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A DECLARATION OF CONFORMITY

The undersigned: PIUSI S.p.A via Piacinotti cm. 21 Rangavino 46029 Suzzara - Mantova - Italy

HEREBY STATES under its own responsibility, that the equipment described below: Description: METER Model: K24 Serial number: refer to Lot Number shown on CE plate affixed to product/year of manufacture: refer to Lot Number shown on the CE plate affixed to the product in conformity with the legal provisions indicated in the directives:

The documentation is at the disposal of the competent authority following motivated request at PIUSI S.p.A. or following request sent to the email address: doc\_tec@piusi.com

Electromagnetic Compatibility 2004/108/EC

Signature: Otto Varini legal representative.

B GENERAL WARNINGS

Important precautions: To ensure operator safety and to protect the pump from potential damage, workers must be fully acquainted with this instruction manual before performing any operation.

Manual preservation: This manual should be complete and legible throughout. It should remain available to end users and specialist installation and maintenance technicians for consultation at any time.

C SAFETY INSTRUCTIONS

C.1 SAFETY WARNINGS

Mains - preliminary checks before installation: Before any checks or maintenance work are carried out, disconnect the power source. When metering flammable liquid, observe precautions against fire or explosion.

C.2 FIRST AID RULES

Contact with the product: In the event of problems developing following EYE/SKIN CONTACT, INHALATION or INGESTION of the treated product, please refer to the SAFETY DATA SHEET of the fluid handle.

C.3 GENERAL SAFETY RULES

Essential protective equipment: Wear protective equipment that is suited to the operations that need to be performed; resistant to cleaning products.

C.4 SAFETY WARNINGS

When metering flammable liquids, observe precautions against fire or explosion: When handling hazardous liquids, always follow the liquid manufacturer's safety precautions.

C.5 SAFETY WARNINGS

When metering flammable liquids, observe precautions against fire or explosion: Do not meter in the presence of any source of ignition including running or hot engines, lit cigarettes, or gas or electric heaters

C.4 PACKAGING

FOREWORD: K24 comes packed in a cardboard box with a label indicating the following data: 1 - contents of the package, 2 - weight of the contents, 3 - description of the product

C.5 PACKAGE CONTENTS/PRE-INSPECTION

FOREWORD: To open the packaging, use a pair of scissors or a cutter, being careful not to damage the dispensing system or its components.

NOTE: In the event that one or more of the components described below are missing from inside the package, please contact Piusi technical support.

D BECOMING ACQUAINTED WITH K24

FOREWORD: Electronic digital meter featuring a turbine measurement system, designed for precise measuring of low viscosity fluid.

K24 is available in 3 versions: 1 a METER - with LCD display and calibration buttons (SILVER LABEL) b METER - with LCD display and calibration buttons (RED LABEL) 2 PULSER - single channel impulse, connectable with a remote display.

D.1 COMPATIBLE LIQUIDS

Turbine: The turbine is placed inside a hole through the body of K24, fit ed with M1 threaded inlet and outlet. The liquids compatible with K24 are at low viscosity, namely: Diesel fuel, Kerosene, Gasoline, Gasoline blended alcohol max 15%.

D.2 DISPLAY LCD

FOREWORD: The LCD of the METER features two numerical registers and various indications displayed to the user only when the applicable function is required.

Table with 2 columns: Main components K24 Meter, Main components K24 Pulser. Lists LCD display, RESET key, CAL key, and technical data plate.



1 Partial register (5 figure) with moving comma FROM 0.1 to 999999 indicating the volume dispensed since the reset button was last pressed

2 Indication of battery charge

3 Indication of calibration mode

4 Totals register (6 figure) with moving comma FROM 0.1 to 999999, that can indicate two types of Total: 4.1. General Total that cannot be reset (TOTAL) 4.2. Resettable total (Reset TOTAL)

5 Indication of total multiplication factor (x10 / x100)

6 Indication of type of total, (TOTAL / Reset TOTAL);

7 Indication of unit of measurement of Totals: L=Litres Gal=Gallons

8 Indication of Flow Rate mode

9 Indication of unit of measurement of Partial: Qts=Quarts Pts=Pints L=Litres Gal=Gallons

D.3 DISPLAY POSITIONING (METER VERSION ONLY)

FOREWORD: The square shape of the K24 body allows the card to be rotated in its housing, thus ensuring great versatility in positioning.

D.4 USERS BUTTONS

FOREWORD: The METER features two buttons (RESET and CAL) which individually perform two main functions and, together, other secondary functions.

E OPERATING MODES

OPERATING MODES: The user can choose between two different operating modes: The meter features a non-volatile memory for storing the dispensing data, even in the event of a complete power break for long periods.

F INSTALLATION

FOREWORD: K24 features a threaded, perpendicular inlet and outlet (1" NPT or BSP male and female that can be combined together).

G DAILY USE

FOREWORD: The only operations that need to be done for daily use are partial and/or resettable total register resetting.

6 digits are available for Totals, plus two icons x 10 / x100. The increment sequence is the following: 0.0 -> 99999.9 -> 999999.9 -> 10000.0 x10 -> 999999.9 x10 -> 100000.0 x100 -> 999999.9 x1000

Normal mode is the standard dispensing. While the count is made, the partial and resettable total are calculated at the same time (reset total). Should one of the keys be accidentally pressed during dispensing, this will have no effect.

G.1 DISPENSING IN NORMAL MODE

FOREWORD: Normal mode is the standard dispensing. While the count is made, the partial and resettable total are calculated at the same time (reset total).

G.1.1 PARTIAL RESET (NORMAL MODE)

The partial register can be reset by pressing the reset key when the meter is in standby, meaning when the display screen shows the word "TOTAL".

After pressing the reset key, during reset, the display screen first of all shows all the lit-up digits and then all the digits that are not lit up.

G.1.2 RESETTING THE RESET TOTAL

VALID JUST FOR METER VERSION WITH SILVER LABEL: The reset total resetting operation can only be performed after resetting the partial register.

Schematically, the steps to be taken are: 1 Wait for the display to show normal standby display page (with total only displayed) 2 Press the reset key quickly 3 The meter starts to reset the partial 4 While the display page showing the reset total is displayed Press the reset key again for at least 1 second

C.2 DISPENSING WITH FLOW RATE MODE DISPLAY

VALID JUST FOR METER VERSION WITH SILVER LABEL: It is possible to dispense fluid, displaying at the same time: 1 the dispensed partial 2 the Flow Rate in (Partial Unit / minute) as shown on the following display page:

Procedure for entering this mode: 1 wait for the Remote Display to go to Standby, meaning the display screen shows Total only 2 quickly press the CAL key. 3 Start dispensing

The flow rate is updated every 0.7 seconds. Consequently, the display could be relatively unstable at lower flow rates. The higher the flow rate, the more stable the displayed value.

IMPORTANT

The flow rate is measured with reference to the unit of measurement of the Partial. For this reason, in case of the unit of measurement of the Partial and Total being different, as in the example shown below, it should be remembered that the indicated flow rate relates to the unit of measurement of the partial.

The word "Gal" remaining alongside the flow rate refers to the register of the Totals (Reset or NON Reset) which are again displayed when exiting from the flow rate reading mode.

To return to "Normal" mode, press the CAL key again. If one of the two keys RESET or CAL is accidentally pressed during the count, this will have no effect.

G.2.1 PARTIAL RESET (FLOW RATE MODE)

To reset the Partial Register, finish dispensing and wait for the Remote Display to show a Flow Rate of 0.0 as indicated in the illustration then quickly press RESET

H CALIBRATION

When operating close to extreme use or flow rate conditions (close to minimum or maximum acceptable values), an on-spot calibration may be required to suit the real conditions in which the K24 is required to operate.

H1 DEFINITIONS

Multiplication factor applied by the system to the electrical pulses received, to transform these into measured fluid unit.

H2 CALIBRATION MODE

Why calibrate? 1 Display the currently used calibration factor: 2 Return to factory calibration (Factory K Factor) after a previous calibration by the user 3 Change the calibration factor using one of the two previously indicated procedures

H.2.1 DISPLAY OF CURRENT CALIBRATION FACTOR AND RESTORING FACTORY FACTOR

By pressing the CAL key while the application is in Standby, the display page appears showing the current calibration factor value.

At the end of the process, a display page is first of all shown with the reset partial and the reset total

H.2.2 IN FIELD CALIBRATION

This procedure calls for the fluid to be dispensed into a graduated sample container in real operating conditions (flow rate, viscosity, etc.) requiring maximum precision.

H.2.3 DIRECT MODIFICATION OF K FACTOR

If normal Meter operation shows a mean percentage error, this can be corrected by applying to the currently used calibration factor a correction of the same percentage.

Example: Error percentage found: 0% - 0.9% CURRENT calibration factor: 1.000 NEW USER K FACTOR: 1.000 \* (100 - (-0.9)/100) = 1.000 \* (100 + 0.9)/100 = 1.009

The flow rate chart alongside shows the switchover logic from one display page to another in this condition, the Reset key permits switching from User factor to Factory factor.

When the Factory Factor is confirmed, the old User factor is deleted from the memory.

1 When the Factory Factor is confirmed, the old User factor is deleted from the memory. 2 use a precise Sample Container with a capacity of not less than 5 litres, featuring an accurate graduated indicator.

3 ensure calibration dispensing is done at a constant flow rate equivalent to that of normal use, until the container is full; 4 Not reduce the flow rate to reach the graduated area of the container during the final dispensing stage (the correct method during the final stages of sample container filling consists in making short top-ups as normal operation flow rate); 5 after dispensing, wait a few minutes to make sure any air bubbles are eliminated from the sample container; only read the Real value at the end of this stage, during which the level in the container could drop.

H.2.2 IN FIELD CALIBRATION

1 The Meter enters calibration mode, shows <<CAL>> and displays the calibration factor in use instead of partial. The words "Fact" and "User" indicate which of the two factors (factory or user) is currently being used.

2 LONG RESET KEY KEYING: The Meter shows "CAL" and the partial zero total. The Meter is ready to perform in-field calibration operations.

3 SHORT RESET KEY KEYING: Changes the direction of the arrow. The operation can be repeated to alternate the direction of the arrow.

4 LONG RESET KEY KEYING: The Meter is informed that the calibration procedure is finished. Before performing this operation, make sure the INDICATED value is that required.

5 NO OPERATION: At the end of the calculation, the new USER K FACTOR is shown for a few seconds, after which the restart cycle is repeated to finally achieve a standby condition.

H.2.2.1 IN-FIELD CALIBRATION PROCEDURE

1 NONE METER in Standby. 12.345 L 13456 L

2 LONG CAL KEY KEYING: The Meter enters calibration mode, shows <<CAL>> and displays the calibration factor in use instead of partial.

3 LONG RESET KEY KEYING: The Meter shows "CAL" and the partial zero total. The Meter is ready to perform in-field calibration.

4 DISPENSING INTO SAMPLE CONTAINER: Without pressing any key, start dispensing into the sample container.

5 SHORT RESET KEY KEYING: The Meter is informed that the calibration procedure is finished. Make sure dispensing is correctly finished before performing this operation.

6 SHORT RESET KEY KEYING: The arrow changes direction. The operation can be repeated to alternate the direction of the arrow.

7 SHORT/LONG CAL KEY KEYING: The indicated value changes in the direction indicated by the arrow.

8 LONG RESET KEY KEYING: The Meter is informed that the calibration procedure is finished. Before performing this operation, make sure the INDICATED value is that required.

9 NO OPERATION: At the end of the calculation, the new USER K FACTOR is shown for a few seconds, after which the restart cycle is repeated to finally achieve a standby condition.

10 NO OPERATION: The Meter stores the new work calibration factor and is ready to begin dispensing using the USER K FACTOR that has just been calculated.

Example: Error percentage found: 0% - 0.9% CURRENT calibration factor: 1.000 NEW USER K FACTOR: 1.000 \* (100 - (-0.9)/100) = 1.000 \* (100 + 0.9)/100 = 1.009

1 NONE METER in Standby. 12.345 L 13456 L

2 LONG CAL KEY KEYING: Meter enters calibration mode, shows "CAL" and displays the calibration factor in use instead of partial.

3 LONG RESET KEY KEYING: The Meter shows "CAL" and the zero partial total. The Meter is ready to perform in-field calibration operations.

4 LONG RESET KEY KEYING: The Meter is informed that the calibration procedure is finished. Before performing this operation, make sure the INDICATED value is that required.

5 NO OPERATION: At the end of the calculation, the new USER K FACTOR is shown for a few seconds, after which the restart cycle is repeated to finally achieve a standby condition.

6 NO OPERATION: The Meter stores the new work calibration factor and is ready to begin dispensing using the USER K FACTOR that has just been changed.

7 LONG RESET KEY KEYING: The Meter is informed that the calibration procedure is finished. Before performing this operation, make sure the INDICATED value is that required.

8 NO OPERATION: At the end of the calculation, the new USER K FACTOR is shown for a few seconds, after which the restart cycle is repeated to finally achieve a standby condition.

I METER CONFIGURATION

The METER feature a menu with which the user can select the main measurement unit, Quarts (Qts), Pints (Pts), Litres (L), Gallons (Gal); The combination of the unit of measurement of the Partial register and that of the Totals is predefined according to the following table:

Table with 3 columns: Combination no., Unit of Measurement Partial Register, Unit of Measurement Totals Register. Shows combinations for L, Gal, Qts, Pts.

To choose between the 4 available combinations: 1 Wait for the METER to go to Standby 2 Then press the CAL and RESET keys together.

3 Every short press of the RESET key, the various combinations of the units of measurements are scrolled as shown below:

By pressing the CAL key at length, the new settings will be stored, the METER will pass through the start cycle and will then be ready to dispense in the set units.

The Reset Total and Total registers will be automatically changed to the new unit of measurement. NO new calibration is required after changing the Unit of Measurement.

L MAINTENANCE

BATTERY REPLACEMENT WARNING: Use 2x1.5 V alkaline batteries size AAA

BATTERIES: K24 should be installed in a position allowing the batteries to be replaced without removing it from the system.

K24 features two low-battery alarm levels: 1 When the battery charge falls below the first level on the LCD, the fi ed battery symbol appears.

2 If K24 operation continues without changing the batteries, the second battery alarm level will be reached which will prevent operation. In this condition the battery icon starts to flash and is the only one remain visible on the LCD.

During meter removal, liquid may spill. Follow the liquid manufacturer's safety precautions for clean up of minor spills.

1 Ensure all liquid is drained from the meter. This could include draining the hose, meter, nozzle or pipe. 2 Wear protective clothing as necessary, loosen both ends of the meter. Use a wrench on only the meter's flange metal surfaces.

3 If the meter is not immediately installed again, cap the hose end or pipe to prevent spills.

4 Press RESET to update all the totals 5 Loosen the 4 fixing screws of the lower cover 6 Remove the old batteries and disconnect the plug 7 Place the new batteries in the same position as the old ones (use to put the battery in the correct way) 8 close the cover again, by positioning the rubber protection as a gasket 9 K24 will switch on automatically and normal operation can be resumed

The K24 will display the same Reset Total, the same Total and the same Partial indicated before the batteries were changed.

Never blow compressed air through the meter. It could damage the rotor.

CLEANING

Only one operation is necessary to clean the K24. After removing K24 from the plant where it was built in, any residual elements can be removed by washing or mechanically-handling.

Do not discard the old batteries in the environment. Refer to local disposal regulations. Do not use compressed air onto the turbine in order to avoid its damage because of an excessive rotation.

ATTENTION

Carefully remove the screws from the corners of the front panel, and then carefully lift the front cover up away from the main body of the meter.

K24 ELECTRONIC ALLUMINIUM TURBINE METER - PULSER



MANUALE D'USO, MANUTENZIONE E CALIBRAZIONE

USE, MAINTENANCE AND CALIBRATION MANUAL

Italiano English

Bulletin M0225 ITEN rev. 0

M MALFUNCTIONS

Table with 3 columns: Problem, Possible cause, Remedial Action. Lists issues like LCD no indication, wrong K factor, turbine blocked, battery discharged.

N DISPOSAL

If the system needs to be disposed, the parts which make it up must be delivered to companies that specialize in the recycling and disposal of industrial waste and, in particular, the packaging consists of biodegradable cardboard which can be delivered to companies for normal recycling of cellulose.

Disposal of electronic components: These must be disposed of by companies that specialize in the disposal of electronic components, in accordance with the indications of directive 2002/96/CE (see text of directive below).

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P EXPLODED VIEWS AND OVERALL DIMENSIONS

/VISTE ESPLOSE ED INGOMBRI



