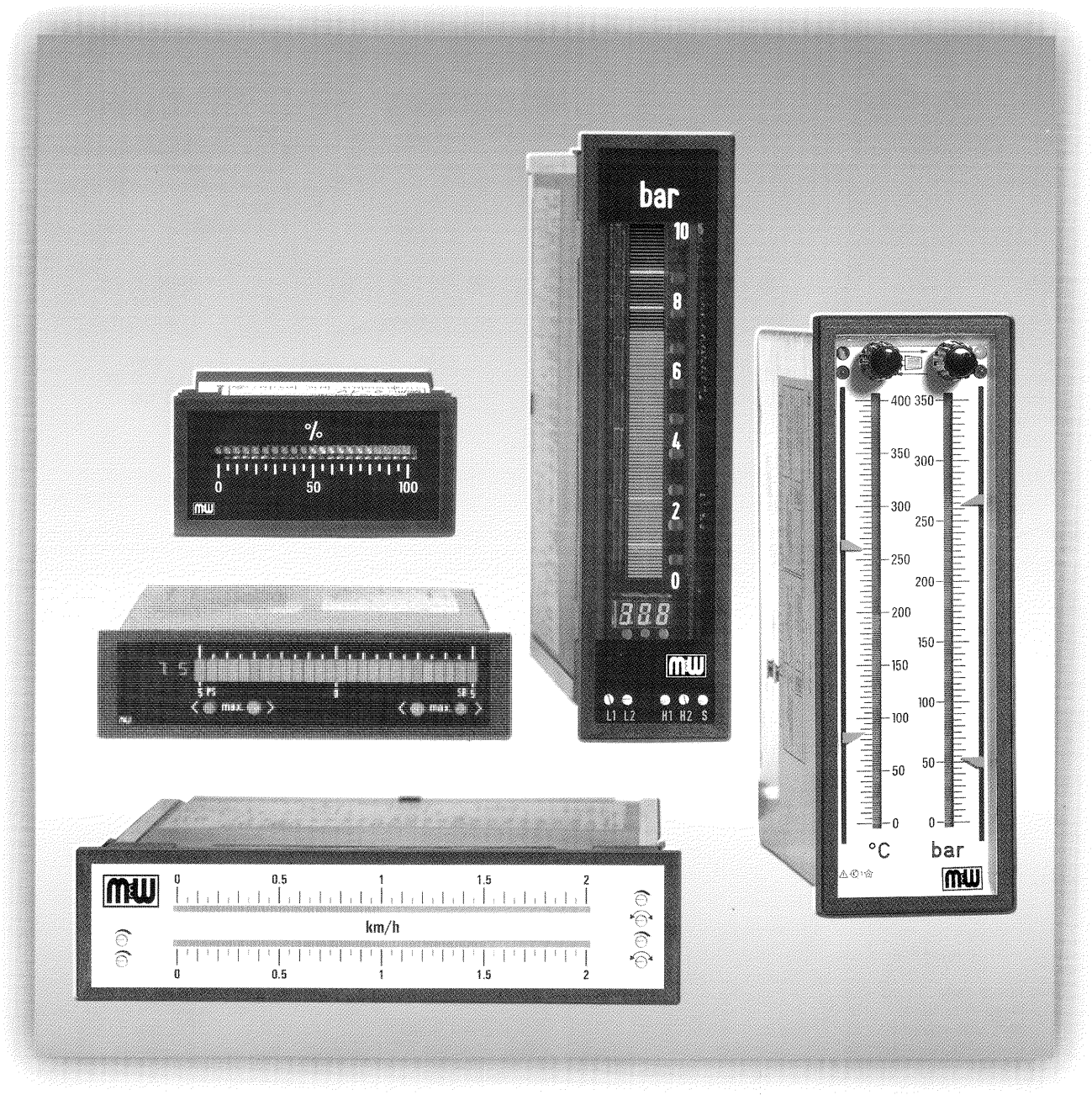
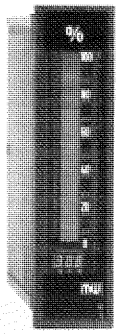
Bar Graph Meters

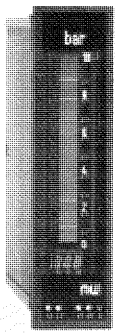
- For process control, automation and laboratory applications
- Current, voltage, resistance, frequency and temperature
- Resolution up to 0,5 %



MÜLLER WEIGERT

Bar Graph Meters





Model	OPr 144	KoOPr 144
Special features	• Electronic measuring instrument with fluorescense display • Operation indepedent of orientation and insensitive to vibration • 100 distinguishable segments • Controls to adjust the start and final value of the display • Adjustable span • BCD output – optional • BCD input – optional • Serial interface • Additional three-digit digital display • Single-line	• Electronic measuring instrument with fluorescense display • Operation indepedent of orientation and insensitive to vibration • 100 distinguishable segments • Four limit values are adjustable and can be displayed • Adjustable span • Out of limit values will be signalled • Controls to adjust limit values • Serial interface • Additional three-digit digital display • Optional BCD output • Single-line
Dimensions Bezel size	144 x 36 mm	144 x 36 mm
Depth	226 mm	270 mm
Panel cut-out	138 x 32.7 mm	138 x 32.7 mm
Versions 1 measuring input, no limit value 1 measuring input, 2 limit values 2 measuring input, no limit value 2 measuring input, 4 limit values	none	none
Number of measuring inputs	One measuring input (measuring range card)	One measuring input (measuring range card)
Bar graph (analogue display)	Fluorescent display 100 Segments vertical format point or ribbon type display	Fluorescent display 100 Segments vertical format point or ribbon type display
Overflow	flashing	flashing
Centre zero	yes	yes
Scale length	100 mm	100 mm
Resolution	1 %	1 %
Colour	green	green
Digital display	yes	yes
Format	Three 7-segment digits	Three 7-segment digits
Auxiliary supply	240 V AC 115/230 V AC 24 V AC 5–12 V or 15–24 V DC	240 V AC 115/230 V AC 24 V AC 5–12 V or 15–24 V DC
Measuring ranges Voltage	yes	yes
Current	yes	yes
Resistance	yes	yes
Thermocouple	yes	yes
Frequency		
Measuring range card	yes	yes
Measuring range	see Measuring Range Cards	see Measuring Range Cards
Zero adjustment	yes	yes
Full-scale adjustment	yes	yes
Limit values Number	None	Four
Adjustable		Potentiometer
Presentation on scale		Bright Segment/Beam signalling
Signalling		Flashing
Outputs		Four Relays
Hysteresis		1% approx.
Analogue Output	Optional for Temperature and True RMS	Optional for Temperature and True RMS
Value	1 mV/digit	1 mV/digit

Bar graph meters can indicate the value of a measured signal from a sensor, for example, connected directly to the meter, or via a transducer. Depending on the display resolution, bar graph meters can be classed as simple trend indicators, general-purpose meters or measuring instruments. In most models the scale markings overlay the indicating bar graph, but in some models the scale is integrated into the illuminated display itself.

Bar graph meters offer a genuine alternative to normal analogue pointer instruments, but with the added advantages of greater robustness – making them less sensitive to shock and vibration – and the ability to operate in any orientation. The displays can also be multicoloured and the indication can be as a moving point, or as a ribbon type display. In some models the bar graph display is complemented by a digital readout.

Unlike simple analogue pointer meters, bar graph meters are electronic and require an auxiliary power supply. They therefore have a high cost price, but can easily include additional features such as limit alarms, transducer power source, analogue outputs and digital interfaces.

The Müller & Weigert bar graph meter series covers the range from simpler trend indicators up to accurate analogue measuring instruments with two independent illuminated bars.

All models are housed in DIN-size enclosures (except for model LK75, which is designed to be a direct replacement for analogue pointer instruments in the same housing) and can easily be built into instrument panels or cabinets.

There is a choice of display technologies. Single Light emitting diodes offering every possible colour combination, light emitting diode bands, fluorescent displays and plasma displays are all available. In addition, the displays can signal input over or under range conditions and the alarm limit status of up to four limit switches (relays or electrical outputs).

Some models offer BCD-Data inputs or outputs, serial interface (RS-232) or an analogue output.

The choice of auxiliary supply voltages varies from 5 V or 24 V DC for the simple models to comprehensive DC an AC options for the more sophisticated models.

MEASURING RANGE CARDS
for LS 100, LS 200, LS 300 and LS 500, OPr and KoOPr

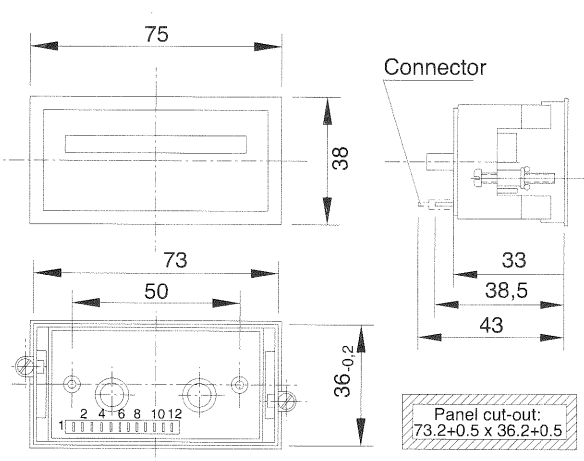
Direct voltage	
Measuring range	0...10 mV to 0...250 V/Overload 350 V max.
Range suppression	Up to 50% of the full-scale value
Direct current	
Measuring range	0...20 µA to 0...200 mA/Overload 0.5 W max.
Range suppression	Up to 50% of the full-scale value
Alternating voltage (Sine)	
Measuring range	0...60 mV to 0...250 V/Overload 350 V max.
Frequency range	10 Hz...35 Hz...2kHz...4 kHz
Alternating current (Sine)	
Measuring range	0...10 µA to 0...1 A/Overload 0.5 W max.
Voltage drop	60 mV approx.
Frequency range	10 Hz...35 Hz...2 kHz...4 kHz
Alternating voltage True RMS	
Measuring range	0...60 mV to 0...250 V/Overload 350 V max.
Frequency range	DC, 15 Hz...10 kHz
Alternating current True RMS	
Measuring range	0...2 mA to 0...2A/Overload 0.5 W max.
Voltage drop	60 mV approx.
Frequency range	DC, 15 Hz...10 kHz
Frequency (not KoOPr.)	
Measuring range	20 Hz...2 kHz
Maximum input	Input voltage range up to 25 V 100 V
	Input voltage range up to 250 V 350 V
Temperature with thermocouple sensor	
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 range	–200 °C...850 °C
Resistance or potentiometer	
Measuring range	20 Ω...20 kΩ
Direct Voltage/Direct current switchable (only LS 100)	
Measuring range Current	0...1 mA, 0...20 mA, 4...20 mA
Voltage	0...10 V

Example Order

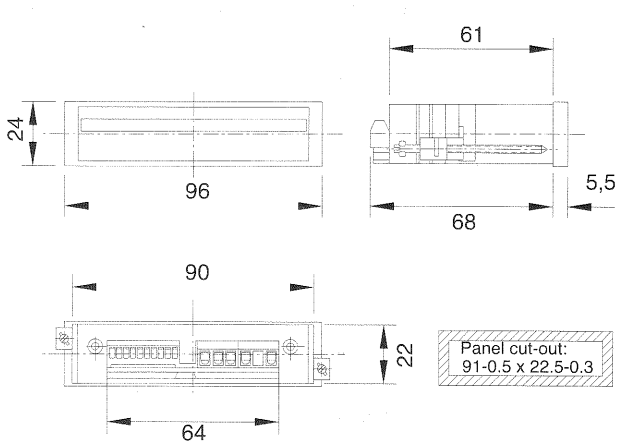
Model & format:	LS 524, vertical scale, black
Measuring input 1:	0...100 V, ribbon type display 0...100%
Measuring input 2:	0...20 mA, point display 0...4 bar
Auxiliary supply voltage:	24 V DC
Limit values – Measuring input 1:	2 max. contacts, fail safe
– Measuring input 2:	1 min. / 1 max. contact, invers
Analogue output 1:	0...20 mA
Analogue output 2:	0...10 V

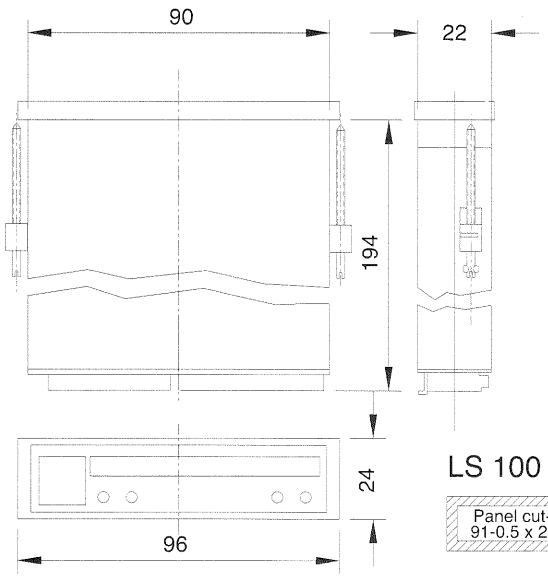
Dimensional Drawings

LK 75



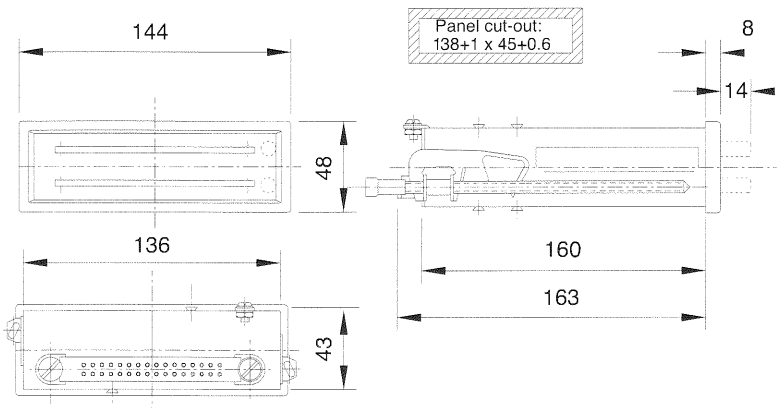
LS 40





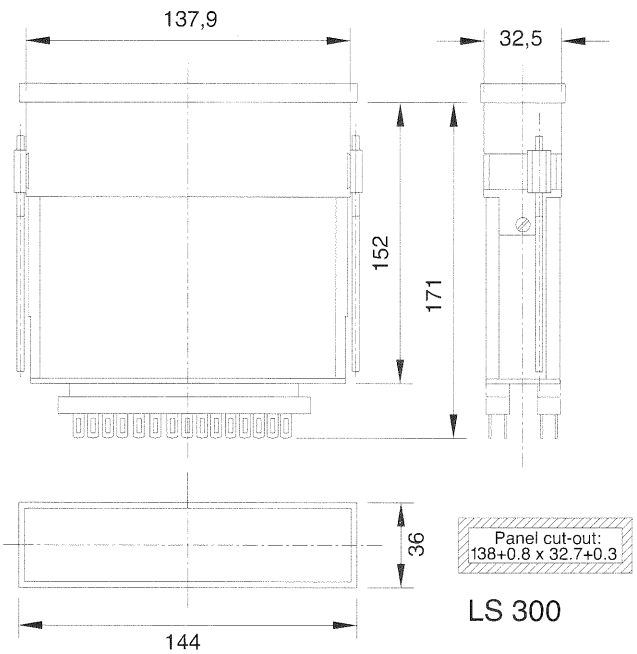
LS 100

Panel cut-out:
91-0.5 x 22.5-0.3



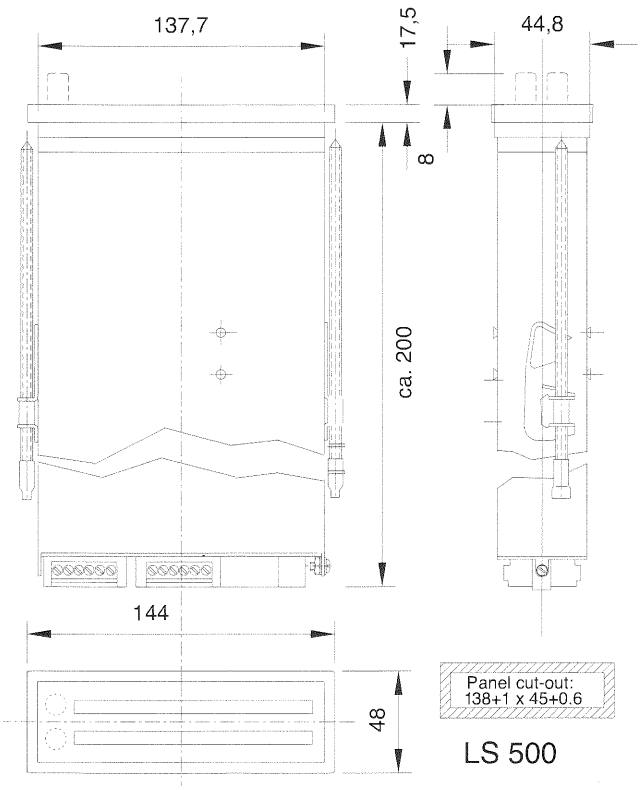
LS 200

Panel cut-out:
138+1 x 45+0.6



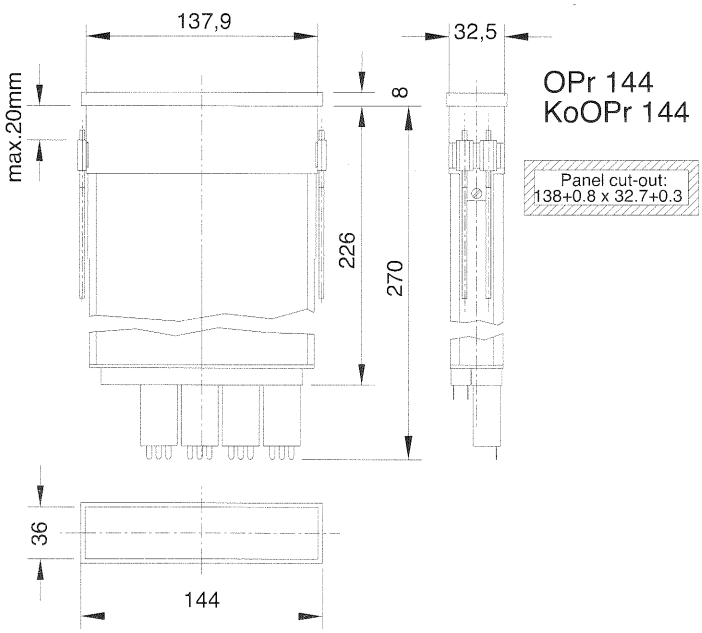
LS 300

Panel cut-out:
138+0.8 x 32.7+0.3



LS 500

Panel cut-out:
138+1 x 45+0.6



OPr 144
KoOPr 144

Panel cut-out:
138+0.8 x 32.7+0.3

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