# COVAL

vacuum managers

# LEMCOM

Mini Vacuum Pumps Communicating via Industrial Field Bus

PROFINET

EtherNet/IP




## ADVANCED VACUUM SOLUTIONS

# LEMCOM

## 1st Mini Vacuum Pump on Industrial Fieldbus

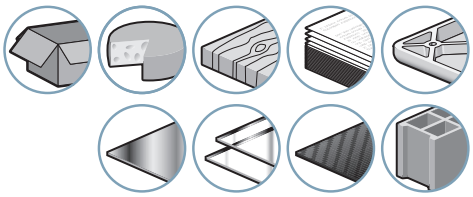
General Points



PROFINET EtherNet/IP

In a world where everything is connected, COVAL is innovating once more by unveiling the LEMCOM series: the first vacuum pump on fieldbus.
The LEMCOM establishes a verified remote communication between the operator and the vacuum pump, with two possible fieldbus choices, EtherNet/IP and PROFINET. This allows the operator to receive real-time information and more importantly respond at all times to configure, diagnose and maintain the operation.

Industry-specific applications

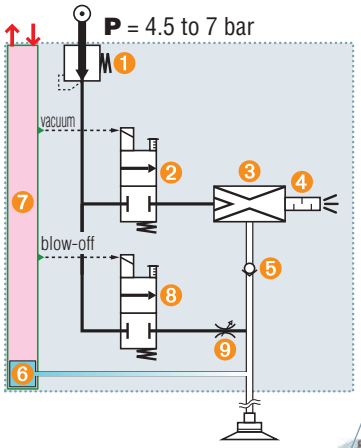


## Compact Integration: The COVAL Technique

The illustrations demonstrate the COVAL advantage: all necessary functions are integrated into a complete and self-governing mini-module.

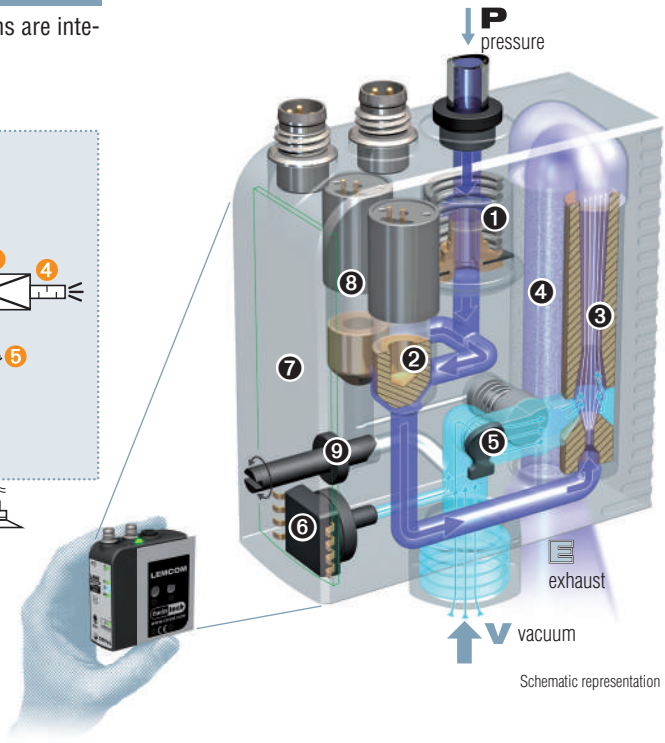
**INTEGRATED FUNCTIONS:**

1. Pressure regulator **3.5 bar**
2. "Vacuum" solenoid valve
3. **3.5 bar** optimized venturi
4. Optimized silencer
5. Vacuum non-return valve
6. Vacuum sensor
7. Integrated electronics: management of "vacuum" functions and communication
8. "Blow-off" solenoid valve
9. Blow-off flow regulator





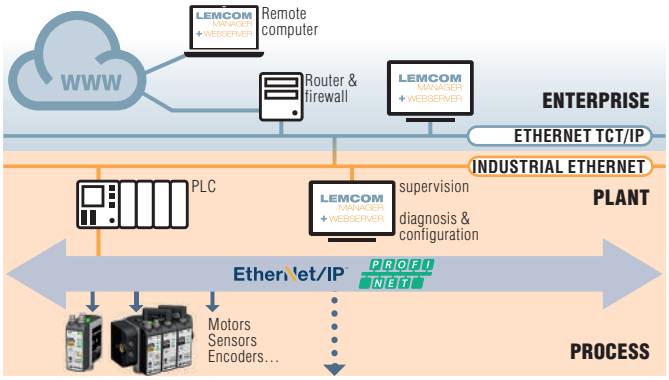

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Schematic representation

## Easy Integration with Existing Industrial Network

LEMCOM is the first vacuum pump which seamlessly integrates with the field network without the use of gateways or other specific interfaces.
The LEMCOM "master" modules enable the continuity of a fieldbus through their two integrated communication ports. Tested and certified by ODVA (EtherNet/IP) and by PI (PROFINET), LEMCOM is connected very easily to the PLC (EDS file, RSLogix 5000 Add-On Instructions, GSDML file).
Based on a "master/secondary" structure where the "master" is a fully-integrated pump, the LEMCOM design enables the supply and control of 1 to 16 vacuum pumps while requiring only 2 connecting cables.




## Advantages

- **Easy implementation**: Plug & Play, custom configuration for every type of application.
- **Maximum automatic** energy savings:
  AIR Saving Regulator **ASR**: 40% savings for porous products.
  AIR Saving Control **ASC**: 90% savings for airtight products.
- **Compactness**: LEMCOM vacuum pumps are the most compact on the market.
- **Short response times**: Installed in close proximity to vacuum cups.
- **Dust resistant**: Non-clogging through-type silencer.
- **Safety**: Product gripping is maintained even during power failure.
- **Supported buses**: EtherNet/IP and PROFINET.
- **Wiring simplified**: 2 cables are capable of managing 1 to 16 modules.
- Settings and diagnosis via **remote monitoring**.
- Nearly unlimited arrangements (stand-alone modules, island assemblies or remote modules).

➔ An essential innovation for intelligent vacuum gripping.

# LEMCOM

## 1st Mini Vacuum Pump on Industrial Fieldbus

Vacuum Levels and Energy-saving



PROFINET EtherNet/IP

## 2 Vacuum Levels to Match Precise Application Needs

**VERSION 60** (Max. 60% vacuum)
To enable a high rate of vacuum flow and compensate for leakage when gripping porous materials.



Suction flow rate (Nl/min):

| Nozzle Ø \ max. vacuum | 60% |
|---|---|
| 1.0 mm | 38 |
| 1.2 mm | 72 |
| 1.4 mm | 92 |

**VERSION 90** (Max. 85% vacuum)
To enable a high vacuum level and thus increase the holding force for gripping airtight materials.



Suction flow rate (Nl/min):

| Nozzle Ø \ max. vacuum | 85% |
|---|---|
| 1.0 mm | 29 |
| 1.2 mm | 45 |
| 1.4 mm | 70 |

| | Porous Materials, Rough Surfaces | | | | Airtight & Semi-Porous Materials | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Cardboard | Food | Wood | Paper | Plastic | Metal | Glass | Composites | Concrete/Stone |
| **LEMCOM 60** | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| **LEMCOM 90** | | | | | ■ | ■ | ■ | ■ | ■ |

● Air Saving Regulator ➔ **40%** of energy savings on average.

■ Air Saving Control ➔ **90%** of energy savings on average.

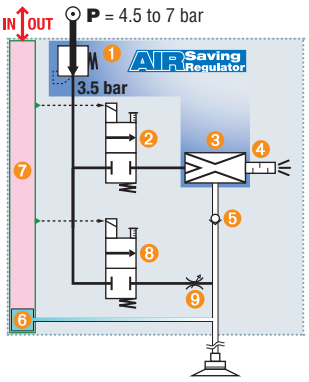
## Integrated Energy-saving Technologies

AIR Saving Regulator

**40%** energy savings (on average, see below).

Combined "venturi regulator" **ASR**: pressure regulator ❶ feeds venturi ❸ with 3.5 bar, the optimized pressure for operation.

➔ **No more unnecessary consumption of compressed air.**

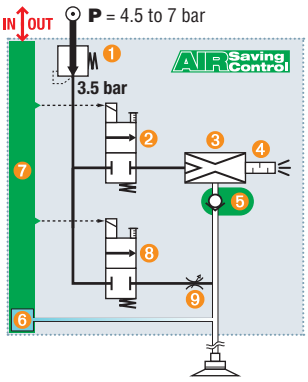



AIR Saving Control

**90%** energy savings (on average).

Combination of non-return valve ❺ and advanced electronics ❼ ensures **ASC**'s automatic performance.

➔ **Once vacuum is established, the pump no longer consumes air to hold the product.**




## AIR Saving Regulator (ASR): Air Saving Regulator

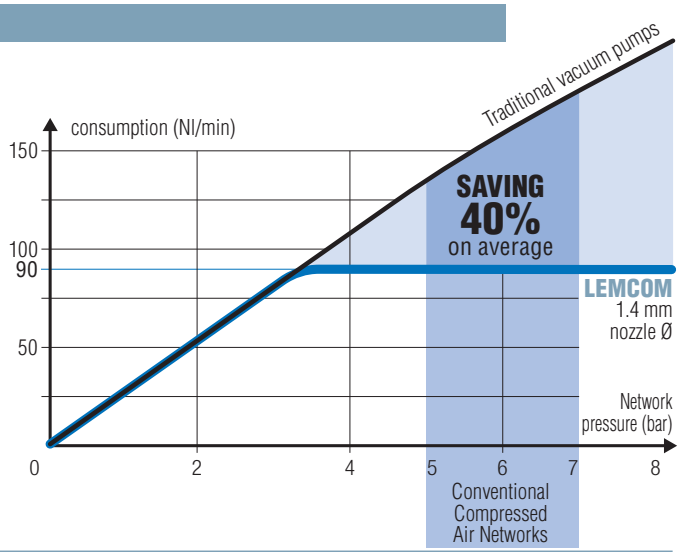
LEMCOM series vacuum pumps, which integrate an **ASR** "venturi regulator" combination, maintain ideals that COVAL values greatly: reducing both compressed air consumption and noise generation.

Regardless of pressure supplied by the compressed air network, the integrated regulator feeds the venturi at **3.5 bar** pressure, optimal for its operation.

➔ No more unnecessary energy consumption.

➔ No external regulator required, thus eliminating the risk of improper adjustment.

Compared to pressures found in most compressed air networks (5-7 bar), the graph opposite demonstrates an achieved economy of 40% on average.



# LEMCOM

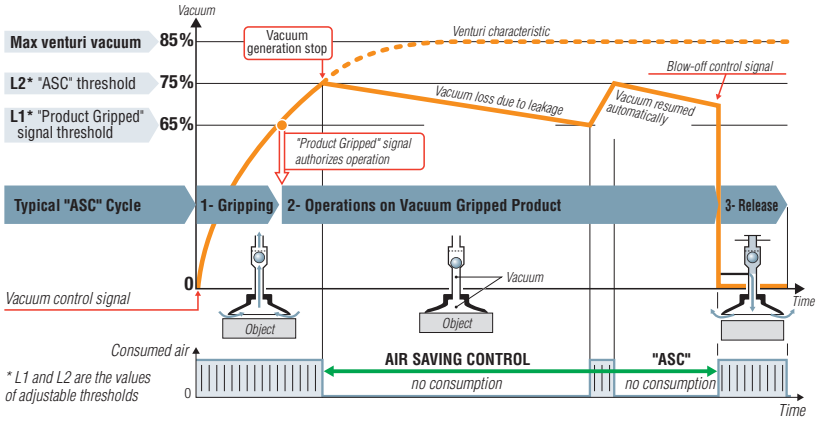
## 1st Mini Vacuum Pump on Industrial Fieldbus

Energy Savings



PROFINET EtherNet/IP

## AIR Saving Control "Air Saving Control" Cycle




**1- Gripping + Transfer** *(1.4 mm nozzle Ø, emptying 0.2 l)*

| Phase | Duration | Air consumption | | |
|---|---|---|---|---|
| | | without "ASC" | with "ASC" | |
| Gripping | 0.28 s | 0.4 Nl | 0.4 Nl | Energy savings achieved |
| Transfer | 1.20 s | 1.8 Nl | 0 | |
| Release | 0.14 s | 0.2 Nl | 0.2 Nl | |
| | | 2.4 Nl | 0.6 Nl | 75 % |

**2- Clamping + Operations** *(1.4 mm nozzle Ø, emptying 0.4 l)*

| Phase | Duration | Air consumption | | |
|---|---|---|---|---|
| | | without "ASC" | with "ASC" | |
| Clamping | 0.55 s | 0.8 Nl | 0.8 Nl | Energy savings achieved |
| Operations | 60 s | 90 Nl | 0 | |
| Release | 0.14 s | 0.2 Nl | 0.2 Nl | |
| | | 91 Nl | 1.0 Nl | 99 % |

As illustrated above, the **LEMCOM** module automatically executes the "**ASC**", cycle, thus saving the maximum amount of energy, based on the following 3 phases.

**1- Gripping the object**

The "vacuum" solenoid ❷ starts the cycle by supplying the venturi ❸ which generates the vacuum to quickly pick up the object with the suction cup ➔ short-term consumption.

**2- Operations on the object held by vacuum**

The vacuum level is constantly monitored by the vacuum switch ❻. When it reaches the L1 threshold (65%), the "gripped object" signal is generated, which allows the planned operations (transfer, machining, etc.). When the vacuum reaches threshold L2 (75%), the supply to the venturi via the solenoid valve ❷ is cut off ➔ consumption is halted. The object remains held by the retained vacuum thanks to the closed valve ❺. Micro-leaks will generally cause the vacuum level to fall slowly. Each time it falls below 65%, vacuum generation is briefly resumed until it reaches threshold L2 (75%).

**3- Releasing the object**

At the end of operations, blow-off is ordered. The "blow-off" solenoid valve ❽ generates a stream of air which closes the isolation valve ❾, blows on the object to release it quickly.

## Smart Adaptation

The illustration above shows the adaptation capability of the LEMCOM module. "**ASC**" operation is automatic for any object that is airtight or generally nonporous (cycle1).
If a leak occurs (cycle 2), due to a rough object or suction cup wear:
1/ the module automatically detects the anomaly, 2/ ends the cycle without "**ASC**" in order to continue production and 3/ reports the event for possible maintenance. Production continues and once everything is returned to normal (cycle 3), "**ASC**" operation is automatically resumed.

## Resulting Savings

Energy savings from "**ASC**" are significant, as the two examples opposite show:

- 75% savings for transferring an object after gripping.
- 99% savings for holding an object during a 1 minute operation.

The product often pays for itself in just a few months.

## "ASC": AN ADVANTAGE WITHOUT LIMITATIONS

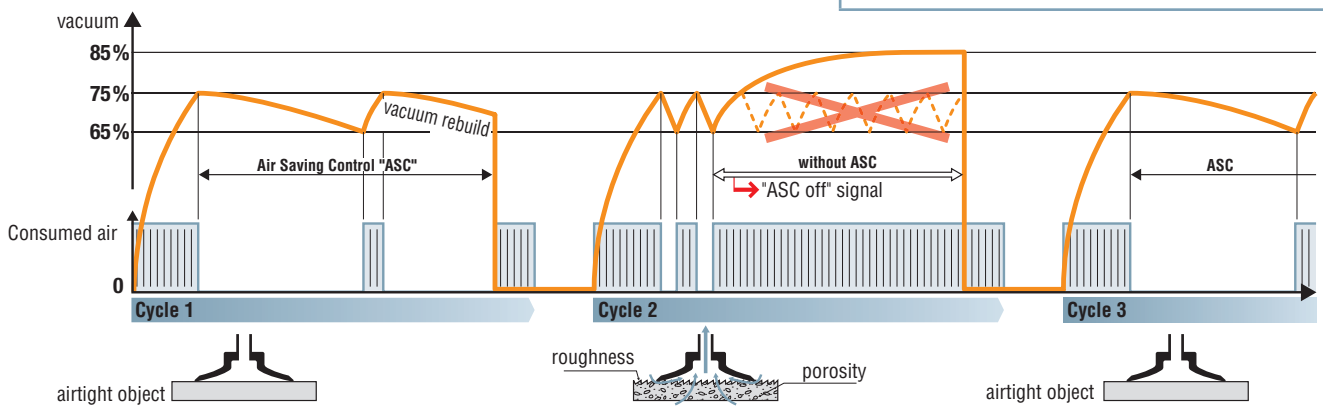
Saving energy has become essential. With LEMCOM, thanks to ASC, energy is saved automatically without interfering with established practices:

**1- No specific adjustment**
The default setting (L1 = 65%, L2 = 75%) is suitable for most applications.

**2- Production regardless of conditions**
Performance is guaranteed. When necessary, without "**ASC**", if the leakage level is too high.

**3- Guided maintenance**
Clear display of the need for maintenance in order to return to autoregulated "**ASC**" operation.

**With LEMCOM, all settings are remotely configurable, and diagnosis is made easier.**




AIR Saving Regulator LEMCOM series vacuum pumps, which integrate an **ASR** "venturi regulator" combination, maintain ideals that COVAL values greatly: reducing both compressed air consumption and noise generation.

# LEMCOM

## 1st Mini Vacuum Pump on Industrial Fieldbus



PROFINET EtherNet/IP

## Individual or Island Modules?

Stand-alone modules are suitable for the most common applications: one module controls one or more suction cups, all of which operate according to the same sequence.
When several suction cups are operating according to different sequences, multiple modules are required, which can be:

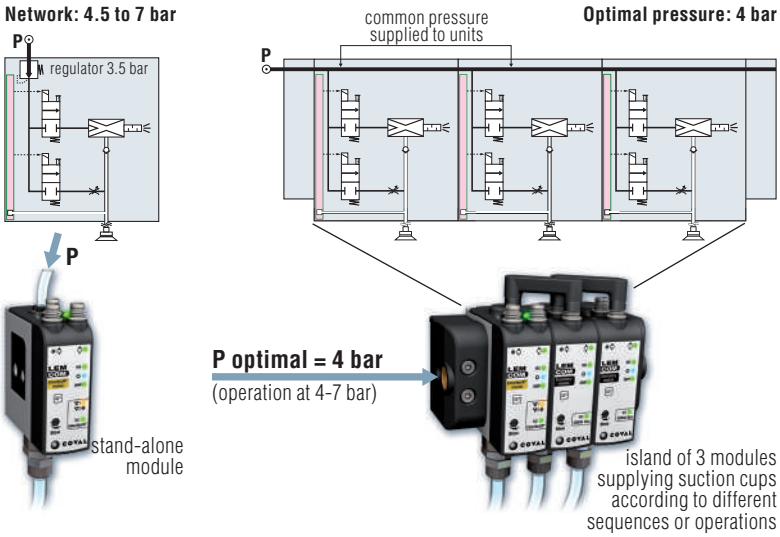
- several autonomous modules, OR
- a group of these modules with an internally shared pressure supply

The illustrations shown here guide the selection:

- autonomous modules are coupled with integrated pressure regulators (ASR)
- in a group, the integrated regulator is eliminated: to maintain the advantage of economical and silent operation, it is recommended to reduce the group's common pressure supply to 4 bar.

The maximum number of modules in an island depends on the power of the modules that must be active simultaneously:

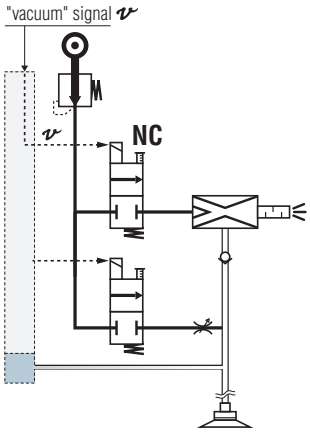
- 5 modules maximum for nozzle 1.4 mm ID.
- 7 modules maximum for nozzle 1.2 mm ID.
- 9 modules maximum for nozzle 1 mm ID.



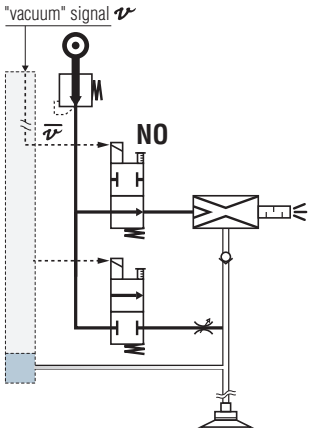

## Vacuum Control by NC or NO Solenoid Valve

Vacuum control by NC (Normally Closed) solenoid valve is the most common: in the event of an electrical shut-off, vacuum is no longer generated. On the other hand, with a NO (Normally Open) solenoid valve, vacuum continues to be generated in the event of an electrical shut-off, providing positive object-gripped security.
The diagrams opposite show that both versions are controlled by the same "vacuum" signal $v$: The opposite $\overline{v}$ required for control of the NO solenoid valve is automatically obtained internally by the control electronics.

■ NC solenoid valve



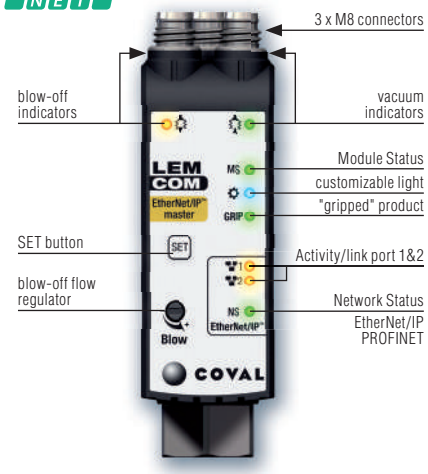

■ NO solenoid valve



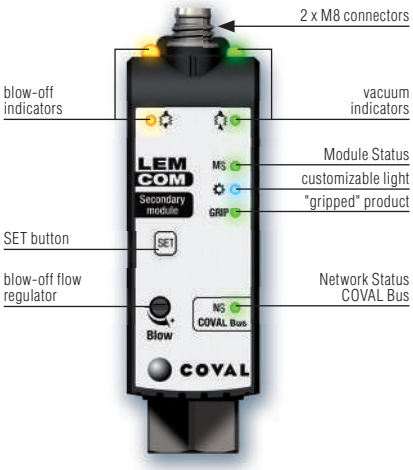

## Communications Panel

**LEMCOM** master

PROFINET EtherNet/IP




**LEMCOM** secondary module



# LEMCOM

## 1st Mini Vacuum Pump on Industrial Fieldbus

Simplified Communication along the Entire Line



EtherNet/IP PROFINET

### Multitude of Innovations

- Maximum intelligence / minimal bulk.
- One "master" module controls up to 15 secondary modules.
- Master module is a fully-integrated pump.
- Remote configuration, monitoring and diagnostics.
- Dedicated Coval bus between master and secondary modules.
- Simplified wiring and installation.
- Standard secondary modules (regardless of the type of bus).
- Additional communications port.
- Supported buses: EtherNet/IP™ / PROFINET / CANopen.
- IP 65 / M8 standard connectors.






### A Simple Product to Utilize

**LEMCOM** master

EtherNet/IP PROFINET

- On-board 2-Port Ethernet Switch.
- On-board web server.
- Dedicated configuration software.
- M8/RJ45 standard connectors.



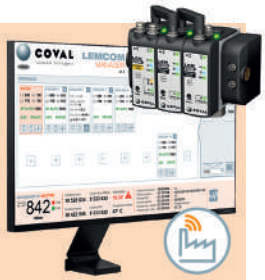
**LEMCOM** secondary module

- Universal secondary module, whatever the type of bus used.



### Dedicated application LEMCOM MANAGER

**Vacuum management made easy**



Specially developed with vacuum handling applications in mind, LEMCOM Manager is a PC software package which allows you, in just a few clicks, to remotely set up and configure LEMCOM vacuum generators as well as run diagnostics.

Packed with numerous functions such as the import/export of parameters, vacuum cycle analysis, alarm and operation cycle monitoring, configuration help or even embedded firmware updating.

The application allows all LEMCOM mini pumps to be controlled remotely over the network either by the end user or by COVAL's technical support teams.

### Settings, Diagnosis, and Process Data

**CONFIGURABLE SETTINGS**

- "Product Gripped" and vacuum regulation (ASC) thresholds.
- Automatic blow-off.
- State of valves in the event of loss of communication.
- Client LED status.
- Network parameters.
- Firmware updates…

**DIAGNOSTIC**

- Cycle counters, vacuum and blow-off control, gripped pieces, lost pieces, ASC…
- Power supply voltage.
- Firmware version.
- Product reference.
- Vacuum cycle acquisition…

**INPUT DATA**

- Vacuum and blow-off control.

**OUTPUT DATA**

- Instant vacuum level (0 to 100%).
- "Gripped Product" signal (ON/OFF).
- Regulation system status.
- Alarms (power supply voltage, temperature, preventive maintenance).

# LEMCOM

## 1st Mini Vacuum Pump on Industrial Fieldbus

Simplified Communication along the Entire Line



## A Setting for Every Application

The LEMCOM is based on an innovative, efficient product structure:

- The "master" module manages communication on the fieldbus, assures management of the "secondary" modules and is a fully-integrated vacuum pump. Its 2 communication ports enable a continuous fieldbus.
- The "secondary" modules are interconnected with the "master" module via the COVAL bus.

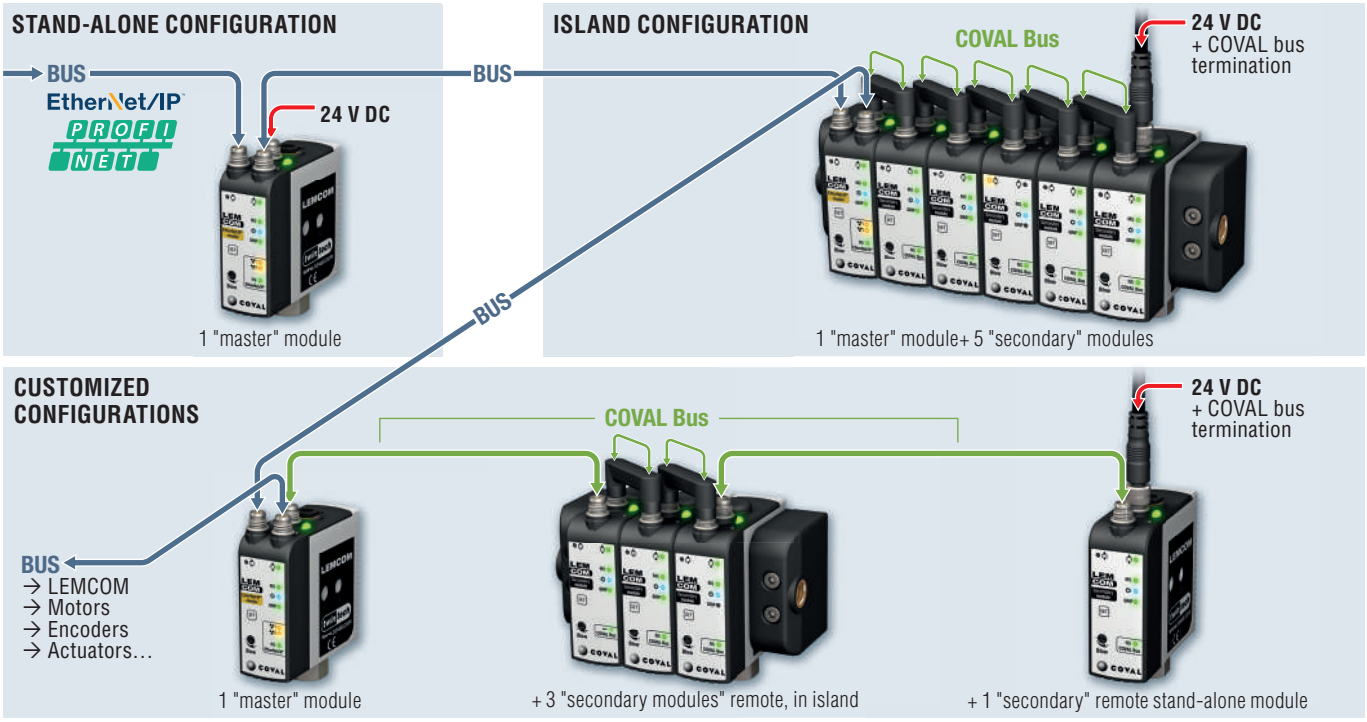
Contact between the "master" module and the "secondary" modules is confirmed by an M8 connecting bridge for island configurations or by a M8/M8 standard cable for configurations based on remote modules.

**Advantages:**

This product structure guarantees flexibility in selection, enabling use of LEMCOMs in stand-alone, island or mixed configurations. As a result, vacuum generators may be placed in close proximity to the application, guaranteeing a reduction:

- in gripping time
- in cycle time
- in energy consumption.

Because setup and diagnosis of the LEMCOM is carried out remotely, it is not necessary to install them in easily accessible zones.



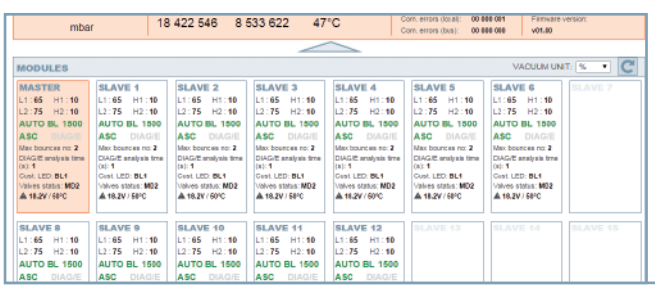

## Full Remote Access

LEMCOM parameters can easily be updated remotely and in several ways. Configuration is possible using LEMCOM Manager PC software, the embedded web server (EtherNet/IP and PROFINET) or by sending vacuum parameters directly from the PLC during use or on initialization.

This flexibility enables the LEMCOM user to adapt to all types of applications without direct intervention on the vacuum generator.

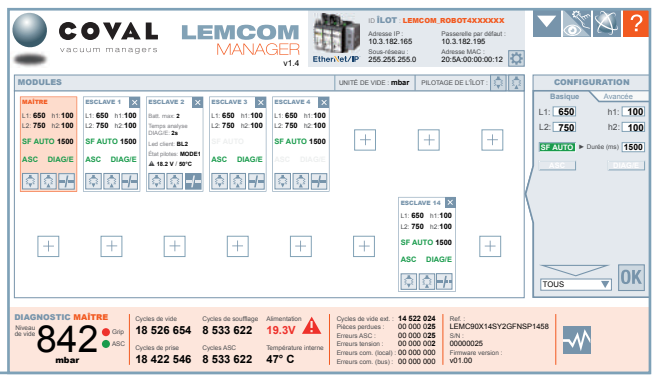
EtherNet/IP PROFINET

- Embedded web server.
- Implicit (I/O) and explicit messaging (setting) (EtherNet/IP).
- Synchronous (I / O) and asynchronous data (configuration) (PROFINET)



LEMCOM MANAGER

- Dedicated universal application: LEMCOM Manager.



# LEMCOM

## 1st Mini Vacuum Pump on Industrial Fieldbus

Selection Guide



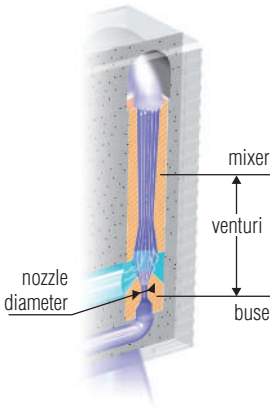
PROFINET EtherNet/IP

## Venturi Specifications

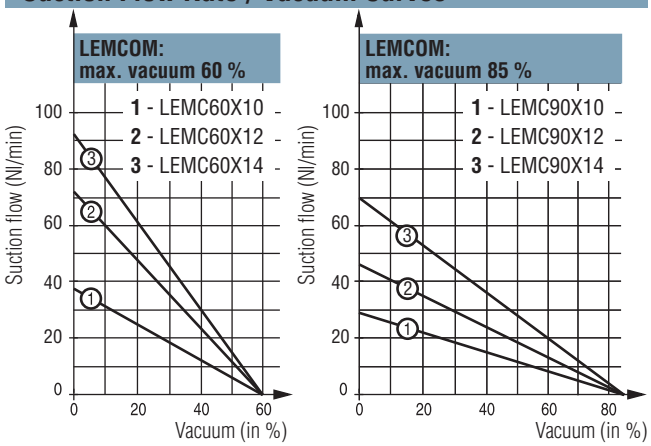
**1- Maximum Vacuum Level**
Dependent upon the mixer profile:

- 85% of maximum vacuum is optimal for gripping airtight products.
- 60% of maximum vacuum is optimal for gripping porous products.

**2- Nozzle Diameter**
Reflects the generated vacuum flow rate, as well as energy consumption. Hence, it must be selected to meet precise requirements without wasting energy.




## Suction Flow Rate / Vacuum Curves




## Handling of Porous Products: *(cardboard, untreated wood, pastries, etc.)* → LEMCOM 60% max. vacuum

When porosity and/or surface leaks are expected during gripping, a vacuum level between 35% and 55% is the best economical compromise generated by a maximum **venturi vacuum level of 60%**. To determine the most effective nozzle diameter, use the table at right and measure the leakage flow rate of the material.

| Evacuation time *(in seconds)* of 1 liter volume | | | | Consumed Air *(Nl/min)* | Vacuum flow *(Nl/min)* |
|---|---|---|---|---|---|
| vacuum reached / Nozzle Ø | 35% | 45% | 55% | | |
| **1.0 mm** | 0.83 | 1.31 | 2.35 | 44 | 38 |
| **1.2 mm** | 0.52 | 0.83 | 1.49 | 65 | 72 |
| **1.4 mm** | 0.34 | 0.54 | 0.97 | 90 | 92 |

## Handling of Airtight Products: *(glass, plastic, coated wood, sheet metal, etc.)* → LEMCOM 85% max. vacuum

Gripping done without major leaks will benefit from a high level of vacuum: Between 55% and 75% generated by a maximum **venturi vacuum level of 85%**.
Depending on the volume to be evacuated and the time available for product gripping, use the table below to select the most effective nozzle diameter and vacuum flow rate.

**Working without "ASC":**

| Evacuation time *(in seconds)* of 1 liter volume | | | | Consumed Air *(Nl/min)* | Vacuum flow *(Nl/min)* |
|---|---|---|---|---|---|
| vacuum reached / Nozzle Ø | 55% | 65% | 75% | | |
| **1.0 mm** | 1.76 | 2.38 | 3.33 | 44 | 29 |
| **1.2 mm** | 1.13 | 1.53 | 2.15 | 65 | 45 |
| **1.4 mm** | 0.73 | 0.99 | 1.38 | 90 | 70 |

AIR Saving Control On airtight products, "ASC" enables you to considerably reduce compressed air consumption. The table below shows:

- A larger nozzle provides a faster grip without consuming more, when using "ASC".
- A smaller nozzle only consumes less when the operation is continued without "ASC".

**When using "ASC"** (evacuation of 1 liter volume):

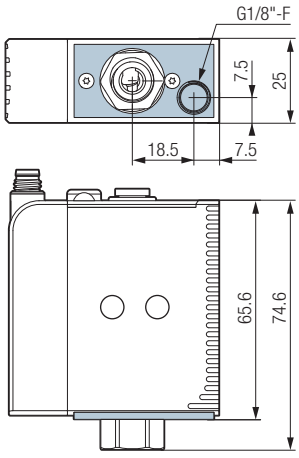
| Ø buse | gripping time (65% vacuum) *(s)* | Time up to 75% vacuum *(s)* | Consumed Air *(Nl)* |
|---|---|---|---|
| **1.0 mm** | **2.38** | **3.33** | 2.2 |
| **1.2 mm** | **1.53** | **2.15** | 2.2 |
| **1.4 mm** | **0.99** | **1.38** | 2.2 |

## Exhaust manifold: option E

The LEMCOM mini vacuum pumps can be equipped with the "exhaust manifold" option, which provides a G1/8''-F connection to the exhaust in order to add a silencer, transfer the exhaust outside the work area or to avoid air discharge near the workpiece. (LEMC___**E** Version).

This option must be specified at time of ordering as it cannot be added later.

**Note**: The design of the exhaust manifold and vacuum pumps do not guarantee the complete sealing of the exhaust and therefore cannot be used in a "clean room" environment.



# LEMCOM

## 1st Mini Vacuum Pump on Industrial Fieldbus

Configuring a Vacuum Pump



PROFINET EtherNet/IP

| LEMC | 90 | X | 12 | S | Y2 | | G | | – | | B2 |
|---|---|---|---|---|---|---|---|---|---|---|---|

### VACUUM LEVEL

| | |
|---|---|
| **60 % max. vacuum** is optimal for porous materials | **60** |
| **85 % max. vacuum** is optimal for airtight products | **90** |

### NOZZLE DIAMETER

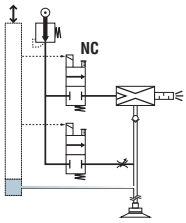
| | |
|---|---|
| **1 mm Ø nozzle** | **10** |
| **1.2 mm Ø nozzle** | **12** |
| **1.4 mm Ø nozzle** | **14** |

### MODULE COMPOSITION

**NC Vacuum pump with blow-off** — **S**

LEMC__X__**S**__G__

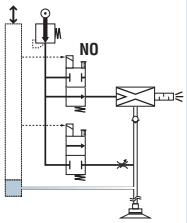
- **NC** vacuum control valve:
  - → in case of electrical cut-off, vacuum generation stops.
- Blow-off configured on site at choice:
  - Blow-off controlled by specific signal;
  - Automatically delayed blow-off time from 0 to 10 s.
- Adjustable blow-off flow rate.




**NO Vacuum pump with blow-off** — **V**

LEMC__X__**V**__G__

- **NO** vacuum control valve:
  - → In case of electrical cut-off, vacuum continues to be generated.
- Blow-off configured on site, at choice:
  - Blow-off controlled by specific signal;
  - Automatically delayed blow-off time from 0 to 10 s.
- Adjustable blow-off flow rate.




### PROTOCOL

**Q2** PROFINET master

LEMC__X___**Q2**G__



- On-board 2-Port Ethernet Switch.
- On-board web server.
- Dedicated configuration software.
- M8/RJ45 standard connectors.
- GSDML file.

**Y2** EtherNet/IP master

LEMC__X___**Y2**G__



- On-board 2-Port Ethernet Switch.
- On-board web server.
- Dedicated configuration software.
- M8/RJ45 standard connectors.
- RSLogix 5000 AOI + EDS file.

**Z2** secondary module

LEMC__X___**Z2**G__



- Universal secondary module, can be used with any fieldbus.
- If necessary, M8/M8 "COVAL Bus" 120 Ω termination, available in accessories.

### EXHAUST

| | |
|---|---|
| Open (integrated silencer) | – |
| Exhaust manifold (G1/8''-F) | **E** |

### CONFIGURATION

| | |
|---|---|
| _ | 1 stand-alone module |

### Island assemblies

**B2** LEMC__X_____G**B2**



Island assembly with 2 modules, with connecting bridges for internal "COVAL Bus" and M8/M8 120 Ω termination:

- → The first module is of the type selected in "PROTOCOL".
- → The following one is a secondary module.

**B3** LEMC__X_____G**B3**



Island assembly with 3 modules, with connecting bridges for internal "COVAL Bus" and M8/M8 120 Ω termination:

- → The first module is of the type selected in "PROTOCOL".
- → The following two are secondary modules.

**B4** …

NB: LEMC__X___**Z2**G**B**_ "Secondary" island modules are delivered without the M8/M8 "COVAL Bus" 120 Ω termination - order separately.

### Components for island assembly

**B** LEMC__X_____G**B**



Island module, complete with integrated assembly screw.



Island endplates set complete with assembly screw and plug for common pressure inlet.

**Part No.: LEMSETA**



Connecting bridge for internal "COVAL Bus".

**Part No.: 80001231**

NB: If necessary, M8/M8 "COVAL Bus" 120 Ω termination is available in accessories

**OPTION:** Version without non-return valve available on request.

**EXAMPLES OF COMPLETE PART NUMBER:**

**LEMC90X14SY2G** LEMCOM vacuum pump, 85% maximum vacuum, 1.4 mm Ø nozzle, controlled by a NC (Normally Closed) solenoid valve, stand-alone EtherNet/IP™ "master" module.

**LEMC90X10SY2GB3** Island assembly of 3 LEMCOM vacuum pumps, 85% maximum vacuum, 1 mm nozzle Ø, controlled by a NC (Normally Closed) solenoid valve, EtherNet/IP™ "master" module, 2 secondary modules, with connecting bridges and the M8/M8 "COVAL Bus" 120 Ω termination.

# LEMCOM

## 1st Mini Vacuum Pump on Industrial Fieldbus

Dimensions, Mounting Options

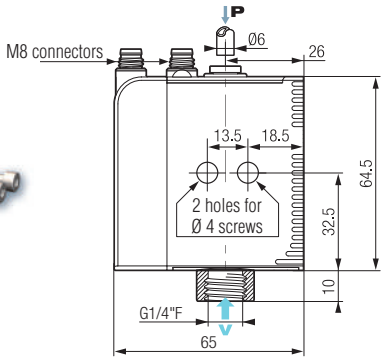


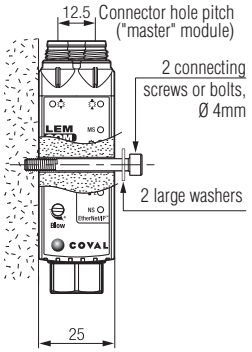
PROFINET EtherNet/IP

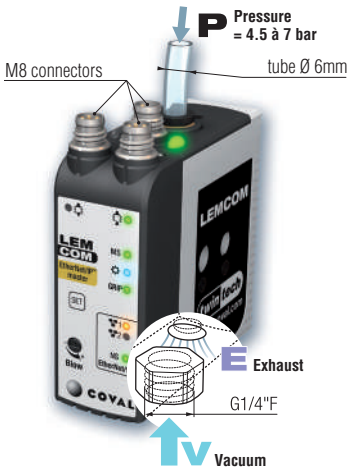
## 1- Stand-alone Modules

### Mounting from side



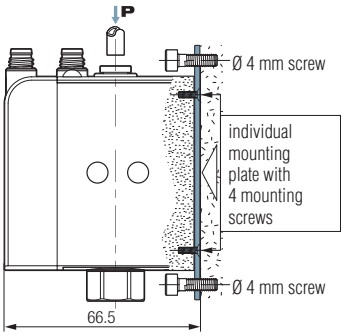


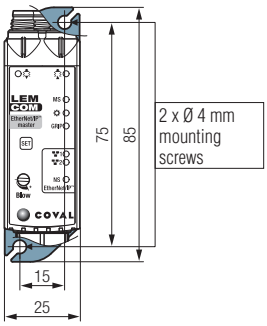




### Mounting from front





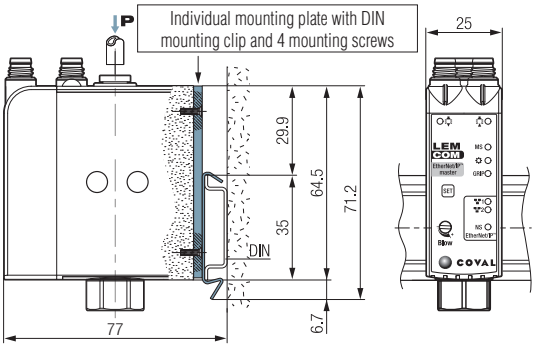

To mount from front, in addition to the module, a mounting kit must be ordered:

Kit for mounting from front:
1 plate + 4 screws

**Part No.: LEMFIXA**

### Mounting on DIN rail



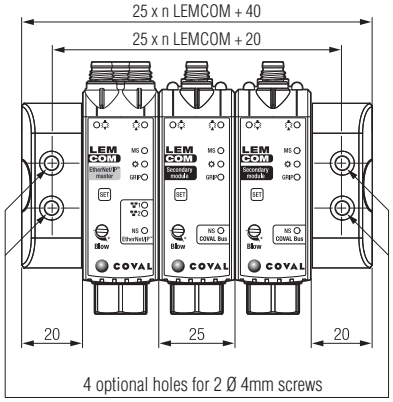



For static mounting (for example, in a cabinet), a module can be clipped onto a DIN rail. For this purpose, the module must first be equipped with an individual plate for mounting onto a DIN rail

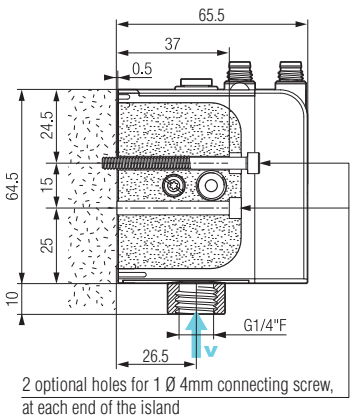
DIN rail mounting kit:
1 plate/clip + 4 screws

**Part No.: LEMFIXB**

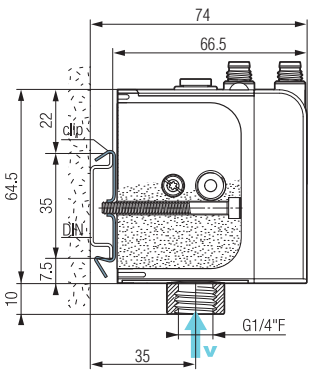
## 2- Islands




### Mounting from front




### Mounting on DIN rail




DIN rail mounting kit:
2 clips + 2 screws

**Part No.: LEMFIXC**

# LEMCOM

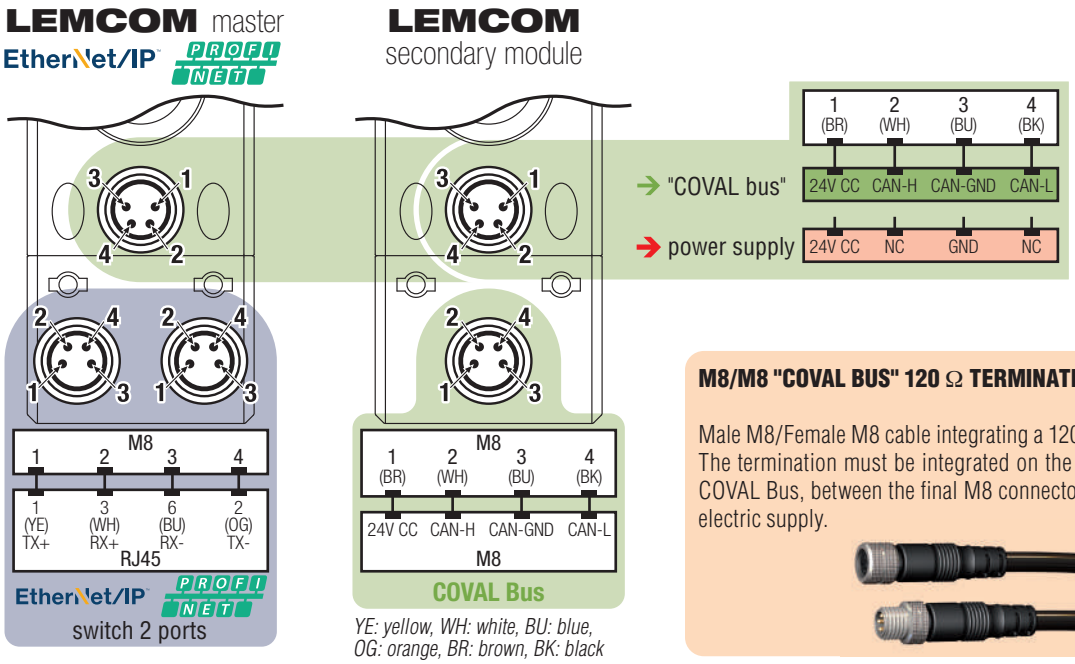
## 1st Mini Vacuum Pump on Industrial Fieldbus

Connections



EtherNet/IP

## Electrical Connections




*YE: yellow, WH: white, BU: blue, OG: orange, BR: brown, BK: black*

### M8/M8 "COVAL BUS" 120 Ω TERMINATION

Male M8/Female M8 cable integrating a 120 Ω termination resistor.
The termination must be integrated on the last "secondary" module of the COVAL Bus, between the final M8 connector of the product and the 24V DC electric supply.



## ACCESSORIES

Cat 5 shielded Ethernet cable: M8, straight, female, 4-pin – RJ45, straight, male, 8-pin – suitable for drag chain use



- **CDM8RJ45L2**: length 2 m.
- **CDM8RJ45L5**: length 5 m.
- **CDM8RJ45L10**: length 10 m.

*Other lengths on request.*

Cat 5 shielded Ethernet cable: M8, straight, female, 4-pin, on both ends – suitable for drag chain use



- **80003053**: length 1 m.

M8/M8 "COVAL bus" cable: M8, straight, female, 4-pin – M8, straight, female, 4-pin



- **CDM8FFL05**: length 0.5 m.
- **CDM8FFL1**: length 1 m.
- **CDM8FFL2**: length 2 m.
- **CDM8FFL4**: length 4 m.

*Other lengths on request.*

Power supply cable: M8, straight, female, 4-pin – open end



- **CDM8**: length 2 m.
- **CDM8N**: length 0.5 m.

120 Ω "COVAL bus" termination: M8, straight, female, 4-pin – M8, plug, male, 4-pin



- **80002303**: length 0.2 m.

*The COVAL bus is based on a CAN architecture and requires the addition of a bus termination to ensure proper communication between the secondary and master modules. It takes the form of an M8 male/M8 female cable that includes a 120 Ω line termination resistor.*

*It must be integrated on the last secondary of the COVAL bus, between the module's rear connector and the 24 V DC power supply.*

*When using a stand-alone master module, this termination is not required.*

# LEMCOM

## 1st Mini Vacuum Pump on Industrial Fieldbus

Specifications



PROFINET EtherNet/IP

### Common Specifications

- Supply: Non-lubricated air 5 microns filtered, according to standard ISO 8573-1:2010 [4:5:4].
- Operating pressure: 4.5 to 7 bar.
- Mini dynamic pressure: - stand-alone module: P = 4.5 bar.
- - island modules: 4 bar.
- Blow-off: adjustable flow: - stand-alone version: P = 3.5 bar.
- - island version: P network.
- Maximum vacuum: 85%.
- Suction flow rate: From 29 to 92 Nl/min.
- Air consumption: From 44 to 90 Nl/min, when operating "without ASC".
- Integrated non-clogging silencer.
- Noise level: approximately 68 dBA "ASC off". 0 dBA with ASC.
- Electric protection grade: IP65.
- Maximum operating frequency: 4 Hz.
- Service life: 30 million cycles.
- Weight: 150 g.
- Operating temperature: From 0 to 50°C.
- Materials: PA 6-6 15% FG, brass, aluminum, NBR.
- 4-pins M8 male connectors.

**Self-Adaptation**

- Continuous monitoring of the leakage level: Shutoff or automatic return to operation with ASC.

**Integrated electronics**

- 24 V DC supply (regulated ± 10 % ).
- Electric consumption: "master" < 150 mA, "secondary" < 100 mA, of which 30 mA (0.7W) per vacuum and blow-off pilot.
- Measurement range: 0 to 99% vacuum.
- Measurement accuracy: ±1.5 % of range, temperature compensated.
- Communication ports protected against wiring errors or reversed polarity.

### Service Specifications

**Settings**

- Piece gripping (L1) and regulation (L2)thresholds.
- Automatic blow-off time configurable (0 to 10 seconds).
- Activation/deactivation of ASC regulation system.
- Activation/deactivation of the (DIAG ECO) leakage level monitoring system.
- Adjustable blue LED functioning mode
- Valve functioning mode in the event of loss of communication

**Diagnosis**

- Instantaneous vacuum level (0 to 99%).
- Gripped product, loss of product, regulation in process, regulation default information.
- Cycle counters (vacuum, blow-off, gripped piece, ASC, etc.).
- Supply voltage and internal temperature.
- Product reference and serial number.
- Firmware version.

**Configuration and diagnosis tools**

- LEMCOM Manager PC software (EtherNet/IP, PROFINET and CANopen universal application).
- Embedded web server (EtherNet/IP and PROFINET module).

**Communication**

**EtherNet/IP:**

- 2-port ethernet switch.
- Static IP address or DHCP.
- EDS file & RSLogix 5000 Add-On Instructions.

**PROFINET:**

- 2-port ethernet switch.
- Static IP address or PROFINET DCP.
- GSDML file

**COVAL Bus:**

- CAN link between "master" and "secondary" units / 1 Mbps.
- Connection by specific bridge for island assembly or unshielded female M8/female M8 cable.
- Max total length of the COVAL Bus: 20 meters.

COVAL
vacuum managers




## A TECHNOLOGICAL PARTNER ON A GLOBAL SCALE

Located in the southeast region of France, COVAL conceives, manufactures and globally distributes high performance, advanced vacuum automation components and systems for industrial applications in all branches.

COVAL is an ISO 9001: V2015 certified company which offers innovative solutions integrating reliable and optimized components with intelligent functionalities. The focus is to provide the most personalized and economic solution to a given application while assuring a significant improvement in the productivity and the safety for the vacuum users around the world.

COVAL has an ambition for technical excellence and innovation. As a specialist in vacuum automation, COVAL is reputed for offering reliable, personalized, cost effective and productive solutions.

The references of COVAL can be found in several industrial sectors (Packaging, Automotive Industry, Plastic, Graphic, Aeronautic…) where vacuum handling is important for high efficiency and productivity.

COVAL markets its products and services all over Europe, in the United States and South America through its subsidiaries and authorized distribution network. COVAL strives to provide customer driven solutions and gives the best possible treatment to satisfy all its clients.

*For all enquiries from Australia, Africa and Asia kindly contact COVAL head office in France.*

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