

# ProcessLab ADI 2045PL



Robust at-line analyzer for process analysis

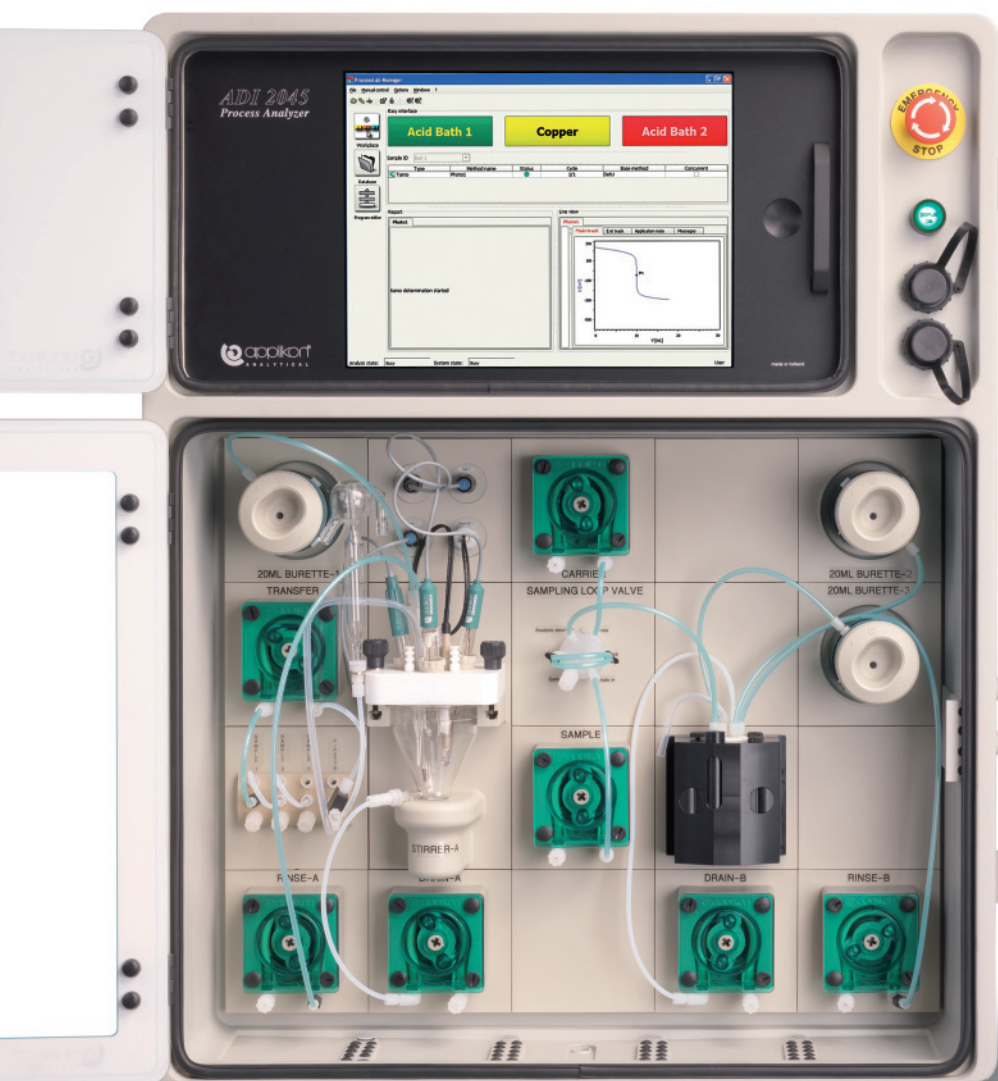
# ProcessLab ADI 2045PL – the innovative solution for routine analysis in production

02

The ProcessLab ADI 2045PL is by far the most robust routine system for at-line ion analysis on the production floor and in control Labs. Metrohm Applikon's 40 years experience with on-line analysis resulted in a new system for custom made at-line process analysis. The ProcessLab ADI 2045PL guarantees the highest level of reliable analytical results. The new additional ProcessLab Manager software offers a user-friendly interface in combination with the **tiamo**™ laboratory software.

## On-line or at-line?

The infrastructure and costs to facilitate on-line analysis can be high especially when multiple sampling points are to be considered. Difficult sampling and complicated sample preparation can also be limiting factors to connect the analyzer on-line. In cases like this, installation of a ProcessLab ADI 2045PL at-line analyzer can be a very cost-efficient solution: Samples are taken manually at each sampling point, fed into the ProcessLab ADI 2045PL (manually or by means of an autosampler), and automatically analyzed. In this way different samples from various process stages can be cost-efficiently analyzed on a single system.





## The ProcessLab ADI 2045PL offers ...

- simple operation due to graphical user interface
- robust hardware IP66/NEMA 4
- complete separation of wet part and electronics
- modular and maximum flexibility for every application
- Touch Screen: Industrial PC with 15" TFT
- ethernet TCP/IP Network for remote control and data storage
- 20 wet parts for maximum space of analytical modules
- leak and level detection for reagent and waste containers
- analog outputs/inputs for results and process control
- USB connection (external/internal) for storage and method transfer



## Analysis methods – versatility at your fingertips

04

The ProcessLab ADI 2045PL is programmed for one or more of the following methods and adapted to specific analysis requirements.

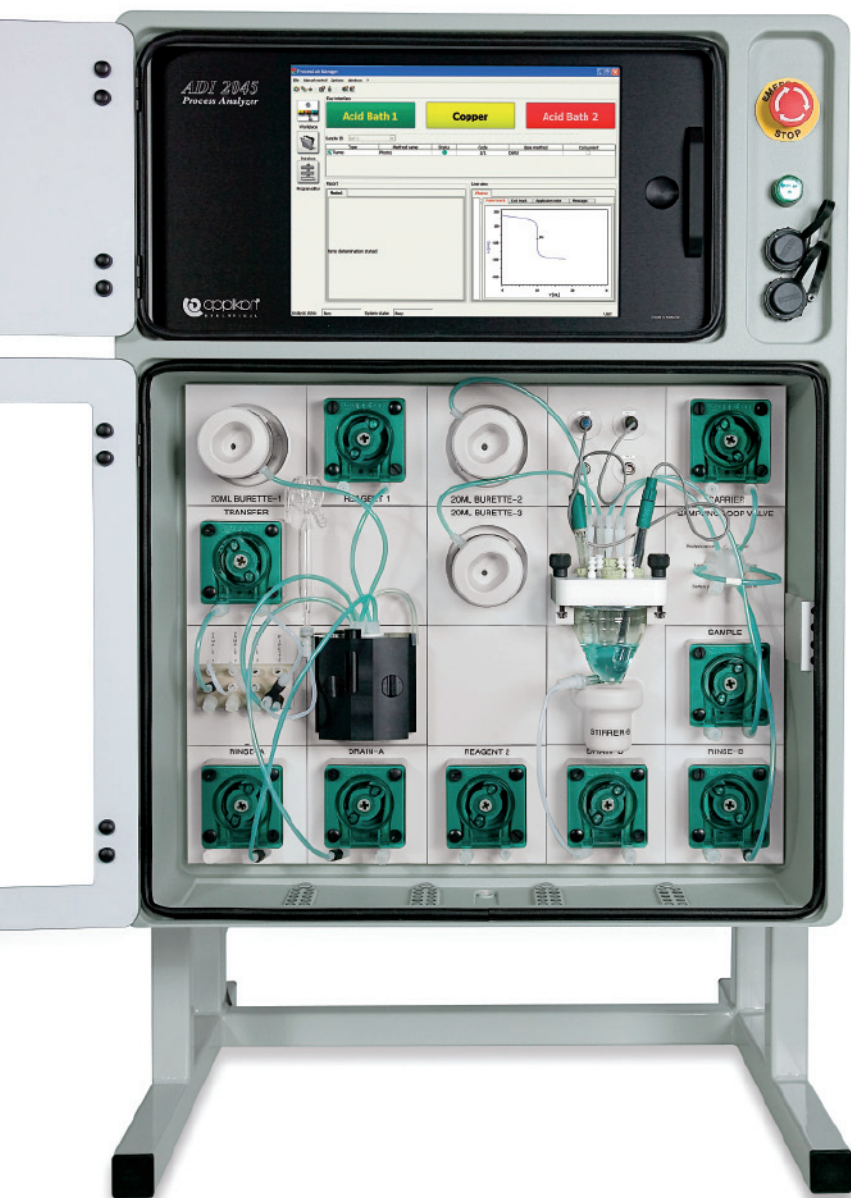
- Titration for a broad range of applications
- Karl Fischer titration for water determination (oil, solvents, glycol, ...)
- Photometry for water quality analysis & various plating solutions
- Standard addition for ion specific analysis that uses Ion Selective Electrodes
- Direct measurement for measuring physical parameters such as pH, conductivity and temperature

Moreover, data from third-party devices such as

- Density
- Temperature
- Flow, turbidity
- Conductivity, etc.

can be imported through the analog input channels for correcting results and providing added monitoring value.

The capability to choose a combination of methods means that in most cases a single ProcessLab ADI 2045PL will fulfil all analysis requirements. Furthermore, the option for simultaneous analysis to increase response times makes the ProcessLab ADI 2045PL an even more powerful at-line analyzer.





## Examples of typical applications

Thanks to Metrohm's many years of experience in the field of ion analysis, we are able to measure numerous analytical parameters, of which the following are particularly important in process analysis:

- pH value
- Conductivity
- Redox potential
- Acid content
- Free and total alkalinity
- Water hardness
- Phosphates
- Chloride
- Chlorine
- Ammonia
- Nitrite
- Fe, Cu, Ni, Zn
- Na, Ca, F (with ISE)
- Free and total SO<sub>2</sub>
- Sulfate
- H<sub>2</sub>S/mercaptans
- Hydrogen peroxide
- Free fatty acids
- Surfactants
- Water content
- Organic additives (CVS)

All analytical methods that are already used in the lab can easily be transferred to process analysis.

As a result of the high flexibility of the individual modules, the ProcessLab ADI 2045PL is highly versatile. Typical application fields are listed below:

### Etching baths in the steel industry

Determination of the content of acids and metals in etching baths.

### Semiconductor / Solar

Determination of mixed acid etchants

### Baths in the electroplating industry

Typical parameters in electroplating baths including the cleaning and degreasing baths used for pretreatment.

### Phosphating baths in the automobile industry

All the important parameters for monitoring a complete Phosphating plant.

### Process baths in the paper industry

Parameters in the cooking liquor or the so-called white, green or black liquors in the paper industry.

### Parameters in the food industry

Important parameters for the quality control of food-stuffs, for example in instant soups or fruit juices.

### Applications for automated sample preparation

For example special projects requiring liquid handling for automatic dilution, extraction, and filtration.

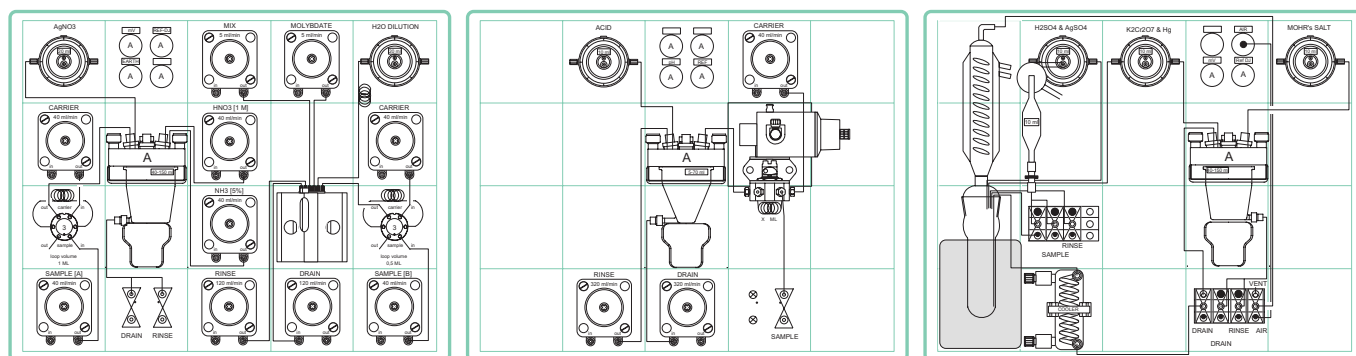


## Modularity for maximum flexibility

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The ProcessLab ADI 2045PL uses high-quality Metrohm analysis modules. In combination with Applikon's experience in process control instrumentation this results in an at-line analyzer that performs in the most difficult envi-

ronments. The industrial housing separates the electronics from the wet part. Any combination of burettes, pumps, vessels, loops, etc. is possible, enabling hundreds of functional layouts.



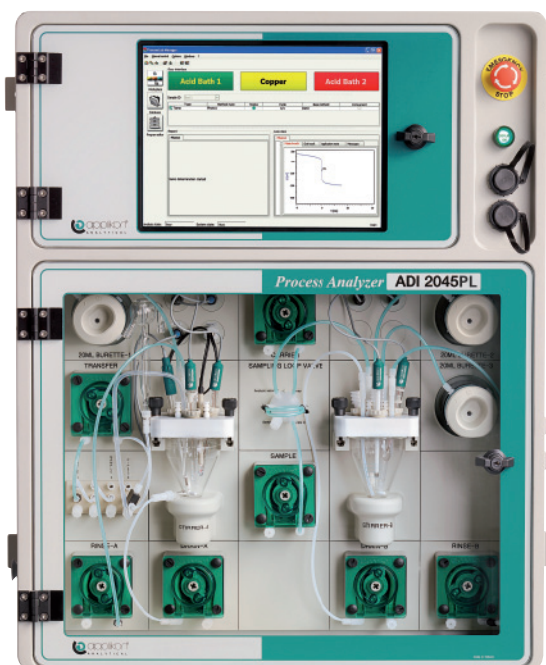
Examples of possible layouts for the wet-chemistry part of the analyzer



## Countless combinations possible

The ProcessLab ADI 2045PL is set up according to the user's specific requirements. Each analysis module contains exactly those components that are required for the analysis to be carried out. A wide range of analytical systems can be configured by the combination of several

analysis modules. This results in simply structured and clearly laid-out analysis units. Sample introduction can be performed manually or more conveniently by means of a Sample Processor when higher throughput is required.



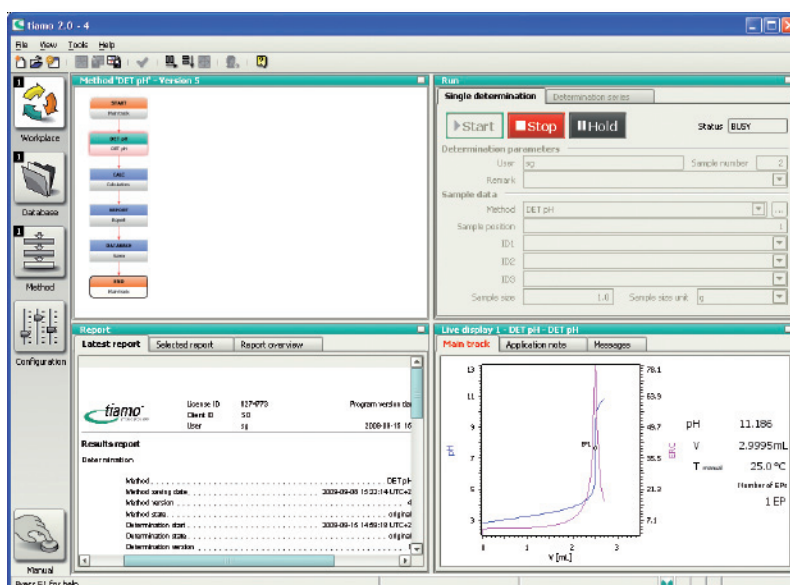
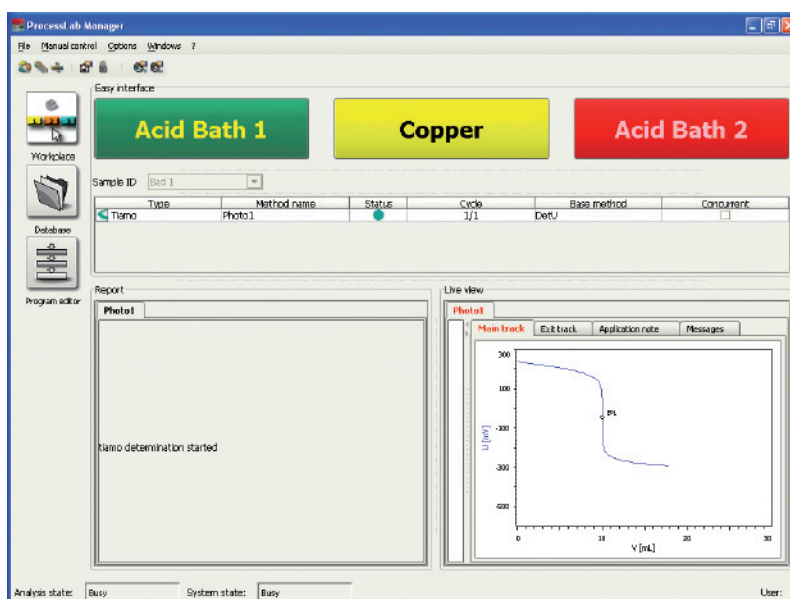
## The software – freely programmable and user-defined

08

The ProcessLab ADI 2045PL can be programmed and controlled in two different ways using either the well-proven **tiamo**™ software or the ProcessLab Manager (PLM) package. **tiamo**™ may be preferred by users already experienced with this software in the laboratory. The PLM software offers a user-defined flexible shell on top of **tiamo**™ for a very clear and easy-to-use graphical

interface. Users just have to press a Start button icon on the touch screen or use the Remote Start option to start the analysis.

The ProcessLab ADI 2045PL can also be remotely controlled using Teamviewersoftware via the Ethernet.

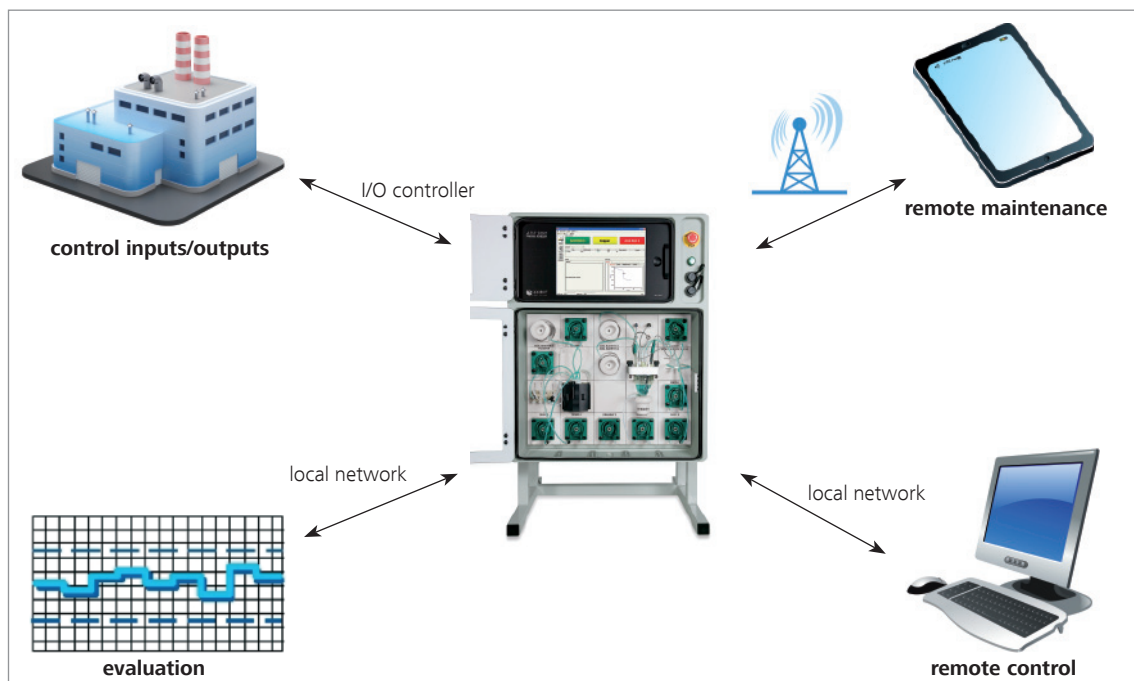




## Networking and process integration

The digital and analog input/output (I/O) components available allow the system to be very easily integrated in the process environment. In this way the system can react to different input signals and commands, for example automatically measure different parameters depending on the sample, trigger an alarm if limits are exceeded or transmit measured values using 4-20 mA analog output signals.

ProcessLab ADI 2045PL can also be easily integrated in a local network or be fully operated by remote control. Analysis data can be exported to any LIMS or made available to a process control system.



Comprehensive communication possibilities

# Specifications ProcessLab ADI 2045PL

10

Applied Analysis Methods	
ADI 2045PL	Titration Karl Fischer titration Photometry Standard addition with ion-selective electrode Direct measurement of pH, mV, conductivity, temperature

Sampling	Batchwise
Frequency	Programmable
Streams	Multiple
Volume	0.1-100 ml
Temperature	5-90 °C / 41-194 F
Pressure	0-4 bar / 0-72 PSI (without preconditioning)

Connectivity	
Data Communication	Ethernet: TCP/IP network serial interface, USB 2.0
Analog Output	4 x 4-20 mA per I/O terminal (multiple I/O terminals possible)
Analog Input	2 x 4-20 mA or 0-2 V per I/O terminal (multiple I/O terminals possible)
Digital Output	4 x 24 VDC per I/O terminal or 2 x 12-230 VAC per I/O terminal (multiple I/O terminals possible)
Relay Output	2 x Potential free relay per I/O terminal (multiple I/O terminals possible)
Digital Input	4 x 24 VDC per I/O terminal (multiple I/O terminals possible)

General	
Power Supply	100-120 / 200-240 V / 690 VA / 50...60 Hz
Housing Material	Standard: «electronics cabinet»: zinc plated steel, epoxy coated «Wet Part» door: polystyrene, epoxy coated Optional: stainless steel SS316
Ingress Protection	IP66/NEMA 4
Ambient Temperature	5-40 °C
Dimensions	H x W x D 870 x 700 x 510 mm
Weight	~75 kg
Accessibility	Passcode protected



# Any doubts if on-line is the way to go?

## Start at-line and upgrade to on-line

The ProcessLab ADI 2045PL can be easily upgraded to an Process Analyzer ADI 2045TI for on-line analysis. Simply start with the ProcessLab ADI 2045PL at-line and upgrade to on-line to gain the maximum on savings with complete process automation. Installation of software and a by-pass connection to the process is all that is required to start analyzing on-line. Downgrading any Metrohm Applikon on-line analyzer to an at-line system is also possible.

## Selection of most commonly used options

- Level detectors
- Reagent cabinet with level detectors
- Ethernet connection
- Pneumatic Actuators (valves, ...)
- Digital and analog inputs and outputs

Please contact your local Metrohm distributor for the precise configuration and setup of the ProcessLab ADI 2045PL. Thanks to the modularity, the system allows on-site adaptation to any individual requirements.



Processlab ADI 2045PL with stand on a table



For further information, consult  
[www.metrohm-applikon.com](http://www.metrohm-applikon.com)



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