PVC Ion Gauge and Vacuum System Controller
for passive UHV hot cathode ion gauges

Features of the Thyracont display and control units

- For 1x UHV ion gauge support (PVCuni) or 2x UHV ion gauge support (PVCduo)
- 2 module slots for addition of Pirani gauges (VSP52x, VSP84x) or active 0-10V transducers
- Intuitive menu-driven operation
- Auto ranging emission, or 11 manual emission settings
- Ramped power degas, pressure measurement during degas
- Integrated, interlocked, multi-step bake-out controller
- Measurement displayed in pressure units or alternatively as direct ion
  Current (emission corrected) for BFM applications
- User definable interlock Hub, 7 output trips and 4 digital inputs
- Multi-drop RS232/RS485 interfaces as standard with easy daisy-chaining
- Full computer control using binary MODBUS and ASCII-based QueBUS protocols
- 2 x 0-10V analog outputs
- 2 user-definable on/off timers

Applications

- All HV and UHV system pressure and interlock monitoring, and process control
- MBE beam flux monitoring (BFM)
- Automated UHV system management
- UHV system bake-out management

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Technical Data

Ion Gauges

Number	1x UHV, dual Iridium-based filament, Yttria or Thoria-coated filaments **(PVCuni)**	2x UHV, dual Iridium-based filament, Yttria or Thoria-coated filaments **(PVCduo)**
Filament Drive	Current DC: 0-3.5A (8V compliance) [PVCduo: per channel]	
Gauge potentials	Normal operation: Filament 40V, Grid: 200V, Degas: Filament 40V. Grid 400V+	
Emission Control	PID control with emission measurement f. accurate pressure correction	
Manual Emission	OFF, 0.05, 0.1, 0.15, 0.25, 0.4, 0.6, 1, 1.5, 2.5, 4, 6, 10mA	
Auto-emission	Emission automatically optimizes to the measured pressure	
Start-up features	Slow, standard and fast start-up. „Learn" feature for start-up power	
Degas Type	Thermal/Electron bombardment	
Degas interlocking	Pressure and digital input interlocking	
Degas Pressure	Displayed during degas	
Electrometer	Range: <1pA to 1mA. High stability due to temperature controlled enclosure	
Gauge Sensitivity	1.0 to 99.9 (resolution 0.1)	
Gas Sensitivity	0.01 to 99.99 (relative to Nitrogen = 1.00)	
Interlocking	Digital inputs: trip/control operation/degas of the gauge	

Secondary Gauges

Number	2 slots allow user to add support for secondary gauges by plug in modules. Module E (for VSP521 Pirani), Module F (for VSP841 Pirani), Modul W universal for 0-10V transducers (user-configurable)
Module operations	Module channels can operate in the same way as ion gauge channels, having interlock trips, digital inputs and analogue outputs assigned. They can be coupled with ion gauge channels for „dual gauge mode" operation

Dual Gauge Mode

Operation	An ion gauge can be assigned a secondary gauge such as the combination act as single wide range gauge, with auto switching of on gauge operation

Technical Data

Bake-Out Control

Thermocouple	Type K thermocouple built-in. 1 to 999°C (0.1°C resolution) Control zone 1 bake-out
Bake-out Control	User configurable: up to 6 ramp/soak steps, 0 to 99:59hm per step (1 minute resolution). Separate zone 1 and zone 2 temperature profiles
Control Type	On/off control. 1 second cycle time. User-defined temperature hysteresis
Power Control	Any combination of the 7 trips can be assigned to switch heater power
Interlocking	Ion gauge, digital inputs and user interaction interlocks. Interlocks can independently inhibit heat output, suspend bake-out (inhibits output and stops bake-out clock) or terminate the bake-out
Parameters	As well as setpoint, measured value and interlock information, peak temperature data available
Ion gauge options	Optional auto-degas of ion gauge(s) at end of bake-out

Digital Interlock Hub

Number	7 output trips and 4 digital inputs. Fully user configurable
Trips	Trip 1 to 4: Single pole, change over relays rated at 1A@24VDC/0.5A@40VAC Trip 5 to 7: NPN open collector, earth-referenced outputs. Max drive: 200mA and 12VDC
Trip assignment	Each trip is individually assignable to various ion/secondary gauge functions, bake-out, timers, front panel or external (comms) control etc.
Trip Options	Operate/inhibit/override. Power up operations. Direction (<or> assigned parameter value). Operating hysteresis
Digital Inputs	All opto-isolated. 3-5VDC input. 2.4kΩ input resistance in series with LED. Reverse diode protected. Digital inputs 1 and 2: electrically isolated from each other and ground. Digital inputs 3 and 4: electrically isolated from ground
Digital Input assignment	Each digital input can be used as required for ion/secondary gauge protection/control, and interlocking of bake-out, timer
Digital Input options	Invert input. Operate/inhibit/override. Power up operation
Connector	Standard DB25 connector

Technical Data

Analogue Output Interlock Hub

Number	2
Output	Full scale range: 0V to ~10.5V (12 bit resolution)
Linearity	<±0.2%
Assignment	User configurable: Ion gauge (emission and sensitive corrected), any secondary gauge, dual gauge, bake-out temperature...
Functionallity	User-defined voltage range, assigned pressure/temperature range lin or lock relationship...

Timers

Number	2
Time Limits	1 second to 999:59:59hms, cycle time defines off + on time
Operation	Time can be set to start at off-time, on time or user-defined time
Output Allocation	Any combination of digital trips
Interlocking	Digital input and ion gauge(s) inhibit of the output

General

Weight	Approx. 5,6 kg
Dimensions	19" rack mounting: WxHxD: 484x44x260mm (19”x1.73”x10.25”) allow 50mm (2”) at rear for earth stud and connectors
Electrical	115/230VAC. 8W (gauges off), Max: 60W (full degas)
Protection	Mains input: Both Neutral and Live fuse protected. 2A(T) for 230 VAC; 3.15A(T) for 115VAC. Transformer: thermal trip protection
Display Type	Graphic 200x16 pixel OLED display, high brightness, high contrast, long life > 100,000h to half-brightness
Communications	Multi-drop RS232 (up to 8 units (port dependent)) and RS485-3 wire (up to 16 units). MODBUS protocol. Simultaneous multiple parameter read/write; floating point resolution. QueBUS protocol. ASCII-based protocol with multiple parameter read/write
Communications connectors	2x RJ45 for simple daisy-chaining

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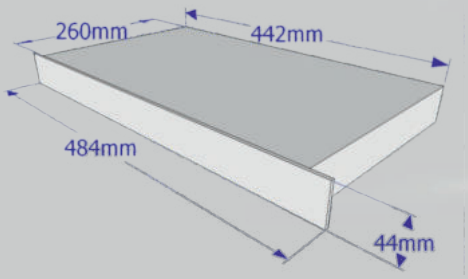
PVC uni

PVC duo

Dimensions in mm



Model designations

- PVCUNN0, PVC uni 230 VDC
- PVCUNN5, PVC uni 115 VDC
- PVCUNW0, PVC uni 230 VDC, Module W
- PVCUNW5, PVC uni 115 VDC, Module W
- PVCUEN0, PVC uni 230 VDC, Module E
- PVCUEN5, PVC uni 115 VDC, Module E
- PVCUFN0, PVC uni 230 VDC, Module F
- PVCUFN5, PVC uni 115 VDC, Module F

- PVCDNN0, PVC duo 230 VDC
- PVCDNN5, PVC duo 115 VDC

Modules

- PVCE, E-Module f. VSP521 Pirani
- PVCF, F-Module f. VSP841 Pirani
- PVCW, W-Module f. active 0-10V transducer

Accessories

- B_IG19BA, BA hot cathode ion gauge
- B_IG19FIL, spare filament for hot cathode sensor
- B_TCK28, thermocouple Type K, 2m bakeable + 8m extension
- VSP521, Pirani sensor
- VSP841, Pirani sensor
- WIG19010, BA sensor cable 10m
- WVSP5003, VSP521 sensor cable 3m
- WVSP8003, VSP841 sensor cable 3m