

MIRCHIPX by mirSense



- High thermal stability
- Very Low drift
- High-performance smart investment
- Mechanical robustness
- Easy and cheap maintenance
- Long time stability and MTBF

QCL-PAS TECHNOLOGY

Our QCL-based photoacoustic detection technology delivers performance levels comparable to high-end analysers such as OF-CEAS or chemiluminescence systems, while maintaining the robustness and simplicity of photoacoustic sensing.

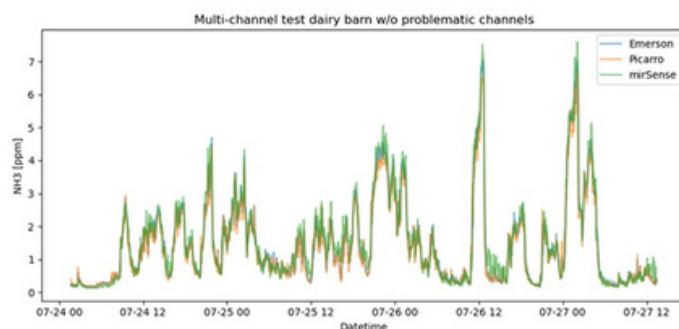
By mastering the entire value chain, MirSense offers the MIRCHIP X — an affordable, compact, and highly sensitive NH₃ sensing solution that's easy to integrate across a wide range of industrial environments.

Combining the precision, selectivity, and stability of Quantum Cascade Lasers with the zero-background advantage of photoacoustics, the MIRCHIP X achieves real-time sub-ppm detection without complex optics or long absorption paths.

Our patented MirSense detection cell ensures long-term stability, field reliability, low drift, and ease of use — making it a powerful choice for demanding applications.

Applications

- Determination of atmospheric nitrogen sources, sinks, and transport.
- Agricultural and biosphere exchange.
- Mobile measurements aboard aircraft, marine, and ground-based platforms.
- Long-term unattended operation in remote field sites.



MirchipX benchmarking, against other QCL technologies, monitoring the NH₃ levels in a dairy barn

PERFORMANCES*

Parameter	Unit	Value / Range	
Principle of Measurement	-	PhotoAcoustic Spectroscopy (PAS)	
Target Gas	-	NH ₃	
Measuring Range	ppm	0 – 40 (Linear Range=LR)	0 – 100 (Full Scale=FS)
Limit Of Detection 3 σ	ppb	≤ 25 with 10 s averaging time	
Response Time (T10-90)	s	Down to 10 (1l/min 1s averaging)	
Laser Source		Quantum Cascade Laser	
Precision σ	ppb	Max 1% of read value or LOD/3	
Accuracy	% of FS	±1	

INTEGRATION

Parameter	Unit	Value / Range
Dimensions of sensor module (LxWxH)	mm	150 x 100 x 75
Approx. weight sensor module	g	1500
Fluid Connectors	4 mm	Push-in
Gas Temperature Limitation	°C	0 to +85, non-condensing
Gas Pressure Limitation	Bar	0.5 to 2 bar absolute
Gas flow (min - max)	ml / min	10 - 1'000
Connector type Interface	-	DB15
Physical Standard	-	Serial RS 232
Communication protocol	-	MODBUS RTU protocol
Voltage supply (min. – max)	VDC	12 - 24 (max. current 4A)
Power consumption in operation	W	Between 10 and 50, can be adjusted depending on the need for quick startup
Ambient Temperature	°C	0 - 50

*Reference conditions (if not otherwise specified): operating temperature 20°C, pressure 1013 hPa and humidity 50% r.H., power supply 12 - 24 VDC, gas matrix: Ambient Air