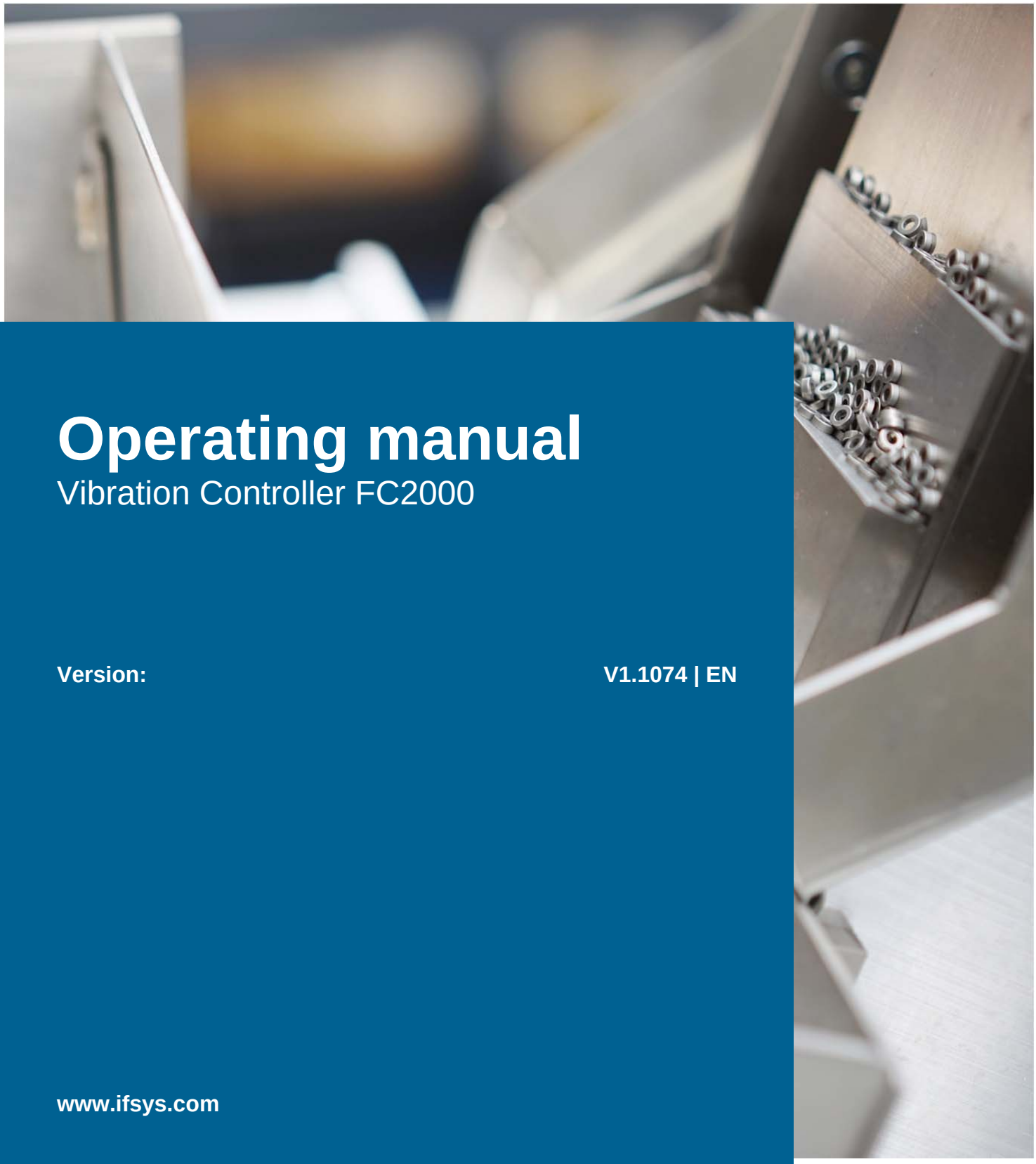
Integrated Feeding Systems



Operating manual

Vibration Controller FC2000

Version: **V1.1074 | EN**

www.ifsys.com

Table of contents

1 General information

1.1 Information on operating instructions / Legal note

About this operating manual
In this operating manual you will find all of the important information on installation, connection, setting, and operation of your FC2000 device.
It also provides information and important instructions for your safety.Technische Änderungen
Aufgrund technischer Entwicklungen behalten wir uns Änderungen der Betriebsanleitung ohne Ankündigungen vor.

Technical changes
We reserve the right to implement changes to the operating instructions due to technical developments without prior notice.

Translations
If translations of this operating manual (or parts thereof) are produced,
they are undertaken to the best of the knowledge and belief of those responsible.
The German operating instructions are the original version. Versions in other languages are translations of the original version.
We do not assume any liability for errors with the translation, even if the
translation was produced by us or on our behalf. The original German version is the controlling document.

Copyright
Passing on or supplementing these operating instructions is not permitted, insofar as this is not expressly agreed by IFSYS.
Archiving and filing are permitted for the purposes of longterm storage.

Trademarks
The common names, trade names, product descriptions, and
other designations reproduced here can be protected by law even where this is not
expressly indicated (e.g. as trademarks). This has no effect on copyright.

Impressum

Responsible for content:

IFSYS - Integrated Feeding Systems GmbH
Am weißen Kreuz 5
97633 Großbardorf
GERMANY
Tel: +49 9766 940098-0
Fax: +49 9766 940098-10
E-Mail: contact@ifsys.com

Managing directors: Adelbert Demar, Rigobert Zehner
District court: Amtsgericht Schweinfurt, HRB 5023
VAT Ident Nr. DE250207912

1.2 Symbols and signs

1.2.1 Warning signs

Sign	Meaning and consequences of disregarding	Measures for avoidance or reduction of danger
	**Warning:** Danger area Potential for injury or death..	• Select and deploy suitable personal or technical protective equipment • Only qualified specialists are permitted to carry out work ☞ see chapter *Qualification of personnel*
	**Warning: Electrical hazard** Failure to observe this sign can result in death, serious injury, or damage to property	• Select and deploy suitable personal or technical protective equipment • Only qualified specialists are permitted to carry out work ☞ see chapter *Qualification of personnel*

1.2.2 Additional symbols and signs

Sign	Meaning	Measures for avoidance or reduction of danger
	**Disconnect before maintenance or repair** Switch off the power and secure to prevent switching back on.	• Select and deploy suitable personal or technical protective equipment • Only qualified specialists are permitted to carry out work ☞ see chapter *Qualification of personnel*
	**Useful tips and information**	
	**Important information**	

2 Safety

2.1 Qualification of personnel

This descriptive document contains the information required for the proper use of the FC2000. It is intended to be read by technically qualified personnel.
Qualified personnel are persons who, on the basis of their education, experience and training, and their knowledge of the relevant standards, provisions, accident safety regulations and operating conditions, are authorised by those responsible for the safety of the equipment, to carry out any necessary tasks, and in doing so are able to identify and avoid any possible dangers.
(Definition of specialist personnel as per IEC 364)
The operating company is responsible for the training of the operating personnel.
Each employee responsible for the installation, commissioning, maintenance, operation of the FC2000 must have read this manual carefully beforehand and understood it. The operating company is recommended to impress the following points upon its personnel prior to the commissioning:

- Knowledge of the content of the operating instructions
- Knowledge of the safety and operating regulations cited within these
- Knowledge of the legal accident prevention regulations

We recommend having training confirmed in writing.

2.2 Safety instructions

The following safety instructions are for your protection, and the protection of third parties and the device itself. You are therefore requested to observe them without exception:

Hazard due to dangerous voltage. Failure to observe this sign can result in death, serious injury, or damage to property

- Disconnect the unit from the supply voltage before assembly or disassembly work as well as when changing fuses or making structural changes.
- Please refer to the relevant accident prevention and work safety regulations for your particular application.
- Before commissioning, check that the rated voltage of the device matches the rated voltage available locally.
- The electrical connections must be covered!
- Check the protective earth connections are in proper working order after installation!
- Before commissioning, check that the solenoid and its core on the connected vibration feeder are earthed..

Hazard due to improper use

- Always store the FC 2000 in a dry and clean storage place. The storage temperature should be between +5°C and +70°C.
- This should be observed in order to ensure compliance with proper use.
- Check the equipment immediately for any damaged packaging or transport damage. Damaged equipment must not be put into operation. Please inform the supplier immediately of any damage.
- During welding work on the machinery, all poles of the FC2000 must be disconnected from the mains and the connected vibration feeder.

3 The product – FC2000

Aus Sicherheits- und Zulassungsgründen (CE) ist das eigenmächtige Umbauen
und/oder Verändern des Geräts nicht gestattet.
Das Gerät entspricht der gültigen Niederspannungs- und EMV Richtlinie.

3.1 Proper use

The device described here is a piece of electrical equipment for use in industrial machinery. It is designed for controlling vibration feeders. Any other use is not proper use and can result in injury to personnel and damage to property. (☞ you can find further information on this topic in the chapter *Safety instructions).*
For use in industrial machinery NFPA 79 applications only.
(☞ you can find further information on this topic in the chapter *UL Approbation*).

3.2 Product specifications

- Frequency converter with output voltage stabilisation
- Mains frequency-independent, adjustable output frequency
- Adjustable at mains voltages of 95 - 250 V~ 50 or 60Hz
- Umin and Umax limit for the output voltage can be adjusted separately and independently from one-another
- Adjustable current limit for maximum solenoid current
- Soft start and soft stop adjustable individually
- Analogue setpoint setting
- Revert to factory settings
- Selectable vibration frequency
- Switchable by the control signal from a PLC, a sensor or potential-free contact
- Temperature monitoring of the power output stage
- All values display in original units V~; A~; T°C;Hz; V-; mA-; time s

3.3 Technical data

Mains connection, wide ranges	95V-250V AC Range: 95-130V~ // 195-250V~
Mains frequency	50Hz or 60Hz
Output voltage ranges	Automatic switchover of output ranges between
Variable output frequency	1 - 230V~ (at 50Hz) and 1 - 115V~ (60Hz)
Output current	5 - 200 Hz (electrical frequency)
Protection type	This corresponds to the mechanical vibration frequency 8-400Hz shown on the display
Fuse	0.1 - 6A~
Mechanical mains connection	IP 54 for suspended installation
Vibration feeder connection	(threaded connections pointing towards the ground)
Inputs E1, E2	UL Enclosure type 1
Transistor output	6.3 AF
Output stabilisation	4-pin connector in the axial sleeve housing
Enclosure	4-pin socket in the axial sleeve housing
Dimensions	+24V= / max. 50mA / PNP Switching level HI: 6 - 24V=- Switching level LO: 0 - 4V=
Operating temperature	24V= / 100mA
Storage temperature	Max. change in voltage of 1V~
Installation altitude	Aluminium baseplate, -Extruded profile and -Front cover

4 Installation

If the FC2000 is supplied loose, the device must be mounted before commissioning, using the fastening holes provided. Two holes and two elongated holes are accessible from the outside for securing the device. They are separate from the inside of the enclosure.
The device should be mounted to a level surface, free from vibration.

Fastening holes 4 x ø5mm

- When choosing the mounting position, please note that the distance between the FC2000 and the vibration feeder must not exceed 10 metres

- The device must not come into direct contact with water
- When moving it from cold to warm surroundings, allow the device to adjust to the temperature for a few hours before putting it into operation, otherwise it could be damaged by condensation.
- Do not install the FC2000 in the vicinity of devices which generate strong electromagnetic fields. This could interfere with the proper functioning of the device.
- Also avoid environments subject to extreme heat or cold or damp.

5 Electrical connection

- All connections may only be made by qualified specialists.
  ☞ See chapter *Qualification of personnel*
  The device must be earthed

- Disconnect the device from the power supply before starting work

- Before connecting the device, establish the mains voltage
  - and frequency. This data must be within the range of permissible values stated for the device.

5.1 Connections on the enclosure

5.1.1 Control

To switch the vibration feeder connected to the FC2000 on and off, the control signals (X4 / X5 connector) must be used. Neither the mains voltage nor the output circuit of the FC2000 may be used for this purpose.
The control inputs enable the device to be switched remotely by another system (PLC, initiator, sensors, etc.). The FC2000 offers a dedicated supply voltage of +24V DC for this.
Switch-on or switch-off with an external voltage of +24V DC is also possible

Do not use the mains voltage or the output circuit for operational switching of the FC2000; this could damage the device..

5.1.2 Description of the connections

All connectors are located on the bottom of the FC2000.

X1 Mains supply cable connection	Pin 1 - L Pin 2 - N Pin 3 - Not Connected Pin 4 - PE	Cable section max. 2.5mm²
X2 Drive connection	Pin 1 - Last Pin 2 - Last Pin 3 - Not Connected Pin 4 - PE	Cable section max. 2.5mm², shielded version
X3 RS232 interface		Connector type: M12 5 pin B-coded, socket
X4 Control inputs for Automatic Mode (solenoid on / off) and Reset (acknowledge faults)	Pin 1 - +24V= Pin 2 - Enable Pin 3 - GND-Digital Pin 4 - Reset	The +24V= supply (GND digital) is electrically isolated from the 230V~ and +5V= (GND analogue) side of the processor! Connector type: M12 5 pin B-coded, connector
X5 Relay output for fault status / solenoid output	Pin 1 - Relaiskontakt 11 Pin 2 - Relaiskontakt 12 Pin 3 - Not Connected Pin 4 - Relaiskontakt 14	Contact load max. 24V DC / 0.5A Connector type: M12 5 pin B-coded, connector
X6 threaded connection Analogue setpoint setting for vibration amplitude	Siehe Kapitel *Analoge Sollwertvorgabe*	M12 dummy plug
X7 - X9	Reserve	M16 dummy plug

5.1.3 Analogue setpoint setting for vibration amplitude

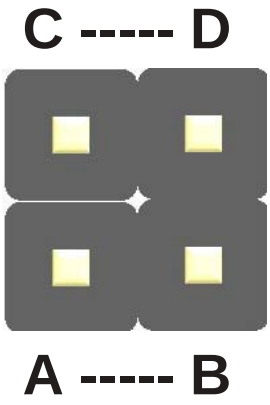
The conveying speed (vibration amplitude) can be set if necessary via an analogue input.
To do so, open the front cover to get to the connection terminals on the control board mounted on the inside of the cover. See chapter *Opening the cover*

Open the dummy plug labelled as X6 and replace it with a suitable threaded connection. Right next to the connection terminal is a jumper, which must be used to select the current or voltage input. In addition, the corresponding settings must be configured in the menu Level 0 & 1.

Terminal 1 - GND analogue for current input / voltage input for external potentiometer

Terminal 5 - Voltage input 0-10 V= or external potentiometer or current input 4-20mA=

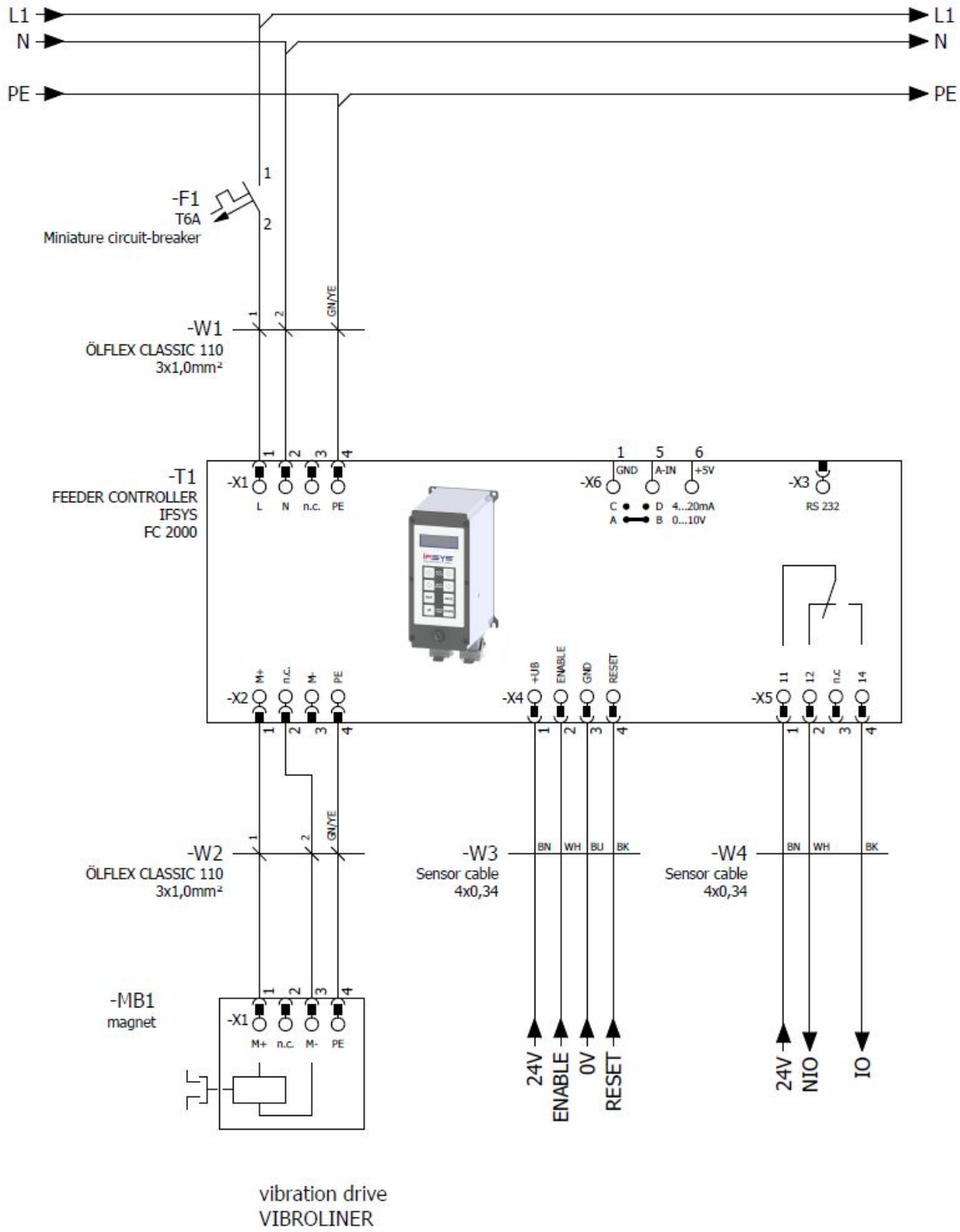
Terminal 6 - +5 V= analogue for external potentiometer



Jumper between **C-D** -> 4-20mA=

Jumper between **A-B** -> 0-10V= or potentiometer

5.2 Example connection diagram



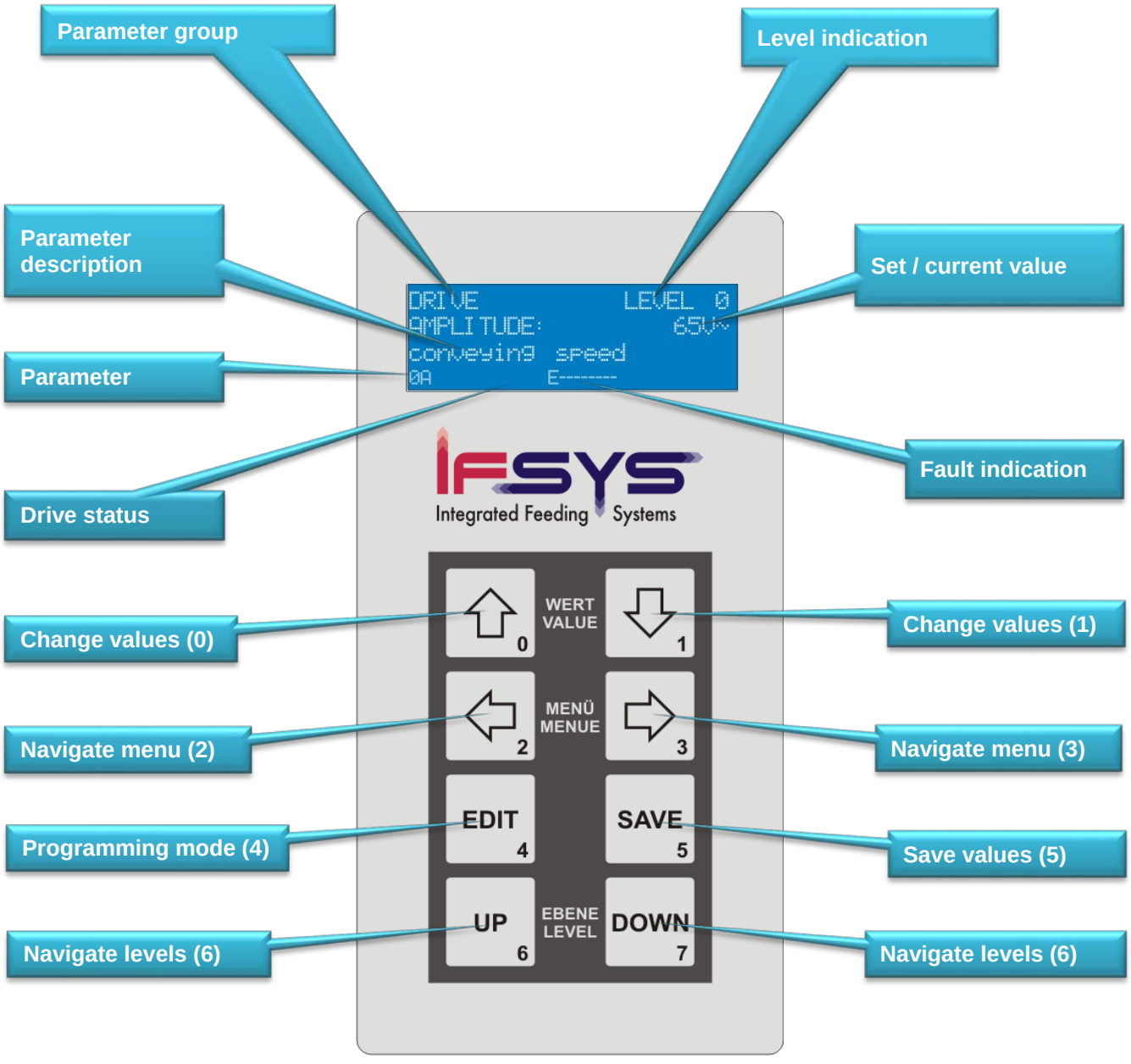
Cable types vary according to application (see chapter *UL approbation*)

6 Operation

The FC2000 only displays the correct function if it is installed and operated in the correct manner.
In case of malfunctions or unclear operating statuses, check the device and rectify the malfunction (see chapter *Troubleshooting*) or have it rectified by a third party.
To avoid the risk of injury, never allow untrained personnel or other vulnerable or at-risk persons to operate the device unsupervised.

6.1 Controls and display

The device is operated and settings are configured using 8 keys which, along with a plain text LCD display, can be found on a control panel on the cover.
All operating mode settings as well as the customisable parameters can be configured on this control panel.



6.2 Operating philosophy

The parameters are configured using the keypad and the plain text LCD display.
The following chapter details the structure of the menus.

Briefly pressing the arrow keys 0 (increase/change) and 1 (reduce/change) increases/reduces or changes the value in the selected screen/parameter by one position (whole number, tenth, or mode). Pressing and holding the keys runs through the value rapidly; after about 1 second, they run through the values at double speed.

Briefly pressing the arrow keys 2 (move right) and 3 (move left) switches from one screen/parameter to the next. Pressing and holding the keys displays the screens/parameters in a continuous sequence.

Briefly pressing the arrow keys 6 (increase) and 7 (reduce) switches from one level to the other. Pressing and holding the keys displays the levels in a continuous sequence.

Pressing the key 4 (Edit) switches to Programming mode. P appears next to the parameter names in the last line of the display.
It is now possible to change the values with the keys 0 and 1.

Changed values must be saved by pressing the key 5 (Save).
The indication SAVE appears briefly on the display as feedback that the value has been changed.

To change the extended menu items/parameters of Level 1, the code for Password Level 1 must be entered.
(Seechapter *Entering the password level*

60 seconds after the last key press (time out), and unless key 5 (Save) is pressed, changes are discarded. The values that were saved before the switch to programming mode are restored. The exiting of programming mode due to a time out is indicated by the "P" on the display flashing three times.

6.2.1 Shortcuts

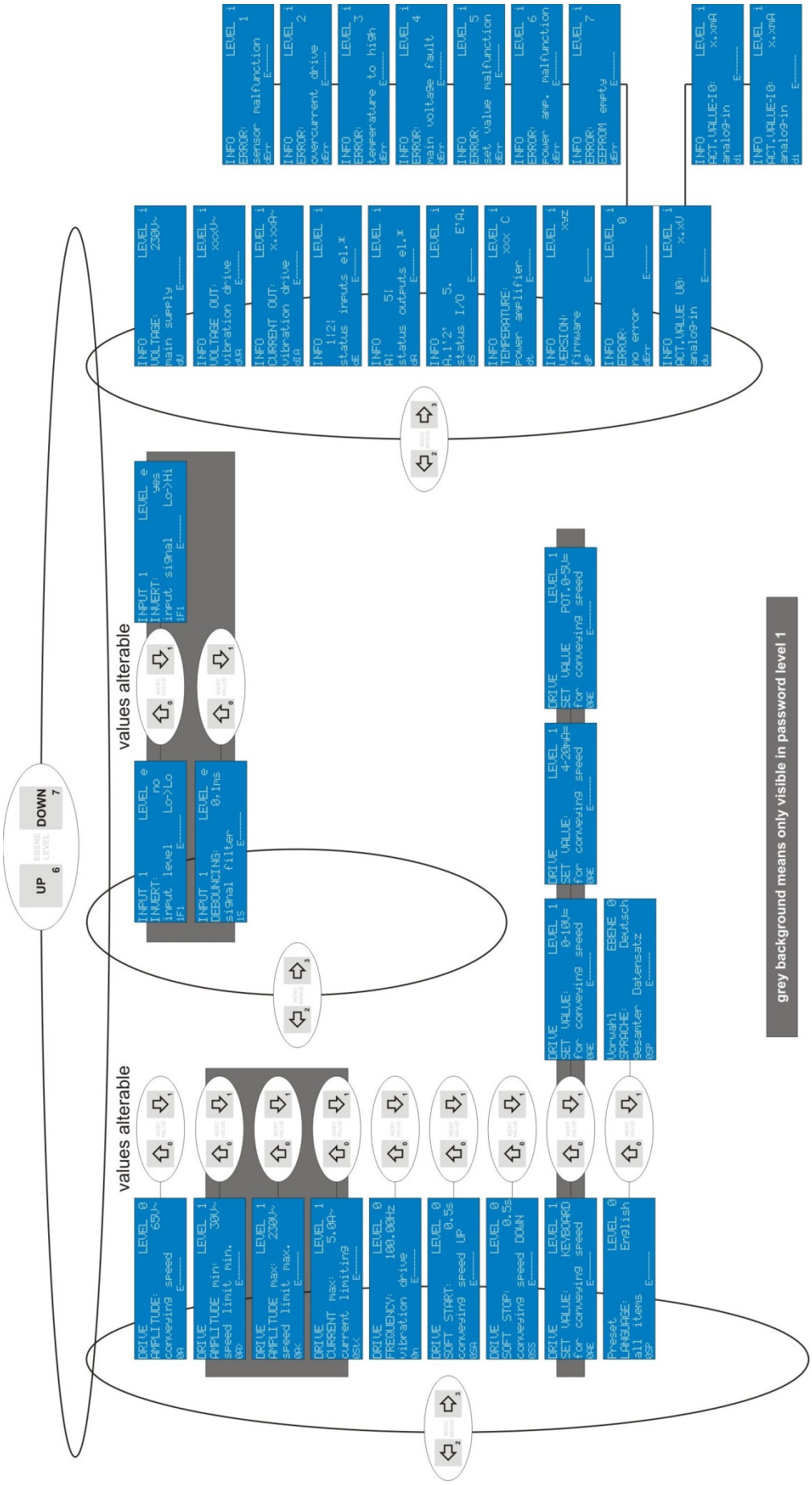
The FC2000 has some different key combination commands

Pressing keys 2 and 3 at the same time navigates straight to the home screen with the vibration amplitude (conveying speed).

Pressing keys 4 and 5 at the same time displays the firmware version on the display.

With keys 6 and 7 you can switch the drive on and off.
(See chapter *Drive manual mode*)

6.3 Menu structure



6.4 Scope of the Level 0 & 1 menus

After the power is turned on, the home screen with the vibration amplitude (conveying speed) is shown on the display. The parameters of Level 1 are only visible by entering the code for Password Level 1!
(See chapter *Entering the password level*)

Parameter "0A" Amplitude conveying/vibration speed
Value adjustable from 1 - 230V~ increment 1 V~
The voltage is determined by the mains voltage and amplitude limit.

Parameter "0A>" Amplitude limit min.
Value adjustable from 1 - 230V~, determined by the mains voltage range Increment 1 V~
Limited by max. amplitude limit

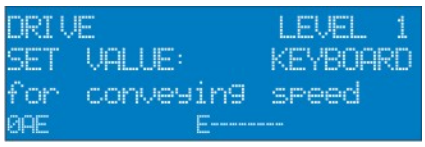
Parameter "0A<" Amplitude limit max.
Value adjustable from 1 - 230V~, determined by the mains voltage range Increment 1 V~
Limited by min. amplitude limit

Parameter "0St<" current limit on the drive
Value adjustable from 0.1 - 6.0A~
Increment 0.1 A~
To protect the solenoids, the value is set to the maximum permissible current for all connected solenoids.

Parameter "0n" frequency on the drive
Value adjustable from 8.0 - 400Hz
Increment 0.02Hz~
This gives the mechanical vibration frequency,
i.e. a setting of 100Hz corresponds to the mains frequency of 50Hz.

Parameter "0SA" soft start
Value adjustable from 0.1 - 5.0sec
Increment 0.1sec
Voltage ramp from 0V~ to set amplitude within the set time.

Parameter "0SS" soft stop
Value adjustable from 0.1 - 5.0sec
Increment 0.1sec
Voltage ramp from set amplitude to 0V~ within the set time.



Parameter "0AE" external setpoint setting [function]
Values adjustable on keypad: 0-10V, 4-20mA
KEYPAD - setpoint setting with membrane keypad
0-10V= - setpoint setting with analogue voltage 0 - 10V=
4-20mA= - setpoint setting with analogue current 4 - 20mA=
POT.0-5V= - setpoint setting with 10K potentiometer
See chapter *Analogue setpoint setting*

6.5 Scope of the Level e menus

The parameters of Level e are only visible by entering the code for Password Level 1!
(See chapter *Entering the password level*)

Parameter "1F1" invert input level
No - input signal is not inverted (Lo->Lo)
Yes - input signal is inverted (Lo->Hi)

Parameter "1S" debounce input
Value adjustable from 0.1 - 99.9ms
Increment 0.1ms
In the event of very rapid level switching in close succession, the debouncing time can mask out double pulses.

6.6 Scope of the Level i menus

Indication "dU" mains voltage

The present mains voltage is displayed

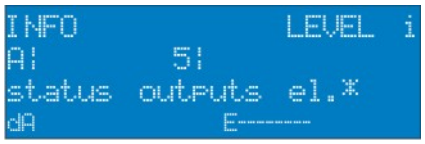
Indication "dIA" voltage at the output (drive)

The output voltage currently set on the drive (solenoid) is displayed

Indication "dIA" current at the output (drive)

The presently flowing solenoid current is displayed

Indication "dE" status of the inputs
1: Vibration feeder input on
2: Reset fault input



Indication "dA" status of the outputs
A: Drive (vibration feeder) output
5: Ready for operation output

Indication "dS" status of the inputs/outputs

Indication "dt" temperature of the output stage

Thee temperature at the power output stage is displayed. Values up to 110°C are permitted

Indication "dP" firmware version

Indication "dErr" fault indication

See chapter *Fault indications*

Indication "du" actual value for the setpoint setting

Only appears in the menu if setpoint setting was not selected via the KEYPAD.

Value of present analogue voltage [V=]
Value of present analogue current [mA=]

6.7 Drive manual mode

To set up the vibration drive, it can be switched on without approval from an external controller by pressing a key combination. This function is time-limited. This mode is known as T10 mode.

Pressing and holding keys 6&7 for 2 seconds switches the FC2000 to manual mode (**T10** mode)

T10 appear in the last list on the display
T10 mode is activated and can be switched off via the shortcut 6+7 (2 seconds).
The FC2000 only remains in this mode for 10 minutes, whereby the number after Txx displays the minutes remaining. Pressing a key restarts the timer function at 10 minutes.
Once the timer elapses, this mode ends automatically.

Pressing and holding keys 6&7 again for 2 seconds ends **T10** mode. **off** is now shown permanently on the display.

6.8 Keylock

The keys on the FC2000 can be protected against unintended actuation by means of a keylock.
The lock can be activated and deactivated from any point in the menu.
The keylock **cannot** be activated while the FC2000 is in programming mode.

Activate keylock

To activate the keylock, press and hold the key **5 "SAVE"** for 10 seconds.

Keylock activated

A "K" (keylock) appears in the last line on the display.

Deactivate keylock

To deactivate the keylock, press and hold the key **5 "SAVE"** for 10 seconds.
The "K" on the display disappears

- The keylock cannot be activated in programming mode..
- The menu can be navigated even with the keylock enabled. However, it is not possible to change any of the values

6.9 Password Level 1

Some menu items are only made visible by entering the password for Level 1.
To do so, proceed as follows:

Press and hold the programming key **4 (Edit)** for about 2 seconds.

The following appears on the display: **Enter CODE:**

The **"P"** also appears in the last line of the display, next to the parameter

The access code is: **000**
Enter the code by pressing **key 0** three times. On the display, a dash appears next to "Enter CODE" for each key press.
Confirm the code by pressing **key 5 (Save)**

Now you can navigate the menu as normal. The associated parameters will appear in the menu at the appropriate places, and their values can be changed.

Exit password level

To exit the password level again, simply press key **4 (Edit)**.
The **"P"** goes out in the last line on the display and the parameters of Level 1 are hidden again.

If no button is pressed for 60 seconds, the password level is exited automatically..

7 Troubleshooting / Fault rectification

- Danger due to electrical voltage
  ☞ see chapter *Qualification of personnel*

- Danger due to tampering.
- Do not tamper with the device. Otherwise this can lead to malfunctions and defects with the device.

- In an unfavourable electromagnetic environment, faults are possible.

7.1 Fault indications

Fault indication	Description of problem	Possible cause(s) / Remedy
	This fault message does not exist for this model of the device.	
Fault message 1 "Sensor defective"		
	This fault message does not exist for this model of the device.	➢ Check the air gap at the solenoid of the vibration feeder; the gap may be too large ➢ Check the frequency setting, the value may be too high
Fault message 2 "Drive overcurrent"		
	The temperature of the output stage has exceeded the limit value.	➢ Switch off the device. Contact the *Service* department.
Fault message 3 "Temperature too high"		
	The mains voltage is outside of the standard voltage ranges	➢ 90-130V~ 190-250V~
Fault message 4 "Incorrect mains voltage"		
	Analogue control setpoint cannot be reached.	➢ Have the analogue signal checked by qualified specialists
Fault message 5 "Setpoint defective"		
		➢ Device defective, must be replaced. Contact the *Service* department.
Fault message 6 "Output stage defective"		
	Data loss occurred in the EEPROM.	➢ Device defective, must be replaced. Contact the *Service* department.
Fault message 7 "EEPROM empty"		

7.2 Faults with no indication

Problem / Fault	Possible cause(s)	Remedy
FC2000 not working	• Power failure or defective fuse	➢ Check the fuses. (F6.3A)
	• The 230V mains voltage is not present.	➢ Have the mains voltage at the input of the FC2000 checked by qualified specialists
	• The device is defective.	➢ Have the device checked by qualified specialists.
	• Control input inverted	➢ Check that the setting for the control input is correct
Vibration feeder not working	• Incorrect vibration frequency set	➢ Have qualified specialists compare the vibration frequency against the data for the vibrating solenoid.
	• Incorrect mains frequency	➢ Have qualified specialists compare the mains frequency against the data for the vibrating solenoid.
	• Umax too low	➢ Check the Umax setting.
Vibration feeder vibrating too strongly, solenoid knocking	• Umax too hig	➢ Check the Umax setting.
	• Incorrect vibration frequency set	➢ Have qualified specialists compare the vibration frequency against the data for the vibrating solenoid.
Magnet gets hot	• Magnet being operated above the permissible voltage	➢ Have the voltage checked by qualified specialists.
	• Solenoid being operated above the permissible frequency	➢ Have the frequency checked by qualified specialists.
Control input not working	• Control voltage is in the incorrect range	➢ Have the voltage checked by qualified specialists.
	• Control input deactivated	➢ Check the setting

7.3 Opening the cover of the enclosure

- Danger due to electrical voltage
  ☞ see chapter *Qualification of personnel*

- Risk of trapping when bolting the cover into place

- Disconnect the device from the power supply before starting work

De-energise the device and secure it against being switched back on.

Remove the six visible screws on the cover of the enclosure with a standard Phillips screwdriver.

When closing the cover of the enclosure, make sure that no cables are caught in it.

Position the cover back on the enclosure and secure it with the removed screws.

8 Maintenance and cleaning

- The control device is maintenance-free.
- The safety test according to DIN VDE 0701-0702 must be performed on an annual basis.
- Before cleaning the device enclosure using liquids, switch off the mains voltage!

Danger due to electrical voltage
☞ see chapter *Qualification of personnel*

Disconnect the device from the power supply before starting work

9 Disposal

The device may not be disposed of with normal household waste.

Users are obligated to hand in used devices at a disposal point for used electrical and electronic equipment. The collection (sorted by type) and proper disposal of your used devices contributes to preserving our natural resources and ensures that they will be recycled, which protects human health and conserves the environment. You can obtain information on where you can find disposal points for your used devices from your local authority, and from local waste disposal firms.

10 Declaration of Conformity

Declaration of Conformity according to EC Directive 2014/30/EC (Electromagnetic Compatibility), dated 26 February 2014.

We hereby declare that the device identified below, in the version placed on the market by us, complies in terms of its design and construction with the basic health and safety requirements of EC Directive 2014/130/EU.
If the device is modified in a manner not agreed up with us, then this Declaration shall be void.

Manufacturer:	IFSYS Integrated Feeding Systems GmbH Am weissen Kreuz 5 97633 Grossbardorf Germany
Person responsible for compilation of the relevant technical documentation:	Michael Eppler Documentation Management IFSYS Integrated Feeding Systems GmbH Am weissen Kreuz 5 97633 Grossbardorf Germany

Product specifications

Designation: Vibration Controller
Model: FC2000
Version V1.1073/1.1074
Year of manufacture: 2016

The FC2000 has been developed and manufactured in accordance with the following regulations, harmonised standards and technical specifications:

- **2014/30/EC**
  EC EMC Directive
- **2014/35/EC**
  EC Low-Voltage Directive
- **EN 61010-1**
  Safety requirements for electrical equipment for measurement, control, regulation and laboratory use - Part1: General requirements
- **EN 61326-1**
  Electrical equipment for measurement, control, regulation and laboratory use - EMC requirements - Part1: General requirements

If the device is modified in a manner not agreed up with the manufacturer, then this Declaration shall be void.

Place, date: Großbardorf, 2016-04-15

Manufacturer signature:

p.p Michael Eppler
Documentation Management

10.1 UL approbation

The device is UL-approved and is listed under the following UL file number.

IND.CONT.EQ
.
E479925

For use in industrial machinery NFPA 79 applications only.
For the power connections only cables may be used that correspond with the requirements of NFPA 79 (2012 / 12.2 – 12.6).

Necessary accessories:

Pin insert	1773080, HC-A3-ESTS, PhoenixContact
Bush insert	1773093, HC-A3-EBUS, PhoenixContact
Sleeve housing	19620031440, HAN 3A-EMV, Harting

11 Service adresses

Please have the following information to hand in order to expedite the handling of Service requests::

- Serial number of the device
- IFSYS machine number and designation of the feed system

(you can find this information on the type plate or on the operating manual of the associated feed system)

Service-Adressen:

Germany / Europe

IFSYS Integrated Feeding Systems GmbH
Am Weißen Kreuz 5
97633 Großbardorf

Tel.: +49 (0) 9766 / 94 00 98-0
Fax: +49 (0) 9766 / 94 00 98-10

contact@ifsys.com
www.ifsys.com

North America

IFSYS North America, Inc.
2240 Hwy 292
Inman, SC 29349

Tel.: +1 .864.472.2222
Fax: +1 .864.472.2232

info@ifsys.us
www.ifsys.us

China

Jopp Technology (Suzhou) Co., Ltd.
3# plant, No. 96 Weixi Road
Suzhou Industrail Park
215122 Suzhou, Jiangsu Province

Tel.: +86 512/6936-2799
Fax: +86 512/6936-2797

china@jopp.com
www.jopp.com