Operation Manual

English



MIXdrive 1 XL **Order no.: 40601**

with

MIXcontrol XL **Order no.: 90600**

Includes:

Quick start
Operation Manual
Technical Documentation
Specifications

Thank you for your confidence shown in us!
Congratulations to the purchase of your new product.
For any enquiries, questions or suggestions please do not hesitate to contact us at info@2mag.de.

2mag
Main competence of **2mag** is based upon mixing, tempering and measuring/controlling. In these fields we are offering support with our products to the modern laboratory within the standardized daily business as well as for the implementation of highly complex processes in the state-of-the-art research. Due to the fact that **2mag** is developing according to customer's needs, is manufacturing self-contained and under permanent quality control and is also selling on-site together with competent contact persons, we can guaranty our customer an outstanding quality and product performance.

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A Quick start

1. Overview of your product

Magnetic stirrer MIXdrive 1 XL with control unit MIXcontrol XL



Image 1: magnetic stirrer MIXdrive 1 XL with control unit MIXcontrol XL

Your product contains at despatch:

- A modern magnetic stirring system (**MIXdrive 1 XL**) consisting of a stainless steel stirring plate with 1 stirring point with fixed stirrer control cable (4-pin plug, with screw nut)
- An external control unit with one connector socket (**MIXcontrol XL)** for connection of the stirrer control cables as well as a pluggable power cable (country-specific).

2. Applications

2.1 Operator

The 100% maintenance- and wear-free magnetic stirrer **MIXdrive 1 XL** are used in the fields of chemistry, medicine, pharmacy, microbiology and biotechnology.
The operators are generally working in research and development, production and quality assurance, where magnetic stirrers with high power are needed for e.g. medium sized volumes (up to 40 litres) or highly viscous media.

2.2 Basic functions

Basic function is stirring of liquids in suitable and chemically resistible vessels.
The stirrer housing is hermetically close and therefore immersible.
The maximum ambient temperature is +100°C in air.

2.3 Product combinations

In addition to the use at the conventional laboratory desk our products have also been tested for the application in

- Laminar flow devices
- Safety cabinets
- Safety cabins
- Incubators

Please note: For using the stirrer in incubators please set the adjustable stirring power to the minimum usable power to reduce the additional heating effect caused by the magnetic stirring drive. Please see chapter "5 External heating operations in incubator".

2.4 Application not for the intended use

The magnetic stirrer **MIXdrive 1 XL** is **explicitly not intended** for the application:



- Stirring and warming of flammable liquids
- Warming of pressure-tight closed and NOT pressure-resistant vessels or glasses
  (e.g. Erlenmeyer flasks, lab flasks)
- At general atmosphere or danger of explosion

The **2mag** is offering special products for the just mentioned application combinations. More information for this can be found at www.2mag.de or at info@2mag.de

2.5 Combinations of vessels

Please use round, chemical resistant and where required heat-resistant vessels made of glass or non-magnetic metal. You can use vessels up to the maximum size stated in the spreadsheet 1.
The vessels should have a thin, even wall thickness. Flat glass bottoms (without any curve to the inside) and smooth surfaces will improve the operating characteristic of the magnetic stirring bar. Uneven surfaces would reduce the stirring power and would cause reaming up of the stirring bar's gliding surface.
In case you intend to stir large amount of liquids, please chose such stirring flasks that have a comparatively small diameter and thin bottom. The magnetic stirring bar can then be centred better.

Magnetic Stirrer	Stirring vessels	Nominal content	Max. amount
MIXdrive 1 XL	Erlenmeyer flasks beaker glasses lab flasks	40.000 ml	1

Spreadsheet 1: Combination examples for vessels



Please always place the flasks in the magnetic centre of the magnetic stirrer. This will ensure the optimum stirring effect!



Do never use any pressure-tight closed flasks.

RISK OF BURSTING!



Do only use temperature-resistant vessels.
Be careful with plastic flasks!

2.6 Stirring bars

In general, all stirring bars matching the length and diameter can be used. But we recommend using the commercial stirring bars with Samarium Cobalt magnetic core (SmCo). By using this highly energetic magnetic material the maximum stirring power of the magnetic stirrer can be achieved, especially when mixing viscose media.

2.7 Tips and hints to the topic stirring

The mixing flasks should be filled max. up to the middle (high speed range) resp. up to ¾ (low speed range).

Place one magnetic stirring bar in each stirring flask.

Place the stirring flasks right in the centre of the stirring point.

In case the magnetic stirring bar turns in an unsteady or jerky way or bounces:
The interaction between the alternating magnetic field and the magnetic stirring bar is too high.

- Increase the speed or
- Use a smaller magnetic stirring bar or
- Decrease the stirring power.

In case the magnetic stirring bar will not be centred or leaves the centre permanently:

The interaction between the alternating magnetic field and the magnetic stirring bar is too low.
Or the stirring bar has a bottom that is uneven or too thick-walled.

Move the flask slightly back and for and centre it again onto the stirring point of the stirrer surface.

- Reduce the speed or use a longer magnetic stirring bar or one with a larger diameter or
- Use a smaller flask with a thin-walled, even bottom or
- Reduce the filling amount in the flasks or
- Increase the stirring speed.

In case the stirring activity is too weak:

- Use commercial magnetic stirring bars with SamariumCobalt-core.
- Use a longer stirring bar or a stirring flask with smaller diameter.



We recommend using 2mag – ASTEROID stirring bars to increase the stirring performance.

3. Installation

3.1 Safety advice

Please ensure the following basic conditions prior to installation:



The wear-free inductive drive works with magnetism. **Cardiac pacemakers, data storage mediums, magnetic cards and other devices,** which can be affected by magnetic fields, have to be kept away from the fields of the stirring unit as well as from the stirring bars.



The device must not be used in explosive rooms.
The control unit MIXcontrol must not be dipped in water or any cleaning solutions.



Your supply voltage has to comply with the label of the control unit. The **control unit** has to be **switched off** before any power connection or power disconnection.



To increase the operation safety, the control unit should be placed apart from chemical materials and reactions as well as away from thermal influences.
For special requirements please contact info@2mag.de.



ATTENTION!
The control unit has to be switched off, BEFORE you connect or disconnect the plugs.



Always turn off the power switch first before handling the connection cables.

3.2 Installation, connection to the control unit MIXcontrol XL

Step by step instruction (please also see image 2)

- **Switch off the control unit MIXcontrol XL BEFORE you handle the connection cables with the power switch (5) and disconnect the power cable (4)!**
- The stirrer control cable (1) of the magnetic stirrer MIXdrive 1 XL has now to be connected to the 4-pin socket of the control unit (2).
  Please secure this plug connection by turning the screw nut situated at the plug. Only by this a trouble-free operation can be guaranteed.
- Connect the power cable (4) to the power input (3) rear-side and afterwards to the power socket.
- The control unit is now connected to the magnetic stirrer and ready for operation.

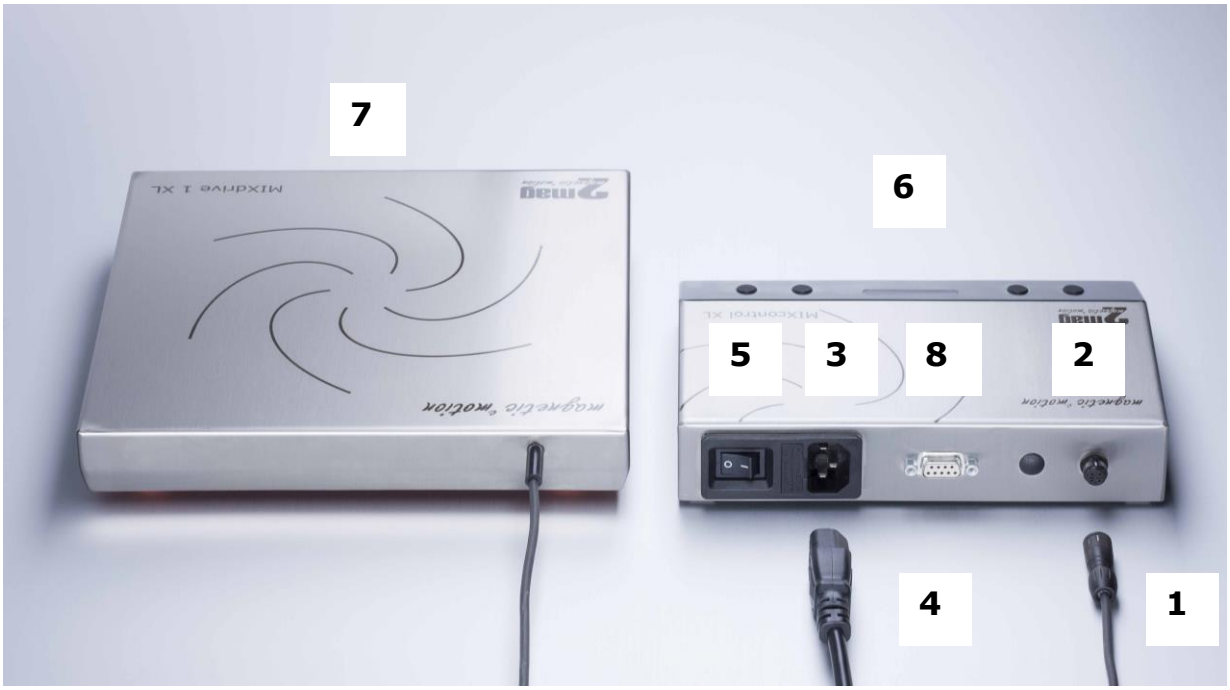


Image 2: Installation, rear side of the control unit MIXcontrol XL with MIXdrive 1 XL

Description functional elements of control unit - backside

1 Connector of the stirrer control cable
2 Socket for the stirrer control cable
3 Power socket
4 Power cable
5 Power switch
6 Control unit 2mag MIXcontrol XL
7 Stirring drive unit 2mag MIXdrive 1 XL
8 RS232 interface

4. Operating of the control unit

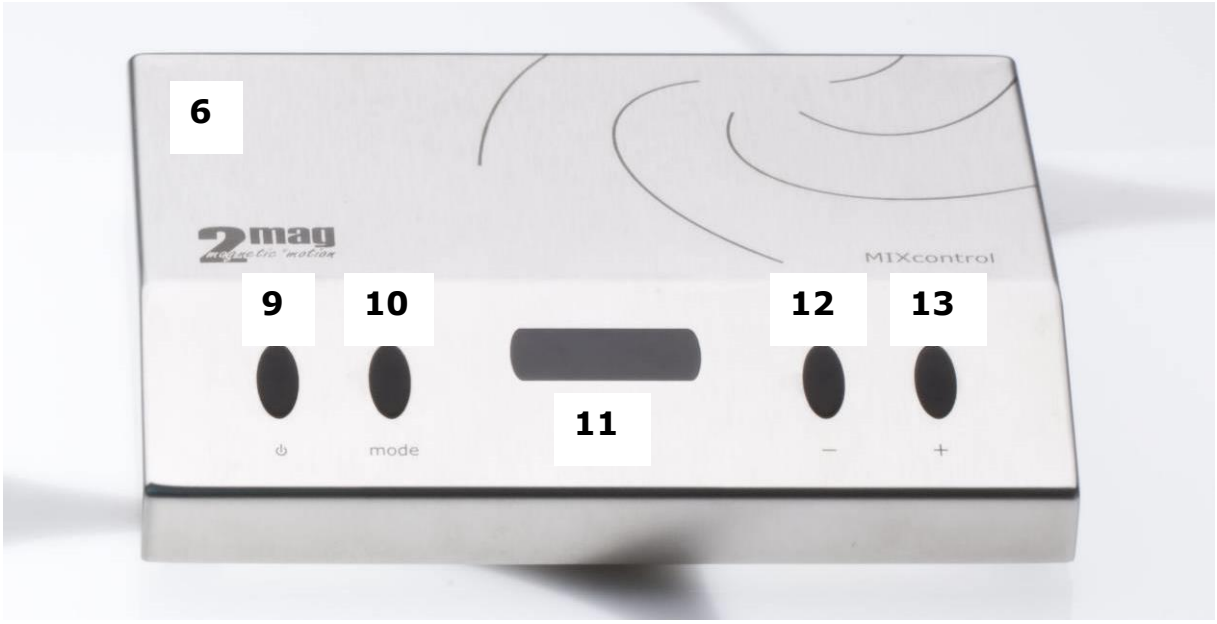


Image 3: Control unit MIXcontrol XL



Image 4: Close-up, operating elements, control unit MIXcontrol XL

4.1 Description operating elements MIXcontrol XL

Stirrer control

9 ON/OFF key for magnetic stirrer
10 MODE-key (M) for power adjustment of the magnetic stirrer
11 Display for speed indicator and power indicator
12 MINUS-key (-) for reduction of stirrer speed
13 PLUS-key (+) for increase of the stirrer speed

Operating of the control unit

After the cables have been installed correctly according to "**Installation, Connection to the control unit"**, the magnetic stirrer system MIXdrive 1 XL with MIXcontrol XL will be ready for operation.

4.2 Stirring operation and stirrer control

Turning On and Off
Please press the ON/OFF-key (9) once. The magnetic stirrer will be switched on by that. The current stirring speed will be shown in the display (10).
By pressing the ON/OFF-key (9) once more, the magnetic stirrer will be switched off again. The display indicator (11) expires.

AutoSave
Automatic saving of the last functional status after disconnection from the mains power supply or a power failure. All parameters for speed, power, acceleration and interval are restored.

SoftStart
After turning on the magnetic stirrer, the stirring bar will be, to increase the operating safety, defined first and then smoothly accelerated to the set speed.
The accelerating phase will be shown by the illumination of a dot at the right segment of the LED-display (11).

Stirrer speed adjustment
The speed of the magnetic stirrer can be adjusted by pressing the MINUS- (12) resp. the PLUS-key (13).
The adjusted speed will be shown in the display (11) when the magnetic stirrer is switched on. The speed range can be adjusted between 70 and 2.000 rpm in steps by 10.
By constantly pressing the MINUS- resp. the PLUS-keys, an accelerated adjustment of the speed can be achieved.

QuickSet
To enter the start- respectively maximum speed directly and quickly there is the Quickset-function available.
The use of the following described keys will be made with the stirrer turned on.
Setting the Start Speed
Press the MINUS-key (12) permanently and press shortly twice the ON/OFF-key (8) afterwards. The start speed "70" will be set.
Setting the Maximum Speed
Press the PLUS-key (13) permanently and press shortly twice the ON/OFF-key (8) afterwards. The maximum speed "2000" will be set.

Settings of further mode

A) **Power** (→ P)
B) **Interval time** → I)
C) **Acceleration** (→ A)

Power adjustment

A newly developed and extremely efficient magnetic stirrer will come into operation.
The inductive drive concept causes an operational heat output by the magnetic stirrer. To reduce the heat output the power of the magnetic stirrer can be adjusted.
A **high power** setting is necessary to mix viscose media and large amounts to be stirred in a strong and efficient way.
A **low power** setting guaranties a warming-free long-term use for example of aqueous probes at room temperature.

The stirring power can be adjusted in four steps by using the MODE-key (10). Press the MODE-key until the letter "P" is shown in the display.
By pressing the MINUS-key (12) respectively the PLUS-key (13) just after pressing the MODE-key, the power can be adjusted in 4 steps between 5/10/15/20 W.

The current value is now shown on the display (11). The display (11) will turn back to the current speed indicator after approx. 5 seconds.
The power adjustment is finished again at the time the speed range is shown.
The power adjustment can also be finished immediately by repeated pressing the MODE-key (10) again.

Interval

The interval function allows a defined restart of the stirrer after running a defined time. The interval time is adjustable in a range from 0 to 240 seconds in steps by 2.

The interval can be adjusted by using the MODE-key (10). Press the MODE-key until the letter "I" is shown in the display.
The interval can be set in steps by 2 from 0 to 240 seconds by pressing the MINUS- (12) resp. PLUS-key (13) afterwards.



Note: „0" = Interval OFF

The current value is now shown on the display (11).
„I 0" seconds means the interval function is OFF.
„I 6" seconds is the shortest interval time.
„I240" seconds is the longest interval time.

The display (11) will turn back to the current speed indicator after approx. 5 seconds. The interval adjustment is finished again at the time the speed range is shown.
The interval adjustment can also be finished immediately by repeated pressing the MODE-key (10) again.



Attention: In case the set interval time is shorter that the set acceleration time, the stirrer might possibly NOT reach the set speed level.

Acceleration adjustment – Variable SoftStart
A newly developed and extremely efficient magnetic stirrer will come into operation.
To raise the operation safety the acceleration of the magnetic stirrer can be set in 4 steps by seconds (20/30/60/120 seconds).
The indication of e.g. 20 sec. refers to the time period from the moment of switching on until the max. speed is reached.

A **fast acceleration** of the stirrer is recommended for small stirring amounts as well as aqueous media.
A **slow acceleration** is recommended for a safe increase of the stirrer's running with regard to large volume, highly viscous media and stirring over far distances. With this setting the possibility of a separation of the magnetic coupling during the acceleration phase is minimized.

The acceleration can be adjusted in four steps by using the MODE-key (10). Press the MODE-key until the letter "A" is shown in the display.
The acceleration can be set in 4 steps by seconds (20/30/60/120 seconds) by pressing the MINUS- (12) resp. PLUS-key (13) afterwards.

The current value is now shown on the display (11).
"A 20" is the quickest acceleration.
"A 120" is the slowest acceleration.

The display (11) will turn back to the current speed indicator after approx. 5 seconds. The acceleration adjustment is finished again at the time the speed range is shown.
The acceleration adjustment can also be finished immediately by repeated pressing the MODE-key (10) again.

mixWATCH – Stirring Bar Monitoring
The Magnetic Stirrer MIXdrive 1 XL is equipped as standard with a newly developed stirring bar control. In case of the magnetic coupling's separation between the magnetic stirrer and the stirring bar during the acceleration phase, the magnetic stirrer will be stopped and started again and the set speed level will be reduced automatically by 100 rpm.
This control cycle is operated as long as a safe acceleration of the stirring bar is guaranteed.
mixWATCH is always active and cannot be turned-off.

Display, Magnetic Stirrer
The display (11) provides as described above a description of:

- Current stirring speed (always with switched on magnetic stirrer)
  → Display shows the adjusted speed without any further letter

- Set Power "P" (after pressing the MODE-key (10))
  → Display shows the letter "P"

- Set Interval Time "I" (after pressing the MODE-key (10))
  → Display shows the letter "I"

- Set Acceleration "A" (after pressing the MODE-key (10))
  → Display shows the letter "A"

- For checking, if the magnetic stirrer is switched on. The display will not be illuminated in case the stirrer is switched off.





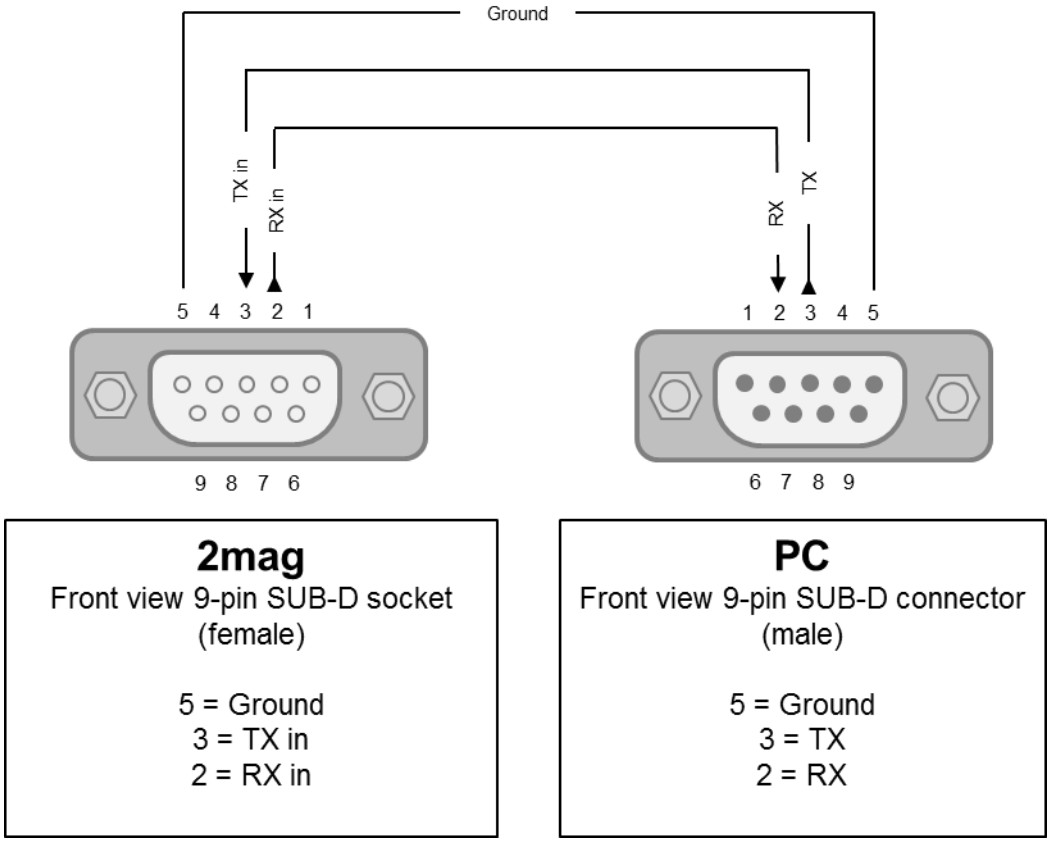
The magnetic stirrer works with extremely strong permanent magnets.
Cardiac pacemakers, data storage mediums, magnetic cards and other devices, which can be affected by magnetic fields, have to be kept away from the fields of the stirring unit as well as from the stirring bars.

4.3 PC-Interface – RS232

The control unit MIXcontrol XL RS232 includes an interface RS232 for external control by e.g. PC.

4.3.1 Pin-assignment RS232 interface, SUB-D connector

Pin assignment of the RS232 interface:



Drawing 1: Pin-assignment RS232 interface

4.4.2 RS232 Commands

The RS232-commands are ASCII coded and can be sent to the MIXcontrol XL RS232 with e.g. the program HyperTerminal or PuTTY, which are coming with the Windows operation system.

Listing of commands and feedbacks (with comments):

No.	Command	Feedback	Comment
1	start/(_A)	OK_START_A	
2	stop/(_A)	OK_STOP_A	
3	setrpm_*RPM*/(_A)	OK_*RPM*RPM_A	*RPM*: 2, 3 or 4 digits, e.g. 70, 100 or 2000, (2 and 3 digits optional with leading zero e.g. 0070 and 0100)
4	sendrpm/(_A)	OK_*RPM*RPM_A	*RPM*: 4 digits, values with only 3 or 2 digits with leading zero, e.g. 0500 or 1000
5	setpower_*POW*/(_A)	OK_POWER*POW*_A	*POW*: 2 or 3 digits, e.g. 50 or 100, without leading zero
6	sendpower/(_A)	OK_POWER*POW*_A	*POW*: 3 digits, values with only 2 digits with leading zero, e.g. 050 or 100
7	setadd_X_A	OK_SETADD_A_X	Change of unit address A to X
8	setdefault/(_A)	OK_SETDEFAULT_A	Reset to 350 rpm and 50% power, acceleration 30 s, interval 0 = Off
9	setaccel_*ACC*/(_A)	OK_ACCEL*ACC*_A	*ACC*: 2 or 3 digits, e.g. 60 or 120, without leading zero
10	sendaccel/(_A)	OK_ACCEL*ACC*_A	*ACC*: 3 digits, values with only 2 digits with leading zero, e.g. 060
11	setinterval_*INT*/(_A)	OK_INTERVAL*INT*_A	*INT*: 1, 2 and 3 digits, e.g. 8, 66 or 120 (optional with leading zero e.g. 0008, 0066, 0120)
12	sendinterval/(_A)	OK_INTERVAL*INT*_A	*INT*: 3 digits, values with only 1 and 2 digits with leading zero, e.g. 066 or 008
13	sendstatus/(_A)	OK_VXXXX_REM_A	1. Err or OK 2. SW versions no. 3. REM/MAN/OFF (remote/manual/offline) 4. Address

Spread sheet 2: Commands – interface RS232

Each entering of the complete command has to be finished with the ASCII code “Carriage Return (CR)”.

There is no determination of small and capital letters.

4.3.3 Format – Command – Feedback

Control commands are defined with the command, (when indicated) parameters and (optional) the unit address attached with underscore.

There are 4 kinds of addressing:

1. Without any address, addressing one unit, feedback- see spreadsheet 2
2. Basic address with letter A to Y: _C, only one unit, feedback- see spreadsheet 2
3. Range address with letter A to Y: _AK, only one unit, feedback- see spreadsheet 2
4. Command to ALL connected units: _Z, feedback = command

Feedback of commands

The feedback of the addressed units is as follows:

1. OK or ER [code of error] – in the case of error
2. Command and parameter (when indicated)
3. Unit address (A-Y, Z = all units, default address is: A)

If a command is addressed with _Z or no unit is addressed, then the feedback will be identical to the command.

Error codes

Error 1: Unknown Command
Error 2: Manual Mode (Start, Stop not possible)
Error 3: Parameter out of range (set value not allowed)

4.3.4 Hints to Parameter Operation

The control unit is saving two different sets of parameters independently – in each case for manual and remote operation.

By starting the control unit manually (by using the keys) or remotely (by using the RS232 interface) the control unit will be started in the manual or remote mode. It is NOT possible to switch from the manual to the remote mode or backwards. Furthermore it can be changed only the parameters of the actual running mode.
The mode can be changed by switching off the control unit by pressing the ON/OFF-key (11).

The ***Set*-commands** can only set the parameters of the remote mode.
The ***Send*-commands** are giving always back the parameters of the actual running mode.

The manual parameters can be changed only by the keys during running in the manual mode and the remote parameter only by the RS232 interface during running in the remote mode!

Via PC and RS232 interface remotely adjusted parameters cannot be changed manually by the keys.

Via the unit keys manually adjusted parameters cannot be changed via PC and RS232 interface. But the parameters of the actual running mode can be checked via the PC and RS232 interface.

The manually switched on control unit cannot be switched off or on via the RS232 interface.

During using the manual mode all parameters can be set via the RS232 interface. These remote parameters cannot be read out in the manual mode. In this case the answer is giving back the parameters of the manual mode.
The via RS232 interface adjusted remote parameters will be saved automatically and will be valid after starting the control unit in the remote mode.
The read out of the parameters are giving always back the parameters of the actual running mode.

Only by switching off the control unit by pressing the ON/OFF-key (11) the running mode can be stopped. That means the remotely started control unit can switched off in this case manually (safety switching).

4.3.5 Control of more than one units

It can be connected more than one control unit with only one interface. All control units are connected with the help of a special needed 2mag adapter box with a standard RS232 cable to the PC and to the controllers.

The last (open) D-Sub-connector has to be closed with a bridge end connector which is connecting the Rx and Tx line.

All controllers are addressed with the address _A in the factory.
To control the control units individually, each control unit has to be addressed with an own address with help of the command “SetAdd”.

4.3.6 Control with HyperTerminal

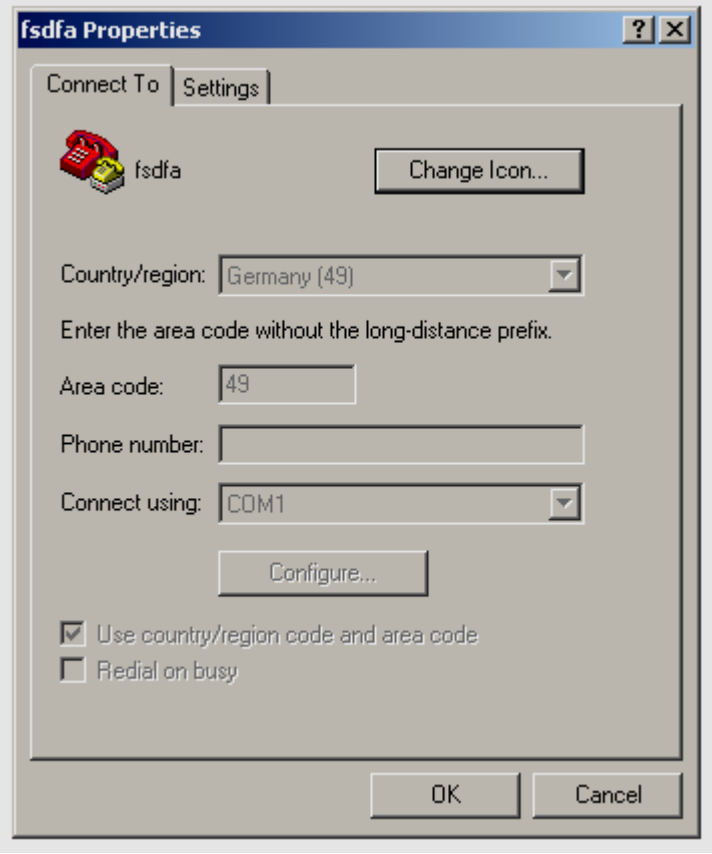
The commands which are shown in spreadsheet 2 can be sent from the PC to the controller with the Windows accessory program HyperTerminal.

Following HyperTerminal preferences allow to control at least 3 control units and the summery of more than one command to a batch file.

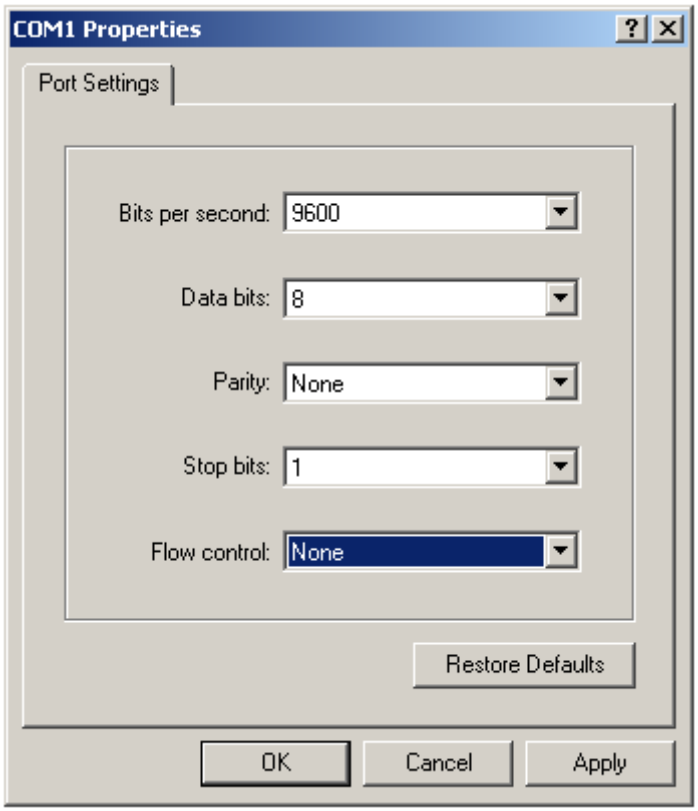
- bits per second: 9600 Baud
- 8 data bits, 1 stop bit, no parity bit
- flow control: „XON / XOFF" or „None"
  Note: Flow control via hardware handshake is not working!

Minimum time distance between two commands: 40ms for one control unit, minimum time distance 80ms for 3 control units.
HyperTerminal allows the adjustment of the time between two commands via the line delay in the ASCII configuration.

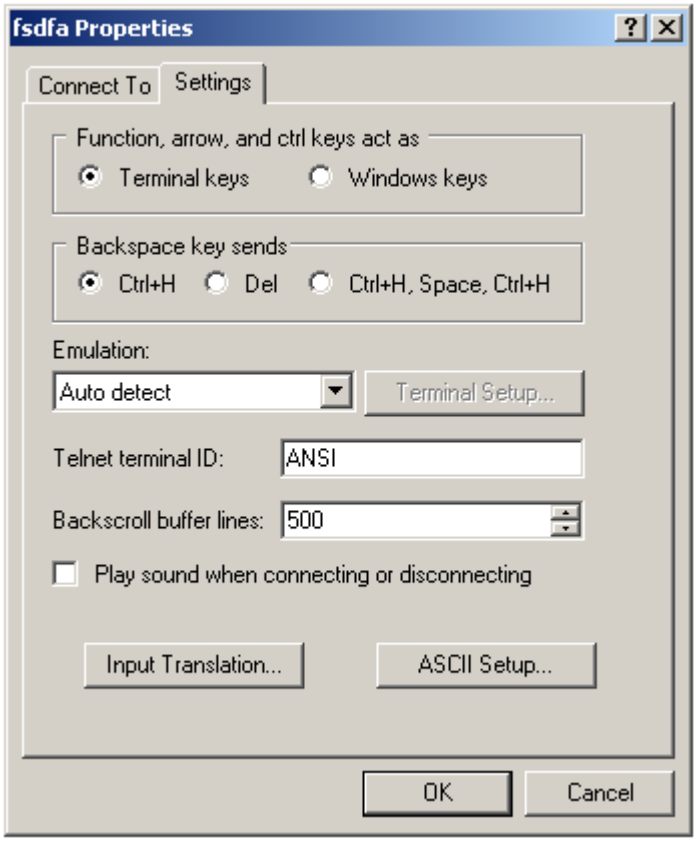
For manual sending of commands via HyperTerminal the ASCII configuration must be set which is shown in screenshot 4.



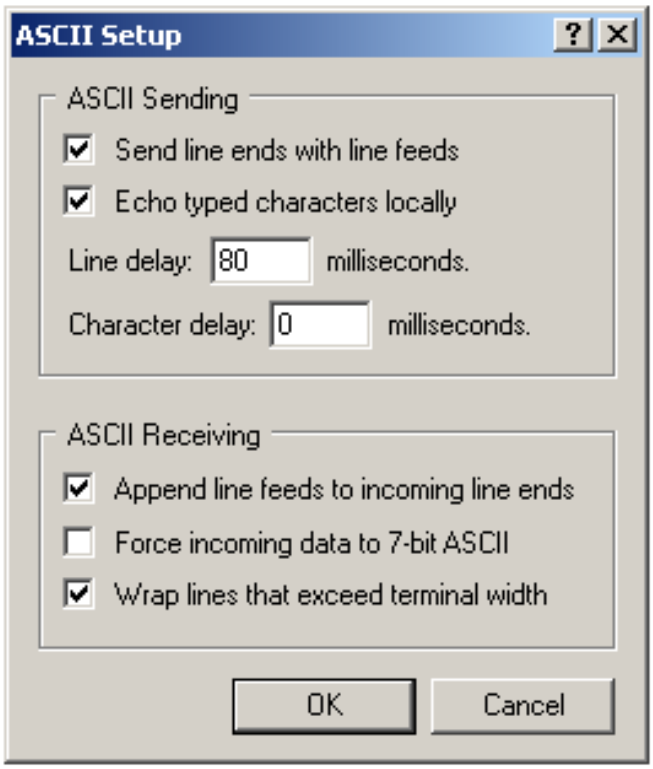
Screenshot 1: Startscreen Hyperterminal



Screenshot 2: Port Setting: 9600 bps, 8 bits, no parity, 1 Stopbit, no flow control



Screenshot 3: Settings → chose ASCII Setup



Screenshot 4: Send lines end with line feed
Echo type characters locally
Line Delay 40 or 100 ms
Append lines that exceed terminal width

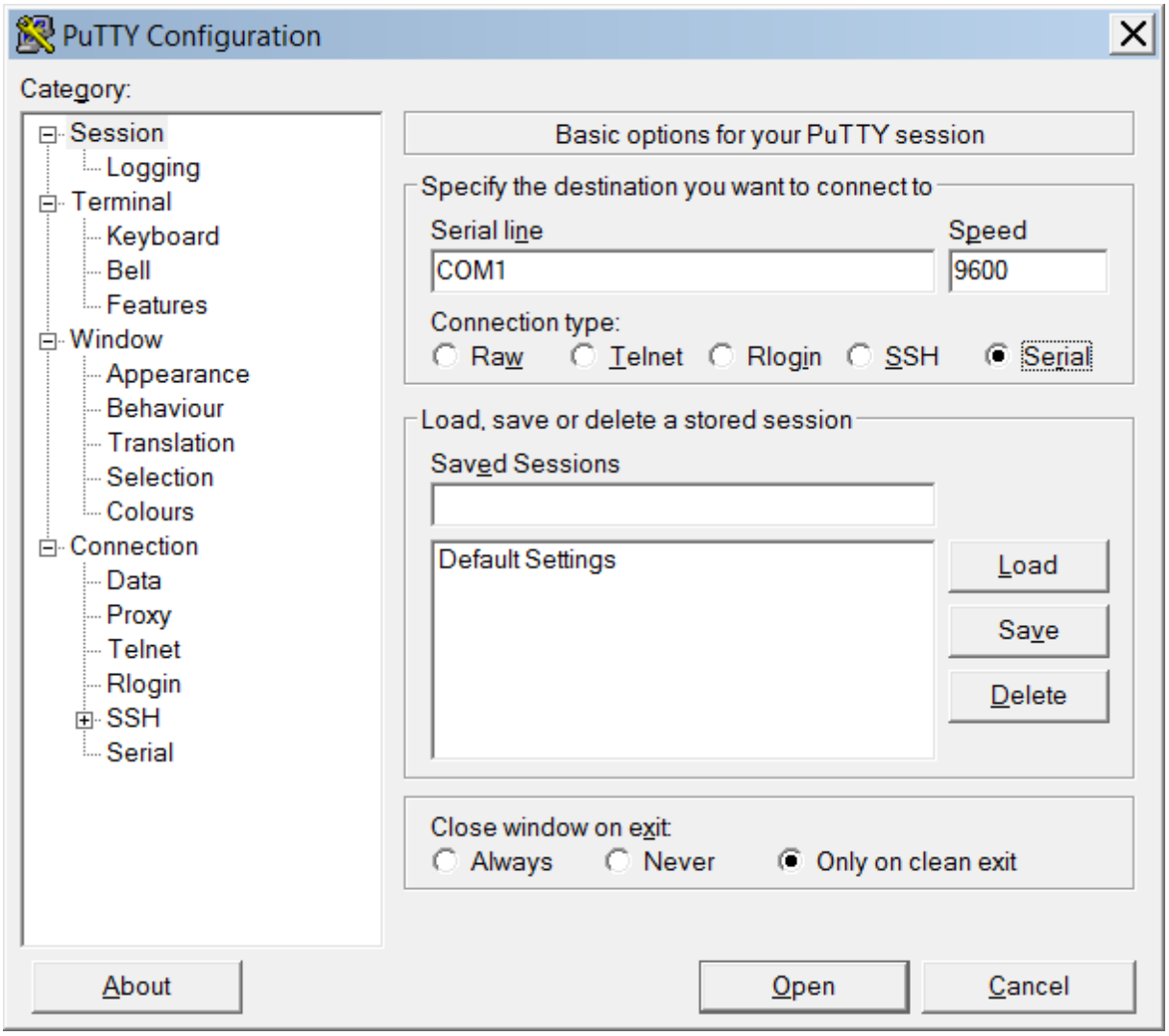
4.3.7 Control with PuTTY

The commands which are shown in spreadsheet 2 can be sent from the PC to the controller with the Windows accessory program Putty.

Category: "Session" →
Serial line: COM?
Speed: 9600
Connection type: Serial

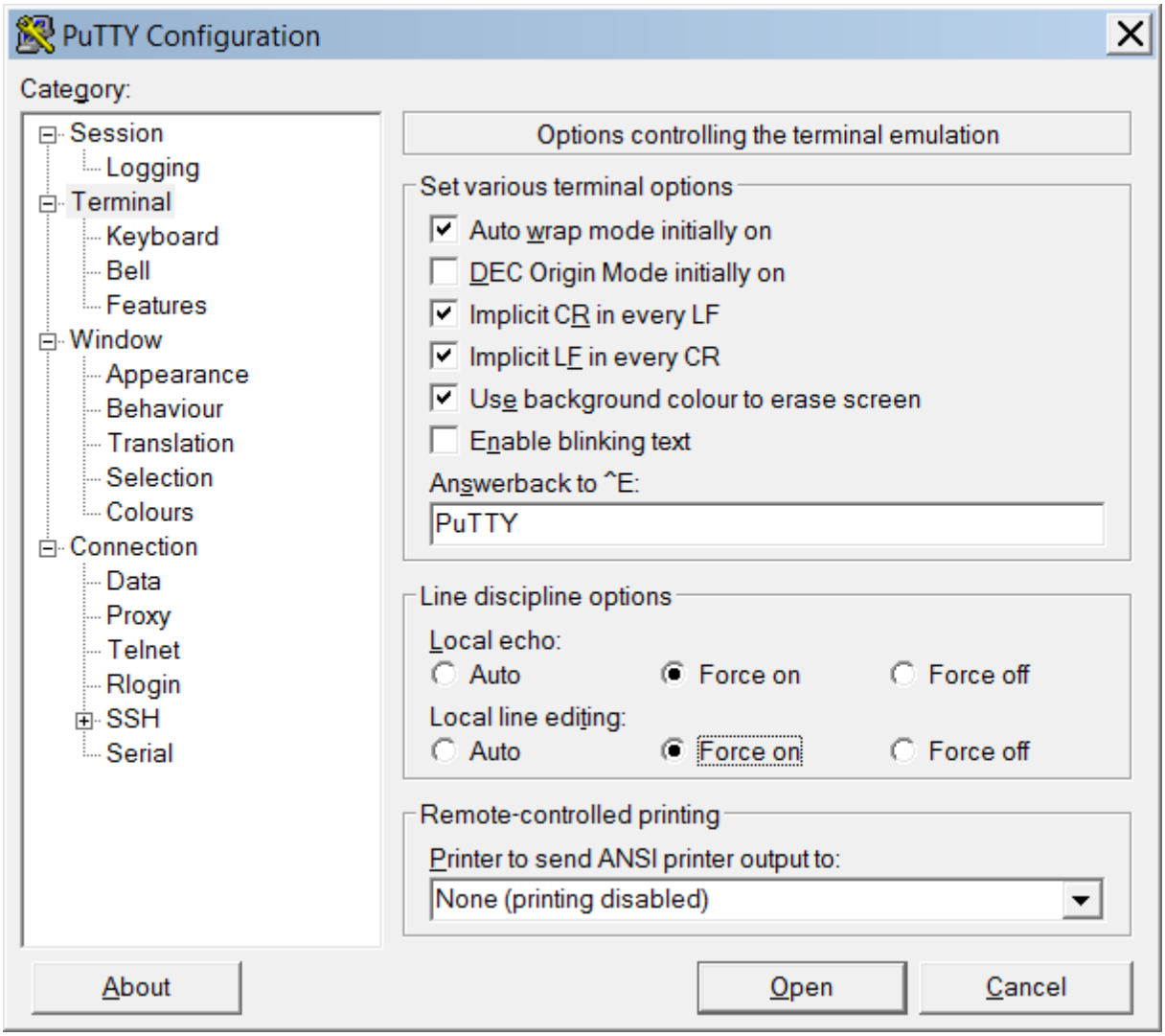
Category: "Terminal" →
Implicit CR in every LF
Implicit LF in every CR
Local echo: Force on
Local line editing: Force on

Category: "Connection" → "Serial" →
Serial line to connect to: COM?
Speed (baud): 9600
Data bits: 8
Stop bits: 1
Parity: None
Flow control: None



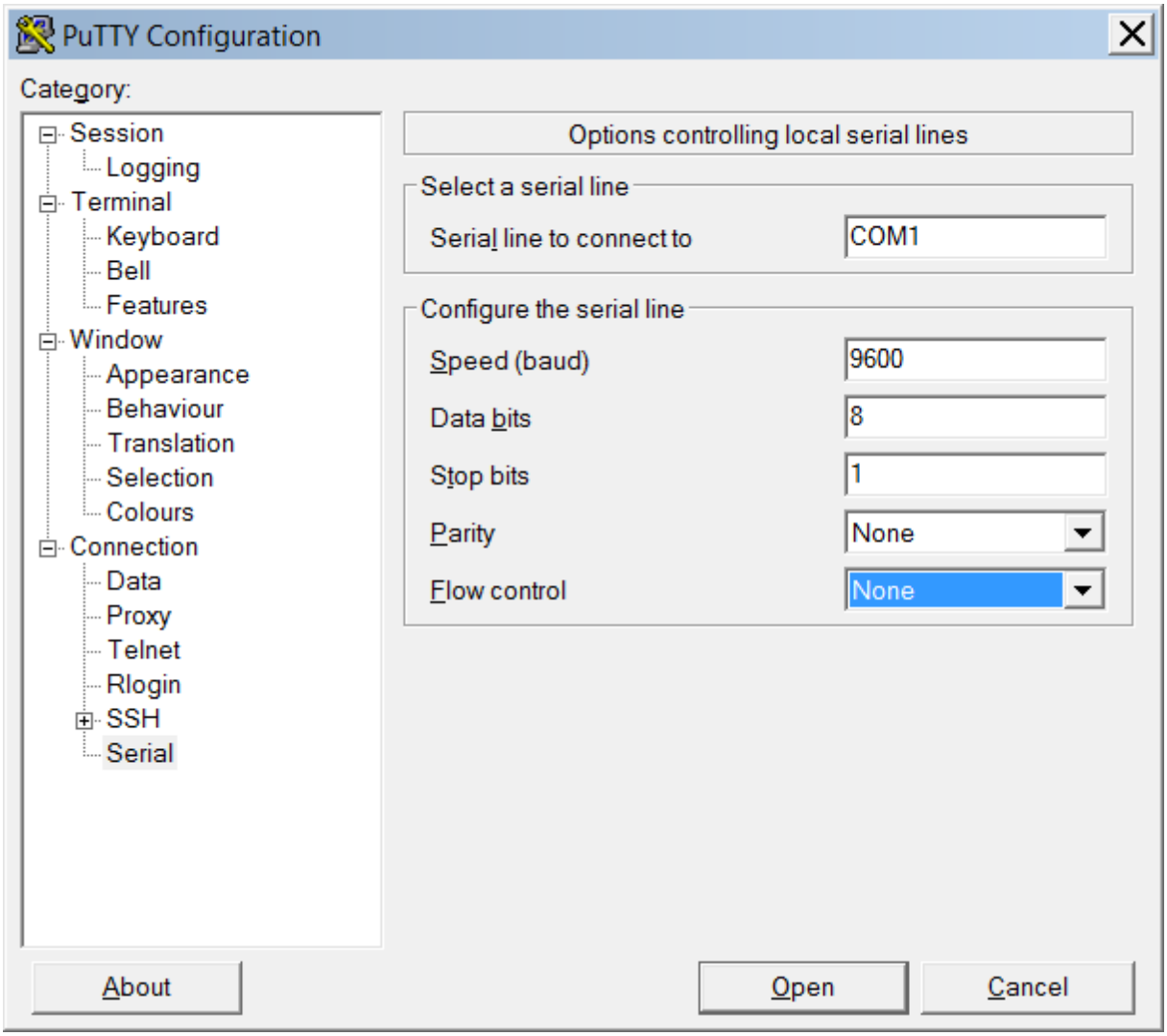
Screenshot 5:

Category: "Session" →
Serial line: COM?
Speed: 9600
Connection type: Serial



Screenshot 6:

Category: "Terminal" →
Implicit CR in every LF
Implicit LF in every CR
Local echo: Force on
Local line editing: Force on



Screenshot 7:

Category: "Connection" → "Serial" →
Serial line to connect to: COM?
Speed (baud): 9600
Data bits: 8
Stop bits: 1
Parity: None
Flow control: None

5 Maximal operating temperature



Please note the **maximum operation temperature +100 °C of MIXdrive 1 XL** in air (at 95% humidity).
Operation in higher ambient temperatures can damage the stirring drive.

If using an oven with bottom heating, do not place the MIXdrive 1 XL directly on the bottom plate of the oven (minimal distance 5 mm)!

B Maintenance, Cleaning and Care



Do not use any cleaning agent or cleaning rag that is based on chlorine with metallic components or ammoniac.
These agents may harm the surface.



The control unit must not be dipped in water or any cleaning solutions.

2mag devices are generally maintenance-free.

Due to their construction the **2mag** devices are very robust and designed for the professional daily use.

We recommend cleaning the devices' surfaces with e.g. cleaning agents containing tensides or isopropyl alcohol regularly.

BEFORE cleaning the surfaces, switch off the device with the power switch and pull out the power cable afterwards.

C Service case and customer service



During service, the device may only be opened by an authorized customer service.

In case of any defect on the device, please make sure to contact us first. We will be ready to offer help quickly and straightforward.

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Warranty:

Due to their construction, the **2mag** devices are very robust and designed for the professional daily use.

The magnetic drive works without any mechanically moved parts as e.g. belts, bearings or motors. Therefore a maximum of reliability within daily use is achieved.

Should in any case, despite our strict quality control, a system part not work without any fault, it can be repaired or exchanged by our customer service without any problems.

We grant 3 years warranty on all material and manufacturing defects.

D Errors

The magnetic stirring bar is turning in an unbalanced way:
There is no denying that magnetic stirring bars are aging in the course of time. This may happen by e.g. sterilizing, usage at high temperatures or causing stress (dropping down). The magnetism can be decreased by this. Separate out this stirring bar and exchange it by a new one.

The control unit is not ready for operation despite the power connection has been made and the power switch had been turned on:
Please get into contact with us.

In general, we are ready to help you in case of problems.
For any enquiries, questions or suggestions please do not hesitate to contact us at info@2mag.de

E Technical details

Magnetic stirrer MIXdrive 1 XL

	MIXdrive 1 XL	**MIXcontrol XL**
Order no.	40601	90600
Stirring points	1	-
Stirring volume/point	Up to 40 Liter	-
Rührleistung (max.)	-	20 watts
Stirring power (max.)	-	70 - 2,000 rpm
Power setting	-	5/10/15/20 W (4-step)
Acceleration	-	variable, 20/30/60/120 s
Interval	-	variable, 0 - 240 s
Material Housing	Stainless steel	
Measurement (WxDxH)	225 x 225 x 38 mm	200 x 155 x 38 mm
Weight (gross)	approx. 4.0 kg	Approx. 1.9 kg
Permitted operation conditions (air)	+5 up to +100 °C (at 95% humidity)	0 up to +40 °C (at 80% humidity)
Permitted storage conditions	-40 °C bis +70 °C, 10 – 95 %, 500 - 1060 hPa	
Protection category	IP66	IP20
Operating voltage (max.) / Electrical data	24 VDC	100-240 V 50-60 Hz/1,5 A

Accessory Extension Cord for MIXdrive 1 XL

	Extension Cord MIXdrive 1 XL
Order no.	46108
Material	silicone cover, wires PTFE-covered
Length	3 m
Weight (gross)	approx. 0.15 kg

Accessory Magnetic Stirring Bar ASTEROID 40

	ASTEROID 40
Order no.	44040
Shape	triangle, convex
Material	PTFE
Measurement (HxL, D)	28 x 40 mm, Ø 33 mm
Weight (gross)	approx. 0.12 kg

Accessories – Magnetic stirring bar SATELLITE 70

	SATELLITE 70
Order no.	44700
Shape	Round, tripod
Material	PTFE
Dimensions D x L stirring bars	Ø 13 x 70 mm
Diameter tripod construction	Ø 99 mm
Weight (gross)	approx. 0.15 kg



Image 7: Stirring bar ASTEROID 40



Image 8: Stirring bar SATELLITE 70

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EU-DECLARATION OF CONFORMITY FOR TECHNICAL DEVICES

(acc. to EU-guideline of the electromagnetic compatibility 2014/30/EU and the low voltage directive 2014/35/EU)

2mag AG
Schragenhofstraße 35 J
DE-80992 Muenchen
GERMANY

Hereby declares that the product

MIXdrive 1 XL

incl.
MIXcontrol XL

is conform to the appropriate regulations of the EU-guideline of the electromagnetic compatibility (EU-guideline 2014/30/EU) as well as the low voltage directive (2014/35/EU) incl. their changes and the laws for the realization of the guideline into national law.

The declaration is valid under the following conditions:
The ambient conditions being stated in the operation manuals have to be adhered to. This mainly applies to the supply with electric energy.

The following norms/standards were chosen to evaluate the finished products with regard to electromagnetic compatibility:

- DIN EN 61000-3-2
- DIN EN 61000-3-3
- DIN EN 61326-1
- DIN EN 60529

The following norms/standards were chosen to evaluate the finished products with regard to low voltage directive:

- DIN EN 61010-1
- DIN EN 61010-2-51

Muenchen, 20.04.2016 Signature: _____

Dr. Klaus Kaufmann (CTO)