REOVIB MFS 268
Frequency controllers for vibratory feeders

Operating instructions

Features
- Feeder operating frequency is adjustable and independent of mains frequency.
- Constant feed rate ensured by internal compensation, irrespective of mains fluctuations.
- Integrated track control via backlog sensor.
- 24 V DC output for operating an air valve (IP 54 version), and amplitude control (sensor required).
- Independent resonant frequency search possible for feeder.
- Enable input (start / stop), status relay (output active / inactive).
- Stand-alone housings (IP 54) or panel-mounted units (IP 20).

Technical data:
Supply voltage 110 / 240 V, +/- 10%, 50/60 Hz
Output 0...100 / 0... 205 V, 3 A, 6 A, 8 A, 12A, 16A
Output frequency 5...300 Hz, (preset at 35... 140 Hz)
Enable input Contacts or 24 V, DC
Track sensor 24 V, PNP (100 mA)
Solenoid air valve output 24 V, (150 mA)
Status output relay (ON/OFF) Changeover contact (250 V, 1 A)
Operating temperature 0...+45 ºC
Storage temperature -10...+80 ºC
Recommended fuse 3 A, 8 A, 16 A slow-blowing, Type 'D' MCB

Display and controls

Instructions:
Menus are used for changing settings. The different parameters are selected by entering a code.
All adjustments are made by first pressing the P key, followed by selecting the menu code, using the cursor keys.

Settings
Pressing the cursor key for a short time causes one digit increase/decrease, holding down for a longer time gives changes in ten-digit steps.
Changed settings are saved when exiting the menu or automatically if a key is not pressed for 60 seconds.

Operating displays

Enable OFF
Track full
Setpoint in %
Timer running
Stop using "0" key

Data is subject to change for the benefit of technical improvement.
Error messages must be cleared in Menu no. C 009 by means of 'Cl.err.'

Timeout can be cleared with the 'I' key or by means of enable

Frequently appearing Errors, which are not described in this chapter, should be reported to the manufacturer.
Safety instructions

This description contains the necessary information for the correct application of the product described below. It is intended for use by technically qualified personnel. Qualified personnel are persons who, because of their training, experience and position, as well as their knowledge of appropriate standards, regulations, health and safety requirements and working conditions, are authorised to be responsible for the safety of the equipment, at all times, whilst carrying out their normal duties and are therefore aware of, and can report possible hazards (definition of qualified employees according to IEC 364).

WARNING!
Hazardous voltage!
Failure to observe can kill, cause serious injury or damage.
Isolate from mains before installation or dismantling work, as well as for fuse changes or post installation modifications.
Observe the prescribed accident prevention and safety rules for the specific application.
Before putting into operation, check if the rated voltage for the unit conforms with the local supply voltage.
Emergency stop devices must be provided for all applications. Operation of the emergency stop must inhibit any further uncontrolled operation.
Electrical connections must be covered.
Earth connections must be checked for correct function, after installation.

Declaration of conformity
We declare that these products conform with the following standards and directives:
EN 50081-2 and EN 50082-2 in accordance with directive 89/336/EEC.
REO ELEKTRONIK AG, D-42657 Solingen

Specified use
The units described herein are electrical controllers for installation in industrial plants. They are designed for power adjustment on vibratory feed equipment.

Installation

Do supply voltage, operating voltage of the conveyor and controller input voltage match?
Is the controller adequately rated for the rated power of the feeder?
What is the vibrating frequency of the feeder?

During switch-on, internal capacitors cause a high inrush current. Especially if several controllers are switched on simultaneously, the external fuse can blow or the circuit breaker can trip. Therefore, we recommend fitting slow-acting fuses or circuit breakers, e.g. with type 'D' characteristic.

Connect the unit in accordance with the wiring instructions and ensure that earthing is correct!

Attention!
New units are factory set (see table with settings).
For units with unknown settings, first recall the factory settings using Menu C 210 'FAC'.

If an external setpoint source is used, select "E.S.P." = I in Menu C003. If a potentiometer is used, select also 'Pot.' = I.
To set the minimum vibration level, select E.S.P. = 0, adjust the vibration level with the cursor keys and then set E.S.P. = I.

The specific settings for a system can be saved by selecting 'US.PA.' in Menu C143 (recall settings via Menu C 210 'US.PA'). Menu access can be hidden by selecting 'Hd.C.' = I in Menu C117.
**Code 003 Function settings**

- **0** = Setpoint using display
- **I** = External setpoint 0...+10 V
- **0** = External setpoint 0...+10 V
- **I** = External setpoint 4...20 mA
- **0** = 0...10 V / 0(4)...20 mA
- **I** = Potentiometer
- **0** = Track control via backlog sensor
- **I** = Coarse/fine control with second setpoint
- **0** = Enable
- **I** = Invert enable

**Operating mode**

- **0** = 0...10 V / 0(4)...20 mA
- **I** = Potentiometer
- **0** = Setpoint using display
- **I** = External setpoint 0...+10 V

**Code 096 / 020 Feeder**

- **0** = Feed rate 0...100%
- **I** = Maximum limit 100...5%
- **0** = Vibrating frequency [Hz]
- **I** = Soft start time 0...5 sec.
- **0** = Soft stop time 0...5 sec.

**Maximum feed rate**

The set point will still display 0...100%, even though it is limited internally.

**Vibrating frequency**

The frequency setting depends on the feeder type. **Important!** The wrong frequency setting can damage the coil.

**Soft start / soft stop**

Time ramp for starting and stopping the feeder.
### Code 008  Control mode

- **Feed rate 0...100 %**
  - `F 100 P` for maximum limit 100...5 %

- **Vibrating frequency [Hz]**
  - `F 480 P`

- **Switch to control mode**
  - `RCC I P`
  - 0 = Regulation (without sensor)
  - I = Control (with sensor)

- **Proportional characteristic (gain)**
- **Integral characteristic (damping)**

- **Automatic frequency control**
  - 0 = Off, I = On
  - Start frequency search

- **Operating mode**

- **Frequency setting**
  - Limiting of output voltage or feed rate, e.g. to prevent hammering. The displayed setpoint range remains at 0...100%.

- **Activates the control mode**
  - Automatic frequency change in case of resonance.

- **Influences the regulation behaviour**
  - Lineout time and vibration behaviour (pumping) of feeder.

- **Code 008  Control mode**
  - `f = fixed`
  - `f = f resonant`

- **Manual setting of the vibrating frequency**
  - It is important to have a low set point setting (e.g. 30 %) because upon reaching resonance it is possible that a high amplitude will be induced, even with a low output voltage, thus increasing the risk of the coil "hammering". To determine the resonant frequency you must connect to the output. Resonant frequency has been reached when there is maximum amplitude and minimum output current.

- **Automatic frequency search (regulation mode only)**
  - * Put set point at zero.
  - * Select regulation mode (Menu C 008, Parameter ACC = I).
  - * The optimum, vibrating frequency of the feeder is determined by initiating the frequency search (Menu C 008, Parameter, select A.F.S. and press any cursor key). Return the controller back to normal running mode after the resonant frequency has been found.
Code C 007 / C 167 Track control / Backlog sensor

Switch on time delay 0...60 sec.
Switch off time delay 0...60 sec.
Invert sensor function I = inverted

Operating mode

Code 015 Special functions

0 = Feeder doesn't switch off during timeout
I = Feeder switches off during timeout
E. = Sensor timeout [sec]

Operating mode

Code 064 Pulse feed

0 = Pulse feed Off
I = Pulse feed On

Operating mode
### Code 117 Inhibit access

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>117</td>
<td>Inhibit access</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P</th>
<th>Code 117 Inhibit access</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>C.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I=</th>
<th>Hidden menus</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Parameter menus cannot be accessed, except for the feed rate setpoint</td>
</tr>
<tr>
<td>-</td>
<td>Parameter menus can be accessed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D.5</th>
<th>Operating mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>0 =</th>
<th>Setpoint access ON</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 =</td>
<td>Setpoint can be adjusted</td>
</tr>
<tr>
<td>1 =</td>
<td>Setpoint cannot be adjusted</td>
</tr>
</tbody>
</table>

### Code 137 Inhibit setpoint access

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>137</td>
<td>Inhibit setpoint access</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P</th>
<th>Code 137 Inhibit setpoint access</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>C.000</td>
</tr>
</tbody>
</table>

<table>
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<tr>
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</tr>
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<tbody>
<tr>
<td>0</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>0 =</th>
<th>Setpoint access ON</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 =</td>
<td>Setpoint can be adjusted</td>
</tr>
<tr>
<td>1 =</td>
<td>Setpoint cannot be adjusted</td>
</tr>
</tbody>
</table>

### Code 143 Save parameter settings

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>143</td>
<td>Save parameter settings</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>P</th>
<th>Code 143 Save parameter settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>C.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>U.S.</th>
<th>Operating mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>U.S.</th>
<th>Select parameters 0 to 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Saves up to 4 different parameters (no. 0 - 3).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P</th>
<th>Push</th>
<th>SAFE</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>1000</td>
<td>Operating mode</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>U.S.</th>
<th>Save parameter settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>All previously set parameters are saved.</td>
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### Code 210 Restore parameters

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>210</td>
<td>Restore parameters</td>
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<table>
<thead>
<tr>
<th>P</th>
<th>Code 210 Restore parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>C.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>U.S.</th>
<th>Operating mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>U.S.</th>
<th>Restore factory settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Restore factory settings.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>U.S.</th>
<th>Select parameters 0 to 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Saves up to 4 different parameters (no. 0 - 3).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P</th>
<th>USPR</th>
<th>SAFE</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>1000</td>
<td>Operating mode</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>U.S.</th>
<th>Restore user settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Restore settings saved under C143.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Restore factory settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restore parameter settings previously stored under C143</td>
</tr>
</tbody>
</table>
**Code 127  Enable service menu**

Enables access to the adjustment of \( I_{\text{max}} \), \( F_{\text{min}} / F_{\text{max}} \), and Output voltage limiting.

**Code 040  Service**

- **Display shows the actual coil current in % of the nominal current (\( I_{\text{nom}} \)).**
  
  
  \[
  \text{Display} \times \frac{I_{\text{nom}}}{100} = \frac{38.5 \times 6}{100} = 2.31 \text{ A}
  \]

  - **Conversion**
  - **Monitoring the output current.**

- **Adjustment of the current limit \& of the nominal current (\( I_{\text{nom}} \)).**
  
  \[
  \frac{I_{\text{limit}} \times 100}{I_{\text{nom}}} = \frac{4.8 \times 100}{6} = 80 \%
  \]

  - **Adjusting output current limit depending on coil.**

- **Effective frequency range**
  
  - **Parameter 'F' in Menus C 008, C 096, and C 020.**
  
  - **Setting the limits of the frequency adjustment range accessible for the user.**
  - **A narrow adjustment range is preferable for the automatic frequency search function.**

- **Display shows the actual vibration frequency.**
  
  When operated with 230 / 240 V mains supply, the output voltage is limited to 100 V.
MFS 268, 621605, 3Amp, IP 20
MFS 268, 626848, 8Amp, IP 20
MFS 268, 621103, 15Amp, IP 20
MFS 268, 3Amp & 8Amp, IP 20, Electrical

Diagram showing Track Sensor, Enable, Set point, Accelerometer, Status Relay, Feeder, and Main Input connections.
MFS 268, 15Amp, IP 20, Electrical

Main Input

Track Sensor

Enable

Set point

Accelerometer

Only use screened control cables!

Screen clamb for cable from acceleration sensor

Output

Feeder

Only use screened power output cables.

Screen clamb for output cable
MFS 268, 626848, 8Amp, IP 54
MFS 268, 626867, 12Amp, IP 54
MFS 268, 626887, 16Amp, IP 54

Key Functions:
F = Former Menu
P = Pause/Accept
= Decrease
= Increase
O = Stop
I = Run

BEFORE REMOVING COVER
DISCONNECT MAIN SUPPLY
MFS 268, IP 54, 8A, Electrical

- **Output Feeder**
  - Main Input 110 / 240 V
  - PE

- **PNP-Sensor track control**
  - Enable
  - External set point

- **Acceleration sensor**
  - Input
  - Screen
  - Acceleration sensor
  - 500 ohm extern
  - + 12...24V, DC
  - 0...10V

- **Internal status relay**
  - +24V
  - R=500 ohm extern

- **Input**
  - Brown / A1
  - Black / A2
  - Yellow / Green

- **Output**
  - Brown / A1
  - Black / A2
  - Yellow / Green

- **Track control**
  - PNP-sensor
  - X 4
  - +24V, DC
  - Input
  - GND

- **Acceleration sensor**
  - X 40
  - +24V
  - Input
  - GND

- **External set point**
  - +10V
  - -10V
  - 0(4)...20mA

- **Enable**
  - +24V
  - +10V
  - -10V

- **Internal set point**
  - +10V
  - -10V
  - 0...10V
  - 0(4)...20mA
  - R=500 ohm extern

- **PNP-Sensor track control**
  - Enable
  - External set point

- **Acceleration sensor**
  - Input
  - Screen
  - Acceleration sensor
  - 500 ohm extern
  - +12...24V, DC
  - 0...10V

- **Internal status relay**
  - +24V
  - R=500 ohm extern

- **Input**
  - Brown / A1
  - Black / A2
  - Yellow / Green

- **Output**
  - Brown / A1
  - Black / A2
  - Yellow / Green