Bank04
Lab 04

Operating Instructions
HFU / HFC Series Freezers
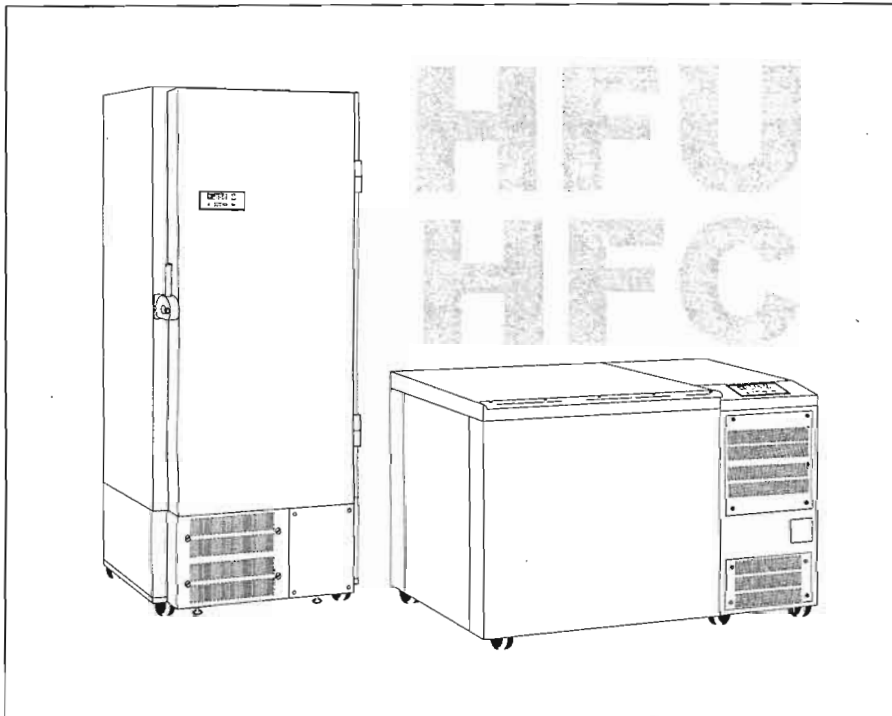
Thermo
ELECTRON CORPORATION

7. Operation

7.3 Program control

Locking the keypad – Loc mode (Top models only)

Locking the keypad will lock the entire control panel to protect it against unauthorized operation. If a person attempts to change values when the keypad is locked, the locking state is indicated by the display Loc.

Information are accessible even when the keypad is locked.

No.	Instruction	Operating steps	Typical display	Description
1.	Activate mode	Press **Mode** key	−86 t5Et	The first mode (t5Et) is displayed. If no input occurs within 10 s, the actual temperature is displayed.
2.	Select mode	Press △ key or Press ▽ key	oFF Loc	The switching state oFF is displayed on the value display (upper). The selected mode is displayed on the mode display (lower).
3.	Enable mode change	Press **Set** key	oFF Loc	The value display flashes.
4.	Lock keypad	Press △ key	on Loc	The value display stops flashing as long as the key is depressed.
5.	Store mode change	Press **Set** key	−86 Loc	The new setting is stored. The keypad is locked, values can no longer be changed. If alarm or failure codes are present, the status Loc will not be displayed. The keypad will also remain locked if the program control is reset. If the SET key is not pressed within 10 s, the original value is maintained, and the actual temperature is displayed.
Unlocking the keypad				
		Mode + ▽ depress simultaneously for 5 s	−86	An audible chime confirms the unlocking. Values can be changed again. The actual temperature is displayed.

7. Operation

7.4 Alarm codes

Alarm codes indicate a fault condition of the unit (malfunction from components of the colling system or wrong operation, e.g. locking state of the door or of the lid). In addition to the alarm codes, the monitoring system performs a differentiated fault diagnosis. The results of this diagnosis are displayed as a failure code (see section „Failure codes I and II"). The alarm code in connection with failure codes ensures that faults can be easily located and repaired.
The alarm codes are displayed on the mode display.

☞ **NOTE – Repairing faults!**
If a fault can not be repaired using the measures described below, record the alarm code and contact Technical Service.

Alarm codes			
Display	Description	Possible cause	Possible repairs / Notes
–	Battery supply activated	• Power supply interrupted	• Reestablish power supply
A00	Unit is started up		• Display goes off automatically after start-up has been completed (max. 8 h)
A04	Condenser temperature not within alarm limits	• Insufficient cooling • Excessive ambient temperature • Filter mat/condenser dirty	• Check wall clearance • Check ambient temperature and decrease as required • Clean filter mat/condenser
A07	Intermediate cooler temperature not within alarm limits	• Unit is started up	• Display goes off automatically after start-up
A11	Compressor stage 1 over-pressure	• Excessive ambient temperature on start-up	• Check ambient temperature
A13	Compressor stage 2 over-pressure	• Insufficient cooling • Excessive ambient temperature • Filter mat/condenser dirty • Stage 2 malfunction	• Check wall clearance • Check ambient temperature and decrease as required • Clean filter mat/condenser • Contact Technical Service
A15	Battery monitoring	• Battery voltage below lower limit	• Check power supply • Battery will be recharged after power supply has been reestablished
oPEn	Door/lid monitoring	• Door/lid open for more than 2 min	• Close door/lid

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7.5 Failure codes

Failure codes are displayed as a result of the self diagnosis of the monitoring system. The program control microprocessor automatically monitors the selected configuration of the unit and the appropriate stored values. Any deviation from the values set by the operator or by the manufacturer are detected and indicated as failure codes. The alarm codes are displayed on the mode display.

☞ **NOTE – Repairing faults!**
If a fault can not be repaired using the measures described below, record the alarm code and contact Technical Service.

Failure codes			
Display	Description	Possible cause	Possible repairs / Notes
cond	Excessive condenser temperature	• Insufficient cooling • Excessive ambient temperature • Filter mat/condenser dirty	• Check wall clearance • Decrease ambient temperature • Clean filter mat/condenser
FR, L	Invalid measuring value	• Faulty temperature sensor	• Contact Technical Service
F00-F12	Program monitoring routines	• Control component malfunction	• Contact Technical Service
F13	Power failure	• Power failure occured	• Check power supply
F20	Actual temperature sensor fault	• Measuring circuit fault	• Contact Technical Service
F24	Condenser sensor fault	• Measuring circuit fault	• Contact Technical Service
F27	Intermediate cooler fault	• Measuring circuit fault	• Contact Technical Service
F29	Actual temperature not within alarm limits	• Newly stored specimen cause temperature rise • Door/lid open too long • Faulty door/lid seal • Excessive ambient temperature • Faulty refrigeration system	• Check alarm limit settings, allow device to cool down • Close door/lid • Check seals • Decrease ambient temperature • Contact Technical Service
F36	Intermediate cooler temperature not within alarm limits	• Insufficient cooling • Excessive ambient temperature • Filter mat/condenser dirty • Insufficient cooling of stage 1	• Check wall clearance • Decrease ambient temperature • Clean filter mat/condenser • Contact Technical Service

Resett: Trykk 2x set
Push set twice

7. Operation

7.5 Failure codes

☞ **NOTE – Repairing faults!**
If a fault can not be repaired using the measures described below, record the alarm code and contact Technical Service.

Failure codes			
Display	Description	Possible cause	Possible repairs / Notes
F39	Compressor 1 overpressure	• Alarm A11 occured five times within 24 h	• Check wall clearance • Decrease ambient temperature • Clean filter mat/condenser • Contact Technical Service
F41	Compressor 2 overpressure	• Alarm A13 occured five times within 24 h	• Check wall clearance • Decrease ambient temperature • Clean filter mat/condenser • Contact Technical Service
F42	Door/lid monitoring	• Door/lid open more than 4 min • Faulty switch	• Close door/lid • Contact Technical Service
F47	Backup cooling system supply	• Insufficient CO_2 supply • Valve closed • Faulty pressure switch	• Connect full cylinder • Open valve • Contact Technical Service
F48	Backup cooling system activated	• Interior chamber temperature reached backup cooling temperature value • Newly stored specimen cause temperature rise (e.g too many specimen or specimen too warm) • Door/lid open too long • Power supply interrupted • Faulty refrigeration system	• Check backup cooling temperature setting • Check load, allow unit to cool down • Allow unit to cool down • Check power supply • Contact Technical Service