

Bar graph displays

- For process control, automation, and laboratory applications
- Current, voltage, resistance, frequency and temperature
- Up to 0.5% resolution



DIALOG A 96 x 24

Programmable quasi-analogue bar graph meters

Single channel meters with a LED light bar and additional digital display.

For DC and AC current and voltage, temperature and resistance measuring ranges. Models with two limits are available.

The limits are displayed simultaneously with the measured value on the light bar.

If a limit is exceeded, this is signalled via relay contacts on the rear side and by an LED on the scale.

All measured values at a glance

- Precise values due to additional digital display
- High-contrast LED displays
- High legibility, wide viewing angle
- Measurement circuit galvanically isolated from the power supply
- Front dimensions: 96 x 24 mm
- Front protection to IP65
- Small installation depth of less than 127 mm
- Quick installation due to slider mount for all control panel thicknesses
- Pre-wiring is possible due to plug in screw terminal blocks

These measuring instruments are suitable for all applications in which several measured values must be monitored simultaneously.

Regulations and standards

Our bar graph displays comply with the regulations defined by the European Directives 73/23/EEC and 89/336/EEC, as verified by compliance with the following standards:

DIN/IEC 61 554 (housing)

IEC/EN 61 010-1:2001, VDE 0411 Part 1

(safety regulations)

IEC/EN 61 326-1/+A1 (interference resistance)

IEC/EN 61 326-1/+A1 (emitted interference)

EN 60 529 (protection class)

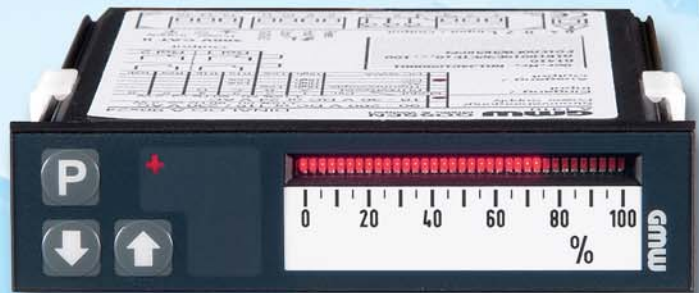
Due to high legibility, you have a good overview of important measured values at a glance, even in unfavourable light conditions.

Each meter can be configured to suit the respective measurement application, by means of various measurement modules.

With their high-contrast LED display, these meters are a good alternative to conventional analogue displays, or liquid crystal bar graph displays.

The LED light bar with 35 segments shows you the measured value with a resolution of 3%, on a scale which is 45 mm in length. By means of the additional polarity indicator, you can also use the full display range for bipolar measurement.

Simple programming with the three buttons enables you to adjust the display range on site.



Technical characteristics – DIALOG A 96 x 24

Display

Type	LED
Light colour	Red or green
Analogue	35 segments
Digital	3-character 7-segment display with polarity indicator
Digit height	Approximately 8 mm

Scale

Format	96 x 24 mm, vertical or horizontal (horizontal format without digital display)
Scale length	45 mm
Scale colour	White or black

Measuring ranges

DC voltage	0... 2 V to 0... 300 V and ± 2 V to ± 300 V
DC current	0... 4... 20 mA 0... 0.2 mA to 0... 200 mA and ± 0.2 mA to ± 200 mA

AC voltage	0... 0.2 V to 0... 300 V and 700 V
AC current	0... 2 mA to 0... 200 mA and 0... 1 A; 0... 5 A
Temperature	Via Pt100 or thermocouples, types: J, K, R or S
Resistance	0... 200 Ω to 0... 20 k Ω
Supply voltages	230 V/115 V AC/ 90... 260 V DC or 24 V AC/18... 36 V DC

Outputs for limit monitors

2 relays	Each with change-over contact
2 additional relays	Each with NO contact
Switching capacity	5 A/250 V AC, 5 A/30 V DC
Switching time	Max. 200 ms

DINALOG A 144 x 24

Programmable quasi-analogue bar graph meters

Bar graph displays serve to display measurement signals visually. It is generally possible to connect sensors directly, or via measuring transducers. Depending on the visual resolution of the values to be displayed, bar graph displays are subdivided into trend indicators, overview indicators, and measuring instruments.

Regulations and standards

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 IEC/EN 61 326-1/+A1 (emitted interference)
 EN 60 529 (protection class)

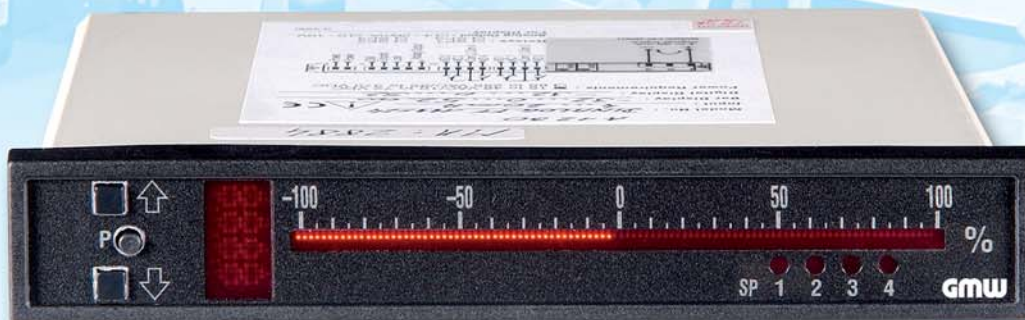


Display of measured values with a choice of red or green 101-segment light bar, plus a red or green 4-character digital display with a numerical range from -1999 to +9999 (12,000 counts).

Highly suitable for all applications in which several measured values must be read out simultaneously. (With meters mounted side by side).

All measured values at a glance

- Precise read-out of values due to additional digital display
- Programmable measurement rate: 3...16 per second
- High legibility and wide viewing angle
- 4-level brightness levels for the light bar and digital display
- Up to four programmable limit values
- Limit status display via additional LEDs on the scale
- Two or four relays available
- 4...20 mA DC current measurement with 24 V DC supply for 2-wire measuring transducer
- Quick installation possible due to metal slider
- Electrical connection occurs via plug in screw terminals
- Front dimensions: 144 x 24 mm to DIN 43718
- Installation depth: 152 mm



Technical characteristics – DINALOG A 144 x 24

Display		AC voltage	0...0.2 V to 0...200 V and 600 V
Type	LED	AC current	0...2 mA to 0...200 mA and 0...1 A; 0...5 A
Light colour	Red or green	Temperature	Via Pt 100 or thermocouples, type: J or K
Analogue	101 segments	Resistance	0...200 Ω to 0...10 kΩ
Digital	4-character LED display with polarity indicator	Supply voltages	85...265 V AC/ 95...370 V DC or 15...48 V AC/10...72 V DC
Digit height	Approximately 7 mm	Outputs for limit monitors	
Scale		2 relays	Each with change-over contact
Format	144 x 24 mm, vertical or horizontal (horizontal format without digital display)	2 additional relays	Each with NO contact
Scale length	91 mm	Switching capacity	5 A/250 V AC, 5 A/30 V DC
Scale colour	White or black	Switching time	Max. 200 ms
Measuring ranges			
DC voltage	0...0.1 V to 0...200 V and ± 0.1 V to ± 200 V		
DC current	0...4...20 mA 0...4...20 mA with 24 V DC supply for measuring transducer 0...2 mA to 0...5 A and ± 2 mA to ± 5 mA		

DINALOG A 144 x 36

Programmable quasi-analogue bar graph meters

Single display

The measured value is displayed on a light bar, and simultaneously on the digital display.

For models which have limit settings, you can read the defined limits clearly on a second light bar alongside the measured value.

Therefore, you have a clear overview of the difference between the measured value and the limit values.

Double display

The measured values are displayed on two light bars side by side. You can select one measured value to be displayed simultaneously on the digital display.

A LED at the beginning of the respective light bar scale, shows you which measured value is being displayed by the digital display.

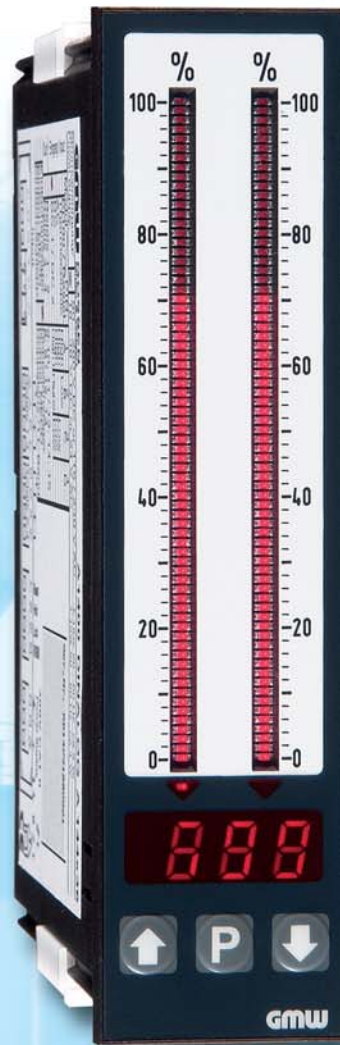
- 71 segments
- With a scale length of 91 mm, the measured value is displayed with a precision which is better than class 1.5.

Alarm messages:

Additional LEDs on the scale indicate when limits are exceeded.

The small installation depth of less than 127 mm enables installation into practically any control cabinet.

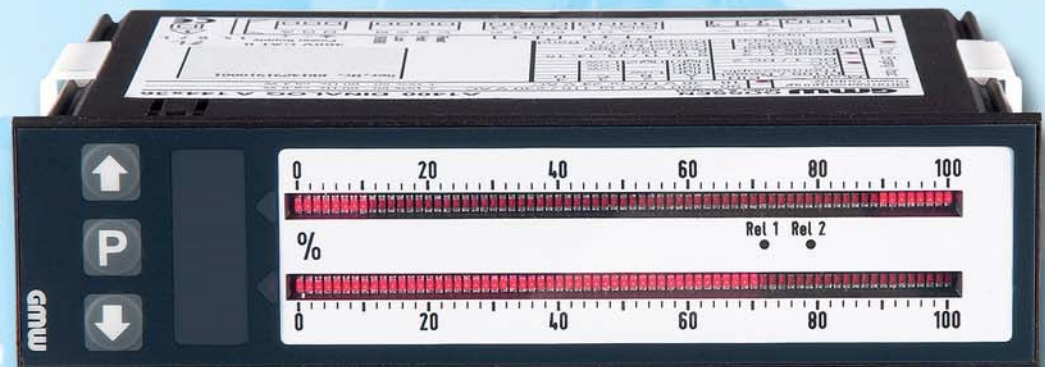
- Front dimensions:
144 x 36 mm to
DIN 43718



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IEC/EN 61 326-1/+A1
(emitted interference)
EN 60 529 (protection class)



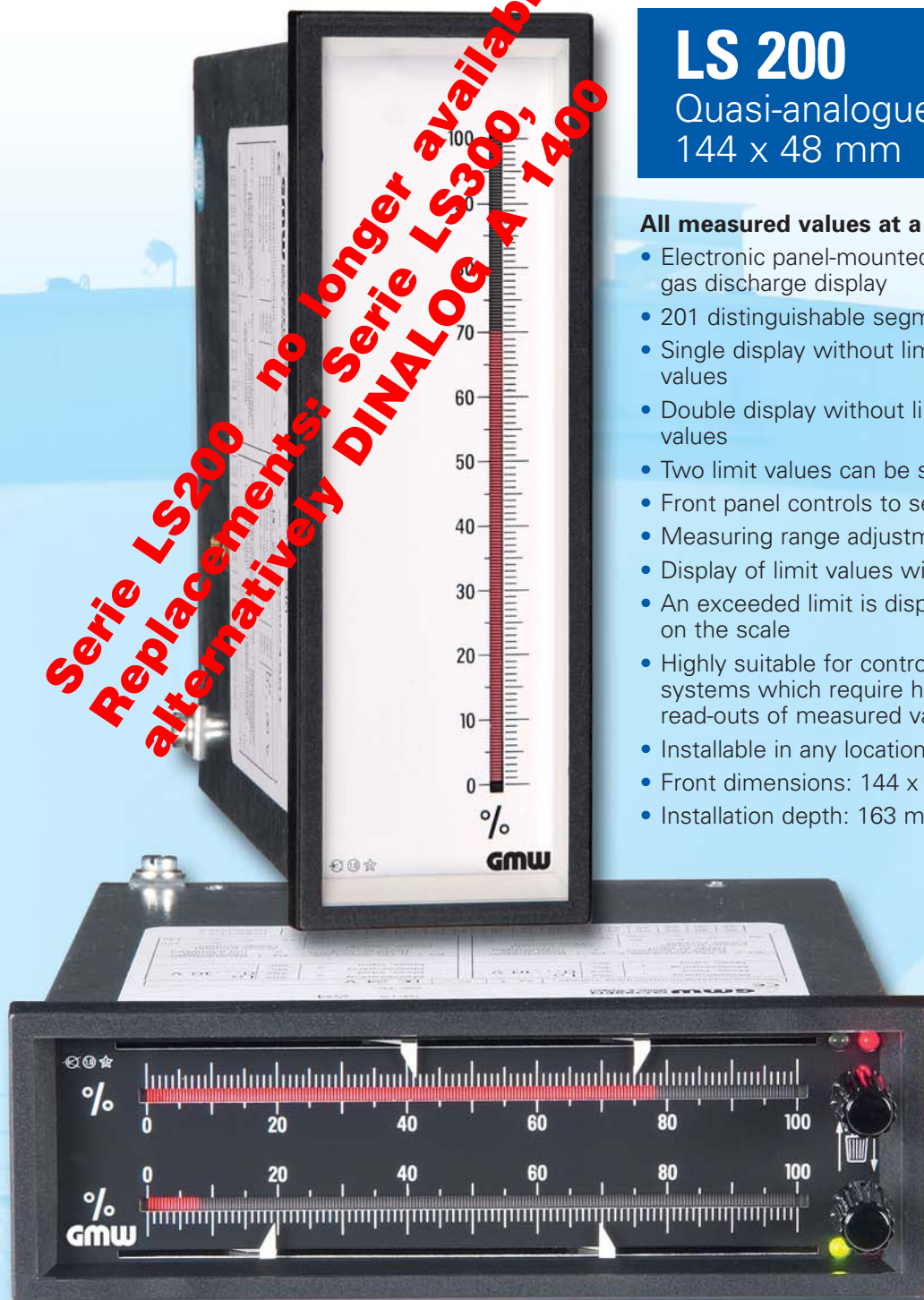
Technical characteristics – DINALOG A 144 x 36

Display		AC voltage	0...0.2 V to 0...300 V and 700 V
Type	LED	AC current	0...2 mA to 0...200 mA and 0...1 A; 0...5 A
Light colour	Red or green	Temperature	Via Pt100 or via thermocouples, types: J, K, R or S
Analogue	71 Segments	Resistance	0...200 Ω to 0...20 kΩ
Digital	3-character 7-segment display with polarity indicator	Supply voltages	230 V/115 V AC/ 90...260 V DC or 24 V AC/18...36 V DC
Digit height	Approximately 8 mm	Outputs for limit monitors	
Scale		2 relays	Each with change-over contact
Format	144 x 36 mm, vertical or horizontal (horizontal format without digital display)	2 additional relays	Each with NO contact
Scale length	91 mm	Switching capacity	5 A/250 V AC, 5 A/30 V DC
Scale colour	White or black	Switching time	Max. 200 ms
Measuring ranges			
DC voltage	0...2 V to 0...300 V and ±2V to ±300 V		
DC current	0...4...20 mA 0...0.2 mA to 0...200 mA and ±0.2 mA to ±200 mA		

LS 200

Quasi-analogue bar graph meters
144 x 48 mm

**Serie LS200 no longer available
Replacements: Serie LS300,
alternatively DINALOG A 1400**



All measured values at a glance

- Electronic panel-mounted measuring instrument with gas discharge display
- 201 distinguishable segments
- Single display without limit values, or with two limit values
- Double display without limit values, or with two limit values
- Two limit values can be set and displayed
- Front panel controls to set limit values
- Measuring range adjustment possible
- Display of limit values with pointers on the scale
- An exceeded limit is displayed by means of an LED on the scale
- Highly suitable for control rooms and process control systems which require high resolution and precise read-outs of measured values
- Installable in any location, vibration-resistant
- Front dimensions: 144 x 48 mm to DIN 43718
- Installation depth: 163 mm

Regulations and standards

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DIN/IEC 61 554 (housing)
IEC/EN 61 010-1:2001, VDE 0411 Part 1 (safety regulations)
IEC/EN 61 326-1/+A1 (interference resistance)
IEC/EN 61 326-1/+A1 (emitted interference)
EN 60 529 (protection class)

Technical characteristics – LS 200 bar graph displays

Analogue bar graph display

Type	Gas discharge
Light colour	Neon red
Over range display	Flashing
Resolution	0,5%

Scale

Format	144 x 48 mm, vertical or horizontal
Scale length	100 mm
Scale colour	Black or white

Measuring ranges

DC voltage	See measuring range card, page 9
DC current	
AC voltage	
AC current	
Temperature	
Resistance	
Frequency	

Supply voltage

24 V AC
115/230 V AC
24 V DC

Limit values

Number	4
Adjustable via	Potentiometers
Display on the scale	Pointers
Signalling	LED
Outputs	4 relays
Hysteresis	Approximately 0.5 %

Versions

1 measurement input, no limit value	LS 210
1 measurement input, 2 limit values	LS 212
2 measurement inputs, no limit value	LS 220
2 measurement inputs, 4 limit values	LS 224

LS 300

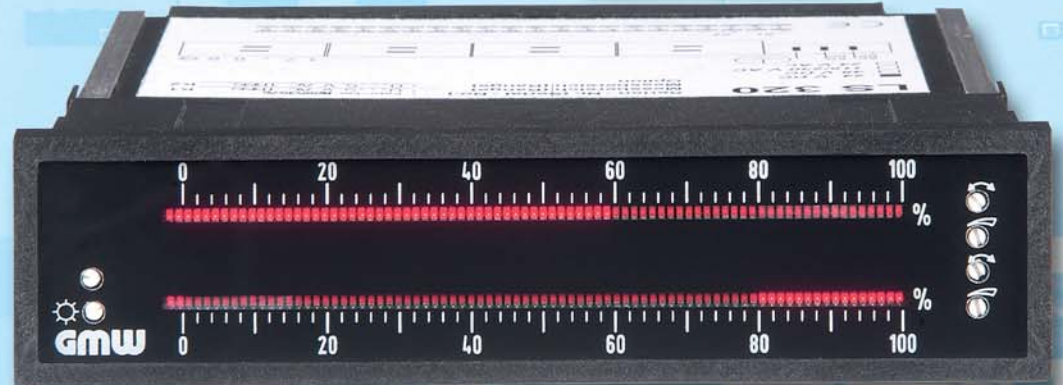
Quasi-analogue bar graph meters
144 x 36 mm

All measured values at a glance

- 300 series bar graph displays in the are robust, quasi-analogue display devices with one or two light bars
- 101 segments per light bar
- In addition, depending on the type, limit relays can be included
- The zero point and full-scale value of the light bars are independent of each other and can be adjusted separately
- Buttons on the front side enable segment tests and brightness adjustment
- 2 limit values can be set on the front side and displayed
- Limit breaches are signalled
- Serial interface
- Installable in any location, vibration-resistant
- Front dimensions: 144 x 36 mm to DIN 43718
- Installation depth: 186 mm

Regulations and standards

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(safety regulations)
IEC/EN 61 326-1/+A1
(interference resistance)
IEC/EN 61 326-1/+A1
(emitted interference)
EN 60 529 (protection class)



Technical characteristics – LS 300 bar graph displays

Analogue bar graph display

Type	LED line
Light colour	Red or green
Over range display	Flashing
Resolution	1.0%
Scale	Dot display or flashing display
Format	144 x 36 mm, vertical or horizontal
Scale length	100 mm
Scale colour	Black or white

Measuring ranges

DC voltage	See measuring range card, page 9
DC current	
AC voltage	
AC current	
Temperature	
Resistance	
Frequency	

Supply voltage

24 V AC
115/230 V AC
24 V DC
48 V DC

Limit values

Number	2
Adjustable via	Potentiometers
Display on the scale	LED bar or LED dot
Signalling	LED
Outputs	2 relays
Hysteresis	Approximately 1.0 %

Versions

1 measurement input, no limit value	LS 310
1 measurement input, 2 limit values	LS 312
2 measurement inputs, no limit value	LS 320

Analogue output

Optional 0...10 V or 0/4...20 mA

LS 40

Quasi-analogue bar graph meters
96 x 24 mm

Bar graph displays serve to display measurement signals visually. It is generally possible to connect sensors directly, or via measuring transducers. Depending on the visual resolution of the values to be displayed, bar graph displays are subdivided into trend indicators, overview indicators, and measuring instruments..



All measured values at a glance

- Electronic panel-mounted measuring instrument with LED light bar
- 41 individual LEDs
- Measuring range adjustable via DIP switches
- $\pm 25\%$ range adjustment for all measuring ranges
- LED colours freely selectable
- Dot or bar display selectable
- Brightness setting via adjustable voltage
- Over range display via flashing LEDs
- Horizontal or vertical installation possible
- Installable in any location, vibration-resistant
- Front dimensions: 96 x 24 mm to DIN 43718
- Installation depth: 84 mm

Regulations and standards

Our bar graph displays comply with the regulations defined by the European Directives 73/23/EEC and 89/336/EEC, as verified by compliance with the following standards:

- DIN/IEC 61 554 (housing)
- IEC/EN 61 010-1:2001, VDE 0411 Part 1 (safety regulations)
- IEC/EN 61 326-1/+A1 (interference resistance)
- IEC/EN 61 326-1/+A1 (emitted interference)
- EN 60 529 (protection class)

Technical characteristics – LS 40 bar graph displays

Analogue bar graph display

Type	41 bar LEDs (2x5 mm)
Light colour	Red (other colours available on request)
Over range display	Flashing
Resolution	2,5%
Scale	
Format	96 x 24 mm, vertical or horizontal
Scale length	Approximately 80 mm
Scale colour	Black or white
Measuring ranges	
DC voltage	0...150 mV to 0...200 V DC Input resistance 50 k Ω /V
DC current	0...20 mA, 4...20 mA DC Voltage drop via shunt: 200 mV

Supply voltage	5 V DC, not galvanically isolated 24 V DC
Working temperature	0 to 50 °C
Storage temperature	-20 to +70 °C
Current consumption	Max. 250 mA with bar display, max. 50 mA with dot display
Installation dimensions	91 ^{-0.5} x 22,5 ^{-0.3} mm
Housing	Closed, black thermoplastic
Scale faceplate	Black plastic

LK 75

Quasi-analogue bar graph meters 75 x 38 mm

Bar graph displays serve to display measurement signals visually. It is generally possible to connect sensors directly, or via measuring transducers. Depending on the visual resolution of the values to be displayed, bar graph displays are subdivided into trend indicators, overview indicators, and measuring instruments.

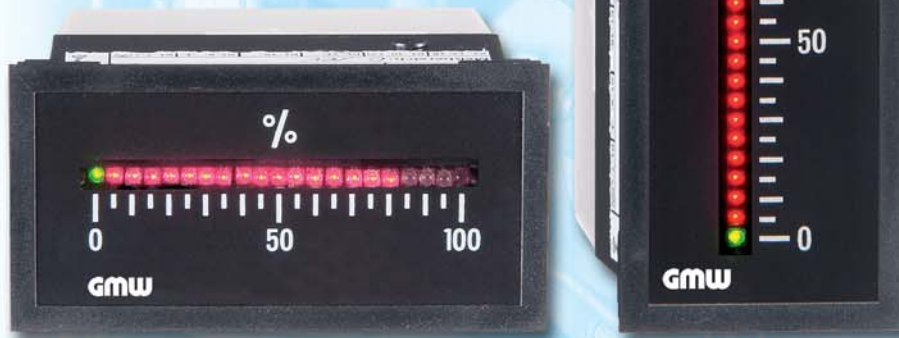
All measured values at a glance

- Electronic panel-mounted measuring instrument with LED line
- 21 individual LEDs
- LED colours freely selectable
- Dot or bar display selectable
- Brightness setting via adjustable voltage
- Over range display via flashing LEDs
- Horizontal or vertical installation possible
- Installable in any location, vibration-resistant
- Front dimensions: 75 x 38 mm
- Installation depth: 43 mm

Regulations and standards

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- IEC/EN 61 010-1:2001, VDE 0411 Part 1(safety regulations)
- IEC/EN 61 326-1/+A1 (interference resistance)
- IEC/EN 61 326-1/+A1 (emitted interference)
- EN 60 529 (protection class)



Technical characteristics – LK 75 bar graph displays

Display		Supply voltage	5 V DC, not galvanically isolated
Type	21 round LEDs (2.5 mm diameter)	Working temperature	0 to 50 °C
Light colour	Red (other colours available on request)	Storage temperature	-20 to +70 °C
Over range display	Flashing	Current consumption	Max. 250 mA with bar display Max. 50 mA with dot display
Resolution	5%	Housing	Closed, black thermoplastic
Scale		Scale faceplate	Black plastic
Format	75 x 38 mm, vertical or horizontal		
Scale length	Approximately 51 mm		
Scale colour	Black or white		
Measuring ranges			
DC voltage	0...60 mV to 0...200 V DC Input resistance 50 kΩ/V		
DC current	0...1 mA to 0...200 mA, 4...20 mA DC Voltage drop via shunt: 200 mV		

MEASURING RANGE CARDS for LS 200 and LS 300

DC voltage Measuring range Range suppression	0...10 mV to 0...250 V/overvoltage 350 V max. Up to 50% of the full-scale value
DC current Measuring range Range suppression	0...20 µA to 0...200 mA/overload 0.5 W max. Up to 50% of the full-scale value
AC voltage (Sinusoidal) Measuring range Frequency range	0...60 mV to 0...250 V/overvoltage 350 V max. 10 Hz...35 Hz...2kHz...4 kHz
AC current (Sinusoidal) Measuring range Voltage drop Frequenzbereich	0...10 µA to 0...1 A/overload 0.5 W max. 60 mV approx. 10 Hz...35 Hz...2 kHz...4 kHz
True RMS AC voltage Messbereich Frequency range	0...60 mV to 0...250 V/overvoltage 350 V max. DC, 15 Hz...10 kHz
True RMS AC current Measuring range Voltage drop Frequency range	0...2 mA to 0...2A/overload 0.5 W max 60 mV approx DC, 15 Hz...10 kHz
Frequency measurement Measuring range Maximum input	20 Hz...2 kHz Input voltage range up to 25 V: 100 V Input voltage range up to 250 V: 350 V
Temperature with thermocouple Measuring range	NiCr-Ni (K) 0...1200 °C Fe-CuNi (J or L) 0... 900 °C Cu-Cu-Ni (T or U) 0... 600 °C PtRh-Pt 10% (S) 400...1700 °C PtRh-Pt 13% (R) 500...1700 °C
Temperature resistance thermometer Pt 100 Measuring ranges	-200 °C...850 °C
Resistor or potentiometer Measuring ranges	20 Ω ...20 kΩ

Order information (example)

Model, scale: LS 224, vertical scale, black
 Measurement input 1: 0...100 V, bar display 0...100%
 Measurement input 2: 0...20 mA, dot display 0...4 bar
 Auxiliary voltage: 24 V DC

Limit values: – Measurement input 1: 2 max. contacts, fail safe
 – Measurement input 2: 1 min. / 1 max. contact, inverse
 Analogue output 1: 0...20 mA
 Analogue output 2: 0...10 V

Certificates



GOST certificate



DIN EN ISO 9001:2000 certificate

PRODUCT OVERVIEW

Copy, mark product boxes of interest and fax back

Fax no. +49 (0)911/3502-307

Sender: _____

Product group Analogue display units



- ❖ Complete measuring instrument family for current, voltage, power, power factor, frequency, bimetal ammeters
- ❖ Housing as per DIN, square/rectangular shape
- ❖ Changeable scales
- ❖ Subassembly and panel-mounted devices

Product group Measuring transducers



- ❖ For all heavy current values and process values
- ❖ In accordance with DIN EN 60688
- ❖ Programmable, up to 4 outputs
- ❖ Class 0.5
- ❖ Compact design 22.5/100 mm
- ❖ Screw terminals, or DIN standard snap fastening

Product group Digital measuring instruments



- ❖ Current, voltage, temperature and process control
- ❖ LED and LCD displays
- ❖ 2.000 to 4.0000 digits
- ❖ DIN panel-mounted devices
- ❖ 39 different device types

Product group Appliance testers



- ❖ In accordance with VDE 0701/0702
- ❖ Panel-mounted and portable
- ❖ Analogue or digital display
- ❖ Protective conductor resistance Insulation
- ❖ Substitute leakage current measurement/differential current

ALUMINUM COPPER
BUT NOT NECESSARY

THE CONDUCTOR

Product group Contact devices



- ❖ For all electrical values
- ❖ Pt 100 and thermocouples
- ❖ 1 or 2 limit values
- ❖ Quiescent or operating current switching
- ❖ 7 housing sizes

Product group Text displays/printers



- ❖ 4 different versions
- ❖ 1 and 2 lines
- ❖ 16/80 characters
- ❖ Protocol panel printers
- ❖ Paper re-roll mechanism

Product group Bar graph displays



- ❖ Analogue and digital display
- ❖ 1 or 2 measurement channels
- ❖ Fluorescent display or LEDs
- ❖ Up to 4 adjustable limit values
- ❖ Bar or point display
- ❖ Panel-mounted DIN size housings

Product group Probes



- ❖ Differential probes up to 1.5 kV
- ❖ Passive probes up to 450 MHz
- ❖ SMT probes and measuring accessories
- ❖ Modular probes
- ❖ High voltage probes up to 40 kV
- ❖ HF probes and demodulator probes

Accessories



- ❖ Current transducers, class 0.5 up to 2000 A
- ❖ Shunts to DIN 43703
- ❖ Measuring instrument selector switches
- ❖ Switch position indicators
- ❖ Power adapters

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