# AMI-Sync

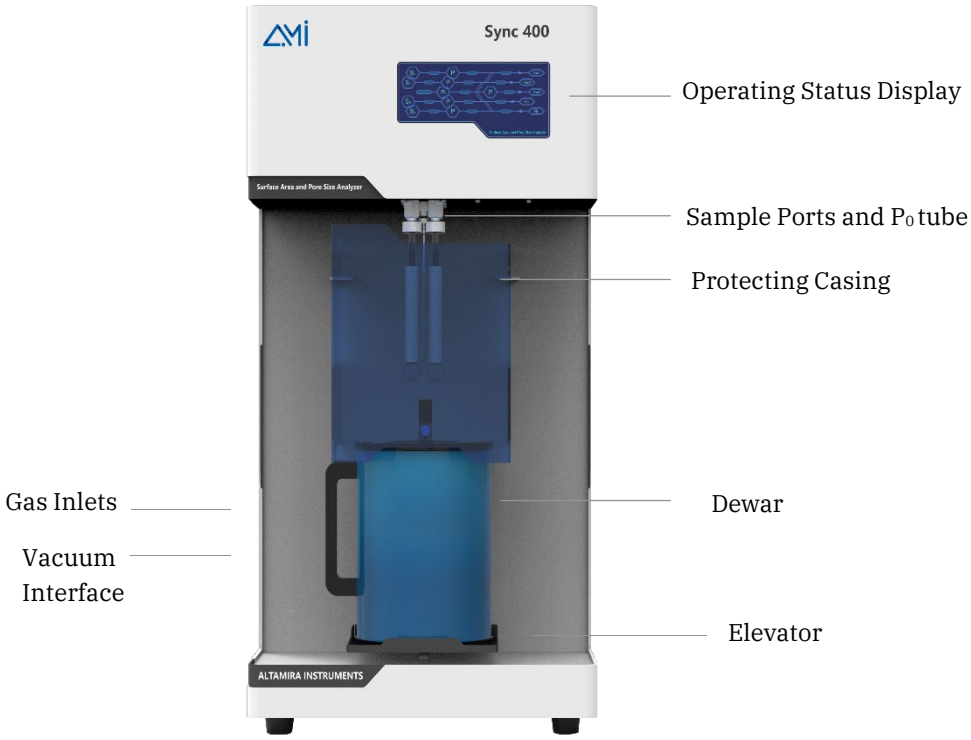
## High-Throughput Surface Area and Porosity Analyzer

## INTRODUCTION

*"Accurate, Accessible, Advanced Gas Sorption"*

The **AMI-Sync** Series is a fully automated, high-performance line of gas physisorption analyzers designed for rapid and accurate surface area and pore size characterization of porous and non-porous materials. Whether analyzing catalysts, zeolites, MOFs, or advanced battery materials, the **AMI-Sync** Series delivers robust vacuum-volumetric measurement systems backed by intuitive software and comprehensive support for both standard and advanced adsorption techniques.

Available in flexible 1-, 2-, or 4-station configurations, the **AMI-Sync** Series features a common $P_0$ measuring transducer and supports simultaneous saturation vapor pressure measurements. Each unit is built for high-throughput performance, with options for a dedicated pressure transducer per station to maximize speed, or a shared sensor setup for cost efficiency. A single large-volume dewar supports multiple stations simultaneously, offering an ideal solution for space-conscious laboratories with demanding workloads.




***AMI-Sync 400** Series Instrument*

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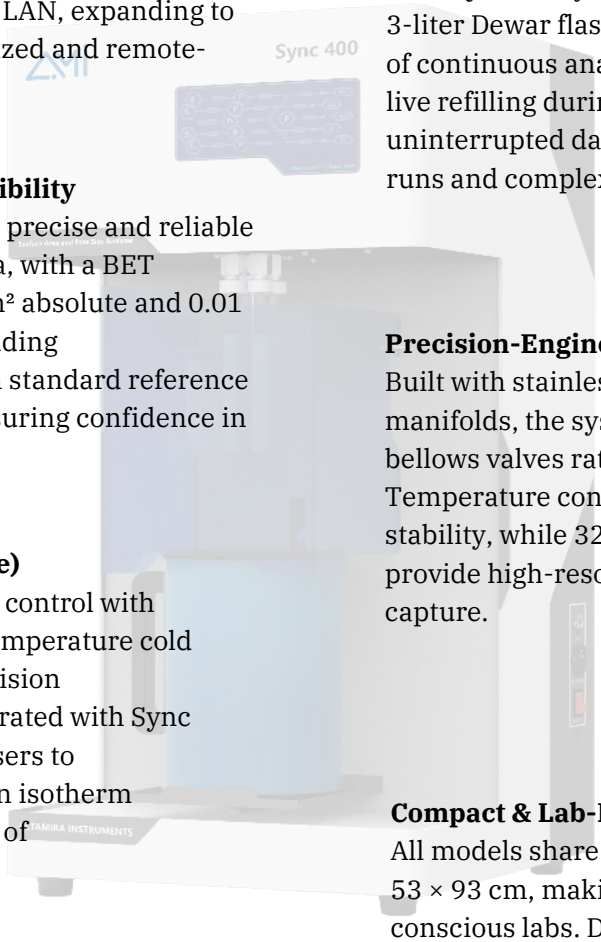
# KEY FEATURES

**Customizable Configuration for Throughput Analysis Needs**
The **AMI-Sync** series offers a scalable solution with up to four high-resolution measurement stations for precise pore size and surface area analysis. For increased throughput, additional instruments can be linked via LAN, expanding to 12 analysis ports with centralized and remote-control capabilities.

**High Sensitivity & Reproducibility**
The **AMI-Sync** Series delivers precise and reliable surface area and porosity data, with a BET detection limit as low as 0.1 m² absolute and 0.01 m²/g specific. It offers outstanding reproducibility—within 1% on standard reference materials like BAM P115—ensuring confidence in repeated analyses.

**CryoTune™ (Optional Feature)**
Unlock advanced temperature control with CryoTune™**,** an optional low-temperature cold bath system designed for precision adsorption studies. Fully integrated with Sync software, CryoTune™ allows users to effortlessly conduct adsorption isotherm measurements across a range of temperatures.

**Optimized Manifold Contamination Control**
A two-step filtration system protects the manifold from particulates reducing contamination risks and extending instrument life. Combined with stainless steel construction and high-cycle bellows valves, the system ensures clean, reliable operation even in high-throughput environments.




**Extended Analysis Duration**
**AMI-Sync** analyzers are equipped with large 3-liter Dewar flasks that allow over 90 hours of continuous analysis. The system supports live refilling during experiments, ensuring uninterrupted data collection during long runs and complex isotherm acquisitions.

**Precision-Engineered Hardware**
Built with stainless steel and vacuum-brazed manifolds, the system features ultra-durable bellows valves rated for over 5 million cycles. Temperature control maintains ±0.05 °C stability, while 32-bit pressure sensors provide high-resolution, accurate data capture.

**Compact & Lab-Ready**
All models share a compact footprint of 51 × 53 × 93 cm, making them ideal for space-conscious labs. Despite their compact size, Sync analyzers are fully equipped for both research-grade and industrial applications, offering power, durability, and precision in one system.

## SOFTWARE

Sync Series analyzers are driven by a multilingual, user-friendly software suite that supports:

- **Control of up to 8 instruments from a single PC**
- **Built-in method libraries** for fast setup and repeatability
- **Customizable analysis profiles** with real-time system feedback
- **Automated leak detection and guided maintenance routines**
- **Visual instrument status interface** for monitoring analysis in progress

Additional capabilities include void volume correction, supercritical $P_0$ handling, temperature control with CryoTune, and compatibility with up to 6 gases per station.

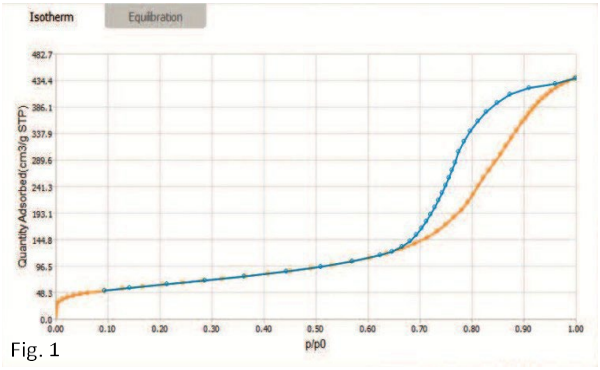


Fig. 1

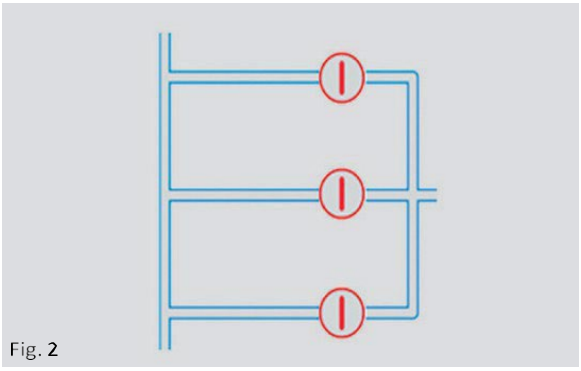


Fig. 2

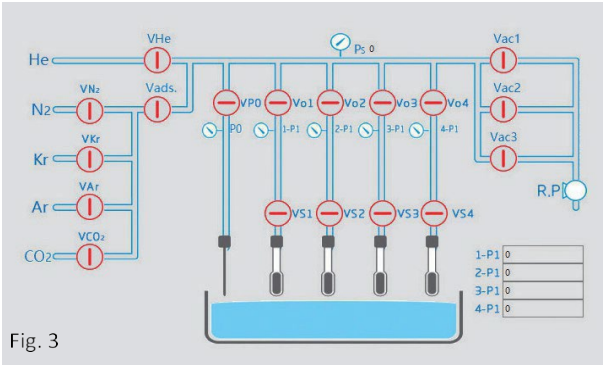


Fig. 3

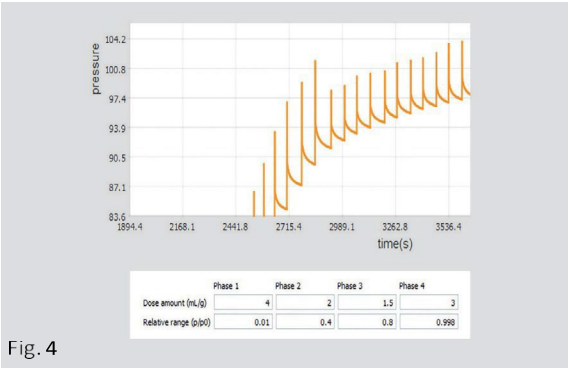


Fig. 4

*Figure 1: Isotherm*
*Figure 2: 3-stage evacuation to prevent sample fluidization*
*Figure 3: Main software screen*
*Figure 4: Interactive software screen*

## *Data Analysis Capabilities:*

- ✓ Isothermal absorption and desorption curve
- ✓ BET specific surface area (single and multiple point)
- ✓ Langmuir surface area
- ✓ Statistical thickness surface area (STSA)
- ✓ HK pore size analysis
- ✓ SF pore size analysis
- ✓ NLDFT pore size distribution
- ✓ Total pore volume
- ✓ t-plot analysis

# SPECIFICATIONS

| **Model** | **AMI-Sync** | | | | |
|---|---|---|---|---|---|
| **Configurations** | **110** | **210** | **220** | **420** | **440** |
| **Analysis Ports** | 1 | 2 | 2 | 4 | 4 |
| **$P_0$ Transducer** | 1 | 1 | 1 | 1 | 1 |
| **Analysis Pressure Transducer** | 1 | 1 | 2 | 2 | 4 |
| **Pressure Transducer** | 1000 torr | | | | |
| **Pressure Transducer Accuracy and Resolution** | Accuracy: 0.05% F.S., Resolution: 0.0005% F.S | | | | |
| **Specific Surface Area** | ≥ 0.01 $m^2/g$, test repeatability: RSD ≤ ±1.0% | | | | |
| **Pore Size Range** | .35*-500 nm, test repeatability: ≤ ±0.02 nm (*Achieved with $CO_2$) | | | | |
| **Pore Volume** | ≥ 0.0001 $cm^3/g$ | | | | |
| **Pump** | 1 mechanical pump (ultimate vacuum 10-1 Pa; minimal 7.5 x $10^{-4}$ torr) | | | | |
| **$P/P_0$ Range** | $10^{-4}$ - 0.998 | | | | |
| **Adsorbates** | $N_2$, $CO_2$, Ar, $H_2$, $O_2$, CO, $CH_4$, etc. | | | | |
| **Dimensions** | 51 x 53 x 93 cm (16.1 x 20.8 x 36.6 inches) All same dimensional size | | | | |
| **Weight** | 45 kg \| 99 pounds (maximum depending on configuration) | | | | |
| **Power Requirements** | 100-240 VAC, 50/60 Hz, maximum power 300 W | | | | |