



DET 4

Dishwashing chemical system









DECLARATION OF CONFORMITY

Company:	AQUA S.p.A.
Address:	Via T. Crotti, 1 - 42018 - San Martino in Rio (RE)

Hereby declares that the products named:

• AQUA DET

Responds to the principal features of the following European Directives:

- **2014/30/CE of 26/02/2014 - Harmonization of the laws of the Member States relating to electromagnetic compatibility – EMC Directive**
- **2014/35/CE of 26/02/2014 - Harmonization of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits – Low Voltage Directive**
- **2011/65/UE of 08/06/2011 with subsequent update 2015/863 of 31/03/2015 – ROHS III Directives**
- **2012/19/UE of 04/07/2012 - WEEE Directives for electrical and electronic waste**

This declaration is issued under the responsibility of Aqua S.p.A.

San Martino in Rio (RE) - 08 settembre 2020

Davide Vezzani
Certification Manager - Aqua S.p.A.



AQUA S.p.A.
 Sede e stabilimento di produzione di Fidenza (Parma) S.p.A. - Cap. Sociale 10.000.000.000 - Registro Imprese
 S. Martino in Rio - 42018 - Reggio Emilia - ITALIA - Sede legale: Via Crotti, 1 - Sede operativa: Via Benzi la 3 - Cod. Fiscale 01662200900 - Pagine Gialle di RE 0202840090
 Tel. +39.0522.556506 - Fax +39.0522.648100 - www.aqua.it - email: info@aquaspa.it



INDEX

1.0	INTRODUCTION	4
1.1	Reference legislation	4
1.2	Technical features	4
1.3	What's in the box?	4
2.0	INSTALLATION	5
2.1	Wall mounting	5
2.2	Detergent connection	5
2.3	Rinse aid connection	6
2.4	Conductivity probe connection	6
2.4.1	Electrical connection of the inductive probe with PT100	7
2.4.2	Setting Setpoint 1	7
2.5	Electrical connections	8
2.5.1	Power supply	8
2.5.2	Initial charge signal (CHARGE)	8
2.5.3	Wash signal (WASH)	8
2.5.4	Rinse signal (RINSE)	8
2.5.5	Diagrams connection	8
2.5.6	Relay output	9
2.5.7	Other connections	9
3.0	USER MENU AND INSTALLER MENU	10
3.1	Display and keys	10
3.1.1	Menu	10
3.2	User menu	10
3.2.1	Priming pumps	11
3.3	Enter in installer menu	11
3.4	Installer menu	12
3.5	Settings menu	13
3.6	Calibration menu	14
3.7	Functioning menu	15
3.8	Alarm menu	16
3.9	Statistics menu	17
3.9.1	Reset statistics	17
3.10	Programming menu – Single tank with probe	18
3.11	Programming menu – Single tank probeless	19
3.12	Programming menu – Conveyor with probe	20
3.13	Programming menu – Conveyor probeless	21
3.14	Programming menu – Cyclic Power&run	22
3.15	Communication menu	23
3.15.1	Enable Bluetooth	23
3.15.2	Disable Bluetooth	23
4.0	RINSE AID SOLENOID PUMP	23
4.1	Pump head tubing connection	23
4.2	Flow rate's diagram	23
5.0	TROUBLESHOOTING	24
6.0	DEFAULT PARAMETER	24
7.0	PROBE CONNECTION	25
7.1	Inductive probe connection	25
7.2	Electrical connection for the inductive probe with PT100	25
7.3	Electrical connections	26
7.4	Settings menu	26

1.0 INTRODUCTION

The system AQUA DET 4 is been designed to dose up to three chemicals (detergent, rinse aid and sanitizer) into any model of dishwashing machine from the small single tank to the big conveyor.

Available a wide range of models to cover all requirements, from the standard model with peristaltic pumps, through the model with solenoid valve to dose powder or dry detergent up to the model with solenoid pump to dose the rinse aid against back pressure higher than 3 bar.

Thanks to microprocessor digital technology and an LCD display, the AQUA DET 4 is easy to program and able to make the most economical use of each chemical.

But the most innovative feature of AQUA DET 4 that makes the system ahead of the others is the Bluetooth technology.

In fact the statistics can be programmed and read using a PDA (Personal Digital Assistant) or smartphone or with a PC (Personal Computer).

Aqua Control DET4 is a software application that can be installed on PDAs with Microsoft Windows Mobile 6 operating system or later versions *and Bluetooth Microsoft stack*, on PCs with Windows Xp operating system or 7 and with the bluetooth driver *Microsoft Bluetooth Enumerator*.

1.1 REFERENCE LEGISLATION

Our pumps are built according to the actual general directives endowed with CE mark in conformity with the following European directives:

n° 2014/30/CE " E.M.C.

n° 2014/35/CE "DBT Low Voltage Directive"

n° 2011/65/UE , 2012/19/UE "direttive RoHs e WEEE"

Note on environmental protection



After the implementation of the European Directive 2002/96/EU in the national legal system, the following applies:

Electrical and electronic devices may not be disposed of with domestic waste. Consumers are obliged by law to return electrical and electronic devices at the end of their service lives to the public collecting points set up for this purpose. Details to this are defined by the national law of the respective country. This symbol on the product, the instruction manual or the package indicates that the product is subject to these regulations. By recycling, reusing the material or other forms of utilizing old devices, you are making an important contribution to protecting our environment

1.2 TECHNICAL FEATURES

Power supply: from 100 to 240VAC 50/60Hz

Consumption max.: 20W

Fuse: 1.6 A - Delayed

Input signal (CHARGE, RINSE & WASH):

- from 24VAC to 240VAC 50/60Hz or 24VDC

Detergent pump

Santoprene® tube

Maximum flow rate: 10 l/hr (10000 ml/hr)

Maximum back pressure: 0.1 bar

Rinse aid and sanitizer¹ pumps

Silicone squeeze tube (Tygon® on request)

Maximum flow rate: 1.5 l/hr (1500 ml/hr) @ 3 bar

Maximum back pressure: 3 bar

Degree protection: IP65

Weight: 2 kg

Overall dimensions: W 304 x H 246 x D 158 mm

1.3 WHAT'S IN THE BOX?

- AQUA DET4 system
- Instruction manual
- Stainless steel injection fitting for detergent
- Stainless steel check valve for the rinse aid
- Plastic check valve for the sanitizer¹
- Conductivity probe
- Foot valve filters
- PE tube 4x6 for sanitizer¹ delivery (2 m)
- PVC tube 4x6 for sanitizer¹ suction (2 m)
- PE tube 4x6 for rinse aid delivery (2 m)
- PVC tube 4x6 for detergent suction and delivery and suction rinse aid (6 m)
- Mounting bracket
- Screws and anchors

(¹) On three pump models

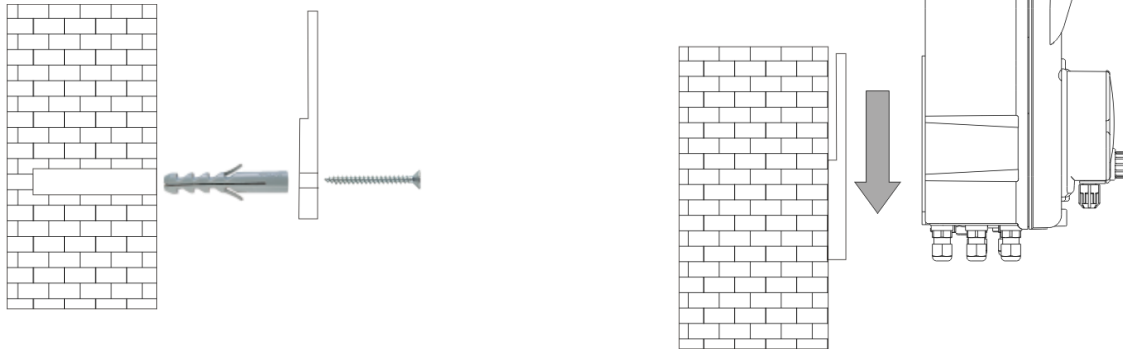
2.0 INSTALLATION

2.1 WALL MOUNTING

Mount the unit on a convenient wall or vertical surface (using suitable hardware) close to the dishwashing machine.

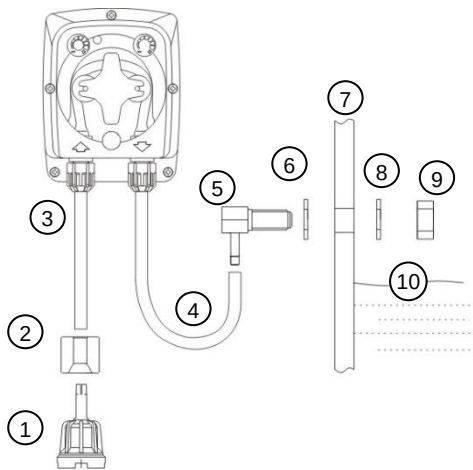


The maximum height from the dispenser to the chemical's container **CANNOT** be more than 1.5 meters.



CAUTION: Do not mount the unit in the direct path of steam.

2.2 DETERGENT CONNECTION



Foot filter connection

1. Foot valve filter
2. Stainless steel weight
3. PVC tubing (flexible, clear tube)

The base of the cone must face the bottom (see diagram)

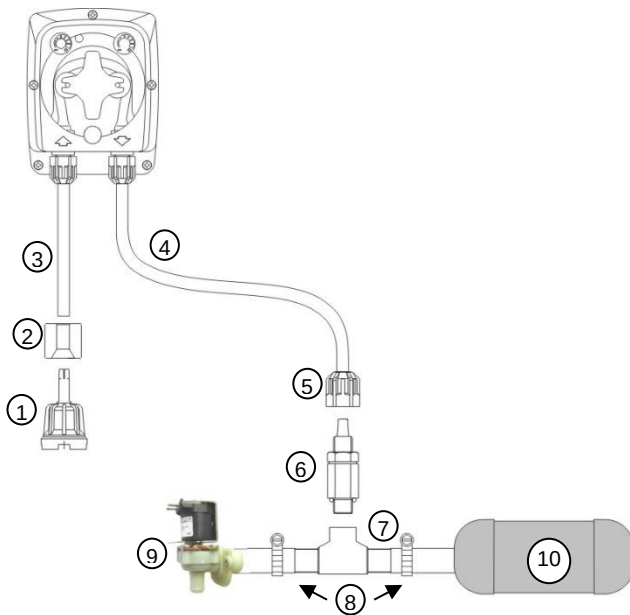
Injection fitting connection

4. PVC tube (flexible, clear tube)
5. Injection fitting
6. Rubber washer
7. Wall tank
8. Rubber washer
9. Fixing nut
10. Maximum water level



If a mounting hole is not provided, drill a hole 10mm just above the maximum water level, ensuring that it does not interfere with the mobile parts of the dishwasher machine.

2.3 RINSE AID CONNECTION



Foot filter connection

1. Filter fitting
2. Stainless steel weight
3. PVC tube (flexible, clear tube)

The base of the cone must face the bottom (see diagram)

Check valve connection

4. PE tube (rigid, white tube)
5. Nut
6. Stainless steel check valve
7. T fitting (available as an accessory)
8. Worm drive hose clips
9. Rinse solenoid valve
10. Boiler

2.4 CONDUCTIVITY PROBE CONNECTION

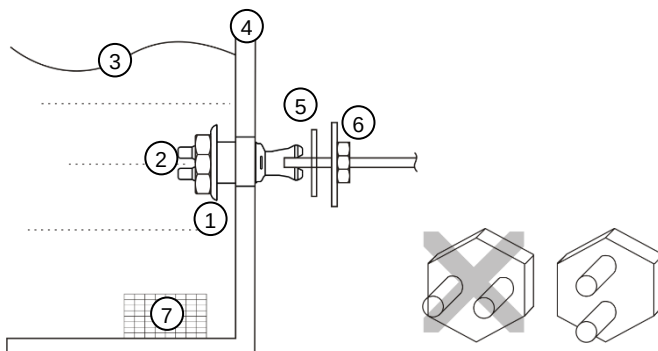
The probe senses the detergent concentration. Correct probe placement is critical for accurate detergent concentration control. Always use the new probe as supplied with the dispenser. The probe must be in a location such that it is always immersed in the wash tank solution and has good flow of solution.

To install correctly the probe following these steps:

- Install the probe in the wash tank below the water level
- Install the near the circulating pump intake
- **It should be away from** incoming water supplies, corners, heating elements, or the bottom of the tank

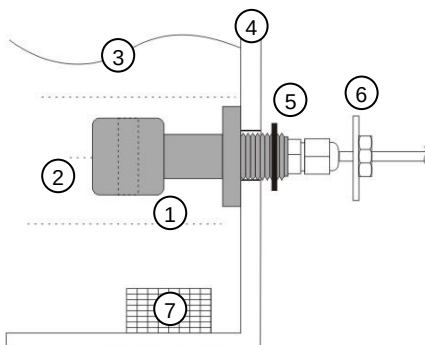


If an existing mounting hole cannot be located, drill a hole 23mm diameter.



Probe connection

1. Probe
2. Electrodes
3. Overflow (maximum water level)
4. Tank wall
5. Rubber washer
6. Fixing nut
7. Circulating pump intake

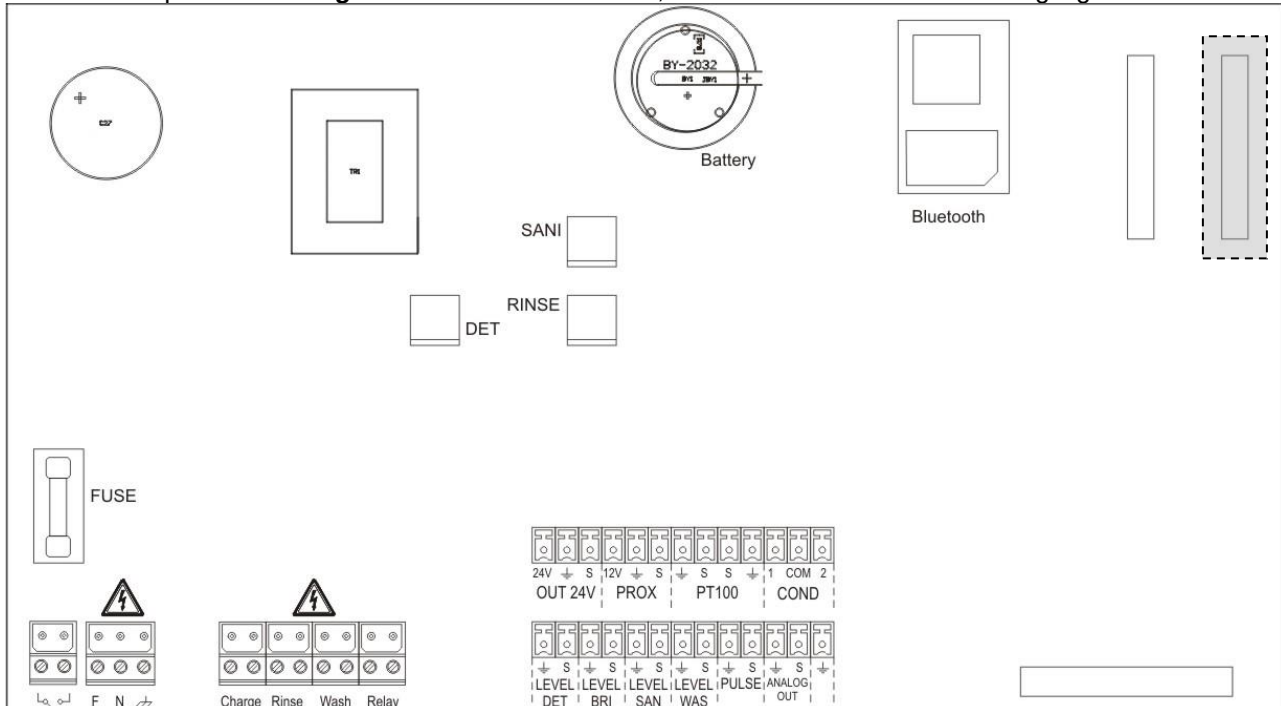


Inductive probe connection

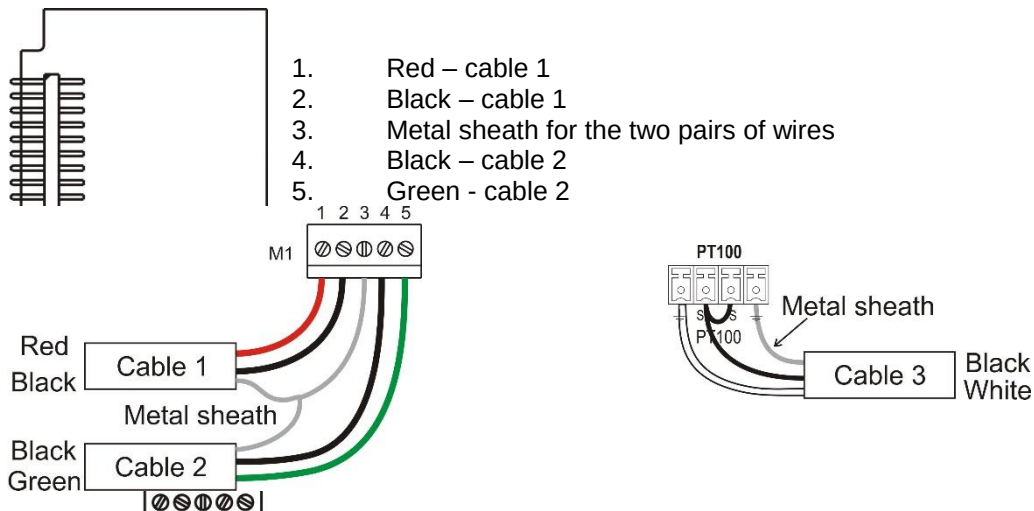
1. Probe
2. Nucleus
3. Overflow (maximum water level)
4. Tank wall
5. Rubber washer
6. Fixing nut
7. Circulating pump intake

2.4.1 Electrical connection for the inductive probe with PT100

Connect the two pairs of **black-green** and **red-black** wires, on the circuit inserted on the highlighted connector.



Observe the colours indicated in the following manner:



PT100 connection

2.4.2 Setting Set point 1

Observe the following sequence to set the target concentration inside the tank, measured by the conductivity probe.

1. Enter in the installer menu, select Programming and then Set P.1 conduc.
2. Fill the tank with water and allow it to reach the recommended wash temperature.
3. Dose the tank manually with the desired amount of detergent
4. Start the wash cycle and wait 20 seconds
5. Press and hold the **F** key for three seconds.
6. Press and hold the **Enter** key for three seconds to exit



In the Set P. 1 conduc. Menu, pressing the **Enter** key once displays the conductivity inside the tank.

Use the same sequence to program Set Point 2.

2.5 ELECTRICAL CONNECTIONS



CAUTION: Always disconnect power when servicing the unit.

CAUTION !!!!!



Verify that the earth system is perfectly functional and complies with the applicable regulations. Ensure the unit is connected to a circuit protected by a highly sensitive (0.03A) RCCB circuit breaker. If unsure please consult a competent electrician. Verify that the rated values of the pump are compatible with those of the mains. Never install the pump directly in parallel with inductive loads (e.g. motors/solenoid valves) if necessary, use an isolating relay. There are 2 protection devices inside the pump: a varistor and a fuse.

2.5.1 Power supply

Connect the **F** **N**  terminals to a voltage from 100 to 240VAC - 50/60Hz.

2.5.2 Initial charge signal – CHARGE terminal

When the initial charge solenoid on the washing machine is energised, this can be used to trigger the dosing of the detergent.

The DET4 system can accept two ranges of input voltage:

- without a jumper in A 20÷240VAC or 24VCC signal (connect the positive wire to the left terminal).
- with a jumper in A 55÷240VAC signal



For single tank models with one solenoid, DON NOT connect this signal.

2.5.3 Wash pump signal – WASH terminal

When power is applied to the wash pump, this can be used to trigger the reading of the concentration inside the tank.

The system DET4 can accept a signal from 24 to 240VAC or 24VDC (connect the positive to the left pin).

The DET4 system can accept two ranges of input voltage:

- without a jumper in A 20÷240VAC or 24VCC signal (connect the positive wire to the left terminal).
- with a jumper in A 55÷240VAC signal



Connect this signal ONLY in probe mode.

2.5.4 Rinse signal – RINSE terminal

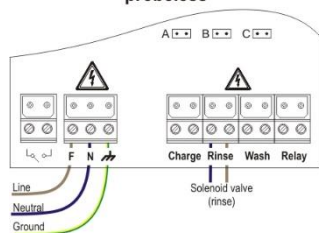
When power is applied to the rinse solenoid valve; this can be used to trigger the dosing of rinse aid and top-up of the detergent.

The DET4 system can accept two ranges of input voltage:

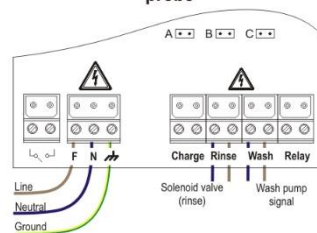
- without a jumper in A 20÷240VAC or 24VCC signal (connect the positive wire to the left terminal).
- with a jumper in A 55÷240VAC signal

2.5.5 Electrical diagrams

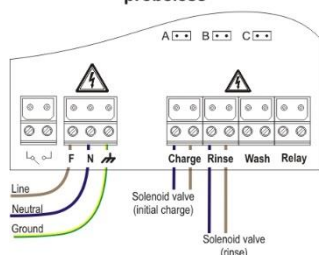
Single tank with one solenoid valve
probeless



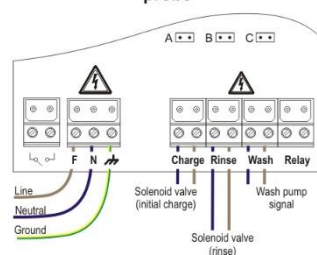
Single tank with one solenoid valve
probe



Single tank with two solenoid valves
or conveyor
probeless



Single tank with two solenoid valves
or conveyor
probe



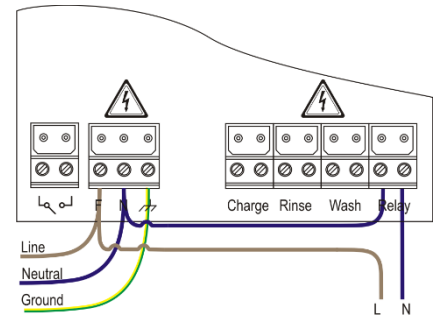
Dishwashing chemical system

ENGLISH

2.5.6 Relay output

The **RELAY** terminal provides a volt free contact which may be programmed from the settings menu.

To provide a powered output on the **RELAY** terminal equal to the power supply, for example 230VAC, connect as shown on the diagram opposite.



2.5.7 Other connections

OUT 24V terminal – Alarm output

A cycling alarm output that gives a pulse voltage (1 second ON & 1 second OFF) at **30VDC with a maximum current of 500mA**.

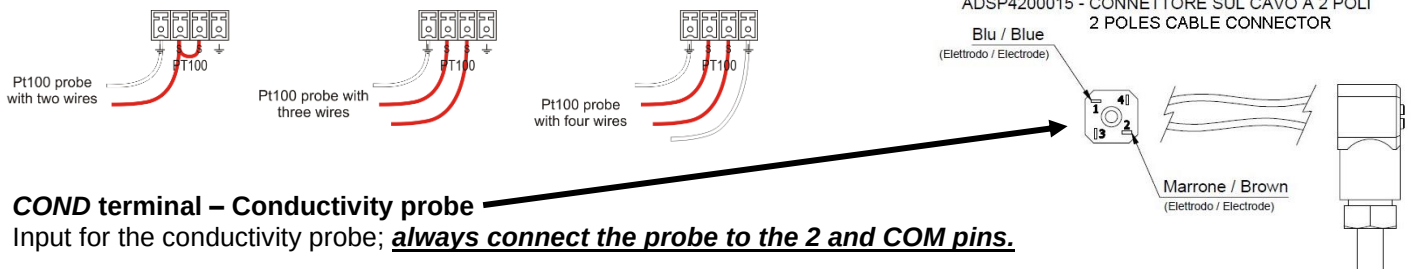
Connect the positive to the **24V** pin and the negative to the **S** pin.

PROX terminal – Proximity sensor

The input for the proximity sensor for counting the number of racks on conveyor machines.

PT100 terminal – Temperature probe

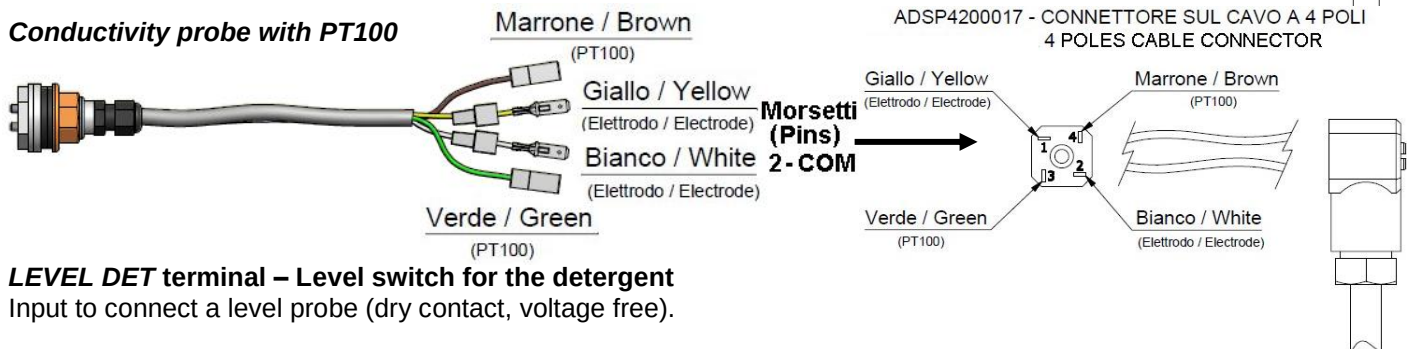
Temperature probe connection for automatic thermal compensation of conductivity measurement.



COND terminal – Conductivity probe

Input for the conductivity probe; **always connect the probe to the 2 and COM pins.**

Conductivity probe with PT100



LEVEL DET terminal – Level switch for the detergent

Input to connect a level probe (dry contact, voltage free).

LEVEL RIN terminal– Level switch for the rinse aid

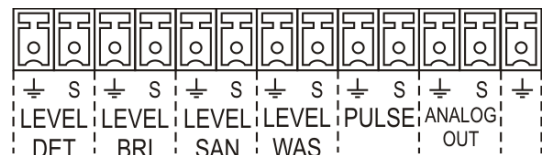
Input to connect a level probe (dry contact, voltage free).

LEVEL SAN terminal – Level switch for the sanitizer

Input to connect a level probe (dry contact, voltage free).

LEVEL WAS terminal – Level switch for the wash tank

Input to connect a level probe (dry contact, voltage free).



The level inputs have a two second delay.

PULSE terminal

Input for a water meter to provide the statistics for the water flow rate (dry contact, voltage free).

ANALOG OUT terminal

Not used.



The symbol  stands for the electrical ground.

3.0 USER MENU AND INSTALLER MENU

3.1 DISPLAY AND KEYS

The system is fully digital and thanks to the 2 line 16 digit LCD display and four keys is easy to program.

▲ ▼ : use these keys to select the values of the different parameters.

Enter : Press this key to confirm a setting or move the cursor.

F : scrolls the menu.

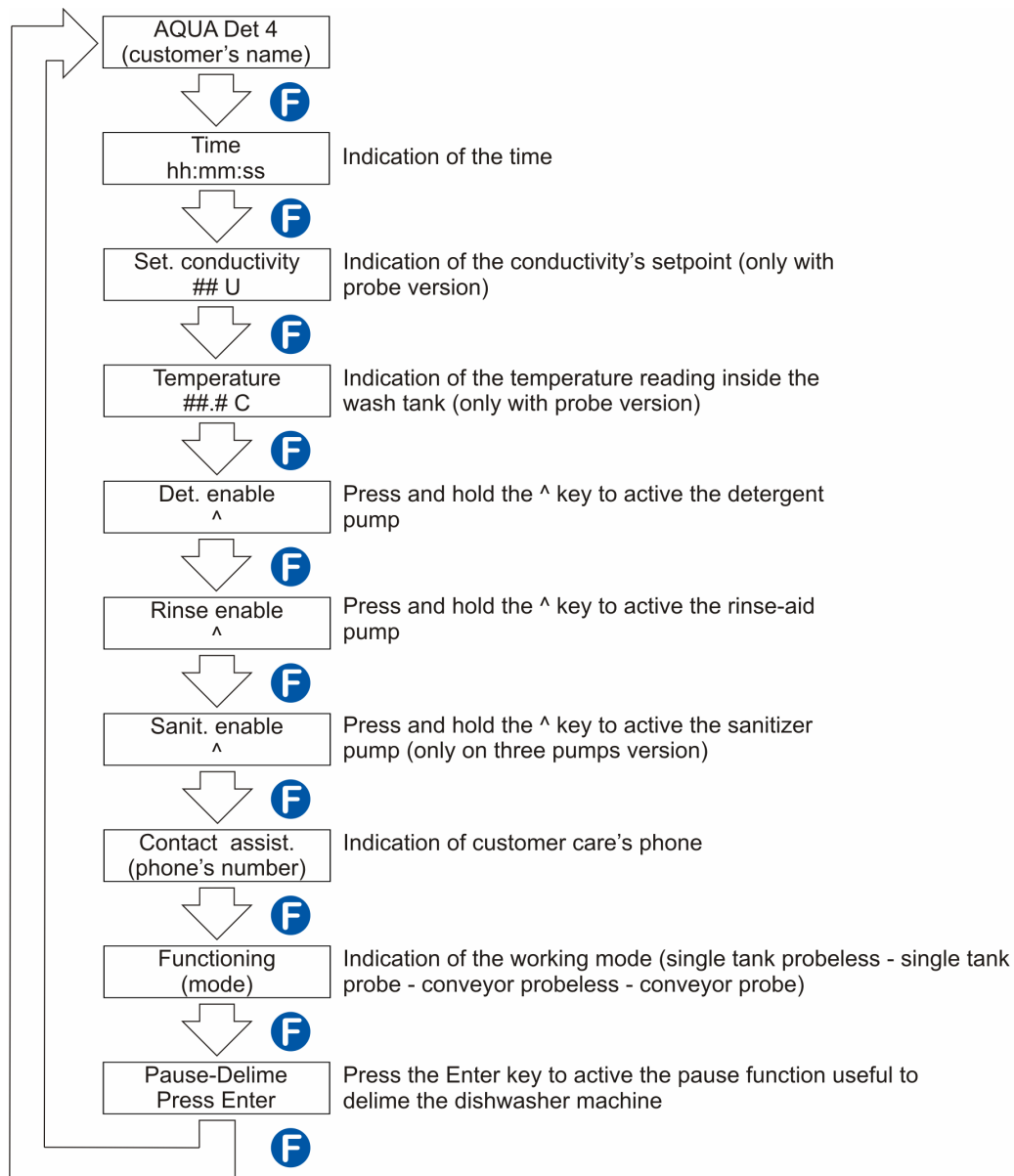
3.1.1 Menu

The system has the following menu available:

1. User Menu: Can be accessed by all users and the installer. In this menu is possible to read information (such as time, assistance phone, working mode etc) and effect some operations such as priming the pumps and pausing the system.
2. Installer Menu: A password must be keyed to enter this menu. In this menu you can program the system and read the statistics.

3.2 USER MENU

When the system is switched on, the display shows the following menu:



In this menu is possible to prime the pumps and pause the system.

3.1.1 PRIMING THE DETERGENT PUMP – User menu > Det. enable

In the user menu, press the **F** key several times until times the display shows:
Pressing the **▲** key the pump runs at the maximum speed for one minute.
To stop the pump before than one minute press the **▼** key.

Det. enable ^=On v=Off

3.1.2 PRIMING THE RINSE AID PUMP – User menu > Rinse enable

In the user menu, press the **F** key several times until times the display shows:
Pressing the **▲** key the pump runs at the maximum speed for one minute.
To stop the pump before than one minute press the **▼** key.

Rinse enable ^=On v=Off

3.1.3 PRIMING THE SANITIZER PUMP – User menu > Sanit. enable.

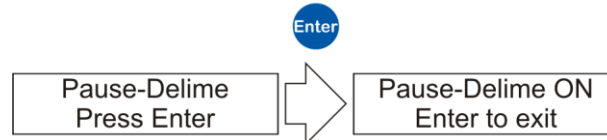
In the user menu, press the **F** key several times until times the display shows:
Pressing the **▲** key the pump runs at the maximum speed for one minute.
To stop the pump before than one minute press the **▼** key.

Sanit. enable ^=On v=Off

3.2.4 DELIME FUNCTION – User menu > Att. Pause-Delime

It is possible to pause the system to delime the dishwasher machine. In this way it is possible to carry out maintenance on the dishwasher without switching off, but more importantly without wasting chemicals.

To enable this function from the user menu, press the **F** key several times until times the display shows:



To exit, again press the **Enter** key. In any event it will exit automatically after 15 minutes.

3.2 ENTER IN INSTALLER MENU

To enter the installer menu, press and hold **Enter** until the display shows:

Password 0000

Now, using the **▲▼** keys select the desired values, using the **Enter** key to move the cursor to the next digit.

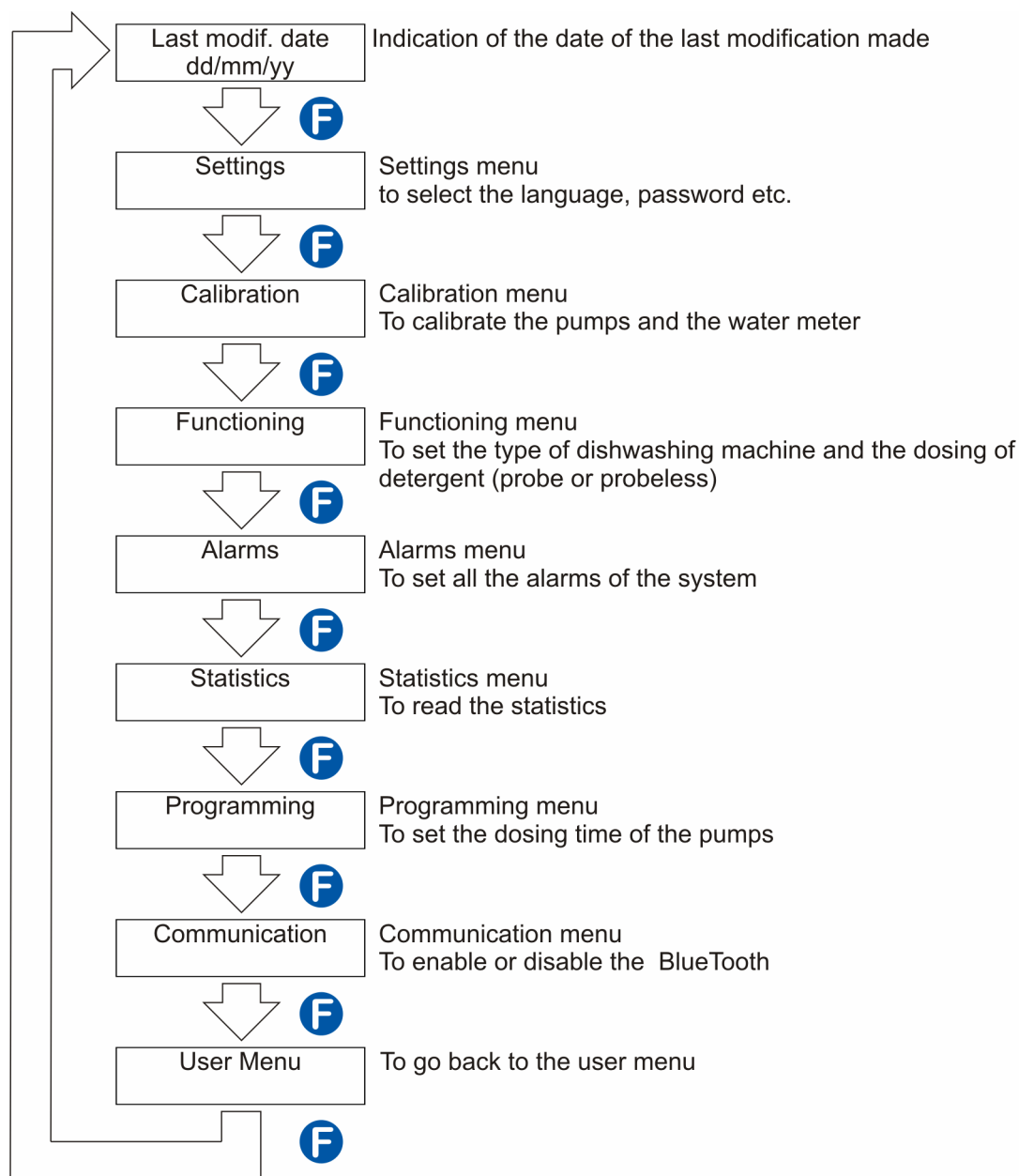
Once you have set the right password, press and hold **Enter** until the display shows:

Last modif. date dd/mm/yy.

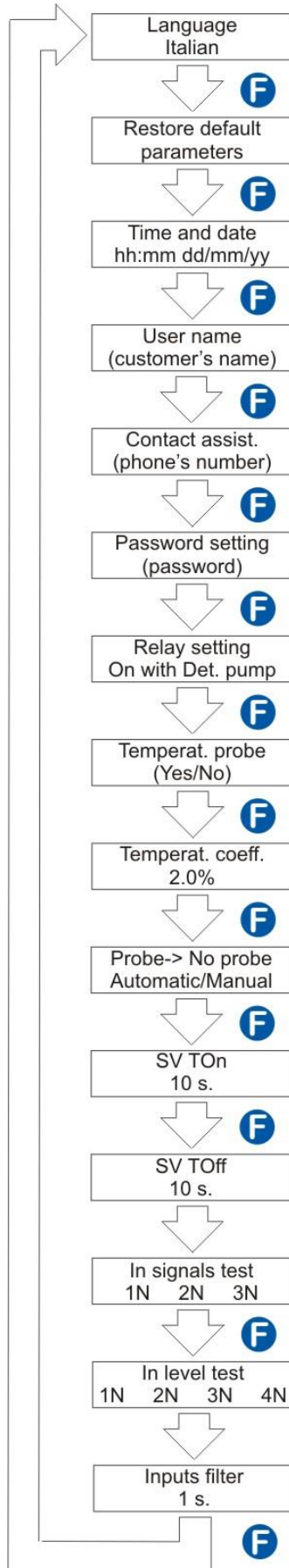


The default password is 0000.

3.4 INSTALLER MENU



3.5 SETTINGS MENU – Enter in installer menu > Settings



Language selection

Use to select the language and to confirm.

Restore default parameters

To restore all parameters to the default value

Press and then with select Yes or No.

Press to confirm



This operation will erase all the data!!!!

Time and date settings

Use to move the cursor and to set the desired values.

Customer's name setting

Use to move the cursor on to the next digit and to select the characters "ABCDEFGHIJKLMNOPQRSTUVWXYZ_0123456789".

Setting the phone number

Use to move the cursor on the next digit and to select the characters "0123456789+_".

Password setting

Use to move the cursor on the next digit and to select the characters "0123456789".

Relay setting

Use the keys to select the working mode of the output relay (RELAY terminal on the circuit board)

It's possible to select:

- *On with DET. pump*
When the detergent pump runs, the relay contact closes.
- *On with Rin. pump*
When the rinse pump runs, the relay contact closes.
- *Open with alarm*
During an alarm condition the relay contact opens.
- *Close with alarm*
During an alarm condition the relay contact closes.

To enable the temperature probe

With select Yes or Not and to confirm.

Temperature coefficient setting (only in probe mode)

This parameter is used to calculate the compensation for conductivity.

Use to set the desired value and to confirm.



Press and hold for three seconds to go back to the previous menu.

Probe-> No Probe – Automatic or manual (only in probe mode)

In probe mode, this parameter allows switching to probeless mode in case of an OFA alarm.

In Automatic, when the OFA alarm occurs, the display shows:

All. dos. Det.!
 Cont. Assist.

If Auto reset OFA is in OFF, pressing  to cancel the alarm condition and to switch the system to probeless mode.

If Auto reset OFA is in ON, when the WASH signal goes down and up again cancels the alarm condition and switches the system to probeless mode.

In Manual, when the OFA alarm triggers, the system continues working in probe mode.



For this function to operate, the system must be programmed first in probeless and then in probe!!!

SV TOn andSV TOff (only for DET4 to dose powder detergents, equipped with a solenoid valve)

These parameters allow you to set the opening and closing time of the solenoid valve respectively, which controls the water to dissolve the powder or solid detergent, during its operation. With the keys   you can set the value you wish between 0 and 30 seconds.

To confirm, press the key .

In. signal test

This menu shows the condition of the signals connected to the terminals **CHARGE**, **WASH** and **RINSE**.

If the signal is active, the display shows the letter Y next to the value shown in the table, or N if not.

- 1 => **CHARGE** signal (signal from the initial charge solenoid valve)
- 2 => **RINSE** signal (signal from the rinse solenoid valve)
- 3 => **WASH** signal (signal from the wash pump)

In. level test

This menu shows the condition of the signals connected to the terminals **LEVEL DET**, **LEVEL BRI**, **LEVEL SAN** and **LEVEL WAS**.

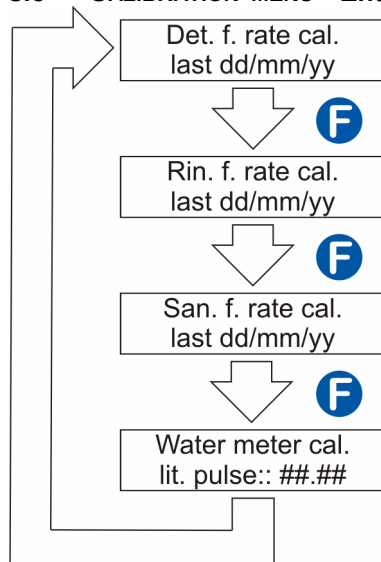
If the signal is active, the display shows the letter Y next to the value shown in the table, or N if not.

- 1 => **LEVEL DET** signal (signal from the level switch of detergent)
- 2 => **LEVEL BRI** signal (signal from the level switch of rinse aid)
- 3 => **LEVEL SAN** signal (signal from the level switch of sanitizer)
- 4 => **LEVEL WAS** signal (signal from the level switch of wash tank)

Inputs filter (only on Cyclic Power&Run mode)

This parameter is the minimum time that the signals CHARGE, RINSE and WASH must be ON before to be recognized as a correct signal to enable the dosing.

Use the   keys to set the desired value from 3 to 99 seconds, and press  to confirm.

3.6 CALIBRATION MENU – Enter in installer menu > Calibration**Det. F. rate cal.**

This menu allows setting of the flow rate of the detergent pump expressed in ml.

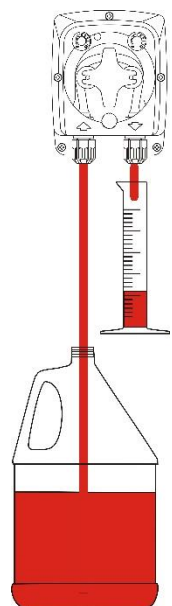
Moreover the system retains the date of the last calibration in memory.

To perform the calibration, following this procedure:

1. Prime the pump.
2. Place a graduated container (at least 250 ml) on the delivery of the pump.
3. Enter in the calibration menu and press .
4. The pump runs for a set period and at the end the display shows for example:

Aspired quantity
 200 ml

Use the   keys to set the measured value and press  to confirm.



Rin. F. rate cal.

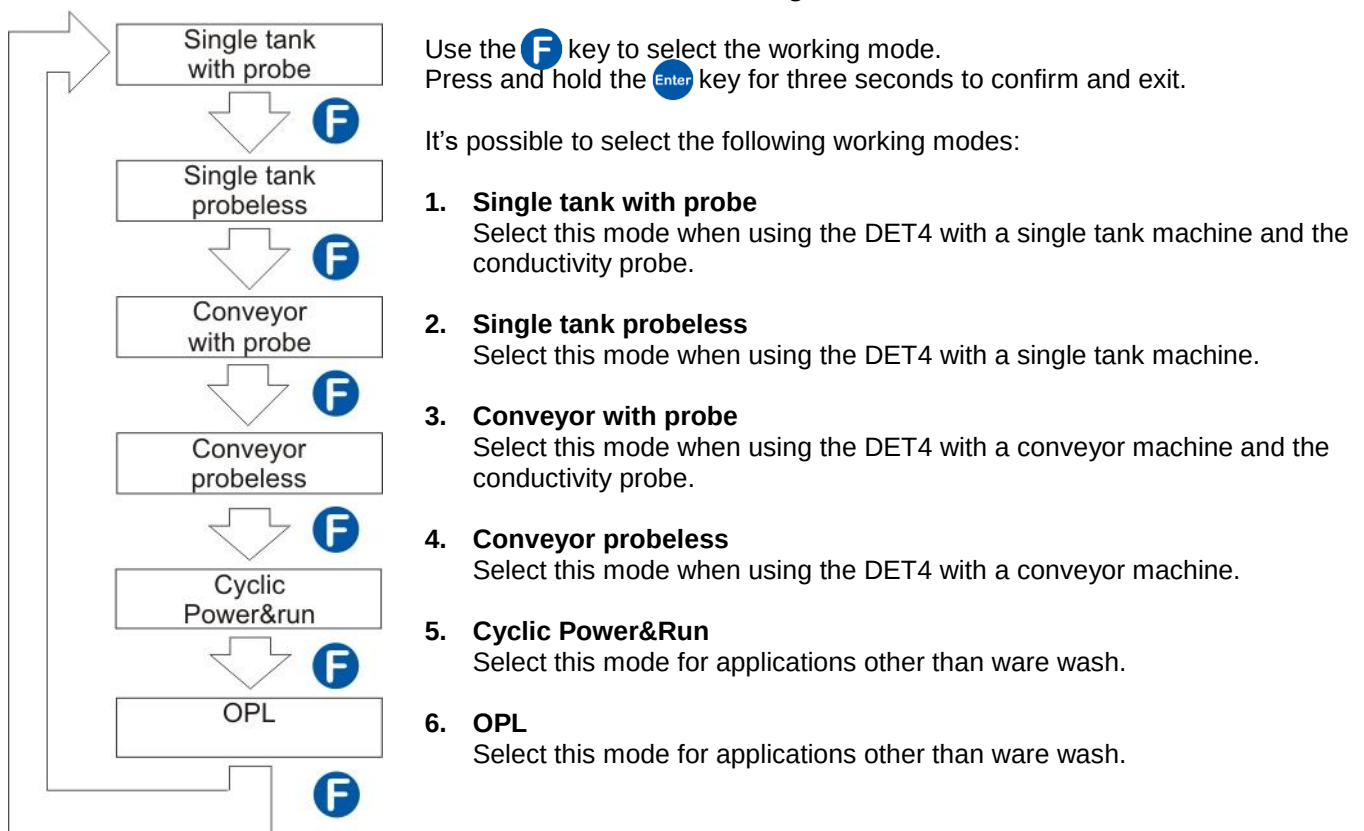
This menu allows setting of the flow rate of the rinse aid pump expressed in ml. Moreover the system retains the date of the last calibration in memory. To calibrate, follow the same procedure as for the detergent.

San. F. rate cal. (on three pump models)

This menu allows setting of the flow rate of the sanitizer pump expressed in ml. Moreover the system retains the date of the last calibration in memory. To calibrate, follow the same procedure as for the detergent.

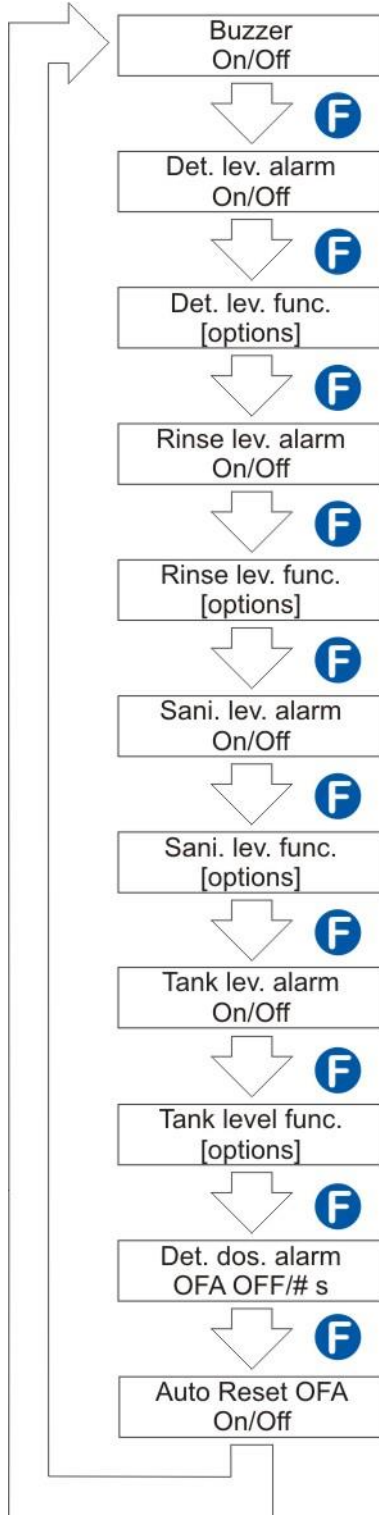
Water meter cal. (only for statistics)

This menu allows setting of the pulses per litre from the water meter. Allowed values are: 0.25, 0.5 and from 1 to 99.

3.7 FUNCTIONING MENU – Enter in installer menu > Functioning

To go back to the previous menu, press and hold **Enter** for three seconds

3.8 ALARMS MENU – Enter in installer menu > Alarms



Buzzer

This parameter allows to muting of the buzzer.

Use ▲ ▼ to select ON/OFF and  to confirm.

Det. Lev. alarm

This parameter enables the level alarm for the detergent when the probe is connected to the terminal **LEVEL DET**.

Use ▲ ▼ to select ON/OFF and  to confirm.

Det. Lev. Func.

For programming the working mode of the alarm.

It's possible select the following options:

1. *Stop dos. sing.*
In the alarm condition, the system stops just the detergent pump.
2. *Stop dos. tot.*
In the alarm condition, the system stops all the pumps.
3. *Only alarm*
In the alarm condition, the system does not stop any pumps.

Use ▲ ▼ to select ON/OFF and  to confirm.

In case of detergent's alarm, the display shows:

Low Level Det.!

It's possible to program all the alarms that can be:

- Lev. Rinse => Level alarm of the rinse aid (terminal **LEVEL BRI**).
- Lev. Sani. => Level alarm of the sanitizer (terminal **LEVEL SAN**) (three pump version only)
- Lev. tank => Level alarm of the wash tank (terminal **LEVEL WAS**).

Det. Dos. alarm– OFA – OFF/0...600 s (only in probe mode)

This parameter allows setting the time within which the system has to reach the set point.

In the event that the system unable to reach the set point the OFA (Over Feed Alarm) goes on and the display shows:

All. dos. Det.!

Auto Reset OFA (only in probe mode)

This parameter allows setting how to cancel the OFA alarm.

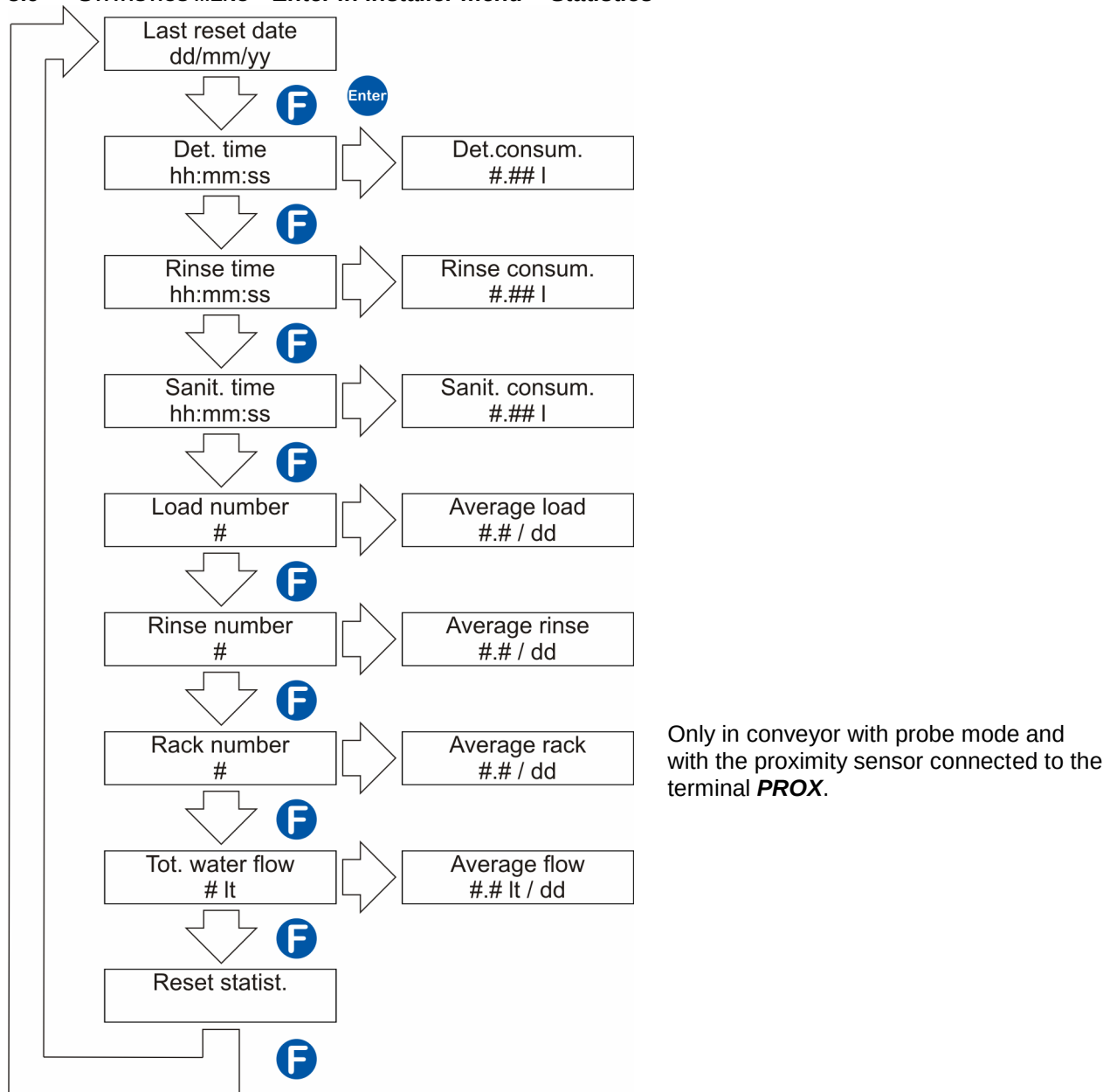
- **On**: the alarm condition is cancelled by the WASH signal.
- **Off**: the alarm condition is cancelled by the user, press and hold  for three seconds key or switch OFF the system.

Use ▲ ▼ to select ON/OFF and  to confirm.

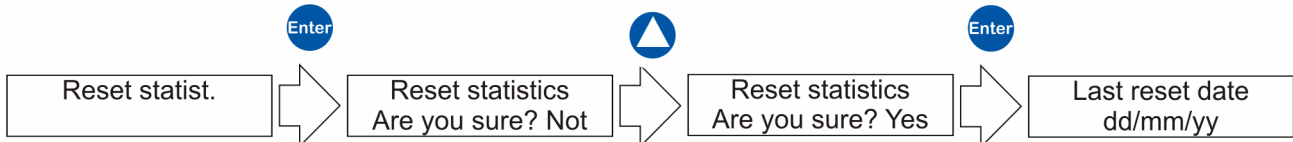


To go back to the previous menu, press and hold  for three seconds

3.9 STATISTICS MENU – Enter in installer menu > Statistics



3.9.1 RESET STATISTICS – Enter in installer menu > Statistics > Reset statist.

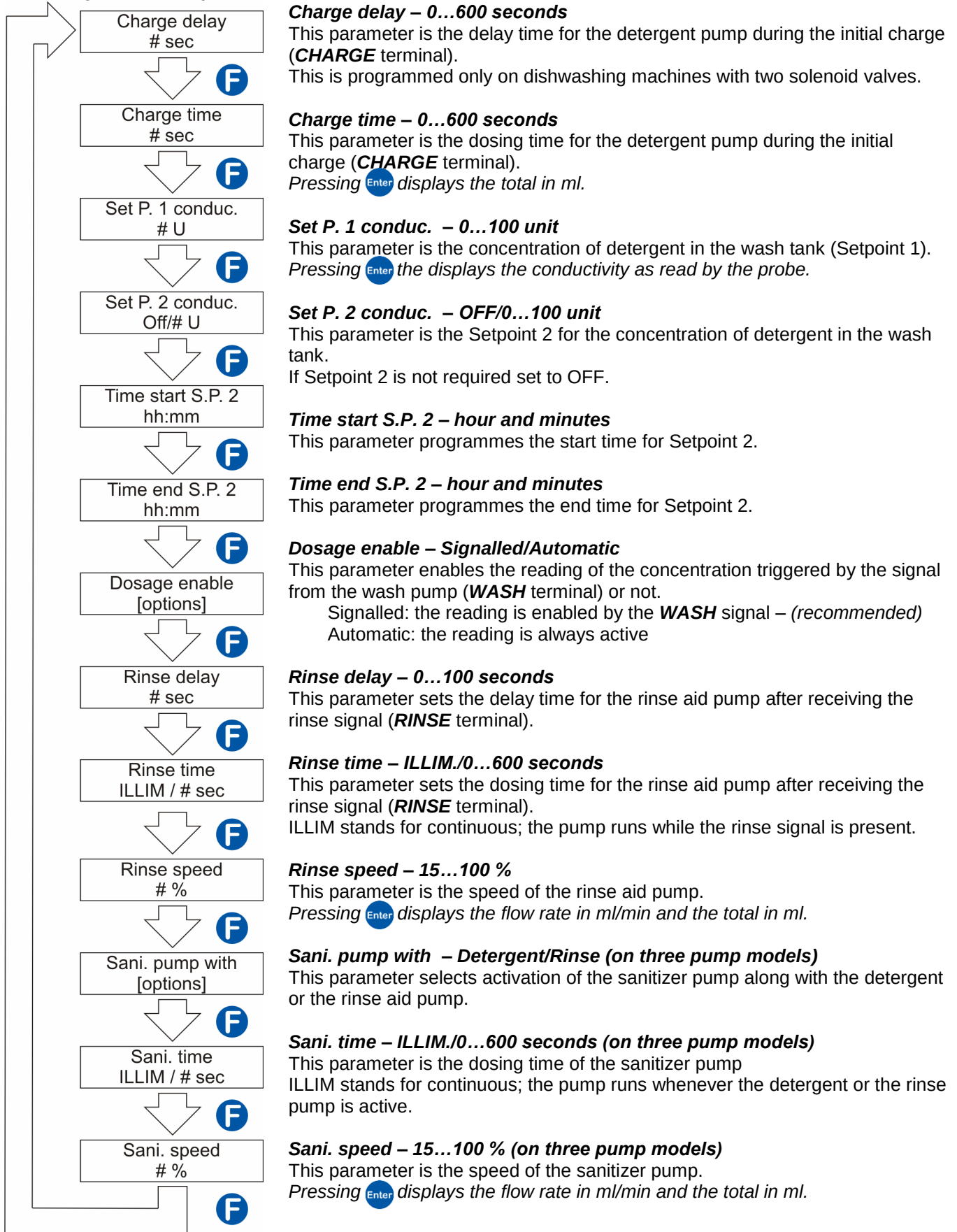


Using reset will erase all the statistics data!!!



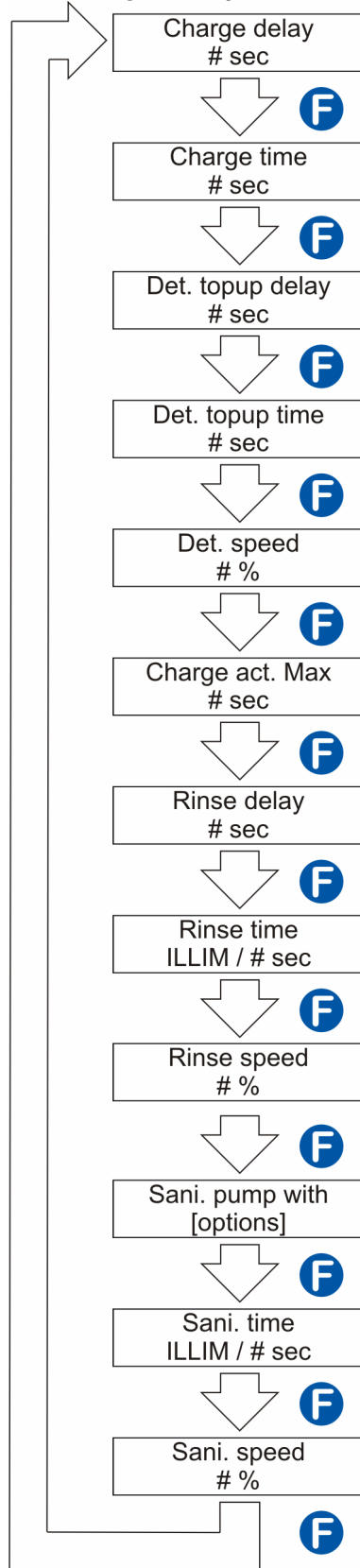
To go back to the previous menu, press and hold **Enter** for three seconds.

3.10 PROGRAMMING MENU – Enter in installer menu > Programming Single tank with probe



To go back to the previous menu, press and hold **Enter** for three seconds.

3.11 PROGRAMMING MENU – Enter in installer menu > Programming Single tank probeless



Charge delay – 0...600 seconds

This parameter is the delay time for the detergent pump during the initial charge (**CHARGE** terminal).
This is programmed only on dishwashing machines with two solenoid valves.

Charge time – 0...600 seconds

This parameter is the dosing time for the detergent pump during the initial charge (**CHARGE** terminal).
Pressing **Enter** displays the total in ml.

Det. topup delay – 0...100 seconds

This parameter is the delay time for the detergent pump during topup, when the rinse signal is active. (**RINSE** terminal).

Det. topup time – ILLIM./0...600 seconds

This parameter is the dosing time of the detergent pump during topup, when the rinse signal is active (**RINSE** terminal).
ILLIM stands for continuous; the pump runs whenever the rinse signal is present.

Det. speed – 15...100 %

This parameter is the speed of the detergent pump during the rinse topup, when the rinse signal is active. (**RINSE** terminal).
Pressing **Enter** displays the flow rate in ml/min and the total in ml.

Charge act. Max

This parameter is the time that the rinse signal has to remain active before to be recognized as an initial charge.



Programme only on single tank models with one solenoid.

Rinse delay – 0...100 seconds

This parameter is the delay time for the rinse aid pump during the rinse signal (**RINSE** terminal).

Rinse time – ILLIM./0...600 seconds

This parameter is the dosing time for the rinse aid pump during the rinse signal (**RINSE** terminal).
ILLIM stands for continuous; the pump runs whenever the rinse signal is present.

Rinse speed – 15...100 %

This parameter is the speed of the rinse aid pump
Pressing **Enter** displays the flow rate in ml/min and the total in ml.

Sani. pump with – Detergent/Rinse (on three pump models)

This parameter selects activation of the sanitizer pump, along with the detergent or rinse aid pump.

Sani. time – ILLIM./0...600 seconds (on three pump models)

This parameter is the dosing time for the sanitizer pump
ILLIM stands for continuous; the pump runs whenever the detergent or the rinse pump is active.

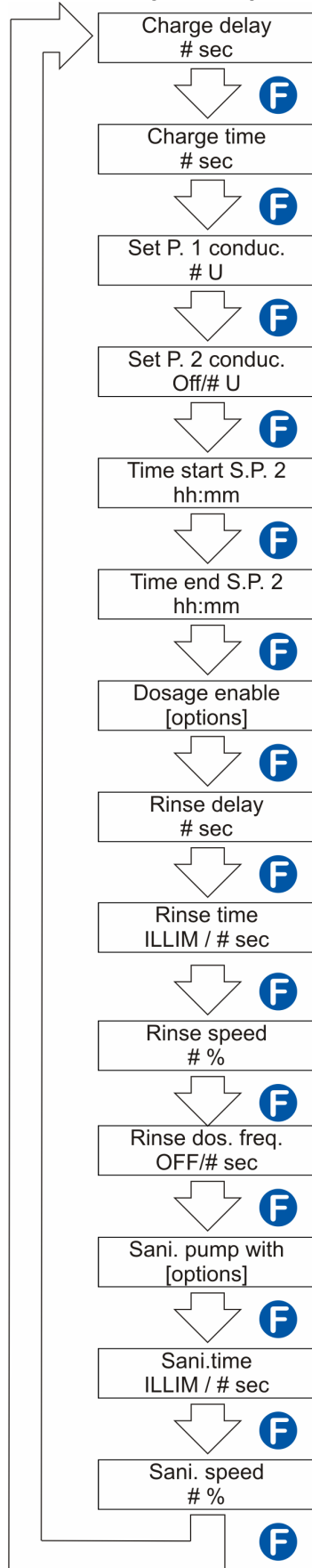
Sani. speed – 15...100 % (on three pump models)

This parameter is the speed of the sanitizer pump.
Pressing **Enter** displays the flow rate in ml/min and the total in ml.



To go back to the previous menu, press and hold **Enter for three seconds.**

3.12 PROGRAMMING MENU – Enter in installer menu > Programming Conveyor with probe



Charge delay – 0...600 seconds

This parameter is the delay time for the detergent pump during the initial charge (**CHARGE** terminal).

This is programmed only on dishwashing machines with two solenoid valves.

Charge time – 0...600 seconds

This parameter is the dosing time for the detergent pump during the initial charge (**CHARGE** terminal).

Pressing **Enter** displays the total in ml.

Set P. 1 conduc. – 0...100 unit

This parameter is the concentration of detergent in the wash tank (Setpoint 1).

Set P. 2 conduc. – OFF/0...100 unit

This parameter is Setpoint 2 for the concentration of detergent in the wash tank.

Time start S.P. 2 – hour and minutes

This parameter programmes the activation time for Setpoint 2.

Time end S.P. 2 – hour and minutes

This parameter programmes the deactivation time for Setpoint 2.

Dosage enable – Signalled/Automatic

This parameter enables the reading of concentration by the signal from the wash pump (**WASH** terminal) or not.

Signalled: the reading is enabled by the **WASH** signal – (recommended)

Automatic: the reading is always active

Rinse delay – 0...100 seconds

This parameter is the delay time for the rinse aid pump during the rinse signal (**RINSE** terminal).

Rinse time – ILLIM./0...600 seconds

This parameter is the dosing time for the rinse aid pump during the rinse signal (**RINSE** terminal).

ILLIM stands for continuous; the pump runs whenever the rinse signal is present.

Rinse speed – 15...100 %

This parameter is the speed of the rinse aid pump.

Pressing **Enter** displays the flow rate in ml/min and the total in ml.

Rinse dos. Freq – OFF/0...600 seconds

This parameter indicates the frequency of activation of the rinse aid pump when the rinse signal is active (**RINSE** terminal).

Sani. pump with – Detergent/Rinse (on three pump models)

This parameter selects activation of the sanitizer pump, along with the detergent or rinse aid pump.

Sani. time – ILLIM./0...600 seconds (on three pump models)

This parameter is the dosing time of the sanitizer pump

ILLIM stands for continuous; the pump runs whenever the detergent or the rinse pump is active.

Sani. speed – 15...100 % (on three pump models)

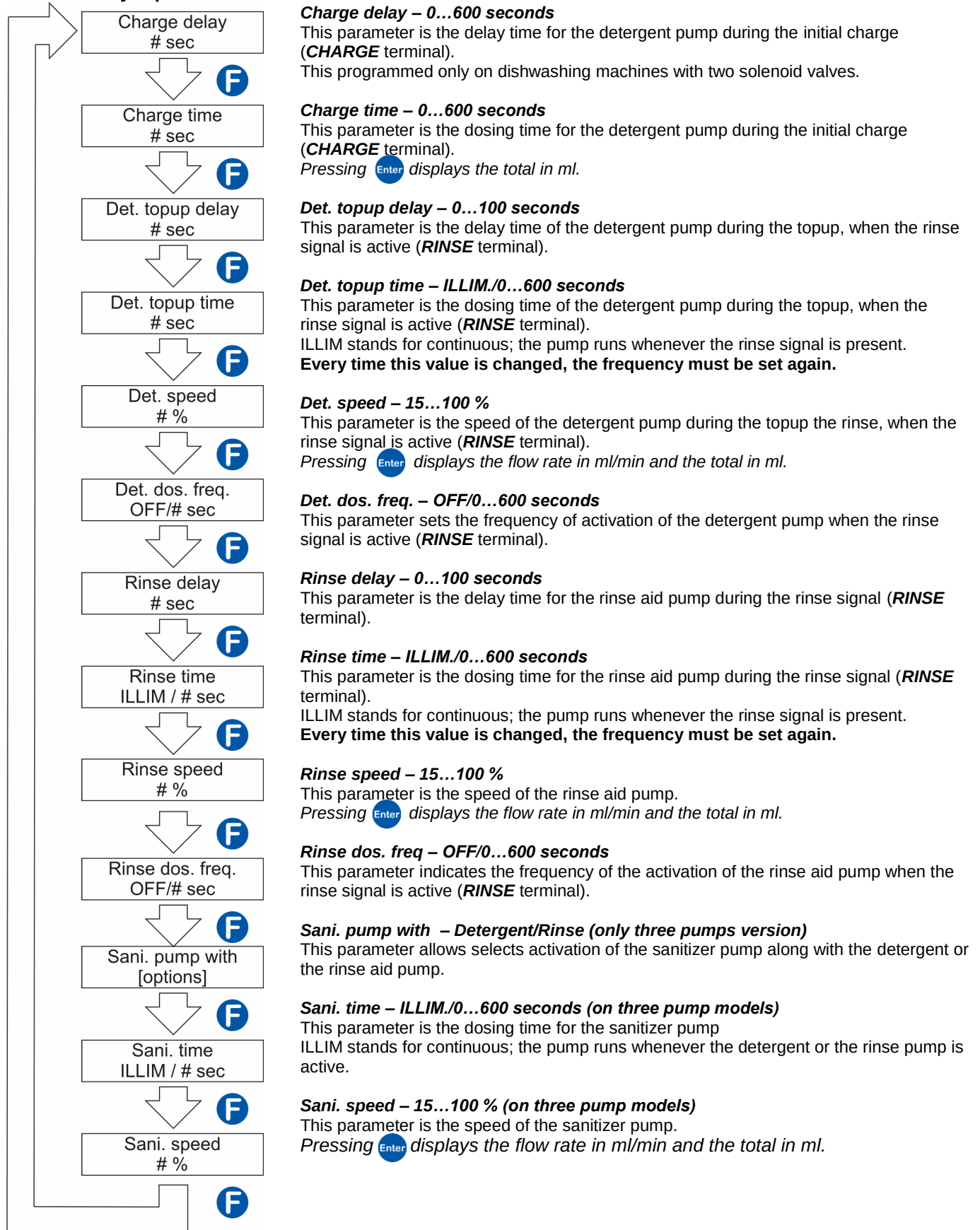
This parameter is the speed of the sanitizer pump.

Pressing **Enter** displays the flow rate in ml/min and the total in ml.



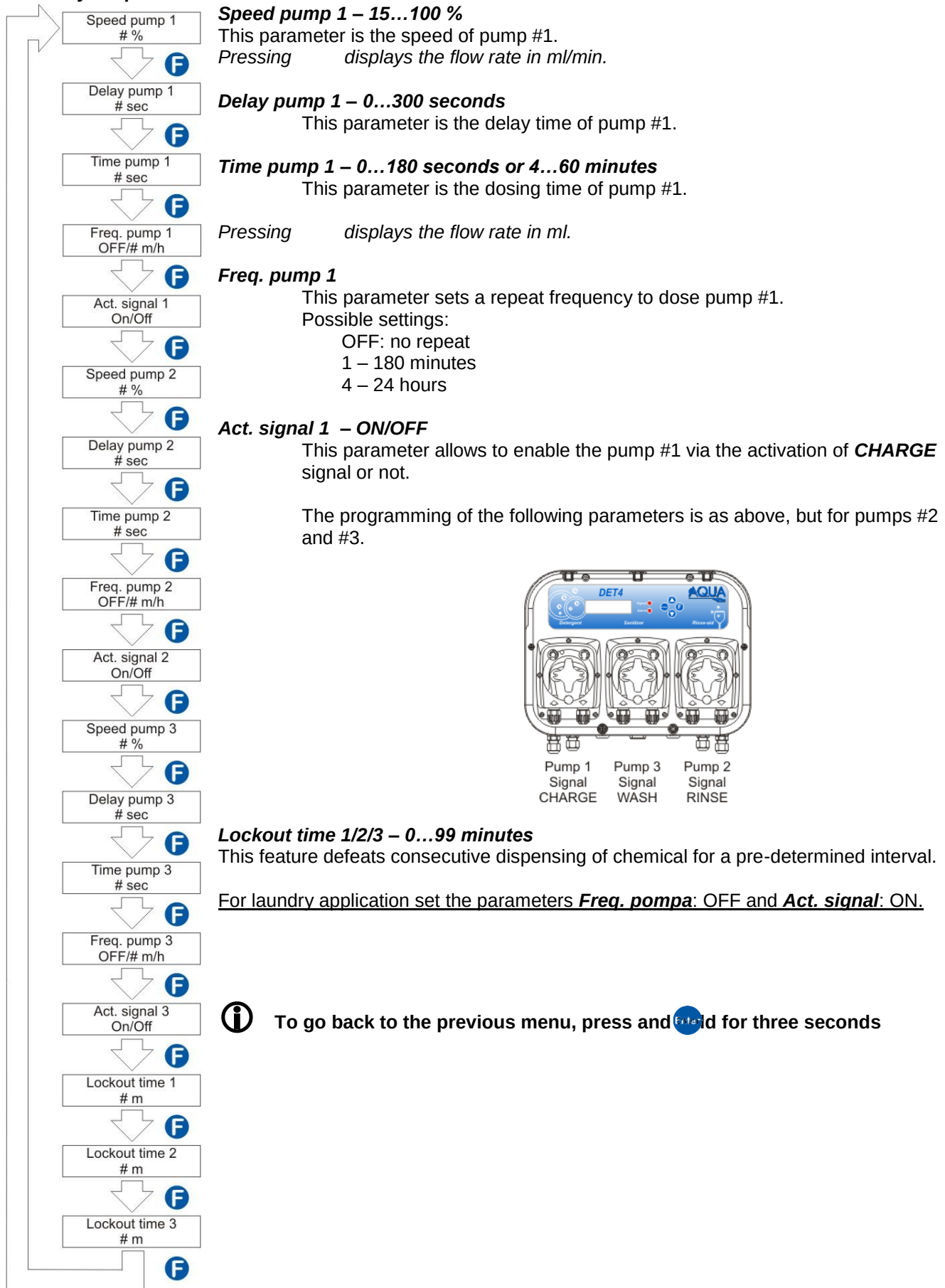
To go back to the previous menu, press and hold **Enter** for three seconds.

3.13 PROGRAMMING MENU – Enter in installer menu > Programming Conveyor probeless



To go back to the previous menu, press and hold **Enter** for three seconds.

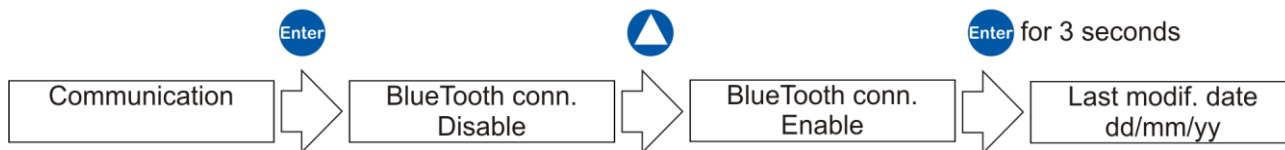
3.14 PROGRAMMING MENU – Enter in installer menu > Programming Cyclic power&run



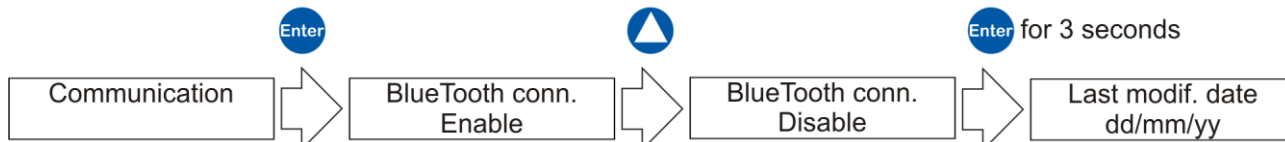
3.15 COMMUNICATION MENU – *Enter in installer menu > Communication*

In this menu is possible enable or disable the Bluetooth connection.

3.15.1 ENABLE BLUETOOTH



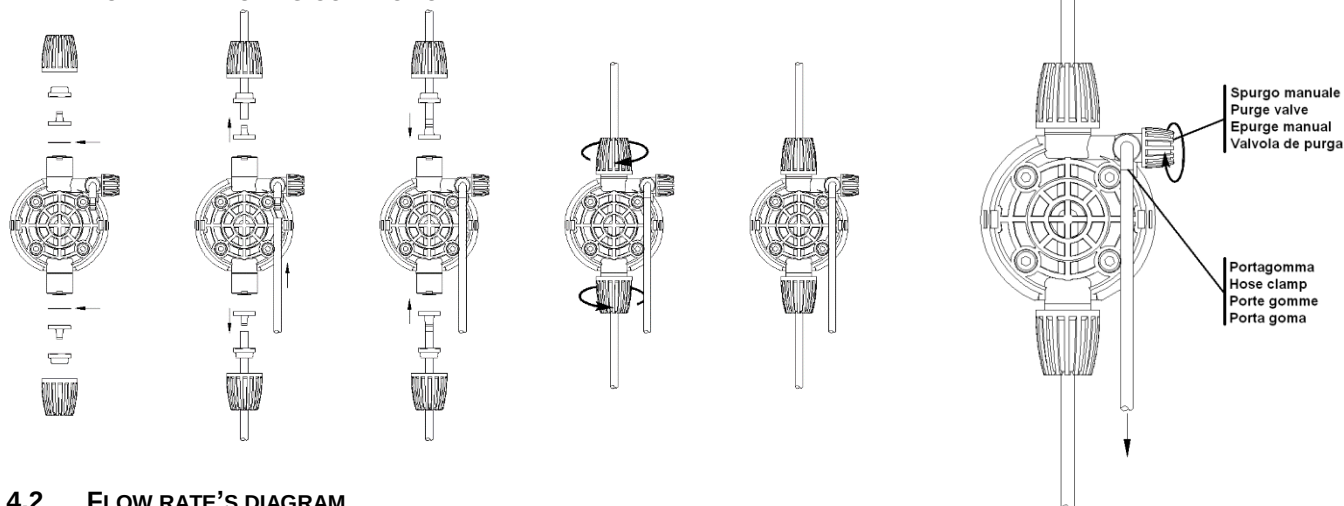
3.15.2 DISABLE BLUETOOTH



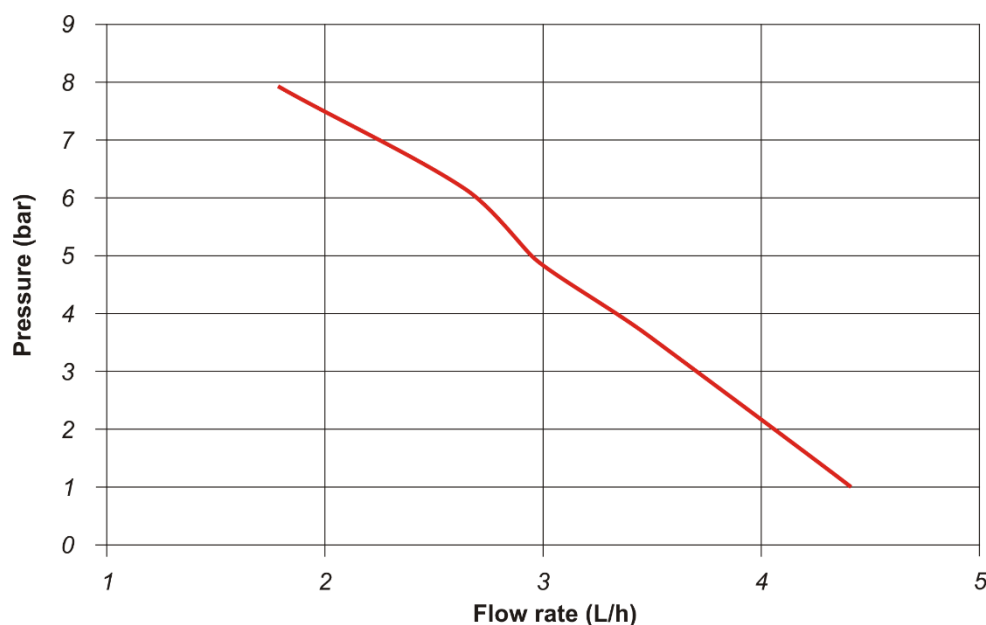
The Bluetooth is an accessory and has to be purchased separately.

4.0 RINSE AID SOLENOID PUMP

4.1 PUMP HEAD TUBING CONNECTION



4.2 FLOW RATE'S DIAGRAM

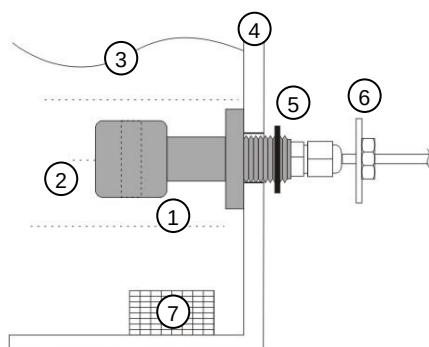


5.0 TROUBLESHOOTING

The system doesn't turn on	- Check the fuse on the circuit board - Verify the voltage on the F-N pins is within 100 and 240VAC 50/60Hz
The pump doesn't run	- Verify that the wires on the motor are well connected - Verify the voltage on the CHARGE, RINSE e WASH terminals is within 24 and 240VAC or 24VDC
Too much detergent	- Verify the dosing time and the speed programmed - Verify the Setpoint of the conductivity - Verify that the conductivity probe is clean
Low detergent	- Verify the power supply - Verify the dosing time and the speed programmed - Verify the Setpoint of the conductivity - Verify that the conductivity probe is clean
Too much rinse air or sanitizer	Verify the dosing time and the speed programmed
Low rinse aid or sanitizer	- Verify the dosing time and the speed programmed - Verify the check valve
The pump is slow	- Verify the motor - Verify the hold-roller - Verify the speed programmed - Verify the check valve
The pump doesn't draw the chemical	- Verify the squeeze tube - Verify the hold-roller - Verify the nut on the suction fitting on the pump

6.0 DEFAULT PARAMETERS

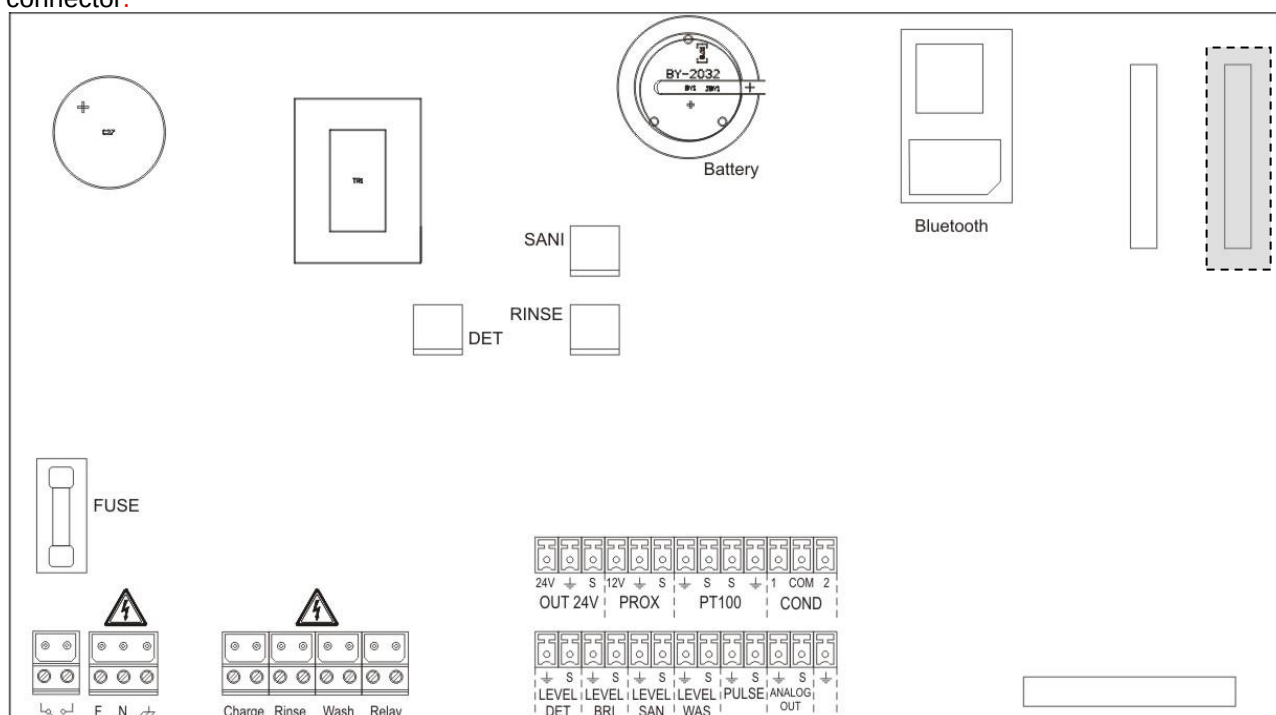
User name	"AQUA SpA"	SV TOFF	10
Contact Assistance	" +390522695805 "	Set Point 1	0
Password	"0000"	Set Point 2	OFF
Relay	Relay close with alarm	Time start Set Point 2	0
Probe Temperature	No	Time end Set Point 2	0
Language	Italian	Dosage enabled	Signalled
Functioning mode	Single tank with probe	Detergent topup delay	0
Inputs filter	3	Detergent topup time	0
Detergent flow rate calibration last data	0	Detergent speed	15
Aspired quantity for Detergent	166	Charge act. Max	OFF
Rinse aid flow rate calibration last data	0	Rinse delay	0
Aspired quantity for Rinse aid	25	Rinse time	0
Sanitizer flow rate calibration last data	0	Rinse speed	15
Aspired quantity for Sanitizer	25	Sanitizer pump with	Rinse pump
Litres per pulses	1	Sanitizer time	0
Buzzer	ON	Sanitizer Speed	15
Detergent level alarm	ON	Rinse Dos. Freq.	OFF
Detergent level functioning	Only alarm	Detergent Dos. Freq.	OFF
Rinse aid level alarm	ON	Delay Pump #1	0
Rinse aid level functioning	Only alarm	Speed Pump #1	100
Sanitizer level alarm	ON	Time Pump #1	0
Sanitizer level functioning	Only alarm	Freq. Pump #1	OFF
Tank level alarm	ON	Activation signal #1	ON
Tank level functioning	Only alarm	Delay Pump #2	0
OFA (over feed alarm)	OFF	Speed Pump #2	100
Auto reset OFA	OFF	Time Pump #2	0
Last reset statistics	0	Freq. Pump #2	OFF
Detergent time	0	Activation signal #2	ON
Rinse aid time	0	Delay Pump #3	0
Sanitizer time	0	Speed Pump #3	100
Detergent consumption	0	Time Pump #3	0
Rinse aid consumption	0	Freq. Pump #3	OFF
Sanitizer consumption	0	Activation signal #3	ON
Load number	0	Lockout time 1	0
Rinse number	0	Lockout time 2	0
Rack number	0	Lockout time 3	0
Water flow rate	0	Bluetooth connection	Enable
Temperature coefficient	2.0	Last modify date	Restoring date
Charge delay	0	TipoDet4	NA
Charge time	0	Manual Temperature	55
SV TOn	10	Probe > No probe	Manual

7.0 INDUCTIVE PROBE**7.1 INDUCTIVE PROBE CONNECTION**

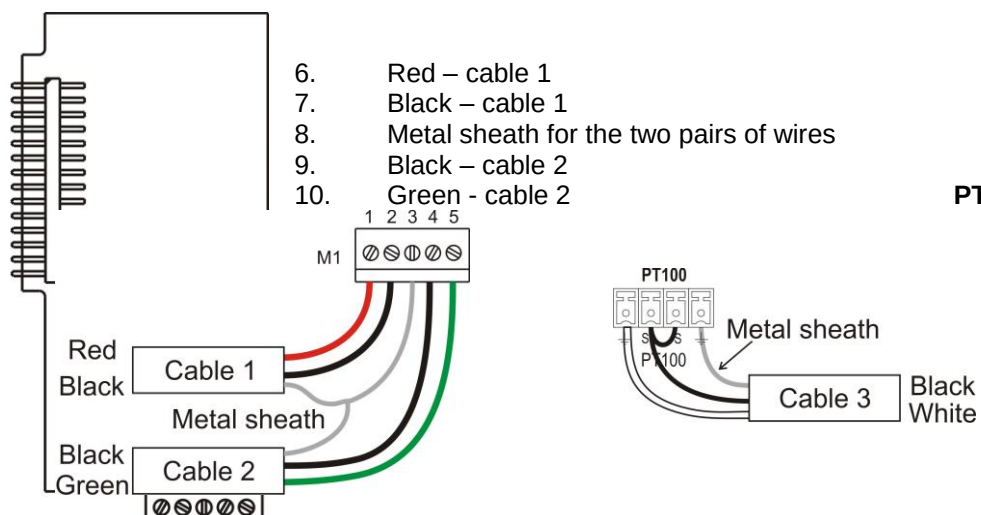
- 8. Probe
- 9. Nucleus
- 10. Overflow (maximum water level)
- 11. Tank wall
- 12. Rubber washer
- 13. Fixing nut
- 14. Circulating pump intake

7.2 ELECTRICAL CONNECTION FOR THE INDUCTIVE PROBE WITH PT100

Connect the two pairs of **black-green** and **red-black** wires, on the circuit inserted on the highlighted connector.



Observe the colours indicated in the following manner:



7.3 ELECTRICAL CONNECTIONS

Initial charge signal – CHARGE terminal

When the initial charge solenoid on the washing machine is energised, this can be used to trigger the dosing of the detergent.

The DET4 system can accept two ranges of input voltage:

without a jumper in A	20÷240VAC or 24VCC signal (connect the positive wire to the left terminal).
with a jumper in A	55÷240VAC signal



For single tank models with one solenoid, DON NOT connect this signal.

Wash pump signal – WASH terminal

When power is applied to the wash pump, this can be used to trigger the reading of the concentration inside the tank.

The system DET4 can accept a signal from 24 to 240VAC or 24VDC (connect the positive to the left pin).

The DET4 system can accept two ranges of input voltage:

without a jumper in A	20÷240VAC or 24VCC signal (connect the positive wire to the left terminal).
with a jumper in A	55÷240VAC signal



Connect this signal ONLY in probe mode.

Rinse signal – RINSE terminal

When power is applied to the rinse solenoid valve; this can be used to trigger the dosing of rinse aid and top-up of the detergent.

The DET4 system can accept two ranges of input voltage:

without a jumper in A	20÷240VAC or 24VCC signal (connect the positive wire to the left terminal).
with a jumper in A	55÷240VAC signal

7.4 SETTINGS MENU

SV TOn and SV TOff (only for DET4 to dose powder detergents, equipped with a solenoid valve)

These parameters allow you to set the opening and closing time of the solenoid valve respectively, which controls the water to dissolve the powder or solid detergent, during its operation.

With the keys   you can set the value you wish between 0 and 30 seconds.

To confirm, press the key 



DET-4

