

**OLYMPUS®**

# GoldXpert Series Portable XRF Analyzer Quick Start Guide



GoldXpert  
GoldXpertSDD

International Version

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### IMPORTANT

- Read the “Important Information” section carefully before handling this instrument.
- Refer to the GoldXpert user’s manual (P/N: 103659) for more detailed information.

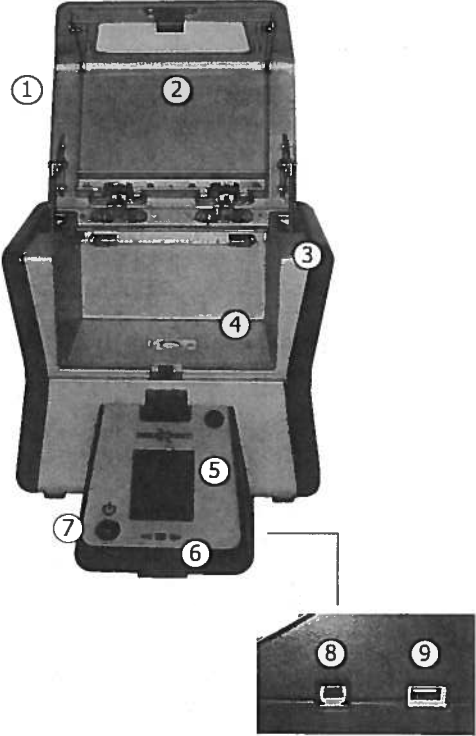
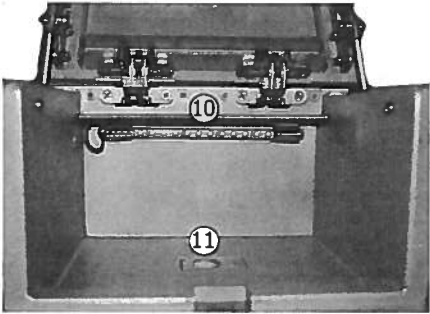
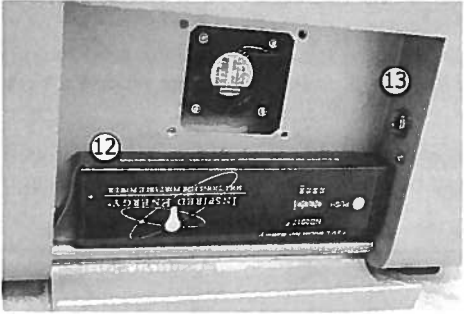
## 1. Unpacking the Instrument

The GoldXpert portable XRF analyzer and its accessories are shipped in a heavy-duty corrugated carton with foam pads.

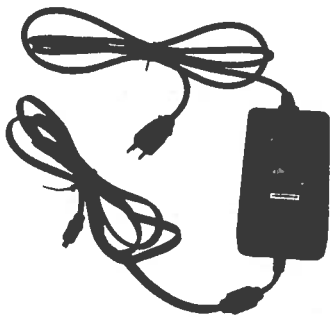
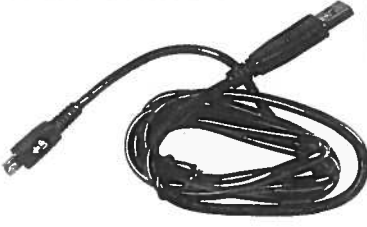

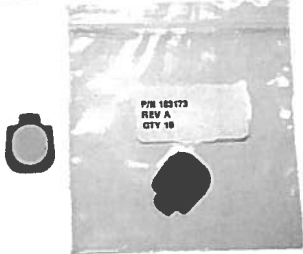
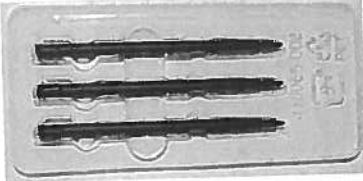
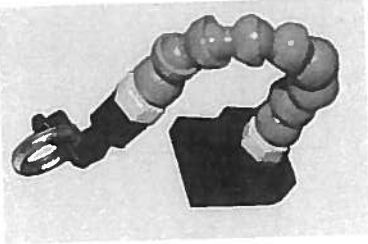
### To unpack the instrument

1. Locate and remove the shipping papers and documentation.
2. Open the carton, and then remove the GoldXpert and all of its components.
3. Inspect all components for damage and report any problems to Olympus immediately.


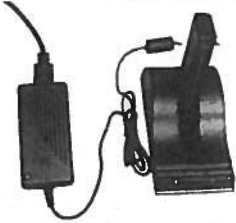

## 2. Instrument Overview

Component key		GoldXpert – All models
1	GoldXpert analyzer	
2	Hinged lid	
3	Main body (or chassis)	
4	Test chamber	
5	User interface touch screen	
6	Navigation keys	
7	Power switch	
8	Mini USB port	
9	Standard USB port	
10	12-element LED array	
11	Measurement window	
12	Li-ion battery (optional)	
13	Input power port	

## 2.1 Standard Accessories

Accessories	Description	
AC power adaptor and power cord	<ul style="list-style-type: none"> <li>• AC power adaptor               <ul style="list-style-type: none"> <li>– Straight barrel connector</li> <li>– Electrical output of 70 W at 18 V and 3.9 A</li> <li>– Electrical input: 100–240 VAC (50–60 Hz)</li> </ul> </li> <li>• Line cord               <ul style="list-style-type: none"> <li>– 1.8 m (6 ft) long</li> <li>– 18 AWG</li> <li>– U/L listed</li> <li>– Connectors: C13 (female) to NEMA 515 (male)</li> </ul> </li> </ul>	
Mini USB cable	<ul style="list-style-type: none"> <li>• P/N: U8990455</li> <li>• 0.9 m (3 ft) long</li> </ul>	
Cal Check coupon	<ul style="list-style-type: none"> <li>• P/N: U8990448</li> <li>• Diameter: 3.8 cm (1.5 in.)</li> <li>• Thickness: 0.38 cm (0.150 in.)</li> <li>• Alloy-grade 316 stainless steel</li> </ul>	
Extra windows	<ul style="list-style-type: none"> <li>• P/N: U8990464 (bag of 10)</li> <li>• Kapton films mounted in a 5 mm (0.2 in.) rigid frame</li> <li>• Measurement window film = 8 <math>\mu</math>m</li> </ul>	
Stylus set	<ul style="list-style-type: none"> <li>• Pack of three</li> </ul>	
Articulated arm with sample holder clip	<ul style="list-style-type: none"> <li>• P/N: U8999655</li> <li>• Arm height (extended): 17.5 cm (6.8 in.)</li> <li>• Fold arm to:               <ul style="list-style-type: none"> <li>– Position sample over the window.</li> <li>– Close the lid.</li> </ul> </li> <li>• Clip max opening: 1.0 cm (0.4 in.)</li> <li>• Mounting screws:               <ul style="list-style-type: none"> <li>– M4 <math>\times</math> 0.7 <math>\times</math> 12 mm</li> <li>– Pan head – Phillips head slot</li> </ul> </li> </ul>	

## 2.2 Optional Accessories

Accessories	Description	
Lithium ion battery	<ul style="list-style-type: none"> <li>• P/N: U8990853</li> <li>• High capacity</li> <li>• 7.2 VDC, 5.2 Ah</li> <li>• Weight: 0.2 kg (7.5 oz)</li> </ul>	
Battery charger	<ul style="list-style-type: none"> <li>• 60 W power supply</li> <li>• Input connector for 5-pin standard battery</li> <li>• LED status display</li> </ul>	
Industrial transport case	<ul style="list-style-type: none"> <li>• P/N: U8990456</li> <li>• Water tight, light-weight enclosure with telescopic handle and in-line wheels</li> <li>• Dimensions: 62.5 cm x 50 cm x 36.6 cm (24.6 in. x 19.7 in. x 14.4 in.)</li> <li>• Weight (empty): 10.6 kg (23.4 lb)</li> </ul>	

## 3. Safety Information

### 3.1 Radiation Safety Information

Olympus XRF analyzers are secure and dependable instruments when used in accordance with recommended testing techniques and safety procedures.



#### WARNING

- Olympus analyzers must only be used by trained and authorized operators in accordance with established safety procedures. Improper use may impair the instrument's safety protection and cause potential harm to the user.
- Read all warning signs and labels.
- DO NOT USE the instrument if there is any evidence of damage. Doing so could cause unintentional emission of stray radiation. If any damage is present, a qualified technician must perform a radiation safety test and repair the damage prior to use of the instrument.

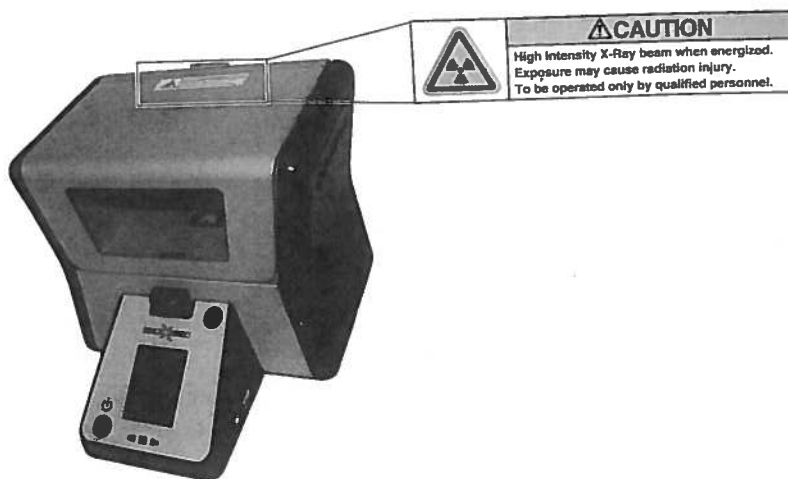


Figure 3-1 Caution radiation label on the lid

## 3.2 Safety Interlock Structure

This mandatory feature ensures that the GoldXpert analyzer functions as a closed-beam X-ray instrument. The lid must be completely closed over the test platform to establish a radiation-safe test chamber. Unless this condition is met, no test analysis or Cal Check procedures can be initiated.

Examples of the safety interlock structure:

- If the lid is not closed (the safety interlock structure is not engaged for X-ray emission), the Cal Check button or Start Test button is disabled (grayed out). It is not possible to force the X-ray ON condition.
- If the lid is opened during an active test, the X-ray tube turns off immediately and a "Test Aborted" message is displayed.

## 3.3 Indicators and Statuses

The GoldXpert portable XRF analyzer has two indicators to alert an operator to the status of the unit.

### 3.3.1 X-Ray Indicator

The X-ray indicator is located on the rear of the lid (see Figure 3-2 on page 7). This indicator consists of a three-element yellow LED array.

#### X-ray indicator flashing (blinking yellow LED array)

A flashing indicator signifies that:

- The X-ray tube is powered to full operational level.
- The analyzer is emitting X-ray radiation through the measurement window.
- The internal filter wheel is in the operational position.



Figure 3-2 X-ray indicator

### 3.3.2 Information Bar

The information bar (see Figure 3-3 on page 7) indicates the status of the test, and includes the following information:

- How much time is remaining in the test interval.
- Notification that the test was completed successfully.
- Notification that the test was terminated due to an error.

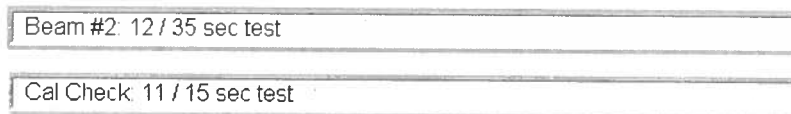


Figure 3-3 Examples of the information bar

## 3.4 Physical Safety

Several mechanical precautions should be observed.

- **Weight**  
The analyzer weighs 10 kg (22 lb). Make sure that your physical safety is not in danger, and that the analyzer is in good physical condition when the unit is transported in the field, set on the ground, or placed on benches, tables, or other surfaces in the lab. The optional Li-ion battery weighs 0.23 kg (0.5 lb).
- **Hinges and spring struts**  
The analyzer lid is hinged. There are also two spring struts that automatically lift the lid when the lid latch is pressed (see Figure 3-4 on page 8).



### CAUTION

- When closing the lid (for testing or prior to moving the analyzer), take caution not to pinch your fingers.
- Do not force close the analyzer.
- Make sure that there is nothing lodged in the hinge area or the spring strut wells on either side of the test chamber.

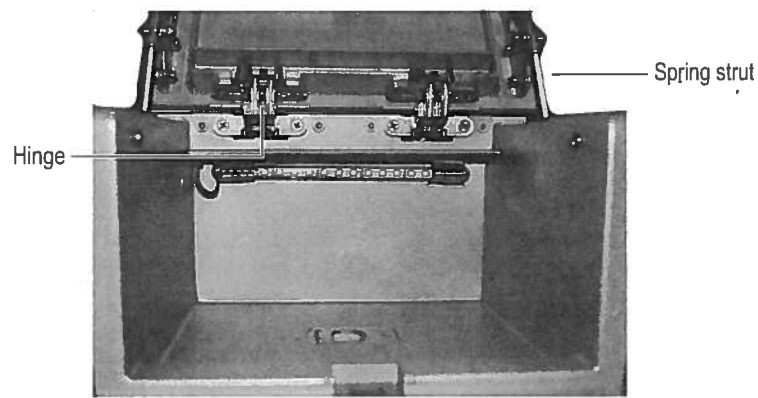


Figure 3-4 GoldXpert hinges and spring struts

## 4. Hardware Setup

The GoldXpert portable XRF analyzer is ready for operation as soon as it is removed from its shipping carton. No assembly is required. However, physical planning and cabling considerations must be taken into account.

### 4.1 Physical Planning

The GoldXpert portable XRF analyzer weighs 10 kg (22 lb) and the optional Li-ion battery weighs 0.23 kg (0.5 lb).

To make a minimum footprint, add at least 15.24 cm (6 in.) to the actual 31 cm (12.2 in.) width and 34 cm (13.4 in.) depth. Allow for a height of 63.5 cm (25 in.) when the lid is open to its maximum extent (see Figure 4-1 on page 8 to Figure 4-3 on page 9).

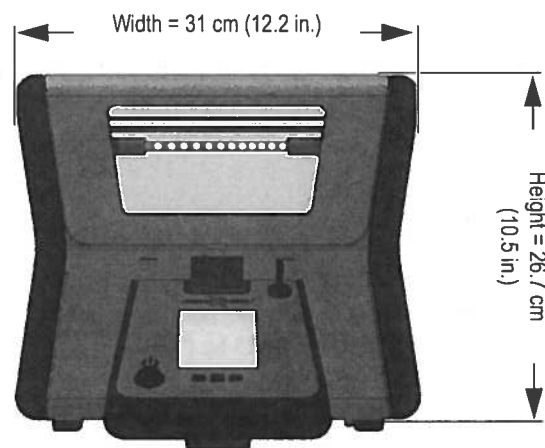


Figure 4-1 GoldXpert front view



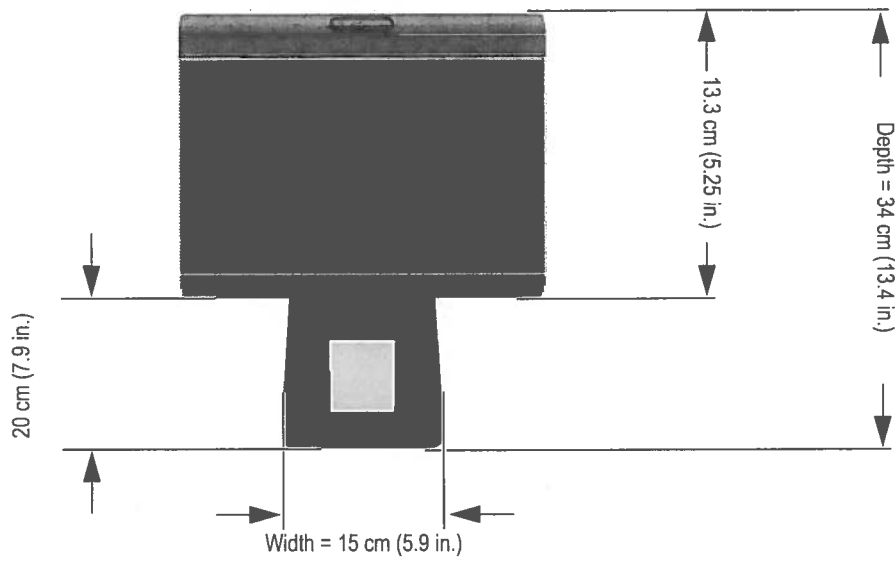


Figure 4-2 GoldXpert top view

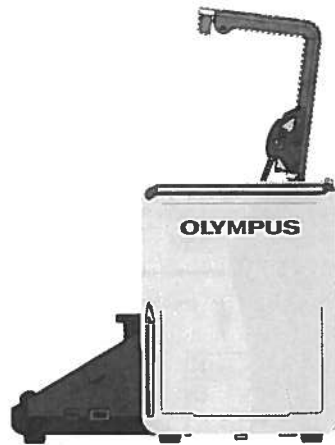


Figure 4-3 GoldXpert side view

## 4.2 Cable Connections

The GoldXpert portable XRF analyzer contains three ports:

- The power port for the AC power adaptor (back of the analyzer) [see Figure 4-4 on page 10]
- Two USB ports (see Figure 4-5 on page 10) that can be used for:
  - Local data storage using a flash memory device
  - An external keyboard

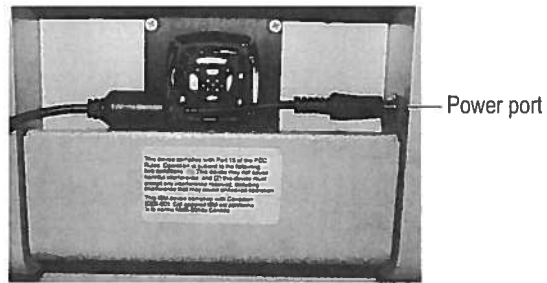


Figure 4-4 Power port for the AC power adaptor

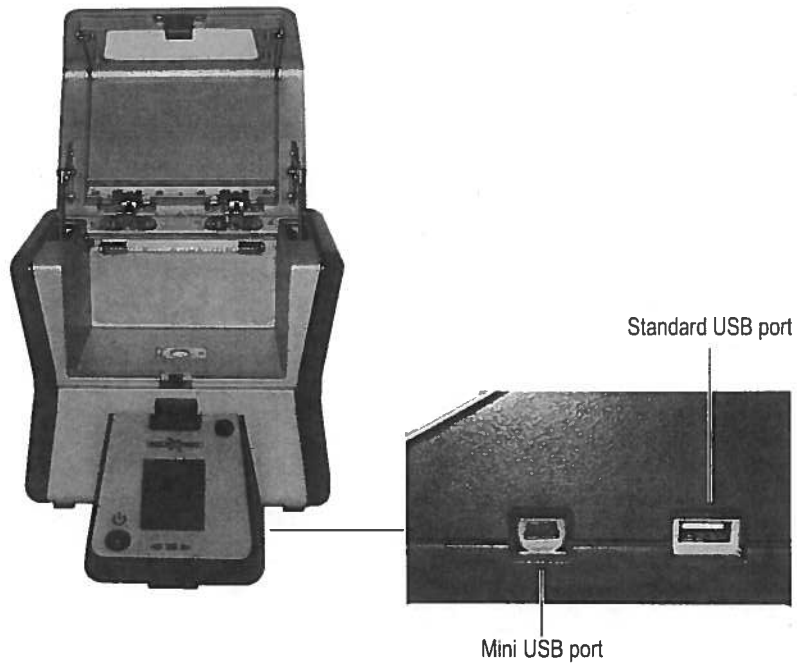


Figure 4-5 USB ports

## 5. User Interface

The GoldXpert's user interface opens with the start-up radiation-safety and initialization screens. The main operations are accessible from the **Home** screen (see Figure 5-1 on page 11).

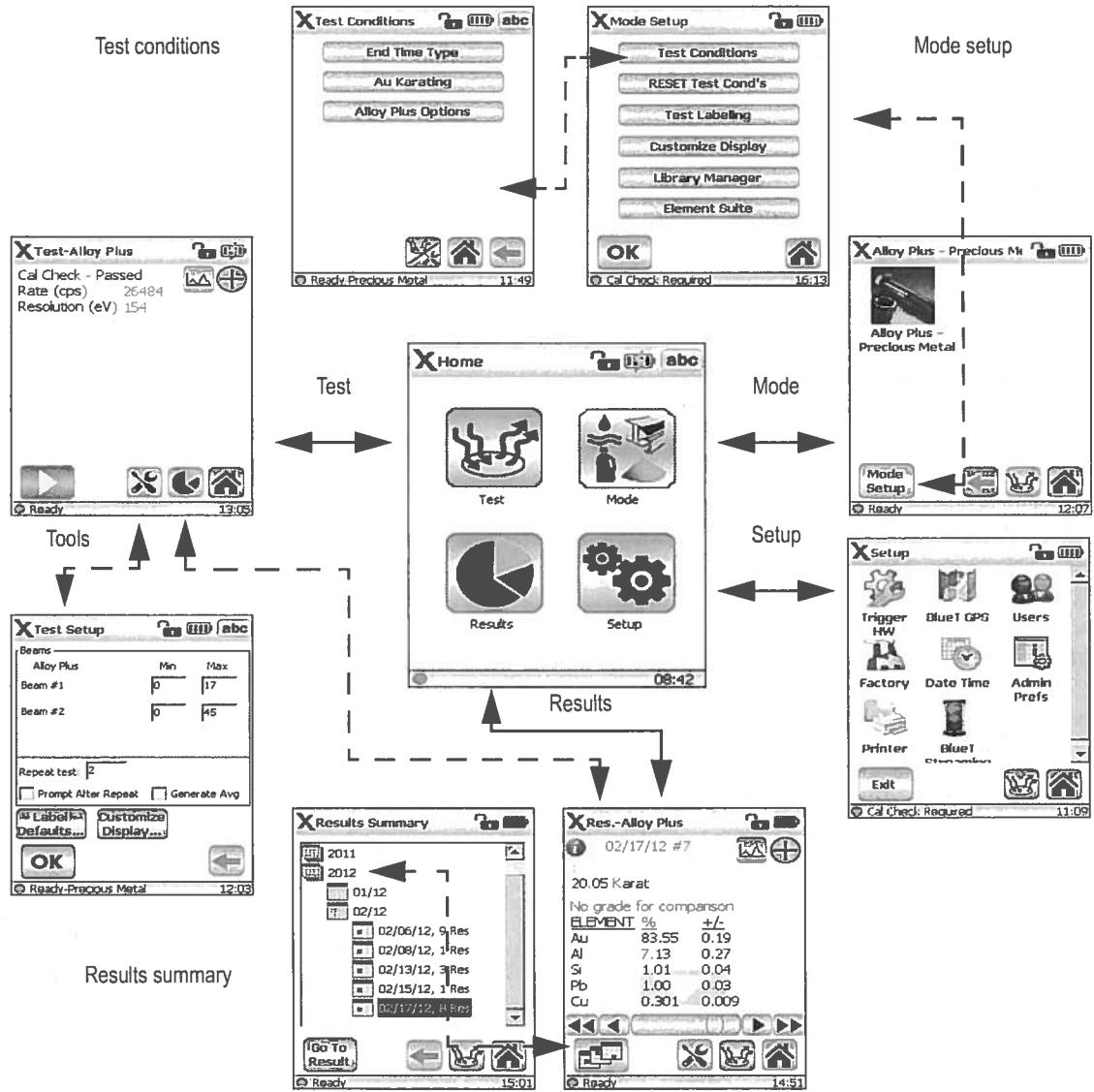


Figure 5-1 GoldXpert user interface

## 5.1 Icons and Buttons

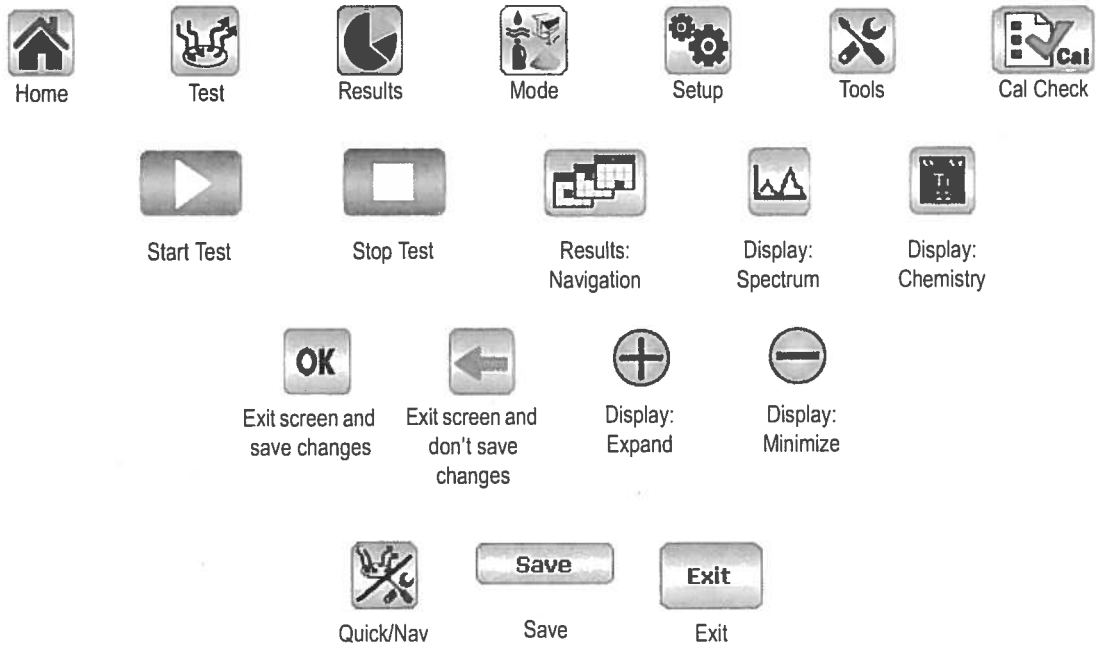


Figure 5-2 Icons and buttons

## 5.2 Indicators

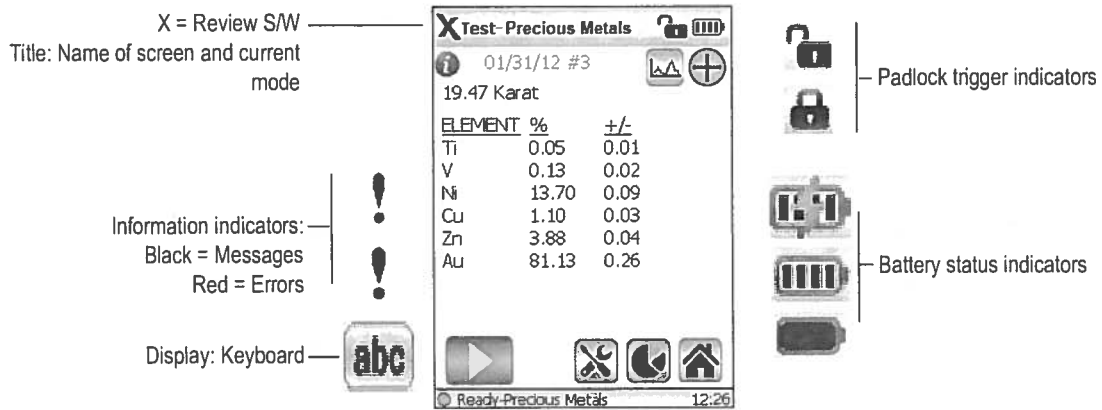


Figure 5-3 User interface indicators

## 5.3 Horizontal and Vertical Scrolling

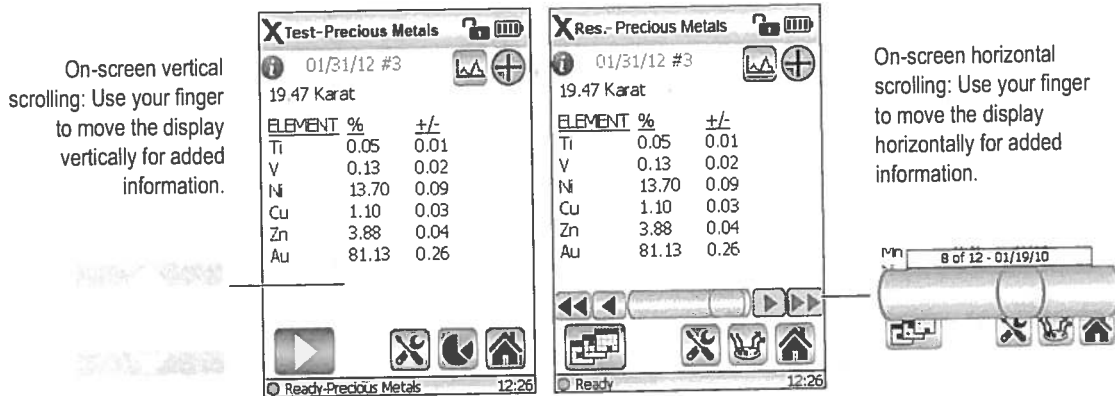


Figure 5-4 Scrolling tools

## 5.4 Lower Status Bar

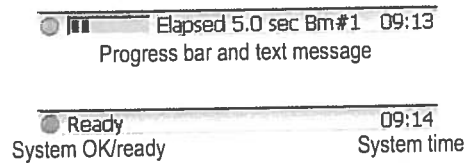


Figure 5-5 Lower status bar

# 6. Operations

This section explains how to use the GoldXpert portable XRF analyzer.

## 6.1 Typical Startup Sequence

### To start the analyzer

1. Plug in the power using the AC adaptor or battery.
2. Set up other inputs and outputs (see section 4.2 on page 10).
3. Push down the latch (see Figure 6-1 on page 14).

The spring-loaded struts flip the lid upwards. If required, the lid may be moved to a higher position for maximum access to the test chamber.

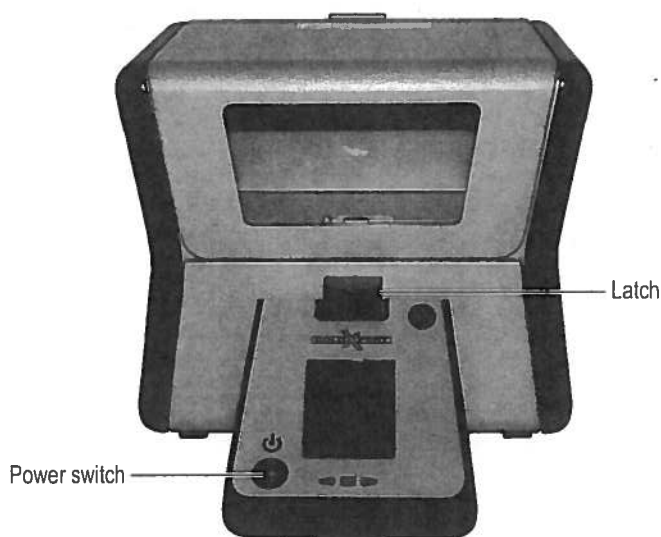


Figure 6-1 GoldXpert latch and power switch

4. Turn the analyzer on using the power switch (membrane switch) located in the bottom left corner (see Figure 6-1 on page 14).
  - The green LED (in the center of the power switch) turns on.
  - The electronic circuitry (including the fan) turns on.
  - Windows CE loads.
5. Read the radiation safety notice screen (see Figure 6-2 on page 14), and then confirm that you are a certified user. System initialization begins immediately.



Figure 6-2 Radiation safety notice screen

The analyzer launches a test screen (see Figure 6-3 on page 15).

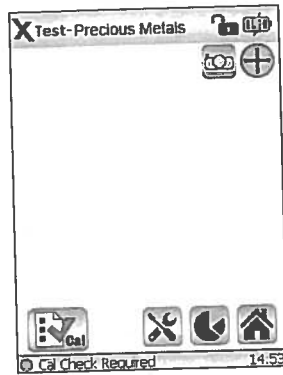


Figure 6-3 Test screen

**NOTE**

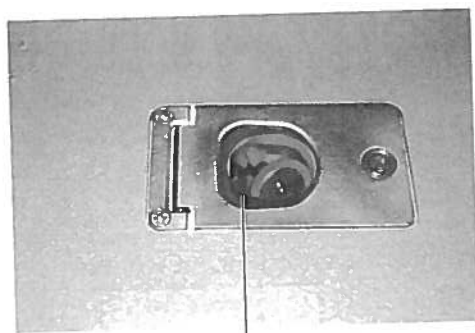
If the "CalCheck Required" message is displayed, then you must perform a Cal Check. Before beginning any new testing, this procedure must be successfully completed.

## 6.2 About Calibration Check (Cal Check)

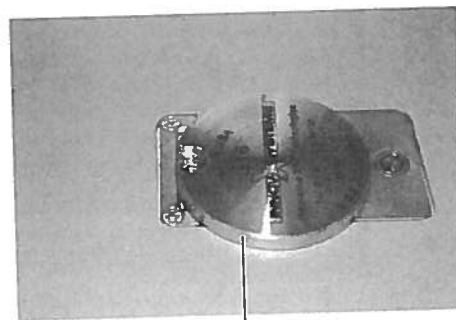
Before beginning any new testing, a Cal Check must be successfully completed. Usually, a Cal Check is only required prior to the first test of the day. The Cal Check procedure takes 15 seconds. A Cal Check should last for 10 hours.

### To perform a Cal Check

1. Place the Cal Check coupon over the measurement window located in the center of the test chamber (see Figure 6-4 on page 15).



Measurement window



Cal Check coupon over the window

Figure 6-4 Measurement window and Cal Check coupon

2. Make sure that the measurement window is completely covered.
3. Close the lid.  
The white test chamber LED array illuminates.
4. Tap the Cal Check button.  
The X-ray indicator starts to blink to indicate that X-rays are being emitted. Progress and result/status are displayed on the user interface (see Figure 6-5 on page 16).

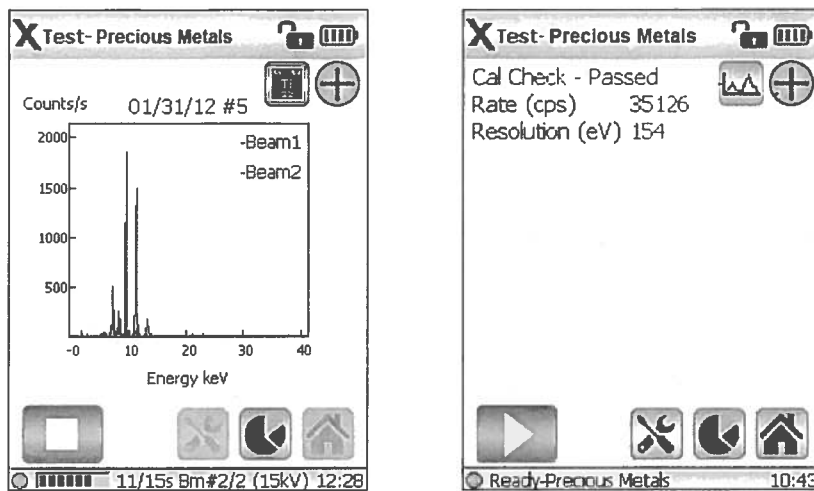


Figure 6-5 User interface: Cal Check progress and result

### 6.3 Conducting a Test

This section explains how to conduct tests using the GoldXpert portable XRF analyzer.

#### To conduct a test

1. Press the lid latch to open the test chamber.
2. Place the sample over the measurement window (see Figure 6-6 on page 16).



Figure 6-6 Gold rope chain positioned over the measurement window

3. Close the lid.
4. Press the Start Test button.  
Progress and results are displayed on the user interface.

### 6.4 Articulated Arm With Sample Holder Clip

The GoldXpert comes with a preinstalled articulated arm and sample-holding clip enabling small pieces of jewelry to be positioned securely for analysis. The following tips should be taken into account when using the clip:

- Position your sample so that only the sample (and not the clip) is within the X-ray beam. The beam is represented by the red circle on the display screen.
- The spring in the clip is made of steel. To ensure that the steel does not enter the sample reading, position the sample and clip so that the center of the clip is not within the X-ray beam.
- Although the clip is made of plastic, it is not invisible to X-rays. Reduce the portion of the clip within the red circle.



## 6.5 Camera Collimation Test Coin

Olympus provides a double-sided collimation test coin (P/N: U8996829) as a check sample with all collimated GoldXpert analyzers (see Figure 6-7 on page 17).

- Side #1 is used to verify the X-ray beam-spot location.
- Side #2 is used to set the cursor position.

Collimated beams have a spot diameter of approximately 3 mm. An uncollimated beam-spot diameter is approximately 10 mm.

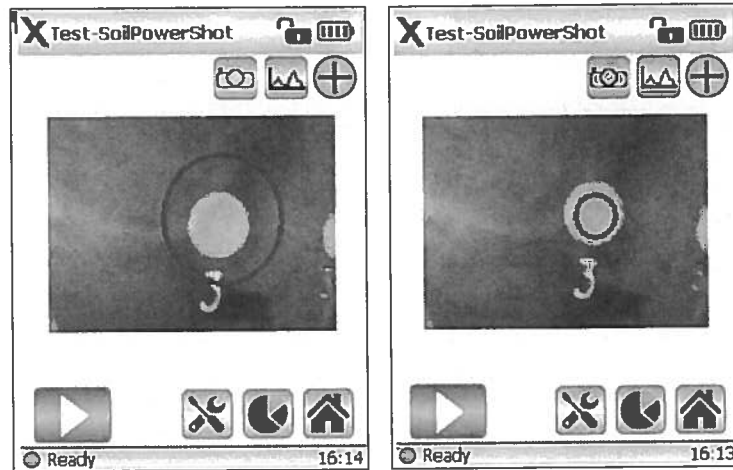


Figure 6-7 Collimation test coin

## 6.6 Exit Options

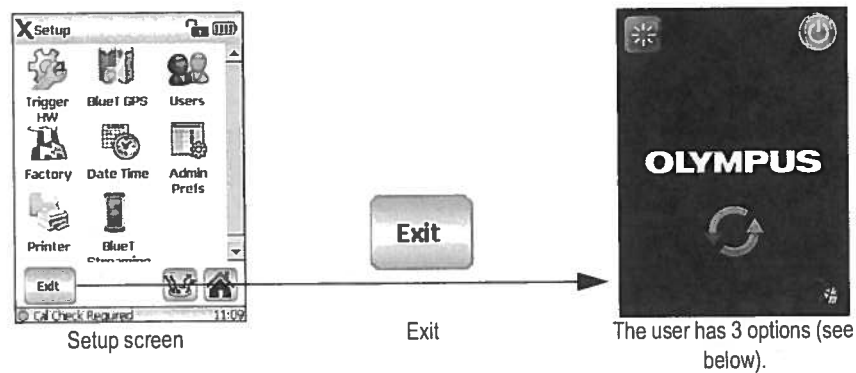





Figure 6-8 Exit options

The user has three options:

1. Soft reboot (  )  
Restart OS and the Innov-X application.
2. Power off (  )  
Turn the analyzer off after confirmation.
3. Relaunch (  )  
Restart the Innov-X application.

## 7. GoldXpert Radiation Profile

The current radiation profile is shown in Figure 7-1 on page 18.

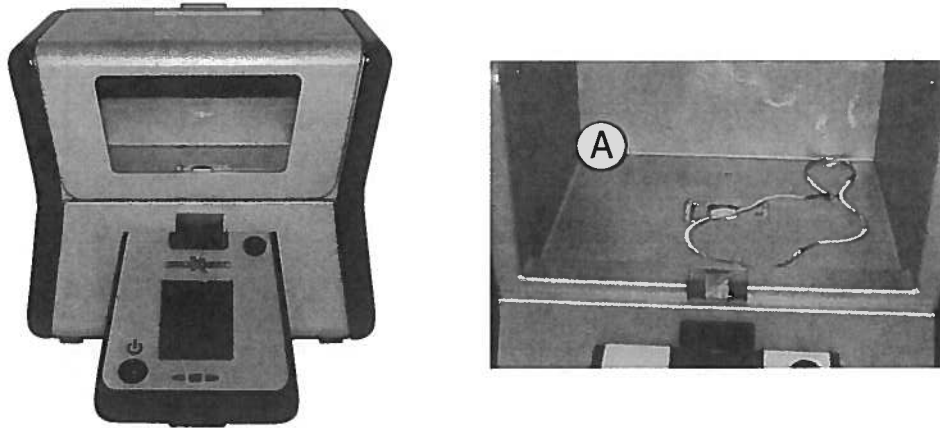


Figure 7-1 GoldXpert radiation profile

Table 1 Radiation profile

Maximum Dose Rate in mR/h ( $\mu\text{Sv/h}$ ) – Secondary Radiation (Scatter leakage)							
Mode	Substrate	Front	Right side	Left side	Top	Bottom	Back
Alloy	316 stainless	<0.1 (1.0)	<0.1 (1.0)	<0.1 (1.0)	<0.1 (1.0)	<0.1 (1.0)	<0.1 (1.0)
	Silver (Ag)	<0.1 (1.0)	<0.1 (1.0)	<0.1 (1.0)	<0.1 (1.0)	<0.1 (1.0)	<0.1 (1.0)
	Gold (Au)	<0.1 (1.0)	<0.1 (1.0)	<0.1 (1.0)	<0.1 (1.0)	<0.1 (1.0)	<0.1 (1.0)
	Gold necklace ("A" above)	<0.1 (1.0)	<0.1 (1.0)	<0.1 (1.0)	<0.1 (1.0)	<0.1 (1.0)	<0.1 (1.0)
Model: GoldXpert		Voltage: 40 kV		Filter: 5 (0.1 mm Al <sup>a</sup> )		Date: Oct. 21, 2011	
Serial #: Varies		Amperage: 100 $\mu\text{A}$		Software: DELTA Tools		By:	
Survey inst.: Ludlum Model 3 44-3 detector		Serial #: 245408 PR260458		Date cal.: Apr. 12, 2011 Date due: Apr. 12, 2012		Michael Tremblay Quality & Regula- tory Manager	

a. Al = Aluminum

# Important Information — Please Read Before Use

## Intended Use

The GoldXpert is designed to perform nondestructive measurement of precious metals to determine alloy chemistry and karat classification.



### DANGER

Do not use the GoldXpert for any purpose other than its intended use.

## Instruction Manual

This instruction manual contains essential information on how to use this Olympus product safely and effectively. Before using this product, thoroughly review this instruction manual, and use the product as instructed.

Keep this instruction manual in a safe, accessible location.

## Instrument Compatibility

The Olympus GoldXpert portable XRF analyzer is primarily a self-contained unit. However, it has two USB ports that allow the user to connect compatible peripherals. It also derives its required DC input power from a standard accessory AC adaptor or an optional battery pack.



### CAUTION

Using incompatible accessories or peripherals could cause a malfunction and/or equipment damage.

## Repair and Modification

The GoldXpert analyzer does not contain any user-serviceable parts, apart from one exception: the measurement window.

If the measurement window is damaged, the window assembly should be replaced as soon as possible. For more details, refer to the GoldXpert user's manual.



### CAUTION

In order to prevent human injury and/or equipment damage, do not disassemble, modify, or attempt to repair the instrument.

## Safety Symbols

The following safety symbols might appear on the instrument and in the instruction manual:



### General warning symbol:

This symbol is used to alert the user to potential hazards. All safety messages that follow this symbol shall be obeyed to avoid possible harm.



### Radiation warning symbol:

This symbol is used to alert the user to the presence of potentially harmful ionizing radiation generated within the XRF analyzer. All safety messages that follow this symbol shall be obeyed to avoid possible harm.



### High voltage warning symbol:

This symbol is used to alert the user to potential electric shock hazards greater than 1,000 volts. All safety messages that follow this symbol shall be obeyed to avoid possible harm.

## Safety Signal Words

The following safety symbols might appear in the documentation of the instrument:



### DANGER

The DANGER signal word indicates an imminently hazardous situation. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in death or serious personal injury. Do not proceed beyond a DANGER signal word until the indicated conditions are fully understood and met.



### WARNING

The WARNING signal word indicates a potentially hazardous situation. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in death or serious personal injury. Do not proceed beyond a WARNING signal word until the indicated conditions are fully understood and met.



### CAUTION

The CAUTION signal word indicates a potentially hazardous situation. It calls attention to an operating procedure, practice, or the like, which, if not correctly performed or adhered to, could result in minor or moderate personal injury, material damage, particularly to the product, destruction of part or all of the product, or loss of data. Do not proceed beyond a CAUTION signal word until the indicated conditions are fully understood and met.

## Safety

Before applying power to the instrument, verify that the correct safety precautions have been taken (see the following warnings). In addition, take note of the external safety labels on the instrument.



### General Warnings

- Carefully read the instructions contained in the user's manual prior to turning on the instrument.
- Keep the user's manual in a safe place for further reference.
- Follow the installation and operation procedures.
- It is imperative to respect the safety warnings on the instrument and in the user's manual.
- Using the equipment in a manner not specified by the manufacturer might impair the instrument's safety protection.
- Do not install substitute parts or perform any unauthorized modifications to the instrument.
- Service instructions, when applicable, are for trained service personnel. To avoid the danger of electric shock, do not perform any work on the instrument unless qualified to do so. For any problem or question regarding this apparatus, contact Olympus or an authorized Olympus representative.



### WARNING



- Before turning on the instrument, you must connect the protective earth terminal of the charger/adaptor to the protective conductor (mains) of the power cord. The mains plug shall only be inserted into a socket outlet provided with a protective earth contact. Never negate the protective action by using an extension cord (power cable) without a protective conductor (grounding).
- If there is any possibility that the ground protection could be impaired, you must turn off the instrument and secure it against any unintended operation.
- The instrument must only be connected to a power source corresponding to the type indicated on the rating plate.



### CAUTION

In case you use a non-approved power supply cord for Olympus products, Olympus can no longer warrant the electrical safety of the equipment.

## WEEE Directive



In accordance with European Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE), this symbol indicates that the product must not be disposed of as unsorted municipal waste, but should be collected separately. Refer to your local Olympus distributor for return and/or collection systems available in your country.

## China RoHS

*China RoHS* is the term used by industry generally to describe legislation implemented by the Ministry of Information Industry (MII) in the People's Republic of China for the control of pollution by electronic information products (EIP).



The China RoHS mark indicates the product's Environmental Friendly Usage Period (EFUP). The EFUP is defined as the number of years for which listed controlled substances will not leak or chemically deteriorate while in the product. The EFUP for the GoldXpert has been determined to be 15 years.

**Note:** The Environmental Friendly Usage Period (EFUP) is not meant to be interpreted as the period assuring functionality and product performance.

## EMC Directive Compliance

### FCC (USA) Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, might cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case you will be required to correct the interference at your own expense.

### EC Directive Compliance

This device complies with the requirements of Directive 2006/95/EC concerning electrical equipment designed for use within certain voltage limits.

This device complies with the requirements of Directive 2004/108/EC concerning electromagnetic compatibility when used in combination with devices bearing CE marking either on the products or in its instructions.

The above-mentioned Directives are complied to by designated configuration for EU region. Regions other than EU that do not use the same configuration do not comply with the above-mentioned Directives.

## Warranty Information

Olympus guarantees your Olympus product to be free from defects in materials and workmanship for a period and with conditions specified in the *Olympus NDT Terms and Conditions* available at <http://www.olympus-ims.com/en/terms/>.

The Olympus warranty only covers equipment that has been used in a proper manner as described in this instruction manual, and that has not been subjected to excessive abuse, attempted unauthorized repair, or modification.

Inspect materials thoroughly on reception for evidence of external or internal damage that might have occurred during shipment. Notify the carrier making the delivery immediately of any damage, because the carrier is normally liable for damage in shipment. Preserve packing materials, waybills, and other shipping documentation in order to establish a damage claim. After notifying the carrier, contact Olympus for assistance with the damage claim and equipment replacement, if necessary.

This instruction manual attempts to teach the proper operation of your Olympus product. The information contained herein is intended solely as a teaching aid and shall not be used in any particular application without independent testing and/or verification by the operator or the supervisor. Such independent verification of procedures becomes more important as the criticality of the application increases. For this reason, Olympus makes no warranty, expressed or implied, that the techniques, examples, or procedures described herein are consistent with industry standards, nor that they meet the requirements of any particular application.

Olympus reserves the right to modify all products without incurring the responsibility for modifying previously manufactured products.

## Technical Support

Olympus is firmly committed to providing the highest level of customer service and product support. If you experience any difficulties when using our product, or if it fails to operate as described in the documentation, first consult the user's manual, and then, if you are still in need of assistance, contact our After-Sales Service. To locate the nearest service center, please contact the Sales Representative the product was purchased from.

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