

# AIR MEASUREMENT WITH SYLVAC

Precision and reproducibility



1<sup>2</sup>  
3<sup>4</sup>

Digitalization



Automation



Energy saving

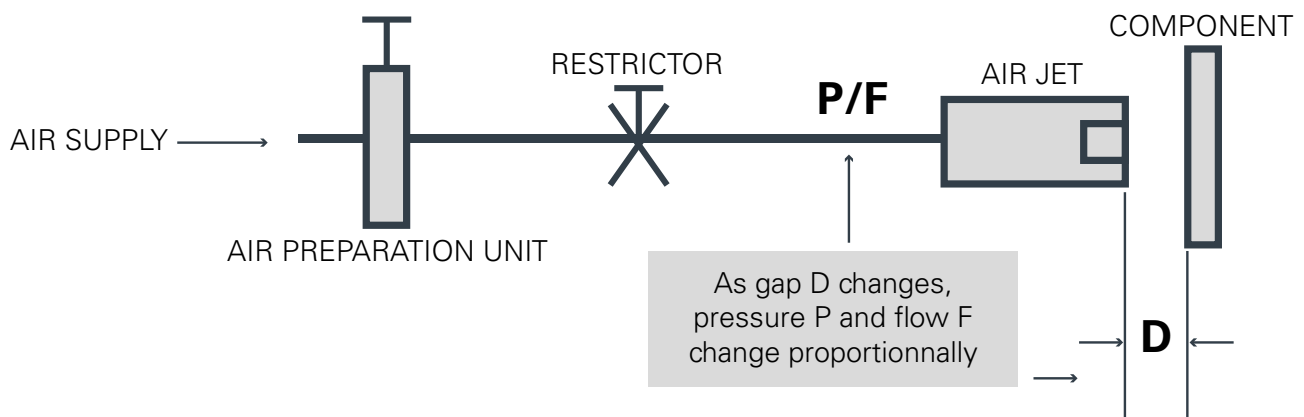
## Introduction

We are leading the charge in revolutionizing the industry by introducing smart solutions that digitalize and automate your existing and new air measuring stations. With our cutting-edge technology, you'll experience precision and reproducibility like never before. Don't miss out on this opportunity to stay ahead of the curve and join the new era of air measurement with Sylvac.

## About the technology

Air gaging is a non-contact measurement technique that uses compressed air to determine the dimensions and surface characteristics of a manufactured part. The gage works by directing a stream of compressed air onto the surface of the part, the sensing element of the gage detects changes in air pressure and converts them into an electrical signal, which is displayed on a display unit or software. Air gaging provides highly accurate measurements of the part's dimensions.

Our air gaging system offers unparalleled accuracy and repeatability, making it an ideal solution for any manufacturing or quality control process that requires precise measurements.



## Measuring Capabilities of Air Gaging Technology

Air gaging is particularly suitable for measuring features with tight tolerance. The smaller the range, the better repeatability, up to a few nanometers. A multitude of features can be measured by air: inside and outside diameters, but also many geometrical features such as taper, flatness, roundness, run-out, squareness, straightness, etc.

## Benefits

One of the key advantages of air gaging is its ability to provide highly accurate and repeatable measurements independently of the operator's positioning of the air gage within the component. This makes it a suitable choice for measuring critical dimensions in high-precision manufacturing applications.

Air gaging also offers the ability to simultaneously measure multiple diameters at different heights, providing a comprehensive measurement of the workpiece. This is particularly useful for components with complex internal features or those that are thin-walled or out-of-round.

To achieve accurate average internal diameter measurements, multiple air jets can be equally located around the circumference of the air gage. The number of jets used can vary, depending on the size of the component, and commonly ranges from four to six or more. This allows for averaging the size measurement, providing a more precise measurement than a single air jet.

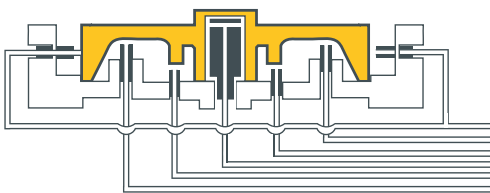
Furthermore, the piece being measured doesn't require cleaning prior to measurement, and this approach allows for multiple measurements to be taken on the same station, thereby saving valuable time for the operator.

Overall, air gaging is a precise and reliable technique that can be used to measure a wide range of dimensions as well as geometrical features making it a valuable tool in the manufacturing industry, particularly in the automotive, aerospace, and precision instrumentation fields.

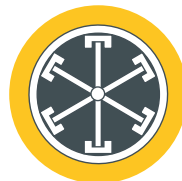
### INTERNAL DIAMETERS

### EXTERNAL DIAMETERS

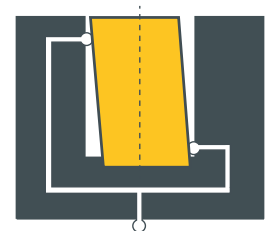
### GEOMETRICAL FEATURES



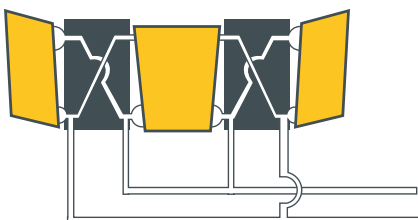
Multiple combined measurement



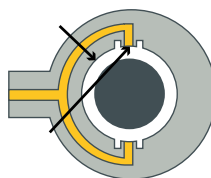
Average diameter



External squareness



Parallelism



Outside diameter



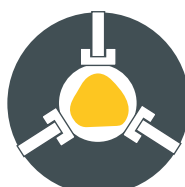
Internal squareness



Internal measurement multi-levels



Internal diameter



Roundness



Tapper



## Sylvac's Air Measurement Solutions

Introducing Sylvac's Air Measurement Solutions, the perfect upgrade for your air gaging system. Our display units, software and modules are designed to be compatible with almost all air gages on the market, regardless of the supplier. This means that you can continue using your existing air gaging system and air supply, while replacing your old air columns and units with our modern alternatives.

Our solutions allow for digitization and automation, providing advanced features that are not available on traditional air columns. With direct digital display of values, data export capabilities, and improved decision-making and monitoring capabilities, you can significantly enhance the accuracy and efficiency of your control stations.

### Benefits

- Digital reading up to 0.01 micron
- Easy to set-up
- Display unit and PC
- Maintenance free
- Suitable for automation
- Export, data traceability
- Compatible with all air gages
- Affordable
- Customized solution
- No periodic calibration required
- PLC compatible



### Application air measurement

Multiple levels air gage connected to modules MB-AG and to D400S.

# Display units

## D70A

D70A display unit is a smart, user-friendly device featuring a touch screen display. It offers the flexibility to connect one or two air gages, depending on the model, while offering advanced features such as:



**DATA TRANSFER BY USB TO PC, PLC OR SERVER**

**DISPLAY RESOLUTION UP TO 0.001 $\mu$ m**

**AIR PRESSURE CONTROL AND ALARM CALIBRATION**

**TEMPERATURE COMPENSATION**

**AIR CUT ENERGY SAVING CONTROL**

## TECHNICAL SPECIFICATIONS

Technical data	804-2074	804-2075
Type	1 input	2 inputs
Overall dimensions	140x105x111	
Weight	0.6	
Case	Aluminium	
Protection, according to IEC 60529	IP65	
Output data	USB / RS232	

## APPLICATIONS



Measurement on D70A - 1 input



Measurement on D70A - 2 inputs

## D400S

D400S is an advanced and multifunctional touchscreen display unit with the ability to connect up to 32 air gages via MB-AG modules.

One single compact unit can replace tens of traditional air columns. The many possibilities of integration and connection will make it the nerve center of your control stations.



**DATA TRANSFER BY USB TO PC, PLC OR SERVER**

**DISPLAY RESOLUTION UP TO 0.01µm**

**AIR PRESSURE CONTROL AND ALARM CALIBRATION**

**TEMPERATURE COMPENSATION**

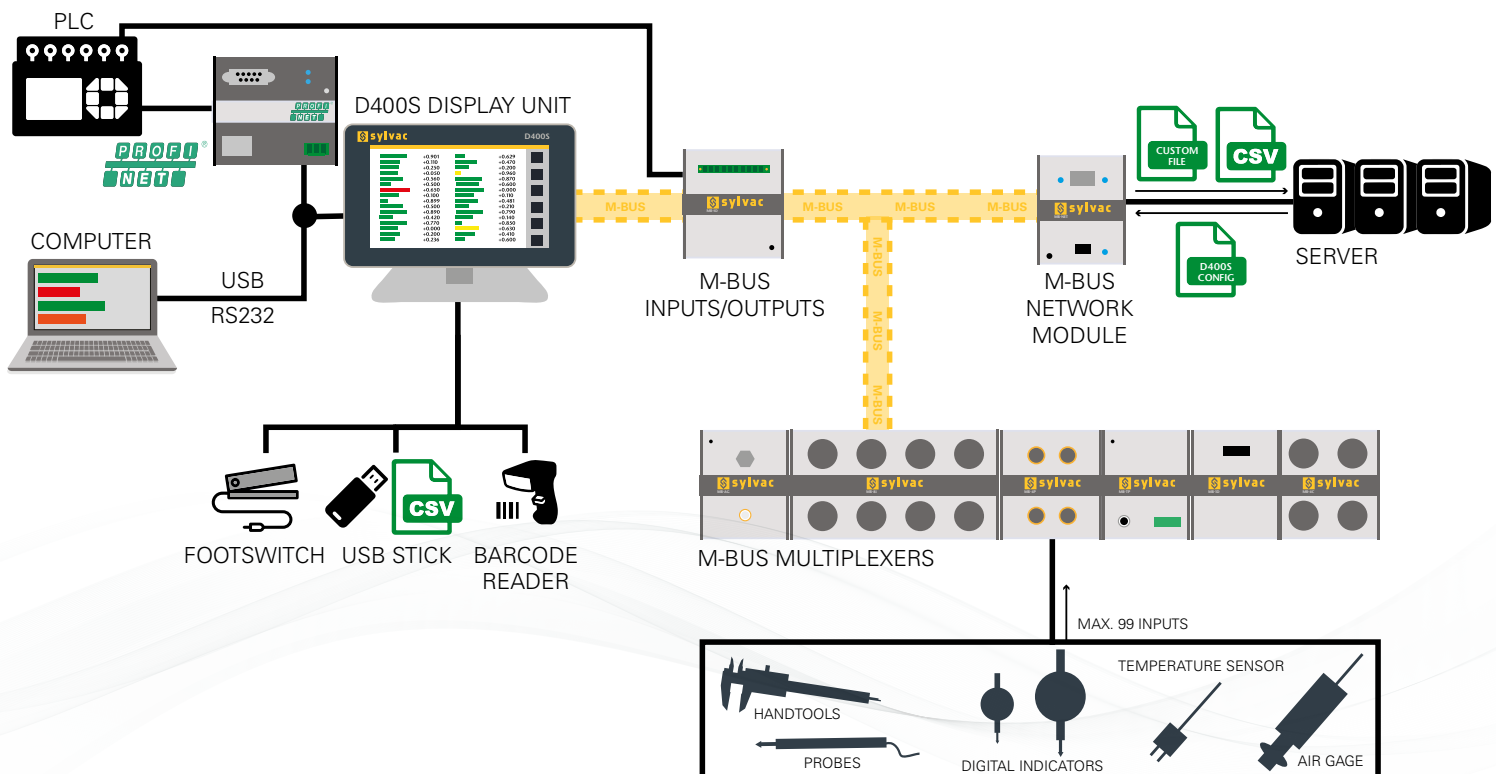
**AUTOMATIC SCREEN DETECTION**

**SPC STATISTICS IN GRAPH**

**STATIC AND DYNAMIC MEASUREMENT**

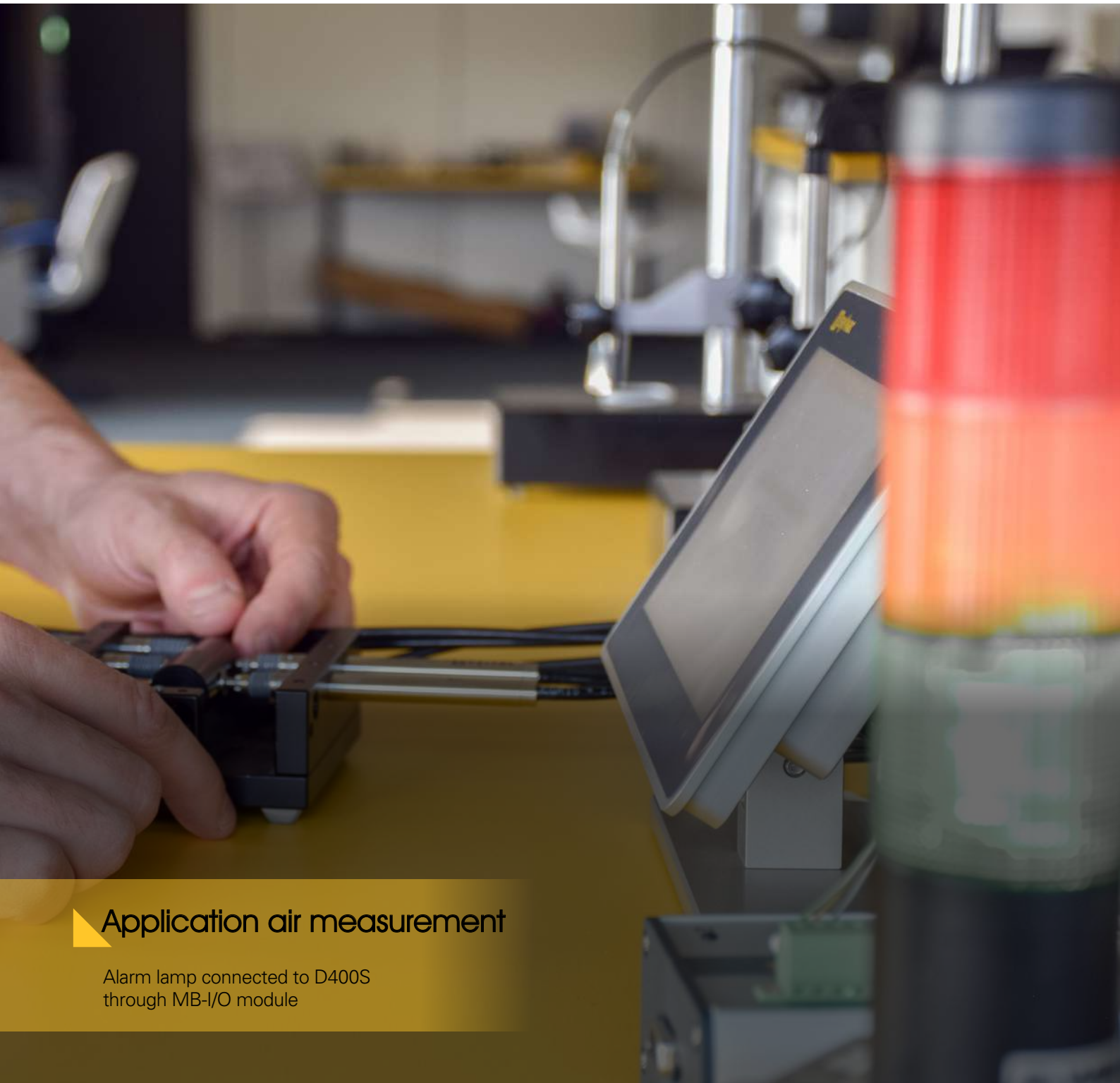
**AIR CUT ENERGY SAVING CONTROL**

### CONNECTIONS POSSIBILITIES ON DISPLAY UNIT D400S



## TECHNICAL SPECIFICATIONS

Technical data	804-2400
Type	D400S, up to 99 instruments
Overall dimensions	200x143x151.6 mm
Weight	1.3 kg
Case	Aluminium
Protection, according to IEC 60529	IP65 (front face)
Output data	USB / RS232



### Application air measurement

Alarm lamp connected to D400S  
through MB-I/O module



## M-Bus modules

M-BUS modules are interfaces allowing to connect different instruments and devices to the D400S and D70A units, and to our Sylcom software.

### MB-RS : MASTER COMMUNICATION MODULE

Master communication module for connecting a set of MB modules to PC or PLC



804-2160

### MB-I/O : AUTOMATION MODULE

Modules with 8 opto-coupled Input/Output whose function can be defined by the units or the software.



804-2130

### MB-TP : TEMPERATURE MODULE

Temperature module with one input for a thermocouple or PT100 temperature sensor, for temperature compensation with D70A and D400S unit



804-2170

### MB-AG : INPUT MODULE FOR AIR GAGE

Module with one input for air gage.



804-2190

### MB-RO : RELAY MODULE

Relay module allowing to control the air-cut system and the lifting of the pneumatic probes.



804-2133

More M-BUS modules for connecting instruments, probes and devices are available on request.

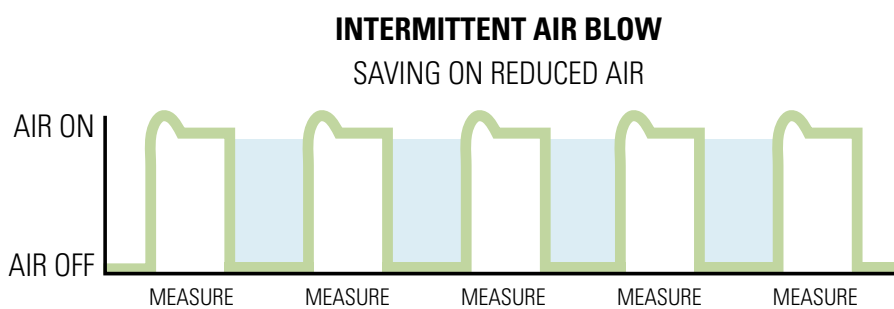
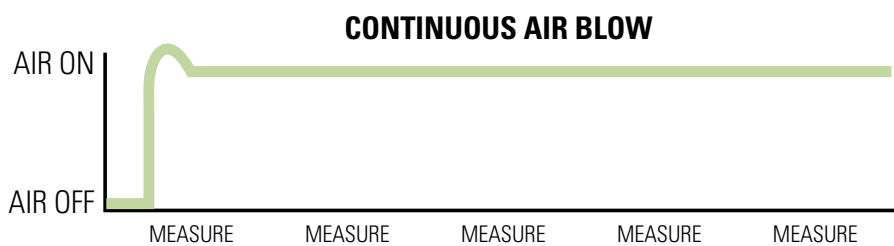


# Air cut energy saving system

## UP TO 50% SAVE ON YOUR ENERGY BILL !

Our units and modules require a stable and controlled air supply. For this reason, the use of precision dual-regulator air preparation is mandatory.

With rising energy costs, it is also extremely attractive to use our air-cut energy saving system consisting of automatically cutting off the air supply when not measuring. A menu on the unit allows to adjust the ECO mode, by defining a time delay and a wake-up threshold. the savings made with such a system can be up to 50% on the energy bill, on a company scale, this can represent thousands of dollars saving per year and a strong reduction of CO<sup>2</sup> emissions.



### Mandatory for air saving system :

Air preparation kit



+

Module MB-RO



+

M12 cable for MB-RO



### AIR PREPARATION

Standard air preparation kit



Air preparation kit with air-cut energy saving system

## How to achieve consistent results

Achieving consistent results with air measurement is dependent on a variety of factors, including the quality of the air supply, air gage, setting masters, and display unit or software. Each of these elements plays a crucial role in the final measurement outcome, and any deviation from perfection can result in unsatisfactory results.



### AIR SUPPLY

A stable air supply, both in pressure and flow, is a critical component that directly influences the final measurement result. To ensure consistency, it is essential to use precision air preparation equipment. Using only a standard regulator can lead to unstable measurements. The air must be filtered and dry to avoid corrosion at the level of the air gage. The output air pressure must be 3 bar, with a cautionary note that pressure above 5 bar can damage our units and low pressure will affect accuracy. Diameter and length of the pneumatic tubes are also important, unsuitable tubes can lead to slow reaction time and unstable value displayed.



### AIR GAGE

At Sylvac, we specialize in providing advanced display units and software for air gaging systems. While we do not manufacture or sell air gages directly, we collaborate with trusted suppliers to ensure that our customers have access to high-quality, precise air gages that meet their specific measurement needs. By working with a reliable supplier for your air gage needs, you can be confident in the accuracy and consistency of your measurements.

### SETTING MASTERS

Air measurement requires calibration with certified masters. Calibration can be done with 2 or 3 masters: the first corresponding to the minimum value of the tolerance, the second corresponding to the maximum value of the tolerance and the possible third corresponding to the nominal value. In order to achieve consistent results, it is recommended to use setting masters that are at least 10 times more accurate than the tolerance interval of the characteristic being measured.

## Software Sylcom

Customers who prefer a Windows-based solution can utilize air gages with our SYLCOM software by connecting them to the MB-RS master module and MB-AG modules. SYLCOM offers a high level of flexibility in displaying and exporting results, as well as the ability to combine air measurements with other measurements taken using Sylvac hand tools such as calipers, indicators, and probes.



### CONNECTION IN A FEW SECONDS



### Application air measurement

Measurements displayed on Sylcom software.



# **sylvac**

Experts in connected metrology !



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