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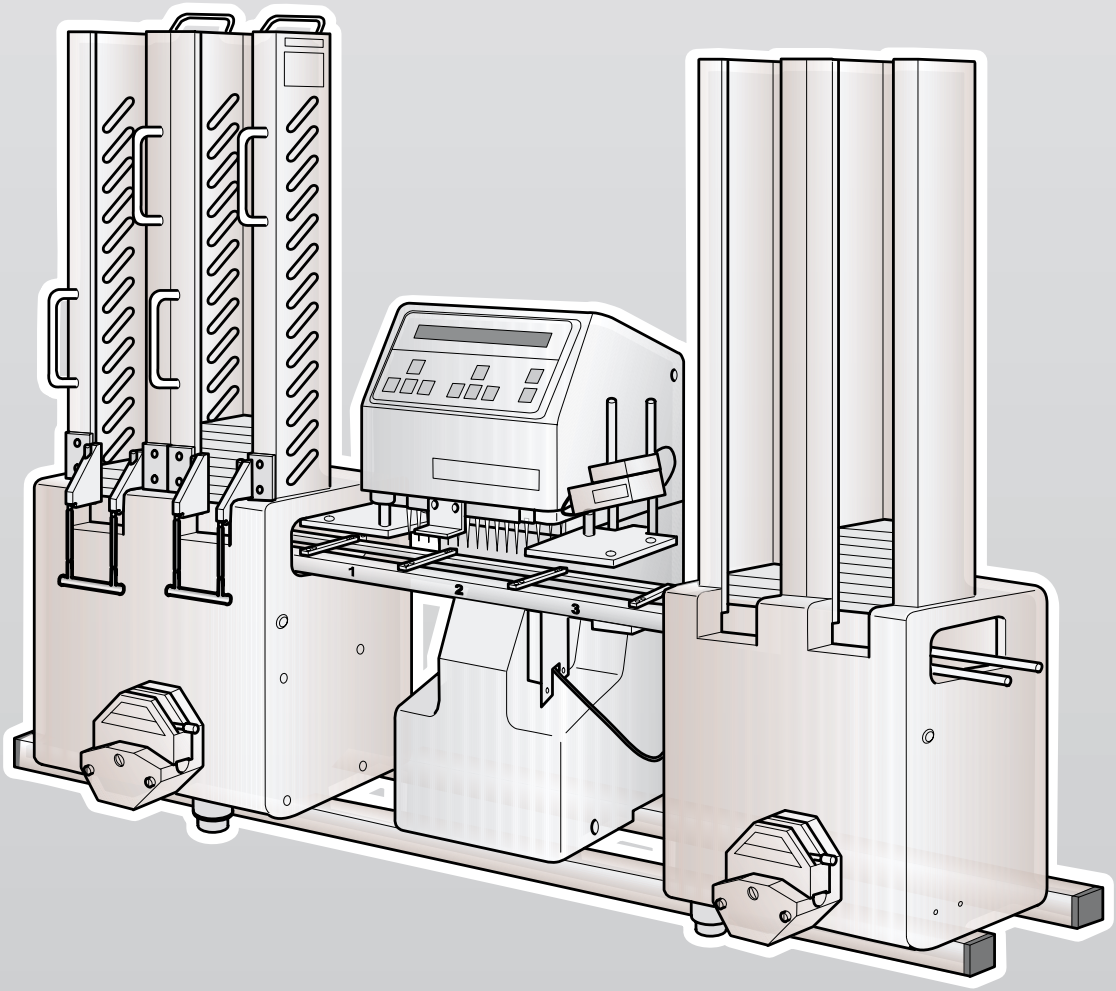
CyBio

Research & Technology for Life

Operating Instructions

Pipettor Device CyBi™-Well

Systems
CyBi™-Well 96
CyBi™-Well 384/1536
CyBi™ -Kombichem



your solutions

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Publication date and order number

January 2000	State of revision 00	Order number OL 3400-26-001BLE00
April 2001	State of revision 01	Order number OL 3400-26-001BLE01

The publisher reserves the right to make changes or revisions to this documentation.

Print date

Applicability

These operating instructions are applicable to the CyBi™-Well Systems.

Serial number

Your contact partner

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1 Important Information

Your documentation for this equipment is composed of the following volumes:

- Pipettor device CyBi™-Well Systems
- Pipettor device CyBi™-Well Module CyBi™-Well
- Pipettor device CyBi™-Well Module Stacker

The Systems volume provides an overview of the device in its entirety. The specific information on the modules are contained in the volume on the CyBi™-Well module or on the Stacker module.

1.1 Proper Usage of Equipment

The CyBi™-Well is a simultaneous pipetting system for automatic processing of microplates with 96, 384 or 1536 Wells.

Its basic functions are dosing, pipetting, dispensing, diluting, rinsing and tip-changing, as well as the transport and stocking of microplates.

CyBi™-Well is intended for use in research and development laboratories in industries such as biotech, biochemistry, clinical chemistry, combinatorial chemistry, molecular biology, molecular genetics and cellular biology and in any laboratory where pipetting processes have to be carried out in a parallel, fast and precise manner.

CyBi™-Well is not intended for use in medical laboratories

It is up to the user to employ the equipment only in accordance with the information and provisions of these operating instructions.

The operation of the equipment is limited by the functional capability of the software and firmware, and by the capability of the specific model purchased.

Use of the CyBi™-Well is prohibited under the following conditions:

- When working with explosive materials.
- When working in an explosive atmosphere.

The supplier and the manufacturer assume no responsibility for:

- Use of the equipment for investigations of caustic materials and organic solvents which have an adverse impact on the stability of the equipment components. The following equipment components come into direct contact with the substances under study:
  - Pipette tips (PP)
  - Reagent vessels (PMMA or PTFE)
  - Microplates
  - Silicone tubing
  - Washing vessels

  If in doubt about the proper usage of the equipment, consult the supplier.
- The following operating conditions:
  - direct exposure to sunlight,
  - temperatures below +15° C and above +35° C,
  - relative humidity greater than 75% and condensate formation,
  - vibrations,
  - uneven, unstable and moist supporting surfaces.
- Manipulation of or damage to the software installation and configuration.

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- Use of accessories, consumable material and spare parts which are not approved by the supplier.
- Service, operation and disassembly for transport by personnel not authorized by the supplier.
- Failure to observe the maintenance requirements.

Failure to observe these provisions shall be deemed as equivalent to an improper type of usage and will nullify any responsibility of the supplier and manufacturer for property damage and personal injury.

Use of the CyBi™-Well for hazardous materials shall be at the sole responsibility of the user.

This pertains to the observance of all safety requirements for protection of personnel and physical equipment when handling radioactive, infectious, toxic, caustic, combustible and other hazardous substances. The user must satisfy all requirements for the arrangement of the laboratories and for the conduct of employees with regard to cleanliness, sterilization, environmental requirements and waste disposal.

Safety instructions for the prevention of injury to personnel and damage to physical equipment which might be caused by the studied substances, are thus not included in these user instructions.

When using the equipment for hazardous substances, the user is requested to set up his own internal operating instructions.

Process control is handled by the software provided by the CyBio AG.

Changes or damage to the software may result in malfunctions in process run and lead to damage of the CyBi™-Well. Protection of software integrity is the sole responsibility of the user.

Strict observance of all the following safety requirements is a prerequisite for a safe and dependable use of the CyBi™-Well.

1.2 Target Groups

These operating instructions are intended for use by research and laboratory personnel who already have the appropriate PC skills.

Operation of the CyBi™-Well is only allowed for trained personnel who strictly observe these operating instructions.

1.3 Warranty and Liability Terms

The supplier and manufacturer are liable only for the operating conditions and process steps specified within these operating instructions. This liability is limited to repair of the equipment or replacement of damaged components and specifically excludes any follow-up damages.

Any warranty or liability claims against the manufacturer are specifically excluded in cases of:

- Failure to observe these operating instructions.
- Improper usage of the equipment or of its individual components and assemblies.
- Use of the equipment with caustic or organic solvent substances that adversely affect the life of components of the equipment.
- Use of the equipment for hazardous substances which may cause harm to personnel or to physical equipment.

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- Manipulation of or damage to software or to its configuration.
- Disabling or damage to the protective features or warning instructions on the equipment.
- Use of the equipment with a power supply which is different from that stated on the nameplate.
- Performance of service or repair work, or work intended to start up the equipment or dismantle it for transport, when such work is performed by unauthorized service personnel. This exclusion of warranty applies to any potential operational failure and also to all components and assemblies which were not directly affected by the repair.
- Use of accessories, consumable material and spare parts which are not specified in these operating instructions or which were not provided or recommended by the supplier or manufacturer.

1.4 Warning Notes and Safety Features

1.4.1 Warning Notes on the Equipment

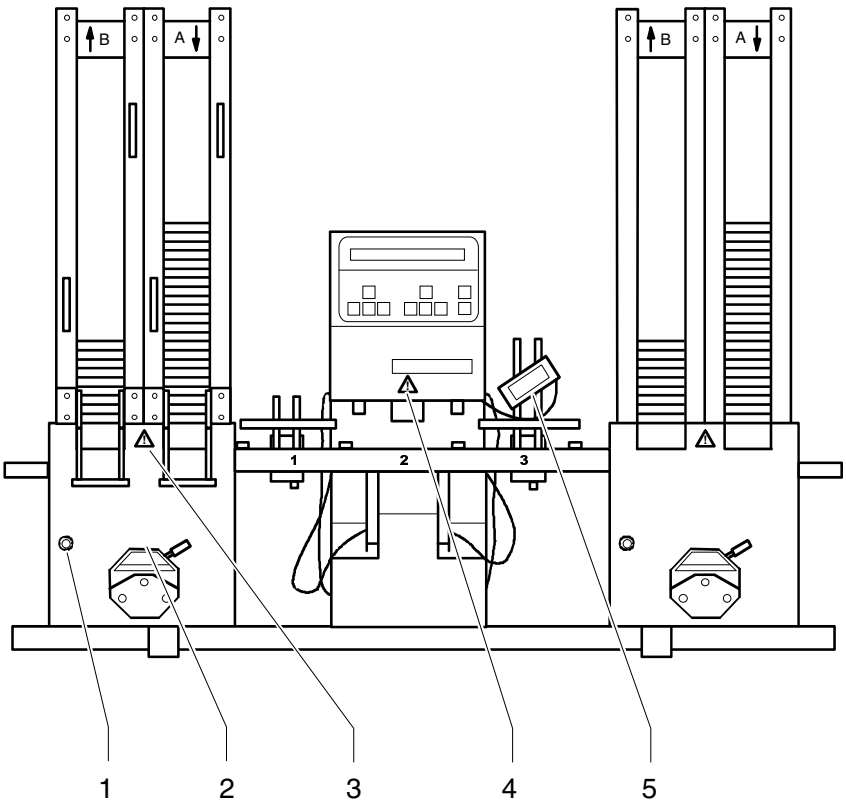


Figure 1 Warning Notes and Safety Features; on the front of the equipment

1 Stop and down switch Stacker (only for Deep Well-Stacker)
2 Warning text for pump
"CAUTION: Keep fingers away from rotor while pump is in operation"
3 Warning note: Lifter Stacker
4 Warning note: Pipette head
5 Warning note: Bar-code reader and Warning text
"CAUTION: laser light - when open avoid exposure to beam"

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Meaning: Warning against mechanical hazard due to moving parts. Follow the instructions in Section 1.6.2.



Meaning: Hazardous Situation - Laser beam! Possible consequences: Injury to eyes. Do not look into the beam!

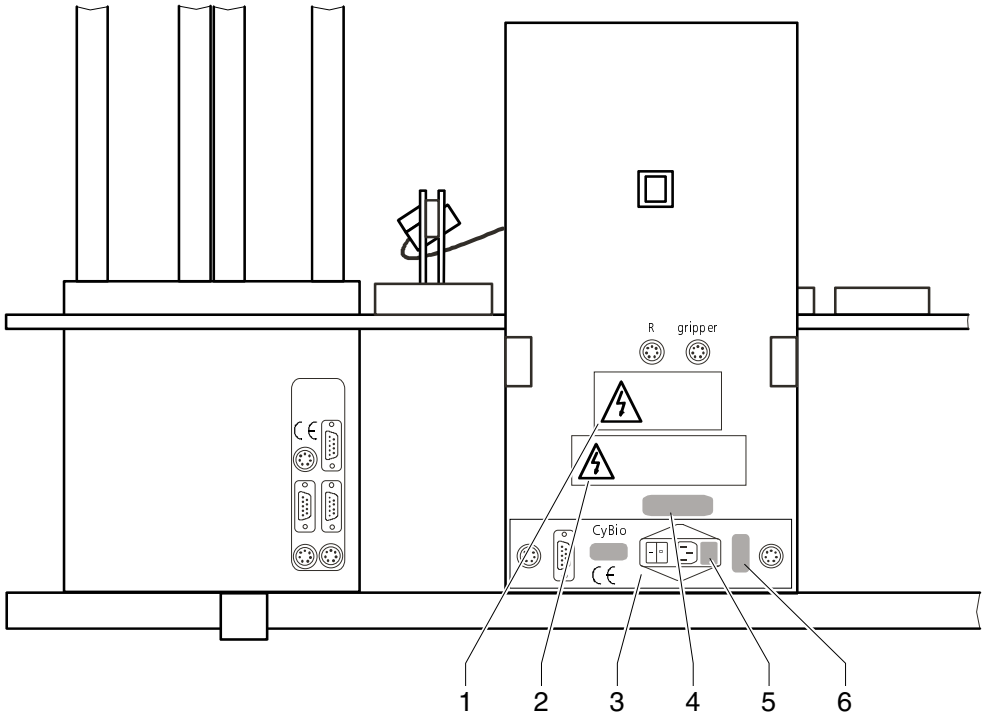


Figure 2 Warning Notes and Safety Features; on the back of the equipment

1 Warning note
"Disconnect the power plug before opening the housing."

2 Warning note for electrical voltage
"WARNING! Risk of electric shock - do not open! Refer servicing to qualified service personal. Warning - for continued protection against risk of fire, replace only with fuse of the specified type and current ratings."

3 Nameplate with data on required electrical connections

4 Note
"Default value set by the manufacturer to 230 (115) V"

5 Fuses

6 Specific data on the fuses



Meaning: Warning against hazardous electrical voltage. Follow the instructions in Section 1.6.1.

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In addition, note the following:

- The Warning Notes are a constituent of the equipment.
- Before operating the equipment, check that the Warning Notes are complete and undamaged.
- If Warning Notes are damaged or missing, do not take the machine into operation and contact the manufacturer immediately in such a case.
- For all operations on the CyBi™-Well it is absolutely necessary to follow the Warning Notes.

1.4.2 Warning Notes in these Operating Instructions



DANGER!
Hazardous Situation - Dangerous electrical voltage!
Possible consequences: Severe or even fatal injury, property damage.



CAUTION!
Hazardous Situation - Laser beam!
Possible consequences: Injury to eyes.



CAUTION!
Hazardous Situation!
Possible consequences: Minor or slight injury, property damage.



CAUTION!
Possible hazardous situation!
Possible consequences: Damage to product, damage to adjacent physical property.



NOTE!
Useful tip on application, No hazard is present.

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1.5 Safety Equipment

The equipment includes the following safety features for protection of personnel and physical property:

1.5.1 Protection against Electrical Hazards

- Linings
  Equipment components having a dangerous electrical voltage are all provided with insulation linings. Accidental contact with components under voltage is not possible.
- Electrical grounding
  The device is designed for electrical grounding as per EN 61010-1.
  When connecting the device to a socket with a grounded contact, it will be impossible, even in case of a short-circuit, for any electrical voltages hazardous to operating personnel to appear at the electrically conducting parts of the housing.

- Fuses
  The power fuse will disconnect the device from the power supply in case of a fault (short-circuit) and prevent heating or fire.
  The power fuse is located underneath the flap (3, Figure 2) in a combination, plug-in unit. Always check for proper seating when installing the plug-in unit.
  The required values are printed on the nameplate (4, Figure 2).

1.5.2 Protection against Mechanical Hazards

- Stop and down switch on the Stacker (Deep Well-design only)
  When operating the red stop and down switch (1, Figure 1) manually, the upward movement of the lifter will be switched off and the lifter will be moved into its bottom position.

1.6 Other Hazards

This device meets the basic requirements of the relevant EC Rules.
In the development/modification of the product the following harmonized European Standards have been taken into account:
EN 61010-1:1993 and A2:1995
EN 55011:1998
EN 50082-2:1996
EN 61000-3-2,3:1996.

The EC-Conformity Certification of CyBio AG shall apply.
The CE-symbol is located on the equipment nameplate.

Nonetheless, when in use, there may be hazards which might result in injury to personnel or damage to property.
Therefore, always follow the safety instructions below:

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1.6.1 Electrical Hazards

- The rated voltage and frequency of the device are provided on the nameplate on the back of the equipment (2, Figure 2). Operation with a different rated voltage or frequency may result in damage to or destruction of the equipment.
  - At the job site make certain that these rated data coincide with the information on the nameplate. In case of differences, the device must not be made operational.



DANGER!
The power plug for this machine has an integral grounded contact. It may only be inserted into a plug with grounded contact. If the grounded contact is broken, there may be a lethal hazard due to electrical arcing.

  - Do not disable this protective feature, e.g., by manipulating the plug or using an extension cord that breaks the grounding conductor.
  - The grounded conductor must not be broken when using a variable-voltage transformer.
  - Contact your authorized service representative immediately if the insertion of the equipment plug into the socket or equipment shut-down causes the laboratory power fuse to blow.



DANGER!
The power cable must be in a technically satisfactory condition. A damaged cable represents a potential lethal hazard due to electric shock. There is also a possible fire hazard.

  - Before inserting the plug into the socket, make sure that the cable is not frayed. Any cuts or abrasions are not acceptable. A defective cable must be replaced by an electrician before any use of the equipment.
  - Do no pull on or flex the cable. When disconnecting from the plug, always pull the cable from the socket by grasping the power plug only.
  - Never grasp the power plug with wet hands.



DANGER!
The electrical components of the device are shielded against contact by use of electrical linings. Removal of these linings may present a lethal hazard due to electric shock.

  - Therefore, any opening of the linings is prohibited.
  - Do not insert any objects into openings in the equipment.
  - Keep all liquids from getting into openings or joints in the equipment. This rule also applies when cleaning the equipment.
  - Service work with dismounted lining may only be conducted by trained electricians. Before any service work, always pull out the power plug.
- The power fuses with this device are provided to prevent fires due to electrical overloads.
- When replacing the power fuses, only use a replacement that corresponds to the requirements on the back side of the device:
  Fuse type for equipment voltage 115 V: T3.15 A / 115 V,
  Fuse type for equipment voltage 230 V: T2.0A / 230 V.
- Do not short-circuit the fuses. Do not use any "home-made" fuses.
- The device should be subjected to a semi-annual check of the fused conductor.

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- The PSPL power supply of external devices is only admissible for CyBio devices.
- The overall power output (aggregate across the two PSPL sockets) must not exceed 70 watts.

1.6.2 Mechanical Hazards

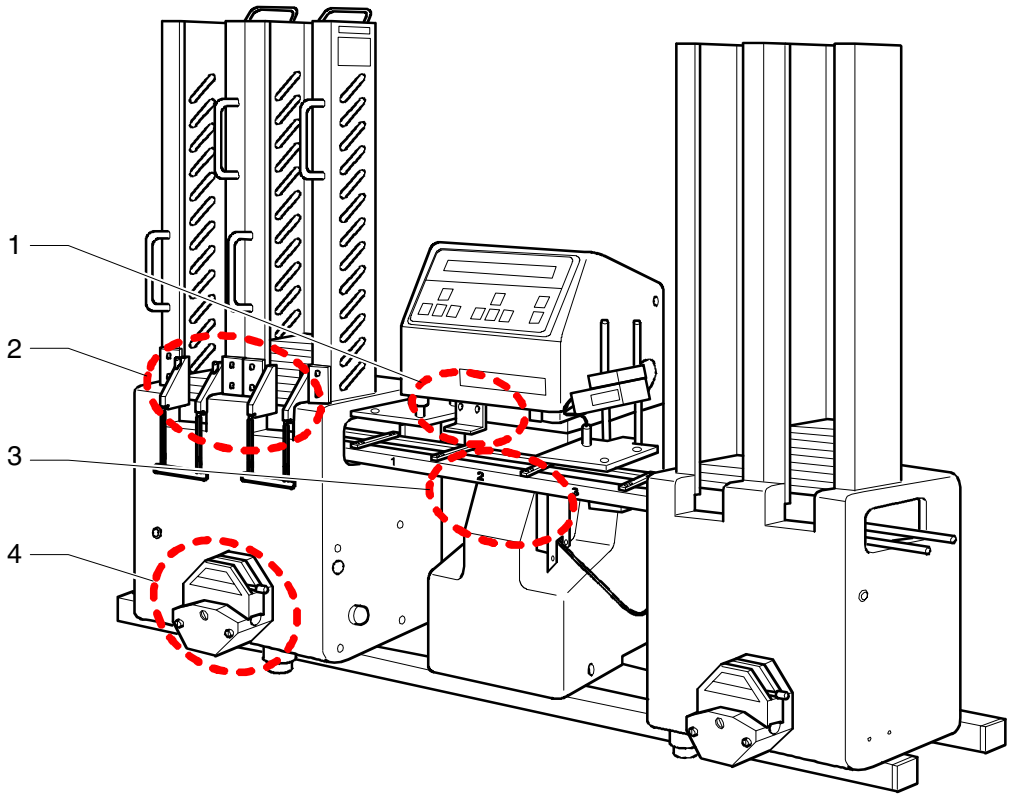


Figure 3 Hazardous areas of the CyBi™-Well
1 Tightening device for the magazine plate
2 Lifter for stacker
3 Lifter for pipetting unit
4 Rollers for the peristaltic pump

The movements of the components of the CyBi™-Well and of the stacker may present a hazard to operating personnel. Failure to observe these precautions may result in injury to hands and fingers. Any reaching into the device while it is in operation may result in damage to the equipment or to samples.

- Never reach into the moving mechanisms of the device while it is in operation and do not insert other objects inside. These potentially hazardous areas are:
  - Tightening device for the magazine plate (1, Figure 3)
  - Lifter for the stacker (2, Figure 3)
  - Lifter for the pipetting unit (3, Figure 3)
  - Rollers for the peristaltic pump (4, Figure 3)

  Failure to follow these precautions may result in damage to the equipment or personal injury.

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- Improper operation or handling may cause damage to the equipment.
  Use the software to correct any improper operation or movement and test the control programs with the appropriate software function.
- The program can be cancelled by pressing the Cancel key.
- Loading of a tip-magazine without pipette tips may result in damage to the dosing flask.
  Never load in an empty tip magazine.
- Make sure that the tip magazine is filled will pipette tips and tightened during transport or shipping of the device.
- Any hindrance to the movements of the equipment components will result in accelerated wear on the drive elements.
  Make certain that there are no objects within the range of the moving parts.
- Do not apply pressure to the slide rails.
- Set up the device so that the air circulation to the bottom of the device will be unhindered and so that air can readily enter the back side of the equipment.
- Make sure that existing ventilation slots are not covered by any external objects.
- Dirt and natural wear of components will result in increased stress on the equipment and thus to an increased probability of failure.
- Clean the device regularly in accordance with the Care Provisions in Chapter 7.
- Do not use a spray disinfectant or any similar product on the equipment. These sprays contain gases which might ignite.
- Watch for evidence of wear on the mechanical components and have them replaced as necessary.
- Switch off the equipment at the power switch during any cleaning or inspection.
- Always use the original packing materials for transport or shipping of the device.

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2 Description

2.1 Method of Operation

The multiple dosing unit CyBi™-Well is a simultaneous-operating 96-hole or 384-hole dosing system for automatic processing of microplates in chemical, biological, physical laboratories and for "in vitro" medical laboratories.
The device has six basic functions which offer numerous and versatile potential applications.

- Dosing
- Pipetting
- Dispensing
- Diluting
- Rinsing
- Tip change

Due to its high precision and flexibility, the CyBi™-Well can cover a wide range of applications even in the submicroliter-volume range. Due to the adaptation of its positioning system in the XY-direction, all basic functions of the 96-hole simultaneous operating system can be employed for the 384-series microplates using 4 steps, or using 16 steps for the 1536-series microplates. The 384-hole simultaneous system needs only 4 steps for the 1536-series microplate.
When using an additional one or two stackers it is possible to handle up to 50 MP per stacker fully automatically.
A user-friendly software running under the MS Windows™ operating system makes possible a simple and fast compilation of specific laboratory routines.

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2.2 Design and Function

The CyBi™-Well-System has a modular design and due to its differing configurations, it allows for quick adaptation to different kinds of customer requirements.

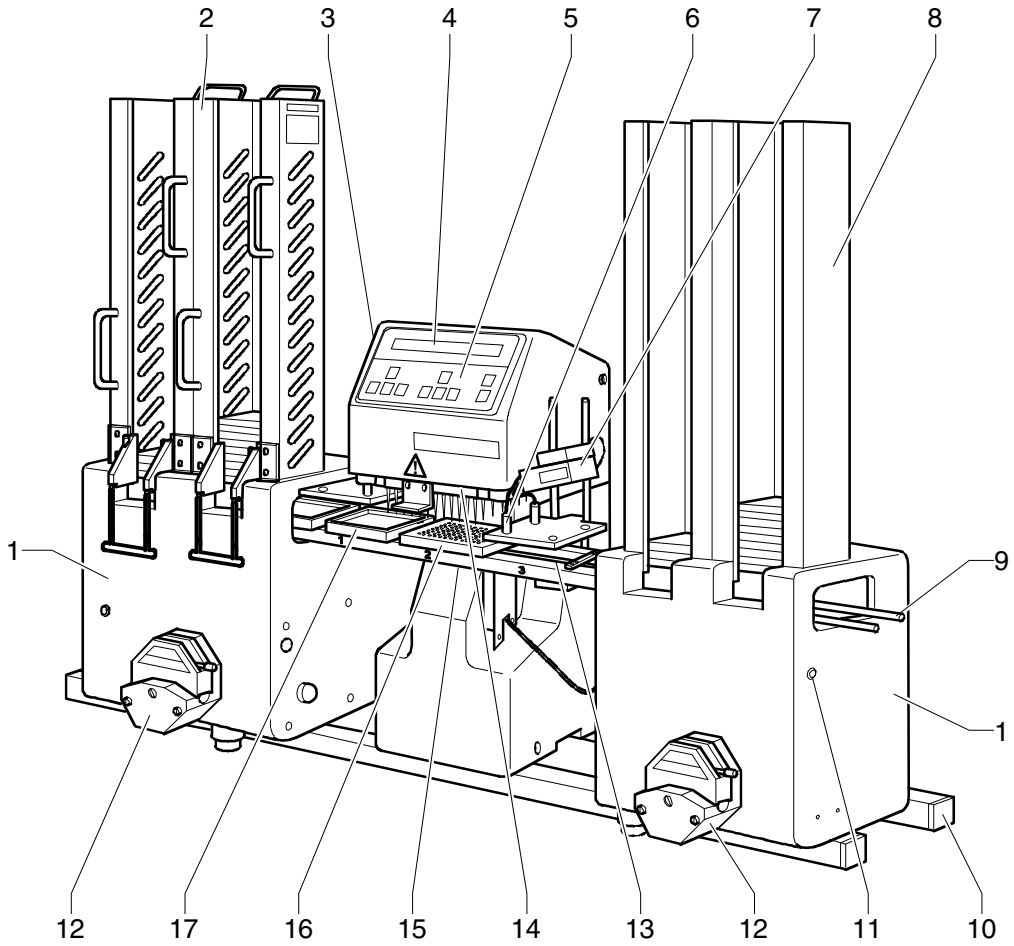


Figure 4 Schematic structure of the CyBi™-Well designed as a double-stacker system

1 Stacker
2 Stacker chimney, detachable
3 Pipetting unit
4 LCD-display
5 Keypad
6 Level sensor
7 Bar-code reader
8 Stacker chimney, fixed
9 Slide rail
10 Basic frame
11 Solenoid control
12 Peristaltic pump
13 MP-carriage
14 Tip magazine with pipetting tips
15 Lifter
16 Microplate with adapter
17 Reagent reservoir

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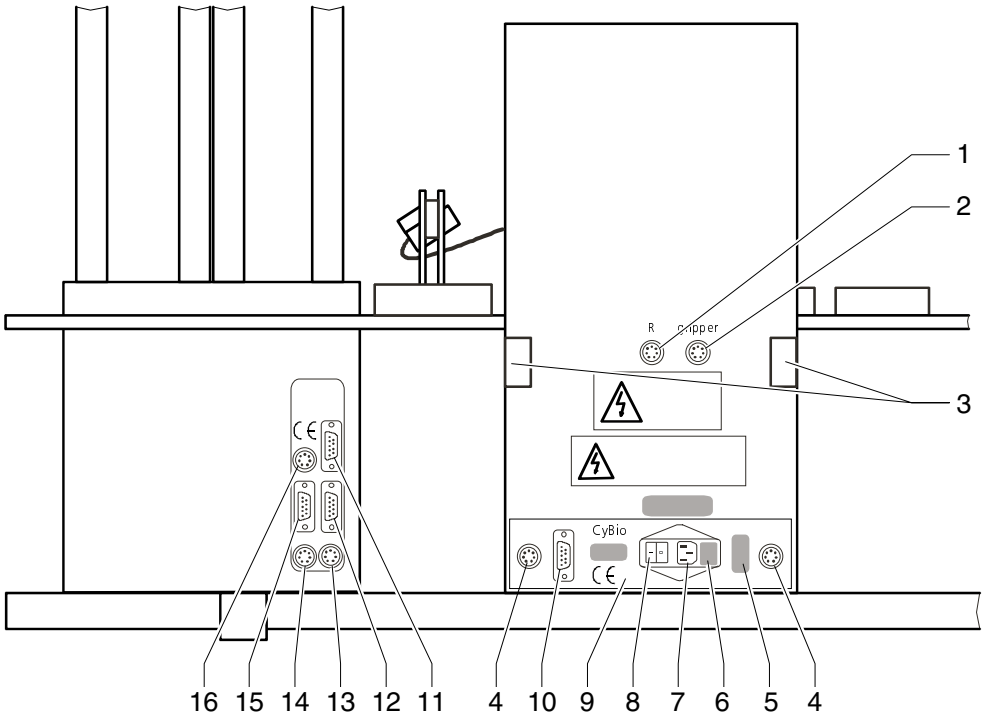


Figure 5 The back of the CyBi™-Well designed as a double-stacker system

1 Reserve jack for
- protection shield (CyBi™-Disk),
- encoder interface 485 for use with CyBi™-Drop
- automatic tip exchange (in development)

2 Jack for external gripper
3 Jack for xy drive
4 PSPL - SV-jack, connection of external CyBio devices
5 Information on the electrical fuses
6 Fuses
7 Power plug
Power supply 115/230 V (to be changed over by means of fuse)
8 On/Off switch
9 Nameplate with data on electrical connection
10 COM - RS 232 PC jack (Sub D connector, 9pole)
11 A3, output to connect a lifter
12 COM2, serial interface
13 SW, switch output
14 PSPL, power supply
15 COM1, serial interface
16 BC, jack for bar-code reader

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2.2.1 CyBi™-Well Equipment Variants

CyBi™-Well 96

The system can process 96-Well-microplates in one working process by means of 96 simultaneously operating precision pipettes.

CyBi™-Well 96/384

The basic structure resembles that of the CyBi™-Well 96. In addition, due to a servo-lifter, the 384-series microplates can also be positioned in the XY-direction and processed in 4 steps.
Upgrading to the 1536-series unit is possible.

CyBi™-Well 96/384/1536

Extended version of the CyBi™-Well 96/384. Microplates using the 1536-format can be processed in 16 positioning steps.

CyBi™-Well 384/1536

The new CyBi™-Well 384/1536 has a pipetting head with 384 simultaneously operating tips. Thus the 384-series plate can be processed in one step, and the 1536-format in 4 steps.

Deep Well-System/Shallow Well-System

All equipment of the CyBi™-Well 96/384/1536 models can also be supplied in a Deep Well-Version (Standard: Shallow Well).

2.2.2 Stacker

An automatically controlled two-chimney stacker with lifter will ensure an efficient microplate handling. The microplates are allocated to the chimneys by means of software. Back-stacking and restacking are both efficient and simple functions. The inlet of plates takes place directly by means of the CyBi™-Well and their conveyance is monitored by sensors.
Up to 50 Amps can be stacked up in a single stacker.
A peristaltic pump and a bar-code reader can be connected to each stacker.
Depending on the design, the stackers can be loaded with MP from the front or from above.

2.2.3 CyBi™-Well/Stackers Combinations

Designation	Quantity CyBi™-Well	Quantity Stackers
Stacker - CyBi™-Well	1	1
CyBi™-Well - Stacker	1	1
Stacker - CyBi™-Well - Stacker	1	2
EXT system	2	3

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2.2.4 Set-up CyBi™-Well - Stacker

- tight configuration (to the pipetting module)
- distant configuration (to the pipetting module)

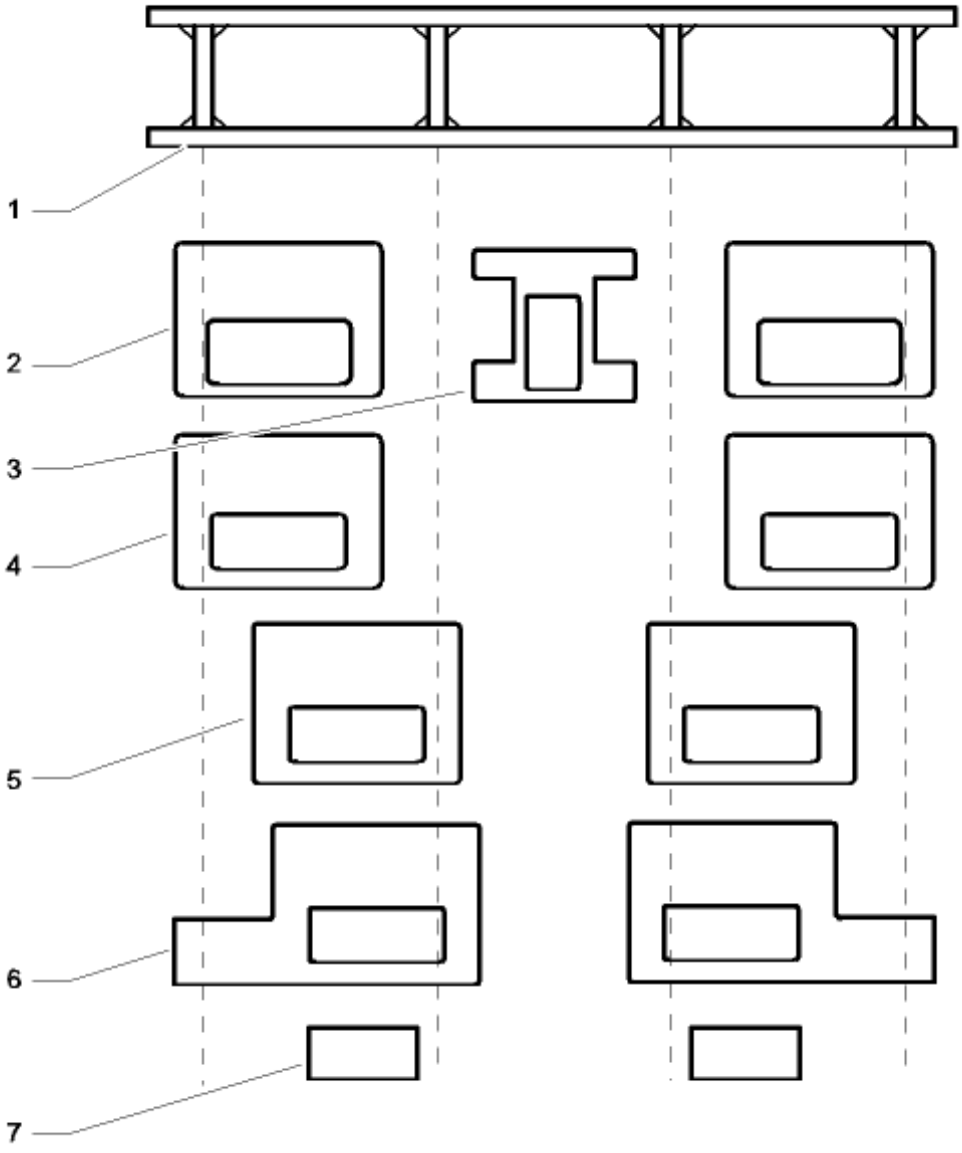


Figure 6 Types of set-up of the base frame

1 base frame
2 mounting plate washing station and E-modul
3 mounting plate CyBi™-Well
4 mounting plate distant configuration stacker
5 mounting plate tight configuration stacker
6 mounting plate tight configuration stacker and external lifter
7 mounting plate external lifter

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2.3 Cabling Diagram

A CyBi™-Well provides the power supply for two stackers and one additional module.

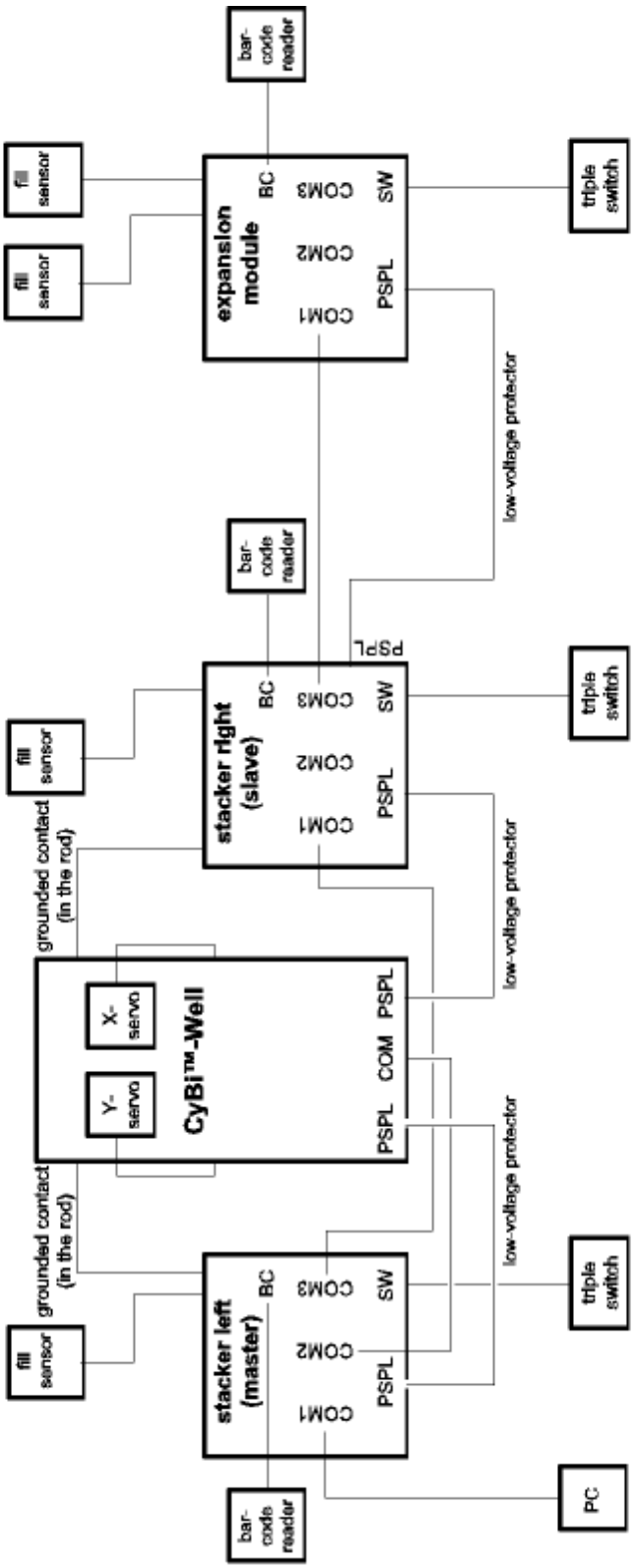


Figure 7 Cabling diagram

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3 Transport/Set-up/Initial Operation

3.1 Transport and Packing

Transport and shipping of the device, including accessories, is permitted only in the original container.

CAUTION!
Direct contact of the tip magazine with the flask may cause damage to the piston.
Never set a tip magazine without the pipette tips into the device. Doing so will void the guarantee.

3.2 Set-up and Initial Operation

The CyBi™-Well is packaged in a wooden crate with carry grips on the side (size: about 1.2 m x 1.5 m x 0.5 m).

- Unscrew the cover and one long side wall of the crate (hex-head screws).
- Remove plastic foil and upper foam retainers.
- Grasp the device by the frame, lift it from the crate and set it up on a dry, flat surface (all feet must rest upon a solid surface).
- Remove the adhesive tape holding the carriage to the table at 4 different locations.
- Remove the bubble-wrap between the lifter and carriage.
- Place the adapter, wash tub and reagent reservoir onto the carriage.
- Connect the 9-pole cable to COM1 on the device and to the COM-interface configured in the PC software (usually COM1).

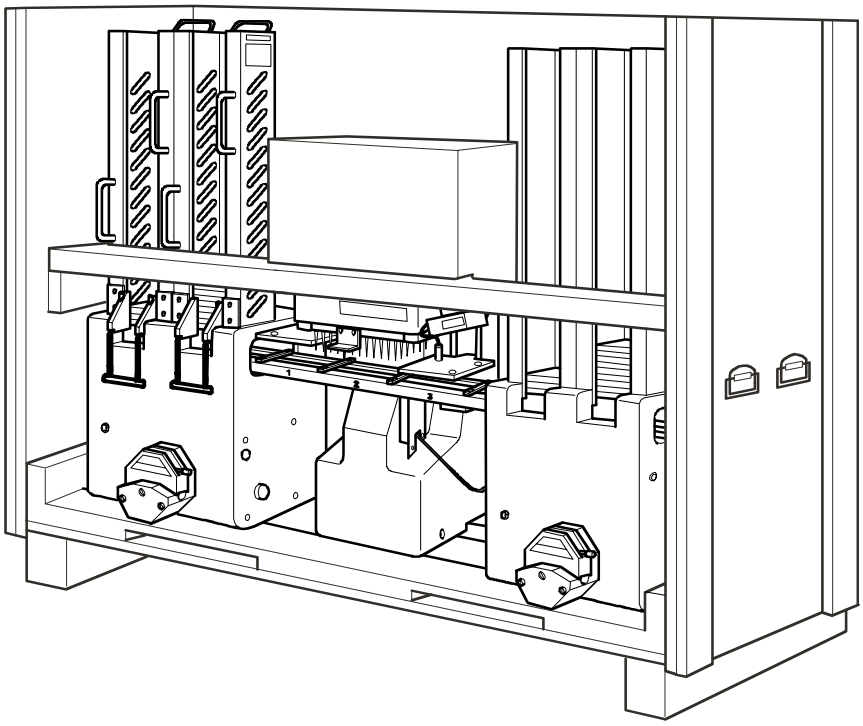


Figure 8 CyBi™-Well in Transport crate

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The modules are securely mounted upon delivery.
All cables are properly and securely connected to the device when shipped.

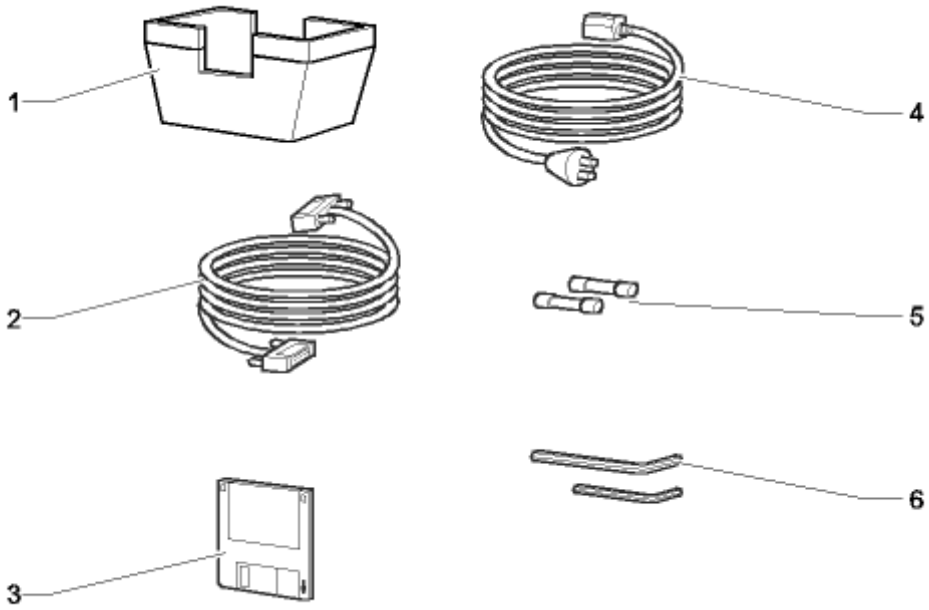


Figure 9 Accessories for the CyBi™-Well

1 Magazine box (red Box)
2 9-pole cable for connection to serial PC interface
3 One set of installation disks with software
4 Power cable
5 Electric fuses
6 Allen-wrench



CAUTION!
Mains voltage and cable.
Disconnect the power supply by pulling the power plug.
Set up the device so that the power plug can be pulled out at any time.



CAUTION!
Possible damage to equipment.
Do not connect the device to the power supply until it has fully adapted to room temperature and is free of any incidental condensation.



CAUTION!
The device can be damaged if the wrong voltage is applied.
Check whether the value (230 V/115 V) printed on the back side of the device is the same as the existing power supply!
Only connect the device if the voltages are the same.

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- Insert the power cable into the device connector and establish a connection to the power mains.
- Switch on the device using the On/Off switch on the back side of the unit.



NOTE!
When the device is switched off, the identifier "0" is recessed and the identifier "1" is prominent.

- Operational readiness of the device is indicated when the display lights up on the front of the unit and by the message "Initializing".
  In case of a fault, switch the device off and disconnect it from the power supply and check the two electrical fuses.
  Fuse type for an equipment voltage of 115 V: T3.15 A / 115 V,
  Fuse type for an equipment voltage of 230 V: T2.0A / 230 V.
  Proceed as follows:
  - Press out the spring lashing with a proper-size screwdriver,
  - Remove the fuse holder from the combination unit at the back of the device.



CAUTION!
Use only the manufacturer-specified fuses!
If necessary, consult your service provider.



NOTE!
The pipette tips supplied in the tip magazine have already been used by the manufacturer for testing and start-up operation of the device and were used to protect the flask and sealing plate against damage and dirt during transport.
They can be used again for the initial runs with the device, but should be replaced by new pipette tips before beginning the actual work with the equipment.

Disassembly/Replacement of Modules

In the older models the modules could be detached by using the screws located underneath the base frame.

But for the more recent models, the modules are attached to a base plate and can be screwed on from above.

Replacement, disassembly and refitting of the equipment is the sole domain of qualified service personnel.



CAUTION!
Possible property damage!
Transport and shipping of the device, including accessories, is permitted only in the original packing.
Make sure that a magazine filled with tips is installed and tightened down.

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4 Operation

4.1 Operating Modes

The following operating modes are possible:

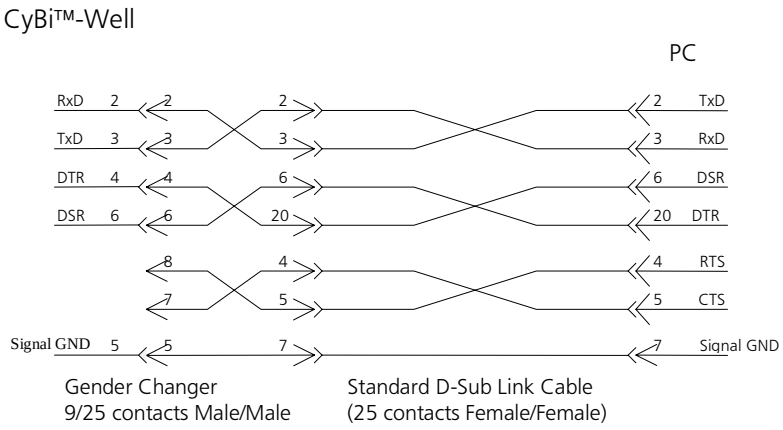
- Manual control (see also Operating Instructions for CyBi™-Well)
  - manual mode
  - configuration
  - statistics
- Control by PC (personal computer), see also Operating Instructions for CyBio-Control.

4.2 PC-Mode

4.2.1 Interface to the PC

The transfer of data between the CyBi™-Well, stackers, supplemental modules and the controlling computer takes place along a serial RS-232C-Interface.

- Data characters are of uneven parity and consist of 8 data bits and 2 stop bits. The data format cannot be changed.
- The baud rate is 19,200 baud and likewise it cannot be changed.



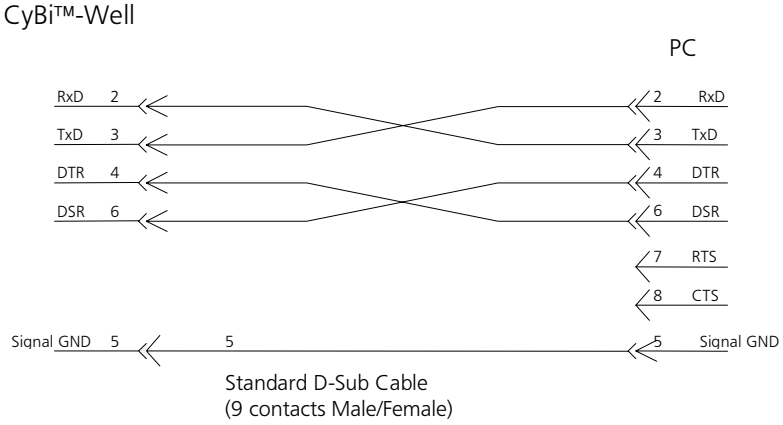
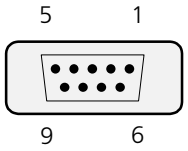


Figure 10 CyBi™-Well-connection to a 9- or 26-pole RS232-PC-jack

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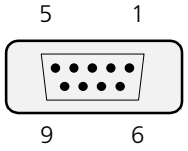
Pin assignments, CyBi™-Well:



D-Sub jack 9 pole

2 = RxD Received Data
3 = TxD Transmitted Data
4 = DTR Data Terminal Ready
5 = ⊥ Signal Ground
8 = CTS Clear to Send

Pin assignments, Stacker:



D-Sub jack 9 pole

2 = RxD Received Data
3 = TxD Transmitted Data
5 = ⊥ Signal Ground

4.2.2 Device Control Program - CyBio-Control

The CyBio-Control program allows a simple and fast compilation and storage of specific laboratory routines.

Hardware requirements

- IBM-compatible PC with Intel PentiumTM-type processor operating at 133 MHz or higher.
- Video display resolution of at least 800*600.
- Microsoft Windows 95™ operating system with Internet Explorer (or higher) or Microsoft Windows NT 4.0™ (or higher).
- Working memory (RAM) of 32 MByte.
- minimum 10 MByte free hard disk space.
- 3 ½"-diskette drive.
- serial interface must be compatible with UART 16550.

For Installation and Operation: See separate operating instructions.

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5 Technical Data

5.1 General Data

Number of pipette tips	96 (8x12-matrix) or 384 (16x24-matrix)
Dosing volumes	250 µl in increments of 0.1 µl (user-variable) or 0.1 - 25 µl in increments of 0.01 µl (user-variable)

Imprecision (coefficient of variance VK) for Measurement Accuracy.

CyBi™-Well 96/384 Dosing head 250 µl Tip OL 3391-128	10 - 25 µl ≤ 2%, 25 - 250 µl ≤ 1%
CyBi™-Well 96/384 Dosing head 25 µl Tip OL 3391-127	5 - 10 µl ≤ 2%, 10 - 25 µl ≤ 1%
CyBi™-Well 384/1536 Dosing head 25 µl Tip OL 3396-240	2 - 5 µl ≤ 2%, 5 - 10 µl ≤ 1%

Lifter

Lifter 96	horizontal non-adjustable (1 Position on the MP)
Servo-lifter 384	horizontally adjustable in X- and Y-coordinate (4 Positions on the MP)
Servo-lifter 1536	horizontally adjustable in X- and Y-coordinate (16 Positions on the MP)

MP-carriage	4-place-carriage with centering elements for adapter or tub, horizontally adjustable (motor-driven) 3-place-carriage

5.2 Weight and Dimensions, CyBi™-Well-System with 2 Stackers

Dimensions

Width, maximum	1290 mm
Height with stackers (standard design)	850 mm
Depth (without pump and cable)	284 mm
Depth (without pump, with cable)	338 mm
Depth (with pump and cable)	403 mm

Weight

CyBi™-Well-System with stackers:	about 55 kg (without accessories)

5.3 Equipment Set-up and Storage Conditions

Storage and Transport

Permissible ambient temperature	- 10 to + 50 °C
Permissible relative humidity	≤ 85 % at + 30 °C

Operation

Permissible ambient temperature	+ 15 to + 35 °C
Permissible relative humidity	≤ 75 %, no condensate formation

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5.4 Operating Data

Class of use:	Table-top unit for use in clean and enclosed rooms.
Protection class	1
Protection type	IP 31
Interference suppression	EN 55011 (DIN VDE 0875 Part 11), Limit class A
Interference resistance	EN 50082 Part 2
CE (1996)	Class A
Power supply	optional 115 V, 230 V or 240 V
Permissible mains fluctuation	± 10%
Mains frequency	50/60 Hz
Identification of mains voltage:	Back side of unit
Power consumption	≤ 330 VA

5.5 Other Data

Interface	RS 232 C, Sub-D 9 pole
Bar-code-Reader	DS2100 (OL 0026:430.24; OL 3396:430.24)
Peristaltic pump (depends on equipment ordered)	(OL 0026:135.24; OL 0027:135.24)

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6 Components/Accessories/Consumable Material



CAUTION!

The equipment, accessories and consumable items have been carefully coordinated by the manufacturer.
Always use only the accessories and consumables recommended by the manufacturer!
In the event of damage or malfunction due to the use of accessories or consumable materials other than that recommended by the manufacturer (in particular, pipette tips), the manufacturer will not accept any claims for damages or loss.

Please also refer to our current accessories catalog.

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7 Cleaning and Maintenance



CAUTION!
Possible injury to personnel or damage to equipment.
Before all maintenance activities:
Switch off the power supply and pull the plug from the socket!



CAUTION!
Possible injury to personnel or damage to equipment.
Do not allow any liquids to get into the inside of the device.

- To clean the device; never use cleaning powders, paint thinner or solvents such as benzene or acetone, because they will attack the housing, the keyboard and the display.
- Clean the housing on the unit and the detachable carriage with a soft cloth immersed in a mild soap or disinfectant solution. Do not spray cleaning products on the equipment.

For special care and maintenance instructions: See the specific operating instructions for the particular device.

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8 List of Errors

If the device experiences malfunctions, examine the following list and check for all possible sources of error.
If difficulties still occur even after this check, or if other faults are present which are not described in the table below, then contact your service provider.

Error/Error code	Possible source(s) of error	Fault correction
Device will not operate in spite of good power supply; display stays dark.	Power cable is not properly seated in the socket or in the device combination-element.	Insert the power plug properly.
	No current at power socket.	Use a different power socket.
	Device fuse is defective.	Pull the power plug and replace the device fuse. (Check the fuse ratings against those given on the name-plate!)
Device reports the fault: "Tip magazine not fully inserted".	Tip magazine is an older model; the back corners are not rounded.	Replace the tip magazine or have the old one modified by your dealer/service provider.
	The edges or corners of the tip magazine are damaged due to impacts.	Replace tip magazine or have the damage repaired.
MP-carriage does not move to position; drive motor "whirrs".	Tight movement of the carriage.	Lift carriage from the slide rails and clean both carriage and rails, especially the spring-loaded snap-in clamp.
	Slide rails are bent.	Carefully align the slide rails until they are again parallel.
Lifter does not move up far enough.	The lifter height is set to "0" or too low.	In the configuration menu adjust the required lifter height.

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SAFETY CERTIFICATE

Dear Customer,

Before any Services or repairs can be provided to you, we require you to complete and return the Safety Certificate set out below.

We hereby certify that the Equipment described below (including all ancillary equipment and accessories therto) is not contaminated with any infectious, radioactive or otherwise dangerous and/or toxic substance and is in a clean and disinfected condition and safe for the performance of Services.

Name/description: _____

Unit no.: ☐☐☐☐☐☐☐☐

_____ _____

Place and date

Director
Signature, Name and Company

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