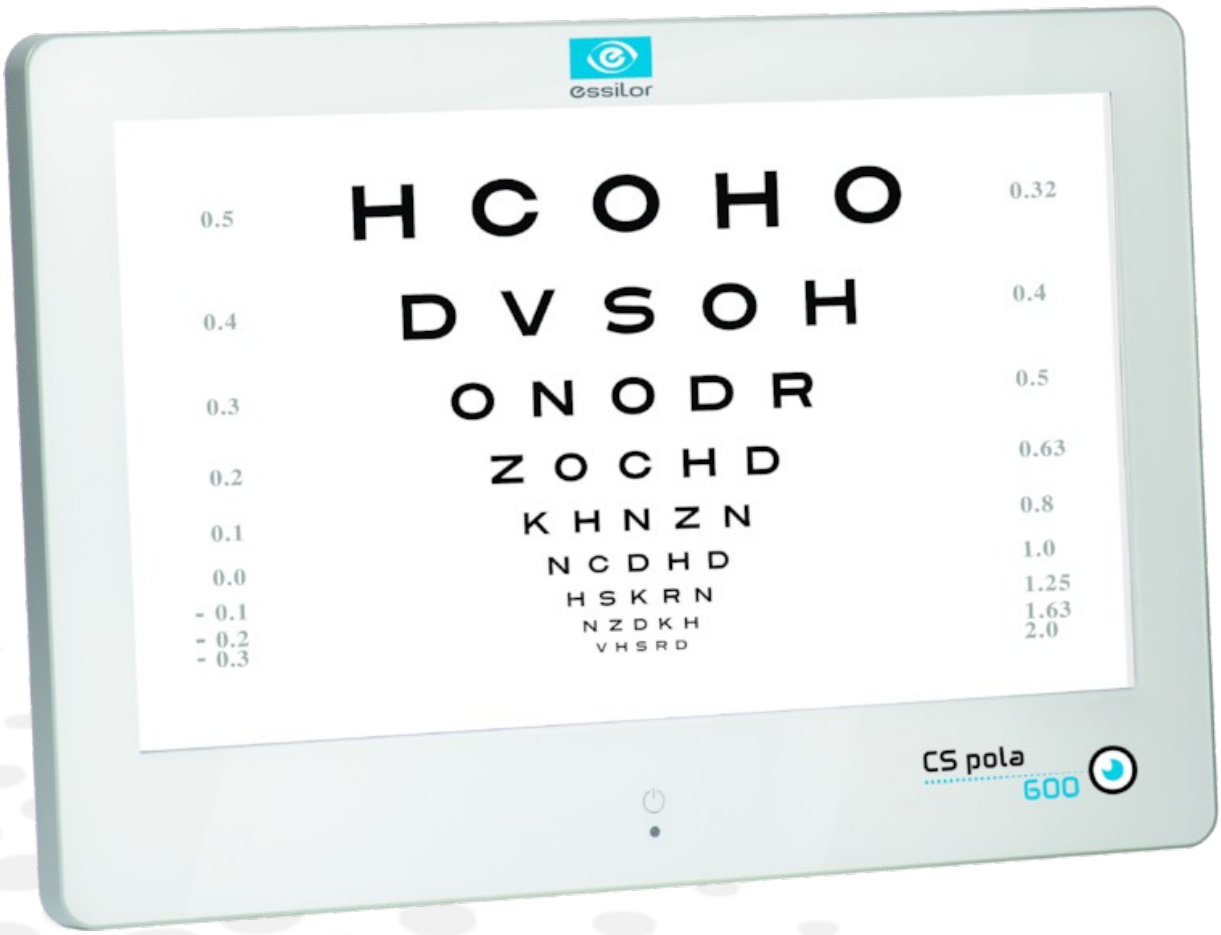
CS POLA 600

ESSILOR INSTRUMENTS



User manual

www.essilor-instruments.com

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I. Introduction

	The complete user manual is available on a web space. To access, please scan the QR code below using a dedicated application.
	Le manuel utilisateur complet est disponible sur un espace web. Pour y accéder veuillez scanner le QR code ci-dessous à l'aide d'une application dédiée.

1. IMPORTANT

This product may malfunction if exposed to electromagnetic interference generated by cell phones, transceivers, radio-controlled toys, etc. Be sure to avoid bringing such items into close contact with the product.

The information in this publication has been carefully checked and is believed to be entirely accurate at the time of publication.

The manufacturer assumes no liability, however, for possible errors or omissions, or for any consequences resulting from the use of the information contained herein. The manufacturer reserves the right to make changes to its products or product specifications at any time and without prior notice, and is not required to update this documentation to reflect such changes.

2. OUTLINE OF PRODUCT OVERVIEW

The CSPOLA600 / CSPOLA600C is an automatic stand-alone visual chart system. It displays a broad range of charts on an LCD panel, including red /green for eye optometry.

The CSPOLA600 / CSPOLA600C can be rotated either using either a cabled or wireless remote control, or by the Essilor APH550.

The chart rotation for CSPOLA600 / CSPOLA600C can be performed by either wired or wireless remote control or by external devices by control box of digital phoropter.

Unlike existing chart projectors, the CSPOLA600 / CSPOLA600C is able to provide a wider range of charts (more than 100 types of general and special charts) on an LCD panel. Furthermore, the product can be adjusted at patient level so that precise examinations can be carried out.

3. Classification

The CSPOLA600 / CSPOLA600C is a class I medical device type B.

This device is compliant with CE marking.

Expected useful life: 7 years

Date of first marking: 2013

II. Safety information

1. Introduction

Safety is everyone's responsibility. The safe use of this equipment largely depends on the installer, user, operator, and maintainer. It is imperative that personnel study and become familiar with this entire manual before attempting to install, use, clean, service or even just adjust this equipment and any associated accessories. It is of paramount importance that the instructions in this manual be fully understood and followed in order to ensure the user's/operator's complete safety. It is for this reason that the following safety notices have been placed appropriately within the text of this manual to highlight safety-related information or information requiring special emphasis. All users, operators, and maintainers must be familiar with and pay particular attention to all warnings and cautions in this document.

Warning

Indicates the presence of a hazard that could result in severe personal injury, death or substantial property damage if ignored.

Note

Describes information for the installation, operation, or maintenance of which is important but hazard related if ignored.

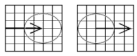
Caution

Indicates the presence of a hazard that could result in minor injury, or property damaged if ignored.

2. SAFETY SYMBOLS

The International Electro-technical Commission (IEC) has established a set of symbols for electronic medical equipment which classify a connection or warn of any potential hazards.

Save these instructions

I O	I and O on power switch represent ON and OFF respectively.
	This symbol identifies a safety note. Ensure that you understand the function of this control before using it. The control's function is described in the appropriate user's or service manual.
	Useful information for the user
	D.C. current
	Polarity
	Indicates the obligation to collect and separate disposal of electrical and electronic equipment, at the end of their useful life.
	Hot surface.
	Identifies the point where the system's earth safety cable is attached to the chassis. The protective earth cable is connected to conductive parts of Class I equipment for safety purposes.
	Indicates the medical device manufacturer
	Manufactured in xxxx (year).
	Signal Input / Output connection.

3. ENVIRONMENTAL FACTORS

Avoid the following environments for operation or storage.

	Where the equipment is exposed to water vapor. Don't operate an equipment with a wet hand.
	Where the equipment is exposed to direct sunlight.
	Where the temperature changes extremely. Normal operating temperature range is from 10°C to 40°C, humidity is from 30% to 75%.
	Where it is near the heat equipment.
	Where the humidity is extremely high or there is a ventilation problem.
	Where the equipment is subject to excessive shocks or vibrations.
	Where equipment is exposed to chemical material or explosive gas.
	Be careful not to be inserted dust, especially, metal.
	Don't disassemble the product or open. The warranty is void.
	Be careful not to close the fan located on the lateral or back side of the equipment.
	Don't plug the AC power cord into the outlet before the connection between devices of the equipment is completed. This can generate the defect.
	Pull out the power cord with holding the plug, not the cord.

Avoid areas where the ambient temperature falls below 10°C or exceeds 40°C during normal operation, or falls below -10°C or exceeds 40°C (14°F-104°F) for transportation and storage. Humidity should be maintained at between 30% and 75% for normal operation, transportation and storage.

Avoid environments where the equipment is exposed to excessive shocks or vibrations.

4. Safety precautions

This equipment has been developed and tested in accordance with safety standards as well as national and international standards. This guarantees a very high degree of safety for this device.

Under legislation currently in force, we are required to inform users expressly about the device's safety aspects. The correct handling of this equipment is imperative for its safe operation. Therefore, please read all instructions carefully before switching on this device. For more detailed information, please contact our Customer Service Department or one of our authorized representatives.

1. This equipment must not be used:
   (a) in areas where there is a risk of explosion and
   (b) in the presence of flammable, explosive, or volatile solvents such as alcohol, benzene or similar chemicals.
2. Do not put or use this device in humid rooms. Humidity should be maintained at between 30 and 75% for normal operation. Do not expose the device to water splashes, dripping water, or sprayed water. Do not place containers containing fluids, liquids, or gases on top of any electrical equipment or devices.
3. The equipment must be operated only by, or under the direct supervision of a properly trained and qualified person.
4. Modifications to this equipment may only be carried out by the manufacturer's service technicians or other authorized persons.
5. Customer maintenance of this equipment may only be performed as stated in the user's manual and service manual. Any additional maintenance may only be performed by the manufacturer's service technicians or other authorized persons.
6. The manufacturer is only responsible for any effects on safety, reliability, and performance of this equipment on condition that the following requirements have been fulfilled:
   (1) the electrical installation in the respective room is consistent with the specifications stated in this manual and,
   (2) this equipment is used, operated, and maintained according to the instructions given in this manual and the service manual.
7. The manufacturer is not liable for damage caused by unauthorized tampering with the device(s). Such tampering will forfeit any rights to claim under warranty.
8. This equipment may only be used together with accessories supplied by the manufacturer. If the customer makes use of other accessories, they should only be used if it has been demonstrated that they may be used safely and if this has been confirmed by the manufacturer of the accessory.
9. Only persons who have undergone proper training and instructions are authorized to install, use, operate, and maintain this equipment.
10. Keep the user's and service manuals in a place that can be accessed any time by the persons operating and maintaining the equipment.
11. Do not force cable connections. If a cable does not connect easily, be sure that the connector (plug) is appropriate for the receptacle (socket). If you cause any damage to a cable connector(s) or receptacle(s), the damage must be repaired by an authorized service technician.
12. Please do not pull on any of the cables. Always hold on to the plug when disconnecting cables.
13. This equipment may be used for the international application.
14. Before every operation, visually check the equipment for exterior mechanical damage and to ensure that it is operating properly.
15. Do not cover any of ventilation grids or slits.
16. Immediately turn off and unplug any equipment that gives off smoke, sparks, strange noises or odours.
17. Use only accessories (including power supply) provided by the manufacturer.

III. Features

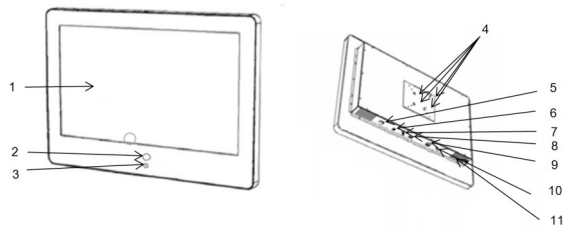
Red / Green reverse	The CSPOLA600 / CSPOLA600C system enables users to reverse all types of Red/Green chart by using the Black & White reverse button on the remote control.
Animation function	The CSPOLA600 / CSPOLA600C system has an animation function. This can be used for getting a child to concentrate on the chart during the sight test, making it is easier to carry out.
Contrast adjustment	With the CSPOLA600 / CSPOLA600C, contrast levels can be decreased in order to examine a patient's eye sight under low-contrast conditions. With the CSPOLA600 / CSPOLA600C, users can select contrast sensitivity levels (75%, 50%, 40%, 30%, 20%, 10%, 7.5%, 5%, 3%, 1.5%) on a screen. Each contrast sensitivity strength level can be shown on the remote control's screen that is used during sight tests carried out on cataract surgery patients by adjusting the opto-type contrast sensitivity.
Black & White reverse	The CSPOLA600 system enables users to carry out tests in a straightforward andconvenient way. This is done by using the Black & White function which lasik & cataract patients can recognize in bright & dark places.
Random function	Random feature. The eye test may be performed with changes to the positions and arrangement of the figures and letters, as well as to the Landolt ring, Snellen, and Children acuity charts. This way, errors in eye tests can be avoided in the event of patients being able to remember optotypes or their direction. Users can easily carry out tests by freely switching between "Numbers, English, Korean, Landolt, Snellen, and Children". On charts such as the Landolt chart, "Number" can be rotated by remote control.
Red / Green filter for color depth adjustment	The CSPOLA600 / CSPOLA600C system enables users to adjust the Red/Green filter concentration from 0 to 31. This can be applied to all types of Red/Green chart.
Mirror function	A mirror function has been added to the CSPOLA600 / CSPOLA600C. This way, it can be installed in areas that are less than 1.5m wide and users can easily select the function they desire at their convenience.
Clock dial rotating	7 types of clock dial can be rotated incrementally by using the “Up/Down” button on the remote control. Black & White can also be reversed by using the “Black & White" reverse button on the remote control.

IV. Notes for using the instrument

1. Do not hit or drop the instrument. The instrument may be damaged if it sustains a strong impact. Impact damage may prevent the product from operating properly. Handle it with care.
2. Do not expose the product to vibration.
3. Exposure to direct sunlight or very bright indoor lights may affect the results of measurements.
4. Do not use organic solutions such as alcohol, thinner, benzene, etc. to clean the surface of this instrument. These may damage the product.
5. Disconnect the power supply and consult your dealer in the event of the product giving off smoke, releasing strange odours or making noise during operation.

V. Configurations

The CSPOLA600 / CSPOLA600C's main components are shown below.

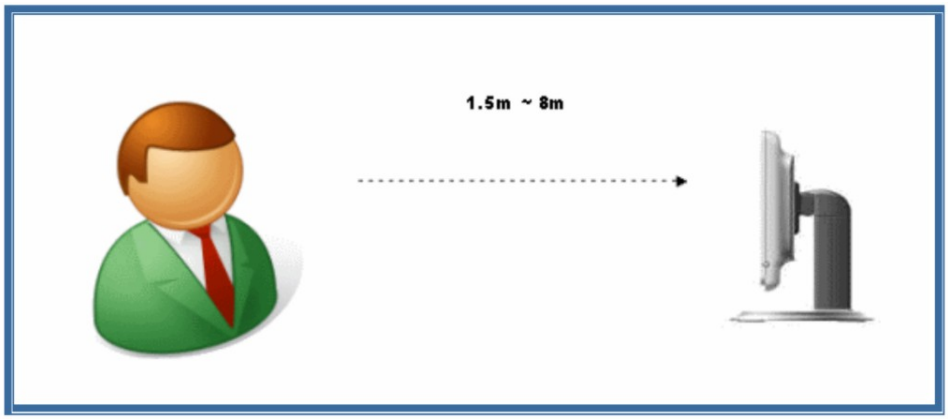
	1. LCD screen: for displaying charts (Optotype) 2. IR Cover: for receiving signals from the remote control 3. LED Lamp 4. Wall mount hole 5. Power switch: for powering the unit ON and OFF 6. Power socket: for connecting the power supply 7. Brightness adjustment 8. USB port for remote control: for communicating with the remote control and main control box 9. USB port : port for upgrade and recharging remote control 10. RS232 : Connector for data communication connectable to the APH500. 11. Vent

VI. Installation

1. VIEWING DISTANCE (LCD DISPLAY POSITION)

Since it is possible to operate the unit by remote control, the operator can examine the patient while ensuring that the charts are changing properly.

The product must be set up so that the centre of the LCD screen is level with the patient's eyes, ensuring that it is not affected by light.



Booting up the system:

VII. Test method

<table>
<tr><th>DIVISION</th><th>DESCRIPTION</th><th colspan="2">TEST METHOD</th></tr>
<tr><td>Orthoptic test - (Binocular balance)</td><td>The test is for synchronizing the visual function with both left and right eye by using Red/Green filter.</td><td colspan="2">1. Show binocular test types to a patient.
2. Let a patient wear Red/Green glasses (right eye = red filter, left eye = green filter).
3. Ask a patient which line of both above and below lines is shown much clearer. If above line is clearer +0.25D as much should be added at a right eye. On the contrary, if below line is clearer +0.25D as much should be added at a left eye.</td></tr>
<tr><td>Orthoptic test - (Red/Green binocular balance)</td><td>The test is for adjusting to the balance of both right and left eye by using prism glasses.</td><td colspan="2">1. Show Red/Green binocular balance test type to a patient.
2. Let the patient wear prism glasses in a left eye (left = Down, right = Up).
3. Ask a patient which one is clearer of green circle and red circle on Red/Green test type. If the patient saw the red circle clearer, +0.25D should be added in a left eye until he can see that Red/Green circles are just alike. But if the green circle was shown clearer, +0.25D should be added in a left eye, until the circles are equally shown.</td></tr>
<tr><td rowspan="5">Orthoptic test - (Worth 4 dots)</td><td rowspan="5">The test is for measuring which eye is better shown of left & right eyes, by using Red/Green filter.</td><td colspan="2">1. Show Worth 4 dots test type.
2. Let a patient wear Red/Green glasses (right eye = red filter,left eye = green filter).
The patient sees ⓐ mark in a right eye and ⓑ mark in a left eye on Worth 4 dots test type. The binocular condition would be ideal, if the patient could see ⓒ mark.
3. Judge a patient's binocular function as below, while asking him how the type is seen.</td></tr>
<tr><td> </td><td>ⓐ Left eye's suppression
> Left eye would be suppressed, if a patient saw only 2 red lights.</td></tr>
<tr><td> </td><td>ⓑ Right eye's suppression
> Right eye would be suppressed, if a patient saw only 3 green lights.</td></tr>
<tr><td> </td><td>ⓒ Blending
> If a patient saw 4 dots, binocular function would be normal.</td></tr>
<tr><td> </td><td>ⓓ Diplopia
> If a patient saw 5 dots, he/she would have diplopia.</td></tr>
</table>

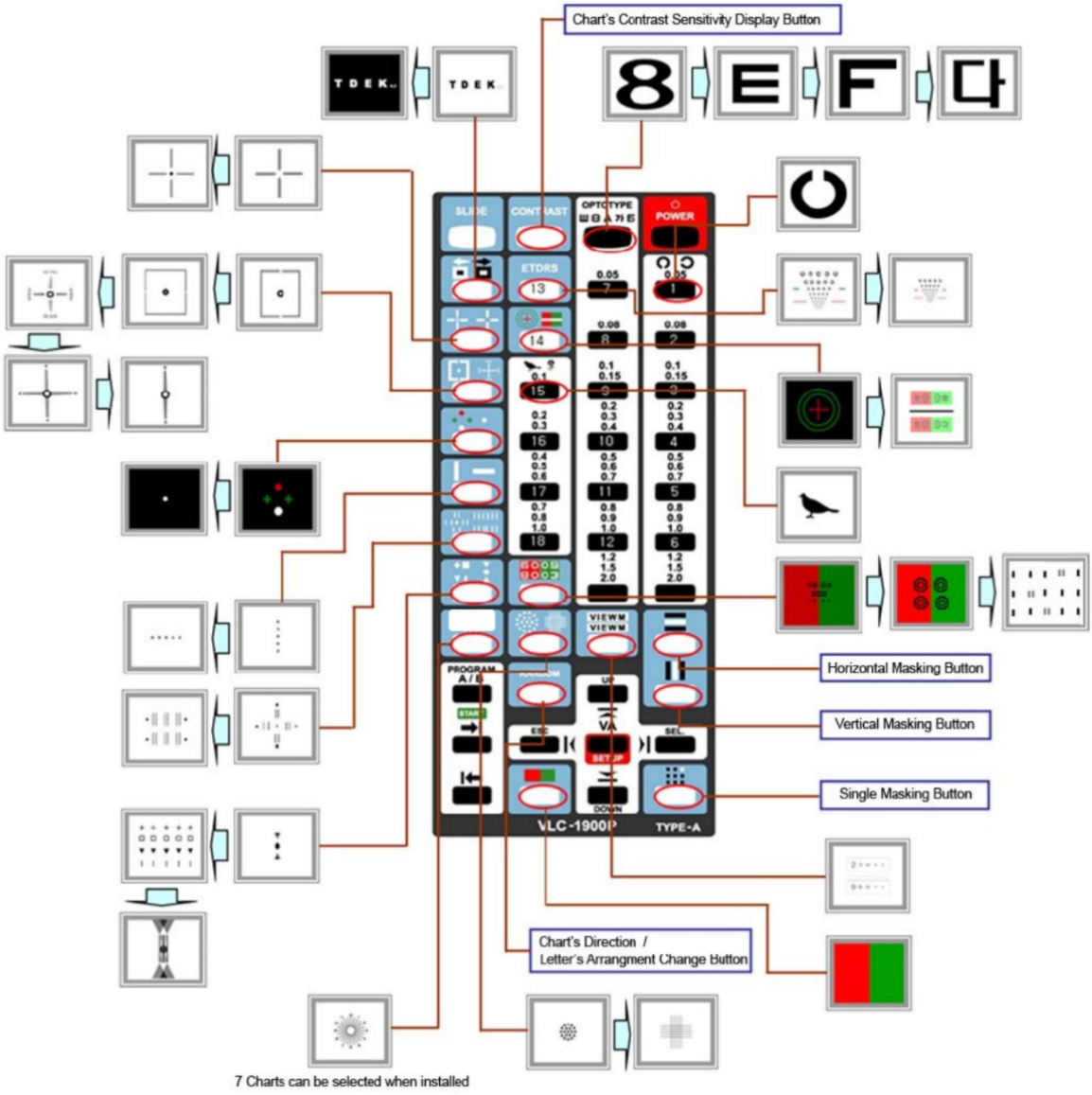
<table>
<tr><th>DIVISION</th><th>DESCRIPTION</th><th colspan="2">TEST METHOD</th></tr>
<tr><td rowspan="4">Aniseikonia test</td><td rowspan="4">The test is for checking aniseikonia of right or left eye using a polarizing filter.</td><td colspan="2">1. Show aniseikonia test type.
2. Let a patient wear Red/Green glasses (right eye = red filter, left eye = green filter). The patient sees fixation target and "]" in a right eye and fixation target and "[" in a left eye.
3. Ask a patient if he can see borders that have in between interval. Also asking if a left and a right border are alike or which one is shown smaller than the other.</td></tr>
<tr><td> </td><td>ⓐ The patient's binocular condition is left > right and right eye < left eye.</td></tr>
<tr><td> </td><td>ⓑ The patient's binocular condition is left < right and right eye > left eye.</td></tr>
<tr><td colspan="2">4. The reason of aniseikonia is heteropsia (when diopter's difference of both a right and a left eye is too big).
And if the result were an axial heteropsia,glasses would be prescribed and if a refractive heteropsia, contact lenses prescribed.</td></tr>
</table>

<table>
<tr><th>Division</th><th>Description</th><th colspan="3">Test method</th></tr>
<tr><td rowspan="5">Phoria test - (Cross phoria)</td><td rowspan="5">This test is for testing horizontal/vertical phoria of right or left eye by using polarizing filter.</td><td>Patient's visual status</td><td>Phoria</td><td>Method</td></tr>
<tr><td> </td><td>ⓐ Esophoria</td><td>Add B.O prism until a vertical line can come to the center of a horizontal line.</td></tr>
<tr><td> </td><td>ⓑ Exophoria</td><td>Add B.I prism until a vertical line can come to the center of a horizontal line.</td></tr>
<tr><td> </td><td>ⓒ Left eye's hyperphoria</td><td>Add B.U in a right eye and B.D in a left eye until a horizontal line can come to the center of a vertical line.</td></tr>
<tr><td> </td><td>ⓓ Right eye's hyperphoria</td><td>Add B.U in a left eye and B.D prism in a right eye until a horizontal line can come to the center of a vertical line.</td></tr>
<tr><td rowspan="6">Phoria test - (Fixation point of cross phoria)</td><td rowspan="6">The test is for measuring vertical/horizontal fixation disparity of right or left eye by using polarizing filter.</td><td colspan="3">1. Show cross phoria test type to a patient.
2. Let a patient wear Red/Green glasses (right eye = red filter, left eye = green filter).
The patient sees « » mark in a right eye and « » mark in a left eye on cross phoria test type. The binocular condition would be ideal, if the patient could see « ». mark.
3. Judge a patient's binocular function as below, while asking him how the type is seen.</td></tr>
<tr><td>Patient's visual status</td><td>Fixation disparity</td><td>Method</td></tr>
<tr><td> </td><td>ⓐ Esodisparity</td><td>Add B.O prism until being no deviation.</td></tr>
<tr><td> </td><td>ⓑ Exodisparity</td><td>Add B.I prism until being no deviation.</td></tr>
<tr><td> </td><td>ⓒ Left eye's hyperdisparity</td><td>Add B.U in a right eye and B.D in a left eye until being no deviation.</td></tr>
<tr><td> </td><td>ⓓ Right eye's hyperdisparity</td><td>Add B.U in a left eye and B.D prism in a right eye until being no deviation.</td></tr>
</table>

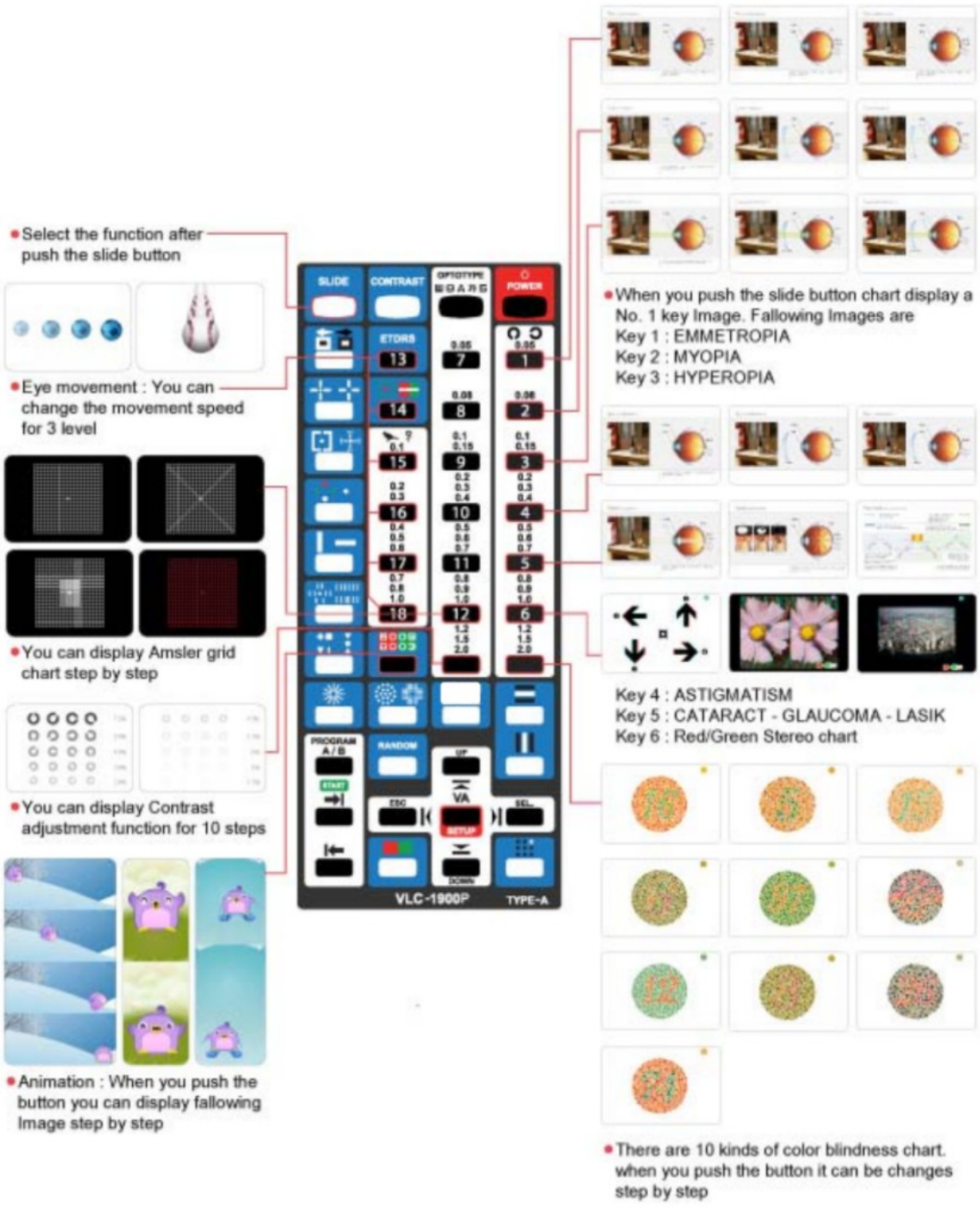
<table>
<tr><th>DIVISION</th><th>DESCRIPTION</th><th>TEST METHOD</th></tr>
<tr><td rowspan="5">Schober's test - (Decussation circle)</td><td rowspan="5">The test is for measuring vertical/horizontal phoria of right or left eye by using Red/Green filter.</td><td colspan="3">1. Show Schober's test type to a patient.
2. Let a patient wear Red/Green glasses (right eye = red filter, left eye = green filter). The patient sees « ◎ » ”mark in a right eye and « ✚ » mark in a left eye on Schober's test type. The binocular condition would be ideal, if the patient could see « ⊕ » mark.
3. Judge a patient's binocular function as below, while asking him how the type is seen.</td></tr>
<tr><td>Patient's visual status</td><td>Fixation disparity</td><td>Method</td></tr>
<tr><td> </td><td>ⓐ Esophoria</td><td>Add B.O prism until being no deviation.</td></tr>
<tr><td> </td><td>ⓑ Exophoria</td><td>Add B.I prism until being no deviation.</td></tr>
<tr><td> </td><td>ⓒ Right eye's hypophoria / Left eye's hyperphoria</td><td>Add B.U in a right eye and B.D in a left eye until being no deviation.</td></tr>
<tr><td> </td><td>ⓓ Right eye's hyperphoria / Left eye's hypophoria</td><td>Add B.U in a left eye and B.D prism in a right eye until being no deviation.</td></tr>
</table>

VIII. Remote control function

1. General function



2. SLIDE FUNCTION



1. Additional function can be selected after slide button press.
2. Charts can be changed for quality improvement without notice.

IX. How to recharge a remote control

Remote control can be rechargeable by the USB adapter.

X. Upgrading a CSPOLA600 / CSPOLA600C system

1 Insert the USB upgrade key.

2 Power up the unit.

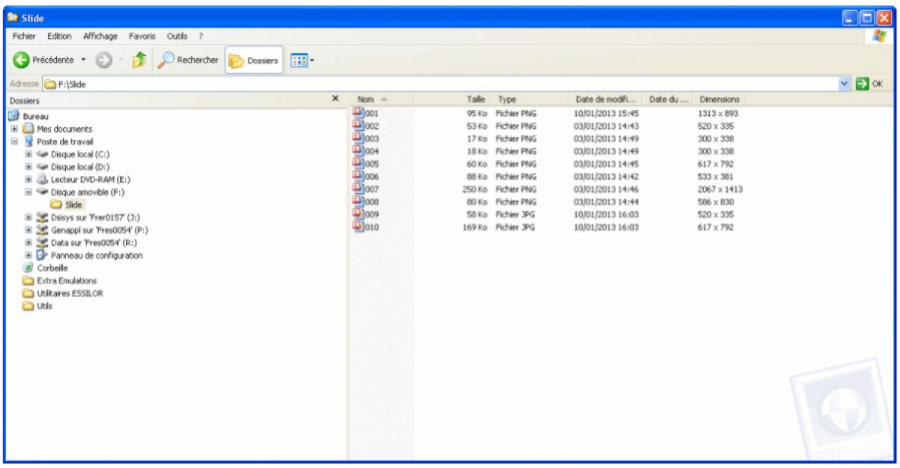
> It will be upgraded automatically.

How to use USB slide mode:

1 Create a folder on the USB key.

2 Name the folder "Slide".

3 Save the images you want in JPEG or PNG format.



4 Insert the USB key into the CSPOLA600 / CSPOLA600C.

> Auto slide will start after 4 minutes (using the images saved in the “Slide” folder) if no key is pressed on the remote control.

Please check that "Engineer" mode has been selected before using the USB slide mode.

If "Auto slide" configuration is off, "Slide" mode will not be activated.

XI. SPECIFICATIONS

LCD type	24 Inch Wuxga TFT LCD / optical polarizing glass type
Resolution	1920 x 1080 pixels
Chart window size	(H) 298.89 x (W) 531.36 mm
Brightness	Max 300 cd / m
Chart	Snellen, Landolt, English, Korean, Russian, Japanese, Numeral, Children Mask (Horizontal, Vertical, Single Optotype) Special chart (Separate polarization), Amsler grid, Color Blindness, Animation, etc.
View distance	1.5 m ~ 6 m (0.25 or 0.5m step adjustment)
Memory card	IDE type Flash Disk Module 4G
Power supply	100-240V ~ 50-60Hz 1,5A (1,5A-0,7A)
Product	12V ⎓ 5,0A
Communication	• Cable: RS 232 Communication • Wireless: IRDA Communication
Dimension / Weight	(W) 621 x (H) 428 x (D) 76 mm / 12 Kg
Dimension / Weight (remote control)	(W) 69.5 x (H) 235.5 x (D) 26 mm / 200 g
Standard accessories	Remote Control, Wall Mounting Bracket, Desk-top Stand and etc.
Optional accessories	Floor Stand, Red/Green Glasses, Polarizing Glasses

XII. Component list

1. Standard accessories

- Main body (LCD chart)
- Remote control
- Wall mounting bracket
- Power adapter
- Power supply ref BPM060S12F25)
- USB adapter for remote control recharge
- USB cable for remoter control
- Power cable
- User manual

XIII. Service information

If there are any problems with the product, please follow the below steps.

1 Turn off the power.

2 Remove the power cable connected to the equipment.

3 Connect the power adapter to the equipment and turn on the power.

4 Check that the equipment operates properly with the remote control.

5 If the equipment does not operate properly, carry out the following steps:

- Check the model name and serial number of the equipment and contact the distributor from which you purchased the equipment.
- If you cannot contact the distributor, please contact us at the address below.

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