

Operating manual MF Freezer

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A Quick Description of the Operator Panel

For an easy reference please open the operator panel folder in the back of this manual.

K1 Key No 1: Start Pumps.

By pressing this key once the pumps will start if no error conditions exists. At the same time the green LED L1 will light up. Pressing the key again will stop the pumps.

K2 Key No 2: Start Dasher.

By pressing this key once, the dasher will start if no error conditions exist. At the same time the green LED L2 will light up. Pressing the key again will stop the dasher.

K3 Key No. 3: Start Compressor.

By pressing this key once, the compressor will start if no error conditions exist. At the same time the green LED L3 will light up. Pressing the key again will stop the compressor.

K4 Key No. 4: Start CIP.

By pressing this key once, the CIP sequence will start if no other functions are running. At the same time the green LED L4 will light up. Pressing the key again will stop the CIP Sequence.

K5 Key No 5: Escape.

This button is used to acknowledge alarms as well as exiting the current displayed screen on the Operator panel.

K6 Key No 6: Left arrow.

This button is used to decrement setpoints on the production screens as well as moving the cursor in the menu and maintenance screens.

K7 Key No 7: Arrow Up.

This button is used to increment setpoints in the set Up screens as well as activating outputs and Incrementing control values in the maintenance screens.

K8 Key No 8: Arrow Down.

This button is used to decrement setpoints in the set-up screens as well as deactivating outputs and Decrementing control values in the maintenance screens.

K9 Key No 9: Right Arrow.

This button is used to increment setpoints on the production screens as well as moving the cursor In the menu and maintenance screens

K10 Key No 10: Enter.

This button is used to step to the next screen in production, set up, and maintenance screens.

L4 Alarm LED

This LED will light up in red if an alarm occurs. At the same time the alarm will be displayed on the screen. When the alarm is acknowledged the led will turn off.

L5 Communication Status

The LED will be steady on in green if communication to the PLC is working properly. If communication faults this led will flash in green. At the same time the communication error screen will be displayed on the screen.

L6 Power On

This LED will light up in green when power is applied to the operator terminal

L7 Key Activated

This LED will light up in green if a key is pressed on the operator terminal.

I1 Production Screen Auto Scroll Function Enabled

This symbol will be displayed when the automatic page scroll function is enabled. This function will automatically display the 4 production related pages on the screen. The pages will shift for every 10 seconds until the page scroll is disabled. The screens are the Pump Set point screen, the Dasher Status Screen, The Refrigeration Set point Screen and The Mimic Screen.

I2 Pass Code Enabled

This symbol will be displayed when a Pass Code is enabled.

Passwords and Operating Levels

The operation of the freezer is divided into 3 levels protected by pass-codes. A pass code is a combination of keys that must be pressed at the same time in order to enable access to pass-code protected functions.

The pass codes will be handed over in a separate envelope. Before running the unit you must consider who should be entitled to enter the higher levels of operation and distribute the pass codes accordingly.

First Level – Operator Level

In this level the daily operation of the freezer is allowed, for instance start pumps, dasher and compressor as well as activating the CIP function. Access to Set up and Maintenance is not allowed.

Second Level – Super User Level

When this level is activated by means of entering the correct pass-code there is access to the Set Up menu where it is possible to adjust parameters related to the function of the freezer. There is also access to the Maintenance Menu where it is possible to see the status and function of the In- and outputs of the PLC.

When leaving the Set Up Menu the user will be prompted to disable the password. If he chooses not to do so, the pass-code will automatically be disabled after 10 minutes.

Third Level – Master Level

When this level is activated by means of entering the correct pass Code it is possible to manually operate the Digital and analog outputs of the PLC and thus check if they are working correctly. Please note that the super user Level must be enabled before the master Level can be selected.

In order to leave the Master Level the Pass Code must be disabled. This is done by keying in the right key combination once again.

Section 1, The Operator Level

The Main Menu



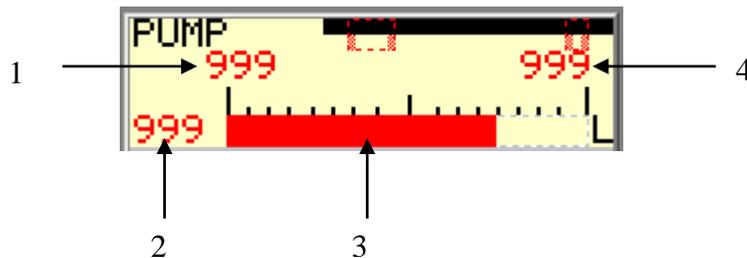
For a quick key reference please open the Operator Panel folder in the back of this manual.

The Main Menu screen gives you access to all the facilities of the freezer. This screen is normally displayed when an Emergency stop situation is cleared or exiting from production, set-up or Maintenance mode.

By pressing K6 (Arrow Left) or K9 (Arrow Right) it is possible to pre-select production, set-up or maintenance functions. Pre-selection is indicated by the 3 squares on the screen changing from light to dark.

By pressing K10 (Enter) when one of the squares are pre-selected you will enter into the specific screens.

Starting the pumps



For a quick key reference please open the Operator Panel folder in the end of this manual.

By pressing the pump start key K1 the pumps will start, the pump set point screen will be displayed and The LED L1 will light up.

By pressing K1 once more the pumps will stop and L1 will turn off.

If any of the following faults are detected the pumps will not start but an error message will displayed Instead. The faults are the following:

Error 1: Dasher Breaker Tripped

Error 3: Pump Breaker Tripped

Error 5: Pump VFD not ready

Error 6: Error in Mains Supply

For a closer description of the error see the alarm section.

If these alarms occur when the pumps are running the pumps will shut down L1 will turn off and the relevant alarm message will be displayed.

Screen field description:

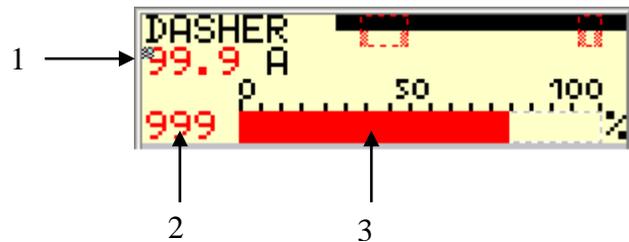
1. This field indicates the minimum capacity of the pumps. It can be adjusted in the Set Up Menu
2. This is the pump speed setpoint in litres per hour.
3. The bar graph is showing the pump speed setpoint in litres per hour.
4. This field indicates the maximum capacity of the pumps. It can be adjusted in the Set UP Menu.

To increase the setpoint press K9 (Arrow Right). To decrease the setpoint press K6 (Arrow Left).

Pressing the K5 (Escape) will display the main menu screen on the display.

Pressing the K10 (Enter) will display the next production screen on the display and at the same enable the Automatic production page scroll-function.

Starting the Dasher



For a quick key reference please open the Operator Panel folder in the end of this manual.

By pressing the pump start key K2 the dasher will start, the dasher monitor screen will be displayed and the LED L2 will light up.

By pressing K2 once more the dasher will stop and L2 will turn off.

If any of the following faults are detected the pumps will not start but an error message will displayed instead. The faults are the following:

Error 3: Dasher Breaker off

Error 6: Error in Mains Supply

For a closer description of the error see the alarm section.

If these alarms occur when the dasher is running the dasher will shut down L2 will turn off and the relevant alarm message will be displayed.

If the Dasher load is exceeding the motor load warning threshold an alarm will be displayed and the back pressure valve will reduce its opening by 10 percent.

If the dasher load is exceeding the motor load shut down limit, the dasher will stop and an alarm will be displayed.

Screen field description:

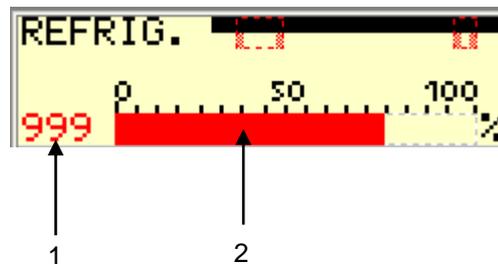
1. This field indicates the current consumption of the dasher motor in Amps.
2. This field indicates the current consumption of the dasher in percent of full motor amperage.
3. The bar graph is showing the current consumption of the dasher in percent of full motor amperage

This screen is a monitor screen only and it is not possible to adjust the motor load.

Pressing the K5 (Escape) will display the main menu screen on the display.

Pressing the K10 (Enter) will display the next production screen on the display and at the same enable the automatic production page scroll function.

Starting the Compressor



For a quick key reference please open the Operator Panel folder in the end of this manual.

By pressing the pump start key K3 the Compressor will start, the refrigeration set point screen will be displayed and the LED L3 will light up.

By pressing K3 once more the compressor will stop and L3 will turn off.

If any of the following faults are detected the compressor will not start but an error message will displayed instead. The faults are the following:

Error 2: Compressor Breaker Tripped

Error 6: Error in Mains Supply

Error 9: Compressor Overheated

Error 10: High Condenser Pressure

Error 11: Compressor Oil Pressure Low

For a closer description of the error see the alarm section.

If these alarms occur when the compressor is running it will shut down, L3 will turn off and the relevant alarm message will be displayed.

Screen field description:

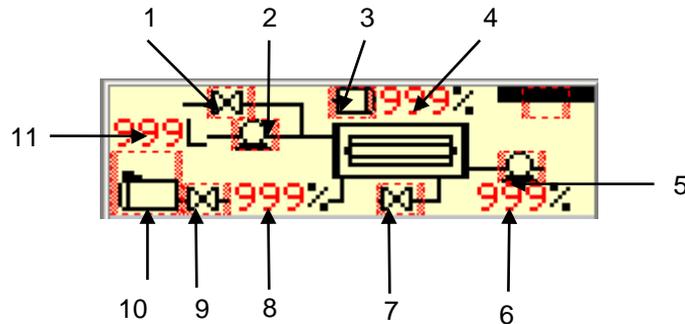
- 1 This is the opening of the backpressure valve in percent.
- 2 The bar graph is showing the opening of the backpressure valve in percent

To increase the setpoint press K9 (Arrow Right). To decrease the setpoint press K6 (Arrow Left).

Pressing the K5 (Escape) will display the main menu screen on the display.

Pressing the K10 (Enter) will display the next production screen on the display and at the same enable the automatic production page scroll-function.

The Mimic Screen



For a quick key reference, please open the Operator Panel folder in the end of this manual.

The Mimic screen will be shown either when the automatic production page scroll function is enabled Or K10 (Enter) is pressed on the Refrigeration setpoint page.

The screen is showing the actual status of the various parts of the freezer.

These parts are:

- 1 Main Air valve. When valve activated the symbol will change from light to dark.
- 2 Mix Pump. When activated the symbol will change from light to dark.
- 3 Dasher Motor. When activated the symbol will change from light to dark.
- 4 Dasher Motor Load. Shows the actual load in percent.
- 5 Product Pump. When activated the symbol will change from light to dark.
- 6 Pump Speed. Shows the actual pump speed in percent.
- 7 Hot Gas Valve. When activated the symbol will change from light to dark.
- 8 Opening of the Back Pressure Valve. Shows the actual opening in percent.
- 9 Liquid Valve. When activated the symbol will change from light to dark.
- 10 Compressor. When activated the symbol will change from light to dark.
- 11 Mix Flow. Shows the calculated mix flow in l/h

Pressing the K5 (Escape) will display the main menu screen on the display.

Pressing the K10 (Enter) will display the next production screen on the display and at the same enable the automatic production page scroll function.

Starting the CIP



For a quick key reference please open the Operator Panel folder in the back of this manual.

By pressing the pump start key K4 the CIP will start, the CIP Sequencer Screen will be displayed and the LED L4 will light up, if neither the pumps, dasher and compressor is running and the Test Mode function is off. If one or more of these conditions are not met the CIP will not start.

By pressing K4 once more the CIP Sequencer will stop, L4 will turn off and the main menu screen displayed.

The CIP Sequencer will cyclically perform the following 3 steps:

Step 1: Flushing Cylinder.

Step 2: Running Dasher and Pumps

Step 3: Flipping Pump Covers

The duration of the steps can be adjusted in the Set Up Menu in the Sub Menu "CIP".

When step 3 is finished the sequencer will do the steps again until CIP maximum time runs out or CIP is terminated by pressing K4.

The CIP Sequencer can be controlled from an external CIP plant by using the Digital Input "CIP Acknowledge", see the electrical diagrams for reference. This input is normally wired to 24VDC and is therefore "On". If the 24VDC signal is removed the input goes "Off" and the CIP Sequencer will pause. It will remain in the pause state until the input goes high again.

The following errors can also pause the CIP Sequencer:

Error 1: Dasher Breaker Tripped.

Error 3: Pump Breaker Tripped.

Error 5: Pump VFD Faulted.

For a closer description of the errors see the alarm section.

Screen field description:

1. This field is showing the remaining CIP time I minutes.
2. This field is showing the remaining time of the actual CIP step in seconds.
3. This field is showing status messages for the CIP Sequencer. The messages are the following:
 - A. **No External signal.** (The digital signal CIP Acknowledge is off)
 - B. **Flushing.** (CIP Sequence Step 1 is running)
 - C. **Run Dasher/Pump.** (CIP Sequence Step 2 is running)
 - D. **Flip Covers.** (CIP sequence Step 3 is running)
 - E. **CIP Done press F4.** (CIP max time is expired, press K4 to end CIP sequence)
 - F. **Functional Error.** (One or more of the above mentioned error has paused the CIP)
 - G. **Restart Press Ent.** (The error has been fixed, press K10 (Enter) to continue)

Alarms

When an Alarm condition happens a corresponding alarm message is immediately displayed on the operator panel display. If more alarms have appeared at the same time it is possible to see them by pressing K8 (Arrow Down). If there is more than one alarm pending it is indicated on top of the alarm display. It is possible to clear the message from the display by pressing K5 (Escape) but this will not remove the alarm condition. Only by finding the error that caused for the alarm And repairing it will remove the alarm.

The alarm messages are the following:

Error 1: Breaker Dasher Tripped.

Cause:

The circuit breaker protecting the dasher motor has switched off by an overload, short circuit or by hand.

Remedy:

Remove overload /short circuit condition and turn on the circuit breaker again.

Error 2: Breaker Compressor Tripped.

Cause:

The circuit breaker protecting the compressor motor has switched off by an overload, short circuit or by hand.

Remedy:

Remove overload /short circuit condition and turn on the circuit breaker again.

Error 3: Breaker Pump Drive Tripped.

Cause:

The circuit breaker protecting the pump drive VFD has switched off by an overload, short circuit or by hand.

Remedy:

Remove overload /short circuit condition and turn on the circuit breaker again.

Error 5: Pump Inverter Faulted.

Cause:

The VFD controlling the pump speed has one or more faults..

Remedy:

Connect The Danfoss LCP2 panel supplied with the machine to the VFD and read out the cause of the error.

Switch off power for at least one minute to the VFD and turn it on again. Check if fault is cleared.

If not refer to the Danfoss VFD manual for further instructions.

Error 7. Error in Mains supply.

Cause:

The power-monitoring relay has switched off either if a power phase is missing or the phase sequence is incorrect.

Remedy:

Check if all phases are present. Rewire the main power phase to obtain correct sequence.

Error 9. Compressor Overheated

Cause:

The internal temperature in the compressor is too high.

Remedy:

Wait until compressor has cooled down. Reduce load on compressor.

Error 10. High Condenser Pressure

Cause:

The Condenser Pressure is too high.

Remedy:

Check cooling water supply. Check water temperature.

Error 11. Compressor Oil Pressure Low

Cause:

The Oil Pressure in compressor has dropped below safe limit

Remedy:

Check Oil level, refill Oil.

Error 13. Warning Dasher Load High

Cause:

The Dasher Load has exceeded the warning limit setpoint.

Remedy:

The control system will automatically reduce the refrigeration until load drops below warning limit. If load does not drop reduce back pressure valve opening setpoint manually.

Error 14. Shutting Down Dasher Load High

Cause:

The Dasher Load has exceeded the shut down limit setpoint.

Remedy:

Reduce refrigeration setpoint

Section 2, The Set Up of Freezer Parameters

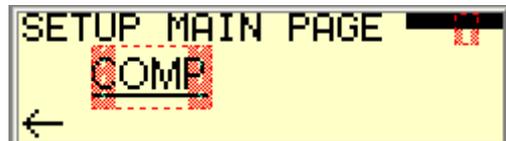
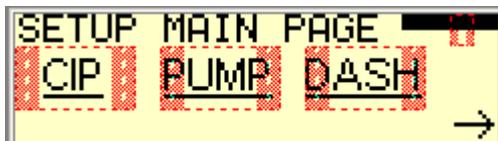
The Main Menu



For a quick key reference please open the Operator Panel folder in the end of this manual.

To get into set-up mode go to the main menu and use K6 (Arrow Left and K9 (Arrow Right) to pre-select the set-up field. Then press K10 (Enter)

If the super user pass code has not been enabled you will be prompted to do so. When the correct pass code has been entered you will get into the main set-up screen:



This Set-up Main Page is consisting of 2 parts. By pressing K9 (Arrow Right) as indicated on the screen you will get into the second part of the screen. By pressing K6 (Arrow Left) as indicated on the screen you will return to the first part.

You pre-select the various parts of the set-up menu exactly as on the main menu screen by using K6 and K9. When pressing K10 (Enter) you will enter into the set-up screens for the pre-elected part.

When pressing K5 (Escape) you will leave the Set-up main menu. At the same time you will be asked to decide to disable your pass code. If you do not disable your pass code it will disable itself after 10 minutes.

CIP Parameters

By pre-selecting the CIP Field on the Main Set-up Menu and pressing K10 (Enter) you will get into the first of the adjustable CIP Parameters.

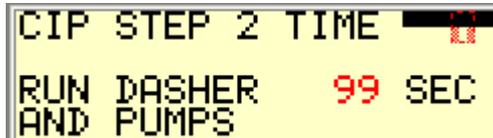
CIP sequencer time for step 1 (flushing cylinder)



On this screen you set the step 1 time for the CIP sequencer. By pressing K7 (Arrow) up you increase the time and by pressing K8 (Arrow Down) you decrease the time. Keeping the keys pressed will make the adjustments go faster and faster. The setpoint adjustment is immediately being stored. There is no need for acknowledging the adjustment.

If you press K5 (Escape) you will return to the Main Set-up Menu. By pressing K10 (Enter) you will go to the next adjustable CIP Parameter:

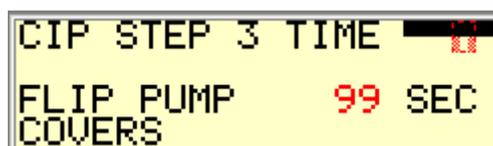
CIP sequencer time for step 2 (running dasher and pumps)



On this screen you set the step 2 time for the CIP sequencer. By pressing K7 (Arrow) up you increase the time and by pressing K8 (Arrow Down) you decrease the time. Keeping the keys pressed will make the adjustments go faster and faster. The setpoint adjustment is immediately being stored. There is no need for acknowledging the adjustment.

If you press K5 (Escape) you will return to CIP Step 1 time. By pressing K10 (Enter) you will go to The next adjustable CIP Parameter:

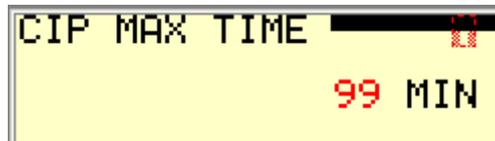
Cip sequencer time for step 3 (flipping pump covers)



On this screen you set the step 3 time for the CIP sequencer. By pressing K7 (Arrow) up you increase the time and by pressing K8 (Arrow Down) you decrease the time. Keeping the keys pressed will make the adjustments go faster and faster. The Setpoint adjustment is immediately being stored. There is no need for acknowledging the adjustment.

If you press K5 (Escape) you will return to CIP Step 2 time. By pressing K10 (Enter) you will go to the next adjustable CIP Parameter:

CIP sequencer time max time



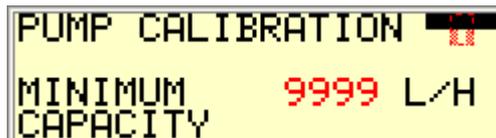
On this screen you set the max time for the CIP sequencer. By pressing K7 (Arrow) up you increase the time and by pressing K8 (Arrow Down) you decrease the time. Keeping the keys pressed will make the adjustments go faster and faster. The setpoint adjustment is immediately being stored. There is no need for acknowledging the adjustment.

If you press K5 (Escape) you will return to CIP Step 3 time. K10 (Enter) will not work since the CIP max time is the last parameter in this sub menu.

Pump Parameters

By pre-selecting the Pump Field on the Main Set-up Menu and pressing K10 (Enter) you will get into the first of the adjustable Pump Parameters.

Pump Calibration Min Capacity



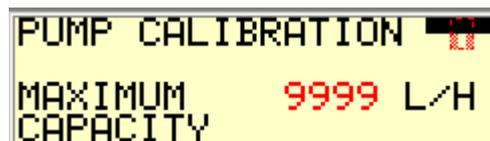
On this screen you set the pump capacity in litres per hour when the pumps are running at minimum speed.

As the pump rotors wear down you may have to adjust this value in order to obtain a correct mix flow read out.

By pressing K7 (Arrow) up you increase the parameter and by pressing K8 (Arrow Down) you decrease the parameter. Keeping the keys pressed will make the adjustments go faster and faster. The parameter adjustment is immediately being stored. There is no need for acknowledging the adjustment.

If you press K5 (Escape) you will return to the Main Set-up Menu. By pressing K10 (Enter) you will go to the next adjustable Pump Parameter:

Pump Calibration Max Capacity



On this screen you set the pump capacity in litres per hour when the pumps are running at maximum speed.

As the pump rotors wear down you may have to adjust this value in order to obtain a correct mix flow read out.

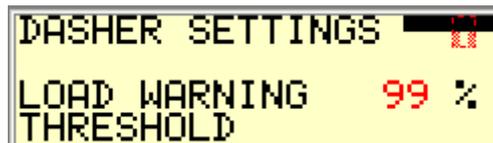
By pressing K7 (Arrow) up you increase the parameter and by pressing K8 (Arrow Down) you decrease the parameter. Keeping the keys pressed will make the adjustments go faster and faster. The parameter adjustment is immediately being stored. There is no need for acknowledging the adjustment.

If you press K5 (Escape) you will return to Pump Calibration Min Capacity. K10 (Enter) will not work since the Pump Calibration Max Capacity is the last parameter in this sub menu.

Dasher Parameters

By pre-selecting the Dash Field on the Main Set-up Menu and pressing K10 (Enter) you will get into the first of the adjustable Dasher Parameters.

Dasher Load Warning Threshold



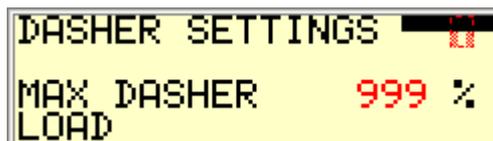
On this screen you set the load warning threshold. When the dasher is running the control system is supervising the load of the dasher. When the load is exceeding this threshold an alarm is displayed and the Back Pressure Valve opening is reduced by 10 percent in order to bring down the dasher load.

When the load has dropped 5 % below the warning threshold the Back Pressure Valve is returned to its original opening.

By pressing K7 (Arrow) up you increase the parameter and by pressing K8 (Arrow Down) you decrease the parameter. Keeping the keys pressed will make the adjustments go faster and faster. The parameter adjustment is immediately being stored. There is no need for acknowledging the adjustment.

If you press K5 (Escape) you will return to the Main Set-up Menu. By pressing K10 (Enter) you will go to the next adjustable Dasher Parameter:

Dasher Max Load

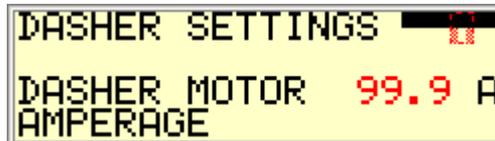


On this screen you set the maximum allowable load of the dasher. When the dasher is running the control system is supervising the load of the dasher. When the load is equal to or exceeds this parameter an alarm is displayed and refrigeration and dasher is stopped.

By pressing K7 (Arrow) up you increase the parameter and by pressing K8 (Arrow Down) you decrease the parameter. Keeping the keys pressed will make the adjustments go faster and faster. The parameter adjustment is immediately being stored. There is no need for acknowledging the adjustment.

If you press K5 (Escape) you will return to the previous Dasher parameter. By pressing K10 (Enter) you will go to the next adjustable Dasher Parameter:

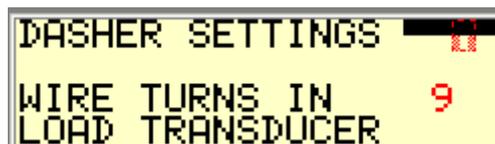
Dasher Motor Amperage



On this screen you set the nominal amperage of the dasher motor. This value can be seen on the motor nameplate. The parameter is used by the control system to calculate the dasher load. By pressing K7 (Arrow) up you increase the parameter and by pressing K8 (Arrow Down) you decrease the parameter. Keeping the keys pressed will make the adjustments go faster and faster. The parameter adjustment is immediately being stored. There is no need for acknowledging the adjustment.

If you press K5 (Escape) you will return to the previous Dasher parameter by pressing K10 (Enter) you will go to the next adjustable Dasher Parameter:

Dasher Wire Turns

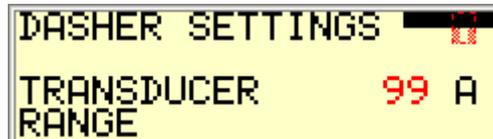


On this screen you tell the control system how many times one of the dasher motors power wired is turned through the current transducer. Nameplate. The parameter is used by the control system to calculate the dasher load.

By pressing K7 (Arrow) up you increase the parameter and by pressing K8 (Arrow Down) you decrease the parameter. Keeping the keys pressed will make the adjustments go faster and faster. The parameter adjustment is immediately being stored. There is no need for acknowledging the adjustment.

If you press K5 (Escape) you will return to the previous Dasher parameter. By pressing K10 (Enter) you will go to the next adjustable Dasher Parameter:

Dasher Transducer Range



On this screen you tell the control system the range setting of the dashers current transducer.

The standard transducer has 3 ranges, which can be selected on the transducer.

The parameter is used by the control system to calculate the dasher load.

By pressing K7 (Arrow) up you increase the parameter and by pressing K8 (Arrow Down) you decrease the parameter. Keeping the keys pressed will make the adjustments go faster and faster. The parameter adjustment is immediately being stored. There is no need for acknowledging the adjustment.

If you press K5 (Escape) you will return to the previous Dasher parameter K10 (Enter) will not work since the Dasher Transducer Range is the last parameter in this sub menu.

Compressor Parameters

By pre-selecting the Comp Field on the Main Set-up Menu and pressing K10 (Enter) you will get into the first of the adjustable Compressor Parameters.

Compressor Shut Down Delay

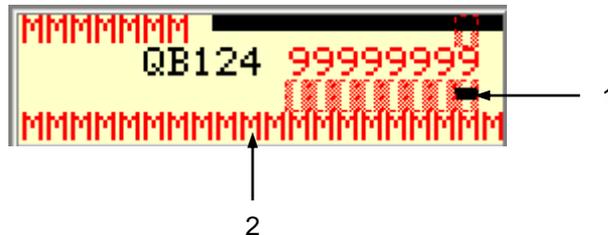


When the Compressor is stopped there should be a small delay in order to make sure that the evaporator is emptied for Halo Carbon. This parameter sets the stop delay.

By pressing K7 (Arrow) up you increase the parameter and by pressing K8 (Arrow Down) you decrease the parameter. Keeping the keys pressed will make the adjustments go faster and faster. The parameter adjustment is immediately being stored. There is no need for acknowledging the adjustment.

If you press K5 (Escape) you will return to the Main Set-up Menu. K10 (Enter) will not work since the Dasher Transducer Range is the last parameter in this sub menu.

PLC outputs 1 to 8

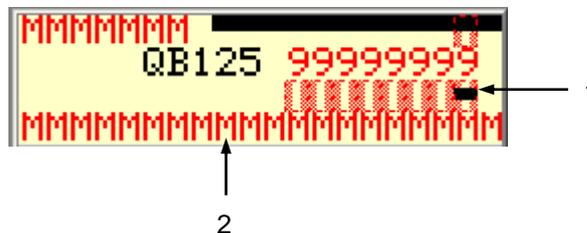


On this screen you can see that status of the first group of digital outputs in the PLC. A “0” means that the output is off and a “1” means that the output is on.

If you press K6 (Arrow Left) and K9 (Arrow Right) you will move the cursor (1) and at the same time you will get an explanation of what the output is for in the message field (2).

If you press K5 (Escape) you will return to the previous Maintenance screen. By pressing K10 (Enter) you will go to the next Maintenance screen:

PLC outputs 9 to 16



On this screen you can see that status of the first group of digital outputs in the PLC.

A “0” means that the output is off and a “1” means that the output is on.

If you press K6 (Arrow Left) and K9 (Arrow Right) you will move the cursor (1) and at the same time you will get an explanation of what the output is for in the message field (2)

If you press K5 (Escape) you will return to the previous Maintenance screen. By pressing K10 (Enter) you will go to the next Maintenance screen:

PLC Analog Input 1



On this screen you can see that status of the first analog input in the PLC. The input range goes from 4 to 20 mA and this range is converted in the PLC from 0 to 100 Percent. The analog in-read value is from the dasher load current transducer.

If you press K5 (Escape) you will return to the previous Maintenance Screen. By pressing K10 (Enter) you will go to the next Maintenance screen:

PLC Analog Input 2



On this screen you can see that status of the second analog input in the PLC. The input range goes from 4 to 20 mA and this range is converted in the PLC from 0 to 100 Percent. This analog input is not used at present.

If you press K5 (Escape) you will return to the previous Maintenance Screen. By pressing K10 (Enter) you will go to the next Maintenance screen:

PLC Analog Input 3



On this screen you can see that status of the third analog input in the PLC. The input range goes from 4 to 20 mA and this range is converted in the PLC from 0 to 100 Percent. This analog input is not used at present.

If you press K5 (Escape) you will return to the previous Maintenance Screen. By pressing K10 (Enter) you will go to the next Maintenance screen:

PLC Analog Input 4



On this screen you can see that status of the third fourth input in the PLC. The input range goes from 4 to 20 mA and this range is converted in the PLC from 0 to 100 Percent. This analog input is not used at present.

If you press K5 (Escape) you will return to the previous Maintenance Screen. By pressing K10 (Enter) you will go to the next Maintenance screen:

PLC Analog Output 1



On this screen you can see the status of the first analog output in the PLC. The output range goes from 0 to 100 percent, which is converted in the PLC's analog output module to 4 to 20 mA. This analog output is controlling the speed of the pumps

If you press K5 (Escape) you will return to the previous Maintenance Screen. By pressing K10 (Enter) you will go to the next Maintenance screen:

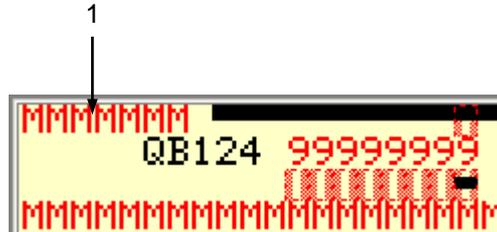
PLC Analog Output 2



On this screen you can see the status of the second analog output in the PLC. The output range goes from 0 to 100 Percent which is converted in the PLC's analog output module to 4 to 20 mA. This analog output is controlling the opening of the freezers backpressure valve.

If you press K5 (Escape) you will return to the previous Maintenance Screen. K10 (Enter) will not work since this screen is the last screen in the maintenance sub menu.

Using the Test Mode



The test mode is intended for use in troubleshooting and testing the freezers PLC, motor and actuators.

Before you go into test mode be sure that no freezers functions are running. If for instance the pumps are running the change to test mode will be blocked and an alarm will be displayed.

Then go to the maintenance screens as described in the previous chapter and key in the Master pass code.

A successful transfer to test mode is indicated by the message field (1) changing from “Check” to “Testing”

Now it is possible to alter the status of the digital and analog outputs.

If you press K6 (Arrow Left) and K9 (Arrow Right) you will move the cursor (1) and at the same time you will get an explanation of what the output is for in the message field (2)

If you press K7 (Arrow Up) you will change the status of the digital output from “off” to “on”. If you press K8 (Arrow Down) you will change the status from “On” to “Off”.

If you want to change an analog output value find the correct screen and then press K7 (Arrow Up) to increase the analog output value and press K8 (Arrow Down) to decrease the analog output value.

You exit from Test mode by entering the master pass code again. The message field (1) will change from

“Testing” to “Check” and the digital and analog values will resume the status they had before the change to test mode was done.