

# MA 96 multifunctional power measuring unit

- Direct voltage input up to 690 V
- Display for active and reactive energy
- Operating hours counter
- Phase sequence indicator
- Long-term storage
- Profibus DP (optional)
- Front side USB interface
- 2 pulse outputs

Long-term storage  
Front side  
USB interface



## Reliable detection of high-level power consumers



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# Multi-functional display MA96

**Multifunction measuring unit specially designed for monitoring 2 to 4-line networks in building technology**



## Reliable detection of high-level power consumers

Energy is becoming more and more expensive and is thus a steadily growing cost factor.

In order to detect high-level power consumers, GMW has developed the MA 96 multifunction measuring unit, which is specially designed for monitoring 2 to 4-line networks in building technology.

All relevant network data can be measured, displayed and stored. With the user software included in the delivery, the stored measured values can be evaluated and archived on a PC. With this comprehensive assessment of consumption, energy consumers can be localised more easily, cost centres can be acquired precisely and peak loads can be monitored.

## The MA96 is used to record measurements in

- 4-wire 3-phase grids
- 3-wire 3-phase grids
- 2-wire 3-phase grids

## The following measurements can be recorded:

- The current values for voltage, current and frequency
- The real power, apparent power, reactive power and power factor for each phase and for the whole grid
- the minimum and maximum values for voltage, current, real power, reactive power and power factor for each phase and for the whole grid.

Also integrated into the device are an energy meter for the real and reactive energy, an operating hours counter and a rotary field direction display.

All the measured values can be stored in a measured values memory and called up and evaluated using a PC software programme included with the unit. The time interval at which each measurement value is to be stored can be set within a range of 1–60 minutes using the software. Depending on the number of measurement values to be stored, the data can be retained for up to a maximum of 400 days. Every measurement value is tagged in the memory with the date and time at which it was recorded. The measured values memory is a combination of non-volatile and volatile memory components. If the operating voltage is switched off, measurement data is lost for a maximum of 100 minutes after approximately 12 hours.

The device is equipped with a USB interface on its front side. This can be used to call up the measured values memory, to configure the device and to display the current measured values.

The device is operated by using three buttons.

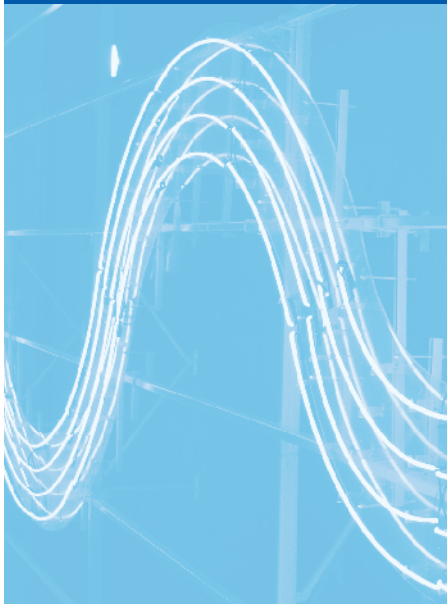
## The standard configuration of the device is as follows:

- Indicator with measured values memory and pulse outputs for connection to external meters for real and reactive energy
- The configuration and evaluation PC software programme is included in the delivery

## The device can also be delivered with the following additional options:

- 2 analogue output, or
- Profibus interface, or
- Limit value outputs

All the outputs given above are galvanically isolated from the measurement inputs and the auxiliary voltage. The device is supplied by a connection to an external auxiliary voltage.



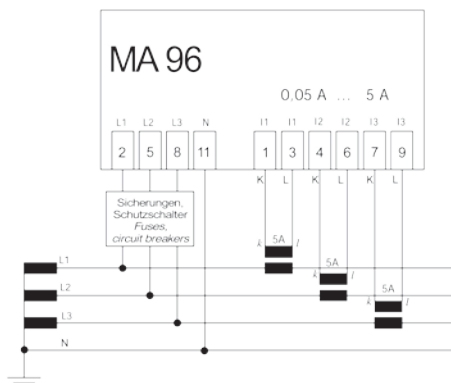
## Technical data of the measured values memory:

Memory type:	EEROM memory (contents of the memory remain intact after the auxiliary voltage is switched off), intermediate storage in 32 kB of SRAM (contents of the memory are lost approximately 12 hours after the auxiliary voltage is switched off)
Memory capacity:	4 MB. Depending on the number of values to be stored, the measured values can be stored for up to a maximum of 400 days
Data structure:	Ring buffer
Measured date storage:	The measurements to be stored can be chosen freely. Any measurements recorded by the device can be stored. The storage interval for each of these values can be configured within a range of 1– 60 minutes. All measured values are given a time stamp by a clock integrated into the device. The measured values memory is configured using a PC software programme included in the delivery

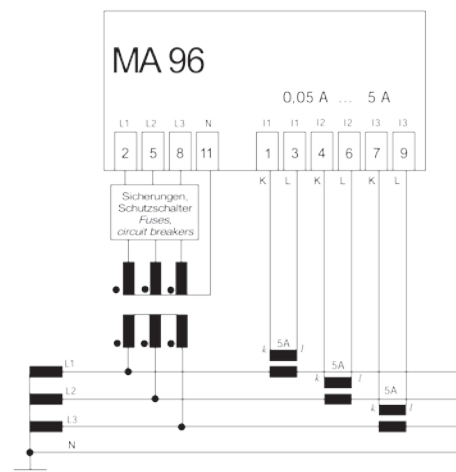
## The analyses listed below can be carried out using the PC software programme:

- A graphic representation of the individual measured values over a freely configurable time interval
- A display of the maximum and minimum values over a freely configurable time interval
- A representation of daily graphs for the individual measured values

## Applications examples

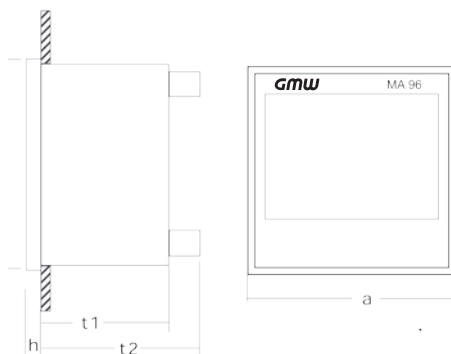


Four-wire, three-phases system, three current transformers, direct voltage input with safety installation (fuses and circuit breakers)



Three-wire, three-phases system, three current transformers, voltage input with voltage transformers and safety installation (fuses and circuit breakers)

## Dimensions



### Mounting dimensions

- a 96 mm
- h 5 mm
- t1 95,5 mm
- t2 110 mm
- Install attachment elements on the side
- Panel cutout  $92^{+0,8} \times 92^{+0,8}$  mm

# Technical data

<b>Housing</b>	according to DIN / IEC 61 554 (DIN 43 700)	
	Dimensions (W x H x D)	96 x 96 x 70 mm
	Cutout	92 <sup>+0,8</sup> x 92 <sup>+0,8</sup> mm
	Weight	approx. 280 g
	Mounting	Screw clamp for instrument panel thickness ≤ 15 mm terminals up to 4 mm <sup>2</sup> rigid ; 2,5 mm <sup>2</sup> flexible
	Front panel	3 Control keys, USB-Interface
	Display	LCD-Display with LED-Background illumination
	Display dimensions (W x H)	approx. 70 x 55 mm
	Measured value indication	3x three-figure, floating decimal point
	<b>Environment behavior</b>	Operating temperature
Storage temperature		-20 ... 70 °C
Relative humidity		up to 90 % non condensing
Sea level		up to 2000 m
Pollution degree		2, according to EN 61010-1:2001
<b>Operating conditions</b>	Electrical safety	according to EN 61010-1:2001; CAT III 300 V (400 ... 100) according to EN 61010-1:2001; CAT III 600 V (690)
	Protection class	according to EN 60529 IP54 Front panel; IP20 Terminals
	Max. voltage to earth	≤ 600 V
	Connection	L1, L2, L3 and N; 3 Phase Current
<b>EMC</b>	Emission	according to EN 55011 Class A; EN 55022 Class B
	Susceptibility	according to EN 61000-4-2; EN 61000-4-3; EN 61000-4-4
<b>Inputs</b>	Current	3 x 1 A <sub>AC</sub> ; 3 x 5 A <sub>AC</sub>
	Voltage U <sub>L-L</sub>	3 x 100/110/120 <sub>VAC</sub> *; 3 x 400 <sub>VAC</sub> ; 3 x 690 <sub>VAC</sub> (projected)
<b>Measuring accuracy</b>	Direct Measuring Data	Class 1
	Computed Measuring Data	Class 2.5
<b>Auxiliary supply</b>	85 V - 265 <sub>VAC</sub> ; 110 V - 265V <sub>DC</sub>	
<b>Impulse outputs (Option)</b>	S0-Standard impulses according to DIN 43854	
	Switch current	max. 27 mA
	Externe Voltage	5 ... 24 V <sub>DC</sub> (max. 30V <sub>DC</sub> )
	Measuring voltage Output - Measuring Input	5 kV
	Impulse time	50 ms ... 2 s adjustable in 0.05 s steps, max. 10 Hz
	Impulse priority	0,01 Wh (Varh) - 999 kWh (kVarh)
	<b>Interface</b>	USB-Interface incl. config-software for Windows® 98, 2000, XP or Profibus (optional)
<b>Password protection</b>	Operation protected by password	available
	Setting protected by password	available
<b>Elapsed hour meter (resettable)</b>	0 ... 999.999.999 h	
<b>Memory</b>	4 MBYTE EEROM-Memory	

\*At the potential transformer

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