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 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.
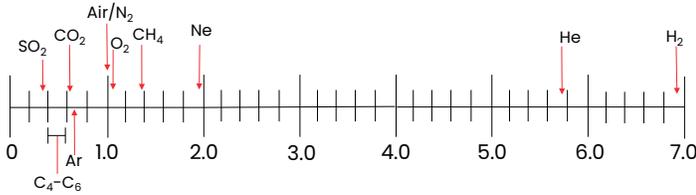
Gas	Formula	Chemical	Gas	Formula	Chemical
Acetylene	0.90	C_2H_2	Helium	5.53	He
Air	1.00	N_2/O_2	n-Heptane	0.58	C_7H_{16}
Argon	0.67	Ar	n-Hexane	0.66	C_6H_{14}
n-Butane	0.74	C_4H_{10}	Hydrogen	6.80	H_2
Carbon Dioxide	0.70	CO_2	Methane	1.45	CH_4
Chlorine	0.34	Cl_2	Methyl Chloride	0.53	CH_3Cl
Ethylene Alcohol	0.64	$C_2H_5OH_4$	Neon	1.84	Ne
Ethylene	0.98	C_2H_4	n-Pentane	0.70	C_5H_{12}
Ethylene Oxide	0.62	C_2H_4O	Sulfur Dioxide	0.38	SO_2
Freon-11	0.37	CCl_3F	Water Vapor	0.77	H_2O

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
- H_2 in various applications along the hydrogen value chain

Metals industry
- H_2 in N_2 atmosphere in metal heat-treating furnaces

Electric power industry
- H_2 in cooling systems for generators

Petroleum industry
- H_2 in hydrocarbon streams

Chemical industry
- H_2 in NH_3 and in CH3OH synthesis gas
- H_2 in chlorine plants

Methane industry
- CO_2 in CH_4

Landfill/biogas industry
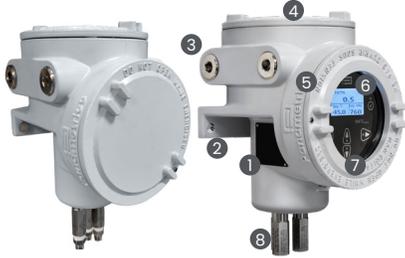- CO_2 in biogas
- CH_4 in biogas

Gas production industry
- Purity monitoring of Ar, H_2, N, and He

Food Industry
- CO_2 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	±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

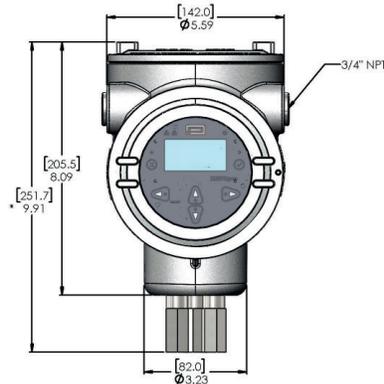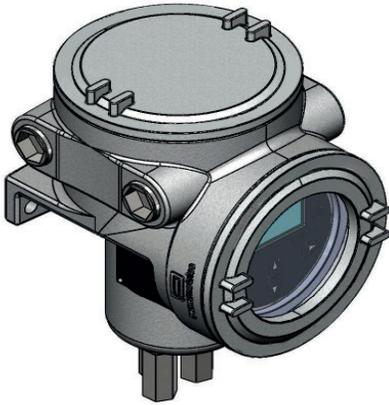|	
Functional Safety	IEC61508 SIL 2 (optional)
Analog Output	Two 4 to 20 mA isolated, 550 Ω maximum load, field-programmable
Digital Output	Modbus RS232/RS485 (Fixed to RS232 on the no display model)
Power	24 VDC ± 4 VDC, 0.8 A
Temperature	• –20ºC to +50ºC (–4ºF to +122ºF), Standard operating temperature • –5ºC to +65ºC (+23ºF to +149ºF), High operating temperature • –20ºC to +65ºC (–4ºF to +149ºF), Storage temperature

Physical

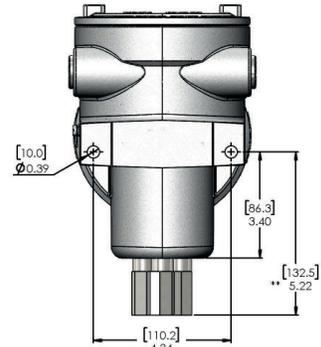|	
Sensor wetted materials	• Standard: 316 stainless steel, glass and Viton® O-rings • Optional: Hastelloy C276 and Chemraz® O-rings
Dimensions	• Wp. (H x D x W): 228 x 178 x 142mm (9 x 7 x 6in) • Ex-proof (H x D x W): 252 x 178 x 142mm (10 x 7 x 6in)
Weight	• Aluminum version: 4.5kg / 9.9 lb • Stainless 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 T78ºC Db, –20ºC < Tamb < +65ºC
European Union compliance	• EMC Directive 2014/30/EU • ATEX 2014/34/EU: II 2 GD Ex db IIC T6 Gb, Ex tb IIIC T78ºC Db, –20ºC < Tamb < +65ºC
NEC/CEC	• Cl I, II, III Div 1. Groups ABCDEFG, T6 • Cl I, Zn 1 AEx/Ex db IIC T6 Gb • Cl II, Zn 21 AEx/Ex tb IIIC T78ºC Db • Cl I, II, III Div 2, Groups ABCDEFG, T6/T5** • –20ºC < Tamb < +65ºC

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

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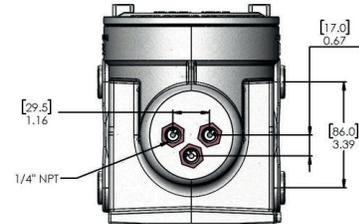
Aluminum Version

[142.0]
Ø5.59

3/4" NPT

[205.5]
8.09

[251.7]
* 9.91

[82.0]
Ø3.23

*8.96 [227.6] WEATHERPROOF VERSION

[10.0]
Ø0.39

[86.3]
3.40

[132.5]
** 5.22

[110.2]
4.34

**4.27 [108.5] WEATHERPROOF VERSION

[178.1]
7.01

[12.0]
0.47

[17.0]
0.67

[29.5]
1.16

[86.0]
3.39

1/4" NPT

Stainless Steel Version

[140.0]
Ø5.51

3/4" NPT

[255.4]
* 10.06

[209.2]
8.24

[84.0]
Ø3.31
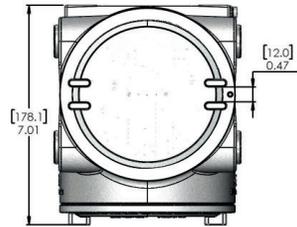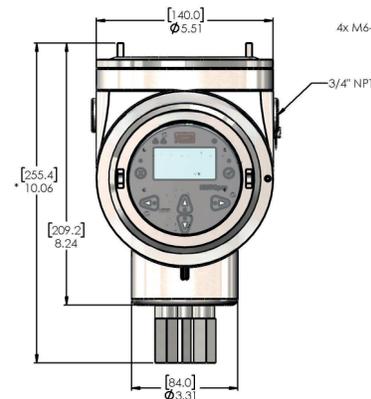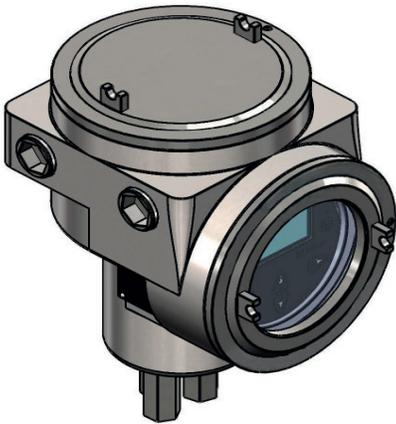
*9.11 [231.4] WEATHERPROOF VERSION

4x M6-6H ↓ 0.47[12.0]

[30.0]
1.18

[82.0]
3.23

[136.4]
5.37

[182.6]
** 7.19

**6.24 [158.5] WEATHERPROOF VERSION

[178.3]
7.02

[7.9]
0.31

[17.0]
0.67

[29.5]
1.16

1/4" NPT
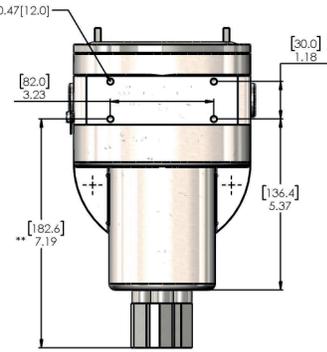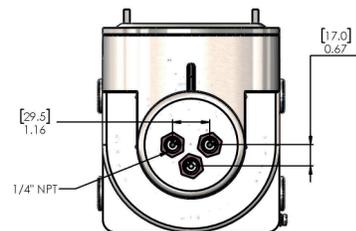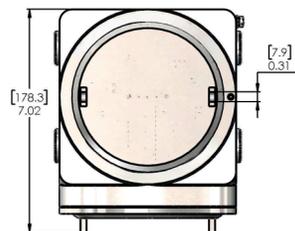
Order and calibration information

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

Analytical Performance, Software, and Specials

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.

XMTCpro	2	1	4	0	7	9	0	SIL	0

Panametrics

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