

# ANDROS 6500 AND ANDROS 6520

High-performance OEM gas analyzers for vehicle diagnostics, inspection, and maintenance.



The Andros® 6500 and 6520 OEM gas modules achieve high reliability through simplicity of design and implementation. Andros Non-Dispersive Infrared (NDIR) gas modules are inherently reliable because there are no moving parts in the optical path. Unlike alternative analyzers that require motors, gratings, chopperwheels, and/or other moving components with limited useful lives, Andros gas analyzers use a pulsed infrared source to achieve high accuracy with high reliability.

The system measures gases, communicates with the host via RS232 or USB, and allows user-defined TTL outputs, as well as analog and tachometer inputs which can be integrated into the data output stream for user convenience.

## ANDROS 6500

- Measure up to five gases: three via NDIR and two via plug-in sensors
- RS232 or USB outputs
- DC pump and solenoid valve drivers
- Two analog-to-digital inputs
- Differential pressure transducer for low flow/leak detection

## ANDROS 6520

- Same as Andros 6500 but without the differential pressure transducer

### OVERVIEW

#### Highly Accurate Calibration

Each 6500 series system is individually calibrated for operation from 0 to 50°C over the entire range of specified concentrations. The results of this intensive calibration process are stored within each system, providing the most accurate analysis possible. This attention to detail provides a highly accurate factory calibration of the NDIR analyzer. In fact, this factory calibration is so accurate and stable that many of our customers have chosen to never re-calibrate their Andros analyzers.

The Andros 6500 is designed to meet and exceed both ISO 3930/OIML R99, Class 0, and BAR 97 specifications.

#### High Stability: Rapid Warm-Up

The enhanced optics and electronics of the 6500 has virtually eliminated zero drift. Prior to this breakthrough, frequent zeroing of an analyzer was required during the first half-hour of operation for sensitive measurements. Now, with just two “zeroes” during the first three minutes, the 6500 meets all accuracy specifications.

#### Unique Optical Architecture

The optics of the 6500 series incorporates precision beam focusing architecture. A concentrated infrared beam generated from a proprietary emitter passes through a precision lens into a cleanable or replaceable gold-lined sample cell that the gas of interest is flowing through. The beam then passes into an optical assembly of highly specialized filters and a unique multi-element detector.

#### Comprehensive Software Architecture

Embedded dual protocol software makes upgrading older products utilizing models 6230, 6231, 6241, 6231A, or 6241A easy.

All calculations are performed in real-time for transmission to your host system. Control of key system devices such as gas flow solenoids and a sampling pump is provided with the ability to accept commands from the host.

#### For Current Andros Customers: A Painless Upgrade

Now it will be easy to keep older BAR 90 and OIML Class 1 equipment up to-date with the new BAR 97, ISO3930/OIML R99, Class 0 certified Andros 6500. Simply install the Andros 6500 into your existing Andros based equipment.

The 6500 not only serves as a drop in replacement for the Model 6602, but with minor mounting modifications, it can replace any of the Model 62XX product line.

No need to scrap old software and hardware when only the NDIR system needs replacing. (While the connectors and software are identical to the older systems, it is possible that a change in wiring lengths or routing may be required depending on your original design).

TECHNICAL DATA

Performance Specifications

Response Time	Response times are specified at a sample flow rate of 1 liter per minute through the 6500 sample cell
Data Refresh Rate	1 second
Warm-up Time	30 seconds ready, 3 minutes usable; 30 minutes to full performance
Host Communication	USB or RS232C asynchronous serial; 19,200 bps or 9600 bps (default is 19,200)

Electrical Specifications

Input Power	+12 V DC nominal (+9 to +16)
Power Consumption	1.8 W average @ 12 VDC

Physical Characteristics

Dimensions (L x W x H)	19.18 x 7.37 x 5.03 cm (7.55" x 2.90" x 1.98")
Weight	0.3 kg (0.8 lb)

Environmental Specifications

Operating Temperature Range	0 to 70°C (32 to 158°F), accuracy not specified > 50°C
Temperature Compensation	Incl. automatically for temp. change > 4°C for O <sub>2</sub>
Operating Humidity	To 95% RH (Non-condensing)
Operating Altitude	-300 to 3000 m (-1000 to 10,000 ft)

Standard freons available: R22, R134A, R404A, R407C, R410A, R507, R422A, R422D

SPECIFICATIONS

Measurement Method	Gas	Resolution	Measurement Range	Accuracy	Precision	Response Time
NDIR (Non-Dispersive Infrared) on board	HC [as either n-Hexane or Propane]	1 ppm	1 to 2000 ppm	±4 ppm abs. or ±3% rel.	±4 ppm abs. or ±3% rel.	T <sub>90</sub> and T <sub>10</sub> < 3 Seconds
			2001 to 15,000 ppm	±5% rel.		
			15,001 to 30,000 ppm	±8% rel.		
	CO	0.001%	0.001% to 10.000%	±0.02% abs. or ±3% rel.	±0.02% abs. or ±3% rel.	
			10.001% to 15.000%	±5% rel.		
	CO <sub>2</sub>	0.01%	0.01% to 16.00%	±0.3% abs. or ±3% rel.	±0.30% abs. or ±3% rel.	
16.01% to 20.00%			±5% rel.			
Electrochemical sensors via connector	NO <sub>x</sub>	1 ppm	0 to 4000 ppm	±25 ppm abs. or ±4% rel.	±25 ppm abs. or ±4% rel.	T <sub>90</sub> < 5 Seconds T <sub>10</sub> < 6 Seconds
			4001 to 5000 ppm	±5% rel.		
	O <sub>2</sub>	0.01%	0.01 to 25.00%	±0.10% abs. or ±3% rel.	±0.10% abs. or ±3% rel.	40 Seconds



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## ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

AE's power solutions enable customer innovation in complex semiconductor and industrial thin film plasma manufacturing processes, demanding high and low voltage applications, and temperature-critical thermal processes.

With deep applications know-how and responsive service and support across the globe, AE builds collaborative partnerships to meet rapid technological developments, propel growth for its customers and power the future of technology.

PRECISION | POWER | PERFORMANCE

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