

# MANUAL.

polaphor.

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## Introduction

Thank you very much for your confidence which you expressed by purchasing this visual acuity system. With the POLAPHOR you have chosen a modern fully developed product which has been produced and tested according to strict quality criteria. Continuous research and development might lead to changes in version and scope of supply. Therefore in the instruction manual details could be slightly different in some cases. If you have any questions or need further information regarding the unit, please don't hesitate to call us or send a fax. Our service team will be glad to help you.

## Device Specifications

Device Type	POLAPHOR Visual acuity system
Manufacturer	Block Optic Ltd. Semerteichstr. 60 D-44141 Dortmund

## Intended Applications

The Polaphor is used to examine the monocular and binocular acuity of the eyes. It is used for optometry and ophthalmology.

## Unintended Application

Other applications as those described above are prohibited. During wrong practice unpredictable hazard can occur.

## Scope of supply

The Polaphor can be delivered with various equipment. The actual scope of supply is listed in the detailed delivery note

## Safety Remarks

a) Please read the instruction manual carefully and make yourself acquainted with all functions before you start to operate the device.

b) Don't change anything at the system by yourself as this might impact the safety and leads to the expiry of the warranty.

c) This system is not intended for use in areas with risk of explosions.

d) Do not operate the Polaphor if you observe visible damages. Breakdowns which have impact on the safety need to be repaired immediately. In this case, please contact an authorized service technician at Block Optic Ltd.

e) Please let all repairs of the Polaphor be done by a service technician authorized by Block Optic Ltd.

f) Only use original accessory parts for the Polaphor.

g) If the system will not be used for a longer period, please turn off the main switch and turn out the power plug.

h) Accessories which will be connected with the electric supply of the Polaphor need to be proven to comply with the appropriate DIN EN or IEC specifications. Furthermore all configurations have to comply with the requirements of the system standard DIN EN 60601-1-1 (IEC 601-1-1) and its modifications. Coupling of non-medical devices (e.g. dataprocessing devices) to a medical electronical system such as the examination unit must not lead to a safety degree for patient, user, and the environment which is beyond DIN EN 60601-1-1 (IEC 601-1-1) and its modifications. If the admissible leakage current is exceeded by the coupling, protective measures according to the system standard DIN EN 60601-1-1 (IEC 601-1-1) and its modifications need to be provided.

After installation or later modifications the system must not put any risk to the patient, the user or the environment.

## Text Accentuation

Important parts of the text in the instruction manual are marked by accentuations and key words. The following accentuations are used in the actual instruction manual:

### Caution!

Indicates a potentially hazardous situation. Please note such precaution measures to prevent any damage from patients or objects.

### Important!

Indicates important information. Please read this information to maintain the high safety and function level of the device.

### Special note!

Indicates information for proper usage. Please read this information to avoid any misuse.

## Liability of Manufacturer

The device has been manufactured according to the latest technical development and acknowledged technical safety directives. Block Ltd. considers itself responsible for any impact on safety, reliability and performance of the device only if:

- Mounting, extensions, readjustments, modifications or repairs are carried out by authorized persons,
- the electric installation of the concerned room complies with the requirements of VDE 0107 and
- the device is used according to the instruction manual.

## Responsibility of User

The user is responsible for:

- compliance with standards for prevention of accidents and the directives for establishment, operation and application of medical devices (Medical Device Operating Directive)
- MPBetriebV),
- operation,
- maintenance,
- duly and safe condition of the product and
- storage of the instruction manual at the usage site.

## Warranty

The „Allgemeinen Verkaufs- und Lieferbedingungen“ of Block Optic Ltd. are effective as the basic principle.

## General information

The Polaphor is a visual acuity system of the next generation. A high-resolution flat panel monitor combined with a powerful computer form the basis for unlimited test possibilities.

You can switch easily through different visual acuity steps and even groups of optotypes by the clearly designed infrared remote control.

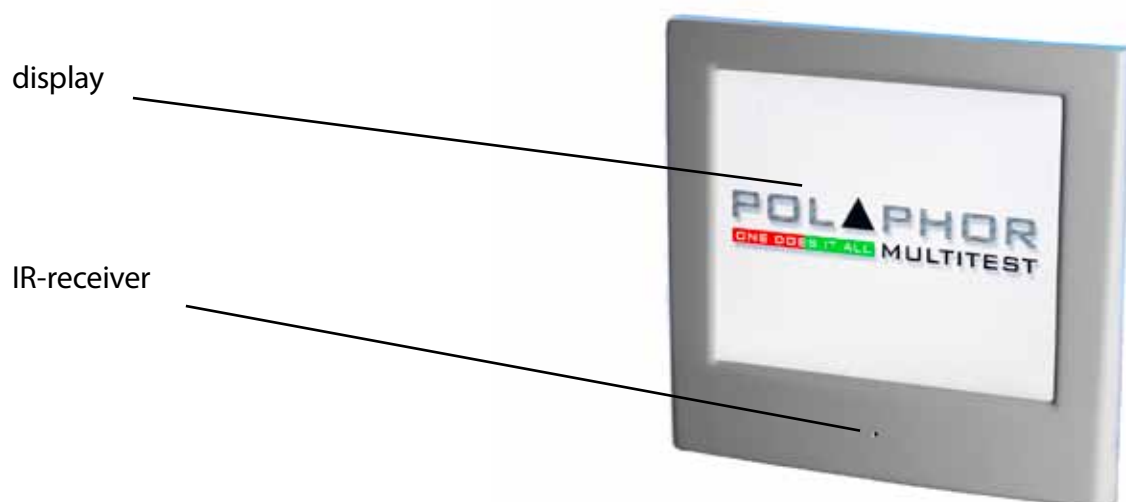
It is even possible to do refractions for official purposes with the Polaphor, because the display of the Landolt rings complies with the ISO 8596.

Many charts for monocular and binocular correction and for recognizing phorias come with the standard version of the Polaphor.

Because of the use of a computer new tests can be implemented into the Polaphor if desired.

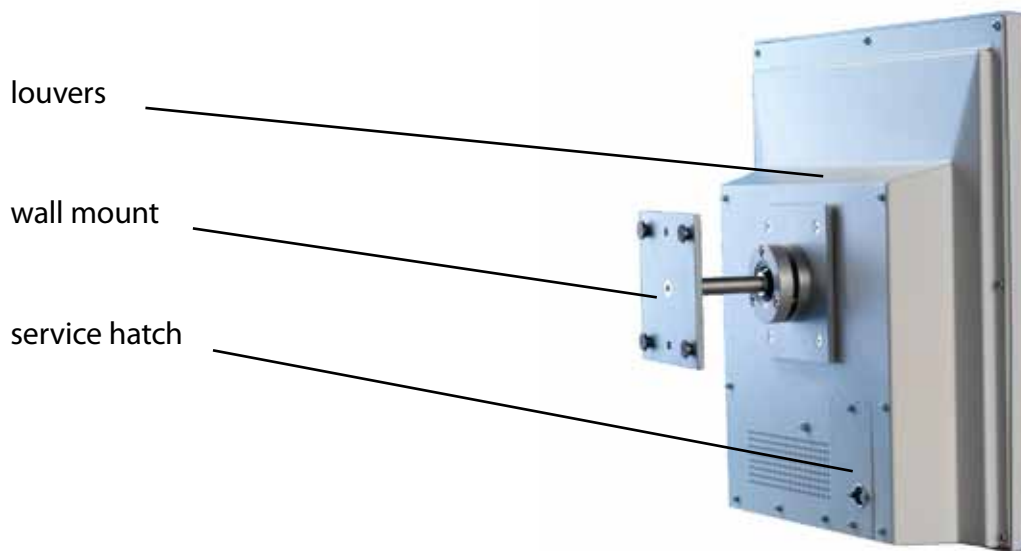
The Polaphor box contains the visual acuity system Polaphor, the IR remote control, and the manual. A special designed wall mount for the adaption of the Polaphor is enclosed.

## POLAPHOR - front view





## POLAPHOR – rear view

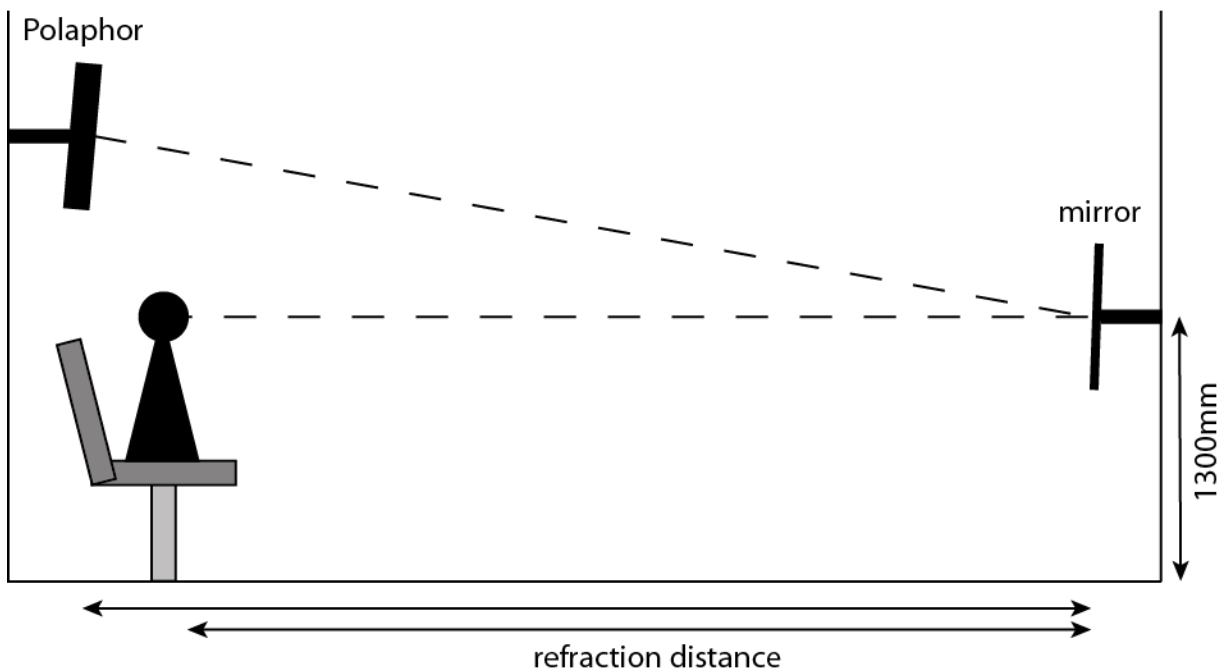
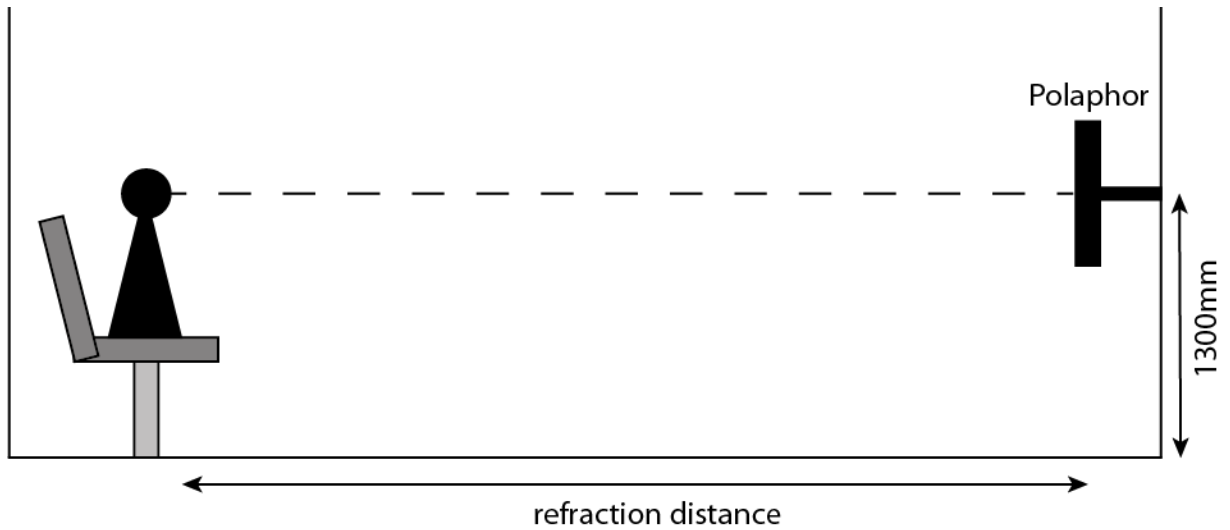


## Mounting

Important for the correct mounting of the Polaphor is on the one hand the refraction distance and on the other hand the height to achieve the best separation of the eyes.

The Polaphor allows a refraction distance between 3,0 and 6,0 meters and must be adjusted individually for each refraction room. The size of the optotypes is calculated automatically for the entered distance. When choosing the height of the Polaphor, have in mind the middle eye height of the patients (about 130 cm). The Polaphor has to be adjusted in that way that an optimal separation of both eyes is achieved.

Normally one visual acuity system or Polaphor is used in an examination room. If more than one Polaphor should be used in the same examination room an adjustment of the software inside the remote control is necessary. In this case please contact your local dealer.



## Putting into operation

Connect the appliance plug with the appropriate female connector on the side of the Polaphor. The equipment is ready to use and can be turned on and off with the main switch.

## Before the first use

Before the first use personal settings must be made in the menu of the Polaphor to achieve the correct results.

Pressing the „menu“-key on the remote control opens the menu so personal adjustments can be made. At first it is necessary to enter the refraction distance with the left and right arrow keys. The optotypes, polarized tests and Schober test are automatically calculated dependend on the entered distance. For reliable and reproducible results the distance from the entrance pupil to the optotype must be measured.

The visual acuity system Polaphor is designed without any mechanic or movable parts. This results in a compact, wearing free and fail-safe instrument. Nevertheless, if a defect occurs please contact your local dealer with a detailed description of the malfunction.

## Safety note

Only skilled service technicians are allowed to open the visual acuity system for maintenance or repairs.

**Caution!** Do not pour any liquids over the device especially the louvers! Do not cover the louvers!

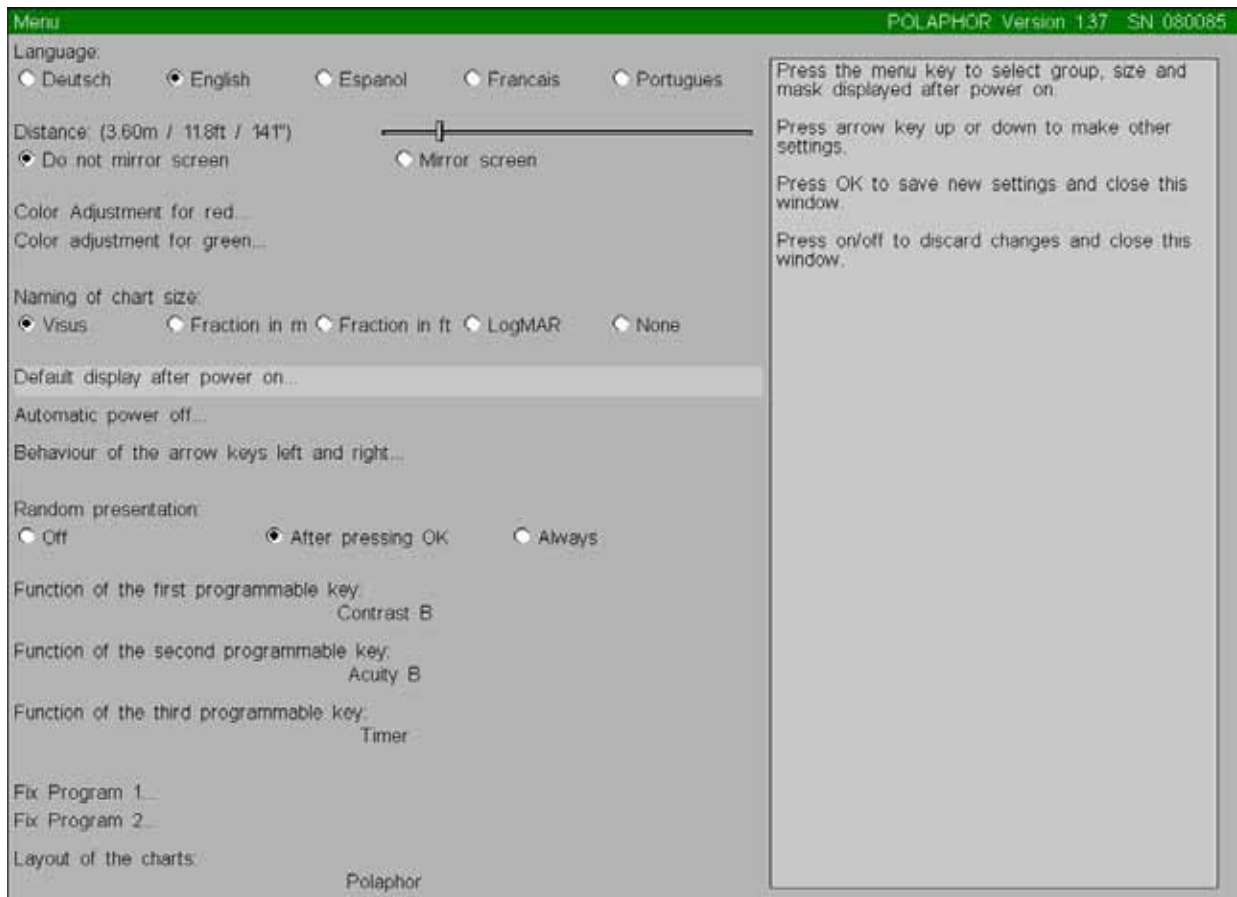
**Important!** Keep in mind to turn off the Polaphor with the main switch every day.

## Care and maintenance

The surface has to be cleaned with a dry cloth. Never use aggressive detergents; the sensitive surface could be damaged !

## The menu

By pressing the “menu”-key on the remote control opens the menu of the Polaphor:



With the ▲ and ▼ keys the checkmark (bright area) can be moved to the characteristic that should be changed. The settings are changed with the ◀▶ keys.

By pressing the “OK” key the changed settings will be saved. By pressing the “stand-by” key the menu is left without any changes.

Special note!

It is advisable to change the desired settings in one turn and press the “OK” key.

## Language

The possible settings are German, English, French, Spanish and Portuguese.

## Distance

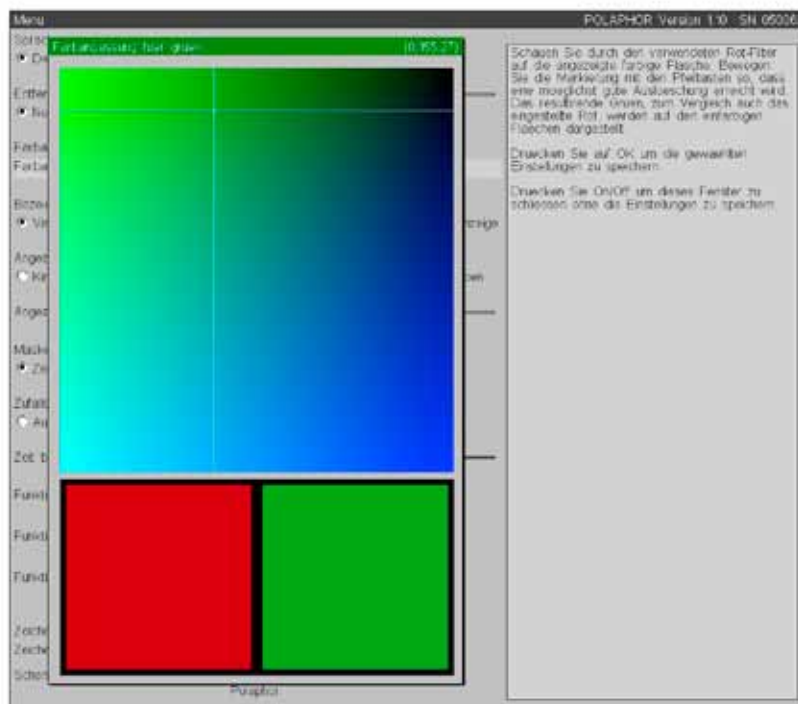
The refraction distances can be adjusted from 300 to 700 centimeters in steps of 10 cm. The size of the optotypes, polarized tests and Schober Test is calculated depending on the distance.

## Do not mirror screen / Mirror screen

If you work with a path-folding mirror you have to mark it here.

## Colour adjustment for red

The lenses used for red/green tests in phoropters or trial lenses are different. To achieve optimal results with the Schober and Worth test it is necessary to adjust the colours red and green of the Polaphor.



0.63

The picture is shown if the ► key is pressed. Look through the green filter and move the cross bar with the arrow keys to that area where the colour red is extinguished. Press the "OK" button to keep this value and go back to the menu.

## Colour adjustment for green

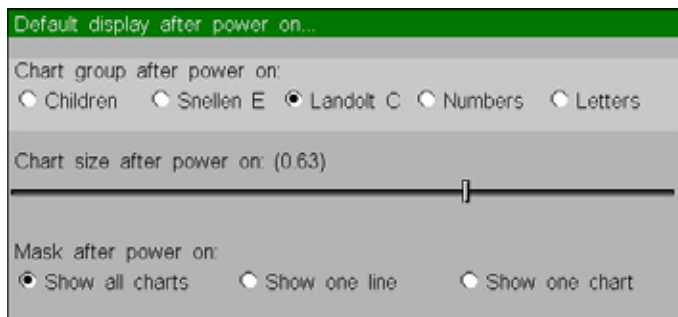
The green adjustment is equal to the adjustment of red with the difference that the red filter must be used.

## Naming of chart size

The naming can be set as logarithmic acuity step, fraction in meters or feet or as a logMAR step. The size can also be turned off completely.

## Default display after power on

Pressing the ► or „Menu“ key will show the picture below.



### Chart group after power on

Determines the standard optotype after power on. The settings are children symbols, E's, Landolt's rings, letters and numbers.

### Chart size after power on

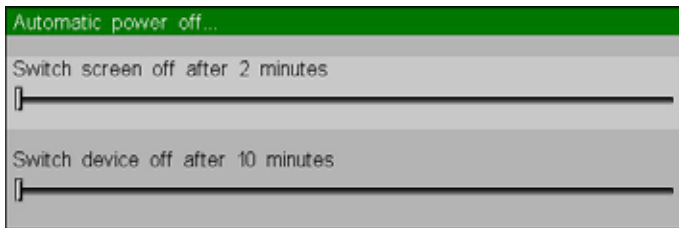
Determines the size of the optotypes after power on. The naming depends on the settings "Naming of chart size".

### Mask after power on

You can start with the group display (max. 2x5 optotypes), a single line (max. 1x5 optotypes) or a single optotype.

## Automatic power off

Pressing the **▶** or „Menu“ key will show the picture below.



### Switch screen off

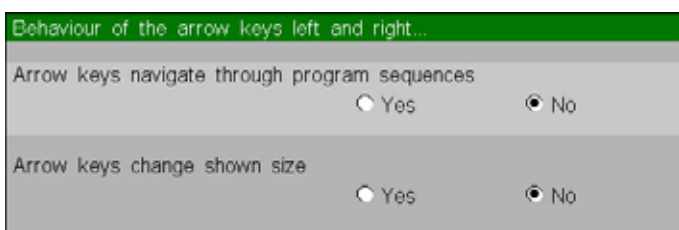
After the entered time the screen will turn off, the device will enter the stand-by mode. A short push of any key on the remote control will turn on the screen again.

### Switch device off

After the entered time the device will turn off. A long push of any key on the remote control will start the computer again.

## Behaviour of the arrow keys left and right

Pressing the **▶** or „Menu“ key will show the picture below.



### Arrow keys navigate through program sequences

If own programs exist they can be controlled with **◀▶** keys. Push the **◀** key to return to the previous program step, the **▶** key will show the next step.

### Arrow keys change shown size

The ISO 8596 demands a minimum amount of optotypes per acuity step. The Polaphor complies to this standard. When the function is active the acuity step will be increased or decreased with the arrow keys with no care about the standard.

## Random presentation

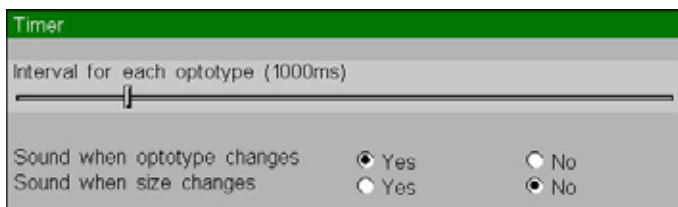
Three different settings are available:

- off: always the same optotypes are shown
- after pressing "OK": always the same optotypes are shown, the randomized optotypes are shown after pressing the "OK" key
- always: every time the display changes randomized optotypes are shown

## Function of the first, second and third free key

A variety of useful tests can be assigned to the three free keys:

- Default chart group and size: the display is set to the optotype group, size and masking chosen in the menu
- Show/Do not show chart size: the optotype size shown in the lower right corner can be shown/hidden
- Red/green filter on/off: in the refraction mode a red/green filter is applied to the optotypes
- Timer:  
Pressing the **▶** or „Menu“ key will show the picture below.



Each optotype can be allocated a period of time in milliseconds. After that period the optotype or acuity step will change. The timer is started or stopped with a push of the free key. If the timer is active, a symbol of a clock is shown in the lower right corner of the display.

- Select program: choose one of the two programmed sequences
- Next step in program: the next step in the own programmed sequence is shown
- Previous step in program: the previous step in the own programmed sequence is shown
- Reset program: the sequence is set to the first step of the sequence
- Stereo test: assigns a stereo test to one of the free keys. Two stereo tests are available. The first is like the stereo test used in the MKH sequence. The objects seem to lay in one plane, before or behind the central circle. This test is marked with a "II" symbol. The impression for each eye can be changed by pressing the "OK" button. Pressing the free key a second time the other stereo test is shown. With this test the objects and the central circle seem to lay in different planes. The symbol for this test is a "X". Also with the "OK" key the impressions can be changed.



- Arrow test: the test is assigned to the free key
- Double arrow test: the test is allocated to the free key
- Stereo 11: the test is allocated to the free key
- Stereo 20: the test is allocated to the free key
- Stereovalenz 11: the test is allocated to the free key
- Stereovalenz 20: the test is allocated to the free key
- D5: the test is allocated to the free key
- D5 randomized: like the D5 test, but with a random stereo symbol
- Random dot hand: the test is allocated to the free key
- Random dot step: the test is allocated to the free key

## Fix program 1 and 2

If you always use the same sequence, it is advisable to save this sequence as an own program.

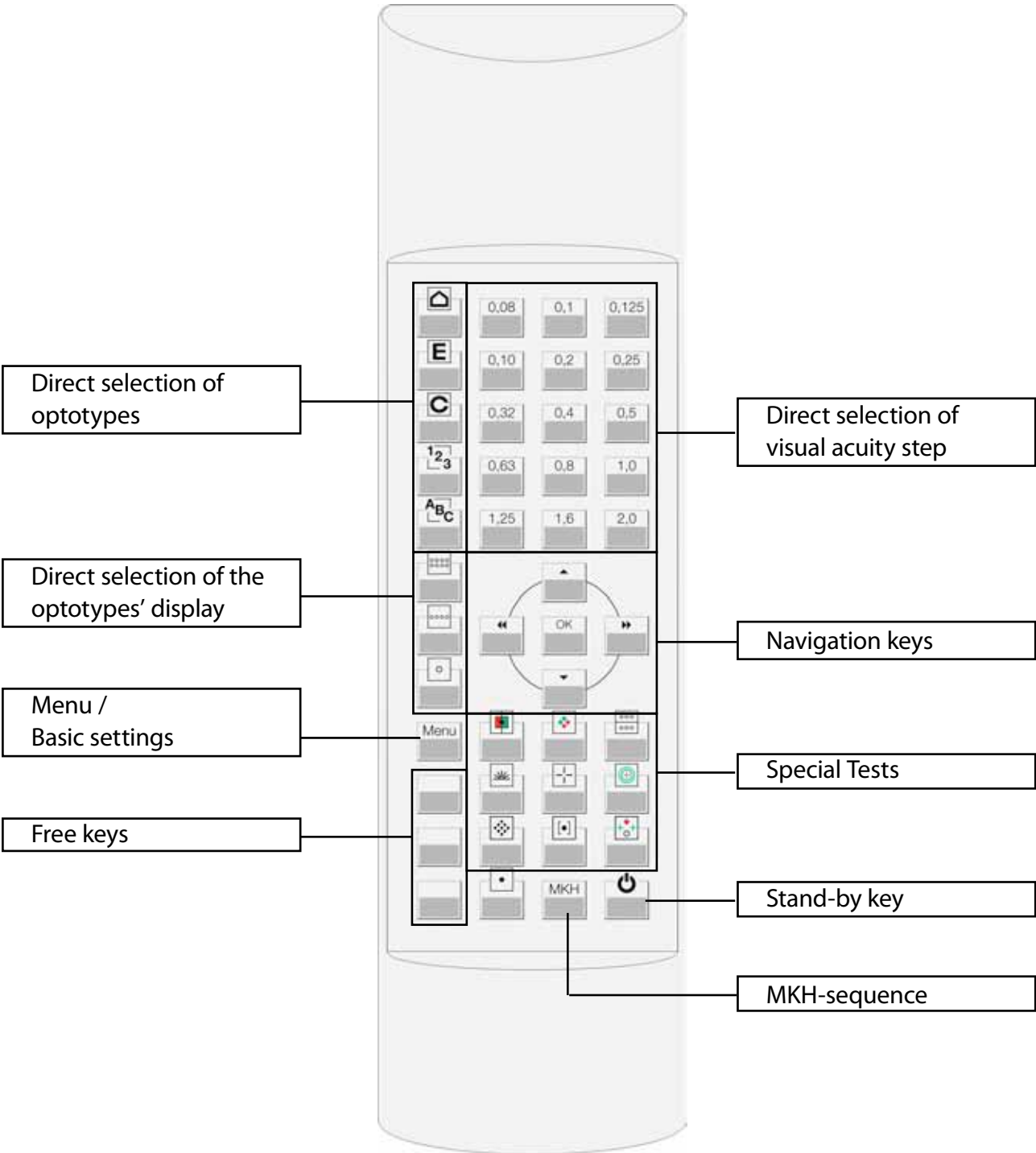
To do that choose one of the two programs and press the ► key. A new window appears with numbers from 1 to 25. These numbers symbolize the maximum amount of program steps that can be programmed.

For each step the desired type and size of an optotype as well as a mask or any other special test can be entered directly by the remote control. An active sequence is shown in the lower left area on the display during the refraction, e.g. "P1 5/7" means that program 1 is running with step 5 of 7.

**Special note!** All menu settings that are changed are immediately saved and active if you leave the menu with the "OK" key. A restart of the system is not necessary.

# Working with the Polaphor

The remote control has 44 keys, which are sorted in groups:



## Direct selection of optotypes

With the following keys the sort of optotypes can be chosen directly:

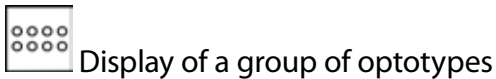
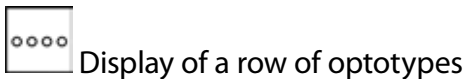
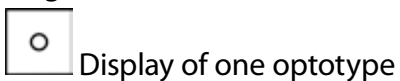


## Direct selection of the visual acuity step

The visual acuity step that belongs to the corresponding key is shown with the actual sort and display of optotypes. The acuity steps 0,05 and 0,063 can be reached with the keys ◀▶ if the acuity step 0,08 is chosen.

## Direct selection of the optotypes' display

The three keys that belong to that function control the display of the optotypes. The following features are available:



## Navigation

The navigation of the Polaphor is realized with the four arrow keys and the „OK“-button of the remote control. Depending on the refraction step different functions are possible:

a) Menu mode:

When the menu is called with the corresponding „menu“-key, the basic settings of the Polaphor can be changed. For a detailed description please read the chapter „menu“.

b) Refraction mode:

In the refraction mode the arrow keys offer different functions:

◀▶ With the left and right arrow keys you can switch through the visual acuity steps.

When

the maximum amount of optotypes is shown, as said in the International Standard 8596, the next higher or lower acuity step is displayed.

▲▼ With the arrow up and down keys the group of optotypes can be changed, the acuity step will stay the same.

With the „OK“-key the randomize function is called if the proper function is enabled in the menu.

c) Special tests:

Some keys for the special tests contain more than one test.

◀▶, ▲▼ With the arrow buttons you can switch through the available tests. You can achieve the same result by pressing the special test key again.











When polarized tests are shown the impression for each eye can be changed by pressing the „OK“-key. If the function is activated an arrow is shown in the lower right corner of the display.

## Menu / basic settings

The menu is shown when the proper key is pressed. To save the changed settings just press the „OK“-key. The changes are active immediately and no restart of the Polaphor is necessary. Pressing the “Stand-by“-key will leave the menu and the changes will have no effect.

## Special tests

The Polaphor comes with more special tests than there are keys available on the remote control. That means some keys contain more tests. To show these tests you can press the arrow keys ◀▶ ( or ▲ ▼) or the proper key on the remote control again. The following tests come with the Polaphor.

	monocular red/green test
	bichrome balance test, Cowen test
	binocular test, binocular test with fusion object
	astigmatism wheel, cross pattern
	cross test, cross test with fusion object
	Schober test
	astigmatism dots
	coincidence test vertical, horizontal
	Worth test
	fixation point
<b>MKH</b>	cross test, pointer test, double pointer test, coincidence test, stereo test (basis 20 mm and 11 mm), stereo test (D5), random-dot hand test, random dot step test, Cowen test

## Stand-by key

By this key the Polaphor is switched into the stand-by mode. The stand-by mode is also activated after 5 minutes when no keystroke was made on the remote control.

## Free keys

The linking of the functions/tests with the free keys is set up in the menu. A keystroke on the according key starts the function/test.

## Optional tests and modules

### C-test (Haase/Hohmann)

#### Features:

The C-test is adjustable from a distance of 3,0 – 5,6 meters. If a greater distance is adjusted, the size of 5,6 meters will be kept. This will result in small inaccuracies.

The C-test includes three charts: 30', 17.2' and 2.6' in the acuity steps from 0.16 – 1.25. Each test is divided in three screens with 4 acuity steps. The test can also be shown with children symbols, E's, numbers and letters. The randomizer can be used with the "OK" key.

#### Navigation:

To use the C-test, it must be linked to a free key. Two versions of the C-test are available:

#### C-test /\:

The normal arrangement of the Landolt rings. Small acuity steps are at the bottom of the screen and high acuity steps at the top.

#### C-test \/:

The inverse arrangement of the optotypes: Small acuity steps are at the top of the screen high acuity steps at the bottom.

Pushing the free key starts the C-test with an intersymbol distance of 30'. Four acuity steps are shown starting with 0.16. Depending on the chosen test the acuity step can be increased with the ▲ ▼ buttons. So you you can switch through the 4 screens of each test.

Press the ► key to advance to the next test with an optotype distance of 17.2'. Another press leads to the test with a distance of 2.6'. The distance of the actual test is shown in the lower right corner of the screen, the acuity steps are on the left side next to the optotypes.

The C-test can be used with Landolt rings, and also with other optotypes like children symbols, E's, numbers and letters. Just press the appropriate button on the remote control (see page 14) to show children symbols instead of Landolt rings.

During the C-test the display can be varied. It is possible to show just one row or one single optotype. In this case you can navigate with the arrow buttons as normal.

The randomizer can be used by pressing the „OK" button.

To leave the C-test just press a special test key or one key of the direct acuity selection.

### Special note!

- if the C-test is shown with a distance of 30', push the ◀ key to go directly to the 2.6' test.
- the function "show/do not show chart size" can be linked to another free key and be used in combination with the C-test

## ETDRS test

### Features:

The ETDRS-test is adjustable for a distance of 3.0 – 6.0 meters. The standard charts and the revised ones with each 3 tests are integrated. The randomizer can be used during the ETDRS test by pushing the "OK" button.

### Navigation:

To use the ETDRS-test, it must be linked to a free key. Two versions of the ETDRS-test are available:

ETDRS: The standard sequence from 1982 (chart R, 1, 2)

Revised ETDRS: The new sequence of the letters (chart 1, 2, 3)

Press the free key to start with the (revised) ETDRS test chart R(1). Outgoing from the highest acuity step as many rows as possible are shown. Lower acuity charts can be shown by pressing the ▲ button. There the width of the screen is too small to show all 5 letters, the ◀▶ keys can be used to scroll to these letters.

Press the free key again to advance to the next chart 1(2). Another press leads to the chart 2(3). The name of the actual test is shown in the lower right corner of the screen, the acuity steps are on the left side next to the letters.

During the ETDRS test the display can be varied. It is possible to show just one row or one single optotype. In this case you can navigate with the arrow buttons ◀▶ as normal.

The randomizer can be used by pressing the „OK“ button.

To leave the ETDRS test press any key, except the navigation buttons.

### Special note!

- the function "show/do not show chart size" can be linked to another free key and be used in combination with the ETDRS test



## Contrast Type A

### Features:

During the refraction it is possible to change the contrast of the optotypes. The following contrast levels are available:

75%, 50%, 40%, 30%, 20%, 10%, 7.5%, 5%, 3%, 1.5%, 1%, 0.5%

When the contrast test is active, the group of optotypes, the acuity step and the display of the optotypes can be changed as well as the randomize function can be used with the direct selection buttons on the remote control. A small picture of the displayed optotypes can be seen in the lower left area of the display. Just one contrast level is displayed per screen.

### Navigation:

To use the Contrast Test A, it must be linked to a free key.

Pressing the free key changes the contrast to 75%. Each press of the ► key lowers the contrast at the mentioned values, pressing the ◀ key increases the contrast.

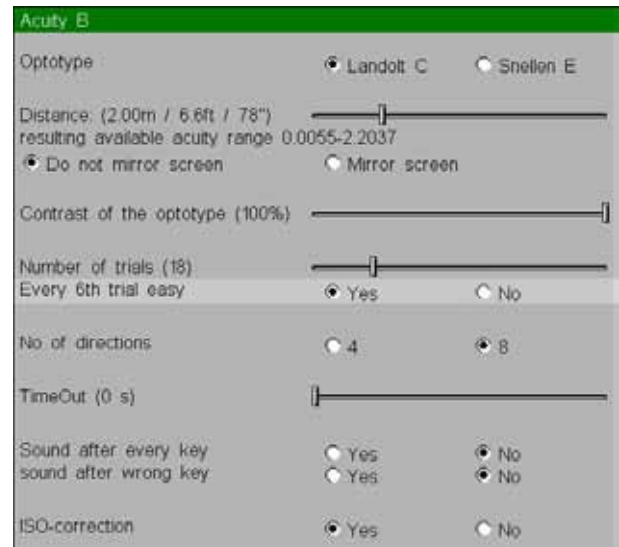
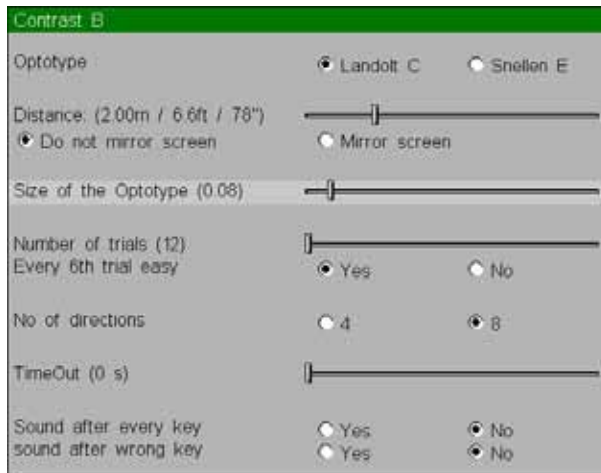
## Contrast and acuity B

### Features:

The contrast and acuity test B simulates the Freiburg Acuity and Contrast Test, developed by Professor Bach. It is a test subject steered test, at which the shown contrast values or acuity steps are calculated with the Best PEST method and Maximum Likelihood algorithm.

### Navigation:

To use the contrast or acuity test B, it must be linked to a free key. Another push on the remote control opens a new window as shown below, where different settings must be made to guarantee correct results.



Optotype: determines the kind of optotype, that is used during the test

Distance: the distance can be entered with the arrow keys. The distance ranges from 0,2 - 8,0 meter and is independent from the refraction distance in the main menu.

Display: if you work with a path-folding mirror you have to mark it here

Size of the optotype: determines the size of the chosen optotype during the test

Contrast of the optotype: determines the contrast of the chosen optotype during the test

Number of trials: determines how often the patient has to recognize the alignment of the optotype

Every 6th trial easy: motivates the patient with an easy to recognize optotype

Number of directions: choose between 4 or 8 directions when using the Landolt ring

TimeOut: a value of „0“ means the patient has infinite time for his response, otherwise after the entered time the response is treated as not recognized

ISO-correction: the result is adapted to the demands of the ISO 8596

Pressing the appropriate key starts the test. The patient has to enter on the separate remote control where he sees the opening of the Landolt ring. Depending on the responses the next contrast level or acuity step will be calculated. If the patient doesn't see an opening he has to guess (forced choice). At the end of the test sequence the contrast threshold or acuity will be shown.

The test can be quit at any time pressing any key on the remote control. A press on the free key will start a new test sequence.

## Ishihara

Features:

The „Ishihara“ Test consists of 24 plates. The plates are distance dependent from 0,6 - 2,2

meter. The size of the plates will not change at a distance larger than 2,2 meter.

#### Navigation:

To use the Ishihara Test , it must be linked to a free key. Another push on the remote control opens a new window as shown below, where different settings can be customized.

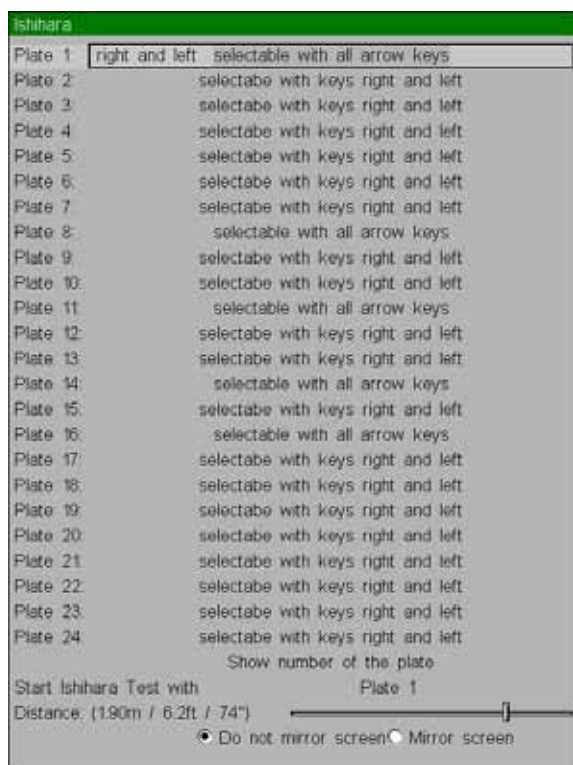


Plate 1 - 24: for each plate can be defined if it should be shown or which of the arrow keys must be pressed to get to the plate.

Show number of the plate: shows the number of the plate in the lower right corner of the display or hides it.

Start Ishihara Test with: determines the plate which starts the sequence

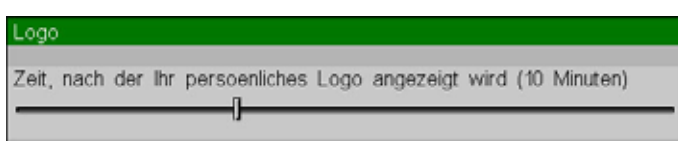
Distance: the distance can be entered with the arrow keys. The distance ranges from 0,6 - 2,2 meter and is independent from the refraction distance in the main menu. The size of the plates will not change at a distance larger than 2,2 meter.

Display: if you work with a path-folding mirror you have to mark it here

The test can be quit at any time pressing any key on the remote control. A press on the free key will start a new test sequence.

## Emblem

It is possible to implement a picture or emblem into the Polaphor. This function can be linked to a free key. By pressing the „Menu“ key the picture below will be shown.



The emblem will be shown by pressing the free key or after the entered period of time.

## Foto

If a single foto or a sequence of pictures is implemented, the function can be linked to a free key. The picture will appear on the screen if the button is pressed.

Each picture of a sequence will be shown by pressing the proper free key.

## Snellen bars

The Snellen bars, a special astigmatism figure, is integrated in the sequence of the other astigmatism tests like astigmatism wheel and cross pattern.

The figure can also be linked to a free key.

## Astigmatism test

The astigmatism test is chosen in the menu and linked to a free key. By pushing this key an astigmatism circle is shown two acuity steps less than the actual acuity step. The size of the circle can be changed either with the arrow keys or with the direct acuity selection key. To leave the test the free key must be pressed again.

Special note!

The function "show/do not show chart size" can be linked to another free key and be used in combination with the astigmatism test

## Errors

description	possible causes	correctives
The display is dark	Connector plug missing	Connect the appliance plug with the socket and turn on the system..
	Fuse defect	Check the two fuses in the drawer of the main switch
	The Polaphor is in the stand-by mode	Press any key on the remote control for about 1 second.
The remote control doesn't work	Batteries are empty.	Change the batteries.
	The IR receiver is covered.	Make sure a free line of sight to the receiver is existing
The separation is not optimal	The Polaphor is not aligned.	Loose the screws on the ball joint and align the Polaphor
The wrong optotypes are shown or change autonomous.	Other instruments control the Polaphor.	A new coding of the remote control is required. Please contact the service hotline.

## Software update

In case of software update turn off the Polaphor and disconnect the appliance plug. Open the service hatch on the rear side and plug out the USB-Stick. Insert the new stick and close the hatch. The appliance plug can be connected with the socket again.

**Important!**

After a software update, the refraction distance and the other customized menu entries must be entered again!

## Description

examination distance:	3,0 – 7,0 meters, in steps of 10cm
visible area:	about 337x270mm
frame color	similar RAL 9016
color coordinates white (CIE):	x 0,31 / y 0,33
control:	IR remote control, 44 keys
axis of polarization:	45°/135°
acuity steps:	0,05-2,0 (logarithmic)
charts:	Landolt's rings*
	tumbling E's
	letters
	numbers
	children symbols
	Schober test
	Worth test
	cross test
	pointer test
	double pointer test
	coincidence test
	stereo test (base 20mm and 11mm)
	stereo test (base 20mm and 11mm)
	stereo test (5" to 30")
	random dot hand test
	random dot stufen test
	binocular test
	Cowen test
	bichrome balance test
	monocular red/green test
	astigmatism wheel
	cross pattern
	astigmatism dots
	fixation point

masking:	single, row and group display
naming of charts:	visual acuity steps, logMAR, fraction in meter or feet
misc:	random display of optotypes
	use with path folding mirror possible
	own tests can be implemented
	stand-by mode

\* The display of the Landolt's rings is conform with the ISO 8596.

## Technical data

dimensions (incl. wall mount):	W 450 mm / H 415 mm / D 235 mm
weight:	9,8 kg
main voltage:	230 V/50 Hz
power consumption:	60 watts active
	20 watt stand-by
panel quality:	complies ISO 13406-2 / Class II
fuses:	primary: 2 x 3,15A T
maintenance and calibration intervals:	every 5 years
operation conditions:	
temperature of the environment	between +10°C and +40°C
relative humidity	between 30% and 75%
air pressure	between 800hPa and 1060hPa



## Declaration of conformity

For the following named product

Visual acuity system by Block Optic Ltd.

POLAPHOR

It is confirmed that the product meets the requirements as determined by the European Community:

89/336/EWG	electromagnetic compatibility
93/42/EWG	medical products

Evaluation of the products complies with the standards listed below:

EN 55011	emission of electromagnetic interference
IEC 801	immunity from electromagnetic interference

This declaration in responsibility for the manufacturer:

Block Optic Ltd., Erzbergerstr. 2, 44135 Dortmund, Germany

is submitted by:

H. C. Block, Geschäftsführer

  
(rechtsgültige Unterschrift)

Dortmund, Germany  
(place)

December 2004  
(date)

# MANUAL.

polaphor.

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 **Block Optic Ltd.**