

XMTCpro

New Generation Thermal Conductivity Binary Gas Analyzer



Panametrics' XMTCpro is a compact, and robust analyzer with SIL 2 by design for continuous measurement of gas concentrations in binary gas mixtures, including hydrogen, carbon dioxide, methane, helium, and many others.

Key Benefits

The XMTcpro is available with an integrated display and intuitive user interface. The XMTcpro also combines computer enhanced signal measurement for fastest response, real-time error detection, and MODBUS digital communication.

XMTcpro brings the user:

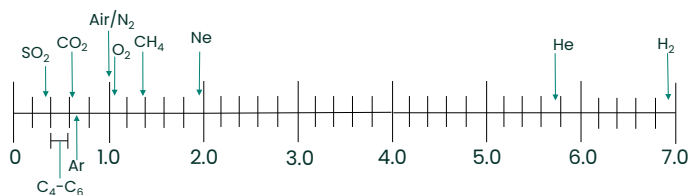
- Ultra-stable thermal conductivity sensor
- Compact design for economic sample system integration
- Intuitive operating interface allows short learning curve, easy and flexible to use
- Integrated high contrast, easy-to-read multiparameter display
- MODBUS digital communication provides measurement and configuration data
- High level of reliability with SIL 2 by design

Minimal calibration and service

The XMTcpro is the most stable thermal conductivity analyzer on the market today. The rugged XMTcpro measuring cell resists contamination and remains insensitive to flow variations.

Since the design uses no moving parts, the transmitter can easily withstand the shock, vibration and harsh environments found in many industrial applications.

If the transmitter requires maintenance, its modular construction permits fast and easy servicing. Users can field-calibrate it quickly and replace the plug-in measuring cell with a pre-calibrated spare in minutes.



Gas	Formula	Chemical	Gas	Formula	Chemical
Acetylene	0.90	C ₂ H ₂	Helium	5.53	He
Air	1.00	N ₂ /O ₂	n-Heptane	0.58	C ₇ H ₁₆
Argon	0.67	Ar	n-Hexane	0.66	C ₆ H ₁₄
n-Butane	0.74	C ₄ H ₁₀	Hydrogen	6.80	H ₂
Carbon Dioxide	0.70	CO ₂	Methane	1.45	CH ₄
Chlorine	0.34	Cl ₂	Methyl Chloride	0.53	CH ₃ Cl
Ethylene Alcohol	0.64	C ₂ H ₅ OH	Neon	1.84	Ne
Ethylene	0.98	C ₂ H ₄	n-Pentane	0.70	C ₅ H ₁₂
Ethylene Oxide	0.62	C ₂ H ₄ O	Sulfur Dioxide	0.38	SO ₂
Freon-II	0.37	CCl ₃ F	Water Vapor	0.77	H ₂ O

Relative thermal conductivities of some common gases at 100°C (212°F). The XMTcpro uses the difference in thermal conductivity of the sample gas compared to the background gas to determine its concentration.

Sample system

Sample systems deliver a clean, representative sample to the XMTcpro at optimal temperatures, pressures and flow rates.

Panametrics offers sample systems for a wide variety of applications.

For assistance in designing your own sample system, please consult our application engineering team.



Applications

The stable and accurate thermal conductivity sensor, certified globally for use in hazardous area environments, make the XMTcpro the tool of choice for use in:

Hydrogen Economy

H₂ in various applications along the hydrogen value chain

Metals industry

H₂ in N₂ atmosphere in metal heat-treating furnaces

Electric power industry

H₂ in cooling systems for generators

Petroleum industry

H₂ in hydrocarbon streams

Chemical industry

- H₂ in NH₃ and in CH₃OH synthesis gas
- H₂ in chlorine plants

Methane industry

- CO₂ in CH₄

Landfill/biogas industry

- CO₂ in biogas
- CH₄ in biogas

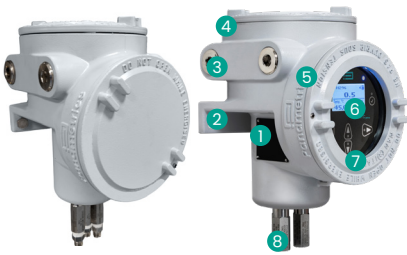
Gas production industry

Purity monitoring of Ar, H₂, N, and He

Food Industry

CO₂ in fermentation process

Technical Specifications



- 1 Configuration and certification information
- 2 Mounting holes
- 3 Cable entries
- 4 Removable top cover
- 5 Removable front cover
- 6 Multi-parameter display
- 7 Magnetic keypad
- 8 Flame arrestors (gas inlet/outlet) and breather

Performance

Accuracy: $\pm 2\%$ of span*

Linearity: $\pm 1\%$ of span

Repeatability: $\pm 0.5\%$ of span

Zero Stability: $\pm 0.5\%$ of span per week
($\pm 1\%$ for 0–1% range)

Span Stability: $\pm 0.5\%$ of span per week
($\pm 1\%$ for 0–1% range)

Response Time: 20 seconds for 90% step change

Measurement Ranges

- 0% to 1%
- 0% to 2%
- 0% to 5%
- 0% to 10%
- 0% to 25%
- 0% to 50%
- 0% to 100%
- 50% to 100%
- 80% to 100%
- 90% to 100%
- 95% to 100%
- 98% to 100%

Measurement Gases (Typical)

- H_2 in N_2 , air, O_2 or CO_2
- He in N_2 or air
- CO_2 in N_2 or air
- SO_2 in air
- Ar in N_2 or air
- H_2/CO_2 /air for hydrogen-cooled generators

Required Sample Flow Rate

50 to 2,000 cc/min (0.1 to 4.0 SCFH);
250 cc/min (0.5 SCFH) nominal

Functional

Functional Safety

IEC61508 SIL 2 (optional)

Analog Output

Two 4 to 20 mA isolated, 550 Ω maximum load, field-programmable

Digital Output

Modbus RS232/RS485

(Fixed to RS232 on the no display model)

Power

24 VDC ± 4 VDC, 1.2 A maximum

Temperature

- -20°C to $+50^\circ\text{C}$ (-4°F to $+122^\circ\text{F}$), Standard operating temperature
- -5°C to $+65^\circ\text{C}$ ($+23^\circ\text{F}$ to $+149^\circ\text{F}$), High operating temperature
- -20°C to $+65^\circ\text{C}$ (-4°F to $+149^\circ\text{F}$), Storage temperature

Physical

Sensor wetted materials

- Standard: 316 stainless steel, glass and Viton® O-rings
- Optional: Hastelloy C276 and Chemraz® O-rings

Dimensions

- Wp. (H x D x W): 228 x 178 x 142mm (9 x 7 x 6in)
- Ex-proof (H x D x W): 252 x 178 x 142mm (10 x 7 x 6in)

Weight

- Aluminum version: 4.5kg / 9.9 lb
- Stainless Steel version: 11.0 kg / 24.2 lb

Connections

- 3/4 in NPT (electrical)
- 1/4 in NPTF (sample gas inlet/outlet)

Environmental

- IP66, Type 4X

IECEx compliance

- Ex db IIC T6 Gb,
Ex tb IIIC T78°C Db,
 $-20^\circ\text{C} < T_{amb} < +65^\circ\text{C}$

European Union compliance

- EMC Directive 2014/30/EU
- ATEX 2014/34/EU: II 2 GD Ex db IIC T6 Gb, Ex tb IIIC T78°C Db, $-20^\circ\text{C} < T_{amb} < +65^\circ\text{C}$

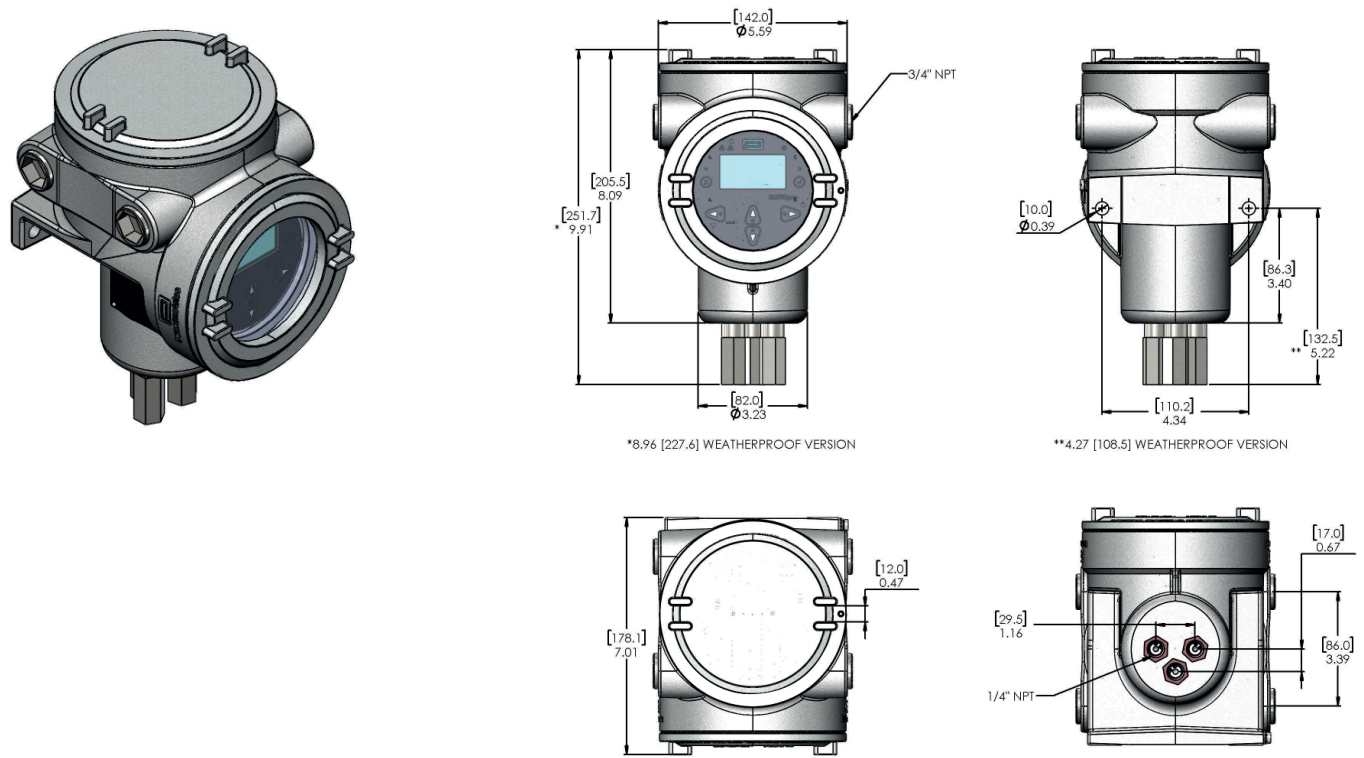
NEC/CEC

- CI I, II, III Div 1, Groups ABCDEFG, T6
- CI I, Zn 1 AEx/Ex db IIC T6 Gb
- CI II, Zn 2I AEx/Ex tb IIIC T78°C Db
- CI I, II, III Div 2, Groups ABCDEFG, T6/T5**
- $-20^\circ\text{C} < T_{amb} < +65^\circ\text{C}$

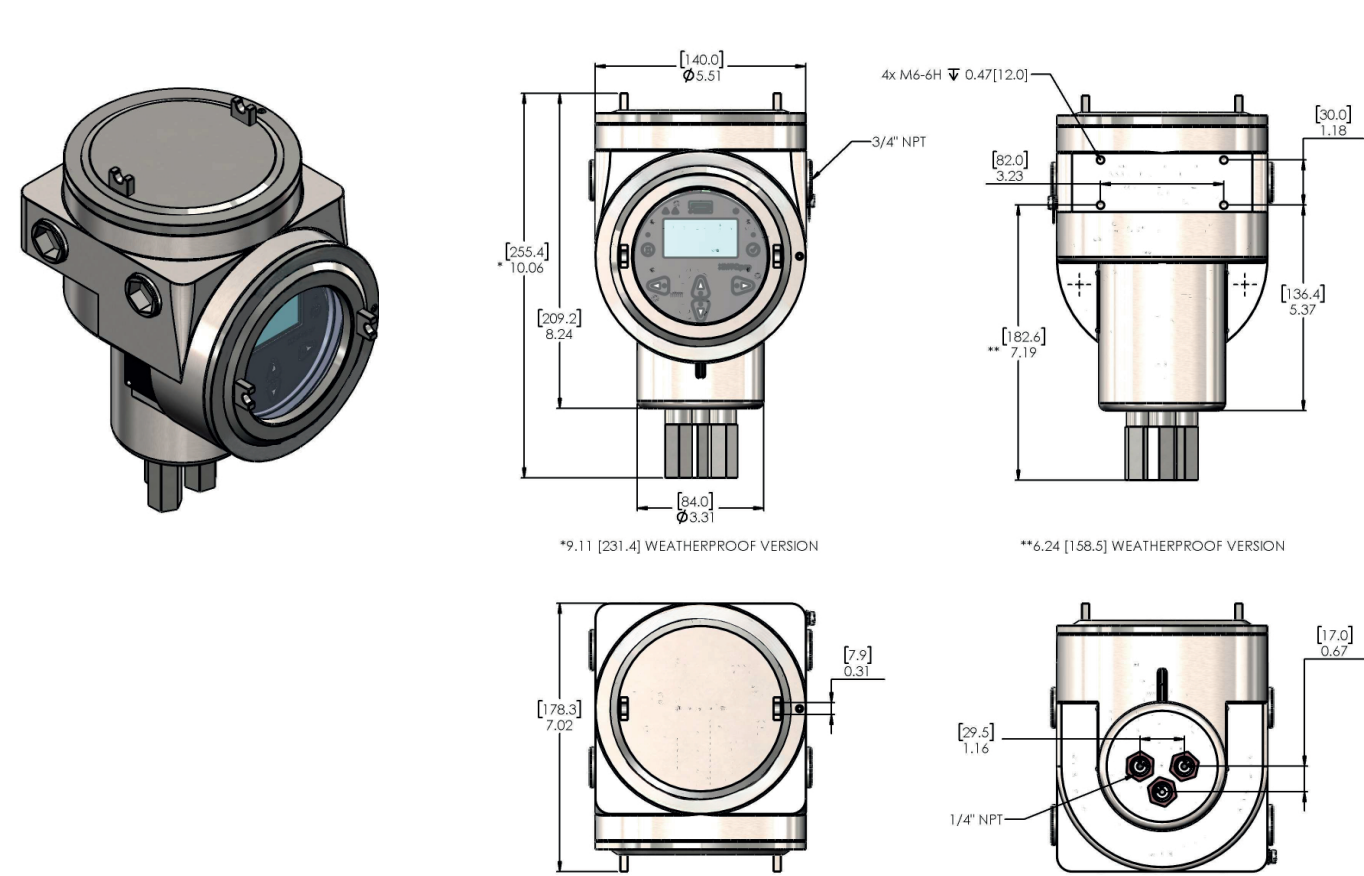
* Accuracy may vary and depends on the gases and concentration ranges measured.

** T5 applies for higher max ambient temperatures (from $+55^\circ\text{C}$ to $+65^\circ\text{C}$) for Division 2 (US/Canada).

Aluminum Version



Stainless Steel Version



Order and calibration information

Model	XMTCpro, Thermal Conductivity Analyzer									
	XMTCpro									
Installation Site Requirements	Enclosure Package									
	1	Aluminium enclosure, weatherproof, with display								
	2	Aluminium enclosure, explosion proof, with display								
	3	Stainless steel enclosure, weatherproof, with display								
	4	Stainless steel enclosure, explosion proof , with display								
	5	Aluminium enclosure, weatherproof, no display								
	6	Aluminium enclosure, explosion proof, no display								
	7	Stainless steel enclosure, weatherproof, no display								
	8	Stainless steel enclosure, explosion proof , no display								
	9	Without enclosure								
Analytical Performance, Software, and Specials	Wetted Material									
	1	316 Stainless Steel, Viton O-Rings, PTFE								
	2	Hastelloy, Chemraz O-Rings,PTFE								
	3	316 Stainless Steel, Chemraz O-Rings, PTFE								
	4	316 Stainless Steel, Viton O-Rings, CPVC								
	5	Hastelloy, Chemraz O-Rings,CPVC								
	6	316 Stainless Steel, Chemraz O-Rings, CPVC								
	Certification									
	1	Safe Area/General Purpose Area								
	2	USA/CAN Div 1, Zone 1/21								
	3	USA/CAN Div 2, Zone 2/22								
	4	ATEX/IECEX								
	Cell Temperature Set Point									
	0	Standard Operating Temperature								
	1	High Operating Temperature								
	Concentration Range									
	1	0 to 1%								
	2	0 TO 2%								
	3	0 TO 5%								
	4	0 TO 10%								
	5	0 TO 25%								
	6	0 TO 50%								
	7	0 TO 100%								
	8	50 TO 100%								
	9	80 TO 100%								
	10	90 TO 100%								
	11	95 TO 100%								
	12	98 TO 100%								
	S	OTHER								
	Calibration Gas									
	1	H ₂ /N ₂								
	2	He/N ₂								
	3	He/Air								
	4	CO ₂ /Air								
	5	CO ₂ /N ₂								
	6	CH ₄ /CO ₂								
	7	CO ₂ /CH ₄								
	8	H ₂ /CO ₂ /Air								
	9	H ₂ /O ₂								
	10	O ₂ /H ₂								
	S	OTHER								
	Software									
	0	Standard								
	1	Hydrogen Cooled Generator								
	Safety Level									
	SIL	SIL2 By Design								
	STN	Standard Industry Model								
	Special									
	0	No Special								
	S	Special*								

*Choose between RS232 and RS485 for the no display model or another option not listed above.

Panametrics, a Baker Hughes business, provides solutions in the toughest applications and environments for moisture, oxygen, liquid and gas flow measurement.

Experts in flare management, Panametrics technology also reduces flare emissions and optimizes performance.

With a reach that extends across the globe, Panametrics' critical measurement solutions and flare emissions management are enabling customers to drive efficiency and achieve carbon reduction targets across critical industries including: Oil & Gas; Energy; Healthcare; Water and Wastewater; Chemical Processing; Food & Beverage and many others.

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