Repair Instructions –

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1.1 Important information

Read and observe chapter 2 "Safety" before performing any work!

1.1.1 Purpose

These repair instructions form the basis for a systematic and safety conscious procedure for the repair of domestic appliances.

These repair instructions include information about troubleshooting and repair.

1.1.2 Target group

These repair instructions are intended for persons who are familiar with equipment technology and were instructed by BSH or an authorised body:

- Service technicians for the repair of domestic appliances
- Pre-assemblers in the spare part stockroom when determining required spare parts
- Call centre employees during order acceptance

1.1.3 Other applicable documents

The following documents include additional relevant repair information:

- General repair instructions
- Error codes and service programs
- Circuit diagrams
- Exploded drawings
- Parts lists
- Repair videos

1.2 Explanation of symbols

1.2.1 Danger levels

The warning levels consist of a symbol and a signal word. The signal word indicates the severity of the danger.

Warning level	Meaning
DANGER	Non-observance of the warning message will result in death or serious injuries.
WARNING	Non-observance of the warning message could result in death or serious injuries.
CAUTION	Non-observance of the warning message could result in minor injuries.
NOTICE	Non-observance of the warning message could result in damage to property.

Table 1: Danger levels

1.2.2 Hazard symbols

Hazard symbols are symbolic representations which give an indication of the kind of danger.

The following hazard symbols are used in this document:

Hazard symbol	Meaning
	General warning message
	Danger from electrical voltage
	Risk of explosion

Hazard symbol	Meaning
	Danger of cuts
	Danger of crushing
	Danger from hot surfaces
	Danger from strong magnetic field
	Danger from non-ionizing radiation

Table 2: Hazard symbols

1.2.3 Structure of the warnings

Warnings in this document have a standardised appearance and a standardised structure.

CAUTION

Type and source of danger!

Consequences of ignoring the warning.

► Actions to protect from danger.

The following example shows a warning that warns against electric shock due to live parts. The measure for avoiding the danger is mentioned.

DANGER

Risk of electric shock due to live parts!

► Disconnect the appliance from the mains at least 60 seconds before starting the work .

1.2.4 General symbols

The following general symbols are used in this document:

Gen. symbol	Meaning
	Identification of a special tip (text and/or graphic)
Start	Identification of a key or button
[00123456]	Identification of a material number
	Identification of a condition (if ..., then ...)
	Identification of a simple tip (only text)

Table 3: General symbols

2.1 Qualification

In Germany, only qualified electricians trained by BSH or an authorised body may perform any repair work.

In other countries, only similarly trained qualified personnel is permitted to perform the repair work.

Appliances must only be repaired by persons that are qualified, **approved** and trained by BSH or an authorised body as instructed.

2.2 General safety information

2.2.1 All domestic appliances

Risk of electric shock due to live parts!
- Disconnect the appliance from the mains for at least 60 seconds before starting work.
- Do not touch the housing, components and cables.
- For tests on an energised system, use a residual current circuit breaker.
- Discharge high-voltage capacitors.

Risk of injury from sharp edges!
- Wear protective gloves.

Risk of injury when dealing with harmful substances!
- Observe the associated safety data sheet!

Risk to the appliance's safety / function!
- Only use original spare parts.

Risk of damage to electrostatically sensitive components (ESDs)!
- Before touching ESDs, use an electrostatic protection system (wristband with earth safe plug).
- Do not touch connections and conductor paths of the modules.
- Only transport ESDs in conductive materials or original packaging.
- Keep ESDs clear of electrostatically chargeable materials (i.e. plastic).

2.3 Product-specific safety information

2.3.1 Microwave ovens

Risk of scalding due to explosive escape of liquids in case of delayed boiling!
- Before heating place a metal spoon in the liquid.

Health hazard due to non-ionising radiation!
- After any work on the appliance, check the tightness with leak rate measurement.

2.3.2 Induction appliances

Induction appliances fulfil the relevant regulations for safety and electromagnetic compatibility (EN 50366).

Danger to life due to magnetic fields!
- People with pacemakers should stay clear during repairs on an open appliance!

Health hazard due to magnetic fields!
- People with medical devices (for example insulin pump / hearing aid) should stay clear of the opened appliance!

2.3.3 Gas appliances

Explosion hazard due to escaping gas!
- Cut off the gas supply before working on gas carrying connections.
- Check tightness following work on connections carrying gas.
- Only repair gas appliances with original parts that were tested and released for such use.

If you smell gas!
- Do not press any electrical switches.
- Extinguish / keep clear of open flames.
- Ensure that room is well ventilated.
- Close the gas isolating equipment.

2.3.4 Refrigerators and freezers

Risk of burns caused by refrigerants!
- Wear protective gloves and goggles.

Explosion hazard due to refrigerants!
- Do not solder pipe connections, only use Lokring connections.
- Do not press any electrical switches.
- Keep clear of thermal appliances.
- Extinguish / keep clear of open flames.
- Ensure that room is well ventilated.

2.3.5 Dryer with heat pump

Risk of burns caused by refrigerants!
- Wear protective gloves and goggles.

Explosion hazard due to refrigerants!
- Do not solder pipe connections, only use Lokring connections.
- Do not press any electrical switches.
- Keep clear of thermal appliances.
- Extinguish / keep clear of open flames.
- Ensure that room is well ventilated.

2.4 Measures after each repair

If the appliance is functional:
- Check according to VDE 0701 or country-specific regulations.
- Check external appearance, function and tightness.
- Document repair work, measured values and functional reliability.

If the appliance is **not** functional:
- Identify the appliance as “not functionally reliable”.
- Warn customers of commissioning and notify them in writing .

3.1 Remote diagnosis of home appliances

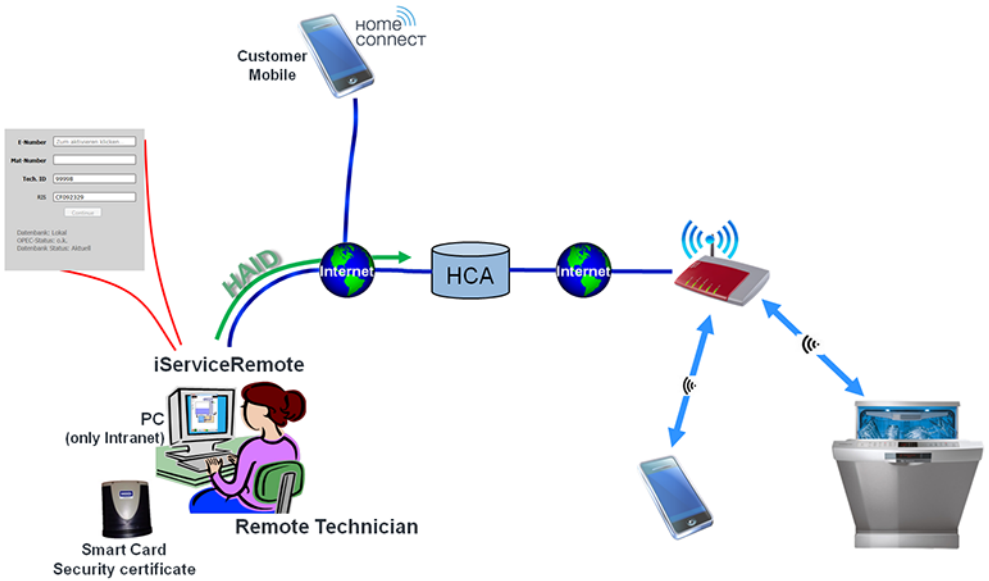


Fig. 1: Principle of remote diagnosis

	Before a HomeConnect technician is sent out to the customer, the remote technician can provide a more detailed diagnosis of the problem and may be able to solve it.

The technician can connect to the home appliance using the iServiceRemote software. A connection to the appliance can be established using the identification code of the appliance (HAID = Home Appliance Identification). This is comprised of the brand, sales ID and MAC address. The remote technician requires his/her personal username and password. These data are transferred to the HCA server by iServiceRemote. For security reasons, the remote technician has a personal smart card with a security certificate. The HCA server verifies the certificate, the username and the password of the technician.

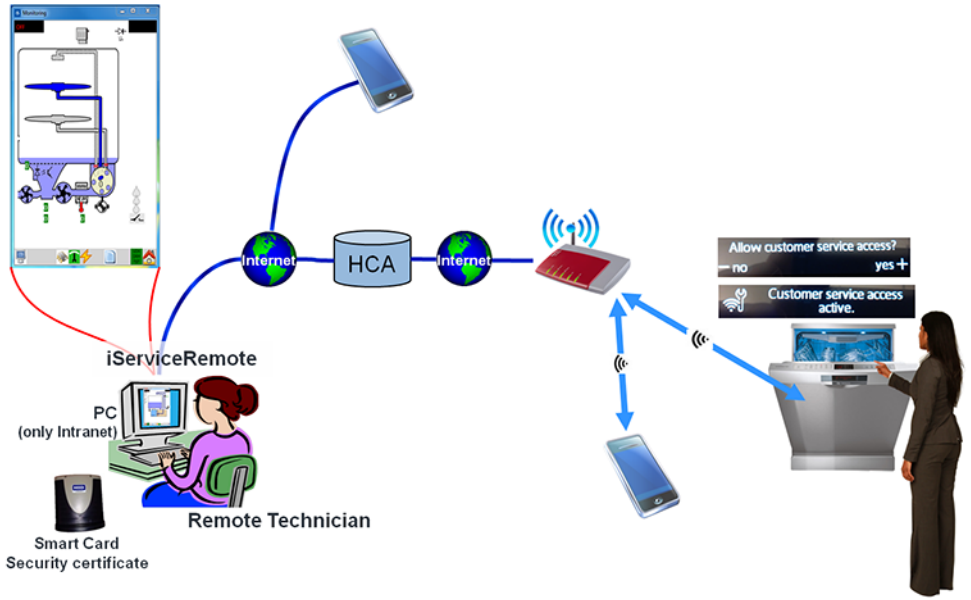


Fig. 2: Principle of remote diagnosis

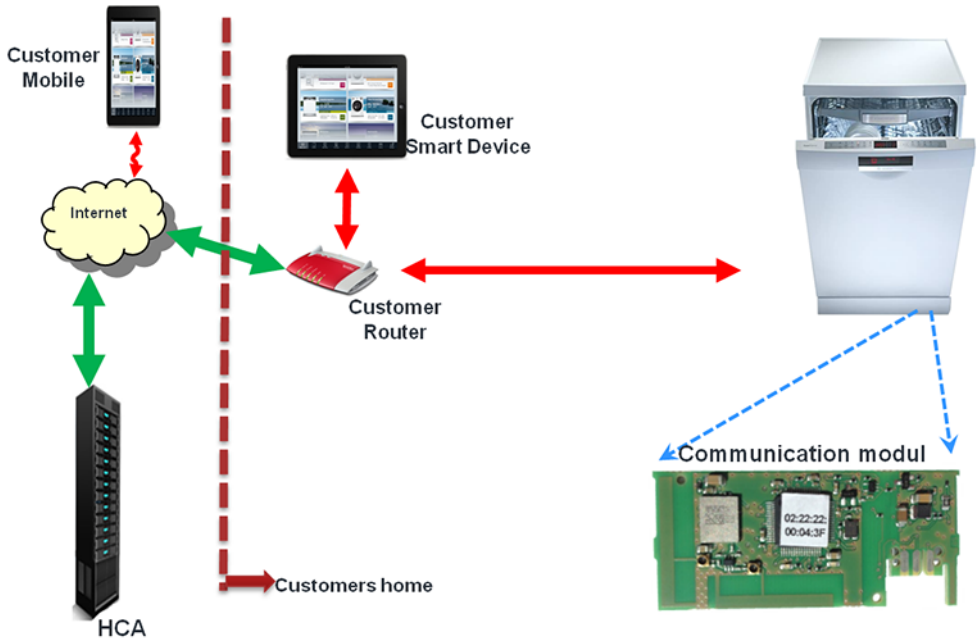
After verifying the data of the remote technician and of the HAID, the HCA server establishes the connection to the respective appliance.

The remote technician also talks to the customer on the telephone at the same time. The message Allow customer service access appears on the display of the appliance. The customer confirms this access by pressing the button [+] on the display. This confirmation can only take place on the appliance itself and not via the app. This ensures that the connection is being established to the correct appliance.

After confirming, the message Customer service access active appears on the display. The connection has been established and the remote technician sees the iService monitor and can read out the appliance memory. He/she can now perform an analysis and give the customer instructions for rectifying the problem if required.

	If the problem cannot be solved by the remote technician or the customer, it will be necessary for a HomeConnect technician to visit the customer.

4.1 Malfunctions



The technician comes across the situation displayed in the illustration. The communication module in the appliance is responsible for the communication with the peripheral components. One of the components within the network is defective: the communication module, router, smart device, app, Internet, HCA server. The technician must check which component is causing the fault.

Fault	Possible cause	Troubleshooting
No connection between the communication module and peripheral components	Wi-Fi signal weak or not present	► Install a WLAN repeater. (Page 11) ► Install a powerline adapter. (Page 12)

Fault	Possible cause	Troubleshooting
	Defective component	ⓘ The technician is equipped with the required hardware. To perform a fault diagnosis, he/she can switch the customer's individual components with his/her own and thereby identify the component which is causing the problem. ⓘ Pay attention to the functional capability of the components which have been brought along! ► Switch the router with the DCU. (Page 13) ► Replace customer's smart device with the technician's smart device. (Page 14) ⓘ For security reasons, iService may not be connected to the appliance using WLAN. The appliance is connected using UDA and the D-Bus-2 cable. ► Use the iService monitor. ► Start the customer service test program. ► Read out the fault memory.

5.1 Checking the function of the COM module

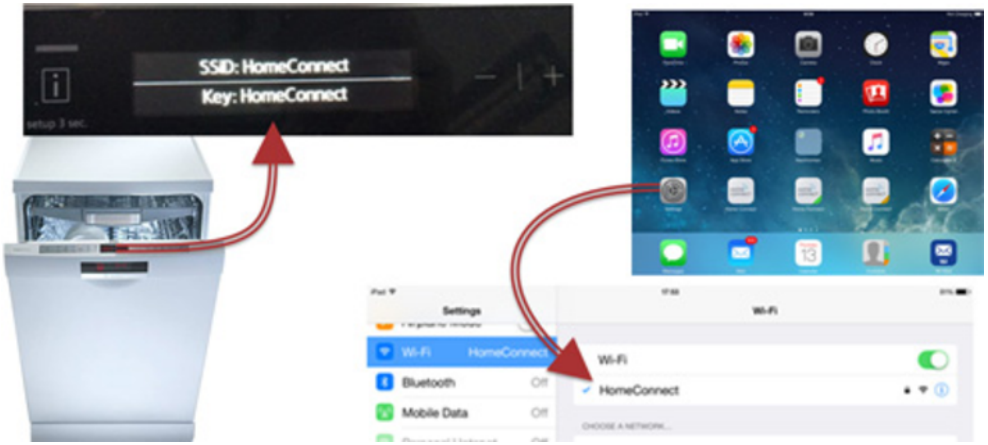


Fig. 3: Checking the function of the COM module

1. Start the HomeConnect menu on the home appliance
2. Start a manual network connection
3. Home appliance opens access point with the SSID "HomeConnect"
4. Check in the Wi-Fi settings whether the Wi-Fi network "HomeConnect" is being received.

Result:
If the Wi-Fi network is detected on the smart device, the COM module is operating correctly.

6.1 Installing the WLAN repeater

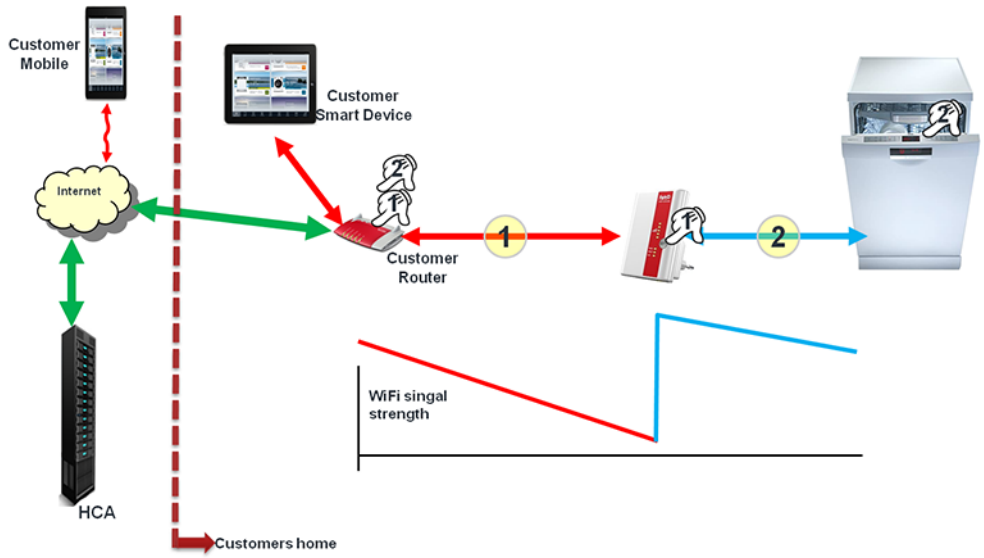


Fig. 4: Check of Internet and Wi-Fi system

1. Insert the WLAN repeater into a free socket in a place where the WLAN signal is still being received.
   Result:
   The repeater receives the weak signal and sends out a new, strong signal.
   This new signal can be received by the home appliance.

2. If the router has a WPS function:
   1) Establish a connection to the repeater via WPS.
   2) To make a connection, press the WPS button on the WLAN repeater until the WLAN LED flashes.
   3) Press the WPS button on the router.
   4) The connection has been established if the WLAN LEDs light up without interruption.
   5) Advise customer:
      In order to connect the home appliance to the Wi-Fi network, press the WPS button on the router (not the one on the repeater).

3. If the router has NO WPS function:
   ► Use the powerline module (dLAN).

6.2 Installing the powerline adapter

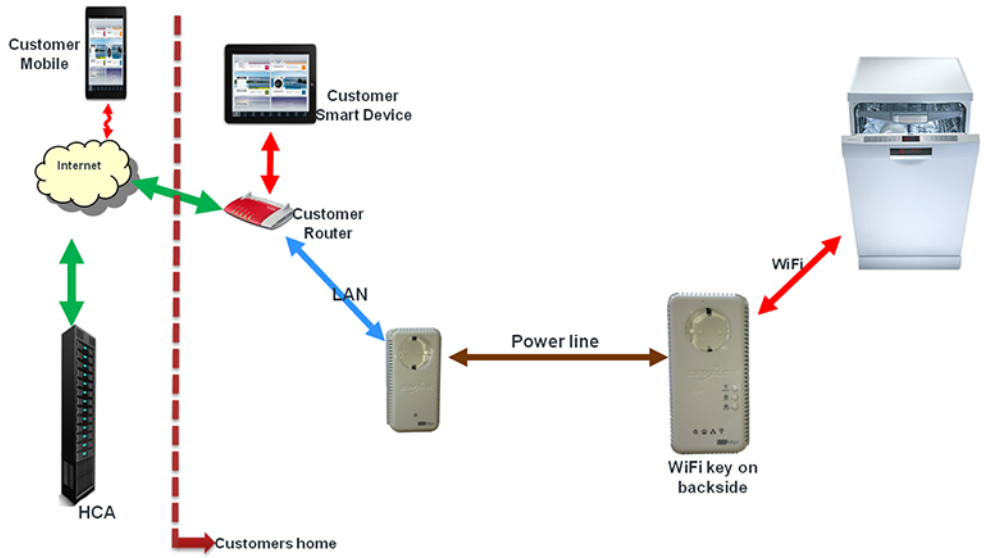


Fig. 5: Wi-Fi connection using a powerline adapter

1. The powerline adapter consists of a transmitter and a receiver.
2. Connect the transmitter to the router using a LAN cable.
   Result:
   The router's signal is transmitted to the receiver via the power line installation.
   The receiver establishes an independent Wi-Fi network with its own network name (SSID) and password.
   Both parts of the powerline adapter connect to each other automatically.
3. When using the WPS method, the WPS button on the receiver must be pressed – not the one on the router!
4. | | |
   |---|---|
   | | When using the manual method (SAP function) to connect the home appliance to the new Wi-Fi system, the SSID and the password of the new Wi-Fi network must be used. The password is on the rear of the receiver. |

   Establish connection to the appliance using the WPS or SAP function.

6.3 Replacing router with DCU

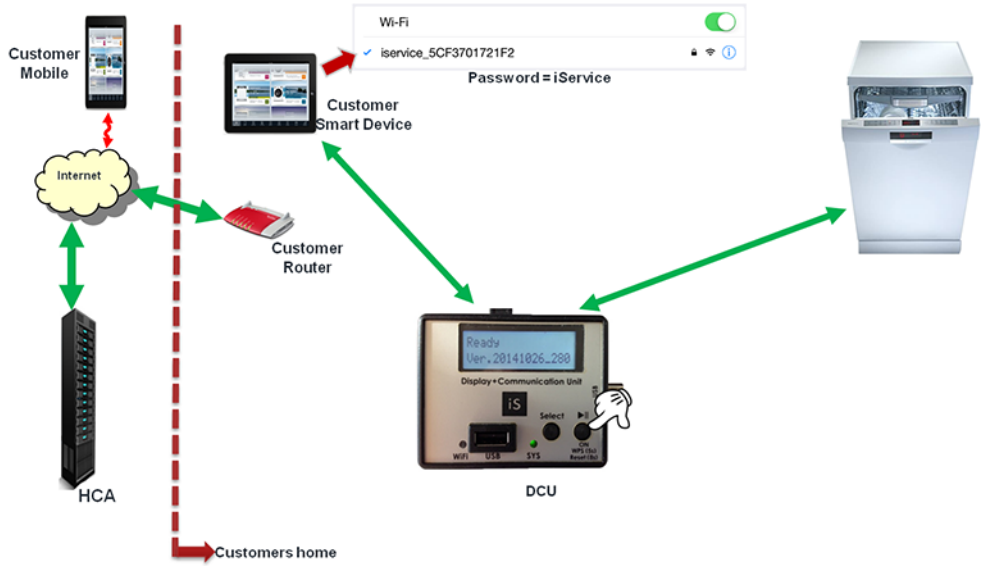


Fig. 6: Checking HomeConnect system components

Prerequisite:
Connections between the customer's smart device, the appliance and the router are disconnected.

	Smart device and appliance will be connected to the DCU. The DCU must be supplied with power via a USB connection or using a USB power supply unit. The DCU establishes a Wi-Fi access point with its own SSID (e.g.: iservice_5cF3701721F2) Each DCU has a different SSID, starting with "iservice_" and a subsequent sequence of numbers and letters. All DCUs require the same password "iService" for the login

1. Connect the customer's smart device to the DCU (SSID search in the Wi-Fi settings of the smart device).
2. Connect the appliance to the DCU using the WPS function.
3. Start the WPS by pressing the WPS button on the DCU for 5 seconds.
   Result:
   The display will go dark.
4. Check whether the appliance can be operated using the customer's smart device.
   Result:
   If the system is working correctly, the problem is with the customer's router.
   The customer's router may not be altered by the technician.

6.4 Switching the smart device

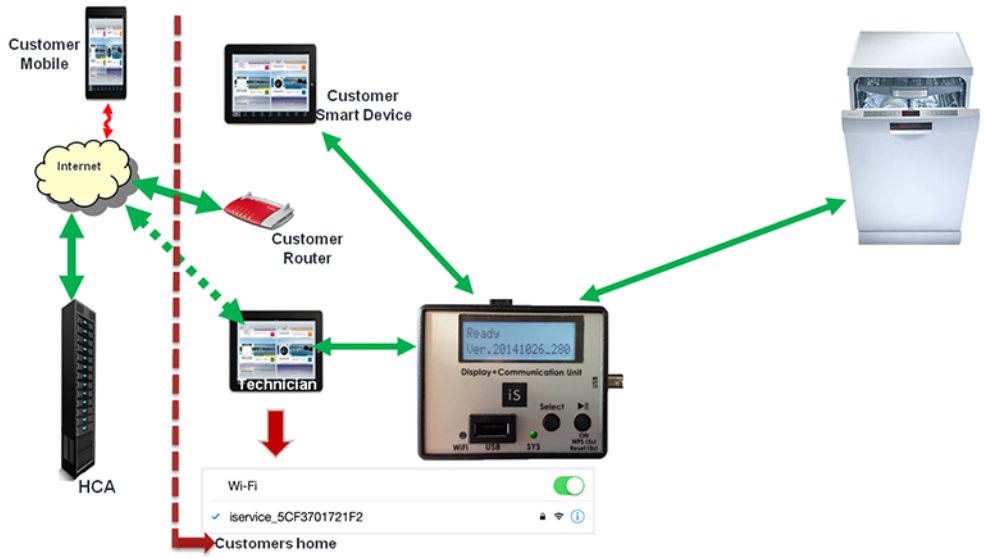


Fig. 7: Checking HomeConnect system components

Prerequisite:
The connection of the customer's smart device is disconnected.

1. Connect the technician's smart device to the DCU.
2. Pair the home appliance with the technician app.
3.

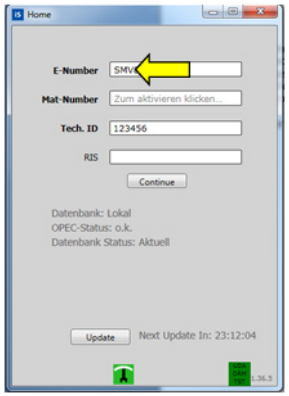
	When pairing, a file must be downloaded from the HCA server. The smart device requires an Internet connection for this download. Ensure that there is a connection to the mobile network.

   Check the correct function of the system.
   Result:
   There is now an independent system without any customer equipment.
   If the system functions correctly, the problem is with the customer's smart device or with the installed app.

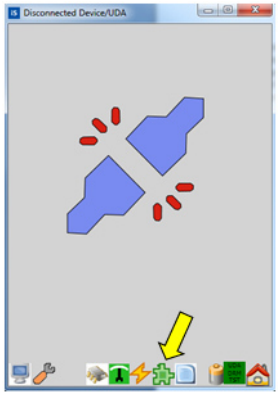
6.5 Coding the modules

	The appliance's e-number, manufacturing date and serial number data are saved on one of the appliance's modules. These data are required when registering the appliance in the HomeConnect system. These data are deleted during the flashing process. The data must be re-written into the appliance using the coding function of iService.

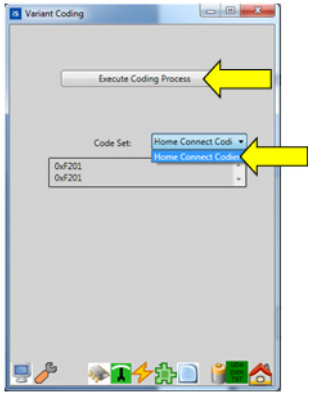
1. Enter the e-number.



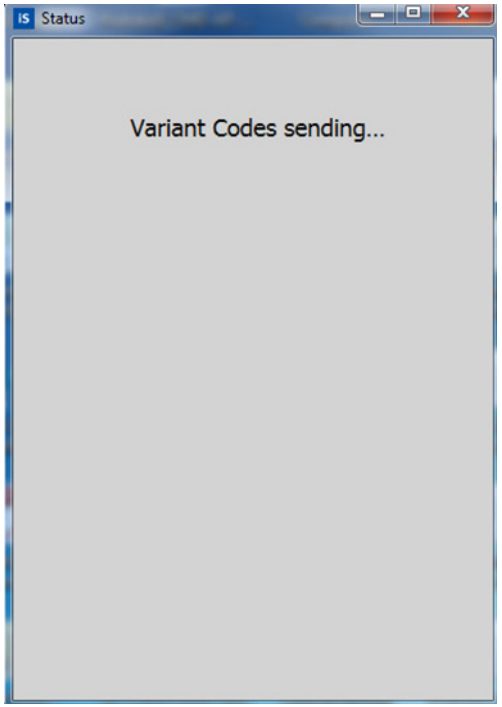
2. Start the coding function.



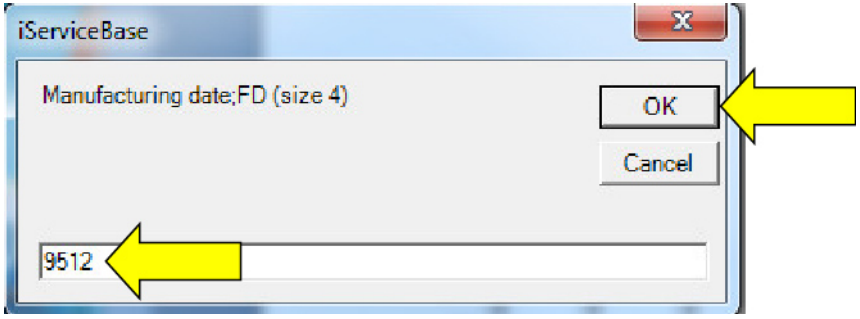
3. 1) Select Home Connect Coding.
   2) Click on Execute Coding Process.



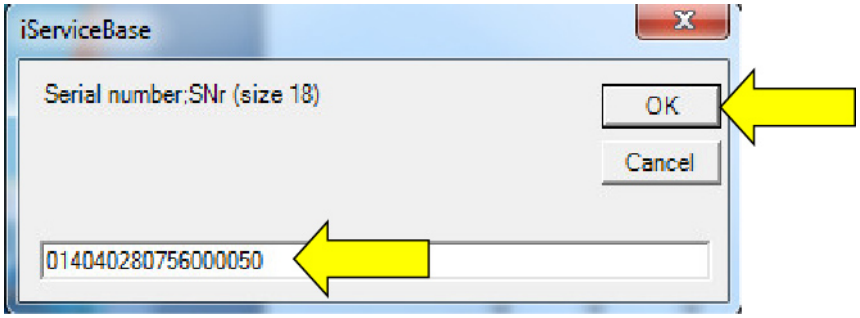
Result:
iService will adopt the e-number automatically and transmit it to the home appliance.



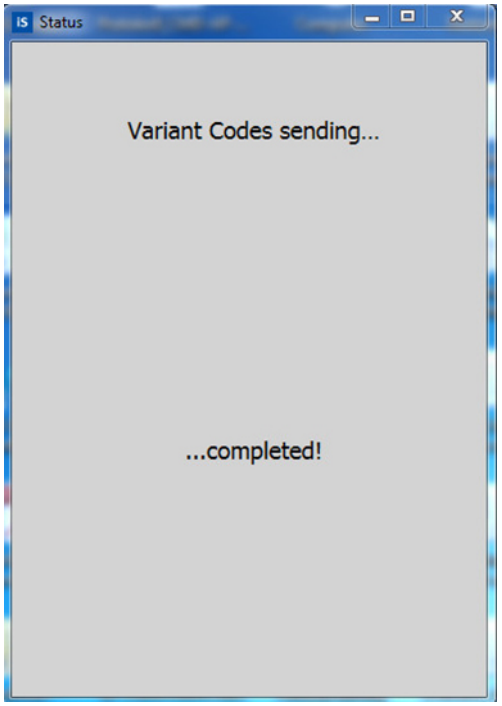
4. 1) Enter the manufacturing date.
   2) Click on OK.



5. 1) Enter the serial number.
   2) Click on OK.



Result:
The data will be transmitted.



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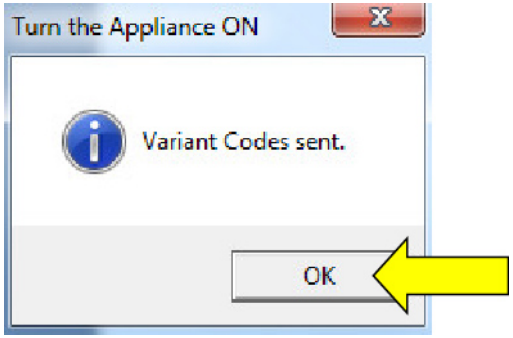

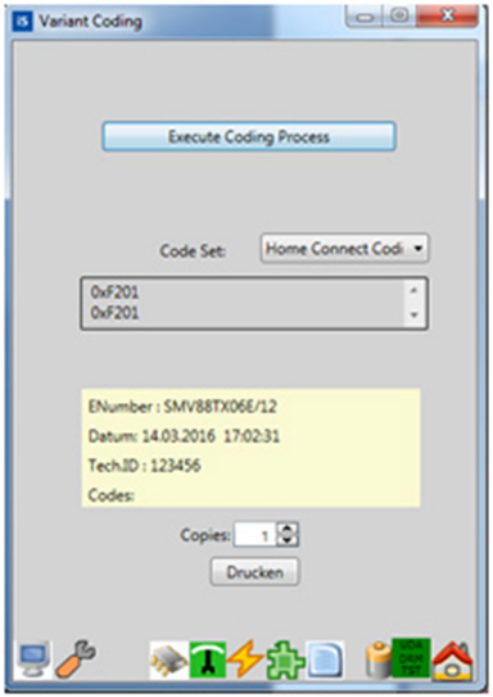

Result:
The data have been successfully communicated.

6.6 Setting up of Home Connect in a Firewall-protected network

The following outgoing connections must be open for the specified URLs so that the home appliance and the HomeConnect app communicate properly with the BSH servers. We deliberately only write the URLs and not the IP addresses, because they always remain the same.

MDNS broadcasts are sent in the local network to connect the app to the home appliance. They must be approved in the local network with the following service string: _homeconnect._tcp.local.

rt.homeconnecthca.com	Port: 443	TCP
rt.homeconnecthca.com	Port: 80	TCP
ocsp.homeconnecthca.com	Port: 8080	TCP
ha-ws.homeconnecthca.com	Port: 443	TCP
sd-ws.homeconnecthca.com	Port: 443	TCP
t.homeconnecthca.com	Port: 123	UDP

Table 4: Port addresses

- WLAN, which works by logging onto a browser (landing page), is not supported (e.g. public hotspots)
- The WPS button on the router makes set-up easier
- Radius server, or WPA Enterprise encryption, is not supported
- Practical experience: D-Link router and Huawei, to name a few examples, run even more stably when the multicast option is activated or single cast is deactivated

Prerequisite:
Prerequisites for WLAN use:

- Supported Wi-Fi standards: IEEE 802.11b; IEEE 802.11g; IEEE 802.11n
- WPA/WPA2 encryption (open network and WEP are not supported)
- Frequency for connection to the home appliance
  - 2.4 GHz for connection from the home appliance to the router, not 5 GHz
  - 5 GHz can be used for connection from the tablet to the router
- Stable Wi-Fi (good reception) with Internet access (not just local WLAN)
- The MAC address filter, childproof lock and other blocks must not be activated or must then be configured correctly

6.6.1 Activating URLs in the customer's router

► Activate connections in the customer's router for the specified URLs (see the "Port addresses" table (Page 18)).

6.6.2 Setting a special configuration for Cisco Controller-based WLANs

1. Wi-Fi Direct Client Policy – allow

   Select WLANs to open the WLANs page.
2. Click on the WLAN ID for the WLAN whose Wi-Fi Direct Client Policy is to be configured
   Result:
   The WLANs > Edit page appears.
3. Click on the Advanced tab.
4. Select **Allow** in the Wi-Fi Direct Client Policy drop-down list
   Result:
   The Wi-Fi direct clients have permission to connect to the WLAN.
5. Click on Run.
6. Activate the Bonjour gateway.

Result:
Global multicast mode is active.
A Bonjour service profile is created, linked and activated for the SSID.
The Bonjour service string “...homeconnect...” is updated in the linked profile .
Additional parameters must be adapted depending on the WLC configuration.