Should you have any further questions, please contact your HAAG-STREIT representative at:
http://www.haag-streit.com/contact/contact-your-distributor.html

HAAG-STREIT DIAGNOSTICS

PRODUCTS CERTIFIED FOR BOTH THE U.S AND CANADIAN MARKETS, TO THE APPLICABLE U.S. AND CANADIAN STANDARDS

Certified Quality Management System
EN ISO 13485
Reg. Nr. 11956

CE
1250

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HAAG-STREIT DIAGNOSTICS

Tradition and Innovation

INSTRUCTIONS FOR USE
Perimeter
OCTOPUS® 300

1500.1802144.02100
10. Edition / 2013-06

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INTRODUCTION

We thank you for choosing a HAAG-STREIT appliance. Provided you comply carefully with the regulations in these instructions for use, we can guarantee the reliable and unproblematic use of our product.

PURPOSE OF USE

The Octopus 300 perimeter is designed for the examination, analysis and documentation of the field of sight, especially the light difference sensitivity and other functions of the human eye.

GENERAL INFORMATION

WARNING!

For perimetry no contraindications are known. Therefore there is no need for related measures.

WARNING!

Read the instructions for use carefully before commissioning the Octopus 300. They contain important information concerning the safety of the user and patient.

NOTE!

Federal law restricts this device to sale by or on the order of a physician or practitioner.

Notes

Notes

CONTENTS

	electromagnetic environment after the installation of high frequency stationary transmitters, an examination of the location is to be recommended. When the measured field strength at the location of an Octopus 300 exceeds the above compatibility level, then the normal operating conditions of the Octopus 300 at that particular location will have to be more closely examined. If unusual power emission characteristics are observed, then it may be necessary to take additional measures, e.g. the reorientation or relocation or conversion of the Octopus 300.
b)	The field strength is lower than 3 V/m throughout a frequency band from 150 kHz – 80 MHz
c)	Possible shorter distances outside ISM bands are not considered to have a better applicability.

Table 4: Recommended separation distances (not life-support equipment)

Recommended separation distances between portable and mobile. RF communications equipment and the Octopus 300			
The Octopus 300 is intended for use in the electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the Octopus 300 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Octopus 300 as recommended as below, according to the maximum output power of the communications equipment.			
Rated maximum output power of transmitter [W]	**Separation distance according to frequency of transmitter [m]**		
	150 kHz – 80 MHz $D = 1.2\sqrt{P}$	**80 MHz – 800 MHz** $D = 1.2\sqrt{P}$	**800 MHz – 2.5 MHz** $D = 7.7\sqrt{P}$
0.01	0.12	0.12	0.77
0.1	0.38	0.38	2.5
1	1.2	1.2	7.7
10	3.8	3.8	25
100	12	12	77
For transmitters rated at a maximum output power not listed above, the recommended separation distance D in meters [m] can be estimated using the equation applicable to the transmitter, where P is the maximum output power rating of the transmitter in watts [W] according to the transmitter manufacturer.			
NOTE 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.			
NOTE 2: These guidelines may not be valid for all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			
NOTE 3: An addition factor of 10/3 is used in calculating the recommended separation distance to decrease the likelihood that mobile/portable communications equipment could cause interference if it is inadvertently brought into patient areas.			

Table 2: Immunity (all devices)

Guidelines and manufacturer's declaration – electromagnetic immunity			
The Octopus 300 is intended for use in the electromagnetic environment specified below. The customer or user of the Octopus 300 should assure that it is used in such an environment.			
Immunity test standard	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment guidance**
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Flooring should be made of wood or concrete, or be covered with ceramic tiles. If the floor is covered with synthetic material, the relative air humidity must be at least 30%.
Electrical fast transient / burst IEC 61000-4-4	±2 kV for power supply lines	±2 kV for power supply lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV line to line ±2 kV line to earth	±1 kV line to line ±2 kV line to earth	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply lines IEC 61000-4-11	< 5% U_T (0.5 cycle) < 40% U_T (5 cycles) < 70% U_T (25 cycle) < 5% U_T for 5 s	< 5% U_T (0.5 cycle) < 40% U_T (5 cycles) < 70% U_T (25 cycle) < 5% U_T for 5 s	Mains power quality should be that of a typical commercial or hospital environment.
NOTE: U_T = Public alternating current supply before the application of the test level.			
Power frequency(50/60 Hz) Magnetic field IEC 61000-4-8	3 A/m	200 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

Table 3: Immunity (not life-support device)

Guidance and manufacturer's declaration – electromagnetic immunity			
The Octopus 300 is intended for use in the electromagnetic environment specified below. The customer or user of the Octopus 300 should assure that it is used in such an environment.			
Electromagnetic environment – guidance			
Portable and mobile RF communications equipment should be used closer to any part of the Octopus 300, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.			
Immunity test standard	**IEC 60601 test level**	**Compliance level**	**Recommended separation distance**
Conducted RF to IEC 61000-4-6	3 V_{rms} 150 kHz – 80 MHz	V1=3 Vrms (estimated value) 150 kHz to 80 MHz	$D = 1.2\sqrt{P}$ 150 kHz – 80 MHz
Radiated RF to IEC 61000-4-3	3 V/m 80 MHz – 800 MHz	E1= 3 V/m 80 MHz to 800 MHz	$D = 1.2\sqrt{P}$ 80 MHz – 800 MHz
Radiated RF to IEC 61000-4-3	3 V/m 0.8 GHz – 2,5 GHz	E2 = 3 V/m 0.8 GHz – 2.5 GHz	$D = 7.7\sqrt{P}$ 0.8 GHz – 2,5 GHz
'P' is the maximum output power rating of the transmitter in Watts 'W' according to the specifications of the transmitter manufacturer and *'D'* as the recommended safety distance in meters 'm'. The field strength of stationary radio transmitters is, according to a test on site, less 'a' than the compatible level 'b' for all frequencies. Interference is possible in the vicinity of appliances bearing the following symbol:			
NOTE 1: at 80 MHz and 800 MHz, the higher frequency range applies.			
NOTE 2: these guidelines may not apply in all situations. Electromagnetic wave propagation is influenced by the absorption and reflection of buildings, objects and people			
a) The field strength of stationary transmitters, such as for example the base stations of radio telephones and public mobile telephone services, amateur radio stations, AM- and FM broadcasting- and television stations, is incapable, in theory of being precisely determined in advance. In order to be able to evaluate an			

Change index

Rev 10	Addendum according to 3rd. Edition EN 60601-1	PGI
Rev 9	Added EMC-supplement (page 49-51)	EF
Rev 8	Removal of CE-mark	OB
Rev 7	Octopus 311 is renamed to Octopus 300. Octopus 301 is discontinued	MM
Rev 6	Attention note to print configuration prior to perform an update (page 16) Environment note according to CE guideline (page 50)	MM

1 SAFETY

FORBIDDEN!

Failure to comply with the instructions can result in material damage and pose a danger to users and patients.

WARNING!

These warnings must absolutely be complied with to guarantee safe operation of the device and to avoid any danger to users and to patients.

NOTE!

Important information: please read carefully.

1.1 Areas of application of the device

The users are ophthalmologists, optometrists, opticians, orthoptists or other trained specialists. The examination is performed in darkened examination rooms.

1.1.1 Patient population

The patient is capable of sitting up straight and keeping his head still. He is physically and mentally able to cooperate well and is mentally competent of following the examination. Patients must be at least 6 years old.

1.2 Ambient conditions

See chapter 11 Technical Data.

1.3 Shipment and unpacking

- Before you unpack the appliance, check whether the packaging shows traces of incorrect handling or damage. If this is the case, notify the transport company that has delivered the goods to you. Unpack the equipment together with a representative of the transport company. Make a report of any damaged parts. This report must be signed by you and by the representative of the transport company.
- Leave the device in the packaging for a few hours before unpacking it (condensation).
- Check the appliance for damage after it is unpacked. Return defective appliances in the appropriate packaging.
- Store packaging material carefully, so that it can be used for possible returns or when moving.

1.4 Installation warnings

FORBIDDEN!

- Never use the device in potentially explosive environments where volatile solvents (alcohol, benzine, etc.) and combustible anesthetics are employed.

WARNING!

- Installation, repairs and modifications may only be performed by trained specialists.
- If a third-party device is connected, this must be done in compliance with the IEC/EN 60601-1 standard.

WARNING!

- A printer used with the device must be connected to the mains via isolation transformer.

NOTE!

- The instrument is to be installed on the height-adjustable table and employed in a dimly lit room in a medical area.
- The use of accessories other than those listed may result in higher emissions or lower interference immunity of the Octopus 300.
- The software must be installed by trained personnel.

B. INFORMATION AND MANUFACTURER'S DECLARATION CONCERNING ELECTROMAGNETIC COMPATIBILITY (EMC)

B.1 General

The Octopus 300 fulfills the requirements on electromagnetic compatibility according to EN 60601-1-2. The instrument is built so that the generation and emission of electromagnetic interference is limited to the extent that other devices are not disturbed in their use in accordance with the regulations and so that it itself has appropriate immunity to electromagnetic interference.

WARNING!

- Electrical medical devices and systems are subject, in terms of EMC, to special measures and must be installed in accordance with the EMC information contained in these instructions for use.
- Portable and mobile HF communication systems may interfere with electrical medical devices.

WARNING!

- Connecting third-party systems to the same extension cable can reduce the system's safety.
- If a third-party device is connected, this must be done in compliance with the IEC/EN 60601-1 standard.

Table 1: Emission

Guidance and manufacturer's declaration – Electromagnetic emissions		
The Octopus 300 is intended for use in the electromagnetic environment specified below. The customer or user of the Octopus 300 should assure that it is used in such an environment.		
Emission test	**Compliance**	**Electromagnetic environment - guidance**
RF Emissions CISPR11	Group 1	The Octopus 300 uses HF energy exclusively for its internal functioning. Therefore, its HF emission are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR11	Class B	The Octopus 300 is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations / flicker IEC 61000-3-3	Complies	

A5. RoHS China

Environment friendly use period (EFUP). The following formula applies for products that can be repaired:

$$EF = \frac{Technical\ service\ life\ \times 125\%}{(Daily\ use) \times 365}$$

125% = Factor for products which can be repaired. Daily use = service use, from field tests Average data: 21,900 patient/year, 10 minutes/patient.

$$Daily\ use = \frac{21900 \times 8.5}{60 \times 365} = 8.5\ hours\ per\ day$$

Technical service life ~ 30,000 hours.

$$EFUP = \frac{30000 \times 125\%}{8.5 \times 365} = 12.1\ years$$

Consequently, the environment friendly use period is approx. **12 years**.

1.5 Operation and environment

WARNING!

- To avoid the risk of suffering an electric shock, this device can only be connected up to the mains with a protective earth.
- The plug, cable and the protective earth of the socket must function perfectly.
- Make sure that the appliance is connected only to power supplies as defined on the type plate. The appliance must be disconnected from the mains by pulling out the plug before any maintenance and cleaning work is performed.

WARNING!

- The doctor or the operator is obliged to inform the patient about the safety instructions concerning him and to ensure that these instructions are complied with.
- The examination of the patient, the use of the device and the interpretation of the results may only be conducted by trained and experienced personnel.
- All users must be appropriately trained and familiarized with the contents of the instructions for use, especially in regard to the safety information contained therein.

WARNING!

- Do not use a defective device or a device that displayed an error message.
- Call service department or your distributor and wait for repair.

WARNING!

- Please note that the light emission of the two IR-LEDs built into the correction lens holder is not visible for the human eye.
- Wavelength at peak emission = 880nm; spectral bandwidth at 50% of I_{max} = 80nm.

NOTE!

- The Octopus 300 may only be operated by qualified and trained personnel. The owner is responsible for their training.
- The present appliance may be used only for the purpose described in these instructions for use.

NOTE!

- Keep these instructions for use in a place where they are accessible at all times to those working with the device. Warranty claims can only be made if the instructions in these instructions for use are complied with.
- Always remove the dust cover before switching the appliance on. The device may otherwise become damaged due to overheating. Similarly, make sure that the appliance is switched off before it is covered.
- Only original spare parts and original accessories may be used for repairs. The use of accessories other than those listed may result in higher emissions or lower interference immunity of the Octopus 300.
- Turn the system off if it will not be used for an extended period of time.

1.6 Disinfection

NOTE!

- For information on cleaning and disinfection, please refer to the 'Maintenance' section.

1.7 Warranty and product liability

- The product should be treated as described in the “Safety” section. Improper handling can damage the product. This would void all guarantee claims.
- Continued use of a product damaged by incorrect handling may lead to personal injury. In this case, the manufacturer accepts no liability.

1.8 Symbols

	Read the instructions for use attentively
	Product classification type B. Device includes type B applied parts, namely patient response button
	RoHS China
	Manufacturer
	Year of production

	General warning: Read the accompanying documentation
	Disposal instructions. See “Disposal” section
	Test symbol of CSA with approval for USA
	Protective earth connection

In addition to other entry possibilities the following symbols are used for operating the perimeter:

Main Monitor Screen

	Examination preparing and performing
	Analysis of examination results
	Configuration, Setup

Error, Messages

	*Messages, information*
	Error messages

A. APPENDIX

A.1 Accessories /spare parts

Component	Type	HS art. No.	Note
Perimeter	Octopus 300	1805000	1x
Compact table	CT 01	1802281	See separate IFU*
Instrument table	IT 01	7220034	See separate IFU*
Instructions for use	Octopus 300	1802144	1x
Patient response button	Octopus 300	1802032	1x
Touch pen		1802303	3x
Dust cover		1802304	1x
Ocular cover		1800339	1x
Eye patch set		1802349	2x/set
Fuse T3.15 A / 250 V		1801326	1x
Allen wrench 2.5mm		1802338	1x
Screwdriver		1802345	1x
USB printer cable		1802347	1x

*IFU=Instructions for use

A2. Legal regulations

- HAAG-STREIT operates a quality management system in accordance with EN ISO 13485. The device has been developed and constructed taking the standards listed in the 'EMC' section into account.
- In accordance with Appendix IX of Directive 93/42/EEC, the Octopus 300 is a Class IIa device. By affixing the CE mark we confirm that our device complies with the applicable standards and directives.
- You can request a copy of the declaration of conformity for the appliance from HAAG-STREIT at any time.

A3. Classification

Standard EN 60601-1:	Perimeter Octopus 300 acc. to protection class I
Applied part:	Type B
CE Directive 93/42/EEC	Class IIa
Standard EN 62471	Exempt group

A4. Disposal

Electrical and electronic devices must be disposed of separately from domestic refuse! This appliance was made available for sale after the 13th August 2005.
For correct disposal, please contact your HAAG-STREIT representative. This guarantees that no hazardous substances enter the environment and that valuable raw materials are recycled.

A5. Standards

EN 60601-1	EN ISO 12866
EN 60601-1-2	EN ISO 14971
EN ISO 15004-1	ISO 9022
EN 62471	EN ISO 10993

12 CARE AND MAINTENANCE

WARNING!

- Housing sections of the perimeter may only be removed by trained persons.
- Danger of an electrical shock! Before the housing section is removed, the instrument must be disconnected from the power by detaching the power cord.
- Repairs may only be made by trained and authorized technicians. Through improper repairs considerable danger for patients and operators can arise.
- If a part must be replaced, only original parts as supplied by HAAG-STREIT or your representative may be installed.
- Guarantee coverage will be denied if instructions in the Instruction for Use are ignored.

12.1 Maintenance

To ensure long-term safe and error-free functioning, we recommend having an authorized professional check the Octopus 300 every two years. Further information and the corresponding technical documentation for this are available from HAAG-STREIT or your local representative.

12.2 Cleaning

Occasional dusting with a soft cloth is sufficient. Stubborn dust particles can be removed with a soft cloth dampened with water or alcohol. Fingerprints and dust on the monitor screen can be removed using a soft, moist cloth.

NOTE!

- Do not allow the appliance to become wet and do not use solvents or abrasive cleaning products under any circumstances.

A dust cover is included with the accessories of the Octopus 300. Cover the instrument when the room is cleaned or when it will not be used for a longer time.

NOTE!

- The appliance must not be switched on when covered (heat build-up, fire hazard).

12.2.1 Applied parts

Applied parts such as the eye patch, patient response button, chin rest and forehead rest as well as other parts such as turning knob are made of plastics which are easy to clean.

NOTE!

- To comply with general hygiene requirements and prevent the transmission of infections, these application parts should be disinfected prior to every examination (e.g., with 70% isopropyl alcohol).

12.2.2 Ocular

Finger prints and dust can be removed with a moist soft cloth.

12.3 Light Sources

In contrast to other perimeters in the Octopus 300 LEDs are employed as light sources for the background illumination and the stimulus. These almost never burn out. Should it ever prove necessary to replace one of the LEDs, please contact the customer service of your representative.

Examination


Female patient


Male patient


Delete all entered items, set examination parameters to standard values


Sort patient file according to name or examination date


Select parameter


Scroll patient file upwards or downwards


Select all examinations


Remove selection


Switch to monitoring examination progress


Switch to monitoring patient eye


Horizontal fine positioning


Vertical fine positioning

Data Analysis


Display the next selected examination (page forward)


Display the previously selected examination (page backwards)


Sort examination file according to name or examination date


Scroll examination file upwards or downwards


Print


Store changes

Setup


Select parameter


Store selected parameter


Back to previous screen


Back to main screen

2 THE INSTRUMENT

2.1 Perimeter Octopus 300

The Octopus 300 is a direct projection perimeter for examinations of the central visual field (30°). It is a stand-alone system, which means, the examination and control units are integrated into the instrument.

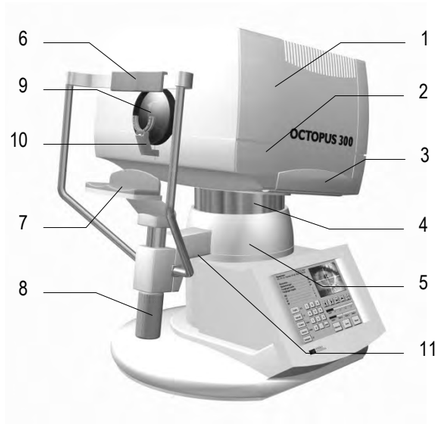


Figure 2-1

1 Optical unit with upper housing
2 Lower housing (left and right)
3 Grip locations (left and right)
4 Rotation and height adjustable instrument column for fine positioning
5 Headrest with
  6 Forehead rest with integrated sensors (applied part)
  7 Chin rest (applied part)
  8 Turning knob for chin rest positioning (rough positioning)
9 Ocular
10 Trial lens holder with IR eye illumination
11 Connector for patient response button. The patient response button is an applied part.

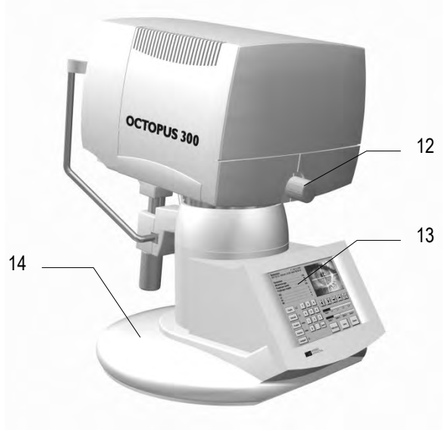


Figure 2-2

12 Turning knob for image focusing
13 Operating unit with LCD monitor and Touch module
14 Instrument base with Connector panel and Power supply

Figure 2-3

15 Connector panel with
  16 Power switch
  17 Power connector
  18 Printer connector (USB)
  19 Serial interface (RS 232)
  20 Ethernet connector
  21 Ethernet control lights
  22 Contrast LCD monitor

11 TECHNICAL DATA

11.1 OCTOPUS 300

Type Designation:	**Octopus 300**
Power requirements:	100 - 240 V AC, 50 / 60 Hz
Power consumption:	70 VA
Fuses:	2 x T3.15 AH 250 V
Measurements (W x L x H):	450 x 530 x 560 mm
Footprint:	0.20 m² (450 x 450 mm)
Weight:	24 kg
Shipping size:	500 x 580 x 660 mm
Shipping weight:	35 kg
Transport:	Temperature from -40°C to +70°C Air pressure from 500 hPa to 1060 hPa Relative humidity from 10% to 95%
Storage:	Temperature from -10°C to +55°C Air pressure from 700 hPa to 1060 hPa Relative humidity from 10% to 95%
Operation:	Temperature from +10°C to +35°C Air pressure from 800 hPa to 1060 hPa Relative humidity from 30% to 90%
Application height:	< 2,000 m above sea level
Operation principle:	Direct projection perimeter
Examination principle:	Bracketing procedure
patient positioning:	Adjustable headrest
Fixation monitoring:	Permanent video monitoring
Eccentricity:	30°
Stimulus range:	0 ... 40 dB
Accuracy:	1dB
Max. stimulus intensity:	1592 cd/m² (5000 asb)
Stimulus color (I):	yellow (590 nm)
Stimulus color (II):	blue (440 nm)
Stimulus size:	Goldmann III, V
Stimulus duration:	100 ms, 200 ms
Stimulus interval:	adaptive, fixed 1.5 ... 4 sec
Background intensity (I):	10 cd/m² (31.4 asb)
Background color (I):	white (LED)
Background intensity (II):	100 cd/m², (314 asb)
Background color (II):	yellow (>530 nm)
Interfaces:	RS232, Ethernet, USB (Printer)
Display device:	Color LCD (640 x 480 pixels)
Data input:	Resistive Touch module

11.2 Infrared Illumination

Light source:	LED
Wavelength:	880nm
Angle of radiation	±20°

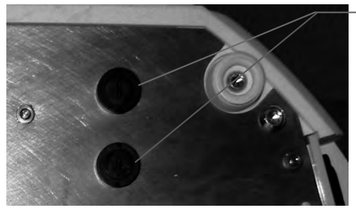
10 SOFTWARE UPDATES

The software update for flash versions 3.05 and higher can be done using a serial cable and the software available on **http://www.haag-streit.com/products/perimetry/octopusr-900/software.html**

. The manual explaining the update procedure can also be downloaded from the website.

NOTE!

Prior to any software update you need to printout the personal settings for future reference: Therefore go to 'Setup' – 'Diagnostic' – 'Printer/Protocols' – 'Actual setup' and print the 4 page protocol.



23 Two Fuses 3,15 AH / 250 V

Figure 2-4

2.1.1 Optical Unit

HAAG-STREIT is the only company which offers perimeters with a direct projection system (Octopus 300 / 301 / 311 / 1-2-3). The stimuli are projected directly into the patient's eye via the optical unit, which replaces the cupola. This technique does not require a darkened room for examinations.

2.1.2 Headrest

A slightly tilted headrest permits the patient to maintain a comfortable posture during the examination. Sensors in the forehead rest provide information about the correct position of the patient's head.

2.1.3 Trial Lens holder

If necessary, trial lenses can be used during the entire duration of the examination. The stimulus is seen at infinity and thus only a correction for distance is required. The trial lens holder can be swung forwards approximately 25° for changing the trial lens in comfort.

2.1.4 Housing

The optical unit and the electronics are protected by a housing with three sections. The optical unit and the electronics of the Octopus 300 are accessible after the upper section of the housing has been removed (4 screws).

WARNING!

- Housing parts may only be removed by trained and authorized technicians.
- Danger of an electrical shock! Before the housing section is removed, the instrument must be disconnected from the power by detaching the power cord.

2.1.5 Fuses

Electrical fuses are located on the bottom of the instrument base plate. For replacing the fuses tilt the device on a firm surface to the side (see *Figure 2-4*).

Type: Two Fuses 3,15 AH / 250 V

WARNING!

- Danger of an electrical shock! Before replacing the fuses, the instrument must be disconnected from the power by detaching the power cord.

2.1.6 Operating Unit

The operation of the instrument takes place in clear text via the Touch Screen. Information is made available via a color LCD monitor. The contrast of the display can be adjusted using the screwdriver contained in the accessories (see position 22 in *Figure 2-4*).

Operation and data entry occurs by touching the data entry module with the finger or with the touch pen which is included in the accessories. When alphanumeric entries are requested, a keyboard is shown in the lower half of the display.

WARNING!

- In order to protect the module surface, **do not employ a pointed object** (ball point pen, pencil, etc.) for entering the data.

2.1.7 Patient Response Button

The patient response button is connected on the underside of the headrest holder (RJ11 connector).

2.1.8 External Connections

Connection possibilities for a printer (USB interface) and for a PC (RS 232 and Ethernet interface) are provided on the connector panel. All connections are electrically isolated and have a dielectric strength of 4 kV according to EN 60601-1.

2.1.9 Light Sources

LEDs are built in for background illumination, fixation targets and stimulus. LEDs produce no waste heat and thus no active cooling is required.

2.1.10 Light Intensities

The light intensity of the stimulus and background are measured with independent photo sensors and are calibrated to their preset reference values every time the perimeter is switched on.

2.1.11 Stimulus

The duration and brightness of the stimuli are controlled electronically. A mechanical shutter and optical attenuation elements are unnecessary.

2.1.12 Fixation Monitoring

The eye of the patient being examined is illuminated with IR LEDs, recorded using a CCD camera and displayed on the LCD monitor. The built in automatic patient monitoring guarantees the reliability of the examination results. The fine positioning of the examined eye takes place via a motorized fine adjustment of the optical unit.

2.1.13 Examination Data

The built in data storage offers room for 48 examinations. Examination results can be shown on the built in LCD monitor, issued on the printer connected to the USB interface and / or transmitted over the serial interface to a PC.

2.2 Instrument Transportation

Transport the instrument over large distances in the original packing. For short distances the instrument can be lifted using the two lower housing sides (see *Figure 2-1)* Two ribbed grips are provided on the left and right sides which prevent from slipping sideways.

Forbidden!

- Do not use the forehead rest of the perimeter as a carrying handle. This plastic part is not adequate for the weight and can be thus broken.

2.3 Installation

2.3.1 Instrument Table

The instrument table is delivered in a separate package. Utilize the instructions included with the table to put the table together and take care to select the correct voltage before connecting the power cord.

2.3.2 Octopus 300

Handle the instrument using both lower housing halves to lift it out of the packing. Two ribbed grips hinder sideways slipping.

Forbidden!

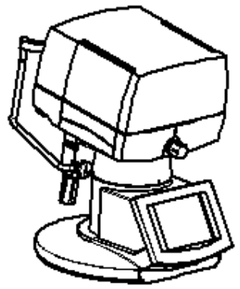
- Do not use the forehead rest of the perimeter as a carrying handle. This plastic part is not adequate for the weight and can be thus broken.

Since the Octopus 300 works without a cupola, a fully darkened room is not required. In order, though, to make the examination conditions pleasant for the patient and for obtaining reliable results, the instrument is to be placed in the room so that no direct light falls on the instrument or the patient.

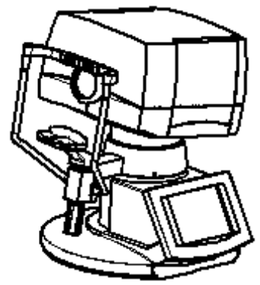
The positioning between the patient and the operator or the operating panel can be so chosen that the room conditions are optimally used.

Error no.	Error text	Required action
240	Examinations lost	Contact service technician
241	Sensor board connection	Contact service technician
242	Interface board connection	Contact service technician
243	Fixation board connection	Contact service technician
244	Limit switch connection	Contact service technician
245	Battery buffer cleared	Contact service technician
246	Mainboard does not support B/Y	Contact service technician
247	Background does not support B/Y	Contact service technician
251	Stimulus size relation	Contact service technician
252	Stimulus DAC error	Contact service technician
253	Background DAC error	Contact service technician
256	Steps lost in x direction	Contact service technician
257	Steps lost in y direction	Contact service technician
258	Steps lost in x and y direction	Contact service technician
261	Data reception failed	Contact service technician
262	Data reception incomplete	Contact service technician
263	Wrong character	Contact service technician
264	RTS/CTS connection missing	Check serial cable or contact service technician
265	Test connector missing	Insert test connector during ‘communication test’
266	Ethernet test failed	Check Ethernet connection or contact service technician
267	Ethernet test failed	Check Ethernet connection or contact service technician
268	Ethernet test failed	Check Ethernet connection or contact service technician
269	Ethernet test failed	Check Ethernet connection or contact service technician
271	Stimulus size	Contact service technician
272	Stimulus size	Contact service technician
273	Stimulus size	Contact service technician
300	Internal printer package error	Contact service technician
301	Printer not supported	Contact service technician
302	No printer selected	Choose a printer
303	Resolution not supported	Contact service technician
304	Illegal paper size	Check printer or contact service technician
305	Required cartridge not installed	Check printer or contact service technician
306	Function not supported	n/a
307	Quality/duplexer not supported	n/a
308	General printer error	Check printer or contact service technician
309	Add paper and press resume	Add paper and press resume
310	Paper jam	Remove paper and restart
311	Print job canceled by user	n/a
316	Printer is offline	Switch on printer
317	Printer is busy	n/a
318	Close printer cover	Close printer cover
330	USB timeout or no cable	Check USB cable or contact service technician
331	Unknown USB device	Check printer or contact service technician
333	Internal USB package error	Contact service technician
451	Data reset - check time	Verify time settings or contact service technician
452	Examination buffer cleared	n/a
453	Setup set to defaults	n/a
454	Setup modified by new software	n/a

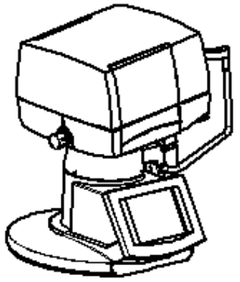
Error no.	Error text	Required action
159	No user parameters	Contact service technician
160	Examination parameter out of range	Contact service technician
162	No background light	Contact service technician
163	No light on BG sensor	Contact service technician
164	No light on S sensor	Contact service technician
165	Stimulus intensity recheck	Contact service technician
166	Background intensity recheck	Contact service technician
167	Reference position lost	Contact service technician
168	Wrong stimulus positions	Contact service technician
170	No B/Y parameters	Contact service technician
171	Stimulus intensity too low	Contact service technician
172	Background intensity too low	Contact service technician
173	0dB stimulus adjustment range	Contact service technician
174	20dB stimulus adjustment range	Contact service technician
175	Background adjustment range	Contact service technician
176	0dB stimulus out of tolerance	Contact service technician
177	20dB stimulus out of tolerance	Contact service technician
178	Background out of tolerance	Contact service technician
179	0dB stimulus adjustment timeout	Contact service technician
180	Too bright for light adjustment	Make room dimmer or contact service technician
181	Too bright for position recheck	Make room dimmer or contact service technician
182	Stimulus projector timeout	Contact service technician
183	Limit switch(es) not reached	Contact service technician
184	Limit switch(es) pressed	Contact service technician
185	Limit switch(es) detected	Contact service technician
186	Upper limit switch not reached	Contact service technician
187	Bottom limit switch not reached	Contact service technician
188	Left limit switch not reached	Contact service technician
189	Right limit switch not reached	Contact service technician
190	Upper limit switch pressed	Contact service technician
191	Bottom limit switch pressed	Contact service technician
192	Left limit switch pressed	Contact service technician
193	Right limit switch pressed	Contact service technician
194	Upper limit switch detected	Contact service technician
195	Bottom limit switch detected	Contact service technician
196	Left limit switch detected	Contact service technician
197	Right limit switch detected	Contact service technician
198	20dB stimulus adjustment timeout	Contact service technician
199	Background adjustment timeout	Contact service technician
200	No response from PC	Check connection to PC or contact service technician
201	PC not ready	Check connection to PC or contact service technician
202	Transmission error	Check connection to PC or contact service technician
203	Receiver error	Check connection to PC or contact service technician
215	Ethernet setup not valid	Check connection to PC or contact service technician
216	No response from server	Check connection to PC or contact service technician
217	Ethernet transmission error	Check connection to PC or contact service technician
218	Ethernet receiver error	Check connection to PC or contact service technician
231	Battery low	Battery defective, contact service technician
232	USB power failed	Contact service technician
233	SIM flash checksum	Contact service technician
234	Boot flash checksum	Contact service technician
235	Calibration flash checksum	Contact service technician
236	Memory error	Contact service technician
237	Video RAM error	Contact service technician
238	Battery buffer	Contact service technician
239	Setup parameters lost	After a reset reenter the setup parameters or contact service technician



The patient sits across from the operator

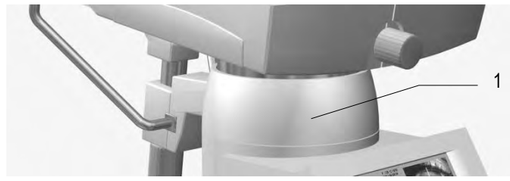


The patient sits on the operator's left



The patient sits on the operator's right

Figure 2-5



1 Headrest holder with 3 Allen screws

Figure 2-6

– Loosen the three Allen head screws roughly 2 turns counterclockwise on the perimeter of the headrest holder (Allen wrench is included with the accessories) and turn the headrest together with the optical unit into the desired position. Tighten the three Allen head screws again. A complete rotation around the column is blocked by a built in limit.
– Place the instrument on the table so that the opening of the table foot and the headrest are in the same direction.
– Connect the patient response button to the connector located on the support of the headrest.

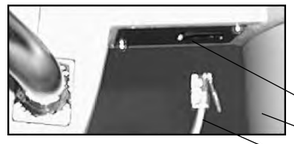


Figure 2-7

The connector housing for the patient response button is accessible from below on the headrest support. The catches on the patient response button connector are oriented in the direction of the instrument column.

Besides the patient response button no other cable should be attached to the RJ11 connector.

– Stick the connector plug so far into the connector housing that the catches audibly click. To remove the patient response button, press the catches in the direction of the headrest and pull out the cable downwards.
– If the examination data are to be transmitted to a PC, connect the Octopus 300 and the PC with the serial connection cable or integrate the perimeter into your Local Area Network.
– Plug the power cord in. The built in power unit works with the voltage specified in chapter 11 *'Technical Data'*. A change of voltage on the instrument is not required. If an instrument table was delivered with the unit, the Octopus 300 can be connected using the power socket in the electronics box of the instrument table.

3 OPERATION

3.1 Switch on the device

Switch on the Octopus 300 with the power switch (see Figure 2-3).

3.2 Switch on the device

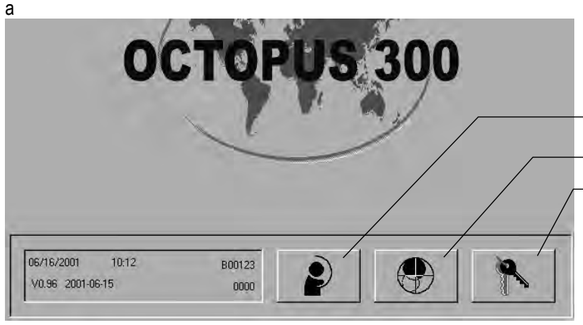
No specific shutdown procedure must follow. Switch off the Octopus 300 with the power Switch (see Figure 2-3)

3.3 General functions

The operation of the instrument occurs with clear text; elements are used which are known from the PC world such as:

- Dialog box → Dialog window, divided into logical items
- Entry boxes → Enter information using the keyboard or change by incrementing or decrementing
- List boxes → Select parameter from a displayed list
- Buttons (on/off/toggle) → Options activated by pressing a button
- Buttons (with symbols) → Initiate functions

a



After switching on the perimeter the main screen appears on the monitor with the symbols for

Prepare and perform an examination

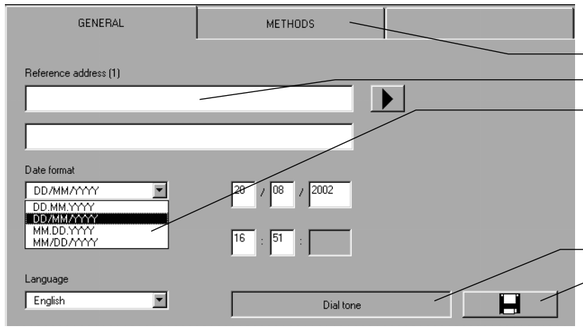
Analyze examination results

Settings, setup

and an information window with

- Current date and time
- Serial no. of the instrument
- Software version, link date
- Accessible options

Figure 3-1



Tab
Entry box
List box
Buttons (on/off/toggle)
Button

Figure 3-2 Dialog box

9 SYSTEM MESSAGES / ERRORS

Two kinds of system messages are distinguished:

Messages

- The instrument performs a function which takes a certain amount of time. The message disappears automatically when the function has completed its action.
- The instrument is unable to perform a function due to the reason which is shown. The message disappears automatically when the problem has been solved.

Errors

- The instrument is unable to perform a function and the message is deleted by operator response. The problem must be resolved by the operator or, if necessary, by a service technician.

9.1 Messages

Message no.	Message text	Required action
401	Close ocular for adjustment	Close ocular for adjustment
402	Dim room light for examination	Dim room light for examination
403	Dim room light for recheck	Dim room light for recheck
410	Dongle code not accepted	Reenter dongle code or contact your distributor
411	Parameters not accepted	Enter valid parameters
412	Serial number missing	Enter serial number
413	No modification of serial number	n/a
420	Examination buffer full	48 examinations in buffer. Empty the buffer!
421	Calibration buffer full	Contact service technician
430	Function not supported	n/a
901	Parameter adjustment	n/a
902	Parameter recheck	n/a
910	Select other eye	Forehead of patient is not in correct position or select the other eye
911	Patient rests	Patient response. button is being pressed or possibly a bad contact.
912	Position patient correctly	Position patient correctly
913	Set trial lenses if required	Reminder to insert the trial lens if required
914	Patient moved	Patient has moved away from the forehead rest
915	Fixation loss	Patients eye is not centered correctly, check patient position
930 - 931	Command in progress	n/a
960	Incorrect settings, not saved	Settings does not allow to save, check settings
961	Restart to activate Ethernet	Restart to activate Ethernet

9.2 Errors

Error no.	Error text	Required action
1 - 69	General OS error 1 - 69	n/a
70 – 149	General examination error 70 - 149	n/a
150	Position not adjusted yet	Contact service technician
151	No W/W parameters	n/a
152	Brightness not adjusted yet	Contact service technician
153	Stimulus not detected	Contact service technician
154	Stimulus fine adjustment	Contact service technician
155	Stimulus center adjustment	Contact service technician
156	Stimulus not on sensor center	Contact service technician
157	No W/W parameters	Contact service technician
158	DAC control timeout	Contact service technician

b) Touch screen calibration with service function (normal case)

Start calibration screen by pressing SETUP – SERVICE – DIAGNOSTIC – SERVICE/DIAGNOSTIC – TOUCH SCREEN CALIBRATION.

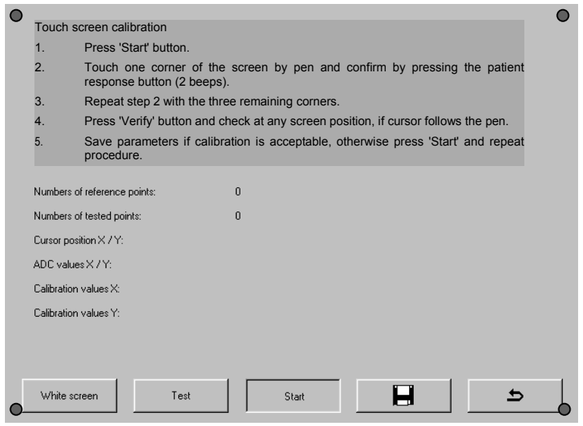


Figure 8-3: Touch screen calibration

Procedure

1) Press 'Start' button.
2) Touch one corner of the screen by pen and confirm by pressing the patient response button (2 beeps).
3) Repeat step 2 with the three remaining corners.

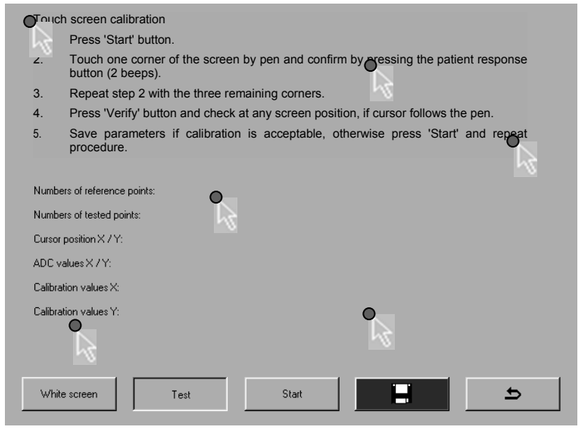
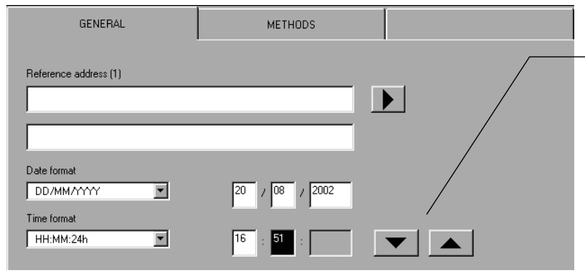


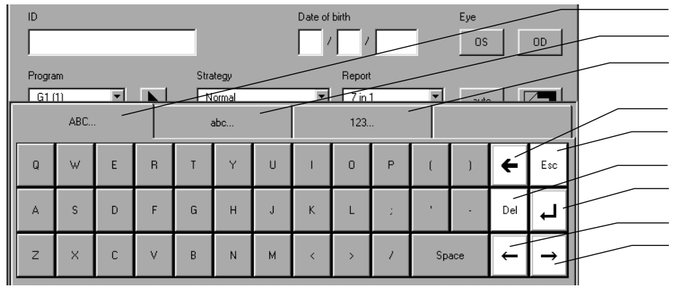
Figure 8-4: Verification of calibration

4) Press 'Verify' button and check at any screen position, if cursor follows the pen.
5) Save parameters if calibration is acceptable, otherwise press 'Start' and repeat procedure.



After an entry box has been activated buttons are presented which can be used to increment or decrement the preset values, or an alphanumeric keyboard is displayed which can be used to enter the required information.

Figure 3-3 Entry fields



Tab with capital letters
Tab with small letters
Tab with numbers and special symbols
Delete character on the cursor's left
Close keyboard
Delete character on the cursor's right
ENTER key
Move cursor left
Move cursor right

Figure 3-4 Keyboard

4 CONFIGURATION, SETUP

In order to perform examinations with the Octopus 300 and analyze the results, only a few items have to be entered or manipulations made when configuration and setup has been correctly carried out. It will prove valuable to study the following chapter in order to work with the instrument efficiently.

Basically

- The options are selected which are shown in the window of a dialog box.
- A function is activated when the associated button is pressed.
- For alphanumeric information, a keyboard is displayed automatically or the values are changed by incrementing or decrementing.
- Before the box is closed the selected changes must be stored.

4.1 General Basic Settings

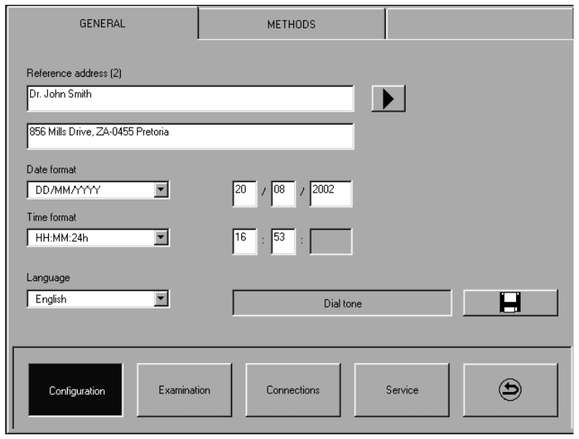


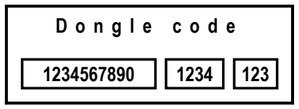
Figure 4-1: Setup – Configuration – General

Basic settings

- Date, date format
- Time, time format
- User language
- Dial tone

Reference address(es)	Address, information on printout	Input fields for up to six addresses or information sequences. The one selected during examination preparation is printed in the printout header. After clicking to the input field the keyboard is automatically displayed. After clicking on ▶ the next input field is presented (save previous input first).
Date format	Sequence of the date entry and display	The entry sequence of the current date and the date of birth of the patient are set with 'Day – Month – Year' or 'Month – Day – Year'.
Actual date	Current date	Setting the current date (sequence according to the 'Date format').
Time format	Display type of the current time and the time of the examination	Specifying whether the current time is to be entered and displayed in 12- or 24-hour mode.
Actual time	Current time	Setting the current time (according to the 'Time format').
Language	User language	5 languages (English, German, French, Italian, and Spanish) are selectable. The selected language is adopted after leaving the setup. Using a software tool on the PC the text in further not implemented user languages can be translated (separate description).

8.1.2 Entering the Dongle Code



The complete dongle code consists of a multi-digit three part series of numbers (see example on the left). Entering the code is done via 'Setup' – 'Service' – 'Dongle' (Figure 8-1). You need to click 'Dongle' while pressing both forehead support sensors.

NOTE!

- For safety reasons the 'Dongle' menu will only become active when the two sensors on the forehead support are pushed in until you clicked on the 'Dongle' button. Then you may release the sensors.
  The additional functions are only made accessible when the dongle code is entered without any mistakes into the instrument it was created for.

8.2 The Results of Code Mistakes

Every dongle code is unique and only valid for a specific instrument. Mistakes made while entering it or the entering of it into the false instrument (false serial no.) have the consequence that only the basic functions are then accessible. Changing to the old code is possible at all times.

8.3 Instrument Information

Figure 8-2: Setup – Service – O300 ID

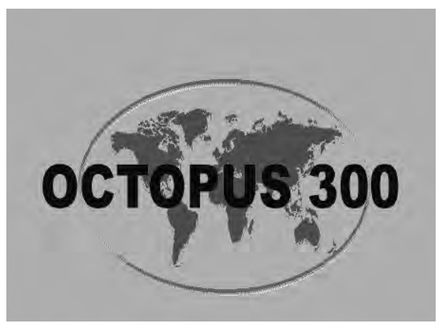
Instrument information

- The complete instrument information can be printed out via 'Setup' – 'Service' – 'O300 ID'.
- The complete Setup information can be printed out via 'Setup' – 'Service' – 'Diagnostic' – 'Printer/Protocols'.

8.4 Touch Screen Calibration

Two ways to calibrate the touch screen are available. It is of course wise to try to carry out calibration by using the built-in service function (refer to section b)). If access to this screen is not possible, start calibration following the procedure in section a).

a) Touch screen calibration with hidden function



Procedure

– Switch perimeter off and on again and wait for the main screen.
– Press patient response button and headrest sensors simultaneously and wait for confirmation (3 beeps).
– Touch one corner of the screen by pen and confirm by pressing the patient response button (2 beeps).
– Repeat this step with the 3 remaining corners.
– Enter service function, repeat calibration and save parameters (refer to section b)).

8 AUXILIARY FUNCTIONS

8.1 Releasing Program Options

Some of the functions of the Octopus 300 are offered as options and are not accessible in the basic version of the software. Basically all the functions are present in the software, but some can only be made accessible with a code. This code is delivered by HAAG-STREIT and is then entered by the customer into the instrument. Information about such additional functions can be obtained directly from HAAG-STREIT or from your representative.

8.1.1 Procedure

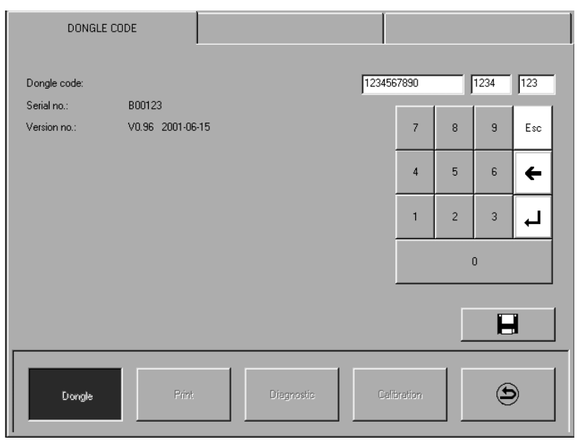


Figure 8-1: Setup – Service – Dongle

Dongle codes

- Read out software master data
  - Actual dongle code
  - Serial no.
  - Software version
- Enter new dongle code. The keyboard is only released, when the serial number of the instrument is stored in the memory.

To print out the complete instrument information see chapter 8.3 *'Instrument Information'*.

Procedure to make additional functions accessible in the perimeter.

NOTE!

- The 'Dongle code' function is only used, when additional program options have been purchased. To avoid free access and faulty manipulations the function is protected. The 'Dongle' button is only released after the two headrest sensors are pressed at the same time.

Customer	– Sends the serial no., software version and the complete dongle code to HAAG-STREIT or the representative and orders the desired supplementary function(s).
HAAG-STREIT	– Based on the serial no. and the present and ordered option(s), the new dongle code is computed and given to the customer.
Customer	– Enters the complete new dongle code into the Octopus 300. ° Open dongle code tab ° Click on 'Dongle code' entry field (numerical keyboard will be displayed) ° Enter complete dongle code into the three entry fields ° Close keyboard with 'Esc' ° Save new dongle code by clicking on Before saving the parameters are verified by the system. A faulty dongle code will not be saved. The message **'Dongle Code not accepted'** is displayed on the screen. Delete wrong code and enter it the correct way.
Octopus 300	– The new additional functions are accessed via the graphical user interface.

Dial tone	Confirmation sound for keyed entries	For activating or deactivating a sound as confirmation when a button is pressed.

Changes must be stored by pressing before leaving the dialog box.

4.2 Presetting for Preparing an Examination

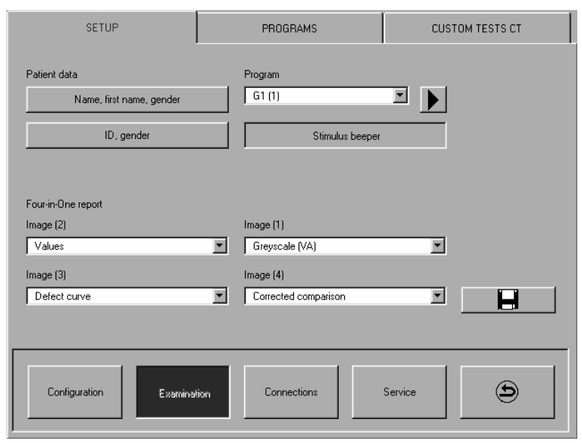
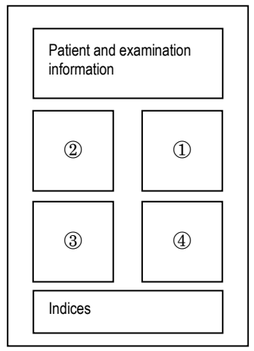


Figure 4-2: Setup – Examination – Setup

Presetting

- Additional patient information when preparing an examination
- Desired examination program
- Layout of the Four-in-One printout

Name, first name, gender	Patient surname, given name and gender	For determining which parameters must be entered for identifying the patient.
ID, gender	Patient ID number and gender	
Every combination of these two buttons is possible.		
Program	Desired examination program	For determining which program should be presented as standard when preparing an examination. Per program three variants (1), (2) and (3) can be selected. Choose the program from the list first and click on in order to change the variant number (the variants are defined in chapter 4.3 *'Defining the Variants of the Standard Examination Program'*).
Stimulus beeper	Sound which accompanies stimulus presentation	For turning the stimulus presentation sound on or off.

Four-in-One report (Option)	Images on the Four-in-One printout 	For specifying where the types of display should be shown on the Four-in-One printout. Every combination of the four selectable images is possible. If the results of a program are printed for which one or more images are not supported, the corresponding fields remain empty.

Changes must be stored by pressing before leaving the dialog box.

4.3 Defining the Variants of the Standard Examination Programs

The G1, 32, M2, ST and LVC examination programs are built into the Octopus 300. For each of these programs three variants (1), (2) and (3) can be defined and stored as buttons P-V1, P-V2 and P-V3.

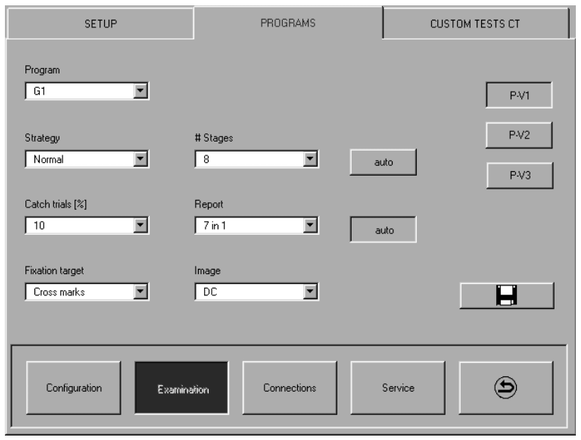


Figure 4-3: Setup – Examination – Programs

Program variants

- Parameters for standard examination programs

Procedure

- Select the examination program from which the variants should be formed, from the 'Program' list box.
- Select the variant which is to be changed by pressing one of the P-V1 ... P-V3 buttons.
- Define the variants by assigning the various parameters.
- Store the parameters.
- Repeat the procedure for all the desired programs and variants.

Strategy (TOP optional)	Program-dependent examination strategy	Assign the selected examination program an examination strategy. The available possibilities depend on the examination program.

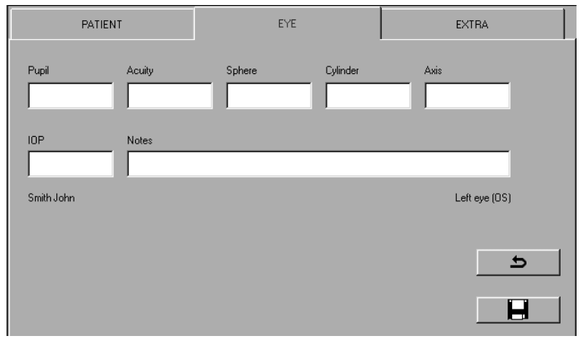


Figure 7-7: Processing – Edit – Change – Eye

Changing eye-related data

- Altering and augmenting eye-related data

Before leaving the dialog box, changes must be stored by pressing .

Changes are not stored if the dialog box is closed by pressing in which case the former values remain unchanged.

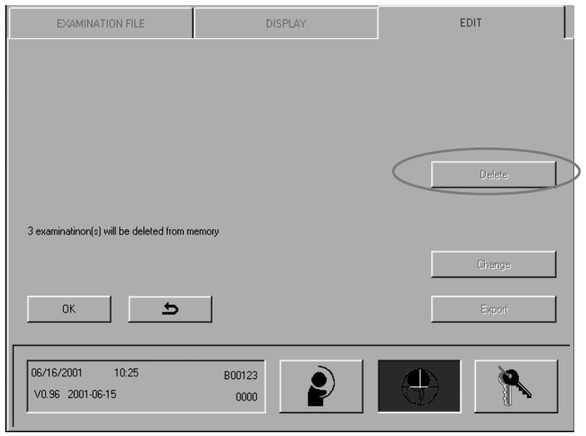


Figure 7-5: Processing – Edit – Delete

Deleting results

- Delete examination results irretrievably from the data memory

Delete	Invoke the 'Delete' function.
OK	Start the deletion process.

The highlighted results will not be deleted when the dialog box is closed by pressing the icon. The data remain unchanged in the Octopus 300 memory.

7.6 Changing Patient Data

Select one examination in the examination file and press on the 'Edit' tab and the 'Change' button. As when preparing an examination there exists a dialog box with personal patient data and a further one with eye-related data.

Corrections are possible for
- personal patient data
- eye-related data

Corrections are not possible for
- program-specific data
- the examined eye

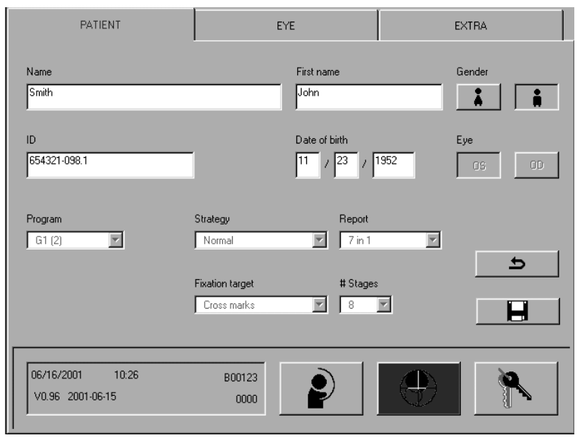


Figure 7-6: Processing – Edit – Change – Patient

Changing patient data

- Altering and augmenting personal patient data

# Stages **auto (# Stages)**	Number of examination stages	Specify the number of examination stages which should be gone through. If the 'auto' button on the side is pressed, the program will end once the stages have been gone through. If it is not pressed, the '# Stages' selection has no meaning.
Catch trials [%]	Number of catch trials in [%]	Set the number of catch trials as a percentage [%] which should be presented during the examination (same number of positive and negative catch trials).
Fixation target	Fixation symbol	Set the fixation target which is displayed for the patient during the examination. If the selected fixation target collides with a test location, another target is displayed during the corresponding stage.
Image	Desired type of display	Select the default display which is to be shown on the monitor. The possibilities depend on the selected examination program (see Table 9-1).
Report **auto (Report)**	Desired printout	Select the default display which is to be printed. The possibilities depend on the selected examination program (see Table 9-1). If the 'auto' button at the side is pressed, the selected printout will be printed automatically at the end of the examination. If the button has not been pressed, the 'Report' selection has no meaning.

Store the definitions by pressing before leaving the dialog box or selecting a further variant.

4.4 Selecting the Perimetry Method

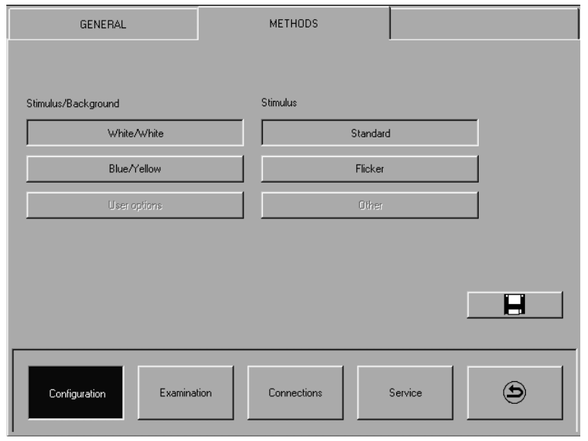


Figure 4-4: Setup – Configuration – Methods

Perimetry methods

- Stimulus and background colors
- Stimulus and perimetry method

Stimulus/Background	Stimulus and background colors	In the Octopus 300 white/white perimetry is used and optional blue/yellow is available and can be selected. Cumstom filters can be inserted.

Stimulus	Perimetry method	In the Octopus 300 standard perimetry is used (normal rectangular stimulus for specified duration) and additional options are available (see separate description).

Changes must be stored by pressing before leaving the dialog box.

4.5 Defining user-defined Tests

In the Octopus 300 five examination programs (CT1-CT5) can be defined by the user and stored (optional in the Octopus 300 Pro).

For programs in which the grid center does not lie at the zero point (x / y = 0 / 0) one must insure that the programs are defined for examining the right eye. The conversion of the test location coordinates takes place then automatically when a left eye is examined.

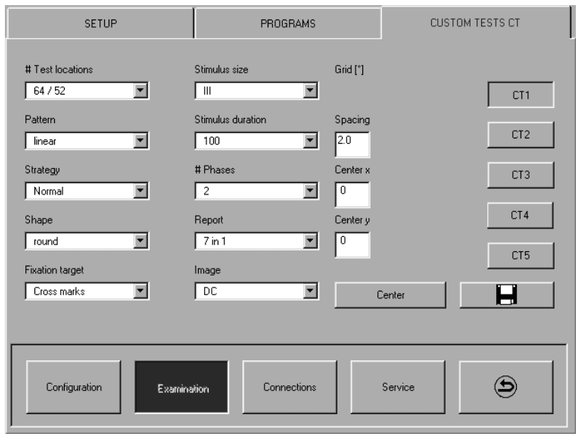


Figure 4-5: Setup – Examination – Custom tests CT

CT Programs

- Parameters for user definable examination programs

Procedure

- Select the CT program which is to be defined by pressing the associated CT1 ... CT5 button.
- Define the program by assigning the various parameters.
  Some parameters depend on each other or on the examination strategy. Not all combinations are thus selectable (see Table 5-1).
- Store the definitions by pressing before leaving the dialog box or choosing a further CT program.

# Test locations	Number of test locations	Specify the number of test locations which are to be examined. The number in front of the slash (/) defines the number for a square test area, the number after the slash (/) the number for a round one.
Pattern	Distribution of the test locations	Distribution of the test locations linearly or non-linearly over the test area.
Shape	Form of the test area	Square or round test area.
Fixation target	Fixation symbol	Set the fixation target to be displayed for the patient during the examination. Test locations which collide with the fixation target, are eliminated from the program.
Strategy (TOP not available)	Examination strategy	Specify the examination strategy which controls the examination process.
# Phases	Number of examination phases	Define the number of phases which are to be gone through.
Stimulus size	Size of the displayed stimuli	Set the stimulus size according to Goldmann III or V.
Stimulus duration	Duration of the displayed stimuli	Set the duration of the individual stimuli.

7.4 Transmitting the Results

The examination results can be transmitted to a PC with the corresponding analysis software for data storage and analysis.

Required are

- Personal Computer
- 'PeriTrend' data storage and analysis software
- Standard Ethernet cable

7.4.1 Preparation

- PC, data transmission and analysis software is installed (the reader is referred to the 'PeriTrend' User Manual for details).
- Connect the serial interface of the PC and the Octopus 300 (connector panel) with the data transmission cable, fasten connector screws or integrate the Octopus 300 into your Local Area Network.
- Setup the parameters of the Octopus 300 correctly (see chapter 4.6 *'Settings for External Connection'*).

Select examination(s) in the examination file and press on the 'Edit' tab and the 'Export' button. For your information the number of selected examinations is shown and the real transmission procedure must be started by pressing 'OK'. Following a successful transmission the results are deleted from the memory. The procedure cannot be rescinded.

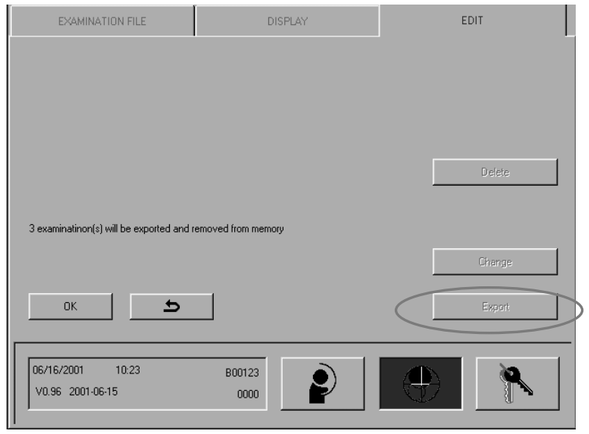


Figure 7-4: Processing – Edit – Export

Transmitting the results

- Transmit examination results to a connected PC and delete them from the memory
- A data storage and analysis software must be present in the PC (e.g. 'PeriTrend')

Export	Invoke the 'Export' function.
OK	Start the transmission and deletion process.

The highlighted results will not be transmitted when the dialog box is closed by pressing the icon. The data remain unchanged in the Octopus 300 memory.

7.5 Deleting Results

Select examination(s) in the examination file and press on the 'Edit' tab and the 'Delete' button. For your information the number of selected examinations is shown and the real deletion procedure must be started by pressing 'OK'. The procedure cannot be rescinded.

The possible images depend on the examination programs which have been performed or the selected examination parameters. Tables 7-1 and 7-2 show the various possibilities.

Program	Image	Report
G1	° Defect curve ° Comparison ° Greyscale (CO) ° Values ° Greyscale (VA) ° Indices	° Comparison ° Greyscale (CO) ° Values ° Greyscale (VA) ° Four-in-One ° Seven-in-One
M2	° Defect curve ° Comparison ° Greyscale (CO) ° Values ° Greyscale (VA) ° Indices	° Comparison ° Greyscale (CO) ° Values ° Greyscale (VA) ° Four-in-One ° Seven-in-One
32	° Defect curve ° Comparison ° Greyscale (CO) ° Values ° Greyscale (VA) ° Indices	° Comparison ° Greyscale (CO) ° Values ° Greyscale (VA) ° Four-in-One ° Seven-in-One
ST	° Symbols/CO ° Symbols/VA	° Symbols/CO ° Symbols/VA
LVC	° Values ° Greyscale (VA)	° Values ° Greyscale (VA)

Table 7-1: Images (Standard programs)

Program	Strategy	Stimulus size	Stimulus duration	Image	Report
CT programs	° Normal	° III	° 100	° Defect curve ° Comparison ° Greyscale (CO) ° Values ° Greyscale (VA) ° Indices	° Comparison ° Greyscale (CO) ° Values ° Greyscale (VA) ° Four-in-One ° Seven-in-One
		° III ° V ° V	° 200 ° 100 ° 200	° Values ° Greyscale (VA)	° Values ° Greyscale (VA)
	° Dynamic	° III	° 100	° Defect curve ° Comparison ° Greyscale (CO) ° Values ° Greyscale (VA) ° Indices	° Comparison ° Greyscale (CO) ° Values ° Greyscale (VA) ° Four-in-One ° Seven-in-One
		° III ° V ° V	° 200 ° 100 ° 200	° Values ° Greyscale (VA)	° Values ° Greyscale (VA)
	° Low Vision	° V ° V	° 200 ° 500	° Values ° Greyscale (VA)	° Values ° Greyscale (VA)
	° 2LT (NS) ° 2LT (DS)	° III	° 100	° Symbols/CO ° Symbols/VA	° Symbols/CO ° Symbols/VA

Table 7-2: Images (CT programs)

Report	Desired printout	Select the default image to be printed out. The possibilities depend on the selected parameters (see Table 7-2).
Image	Desired display	Select the default image which is to be shown on the monitor screen. The possibilities depend on the selected parameters (see Table 7-2).
Spacing	Spacing of the test location grid	Specify the spacing between the individual test locations.
Center x	x coordinate of the test area center	Define the x and y coordinates of the test area center.
Center y	y coordinate of the test area center	
Center	Examine center point of the test area	Specify whether the center point of the test area should be examined or not.

Changes must be stored by pressing before leaving the dialog box.

Strategy	Pattern	Shape	# Test locations	Spacing	Center x	Center y	Center	Stimulus size	Stimulus duration
○ Normal ○ Dynamic	○ linear	○ square ○ round	○ 16/12 ○ 25/21 ○ 36/32 ○ 49/45 ○ 64/52 ○ 81/69 ○ 100/76	○ 0.5 .. 6.0 in steps of 0.1° ○ 2.0	○ 0 .. ±55 in steps of 1°	○ 0 .. ±55 in steps of 1°	○ on ○ off	○ III ○ V	○ 100 ○ 200
	○ non linear	○ round	○ 81/69	○ 0.5 .. 2.6 in steps of 0.1°	○ 0.0	○ 0.0	○ on ○ off	○ III ○ V	○ 100 ○ 200
○ Low Vision	○ linear	○ square ○ round	○ 16/12 ○ 25/21 ○ 36/32 ○ 49/45 ○ 64/52 ○ 81/69 ○ 100/76	○ 0.5 .. 6.0 in steps of 0.1° ○ 2.0	○ 0 .. ±55 in steps of 1°	○ 0 .. ±55 in steps of 1°	○ on ○ off	○ V	○ 200 ○ 500
	○ non linear	○ round	○ 81/69	○ 0.5 .. 2.6 in steps of 0.1°	○ 0.0	○ 0.0	○ on ○ off	○ V	○ 200 ○ 500
○ 2LT (NS) ○ 2LT (DS)	○ linear	○ square ○ round	○ 16/12 ○ 25/21 ○ 36/32 ○ 49/45 ○ 64/52 ○ 81/69 ○ 100/76	○ 0.5 .. 6.0 in steps of 0.1° ○ 2.0	○ 0 .. ±55 in steps of 1°	○ 0 .. ±55 in steps of 1°	○ on ○ off	○ III	○ 100
	○ non linear	○ round	○ 81/69	○ 0.5 .. 2.6 in steps of 0.1°	○ 0.0	○ 0.0	○ on ○ off	○ III	○ 100

Table 5-1: Relationships of the CT Program parameters

7.2 Displaying the Results

Select examination(s) in the examination file and press the 'Display' tab. The type of image which has been defined in setup (see chapter 4.3 *'Defining the Variants of the Standard Examination Program'*) will be displayed on the monitor.

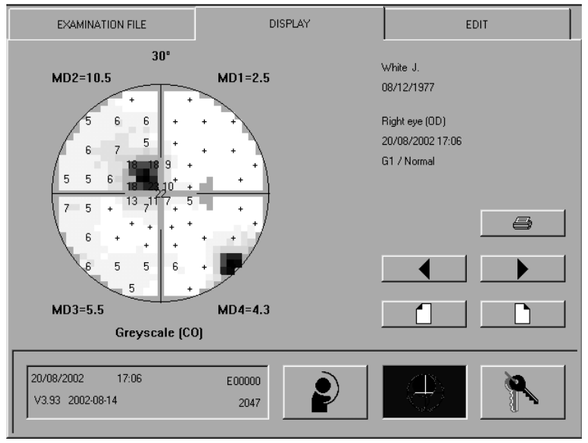


Figure 7-2: Processing – Display

Images on monitor

- Types of images depend on the selected examination program

	Scroll through the various images	Display further image when the selected examination permits multiple images.
	Select previous / next examination	Display image of a further examination when multiple examinations have been selected.
	Activate the 'Printer' menu	Invoke printing. The function is only available when a single examination has been selected.

7.3 Printing the Results

Select one examination in the examination file. Access to the 'Printer' menu is available by pressing the symbol or via the 'Display' tab.

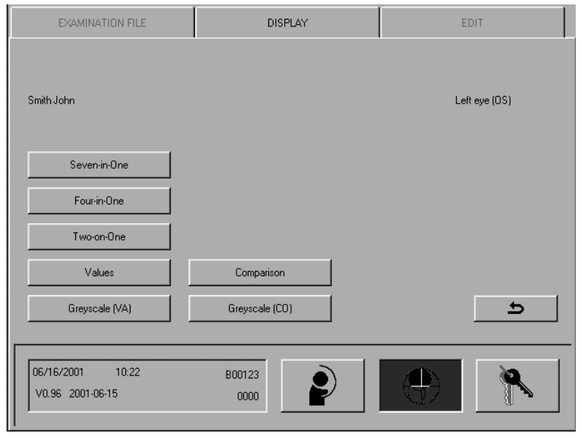


Figure 7-3: Processing – Display – Print

Printing the results

- Direct from the examination file
  or
- After displaying the results on the monitor

7 Analysis of Examination Results

The analysis of the examination results consists of:

- Displaying results on the monitor
- Printing results
- Transmitting results to evaluation software on a PC
- Changing certain data
- Deleting results

The functions are always accessed via the 'Analysis' symbol and the examinations are selected from the examination file.

7.1 Examination File

The desired examinations are selected by clicking on the corresponding line in the examination list. With repeated clicking the selection can be cancelled again. Various functions permit multiple selections.

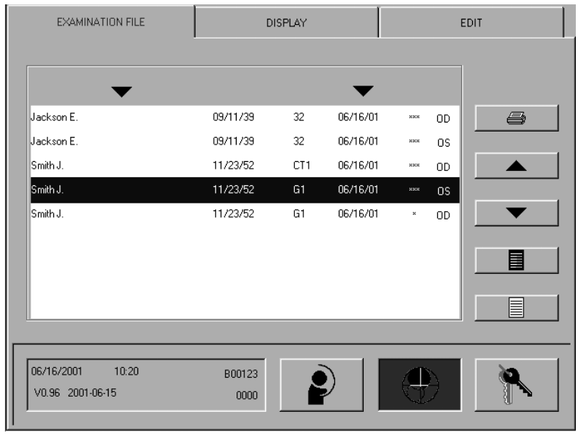


Figure 7-1: Processing – Examination file

Examination file

- List of the completed or interrupted examinations
- Table of contents consisting of
  - Name, ID number
  - Date of birth
  - Examination program
  - Examination date
  - Examined eye
  - Examination status
    (** interrupted)
    (*** completed)

	Sort file	Sort the list according to patient names or examination date in an increasing or decreasing series. Patient names: Click the left button Examination date: Click the right button
	Print results	The 'Print' function is invoked directly without a preceding display of the results on the monitor screen.
	Scroll file forwards / backwards	The examination file can contain a maximum of 48 examinations. Using the two buttons the list can be scrolled forwards or backwards until the desired examination is found.
	Select all examinations	Highlight all the examinations in the examination file.
	Cancel the selection	Cancel the selections in the examination file.

4.6 Settings for External Connections

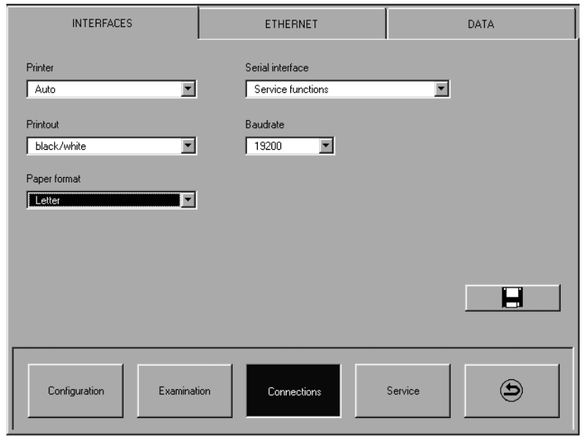


Figure 4-6: Setup – Connections – Interfaces

External connections

- Installed printer
- Printout (color, black/white)
- Paper format
- Transmission parameters

Serial interface / Baudrate	Speed of data transmission	Definition of data transmission speed using the serial interface. All baudrates are set to valid default values. If the baudrate is changed for the Octopus 300 be sure to have the same baudrate in the PC. Procedure: – Select desired parameter in 'Serial interface' – Select speed of data transmission in 'Baudrate' and save changes.
Printer	Selection of the connected printer	Only printers with USB interface can be connected. Normally the connected printer is identified automatically.
Printout	Black/white or color printout	Black/white or color printouts are available. Be aware that color printouts take more time to be processed and printed compared to black/white printouts.
Paper format	Used paper format	The standard paper formats A4 (Europe) and Letter (USA) can be selected.

Changes must be stored by pressing before leaving the dialog box.

4.7 Ethernet Interface Settings

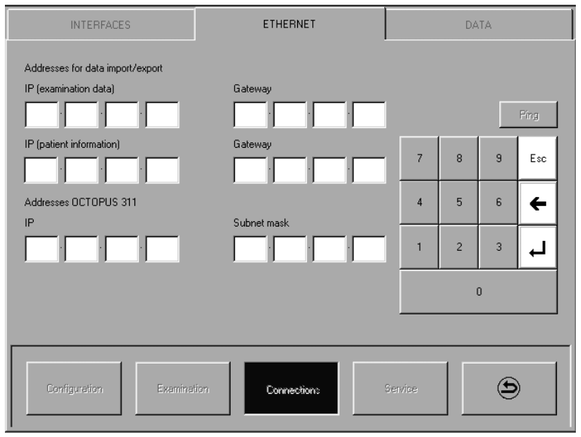


Figure 4-7: Setup – Connections – Ethernet

Ethernet interface settings

- IP addresses of connected PC(s)
- Gateway address(es)
- IP address of Octopus perimeter

In connection with the integration of an Octopus perimeter into a Local Area Network some specific settings and installations have to be carried out on the server and on the Octopus 300 (preferably by an IT specialist). Details are available in a separate description shipped with the required interface board.

IP (examination data)	IP address of LAN server or PC	IP address of the LAN server or a PC integrated in the LAN where the examination data of the Octopus 300 have to be exported.
IP (patient information)	IP address of LAN server or PC	IP address of the LAN server or a PC integrated into the LAN where patient information for examination preparation is available (both addresses may be identical).
Gateway	Gateway IP address	IP address of a Gateway.
IP address Octopus 300	IP address Octopus perimeter	IP address of the Octopus 300 in the Local Area Network.

After definitions are made and the devices are connected to tha LAN the correct communication can be checked by clicking on the 'Ping' button. Correct communication is confirmed by displaying a ☑ sign, if no communication is possible a ☒ sign is displayed.

Changes must be stored by pressing 💾 before leaving the dialog box.

Pupil (automatic) **Pupil* (manual)**	Pupil size of the eye being examined	The pupil diameter can be entered manually or determined by the system. manual: Press the 'Pupil' button and change the starting value by 0.5 mm with each key click. Starting value: – 3mm (if no size has been entered during preparation) – Size which has been entered during preparation – Size which has been determined by the system automatic: The pupil diameter is measured after 10 stimuli each, averaged and displayed. At the end of the examination pupil size is stored in the examination results. Automatic pupil measurement is broken off, if pupil size is entered manually before or during the examination (displayed with Pupil*).
Interval	Set the stimulus interval	For setting the time between two stimulus presentations. Press the 'Interval' button and change the default value by 0.5 seconds with each key click or set interval to adaptive. fix: Fixed time between 1.5 ... 4 seconds. adaptive: The time interval is matched automatically to the response behavior (reaction time) of the patient.
Control	Sensitivity of the fixation monitoring	Press the 'Control' button and change the parameter to the desired value. off: No automatic fixation monitoring. min: Only lid close detection. Deviations of the pupil from the ideal position are not checked. med: Medium sensitivity of the fixation monitoring. max: Maximum sensitivity of the fixation monitoring. auto: Automatic fine positioning (option) is activated.
Video	Brightness of the displayed eye	Press the 'Video' button and change the parameter until the desired brightness is achieved.
Fixation	Brightness of the fixation target	Press the 'Fixation' button and change the parameter until the desired brightness is achieved.

6.5 Continuing an interrupted Examination

Interrupted examinations can be restarted and resumed. The procedure is described in chapter 5.6 *'Patient File'*.

Save	When the examination program has completed all the test locations, the results are stored automatically. By pressing 'Save' the results from the stages which have been completed up to the point of pressing are stored and marked as being an interrupted examination (**).

6.3 Examination Information

All the displayed information is continuously updated during the examination, as far as the parameters of the selected examination program permit this to be done.

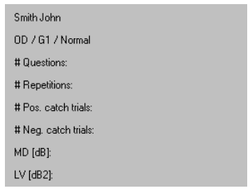


Figure 6-3: Examination information

- Surname, given name and date of birth of the patient, eye being examined, selected examination program and examination strategy being employed.
- Number of stimuli that have been presented.
- Number of stimuli that have been repeated.
- Number of presented and falsely answered positive catch trials.
- Number of presented and falsely answered negative catch trials.
- Mean Defect MD (average of the differences between thresholds and age corrected normal values).
- Loss variance LV (indicates the inhomogeneity of the visual field).
- Short term fluctuation SF (only if phase 2 is examined).

6.4 Parameter Changing

All settings remain unchanged and will also be used in the following examinations.

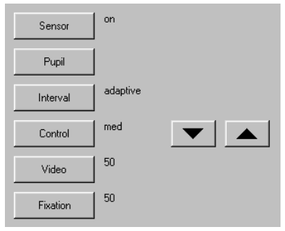


Figure 6-4: Fixation monitoring

- Possibilities for
  - Entering the pupil diameter
  - Setting the sensitivity of fixation monitoring
  - Setting the brightness of the eye image

Procedure

- Press the desired function button (arrow keys are displayed).
- Press the arrow button until the desired value is displayed.
- The arrow buttons disappear when the function button is pressed again (not absolutely necessary).

Sensor	Switch function of headrest sensor on or off respectively	on: User is informed, if the patient is moving back his or her head from the ideal position. Message: Patient moved off: No message is displayed, if the patient is moving back from the ideal position. Independent of this setting, user becomes aware of mismatch between patient's head position and setting in patient preparation.

4.8 Settings for Data Communications

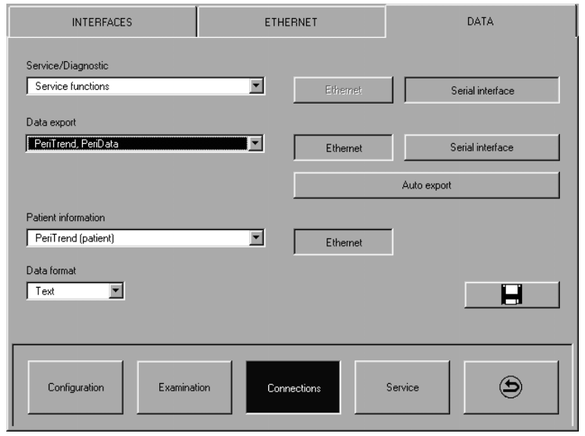


Figure 4-8: Setup – Connections – Data

Data communication

- Selection of a Service/Diagnostic function
- Selection of the analysis program where data have to be exported
- Structure of patient information used to prepare an examination
- Definition of the interface used to communicate with a PC

Service/Diagnostic	Service and diagnostic functions	Per default this parameter is set to 'Service functions'. 'Service functions' is used to upgrade application software and to modify User texts. To apply these two functions the serial interface is required.
Data export	Analysis program where data have to be exported	Selection of the analysis program where data have to be exported. – For data export to PeriData the serial interface is required. – For data export to PeriTrend Ethernet or serial interface is used. (To use the Ethernet interface the corresponding installation and configuration of the Octopus perimeter and a PC or the LAN server is required).
Patient information **Data format**	Patient information for the preparation of an examination	Demographics to identify the results of the patient to be examined can be selected from PeriTrend or an EDP system (special PeriTrend or EDP functions required).
Auto export	Automatic data export	Examination results are automatically exported to the connected PC at the end of an examination or after an automatic printout on the Octopus 300 if this button is pressed. After transmission the data is deleted from perimeter buffer.

Changes must be stored by pressing before leaving the dialog box.

4.9 Service Functions

Figure 4-9: Setup – Service – .....

The service functions are described in the 'Octopus 300 Service Manual'.

5 PERFORMING AN EXAMINATION

Careful examination preparation helps increasing the reliability of the results. The patient should be informed about the examination process so he or she can cooperate optimally.

5.1 Instructing the Patient

Fixation

During the entire examination the patient concentrates on the fixation target which is displayed in the center of the field of view.

Examination Process

At various locations in the field of view stimuli (flashes of light) of a certain duration and intensity are shown. The patient acknowledges that he or she perceives the stimulus by pressings quickly on the patient response button.

Perception of the Stimuli

It is normal that the patient is unable to see many stimuli. The number depends on the selected examination strategy and the condition of the patient's visual field.

Duration of the Examination

The duration of the examination depends on the selected examination program and the examination strategy and can range from roughly 3 to 15 minutes.

Stopping the Examination Process

By closing the eye being examined or holding the patient response button down the patient can stop the examination process.

Stimulus Interval

The time between two successive stimuli varies according to the instrument settings and the patient response speed of the patient. It can range from roughly 1.5 to 4 seconds.

5.2 Trial Lenses

The patient sees the stimuli at infinity and thus his or her eye must be corrected for distance. The spherical lens is put on the patient's side, the cylindrical on the ocular side of the lens holder. For the correct positioning of the cylindrical correction axis the trial lens holder is fitted with marks separated by 10°. The first mark to the above right corresponds to the 0°position. The trial lenses can remain in place during the whole examination. The trial lens holder can be swung out roughly 25° towards the front for changing the trial lenses comfortably.

5.3 Situating the Patient

We recommend using a chair in which the back and the seat can be adjusted. Place the chair so that the patient is in as relaxed a posture as possible. An electrically adjustable instrument table (optional) allows the height of the instrument to be fitted to the patient's physical size comfortably.

Cover the eye not being examined with the occluder which is included in the accessories, give him or her the patient response button, and explain its operation.

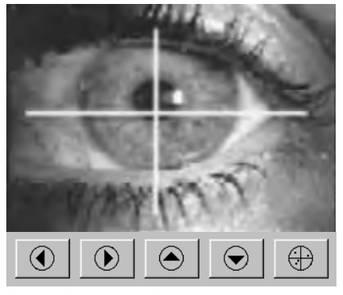
Adjust the headrest and table height so that the patient can rest his or her chin on the chin rest without having to alter their posture and so that his or her forehead touches the sensors in the forehead rest (right eye = left indentation, left eye = right indentation). The height of the chin rest should be set using the adjustment knob so that the eye of the patient lies even with the inscribed rings on the two columns.

6 MONITORING AN EXAMINATION

After the examination preparation has been completed by pressing the 'OK' button the monitoring screen appears. This is the right moment to position the patient at the instrument (see chapter 5.3 '*Situating the Patient*').

6.1 Fine Positioning, Focusing

The fine positioning of the eye to be examined takes place via the arrow buttons on the Touch module. For larger horizontal movements the optical unit can be turned manually. Position the pupil precisely on the crosshairs and focus the display of the eye with the adjustment knob of the optical unit.



- Switch to the examined test locations.
- Switch to the eye being examined.
- Fine horizontal positioning.
- Fine vertical positioning.

NOTE!
Before selecting which button to press, envisage moving the crosshair towards the center of the pupil.

Figure 6-1: Fine positioning

6.2 Command Buttons, Examination Progress

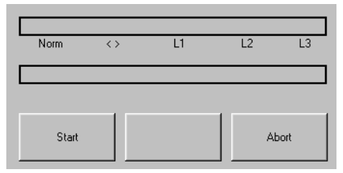


Figure 6-2: Examination progress

- During an examination with a normal or dynamic strategy and standard parameters the DLI (Defect Level Indicator) shows the condition of the visual field. The information is continuously updated.
- The progress indicator shows how far the examination has progressed within the current phase.

The labels and functions of the various command buttons depend on the progress and status of the examination.

Start	After the examination preparation is completed (required data entered, patient instructed and positioned), the actual examination is begun.
Abort	Abort the examination. All of the data collected up to this point will be lost.
Break / Break*	Insert a 'Stop' at the end of the current stage or remove a programmed 'Stop'. Press the 'Break' or 'Break*' buttons respectively. A programmed 'Stop' is displayed with 'Break*'. The examination stops at the end of the stage in which the break has been programmed. The examination can be resumed, stored or aborted. With 'Store' the results obtained up to this point from the completed stages are stored and examination is marked as having been interrupted (**).
Stop	Stop the examination process at some place. The examination can be resumed, stored or aborted. With 'Store' the results obtained up to this point from the completed stages are stored and examination is marked as having been interrupted (**).
Continue	Resume an examination that has been halted by pressing 'Stop'.
Restart	A part of the first stage of an examination is often used to show the procedure to a patient who is new to this type of examination. After stopping within the first stage the examination can be started again without leaving the monitoring mode. All of the data collected up to this point will be lost.
Next	Resume an examination that has stopped after 'Break*' at the end of a stage or Start the next phase of an examination after the end of a phase has been reached and the selected examination program permits one or more further phases.

▲ ▼	Scroll file forwards / backwards	The patient file can contain a maximum of 48 examinations. Using the two buttons the list can be scrolled forwards or backwards until the desired examination is found.
New	Begin a new examination	When a patient is to be examined whose patient data is already in the list, proceed as follows: – Search for the patient in the list – Highlight the patient – Press the 'New' button ➔ Data will be taken over in the boxes of the '*Preparing an Examination (Standard Program)*' screen. All entries can be changed (see chapter 5.4). ➔ Start examination with 'OK'
Continue	Resume an interrupted examination	When an interrupted examination (**) is to be resumed, proceed as follows: – Search for the patient in the list – Highlight the patient – Press the 'Continue' button ➔ Program continues with *'Monitoring an Examination'* (see chapter 6). Entries cannot be changed.

5.7 Information

Various program parameters from the selected examination program and the age-corrected normal values are shown in the information window. Parameters cannot be changed here.

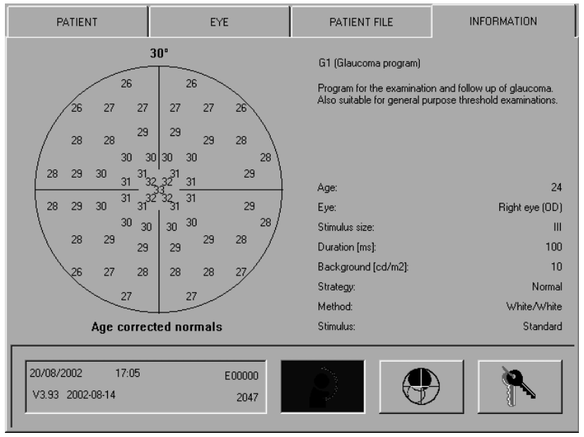


Figure 5-5: Examination – Information

To specify luminance the two units [asb] and [cd/m²] are used.

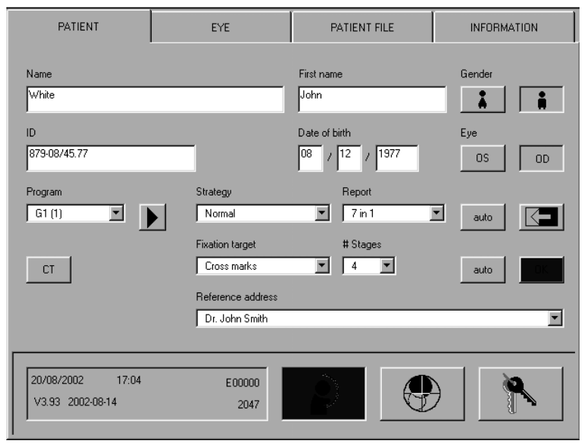
Conversion: [asb] divided by Pi (3.14) = [cd/m²]
[cd/m2] multiplied by Pi (3.14) = [asb]

Information from the examination program

- Brief description of the selected examination program
- Parameters of the selected examination program
- Display of the age corrected normal values at the test locations when the standard program parameters were employed in a threshold value program
- If the age of a patient is defined the numbers correspond to the age corrected normal values.
- If no age is defined the numbers correspond to the normal values of a 20 years old person.

5.4 Preparing an Examination (Standard Program)

Examinations or examination preparation are always accessed via the 'Examine' symbol. Before an examination can begin, a few items must be entered.



Preparing an examination

- Personal patient data
- Program parameters

Chapter 4.2 *'Presetting for Preparing an Examination'* and chapter 4.3 *'Defining the Variants of the Standard Examination Program'* show how the presetting can be optimized.

Figure 5-1: Examination – Patient (standard programs)

The information which the system requests depends on the setup (see chapter 4 *'Configuration, Setup'*). The items which are always required are the patient's date of birth and the eye to be examined.

Name	Patient's name	Enter the patient's surname.
First name	Patient's given name	Enter the patient's given name.
ID	Patient's identification number	Enter the Identification number.
Gender	Patient's gender	Click on the corresponding symbol.
Date of birth	Patient's date of birth	The patient's date of birth must be entered. The sequence of how it is typed 'Day – Month – Year' or 'Month – Day – Year' was defined in the setup (see chapter 4.1 *'General Basic Settings'*).
Eye	Eye to be examined	Click on the eye which is to be examined. This item is absolutely required.
Program	Standard examination program	Select the program to be used for the examination. To select a standard program, do not press the 'CT' button. For each of these programs three variants can be defined (see chapter 4.3 *'Defining the Variants of the Standard Examination Programs'*). By clicking on ▶ the next variant will be selected. This button has no function for CT programs.
CT	CT button	If a CT program is to be used see chapter 5.5 *'Preparing an Examination (CT Program)'* for examination preparation. The 'CT' button is not pressed for standard examination programs.
Strategy (TOP optional)	Examination strategy	Select the strategy which is to be used in the examination.
Report auto (Report)	Desired printout	Select the default image which is to be printed. The possibilities depend on the selected program (see Table 7-1). If the 'auto' button at the side is pressed, the selected printout will be printed automatically at the end of the examination.

Fixation target	Fixation symbol	Set the fixation target which is displayed for the patient during the examination. If the selected fixation target collides with a test location, another target is displayed during the corresponding stage.
# Stages **auto (# Stages)**	Number of examination stages	Specify the number of examination stages which should be gone through. If the 'auto' button on the side has been pressed, the program will end after the preset stages have been worked through.
Reference address	Address, information on printout	Select reference address to be printed in the header of a printout. After clicking on the default address is selected (address which is presented in the 'Setup' – 'Configuration' – 'General' window).
	Delete entries, set standard values	When an examination is being prepared, the patient data and the program parameters from the previous examination are offered. After the 'Delete' button is pressed, the patient data is deleted and the program parameters defined in the setup are taken over.
The 'OK' button turns blue when all the required data have been entered. Press 'OK' to start the examination. Examination monitoring and examination procedure are described in chapter 6 *'Monitoring an Examination'*.		

NOTE!
The required items can be reduced to a minimum when the setup has been well matched to your needs.

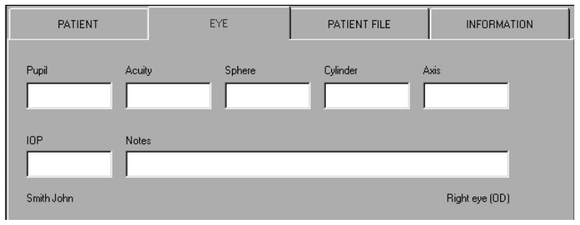


Figure 5-2: Examination – Eye

Examination preparation
- Eye-related data

Entering the eye-related data is not absolutely necessary. The dialog box can only be selected when the eye to be examined has been selected. All entered information is deleted when the other eye is selected.

Pupil	Pupil size	All information entered here is voluntary and is not checked for plausibility. If data has been entered and the other eye is selected, everything entered up to that point is deleted. After is pressed (see above) eye-related data is also deleted.
Acuity	Acuity	
Sphere	Spherical refraction correction	
Cylinder	Cylindrical refraction correction	
Axis	Axis of the refraction correction	
IOP	Intra ocular pressure	
Comment	Lines for comments	
As information the surname, given name, date of birth and the examined eye of the patient are shown. Click on the 'Patient' tab to start the examination.		

5.5 Preparing an Examination (CT Program)

In order to select a user-defined program, the 'CT' button has to be pressed.

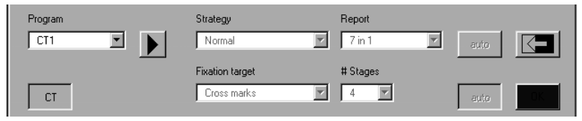


Figure 5-3: Examination – Patient (CT program)

Examination preparation for CT Program
- Program parameters

Enter the personal patient data and the eye-related data. See chapter 5.4 *'Preparing an Examination (Standard* Program*)'.*

CT	CT button	If a CT program is to be used, press the 'CT' button and select the program in the 'Program' list box.
Program	CT examination program	Select one of the 5 predefined CT programs in the list box. The ▶ button has no function for CT programs.
Strategy **Report** **Fixation target**	These parameters are displayed for your information. They can only be changed in the setup (see chapter 4.5 *'Defining user-defined Tests'*).	
# Stages **auto (Report)** **auto (# Stages)**	No function.	

5.6 Patient File

All interrupted and completed examinations are recorded in the patient file. Interrupted examinations can be resumed again and the personal patient data can be taken over in a new examination from a completed one.

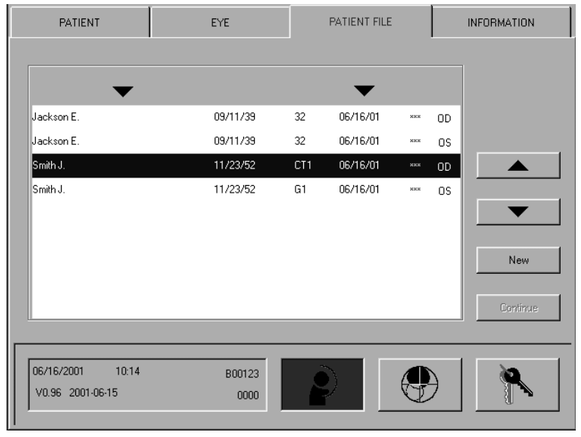


Figure 5-4: Examination – Patient file

Patient file
- Directory of the examinations which have been performed
- Resume interrupted examinations

Examination status
(** interrupted)
(*** completed)

The examination file can contain a maximum of 48 examinations. The message 'Examination buffer full' indicates that results have to be transmitted or deleted before starting a new examination.

	Sort file	Sort the list according to patient names or examination date in an increasing or decreasing series. Patient names: Click the left button Examination date: Click the right button