

# Operating Manual

## EcoDose 2K Easy

MDR00018EN

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## 1 Foreword

### 1.1 Identification of the manual

The Instruction Manual is a document issued by **Verind SpA** and it is an integral part of the machine. This manual has been prepared in accordance with Annex I, Article 1.7.4 of Directive 2006/42/CE of the EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 May 2006 on machinery and amending Directive 95/16/CE (recast) and is a part of the machine. It contains technical instructions and its reproduction, either in whole or in part, as well as its modification, unauthorised use for commercial purposes or disclosure to third parties is forbidden.



**Read the operating instructions carefully and follow them scrupulously before starting the machine.**

This manual is intended to familiarise the personnel with the machine, in accordance with Annex I, Article 1.7.4 of Directive 2006/42/CE, allowing for the safe and correct use of the latter.

For clarity purposes, the manual cannot contain very detailed information on all the possible installation set-ups and, in particular, cannot cover all the possible installation, operating and maintenance cases.

**Verind SpA** reserves the right to make changes to the product described in this manual at any time and without prior warning.

This manual was prepared solely for the use of our customers and we guarantee that it constitutes the most up-to-date documentation relating to the product at the date of issue.

It is understood that the use of the manual is the responsibility of the user.

No further warranty is therefore given by **Verind SpA** (in particular for any flaws, incompleteness and/or operating difficulty) and therefore it cannot be held in any way liable for any direct or indirect damage due to improper use of this documentation.



**Before carrying out any operation on the machine, it is necessary to read the entire manual carefully.**

The machine was designed and built in compliance with the requirements of the Machinery Directive 2006/42/CE, taking into account the normal use and the reasonably foreseeable misuse of the machine. Under no circumstances may the machine be used for purposes other than those for which it was designed, nor may it be used in any other way than those described in the manual. The various works must be carried out according to the criteria and in the sequence described in this manual.

### 1.2 How to request additional copies

Any additional copies of this document must be requested by submitting a regular purchase order to:

**Verind SpA**

Via Papa Giovanni XXIII 25/29

20053 Rodano - MI

Phone +39 02 95 95 171

Fax +39 02 95 32 09 14

e-mail: [verind@verind.it](mailto:verind@verind.it)

### 1.3 Responsibility

This manual reflects the state of the system at the time of its placing on the market and is subject to change, at the sole discretion of **Verind SpA**.

If the manual is modified for other similar future systems, **Verind SpA** will not be obliged to update any of the manuals accompanying systems already placed on the market.

**Verind SpA** considers itself relieved of any liability in the event of improper or incorrect use of the system, such as:

- Use of the system by untrained personnel
- Use contrary to current regulations;
- Incorrect or modified installation by the customer;
- Power supply defects;
- Serious maintenance deficiencies;
- Unauthorised system changes;
- Use of unsuitable spare parts;
- Failure to comply with the operating instructions;
- Property damage or personal injury due to failure to observe the safety standards.

### 1.4 Reference standards

Every interaction between the operator and the system has been carefully studied and analysed during the design phase.

The design choices, the features of the system and the instructions reported in this manual are aimed at guaranteeing the highest level of safety for the exposed persons and the operator.

Pursuant to the "Machinery Directive" 2006/42CE, the following definitions should be noted:

|  |  |
|--|--|
| <b>Danger</b>                              | A potential source of injury or damage to health;  |
| <b>Danger zones</b>                        | Any zone within and/or around machinery in which a person is subject to a risk to his health or safety;                                |
| <b>Exposed person</b>                      | Any person wholly or partially in a danger zone;   |
| <b>Operator</b>                            | The person or persons installing, operating, adjusting, maintaining, cleaning, repairing or moving machinery;                          |
| <b>Risk</b>                                | A combination of the probability and the degree of an injury or damage to health that can arise in a hazardous situation;              |
| <b>Guard</b>                               | A part of the machinery used specifically to provide protection by means of a physical barrier;  |
| <b>Protection device</b>                   | A device (other than a guard) which reduces the risk, either alone or in conjunction with a guard;                                     |
| <b>Intended use</b>                        | The use of machinery in accordance with the information provided in the instructions for use;  |
| <b>Reasonably foreseeable improper use</b> | The use of machinery in a way not intended in the instructions for use, but which may result from readily predictable human behaviour. |



## WARNING

If this system is an integral part of another system (paint booths etc.), it is **STRICTLY FORBIDDEN** to put it into operation before the entire system has been declared in compliance with the provisions of the "MACHINERY DIRECTIVE" 2006/42/ CE

List of standards used in design:

|                         |   |
|-------------------------|---|
| UNI EN ISO 12100-1:2010 | Safety of machinery — General principles for design — Risk assessment and risk reduction              |
| UNI EN ISO 13849-1:2016 | Safety of machinery - Safety-related parts of control systems - Part 1: General design principles     |
| UNI EN ISO 13857:2008   | Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs |
| UNI EN 349:2008         | Safety of machinery - Minimum gaps to avoid crushing of parts of the human body                       |
| UNI EN ISO 13850:2015   | Safety of machinery - Emergency stop function - Design principles                                     |
| IEC EN 60204-1          | Safety of machinery - Electrical equipment of machines - Part 1: General rules                        |

### 1.5 Cables and connectors used

All the cables used for the electrical connections are fire resistant and comply with the standards in force. The connectors used are IP65 rated.

### 1.6 Identification


For any communication with **Verind SpA**, always mention the model and serial number on the identification plate on the machine. This document is identified by a serial number that corresponds to the order number to allow traceability and reference. All reproduction and publishing rights of this manual and of any related enclosed documentation are reserved to **Verind SpA**.



### 1.7 Of the manufacturer

|               |  |
|---------------|--|
| Manufacturer: | Verind SpA                                       |
| Address:      | via Papa Giovanni XXIII 25/29<br>20053 Rodano MI |
| Tel.:         | +39 02 95 95 171                                 |
| Fax:          | +39 02 95 32 09 14                               |
| URL           | <a href="http://www.verind.it">www.verind.it</a> |

#### 1.7.1 Of the product

The data of the machine are reproduced on an aluminium plate affixed on the machine.

|   |                 |
|---|-----------------|
| Macchina<br>Machine   | EcoDose 2K Easy |
| Serie/Tipo<br>Series/Type   | Mxxx            |
| n°. serie<br>serial n°.   | 1xxxx-1         |
| Anno<br>Year  | 2022            |
| <b>Verind S.p.A.</b><br>Via Papa Giovanni XXIII,25/29<br>20053 Rodano (MI) - ITALIA<br>Phone +39 02 95 95 171<br>C.F.e Part IVA n.00801640152<br>verind@verind.it |                 |
|    |                 |

|  |                                      |
|--|--------------------------------------|
| Macchina<br>Machine  | PANNELLO FLUIDICO<br>EcoDose 2K Easy |
| Serie/Tipo<br>Series/Type  | Mxxx                                 |
| n°. serie<br>serial n°.  | 1xxxx-1                              |
| Anno<br>Year   | 2022                                 |
| <b>Verind S.p.A.</b><br>Via Papa Giovanni XXIII,25/29<br>20053 Rodano (MI) - ITALIA<br>Phone +39 02 95 95 171<br>C.F.e Part IVA n.00801640152<br>verind@verind.it                                |                                      |
|   II 3G Ex h IIA T4 Gc |                                      |

In addition, as the fluid panel can be installed inside the paint booth, after a verification incumbent with the user that the Atex marking of the hydraulic system panel corresponds to the ATEX classification of the paint booth, the following CE + ATEX marking is applied to the fluid panel.

The data is shown on an aluminium plate affixed to the machine.

### 1.8 Warranty

**Verind SpA** undertakes to replace any individual part that proves to be defective within **twelve months** after delivery.

Any changes brought to the machine and/or to its accessories without a prior written authorisation from **Verind SpA** will invalidate the total or partial warranty and the Declarations of Conformity that may have been supplied with the equipment. The WARRANTY shall become null and void in the event of improper use or tampering with the components or if the instructions reported below are not followed. Repairs under warranty will be carried out exclusively at the **Verind SpA** premises. The material must arrive FOB designated port and will be returned freight collect. In the event of on-site operations, the customer must pay the travel expenses at the current rates.

## 2 Safety and Residual Risks

### 2.1 Symbols

For the purposes of this manual, the graphical symbols reported in Standard UNI EN ISO 7010 will apply; each of them has an unique number and meaning.



**GENERAL PROHIBITION (P001):** “Prohibition” signs are identified by a red ring and diagonal bar over a black symbol on white background. They indicate an action that should be avoided.



**GENERAL WARNING (W001):** “Prohibition” signs are identified by a triangle with yellow background and black symbol. This sign indicates a potentially dangerous situation that, if not avoided, could result in injuries.



**GENERAL MANDATORY ACTION (M001):** “Mandatory action” signs are identified by a blue circle with white symbol. They indicate an action to be performed.

Some information is highlighted by graphical symbols intended to draw the reader's attention.



**Note:**  
Provides supplementary information or guidance.

Explanations of Safety Notes and Symbols.



#### HAZARD

The red safety note “HAZARD” indicates a high risk that can result in very serious injury or death.



#### WARNING

The orange safety note “WARNING” indicates a medium risk which may, however, result in serious injury or death in particular cases.



#### CAUTION

The yellow safety note “CAUTION” indicates a low risk that could result in insignificant or minor damage.



#### CAUTION

The blue safety note “NOTICE” indicates a risk that could result in property damage and could affect production.



## 2.2 Instructions on how to approach the machine

The number of operators indicated, their qualifications and intervention procedures, are optimised to ensure the safety and health of employees and to achieve the final goal.

Failure to observe the instructions herein will seriously endanger the safety and health of the operators and/or could prevent the achievement of the desired result.



### HAZARD

It is forbidden to install or use the machine in explosive atmospheres (ATEX). Only the fluid section can be installed in Atex Zone 2.

The employer is responsible for making this document available for all the personnel that interacts with the machine.

Operators who are to interact with the machine have the duty to adequately document themselves using this manual before carrying out any work, adopting the specific safety prescriptions to make any type of man-machine interaction safe. Operators, in addition to scrupulously complying with the contents of this document, must in any case adopt and necessarily observe the general accident prevention regulations provided for in EU directives and the legislation of the country of destination.

The machine must be operated and serviced by qualified operators, authorised by the customer, who have previously participated in the training conducted by **Verind SpA** technicians.

Operators are bound to report to their direct supervisors any deficiencies and/or potential dangerous situations that occur.

The customer must inform **Verind SpA** immediately of any defect and/or malfunction of the accident prevention systems, as well as of any suspected hazardous situation that might come to their attention.

The customer and/or third parties (excluding duly authorised **Verind SpA** personnel) are absolutely forbidden from making changes of any kind or extent to the machine and its functions, as well as to this technical document.



### HAZARD

Before switching on the machine and starting work, the electrical panels, the control panels and all the protective casings must be closed and the operator workstations must be clear and clean.

## 2.3 Definitions for “operator” and “specialist technician”

The term “**operator**” refers to a professional who has access to the machine for production and routine maintenance purposes.

This definition refers to personnel who are familiar with the operating and maintenance procedures of the machine and who meet the following requirements:

1. Training that authorises them to operate in accordance with the safety standards as regards the possible hazards associated with the presence of electricity and moving parts.
2. Training on the use of Personal Protective Equipment and on basic first aid.

The term “**specialist technician**” refers to a professional responsible for the installation, start-up and extraordinary maintenance of the machine.

This definition refers to personnel who are familiar with the installation, assembly, repair and servicing procedures of the machine and who have specific technical qualifications (electrical, mechanical, pneumatic). In addition to the requirements listed for operators, specialist technicians must also have adequate technical training or at least specific training on the safe use and maintenance procedures of the machine.



### CAUTION

The employer must instruct staff on accident risks, operator safety devices, require compliance with company rules and provisions in safety and means of protection.

The operator must observe the instructions and directions given by the employer or the persons in charge and, in particular, must:

- Use the system, equipment, tools, work and safety devices correctly.
- Use the personal protective equipment properly.
- Immediately report any hazardous situations.
- Do not remove or modify the safety devices or control signals.
- Carefully follow the instructions in this manual.



### WARNING

The tampering with or replacement of one or more parts of the system, the use of accessories or consumables other than those recommended by Verind SpA could result in injury and will relieve Verind SpA of any civil or criminal liability.



### WARNING

Before switching on the system and starting work, the doors of the electrical panels, control panels and all other safety doors must be closed and the operator workstations must be clear and clean.

## 2.4 Personal Protective Equipment (PPE)

The employer is responsible for the Operating Procedures on site and for allocating the correct PPE to workers. Below are some general considerations that can be applied by the HPPD when drawing up the above-mentioned Operating Procedures valid on site. The following considerations should not be regarded as binding in the choice of PPE, which must ultimately be made exclusively by the Employer.



Use of the devices mentioned in this paragraph is mandatory during operation and maintenance of the equipment.

Personnel working on and/or passing by the equipment must not wear loose-fitting clothing, laces, belts, bracelets or other parts that may cause danger. Any long hair must be gathered in such a way so as not to pose a danger. The use of PPE in work operations is regulated by the legal provisions in force (Legislative Decree 81/08). Please find below the PPE recommended for the installation, use and dismantling of the equipment.

**The PPE must be adequately preserved and replaced in case of loss of effectiveness.**

| PPE            | Reference   |
|----------------|---|
| Safety shoes   | ISO-EN 20345 S3 SRC<br>ANTISTATIC RESISTANT TO HYDROCARBONS               |
| Clothing       | Technical clothing EN 340   |
| Gloves         | Polyamide knit coated palm<br>Mechanical hazard protection<br>EN 388-4121 |
| Ear protectors | Ear plugs - headband SNR 24   |
| Dust mask      | Filtering face mask FFP1/A2   |
| Glasses        | EN166, optical class 1 mechanical strength F                              |



### WARNING

As regards the PPE to be used during work and when handling chemical products, reference **MUST** be made to their safety data sheet.

The following signs summarise the protective equipment to be worn.



**Safety footwear** (M008) Use: Always, Non-Conductive Shoes



**Protective gloves** (M009) Use: Always



**Protective clothing** (M010) Use: Always



**Eye protection** (M004) Use: Always



**Hearing protection** (M003) Use: If the airborne noise level measured during production exceeds the danger threshold set out in the regulations in force in the Country where the machine is used.



**Protective helmet** (M014) Use: If the machine works in environments where suspended loads are present (e.g. overhead conveyors).

## 2.5 Signs and Labels

The following signs must be displayed at all access points to the room where the machine is installed:



**Do not alter the state of the switch** (P031) It prohibits tampering, even temporary, with the active safety devices.  
Make sure that the guards and safety devices are efficient.



**Temporary removal of guards** - The guards and safety devices of the machine must NOT be removed unless required for special works that will be carried out adopting all the measures necessary to minimise the resulting risk and under the supervision of line managers.



**Transit prohibited** (P004) Access to the machine's operating area to all persons except the machine operator only is prohibited.



**Electricity hazard** (W012) It indicates the presence of live parts.



**Obligation to disconnect for maintenance** (M021) It signals the obligation to disconnect the machine from energy sources before starting any operation.



**General mandatory action** (M001) It indicates that any faults and malfunctions noticed on the safety and protective devices as well as any hazardous situations must be immediately reported.



**Do not extinguish with water** (P011) Do not use water to extinguish fires; only use powder or carbon dioxide fire extinguishers.



**No smoking** (P002) This sign prohibits smoking in the area of the sign.

## 2.6 Intended Use

EcoDose 2K Easy is designed for dosing and mixing fluid components (usually bases and catalysts) according to preset ratios.

Dosing is achieved by controlling the amount of each component through the timed opening of pneumatic valves. The components thus dosed are mixed in a mixing section, which is connected to the dispensing devices.

Mixed components can remain for a limited time inside the machine and in the supply circuits.

The circuits through which the fluids pass are washed cyclically with specific solvents.

The wash cycles are controlled by pneumatic valves governed by EcoDose 2K Easy, located inside EcoDose 2K Easy.

The machine is designed in such a way that all its functions can be operated and controlled by a single operator. The intended workstation is located in front of the control panel, from where the operator can check the correct operation of the system.

Any other application is to be considered unauthorised, prohibited and potentially dangerous.

For any different application, the Customer must absolutely contact **Verind S.p.A.** to obtain written approval of such a different permitted use.

## 2.7 Safety Instructions and Residual Risks

### Equipment Safety Warnings

These safety warnings are of a general nature and should be read carefully.

Please find below the special safety warnings for each individual residual risk.

In relation to risk analysis, risk assessment and risk mitigation, the following considerations and recommendations are highlighted.

### 2.7.1 GENERAL CONSIDERATIONS

#### General

- “Residual risks” are defined as risks that could not be sufficiently eliminated or mitigated in the design stage and are, therefore, potentially present on the equipment.
- To check what residual risks are present during the installation and use of components when integrated in the existing system, please refer to the appropriate documents in the relevant sections. Read the documents mentioned to learn about possible misuse and their warnings.
- Improper use of the equipment could lead to hazardous situations for the operator as well as for the equipment.
- It is forbidden to change, tamper with or alter in any way the structure of the equipment or the fitted devices, the operating sequence etc., without a prior consultation with and a written authorisation from the Manufacturer.
- Do not use the equipment for purposes other than those for which it was designed.

## HAZARD

It is absolutely forbidden to use the equipment for purposes other than those indicated.

- **Emergency Interventions** - The following information is of a general nature. The nature of the compounds/paints used for processing must be taken from the safety data sheets of the products chosen and employed by the end user.
- **First-aid Interventions** - For any first aid interventions, follow your company regulations and the current standards.

## CAUTION



The following safety instructions deal with specific hazards that may arise during installation, operation, cleaning and maintenance of the equipment.

These instructions are to supplement existing regulations (national and company-specific) on safety and health at work.

The installation, operation and maintenance of the equipment shall be carried out only by personnel who have been provided with the necessary training.

## CAUTION



Verify that users (operators, maintenance technicians) have fully read and understood the instructions of use and particularly the safety specifications. It is advisable, according to each specific case, to confirm the above in writing. The units can be used only with products and under the operating conditions provided for in the purchase specifications or/and in the user instructions.

Any use other than that for which the equipment is intended or any employment by untrained personnel may cause risks to the safety of people

- **Verind S.p.A.** shall NOT be held liable for any damage caused by such use or changes not authorised in writing.
- All transformations or changes affecting the safety of the units that are not authorised in writing by **Verind S.p.A.** are forbidden.
- Hazards due to Equipment Misuse

## WARNING



The equipment is in a safe condition when used under the conditions described in this manual. Any use other than that described (e.g., excessive pressure values, incompatible process or washing materials, alteration and/or modification of the system components etc.) may be the source of dangerous situations and behaviours that are not easily predictable. Verify that the earthing system complies with current regulations. Liquids in the work area must be stored in approved earthed containers. **DO NOT** provide more material than is required for one work shift or more than the maximum quantity indicated by the user's risk analysis of the classification and use of the area in which the equipment is located.

### 2.7.1.1 CONTROL SYSTEMS

- Do not disable the safety devices or elude the alerts, alarms and warnings communicated automatically or via the warning plates installed on the system.



- Machine controls are located on the control panel (ref. Chapter 12.1)
- With regard to the Emergency Stop, please note that this stop is implemented via the main disconnecting switch (1) located on the general control panel

### 2.7.1.2 PROTECTIVE MEASURES AGAINST MECHANICAL HAZARDS

As regards the scope of supply in question, the following risks are present in the various phases of installation, use, maintenance, cleaning and dismantling, which have been reduced as far as possible, but not totally eliminated:

- Loss of stability,
- Break-up during operation
- Falling or projecting objects
- Edge or corner surfaces

Therefore, the following provides intrinsic solutions, instructions and the use of PPE that contribute to the reduction of these risks.

### 2.7.1.3 RISKS DUE TO OTHER HAZARDS

- It is strictly forbidden to store combustible material (e.g., paints and solvents) in the vicinity of equipment that is not marked as suitable for use with solvent-based paints (ATEX marking).

#### 2.7.1.3.1 Electricity - Static Energy - Earthing



### HAZARD



The metal parts of systems that come in contact with people and which, due to a lack of insulation or other causes, could be live, must be earthed.

---

#### 2.7.1.3.2 Energy other than Electricity - Energy of pressurised fluids (Compressed Air and Paints and Solvents)

There are risks due to the presence of Compressed Air and Pressurised Liquids (paints and solvents)

#### 2.7.1.3.3 Fire - Explosion - Fire-fighting measures

Do not use water to put out fires, only powder or carbon dioxide extinguishers.

Some products may release toxic fumes into the atmosphere when heated or during a fire. Always use a respirator when extinguishing fires. In any case, scrupulously follow the established company procedures and the safety data sheets of the materials used.

#### 2.7.1.3.4 Noise and Vibration

The machine does not exhibit any significant noise or vibration under normal conditions; however, in the event of malfunction or failure, noise or vibration may be generated.

#### 2.7.1.3.5 Materials and Substances

Breakage and incorrect maintenance can result in the release of materials and substances, specifically paints, solvents and compressed air.

#### 2.7.1.3.6 Slipping, Tripping and Falling

In the event of breakage and incorrect maintenance, there is a risk of slipping, tripping and falling.

### 2.7.1.4 MAINTENANCE

- 1 The equipment should be stopped immediately if they show faults that could pose a danger to employees or third parties.
- 2 In the case of cleaning or maintenance with chemicals, the instructions of the supplier of such products shall be complied with.

**WARNING**

Do not carry out any maintenance work without first disconnecting the system from the power supply (where present)

**WARNING**

Before touching the system, make sure that all power sources have been cut out.

- 3 Only suitably trained specialist personnel must be allowed to access the machine for maintenance work.
- 4 During the entire intervention time, signs of “System under maintenance” must be displayed in the department in a visible way for all access areas.
- 5 Any work on the equipment should only be carried out after it has been stopped. The main power supply switch or pneumatic valve, where there is one, must be set to “0” and locked with a special padlock. Such a lockable switch or valve is the responsibility of the customer and must be considered in the customer's risk analysis. The power supply line upstream the equipment must be cut off. The pneumatic supply line must be disconnected upstream of the equipment.
- 6 The pneumatic panel and the the electrical panel, where present, must be always closed with a key and access to them will be allowed only to suitably trained personnel.
- 7 All routine and extraordinary maintenance operations must be recorded in a special logbook by the customer, indicating the date, time, type of operation, name of the operator and all useful information.
- 8 After maintenance operations, before restoring the electric or pneumatic power supply, carry out a thorough check to make sure that no tools and/or other materials have been left in the operating area of the equipment and that all connections are correctly tightened.

Please find below a brief summary of the concepts described above:

### 2.7.1.5 GENERAL MAINTENANCE INSTRUCTIONS

Before starting any general maintenance work, remember to:

- a) Disconnect all power sources: ELECTRICITY, COMPRESSED AIR, HYDRAULIC ENERGY etc., etc.
- b) Check the efficiency of the earthing connections of all the systems
- c) Dissipate the residual energy,
- d) Check that all the system parts are at a permanent standstill
- e) Thoroughly stick to your company's safety plan provisions
- f) Place padlocks on the switches/valves to prevent accidental restarting.
- g) Integrate the above operations with the LOTO (LockOutTagOut) procedures as outlined in the Operating Instructions set out by the HPPD.

### 2.7.1.6 TRAINING

1. The equipment must only be used by personnel who are familiar with its operation and who have understood what is described in this manual and in the Instructions to be drawn up by the End-User following the incorporation of this equipment into the system set out by the End-User or their representative.
2. The equipment shall be maintained and used in accordance with the instructions herein and as suggested from time to time.
3. The department manager must instruct the operators and the maintenance technicians on the safe use and maintenance of the equipment.
4. The work area must be provided with adequate ventilation and extraction systems, by the user, Employer, HPPD.

## 2.7.2 RESIDUAL RISKS

Please find below a detailed list of the residual risks that remain during the use of the supplied equipment, with reference to the Essential Health and Safety Requirements (EHSRs) and the Residual Risks as required by the Machinery Directive 2006/42/EC.

### CAUTION



Remember that there is NO insurance compensation that can physically replace a finger, hand or other parts of the body amputated or otherwise rendered unusable as a result of accidents caused by errors or distractions.

Therefore, ALWAYS follow the General Instructions and specific instructions of each component of the system, in particular those relating to safety, on any occasion, for example:

- During installation, start-up, testing;
- When using the equipment;
- During maintenance and cleaning

#### 2.7.2.1 Residual Risks - Materials to Products (EHSR 1.1.3)

The supplied Equipment, as described in Chapter 3 below, uses paints and solvents that must be used in accordance with the technical data sheets of the individual components.

Carefully consider the residual risks listed in the data sheets, particularly with regard to toxicity and flammability. The equipment contains fluid and materials (paint products) that can cause injury in the event of faults or maintenance work carried out incorrectly, i.e. without having carried out LOTO procedures beforehand.

#### 2.7.2.2 Hose Handling Precautions

**Do not** pull the hoses to move the equipment to which it is connected.

**Do not** use solvents or products incompatible with the internal or external coatings of the hose.

**Do not** expose hoses to temperatures above 180°F or below 0°C (REF.. UNI EN 12621)

### CAUTION



#### Hazard due to splashing material!

Chemical burns of the skin caused by material coming out of the damaged paint tubes and from the change colour valves.

Check the paint tubes and the colour change valves regularly. Release any residual pressure before working on the colour change valves and product tubes.



### WARNING

To eliminate these risks, always follow the instructions given in this manual.

#### 2.7.2.3 Residual Risks - Lighting (EHSR 1.1.4)

The supplied machine, as described in Chapter 3 below, must be positioned in locations with excellent lighting, avoiding poor visual conditions and subsequent visual damage to authorised personnel.

#### 2.7.2.4 Residual Risks - Machine design for handling purposes (EHSR 1.1.5)

The supplied machine, as described in Chapter 3 below, is designed for safe handling, provided that the instructions for handling and installation are strictly followed. In particular, carefully consider the weight of the equipment, lifting points and suitable lifting and handling equipment.

#### 2.7.2.5 Residual Risks- Ergonomics (EHSR 1.1.6)

The supplied machine, as described in Chapter 3 below, was designed in accordance with ergonomic principles; reference must be made to the instructions of the individual assemblies or components in order to avoid problems associated with incorrect use and incorrect posture or mode of operation that can lead to personal injury.



### 2.7.2.6 Residual Risks - Control Systems (EHSR 1.2 - all paragraphs)

The supplied machine, as described in Chapter 3 below, was designed in accordance with the stated principles regarding control systems.

Despite the reduction of initial risks through risk analysis, risk assessment and risk mitigation, carried out by **Verind**, there are still residual risks that have been examined in the light of the following paragraphs on EHSR:

Residual Risks - Safety and Reliability of Control Systems (EHSR 1.2.1)

Residual Risks - Control Devices (EHSR 1.2.2)

Residual Risks - Start up (EHSR 1.2.3)

Residual Risks- Shutdown (EHSR 1.2.4)

Residual Risks - Selecting the Control or Operating Mode (EHSR 1.2.5)

Residual Risks - Energy Circuit Failure (EHSR 1.2.6)

Therefore, it is forbidden to tamper with, modify or alter the control systems and reference must be made to the instructions of the individual assemblies or components in order not to incur problems due to incorrect use and manner of operation that may result in property damage or personal injury.

### 2.7.2.7 Residual Risks - Loss of Stability (EHSR 1.3.1)

The supplied machine, as described in Chapter 3 below, was designed for safe handling, provided that the instructions for handling and installation are strictly followed. In particular, carefully consider the weight of the equipment, lifting points and suitable lifting and handling equipment to avoid loss of stability of the equipment during installation, use and maintenance.

In particular, great care is required when handling drums of paint or solvents that could cause serious property damage or personal injury if they tip over.

### 2.7.2.8 Residual Risks - Breakage during Operation (EHSR 1.3.2)

The supplied machine, as described in the following Chapter 3, was designed to avoid possible breakage of components. However, it is possible that originally defective components or wear and tear of the components may lead to breakages that may cause property damage or personal injury.

In particular, pay attention to the condition of paint or solvent pipes and compressed air pipes.

If anomalies or signs of breakage or damage are noted, the parts identified must be replaced immediately, following the procedures indicated in their instruction manuals for the individual parts or assemblies.

If one of the components fails, it could release compressed air, paint, solvent or parts of the components. Be careful and use PPE.

### 2.7.2.9 Residual Risks - Falling or Projecting Objects (EHSR 1.3.3)

The supplied machine, as described in Chapter 3 below, is subject to falling or projecting objects, in the event of incorrect use and in the event of faults. Take care to use the equipment correctly and use PPE.

During transport, installation or disassembly, it is possible that equipment may fall if the procedures followed are incorrect and different from those specified in this manual.

Strictly follow transport, installation and dismantling instructions and use PPE.

### 2.7.2.10 Residual Risks - Surfaces, Edges or Corners (EHSR 1.3.4)

During transport, installation, operation, maintenance or disassembly, it is possible to hit surfaces of the equipment that may cause cuts or abrasions.

Follow the instructions for transport, installation, operation, maintenance and dismantling and use PPE.

### 2.7.2.11 Residual Risks - Electricity (EHSR 1.5.1)

The supplied machine, as described in Chapter 3 below, presents residual risks due to Electricity.

In particular, the panel presents residual risks due to the presence of Electrical and Electrostatic Energy.



**Warning: Electricity (W012)** It indicates the presence of live parts.

### 2.7.2.12 Residual Risks - Static Electricity (EHSR 1.5.2)

The supplied machine, as described in Chapter 3 below, presents residual risks due to static electricity.



#### HAZARD



The metal parts of systems that come in contact with people and which, due to a lack of insulation or other causes, could be live, must be earthed.

#### CAUTION

The passage of the product at high speed in the pumps and pipes generates static electricity with possible formation of sparks. These sparks can ignite product vapours in transit, dust and/or other hazardous substances, regardless of whether the work is carried out indoors or outdoors, and cause fires or explosions with possible personal injury or serious material damage.



If sparks from static electricity occur or the slightest discharge is felt, IMMEDIATELY INTERRUPT THE DISTRIBUTION of the product. DO NOT use the system again before identifying and solving the problem. In order to avoid static electricity risks, the equipment must be grounded as specified below.



Moreover, it is necessary to install proper extinguishing means close to the system, according to the indications in the product data sheet.

In order to avoid the risks arising from static electricity, all conductive components of the system must be connected to the earthing system on site.

People also fall into this category and will therefore have to wear antistatic footwear and gloves. Finally and for the same reasons, the flooring in the painting area must be antistatic, such as bare concrete, metal gratings etc.

Painting booths must be properly ventilated to avoid accumulation of hazardous vapours.

### 2.7.2.13 Residual Risks - Energy other than Electricity (EHSR 1.5.3)

The supplied machine, as described in Chapter 3 below, presents residual risks due to Energy other than Electricity.

The following energy sources are present:

- Energy due to Compressed Air;
- Energy due to Liquids under pressure.

Pay attention to residual risks from Compressed Air and Pressurised Fluids (paints and solvents), during start-up, operation, maintenance and cleaning, by following the instructions and using the correct PPE.

### 2.7.2.14 Residual Risks - Assembly Errors (EHSR 1.5.4)

During initial assembly or subsequent maintenance, it is possible to incur installation or reassembly errors.

In particular, the maintenance of components such as Pumps, Paint Guns, Product Pressure Regulator, Valves etc. must be carried out according to the instructions of the individual components, paying attention to the correct reassembly following disassembly to replace worn or damaged parts.

In addition, pneumatic, fluid or electrical connections during maintenance or replacement may be subject to assembly or reassembly errors. Pay attention to and follow the relevant instructions and use the necessary PPE.

### 2.7.2.15 Residual Risks - Fire (EHSR 1.5.6) and Explosion (EHSR 1.5.7)

The supplied machine, as described in Chapter 3 below, presents residual risks due to Fire and Explosion. Even if it is a system intended for water-based 2K products, the presence of dilution and washing products of a flammable type, in the presence of oxidisers and igniters, presents a risk of Fire and Explosion. Reference should be made to the technical data sheets of all products in use to determine their hazardousness and the correct procedures for their use.

#### CAUTION

Passage of the product at high speed through pumps and hoses generates static electricity, which can ignite a fire or explosion with possible serious personal injury or property damage.

In addition, the presence of high-voltage generators (up to 100,000 volts) presents the possibility of creating a fire and/or explosion ignition with possible serious personal injury or property damage.

If sparks from static electricity occur or the slightest discharge is felt, IMMEDIATELY INTERRUPT THE DISTRIBUTION of the product.

DO NOT use the system again before identifying and solving the problem.



In order to avoid the risks arising from static electricity, all conductive components of the system must be connected to the earthing system on site.



People also fall into this category and will therefore have to wear antistatic footwear and gloves. Finally and for the same reasons, the flooring in the painting area must be antistatic, such as bare concrete, metal gratings etc.

In the case of equipment electrostatically charged by the High Voltage Generator, specifically some paint units, the EcoDose 2K Easy panels, the paint pipes and paint guns.

In order to access such equipment, for inspection, maintenance or cleaning purposes, it must be earthed using a pneumatic earthing arrester.

In addition, suitable extinguishing equipment must be installed in the immediate vicinity of the system, according to the indications of the product sheets, the risk analysis and the analysis of any ATEX areas to be carried out by the customer.

Painting booths must be properly ventilated to avoid accumulation of hazardous vapours. Such

### 2.7.2.16 Residual Risks - Noise (EHSR 1.5.8)

The supplied machine, as described in Chapter 3 below, presents residual risks due to Noise. Under normal conditions of use, noise emissions are not expected to exceed the requirements of the Machinery Directive 2006/42/EC

During use, maintenance and cleaning, there is a risk of potentially dangerous noise emissions in the event of a component failure and consequent loss of compressed air.

Follow the operating and maintenance instructions and use appropriate PPE.

### 2.7.2.17 Residual Risks - Vibrations (EHSR 1.5.9)

The supplied machine, as described in Chapter 3 below, presents residual risks due to vibration. Under normal conditions of use, vibrations are not expected to exceed the requirements of the Machinery Directive 2006/42/EC

During use, maintenance and cleaning, there is a risk of potentially dangerous vibrations in the event of a component failure and consequent loss of compressed air.

Follow the operating and maintenance instructions and use appropriate PPE.

### 2.7.2.18 Residual Risks - Emissions of Materials and Substances (EHSR 1.5.13)

The supplied machine, as described in Chapter 3 below, presents residual risks due to the emission of materials and substances.

In the event of incorrect use and of a fault, during use, maintenance and cleaning of components such as pumps, paint guns, product pressure regulators, valves, mixers, piping etc., it is possible that materials and substances (paints and solvents) may be released.

Pay attention to and follow the relevant instructions and use the necessary PPE.

#### CAUTION



##### **Hazard due to splashing material!**

Chemical burns of the skin caused by material coming out of the damaged paint tubes and from the change colour valves.

Check the paint tubes and the colour change valves regularly. Release any residual pressure before working on the colour change valves and product tubes.



#### WARNING

To eliminate these risks, always follow the instructions given in this manual.

### 2.7.2.19 Residual Risks - Slipping, Tripping and Falling (EHSR 1.5.15)

The supplied machine, as described in Chapter 3 below, presents residual risks of slipping, tripping and falling.

In the event of improper use and in the event of a fault, during use, maintenance and cleaning of the equipment, it is possible that materials and substances (paints and solvents) may be released, which can cause slippery surfaces and thus slips, trips and falls

Pay attention to and follow the relevant instructions and use the necessary PPE.

### 2.7.2.20 Residual Risks - Machine Maintenance (EHSR 1.6.1) - Residual Risks - Operator Intervention (EHSR 1.6.4)

The supplied machine, as described in Chapter 3 below, presents residual risks due to maintenance and cleaning operations.

Therefore, before accessing the machine to carry out maintenance or cleaning operations, always stop the machine, release the residual energy and interlock the energy supply switches/valves.

The personnel must also follow the Procedures indicated by the employer.

#### WARNING



Before carrying out any operation (maintenance, adjustment etc.) in the vicinity of the pumps, regulators, automation devices etc., MAKE SURE THAT SUCH PARTS ARE IN A PERMANENT STATE OF QUIET and that there is no such thing as any possibility of their unexpected start.

### 2.7.2.21 Residual Risks - Access to Workstations and Servicing Points (EHSR 1.6.2)

The supplied machine, as described in Chapter 3 below, presents potential residual risks during maintenance and cleaning operations when accessing workstations and servicing points. It is essential to follow the instructions scrupulously and use appropriate PPE.

### 2.7.2.22 Residual Risks - Isolation from Power Sources (EHSR 1.6.3)

In order to check, maintain or clean the equipment included in the scope of supply, it is mandatory for the operator or maintenance technician to eliminate all residual energy in the machine, whether electrical, pneumatic, hydraulic, fluid, mechanical etc.

Therefore, any work on the equipment should only be carried out after stopping it and releasing residual energy. Failure to follow these instructions may result in personal injury or property damage.

To operate as above, the electrical, fluid or pneumatic supply line must be disconnected upstream of the electrical/electro pneumatic panel or individual units.

**Such a lockable switch or valve is the responsibility of the customer** and must be considered in the customer's risk analysis.

The employer's Operating Instructions will provide for appropriate LOTO procedures. (Lock Out Tag Out)

### 2.7.2.23 Residual Risks - Cleaning of Internal Parts (EHSR 1.6.5)

The supplied equipment, as described in Chapter 3 below, presents potential residual risks during cleaning operations when accessing internal parts.

It is essential to follow the instructions scrupulously and to use appropriate PPE.

### 3 Description and features

#### 3.1 Application and intended use

The EcoDose 2K Easy is built exclusively for use in surface finishing or similar activities and should only be installed, maintained and repaired by personnel who know the equipment very well and have been informed about the dangers.

The main rules for accident prevention should be observed, as well as the safety regulations.

The controls were designed exclusively for the operation of dosing components with the EcoDose 2K Easy mixing equipment.

Passwords for changing input parameters should only be given to extremely qualified personnel.

Use only with products compatible with its components.



## DANGER

EcoDose 2K Easy must not be installed in areas with a potentially explosive atmosphere.



### Earthing



The metal parts of systems that come in contact with people and which, due to a lack of insulation or other causes, could be live, must be earthed. For this purpose, there is a contact point identified by an adhesive label (see drawing) on the machine bed plate that can be used for connection to the general earthing system of the factory.

### 3.2 Machine Function (General Description)

EcoDose 2K Easy is designed for dosing and mixing fluid components (usually bases and catalysts) according to preset ratios. Dosing is achieved by controlling the amount of each component through the timed opening of pneumatic valves.

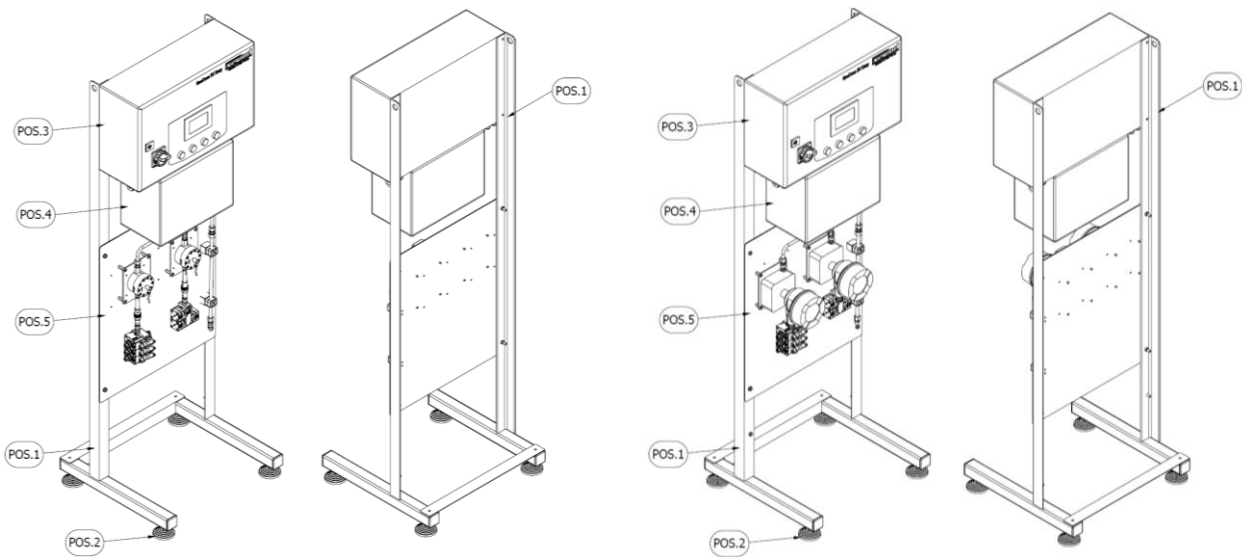
The components thus dosed are mixed in a mixing section, which is connected to the dispensing devices.

Mixed components can remain for a limited time inside the machine and in the supply circuits.

The circuits through which the fluids pass are washed cyclically with specific solvents.

The wash cycles are controlled by pneumatic valves governed by EcoDose 2K Easy, located inside EcoDose 2K Easy.

In its basic configuration, EcoDose 2K Easy includes:



#### Gear version / Coriolis version

- 1 Supporting frame
- 2 Support feet
- 3 Electric panel
- 4 Pneumatic panel
- 5 Fluid panel

### ATTENTION



See drawing for a complete list of components and codes:

N10140003\_14 - ECODOSE 2K EASY GENERAL ASSEMBLY - GEAR FLOW METER VERSION LP

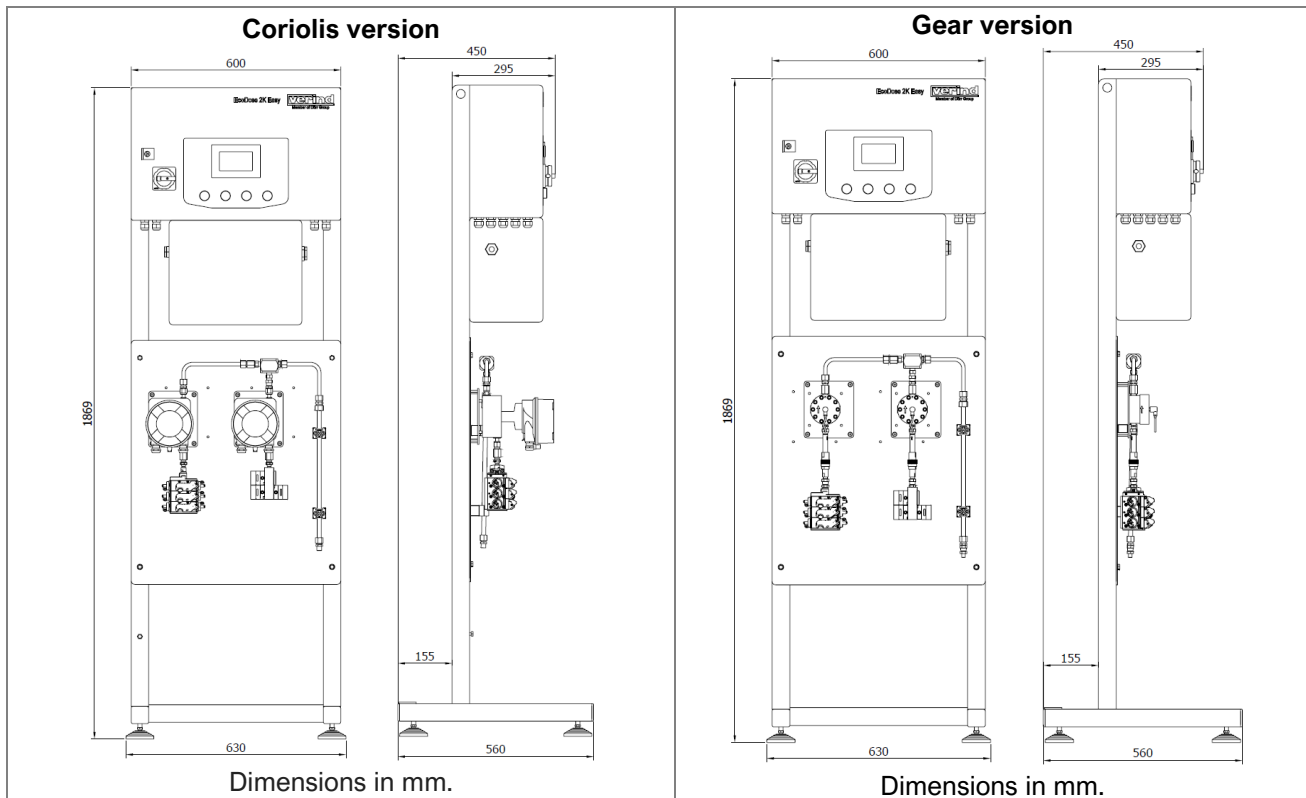
N10140015\_26 - ECODOSE 2K EASY GENERAL ASSEMBLY - GEAR FLOW METER VERSION HP

N10140027\_30 - ECODOSE 2K EASY GENERAL ASSEMBLY - CORIOLIS FLOW METER VERSION LP

N10140031\_34 - ECODOSE 2K EASY GENERAL ASSEMBLY - CORIOLIS FLOW METER VERSION HP

Attached to this manual.

### 3.3 Technical Data

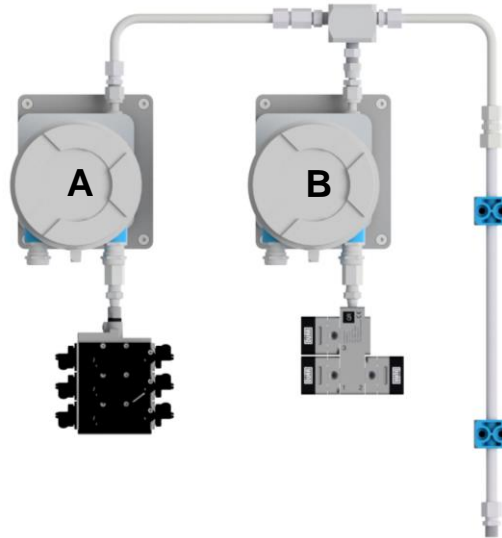


|                                   |   |                            |
|-----------------------------------|---|----------------------------|
| Product temperature               |   | <b>15° C min.</b>          |
| Product temperature               |   | <b>40° C max.</b>          |
| Air inlet pressure                |   | <b>5.5 to 8 bar</b>        |
| Mixing ratio (variable)           |   | <b>from 1:0 to 10 :1</b>   |
| max. in/out pressure              | (with <b>low</b> pressure c. c. valves)               | <b>20 bar</b>              |
| max. in/out pressure              | (with <b>high</b> pressure c. c. valves and gear)     | <b>200 bar</b>             |
| max. in/out pressure              | (with <b>high</b> pressure c. c. valves and coriolis) | <b>200 bar</b>             |
| Ambient temperature               |   | <b>from 10° C to 40° C</b> |
| Transport and storage temperature |   | <b>from 10° C to 40° C</b> |
| Supply voltage                    |   | <b>100 - 240 VAC</b>       |
| Frequency                         |   | <b>50 – 60 Hz</b>          |
| Phases                            |   | <b>Ph+N</b>                |
| Breaking capacity                 |   | <b>14kA</b>                |
| Rated power                       |   | <b>130W</b>                |
| Power consumption                 | plc B&R - Coriolis                                    | <b>92W</b>                 |
| Power consumption                 | plc B&R - Gear  | <b>60W</b>                 |
| Current consumption               | plc B&R - Coriolis                                    | <b>0.4A</b>                |
| Current consumption               | plc B&R - Gear  | <b>0.26A</b>               |
| Degree of protection              |   | <b>IP55</b>                |
| Weight Coriolis version           |   | <b>about 120 kg</b>        |
| Weight Gear version               |   | <b>about 100 kg</b>        |





### 3.4.2 Coriolis Flow Control

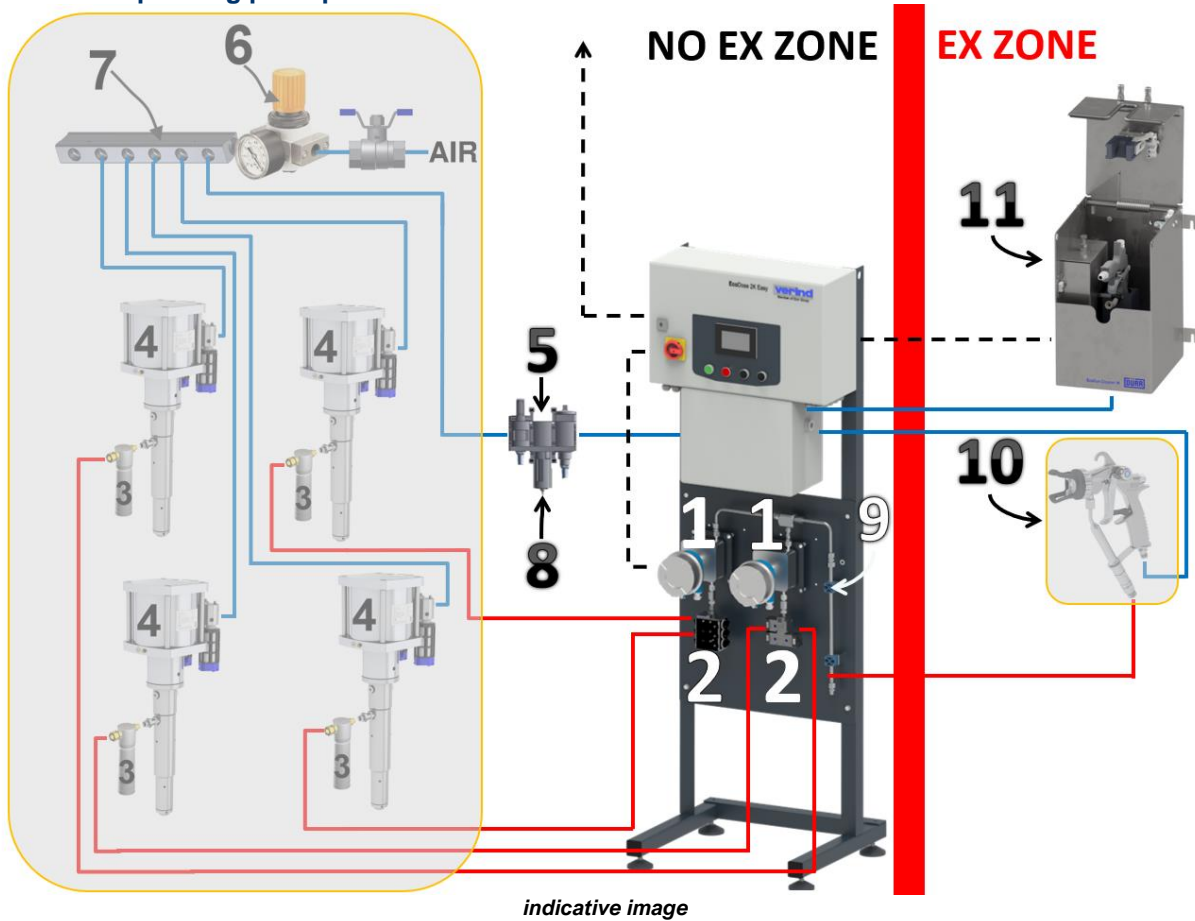


Coriolis Flow Meter A or B type 1

| COR A | COR B | Flow rate<br>Flow range | Mixing ratio<br>Range | Range<br>Viscosity A CPS | Range<br>Viscosity B CPS |
|-------|-------|-------------------------|-----------------------|--------------------------|--------------------------|
| 1     | 1     | 40cc / 3400cc           | 1:1 to 10:1           | 20 - 500                 | 20 - 500                 |

Colour change valves : Low or high pressure  
 no. of colours with B.P. valves : 2 - 4 - 5  
 no. of colours with A.P. valves : 1 - 3 - 5  
 no. of catalysts : 1- 3  
 no. of guns : 1  
 no. EcoGun CleanerM : 1

### 3.5 Operating principle



Compressed air is supplied from the customer's network via the manual valve (5).  
Feeding devices consist of pressure generators (4), usually pumps, for paint and washing products.



#### CAUTION

It is imperative for the products to be filtered through the filter (3) between the pumps and the valves.



#### CAUTION

For a correct operation, it is essential that the feed pressure of the catalyst converter circuit should be 0.5 to 1 bar higher than the feed pressure of the base circuit. This value may change depending on the viscosity of the products used.



#### Earthing



The metal parts of systems that come in contact with people and which, due to a lack of insulation or other causes, could be live, must be earthed. For this purpose, there is a contact point identified by an adhesive label (see drawing) on the machine bed plate that can be used for connection to the general earthing system of the factory.

From the control panel, the colour change valves (2) are operated via the air hoses. The products (catalyst, base paints or washing products) pumped through the product pipes are already under pressure at the valves (2).

Handled via pneumatic control valves, the products are sent through the measuring devices (1) to the static mixer (9).

The components (catalyst, base paint) are combined and premixed. Proper mixing takes place in the static mixer (9).

If a gun (10) (also Airmix) is connected to EcoDose 2K Easy, the equipment will be activated and controlled with an air flow meter installed in the control panel.

A filter (optional 8) monitors and protects EcoDose2K from dirt particles coming from the compressed air network.

In an emergency situation, the compressed air can be cut off by closing the ball valve (5).

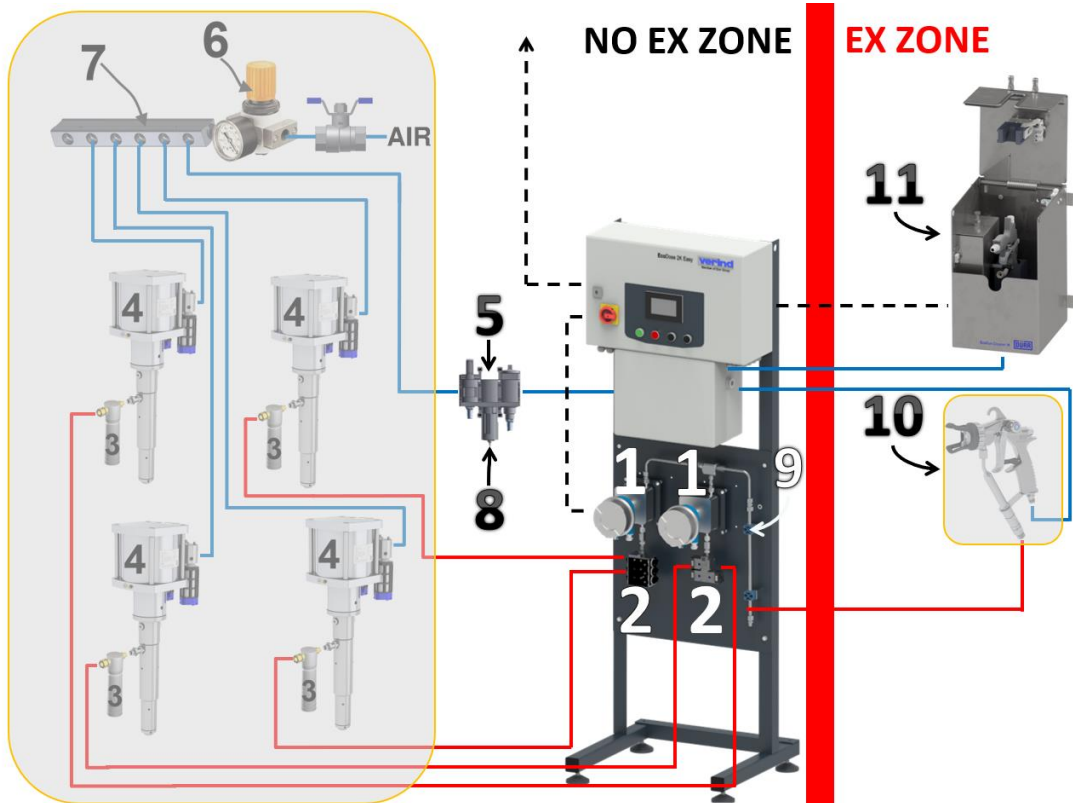
Using the of system pages of the control panel, you can set and display all the data required for the correct operation of EcoDose 2K Easy (see chapter “12 Directions for use”).

The following components are not part of EcoDose 2K Easy:

- 3 Product filter
- 4 Pumping unit
- 6 Air regulator
- 7 Air manifold
- 8 Air filter
- 10 Spray gun
- 11 Product regulator
- 11 EcoGun CleanerM
- Air and product IN piping
- Air and product OUT piping

### 3.6 Determination of the EX-Zone

Option: Standard version



Indicative image

← — — Connection for paint master controller / robot / safety device

Not included in the "ED2K Easy scope of supply", to be supplied / installed by a different entity / scope. All pipes for paint supply and air supply to and from the machine are not included in the delivery.

- |    |              |    |                      |   |                |
|----|--------------|----|----------------------|---|----------------|
| 1  | Flow meter   | 2  | Colour change valves | 3 | Product filter |
| 4  | Pumping unit | 5  | Manual valve         | 6 | Air regulator  |
| 7  | Air manifold | 8  | Air filter           | 9 | Static mixer   |
| 10 | Spray gun    | 11 | EcoGun CleanerM      |   |                |



## CAUTION

During normal operation, an explosive atmosphere is only present inside the paint booth.

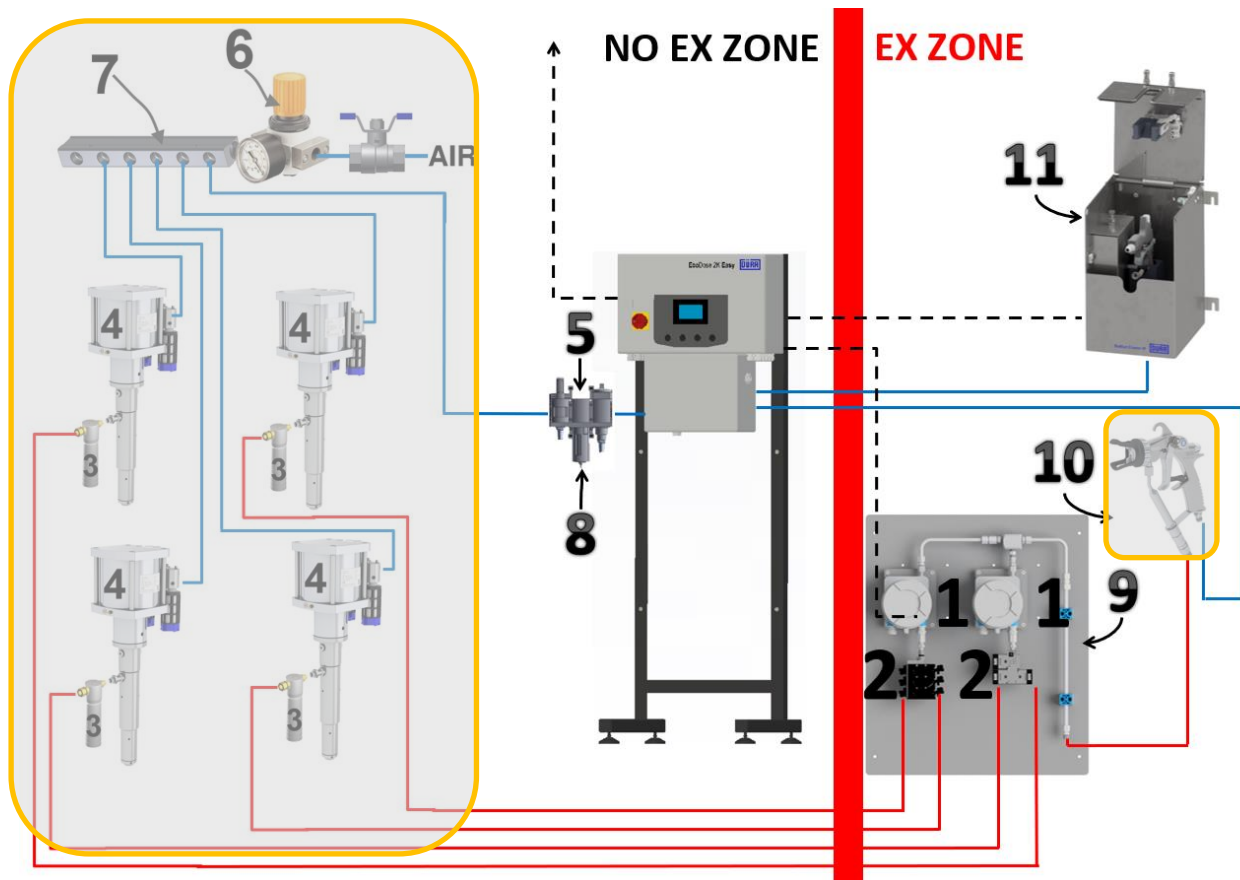


Earthing



The metal parts of systems that come in contact with people and which, due to a lack of insulation or other causes, could be live, must be earthed. For this purpose, there is a contact point identified by an adhesive label (see drawing) on the machine bed plate that can be used for connection to the general earthing system of the factory.

Option: Version with Separate Fluid Panel



Indicative image

← - - - Connection for paint master controller / robot / safety device

Not included in the "ED2K scope of supply", to be supplied / installed by a different entity / scope. All pipes for paint supply and air supply to and from the machine are not included in the delivery.

- |                |                        |                  |
|----------------|------------------------|------------------|
| 1 Flow meter   | 2 Colour change valves | 3 Product filter |
| 4 Pumping unit | 5 Manual valve         | 6 Air regulator  |
| 7 Air manifold | 8 Air filter           | 9 Static mixer   |
| 10 Spray gun   | 11 EcoGun CleanerM     |                  |



### ATTENTION

During normal operation, an explosive atmosphere is only present inside the paint booth.



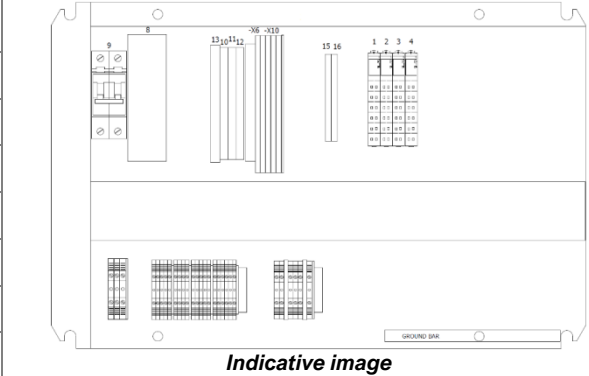
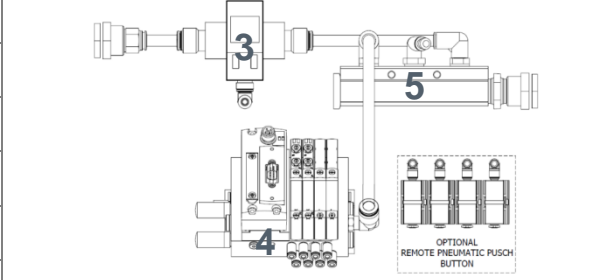
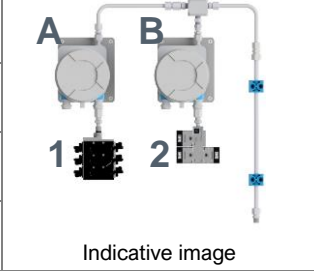
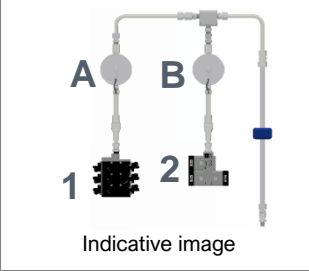
Earthing



The metal parts of systems that come in contact with people and which, due to a lack of insulation or other causes, could be live, must be earthed. For this purpose, there is a contact point identified by an adhesive label (see drawing) on the machine bed plate that can be used for connection to the general earthing system of the factory.

IN THE SEPARATE VERSION, THE FLUID PANEL MUST BE EARTHED VIA THE EARTHING CONNECTION PROVIDED AT THE BOTTOM RIGHT OF THE PAINTED CARBON STEEL PLATE.

### 3.7 Module description

| Electrical panel  |                             |   |  |
|---|-----------------------------|---|--|
| 1   | CPU                         |   | <br><i>Indicative image</i>    |
| 2   | Scalance 5 port switch      | ◆◆◆   |  |
| 3   | 24VDC power supply          |   |  |
| 4   | 24 VDC safety device        | ◆◆◆   |  |
| 5   | Circuit breaker             |   |  |
| 6   | Relay                       | ◆◆◆   |  |
| 7   | Terminal board              |   |  |
| 8   |                             | ◆◆◆   |  |
| ◆◆◆ when foreseen<br>See drawing for a complete list of the electric panel components: "F30910029 - Electronic module ED2K Easy Gear / F30910030 - Electronic module ED2K Easy Coriolis" . Chapter 11. Attached documents |                             |   |  |
| Pneumatic panel   |                             |   |  |
| 1   |                             |   | <br><i>Indicative image</i>   |
| 2   | Flow switch                 |   |  |
| 3   | Pressure switch             |   |  |
| 4   | Series Y valve isle         |   |  |
| 5   | Air manifold                |   |  |
| 6   |                             |   |  |
| For a complete list of the pneumatic panel components, see drawing "F30820151-Pneumatic Module ED2K Easy 8EV" Chapter 11. Attached documents  |                             |   |  |
| Fluid panel   |                             |   |  |
| A   | Paint circuit flow meter    | <br><i>Indicative image</i> | <br><i>Indicative image</i> |
| B   | Catalyst circuit flow meter |   |  |
| 1   | Paint circuit DC valves     |   |  |
| 2   | Catalyst circuit CC valves  |   |  |
| See drawing for a complete list of the fluid panel components: "N133200XX – Fluid Assembly" Chapter 11. Attached documents  |                             |   |  |

## 4 Lifting and Transport

### 4.1 General Safety Notes



Before moving the machine, check that the capacity of the equipment used is suitable for the weight of the machine and its packaging, if any.

#### INDICATION

The packaging used complies with the environmental requirements of the European Packaging Regulations (Official Journal of the European Union, N. L. 365/19). Wooden crates and cardboard containers can be easily recovered. Plastic enclosures are made of materials that are free of toxic metals. For their disposal, we recommend contacting the competent body in your area.



Note:

Never leave packaging items (plastic bags, expanded polystyrene, nails, screws, pieces of wood etc.) within the system installation area; they are potential sources of danger. Send these items to appropriate collection points.

Machine handling must be carried out by suitably trained and informed personnel, equipped with the Personal Protective Equipment indicated above.

### 4.2 Transport and Handling

Handling activities must be carried out exclusively by specially trained qualified personnel and in full compliance with the consolidated text on safety at work (Legislative Decree of 9 April 2008, No. 81), concerning manual handling of loads.

The machine was designed and built in such a way that it can be handled with an overhead crane or a forklift truck.

Use only below-the-hook lifting devices suitable for the weight of the machine, taking care to arrange it in such a way as not to damage the equipment.

The angle formed between the vertical and the chain must not exceed 45°.

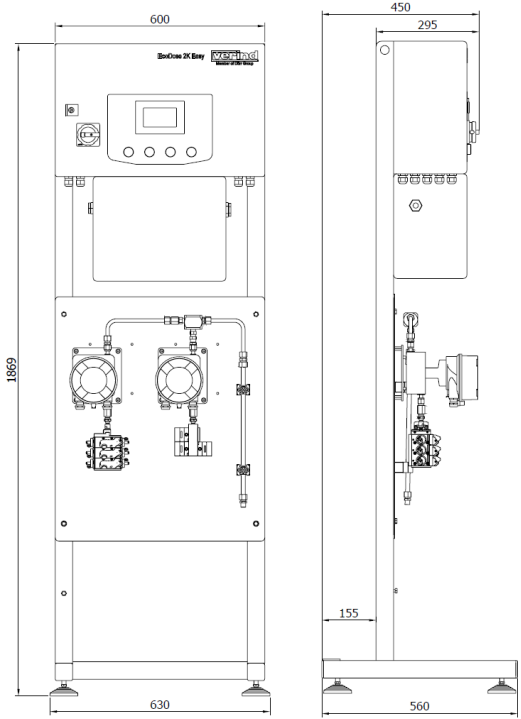
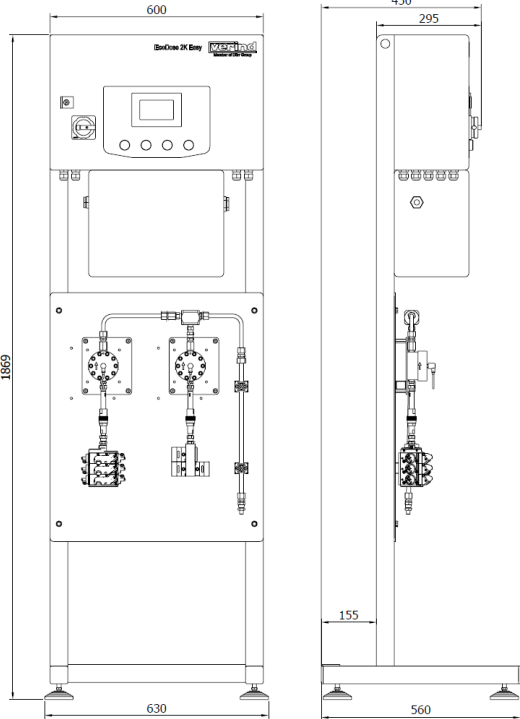
The machine is normally shipped in a wooden crate, made to be easily handled with a forklift truck.



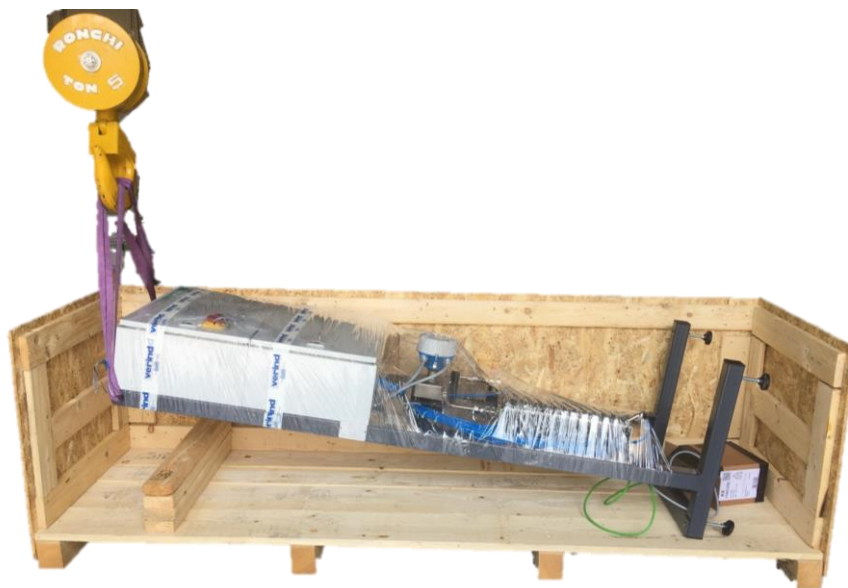
*indicative image*

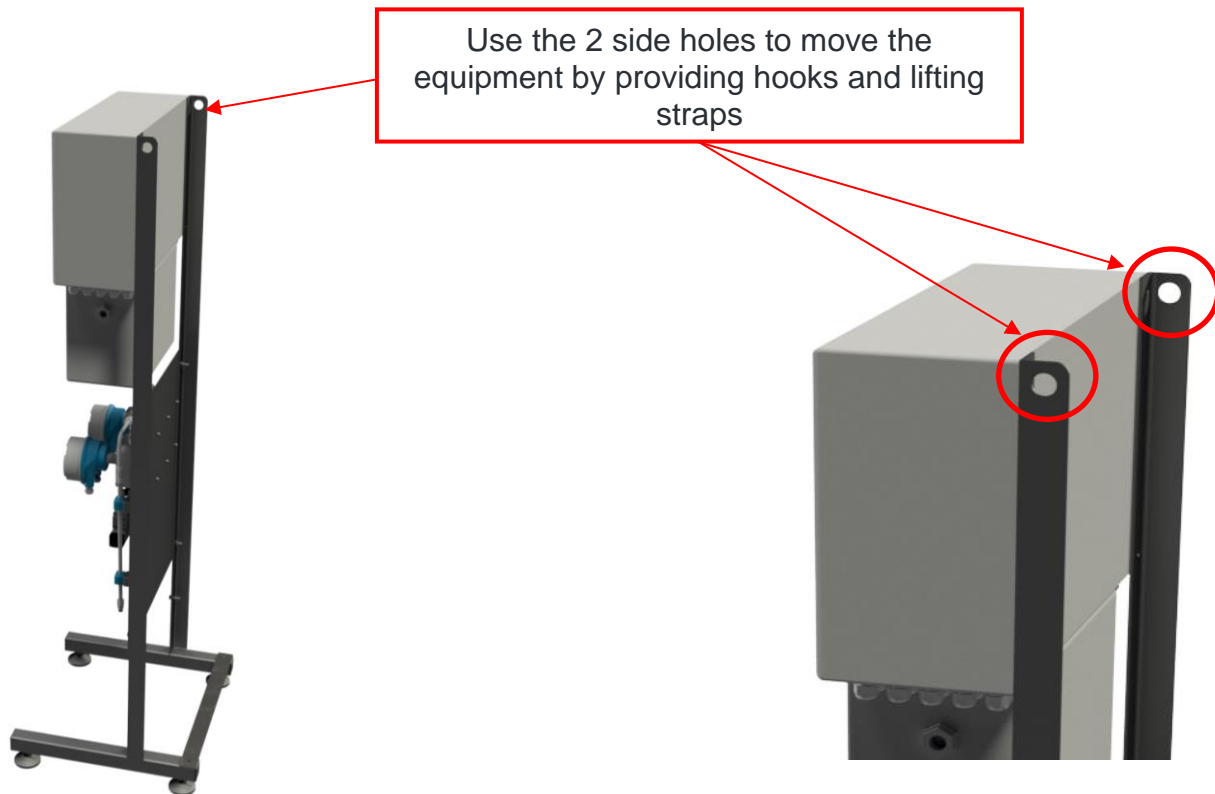


Refer to section 3.4 Technical Data, individual machine weight.

| <b>Coriolis version</b>   | <b>Gear version</b>  |
|---|--|
|  <p>Dimensions in mm.</p> |  <p>Dimensions in mm.</p> |
| Coriolis version weight   | <b>about 120 kg</b>  |
| Gear version weight   | <b>about 100 kg</b>  |

Use the appropriate eyelets and eyebolts to remove it from the case.





## CAUTION

Use a lifting strap with a capacity of at least 500 kg.

### 4.1 Storage

Eco Dose2k Easy must be stored under the following conditions:

- installation not immediately after delivery;
- removal and storage pending relocation - store the machine indoors, protected from direct contact with atmospheric agents and dust.

The permissible ambient values in the storage area are as follows:

Temperature: + 15 ÷ + 40 °C (59 ÷ 104°F).

Relative humidity: 35÷90 %.

For long-term storage (one year max.), keep the machine indoors, protected from excessive temperature changes; the ambient temperature should not drop below +5°C and the humidity should not exceed 60%.

### 4.2 Positioning

It is important to place the machine on a good, even, flat surface. The machine rests on the ground by means of special feet.

The machine must be installed in a room with adequate lighting and ventilation.

If the natural lighting is not enough to meet the legal requirements, install additional artificial lighting sources.

After positioning the machine, make sure it is level.

Cleaning:

After positioning, before commissioning, the machine must be cleaned of any dust, foreign substances that may have accumulated during transport.

## 5 Connections

### 5.1 Electrical connection



The electrical connection must be carried out only by authorised electricians, with the equipment disconnected from the power supply.

The earthing system **MUST** be made pursuant to the current regulations in force on electrical safety (for Italy, Decree no. 37 of 22 January 2008).

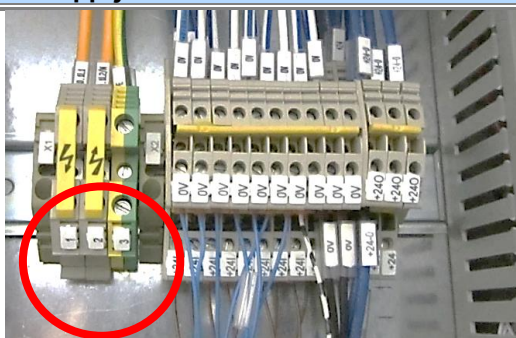

Check the machine nameplate data before choosing the connection materials (cable cross section etc.).

The panel is supplied isolated from electrical and pneumatic energy sources.

Do not carry out any maintenance without first switching off the power supply to the system. Before any maintenance operation, make sure the machine has been isolated from all sources of electricity and pneumatic power, the general switch that locks the door is padlocked (padlock provided by the customer) and that any remaining energy has been released.

Connection to the mains must be performed by specialised personnel according to the following procedure:

- Connect to the user's network using a primary power cable (phase + neutral + earth).
- Make the connection inside the general electrical panel in the appropriate terminal block
- Once the connection to the grid is complete, make sure it is correct using a proper instrument (tester).

| Electric power supply  |  |
|--|--|
| <p>Use terminals 1-2-3</p> <p>Use cables with a 2.5 mm<sup>2</sup> cross-section</p>                     |   |
| <p><b>See the wiring diagram attached to this manual</b></p>   |  |
| Earthing   |  |
| <p>It is essential to connect the support to the earthing system using the dedicated terminal block.</p> |  |



## CAUTION

Connecting the machine to the mains must be performed in compliance with the regulations in force in the user's country.

Prepare an appropriate protective device for the electric power line of the machine, upstream of the junction box. The voltage and frequency of the power supply for the machine are indicated on the plate attached to the panel. The required voltages and frequencies must be specified to **Verind SpA** upon ordering the machine. If the voltage is different from what initially agreed, the user must not operate directly on the machine; please contact **Verind SpA** technicians for adjustments.

## 5.2 Pneumatic Connections

The compressed air line must be connected to the appropriate connector ( 1/2"), operating pressure 6 Bar. Once connected to the compressed air network, the pressure reducer must be operated in order to supply the consumers with a pressure of approx. 6 bar (check the pressure gauge).

### 5.2.1 Compressed air characteristics

| PARTICLES |                      |                        |
|-----------|----------------------|------------------------|
| Class     | Max. Ø particles (1) | Max. concentration (2) |
| 1         | 0.1 micron           | 0.1 mg/m <sup>3</sup>  |
| 2         | 1 micron             | 1 mg/m <sup>3</sup>    |
| 3         | 5 micron             | 5 mg/m <sup>3</sup>    |
| 4         | 15 micron            | 8 mg/m <sup>3</sup>    |
| 5         | 40 micron            | 10 mg/m <sup>3</sup>   |

(1)The particle diameter is based on the relationship Beta Bn = 20  
 (2)at 1 bar absolute, + 20 ° C, steam relative pressure 0.6

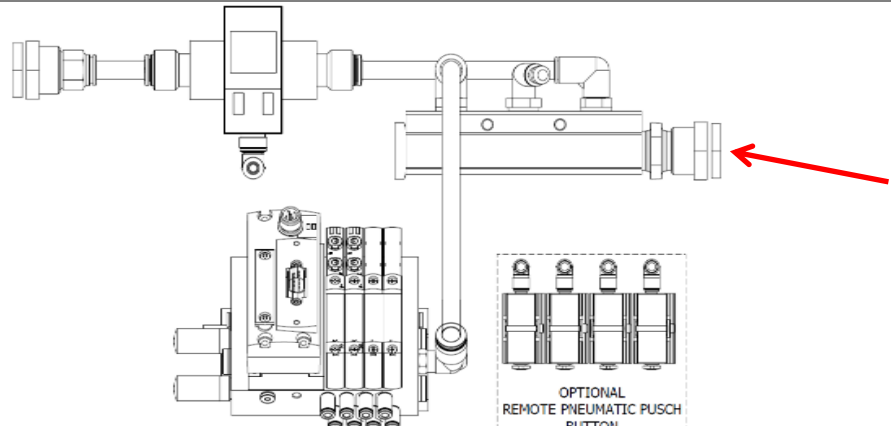
| WATER |                            |
|-------|----------------------------|
| Class | Max. dew point in pressure |
| 1     | - 70                       |
| 2     | - 40                       |
| 3     | - 20                       |
| 4     | + 3                        |
| 5     | + 7                        |
| 6     | + 10                       |

| OIL   |                        |
|-------|------------------------|
| Class | Max. concentration (1) |
| 1     | 0.01 mg/m <sup>3</sup> |
| 2     | 0.1 mg/m <sup>3</sup>  |
| 3     | 1 mg/m <sup>3</sup>    |
| 4     | 5 mg/m <sup>3</sup>    |
| 5     | 25 mg/m <sup>3</sup>   |

(1) at 1 bar absolute, + 20 ° C, steam relative pressure 0.6

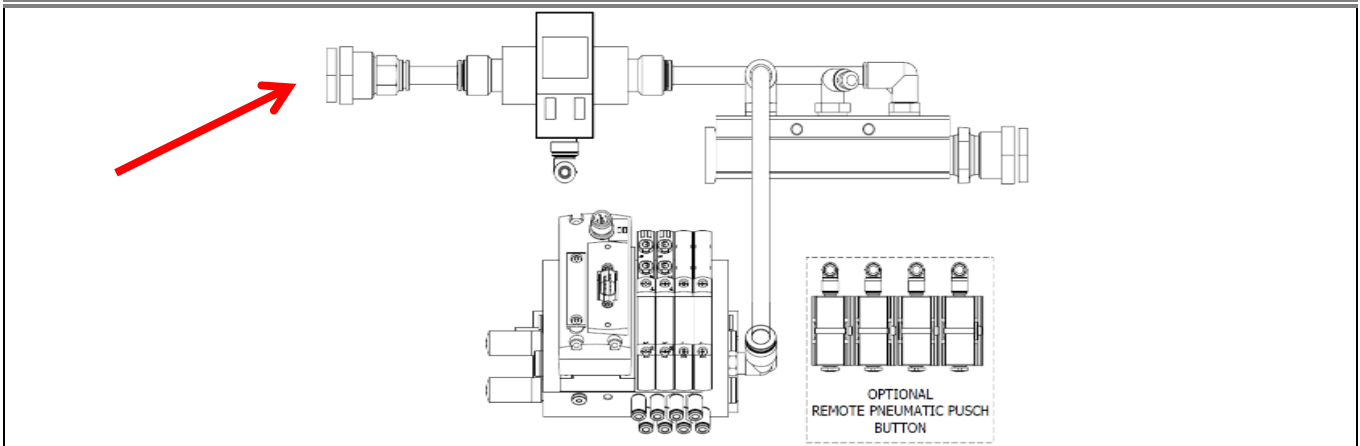
### 5.2.2 Pneumatic connections

**General compressed air supply (5.5 bar min. - 8 bar max.)**



Use the 1/2" threaded gas F connector.  
It is recommended to use a hose of at least Ø 1/2" gas

**Atomising air connection to guns**



Use the 3/8" gas F threaded connections

Connection with **EcoGun CleanerM**

When planned, see drawing:  
 "F30820151-Pneumatic Module ED2K Easy 8EV" Chapter 11. Attached documents

**5.3 Product IN connection**

**EcoMCC3** colour change valves. *low pressure* (20 bar max)  
 in use only on circuit A (base)



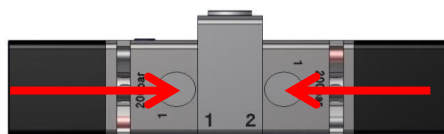
Use the 1/8" gas female threaded connections (1)  
 The 1/8" gas female threaded connections (2) are normally plugged and they are only used in case of paint recirculation

**EcoValve7 20** colour change valves. *low pressure* (20 bar max)  
 in use only on circuit B (catalyst)



Use the 1/8" gas female threaded connections (1-2)

**EcoMCC200** colour change valves *high pressure*  
 (160 bar max with Coriolis) (200 bar max with Gear)  
 in use on both circuit A (base) and circuit B (catalyst)



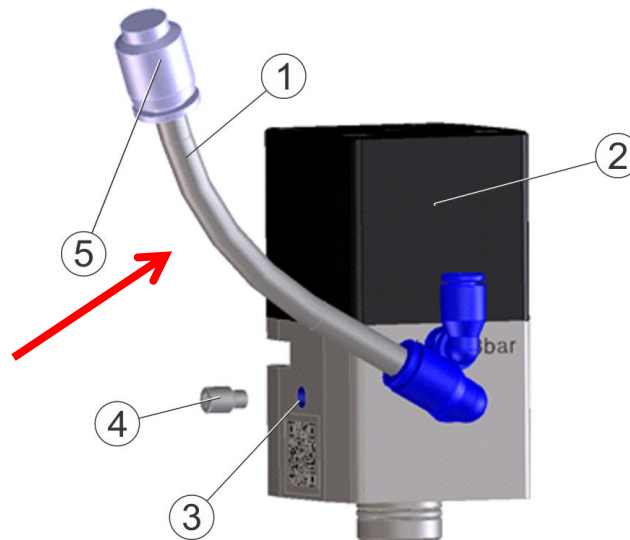
Use the 1/8" gas female threaded connections

## CAUTION



It is essential to use fittings and piping suitable for the operating pressures and the products used. Follow the instructions of the manufacturer of the fittings for the tightening torques. A shut-off valve must be installed on all product supply lines, to be closed for safe maintenance operations.

**EcoMCC200** colour change valves *high pressure*  
(200 bar max with Coriolis)      (200 bar max with Gear)  
In use on both circuit A (base) and circuit B (catalyst)

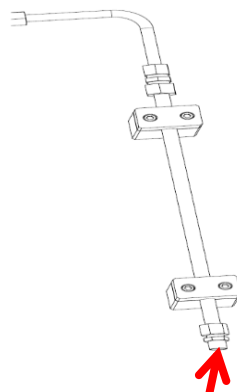


## WARNING



For a correct valve operation, the tube (ref. 1) must always be filled with lubricating oil compatible with the products used. EcoDose2K Easy is delivered with empty tubes. It is the user's responsibility, before commissioning the machine, to fill them with a product suitable for the products used.

### 5.4 Product OUT connection





## WARNING

It is essential to use hoses suitable for the operating pressures and products used  
Follow the instructions of the manufacturer of the fittings for the tightening torques.

---

## 6 Start-up



### WARNING

Before carrying out any start-up operation, read and apply the chapter “Safety instructions and residual risks”.

#### 6.1 Before start-up

Before starting the machine, make sure that:

- the pneumatic connection has been made correctly;
- the fluid connection has been made correctly;
- where applicable, the machine is correctly secured to the floor;
- the mushroom-shaped emergency stop button on the general electrical panel is not pressed.

#### 6.2 Start-up

The machine has been tested and tried out by us, but it is essential before the first start-up:

- to check that you have complied with all the operations described in chapter “6 Connections”.
- to check that all compressed air and product in/out connections are correctly tightened.

### CAUTION



For a correct operation, it is essential that the feed pressure of the catalyst converter circuit should be 0.5 to 1 bar higher than the feed pressure of the base circuit. This value can change depending on the viscosity of the products used, with the obligation of observing the following principle.

If the supply pressure values are correctly set, the valve of the base circuit will always remain open, while the valve of the catalyst circuit will open/close according to the set mixing ratio of the recipe in use.

#### 6.3 System configuration

EcoDose2K Easy is delivered already configured according to customer specifications and is ready for commissioning.



### CAUTION

Changing the system configuration also involves a consequent hardware modification of EcoDose2K Easy and may only be carried out by specialised personnel authorised by **Verind SpA**

#### 6.4 Alarm management on the PLC for consumable components




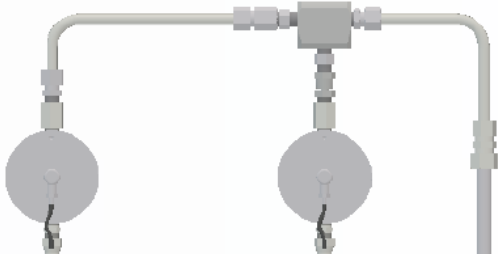



### CAUTION

The control system provides a warning message “MAXIMUM NUMBER OF PULSES ACHIEVED, PROVIDE MAINTENANCE” for consumable components.

|  |   |  |
|--|---|--|
| <p><b>EcoMCC3</b><br/>colour change valves<br/><i>low pressure</i></p> | <p><b>EcoValve7 20</b><br/>Colour change valves<br/><i>low pressure</i></p> | <p><b>EcoMCC200</b><br/>colour change valves<br/><i>high pressure – AA</i></p> |
|--|---|--|



|   |  |   |
|---|--|---|
|  |   |  |
| <p style="text-align: center;"><b>Gear Flow Control</b></p>                       |  | <p style="text-align: center;"><b>Coriolis Flow Control</b></p>                     |
|  |  |   |

The number of life cycles of these components must be set during installation depending on the type of material, its degree of abrasiveness and the working conditions.  
 For the equipment to work properly, these parameters must be calibrated according to the specific application.  
 The factory preset initial setting is absolutely indicative and not decisive for the warranties.  
 The pre-set values are indicative and refer to tests performed with Mesamol-oil.

## 7 Troubleshooting

### INDICATION

This chapter lists some of the most common issues that can affect a good processing quality. In the event of unforeseen problems, please contact **Verind SpA** Technical Support.

| Symptom   | Cause                                     | Solution  |
|---|---|---|
| Paint flow is excessive and/or does not exit properly   | High product inlet pressure               | Check the product feed pressure to the machine                                    |
| Paint flow is inadequate and/or does not exit properly. | Low product inlet pressure                | Check the hose connections and restore the correct pressure on the pressure gauge |
|   | Clogged filter                            | Check the pressure gauge and change the filter cartridge if necessary             |
|   | Material catalysed in the fluid circuit   | Flush the machine and/or dismantle and clean the fluid circuit                    |
|   | Dirty colour change valves                | Remove and clean them and replace them if necessary                               |
|   | Static mixer clogged                      | Flush the machine and/or dismantle and clean the fluid circuit                    |
|   | Pump switched off or incorrectly adjusted | Start the pump  |

## 8 Routine maintenance



### CAUTION

The following operations may only be carried out by adequately trained personnel.



### CAUTION

Wear personal protective equipment  
 Always wear the following protective equipment during assembly.



### DANGER



Before any maintenance operation, make sure the machine has been isolated from all sources of electricity and pneumatic power, the general switch that locks the door is padlocked (padlock provided by the customer) and that any remaining energy has been released.

Always operate with the individual Personal Protective Equipment mentioned and appropriate to the department.

### WARNING



Hazard due to splashing material!

Chemical burns of the skin caused by material coming out of the damaged paint tubes and from the change colour valves.

Check the paint tubes and the colour change valves regularly. Release any residual pressure before working on the colour change valves and product tubes.

### WARNING



The general dangers of the system in which EcoDose2K Easy will be installed are not expressly provided in this manual. The personnel should be informed by the customer and should therefore be trained with regard to these dangers.

### WARNING



Live equipment.

This chapter explains the routine maintenance operations to be performed on the machine. For good preservation, observe the instructions below and respect the indicated frequency.

Besides maintenance, a thorough cleaning of the machine is also essential to prevent any compound residues from compromising the machine's operation.

In addition to the frequency with which it should be carried out, each operation is also accompanied by the required staff qualification:

- ☆ Simple operation that can be carried out directly by the operator (qualified person authorised to operate the machine with the guards on, using the controls available on the push-button panel).
- ☆☆ Operation that requires a specific knowledge of the work to be carried out. To be performed by the maintenance electrician (qualified technician authorised to install, repair and perform extraordinary maintenance operations of an exclusively electrical nature).
- ☆☆☆ Operation that, due to its specificity, requires the intervention of a **Verind SpA** technician or however of the specialised personnel.

### WARNING



Before performing any maintenance on EcoDose2K Easy, the operator must make sure that:

- the power is cut off
- air and product supply is switched off
- all product/solvent/air circuits are depressurised

**WARNING**



Do not perform or undertake maintenance, repair or modification operations without having specific knowledge of them or having received precise instructions.  
All operations must be performed with the observance of safety regulations.  
Do not remove or force electrical parts when the panel is live.

The key to the panel must only be given to authorised personnel.

**WARNING**



Hazard due to splashing material!  
Chemical burns of the skin caused by material coming out of the damaged paint tubes and from the change colour valves.  
Check the paint tubes and the colour change valves regularly. Eliminate any residual pressure before working on the colour change valves and product tubes

**DC valves**



**EcoMCC3**



**EcoValve7 20**



**EcoMCC 200**

DC valves must be checked periodically according to the manufacturer's instructions (see attached documents).

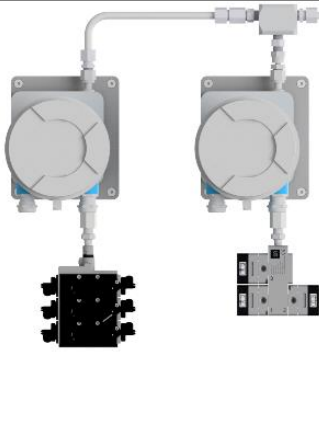
The valve activity is monitored by the PLC and if the number of switching operations exceeds the programmed value, the message "MAXIMUM NUMBER OF PULSES ACHIEVED, PROVIDE MAINTENANCE" will appear on the display.

When the message appears, the valves must be replaced as soon as possible.

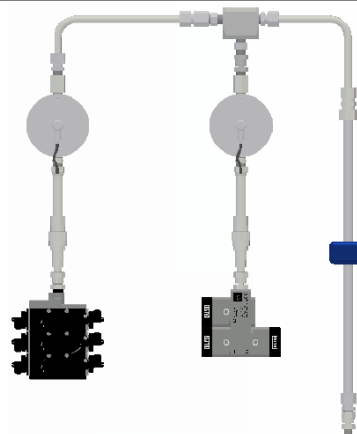
**8.1 ☆Every day**

Inspect the mixing panel for leaks, leakage and/or damage.

**Complete mixing panel**

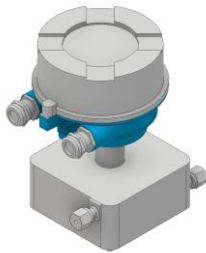


**Coriolis version**



**Gear version**

**“Coriolis” flow meters**



The “Coriolis” mass flow meter requires no maintenance beyond normal calibration tests to ensure its correct condition.

**“Gear” flow meters**



**Standard**

For “Gear” volumetric gauges, if a measuring cell is not used for a long period, it must be flushed with a suitable solvent. Washing is particularly important for measuring instruments as the products release particles that could stick to the gears. Follow the manufacturer's instructions for disassembly (see attached documents).

The accuracy of the measuring cell must be checked at regular intervals by calibration. After about 8000 hours of operation, the calibration should be checked by the manufacturer.

The activity of the gear measuring unit is monitored by the PLC and if the number of switching operations exceeds the programmed value, the message “MAXIMUM NUMBER OF PULSES ACHIEVED, PROVIDE MAINTENANCE” will appear on the display.

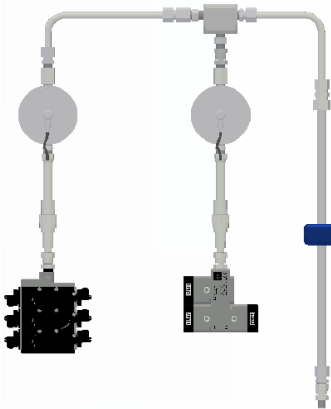
When the message appears, the gear measuring unit must be replaced as soon as possible.

**GEAR FILTER (only for versions with gear flow meter)**



Remove the filter daily, clean the cartridge or replace it if necessary. For the model, see the drawing for the mixing panel, enclosed with this manual.

**GEAR FILTER BY-PASS (only for versions with Gear Flow Meter)**



If, due to requirements arising from the type of paint and/or catalyst used, there is a need to remove one or both “GEAR FILTERS” from the mixing panel, proceed as follows:

- 1 Remove the gear filter
- 2 Loosen the screws holding the DC valve group to the fixing rail
- 3 Slide the DC valve group upwards and attach it directly to the gear flow meter
- 4 Tighten the screws holding the DC valve group to the fixing rail

**8.2 ☆☆Every week**

Thorough cleaning of the panel on the outside to remove dust, using vacuum cleaners, brushes and rags (DO NOT USE SOLVENTS OR AGRESSIVE COMPONENTS).

**8.3 ☆☆Monthly**

Thorough cleaning of the panel on the inside to remove dust, using vacuum cleaners, brushes and rags  
Clean the filters in the ventilation fans of the panel.

**8.4 ☆☆Yearly**

In the Geared Mixing Panel

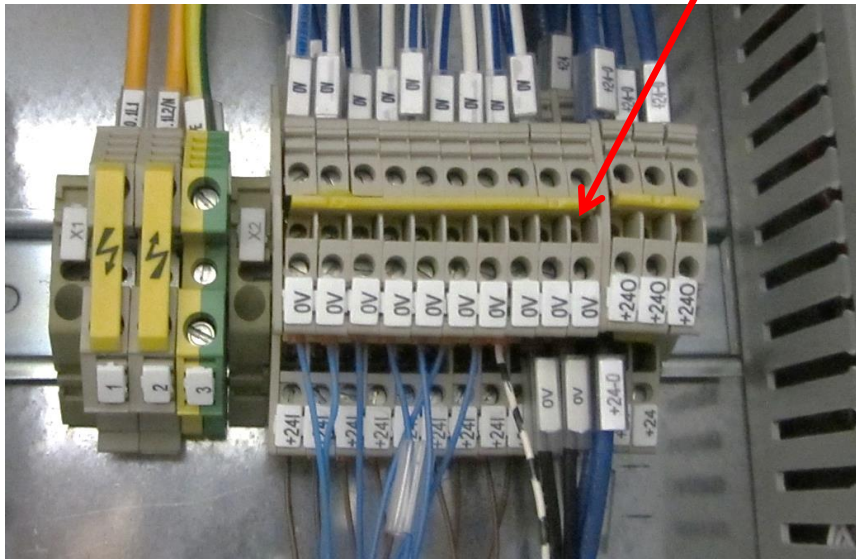
Spot check the tightness of the connection terminal blocks

Check the correct operation of the equipment, particularly the calibration of the protections and of the thermal relays

Check the insulation between phases and to earth

Check the earthing PE.

In particular, check the correct tightening of the terminal box screws



*Indicative image*

The PLC of EcoDose 2K Easy is generally maintenance-free. It is provided with an internal flash memory and, therefore, does not require the installation of a backup battery.

## 9 Decommissioning and Disposal

### INDICATION

Please note that the disposal of toxic and/or harmful waste, such as chemical compounds, is subject to specific regulations depending on your country. Before carrying out any operation of this type, it will be necessary to obtain information about these regulations from the competent bodies in the territory. For machine dismantling, we recommend contacting the Manufacturer and entrusting the operations only to specialised personnel. If necessary, contact organisations specialised in this type of activity.

#### 9.1 Decommissioning

- Unplug the machine from any power source
- Carefully check the physical state of the machine, making sure that there are no structural parts that could be subject to possible failure or breakage during handling and/or movement;
- If necessary, empty it. Caution: Do not dispose of waste and/or polluting substances into the environment!
- Check that the machine does not contain any hazardous or toxic substances or substances that can deteriorate over time.
- In case of temporary storage of chemical compounds, it is important to follow the instructions in the technical data sheets accompanying the product. In the absence of such sheets, request them from the supplier of raw materials.
- With the exception of these compounds, the machine does not contain any parts that can be defined as toxic or harmful.

#### 9.2 Machine disposal

For system dismantling, separate it into its component parts and dispose of them in compliance with the local waste disposal regulations in force.

Scrap resulted from the dismantling of the machine must be disposed of with respect for the environment, avoiding soil, air and water pollution.

In any case, the local legislation in force must be observed.

Remember that waste means any substance or object that the holder discards, has decided to discard or is required to discard (L.D. no. 22 of 5 February 1997).

Waste from machine scrapping can be classified as special waste.

If the scrapping is entrusted to third parties, contact companies authorised to recover and/or dispose of the resulting materials.

Disposal must, in any case, be in conformity with the laws in force at that time in the country in which the machine is located; said requirements are not foreseeable at the moment, but compliance with them is the exclusive responsibility of the end owner of the machine or of its representative.

#### 9.3 Demolition Materials

Special non-hazardous waste that can be recovered, pursuant to the Ministerial Decree of 5 February 1998:

- Ferrous materials, aluminium, stainless steel, copper;
- Plastic materials;
- Electronic boards;
- Electrical system.

#### 9.4 Indications for Proper Waste Management

Proper management of special waste involves:

- Storage in suitable places, avoiding the mixing of hazardous waste with non-hazardous waste.
- Making sure that waste transportation and disposal/recovery is carried out by authorised hauliers and recipients.
- Waste transport to authorised collection centres is allowed only if registered in the Register of Environmental Operators.

#### 9.5 Handling of waste electrical and electronic equipment (WEEE)

With Legislative Decree no.151 of 25 July 2005, the Italian Government has implemented the European Parliament Directives on the subject of the disposal of waste electric and electronic appliances (WEEE) (Directives 2002/95/CE and 2003/108/CE).

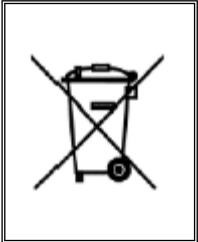
In particular, the decree establishes measures and procedures aimed at:

- a) preventing the production of WEEE;
- b) promoting re-use, recycling and other forms of recovery of WEEE to reduce the amount of WEEE sent for disposal;
- c) improving the environmental performance of the actors involved in the life cycle of such equipment (manufacturers, distributors, consumers and operators directly involved in the handling of WEEE);
- d) reducing the use of hazardous substances in electrical and electronic equipment.

The decree mandates the limitation and elimination of certain substances present in WEEE: lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls and polybrominated diphenyl ether are banned.

The machine was designed and manufactured in accordance with that directive.

Follow the instructions below.



This symbol of a barred wheeled bin indicates the separate collection of the machine's electrical and electronic equipment.

The user of this machine can contact the collection centres set up by the Municipalities or ask for it to be collected by the dealer in order to dispose of it correctly.



## 10 Spare Parts

Refer to the corresponding drawings to identify any damaged or worn devices.

| Code      | Electrical equipment components   |
|-----------|---|
| E18260003 | Current monitor\locc box 24vdc 1-10A                                      |
| F12050129 | Power supply unit\24 vdc -5A 100-240 vac                                  |
| E03500203 | COMMUNICATION CARD\CAN I/O SLAVE  |
| F02030047 | TEST CONTROL UNIT\POWER PANEL C30 4.3"                                    |
| E20010426 | Plug\2 pins cage clamp 3.81 1.5mm <sup>2</sup>                            |
| E03020117 | INPUT CARD\DIGITAL X20 12IN   |
| E03910002 | Bus module\x20 24v  |
| E03910001 | Terminal block\x20 12-pol.24vdc codiert                                   |
| E26030028 | Safety barrier\dezentral 2 channel (only for the Geared Volumetric Meter) |
| E03020121 | INPUT CARD\DIGITAL 2In SINK 24VDC X20                                     |
| Code      | Pneumatic panel components  |
| E22060028 | Transducer\600l/min T.SFAB+SW   |
| M54120157 | Valve unit block 4 pcs + SW   |
| M54210164 | Spare module EV single module (1 module = 2 solenoid valves)              |
| Code      | Mixing tube components  |
| M34050085 | Static mixer, calibrated, SS  |
| M27050028 | Mixing block, SS  |
| M54360216 | Non-return valve  |
| M55070402 | Angled ring connection 1/4 "F NPT D10                                     |
| M55070398 | Angled ring connection 1/4"M GAS.D10                                      |
| M55200043 | Angled ring connection D10-D12  |
| M53170517 | Swivel connection HP SS 1/4"G Mx1/4"NPT F                                 |
| M34010528 | Bent tube channel A   |
| M34010529 | Bent tube channel B   |
| M58050053 | Connector SS angled ring 1/4"G M D12                                      |
| Code      | Fluid panel components  |
| W07020210 | FLOWMETER\CUBEMASS 100 2G W. SOFTWARE                                     |
| W07020134 | Gear flow meter 0.005-2 l/min. ZHM 01/1                                   |
| W07020133 | Gear flow meter 0.02-3 l/min. ZHM 01/2                                    |
| E20020034 | 5-Pole M12 plug   |
| N32350011 | EcoValve7 20 2C   |
| N32350014 | EcoValve7 20 3C   |

|           |                                     |
|-----------|-------------------------------------|
| N32350012 | EcoValve7 20 4C                     |
| N14100001 | EcoMCC 200 2C D SST                 |
| N14100002 | EcoMCC 200 4C D SST                 |
| N14100003 | EcoMCC 200 6C D SST                 |
| N14800102 | EcoMCC3 20 2C (First Version)       |
| N14800103 | EcoMCC3 20 4C (First Version)       |
| N14800104 | EcoMCC3 20 6C (First Version)       |
| N14800225 | EcoMCC3 20 2C (Second Version)      |
| N14800226 | EcoMCC3 20 4C (Second Version)      |
| N14800227 | EcoMCC3 20 6C (Second Version)      |
| N32500027 | Mixer complete\ED2K calibrated pipe |
| M16090143 | Filter Housing\F1/4" x M1/4" SS     |
| M13010026 | Filter insert\100 mesh yellow       |

If unable to find or identify the necessary parts, contact the Technical Service specifying the machine model and serial number. This information can be found on the machine nameplate.

Example of ordering spare parts:

Machine:  
 Serial no.:  
 Manufacturing year:  
 Description:  
 Code:

## 11 Attached documents

The annex to this manual provides the declaration of conformity, the documentation relating to the electrical and/or pneumatic diagrams of the machine and the technical documentation of the components available on the market. This documentation may appear in this chapter or it may be provided separately if layout requirements so require. Anything not supplied is to be considered part of the technical file, which is archived on the Manufacturer's premises.

### 11.1 Drawings and diagrams 2K



| Drawing no.          | rev. | Description   |
|----------------------|------|---|
| N10140003_14         | 00   | Ecodose 2k Easy General Assembly - Gear Flow Meter Version Lp     |
| N10140015_26         | 00   | Ecodose 2k Easy General Assembly - Gear Flow Meter Version Hp     |
| N10140027_30         | 00   | Ecodose 2k Easy General Assembly - Coriolis Flow Meter Version Lp |
| N10140031_34         | 00   | Ecodose 2k Easy General Assembly - Coriolis Flow Meter Version Hp |
| F30820151            | 00   | Pneumatic Module ED2K Easy 8EV                                    |
| N13320001_32         | 00   | Fluid EcoDose 2K Easy   |
| F30910029            | 00   | Electronic module ED2K Easy Gear                                  |
| F30910030            | 00   | Electronic module ED2K Easy Coriolis                              |
| F30820151            | 00   | Pneumatic Module ED2K Easy 8EV                                    |
| Ecodose 2K Easy REV3 | 00   | Wiring diagram  |

### 11.2 Main components documentation

| Supplier                | Description                    | Model               | Code      |
|-------------------------|--------------------------------|---------------------|-----------|
| <b>Endress + Hauser</b> | Coriolis flow meter            | CUBEMASS 100        | W07020210 |
| <b>DÜRR</b>             | Gear flow meter 0.005-2 l/min. | ZHM 01/1            | W07020134 |
|                         | Gear flow meter 0.02-3 l/min.  | ZHM 01/2            | W07020133 |
|                         | CC valves                      | EcoValve7 20 2C     | N32350011 |
|                         | CC valves                      | EcoValve7 20 3C     | N32350014 |
|                         | CC valves                      | EcoValve7 20 4C     | N32350012 |
|                         | CC valves                      | EcoMCC 200 2C D SST | N14100001 |
|                         | CC valves                      | EcoMCC 200 4C D SST | N14100002 |
|                         | CC valves                      | EcoMCC 200 6C D SST | N14100003 |
|                         | CC valves (First Version)      | EcoMCC3 20 2C       | N14800102 |
|                         | CC valves (First Version)      | EcoMCC3 20 4C       | N14800103 |
|                         | CC valves (First Version)      | EcoMCC3 20 6C       | N14800104 |
|                         | CC valves (Second Version)     | EcoMCC3 20 2C       | N14800225 |
|                         | CC valves (Second Version)     | EcoMCC3 20 4C       | N14800226 |
|                         | CC valves (Second Version)     | EcoMCC3 20 6C       | N14800227 |

### 11.1 Certificates and declarations of conformity

EC DECLARATION OF CONFORMITY according to Machinery Directive 2006/42/EC

| Dichiarazione CE di Conformità    |  |
|--|--|
| con la Direttiva Macchine 2006/42/CE, Allegato II, Parte 1, Sezione A per le macchine  |  |
| Il fabbricante / distributore:   |  |
| Verind S.p.A.<br>Via Papa Giovanni XXIII, 25/29<br>20053 Rodano (MI)<br>Tel: +39 02 95 95 17.1 / Fax: +39 02 95 32 09 14   |  |
| dichiara che la macchina nuova:  |  |
| <b>Denominazione macchina:</b>   | EcoDose 2K Easy – Macchina di miscelazione per Vernici Bicomponenti  |
| <b>N. matricola:</b>   | XXXXXXXXXX   |
| soddisfa i requisiti della Direttiva 2006/42/CE di cui all'allegato 1 e in aggiunta alle seguenti direttive applicabili:   |  |
| 2014/53/EU   | Direttiva Compatibilità Elettromagnetica   |
| 2014/35/EU   | Direttiva Bassa Tensione   |
| 2014/34/EU   | Direttiva ATEX – solo per il pannello radio: N132200XX-Marcatura ATEX Ex II 3G Ex n IIA 14 Gc  |
| Norme armonizzate applicate:   |  |
| EN ISO 12100   | Sicurezza del macchinario - Principi generali di progettazione – Valutazione del rischio e riduzione del rischio   |
| EN 60204:2016  | Sicurezza del macchinario - Principi generali di progettazione – Equipaggiamento Elettrico del macchinario   |
| EN 60204-1:2018  | Sicurezza del macchinario - Equipaggiamento Elettrico del macchinario – Parte 1: Requisiti Generali  |
| EN 62061:2021  | Sicurezza del macchinario - Sicurezza funzionale dei sistemi di controllo legati alla sicurezza  |
| IEC 61439:2020   | Functional safety of safety-related control systems  |
| EN 60079-0:2014  | Quadri Elettrici Bordo Macchina - Regole Generali  |
| EN 60079-14:2014   | General rule on electrical cabinets.   |
| EN ISO 80079-36  | Atmosfere Esplosive Parte 0: Apparecchiature - Prescrizioni Generali   |
|  | Atmosfere Esplosive Parte 14: Progettazione, Scelta, Installazione   |
|  | Atmosfere Esplosive Parte 36: Apparecchiature Non-Elettriche per Atmosfere Esplosive   |
| Si dichiara inoltre che il Fascicolo Tecnico è stato compilato in conformità dell'allegato VII Parte A.  |  |
| Tale documentazione sarà trasmessa per posta o per via elettronica in risposta ad una richiesta motivata da parte dell'autorità nazionali competenti.  |  |
| Persona autorizzata a costituire il fascicolo tecnico:   |  |
| Luca Donati<br>Via Papa Giovanni XXIII, 25/29<br>20053 - Rodano (MI)   |  |
| <b>Non è consentito mettere in servizio la nuova macchina fino a che la macchina finale in cui deve essere incorporata non sia stata dichiarata conforme, se del caso, alle disposizioni della Direttiva 2006/42/CE.</b> |  |
| Rodano (MI)<br><small>(luogo e data di emissione)</small>  | DATA   |
|  | <br>Marco Bottaveri<br>Technical Director Verind S.p.A.<br>Rodano (MI), Italy |

## 12 Directions for use



### ATTENTION

The following operations may only be carried out by adequately trained personnel.



### CAUTION

Wear personal protective equipment  
Always wear the following protective equipment during assembly.




### WARNING

**Hazard due to splashing material!**

Chemical burns of the skin caused by material coming out of the damaged paint tubes and from the change colour valves.  
Check the paint tubes and the colour change valves regularly. Release any residual pressure before working on the colour change valves and product tubes.




The machine is operated via a control panel consisting of 4 buttons and a Touch Panel.  
The functions of the buttons are described below:

|   |  |
|---|--|
|  <p><i>Controls on the control panel</i></p> | <ol style="list-style-type: none"> <li>1. Main switch: enables/disables power</li> <li>2. Green illuminated button, "start": it starts the system</li> <li>3. Red illuminated button, "stop ": it stops the system and lits up in case of an alarm.</li> <li>4. Black button, "start washing":</li> <li>5. Black button, "reset alarms"</li> </ol> |
|---|--|



### 12.1 Page header

Each Touch Panel page has the same Header

On the left side of the Header, the currently selected mode is shown through the following pictograms.

|   |  |
|---|--|
|  | <p><b>Manual mode</b><br/>The machine is controlled by the operator using the buttons on the control panel: START, STOP, WASH, RESET: you select the recipes, start the colour change and wash cycles</p>  |
|  | <p><b>Automatic mode (with an external controller)</b><br/>The machine is connected to an external controller, with signals exchanged via an Ethernet UDP interface. Recipe selection as well as colour change and wash cycles are initiated by the external controller, with local alarm reset.</p> |
|  | <p><b>Maintenance mode (maintenance intervention)</b><br/>The valves can be controlled individually via the operator's panel.</p>  |

The related pictograms have different meanings depending on the status of the system

|   |   |
|---|---|
|  | Green: the system is switched on and ready for operation.         |
|  | Red: the system is not operational due to the presence of a fault |



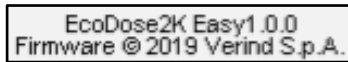
Indication of the currently logged-in user level: ranges from 0 to 3.



In the centre of the Header, you can see the number of the active recipe.

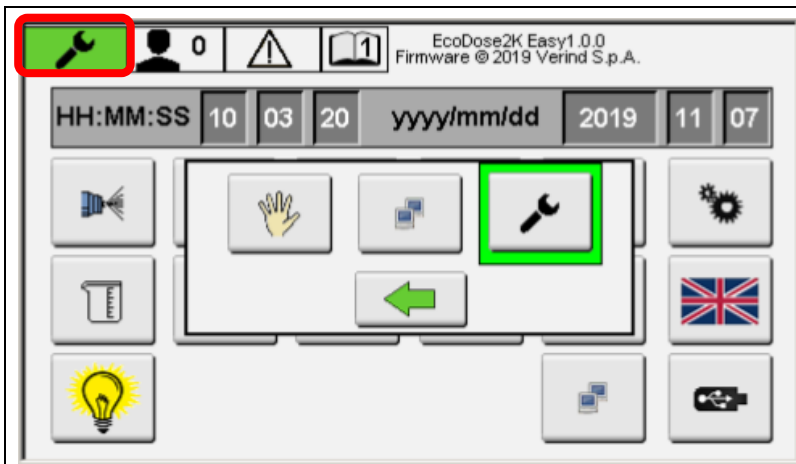


Alarms button. It opens the active alarms window.



On the right side of the Header, you can see the installed firmware (e.g., 1.0.0)

### 12.1.1 Changing the operating mode






Changing the operating mode

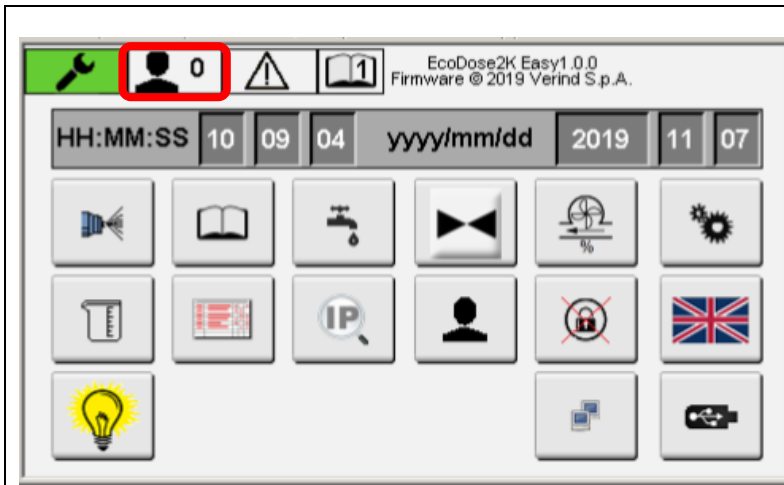
Pressing the highlighted button in the Header will open a sub-window, which you can use to switch from one operating mode to another.

This sub-window can be opened from the Header of all main windows.

Enter with level 1 or higher, select the desired operating mode

-  Manual mode
-  Automatic mode
-  Maintenance mode

### 12.1.2 User management – Password



The input tab dialogue box for entering the password is opened by tapping on the symbol in the page Header.

Enter the password using the keypad that appears on the touch panel.

After confirming the password, the currently active user is displayed.

| Level | User              | Password | Authorisations   |
|-------|-------------------|----------|--|
| 0     | Simple worker     | –        | password entry<br>menu choices<br>language change<br>starting cyclic programs<br>save consumption data on USB stick            |
| 1     | Line manager      | 00000    | enable/disable the automatic mode<br>change recipe data<br>save data on USB stick<br>change washing program data               |
| 2     | Expert technician | 12345    | change general parameters<br>change date and time<br>change calibration values   |
| 3     | Administrator     | 02468    | password management<br>change IP address<br>reset valve configuration<br>change alarm parameters<br>upload data from USB stick |
| 4     | Verind SpA        | 20090    |  |

Tapping the user level as described above will reset the level to zero.

### 12.1.3 Functions page home page

0

EcoDose2K Easy1.0.0  
 Firmware © 2019 Verind S.p.A.

HH:MM:SS

10

09

04

yyyy/mm/dd

2019

11

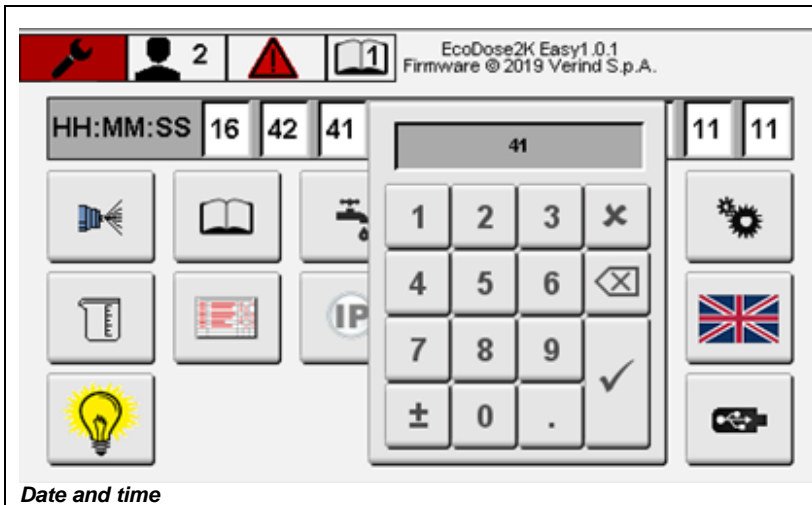
07

**Home page**

- Spraying page
- Recipe data settings page
- Wash cycle page
- Manual valve control page
- Flow meter calibration page
- Parameters setting page
- Product consumption page
- Alarms page
- IP address settings page
- user password setting page
- factory password reset page
- language change menu
- lamp and siren tests
- remote controller signal display page
- save menu - restore USB key data



### 12.1.4 Date and time settings

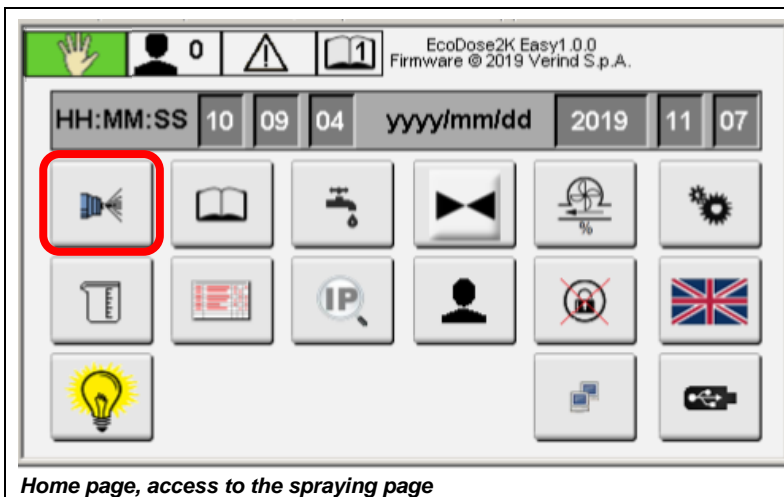


Log in with level 2 or higher.  
The date and time fields can be filled in after tapping the related box.

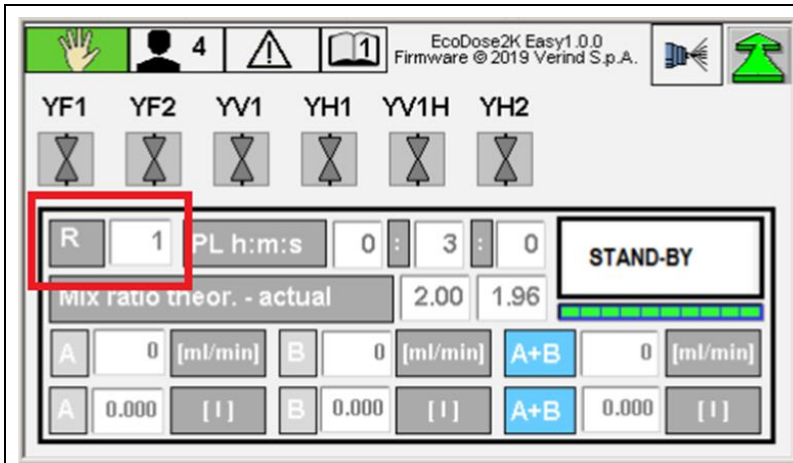
In automatic mode, a specific command can be sent from an external controller to synchronise the date and time.

### 12.1.5 Spraying

With the machine in Stand-By, holding down the STOP button on the electrical panel, press the RESET button on the electrical panel.

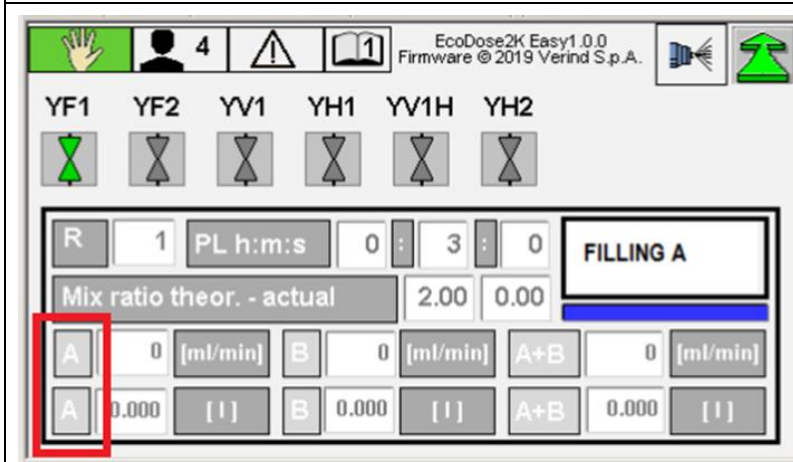


With the machine in MANUAL mode, pressing the highlighted button will open the spraying page.



The recipe number will increment by one each time the RESET button is pressed; once the maximum value of nine is reached, it restarts from 1. Once the desired recipe value has been selected, press the START button on the electrical panel, which will start the loading sequence that will bring the machine into the Ready state.

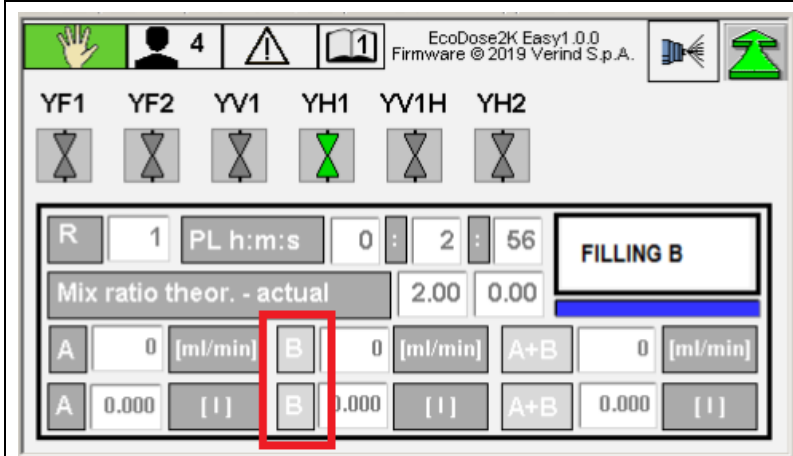
Recipe change sequence: purge and filling of sections A, B and A+B depends on the state of the machine, the recipe in use and the required recipe and the machine parameter settings.



Channel A fill status page.

Filling channel A i.e., the section from the colour valve block to the mixing block - FILLING A with the quantity indicated in the parameter Tube A volume [ml].

The colour of the channel letter is light blue when the channel has been cleaned of solvent and dark grey when it is loaded, light grey when the state is undefined.

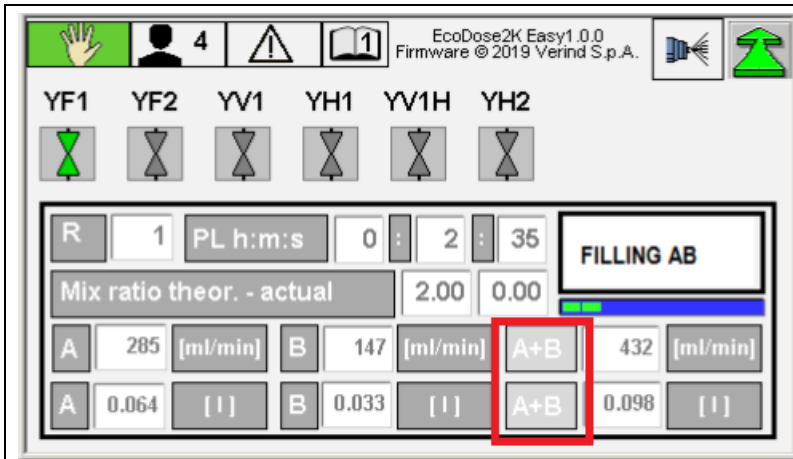


Channel B fill status page.

Possible filling of channel B i.e., the section from the catalyst valve block to the mixing block - FILLING B with the quantity indicated in the parameter Tube B volume [ml].

The colour of the channel letter is light blue when the channel has been cleaned of solvent and dark grey when it is loaded, light grey when the state is undefined.

If the catalyst in use is the same as in the new loading recipe and, in the parameters, the option: Always wash channel B is not selected, channel B will not be washed.

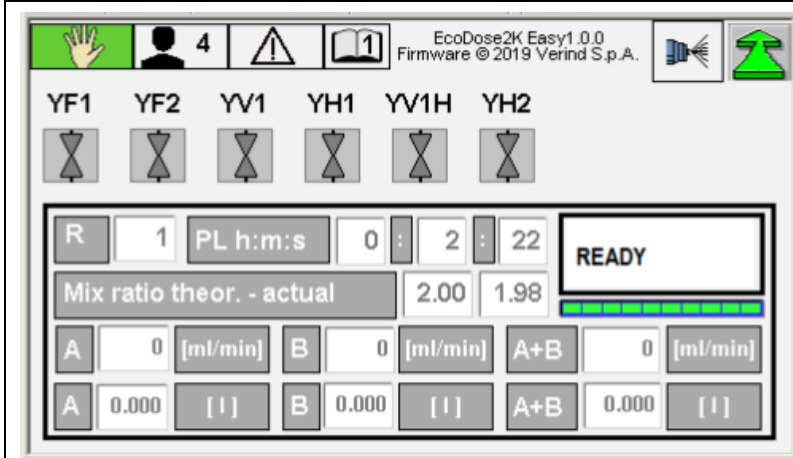


Channel AB fill status page.

Filling channel A+B i.e., the section from the mixing block to the gun with mixed product, FILLING AB with the quantity assigned in the parameter "AB Filling Quantity".

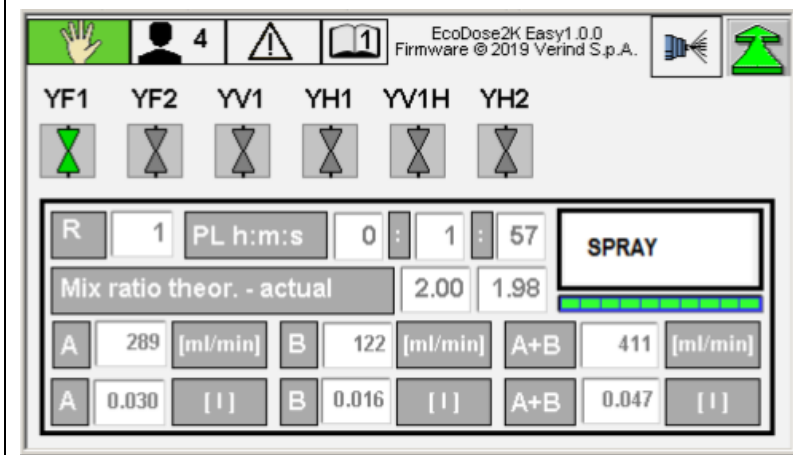
A green bar graph indicates the progression of the mixed product quantity to the final value.

The colour of the channel letter is light blue when the channel has been cleaned of solvent and dark grey when it is loaded, light grey when the state is undefined.

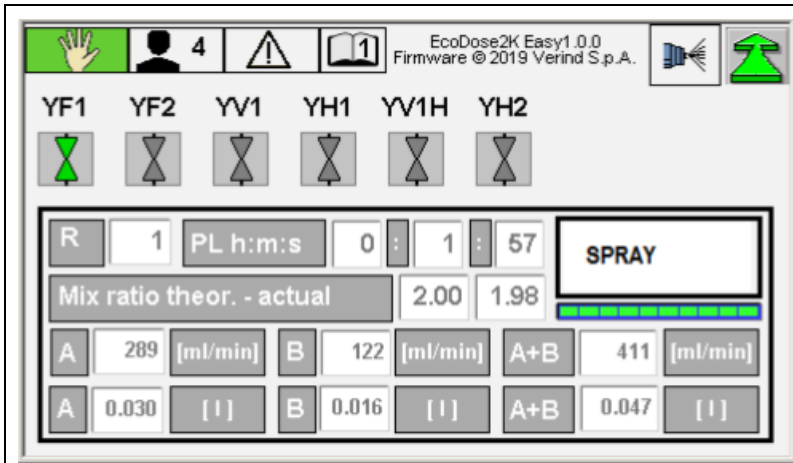


At the end, the machine will enter the ready state,

The green START button lamp will light up on the control panel.



By pulling the trigger of the gun, the air flow switch signal is activated and the colour and catalyst valve will open and spraying will begin in the Spray status.



*Spraying data page*

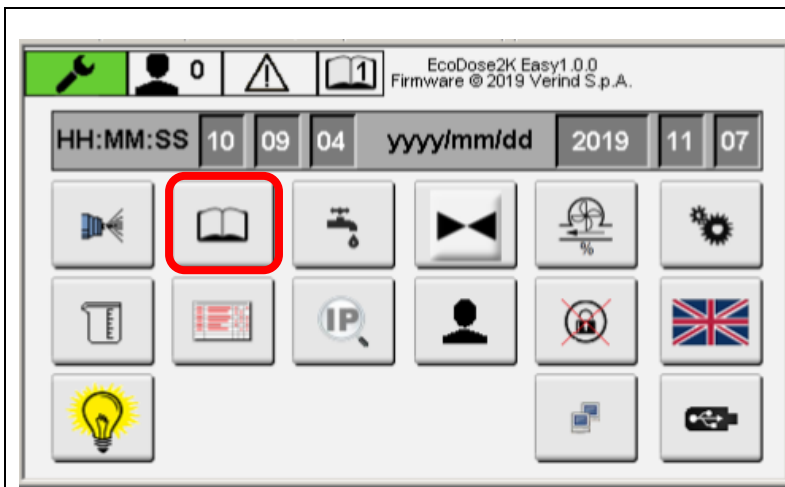
During spraying, the following data are shown in this window:





- Machine status: Ready/Spray
- Recipe number: R
- The residual pot-life value in h:m:s (countdown to zero)
- Current flow on channel A (ml/min)
- Current flow on channel B (ml/min)
- The current mixed product flow in ml/min
- The dispensed quantity of product A and B and of mixed product A+B in litres

The quantity is reset each time an alarm is set to stop spraying.



The theoretical mixing ratio set in the recipe and the actual measured ratio. On the page, the active valves are coloured in green.

### 12.1.6 Recipe data settings











EcoDose2K Easy1.0.0  
 Firmware © 2019 Verind S.p.A.

|   | 1   | 2 | 3.00 | 90                | 100              | 50               | 3    |
|---|-----|---|------|-------------------|------------------|------------------|------|
|   | COL | H | MR   | POT[ <b>min</b> ] | QLA[ <b>ml</b> ] | QLB[ <b>ml</b> ] | n.CY |
| 1 | 1   | 1 | 2.00 | 3                 | 100              | 50               | 3    |
| 2 | 1   | 1 | 4.00 | 3                 | 100              | 50               | 2    |
| 3 | 1   | 2 | 3.00 | 90                | 100              | 50               | 3    |
| 4 | 2   | 2 | 2.00 | 90                | 100              | 50               | 3    |
| 5 | 2   | 0 | 0.00 | 0                 | 100              | 0                | 2    |
| 6 | 0   | 0 | 0.00 | 0                 | 0                | 0                | 0    |
| 7 | 0   | 0 | 0.00 | 0                 | 0                | 0                | 0    |
| 8 | 0   | 0 | 0.00 | 0                 | 0                | 0                | 0    |
| 9 | 0   | 0 | 0.00 | 0                 | 0                | 0                | 0    |


Recipe settings page








This page lists all the recipes, numbered from one to nine. Each recipe refers to a set of parameters and a name which appears in a box in the top right-hand corner.

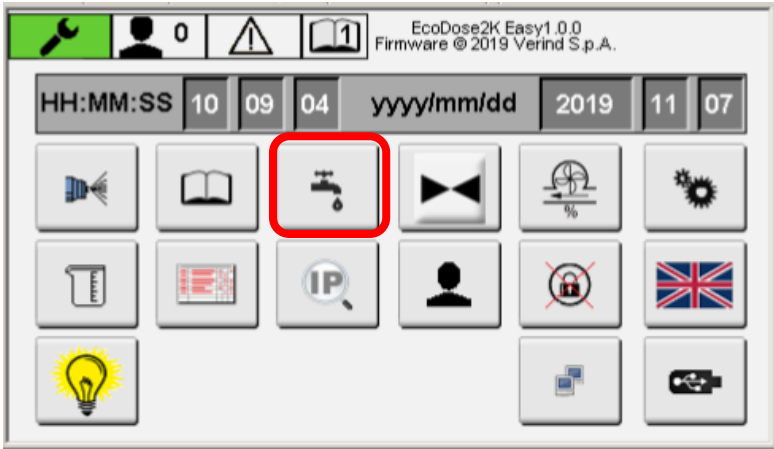
**COL** = Base valve number  
**H** = Catalyst valve number  
**MR** = Mixing ratio: parts A for each part B  
**POT [min]** = Pot life of the mixed material in minutes  
**QLA [ml]** = Amount of solvent on channel A for recipe change purge  
**QLB [ml]** = Amount of solvent on channel B for recipe change purge  
**n.CY** = Number of repetitions of the QLA-QLB sequence at recipe change

To change recipe data, log in with a user of at least level 1. The first unnumbered row at the top of the page is used to enter the recipe data into the table. You can fill in each individual field by entering values using the keyboard, which appears when you tap on the field.

When a recipe is selected, the corresponding line turns green and the corresponding data is copied to the top line. Once all parameters have been entered, press the “Save” button . On the right of the screen, there are three more buttons: copy, paste and save.

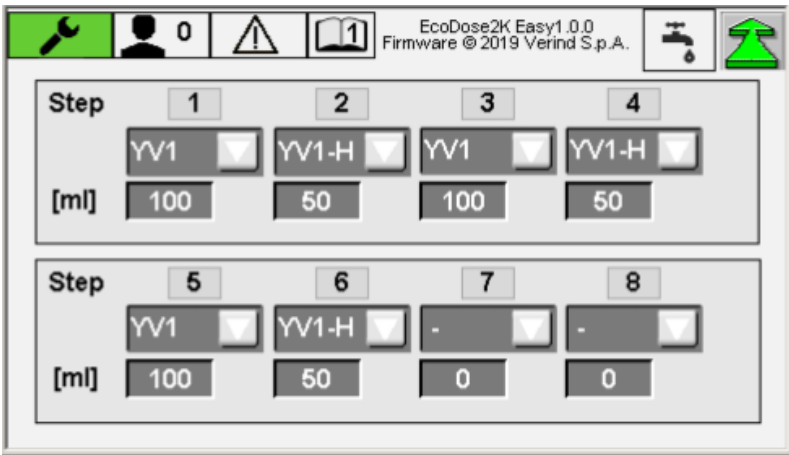
|              |   |   |
|--------------|---|---|
| <b>Copy</b>  |  | This button can be used to temporarily copy a line from the recipe table.   |
| <b>Paste</b> |  | This button can be used to paste a previously copied line onto another one. |
| <b>Save</b>  |  | This button can be used to save all changes.                                |

### 12.1.7 Washing cycle



The screenshot shows the home screen of the EcoDose2K Easy control panel. At the top, there are icons for maintenance, user level (0), warning, and help. The date and time are displayed as 10:09:04 on 04/11/2019. The WASH button, represented by a water tap icon, is highlighted with a red box.


The washing program is activated in the stand-by state by pressing the WASH button on the electrical panel. The wash cycle consists of a sequence of up to eight steps, for each of which it is possible to assign which solvent valve to open, YV1 (channel A) or YV1-H (channel B) and the amount of solvent to pass in order to proceed to the next step. To change the recipe data, log in with a user of at least level 1.



The screenshot shows the 'Wash cycle page' where the user can configure up to eight steps. Each step is defined by a solvent valve (YV1 or YV1-H) and a volume in milliliters (ml). Steps 1-4 are configured with YV1 (100ml), YV1-H (50ml), YV1 (100ml), and YV1-H (50ml) respectively. Steps 5-8 are configured with YV1 (100ml), YV1-H (50ml), and 0ml for the remaining two steps.

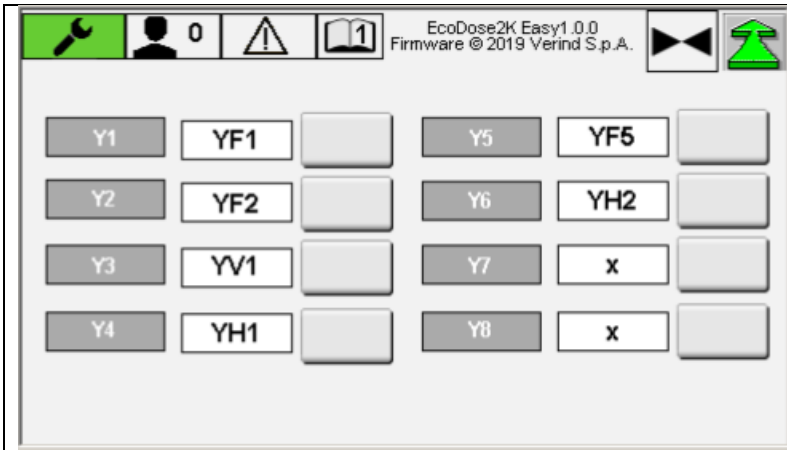
*Wash cycle page*

### 12.1.8 Manual valve control



The screenshot shows the home screen of the EcoDose2K Easy control panel. The date and time are displayed as 10:04:33 on 04/11/2019. The Manual Valve Control button, represented by a valve icon, is highlighted with a red box.

Log in with at least a level 1 user. Put the system in MAINTENANCE mode. From the home page, open the one for valve control.



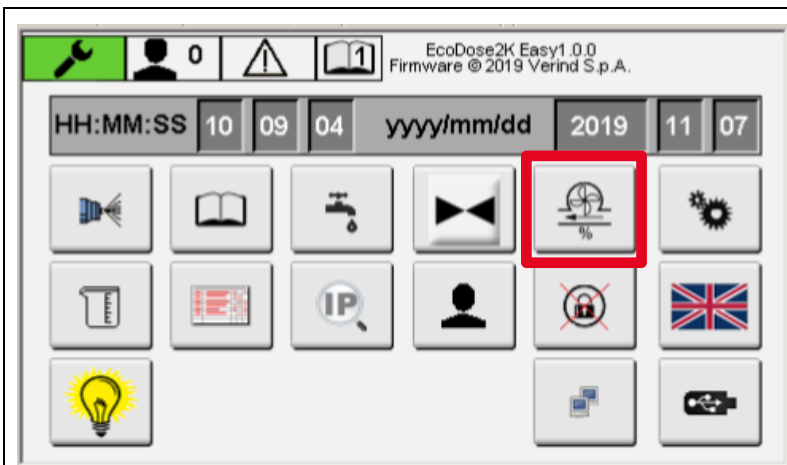
Manual valve control page

The page lists the valves according to the machine configuration.

You can control the valves individually (On/Off) with the button next to each valve.

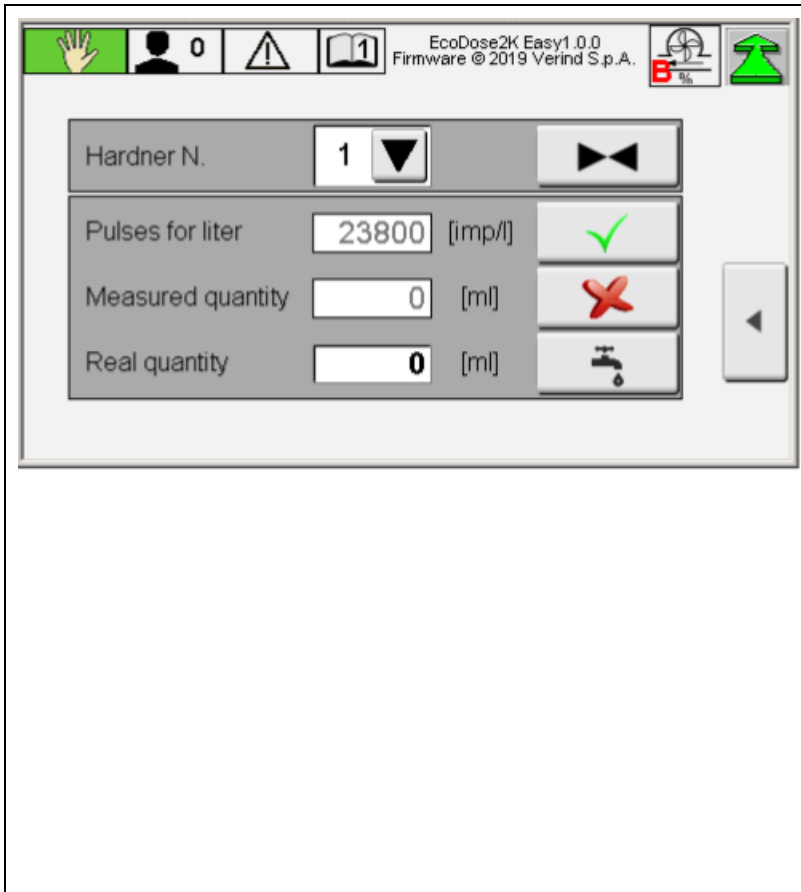



### 12.1.9 Calibration data change

The flow meters must be parameterised by entering the number of pulses generated per litre of material dispensed. The number of pulses per litre can be entered manually or it can be calculated via a procedure described below, for both channel A and channel B. The calibration values are saved in the parameters Pulses per litre of colour [imp/l] - Pulses per litre of catalyst [imp/l].



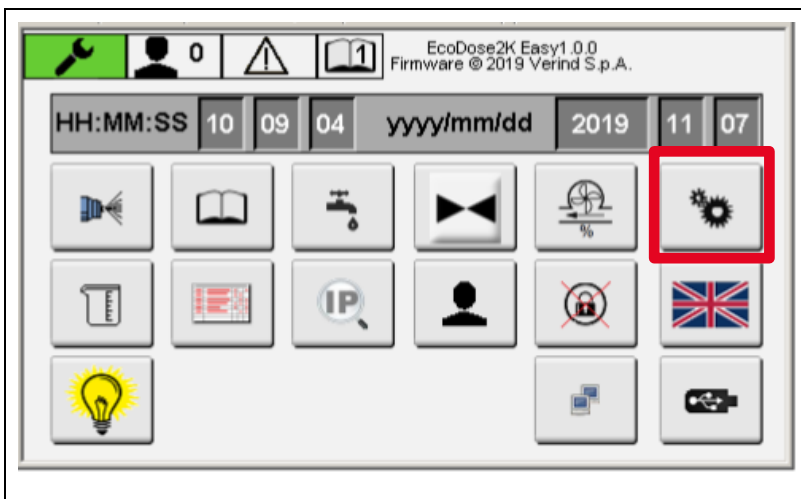
Log in with level 2 or higher.

From the home page, open the calibration page using the highlighted button.

|  |  |
|--|--|
|  | <p>Select from the drop-down menu the colour valve with which the calibration is to be performed.</p> <p>With the machine in manual mode, open the valve with the control </p> <p>Fill the pipe up to the product outlet. Close the valve with the same control.</p> <p>Zero the count of millilitres transited with the button </p> <p>Then re-open the valve and collect the product in a graduated container. Close the valve when the quantity collected is sufficient for an accurate measurement - a few hundred millilitres. Enter the actual value of the millilitres collected in the container in the actual quantity field.</p> <p>Confirm with the button, the pulses per litre of colour parameter will be recalculated and saved. </p> |
|--|--|

To calibrate the B-channel flow meter, go to the next page with the right arrow button, then proceed in the same way.

### 12.1.10 Parameters

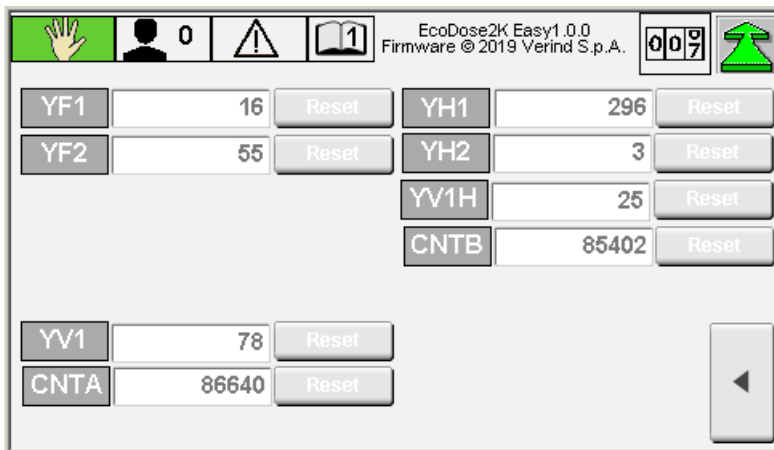
|   |   |
|---|---|
|  | <p>The parameters are arranged in four pages of settings. To change a value, log in with a user of the appropriate level.</p> |
|---|---|





|                                 |       |         |
|---------------------------------|-------|---------|
| Impulsi per litro colore        | 11900 | [imp/l] |
| Impulsi per litro catalizzatore | 20800 | [imp/l] |
| Diametro interno tubo           | 6     | [mm]    |
| Lunghezza                       | 8     | [m]     |
| Vol. tubo                       | 226   | [ml]    |

Parameters page 1



|      |       |       |      |       |       |
|------|-------|-------|------|-------|-------|
| YF1  | 16    | Reset | YH1  | 296   | Reset |
| YF2  | 55    | Reset | YH2  | 3     | Reset |
|      |       |       | YV1H | 25    | Reset |
|      |       |       | CNTB | 85402 | Reset |
| YV1  | 78    | Reset |      |       |       |
| CNTA | 86640 | Reset |      |       |       |

Counters Reset Page

**Pulses per litre of colour:**

Level 2. Number of pulses per litre measured by the volumetric meter on channel A; value set during the calibration procedure; it is automatically written here with confirmation of the actual volume value measured.

**Pulses per litre of catalyst:**


Level 2. Number of pulses per litre measured by the volumetric meter on channel B; value set during the calibration procedure; it is automatically written here with confirmation of the actual volume value measured.

**Tube inner diameter:**

Level 3. Inner pipe diameter in millimetres (default value = 6mm).

**Length:**

Level 3. Length of pipeline in metres.

From parameter page 1, to access the pneumatic valve and flow meter utilisation data page, press the button 

An alert message will appear when the value of the operation counter has reached the limit set in the parameters and therefore the component must be checked or replaced.

Once the operation has been carried out, log in with a level 3 user, press the reset button next to each counter to reset it to zero.

| EcoDose2K Easy1.0.0<br>Firmware © 2019 Verind S.p.A. |          |
|--|----------|
| Volume tubo A  | 150 [ml] |
| Volume tubo B  | 100 [ml] |
| Quantità riempimento AB                              | 300 [ml] |
| Lava sempre canale B                                 | No       |
| Quantità per pulire A dopo calib.                    | 500 [ml] |
| Quantità per pulire B dopo calib.                    | 500 [ml] |

#### Pipe A volume

Level 3. Volume of the pipe section from colour change A to the mixing block. Default value 150 ml

#### Pipe B volume

Level 3. Volume of the pipe section from colour change B to the mixing block. Default value 100 ml

#### AB filling quantity

Level 3. Amount of mixture in millilitres dispensed in the loading phase after filling channels A and B. Default value 300 ml

#### Always wash channel B

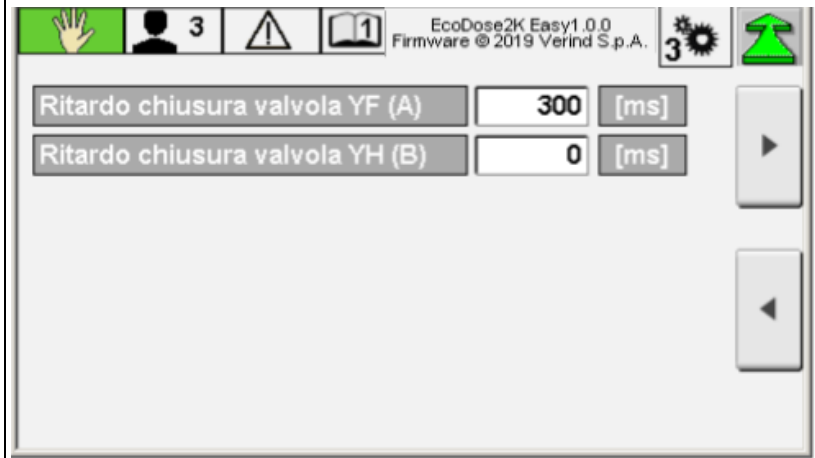
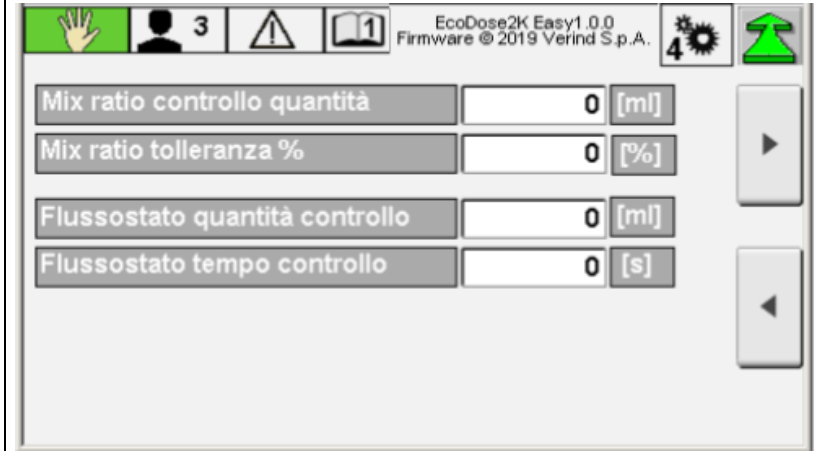
Level 3. During a recipe change, even if the new recipe uses the same catalyst as the one in use, a colour change cycle is performed with solvent on channel B.

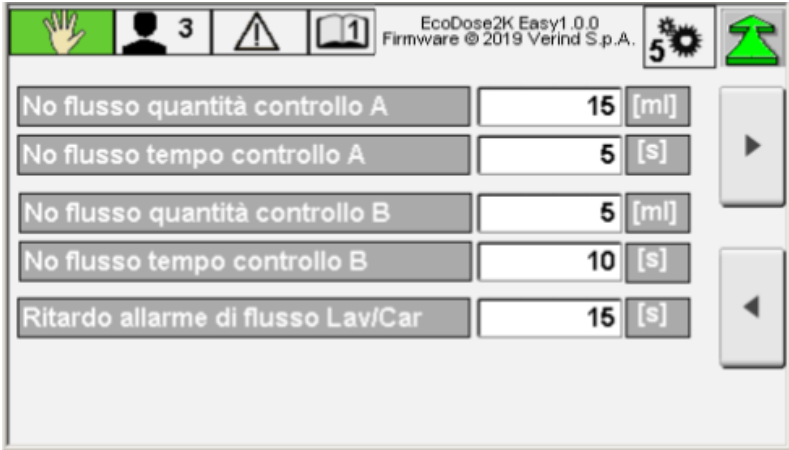
#### Quantity to clean A after calibration

Level 3. Once calibration has been performed on channel A, the channel is flushed with the amount of solvent set here. This allows you to repeat the calibration with a different colour or to calibrate on channel B. Default value 300 ml

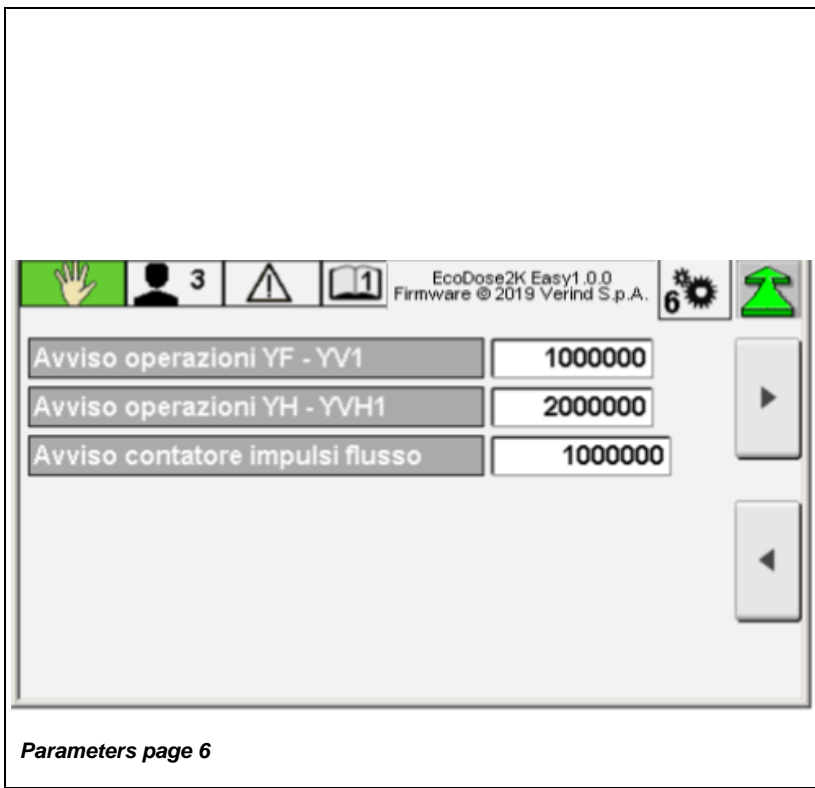
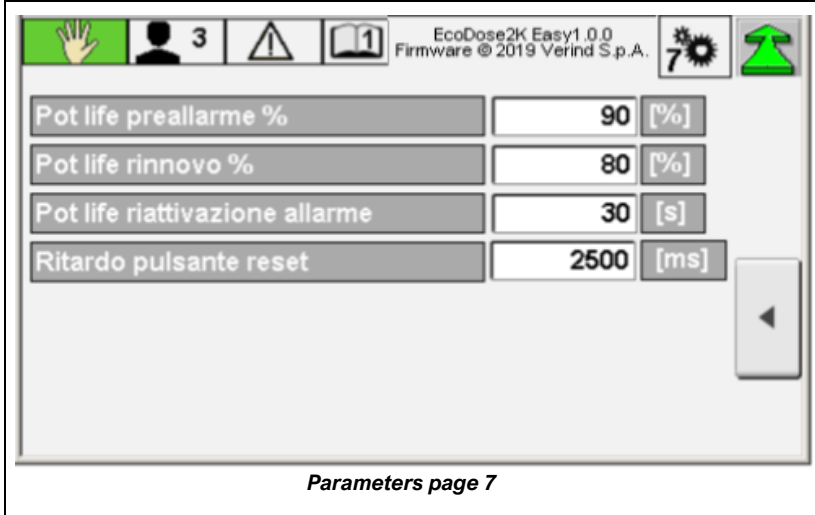
#### Quantity to clean B after calibration

Level 3. Once the calibration has been performed on channel B, the channel is flushed with the amount of solvent set here. This allows you to repeat the calibration with a different catalyst or to calibrate on channel A. Default value 300 ml

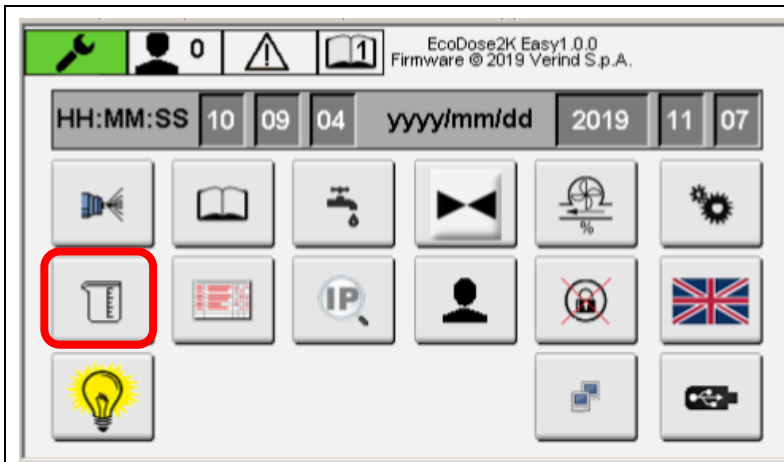
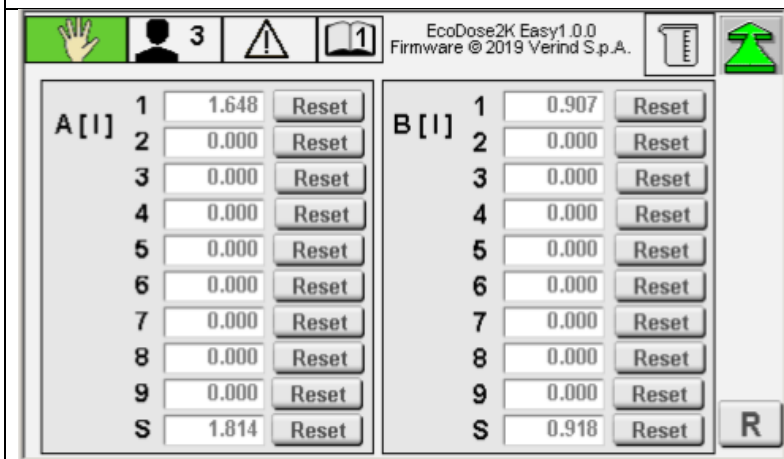
|   |  |
|---|--|
|  <p><b>Parameters page 3</b></p>   | <p><u>YF valve closing delay (A):</u><br/>                 In order to keep the YF colour valve always opened during catalyst injection, there is the option of keeping it open for a short time, as per the present specification, even when there is a surplus of colour in the A/B mixing ratio. Default value 300 [ms]</p> <p><u>YH valve closing delay (B):</u><br/>                 To reduce the number of operations (frequency) of the catalyst valve, it is possible to keep it open for the short time specified here, even when there is a surplus of catalyst in the A/B mixing ratio. Default value 0 [ms]</p>   |
|  <p><b>Parameters page 4</b></p> | <p><u>Mix ratio quality control:</u><br/>                 Level 3. Mixing ratio errors are checked periodically each time the quantity indicated here in millilitres is dispensed. Default value 300 ml</p> <p><u>Mix ratio tolerance:</u><br/>                 Level 3. Maximum error in percentage of the mixing ratio against the control quantity specified in the previous parameter. Default value 2%</p> <p><u>Flow switch control quantity:</u><br/>                 Level 3. Quantity of product in millilitres measured on channel A, after which the accumulated time of the atomising air flow switch signal is periodically checked. Set to zero, this parameter will exclude the Flow Switch Error alarm. Default value 100 ml</p> <p><u>Flow switch time control:</u><br/>                 Level 3. Periodically, whenever the quantity set in the previous parameter is delivered to channel A, a check is made that the flow switch ON signal total time is greater than the time assigned here in seconds. The purpose is to detect flow switch malfunctions or leaks: a condition in which product is dispensed without a flow switch On signal. Set to zero, this parameter will exclude the Flow Switch Error alarm. Default value 10 s</p> |

|  |   |
|--|---|
|  | <p><u>No flow control quantity A:</u><br/>                 During spraying, each time the cumulative time from the signal of the atomising air flow switch On reaches the threshold set in the following parameter, a check is made that the quantity delivered to channel A is greater than or equal to the value set here in ml. Default value 4.</p> <p><u>No flow control time A:</u><br/>                 Level 3. During spraying, each time the cumulative time from the signal of the atomising air flow switch On reaches the value set here in seconds, a check is made that the quantity delivered to channel A is greater than or equal to the value set in the previous parameter. It detects flow meter malfunctions or an obstruction on the channel.<br/>                 Caution: extending this time can make it untimely to react to any errors in mixing.<br/>                 Default value 5 s.</p> <p><u>No flow control quantity B:</u><br/>                 Level 3. During spraying, each time the cumulative time from the signal of the atomising air flow switch On reaches the threshold set in the following parameter, a check is made that the quantity delivered to channel B is greater than or equal to the value set here in millilitres. Default value 1.</p> <p><u>No flow control time B:</u><br/>                 Level 3. During spraying, each time the cumulative time from the signal of the atomising air flow switch On reaches the value set here in seconds, a check is made that the quantity delivered to channel B is greater than or equal to the value set in the previous parameter. It detects flow meter malfunctions or an obstruction on the channel.<br/>                 Caution: extending this time can make it untimely to react to any errors in mixing.<br/>                 Default value 5 s.</p> <p><u>Wash/Load flow alarm delay:</u><br/>                 Level 3. If no product is detected during washing or loading for the time set here in seconds, a no-delivery alarm is generated on channel A or B.</p> |
|--|---|

Parameters page 5

|   |                            |         |                             |         |                                 |         |  |           |  |
|---|----------------------------|---------|-----------------------------|---------|---------------------------------|---------|--|-----------|--|
|  <p>The screenshot shows the 'Parameters page 6' of the EcoDose2K Easy device. At the top, there is a status bar with icons for a hand, a person with the number 3, a warning triangle, a book with the number 1, and a gear with the number 6. The text 'EcoDose2K Easy1.0.0 Firmware © 2019 Verind S.p.A.' is displayed. Below the status bar, there are three rows of parameter settings:</p> <table border="1"> <tr> <td>Avviso operazioni YF - YV1</td> <td>1000000</td> </tr> <tr> <td>Avviso operazioni YH - YVH1</td> <td>2000000</td> </tr> <tr> <td>Avviso contatore impulsi flusso</td> <td>1000000</td> </tr> </table> <p>Navigation arrows are visible on the right side of the parameter list.</p>   | Avviso operazioni YF - YV1 | 1000000 | Avviso operazioni YH - YVH1 | 2000000 | Avviso contatore impulsi flusso | 1000000 | <p><b>Operations warning YF - YV1 (Level 3) =</b><br/>                 Valve operations on channel A are counted. When the value of one of these reaches the threshold set here, a warning message is generated.<br/>                 Setting this value to zero will not generate messages.<br/>                 Default value 1000000.</p> <p><b>Operation warning YH - YVH1 (Level 3) =</b><br/>                 Valve operations on channel B are counted. When the value of one of these reaches the threshold set here, a warning message is generated.<br/>                 Setting this value to zero will not generate messages.<br/>                 Default value 2000000.</p> <p><b>Flow pulse counter warning (Level 3) =</b><br/>                 The number of pulses generated by flow meters on channels A and B are counted. When the value reaches the threshold indicated here, a warning message is generated. Setting this value to zero will not generate messages.<br/>                 Default value 0.</p> |           |  |
| Avviso operazioni YF - YV1  | 1000000                    |         |                             |         |                                 |         |  |           |  |
| Avviso operazioni YH - YVH1   | 2000000                    |         |                             |         |                                 |         |  |           |  |
| Avviso contatore impulsi flusso   | 1000000                    |         |                             |         |                                 |         |  |           |  |
|  <p>The screenshot shows the 'Parameters page 7' of the EcoDose2K Easy device. At the top, there is a status bar with icons for a hand, a person with the number 3, a warning triangle, a book with the number 1, and a gear with the number 7. The text 'EcoDose2K Easy1.0.0 Firmware © 2019 Verind S.p.A.' is displayed. Below the status bar, there are four rows of parameter settings:</p> <table border="1"> <tr> <td>Pot life preallarme %</td> <td>90 [%]</td> </tr> <tr> <td>Pot life rinnovo %</td> <td>80 [%]</td> </tr> <tr> <td>Pot life riattivazione allarme</td> <td>30 [s]</td> </tr> <tr> <td>Ritardo pulsante reset</td> <td>2500 [ms]</td> </tr> </table> <p>Navigation arrows are visible on the right side of the parameter list.</p> | Pot life preallarme %      | 90 [%]  | Pot life rinnovo %          | 80 [%]  | Pot life riattivazione allarme  | 30 [s]  | Ritardo pulsante reset   | 2500 [ms] |  |
| Pot life preallarme %   | 90 [%]                     |         |                             |         |                                 |         |  |           |  |
| Pot life rinnovo %  | 80 [%]                     |         |                             |         |                                 |         |  |           |  |
| Pot life riattivazione allarme  | 30 [s]                     |         |                             |         |                                 |         |  |           |  |
| Ritardo pulsante reset  | 2500 [ms]                  |         |                             |         |                                 |         |  |           |  |

### 12.1.11 Consumption

| Channel | Recipe | Consumption | Action |
|---------|--------|-------------|--------|
| A [I]   | 1      | 1.648       | Reset  |
|         | 2      | 0.000       | Reset  |
|         | 3      | 0.000       | Reset  |
|         | 4      | 0.000       | Reset  |
|         | 5      | 0.000       | Reset  |
|         | 6      | 0.000       | Reset  |
|         | 7      | 0.000       | Reset  |
|         | 8      | 0.000       | Reset  |
|         | 9      | 0.000       | Reset  |
| S       | 1.814  | Reset       |        |
| B [I]   | 1      | 0.907       | Reset  |
|         | 2      | 0.000       | Reset  |
|         | 3      | 0.000       | Reset  |
|         | 4      | 0.000       | Reset  |
|         | 5      | 0.000       | Reset  |
|         | 6      | 0.000       | Reset  |
|         | 7      | 0.000       | Reset  |
|         | 8      | 0.000       | Reset  |
|         | 9      | 0.000       | Reset  |
| S       | 0.918  | Reset       |        |

Consumption page

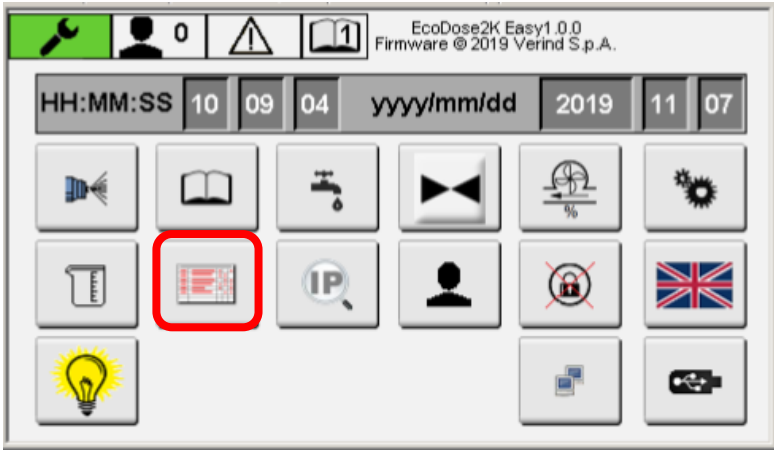




This page shows the consumption for all products that are used in the system for the 9 recipes, expressed in litres, and the solvent consumption for channels A and B. To reset the consumption data, log in with a level 1 user or higher.

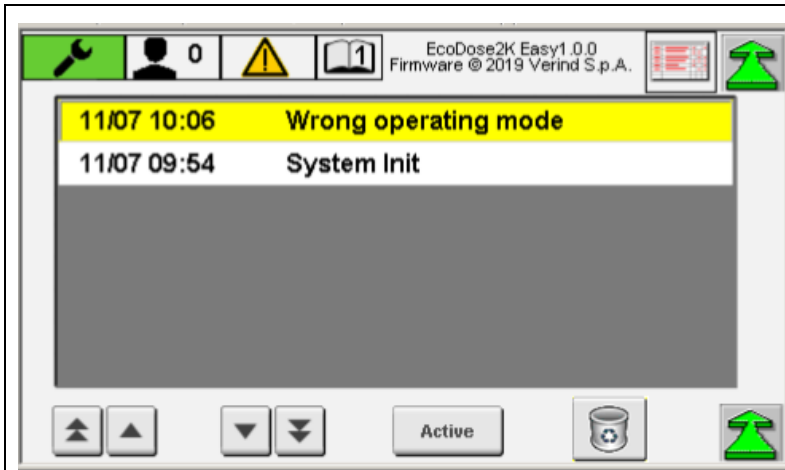
Consumption can be reset individually with the key next to each one or all together with the R key.

### 12.1.12 Alarms

When an alarm occurs, a window will open with the corresponding message.

When an alarm occurs, the machine will switch to Stand-By. Press the Reset button on the electrical panel to silence the siren, press and hold the alarm button for the time set in the parameters to reset the alarm.

|   |  |
|---|--|
|                                      |  |
|  <p><b>Alarms window</b></p>        | <p>There are two alarm windows: active alarms and alarm history. Press the button on the page header to change the window display.</p> <ul style="list-style-type: none"> <li> Active</li> <li> Alarm history</li> </ul> |
|  <p><b>Current alarms page</b></p> | <p>This page shows all alarms and warnings currently in progress with the date and time they occurred.</p>   |



Alarm history page

Alarm history storage for up to 1000 alarms.



Use the button to delete the archive.

## Messages and alarm groups

### Group 0: System messages

| Alarm number | Alarm                         |
|--------------|-------------------------------|
| 0            | Acknowledged all              |
| 1            | Ignored all                   |
| 2            | System initialisation         |
| 5            | The alarm text cannot be read |

### Group 1: Process alarms

| Alarm number | Alarm  |
|--------------|--|
| 0            | Invalid external recipe                                |
| 1            | Channel A not delivering                               |
| 2            | Channel B not delivering                               |
| 3            | Air flow switch not OK or leakage                      |
| 6            | POT-life alarm   |
| 7            | Calibration factor (A or B) less than or equal to zero |
| 8            | POT-life pre-alarm                                     |
| 9            | System switched off and not washed                     |
| 10           | External alarm   |
| 12           | Out-of-tolerance mixing ratio                          |
| 23           | Current recipe 0 - Initialised 1                       |

|                                 |  |
|---------------------------------|--|
| <b>Invalid external recipe</b>  | The number of recipes from the external controller is either zero or over the maximum number of recipes.   |
| <b>Channel A not delivering</b> | <b>Possible cause:</b> cyclically during spraying in manual mode, when the cumulative time from the air flow switch on signal reaches the control threshold (Parameter: No flow control time A [s]) the expected quantity has not passed (Parameter: No flow control quantity A [ml]). |



|   |   |
|---|---|
|   | <p>The same control during spraying in automatic mode is done by cumulating the AgoOn signal times on the communication interface.</p> <p><b>Fault clearance:</b> check valve opening and product flow.<br/>Check the correct count of the product flow meter on channel A on the Valve operations page.</p> <p>Reduce the parameter No flow control quantity [ml].<br/>If an error message is received despite the product flowing within the waiting time, the flow meter on channel A is faulty.</p> <p>CAUTION! Extending the control time, parameter No flow control time A [s], leads to the possibility of incorrect dosing reaching the gun.</p>                                      |
| <b>Channel B not delivering</b>                               | As described above, but for channel B   |
| <b>Air flow switch not OK or leakage</b>                      | <p><b>Possible cause:</b> cyclically during spraying in manual mode, the time of the air flow switch on signal is cumulated; at the same time, the quantity of product flowing through channel A is measured. When the passed quantity reaches the control value (Parameter: flow switch control quantity [ml]), the accumulated time of the air flow switch on signal must exceed the control value (Parameter: flow switch control time).</p> <p><b>Fault clearance:</b> check that the air flow switch is working properly and that there are no leaks. Reduce the value of the flow switch control time parameter - increase the value of the flow switch control quantity parameter.</p> |
| <b>POT-life alarm</b>   | <p><b>Possible cause:</b> POT-life exceeded.</p> <p><b>Fault clearance:</b> after the alarm, the machine switches to Stand-By. Press the Start button on the electrical panel. The machine performs an AB mixed product loading until the POT-life falls below what is set in the parameter for Pot-life renewal %. Alternatively, a wash cycle can be performed.</p>   |
| <b>Calibration factor (A or B) less than or equal to zero</b> | <p><b>Possible cause:</b> in the machine parameters, the parameters colour or catalyst pulse/litre are not set.</p> <p><b>Fault clearance:</b> log in with a level 3 user and enter the correct values into the calibration table; however, the exact values must be obtained by a specific calibration procedure; see the relevant section in the manual.</p>  |
| <b>POT-life pre-alarm</b>                                     | <p><b>Possible cause:</b> The POT-life time has reached the value set in the POT-life % pre-alarm parameters.</p> <p><b>Fault clearance:</b> the product mixed in the pipes must be renewed as soon as possible: proceed with a spraying process, through a new loading cycle or flushing.</p>  |
| <b>System switched off and not washed</b>                     | <p><b>Possible cause:</b> the system was switched off but not washed.</p> <p><b>Fault clearance:</b> a washing cycle must be carried out to reset the alarm.</p>  |
| <b>External alarm</b>   | Reserved - not used for this application  |
| <b>Out-of-tolerance mixing ratio</b>                          | <p><b>Possible cause:</b> The system performs a cyclic check on the mixing ratio; the error in the mixing ratio has exceeded the value set in the parameter: Mix ratio tolerance.</p> <p><b>Fault clearance:</b> check valves for leaks; increase the value of parameter : Mix ratio control quantity [ml].</p>   |
| <b>Current recipe 0 -</b>                                     | <p><b>Possible cause:</b> at the time of switching on, the current recipe was number zero. The current recipe is derived from the retention data and is not deleted when the machine is switched off.</p>   |

|                            |   |
|----------------------------|---|
| <b>Initialised to</b><br>1 | <b>Fault clearance:</b> if this is not the first time the machine is switched on, check all other parameters. Contact the supplier. |
|----------------------------|---|

### Group 3: Hardware alarms

| Alarm number | Alarm   |
|--------------|---|
| 0            | Festo CTEU-CO valve module not OK                     |
| 16           | Card X20BR7300 not OK                                 |
| 17           | Card X20DI9371 not OK                                 |
| 18           | Card X20DI2377 not OK                                 |
| 19           | Card X20DO8322 not OK                                 |
| 24           | No signal from external control                       |
| 25           | Wrong serial number. Use the right configuration file |

All hardware alarms require intervention by maintenance personnel to check the status of electrical components and their connections.

### Group 4: General system alarms

| Alarm number | Alarm  |
|--------------|--|
| 0            | Error in the program initialisation routine                |
| 1            | Error in the recipe initialisation routine                 |
| 2            | Error in the configuration initialisation routine          |
| 3            | Error in parameter initialisation routine                  |
| 4            | Error in the consumption initialisation routine            |
| 5            | Error in the program save routine                          |
| 6            | Error in recipe saving routine                             |
| 7            | Error in the configuration saving routine                  |
| 8            | Error in the parameter saving routine                      |
| 9            | Error in the consumption saving routine                    |
| 11           | 24V DC switch not OK                                       |
| 13           | Error in the global initialisation routine                 |
| 14           | USB stick not inserted during data import/export operation |

|  |   |
|--|---|
| <b>Error in the program initialisation routine</b> | <b>Possible cause:</b> when switched on, the PLC loads all operating data: Recipes, configuration, parameters and consumption from files in its internal memory. If the operation is not completed successfully, this alarm is generated. |
| <b>Error in the recipe initialisation routine</b>  | <b>Fault clearance:</b> try restoring missing data from a previous backup saved on a USB device. See the appropriate section of the manual. Restart the machine. If the error persists, contact the supplier.                             |

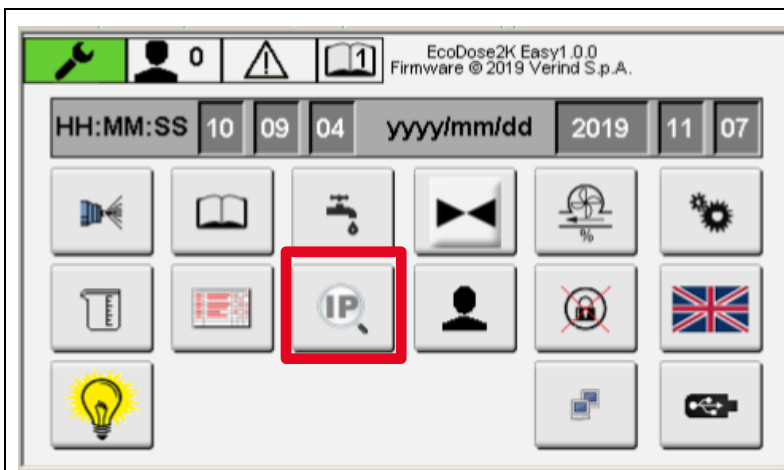
|   |  |
|---|--|
| <b>Error in the configuration initialisation routine</b>          |  |
| <b>Error in parameter initialisation routine</b>                  |  |
| <b>Error in the consumption initialisation routine</b>            |  |
| <b>Error in the program save routine</b>                          | <p><b>Possible cause:</b> Whenever the operating file is modified by a save action, the corresponding file in the PLC's internal memory is updated. The data in memory are probably discordant.</p> <p><b>Fault clearance:</b> try restoring missing data from a previous backup saved on a USB device. See the appropriate section of the manual. Restart the machine. If the error persists, contact the supplier.</p> |
| <b>Error in recipe saving routine</b>                             |  |
| <b>Error in the configuration saving routine</b>                  |  |
| <b>Error in the parameter saving routine</b>                      |  |
| <b>Error in the consumption saving routine</b>                    |  |
| <b>24V DC switch not OK</b>                                       | <p><b>Possible cause:</b> tripping of electrical circuit protections.</p> <p><b>Fault clearance:</b> call the maintenance personnel. Contact the supplier.</p>   |
| <b>USB stick not inserted during data import/export operation</b> | <p><b>Possible cause:</b> the operation to save or load data on/from the USB device was unsuccessful.</p> <p><b>Fault clearance:</b> check whether the USB device is correctly inserted and correctly formatted.</p>   |

#### Group 5: Notices

| Alarm number | Alarm  |
|--------------|--|
| 0            | The YF1 valve has been activated too many times, provide maintenance works                 |
| 1            | The YF2 valve has been activated too many times, provide maintenance works                 |
| 2            | The YF3 valve has been activated too many times, provide maintenance works                 |
| 3            | The YF4 valve has been activated too many times, provide maintenance works                 |
| 4            | The YF5 valve has been activated too many times, provide maintenance works                 |
| 10           | The YH1 valve has been activated too many times, provide maintenance works                 |
| 11           | The YH2 valve has been activated too many times, provide maintenance works                 |
| 13           | The YV1 valve has been activated too many times, provide maintenance works                 |
| 15           | The YV1H valve has been activated too many times, provide maintenance works                |
| 18           | Once the maximum number of pulses on channel A has been reached, provide maintenance works |
| 19           | Once the maximum number of pulses on channel B has been reached, provide maintenance works |
| 25           | The recipe that is being changed is in use at the moment - Before washing                  |
| 26           | Automatic mode enabled – commands not possible   |
| 27           | Wrong operating mode   |
| 28           | Incorrect values in the required recipe  |
| 29           | Wash before loading  |

## 12.2 UDP connection EcoDose2K Easy and external control

To use the external recipe mode, the master control must be connected via a UDP connection to the “EcoDose 2 control”. To connect the IF3 interface, use the X20CP1381 B&R module. A UDP server is programmed on the EcoDose control, its external control must be programmed to connect with a UDP client.



System page, IP address access

To access the IP address settings page, press the highlighted button.



The following parameters must be specified on the external control for the UDP connection:

- EcoDose control port number = remote port 2000
- EcoDose control IP address = this address must be taken from the IF3 interface
- External control port number = local port 2001

The IP address of the external controller and the EcoDose2K Easy must be in the same subnet.

IP address settings page

### Change IP address


Using the Ethernet connection to the IF3 IP port, EcoDose2K easy can be connected to an external controller. Factory setting of port IF3:


IP address: 192,168,100,101  
Subnet mask: 255.255.255.0



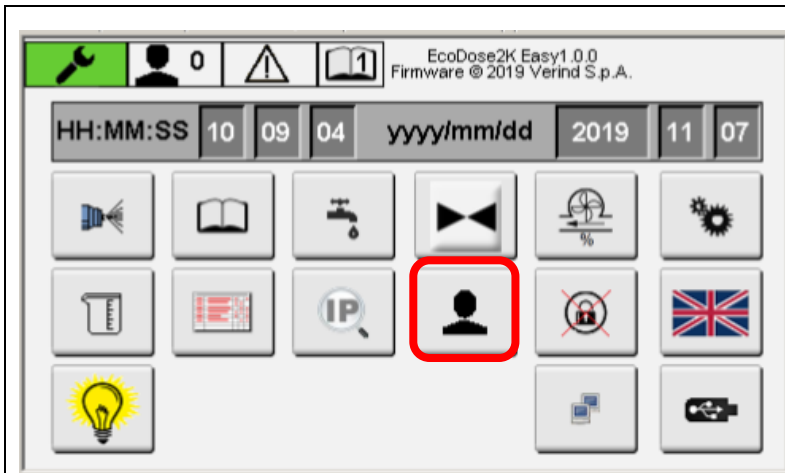
On the home page, a window opens to change the IF3 IP address.

Log in with authorisation level 3 to be able to change address.

Save the change with the  button

Exit this menu using the  button

### 12.2.1 Change password





On the home page, tapping the highlighted button will open a window that allows you to view and change passwords.

You can only change passwords if you have a user of the highest level (Level 3)



In the "User level" field, select the level of the password that will be entered (Levels 1-3).

After the new password has been entered into the field, it is possible to change the password via the confirmation button. 

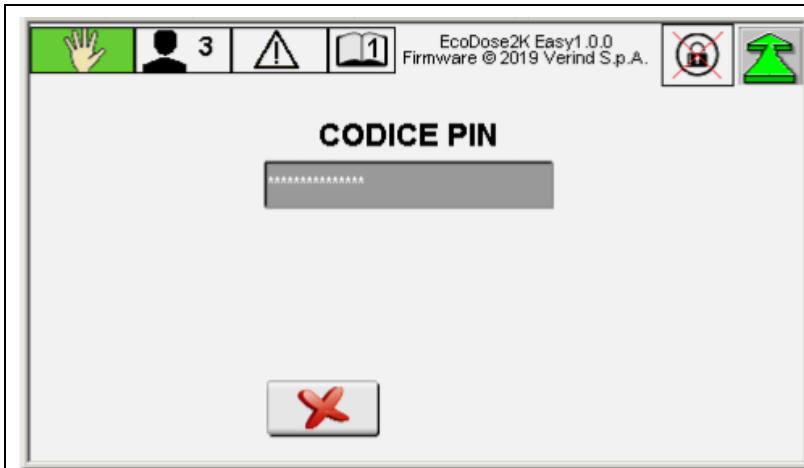
After confirmation, the window will close. Using the "exit" button, you can exit without changing the menu. 

### 12.2.2 Reset password



Home page, password reset access


From the home page, press the highlighted button to open the page where passwords can be reset to the factory settings.




Password reset page

The confirmation button to reset passwords will only appear if the correct PIN CODE is entered.

PIN CODE: 95328807

By pressing the following  button, all passwords will be reset to the factory settings. See section "User management".

Use the exit button to close the window without  performing any action.

### 12.2.3 Language selection

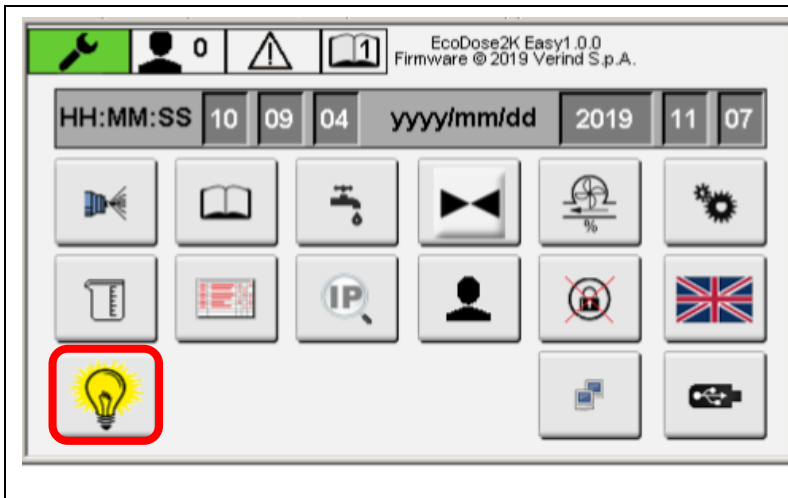


Language selection page

On the home page, tap the highlighted button to open the language change menu.

By pressing the desired language in the drop-down menu, the selection is confirmed and all texts are displayed in the selected language.

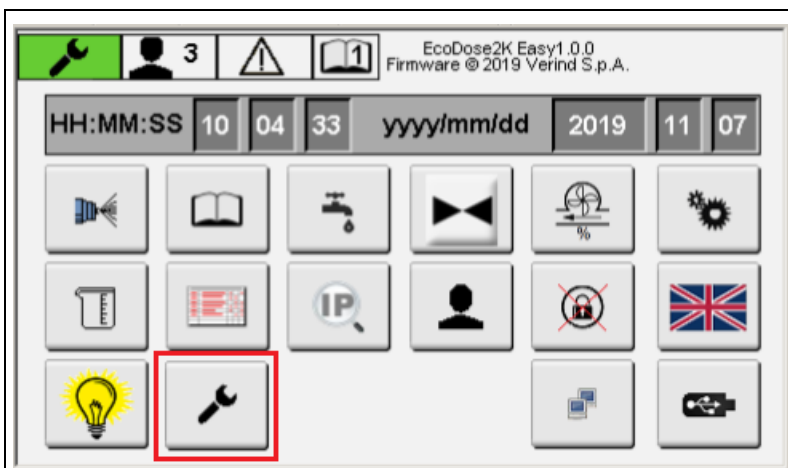
### 12.2.4 Lamp test



Touching the “Lamp test” button will activate the lamp test function.

All lights will come on and the siren will be enabled.

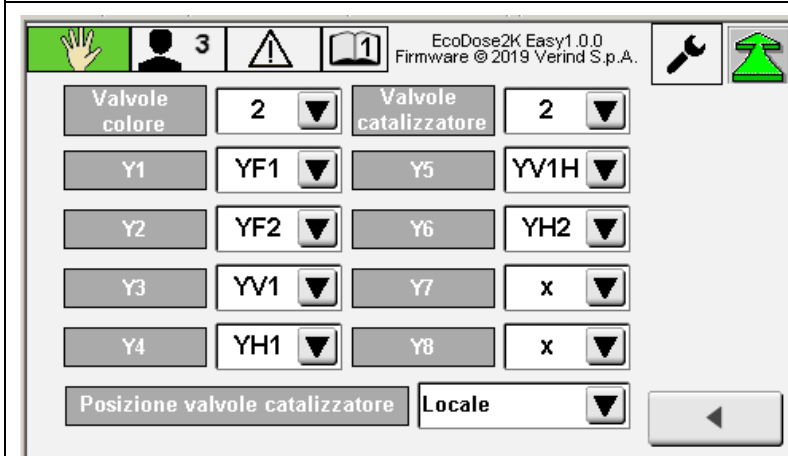
### 12.2.5 EcoDose2K Easy configuration



Home page, valve configuration access

By entering with level 3 on the home page, it is possible to enter the valve configuration page (highlighted button in the figure).

It is possible to assign the position of the pneumatic valves on channel A and B in the solenoid valve group.



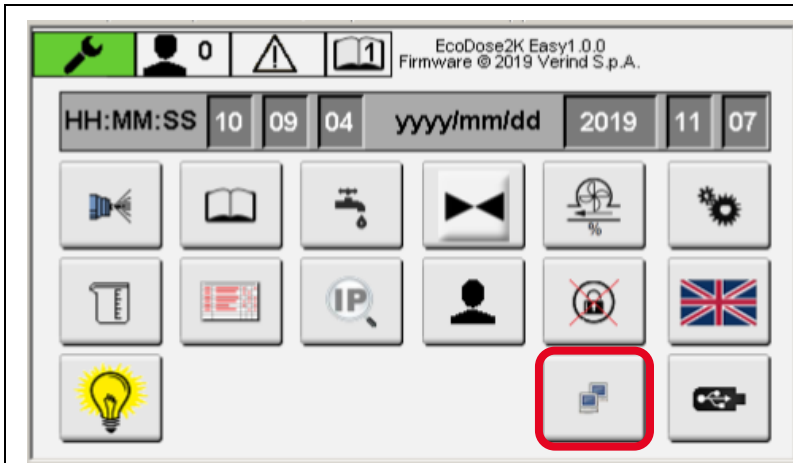
Valve configuration page

The total number of colour and catalyst valves is set here. The solenoid valves are then assigned to the valve to which they are pneumatically connected.

For installations with a remote fluid panel, it is possible to indicate the position of the catalyst solenoid valves as remote, which will be controlled by electrical outputs of the EcoDose 2K Easy boards.

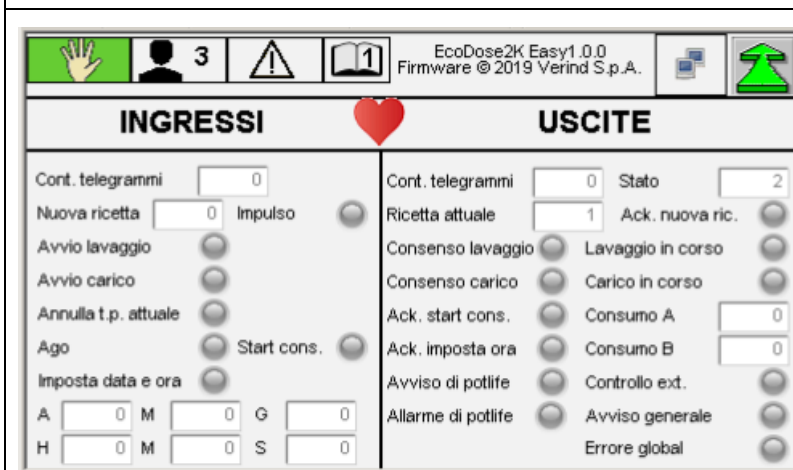


### 12.3 Automatic mode



Home page, access to external interface control signals

From the home page, pressing the highlighted button will open the window where the signals exchanged with the external control unit are displayed .



External interface control signals page

This page shows the input and output signals that are exchanged with the external PLC when the system is in Automatic mode. The window contains:

- Signals consisting of Boolean numbers relating to time programs, errors and station states
- Signals consisting of integer and real numbers relating to recipes, colours, pressures and date/time

### Output to the external control interface

|      | OUTPUT TO EXTERNAL CONTROL SYSTEMS |     |  |
|------|------------------------------------|-----|--|
| 0.0  | iTelCount                          | INT | Telegram counter. Must be copied into AckTelCounter on the remote control system |
| 2.0  | iAlarmGrplfoGlb1                   | INT | Alarm information group byte 0/1 (global alarm)                                  |
| 4.0  | iAlarmGrplfoGlb2                   | INT | Alarm information group byte 2/3 (global alarm)                                  |
| 6.0  | iAlarmGrplfoApl1                   | INT | Alarm information group byte 0/1 (application-specific alarm)                    |
| 8.0  | iAlarmGrplfoApl2                   | INT | Alarm information group byte 2/3 (application-specific alarm)                    |
| 10.0 | iSpare_10                          | INT |  |
| 12.0 | iSpare_12                          | INT |  |
| 14.0 | iSpare_14                          | INT |  |
| 16.0 | iSpare_16                          | INT |  |

|      |                   |      |   |
|------|-------------------|------|---|
| 18.0 | iSpare_18         | INT  |   |
| 20.0 | mStatReady        | BOOL | Station On  |
| 20.1 | mStatExtMode      | BOOL | Station in automatic mode i.e., with external control (data from the remote controller will only use this mode) |
| 20.2 | mStatFault        | BOOL | Global station failures   |
| 20.3 | mStatWarning      | BOOL | Global station warnings   |
| 20.4 | mAckSetTime       | BOOL | Date and time synchronisation request   |
| 20.5 | mSpare_20_5       | BOOL |   |
| 20.6 | mSpare_20_6       | BOOL |   |
| 20.7 | mSpare_20_7       | BOOL |   |
| 21.0 | mSpare_21_0       | BOOL |   |
| 21.1 | mSpare_21_01      | BOOL |   |
| 21.2 | mSpare_21_02      | BOOL |   |
| 21.3 | mSpare_21_03      | BOOL |   |
| 21.4 | mSpare_21_04      | BOOL |   |
| 21.5 | mSpare_21_05      | BOOL |   |
| 21.6 | mSpare_21_06      | BOOL |   |
| 21.7 | mSpare_21_07      | BOOL |   |
| 22.0 | iColorChangeState | INT  | Status 0 = not set, 1 = stand-by, 2 = washed, 3 = ready 4 = spray   |
| 24.0 | iActLoadedRecipe  | INT  | Current recipe number   |
| 26.0 | iSpare_26         | INT  |   |
| 28.0 | iSpare_28         | INT  |   |
| 30.0 | iSpare_30         | INT  |   |
| 32.0 | iSpare_32         | INT  |   |
| 34.0 | iSpare_34         | INT  |   |
| 36.0 | iSpare_36         | INT  |   |
| 38.0 | iConsA            | INT  | Current consumption of component A [ml].  |
| 40.0 | iConsB            | INT  | Current consumption of component B [ml].  |
| 42.0 | iSpare_42         | INT  |   |
| 44.0 | iValveSate1_08    | BOOL | Valve RH1 On  |
| 44.1 | iValveSate1_09    | BOOL | Valve RH2 On  |
| 44.2 | iValveSate1_10    | BOOL |   |
| 44.3 | iValveSate1_11    | BOOL |   |
| 44.4 | iValveSate1_12    | BOOL |   |
| 44.5 | iValveSate1_13    | BOOL |   |
| 44.6 | iValveSate1_14    | BOOL |   |
| 44.7 | iValveSate1_15    | BOOL |   |
| 45.0 | iValveSate1_00    | BOOL | Valve Y1 On   |
| 45.1 | iValveSate1_01    | BOOL | Valve Y2 On   |
| 45.2 | iValveSate1_02    | BOOL | Valve Y3 On   |
| 45.3 | iValveSate1_03    | BOOL | Valve Y4 On   |
| 45.4 | iValveSate1_04    | BOOL | Valve Y5 On   |
| 45.5 | iValveSate1_05    | BOOL | Valve Y6 On   |
| 45.6 | iValveSate1_06    | BOOL | Valve Y7 On   |
| 45.7 | iValveSate1_07    | BOOL | Valve Y8 On   |
| 46.0 | iValveSate2_08    | BOOL | Valve   |
| 46.1 | iValveSate2_09    | BOOL | Valve   |

|      |                  |      |                                   |
|------|------------------|------|-----------------------------------|
| 46.2 | iValveSate2_10   | BOOL | Valve                             |
| 46.3 | iValveSate2_11   | BOOL | Valve                             |
| 46.4 | iValveSate2_12   | BOOL | Valve                             |
| 46.5 | iValveSate2_13   | BOOL | Valve                             |
| 46.6 | iValveSate2_14   | BOOL | Valve                             |
| 46.7 | iValveSate2_15   | BOOL | Valve                             |
| 47.0 | iValveSate2_00   | BOOL | Valve                             |
| 47.1 | iValveSate2_01   | BOOL | Valve                             |
| 47.2 | iValveSate2_02   | BOOL | Valve                             |
| 47.3 | iValveSate2_03   | BOOL | Valve                             |
| 47.4 | iValveSate2_04   | BOOL | Valve                             |
| 47.5 | iValveSate2_05   | BOOL | Valve                             |
| 47.6 | iValveSate2_06   | BOOL | Valve                             |
| 47.7 | iValveSate2_07   | BOOL | Valve                             |
| 48.0 | iSpare_48        | INT  |                                   |
| 50.0 | iSpare_50        | INT  |                                   |
| 52.0 | iSpare_52        | INT  |                                   |
| 54.0 | iSpare_54        | INT  |                                   |
| 56.0 | iSpare_56        | INT  |                                   |
| 58.0 | iSpare_58        | INT  |                                   |
| 60.0 | iSpare_60        | INT  |                                   |
| 62.0 | mPurgeRun        | BOOL | The washing program is active     |
| 62.1 | mLoadRun         | BOOL | The loading program is active     |
| 62.2 | mSpare_62.2      | BOOL |                                   |
| 62.3 | mSpare_62.3      | BOOL |                                   |
| 62.4 | mSpare_62.4      | BOOL |                                   |
| 62.5 | mReleasePurge    | BOOL | Release start purge recipe change |
| 62.6 | mReleaseLoad     | BOOL | Release start load recipe change  |
| 62.7 | mAckStrNewRecipe | BOOL | Acknowledge new recipe            |
| 63.0 | mSpare_63.0      | BOOL |                                   |
| 63.1 | mSpare_63.1      | BOOL |                                   |
| 63.2 | mSpare_63.2      | BOOL |                                   |
| 63.3 | mSpare_63.3      | BOOL |                                   |
| 63.4 | mStartConsAck    | BOOL | Acknowledge start consumption     |
| 63.5 | mPotlife Alarm   | BOOL | Pot-life alarm                    |
| 63.6 | mPotLifePrealarm | BOOL | Pot-life pre-alarm                |
| 63.7 | mSpare_63_7      | BOOL |                                   |
| 64.0 | mSpare_64_0      | BOOL |                                   |
| 64.1 | mSpare_64_1      | BOOL |                                   |
| 64.2 | mSpare_64_2      | BOOL |                                   |
| 64.3 | mSpare_64_3      | BOOL |                                   |
| 64.4 | mSpare_64_4      | BOOL |                                   |
| 64.5 | mSpare_64_5      | BOOL |                                   |
| 64.6 | mSpare_64_6      | BOOL |                                   |
| 64.7 | mSpare_64_7      | BOOL |                                   |
| 65.0 | mSpare_65_0      | BOOL |                                   |
| 65.1 | mSpare_65_1      | BOOL |                                   |

|      |             |      |  |
|------|-------------|------|--|
| 65.2 | mSpare_65_2 | BOOL |  |
| 65.3 | mSpare_65_3 | BOOL |  |
| 65.4 | mSpare_65_4 | BOOL |  |
| 65.5 | mSpare_65_5 | BOOL |  |
| 65.6 | mSpare_65_6 | BOOL |  |
| 65.7 | mSpare_65_7 | BOOL |  |

### Input from external control interface

|      | INPUT FROM AN EXTERNAL CONTROL SYSTEM |      |  |
|------|---------------------------------------|------|--|
| 0.0  | iAckTelCount                          | INT  | Telegram counter detected                |
| 2.0  | iDateYear                             | INT  | Date Year => Ext                         |
| 4.0  | bDateMonth                            | BYTE | Date month => Ext                        |
| 5.0  | bDateDay                              | BYTE | Date Day => Ext                          |
| 6.0  | bTimeHours                            | BYTE | Time hours => Ext                        |
| 7.0  | bTimeMinutes                          | BYTE | Time minutes => Ext                      |
| 8.0  | bTimeSeconds                          | BYTE | Time seconds => Ext                      |
| 9.0  | iSpareO_9                             | BYTE |  |
| 10.0 | iSpareO_10                            | INT  |  |
| 12.0 | iSpareO_12                            | INT  |  |
| 14.0 | iSpareO_14                            | INT  |  |
| 16.0 | iSpareO_16                            | INT  |  |
| 18.0 | iSpareO_18                            | INT  |  |
| 20.0 | mSpare_20_0                           | BOOL |  |
| 20.1 | mSpare_20_1                           | BOOL |  |
| 20.2 | mTimeSync                             | BOOL | Set date and time from external control. |
| 20.3 | mSpareO_20_3                          | BOOL |  |
| 20.4 | mSpareO_20_4                          | BOOL |  |
| 20.5 | mSpareO_20_5                          | BOOL |  |
| 20.6 | mSpareO_20_6                          | BOOL |  |
| 20.7 | mSpareO_20_7                          | BOOL |  |
| 21.0 | mSpareO_21_0                          | BOOL |  |
| 21.1 | mSpareO_21_1                          | BOOL |  |
| 21.2 | mSpareO_21_2                          | BOOL |  |
| 21.3 | mSpareO_21_3                          | BOOL |  |
| 21.4 | mSpareO_21_4                          | BOOL |  |
| 21.5 | mSpareO_21_5                          | BOOL |  |
| 21.6 | mSpareO_21_6                          | BOOL |  |
| 21.7 | mSpareO_21_7                          | BOOL |  |

|      |                  |      |                                    |
|------|------------------|------|------------------------------------|
| 22.0 | iNoNewRecipe     | INT  | New recipe number                  |
| 24.0 | iSpareO_24       | INT  |                                    |
| 26.0 | iSpareO_26       | INT  |                                    |
| 28.0 | iSpareO_28       | INT  |                                    |
| 30.0 | iSpareO_30       | INT  |                                    |
| 32.0 | iSpareO_32       | INT  |                                    |
| 34.0 | iSpareO_34       | INT  |                                    |
| 36.0 | iSpareO_36       | INT  |                                    |
| 38.0 | iSpareO_38       | INT  |                                    |
| 40.0 | iSpareO_40       | INT  |                                    |
| 42.0 | iSpareO_42       | INT  |                                    |
| 44.0 | iSpareO_44       | INT  |                                    |
| 46.0 | iSpareO_46       | INT  |                                    |
| 48.0 | iSpareO_48       | INT  |                                    |
| 50.0 | iSpareO_50       | INT  |                                    |
| 52.0 | iSpareO_52       | INT  |                                    |
| 54.0 | iSpareO_54       | INT  |                                    |
| 56.0 | iSpareO_56       | INT  |                                    |
| 58.0 | iSpareO_58       | INT  |                                    |
| 60.0 | iSpareO_60       | INT  |                                    |
| 62.0 | mStart           | BOOL | Start loading sequence up to Ready |
| 62.1 | mStop            | BOOL | Switch to Stand-by                 |
| 62.2 | mStartPurge      | BOOL | Start washing cycle                |
| 62.3 | mStrobeNewRecipe | BOOL | Strobe for new recipe              |
| 62.4 | mSpare_62_4      | BOOL |                                    |
| 62.5 | mMainNeedle      | BOOL | Needle Gun On                      |
| 62.6 | mSpare_62_6      | BOOL |                                    |
| 62.7 | mStartCons       | BOOL | Start consumption measurement      |
| 63.0 | mSpareO_63_0     | BOOL |                                    |
| 63.1 | mSpareO_63_1     | BOOL |                                    |
| 63.2 | mSpareO_63_2     | BOOL |                                    |
| 63.3 | mSpareO_63_3     | BOOL |                                    |
| 63.4 | mSpareO_63_4     | BOOL |                                    |
| 63.5 | mSpareO_63_5     | BOOL |                                    |
| 63.6 | mSpareO_63_6     | BOOL |                                    |
| 63.7 | mSpareO_63_7     | BOOL |                                    |
| 64.0 | mSpareO_64_0     | BOOL |                                    |
| 64.1 | mSpareO_64_1     | BOOL |                                    |
| 64.2 | mSpareO_64_2     | BOOL |                                    |
| 64.3 | mSpareO_64_3     | BOOL |                                    |

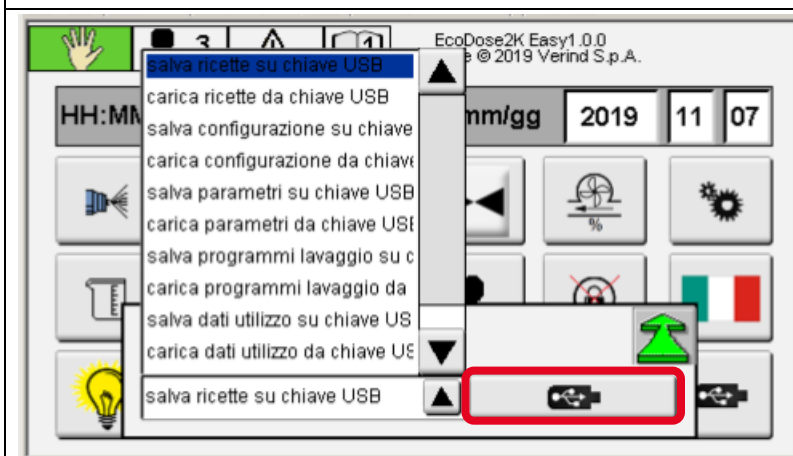
|      |              |      |  |
|------|--------------|------|--|
| 64.4 | mSpareO_64_4 | BOOL |  |
| 64.5 | mSpareO_64_5 | BOOL |  |
| 64.6 | mSpareO_64_6 | BOOL |  |
| 64.7 | mSpareO_64_7 | BOOL |  |
| 65.0 | mSpareO_65_0 | BOOL |  |
| 65.1 | mSpareO_65_1 | BOOL |  |
| 65.2 | mSpareO_65_2 | BOOL |  |
| 65.3 | mSpareO_65_3 | BOOL |  |
| 65.4 | mSpareO_65_4 | BOOL |  |
| 65.5 | mSpareO_65_5 | BOOL |  |
| 65.6 | mSpareO_65_6 | BOOL |  |
| 65.7 | mSpareO_65_7 | BOOL |  |

### 12.3.1 Backing up data to a USB storage device

Via the “USB functions” drop-down menu, you can make sure the following data are stored on a USB stick or transferred from a USB stick to the controller's internal memory.



On the home page, press the highlighted button.




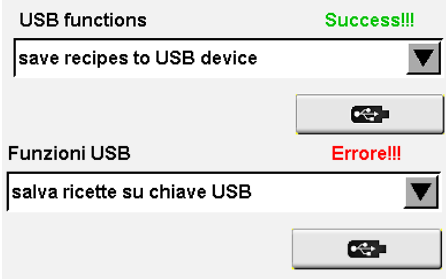


The drop-down menu opens.

Once the desired function is selected from the drop-down menu, it can be activated with the highlighted button.

USB functions

### Save/upload data to/from the USB stick

|  |   |
|--|---|
| <p>1. Insert the USB stick in the IF1- USB port.</p>   |  <p style="text-align: center;">IF4 - USB</p> |
| <p>2. Log in with the appropriate user level</p>       |   |
| <p>3. Select the action you want to perform</p>        |   |
| <p>4. To execute the action, press</p>                 |    |
| <p>5. Upon completion, a message will be displayed</p> |   |

The message disappears automatically after five seconds.

Files are created on the USB stick:

1. "EcoDose2K\_ConfigData\Configuration" after the configuration has been transferred on the USB device
2. "EcoDose2K\_ParamData\Parameters" after the parameters have been transferred to the USB device
3. "EcoDose2K\_PurgeData\PurgePrograms" after the wash cycle has been transferred on the USB device
4. "EcoDose2K\_RecipeData\Recipes" after the recipes have been saved on the USB device
5. "EcoDose2K\_Consumptions\Consumptions.csv" after consumption has been saved on the USB device
6. "E EcoDose2K\_Weardata\Wearcounters" after WEAR COUNTERS have been transferred to the USB device

With these files on the USB device, the entire configuration can be restored in the event of a failure.  
 The following data are saved in the configuration file:

1. Number of colour valves
2. Number of curing valves
3. Location of local-remote output valves
4. Serial number

## 12.4 System status list

|                     |  |
|---------------------|--|
| <b>Purging</b>      | The "Washing" cyclic program is running, the entire system is washed.  |
| <b>Clean A or B</b> | Purging of channel A or B at recipe change   |
| <b>Filling A</b>    | Filling channel A on the section from the colour valve change to the mixing block  |
| <b>Filling B</b>    | Filling channel B on the section from the catalyst valve change to the mixing block  |
| <b>Filling AB</b>   | Filling the section from the mixing block to the gun with mixed product  |
| <b>Stand-by</b>     | The machine is in a waiting state, following an alarm or after pressing the stop button.   |
| <b>Ready</b>        | Once the recipe change sequence is completed, the machine goes into a ready state and it is ready for spraying.  |
| <b>Spray</b>        | From the ready state, pulling the gun trigger, as the system receives the air flow meter on signal, will open the colour and catalyst valves while spraying the product mixture. |
| <b>Indefinite</b>   | If the system is not in any of the previous states, it means it is not loaded, not washed, it is an undefined state.   |

## 12.5 External signal relay

Wash and load relay active during the wash cycle and recipe change phases

Alarm relay, active when the machine is in alarm

Ready relay, active once the machine has completed the loading sequence and there are no active alarms or colour changes or washing cycles in progress.