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Find the *Leybold Combivac CM31* at our website: ***Click HERE***

COMBIVAC CM 31/CM 32/CM 33



By combining two/three principles of measurement – absolute pressure sensor, Pirani and Penning – the COMBIVAC CM 31/CM 32/CM 33 cover the entire pressure range from 10^{-9} to 2 000 mbar (10^{-9} to 1500 Torr) while offering monitoring and control functions.

Advantages to the User

- Selectable dual LCD display combining the advantages of analog and digital readouts (over 12 decades)
- Automatic switchover from THERMOVAC to Penning (cold cathode) operation
- Clear display of pressure and operating status with analog trend indication, can also be read from a great distance
- Easy to operate
- Locking of the keypad via softlock keylock
- Two adjustable switching thresholds with relay contact per measurement channel
- Logarithmic/linear 0 to 10 V chart recorder output
- Compact, rugged Penning gauge which is capable of withstanding operation at high pressures (see section “Sensors”)
- Aligned and temperature compensated THERMOVAC sensors (see section “Sensors”)
- Precision absolute pressure sensors with ceramics or Inconel diaphragm (see section “Sensors”)
- Cost-effective replacement sensing cells and electrodes
- Fault indication for each channel in the event of a broken filament, a broken cable or failed plasma discharge
- Compact bench-top unit (1/4 19", 3 HU) with metal enclosure, which may also be installed in panel cut-outs and 19" racks
- Full remote control via RS 232 C interface
- CE mark

Typical Applications

- General pressure measurements on pump systems, for example:
  – Turbomolecular pump systems
  – Diffusion pump systems
  – Cryo pump systems
- Vacuum melting, soldering and annealing furnaces
- Coating systems
- Analytical instruments

COMBIVAC CM 31

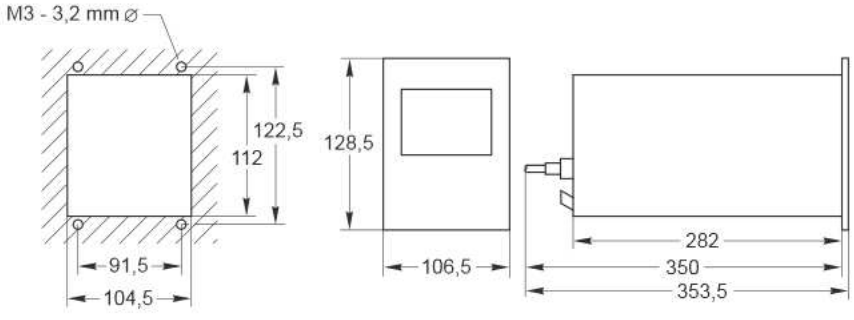
This combination instrument for standard applications covers with its three measurement channels (2 x THERMOVAC and 1 x PENNINGVAC) the entire range of 12 decades between 1 x 10^{-9} and 1000 mbar.

COMBIVAC CM 32

For over-pressure measurements and pressure measurements which do not depend on the type of gas, the CM 32 offers the facility of connecting a linear absolute pressure sensor (DI 200/201/2000/2001 – see section “Sensors”) in combination with THERMOVAC and PENNINGVAC sensors. Suitable 4 to 20 mA pressure sensors having a range up to 20 000 mbar (15 000 Torr) may be connected.

COMBIVAC CM 33

If the utmost is required regarding accuracy and resolution, then the CM 33 is the right choice. In combination with THERMOVAC and PENNINGVAC sensors, capacitive absolute pressure sensors may be connected (see section “Sensors”) which offer, depending on the type, a range of 2 x 10^{-4} to 13 300 mbar (1.5 x 10^{-4} to 10 000 Torr).



Dimensional drawing and panel cut-out for the COMBIVAC CM 31/CM 32/CM 33

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Technical Data		COMBIVAC CM 31/32/33
Number of measurement channels		3
Display range, CM 31	mbar (Torr)	1 x 10^{-9} to 1000 (0.75 x 10^{-9} to 750)
CM 32	mbar (Torr)	1 x 10^{-9} to 2000 (or 20 000*)) (0.75 x 10^{-9} to 1500 (or 15 000*))
CM 33	mbar (Torr)	1 x 10^{-9} to 1330 (or 13 300*)) (0.75 x 10^{-9} to 998 (or 9980*))
Unit of measurement (selectable)		mbar, Torr, Pa, Micron
Measurement uncertainty		
PENNINGVAC		±30 % of the meas. value in the range 10^{-8} to 10^{-4} mbar/Torr
THERMOVAC		≤ 20 % of the meas. value in the range 10^{-3} to 10^{-2} mbar/Torr ≤ 15 % of the meas. value in the range 10^{-2} to 10^{2} mbar/Torr
Absolute pressure sensor		Depending on the type of sensor used
Measurement display (backlit)		digital, 7 segment LCD, analog, LCD bar graph, with logarithmic divisions (selectable)
Type of gas (selectable)		Air, N_2, Ar
Switching thresholds		6, 2 per channel, floating changeover contacts
Operating mode		single, interval
Adjustment range		
PENNINGVAC	mbar (Torr)	1 x 10^{-8} to 9.9 x 10^{-3} (0.75 x 10^{-8} to 7.4 x 10^{-3})
THERMOVAC	mbar (Torr)	5 x 10^{-3} to 500 (3.75 x 10^{-3} to 375)
Hysteresis for the switching relay		standard 10 % of trigger value, free adjustable for THERMOVAC and PENNINGVAC
Ready indication		1 contact per channel, closed when ready
Rating of the relay contacts		AC 240 V/5A (Resistive load) DC 60 V/0.7 A (Resistive load)
Contact life at 5 A		≥ 6 x 10^{4} cycles
Chart recorder output (Ra ≥ 2.5 kΩ)		0 to 10 V, log./lin. divisions
PENNINGVAC		logarithm.: (0 V ; 1 x 10^{-9} mbar/Torr), 1.43 V/decade
THERMOVAC		linear: 3 decades, about 10.5 V for fault logarithm.: (0 V ; 1 x 10^{-3} mbar/Torr), 1.67 V/decade
Absolute pressure sensor		linear: 3 decades, about 10.5 V for fault log./lin. 0 to 10 V
Control input for PENNINGVAC		Prog. contr. compatible digital 24 V input Logic level (LOW) < 7 V, 0 A; (HIGH) > 13 V, 7 mA
Interface		RS 232 C
Main connection 50/60 Hz		
CM 31/32 (selectable)	V	100/120/200/230, +10/-15 %
CM 33	V	90 to 250
Power consumption	VA	35
Storage temperature range	°C	-40 to +60
Nominal temperature range	°C	0 to 40
Max. rel. humidity	% n.c.	80
Weight	kg (lbs)	2.3 (5)
Dimensions (W x H x D)	mm	100.5 x 128.5 x 262

Ordering Information		COMBIVAC CM 31/32/33
CM 31, with 2 m long main cord, 230 V AC		Part No. 157 89
CM 32, with 2 m long main cord, 230 V AC		Part No. 157 90
CM 33, with 2 m long main cord, 230 V AC		Part No. 157 95
Options		
19" installation frame		Part No. 161 00
1/4 19" blank panel		Part No. 161 02
THERMOVAC sensors for CM 31/32/33		
TR 211, DN 16 KF		Part No. 157 85
TR 211, 1/8" NPT		Part No. 896 33
TR 212, DN 16 KF		Part No. 158 52
TR 216, DN 16 KF		Part No. 157 87
Cable for TR sensors	5 m	Part No. 162 26
	10 m	Part No. 162 27
	20 m	Part No. 162 28
	30 m	Part No. 124 35
	40 m	Part No. 124 36
	50 m	Part No. 124 37
	75 m	Part No. 124 38
	100 m	Part No. 124 39
PENNINGVAC sensors for CM 31/32/33		
PR 25, DN 25 KF		Part No. 157 52
PR 26, DN 40 KF		Part No. 136 46
PR 27, DN 40 CF		Part No. 136 48
PR 37, DN 40 CF, ausheizbar		Part No. 157 54
Replacement cathode plates for PR 25 (Set of 5 pcs.)		Part No. 162 94
Cable for PR sensors	5 m	Part No. 162 88
	10 m	Part No. 162 89
	20 m	Part No. 157 56
	30 m	Part No. 124 50
	40 m	Part No. 124 51
	50 m	Part No. 124 52
	75 m	Part No. 124 53
	100 m	Part No. 124 54
Absolute pressure sensors for CM 32		
DI 200, 200 mbar, DN 16 KF, incl. 5 m long cable		Part No. 158 12
DI 201, 200 mbar, DN 16 KF, incl. 5 m long cable		Part No. 158.14
DI 2000, 2000 mbar, DN 16 KF, incl. 5 m long cable		Part No. 158 13
DI 2001, 2000 mbar, DN 16 KF, incl. 5 m long cable		Part No. 158 25
Absolute pressure sensors for CM 33		
CTR90, 1 Torr, DN 16 KF		Part No. 159 24
CTR90, 10 Torr, DN 16 KF		Part No. 159 23
CTR90, 100 Torr, DN 16 KF		Part No. 159 22
CTR90, 1000 Torr, DN 16 KF		Part No. 159 21
CTR90, 1 Torr, DN 16 CF		Part No. 159 34
CTR90, 10 Torr, DN 16 CF		Part No. 159 33
CTR90, 100 Torr, DN 16 CF		Part No. 159 32
CTR90, 1000 Torr, DN 16 CF		Part No. 159 31
Sensor cables	5 m	Part No. 157 64
	10 m	Part No. 124 41
	15 m	Part No. 124 42
	20 m	Part No. 124 43
	30 m	Part No. 124 44
	40 m	Part No. 124 45
	50 m	Part No. 124 46
	75 m	Part No. 124 47
	100 m	Part No. 124 48

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