

InVue® NX148 Concentration Monitor

Process monitoring for in-line liquid chemical applications in a compact, integrated package

The InVue® NX148 concentration monitor with 148-connect software package delivers real-time information for point-of-use chemical blending, spiking, and dilution without process intrusion or interruption. The PC-based graphical user interface provides easy setup, field calibration, data collection, and analysis.

Integrated in a compact, ultra-high purity package, the NX148 concentration monitor delivers cost-effective yet high-performance concentration monitoring enabling greater process efficiency for BEOL, FEOL, and sub-fab delivery chemical systems. This increased window of visibility equates to tight process control increasing wafer throughput, reducing chemical costs, and decreasing scrap.

The NX148 monitor allows users to:

- Precisely monitor and control chemical dilution and blending in real time
- Increase chemical bath lifetime, reducing chemical usage and disposal costs
- Monitor for chemical excursions
- Have access to real-time data for process optimization
- Replace alternative outdated or expensive monitoring technologies



Integration Flexibility

The NX148 concentration monitor uses an innovative refractive index technology packaged in a compact configuration. The measurement is based on the refraction of light in the process fluid, resulting in an accurate, safe, and repeatable means of measuring liquid concentration. The in-line sensor accurately measures the index of refraction and the temperature of the process fluid. This information is then used to calculate the process fluid's concentration. The NX148 monitor includes three outputs, index of refraction, temperature, and concentration via the interface cable. Outputs are 4 to 20 mA and RS-485 signals that can be used as inputs to process controllers. The Modbus®-compliant architecture supports an RS-485 long distance communication interface for programmable logic controllers or factory host. It includes an RS-485-to-USB converter.

Configurations are available with Flaretek®, PrimeLock®, and Super 300 Type Pillar® connections.

FEATURES AND BENEFITS

Measurement based on Index of Refraction (IoR)	<p>Superior accuracy and response times</p> <p>Large dynamic range</p> <p>Achieves accuracy more rapidly than alternate technologies</p> <p>Measures concentration accurately and repeatedly even with nonconductive fluids</p>
Integrated, small footprint installed directly in line with the process chemicals	<p>Method is noninvasive; in line means no interruption of process and no delay in measurement</p> <p>Easily integrated into new tools or existing tools</p>
148-connect software, DDU	<p>GUI and software simplify programming and use</p> <p>Software enable on-site calibration in minutes, reducing cost of ownership</p> <p>Provides real-time refractive index, concentration and temperature</p> <p>Supports RS-485 long distance communication as well as 4-20 mA</p>
Sensor has no consumable parts	<p>Fewer replacement parts means minimal hardware maintenance</p>

SPECIFICATIONS

Sensor materials of construction:	Flow cell	PTFE*
	Optical window	Semiconductor-grade sapphire*
	Cable	Polyphenylene sulfide (PPS)
	Bonnet, enclosure	Polypropylene (PP)
	Mounting plate	PVDF
Sensor operating parameters:	Fluid pressure rating	0–5.5 bar (0–80 psig)
	Fluid temperature rating	5°–50°C (41°–122°F)
	Process fluid index of refraction range	1.28000 to 1.40000**
Machine interface:	4-20 mA RS-485 (Modbus-compliant)	Analog, scalable resolution
		Digital over serial***
Software:	Windows®-based interface for user setup, calibration, monitoring and data logging of up to four sensors. System requirements: Windows 98 or higher, 128+MB RAM, CD-ROM.	

*Wetted components

**For fluids with an RI above 1.40000, please consult your local Entegris support person.

***Full digital protocol available to replicate service software 148-connect

PERFORMANCE DATA

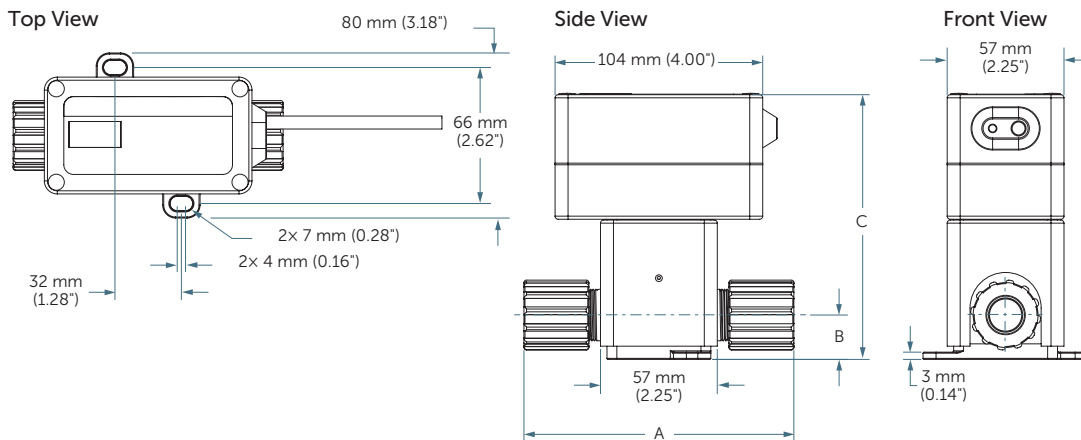
The following performance data is based on operation within the calibrated range, $\pm 0.3\%$ of the refractive index calibration point or $\pm 0.3\%$ of concentration.*

Criteria	Value
Refractive index accuracy (Refractive Index Units, RIU):	$\pm 2 \times 10^{-4}$
Refractive index repeatability:	2.5×10^{-5}
Refractive index resolution:	1.0×10^{-5}
Concentration accuracy:	$\pm 0.2 \text{ wt}\%^{**}$
Concentration repeatability:	$\pm 0.025 \text{ wt}\%$
Concentration resolution:	Chemical dependent 0.01 wt% or better
Response time:	1.2 sec standard, no rolling averaging enabled, rolling averaging is user-configurable

*The fluid temperature compensation coefficient (TCC) is shipped factory set using room temperature DI water.

**Based on measuring ethylene glycol at 0.345 bar (5 psig) with a maximum variation of 0.017 bar ($\pm 0.25 \text{ psig}$) and a temperature of $20^\circ\text{C} \pm 0.1^\circ\text{C}$ ($68^\circ\text{F} \pm 0.18^\circ\text{F}$).

DIMENSIONS

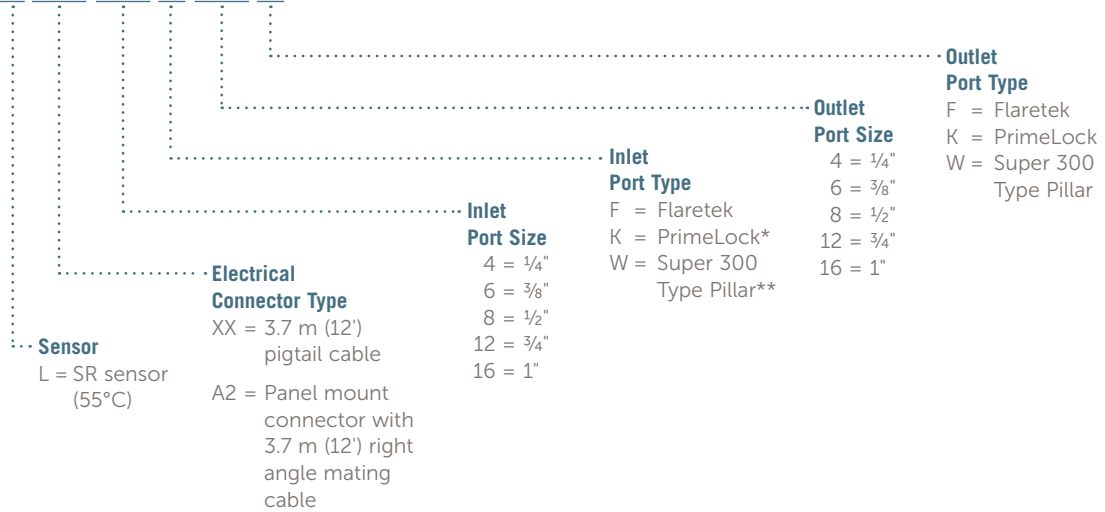


Port Connection	A	B	C
1/4" Flaretek	113.3 mm (4.46")	21.6 mm (0.85")	123.2 mm (4.85")
1/4" Pillar S300	96.5 mm (3.80")	21.6 mm (0.85")	123.2 mm (4.85")
3/8" Flaretek	118.9 mm (4.68")	20.1 mm (0.79")	123.2 mm (4.85")
1/2" Flaretek	122.9 mm (4.84")	19.8 mm (0.78")	124.5 mm (4.90")
1/2" PrimeLock	118.4 mm (4.66")	24.9 mm (0.98")	129.5 mm (5.10")
3/4" Flaretek	132.1 mm (5.20")	21.8 mm (0.86")	129.5 mm (5.10")
3/4" Pillar S300	130.3 mm (5.13")	29.5 mm (1.16")	137.2 mm (5.40")
1" Flaretek	144.3 mm (5.68")	26.2 mm (1.03")	137.2 mm (5.40")
1" PrimeLock	143.8 mm (5.66")	32.5 mm (1.28")	143.5 mm (5.65")

ORDERING INFORMATION

InVue NX148 Concentration Monitor: part number

NPAAA L XX



*Only available in 1/2" and 1" inlet port sizes

**Only available in 1/4" and 3/4" inlet port sizes

Note: For configurations not listed, please contact Entegris.

FOR MORE INFORMATION

Please call your Regional Customer Service Center today to learn what Entegris can do for you. Visit entegris.com and select the [Contact Us](#) link to find the customer service center nearest you.

TERMS AND CONDITIONS OF SALE

All purchases are subject to Entegris' Terms and Conditions of Sale. To view and print this information, visit entegris.com and select the [Terms & Conditions](#) link in the footer.



Corporate Headquarters

129 Concord Road
Billerica, MA 01821
USA

Customer Service

Tel +1 952 556 4181
Fax +1 952 556 8022
Toll Free 800 394 4083

Entegris®, the Entegris Rings Design®, and other product names are trademarks of Entegris, Inc. as listed on entegris.com/trademarks. All third-party product names, logos, and company names are trademarks or registered trademarks of their respective owners. Use of them does not imply any affiliation, sponsorship, or endorsement by the trademark owner.

©2014-2020 Entegris, Inc. | All rights reserved. | Printed in the USA | 3965-7543ENT-0720