



# COMBIVAC Series

Controller for passive sensors  
in demanding industrial and research applications



# COMBIVAC Series

Monitoring and control across the entire vacuum pressure range between  $10^{-12}$  and 1000 mbar

By combining two principles of measurement (THERMOVAC and PENNINGVAC) the COMBIVAC CM 51 performs vacuum pressure measurements and control within the entire range of  $10^{-9}$  and 1000 mbar.

The COMBIVAC 52 covers the entire range of vacuum pressures from  $10^{-12}$  to 1000 mbar by combining two UHV principles of measurement (THERMOVAC and IONIVAC).



## Customer Benefits

- Compact three channel measuring instruments for passive sensors
- Vacuum pressure measurement from  $10^{-12}$  - 1000 mbar
- Automatic switchover and high voltage control from THERMOVAC to PENNING (CM 51), and from THERMOVAC to IONIVAC (CM 52)
- Connection of adjusted, temperature compensated THERMOVAC sensors
- High sensor reliability and lifetime PENNING, resp. IONIVAC vacuum gauge heads
- Cost-effective replacement sensors and electrodes
- Connection of compact, bakeable and rugged
- Compact, installable benchtop housing (1/4 19-in., 3 HU) on request
- Error message per channel, in case of a broken filament, defective sensor line or failed plasma discharge, for example
- Cable length up to 100 meters possible
- RS 232/485 and Profibus interfaces
- CE and RoHS compliant

## Typical Applications

### Process industry

- Rough or corrosive industrial conditions
- Universal monitoring of high vacuum pump system operation
- Annealing, melting, brazing or hardening furnaces
- Coating systems



COMBIVAC Series

### Research applications

- Particle accelerators
- Surface analysis
- Tunnel microscopy
- Radiation-resistant and bakeable systems
- Molecular beam epitaxy (MBE)



Controller for passive sensors

## Connectable Sensors

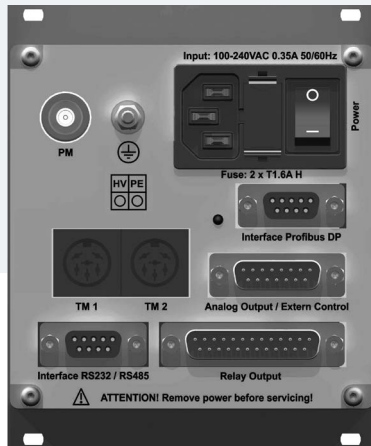
### CM 51

#### THERMOVAC models

- TR 211 to TR 216

#### PENNINGVAC models (CM 51)

- PR 25 to PR 27
- PR 28, bakeable to 200 °C



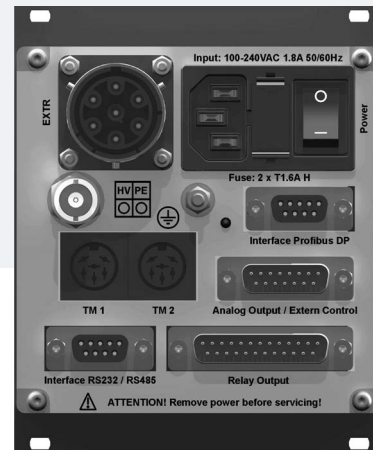
### CM 52

#### THERMOVAC models

- TR 211 to TR 216

#### IONIVAC models (CM 52)

- IE 414, bakeable to 350 °C
- IE 514, bakeable to 350 °C



## Technical Data

		CM 51	CM 52
<b>Display range</b> Channel 1, 2 (THERMOVAC) Channel 3 (PENNINGVAC) Channel 3 (IE 414 /IE 514)	mbar mbar mbar	0.5 · 10 <sup>-3</sup> - 1000 1 · 10 <sup>-9</sup> - 10 <sup>-2</sup> -	0.5 · 10 <sup>-3</sup> - 1000 - 2 · 10 <sup>-11</sup> - 1 · 10 <sup>-2</sup> / 2 · 10 <sup>-12</sup> - 1 · 10 <sup>-4</sup>
<b>Possible sensors</b> THERMOVAC PENNINGVAC IONIVAC		TR 211, TR 212, TR 216 PR 25, PR 26, PR 27, PR 28 -	TR 211, TR 212, TR 216 - IE 414, IE 514
<b>Switching thresholds</b>		2 per channel	2 per channel
<b>Operating mode</b>		single, interval, trigger	single, interval, trigger
<b>Adjustable Switching thresholds</b> THERMOVAC PENNINGVAC Bayard-Alpert (IE 414) Extractor (IE 514)	mbar mbar mbar mbar	5 · 10 <sup>-3</sup> - 500 1 · 10 <sup>-8</sup> - 9.9 · 10 <sup>-3</sup> - -	5 · 10 <sup>-3</sup> - 500 - 1 · 10 <sup>-8</sup> - 5 · 10 <sup>-3</sup> 1 · 10 <sup>-11</sup> - 1 · 10 <sup>-4</sup>
<b>Mains connection</b>		100 - 240 V, 50/60 Hz	100 - 240 V, 50/60 Hz
<b>Interfaces</b>		RS 232 C, RS 485/Profibus	RS 232 C, RS 485/Profibus
<b>Dimensions (W x H x D)</b>	mm	106.4 X 128.5 X 164.5	106.4 X 128.5 X 164.5
<b>Protection class</b>		IP 40	IP 40

## Ordering Information

		CM 51	CM 52
<b>COMBIVAC controller with</b> EURO and US mains connection cable (2 m) and Interfaces: RS 232 C/485 // or Profibus	Cat. No.	230 110 // 230 111	230115 // 230 116



Pioneering products. Passionately applied.

