).

Subject to technical modifications.
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