



Electrolux

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Customer Care - EMEA
Training and Operations Support
Technical Support

SERVICE MANUAL

FABRIC CARE

Washing Machines, Washer Dryers, Dryers - CONNECTIVITY

CONNECTIVITY - NIUX

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1 PRECAUTION



Information "Safety"

- All the work to be performed inside the appliance requires specific skills and knowledge and may only be carried out by qualified and authorised Service Engineers
- This platform is not fitted with an ON/OFF switch. Before you access internal components, take the plug out of the socket to disconnect the power supply.
- Some of the components in the mechanical part could cause injuries, so wear suitable protection and proceed with caution.
- Always empty the appliance of all the water before laying it on its side.
- If the appliance has to be placed on its side for maintenance or another reason, lie it on its left side, to avoid the risk of any residual water falling onto the main circuit board.
- Always empty all the water from the condensation tank before laying the appliance on its side.
- Never place the appliance on its right side (electronic control system side): some of the water in the detergent dispenser could leak onto the electrical/electronic components and cause these to burn.
- When replacing the heating element, replace it with one that has the same characteristics (2 thermal fuses) in order not to compromise the safety of the appliance. NEVER remove/ switch the NTC sensors between heating elements.

Document Revisions

Revision	Date	Description
0.0	07/2017	Document creation

2 PURPOSE OF THIS MANUAL

The purpose of this Service Manual is to provide Service Engineers who are already familiar with the repair procedures with information regarding: **Washing Machines, Washer Dryers and Dryers**

fitted with **NIUX** electronic control systems.

The documents no.:

- **599 802-898** (Washing Machines and Washer Dryers)
- **599 794-731** (Dryers)

describe the basic functional concepts of all User Interface types designed for:

- POne
- Diamond

Such boards are separated from the main power board that controls the appliance and connected to the user interface board with dedicated communication line.

The compatible main boards are based on:

Washing Machine	EWX11	EWX13	EWX14
POne			x

Dryer	EDR12	EDR14	EDR16
POne			x

The manual deals with the following topics:

- General characteristics
- Control panel
- Guide to diagnostics
- Technical and functional characteristics
- Access

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4 PONE

4.1 SERIES 9 - LEVEL A

4.1.1 CONTROL PANEL

Here the application pictures:



4.2 SERIES 8 - LEVEL C

4.2.1 CONTROL PANEL

Here the application pictures:



5 DIAMOND

5.1 TC2 LEVEL

5.1.1 CONTROL PANEL

Here the application pictures:

WASHING MACHINE



DRYER



6 DIAGNOSTIC MODE AND CONNECTIVITY KEY COMBINATION

The SERIES 9 - LEVEL A user interface provides two ways to enter the main diagnostic modes:

- Pressing the **Service key combination** after machine switching on
- Selecting **Machine Settings** → **Service** menu and entering the proper pin code (SERIES 9 - LEVEL A only)

POne - DIAGNOSTIC MODE key combination highlighted in green

WASHING MACHINE

DRYER



Diamond - DIAGNOSTIC MODE key combination highlighted in green

WASHING MACHINE

DRYER



6.1 CONNECTIVITY KEY COMBINATION

The connectivity features available to user on control panels are about the Wi-Fi On/Off/Reset and Remote Start On/Off.

UI level	Wi-Fi				
	On	Off	Reset	Remote Start On	Remote Start Off
SERIES 9 - LEVEL A	Available in "Machine Settings" menu	Available in "Machine Settings" menu	Available in "Machine Settings" menu	Available in any cycle menu	Available in any cycle menu
SERIES 8 - LEVEL ...	6+5	6+5	6+5 for 5secs	5+4	5+4
DIAMOND - TC2	4+3	4+3	4+3 for 5secs	Delay and then Start	Delay and then Start

The first time that the user press the combination to turn Wi-Fi On, or after a Wi-Fi Reset, the onboarding procedure starts.

Connectivity features
Information

- The connectivity features are available when the Wi-Fi is turned on and has a successful boot
- Boot time for the NIUX is about 40 seconds
- The Wi-Fi can be reset after the NIUX boot is complete
- Remote Start is necessary in order to send commands from mobile device to a machine like Start / Pause / Stop. Otherwise only monitoring and changing a program and options without starting or pausing a machine is allowed.

7 CONNECTIVITY FUNCTIONS


7.1 ONBOARDING AND POWER ON

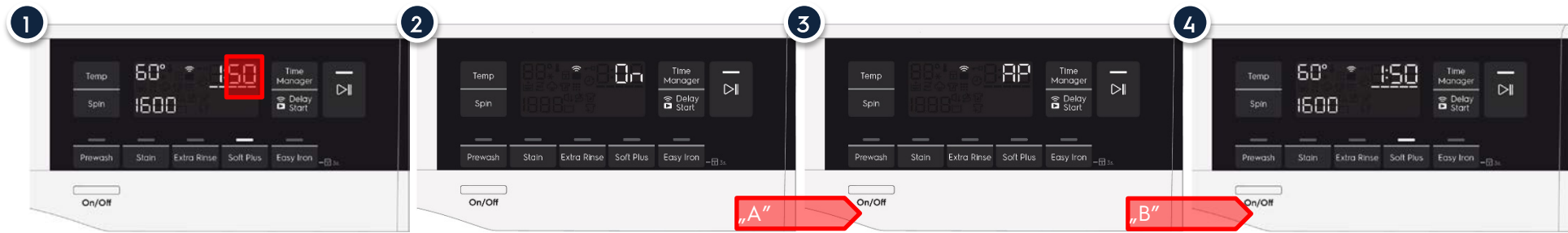
Onboarding is the procedure needed to enrol the machine into the user Wi-Fi network, storing the user network credentials inside the NIUX. After the first enrolment, the Wi-Fi turns on automatically connecting to the same Wi-Fi network.

In case the user changes the Wi-Fi network name or password, the Wi-Fi settings in the user machine has to be reset and the onboarding procedure has to be repeated. The screens of onboarding flowchart and possible paths:



- A** "Cancel" button pressed or connection time out
- B** NIUX boot is completed
- C** The onboarding in the App is completed

- 1 Tap on WiFi status "OFF" to turn on the Wi-Fi module
- 2 The NIUX is booting up, the Wi-Fi icon  is blinking
- 3 If the Wi-Fi module is turned on and the NIUX board boot is complete the UI is showing "Trying to connect to App"
- 4 If the onboarding with the mobile device using the App is completed the UI is showing the status "Connected!" and the signal strength
- 5 After tapping on "OK": the UI goes to the previous menu and the status of the Wi-Fi changes to "Connected!"



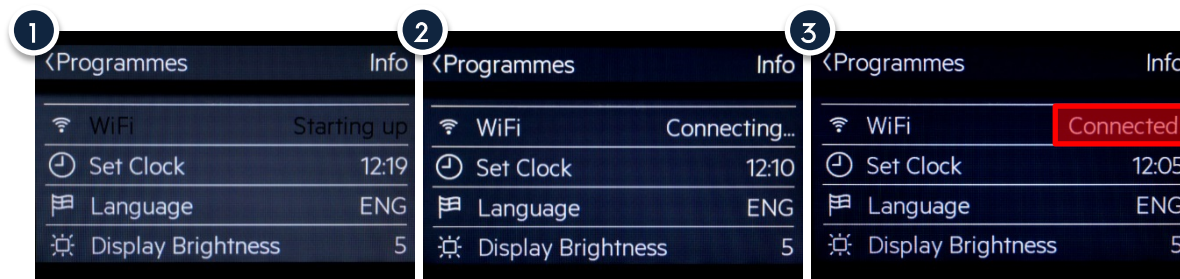
- A** NIUX boot is completed
- B** The onboarding in the App is completed

- 1 Key combination to enable Wi-Fi pressed
- 2 The NIUX is booting up, the Wi-Fi icon is blinking
- 3 Machine Access Point is open
- 4 Wi-Fi icon is on and steady

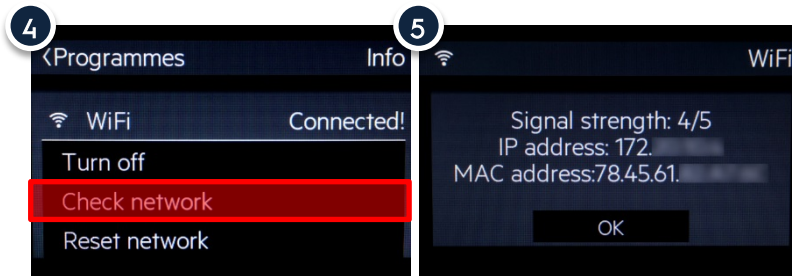
After the onboarding, each time the machine is switched on, the NIUX is powered by UI.

The NIUX boot phase (that lasts about 40sec), and the following network search phase (a few sec), are displayed:

- with the Wi-Fi icon blinking (S9 program summary/S8/TC2)
- with a string "Starting Up" and "Connecting" in S9 "Machine Settings" menu:



- 1 The NIUX is booting up, UI shows “WiFi Starting up”
- 2 The NIUX is trying to connect to the router used for onboarding, , UI shows “WiFi Connecting”
- 3 Procedure is completed. When the Wi-Fi network has been found and joined, the Wi-Fi icon is shown steady and UI shows “WiFi Connected!” in “Machine Settings”



- 4 Used to turn the WiFi Off or to Reset the network information (offboard). Enabled only in “Connecting” and “Connected” status by tapping on the text. During “Starting up” it does not appear
- 5 After tapping on “Check Network” the UI shows a popup with network information. If this happen during the “Connecting” phase, the “Signal Strength” and “IP address” fields will be empty showing 0/0 for signal and 0.0.0.0 and for IP address, as they depend on the router.

7.2 POWER OFF AND NETWORK RESET (OFFBOARDING)



NIUX Information

- The NIUX is switched OFF each time:
 - the machine is switched OFF
 - the machine is entering the Stand-Off mode
 On the next machine power ON, the NIUX is switched ON
- The network reset (Off-boarding) is used to clear the user network information from the NIUX. This operation can be performed after the NIUX boot is completed.

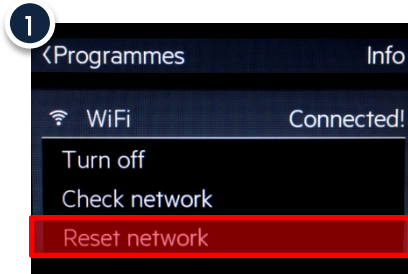
By pressing the Wi-Fi Off combination (or going to Wi-Fi option menu), the NIUX is switched OFF and remains off the next time the machine is turned on

To switch the NIUX ON again, the user has to press again the WiFi On combination (or “WiFi” submenu option).

If the Wi-Fi is off, any of the connectivity functions are unavailable.

For network reset the SERIES 8 and TC2 have specific key combinations, while in SERIES 9 this operation can be achieved tapping the “WiFi” submenu.

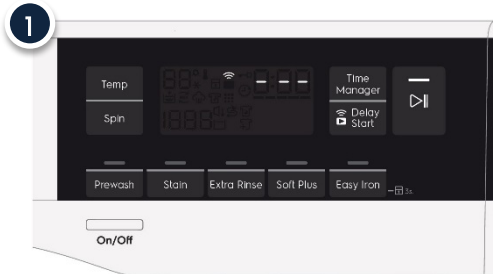
SERIES 9 - LEVEL A



1 To reset the network tap on the “Reset network” during the “Connecting” or “Connected” status of the Wi-Fi

SERIES 8 - LEVEL C

DIAMOND TC2



1 To reset the network keep pressing the key combination for the Factory Reset for 5 seconds. The TTE digits will display “- - -” for another 5 seconds, before returning to setup

8 WORKING HOURS COUNTER

After entering the Diagnostic Mode, the operator can display the total operating time for the appliance, which is counted from the moment the first cycle is started.

The unit can count up to a maximum of **6 550** hours of operating time.

- Only the operating time of normal programmes (and not diagnostic cycles) is counted
- The actual operating time for the cycle is counted (which does not include pauses, delayed start time, rinse hold time and soaking phases)
- The precision of the counter is 30 seconds per programme.
- Only whole hours of operation are counted (1hr and 59 min = 1hr)



Working hours

Entering working hours counter and display information

- Enter Diadnostic Mode
- Rotate the Hi-fi selector to position 13th for the Tumble Dryers, the 14th for Washing Machines and Washer Dryers. The displayed info is the same for both the appliance types.
- The thousands digit is showed only when value is over 999, the rule is valid for all platforms
- Examples:
15 = Hr 0 15
150 = Hr 1 50
1550 = Hr 15 50

This time is displayed in a single sequence for **POne Series 9 level A**. For example, if the operating time is 6,550 hours, the display will show the following sequence:

	Example	Display	
	The following digits are displayed: <ul style="list-style-type: none"> • Thousands - 6 • Hundreds - 5 • Tens - 5 • Units - 0 	Tumble Dryers <u>Position 13th</u>	Washing Machines, Washer Dryers <u>Position 14th</u>
POne			

9 DEMO MODE

In the shops and exhibitions sometime it could be necessary to show to the customer the machine behaviour in set-up condition and also during cycle execution. The duration of a cycle execution is in any case too long for a brief show.

The Demo works in two ways: one interactive mode and one automatic loop. The interactive mode enables the user to try the interface without activating the appliance. If no one has interacted with the interface for 3 minutes, or Start button hasn't been pushed, it proceeds to display an automatic loop instead, simulating the cycle execution only on display.

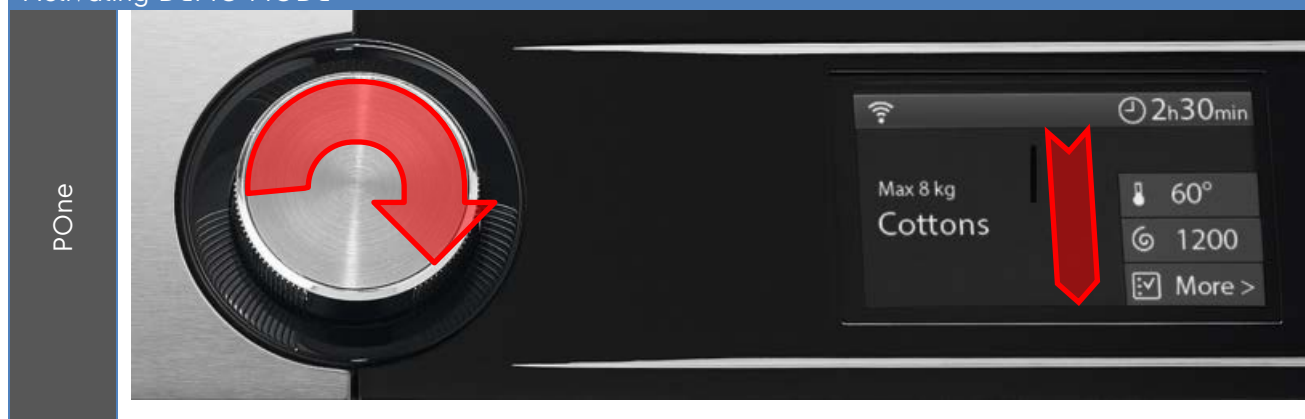
DEMO mode alters the execution of a cycle in such a way that these problems are avoided:

- In set-up state the machine behaviour is the same of the user mode one.
- During cycle execution all times are shorter.
- No water load/drain is executed: it means that if it's necessary to show machine running with water inside the drum, it's loaded by hand and never drained (no spin phases are executed in this case). All the user interface functionality is shown as in the normal condition (time to end ...).


For top-loader appliances, while DEMO mode is active, only set-up phase is available (START/PAUSE button is disabled), since without the porthole the motor moving can't be seen and so it is useless.

9.1 ENTERING DEMO MODE

Activating DEMO MODE

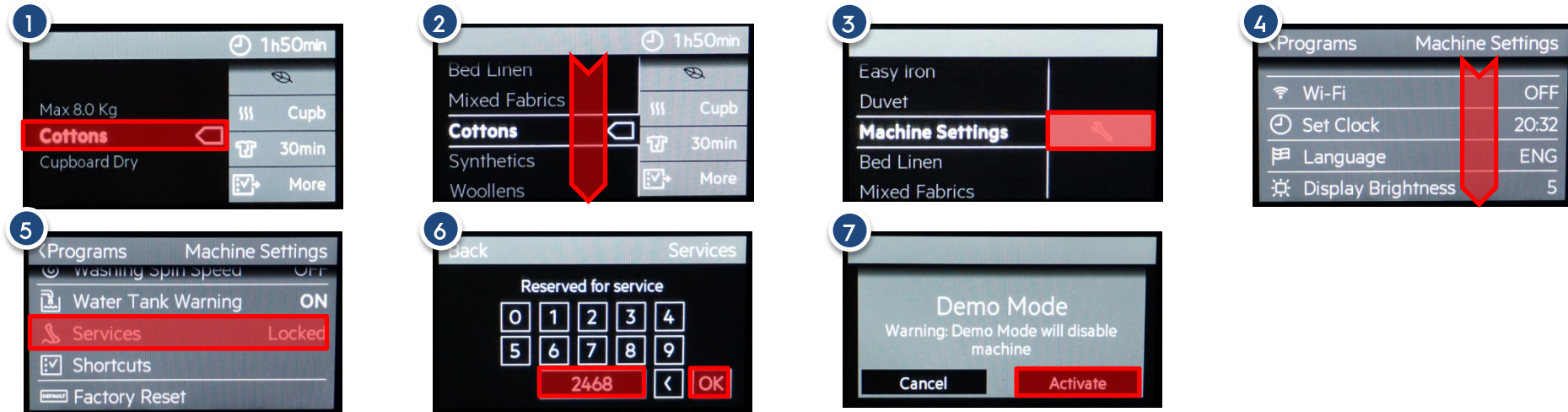




In case of POne A level, to enter the DEMO MODE:

- rotate the Hi-fi selector or swipe vertically on the touch screen (scroll the list up and down) until the **Settings** is selected
- Tap on settings symbol 
- Select **Services** and tap on it
- Enter DEMO MODE code **"2468"**
- Tap on **"OK"**
- Tap on **"Activate"**

To enter in this mode the procedure is the following:

- Switch on the machine via On/Off button (pressing for about 200msec, then release the button), and **do not press any other button**;
- Wait until **Logo appears** on display
 - ♯ *press the START/PAUSE key for about 200msec to skip Logo screen if you need to gain time (optional step)*
- Wait until **Program List screen appears** on display



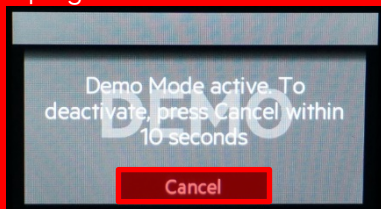
- 1 User interface starting screen. Tap on “Cottons” or rotate the Hi-fi selector clockwise
- 2 Swipe vertically down on the touch screen (scroll the list down) or rotate the Hi-fi selector clockwise until the option “Machine Settings” is selected
- 3 Tap on a settings symbol 
- 4 Swipe vertically down on the touch screen (scroll the list down) or rotate the Hi-fi selector clockwise until the option “Services” is selected
- 5 Tap on “Services”
- 6 Enter DEMO MODE code “2468” and tap on “OK”; in case a wrong code is typed in, tap on  to clear it
- 7 Tap on “Activate” to set the machine in DEMO MODE or tap on “Cancel” to go back to 6 .



Information

"DEMO mode"

- Once the DEMO mode is set, after each machine switching on DEMO mode is automatically recalled; this occurrence is signalled after the start-up by the steady text "DEMO" showed in background in all the screens
- The DEMO mode provides two ways to work: one interactive and one as a slide show.
- To exit the DEMO mode:
 - the machine has to be unplugged from mains net.
 - unplug machine from mains net and tap Cancel to confirmation popup screen showed at the next machine power on



The programs summary screen appears and DEMO text is no more showed in background.

The confirmation popup screen is showed for 10 seconds, if no action is taken the Demo mode remains active.

- ❖ follow the same procedure used to activate it: Settings → Service, code 2468 and OK; the programs list screen appears and DEMO text is no more showed in background

9.2 INTERACTIVE MODE

The interactive mode enables the user to try out the interface, selecting any program and option, without activating the appliance.

This mode is the default selected one when entering Demo mode; it remains active as long as the user interacts with UI, after 30 seconds of no interaction the mode switches to Slide Show.

Pressing Start/Pause keypad the machine starts the selected cycle, but its execution is performed in such a way that water and heating management are avoided:

- During cycle execution all times are shorter.
- All the user interface functionality is shown as in the normal condition (time to end ...).
- **Tumble Dryers:** no drying (heating) is executed.
- **Washing-machines:** no water load/drain and heating is executed: it means that if it's necessary to show machine running with water inside the drum, it's loaded by hand and never drained (no spin phases are executed in this case).

9.3 SLIDE SHOW MODE

The slide show mode is used to catch attention by showing a rolling sequence of slides, as a screen saver. The slides describe the features of the machine (technology, performance ...).

The slide show mode starts automatically after 30 seconds of no interaction by customer (no use of touch, no use of knob) in idle mode (before pressing Start/Pause keypad).

Each slide is showed for about 8 seconds, the last one is a popup screen asking whether the customer wants to try machine in interactive mode. Tapping YES the program list screen appears, tapping NO or after 5 seconds the show restarts from first slide (Brand Logo).

Also touching the display anywhere during the rolling slide show brings to the popup screen.

10 DIAGNOSTIC MODE


This mode is used in several conditions:

- In factory assembly line to perform a manual test of the machine functionality (final assembly test).
- By service people to check for faults and repair the machine.
- In the labs to check the right machine functionality.

10.1 ENTERING DIAGNOSTIC MODE, SERVICE KEY COMBINATION

As described before, to enter in this mode the procedure is the following:

- Switch on the machine via On/Off button (pressing for about 200msec, then release the button), and **do not press any other button**;
- Wait until **Logo appears** on display
- Press and hold for about 3 seconds the defined key combination (START/PAUSE and the closest one);
 - ☞ Within about 3 seconds the UI shall enter the diagnostic mode; the acknowledge of the operation is given by showing Diagnostic Test screen
 - ☞ in case after the Logo screen appears the program list, key combination has not been recognized: switch machine off by means of ON/OFF button and restart from the beginning


 Information Time to set "DIAGNOSTIC mode"	
Time	Aesthetic levels
3 sec	POne

10.2 ENTERING DIAGNOSTIC MODE, MACHINE SETTINGS > SERVICE

Activating SERVICE MODE

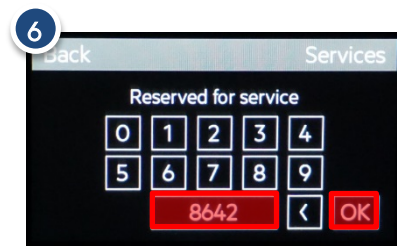
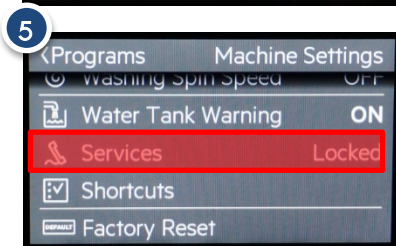
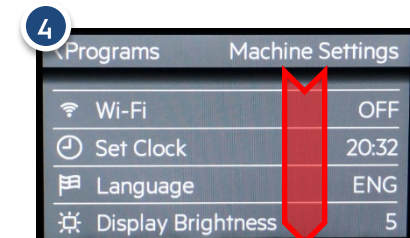
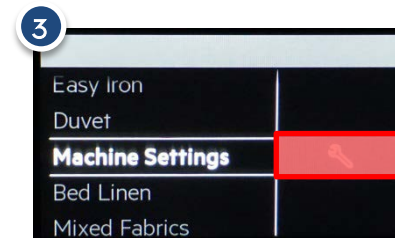
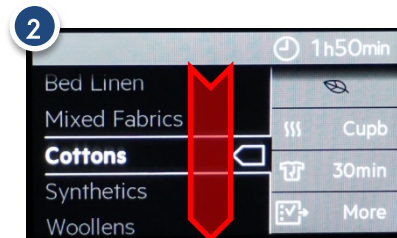
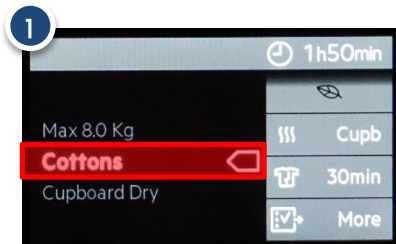




In case of POne A level, to enter the DEMO MODE:

- rotate the Hi-fi selector or swipe vertically on the touch screen (scroll the list up and down) until the **Settings** is selected
- Tap on settings symbol 
- Select **Services** and tap on it
- Enter SERVICE MODE code "8642"
- Tap on "OK"

To enter in this mode the procedure is the following:

- Switch on the machine via On/Off button (pressing for about 200msec, then release the button), and **do not press any other button**;
- Wait until **Logo appears** on display
 - ♯ *press the START/PAUSE key for about 200msec to skip Logo screen if you need to gain time (optional step)*
- Wait until **Program List screen appears** on display



- 1 User interface starting screen. Tap on **"Cottons"** or rotate the Hi-fi selector clockwise
- 2 Swipe vertically down on the touch screen (scroll the list down) or rotate the Hi-fi selector clockwise until the option **"Machine Settings"** is selected
- 3 Tap on a settings symbol 
- 4 Swipe vertically down on the touch screen (scroll the list down) or rotate the Hi-fi selector clockwise until the option **"Services"** is selected
- 5 Tap on **"Services"**
- 6 Enter service mode code **"8642"** and tap on **"OK"**; in case a wrong code is typed in, tap on  to clear it

After the Factory Service mode is entered, the following actions can be performed:

- test the user interface behaviour
- select the factory test cycles by means of encoder knob
- switch machine off by means of on/off button

The Service menu allows setting other diagnostic modes besides the Factory Service mode. Following the codes to activate all the available modes:

Mode	Code	Description
Service	8642	Machine testing by Factory and After Sales Service
Demo	2468	Demonstration mode for Shops/Exhibitions
Touch Screen Cursor	3579	Display of touch screen coordinates pointer
Touch Screen Test	9753	Touch screen testing by R&D



Information

"DIAGNOSTIC mode"

- If the key combination is recognised within 3 seconds since the machine was switched on (via On/Off button), a DIAGNOSTIC mode is entered
- To exit from DIAGNOSTIC mode it's sufficient to switch off the machine.
- According to the machine configuration, at the next machine switching on the electric test cycle may be activated. To stop it, switch off again the machine.

10.3 DIAGNOSTIC PROGRAM DEFINITION

Selecting the factory test cycles



In case of POne A level, to select the factory test cycles:

- rotate the Hi-fi selector

POSITION - TEST:

POSITION			TEST TYPE
WM	WD	TD	
1, 15	1, 15	1, 14, 15	User interface behaviour
2 - 10	2 - 10	2 - 9	Factory test cycles
11	11	10	Alarms check and reset
12	12	11	Electric test mode setting
13	13	12	Factory settings reset
14	14	13	Machine worked hours check



Information Test cycles

The test cycles are working only if:

- There is no communication error between main board and user interface.
- The machine is configured with a valid configuration (no configuration alarm).
- In case of PB-UI communication alarm, the only test available is the user interface test, because the user interface can be tested alone just supplying the +5/+12 Volts.
- Pressing together the key combination during one of the diagnostic cycles (from position 2 to 10) the machine will set in electric test mode at the next power on.
- Pressing together the key combination in the last alarm display position (11), the alarm codes that were stored in memory will be reset.
- Pressing another valid key combination (the ones configured for Child Lock, Extra Rinse...) during one of the diagnostic cycles (from position 2 to 10) the factory default settings are restored, that is:
 - disable permanent modes/options such as Child Lock, Extra Rinse, Buzzer;
 - clear memories for Series 9 level.

During the test the LCD will show some data concerning the cycle being performed. The details are explained in the following tables, which also specify, for each selector position, the purpose of the associated test, the components activated and the conditions under that the test is performed.

10.4 USER INTERFACE TEST

The purpose of the test is to check the functionality of the input/output of control panel. The **TFT display** and **backlight LEDs** are implicitly checked by the fact that the graphics (pictures, text, colours ...) is correctly displayed. The **Start/Pause LEDs** light on and off continuously alternating red and orange colour LEDs. Acting on actuators (knob, keys) the related feedback info is showed on display as follows:

Diagnostic Test		E83
Knob pos: 1	Knob code: h0A	
Key ON/OFF	OFF	
Key Start/Pause	OFF	
Key Mode	OFF	

Header: test type + alarm code (if present)

Knob/test position index + encoder code

On/Off button checked status

Start/Pause touchpad checked status

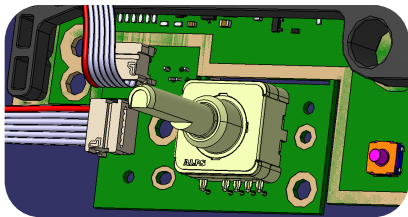
Mode touchpad checked status (only WD)

- **Knob pos** field identifies the index of test type position; does not refer to physical position of encoder, its value starts always from 1 at each start-up or after Service mode entering regardless of actual position of encoder shaft.

- **Knob code** field show the digital code (hexadecimal value) of physical position of encoder knob; the value is given by combination of 4 digital lines, valid values are:

Shaft Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Code	h07	h06	h0E	h0A	h02	h03	h0B	h09	h01	h00	h08	h0C	h04	h05	h0D

Position 1 corresponds to the reference one of encoder shaft, showed in below picture.



Total positions number is 15, the code **h0F** is given when all digital lines are sensed open (encoder switches in open circuit): such situation is a fault condition (flat cable disconnected, component failure ...), the alarm code **E83** appears on header line.

- **Key ON/OFF** field show the test status of On/Off button: OFF means still to be checked, OK means the button has been detected when pressed.

Remark: button has to be pressed with a very short timeout, about 120 msec, to perform the test, holding it longer for about 220 msec switches machine off and exits Service mode: in such a case the button is implicitly checked.

- **Key Start/Pause** field show the test status of Start/Pause touchpad: OFF means still to be checked, OK means the key has been detected when touched. In case of touch sensor fault the alarm code **E9E** appears on header line.
- **Key Mode** field show the test status of Mode touchpad present only on Washer & Dryer machine: OFF means still to be checked, OK means key has been detected when touched. In case of touch sensor fault the alarm code **E9E** appears on header line.

The **buzzer** is checked each time a key is pressed; a single short beep is played if key detected.

The **touch screen** can be checked simply touching the display: a cross shape cursor appears at the coordinates corresponding to the point where has been detected the touch. Moving the finger along the screen the cursor follows the drawn line.

Diagnostic Test	
Knob pos: 1	Knob code: h0A
Key ON/OFF	OFF
Key Start/Pause	OFF

The cursor remains displayed at the last touched point also when changing screen: to remove it from the screens not related to UI test (positions from 2 to 13) just touch the display.

10.5 FACTORY TEST CYCLES

The purpose of the test is to check the functionality of appliance, locate the defect area reported by a possible fault or alarm code signaled by the machine.

Selecting standard test cycles



In case of POne A level, to select the **standard test cycles**:

- rotate the Hi-fi selector

The header line specifies the running cycle type, the Start/Pause red LED is steadily lighted on

Selecting extended test cycles



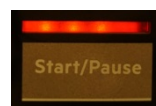
In case of POne A level, to select the **extended test cycles**:

- press Start/Pause

In pairing with some positions: the related info takes place in the display screen and the Start/Pause red LED is not anymore steady but flashes to identify the alternative test cycle

Water Load: WASH	E33
Knob pos: 2	Knob code: h0A
Water Level	0
Temperature	24

Standard cycle
LED steady



Extended cycle
LED flashing



Each time Start/Pause key is pressed the selected test cycle switches from standard to extended and vice versa, and machine restarts the just selected one.

In case an alarm occurs during the test cycle the related alarm code appears on right side of header line (for example "E33" in the below picture).

The test cycles are specific for each application, based on machine configuration.

Following paragraphs describe the feedback that is showed on display for each position, for more detailed info about components tested please refer to the Service specification of related electronic platform.

The grey colour text is showed only according to machine configuration specified by specific test description.

10.5.1 FACTORY TEST CYCLES - WASHING MACHINE / WASHER & DRYER

Position	Standard test	Extended test
2	Water load: Wash compartment	Water load: Salt box + pump activation (Water softener module)
3	Water load: Prewash compartment	
4	Water load: Softener compartment	
5	Water load: Third electro valve	
6	Water load: Fourth electro valve (hot water)	
7	Wash Heater / Weight sensor	Concentrated Wash pump
8	Spin at 250 rpm with water into the tub	
9	Drain, level sensor calibration and spin phase at maximum speed	
10	Drying loads for WD / Drum positioning for TL / Ultra Aqua Stop device / Water softener module	Connectivity NIUX board

The knob position and knob code values are always showed in all screens below the header line, since the encoder knob has no printed reference on control panel.

Remark: the knob code values indicated in below pictures have to be considered only as examples; any of the 15 possible values can be showed in that field of each test position.

Position 2 show info about water loading:

- the used electro-valve/drawer compartment "WASH" specified on Header line
- the water level expressed in mm
- the temperature of washing NTC expressed in Celsius degrees
- the sensor status of drying air filter compartment, only if open, for the WD HP

Water Load: WASH		E33
Knob pos:	2	Knob code: h0A
Water Level	0	
Temperature	24	
Condenser filter drawer open		

Only for WD HP

Position 2 (EXTENDED TEST) shows info about water softener:

- Water softener test specified on Header line
- the high (1) / low (0) level status of Density floater 1 on line two
- the high (1) / low (0) level status of Salt floater 2 on line three

Water Softener Test		E33
Knob pos:	2	Knob code: h0A
Float 1		HIGH
Float 2 - Salt		LOW



Positions from 3 to 6 show the same info about water loading as standard test position 2, changes only the used drawer compartment/electro-valve specified on Header line

Water Load: PREWASH		E33
Knob pos:	3	Knob code: h0A
Water Level	0	
Temperature	24	
Condenser filter drawer open		

Only for WD HP

Water Load: SOFTNER		E33
Knob pos:	4	Knob code: h0A
Water Level	0	
Temperature	24	
Condenser filter drawer open		

Only for WD HP

Water Load: 3rd ELV		E33
Knob pos:	5	Knob code: h0A
Water Level	0	
Temperature	24	
Condenser filter drawer open		

Only for WD HP

Water Load: 4th ELV		E33
Knob pos:	6	Knob code: h0A
Water Level	0	
Temperature	24	
Condenser filter drawer open		

Only for WD HP

Position 7 shows info about wash heating:

- heating test specified on Header line
- the water level expressed in mm
- the temperature of washing NTC expressed in Celsius degrees
- the status of condenser air filter compartment sensor, only if open, for the WD HP
- weight sensor test info not showed

Heating		E33
Knob pos:	7	Knob code: h0A
Water Level	55	
Temperature	24	
Condenser filter drawer open		

Only for WD HP

Position 7 (EXTENDED TEST) shows same info as standard test:

- no specific info to show for concentrated wash pump test
- Start/Pause red LED flashing (to indicate extended test)

Position 8 shows info about water leakage:

- spin with water test specified on Header line
- the water level expressed in mm
- the spin speed expressed in rpm
- the status of condenser air filter compartment sensor, only if open, for the WD HP

Spin with water		E33
Knob pos:	8	Knob code: h0A
Water Level	80	
Spin Speed	250	
Condenser filter drawer open		

Only for WD HP

Position 9 shows info about water draining and spinning:

- drain and spin test specified on Header line
- the water level expressed in mm
- the spin speed expressed in rpm
- the status of condenser air filter compartment sensor, only if open, for the WD HP

Drain and Spin		E33
Knob pos:	9	Knob code: h0A
Water Level	0	
Spin Speed	1450	
Condenser filter drawer open		

Only for WD HP

Position 10 shows info according to machine configuration: below are described separately the three cases.

Washing machine **Front loader**: show nothing except for header and knob info

- minus characters on Header line
- Ultra Acqua Stop device and water softener module test info are not showed

-----		E33
Knob pos:	10	Knob code: h0A

Washing machine **Top loader**: show info about drum positioning:

- Drum positioning test specified on Header line
- the drum speed expressed in rpm

Drum positioning		E33
Knob pos:	10	Knob code: h0A
Drum positioning		
Spin Speed	25	

Washer & Dryer: show info about drying:

- Drying test specified on Header line
- the temperature of upper (input for WD HP) air flow NTC expressed in Celsius degrees
- the temperature of lower (output for WD HP) air flow NTC expressed in Celsius degrees
- the temperature of capillary NTC expressed in Celsius degrees for the WD HP

Drying		E33
Knob pos:	10	Knob code: h0A
Ntc Input	0	
Ntc Output	0	
Ntc Capillary	0	

Only for WD HP

Position 10 (EXTENDED TEST) shows info about NIUX/Wi-Fi installation:

- NIUX Wi-Fi test specified on Header line
- the status of NIUX/Wi-Fi configuration/serialization
- the Wi-Fi signal strength expressed in 5 levels: 0 = no signal, 5 = full level signal

NIUX Wi-Fi test		E33
Knob pos:	10	Knob code: h0A
NIUX Off		
Signal strength:	0/5	



The NIUX/Wi-Fi status field is updated during the NIUX data configuration and serialization procedure done remotely by Factory Test equipment. The possible displayed values for NIUX/Wi-Fi status are:

- NIUX Off : NIUX switched off
- NIUX Starting up... : NIUX SW is booting
- Ready/Not Configured : Wi-Fi ready before serialization
- Configured/Not Installed : NIUX serialization successfully done, not installed
- Configured/Wi-Fi Off : configuration successfully done, Wi-Fi is off
- Configured/Installed : configuration done and installed
- NIUX Joined : configuration done, installed and connected

10.5.2 FACTORY TEST CYCLES - TUMBLE DRYER

Position	Standard test	Extended test
2	Condense Tank: Switch and Pump	
3	Counter Clockwise drum rotation + Steamer heat up for HP Steam TD	
4	Compressor cooling fan + Steam generation for HP Steam TD	
5	Clockwise drum rotation	
6	Compressor + Clockwise drum rotation	
7	Conductimetric sensor: drum open circuit	
8	Conductimetric sensor: drum short circuit	
9	Condense Tank Switch + Steamer emptying for HP Steam TD	Connectivity NIUX board

The knob position and knob code values are always showed in all screens below the header line, since the encoder knob has no printed reference on control panel.

Remark: the knob code values indicated in below pictures have to be considered only as reference examples.

Position 2 show info about water tank sensors:

- Water level sensor test specified on Header line
- the full/empty status of Condense Tank: values are "Tank..." while checking sensor, "Tank EMPTY" after tank has been sensed empty
- the full/empty status of Steam Tank for HP Steam TD: values are "Steam Tank: EMPTY" if no water present, "Steam Tank: FULL" if water present

Water level sensor	E21
Knob pos: 2	Knob code: h0A
Tank...	
Steam Tank: EMPTY	

Only for HP Steam TD

Position 3 show info about drum rotation and steamer:

- Drum dir. left test specified on Header line
- the temperature of NTC 2 (steamer) expressed in Celsius degrees for HP Steam TD
- the full/empty status of Steam Tank for HP Steam TD: values are "Steam Tank: EMPTY" if no water present, "Steam Tank: FULL" if water present
- the steamer system active for HP Steam TD

Drum dir. left	E21
Knob pos: 3	Knob code: h0A
Ntc2	24
Steam Tank: EMPTY	
Steamer ON	

Only for HP Steam TD
Only for HP Steam TD
Only for HP Steam TD

Position 4 show info about compressor and steamer:

- Compressor fan test specified on Header line
- the temperature of NTC 2 (steamer) expressed in Celsius degrees for HP Steam TD
- the full/empty status of Steam Tank for HP Steam TD: values are "Steam Tank: EMPTY" if no water present, "Steam Tank: FULL" if water present
- the steamer system active for HP Steam TD

Compressor fan	E21
Knob pos: 4	Knob code: h0A
Ntc2	24
Steam Tank: EMPTY	
Steamer ON	

Only for HP Steam TD
Only for HP Steam TD
Only for HP Steam TD

Position 5 show info about drum rotation and steamer:

- Drum dir. right test specified on Header line
- the temperature of NTC 1 (drum outlet for Traditional Condense or compressor for Heat Pump dryers) expressed in Celsius degrees
- the full/empty status of Steam Tank for HP Steam TD: values are "Steam Tank: EMPTY" if no water present, "Steam Tank: FULL" if water present

Drum dir. right	E21
Knob pos: 5	Knob code: h0A
Ntc1	24
Steam Tank: EMPTY	

Only for HP Steam TD

Position 6 show info about compressor and steamer:

- Compressor motor test specified on Header line
- for Traditional Condense show NTC2 (heater) drying temperature, however for Heat Pump dryers shows NTC2 (drum outlet) drying temperature, if the NTC2 is not mounted the NTC1 (compressor) temperature is expressed in Celsius degrees
- the full/empty status of Steam Tank for HP Steam TD: values are "Steam Tank: EMPTY" if no water present, "Steam Tank: FULL" if water present

Compressor motor		E21
Knob pos: 6	Knob code: h0A	
Ntc2	24	
Steam Tank: EMPTY		

Only for HP Steam TD

Position 7 show info about humidity sensor and steamer:

- Hum. sensor open test specified on Header line
- the open circuit status of humidity sensor: values are "Sensor..." while checking sensor, "Sensor OK" after sensor has been sensed open
- the full/empty status of Steam Tank for HP Steam TD: values are "Steam Tank: EMPTY" if no water present, "Steam Tank: FULL" if water present

Hum. sensor open		E21
Knob pos: 7	Knob code: h0A	
Sensor...		
Steam Tank: EMPTY		

Only for HP Steam TD

Position 8 show info about humidity sensor and steamer:

- Hum. sensor closed test specified on Header line
- the closed circuit status of humidity sensor: values are "Sensor..." while checking sensor, "Sensor OK" after sensor has been sensed closed
- the full/empty status of Steam Tank for HP Steam TD: values are "Steam Tank: EMPTY" if no water present, "Steam Tank: FULL" if water present

Hum. sensor closed		E21
Knob pos: 8	Knob code: h0A	
Sensor...		
Steam Tank: EMPTY		

Only for HP Steam TD

The NIUX/Wi-Fi status field is updated during the NIUX data configuration and serialization procedure

done remotely by Factory Test equipment.

Position 9 show info about water tank sensors and steamer:

- Water pumping out test specified on Header line
- the full/empty status of Condense Tank: values are "Tank..." while checking sensor, "Tank EMPTY" after tank has been sensed empty
- the full/empty status of Steam Tank for HP Steam TD: values are "Steam Tank: EMPTY" if no water present, "Steam Tank: FULL" if water present
- the steamer system active for HP Steam TD

Water pumping out		E21
Knob pos: 9	Knob code: h0A	
Tank...		
Steam Tank: EMPTY		
Steamer ON		

Only for HP Steam TD
Only for HP Steam TD

Position 9 (EXTENDED TEST) shows info about NIUX/Wi-Fi installation:

- NIUX Wi-Fi test specified on Header line
- the status of NIUX/Wi-Fi configuration/serialization
- the Wi-Fi signal strength expressed in 5 levels: 0 = no signal, 5 = full level signal

NIUX Wi-Fi test		E21
Knob pos: 9	Knob code: h0A	
NIUX Off		
Signal strength:	0/5	



The possible displayed values for NIUX/Wi-Fi status are:

- NIUX Off : NIUX switched off
- NIUX Starting up... : NIUX SW is booting
- Ready/Not Configured : Wi-Fi ready before serialization
- Configured/Not Installed : NIUX serialization successfully done, not installed
- Configured/Wi-Fi Off : configuration successfully done, Wi-Fi is off
- Configured/Installed : configuration done and installed
- NIUX Joined : configuration done, installed and connected

10.6 ALARMS CHECK AND RESET

The purpose of the test is to check the presence of alarm codes stored during the functioning of the appliance and optionally reset the last detected ones.

The appliance stops any running test cycle after selecting the alarm check position.

The test position is the 10th for the Tumble Dryers, the 11th for Washing machines (both WM/WD). The displayed info is the same for both the appliance types.

In case a new alarm occurs during the check, its code is showed on the right side corner of the header line. Once read, the last three alarms can be optionally reset touching the Reset Alarms button which changes colour (green) while pressed.

Alarm History		E33
Knob pos: 11	Knob code: h0A	
Last Alarm	E33	
Second Last Alarm	E91	
Third Last Alarm	E00	
Reset Alarms		

Alarm History		
Knob pos: 11	Knob code: h0A	
Last Alarm	E00	
Second Last Alarm	E00	
Third Last Alarm	E00	
Reset Alarms		

10.7 ELECTRIC TEST MODE SETTING

The purpose of the test is to optionally preset the Electric Test mode in order to let the machine start the factory Electric test cycle at successive power on.

Electric Test	E33
Knob pos: 12	Knob code: h0A
Set Electric Test	

This option is used at the discretion of assembly line staff when machine is configured to restart in normal user mode by default after the Factory Service mode.

The test position is the 11th for the Tumble Dryers, the 12th for Washing machines (both WM/WD). The displayed info is the same for both the appliance types.

The mode is preset by touching the Set Electric Test button which changes colour (green) while pressed.

10.8 FACTORY SETTINGS RESET

The purpose of the test is to check the Firmware version codes installed on PB and UI electronic boards and to optionally reset to factory default values the permanent options stored by customer during the use of appliance.

The test position is the 12th for the Tumble Dryers, the 13th for Washing machines (both WM/WD). The displayed info is the same for both the appliance types.

The options are reset by touching the Factory Reset button which changes colour (green) while pressed.

Factory Settings	E33
Knob pos: 13	Knob code: h0A
PB UI: WL130041	
UI FW: U1A90100	
Psoc FW: C1A10100	
Factory Reset	

Power Board Firmware version
User Interface Firmware version
Touch Pads device Firmware version

The reset options common to washing machines (both WM/WD) and tumble dryers are:

- Language: restored the default configuration
- Clock time: restart from 12:00
- Display Brightness: set to maximum level
- Memory programs: erased
- Connectivity: NIUX uninstalled (if already installed)
- Child Lock mode: deactivated
- Demo mode: deactivated
- Buzzer mode: restored the default configuration
- Options Shortcuts: deactivated

The reset options for washing machines (both WM/WD) are:

- Extra Rinse: deactivated extra rinses
- Softener: restored the default configuration
- Hot water inlet: restored the default configuration
- Liquid detergent use (TL only): restored the default configuration
- Detergent Dosing: restored the default configuration

The reset options for tumble dryers are:

- Full Water Tank Warning: activated
- Maximum Spin Speed: reset

10.9 MACHINE WORKED HOURS

Machine Worked Hours		E33
Knob pos: 14	Knob code: h0A	
Worked Hours:	0	
Cycles Counter:	0	

The purpose of the test is to check the amount of hours/cycles the appliance has worked during the machine life. Only the actual operating time of normal programmes (and not diagnostic cycles) is counted. The hours counter range is from 0 to 6550.

The test position is the 13th for the Tumble Dryers, the 14th for Washing machines (both WM/WD). The displayed info is the same for both the appliance types.

10.10 ALARMS

One of the main requirements of the diagnostic system is to be transparent to the final user except for some most common warning related to the door handling and water inlet and drain management.

To increase the flexibility of the system it was introduced the possibility to enable/disable the alarms display by the machine configuration in order to cover requirement as field test context, particular countries requirement ...

10.10.1 ALARMS DISPLAY IN DIAGNOSTIC MODE

Water Load: WASH	E33
Knob pos: 2	Knob code: h0A
Water Level	0
Temperature	24

The visualization of all possible alarm is enabled during diagnostic test/cycles and related full code is always shown regardless of the configuration.

In case an alarm occurs during the running test cycle the related alarm code appears on right side of header line (for example "E33" in the below picture).

The alarm code is shown in the format "E" + alarm family digit + alarm number digit.

Please note that, compared to all other UI aesthetic levels, all occurrences of "b" are not replaced by "H" (so for instance "Eb3" is not shown like "EH3") since there's no problem of mistaking the "6" symbol with "b" symbol as would be with standard 7-segment digit display.

10.10.2 ALARMS DISPLAY IN NORMAL USER MODE

In normal functioning mode, to final user are showed only the warnings that he is able to manage himself without the attendance of after sales service personnel.

These warnings are not considered permanent machine faults, but normally as temporary faults due to carelessness of the user. Such warnings are for example:

- door porthole not properly closed
- clogged draining filter (WM/WD)
- water tap closed (WM/WD)
- detergent over dosing (WM/WD)

There are also other alarms that stop machine and cannot be managed by the final user, that are requested to be shown as warnings:

- water leakage (managed by Aqua Control System in WM/WD)
- low mains voltage/irregular mains frequency
- software configuration
- no communication between User Interface board and Power board

All the other warnings are not showed to final user because in many cases they are "false alarms" due to temporary abnormal conditions that the user sometimes neither notices and that could be simply solved switching off the machine. The main target is to avoid increasing the Service Call Rate.

The final user needs to go through instruction booklet to recognise a machine fault condition and try to solve it following the suggested sequence of actions.

The **last alarm display mode**, used to check the three most recent alarms stored in memory, is not available on level A UI as in all other UI aesthetic levels since there's no possibility to have a key combination to be pressed runtime to recall it.

When an alarm is detected and has to be notified to customer, Level A UI shows the related warning by means of a popup screen with a text description specific for each alarm type.

The buzzer sounds (also if deactivated by customer via Settings menu) with a specific sequence of three short beeps about every 20 seconds for maximum 5 minutes, but not in case of mains voltage/frequency alarms (EHx family code) or some belonging to EFx family like detergent over dosing.

For the most part of warnings (E1x, E2x, E4x family codes), the alarm condition puts the machine in pause state with Start/Pause button LED blinking continuously.


For warnings belonging to E9x family code (communication failure between electronic boards or wrong configuration) if failure repeats after unplugging/plugging machine, after sales service needs to be contacted.

Auto Stand-by mode is disabled in case of alarm presence only for warnings that are showed to the customer.

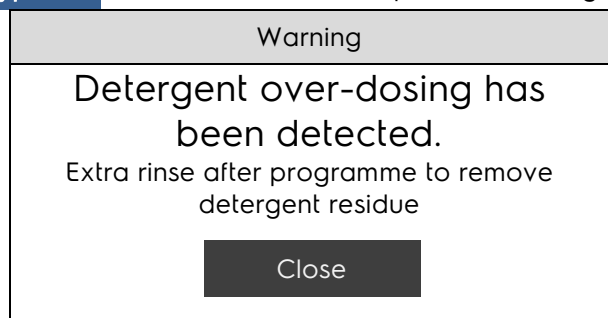
After the problem has been solved, if cycle was already started, to clear the warning notification in most cases it's enough pressing Start/Pause key: the warning message popup disappears, the buzzer stops playing warning melody and the cycle restarts (**Type B**).

In some cases if warning is given at the end of the cycle, like for instance the detergent over dosing, to clear notification screen the Close button on display has to be touched (**Type C**).

The warning notification screens can be of four types as showed by following examples:

Type A	Alarms that stop machine	Type B	Alarms that stop the cycle already started, machine in pause
<p data-bbox="412 1126 568 1153">Warning E91</p> <p data-bbox="206 1219 777 1321">Error. Try restarting the machine. Switch the machine off and on again to clear the error</p>	<p data-bbox="813 1117 1099 1166">Header: Warning + alarm code</p> <p data-bbox="813 1174 1077 1313">Main text message describing the problem</p> <p data-bbox="813 1230 1081 1313">Secondary message describing the action to be taken</p>	<p data-bbox="1406 1126 1509 1153">Warning</p> <p data-bbox="1182 1174 1733 1254">Check that the door is properly closed.</p> <p data-bbox="1301 1262 1615 1289">Press Start to begin cycle</p>	<p data-bbox="1780 1117 2067 1166">Header: Warning without alarm code</p> <p data-bbox="1780 1174 2045 1313">Main text message describing the problem</p> <p data-bbox="1780 1230 2049 1313">Secondary message describing the action to be taken</p> 

Type C Alarms that do not stop machine but give only a notification



Header: Warning without alarm code
Main text message describing the problem
Secondary message describing the action to be taken
Confirmation button to tap to close screen

Type D Reminder, warnings at cycle end



Warning message (scrolling if too long)

10.10.3 ALARMS DISPLAY - WASHING MACHINE / WASHER & DRYER

Following the list of faults that are notified to customer when detected, in case the related alarm is configured as visible to final user:

Code	Meaning	Screen Layout	Displayed Text	Displayed Code	Buzzer Melody
E11,E12	water loading timeout	Type B	Check that the water inlet tap is open. Press Start to resume cycle	N	Y
E21,E22	water draining timeout	Type B	Check that the drain filter is not clogged. Press Start to resume cycle	N	Y
E41	door locking timeout	Type B	Check that the door is properly closed. Press Start to begin cycle	N	Y
EF2	detergent overdosing	Type C	Detergent over-dosing has been detected. Extra rinse after programme to remove detergent residue	N	N
EF3	Aqua Control sensor: water leakages	Type B	A water leak has been detected. Automatic safety water draining activated	N	Y
EF5	unbalanced laundry load	Type C	Unbalanced laundry load has been detected. Spin skipped	N	N
EB1+EB3	mains supply	Type B	The mains voltage supply is unstable. Programme will continue when electricity supply is stable	N	N
E91	PB-UI communication	Type A	Error. Try restarting the machine. Switch the machine off and on again to clear the error	E91	Y
E92+E94	wrong configuration	Type A	Error. Try restarting the machine. Switch the machine off and on again to clear the error	E92+E94	Y
Others ⁽¹⁾	-	Type A	Error. Try restarting the machine. Switch the machine off and on again to clear the error	Ex0	Y

⁽¹⁾ All other alarms show the generic message that invites to switch the machine off and on to try clearing the conditions that bring to possible “false” alarm: if the fault is real, and not just a temporary problem, the alarm warning will be raised again. The displayed code shows only the alarm family code.

Some warnings notified to customer are not associated to any alarm code, they are displayed when occur during the cycle but they are not registered in the alarm history.

Warning	Screen Layout	Displayed Text	Buzzer Melody
Drying air filter drawer open (for WD HP only)	Type B	Check the air filter Press Start to resume cycle	3 short beeps played once

Some warnings are notified to customer as reminders to invite performing an action before starting with next cycle. They are displayed at cycle end on footer line bar as fig. 6.4 and are not registered in the alarm history. Messages are:

Displayed Text	Meaning
Top up salt	Salt floater sensor active (container empty), advice to refill salt (Water Softener machine only)
Clean the primary air filter	Advise to clean primary drying filter, given every cycle end (WD HP only)
Clean both air filters	Advise to clean both drying filters, given every “n” cycles (WD HP only)
Suggested load exceeded	Laundry amount over the suggested max load (detected during washing phase), cycle executed with reduced performance (WD only without weight sensor)

10.10.4 ALARMS DISPLAY - TUMBLE DRYER

Following the list of faults that are notified to customer when detected, in case the related alarm is configured as visible to final user:

Code	Meaning	Screen Layout	Displayed Text	Displayed Code	Buzzer Melody
(2)	door open	Type B	Check that the door is properly closed. Press Start to begin cycle	N	N
EB1+EB3	mains supply	Type B	The mains voltage supply is unstable. Programme will continue when electricity supply is stable	N	N
E91	PB-UI communication	Type A	Error. Try restarting the machine. Switch the machine off and on again to clear the error	E91	Y

E92+E94	wrong configuration	Type A	Error. Try restarting the machine. Switch the machine off and on again to clear the error	E92+E94	Y
Others (1)	-	Type A	Error. Try restarting the machine. Switch the machine off and on again to clear the error	Ex0	Y

⁽¹⁾ All other alarms show the generic message that invites to switch the machine off and on to try clearing the conditions that bring to possible “false” alarm: if the fault is real, and not just a temporary problem, the alarm warning will be raised again. The displayed code shows only the alarm family code.

⁽²⁾ Fault condition is not detected as an alarm; no code is stored in alarm history.

Some warnings notified to customer are not associated to any alarm code, they are displayed when occur during the cycle but they are not registered in the alarm history.

Warning	Screen Layout	Displayed Text	Buzzer Melody
water condense tank full	Type B	Empty the water container Press Start to resume cycle	N
no laundry inside drum	Type B	Check the laundry load Press Start to resume cycle	N
steam tank empty	Type B	Fill the steam tank with water Press Start to resume cycle	N
steam tank full when refilling water	Type B	Steam Tank is full Press Start to resume cycle	1 long beep played once

Some warnings are notified to customer as reminders to invite performing an action before starting with next cycle. They are displayed at cycle end on footer line bar as fig. 6.4 and are not registered in the alarm history. Messages are:

Message	Displayed Text	Meaning
1	Empty the water container	Advice to empty the water condense tank, given every cycle end
2	Clean the lint filter	Advice to clean filters, given every cycle end. In HP Steam TD refer also to steam filter cleaning
3	Fill the steam tank with water	Advice to refill steam container, given every cycle end (HP Steam TD only)
4	Clean the heat exchanger area	Advice to clean heat exchanger area, given every “n” cycles
5	Clean the steam filter	Not showed, this remind is included in message 2 (HP Steam TD only)

The first three reminders above can be also showed together by alternating 2 or 3 of them, the possible combinations are:

- default case: messages 1 + 2
- HP Steam TD with water condense tank warning enabled: messages 1 + 2 + 3
- HP Steam TD with water condense tank warning disabled: messages 2 + 3

11 WIFI TEST IN DIAGNOSTIC MODE

In Diagnostic mode it is possible for the Service to test the Wi-Fi module. The behaviour of the NIUX and of the antennas is configured by software (CCF), except for the “UI LEDs and buttons test” position, where the NIUX is not powered.

Knob position		TEST SETUP	NIUX status	Feedback on UI	note
TD	WM				
1	1	UI test of LEDs and button	UI turns NIUX completely OFF	-	-
2-9.1	2-10.1	Various tests	NIUX is powered, antennas turn ON after boot completes	S8 / Diamond UI: NIUX status displayed on Wi-Fi icons	-
9.2	10.2	NIUX configuration	NIUX is powered, antennas turn ON after boot completes	S8 /Diamond UI: NIUX status displayed on Wi-Fi icons S9 UI: UI shows serialization status (“not serialized” or “OK”)	(“extended diagnostic” position) pressing Start the machine toggles between: ▪ TD 9.1 and 9.2 ▪ WM 10.1 and 10.2
10	11	Last Alarm	NIUX holds its status from previous position	-	i.e. coming from position 9 antennas stay ON, coming from position 12 NIUX stays OFF
other	other	UI test of LEDs and button	UI turns NIUX completely OFF	-	-

Specifically the “NIUX Configuration” position can be accessed by pressing Start button in knob position 9 (TD) or 10 (WM).

The information displayed are about the knob position, NIUX status, and its signal strength (which is meaningful only when the WiFi is joined to a network).

Different NIUX status are managed by the different UIs. As the possibilities are several, for S8 and TC2 are used the combination of WiFi and Remote Start icon:

NIUX situation	One S8 – Diamond TC2		One S9		Notes
	WiFi icon	Remote Start icon	TD	WM	
NIUX off	Off	Off	NIUX WiFi Test Knob pos: 9 Knob code: h0A Configured/WiFi Off Signal strength: 0/5	NIUX WiFi Test Knob pos: 10 Knob code: h06 Configured/WiFi Off Signal strength: 0/5	
Starting Up	Blinking	Off	NIUX WiFi Test Knob pos: 9 Knob code: h00 NIUX Starting up... Signal strength: 0/5	NIUX WiFi Test Knob pos: 10 Knob code: h04 NIUX Starting up... Signal strength: 0/5	
Boot complete, not serialized or serialization in process (at the factory)	Blinking alternatively		NIUX WiFi Test Knob pos: 9 Knob code: h00 Ready/Not configured Signal strength: 0/5	NIUX WiFi Test Knob pos: 10 Knob code: h04 Ready/Not configured Signal strength: 0/5	Could be possible only at the factory, as the NIU is not in Service mode nor serialized
Serialized	Slow Blinking	Off	NIUX WiFi Test Knob pos: 9 Knob code: h0E Configured/Not Installed Signal strength: 0/5	NIUX WiFi Test Knob pos: 10 Knob code: h06 Configured/Not Installed Signal strength: 0/5	This is the correct message for a machine at the factory after serialization, or at customer house if machine is not onboarded

Serialization Error or timeout	Alarm Code displayed on digits				
Serialized with network credential (i.e. at customer house)	Slow Blinking	Steady On			This is the correct message for a machine at the customer house if machine is onboarded, but router is switched off
Serialized, with network credential and connected to the router (i.e. at customer house)	Steady On	Off			This is the correct message for a machine at the customer house if machine is onboarded, and router is on
Bootling error, wiring between UI and NIUX board defective					

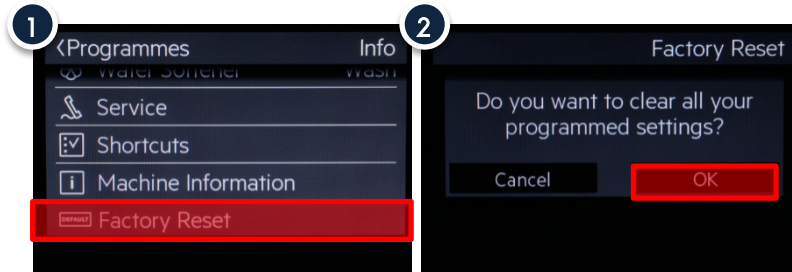
12 FACTORY RESET



Information

"Factory Reset"

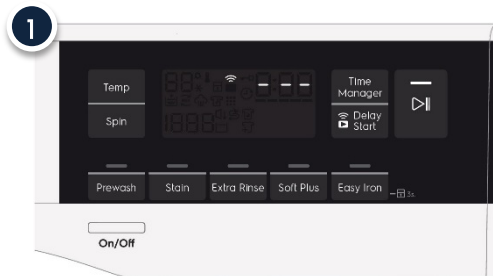
- The Factory Reset command from local UI clears some of the machine parameters, including the Wi-Fi status and the network parameter
- From local UI it is available for customer only on SERIES 9 - LEVEL A
- In case of SERIES 8 - LEVEL C and DIAMOND TC2 it is available only for Service by entering the Diagnostic Mode and then pressing a specific key combinations for Factory Reset
- **If this command is performed while the Wi-Fi is booting up or switched off, the network parameter contained inside NIUX will not be erased.** Therefore, when the customer will turn the NIUX on again, it will try to reconnect to the local area network memorized inside NIUX. The customer, if needed, can cancel this operation and reset the network settings activating as described in the paragraph [7.2 POWER OFF AND NETWORK RESET \(OFFBOARDING\)](#)



- 1 In order to perform factory reset to default go to "Settings" and tap on "Factory Reset"
- 2 Confirm the operation by tapping on "OK"

SERIES 8 - LEVEL C

DIAMOND TC2



- 1 In order to perform factory reset go enter Service Mode and keep pressing the key combination for the Factory Reset for 5 seconds. The TTE digits will display "- -" for another 5 seconds, before returning to setup

1.1.1 OTHER CASES OF ERASING MACHINE PARAMETERS

Other situations to be considered that affects the Wi-Fi status, or general UI parameter, are:

- new mainboard installation that has a new MCF
- performing test cycles in the Diagnostic Mode
- Factory Reset command from local UI (SERIES 9 – LEVEL A only) or in the Diagnostic Mode



Information

“NIUX network parameters”

- After entering the Diagnostic Mode, the network parameters are not cleared from NIUX
- To clear the network parameters NIUX has to be ON and:
 - in case of SERIES 8 of DIAMOND TC2 the Factory Reset buttons combination is pressed
 - in case of SERIES 9 in the Diagnostic Mode position 12 for TD or 13 for WM/WD the “Factory Reset” button is pressed
- Serialization data of the machine cannot be erased

UI data: language, time, brightness, chime volume, child lock

PB data: pressure sensor calibration, extra rinse default, demo mode

Events	Consequences							
	Erase of UI data		Erase of PB data		Offboarding CMD sent to NIUX		Reset of NIUX flags (Wi-Fi stays off)	
	S9	S8 / TC2	S9	S8 / TC2	S9	S8 / TC2	S9	S8 / TC2
New MCF received	x	x	-	-	-	-	x	x
Performing of the Diagnostic Mode	x	x	-	-	-	-	x	x
Factory Reset to default in submenu	partial (except language, time, initial setup menus)	x	-	x	x*	x*	x	x
Factory Reset to default command in Diagnose Mode	x	N/A	x	N/A	x*	N/A	x	N/A

*unsuccessful if NIU is OFF or still booting

13 TOUCH SCREEN CURSOR

This mode is used by R&D labs to perform a visual test of the display touch.

Touching the display a cross shape cursor is drawn at the coordinates corresponding to the point where the touch has been detected. Moving the finger along the screen the cursor follows the drawn line and remains displayed at the last detected point before lifting the finger.

The cursor mode is useful to monitor the reliability of touch screen device such as:

- signal detection calibration: touching the screen can be mapped the areas where the signal is stronger/weaker;
- environmental conditions sensitiveness: monitoring the cursor position can be analyzed the conditions that affect the device and cause false touch detections

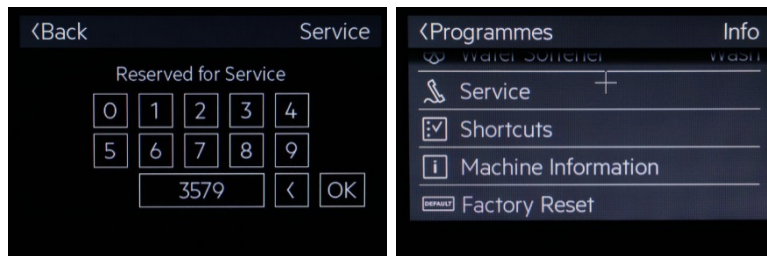


Information

"TOUCH SCREEN CURSOR mode"

- To enter in TOUCH SCREEN CURSOR mode follow the procedure described in 10.2
- After having entered the code **3579** and tapped OK, the cursor appears at the successive touch.
- To exit TOUCH SCREEN CURSOR mode tap on  in the keyboard screen or unplug the appliance
- Switching machine off and on via the On/Off button does not reset the mode.

Here some examples how the cursor is showed:



13.1 TOUCH SCREEN TEST

This mode is used by R&D to perform a deeper test of the display touch. It is used to analyse more in detail the touch signals, the noise level, the device faults. Moving the encoder knob four screens with different test types can be selected:

- 1) monitor of measured reference signals: the displayed numbers and colours show the signals level
- 2) touch device operating status: summary of communication protocol errors, number of calibrations or device reset procedures, etc.
- 3) touch device self-test: the result of an internal HW test of the device is showed

4) monitor of measured noise level: summary of noise levels and thresholds

The data of above tests can be evaluated only by R&D staff. However in case of need the Service people can run the test and send the data report to R&D for problem investigation.



Information

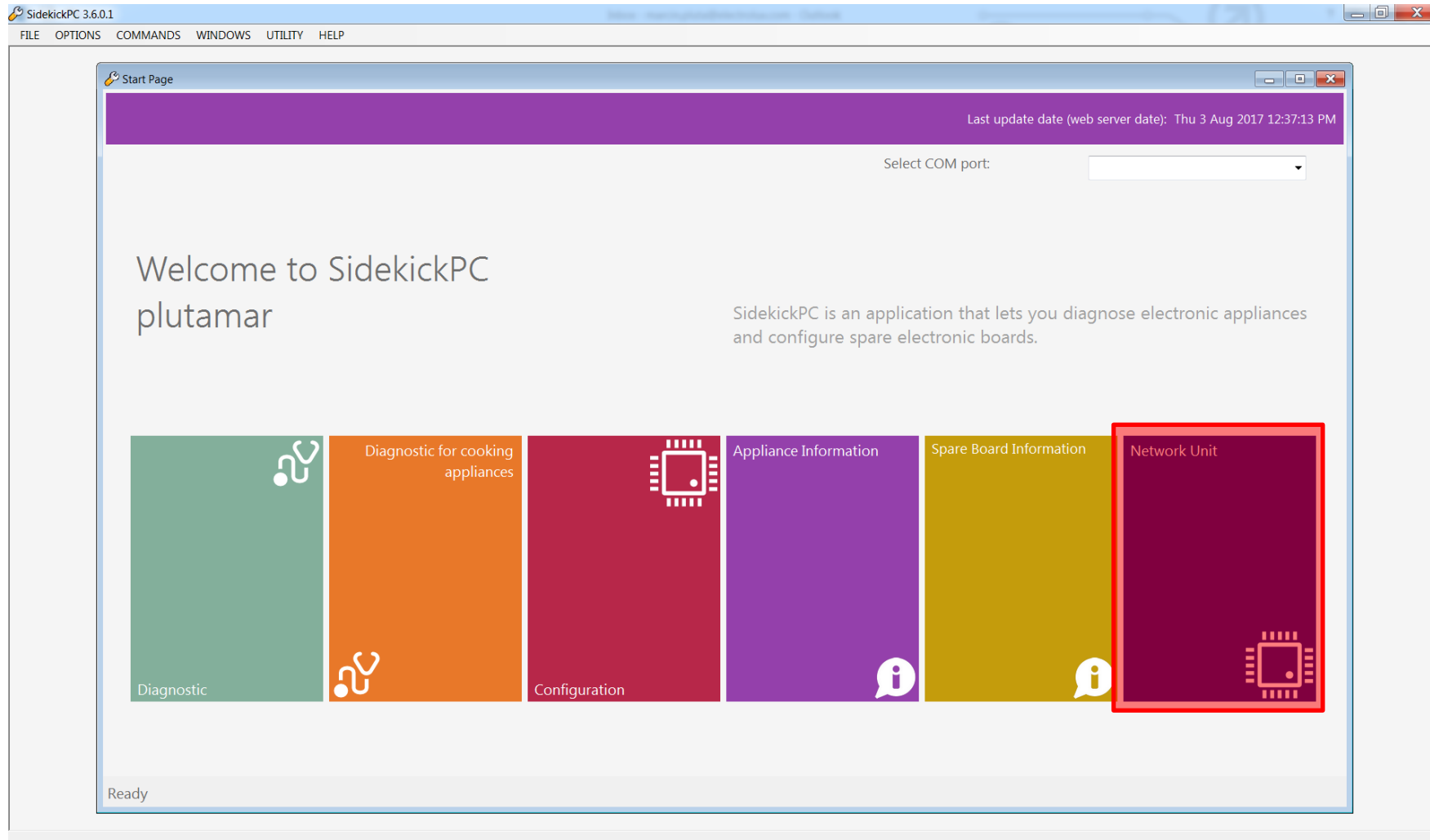
"TOUCH SCREEN TEST mode"

- To enter in TOUCH SCREEN TEST mode follow the procedure described in 10.2
- To exit TOUCH SCREEN TEST mode switch machine off via the On/Off button or unplug the appliance.

14 SIDEKICKPC

14.1 SPARE NETWORK UNIT MANAGEMENT

The new **Network Unit** command in SidekickPC provides the functions for preparing spare network boards before the installation in the appliance.



After selecting the **Network Unit** command, the corresponding dialog box appears with possible operations:


- **Associate Appliance**
- **Serialize Appliance with Wi-Fi**
- **Serialize Appliance with Cable**


SidekickPC

Network Unit

Enter the MAC address of both the original and spare network units and the PNC, ELC, and Serial Number (SN) of the appliance to ASSOCIATE THE APPLIANCE with the spare network unit.
You should ALWAYS associate the appliance before installing a spare network unit. Appliance association is necessary in order to allow the secure connection to remote servers.
Press "Associate Appliance" to associate the PNC/ELC/SN with the network unit.

Enter the MAC address of the spare network unit and the PNC, ELC, and Serial Number (SN) of the appliance to manually SERIALIZE THE APPLIANCE.
Before the serialization, unplug the appliance from the mains power supply and install the new spare boards.
Turn on the appliance, turn on the network board, wait for about 40 seconds and then press "Serialize Appliance" and

MAC address original Network 

MAC address spare Network 

PNC:

ELC:

Serial Number:

Associate Appliance Serialize Appliance with Wifi Serialize Appliance with Cable

14.2 APPLIANCE ASSOCIATION



Information

"APPLIANCE ASSOCIATION"

- Appliance association is required for security reasons, this operation allows the appliance to securely connect to remote servers.
- The appliance is identified by means of the PNC, ELC and Serial Number.
- Before installing a spare network unit it always has to be associated to the appliance where it will be installed.
- The computer must be connected to the internet when this operation is executed, since the process is updating information in the remote Sidekick servers.
- The MAC address of the original spare network unit is requested in order to prevent manual errors.

APPLIANCE ASSOCIATION:

- lets to associate a spare network unit, identified by means of the MAC address, to the appliance where it is going to be installed.
- requires the insertion of all fields in the dialog box.

In order to avoid manual insertion errors, the software provides a couple of useful functions that you can use to get information that you may miss:

- get the MAC address of the network unit currently installed in an appliance;
- get the PNC, ELC and serial number of the appliance starting from the MAC address of the network unit.

14.2.1 MAC ADDRESS OF THE NETWORK UNIT FROM PNC, ELC AND SERIAL NUMBER

1

MAC address original Network

MAC address spare Network


PNC: 160001609

ELC: 00


Serial Number: 9900000

1 To get the MAC address of the NIU currently installed in an appliance, insert the PNC, ELC and serial number and press the command button at the right side of the PNC field (when this operation is executed the computer must be connected to the internet).

2

MAC address original Network 

MAC address spare Network

PNC: 


ELC:

Serial Number:

2 The MAC address field is populated with the corresponding piece of information after the button was pressed (described in step 1) to get the MAC address of the NIU.

14.2.2 PNC, ELC AND SERIAL NUMBER FROM THE MAC ADDRESS

1

MAC address original Network 

MAC address spare Network


PNC:

ELC:


Serial Number:

1 To get the PNC, ELC and serial number of the appliance starting from the MAC address of the currently-installed network unit, insert this value in the corresponding field and press the command button at the right side of the field (when this operation is executed the computer must be connected to the internet).

2

MAC address original Network 

MAC address spare Network

PNC: 

ELC:

Serial Number:

2 The PNC, ELC, and Serial Number fields are populated with the corresponding pieces of information after the button was pressed (described in step 1).

14.2.3 ASSOCIATE APPLIANCE





Information


“MAC address spare Network”

- Appliance Association requires the manual insertion of the MAC address of the spare network unit that is going to be installed.
- Before executing the command, please double-check if the inserted MAC address is correct. If the value is wrong the operation will not succeed.

1

MAC address original Network: 7845611FBB6F 

MAC address spare Network: 78456182A85D 

PNC: 160001609 

ELC: 00

Serial Number: 9900000

Associate Appliance | Serialize Appliance with Wifi | Serialize Appliance with Cable

1 When the inserted value is correct, select the “Associate Appliance” command when this operation is executed the computer must be connected to the internet).

This operation updates information about this appliance in Electrolux remote servers.

2 If the operation succeeds, the “Success” message appears in the text box.

3 The system prevents user from defining one invalid MAC address that does not belong to a valid spare board.

In this case the software issues an error and the “Failed” message appears in the text box.


2


Associating Appliance ...


Success

Associate Appliance | Serialize Appliance with Wifi | Serialize Appliance with Cable

3

MAC address original Network: 

MAC address spare Network: 

PNC: 

ELC:

Serial Number:

Associating Appliance ...
Mac Address: 78456182A85D, not found.
Failed

Associate Appliance Serialize Appliance with Wifi Serialize Appliance with Cable

14.3 SERIALIZATION



Information

"Appliance Serialization"

- This operation normally occurs in the factory during manufacturing. Appliance serialization data are replicated from the network board to at least one internal module
- In Fabric Care appliances, serialization data are replicated from the **NIUX** module to both the **Main Board** and the **User Interface**.
- Serialization data in spare boards is of course missing. When you replace one or two of the above boards, serialization data is copied to the spare boards when you first turn on the NIUX unit after installation. This process is called **automatic serialization**.
- Appliance Serialization consists in storing in the internal electronic unit(s) the information on appliance identity (PNC, ELC and Serial Number)
- In Fabric Care appliances manual serialization is required when you replace the **NIUX** module, the **Main Board** and the **User Interface** at the same time
- Manual serialization of an appliance is only possible after the execution of the Appliance Association for the same appliance.

If it is necessary to replace at the same time the NIUX module and all internal boards that store the identity of the appliance, the serialization process must be executed.

This is the so-called “**Manual Serialization**” of the appliance.

Currently manual serialization of Fabric Care appliances occurs with the DAAS interface. Therefore the “**Serialize Appliance with Cable**” command must be used. In future, Fabric Care appliances will support the serialization through the Wi-Fi interface.

14.3.1 MANUAL SERIALIZATION

- 1 Disconnect the appliance from the mains power supply
- 2 Using SidekickPC configure the spare main board appliance before installing it
- 3 Replace the main board, the user interface and the network unit
- 4 Connect the AMI to the PC and to the main board (see next slides for details)
- 5 Turn the appliance on

6

MAC address original Network

MAC address spare Network

PNC:

ELC:

Serial Number:

- 6 Select the MAC address of a spare unit that you have previously associated. You can use the selection list that shows all the associations that you have executed previously. This operation automatically fills-in the remaining fields: PNC, ELC and Serial Number

7

MAC address original Network

MAC address spare Network

PNC:

ELC:

Serial Number:

- 7 The selection of the **MAC address** of the spare unit automatically fills-in the remaining fields that are required for this operation: PNC, ELC and Serial Number

8

MAC address original Network

MAC address spare Network

PNC:

ELC:

Serial Number:

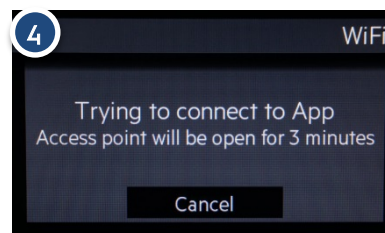
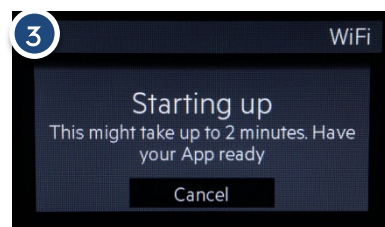
Serializing Appliance ...
 Writing PNC: 160001609 (OK)
 Writing ELC: 0 (OK)
 Writing SN: 99900000 (OK)
 Success

Associate Appliance Serialize Appliance with Wifi **Serialize Appliance with Cable**

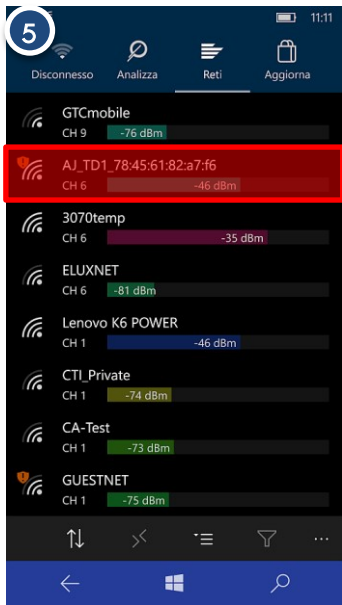
- 8 Press the **Serialize Appliance with Cable** command, (see example on the left). Please ensure that you use the correct COM port number. Wait until the operation completes successfully
- 9 While the appliance is still on, disconnect it from the mains power supply. This operation generates a "power fail" event that forces the storage of serialatton data inside the Main Board
- 10 Turn the appliance on again and execute the manual serialization check, as described in the next slides

14.3.2 MANUAL SERIALIZATION CHECK STEPS

- 1 Reconnect the appliance to the mains power supply and turn it on
- 2 Turn on the spare network unit (menu **Settings>>Wi-Fi Connection**; see 9.1 ENTERING DEMO MODE step 1 - 4 and tap on "WiFi" to activate)



- 3 This message appears for about one minute
- 4 Wait until this message appears (if it does not appear the appliance is not yet serialized):



5 If network installation is not possible, check that a Wi-Fi network with a name starting with **AJ_xx1_** is visible. This is a sign that the appliance has been correctly configured.

xx is product-specific and can stand for WM, DR, OV, etc.

14.4 MANUAL SERIALIZATION WITH CABLE



Information

"Manual Serialization"



- For the manual serialization connect the AMI module to the main board of the appliance, **while the appliance is unplugged from the mains power supply**
- You should use the RAST5 connector in the AMI kit.
- **The AMI switch must be in the OFF Position**

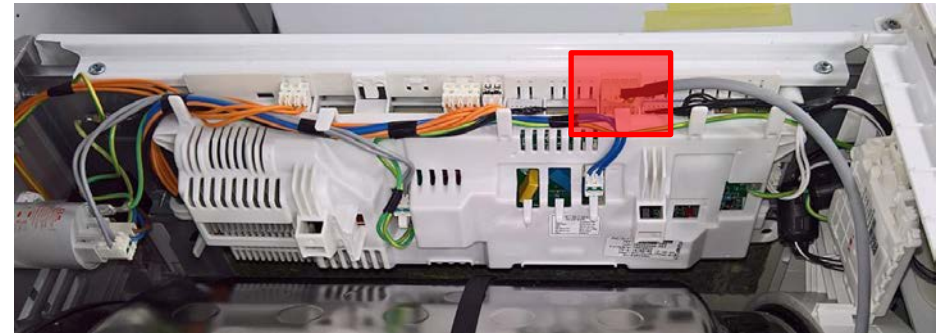
14.4.1 WASHING MACHINE

Plug the RAST 5 cable to DAAS edge connector of the main board. Example for dryer:



14.4.2 TUMBLE DRYER

Plug the RAST 5 cable to DAAS edge connector of the main board. Example for washing-machine:



14.4.3 AMI KIT - POWER SWITCH

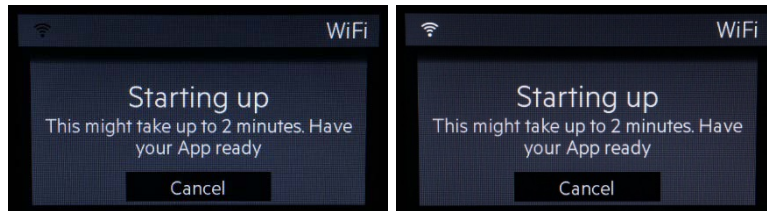
For the manual serialization you must set the secondary power switch of the AMI module in the OFF position.

- 1 Secondary power switch
- 2 OFF position
- 3 ON position (the AMI provides power supply)



14.4.4 APPLIANCE NOT YET SERIALIZED

If, while checking for a proper appliance serialization, the following message appears on the screen with Wi-Fi symbol blinking and doesn't disappear until the machine is switched off, it means that the appliance is not correctly serialized.





Information


"Manual Serialization"

- To fix this problem manually serialization of the appliance must be carried out.

14.4.5 MANUAL SERIALIZATION: UNIT NOT YET ASSOCIATED

MAC address original Network 

MAC address spare Network 

PNC: 

ELC:

Serial Number:

Serializing Appliance ...
The spare Network Unit has not been associated to the specified appliance

If the new spare network unit board has not been associated to the appliance, the system will prevent user from manually serializing this appliance.

15 NIUX

The spare Wi-Fi network interface unit for Fabric Care is made up by three components:

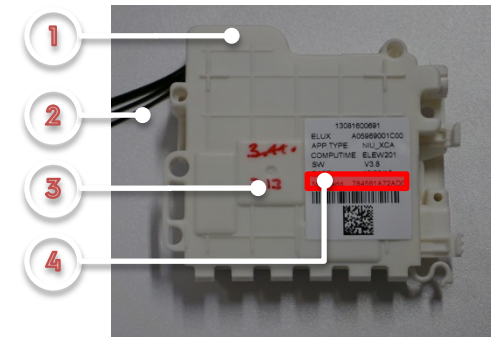
- 1 plastic enclosure
- 2 communication cable, it should be connected to the user interface board in the appliance
- 3 electronic board with antennas (inside the plastic enclosure).

All smart appliances are equipped with a Network Interface Unit (NIU).

Each Network Interface Unit has an “unique identity” that is defined through the physical network address of the Wi-Fi interface: the Media Access Control (MAC) address.

The MAC address **4** of the unit is visible in the label(s) attached to the plastic enclosure. The MAC address is a 12-digit hexadecimal string.

In this example the MAC address is: 78456182A773.

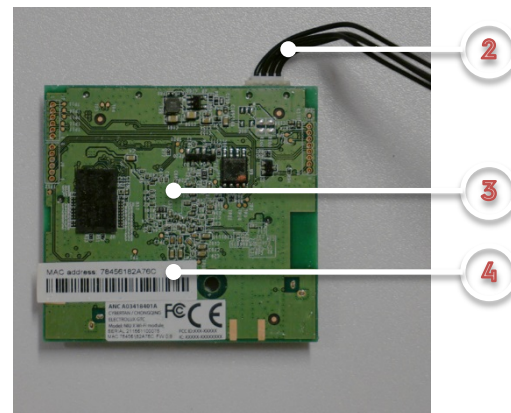
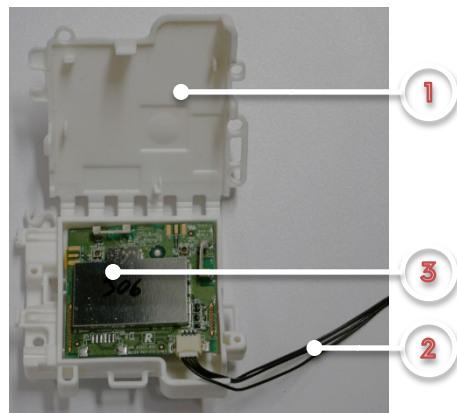


Information

“Network Interface Unit”



- The NIUX is a specific type of NIU (NIU LinuX version).
- The electronic board is very sensitive to electro-static discharges (ESD). Avoid opening the plastic enclosure and touching the electronic board, in order to minimize the risk of damages caused by ESD.
- Avoid touching and handling the NIUX unit while the appliance is connected to the mains power supply, in order to avoid the risk of electric shock



15.1 NIUX IN THE WASHING-MACHINE AND TUMBLE DRYER

WASHING MACHINE

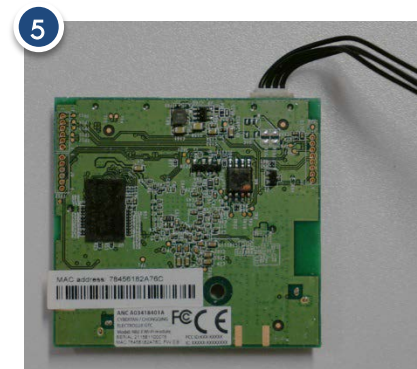
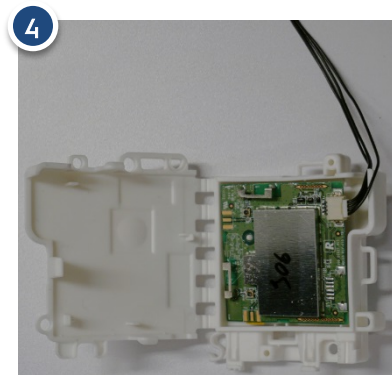
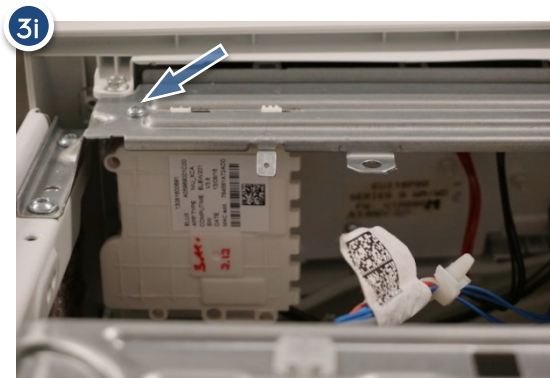
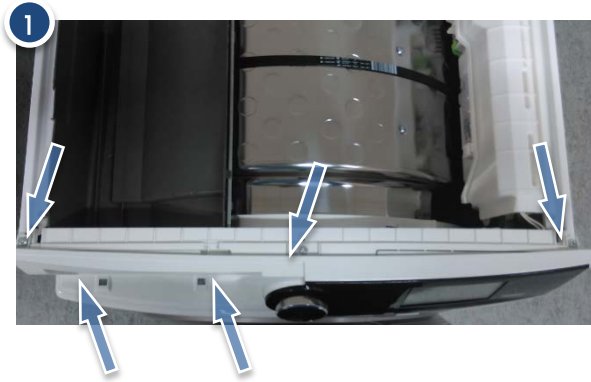


TUMBLE DRYER



16 DISASSEMBLY

16.1 NIUX



- 1 Remove worktop and loosen screws that secure the control panel to the cabinet
- 2 Disconnect the connector from NIUX to UI
- 3 3i Unfasten the screw which secure the NIUX box to the cabinet (3 - box fixation in TD, 3i - box fixation in WM)
- 4 Open the box to get access to NIUX board
- 5 NIUX board with cable

17 DEFINITION OF TERMS, ACRONYMS AND ABBREVIATIONS

AB	Anti Boiling
CCF	Cycle Configuration File
D&L	Density & Level sensors
DD	Detergent Dispenser
DDWS	Detergent Dispenser assemblies with integrated a Water Softener
DM	Diverter Motor
DSP	Digital Signal Processors
DV	DiVerter
FCV	Field Control Vectorial, generally used to indicate motor control board
FM	Flow-Meter sensor
Hard EV	Electro-Valve to load hard water in the DD
Hot EV	Electro-Valve to load hot hard water directly into the tub
MB	Main board, Motherboard
MCF	Machine Configuration File
NIU	Network Interface Unit
NIUX	NIUX is only a specific type of NIU (NIU LinuX version).
NTC	Negative Temperature Coefficient
PCB	Printed Circuit Board
RTO	Resin Tank Outlet to DV
Soft EV	Electro-Valve to load soft water in the DD
UI	User Interface
WD	Washer Dryer
WM	Washing Machine
WS	Water Softener
WSP	Water Softener Pump