



# InterBox

User's Manual

DMTA031-01EN — Rev. C  
September 2022

This instruction manual contains essential information on how to use this Evident product safely and effectively. Before using this product, thoroughly review this instruction manual. Use the product as instructed. Keep this instruction manual in a safe, accessible location.

EVIDENT CANADA, INC., 3415, Rue Pierre-Ardouin, Québec (QC) G1P 0B3  
Canada

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This document was prepared with particular attention to usage to ensure the accuracy of the information contained therein, and corresponds to the version of the product manufactured prior to the date appearing on the title page. There could, however, be some differences between the manual and the product if the product was modified thereafter.

The information contained in this document is subject to change without notice.

Part number: DMTA031-01EN  
Rev. C  
September 2022

Printed in Canada

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## List of Abbreviations

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|      |                                 |
|------|---------------------------------|
| EFUP | environment-friendly use period |
| LED  | light-emitting diode            |
| N/A  | not applicable                  |
| PA   | phased array                    |
| PVC  | polyvinyl chloride              |
| TOFD | time-of-flight diffraction      |
| UT   | ultrasonic testing              |



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## Important Information — Please Read Before Use

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### Intended Use

The InterBox is designed to perform nondestructive inspections on industrial and commercial materials.



#### **WARNING**

Do not use the InterBox for any purpose other than its intended use. It must never be used to inspect or examine human or animal body parts.

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### Instruction Manual

This instruction manual contains essential information on how to use this product safely and effectively. Before using this product, thoroughly review this instruction manual. Use the product as instructed. Keep this instruction manual in a safe, accessible location.

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#### **IMPORTANT**

Some of the details of components illustrated in this manual may differ from the components installed on your device. However, the operating principles remain the same.

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## Device Compatibility

Only use this device with the approved ancillary equipment provided by Evident. Equipment provided by Evident and approved for use with this device is described later in this manual.

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### CAUTION

Always use equipment and accessories that meet Evident specifications. Using incompatible equipment could cause equipment malfunction and/or damage, or human injury.

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## Repair and Modification

This device does not contain any user-serviceable parts. Opening the device might void the warranty.

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### CAUTION

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

---

## Safety Symbols

The following safety symbols might appear on the device 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 or material damage.

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High voltage warning symbol

This symbol is used to alert the user to potential electric shock hazards greater than 1000 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 device:



**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, will 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, may 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.

## Note Signal Words

The following note signal words could appear in the documentation of the device:

**IMPORTANT**

The IMPORTANT signal word calls attention to a note that provides important information, or information essential to the completion of a task.

**NOTE**

The NOTE signal word calls attention to an operating procedure, practice, or the like, which requires special attention. A note also denotes related parenthetical information that is useful, but not imperative.

**TIP**

The TIP signal word calls attention to a type of note that helps you apply the techniques and procedures described in the manual to your specific needs, or provides hints on how to effectively use the capabilities of the product.

## Safety

Before turning on the device, verify that the correct safety precautions have been taken (see the following warnings). In addition, note the external markings on the device, which are described under “Safety Symbols.”

## Warnings



**WARNING**

### General Warnings

- Carefully read the instructions contained in this instruction manual prior to turning on the device.
- Keep this instruction manual in a safe place for further reference.

- Follow the installation and operation procedures.
- It is imperative to respect the safety warnings on the device and in this instruction manual.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment could be impaired.
- Do not install substitute parts or perform any unauthorized modification to the device.
- Service instructions, when applicable, are for trained service personnel. To avoid the risk of electric shock, do not perform any work on the device unless qualified to do so. For any problem or question regarding this device, contact Evident or an authorized Evident representative.
- Do not touch the connectors directly by hand. Otherwise, a malfunction or electric shock may result.
- Do not allow metallic or foreign objects to enter the device through connectors or any other openings. Otherwise, a malfunction or electric shock may result.

**WARNING****Electrical Warning**

The device must only be connected to a power source corresponding to the type indicated on the rating label.

**CAUTION**

If a non-approved power supply cord not dedicated to Evident products is used, Evident will not be able to ensure the electrical safety of the equipment.

**Battery Precautions****CAUTION**

- Before disposing of a battery, check your local laws, rules, and regulations, and follow them accordingly.

- Transportation of lithium-ion batteries is regulated by the United Nations under the United Nations Recommendations on the Transport of Dangerous Goods. It is expected that governments, intergovernmental organizations, and other international organizations shall conform to the principles laid down in these regulations, thus contributing to worldwide harmonization in this field. These international organizations include the International Civil Aviation organization (ICAO), the International Air Transport Association (IATA), the International Maritime Organization (IMO), the US Department of Transportation (USDOT), Transport Canada (TC), and others. Please contact the transporter and confirm current regulations before transportation of lithium-ion batteries.
- For California (USA) only:  
The device may contain a CR battery. The CR battery contains perchlorate material, and special handling may be required. Refer to <http://www.dtsc.ca.gov/hazardouswaste/perchlorate>.
- Do not open, crush, or perforate batteries; doing so could cause injury.
- Do not incinerate batteries. Keep batteries away from fire and other sources of extreme heat. Exposing batteries to extreme heat (over 80 °C) could result in an explosion or personal injury.
- Do not drop, hit, or otherwise abuse a battery, as doing so could expose the cell contents, which are corrosive and explosive.
- Do not short-circuit the battery terminals. A short circuit could cause injury and severe damage to a battery making it unusable.
- Do not expose a battery to moisture or rain; doing so could cause an electric shock.
- Only use an external charger approved by Evident to charge the batteries.
- Only use batteries supplied by Evident.
- Do not store batteries that have less than 40 % remaining charge. Recharge batteries to between 40 % and 80 % capacity before storing them.
- During storage, keep the battery charge between 40 % and 80 %.
- Do not leave batteries in the InterBox unit during device storage.

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## Regulations for Shipping Products with Lithium-Ion Batteries

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**IMPORTANT**

When shipping a Li-ion battery or batteries, be sure to follow all local transportation regulations.

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**WARNING**

Damaged batteries cannot be shipped through normal routes — DO NOT ship damaged batteries to Evident. Contact your local Evident representative or material disposal professionals.

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## Equipment Disposal

Before disposing of the InterBox, check your local laws, rules, and regulations, and follow them accordingly.

## BC (Battery Charger - California, USA Community)



The BC marking indicates that this product has been tested and complies with the Appliance Efficiency Regulations as stated in the California Code of Regulations Title 20, Sections 1601 through 1608 for Battery Charger Systems. The internal battery charger within this device has been tested and certified pursuant to the California Energy Commission's (CEC) requirements; this device is listed on the online CEC's (T20) database.

## CE (European Community)



This device complies with the requirements of directive 2014/30/EU concerning electromagnetic compatibility, directive 2014/35/EU concerning low voltage, and directive 2015/863 which amends 2011/65/EU concerning restriction of hazardous substances (RoHS). The CE marking is a declaration that this product conforms to all the applicable directives of the European Community.

## UKCA (United Kingdom)



This device complies with the requirements of the Electromagnetic Compatibility Regulations 2016, the Electrical Equipment (Safety) Regulations 2016, and the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012. The UKCA marking indicates compliance with the above regulations.

## RCM (Australia)



The regulatory compliance mark (RCM) label indicates that the product complies with all applicable standards, and has been registered with the Australian Communications and Media Authority (ACMA) for placement on the Australian market.

## WEEE Directive



In accordance with European Directive 2012/19/EU 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 Evident 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 Environment-Friendly Use 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 InterBox has been determined to be 15 years.

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



电器电子产品有害  
物质限制使用  
标志

本标志是根据“电器电子产品有害物质限制使用管理办法”以及“电子电气产品有害物质限制使用标识要求”的规定，适用于在中国销售的电器电子产品上的电器电子产品有害物质使用限制标志。

（注意）电器电子产品有害物质限制使用标志内的数字为在正常的使用条件下有害物质等不泄漏的期限，不是保证产品功能性能的期间。

产品中有害物质的名称及含量

| 部件名称 |      | 有害物质           |                |                |                        |               |                 |
|------|------|----------------|----------------|----------------|------------------------|---------------|-----------------|
|      |      | 铅及其化合物<br>(Pb) | 汞及其化合物<br>(Hg) | 镉及其化合物<br>(Cd) | 六价铬及其化合物<br>(Cr( VI )) | 多溴联苯<br>(PBB) | 多溴二苯醚<br>(PBDE) |
| 主体   | 机构部件 | ×              | ○              | ○              | ○                      | ○             | ○               |
|      | 光学部件 | ×              | ○              | ○              | ○                      | ○             | ○               |
|      | 电气部件 | ×              | ○              | ○              | ○                      | ○             | ○               |

产品中有害物质的名称及含量

| 部件名称   | 有害物质           |                |                |                      |               |                 |
|--|----------------|----------------|----------------|----------------------|---------------|-----------------|
|  | 铅及其化合物<br>(Pb) | 汞及其化合物<br>(Hg) | 镉及其化合物<br>(Cd) | 六价铬及其化合物<br>(Cr(VI)) | 多溴联苯<br>(PBB) | 多溴二苯醚<br>(PBDE) |
| 附件   | ×              | ○              | ○              | ○                    | ○             | ○               |
| 本表格依据 SJ/T 11364 的规定编制。<br>○：表示该有害物质在该部件所有均质材料中的含量均在 GB/T26572 规定的限量要求以下。<br>×：表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T26572 规定的限量要求。 |                |                |                |                      |               |                 |

## Korea Communications Commission (KCC)



Seller and user shall be noticed that this equipment is suitable for electromagnetic equipment for office work (class A) and it can be used outside the home. This device complies with the EMC requirements of Korea.

이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.

## EMC Directive Compliance

This equipment generates and uses radio-frequency energy and, if not installed and used properly (that is, in strict accordance with the manufacturer's instructions), may cause interference. The InterBox has been tested and found to comply with the limits for an industrial device in accordance with the specifications of the EMC directive.

## FCC (USA) Compliance

### NOTE

This product 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 product is operated in a



commercial environment. This product 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 product 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.

---

**IMPORTANT**

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the product.

---

**FCC Supplier's Declaration of Conformity**

Hereby declares that the product,

Product name: InterBox

Model: InterBox-MR/InterBox-CW

Conforms to the following specifications:

FCC Part 15, Subpart B, Section 15.107 and Section 15.109.

Supplementary information:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Responsible party name:

EVIDENT CANADA, INC.

Address:

3415, Rue Pierre-Ardouin, Québec (QC) G1P 0B3 Canada

Phone number:

+1 781-419-3900

## ICES-001 (Canada) Compliance

This Class A digital apparatus complies with Canadian ICES-001.

Cet appareil numérique de la classe A est conforme à la norme NMB-001 du Canada.

## Warranty Information

Evident guarantees your Evident product to be free from defects in materials and workmanship for a specific period, and in accordance with conditions specified in the Terms and Conditions available at <https://www.olympus-ims.com/en/terms/>.

The Evident 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 receipt for evidence of external or internal damage that might have occurred during shipment. Immediately notify the carrier making the delivery of any damage, because the carrier is normally liable for damage during shipment. Retain packing materials, waybills, and other shipping documentation needed in order to file a damage claim. After notifying the carrier, contact Evident for assistance with the damage claim and equipment replacement, if necessary.

This instruction manual explains the proper operation of your Evident 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 increasingly important as the criticality of the application increases. For this reason, Evident 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.

Evident reserves the right to modify any product without incurring the responsibility for modifying previously manufactured products.

## Technical Support

Evident 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, visit the Service Centers page on the Evident Scientific Web site.



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# Introduction

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This manual provides instructions and technical specifications for the InterBox, which is a wiring interconnection box that can be mounted on an Evident scanner to simplify the cable connections between the scanner and its acquisition instrument.

To help you understand and safely use the InterBox, this manual contains an equipment overview, connection details, maintenance instructions, and detailed specifications.

Four InterBox models are available, for configurations to suit different equipment applications.

---

|             |
|-------------|
| <b>NOTE</b> |
|-------------|

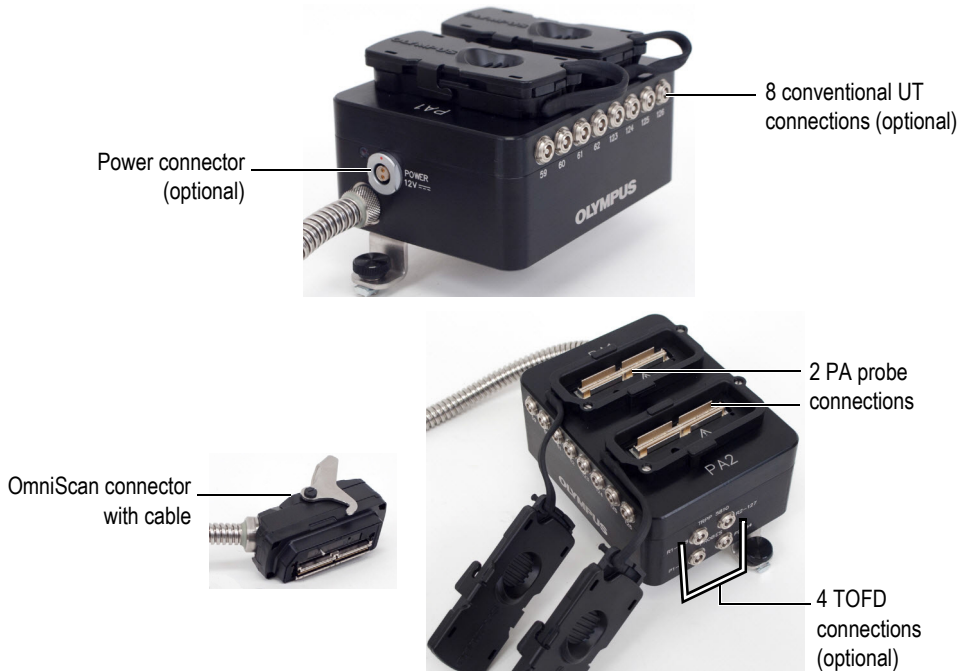
In this manual, the InterBox model EIB-T-8-M-15-OM is shown, because it presents all available product features for all models.

---



# 1. Overview

The EIB-T-8-M-15-OM InterBox model is an example of one of the four available models (see Figure 1-1 on page 23). Depending on the model chosen, it is possible to connect one or two phased array probes, up to two pairs of TOFD probes, and up to eight conventional UT transducers to the InterBox. The connections are transmitted to the acquisition unit through a single 128-element cable with an OmniScan or Hypertronics connector.



**Figure 1-1 InterBox model EIB-T-8-M-15-OM – Connector locations**

The InterBox design eliminates the individual component cables between the scanner and the acquisition unit, and minimizes the encumbrance needed on the scanner to install the pulser/receiver extension box and the PA probe splitter.

Depending on the model, the InterBox integrates a splitter (for phased array probes), a remote pulser/preamplifier (for TOFD inspections), or multiple UT channels, and is therefore well-suited for certain applications that require a combination of these features. For each of these configurations, two cable types are available: a flexible PVC cable and a metallic-armored cable (standard).



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## 2. Connections and Cables

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Depending on the InterBox model, different instrument connectors and different cables are provided, and therefore the connection procedures may vary.

### 2.1 Connections to the Acquisition Unit

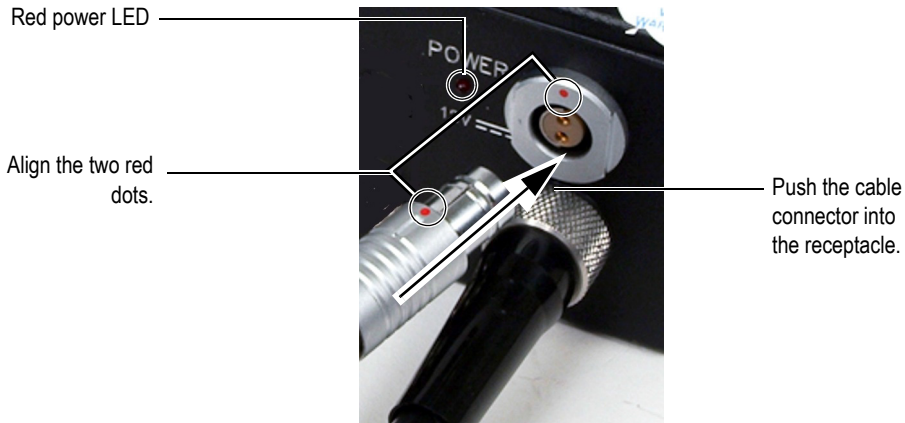
The InterBox is connected to an acquisition instrument by using an OmniScan or Hypertronics connector and cable. The cable's outer material is either metallic-armored or PVC-coated (see Figure 2-1 on page 25).



**Figure 2-1** The acquisition-data cable

## 2.2 Power-Cable Connector—for Models with TRPP 5810 Pulser/Preamplifier

The power-cable connector is marked with a red dot that must be aligned with a red dot on the connector receptacle on the InterBox before the connection is made (see Figure 2-2 on page 26 and Figure 2-3 on page 27).



**Figure 2-2** Aligning the marks for the power connector

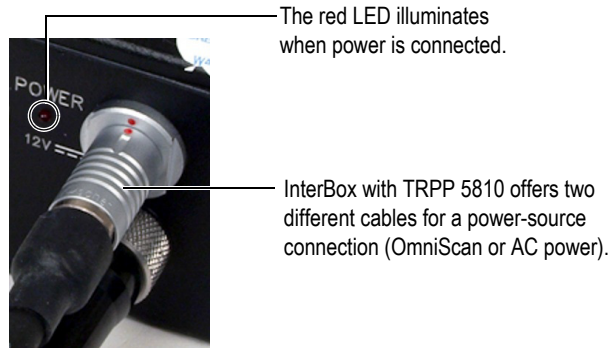
Once the InterBox is correctly connected to an electric power source, the red LED illuminates (see Figure 2-3 on page 27).

---

**NOTE**

All InterBox models equipped with TRPP 5810 come with two power cables. The first power cable allows the InterBox to be powered by an OmniScan acquisition unit. The second power cable allows the InterBox to be powered by a 120 VAC to 240 VAC source.

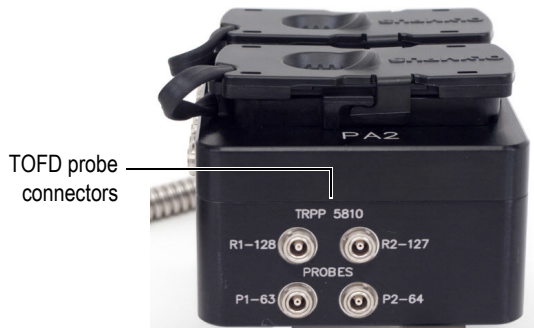
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**Figure 2-3 The power cable connection**

## 2.3 TOFD Connectors— for Models with TRPP 5810 Pulser/Preamplifier

The TOFD connectors (pulsers and receivers) are mounted in the section labeled TRPP 5810 (see Figure 2-4 on page 27).



**Figure 2-4 The TOFD connections**

On the TRPP 5810 module, two connectors are for pulser outputs, and two are for receiver inputs. This enables the InterBox to drive two pairs of TOFD probes simultaneously.

The label on the InterBox face opposing the TOFD connectors provides the connection information for the integrated TRPP 5810 pulser/preamplifier (see Figure 2-5 on page 28):

- P1 and P2 identify the pulser outputs
- R1 and R2 identify the receiver inputs

These codes, as well as the channel numbers, are marked next to each connector (see Figure 2-4 on page 27).

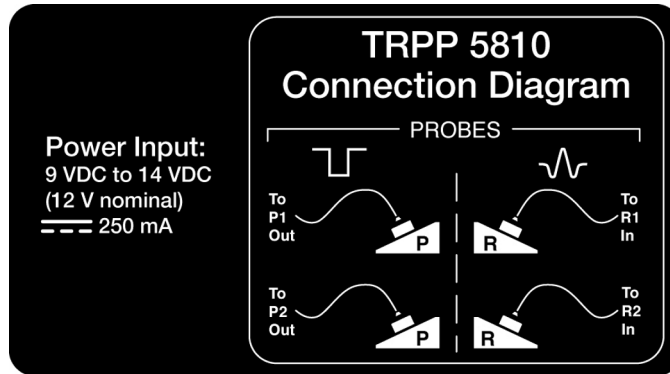


Figure 2-5 The label with probe-connection diagram

Table 1 InterBox—Pinout for the P and R connectors

| Connector         | I/O    | Description  |
|-------------------|--------|--|
| P1 OUT and P2 OUT | Output | These P connectors are used to transmit the signals to two conventional probes.  |
| R1 IN and R2 IN   | Input  | These R connectors are used to receive the signals from two conventional probes. |

## 2.4 Conventional UT Connectors

The connections for conventional ultrasonic transducers are located on the right side of the acquisition-data cable (see Figure 2-6 on page 29). The channel numbers are marked next to each connector.



Figure 2-6 The conventional UT connections

---

### IMPORTANT

The power output from the conventional UT channels is limited to 80 V. This is because these channels are connected to a phased array instrument, which imposes this voltage limit.

---

## 2.5 Phased Array Probe Connectors

Two phased array connector receptacles are mounted on the top of the InterBox (see Figure 2-7 on page 30). Rubber covers protect the receptacles when no connector is installed.



**Figure 2-7 The protective covers for phased array connectors (PA1 and PA2)**

The connector receptacles are identified as PA1 and PA2.

---

**NOTE**

The highest channel number on each PA range depends on how many channels are used for TOFD and conventional UT connections. The maximum total number of channels can be either 64 or 128, depending on the InterBox model.

---

For more information about channel numbers, refer to Table 8 on page 42.

## **2.6 Connecting the Phased Array Connectors**

The two InterBox phased array connectors have covers that protect them from dust and other pollutants.

**IMPORTANT**

To maintain the water resistance of the InterBox, the PA connectors must be covered by the protective covers even when there is no PA probe connected to the instrument.

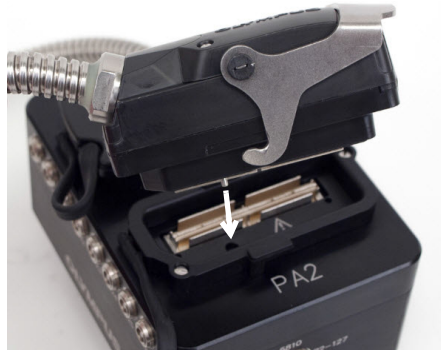
**To connect a phased array connector to the InterBox**

1. Remove the phased array protective cover (see Figure 2-8 on page 31).



**Figure 2-8 Removing the PA protective covers**

2. Align the pins of the phased array connector with the receiving holes on the receptacle (see Figure 2-9 on page 32).



**Figure 2-9** Aligning the OmniScan connector

---

**IMPORTANT**

To avoid connector-pin problems, always make sure that the connector is aligned straight with respect to the receptacle before pushing it into the receptacle.

---

3. Push the connector into the receptacle to ensure a good connection (see Figure 2-10 on page 32).
4. Pull down the latch mechanism to lock the connector.

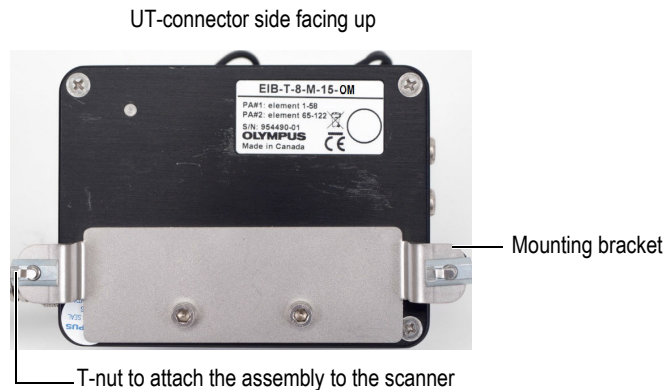


**Figure 2-10** The OmniScan connector pushed in (*left*) and locked (*right*)



## 2.7 InterBox Installation

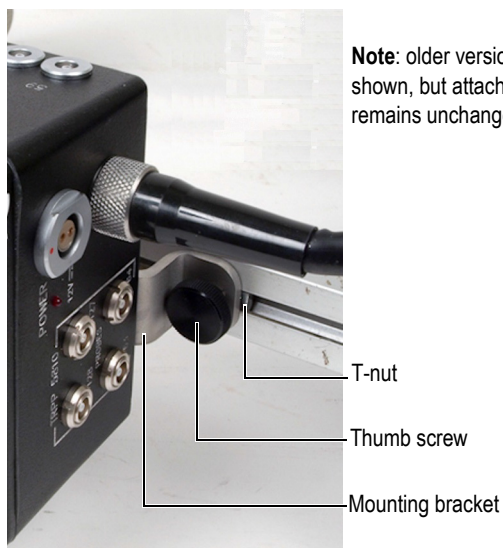
The InterBox can be attached to an Evident HSMT manual scanner with the supplied mounting bracket (see Figure 2-12 on page 34). A pair of T-nuts with thumb screws secures the InterBox to the frame of the scanner (see Figure 2-11 on page 33 and Figure 2-12 on page 34).



**Figure 2-11 The mounting bracket for the HSMT manual scanner**

### To install or remove the InterBox

1. Identify a location on the scanner's frame where the InterBox will be installed. Ensure that this location allows access to the InterBox's different connectors without limiting the scanner's mobility (see Figure 2-12 on page 34).
2. Slide the two T-nuts into the frame bar of the scanner.
3. Move the InterBox assembly along the scanner's frame bar to the desired location.



**Figure 2-12 The InterBox assembly attached to the scanner**

4. Tighten the two thumb screws.

---

## 3. Maintenance

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The InterBox requires very little maintenance to keep it in good physical and working condition. A periodic inspection and, depending on the operating environment, periodic cleaning may be required.

### 3.1 Preventive Maintenance

The InterBox does not require preventive maintenance. Only a regular inspection of the product is recommended to ensure that the InterBox functions correctly.

### 3.2 Unit Cleaning

The InterBox external surfaces can be cleaned when needed. This section provides the appropriate product-cleaning procedure.

#### To clean the unit

1. Ensure the unit is turned off by removing the source of power.
2. Disconnect all cables.
3. To bring the instrument back to its original finish, clean the housing with a soft cloth.
4. To remove persistent stains, use a damp cloth with a soft, soapy solution. Do not use abrasive products or powerful solvents that could damage the finish.
5. Wait until the instrument dries completely before connecting the cables.



## 4. Specifications

**Table 2 InterBox—Technical specifications**

| Element                               | Description                    |   |
|---------------------------------------|--------------------------------|---|
| Instrument's physical characteristics | Overall dimensions (L × W × H) | 151 mm × 100 mm × 100 mm (5.94 in. × 3.94 in. × 3.94 in.), without cable clearance. Cable-bend clearance is approximately 50 mm (1.97 in.). |
|                                       | Weight                         | 1 kg (2.2 lb) <sup>a</sup>  |
|                                       | Operating temperature          | -10 °C to 60 °C (14 °F to 140 °F)   |
|                                       | Storage temperature            | -20 °C to 70 °C (-4 °F to 158 °F)   |
|                                       | Relative humidity              | Up to 85 %, noncondensing   |
|                                       | Wet location                   | Yes   |
|                                       | Altitude                       | Up to 2000 m  |
|                                       | Outdoor use                    | Yes   |
|                                       | Pollution level                | 2   |
|                                       | IP rating                      | Splash proof <sup>b</sup> (Designed for IP34 rating)  |
| Main-cable characteristics            | External material              | – Flexible metallic-armored<br>OR<br>– PVC jacket   |
|                                       | Number of elements             | 64 elements or 128 elements micro-coax  |
|                                       | Default connector type         | OmniScan connector (other types available as an option).  |

**Table 2 InterBox— Technical specifications (continued)**

| Element        | Description       |   |
|----------------|-------------------|---|
| PA connections | Voltage (max.)    | 80 V  |
|                | PA connector type | OmniScan connectors   |
| UT connections | Voltage (max.)    | 80 V  |
|                | UT connector type | LEMO-00 female connectors   |
| TRPP 5810      | Connector type    | LEMO-00 female connectors (See “TRPP 5810 Specifications” on page 38) |

- a. Without any cable attached.
- b. If connectors or protective covers are in place.

## 4.1 TRPP 5810 Specifications

**Table 3 TRPP 5810— Power supply**

|               |                                  |
|---------------|----------------------------------|
| Voltage range | 9 VDC to 14 VDC (12 VDC nominal) |
| Current       | 250 mA max.                      |

**Table 4 TRPP 5810— Receiver (preamplifier) specifications**

|                            |   |
|----------------------------|---|
| Voltage gain               | 40 dB $\pm$ 0.5 dB into 50 $\Omega$ at 10 MHz                     |
| Bandwidth (-3 dB)          | 0.5 MHz to 30 MHz with $\pm$ 10 % tolerance                       |
| Input-referred noise       | $\leq 2$ nV/ $\sqrt{\text{Hz}}$ with 50 $\Omega$ source impedance |
| Input/output HV protection | -300 V peak pulsed for pulse width $\leq$ 500 ns                  |
| Input impedance            | 550 $\Omega$ $\pm$ 55 $\Omega$                                    |
| Output impedance           | 50 $\Omega$ $\pm$ 5 $\Omega$                                      |
| Crosstalk between channels | $\geq$ 100 dB with 10 MHz sine wave                               |

**Table 5 TRPP 5810—Pulser specifications**

|                          |                                      |
|--------------------------|--------------------------------------|
| Output pulse voltage     | -200 V $\pm$ 20 V into 50 $\Omega$   |
| Output impedance         | $\leq$ 6 $\Omega$                    |
| Input triggering voltage | -15 V to -200 V, protected to -300 V |

**Table 5 TRPP 5810—Pulser specifications (continued)**

|                                      |   |
|--------------------------------------|---|
| Input impedance                      | 50 $\Omega$ $\pm$ 5 $\Omega$  |
| Probe damping                        | Active, 50 $\Omega$ $\pm$ 5 $\Omega$  |
| Minimum pulse width                  | 30 ns $\pm$ 5 ns  |
| Maximum pulse width                  | 500 ns $\pm$ 50 ns  |
| Repeated pulse width error           | $\pm$ 10 % for pulse width >50 ns,<br>otherwise $\pm$ 5 ns with -50 V min. input<br>trig. voltage |
| Maximum pulse repetition freq. (PRF) | 5 kHz for 100 ns pulse width, both<br>channels  |
|                                      | 10 kHz for 100 ns pulse width, single<br>channel  |
|                                      | 20 kHz for 50 ns pulse width, single<br>channel (0.1 % total maximum duty<br>cycle)               |

### 4.1.1 12 V Connector

The 12 V connector is used to supply power to the TRPP 5810 unit (see Figure 4-1 on page 39).

#### Description

Receptacle with 2 female contacts

#### Manufacturer, number

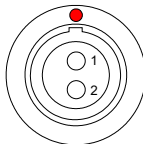
W.W. Fischer Inc., D.103.A051-130

Evident, 21AB0133

#### Suggested cable connector

W.W. Fischer Inc., S.103.A051-60/6.2-S

Evident, 21AB0132



**Figure 4-1 The 12 V connector**

**Table 6 InterBox—Pinout for the 12 V connector**

| Pin | I/O   | Signal | Description   |
|-----|-------|--------|---|
| 1   | Input | 12 VDC | 9 VDC to 14 VDC input (12 VDC nominal), 250 mA max. |
| 2   | N/A   | GND    | Ground  |

## 4.1.2 P and R Connectors

The P and R connectors on the InterBox unit are used for pulser and receiver connections, coming from or going to the TOFD probes (see Figure 4-2 on page 40).

### Description

Coaxial receptacle

### Manufacturer, number

LEMO, EPS.00.250.NTN

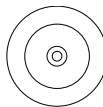
Evident, 21AB0056

### Suggested cable connector

LEMO, FFC.00.250.CTAC31

Equivalent: W.W. Fischer, S.101.A004/3.0

Evident, 21AB0016



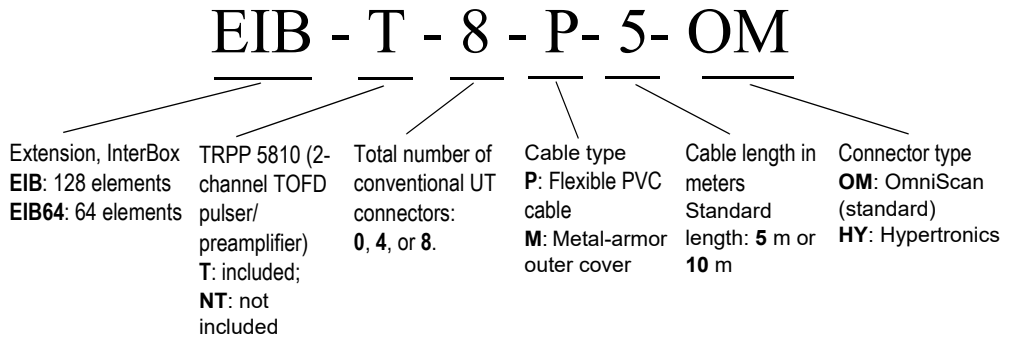
**Figure 4-2 The P and R connector**

## 4.2 InterBox Connector Configurations and Ordering Numbers

Table 7 on page 41 specifies the total number of connectors, for each type of connection, that are included on each InterBox model. Table 8 on page 42 contains the designated channel numbers for the connectors.

In the tables, the InterBox model numbers are coded as follows:





**Figure 4-3 InterBox order number nomenclature**

**Table 7 InterBox—Number of connectors**

| InterBox model    | Number of connectors |                  |                 |
|-------------------|----------------------|------------------|-----------------|
|                   | Phased array UT      | TOFD (TRPP 5810) | Conventional UT |
| EIB-T-0-x-x-xx    | 2                    | 4                | 0               |
| EIB-T-4-x-x-xx    | 2                    | 4                | 4               |
| EIB-T-8-x-x-xx    | 2                    | 4                | 8               |
| EIB-NT-0-x-x-xx   | 2                    | 0                | 0               |
| EIB-NT-4-x-x-xx   | 2                    | 0                | 4               |
| EIB-NT-8-x-x-xx   | 2                    | 0                | 8               |
| EIB64-NT-0-x-x-xx | 2                    | 0                | 0               |
| EIB64-NT-4-x-x-xx | 2                    | 0                | 4               |
| EIB64-NT-8-x-x-xx | 2                    | 0                | 8               |
| EIB64-T-0-x-x-xx  | 2                    | 4                | 0               |
| EIB64-T-4-x-x-xx  | 2                    | 4                | 4               |
| EIB64-T-8-x-x-xx  | 2                    | 4                | 8               |

**Table 8 InterBox—Channel numbering**

| InterBox commercial model | Phased array UT |        | TOFD (TRPP 5810) |    |     |     | Conventional UT |      |      |      |      |      |      |      |
|---------------------------|-----------------|--------|------------------|----|-----|-----|-----------------|------|------|------|------|------|------|------|
|                           | PA1             | PA2    | P1               | P2 | R1  | R2  | UT 1            | UT 2 | UT 3 | UT 4 | UT 5 | UT 6 | UT 7 | UT 8 |
| EIB-T-0-x-x-xx            | 1-62            | 65-126 | 63               | 64 | 128 | 127 | a               |      |      |      |      |      |      |      |
| EIB-T-4-x-x-xx            | 1-60            | 65-124 | 63               | 64 | 128 | 127 |                 |      | 61   | 62   |      |      | 125  | 126  |
| EIB-T-8-x-x-xx            | 1-58            | 65-122 | 63               | 64 | 128 | 127 | 59              | 60   | 61   | 62   | 123  | 124  | 125  | 126  |
| EIB-NT-0-x-x-xx           | 1-64            | 65-128 |                  |    |     |     |                 |      |      |      |      |      |      |      |
| EIB-NT-4-x-x-xx           | 1-62            | 65-126 |                  |    |     |     |                 |      | 63   | 64   |      |      | 127  | 128  |
| EIB-NT-8-x-x-xx           | 1-60            | 65-124 |                  |    |     |     | 61              | 62   | 63   | 64   | 125  | 126  | 127  | 128  |
| EIB64-NT-0-x-x-xx         | 1-32            | 33-64  |                  |    |     |     |                 |      |      |      |      |      |      |      |
| EIB64-NT-4-x-x-xx         | 1-30            | 33-62  |                  |    |     |     |                 |      | 31   | 32   |      |      | 63   | 64   |
| EIB64-NT-8-x-x-xx         | 1-28            | 33-60  |                  |    |     |     | 29              | 30   | 31   | 32   | 61   | 62   | 63   | 64   |
| EIB64-T-0-x-x-xx          | 1-30            | 33-62  | 31               | 32 | 64  | 63  |                 |      |      |      |      |      |      |      |
| EIB64-T-4-x-x-xx          | 1-28            | 33-60  | 31               | 32 | 64  | 63  |                 |      | 29   | 30   |      |      | 61   | 62   |
| EIB64-T-8-x-x-xx          | 1-26            | 33-58  | 31               | 32 | 64  | 63  | 27              | 28   | 29   | 30   | 59   | 60   | 61   | 62   |

a. For this table: if a table box is empty, channel numbering does not apply.

---

|             |
|-------------|
| <b>NOTE</b> |
|-------------|

The first three sets of characters in an InterBox model number determine the number of UT connectors, and whether a TOFD pulser/preamplifier is included. These first three sets of characters represent the characteristics of the box itself. The last three sets of characters define the main cable options.

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