

SPECTRA X-XL

EN

Section 4 – Troubleshooting



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Read the safety information chapter
before working on the machines.

Change log

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I. Explanation of symbols

This chapter explains what the various symbols mean.



Danger indicates potentially life-threatening danger or grave injury.



Warning indicates risk of injury.



Caution indicates risk of minor injury.



Notice indicates possibility of damage to the machine.



This symbol provides you with information about the preconditions that must be met in order to undertake further actions.



This symbol indicates tips, shortcuts and additional information.



This symbol indicates information on materials and tool tips with information on usage (torque, etc.).



This symbol indicates that you must perform an action.



This symbol indicates the sequence of actions.

II. For your safety

This documentation has been created exclusively for FRANKE service technicians and authorized partners. It will enable service technicians to perform their tasks on the coffee machine and its add-on units.

These tasks include start-up, programming, maintenance work, troubleshooting and product quality settings.

WARNING

Danger of injury and damage to the machine!

Improperly making changes in the form of retrofits or repairs can lead to injury or damage to the machine.

- ◆ Be sure to read the safety information in the Service folder.
- ◆ Programming and settings may only be undertaken by authorized service technicians.
- ◆ Modifications and repairs may only be undertaken by authorized service technicians.
- ◆ Do not make any modifications to the machine that are not described in the documentation provided by FRANKE.

III. Machine error codes




- If an error occurs when the machine is in operation, error messages are displayed on the display.
- The error code list provides solutions.
- Individual components (heating, motor valves, etc.) can be checked using the respective test menu (input and output ports) *see p. 15 and p. 14*.
- As a matter of course, always restart the system first, *see p. 13*.
- An event message is not displayed, but rather only recorded in the error history.
- The variable indicated in the column Description refers to the error history in Service Tool 3.

Error No.	Error text	Description	Solution/remedy
2	Door open	The grounds door is open, all outputs are blocked (Spg 24Vx is interrupted in Hardware). The ongoing product is stopped and the device immediately activates the energy-saving mode.	<ul style="list-style-type: none"> • Close the grounds door. • Device must be restarted.
3	Communication LP	The power PCB has not responded three times within 1.5 sec. after PowerOn or is not ready, respectively.	<ul style="list-style-type: none"> • Restart the system; if that does not help, then switch machine OFF/ON (disconnect power for 30 seconds).
6	Old software SPLP	The software version of the power PCB is out-of-date. The power PCB remains in Reset status.	<ul style="list-style-type: none"> • The display indicates the required software version which must be installed on the SPLP and/or is compatible with the SPCPU-SW. • Load required software on the SPLP.
7	Ext. flash SW	The software version in the external Flash does not correspond to the software version in the internal Flash.	<ul style="list-style-type: none"> • Update the external Flash once again. • The versions must fit exactly. Possibly update once again.
8	Internal CAN	The CPU Print has not received a message from the power PCB for longer than 800 ms.	<ul style="list-style-type: none"> • Restart system. • Check the 14-pin cable from SPLP – SPCPU; normally the CPU Print receives a message from the power PCB every 20 to 40 ms. The power PCB remains in Reset status.
9	No text, only entry in table	Device restarted	<ul style="list-style-type: none"> • The power PCB had a reset during which the CPU Print was normally in operating mode. It is for that reason that the device was restarted. • Error Number 9 is only entered in the Error list; nothing appears on the display.
14	Temperature sensor	The temperature sensor (NTC X212.1/8) on the boiler heater has short-circuited.	<ul style="list-style-type: none"> • System for corresponding heater remains blocked. • Restart system.
15	Temperature sensor	The temperature sensor (NTC X212.1/8) on the boiler heater has been interrupted or the sensor is not present.	<ul style="list-style-type: none"> • System for corresponding heater remains blocked. • Restart system.

Continued on next page.


Error No.	Error text	Description	Solution/remedy
16	Temp. Difference	No temperature increase of a minimum of 2°C was detected at the temperature sensor (NTC X212.1/8) on the boiler heater within 45 sec. of heating.	<ul style="list-style-type: none"> Restart system. Possibly something is defective in the electrical circuit or the Klixon has tripped.
17	Overheating	The temperature of the boiler heater has increased to more than 150°C or is 25° higher than the nominal value.	<ul style="list-style-type: none"> Restart system. System for corresponding heater remains blocked.
18	Temperature sensor	The temperature sensor (NTC X212.2/9) on the brewing container heater has short-circuited.	<ul style="list-style-type: none"> Restart system. System for corresponding heater remains blocked.
19	Temperature sensor	The temperature sensor (NTC X212.2/9) on the brewing container heater has been interrupted or the sensor is not present.	<ul style="list-style-type: none"> Restart system. System for corresponding heater remains blocked.
21	Overheating	The temperature of the brewing container heater has increased to 25° higher than the nominal value (BG_VOLL).	<ul style="list-style-type: none"> Restart system. System for corresponding heater remains blocked.
22	Heater timeout	The brewing container heater was switched on for more than 12 min. without interruption.	<ul style="list-style-type: none"> Restart system. Possibly something is defective in the electrical circuit or the Klixon has tripped.
23	Heater timeout	The storage heater was switched on for more than 12 min. without interruption.	<ul style="list-style-type: none"> Restart system. Possibly something is defective in the electrical circuit or the Klixon has tripped.
24	Heater timeout	The boiler heater was switched on for more than 12 min. without interruption.	<ul style="list-style-type: none"> Restart system. Possibly something is defective in the electrical circuit or the Klixon has tripped.
27	Temperature sensor	The temperature sensor (NTC X212.3/10) on the storage heater has short-circuited.	<ul style="list-style-type: none"> Restart system.
28	Temperature sensor	The temperature sensor (NTC X212.3/10) on the storage heater has been interrupted or the sensor is not present.	<ul style="list-style-type: none"> Restart system.
29	Overheating	The temperature of the storage heater has increased to 25° higher than the nominal value (VB_VOLL).	<ul style="list-style-type: none"> Restart system. System for corresponding heater remains blocked.
30	Coffee post-heating	The boiler heater was heating for more than 6 min. without interruption and without reaching the nominal value. The products remain blocked until the nominal value is reached.	<ul style="list-style-type: none"> Error is cleared automatically as soon as the nominal value is reached once again.
40	Motor timeout	BG undefined position. 20 pulses were not measured within 4 sec. during travel.	<ul style="list-style-type: none"> Restart or check system, respectively.

 Continued on next page.


Error No.	Error text	Description	Solution/remedy
41	Motor timeout	BG wanted to open at top. 20 pulses were not measured within 4 sec. during travel downwards.	<ul style="list-style-type: none"> Restart or check system, respectively.
42	Motor timeout	BG wanted to open at bottom. 20 pulses were not measured within 4 sec. during travel upwards.	<ul style="list-style-type: none"> Restart or check system, respectively.
43	Motor timeout	BG wanted to close. 20 pulses were not measured within 4 sec. during travel into the middle position.	<ul style="list-style-type: none"> Restart or check system, respectively.
44	Motor timeout	The current of the BG rose above 2A (AD224) for 2 sec. during travel upwards.	<ul style="list-style-type: none"> Restart or check system, respectively.
45	Motor timeout	The current of the BG rose above 2A (AD224) for 2 sec. during travel downwards.	<ul style="list-style-type: none"> Restart or check system, respectively.
50	Checking card	Chip type unknown.	<ul style="list-style-type: none"> Remove card. Viable chip types are I2C and SLE4428/SLE5528.
51	Checking card	The card type not supported.	<ul style="list-style-type: none"> Remove card. Supported card types are Install, Boot, Adjust and Adjust plus.
52	Checking card	There is a CRC check-sum error in the chip card identification block.	<ul style="list-style-type: none"> Remove card The card contains incorrect data or the identification block is defective.
53	Checking card	There is a CRC check-sum error in the chip card header. This error may also occur if the chip card is inserted in the reader the wrong way round.	<ul style="list-style-type: none"> Remove card. Card contains incorrect data or the header block is defective.
54	Reading card	CRC error in the scope of reference data (machine data or product data).	<ul style="list-style-type: none"> Remove card. Clear card and try again.
55	Checking card	Chip type cannot be read.	<ul style="list-style-type: none"> Remove card.
56	Checking card	RID code is not permitted by the machine.	<ul style="list-style-type: none"> Remove card.
57	Checking card	PIX code is not permitted by the machine.	<ul style="list-style-type: none"> Remove card.
58	Writing card	An error occurred in the writing/reading check following a write procedure.	<ul style="list-style-type: none"> Remove card. Possibly not all memory cells could be written to. Clean card and try again.
59	Writing card	The PSC code cannot be written.	<ul style="list-style-type: none"> Remove card.
60	Writing card	Error-Counter $\geq 8 \rightarrow$ Card defective.	<ul style="list-style-type: none"> Remove card. 8 attempts were made to write the card with the wrong PSC. Card is defective.

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Error No.	Error text	Description	Solution/remedy
61	Writing card	Timeout occurred while writing.	<ul style="list-style-type: none"> Remove card. The card is possibly defective, because not everything was written within useful time period. Possibly try again.
90	Maint. required	The Maintenance counter has expired by draws or by time.	<ul style="list-style-type: none"> Set Maintenance counter 6.12 to zero.
99	Water filter	The "Water quantity" counter is greater than the programmed value from "1.23 Water filter" or (starting with SW 1.3), the date for the planned filter change has been reached.	<ul style="list-style-type: none"> The filter must be replaced and the counter 6.3 water quantity must be cleared.
101	Emptying the grounds container	The grounds container must be emptied. The programmed amount from 1.22 has been reached.	<ul style="list-style-type: none"> All further brews until rinsing are blocked until the emptying has been confirmed with the CLEAN button.
110	Flowmeter error	Fewer than 2 pulses were detected within 2 sec. at Turbine B8 while a coffee was being dispensed. Neither of the turbine wheels achieved the required quantity (2 pulses) within 2 sec.	<ul style="list-style-type: none"> One brewing setting is deactivated. Check water intake.
111	Flowmeter error	Fewer than 2 pulses were detected within 2 sec. at Turbine B9 while a coffee was being dispensed. Neither of the turbine wheels achieved the required quantity (2 pulses) within 2 sec.	<ul style="list-style-type: none"> Finished production of the ongoing product is time-controlled on the basis of the most recently determined and valid time. The error is cleared from the display at the time of product start and product completion. The turbine is read again for the next subsequent product.
115	Check the water outlet	If the brewing container does not fall below B5 within 1 min. at the start of a BST, then this message will be displayed.	<ul style="list-style-type: none"> Operation resumes as soon as B5 is dry.
116	Electrode B5	Electrode B5 was not activated within 75 s during the water search in the initialization process.	<ul style="list-style-type: none"> Restart
117	Electrode B4	Electrode B4 was not reached within 120 s during the cleaning.	<ul style="list-style-type: none"> Cleaning procedure will not be stopped as a result.
118	Electrode B5	Electrode B5 was activated during the water search, but fewer than 300 pulses (480 ml) were dosed.	<ul style="list-style-type: none"> Restart
121	Add ground coffee	The ground coffee container is empty.	<ul style="list-style-type: none"> Add ground coffee. Is updated every 10 s.
122	Ground coffee is empty	Empty Message activated.	<ul style="list-style-type: none"> 2 more complete brews can be carried out.

 Continued on next page.

Error No.	Error text	Description	Solution/remedy
128	Ground coffee dosing unit	Ground coffee dosing unit fewer than five pulses during 1.0 s.	<ul style="list-style-type: none"> Restart
140	Calibrate store!	The calibration of the storage container is missing.	<ul style="list-style-type: none"> Calibrate the storage container.
141	Frequency store	The frequency level monitor of the Spectra-X-XL storage container measures frequencies lower than 100 kHz.	<ul style="list-style-type: none"> Either the probe is missing or it is not connected or it measures incorrectly. Further brewing is blocked by this error. Connect the probe.
142	Add cleaner	Cleaning fluid must be topped up.	<ul style="list-style-type: none"> Force.
143	Cleaner reserve	Message as to how many cleaning cycles can still be carried out. One cleaning can have 1 or 2 cycles with cleaner.	
144	Cleaner empty	Cleaning fluid is empty.	<ul style="list-style-type: none"> When the error message appears for the first time, an additional 8 cleaning cycles can be carried out.
160	Battery low	The voltage of the battery on the CPU is less than 2.5V or is absent.	<ul style="list-style-type: none"> Replace the battery (type CR2032, 3V). Caution: Data could be lost if the power supply fails while the battery is dead.
200	Communication CS	No Acknowledge (acknowledgement) to a message sent by the master (the coffee machine) came from the slave within 0.2 sec. or Ack-Tmo, respectively.	<ul style="list-style-type: none"> Possibly the cable is broken or the accounting device is not switched on.
201	Communication CS	No data was received within 5 sec. → Data timeout	<ul style="list-style-type: none"> Possibly the cable is broken.
202	Communication CS	The check sum of one data packet was incorrect.	
203	Communication CS	5 NAK's (not understood) in a row have come back from the accounting device.	
204	Communication CS	Payment protocol CS is deactivated.	<ul style="list-style-type: none"> The cause is a USB cable that has been plugged in. Remove USB cable.
210	Accounting CAN	The accounting device has not returned a status response within 16 sec.	<ul style="list-style-type: none"> Press the Clean button, the CAN bus is re-initialized if nothing is running. Error is cleared automatically as soon as the status is received once again..
211	Accounting CAN	An error with a different communication has occurred on the accounting device (interface).	<ul style="list-style-type: none"> Check accounting communication connections and feeds.

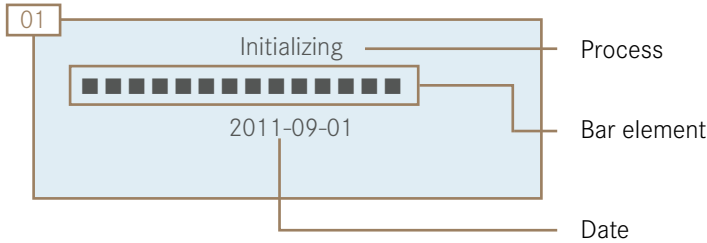
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Error No.	Error text	Description	Solution/remedy
240	Display error	The display RAM is no longer present, it is possible that the display controller has crashed.	<ul style="list-style-type: none"> • Is monitored automatically every 10 sec. • This error can only be read from the error history, because presentation on the display is only marginally possible at the time of its occurrence.
245	No text, only entry in table	Event message: Coffee machine was switched on.	<ul style="list-style-type: none"> • Nothing is shown on the display except entry in the table for information purposes.
246	No text, only entry in table	Event message: Coffee machine was switched off.	<ul style="list-style-type: none"> • Nothing is shown on the display except entry in the table for information purposes.
249	No text, only entry in table	Event message: Coffee machine was connected to the power supply.	<ul style="list-style-type: none"> • Nothing is shown on the display except entry in the table for information purposes.
250	No text, only entry in table	Event message: Cleaning has started.	
251	No text, only entry in table	Event message: Cleaning has ended.	
252	No text, only entry in table	Event message: Cleaning was canceled.	
253	No text, only entry in table	Event message: Cleaning was interrupted because an insufficiently large frequency change was detected within 30 sec. while filling the store and the container was not correctly filled. In addition, the level in the container was less than 1.8 liters.	
256	No text, only entry in table	Event message: Cleaning was canceled manually by the customer.	
257	No text, only entry in table	Event message: Cleaning was restarted because the key-operated switch was switched off within the 1st cleaning dosage.	<ul style="list-style-type: none"> • No cancellation of cleaning as a result
260	No text, only entry in table	Event message: The grounds door has been closed.	
280	No text, only entry in table	Valid calibration of storage unit performed	
281	No text, only entry in table	Calibration of storage unit invalid	
290	No text, only entry in table	Daylight Saving Time/Standard Time change	

IV. Initialization



- Initialization is started immediately after the machine is switched on.
- Machine displays progress of the initialization by means of bar elements in the display.
- Each bar element represents one process step.



1. Initialization - Process steps

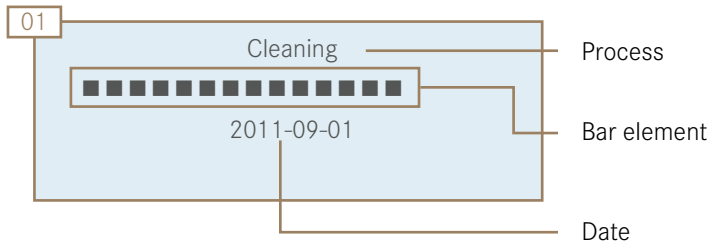
Number of bar elements	Process step	Note
1	Start Initialization, "Maintenance" check, "Filter replacement" check	
2		
3		
4	Starting frequency measurement VB	
5	Emptying the storage container	Conditional mode ¹
6	Rinsing the storage container	Conditional mode ¹
7		
8	BG reference travel (downward).	
9		
10	BG emptying and rinsing	
11		
12	Open BG at top	
13		
14	BG water dosing up to Electrode B5	
15	B5 active for first time	
16	BG water dosing OK	
17		
18	Activate heaters (Boiler, BG, VB), rinse BG	
19		
20	BG rinsing completed, wait until boiler is heated up to nominal value – heating-up threshold (15°C).	
21		
22	Check whether neutralization is necessary.	
23	Moisten BG	
24	Initialization procedure ended, bar disappears immediately once again, change to "Please select".	

¹ Process steps are carried out only if the machine is disconnected from the power supply or if the temperature of the storage container has fallen below the required minimum.

V. Cleaning



- Cleaning of the machine in accordance with separate cleaning instructions.
- Machine displays progress of the cleaning by means of bar elements in the display.
- Each bar element represents one process step.



1. Cleaning - Process steps

Number of bar elements	Process step	Note
1	Empty BG (max. 2 min.), Empty VB (until Delta-f < 1 kHz for 10 sec.)	
2	Rinse VB, empty VB	
3	Rinse out BG	
4	Open BG at top	
5	Dosing cleaning fluid	
6	BG contact time 5 min. running	
7	Refiltering cleaning fluid	
8	Rinse out BG VB cleaning	
9	2nd cycle dosing cleaning fluid	Jump from bar 8 to 13, if there is only 1 cleaning cycle (fixed)
10	BG contact time 5 min. running	
11	Refiltering cleaning fluid	
12	Rinse out BG VB cleaning	
13	Open BG at top	
14	Fill Rinse 1 BG with water	
15	Rinse 1, water refiltering VB contact 3 min. / VB cycl. draining	
16	Rinse 1 Rinse out BG Rinse 1 VB cycl. draining (Y6, Y7)	
17	Open BG at top Rinse 1 VB cycl. draining	
18	Fill 2 BG with water Rinse 1 VB cycl. draining	

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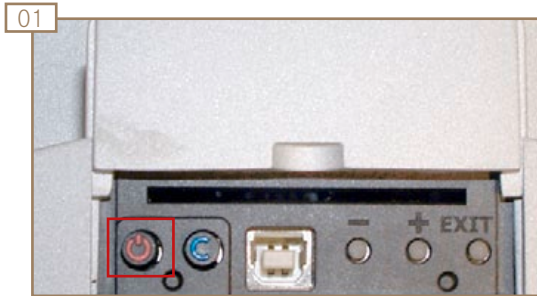
Number of bar elements	Process step	Note
19	Wait until VB completely empty, then Rinse 2, clear water refiltering	
20	Rinse 2 Rinse out BG Rinse 2 VB cycl. draining (Y6, Y7, Y8)	
21	Wait until VB completely empty.	
22	Handling of counter, decision Neutralization, decision OffAfterCleaning.	
23	Moisten BG strainer,	
24	Clean end.	

VI. Troubleshooting using the machine error codes

1. Machine restart



- As a matter of course, always restart the system first.
- Among other things, a restart resets the CPU and the power PCB.

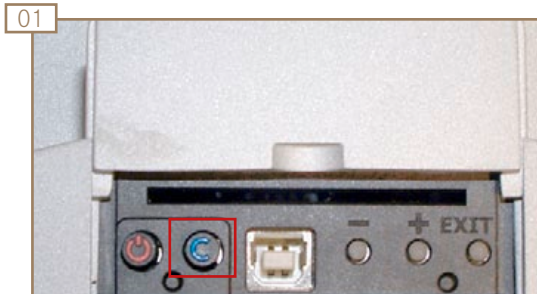


- ▶ Switch off machine.
- ▶ Disconnect the machine from power for at least 30 seconds.
The condensers will discharge.
- ▶ Switch on machine.

2. Quick error resolution



- The protocols or acknowledgment of many errors can be resolved by briefly pressing the button.
- For instance, the CAN bus or the display can be completely rebuild in this way.



- ▶ Very briefly (approx. 100 milliseconds) press **CLEAN**.
The error will be resolved and the display may rebuild.



- Follow other troubleshooting instructions.

VII. Output ports



- The machine must be heated up in order to be able to perform optimal tests.



- To test whether a signal is being sent from the desired component. Checks for correct functionality.
- Following testing via the output ports, the components should also be tested via the input ports to ensure an accurate diagnosis.
- Only one output port can be activated at a time.

WARNING

Danger of scalding or injury from working on a machine!

- ◆ Strict observation of the directions contained in the instructions is imperative.
- ◆ Pay attention and work carefully.
- ◆ Work as rapidly as possible.

NOTICE

Damage caused by continuous operation of individual components!

The Output Ports function activates individual components for function verification. Excessively long test operation can destroy the components.

- ◆ Activate components only 2 to 3 seconds for the function test.
- ◆ Switch off component immediately after test.

NOTICE

Damage from overheating the boiler!

The Output Ports function activates the boiler for function verification. NTC temperature sensor monitoring is not active during this process. Operating an empty boiler or operating too long in test mode can ruin the boiler.

- ◆ Activate components only 2 to 3 seconds for the function test.
- ◆ Switch off component immediately after test.



- If test fails:
 - Check the electrical connections to the component, *see Section 8 - Electrical diagrams*.
 - Repeat the test.
 - Check the component and replace it, if necessary.
- For instructions on function tests, *see Section 6 - Programming, V. Programming, 8. Test functions*.

VIII. Input ports



- The machine must be heated up in order to be able to perform optimal tests.



- To test whether signal is being received by the desired component. Indirectly checks for correct functionality. Status of the respective input port is displayed.
- Only one input port can be activated at a time.

WARNING

Danger of scalding or injury from working on a machine!

- ◆ Strict observation of the directions contained in the instructions is imperative.
- ◆ Pay attention and work carefully.
- ◆ Work as rapidly as possible.

NOTICE

Damage caused by continuous operation of individual components!

The Input Ports function activates individual components for function verification. Excessively long test operation can destroy the components.

- ◆ Activate components only 2 to 3 seconds for the function test.
- ◆ Switch off component immediately after test.



- If test fails:
 - Check the electrical connections to the component, *see Section 8 - Electrical diagrams*.
 - Repeat the test.
 - Check the component and replace it, if necessary.
- For instructions on function tests, *see Section 6 - Programming, V. Programming, 8. Test functions*.

