

# Climate rating definitions

- Climate rating **SN**  
= Ambient temperatures of +10 °C to +32 °C
- Climate rating **N**  
= Ambient temperatures of +16 °C to +32 °C
- Climate rating **ST**  
= Ambient temperatures of +16 °C to +38 °C
- Climate rating **T**  
= Ambient temperatures of +16 °C to +43 °C

# Customer service

As a company specialised in manufacturing refrigerators and freezers, Liebherr has a wide and comprehensive service network.

Liebherr laboratory refrigerators do not conform to DIN 58345 relevant to storing pharmaceuticals nor to DIN 58371 relevant to storing conserved blood. Liebherr laboratory freezers do not conform to 58375 relevant to storing blood plasma. All laboratory refrigerators and freezers conform to the EC Directives 2004/108/EC and 2006/95/EC.

# Internet

You will also find all Liebherr's laboratory appliances together with illustrations and technical data on our website at [www.liebherr.com](http://www.liebherr.com)

[www.liebherr.com](http://www.liebherr.com)

Subject to alterations. Printed in Germany by Fischer. 0133/8.0/04.10



# Laboratory refrigerators and freezers

**LIEBHERR**



# Laboratory appliances in compact format

Wherever floor space is limited or under-worktop installation is planned, the Mediline laboratory refrigerators with Comfort electronic controllers are the ideal solution. These appliances meet the exacting demands made of laboratory appliances. The range comprises two freestanding and two under-worktop laboratory refrigerators, in each case with glass door and solid door versions. The temperature can be set from +3°C to +8°C. The forced-air cooling system in conjunction with the

precision electronic controller ensures temperature consistency and uniform temperature distribution in the interior. The new LCv 4010 laboratory fridge-freezer further extends the range of compact laboratory appliances. It has two separately adjustable cooling circuits and therefore provides the utmost temperature stability and temperature consistency for both the refrigerator compartment and the freezer compartment.

## The Comfort electronic controller

The precision Comfort electronic controller with digital temperature display enables temperatures to be set to 1/10°C accuracy. Symbols indicate the operating status of the appliance at all times. To satisfy laboratory hygiene requirements, the Comfort electronic controller is flush-mounted and has an easy-clean membrane keypad.

## Integrated alarm systems

A visual and audible temperature alarm alerts the user if temperature deviation limits are exceeded. The parameters for the temperature alarm can be individually set. In addition, a visual and audible door alarm is raised if the door is open for longer than 1 minute. Furthermore, the laboratory appliances with Comfort electronic controllers have a visual power failure alarm when mains power returns and a sensor defect alarm.

## Integrated data memory with min/max temperatures

The Comfort electronic controller has an integrated data memory. It logs the maximum and minimum internal temperatures that occurred once the set temperature was reached, the last three temperature alarms and power failures, together with the time, date and duration of the alarm. The respective data can be recalled using the AlarmLog function and read on the display panel.

## 1-point calibration

The laboratory appliances with Comfort electronic controllers provide 1-point calibration for accurate temperature control. This permits compensation between the set temperature and the actual internal temperature. Positive or negative changes to the correction value can be made in steps of 0.1K.

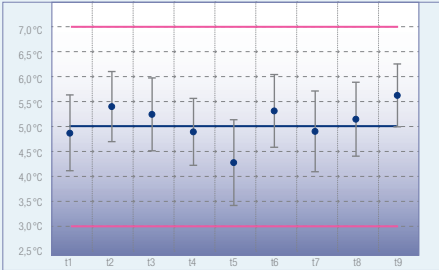
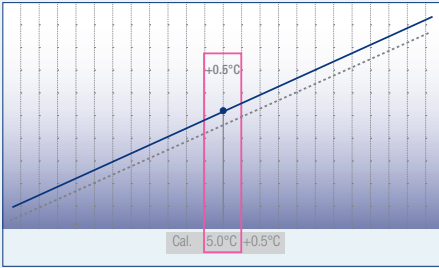
Implementation September 2010

## External temperature and alarm connections

The laboratory appliances with Comfort electronic controllers are equipped with a volt-free contact for alarm forwarding to an external remote warning system. In addition, the appliances have an RS 485 serial interface for central documentation of the temperature profile data and alarm events.

## Maximum temperature stability and temperature consistency

The forced-air cooling system in conjunction with the precision Comfort electronic controller ensures maximum temperature stability and high temperature consistency in the interior. The appliances are equipped with a secondary safety thermostat to prevent temperatures below +2°C in case of a fault. All the laboratory appliances with Comfort electronic controllers are tested according to the NF X 15-140 standard with regard to maximum temperature stability and optimal temperature consistency.





**Access port for an external temperature sensor**

In the laboratory appliances with Comfort electronic controllers there is provision for an independent temperature sensor allowing, for instance, a PT 100 probe or similar measuring elements to be positioned in the interior. The diameter of the access port is 10 mm.



**Hygienic interior for versatile use**

The seamless commercial-grade polystyrol inner liner is exceptionally easy to clean. The moulded trays prevent the grid shelves from tipping and allow height-adjustment in increments of 32 mm for particularly versatile use of the interior.



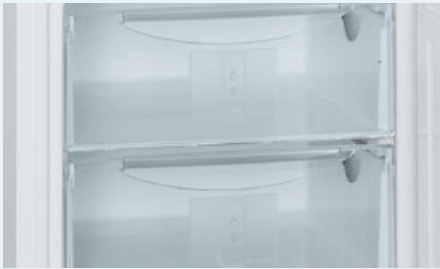
**Close-mesh grid shelves**

The plastic-coated grid shelves are easily adjustable in height and can be removed at a door opening angle of 90°. The close-mesh grid shelves ensure secure storage even for small items. The grid shelves have an extremely high loading capacity of up to 60 kg.



**Interior light**

The LKv 3912 and LKUv 1612 laboratory refrigerators with glass door have a ceiling light with separate switch for uniform illumination of the interior and fast, direct access to the stored products.



**Convenient, clear view drawers**

The drawers in the freezer compartment of the LCv 4010 fridge-freezer can be removed at a door opening angle of 90°. They have a transparent front providing a clear view of the substances stored inside, and handles recessed in the sides of the drawers for easy carrying when the drawers are removed. There is the additional possibility of using the freezer compartment just with the two integrated glass shelves as storage areas.



**Practical door**

The doors are self-closing for convenient use. The integrated lock is exceedingly sturdy and protects the stored products against unauthorised access. The doors hinges are reversible and the gaskets are replaceable.

**Functional and practical accessories**



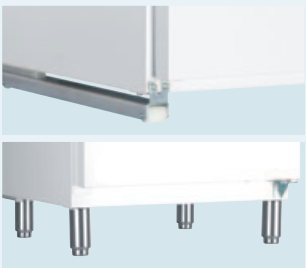
**Additional lock barrels**

For specific locking requirements, up to 10 lock barrels each with a different key can be retrofitted to the laboratory models with Comfort controllers.



**Evaporator cover**

A white-coated aluminium evaporator cover is available as a retrofit kit for the LKv, LCv and LKUv models to prevent laboratory preparations from freezing onto the rear-wall evaporator.



**Roller sets and adjustable-height feet**

30 mm-high roller sets can be retrofitted to the under-worktop LKUv models and adjustable-height feet can be retrofitted to the LKv models to allow easy cleaning underneath. The feet are adjustable between 115 mm and 170 mm in height.



**Plastic-coated grid shelves**

Additional plastic-coated grid shelves can be retrofitted as required to provide extra storage options. The robust grid shelves have an extremely high loading capacity of up to 60 kg.



**Stacking kit**

A stacking kit is available as an accessory for the LKUv, LKUexv and LGUex models. This enables laboratory refrigerators and freezers with independent temperatures to be combined on a small footprint.



**NTC product temperature probe**

An NTC product temperature probe for logging product temperatures is available as a retrofit kit for the laboratory appliances with Comfort electronic controllers. The logged product temperatures can either be read by the electronic controller or transferred to an external documentation system via the existing RS 485 interface.

Available from September 2010



**Interface converter with documentation software**

A special interface converter including documentation software is available for central documentation of the temperature profile data and alarm events of multiple appliances via the RS 485 serial interface. Up to 20 laboratory appliances can be networked for central monitoring and temperature recording.

Compatible for laboratory appliances with Comfort electronic controllers from September 2010





Laboratory refrigerators  
with Comfort electronic controllers

Total gross/net capacity
Exterior dimensions in mm (w/d/h)
Interior dimensions in mm (w/d/h)
Energy consumption in 24h*
General
Cooling system
Defrosting method
Temperature setting range
Housing material/colour
Door/lid material
Liner material
Type of control
Temperature display
Status display
Temperature and door open alarm
Power failure alarm
Interface / volt-free contact
Interior light
Adjustable storage shelves
Usable shelf area in mm (w/d)
Shelf material
Shelf loading capacity
Handle
Lock
Self-closing door
Door hinges
Climate rating
Refrigerant
Accessories
Grid shelf, plastic-coated
Stacking kit, white
Roller set
Evaporator cover, white
Adjustable legs
NTC product temperature sensor
Converter incl. software (serial connection)

<b>LKv 3912</b> Mediline	<b>LKv 3910</b> Mediline	<b>LKuv 1612</b> Mediline	<b>LKuv 1610</b> Mediline
360/344 l	360/344 l	141/130 l	141/130 l
600/615/1840	600/615/1840	600/615/820	600/615/820
455/435/1650	455/435/1650	455/435/669	455/435/669
1.3 kWh	0.8 kWh	1.0 kWh	0.7 kWh
dynamic	dynamic	dynamic	dynamic
automatic	automatic	automatic	automatic
+3°C to +8 °C	+3°C to +8 °C	+3°C to +8 °C	+3°C to +8 °C
steel/white	steel/white	steel/white	steel/white
glazed door	steel	glazed door	steel
white plastic	white plastic	white plastic	white plastic
electronic controller	electronic controller	electronic controller	electronic controller
external digital	external digital	external digital	external digital
•	•	•	•
visual and audible	visual and audible	visual and audible	visual and audible
when mains power returns	when mains power returns	when mains power returns	when mains power returns
RS 485/•	RS 485/•	RS 485/•	RS 485/•
ceiling lighting, with separate switch		ceiling lighting, with separate switch	
5	5	3	3
455/420	455/420	455/420	455/420
grid shelves, plastic-coated	grid shelves, plastic-coated	grid shelves, plastic-coated	grid shelves, plastic-coated
60 kg	60 kg	60 kg	60 kg
ergonomic slimline handle	ergonomic slimline handle	ergonomic slimline handle	ergonomic slimline handle
•	•	•	•
•	•	•	•
right hand, reversible	right hand, reversible	right hand, reversible	right hand, reversible
SN-ST	SN-ST	SN-ST	SN-ST
R 600a	R 600a	R 600a	R 600a
7112313	7112313	7112313	7112313
		9876687	9876687
		9590521	9590521
9590525	9590525	9590523	9590523
9590737	9590737		
available from September 2010	available from September 2010	available from September 2010	available from September 2010
compatible from September 2010	compatible from September 2010	compatible from September 2010	compatible from September 2010

\* according to NF X 15-140 laboratory test procedure: October 2002 at +25°C ambient temperature

Laboratory fridge-freezer  
with Comfort electronic controllers

Gross capacity	fridge/freezer comp.
Net capacity	fridge/freezer comp.
Exterior dimensions in mm (w/d/h)	
Interior dimensions in mm (w/d/h)	fridge compartment
	freezer compartment
Energy consumption in 24h*	
General	
Cooling system	fridge/freezer comp.
Defrosting method	fridge/freezer comp.
Temperature setting range	fridge/freezer comp.
Housing material/colour	
Door/lid material	
Liner material	
Type of control	
Temperature display	
Status display	
Temperature and door open alarm	
Power failure alarm	
Interface / volt-free contact	
Adjustable storage shelves	fridge compartment
Usable shelf area in mm (w/d)	fridge compartment
Shelf material	fridge/freezer comp.
Shelf loading capacity	fridge/freezer comp.
Number of drawers	freezer compartment
Handle	
Lock	
Self-closing doors	
Door hinges	
Climate rating	
Refrigerant	
Accessories	
Grid shelf, plastic-coated, for	fridge compartment
Evaporator cover, white, for	fridge compartment
NTC product temperature sensor	
Converter incl. software (serial connection)	

\* according to NF X 15-140 laboratory test procedure: October 2002 at +25°C ambient temperature

LCv 4010  
Mediline

254/107 l
240/105 l
600/615/2000
455/435/1110
431/435/597
1.8 kWh
forced-air / static
automatic / manual
+3 °C to +8 °C / -9 °C to -30 °C
steel/white
steel
white plastic
electronic controller
external digital
•
visual and audible
when mains power returns
RS 485/•
4
455/420
grid shelves, plastic-coated / glass
60 kg / 40 kg
3
ergonomic slimline door handles
•
•
right interchangeable
SN-ST
R 600a
7112313
available from September 2010
available from September 2010
compatible from September 2010

model available from September 2010

# Storage of explosive and highly flammable substances

The range of laboratory appliances with Comfort electronic controllers comprises two refrigerators and two freezers with spark-free interior, especially for storing explosive and highly flammable substances - for instance in the chemical industry or in special laboratories. The interiors of the appliances are in compliance with the safety requirements of the EU Directive 94/9/EC (ATEX 95) and have been tested according to the EN 1127-1, IEC 60079-0 and IEC 60079-15 standards by electro-suisse – SEV (Swiss Association for Electrical Engineering, Power and Information Technologies), the ATEX conformity evaluation organisation.



## Certified according to ATEX 95

All laboratory refrigerators and freezers with spark-free interior are tested according to the 94/9 EC (ATEX 95) Directive. They have a Zone II nA interior for gases, taking into account the safety requirements of material category 3G. The appliances are therefore suited for storing explosive and highly flammable substances.



## The Comfort electronic controller

The precision Comfort electronic controller with digital temperature display enables temperatures to be set to 1/10°C accuracy. Symbols indicate the operating status of the appliance at all times. To satisfy laboratory hygiene requirements, the Comfort electronic controller is flush-mounted and has an easy-clean membrane keypad.



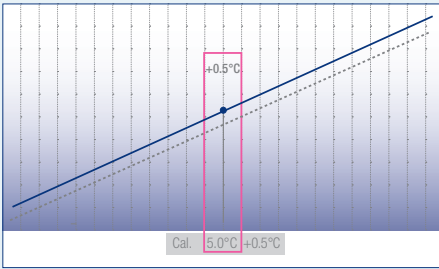
## Integrated alarm systems

A visual and audible temperature alarm alerts the user if temperature deviation limits are exceeded. The parameters for the temperature alarm can be individually set. In addition, a visual and audible door alarm is raised if the door is open for longer than 1 minute. Furthermore, the laboratory appliances with Comfort electronic controllers have a visual power failure alarm when mains power returns and a sensor defect alarm.



## Integrated data memory with min/max temperatures

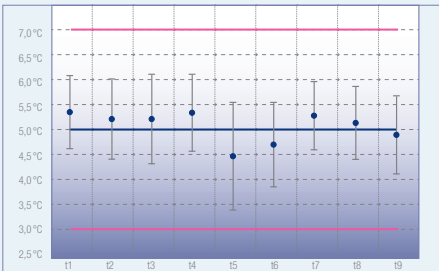
The Comfort electronic controller has an integrated data memory. It logs the maximum and minimum internal temperatures that occurred once the set temperature was reached, the last three temperature alarms and power failures, together with the time, date and duration of the alarm. The respective data can be recalled using the AlarmLog function and read on the display panel.



## 1-point calibration

The laboratory appliances with Comfort electronic controllers provide 1-point calibration for accurate temperature control. This permits compensation between the set temperature and the actual internal temperature. Positive or negative changes to the correction value can be made in steps of 0.1K.

Implementation September 2010



## Maximum temperature stability and temperature consistency

In conjunction with the precision Comfort electronic controller, the forced-air cooling system of the laboratory refrigerators and the static cooling system of the laboratory freezers with spark-free interior ensure maximum temperature stability and high temperature consistency. The laboratory refrigerators are equipped with a secondary safety thermostat to prevent temperatures below +2°C in case of a fault. All the laboratory appliances with Comfort electronic controllers are tested according to the NF X 15-140 standard with regard to maximum temperature stability and optimal temperature consistency.





External temperature and alarm connections

The laboratory appliances with Comfort electronic controllers are equipped with a volt-free contact for alarm forwarding to an external remote warning system. In addition, the appliances have an RS 485 serial interface for central documentation of the temperature profile data and alarm events.



Access port for an external temperature sensor

In the laboratory appliances with Comfort electronic controllers and spark-free interior there is provision for an independent temperature sensor allowing, for instance, a PT 100 or similar measuring elements to be positioned in the interior. The access port diameter is 10 mm.



Hygienic interior for versatile use

The seamless commercial-grade polystyrol inner liner of the laboratory refrigerators with spark-free interior is exceptionally easy to clean. The moulded trayslides prevent the glass shelves from tipping and allow height-adjustment in increments of 32 mm for particularly versatile use of the interior.



Glass shelves

The glass shelves of the laboratory refrigerators with spark-free interior are easily adjustable in height and can be removed at a door opening angle of 90°. They ensure secure storage even for small items and have a loading capacity of up to 40 kg.



Convenient, clear view drawers

The drawers of the spark-free laboratory freezers can be removed at a door opening angle of 90°. They have a transparent front providing a clear view of the substances stored inside, and handles recessed in the sides of the drawers for easy carrying when the drawers are removed.



Practical door

The doors are self-closing for convenient use. The integrated lock is exceedingly sturdy and protects the stored products against unauthorised access. The door hinges are reversible and the gaskets are replaceable.

Functional and practical accessories



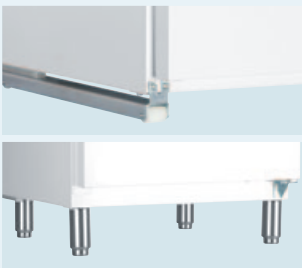
Additional lock barrels

For specific locking requirements, up to 10 lock barrels each with a different key can be retrofitted to the laboratory models with Comfort controllers.



Evaporator cover

A white-coated aluminium evaporator cover is available as a retrofit kit for the LKexv and LKUexv models to prevent laboratory preparations from freezing onto the rear-wall evaporator.



Roller sets and adjustable legs

30 mm-high roller sets can be retrofitted to the under-worktop LKUexv 1610 and LGUex 1500 models and adjustable legs can be retrofitted to the LKexv 3910 and LGex 3410 models to allow easy cleaning underneath. The feet are adjustable between 115 mm and 170 mm in height.



Glass shelves

Additional glass shelves can be retrofitted to the LKexv and LKUexv models as required to provide extra storage options. The robust glass shelves have an extremely high loading capacity of up to 40 kg.



Stacking kit

A stacking kit is available as an accessory for the LKUv, LKUexv and LGUex models. This enables laboratory refrigerators and freezers with independent temperatures to be combined on a small footprint.



NTC product temperature probe

An NTC product temperature probe for logging product temperatures is available as a retrofit kit for the laboratory appliances with Comfort electronic controllers. The logged product temperatures can either be read by the electronic controller or transferred to an external documentation system via the existing RS 485 interface.

available from September 2010



Interface converter with documentation software

A special interface converter including documentation software is available for central documentation of the temperature profile data and alarm events of multiple appliances via the RS 485 serial interface. Up to 20 laboratory appliances can be networked for central monitoring and temperature recording.

Compatible for laboratory appliances with Comfort electronic controllers from September 2010



Laboratory refrigerators and freezers  
with Comfort electronic controller and  
spark-free interior

Total gross/net capacity
Exterior dimensions in mm (w/d/h)
Interior dimensions in mm (w/d/h)
Energy consumption in 24h*
General
Cooling system
Defrosting method
Temperature setting range
Housing material/colour
Door/lid material
Liner material
Type of control
Temperature display
Status display
Temperature and door open alarm
Power failure alarm
Interface / volt-free contact
Adjustable storage shelves
Usable shelf area in mm (w/d)
Shelf material
Shelf loading capacity
Number of drawers/baskets
Shelf height in mm
Handle
Lock
Self-closing door
Door hinges
Climate rating
Refrigerant
Accessories
Glass shelf
Stacking kit, white
Roller set
Evaporator cover, white
Adjustable legs
NTC product temperature sensor
Converter incl. software (serial connection)



<b>LKexv 3910</b> Mediline	<b>LKUexv 1610</b> Mediline	<b>LGex 3410</b> Mediline	<b>LGUex 1500</b> Mediline
360/344 l	141/130 l	310/284 l	139/129 l
600/615/1840	600/615/820	600/615/1840	600/615/820
455/435/1650	455/435/669	420/400/1587	454/450/663
0.9 kWh	0.9 kWh	1.3 kWh	0.9 kWh
dynamic	dynamic	static	static
automatic	automatic	manual	manual
+3°C to +8°C	+3°C to +8°C	-9°C to -30°C	-9°C to -26°C
steel/white	steel/white	steel/white	steel/white
steel	steel	steel	steel
white plastic	white plastic	white plastic	white plastic
electronic controller	electronic controller	electronic controller	electronic controller
external digital	external digital	external digital	external digital
•	•	•	•
visual and audible	visual and audible	visual and audible	visual and audible
when mains power returns	when mains power returns	when mains power returns	when mains power returns
RS 485/•	RS 485/•	RS 485/•	RS 485/•
5	3		
455/420	455/420		
glass	glass	evaporator plates	evaporator plates
40 kg	40 kg	24 kg	24 kg
		8/0	3/1
		185	149
ergonomic slimline handle	ergonomic slimline handle	ergonomic slimline handle	ergonomic slimline handle
•	•	•	•
•	•	•	•
right hand, reversible	right hand, reversible	right hand, reversible	right hand, reversible
SN-ST	SN-ST	SN-ST	SN-ST
R 600a	R 600a	R 600a	R 600a
9293629	9293629		
	9876687		9876687
	9590521		9590521
9590525	9590523		
9590737		9590737	
available from September 2010	available from September 2010	available from September 2010	available from September 2010
compatible from September 2010	compatible from September 2010	compatible from September 2010	compatible from September 2010

\* according to NF X 15-140 laboratory test procedure: October 2002 at +25°C ambient temperature



# Robust and spark-free

The laboratory refrigerators with static cooling and spark-free interior are designed especially for storing explosive and highly flammable substances. The interiors of the FKEX models meet all the safety requirements of the EU Directive 94/9EC (ATEX 95). The

appliances excel with a large capacity and rugged design. The cooling temperature is continuously adjustable from +2°C to +10°C with the aid of the thermostat integrated in the control panel.



## Certified according to ATEX 95

The FKEX models are labelled clearly and permanently on the outer housing and inside in accordance with the ATEX Directive 94/9 EC, including information for cleaning. The interior is in compliance with Zone II nA for gases, taking into account the safety requirements of material category 3G. The appliances are therefore suited for storing explosive and highly flammable substances.



## Hygienic interior for versatile use

The seamless plastic compartment liner is exceptionally easy to clean. The moulded trays prevent the glass shelves from tipping and allow them to be varied in height.



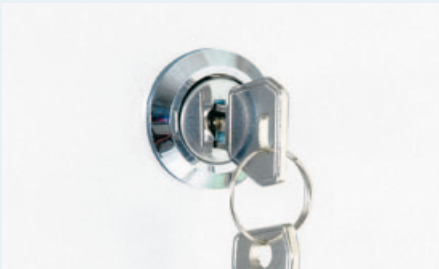
## Glass shelves

The glass shelves ensure secure storage even for small items and have a loading capacity of up to 40 kg.



## Water tray

The defrost water drain in the laboratory appliances with spark-free interior is sealed for compliance with the ATEX Directive 94/9 EC. The defrost water obtained during the automatic defrost cycle is collected in a tray which has to be emptied manually at regular intervals.



## Lock

The integrated lock is exceedingly sturdy and protects the stored products against unauthorised access.



## Reversible door hinges

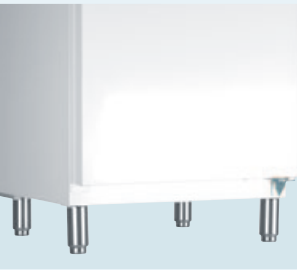
The door hinges of the FKEX models are reversible to permit adaptation to individual space conditions. The door gaskets can also be replaced as required.



# Functional and practical accessories



**Castor base**  
A castor base is available as an accessory for the FKEX models to allow flexible use of the appliances in different rooms.



**Adjustable legs**  
Adjustable legs can be retrofitted to the FKEX models for easy cleaning underneath. The legs are adjustable between 115 mm and 170 mm in height.



**Glass shelves**  
Additional glass shelves can be retrofitted as required to provide extra storage options. The robust glass shelves have a loading capacity of up to 40 kg.



**Additional lock barrels**  
For specific locking requirements, up to 10 lock barrels each with a different key can be retrofitted to the FKEX models.



**Laboratory refrigerators with analogue controls and spark-free interior**

<b>Total gross/net capacity</b>	
<b>Exterior dimensions in mm (w/d/h)</b>	
<b>Interior dimensions in mm (w/d/h)</b>	
<b>Energy consumption in 24h</b>	
<b>General</b>	
Cooling system	
Defrosting method	
Temperature setting range	
Housing material/colour	
Door/lid material	
Liner material	
Type of control	
Adjustable storage shelves	
Shelf material	
Usable shelf area in mm (w/d)	
Shelf loading capacity	
Handle	
Lock	
Door hinges	
Gross/net weight	
Climate rating	
Refrigerant	
<b>Accessories</b>	
Glass shelf	
Castor base	
Set of adjustable legs	

FKEX 5000 Mediline	FKEX 3600 Mediline	FKEX 2600 Mediline	FKEX 1800 Mediline
500/433 l	360/335 l	260/247 l	180/174 l
752/710/1516	600/600/1590	600/600/1216	600/600/885
652/537/1338	513/441/1418	513/441/1047	513/441/734
0.9 kWh	0.9 kWh	0.8 kWh	0.7 kWh
static	static	static	static
automatic	automatic	automatic	automatic
+2°C to +10 °C	+2°C to +10 °C	+2°C to +10 °C	+2°C to +10 °C
steel/white	steel/white	steel/white	steel/white
steel	steel	steel	steel
white plastic	white plastic	white plastic	white plastic
mechanical control system	mechanical control system	mechanical control system	mechanical control system
5	5	4	3
glass	glass	glass	glass
652/489	513/405	513/405	513/405
40 kg	40 kg	40 kg	40 kg
•	•	•	•
•	•	•	•
right hand, reversible	right hand, reversible	right hand, reversible	right hand, reversible
78/73 kg	62/58 kg	48/45 kg	39/36 kg
SN	SN	SN	SN
R 600a	R 600a	R 600a	R 600a
9293689	9293691	9293691	9293691
9086957	9086959	9086781	9086781
9590963	9590965	9590965	9590965