



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.

PANA078DS Rev. 20

Key Benefits

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

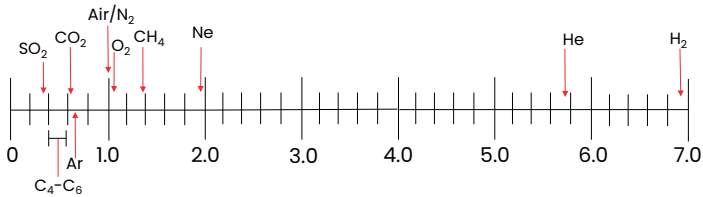
XMTCPpro brings the user:

- 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 XMTCPpro is the most stable thermal conductivity analyzer on the market today. The rugged XMTCPpro 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 ₄	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-11	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 XMTCPpro 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 XMTCPpro 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 XMTCPpro 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

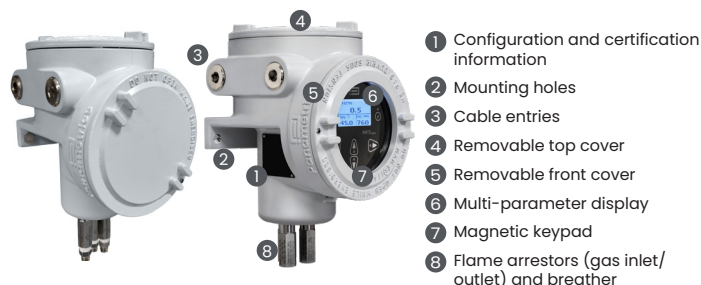
Gas production industry

- Purity monitoring of Ar, H₂, N, and He

Food Industry

- CO₂ in fermentation process

Technical Specifications



Performance

Accuracy	±2% of span*
Linearity	±1% of span
Repeatability	±0.5% of span
Zero Stability	±0.5% of span per week (±1% for 0–1% range)
Span Stability	±0.5% of span per week (±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°C (–4°F to +122°F), Standard operating temperature –5°C to +65°C (+23°F to +149°F), High operating temperature –20°C to +65°C (–4°F to +149°F), Storage temperature

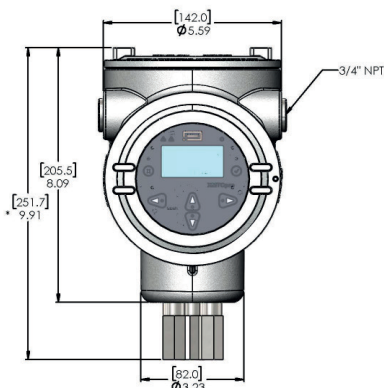
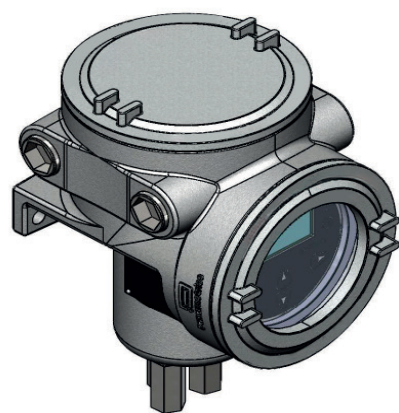
Physical

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°C < Tamb < +65°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°C < Tamb < +65°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°C < Tamb < +65°C

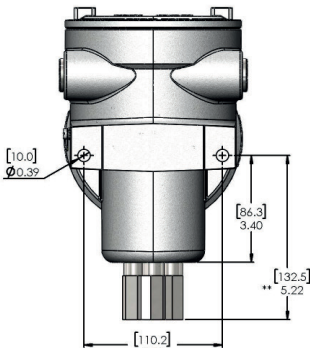
* Accuracy may vary and depends on the gases and concentration ranges measured.

** T5 applies for higher max ambient temperatures (from +55°C to +65°C) for Division 2 (US/Canada).

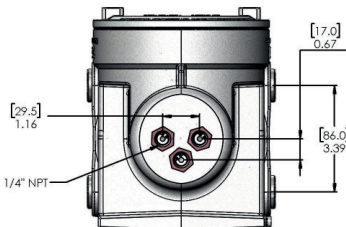
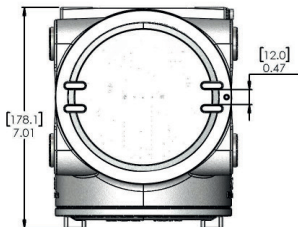
Aluminum Version



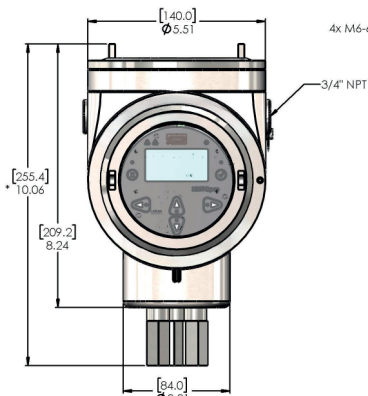
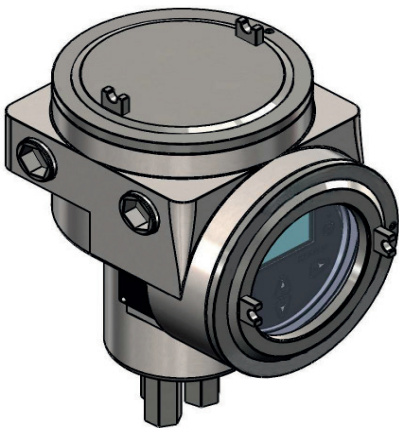
*8.96 [227.6] WEATHERPROOF VERSION



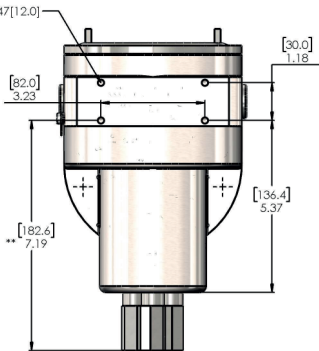
**4.27 [108.5] WEATHERPROOF VERSION



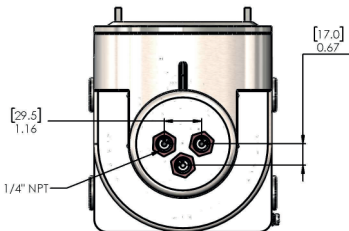
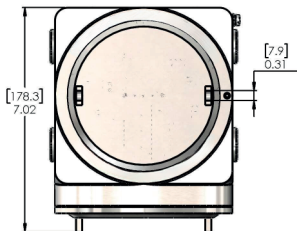
Stainless Steel Version



*9.11 [231.4] WEATHERPROOF VERSION



**6.24 [158.5] WEATHERPROOF VERSION



Order and calibration information

Installation Site Requirements	Model										
	XMTCpro	XMTCpro, Thermal Conductivity Analyzer									
		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								
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*									