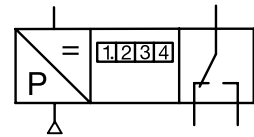


MEASURING DEVICES

DESCRIPTION		DESCRIPTION	CONNECTION	SERIES	PAGE
		bar	thread		
DIGITAL DISPLAY	mounting, auch ext. Sensor	0 ... 1 mbar / 10 bar	4 mm tube	MKA	14.02
	portable, hand-operated press. gauge	0 ... 1 mbar / 10 bar	4 mm tube	MHA	14.03
ANALOGUE DISPLAY	male thread, Ø 23 mm	0 ... 4 / 16 bar	M5 and G $\frac{1}{8}$	MA	14.04
	male thread, Ø 40 mm	0 ... 1 / 16 bar	G $\frac{1}{8}$	MA	14.04
	male thread, Ø 50 mm	0 ... 1 / 60 bar	G $\frac{1}{8}$ and G $\frac{1}{4}$	MA	14.04
	male thread, Ø 63 mm	0 ... 60 mbar / 100 bar	G $\frac{1}{4}$	MA	14.04
STAINLESS STEEL	male thread, Ø 40 mm	0 ... 2.5 / 16 bar	G $\frac{1}{8}$ and G $\frac{1}{4}$	MS	14.05
	male thread, Ø 50 mm	0 ... 2.5 / 60 bar	G $\frac{1}{4}$	MS	14.05
	male thread, Ø 63 mm	0 ... 25 mbar / 60 bar	G $\frac{1}{4}$	MS	14.05



Description	Suitable for measurement of positive pressure, vacuum or differential pressure.		
Media	compressed air or non-corrosive gases		
Supply voltage	15...30 V DC standard, optionally 230 V AC $\pm 10\%$		
Electrical connector	plug with 7-pin screw terminal for cable cross-sectional area 0.14...1.5 mm ²		
Pneumatic connection	P+ : pos. pressure P- : vacuum P+/P- : differential pressure, the higher pressure is to be connected at P+ plug nipple up to 1 bar, sleeve with union nut from 2 bar on, each for hose internal diameter of $\varnothing 4$ mm		
Display	3½-digit LCD display, max. ± 1999 , 14 mm tall, black numbers		
Output signal	0...10 V, impedance > 10 k Ω , optionally 4...20 mA, impedance < 500 Ω		
Linearity	see chart, optionally 0.2% FS		
Long-term stability	< 0.1% FS per year at > 25 mbar, < 1% FS per year at > 5 mbar, < 2% FS per year at < 5 mbar range		
Temperature sensitivity	see chart, at 0 °C to 50 °C / 32 °F to 122 °F		
Response time	100 ms		
Temperature range	-20 °C to 50 °C / -4 °F to 122 °F		
Material	Housing: aluminium		
	Overpressure	see chart	
	Hysteresis	< 0.1% FS	
	Repeatability	see chart	
	Resolution	1 digit	
	Protection class	IP 54	



0...1 mbar / 1000 bar
pressure, vacuum, differential pressure

Repeatability	Temperature error	Linearity error	Over-pressure	Measurement range	Order number
% FS	% FS	% FS	max. bar	mbar/bar	

Digital gauge for compressed air, measurement of positive pressure, vacuum and differential pressure, 24 V DC, outlet signal 0...10 V, 3½-digit display

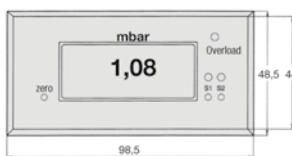
1.0	4.0	1.0	0.25	0... 1 mbar	MKA-A1
0.3	2.5	0.8	0.25	0... 2.5 mbar	MKA-A2
0.3	1.2	0.8	0.25	0... 5 mbar	MKA-A5
0.2	1.0	0.8	0.25	0... 10 mbar	MKA-B1
0.1	1.0	0.7	0.35	0... 20 mbar	MKA-B2
0.1	1.0	0.7	0.35	0... 50 mbar	MKA-B5
0.1	1.0	0.5	0.35	0... 100 mbar	MKA-C1
0.1	1.0	0.5	0.75	0... 200 mbar	MKA-C2
0.1	1.0	0.5	1.5	0... 500 mbar	MKA-C5
0.1	1.0	0.5	3.0	-1... 1 bar	MKA-V1
0.1	1.0	0.5	3.0	0... 1 bar	MKA-01
0.1	1.0	0.5	4.0	0... 2 bar	MKA-02
0.1	2.0	0.5	10	0... 8 bar	MKA-08
0.1	2.0	0.5	12	0... 10 bar	MKA-10
0.1	2.3 mbar	1 mbar	3.3	0.7... 1.1 bar _{abs}	MKA-S1

Digital gauge for external sensor 0...10 V input signal, supply voltage 24 V DC, 3½-digit display

96	48	137	e.g. for pressure transducer	MKA-00
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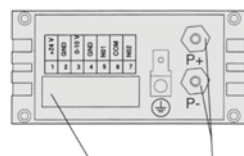
Special options, add the appropriate letter

two limit switches	with LED display, 230 V AC, 1 A, hysteresis 2% FS	MKA-...S
linearity < 0.2% FS	from 100 mbar	MKA-...B
4...20 mA output signal	impedance < 500 Ω	MKA-...A
4...20 mA input signal	internal resistance 100 Ω	MKA-00A
P _a indication	< 20 mbar: indication P _a > 20 mbar: indication kPa	MKA-...P
230 V AC	supply voltage	MKA-...V
RS232*1	interface, 8 bit without parity	MKA-...R
deviant measurement range	to be indicated on order	MKA-XX



panel cut-out 45 x 93 mm

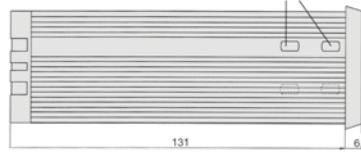
front view



multiple pin strip

pressure connectors

back view



side view

*1 Handshake on/off, Baudrate 9600

*2 indicate pressure range by order

Calibration or test chart: see chapter "Technical Information"
Pressure transducers: see chapter "Pressure Transducers"

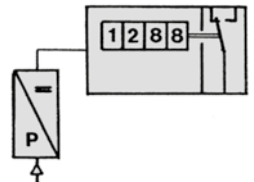
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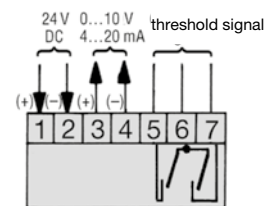
MKA, with integrated pressure transducer



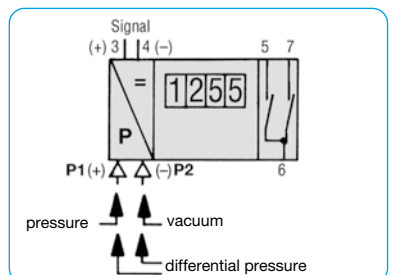
MKA-00, with external pressure transducer



MKA-00, with external pressure transducer



electrical connection



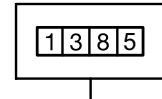
pneumatical connection

* Product group



Order example:
MKA-A1

Description	A piezo-resistive pressure sensor converts the input pressure into a digital electrical signal, which is displayed on the LCD. On-off switch is located at the side of the plastic housing.		
Media	compressed air or non-corrosive gases		
Pneumatic connection	P+: pos. pressure	P-: vacuum	P+/P-: differential pressure, the higher pressure to be connected at P+ plug nipple up to 1 bar, sleeve with union greater than 1 bar, each for hose internal diameter of Ø 4 mm
Voltage supply	9 V battery, 2.5 mA, type 6F22, PP3 or similar		
Display	3½-digit LCD display, max. ± 1999, 12 mm tall, black numbers, low battery display at low voltage, red LED lights up at overpressure, then measurement is faulty		
Output signal	optionally 0...1 V		
Zero point	All devices have a potentiometer for rough adjustment of zero point at the side of the housing.		
Linearity	see chart, optionally 0.2% FS		
Long-term stability	< 0.1% FS per year at > 20 mbar		
Temperature sensitivity	see chart, at 0 to 50 °C / 32 to 122 °F		
Temperature range	0 °C to 50 °C / 32 °F to 122 °F		
Material	Housing: plastic		
	Hysteresis	< 0.1% FS	
	Impedance:	> 2 kΩ terminal for 2.5 mm 2-pin jack plug	
	Repeatability	see chart	
	Resolution	0.05% FS	
	Protection class	IP 54	



positive pressure, vacuum and differential pressure

Repeatability	Temperature error	Linearity error	Over-pressure	Measurement range	Order number
% FS	% FS	% FS	max. bar	mbar / bar	

Hand-operated gauge for compressed air, measurement of positive pressure, vacuum and differential pressure, with battery, 3½-digit display					MHA
1.0	4.0	1.0	0.25	0... 1 mbar	MHA-A1
0.3	2.5	0.8	0.25	0... 2 mbar	MHA-A2
0.3	1.2	0.8	0.25	0... 5 mbar	MHA-A5
0.2	1.0	0.8	0.25	0... 10 mbar	MHA-B1
0.1	1.0	0.7	0.35	0... 20 mbar	MHA-B2
0.1	1.0	0.7	0.35	0... 50 mbar	MHA-B5
0.1	1.0	0.5	0.35	0... 100 mbar	MHA-C1
0.1	1.0	0.5	0.75	0... 200 mbar	MHA-C2
0.1	1.0	0.5	1.5	0... 500 mbar	MHA-C5
0.1	1.0	0.5	3.0	-1... 1 bar	MHA-V1
0.1	1.0	0.5	3.0	0... 1 bar	MHA-01
0.1	1.0	0.5	4.0	0... 2 bar	MHA-02
0.1	2.0	0.5	10	0... 8 bar	MHA-08
0.1	2.0	0.5	12	0... 10 bar	MHA-10
0.1	2.3 mbar	1 mbar	3.3	0.7... 1.1 bar _{abs}	MHA-S1



MHA

Gauges



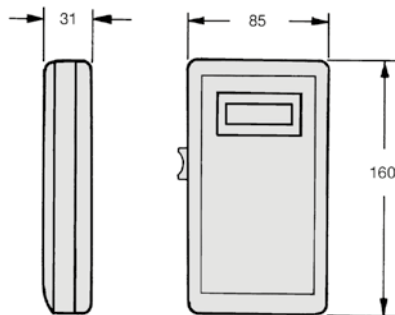
14

Special options, add the appropriate letter

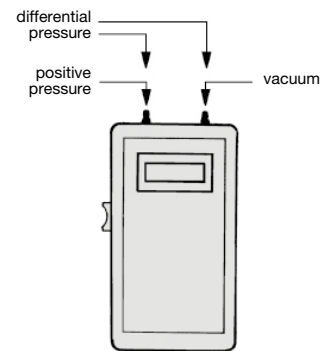
linearity < 0.2% FS	from 100 mbar on	MHA- . .B
0-1 V output signal	at electrical connector	MHA- . .N
P _a indication	< 20 mbar: indication P _a > 20 mbar: indication kP _a	MHA- . .P
zero point fine adjustment	in the front	MHA- . .E
deviant measurement range	to be indicated on order	MHA-XX

Accessories, enclosed

protective bag	for belt attachment	MHT
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MHA



connection diagram

* Product group

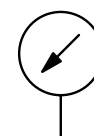
Calibration or test chart: see chapter "Technical Information"

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Order example:
MHA-A1

Description	Pressure gauge with Bourdon tube or capsule, dust-protected, splash-proof, antirust, oil-resistant and silicone-free. The capsule type gauge features an integrated restrictor against pressure peaks.		
Media	all media compliant with brass, e.g. compressed air, non-corrosive gases or fluids		
Scale	Bourdon tube gauge: white background with black bar scale and red psi scale capsule type gauge: white background with black mbar scale		
Indicator accuracy	1.6% FS on gauge Ø 63 mm 2.5% FS on gauge Ø 40 mm and Ø 50 mm, 4% FS on gauge Ø 23 mm		
Connection thread	G½ or G¼, on central back, M5 at gauge Ø 23 mm		
Temperature range	0 °C to 60 °C / 32 °F to 140 °F, for appropriately conditioned compressed air down to -20 °C / -4 °F		
Material	Housing: ABS plastic at Ø 40, Ø 50, Ø 63 mm nickel-plated brass at Ø 23 mm stainless steel 1.4301 at capsule gauge	Lens: acrylic glass Connection/Inner parts: brass Seal: NBR/Buna-N at capsule gauge	



with male thread
-1 ... 0 bar; 0 ... 60 mbar/100 bar

Dimensions Ø A mm	Principle R: Bourdon tube K: capsule tube	Indicator accuracy % FS	Display range bar/mbar	Order number G½	Order number M5 / G¼
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Pressure gauge, round

male thread on central back

MA23/40/50

MA23/50/63

23	R	4	0 ... 4	MA2301-04	MA23M5-04
			0 ... 6	MA2301-06	MA23M5-06
			0 ... 10	MA2301-10	MA23M5-10
			0 ... 12	MA2301-12	MA23M5-12
			0 ... 16	MA2301-16	MA23M5-16
40	R	2.5	0 ... 1	MA4001-01	
			0 ... 2.5	MA4001-02	
			0 ... 4	MA4001-04	
			0 ... 6	MA4001-06	
			0 ... 10	MA4001-10	
50	R	2.5	0 ... 1	MA5001-01	MA5002- 01
			0 ... 2.5	MA5001-02	MA5002- 02
			0 ... 4	MA5001-04	MA5002- 04
			0 ... 6	MA5001-06	MA5002- 06
			0 ... 10	MA5001-10	MA5002- 10
63	K	1.6	0 ... 16	MA5001-16	MA5002- 16
			0 ... 25		MA5002- 25
			0 ... 60		MA5002- 60
			0 ... 60 mbar		MA6302- B6
			0 ... 160 mbar		MA6302- C2
63	R	2.5	0 ... 250 mbar		MA6302- C3
			0 ... 400 mbar		MA6302- C4
			0 ... 0,6 bar		MA6302- C6
			-1 ... 0 vac.		MA6302- 00
			0 ... 1		MA6302- 01
63	R	1.6	0 ... 2,5		MA6302- 02
			0 ... 4		MA6302- 04
			0 ... 6		MA6302- 06
			0 ... 10		MA6302- 10
			0 ... 16		MA6302- 16
63	R	1.6	0 ... 25		MA6302- 25
			0 ... 60		MA6302- 60
			0 ... 100		MA6302-100



MA23M5-10



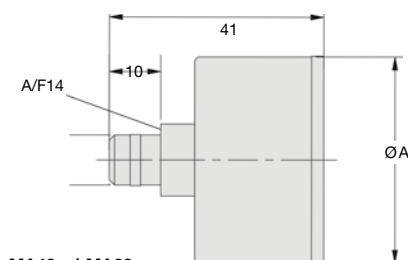
MA5001-16



MA6302-10

Special options, add the appropriate number

for oxygen specially cleaned (not for MA23..) MA 15



MA40.. / MA63..

* Product group

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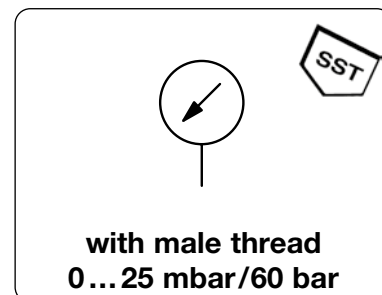


Order example:
MA2301-04

STAINLESS STEEL PRESSURE GAUGE WITH MALE THREAD

MS

Description	Pressure gauge with Bourdon tube or capsule, dust-protected and splash-proof. The capsule type gauge features an integrated restrictor against pressure peaks.	
Media	all media compliant with stainless steel, e.g. compressed air, gases or fluids	
Scale	Bourdon tube gauge: white background with black bar scale and red psi scale capsule type gauge: white background with black mbar scale	
Indicator accuracy	1.6% FS	Connection thread G½ or G¾, on central back
Temperature range	medium 0 °C to 100 °C / 32 °F to 212 °F for capsule type gauge 0 °C to 200 °C / 32 °F to 392 °F for Bourdon tube gauge for appropriately conditioned compressed air down to -40 °C / -40 °F ambient max. 60 °C / 140 °F	
Material	Housing: stainless steel 1.4301 Inspection glass: laminated safety glass at MS63, single strength glass at MS40 and MS50 Connection: stainless steel 1.4571	Seal: FKM at capsule gauge



Dimensions	Principle	Indicator accuracy	Display range	Order number	Order number
Ø A	R: Bourdon tube K: capsule tube	% FS	bar/mbar	G½	G¾
mm					



Pressure gauge		male thread on central back	MS40	MS40/50/63
40	R	1.6	0 ... 2.5 0 ... 4 0 ... 6 0 ... 10 0 ... 16	MS4001-02 MS4001-04 MS4001-06 MS4001-10 MS4001-16
50	R	1.6	0 ... 2.5 0 ... 4 0 ... 6 0 ... 10 0 ... 16 0 ... 25 0 ... 60	MS5002-02 MS5002-04 MS5002-06 MS5002-10 MS5002-16 MS5002-25 MS5002-60
63	K	1.6	0 ... 25 mbar 0 ... 60 mbar 0 ... 100 mbar 0 ... 160 mbar 0 ... 250 mbar 0 ... 400 mbar 0 ... 600 mbar	MS6302-B2 MS6302-B6 MS6302-C1 MS6302-C2 MS6302-C3 MS6302-C4 MS6302-C6
63	R	1.6	0 ... 1 0 ... 2.5 0 ... 4 0 ... 6 0 ... 10 0 ... 16 0 ... 25 0 ... 60	MS6302-01 MS6302-02 MS6302-04 MS6302-06 MS6302-10 MS6302-16 MS6302-25 MS6302-60



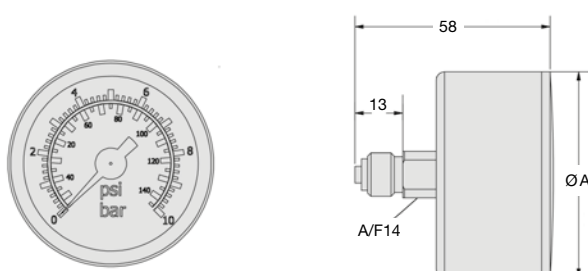
Gauges

1385

14

Special options, add the appropriate number

for oxygen specially cleaned MS....-...15



MS

* Product group

PDF CAD
www.aircom.net



Order example:
MS4001-02