



# IQ / OQ

Installation and Operational Qualification

**BBR 1400**



**ARCTIKO**

## **IQ/OQ for BBR 1400 Model.:**

The objective of this Installation and Operational Qualification (IQ/OQ) Checklist is to qualify the installation and operation of the Arctiko unit BBR 1400 Refrigerator for routine laboratory use.

This Installation and Operation Qualification Check will define the minimum test procedures and acceptance criteria to be used to establish that the Arctiko unit BBR 1400 Refrigerator is installed and operated as per our specifications.

This checklist is mentioned to be used as input for distributors of Arctiko unit BBR 1400 Refrigerator. Please be aware that local circumstance can require additional control and verification during validation.

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## 1 Basic information

### 1.1 Basic information about the unit

Serial number: \_\_\_\_\_

Arctiko Purchase order: \_\_\_\_\_

Date of quality control: \_\_\_\_\_

Company name: \_\_\_\_\_

Company address: \_\_\_\_\_

Quality control carried out by: \_\_\_\_\_

Date & Sign: \_\_\_\_\_

Quality control carried out by  
Quality Department: \_\_\_\_\_

Date & Sign: \_\_\_\_\_

<i>Comments</i>

## 2 Component Verification

### 2.1 Cabinet check points:

<i>Scope of supply</i>		<i>Check</i>
<i>Delivered versus P.O.</i>	<i>All Items are delivered as stated in P.O.</i>	

<i>Cabinet check points</i>		<i>Check</i>
<i>Body</i>	<i>All packing material has been removed</i>	
	<i>No scratches. No dents. No rust</i>	
	<i>No cracks on plastic frames</i>	
<i>Door</i>	<i>Can open and close</i>	
	<i>Can be locked via the key</i>	
	<i>No gab between gasket and frame</i>	
<i>Controller</i>	<i>No scratches on display</i>	
	<i>All cable mounted as per safety requirements</i>	
<i>Chart recorder</i>	<i>No scratches on plastic cover on the front of the chart recorder.</i>	
	<i>Chart recorder is in function at the right temperature</i>	
<i>Inside compartment</i>	<i>No scratches. No dents. No rust</i>	
	<i>Sensor mounted at the right place</i>	
<i>Documentation</i>	<i>Operating Instruction Manual available</i>	

<i>Comments</i>

## 3 Environmental Conditions Verification

### 3.1 Verify that the following is correct

<i>Cabinet check points</i>		<i>Check</i>
<i>Alarms</i>	<i>Alarm delay</i>	
	<i>Door open alarm</i>	
	<i>High temp. alarm</i>	
	<i>Low temp. alarm</i>	
	<i>Prope eprom failure</i>	
	<i>Power failure</i>	
	<i>Current alarms</i>	
<i>Secondary Alarms</i>	<i>High temp. alarm</i>	
	<i>Low temp. alarm</i>	
	<i>Power failure</i>	
<i>Fan</i>	<i>No unusual noise</i>	
<i>Compressor</i>	<i>No unusual noise</i>	

<i>Environment</i>		<i>Check</i>
<i>Clima</i>	<i>Max. ambient temp. 32°C Class N. No direct sun on the refrigerator</i>	
<i>Electrical supply</i>	<i>As per stated in Operating Instruction Manual and in accordance to local regulations</i>	
<i>Surface</i>	<i>Refrigerator kept on a solid flat surface to eliminate any vibrations &amp; irritating noise</i>	
<i>Airflow</i>	<i>The unit is installed with at least 10 cm free space to the sides and 16 cm free space at the back</i>	

<i>Comments</i>

## 4 Equipment File Verification

### 4.1 Verify that the documentation is available

<i>Documentation</i>	<i>Check</i>
<i>Purchase Order</i>	
<i>Operating Instruction Manual</i>	
<i>Spare Parts List</i>	
<i>Declaration of Conformity (only for EU)</i>	
<i>Service Manual</i>	

<i>Comments</i>

## 5 Operational Qualification Data Sheet

### 5.1 Make sure that the following parameters will be noted and filled

It is our recommendation that the parameters are checked app. Ones time every year.  
 The parameters must be controlled by login the data via USB.  
 (Instruction for login data in user manual)

Parameter	Description	Arctiko default settings	Control
C0	Defrosting frequency (h)	24	
C1	Maximal defrosting time (min)	30	
C2	Minimal compressor stopping time (min)	1	
C3	Evaporator thawing time (min)	1	
C4	Temperature delay alarms (min)	5	
C5	Maximal compressor operation time (min)	40	
C6	Compressor stopping time (min)	1	
C7	Time for which the temp. measured directly prior to the defrosting compartment (min)	5	
C8	Compressor operation time if controlling sensor has been damaged (min)	3	
C9	Compressor stopping time if controlling sensor has been damaged (min)	3	
C10	Fan start after start compressor (min)	1	
C11	Fan stop after stop compressor (min)	1	
C12	Period write data to controller (min)	1	
C13	Evaporator freezing time (min)	2	
C14	Hour start blockade defrosting process (hh)	0	
C15	Hour end blockade defrosting process (hh)	0	
C16	High hysteresis value blockade display temperature (°C)	0	
C17	Low hysteresis value blockade display temperature (°C)	0	
C18	Time delay alarm open the door (min)	3	
C19	Time delay start two compressors (s)	30	
C20	Time delay between compressor start and the moment when compressor outlet temperature is measured. (s)	0	
C21	Time interval during compressor operation when the compressor outlet temp. can't fall more than d11 parameter. (s)	30	
D0	User set minimal temperature (°C)	4	
D1	User set maximal temperature (°C)	4	
D3	Hysteresis (°C)	1	
D4	Chamber sensor rescaling with relation to actually measured temperature (°C)	0	
D5	Ambient sensor rescaling with relation to actually measured temperature (°C)	-16	
D6	Chamber temperature higher up, will be Alarm (°C)	6	
D7	Chamber temperature below this, will be Alarm (°C)	2	
D8	Evaporator temperature at which fans will start their operation after the defrosting process completion (°C)	4	
D9	Evaporator temperature at which the defrosting terminates (°C)	1	
D10	Minimum increase of compressor outlet temperature in time C20 (°C)	4	
D11	Maximum decrease of compressor outlet temp. during time interval C21 (°C)	7	



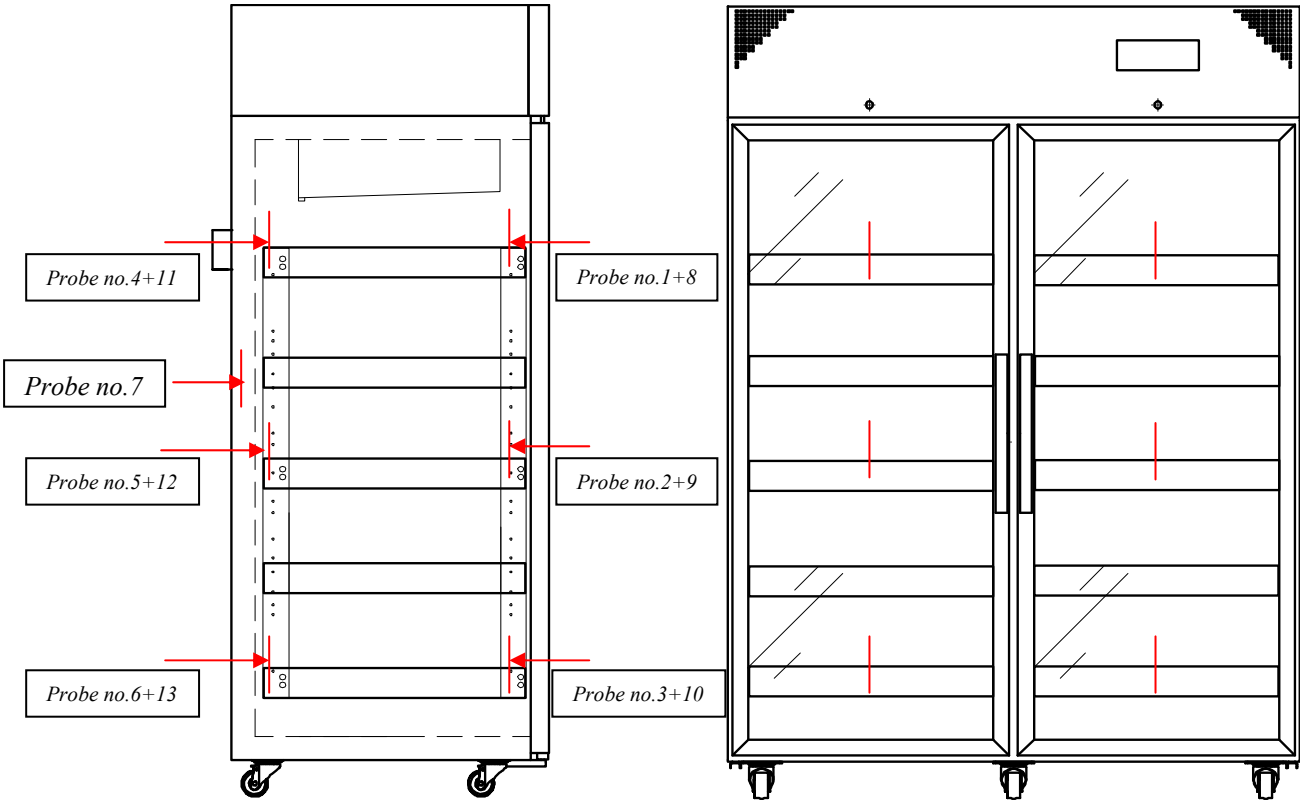
R0	0- Data writes to controller – disable 1- Data writes to controller – enable	1	
R1	0- Power failure – disable 1- Power failure – enable	1	
R2	0- Door open – disable 1- Door open – enable	1	
R3	0- Probe failure – disable 1- Probe failure – enable	1	
R4	Evaporator fans operation method, the parameter set as follows: 00 – Fan operate 01 – Fans operate all time 02 – Fan stopping	0	
R5	Evaporator defrosting method, the parameter set as follows: 00 – Defrosting through the compressor stop 01 – Heater assisted defrosting	1	
R6	Door opening sensor option: 00 – No door opening sensor present 01 – Door opening sensor available, connected when door is open 02 – Door opening sensor available, disconnected when door is open	2	
R7	Evaporator fans operation method, the parameter set as follows: 00 – Fans operate only together with the compressor 01 – Fans operate permanently after activating the power supply <b>NOTE!!!</b> <i>This parameter does not affect the cycle and method of evaporator defrosting</i>	1	
R8	Option alarm relay 0- Relay normally open 1- Relay normally connect	1	
R9	Address controller to 485	2	
R10	Type device 00 – Unit with one compressor 01 – Unit with two compressors, working together 02 – Unit with two compressors, only one compressor working	0	
R11	Blockade, turning of alarm relay (transmitter) with “mute” button on control panel 0- Blockade Off 1- Blockade On	1	
R12	Number of cycles changes work compressor, for type refrigerator no 2	1	
R13	0- The total value of temperature display 1- Temperature displayed with a comma	1	
R14	0- Relay lights attached all time 1- Relay lights attached with the door open 2- Relay lights attached with the door closed	1	
R15	0- Full communication with the power supply 1- Only the power failure detection 2- If we have 2 PCB modules connected to single power supply	0	
Setpoint	(°C)	4	

## Secondary Alarms – Dixell XR30CX

Label	Name	Range	Set point	Pr 1/2	Check
ALc	Temperature alarms configuration	rE=related to set; Ab=absolute	Ab	Pr2	
ALU	Maximum temperature alarm	Set-110,0°C; Set-230°F	6	Pr1	
ALL	Minimum temperature alarm	-50.0°C-Set/-58°F-Set	2	Pr1	
AFH	Differential for temperature alarm recovery	(0,1°C-25,5°C) (1°F-45°F)	1	Pr2	
ALd	Temperature alarm delay	0-255min	0	Pr2	
dAo	Delay of temperature alarm delay	0-23h e 50'	23	Pr2	
tbA	Alarm relay disabling	n=no; y=yes	y	Pr2	
Aro	Alarm relay activation with power failure	n(0); y(1)	y	Pr2	
ALF	Alarm relay activation for all the alarms	n(0); y(1)	y	Pr2	
bon	Time of buzzer restart after muting, in case og alarm duration	0 – 30 (min)	30	Pr2	
AoP	Alarm relay polarity (0A1=ALr)	oP; cL	cL	Pr2	
i1P	Digital input polarity	oP=opening; cL=closing	cL	Pr1	
i1F	Digital input configuration	EAL, bAL, PAL, dor, dEF, Htr, AUS	AUS	Pr1	
Adr	Serial address	0 – 247	1	Pr2	
Pbc	Kind of probe	Ptc; ntc	Pt1	Pr2	
onF	On/off key enabling	Nu, oFF, ES	oFF	Pr2	

## 6 Placement of test probes.

The probes must be placed in the unit like following marked with red.  
Probe no. 1(8) 2(9), 3(10) are placed in front of drawer no. 1, 3, 5.  
Probe no. 4(11), 5(12), 6(13) are placed in the back of drawer no. 1, 3, 5.  
Probe no. 7 is placed beside the probe for the controller.



Comments

## 7 Requirement for accept.

### 7.1 *Max. deviation and performance limits.*

Max. Ambient temperature	32°C ± 2K
Set point of controller	+4°C
Max. deviation from Set point for each probe placed in the unit:	±2°C

	Probe no. on pull down
Actual value for probe no. 1:	
Max. temperature	_____
Min. temperature	_____
Passed Yes / No	_____
Actual value for probe no. 2:	
Max. temperature	_____
Min. temperature	_____
Passed Yes / No	_____
Actual value for probe no. 3:	
Max. temperature	_____
Min. temperature	_____
Passed Yes / No	_____
Actual value for probe no. 4:	
Max. temperature	_____
Min. temperature	_____
Passed Yes / No	_____

Actual value for probe no. 5:

Max. temperature \_\_\_\_\_

Min. temperature \_\_\_\_\_

Passed Yes / No \_\_\_\_\_

Actual value for probe no. 6:

Max. temperature \_\_\_\_\_

Min. temperature \_\_\_\_\_

Passed Yes / No \_\_\_\_\_

Actual value for probe no. 7:

Max. temperature \_\_\_\_\_

Min. temperature \_\_\_\_\_

Passed Yes / No \_\_\_\_\_

Actual value for probe no. 8:

Max. temperature \_\_\_\_\_

Min. temperature \_\_\_\_\_

Passed Yes / No \_\_\_\_\_

Actual value for probe no. 9:

Max. temperature \_\_\_\_\_

Min. temperature \_\_\_\_\_

Passed Yes / No \_\_\_\_\_

Actual value for probe no. 10:

Max. temperature \_\_\_\_\_

Min. temperature \_\_\_\_\_

Passed Yes / No \_\_\_\_\_

Actual value for probe no. 11:

Max. temperature \_\_\_\_\_

Min. temperature \_\_\_\_\_

Passed Yes / No \_\_\_\_\_

Actual value for probe no. 12:

Max. temperature \_\_\_\_\_

Min. temperature \_\_\_\_\_

Passed Yes / No \_\_\_\_\_

Actual value for probe no. 13:

Max. temperature \_\_\_\_\_

Min. temperature \_\_\_\_\_

Passed Yes / No \_\_\_\_\_

Actual value Chart recorder:

Temperature \_\_\_\_\_

Passed Yes / No \_\_\_\_\_

If there are deviation between probe placed beside the probe for controller and display then change the parameter “calibration” .  
Start new test if the controller has been calibrate.

Pull down time Max. 6 h

Passed Yes / No \_\_\_\_\_

<i>Comments</i>



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