

## 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

## Internet

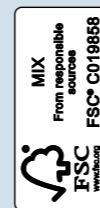
You will also find all Liebherr's laboratory appliances together with illustrations and technical data on our website at [www.liebherr.com](http://www.liebherr.com). Under „Info & Service“ the “Laboratory Technical Sales Manual“ is available for download which provides detailed technical information on the appliances and NFX 15-140 temperature charts.



## Customer service

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

Liebherr laboratory refrigerators or freezers do not comply with the German Institute for Standardisation norm DIN 58371 regarding the requirements for the storage of conserved blood and DIN 58375 regarding the requirements for the storage of blood plasma. The MKV and MKUv models comply with the German Institute for Standardisation norm DIN 58345 which refers to the specification of pharmacy refrigerators. All other Liebherr refrigerators and freezers in this catalogue do not comply with this standard.



Subject to alterations. Printed in Germany by Fischer, 7944438-00/1, 5/02.2012

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## Laboratory refrigerators and freezers

# LIEBHERR

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Subject to alterations. Printed in Germany by Fischer, 7943928-03/7, 6/02, 2012



## Laboratory refrigerators and freezers



## Innovative expertise and drive in the laboratory sector

The demands made on refrigerators and freezers are particularly high in all the sectors of professional use. Whether the issue is the refrigeration performance, specifying the materials, designing the refrigeration components or evolving the design concepts – all the decisions are directed to ensuring the long-term, trouble-free use of our appliances.

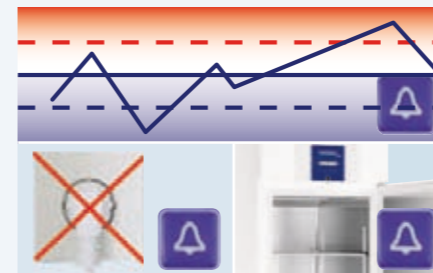
The most stringent reliability and safety standards apply to appliances in the laboratory sector. Therefore Liebherr has a range of purpose-built and factory-designed laboratory appliances in different temperature ranges for numerous applications. The Mediline appliances incorporating Profi electronic controllers offer many advantages. High-grade materials, high-performance components and accurate workmanship right down to the last detail ensure the high quality of the Liebherr appliances.

## The laboratory refrigerators and freezers with Profi electronic controllers



### The Profi electronic controller

The menu-guided Profi electronic controller with integrated real-time clock allows the temperature to be set to 1/10°C accuracy. The text display has German, English, French, Spanish or Italian language setting options. To satisfy laboratory hygiene requirements, the electronic controller is flush-fitted and has an easy-clean membrane keypad.



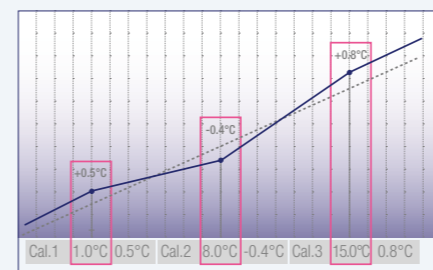
### Integrated alarm systems

A visual and audible temperature alarm alerts the user if temperature deviation limits are exceeded. In addition, a visual and audible alarm is activated if the door is open for longer than 1 minute. There is also an immediate visual and audible alarm in the event of power failure.



### Integrated data memory

The Profi electronic controller has an integrated data memory which logs the last 30 alarm events including date, time and maximum temperature as well as the internal temperature profile at 4-minute intervals. 2800 temperature logs are stored to memory, which corresponds to approximately a 7-day logging period.



### 3-point calibration

The laboratory appliances with Profi electronic controllers provide 3-point calibration for extremely accurate temperature control. This permits compensation between the set temperature and the actual internal temperature at as many as three temperature points. Positive or negative changes to the correction value can be made in steps of 0.1K.



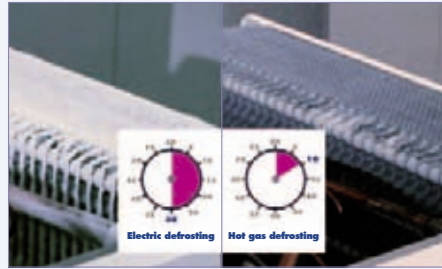
### Mains-independent power supply of the electronic controller

In case of power failure, the electronic controller continues to operate from an integrated 12 V battery. As a result, the memory continues to log the internal temperatures for another 72 hours even in the event of power failure. Furthermore, if external alarm and documentation systems are connected, the data transfer is maintained for as long as 72 hours.



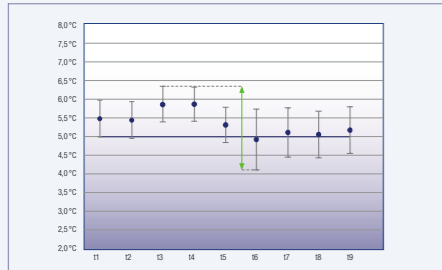
### External temperature and alarm documentation

The laboratory appliances with Profi electronic controllers are equipped with a volt-free contact for alarm forwarding to an external remote warning system. The data stored in the internal memory can be read out via the infrared interface and transferred to a PC with documentation software. In addition, the appliances have an RS 485 serial interface enabling as many as 20 appliances to be networked with a central documentation and alarm system.



### Energy-efficient hot-gas defrost system

The hot-gas defrost system with demand and time control permits very short defrost cycles: only 8 minutes for laboratory refrigerators and 12 minutes for laboratory freezers. As a result, the internal temperature remains almost constant during the defrost cycle. In addition, there is the option of initiating the defrost manually.



### Maximum temperature stability and temperature consistency

Maximum temperature stability is ensured by the high-performance forced-air cooling system with double ventilation, in conjunction with optimal routing of the air flow. The very short defrost cycles allow the internal temperature to be kept almost constant during the defrost phase. All the laboratory appliances 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 Profi 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 7.6 mm.



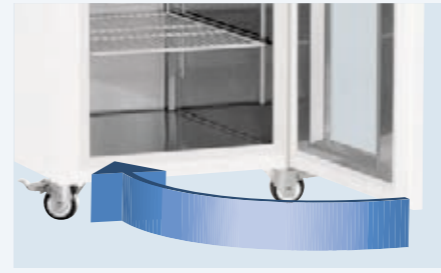
### Refrigeration components

The refrigeration components are securely integrated in the ceiling area, allowing ready access. The compressor compartment panel can be simply raised for cleaning or servicing purposes and can be fully detached from an opening angle of 45° to provide very good access to the refrigeration components.



### High-quality interior for versatile use

The smooth compartment liners are made entirely of 304-grade stainless steel and are therefore particularly easy to clean. The robust trayslides can be easily repositioned to suit needs and, together with the plastic-coated grid shelves, they ensure versatile use of the interior. The trayslides are U-shaped to make the grid shelves non-tilting.



### Practical door

The doors remain open at 90° and are self-closing at less than 60° for convenient use. The integrated lock is exceedingly sturdy and protects the stored products against unauthorised access. The door hinges are interchangeable and the door seals are replaceable.



### Castors

The LKPv and LGPv ranges come with castors as standard to allow easy and convenient cleaning underneath and versatile use of the appliances in different rooms. The brake of the two front castors provides a firm hold and ensures that the appliances cannot tip even if the grid shelves are extended. The castors can be removed in order to transport the cabinets. Doing so the height of the cabinets will be reduced by 13 cm.

## Functional and practical accessories



### Infrared key with documentation software

The alarm events and temperature profile data can be read out using the infrared key available as an accessory. Corresponding documentation software is included enabling visualisation of the read-out data on a PC.



### NTC product temperature probe

An NTC product temperature probe for logging product temperatures is available as a retrofit kit for the laboratory appliances with Profi 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.



### 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. Capability is provided for interconnecting as many as 20 laboratory appliances and centrally documenting their parameters.



### U-shaped trayslides and grid shelves

Additional U-shaped trayslides and 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.



Laboratory refrigerators and freezers with Profi electronic controllers	LKPv 1422 MediLine	LKPv 8420 MediLine	LKPv 6520 MediLine	LGPv 1420 MediLine	LGPv 8420 MediLine	LGPv 6520 MediLine
<b>Gross capacity</b>	1427 l	856 l	601 l	1427 l	856 l	601 l
<b>Exterior dimensions in mm (w/d/h)</b>	1430 / 830 / 2150	790 / 980 / 2150	700 / 830 / 2150	1430 / 830 / 2150	790 / 980 / 2150	700 / 830 / 2150
<b>Interior dimensions in mm (w/d/h)</b>	1263 / 650 / 1550	623 / 800 / 1550	533 / 650 / 1550	1263 / 650 / 1550	623 / 800 / 1550	533 / 650 / 1550
<b>Energy consumption in 24h*</b>	3.923 kWh	2.400 kWh	1.775 kWh	8.887 kWh	5.500 kWh	4.715 kWh
<b>General</b>						
Cooling system	dynamic	dynamic	dynamic	dynamic	dynamic	dynamic
Defrosting method	automatic	automatic	automatic	automatic	automatic	automatic
Temperature range	0°C to +16°C	-2°C to +16°C	-2°C to +16°C	-10°C to -26°C	-10°C to -35°C <sup>1)</sup>	-10°C to -35°C <sup>1)</sup>
Housing material / colour	steel / white	steel / white	steel / white	steel / white	steel / white	steel / white
Door / lid material	glass door	steel	steel	steel	steel	steel
Liner material	304-grade stainless steel	304-grade stainless steel	304-grade stainless steel	304-grade stainless steel	304-grade stainless steel	304-grade stainless steel
Type of control	electronic controller with data logger and text display	electronic controller with data logger and text display	electronic controller with data logger and text display	electronic controller with data logger and text display	electronic controller with data logger and text display	electronic controller with data logger and text display
Temperature display	external digital	external digital	external digital	external digital	external digital	external digital
Power failure alarm	immediately upon power failure for 72hrs	immediately upon power failure for 72hrs	immediately upon power failure for 72hrs	immediately upon power failure for 72hrs	immediately upon power failure for 72hrs	immediately upon power failure for 72hrs
Temperature and door open alarm	visual and audible	visual and audible	visual and audible	visual and audible	visual and audible	visual and audible
Interface	RS 485	RS 485	RS 485	RS 485	RS 485	RS 485
Volt-free contact	•	•	•	•	•	•
Interior light	ceiling lighting, with separate switch					
Adjustable storage shelves	8	4	4	8	4	4
Usable shelf area in mm (w/d)	1263 / 650	623 / 800	533 / 650	1263 / 650	623 / 800	533 / 650
Shelf material	grid shelves, plastic-coated	grid shelves, plastic-coated	grid shelves, plastic-coated	grid shelves, plastic-coated	grid shelves, plastic-coated	grid shelves, plastic-coated
Shelf loading capacity	60 kg	60 kg	60 kg	60 kg	60 kg	60 kg
Castors	castors with brake at the front, castors at the rear	castors with brake at the front, fixed castors at the rear	castors with brake at the front, fixed castors at the rear	castors with brake at the front, castors at the rear	castors with brake at the front, fixed castors at the rear	castors with brake at the front, fixed castors at the rear
Handle	Handle moulding	Handle moulding	Handle moulding	Handle moulding	Handle moulding	Handle moulding
Lock	•	•	•	•	•	•
Self-closing door	•	•	•	•	•	•
Door hinges		right hand, reversible	right hand, reversible		right hand, reversible	right hand, reversible
Climate rating	T	T	T	T	T	T
Noise level re 1 PW	55 dB (A)	55 dB (A)	55 dB (A)	60 dB (A)	60 dB (A)	60 dB (A)
Refrigerant	R 290	R 290	R 290	R 290	R 290	R 290
Voltage / Connection rating	220-240 V / 3.0 A	220-240 V / 2.0 A	220-240 V / 2.0 A	220-240 V / 4.5 A	220-240 V / 4.0 A	220-240 V / 4.0 A
<b>Accessories</b>						
Grid shelf, plastic-coated	7112393	7113643	7112393	7112393	7113643	7112393
U-shaped trayslide, right	9000906	9005089	9000906	9000906	9005089	9000906
U-shaped trayslide, left	9000907	9005077	9000907	9000907	9005077	9000907
Infrared key incl. software	9590389	9590389	9590389	9590389	9590389	9590389
Converter incl. software (serial connection)	9590387	9590387	9590387	9590387	9590387	9590387
NTC product temperature sensor	9590407	9590407	9590407	9590407	9590407	9590407
<b>Also available as</b>	<b>LKPv 1420</b> with insulated door		<b>LKPv 6522</b> with glazed door			

\* measured at +25°C ambient temperature and +5°C set temperature for fridges and -20°C for freezers

1) The temperature range is valid at a maximum ambient temperature of +30 °C.

## 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 underworktop 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 LCv 4010 laboratory fridge-freezer further extends the range of compact laboratory appliances. It has two separately adjustable cooling circuits providing 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 accurately. 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.



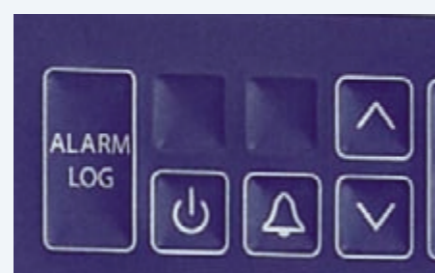
### Integrated alarm systems

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 activated if the door is open for longer than 1 minute. The door-open alarm delay can be adjusted between 1 and 5 minutes. 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.



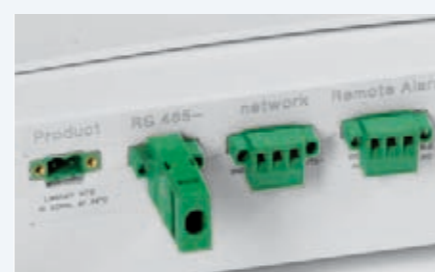
### 1-point calibration

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.



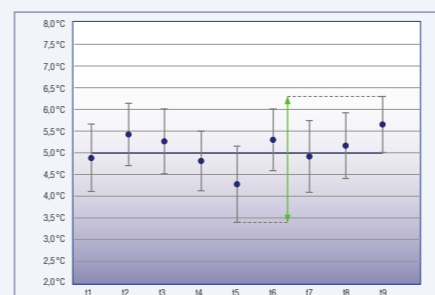
### External temperature and alarm connections

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.



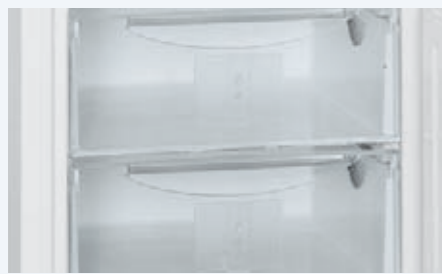
### Close-mesh grid shelves

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.



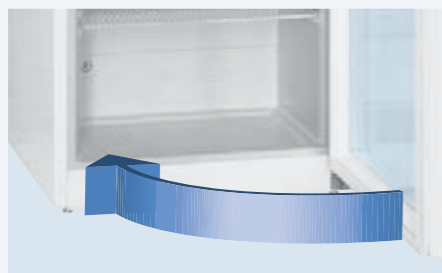
### Interior light

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 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



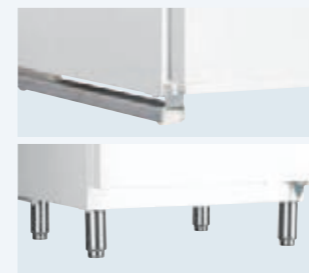
### Additional lock barrels

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 1612 and LKUv 1610 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.



### 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.



Laboratory refrigerators with Comfort electronic controllers	LKv 3912 MediLine	LKv 3910 MediLine	LKv 1612 MediLine	LKv 1610 MediLine
<b>Total gross / net capacity</b>	360 / 344 l	360 / 344 l	141 / 130 l	141 / 130 l
<b>Exterior dimensions in mm (w/d/h)</b>	600 / 615 / 1840	600 / 615 / 1840	600 / 615 / 820	600 / 615 / 820
<b>Interior dimensions in mm (w/d/h)</b>	440 / 435 / 1635	440 / 435 / 1635	440 / 435 / 670	440 / 435 / 670
<b>Energy consumption in 24h*</b>	1.315 kWh	0.846 kWh	1.010 kWh	0.747 kWh
<b>General</b>				
Cooling system	dynamic	dynamic	dynamic	dynamic
Defrosting method	automatic	automatic	automatic	automatic
Temperature range	+3°C to +8°C	+3°C to +8°C	+3°C to +8°C	+3°C to +8°C
Housing material / colour	steel / white	steel / white	steel / white	steel / white
Door / lid material	glass door	steel	glass door	steel
Liner material	white plastic	white plastic	white plastic	white plastic
Type of control	electronic controller	electronic controller	electronic controller	electronic controller
Temperature display	external digital	external digital	external digital	external digital
Power failure alarm	when mains power returns	when mains power returns	when mains power returns	when mains power returns
Temperature and door open alarm	visual and audible	visual and audible	visual and audible	visual and audible
Interface	RS 485	RS 485	RS 485	RS 485
Volt-free contact	•	•	•	•
Interior light	ceiling lighting, with separate switch		ceiling lighting, with separate switch	
Adjustable storage shelves	5	5	3	3
Usable shelf area in mm (w/d)	440 / 420	440 / 420	440 / 420	440 / 420
Shelf material	grid shelves, plastic-coated	grid shelves, plastic-coated	grid shelves, plastic-coated	grid shelves, plastic-coated
Shelf loading capacity	60 kg	60 kg	60 kg	60 kg
Handle	ergonomic slimline handle	ergonomic slimline handle	ergonomic slimline handle	ergonomic slimline handle
Lock	•	•	•	•
Self-closing door	•	•	•	•
Door hinges	right hand, reversible	right hand, reversible	right hand, reversible	right hand, reversible
Climate rating	SN-ST	SN-ST	SN-ST	SN-ST
Noise level re 1 pW	43 dB (A)	43 dB (A)	42 dB (A)	42 dB (A)
Refrigerant	R 600a	R 600a	R 600a	R 600a
Voltage / Connection rating	220-240 V / 1.5 A	220-240 V / 1.5 A	220-240 V / 1.0 A	220-240 V / 1.0 A
<b>Accessories</b>				
Grid shelf, plastic-coated	7112313	7112313	7112313	7112313
Stacking kit, white			9876687	9876687
Roller set			9590521	9590521
Evaporator cover, white	9590525	9590525	9590523	9590523
Adjustable legs	9590411	9590411		
NTC product temperature sensor	9590407	9590407	9590407	9590407
Converter incl. software (serial connection)	9590387	9590387	9590387	9590387

\* measured at +25°C ambient temperature and +5°C set temperature for fridges and -20°C for freezers

Laboratory fridge-freezer with Comfort electronic controllers	LCv 4010 MediLine
<b>Total gross / net capacity</b>	fridge compartment 254 / 240 l
<b>Total gross / net capacity</b>	freezer compartment 107 / 105 l
<b>Exterior dimensions in mm (w/d/h)</b>	600 / 615 / 2000
<b>Interior dimensions in mm (w/d/h)</b>	fridge compartment 440 / 435 / 1105
<b>Interior dimensions in mm (w/d/h)</b>	freezer compartment 431 / 435 / 597
<b>Energy consumption in 24h*</b>	1.800 kWh
<b>General</b>	
Cooling system	fridge / freezer comp. forced-air / static
Defrosting method	fridge / freezer comp. automatic / manual
Temperature range	fridge / freezer comp. +3°C to +8°C / -9°C to -30°C
Housing material / colour	steel / white
Door / lid material	steel
Liner material	white plastic
Type of control	electronic controller
Temperature display	external digital
Power failure alarm	when mains power returns
Temperature and door open alarm	visual and audible
Interface	RS 485
Volt-free contact	•
Adjustable storage shelves	fridge compartment 4
Usable shelf area in mm (w/d)	fridge compartment 440 / 420
Shelf material	fridge / freezer comp. grid shelves, plastic-coated / glass
Shelf loading capacity	fridge / freezer comp. 60 kg / 24 kg
Number of drawers	freezer compartment 3
Handle	ergonomic slimline handle
Lock	•
Self-closing door	•
Door hinges	right hand, reversible
Climate rating	SN-ST
Noise level re 1 pW	43 dB (A)
Refrigerant	R 600a
Voltage / Connection rating	220-240 V / 1.5 A
<b>Accessories</b>	
Grid shelf, plastic-coated, for	fridge compartment 7112313
Evaporator cover, white, for	fridge compartment 9590391
NTC product temperature sensor	9590407
Converter incl. software (serial connection)	9590387

\* measured at +25°C ambient temperature and +5°C set temperature for fridge compartment and -20°C for freezer compartment.

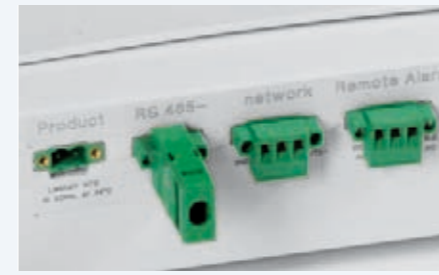


# Pharmacy refrigerators compliant to DIN 58345



In the medical sector safety and reliability is of the utmost importance and therefore pharmacies, surgeries, hospitals as well as companies make high demands on the cabinets which are intended to store pharmaceutical products. Liebherr's pharmacy refrigerators are explicitly designed for the safe storage of pharmacy products compliant to DIN 58345. True to the motto „product quality on the highest level” Liebherr pharmacy cabinets are both energy-efficient and environmentally friendly. The range comprises

two freestanding and two under-worktop pharmacy refrigerators, in each case with glass door and solid door versions. The forced-air cooling system in conjunction with the precision electronic controller ensures temperature stability and uniform temperature distribution in the interior. Numerous alarm and safety functions provide additional safety for the pharmacy products stored within the unit.



## External temperature and alarm connections

The pharmacy refrigerators 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 pharmacy refrigerators 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 MKv 3912 and MKUv 1612 pharmacy 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.



## 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.



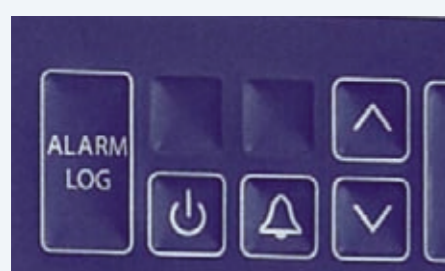
## The Comfort electronic controller

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



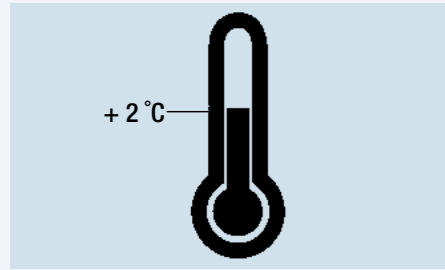
## Integrated alarm systems

A visual and audible temperature alarm alerts the user if temperature deviation limits are exceeded. In addition, a visual and audible alarm is activated if the door is open for longer than 1 minute. The door-open alarm delay can be adjusted between 1 and 5 minutes.



## 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.



**Safety thermostat**

The pharmacy fridges are fitted with an additional safety thermostat: In case of a controller- or probe defect this safety thermostat prevents the product temperature from dropping below +2 °C thus protecting the contents.



**Power failure alarm**

An audible and visual power-failure alarm with incorporated self-charging battery warns in case of supply power failure for up to 12 hrs. The audible alarm can be muted using the reset button. The cabinet plug is firmly fixed into the alarm socket and cannot be accidentally removed.

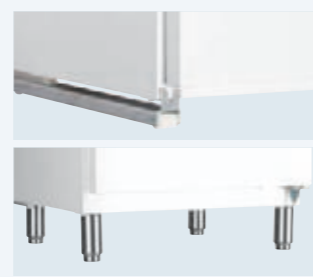


**Functional and practical accessories**



**Additional lock barrels**

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



**Roller sets and adjustable-height feet**

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



**Stacking kit**

A stacking kit is available as an accessory for the MKUv 1612 and MKUv 1610 models. This enables laboratory refrigerators and freezers with independent temperatures to be combined on a small footprint.



**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.



**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.

Pharmacy refrigerators compliant to DIN 58345	MKv 3912 MediLine	MKv 3910 MediLine	MKUv 1612 MediLine	MKUv 1610 MediLine
<b>Total gross / net capacity</b>	360 / 281 l	360 / 300 l	141 / 115 l	141 / 116 l
<b>Exterior dimensions in mm (w/d/h)</b>	600 / 615 / 1840	600 / 615 / 1840	600 / 615 / 820	600 / 615 / 820
<b>Interior dimensions in mm (w/d/h)</b>	440 / 435 / 1635	440 / 435 / 1635	440 / 435 / 670	440 / 435 / 670
<b>Energy consumption in 24h*</b>	1.315 kWh	0.846 kWh	1.010 kWh	0.747 kWh
<b>General</b>				
Cooling system	dynamic	dynamic	dynamic	dynamic
Defrosting method	automatic	automatic	automatic	automatic
Temperature range	+5°C	+5°C	+5°C	+5°C
Housing material / colour	steel / white	steel / white	steel / white	steel / white
Door / lid material	glass door	steel	glass door	steel
Liner material	white plastic	white plastic	white plastic	white plastic
Type of control	electronic controller	electronic controller	electronic controller	electronic controller
Temperature display	external digital	external digital	external digital	external digital
Power failure alarm	immediately upon power failure for at least 12hrs	immediately upon power failure for at least 12hrs	immediately upon power failure for at least 12hrs	immediately upon power failure for at least 12hrs
Temperature and door open alarm	visual and audible	visual and audible	visual and audible	visual and audible
Interface	RS 485	RS 485	RS 485	RS 485
Volt-free contact	•	•	•	•
Interior light	ceiling lighting, with separate switch		ceiling lighting, with separate switch	
Adjustable storage shelves	5	5	3	3
Usable shelf area in mm (w/d)	440 / 420	440 / 420	440 / 420	440 / 420
Shelf material	grid shelves, plastic-coated	grid shelves, plastic-coated	grid shelves, plastic-coated	grid shelves, plastic-coated
Shelf loading capacity	60 kg	60 kg	60 kg	60 kg
Handle	ergonomic slimline handle	ergonomic slimline handle	ergonomic slimline handle	ergonomic slimline handle
Lock	•	•	•	•
Self-closing door	•	•	•	•
Door hinges	right hand, reversible	right hand, reversible	right hand, reversible	right hand, reversible
Climate rating	SN	SN	SN	SN
Noise level re 1 PW	43 dB (A)	43 dB (A)	42 dB (A)	42 dB (A)
Refrigerant	R 600a	R 600a	R 600a	R 600a
Voltage / Connection rating	220-240 V / 1.5 A	220-240 V / 1.5 A	220-240 V / 1.0 A	220-240 V / 1.0 A
<b>Accessories</b>				
Grid shelf, plastic-coated	7112313	7112313	7112313	7112313
Stacking kit, white			9876687	9876687
Roller set			9590521	9590521
Adjustable legs	9590411	9590411		
NTC product temperature sensor	9590407	9590407	9590407	9590407
Converter incl. software (serial connection)	9590387	9590387	9590387	9590387

\* measured at +25 °C ambient temperature and +5 °C set temperature.

# Low temperature -45°C chest freezers

The low temperature -45°C chest freezers are designed to meet the specific requirements of an array of research, industrial or clinical applications. Where there is a need to store products or samples at lower than usual freezing temperatures freezers are the ideal solution. Offering supreme temperature stability as well as temperature uniformity within the units, they ensure the safe, cold storage of specimens, biological samples and other substances.

The low temperature chest freezers are available in three sizes and are equipped with a precision digital controller, which guarantees maximum temperature accuracy. Having a volt-free contact and an RS 485 serial interface, Liebherr's low temperature chest freezers can also be connected to a central alarm and documentation system, which provides additional safety for the samples within the unit.



## External temperature and alarm connections

The low temperature chest freezers 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.



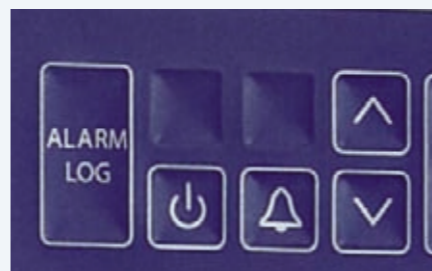
## The Comfort electronic controller

The precision Comfort electronic controller with digital temperature display enables temperatures to be set accurately. Symbols indicate the operating status of the appliance at all times. To satisfy laboratory hygiene requirements, the Comfort electronic controller 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 alarm is activated when the lid is open for longer than 1 minute. The door-open alarm delay can be adjusted between 1 and 5 minutes. 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 low temperature chest freezers 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.



## StopFrost-System

The Stop-Frost system fitted to the LGT models has 2 major advantages: frosting of the freezer and its contents is significantly reduced. This means the time-consuming process of defrosting is necessary far less often. The vacuum is also equalised quickly after the lid has been opened and closed and the chest freezer can be re-opened effortlessly.

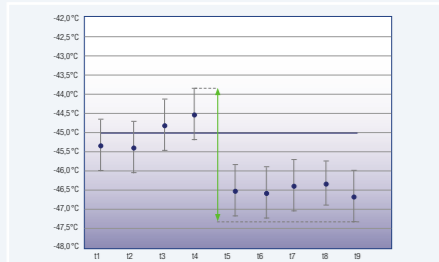
## Lid handle

The aluminium lid handle of the LGT models is simple and tough for intensive commercial use. All models have locks as standard.



### Access port for an external temperature probe

In the low temperature chest freezers with Comfort electronic controllers there is provision for an independent temperature probe 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.



### Maximum temperature stability and temperature consistency

The precise Comfort controller guarantees maximum temperature control and stability. All laboratory chest freezers with comfort controller are tested to NFX 15-140 thus providing reliable and exact data on temperature stability and distribution within the freezer.



### Interior light

The freezer lid has an integrated interior light to improve visibility and potentially reduce lid opening duration.

### One-piece lid

The lid of the LGT models is moulded from a single piece of steel. This makes it extremely resistant to any deformation from vacuum pressure after lid openings. Because it has no joints but instead radiused corners and edges it is also hygienic and easy to clean. The strong lid hinges are designed for at least 300 000 openings: they counterbalance the lid from about 45° thus improving safety and reducing the effort needed to open the freezer.



## Functional and practical accessories



### NTC product temperature probe

An NTC product temperature probe for logging product temperatures is available as a retrofit kit for the low temperature chest freezers 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.



### 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.



### Optional high-quality baskets

The optional baskets facilitate the storage of small items and can help to improve the handling and organising of the freezer contents. The baskets have retractable handles can be stacked on the freezer base and/or hung from the top frame.

Low temperature -45°C chest freezers	LGT 4725 MediLine	LGT 3725 MediLine	LGT 2325 MediLine
<b>Total gross / net capacity freezer compartment</b>	459 / 431 l	365 / 342 l	215 / 200 l
<b>Exterior dimensions in mm (w/d/h)</b>	1648 / 808 / 919	1373 / 808 / 919	1132 / 760 / 919
<b>Interior dimensions in mm (w/d/h)</b>	1445 / 500 / 650	1170 / 500 / 650	889 / 410 / 630
<b>Energy consumption in 24h*</b>	4.352 kWh	2.928 kWh	2.256 kWh
<b>General</b>			
Cooling system	static	static	static
Defrosting method	manual	manual	manual
Temperature range	-10°C to -45°C	-10°C to -45°C	-10°C to -45°C
Housing material / colour	steel / white	steel / white	steel / white
Door / lid material	steel	steel	steel
Liner material	white coated aluminium	white coated aluminium	white coated aluminium
Type of control	electronic controller	electronic controller	electronic controller
Temperature display	external digital	external digital	external digital
Power failure alarm	when mains power returns	when mains power returns	when mains power returns
Interface	RS 485	RS 485	RS 485
Volt-free contact	•	•	•
Isolation	100 - 100 mm	100 - 100 mm	120 - 120 mm
Handle	aluminium profile	aluminium profile	aluminium profile
Lock	•	•	•
Climate rating	SN	SN	SN
Noise level re 1 pW	55 dB (A)	55 dB (A)	55 dB (A)
Refrigerant	R 290	R 290	R 290
Voltage / Connection rating	220-240 V / 3.5 A	220-240 V / 3.0 A	220-240 V / 2.0 A
<b>Accessories</b>			
NTC product temperature probe	9590407	9590407	9590407
Converter incl. software (serial connection)	9590387	9590387	9590387
Baskets	7112947	7112947	7112317

\* measured at +25 °C ambient temperature and -45 °C set temperature.

## 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 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.



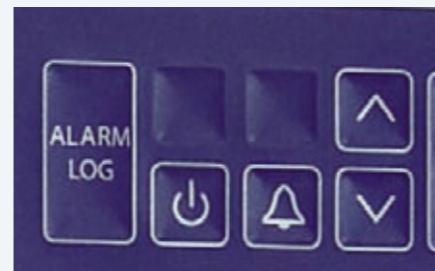
### The Comfort electronic controller

The precision Comfort electronic controller with digital temperature display enables temperatures to be set accurately. 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.



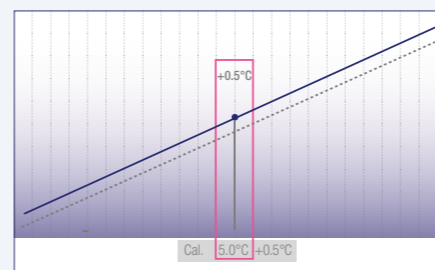
### Integrated alarm systems

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 activated if the door is open for longer than 1 minute. The door-open alarm delay can be adjusted between 1 and 5 minutes. Furthermore, the laboratory appliances with Comfort electronic controllers have a visual power failure alarm when mains power returns and a sensor defect alarm.



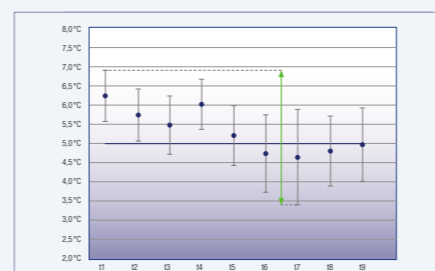
### Integrated data memory with min/max temperatures

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.



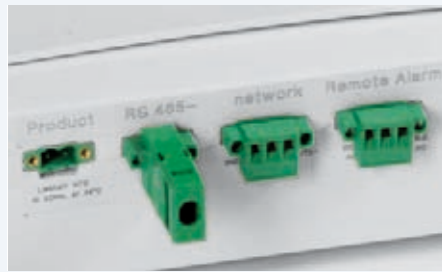
### 1-point calibration

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.



### 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 trays 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 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



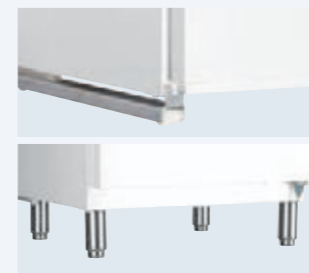
### Additional lock barrels

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.



### 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.



## Robust and spark-free

The laboratory refrigerators with static cooling and spark-free interior are designed specifically 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

### 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 range

#### Housing material / colour

#### Door / lid material

#### Liner material

#### Type of control

#### Adjustable storage shelves

#### Usable shelf area in mm (w/d)

#### Shelf material

#### Shelf loading capacity

#### Handle

#### Lock

#### Door hinges

#### Gross / net weight

#### Climate rating

#### Noise level re 1 pW

#### Refrigerant

#### Voltage / Connection rating

### Accessories

#### Glass shelf

#### Castor base

#### Set of adjustable legs

### FKEX 5000

#### MediLine

500 / 433 l

752 / 710 / 1516

652 / 537 / 1338

0.898 kWh

static

automatic

+2°C to +10°C

steel / white

steel

white plastic

mechanical control system

5

652 / 489

glass

40 kg

ergonomic slimline handle

•

right hand, reversible

78/73 kg

SN

40 dB (A)

R 600a

220-240 V / 1.0 A

9293689

9086957

9590963

### FKEX 3600

#### MediLine

360 / 335 l

600 / 600 / 1590

513 / 441 / 1418

0.898 kWh

static

automatic

+2°C to +10°C

steel / white

steel

white plastic

mechanical control system

5

513 / 405

glass

40 kg

ergonomic slimline handle

•

right hand, reversible

62/58 kg

SN

38 dB (A)

R 600a

220-240 V / 1.0 A

9293691

9086959

9590965

### FKEX 2600

#### MediLine

260 / 247 l

600 / 600 / 1216

513 / 441 / 1047

0.800 kWh

static

automatic

+2°C to +10°C

steel / white

steel

white plastic

mechanical control system

4

513 / 405

glass

40 kg

ergonomic slimline handle

•

right hand, reversible

48/45 kg

SN

38 dB (A)

R 600a

220-240 V / 1.0 A

9293691

9086781

9590965

### FKEX 1800

#### MediLine

180 / 174 l

600 / 600 / 886

513 / 441 / 734

0.698 kWh

static

automatic

+2°C to +10°C

steel / white

steel

white plastic

mechanical control system

3

513 / 405

glass

40 kg

ergonomic slimline handle

•

right hand, reversible

39/36 kg

SN

38 dB (A)

R 600a

220-240 V / 1.0 A

9293691

9086781

9590965

\*measured at +25 °C ambient temperature and +5 °C set temperature