SHORT PRES-SURE OF RESET KEY 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.
The measurement electronics and the LCD display are fitted in the top
part of the K24 which remains isolated from the fluid-bath measurement chamber and sealed from the outside by means of a cover. OPERATING MODES Normal Mode: Mode with display of Partial and Total dis-Flow Rate Mode: Mode with display of Flow Rate, as well as Partial dispensed quantity. 2 - Flow rate INSTALLATION **FOREWORD** K24 features a threaded, perpendicular inlet and outlet (1"NPT or Check that the data on the label correspond to the desired specifications. In the event of any anomaly, contact the supplier immediately, indicating the nature of the defects. Do not use equipment which you suspect with the set. 3SP male and female) that can be combined together. It has been designed to be easily installed in any position: fixed in-line or mobile on a dispensing nozzle. In order to improve the life of the turbine, it is recommended to fit a strainer before the meter itself For installations on system, position meter so that the battery housing can be easily reached. NOTICE To protect against the leakage, make sure all threads are Connections Make sure the thread tape or sealing compound does nterfere with flow Make sure there are no leaks in the connections. To seal leaks, remove and inspect the meter and re-place the thread tape or sealant. Refer to the Trouble-shooting Section METER – with LCD display and calibration buttons (RED LABEL) To minimize static electricity build up, use only static co ductive hose $R < 1M\Omega m$ when metering flammable fluid and keep the fill nozzle in contact with the container be ing filled during the filling process. The turbine is placed inside a hole through the body of k24, fitted with M-f threaded inlet and outlet.
The liquids compatible with k24 are at low viscosity, namely: O NOT exceed 145 psi - 20 bar line pressure. DO NOT install additional foot valve or check valve without a pressure relief valve; otherwise the meter may G DAILY USE The only operations that need to be done for daily use are partial and/ or resettable total register resetting. The user should use only the dispensing system of k24. Occasionally the meter may need to be configured or calibrated. To do so, please refer to the relevant chapters. Below are the two typical normal operation displays. One display page shows the partial and reset total registers. The other shows the partial and general total. Switchover from resettable total to general total display is automatic and tied to phases and times that are in factory set and cannot be changed. o connect the appliance up to energy sources other than hose contemplated by the manufacturer Registro del PARCIALE -12.345 12.345 o use the commercial devices for purposes other than those adicated by the manufacturer. 12.3 == Gm. 31,219 --- 6 6 digits are available for Totals, plus two icons x 10/x100. The increment sequence is the following: 0.0 -> 999999 -> 999999 -> 100000 x 10 -> 999999 x NOTICE DISPENSING IN NORMAL MODE G1 Normal mode is the standard dispensing. While the count is made, the **FOREWORD** partial and resettable total are displayed at the same time (reset total) NOTICE Should one of the keys be accidentally pressed during dispensing, this will have no effect. A few seconds after dispensing has ended, on the lower register, the display switches from resettable total to general total: the word reset above the word total disappears, and the reset total is replaced by STAND BY the general total. This situation is called standby and remains stable until the user operates the k24 again 12.345 12.345 0 C83 - 6-C23 = 6 G1.1 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 12.345 9 shows the word "TOTAL". 53453 300 Indication of unit of measurement of Partial: Qts=Quarts Pts=Pints I = I itres Gal=Gallons After pressing the reset key, during reset, the display screen 88888 first of all shows all the lit-up digits and then all the digits that are not lit up. C#196898.8151 At the end of the process, a display page is first of all shown with the reset partial and the reset total 0.000 53453 --- 6 and, after a few moments, the reset total is replaced by the 0.000 294023 -- G., G1.2 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. The reset total can in fact be reset by pressing the reset key at length while the display screen shows reset total as on the following display ages. 0.000 58463 Schematically, the steps to be taken are: 12.345 Wait for the display to show normal standby display page vith total only displayed \$3948.3° 2 Press the reset key quickly The meter starts to reset the partial While the display page showing the reset total is displayed Press the reset key again for at least 1 second 0.000 aresi 50 The display screen again shows all the segments of the display followed by all the switched-off segments and finally shows the display page where the reset Reset 0.000 (50 G2 DISPENSING WITH FLOW RATE MODE DISPLAY VALID JUST FOR METER VERSION WITH SILVER LABEL It is possible to dispense fluids, displaying at the same 12,345 CALIBRATE MEANS PERFORMING ACTIONS ON THE METER KEYS. BELOW IS THE LEGEND OF THE SYMBOLS USED TO DESCRIBE THE ACTIONS TO BE PERFORMED the dispensed partial 2 the Flow Rate in [Partial Unit / minute] as shown on the 185/ following display page:

To open the packaging, use a pair of scissors or a cutter, being careful

In the event that one or more of the components de-scribed below are missing from inside the package, please contact Piusi inc technical support.

not to damage the dispensing system or its components.

BECOMING ACQUAINTED WITH K24

gned for precise measuring of low viscosity fluids.

DIESEL FUEL

DO NOT USE WITH SUNDRIES LIQUIDS

Do not use in case of lightnings

The "LCD" of the METER features two numerical registers and various indications displayed to the user only when the applicable function so

The square shape of the k24 body allows the card to be rotated in its

This allows easy display readings in any position. The card housing is closed by a plastic cover sealed through a rubber protection acting as a

gasket as well. This can be easily removed unscrewing the 4 screws that

The METER features two buttons (RESET and CAL) which individ

- for the RESET key, resetting the partial register and Reset Total - for the CAL key, entering instrument calibration mode

Jsed together, the two keys permit entering confi vhere the desired unit of measurement can be se

ally perform two main functions and, together, other secondary

ousing, thus ensuring great versatility in positioning

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

Indication of unit of measurement of

Indication of Flow Rate mode

L=Litres Gal=Gallons

K24 is a bi-directional meter with LCD display and calibration buttons. The body is made of aluminum (conductive) and designed for high flow 120 l/min. (32 GPM).

METER – with LCD display and calibration buttons (SILVER LABEL)

PULSER – single-channel impulse, cannectable with a remote display.

use the appliance in a construction configuration other tha at contemplated by the manufacturer

Main components K24 Pulser

use the appliance with fixed guards tampered with or remov

o integrate other systems and/or equipment not consid y the manufacturer in the executive project.

Procedure for entering this mode: wait for the Remote Display to go to Standby, meaning the display screen shows Total only quickly press the CAL key. 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 NOTICE 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. NOTICE G2.1 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 CALIBRATION When operating close to extreme use or flow rate conditions (close to minimum or maximum acceptable values), an on-the-spot calibration may be required to suit the real conditions in which the K24 is required to operate. H1 DEFINITIONS FACTORY K FACTOR USER K FACTOR: Customized calibration factor, meaning modified by calibration. H2 CALIBRATION MODE Why calibrate? **FOREWORD** In calibration mode, the partial and total dispensed quantities indicated on the display screen take on different meanings according to the calibration procedure phase. In calibration mode, the K24 cannot be used for normal dispensing operations. Calibration" mode, the totals are not increased H2.1 DISPLAY OF CURRENT CALIBRATION FACTOR AND RESTORING FACTORY FACTOR. ance is in Standby, the display page appears showing the current calibration factor used. If no calibration has ever been performed, or the factory setting has been restored after previous calibration The word "Fact" abbreviation for "factory" shows that the factory calibration factor s being used If, on the other hand, calibrations have been made by the user, the display page will appear showing the currently used calibration factor (in our example 0,998) . The word "user" indicates a calibration fac-tor set by the user is being used.. hows the switchover logic rom one display page to n this condition, the Reset ey permits switching om User factor to Factory factor. To confirm the choice of press CAL while "User" of factor that has just been confirmed NOTICE H2.2 IN FIELD CALIBRATION **FOREWORD** etc.) requiring maximum precision VOTICE litres, featuring an accurate graduated indicator. lent to that of normal use, until the container is full: ups at normal operation flow rate):

12.345 °

vious calibration by the user

ving display page will appear:

1,000

<u>operation</u>

325

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. In the example shown, the flow rate is expressed in Qts/min. 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 Even though in this mode they are not displayed, both the Reset Total and the General Total (Total) increase. Their value can be checked after dispensing has terminated, returning to "Normal" mode, by quickly pressing CAL. 12.345 4 0.0 Multiplication factor applied by the system to the electrical pulses received, to transform these into measured fluid units. Factory-set default factor. It is equal to 1,000. This calibration factor ensures utmost precision in the following operating conditions:

Fluid diesel Temperature: 20°C

Flow rate: 50 lit/min (13 GPM) Even after any changes have been made by the user, the factory k factor can be restored by means of a simple procedure. Display the currently used calibration factor: n to factory calibration (Factory K Factor) after a pre Change the calibration factor using one of the two previously indicated procedures Two procedures are available for changing the Calibration Factor: In-Field Calibration, performed by means of a dispensing Direct Calibration, performed by directly changing the The K24 features a non-volatile memory that keeps the data concerning calibration and total dispense quantity stored for an indefinite time, even in the case of a long power break; after changing the bat-teries, calibration need not be repeated. 1.000 Gas FECT 0.998 Carl USER 1236 22500.0 15'342 to: 1998 ABBBBE. Chambillary ? TIME OUT 12.345 (PSC) When the Factory Factor is confirmed, the old User factor is deleted from the memory This procedure calls for the fluid to be dispensed into a graduated For correct K24 calibration, it is most important to: 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 3 ensure calibration dispensing is done at a constant flow rate equiva-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-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. **6** Carefully follow the procedure indicated below.

H2.2.1 IN-FIELD CALIBRATION PROCEDURE ACTION 12.345 The area LONG CAL key keying arts (Qts), Pints (Pts), Litres (Lit), Gallons (Gal); The Meter enters calibration mode, shows <<CAL>> and 1,000 plays the calibration factor in use instead of partial. e words "Fact" and "USER" indicate which of the two tors (factory or user) is currently in use. portant: This factor is that which the instrument also es for field calibration measurement operations LONG RESET key keying
The Meter shows "CAL" and the partial at zero. The Meter is ready to perform in-field calibration. 0.000 64 70.0 DISPENSING INTO SAMPLE CONTAINER o choose between the 4 available combinations Without pressing any key, start dispensing into the 9.800 GALL MOUSE Dispensing can be interrupted and started again at will. Continue dispensing until the level of the fluid in the sample container has reached the graduated area. There no need to reach a preset quantity ► | 0.86 9,800 1 AN HOUSE TO SHORT RESET key keying

SHORT RESET key keying

SHORT RESET key keying

SHORT RESET key keying

SHORT RESET key keying 9.800 Make sure dispensing is correctly finished before performing this operation. To calibrate the Meter, COP FIELD the value indicated by the partial totaliser (example 9.800) must be forced to the real value marked on the graduated sample container. In the bottom left part of the display an arrow appears (upwards and downwards) that shows the direction (increase or decrease) of the value change displayed when the following operations NOTICE SHORT RESET key keying
The arrow changes direction. The operation can be repeated to alternate the direction of the arrow. 9.800 OWN FIRST The indicated value changes in the direction indicated BATTERY REPLACEMENT by the arrow 9.860 one unit for every short CAL key keying - one unit to every short call key keying - continually if the CAL key is kept pressed. The speed increase rises by keeping the key pressed. If the desired value is exceeded, repeat the operations from point (6). OWN TRUE LONG RESET key keying
The Meter is informed that the calibration procedure is BATTERIES Before performing this operation, make sure the INDICATED value is the same as the REAL value. K24 features two low-battery alarm levels ► House 12.345 5.860 1 29923 Indicated value Real value The Meter calculates the new USER K FACTOR: this the correction to be made ATTENTION: If this operation is performed after action (5), without changing the indicated value, the USER K FACTOR would be the same as the FACTORY K FACTOR, TO REMOVE BATTERY thus it is ignored. 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 standby condition.

IMPORTANT: From now on, the indicated factor will 1.075 become the calibration factor used by the Meter and will continue to remain such even after a battery The Meter stores the new work calibration factor 0.000 and is ready to begin dispensing, using the USER K FACTOR that has just been calculated.. ON THE WALL To change the bat-teries, with reference to the exploded DIRECT MODIFICATION OF K FACTOR currently used calibration factor a correction of the same percentage. In this tentage correction of the USER K FACTOR must be calculated by the operator in the following way New cal. Factor = Old Cal Factor * $\left(\frac{100 - E\%}{100}\right)$ The K24 will display the same Reset Total, the same Total and the same Partial indicated Example: fter changing the batteries, the meter does not need calibrating agair Error percentage found: E% - 0.9 % NOTICE CURRENT calibration factor: 1.000

New USER K FACTOR: 1.000 * [(100 - (- 0.9))/100] = 1.000 * [(100 + 0.9)/100] = 1.000 f the Meter indicates less than the real dispensed value (negative error) the new calibra-ion factor must be higher than the old one as shown in the example. The opposite applies if the Meter shows more than the real dispensed value (positive error). METER in Standby. WARNING 15'342 19166 1016 LONG CAL KEY KEYING TO STORE n mode, shows "CAL" and displays the 1,000 ration factor being used instead of the partial. The word 2 (1) "Fact" and "User" indicate which of the two factors (factory or OW RISERS K24 Front face replace user) is currently being used. LONG RESET KEY KEYING The Meter shows "CAL" and the zero partial total 1.000 Meter is ready to perform in-field calibration by dispensing PRIMA LONG RESET KEY KEYING ange of the calibration factor: ALTERNATION . arrow appears (upwards or downwards) defining the direct increase or decrease) of change of the displayed value whe quent operations 5 or 6 are performed. SHORT RESET KEY KEYING Changes the direction of the arrow. The operation can be repeated to alternate the direction of the arrow. 1,000

OWN DARKY

1.003

manager 1

GH 800

1.003

SHORT/LONG CAL KEY KEYING

LONG RESET KEY KEYING

value is that required.

one unit for every short CAL key keying

indicated value changes in the direction indicated by the

continually if the CAL key is kept pressed. The speed increases by keeping the key pressed. If the desired value is

ded, repeat the operations from point (5).

e Meter is informed that the calibration procedure is

Before performing this operation, make sure the INDICATED

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

IMPÓRTANT: From now on, the indicated factor will become the calibration factor used by the Meter and will continue to

main such even after a battery change

he Meter stores the new work calibration factor and is ready 0.000 begin dispensing, using the USER K FACTOR that has just en changed. 1946 **TURBINE** METER CONFIGURATION **METER - PULSER** uars (Qb), Fills (FB), Littles (Lt), Gallons (Gal), he combination of the unit of measurement of the Partial register and that of the otals is predefined according to the following table: **Totals Register** Partial Register Litres (L) Gallons (Gal) Wait for the METER to go to Standby Then press the CAL and RESET keys together. Keep these pressed until the word "UNIT" appears on the screen together with the unit of measurement set at that time (in this example Litres / Litres) Every short press of the RESET key, the various combination **PIUS** UNIT Fluid Handlina Innovation UTIT Qts UNIT MANUALE D'USO, MANUTENZIONE € CALIBRAZION€ , pressing the CAL key at length, the new settings will e stored, the METER will pass through the start cycle and ill then be ready to dispense in the set units. **USE, MAINTENANCE AND** CALIBRATION MANUAL The Reset Total and Total registers will be automatically changed to the new unit of measurement. M0225B IT€N 00 NO new calibration is required after changing the Unit of Measurement. MALFUNCTIONS Possible cause Use 2x1.5 V alkaline batteries size AAA Wrong K FACTOR The meter works belov Check the batteries and terminals at least every year to ensure proper operation. It is strongly recom-mended that terminals be cleaned annually Reduced or zero flow TURBINE blocked The meter does not count, but the flow rate is correct Possible electronic card When the battery charge falls below the first level on the LCD, the fixed battery symbol appears. In this condition, K24 continues to operate correctly, but the fixed icon warns the user that it is ADVISABLE to change the batteries. K24 is switched of in the wrong way

Litres (L)

Gallons (Gal)

UNIT

If K24 operation continues without changing the batteries, the second battery alarm level will be reached which will prevent op-

eration. In this condition the battery icon starts to flash and is the only one to remain visible on the LCD.

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

Ensure all liquid is drained from the meter. This could in clude draining the hose, meter, nozzle or pipe

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

Remove the old batteries and disconnect the plug

Place the new batteries in the same position as the old ones

close the cover again, by positioning the rubber protection as a gasket

K24 will switch on automatically and normal operation

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

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

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

Follow the liquid manifacturer's instructions for the

Carefully remove the screws from the corners of the

away from the main body of the meter.

away from the main body of the meter.

front panel, and then carefully lift the front cover up

Carefully remove the screws from the corners of the

front panel, and then carefully lift the front cover up

en the new panel is fitted make sure the powe

adapter is fitted correctly with the location pin in the

Carefully refit the display panel back onto the main

body making sure the wire is tucked into the corner

and replace the screws

If this operation does not restore a smooth rotation of the

Loosen the 4 fixing screws of the lower cover

sure to put the battery in the correct way)

Press RESET to update all the totals

surfaces

can be resumed

néchanically-handling.

MAINTENANCE

ELECTRONIC ALLUMINIUM



EN

Remedial Action Check battery contacts With reference to paragraph H, check the K FACTOR Increase the flow rate until an cceptable flow rate range ha Clean the TURBINE Repeat the reassembly pro-Contact your deale Battery discharged or installed Check battery charge and/o check the battery position

DISPOSAL

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

Metal parts, whether paint-finished or in stainless steel, can be

ese 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).

uropean Directive 2002/96/EC requires that all equipment

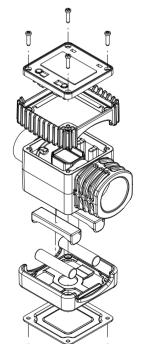
onsigned to scrap metal collectors.

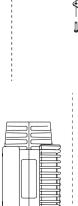
Metal Parts Dis-Disposal of electric and electronic

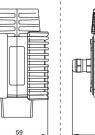
European Directive 2002/96/EC requires that all equipment — marked with this symbol on the product and/or packaging not be disposed of together with non-differentiated urban waste. The symbol indicates that this product must not be disposed of together with normal household waste. It is the responsibility of the owner to dispose of these products as well as other electric or electronic equipment by means of the specific refuse collection structures indicated by the government or the local governing authorities

authorities. Other components, such as pipes, rubber gaskets, plastic parts and wires, must be disposed of by companies specialising in the disposal of industrial waste.

EXPLODED VIEWS AND OVERALL DIMENSIONS /VISTE ESPLOSE ED INGOMBRI









PULSER