



instruction manual

DataCapsule-Evo
Cat. No. 17308



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instruction manual

**DataCapsule-Evo
Cat. No. 17308**

Serial No.

SAFETY CONSIDERATIONS

ALTHOUGH THIS INSTRUMENT HAS BEEN DESIGNED WITH INTERNATIONAL SAFETY STANDARD, THIS MANUAL CONTAINS INFORMATION, CAUTIONS AND WARNINGS WHICH MUST BE FOLLOWED TO ENSURE SAFE OPERATION AND TO RETAIN THE INSTRUMENT IN SAFE CONDITIONS.

SERVICE AND ADJUSTMENTS SHOULD BE CARRIED OUT BY QUALIFIED PERSONNEL, AUTHORIZED BY UGO BASILE ORGANIZATION.

ANY ADJUSTMENT, MAINTENANCE AND REPAIR OF THE OPENED INSTRUMENT UNDER VOLTAGE SHOULD BE AVOIDED AS MUCH AS POSSIBLE AND, WHEN INEVITABLE, SHOULD BE CARRIED OUT BY A SKILLED PERSON WHO IS AWARE OF THE HAZARD INVOLVED.

CAPACITORS INSIDE THE INSTRUMENT MAY STILL BE CHARGED EVEN IF THE INSTRUMENT HAS BEEN DISCONNECTED FROM ITS SOURCE OF SUPPLY.

DataCapsule-Evo Digital Recorder

Cat. No. 17308

NEW

General

The new DataCapsule-Evo 17308, powered by iWorx, is a new general purpose, 8-channel data acquisition system that provides high resolution and sensitivity over conventional recorders.

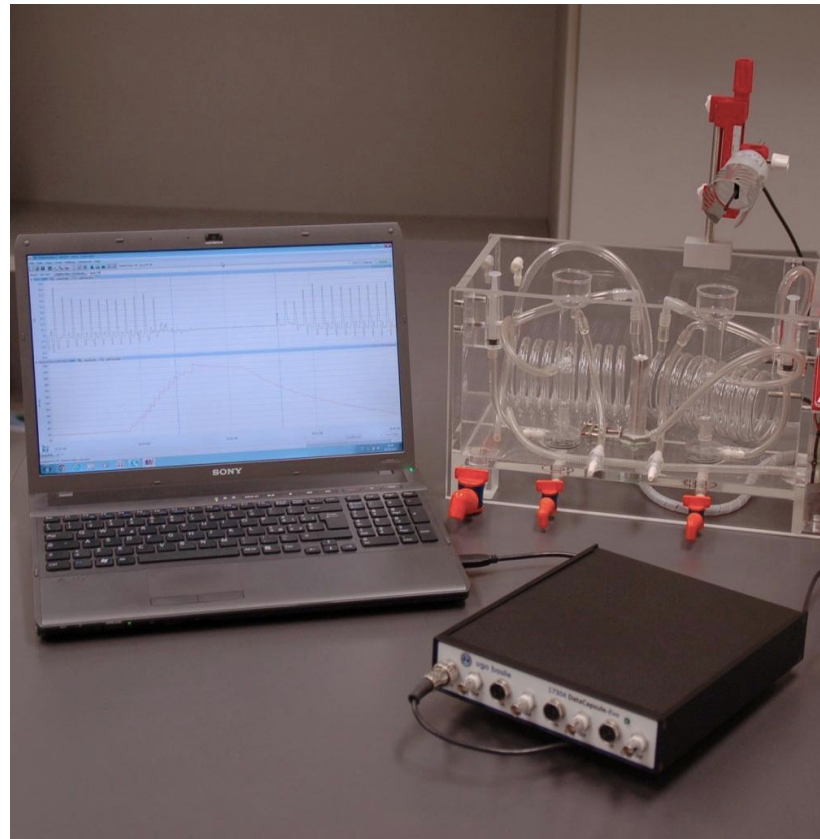
It is an advanced and feature-rich physiological data acquisition system; it comes standard with eight general purpose input channels, a low voltage and high voltage stimulator, eight digital inputs and outputs, a built-in barometric pressure sensor, and four iWire™ inputs.

The 17308 exhibits the high resolution, low noise, and flexibility required for a variety of research applications.

Set-up is plug-and play easy, with connection to PC or MAC computers via USB interface; incorporating innovative iWire serial interface technology and advanced LabScribe data acquisition and analysis software, the 17308 Recorder accommodates a wide range of sensors, transducers, and other devices.

The 17308 feature a high resolution, 16-bit ADC, with exceptionally low system noise ~ 1mV.

LabScribe3™ software is provided with the instrument, or can be downloaded from our web site.



**LabScribe3™
Software on-board**

**100KHz Sampling
Speed**

**4+4 CHANNEL DATA
ACQUISITION SYSTEM**

**with iWire Interface
(4 additional channels)**

Main Features

- USB connection to PC and MAC
- Connectors for most transducers
- DIN & BNC inputs and BNC outputs
- Input trigger to start recording
- High resolution and sensitivity
- Dual Programmable stimulator iWire interface



CHECK-LIST

Cat. No. 17308 DATA CAPSULE

CLIENTE / CUSTOMER _____

Ordine No. / Order No. _____ Data / Date ____/____/____

UB code	CAT.No.	✓	Q.ty	DESCRIPTION	DESCRIZIONE
	17308		1	DataCapsule Recorder (Hardware)	Registratore DataCapsule (Hardware)
			1	LabScribe Software (on CD)	LabScribe Software (su CD)
	17308-302		1	Instruction Manual (on CD)	Manuale di Istruzione (su CD)
	52010-323		1	USB CABLE	USB CABLE
			1	POWER SUPPLY	POWER SUPPLY

DATE / /	Serial No.	PREPARATO DA / PACKED BY
----------	------------	--------------------------

IMPORTANT/IMPORTANTE:

Check the shipment for completeness immediately after receipt: should you find any discrepancy, please fill in the following part and transmit it to our fax no. +39 0332 745488

Al ricevimento della merce controllate che la spedizione sia completa: in caso di discrepanza, completate il formulario di seguito riportato ed inviatelo al nostro fax no. 0332 745488

FROM: Name _____ Company/Institution _____

DATE _____ REF. _____

NOTE

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DataCapsule-Evo

Cat. 17308

1 GENERAL

The new **DataCapsule-Evo**, powered by iWorx, is a new general purpose, data acquisition system that provides high resolution and sensitivity over conventional recorders, for organ and tissue bath studies, cardiovascular/hemodynamic research, etc.



THE 17308 is the most advanced and feature-rich physiological data acquisition system on the market. It comes standard with eight general purpose input channels, a low voltage and high voltage stimulator, eight digital inputs and outputs, a built-in barometric pressure sensor, and four iWire™ inputs

This versatile digital recorder is a unique system, in that each channel is independent, each having its own 16 bit analog-to-digital converter.

This makes the 17308 Recorder a space efficient “One Box” solution. Setup is plug-and-play easy with connection to PC or MAC computers via the popular USB interface.

1.1 Overview of the System

The 17308 hardware in combination with **LabScribe3™** recording software provides a system that allows coordinated control of both analog inputs and outputs.

The hardware offers many benefits including low noise, high speed, range, and resolution. The 17308 interfaces with LabScribe3 software via the USB port, the most current computer peripheral interface, and the 17308 capitalizes on three of its features: high speed, built in error checking, and ‘Plug and Play’ connectivity.

All of this is packaged in a low profile enclosure that provides both durability and increased noise immunity.

1.1.1 Resolution and Noise

The high resolution of the DataCapsule-Evo 17308, combined with an unparalleled signal-to-noise ratio and exceptionally low enable you to resolve even the most subtle changes in pressure tension, temperature, or other research parameters.

For example, in vascular tissue studies, tension as low as 1 mg can be measured reliably. Likewise, changes as low as 0.1° C during thermal studies, or pressure changes as low as 0.1 mmHg during hemodynamic studies, can easily be resolved.



Figure 1 "Front Panel"

1.1.2 Inputs

A1 through A4: BNC connectors for single-ended transducers.

A5 through A8: Each channel is equipped with a transducer amplifier to allow connection of virtually any physiologic transducer via a DIN8 connector.



inputs A5 through A8 are to be used for Ugo Basile transducers (with suffix -G).

iWire Connectors: accept up to four serial iWire interfaces

1.1.3 Outputs

S1 and S2: Low voltage stimulators. Parameters for the stimulators, such as pulse width, frequency and amplitude, may be changed on the fly using controls located in the LabScribe software toolbar. Standard protocols include Pulse, Train, Step, Triangle, Ramp, and Custom. Connected via BNC connectors.

HV Stimulator: High voltage isolated stimulator. Suitable for human striated muscle studies. Connected via HV safety connectors.

1.1.4 Speed

The sampling speed of the DataCapsule-Evo 17308 has been optimized to meet the requirements for cardiovascular/hemodynamic research, organ and tissue bath studies, Oocyte clamp and epithelial voltage clamp applications. The maximum sampling speed is 100KHz, more than fast enough for these applications.

1.2 Rear Panel



Figure 2 "Back Panel"

- **Power switch**
- **DC Power connector:** Accepts 12VDC, 1.5 A DC converter.
- **Ground:** Accepts a banana plug.
- **EM1 and EM2:** Accept the Event Marker (EM-220) and certain other transducers (including the FRS-220 Foot Reaction Switch and the PHRM-100 Polar Heart Rate Monitor receiver).
- **Sync-Out, Sync-In:** To synchronize recordings across multiple RA Recorders so that channels from multiple devices can be sampled simultaneously. BNC connectors.
- **USB connector**
- **Digital Input/Output 1 and 2:** Up to eight digital inputs and outputs are available to monitor and control external TTL devices like pumps and valves.

1.3 List of components

The 17308 DataCapsule is shipped with the following, see also paragraph 7-ORDERING INFORMATION:

- 17308 Hardware
- USB A-to-B Cable
- Universal 12VDC, 1A power supply
- LabScribe3 software CD, see *paragraph 2*
- Hardware/Software Manual (on CD)

2 LabScribe™ Software

A CD with the LabScribe3 software is provided with the instrument. The software can also be downloaded from our web site <http://www.ugobasile.com/ub-software/viewcategory/3-ub-softwares.html>.

2.1.1 Real Units

LabScribe software allows you to calibrate the displayed data in any units you choose. New in LabScribe3 is support for **multi-point calibration** to address the use of nonlinear sensors.

2.1.2 Display Controls

A powerful benefit of the high resolution performance of the 17308 enables the use of LabScribe's **AutoScale feature** to optimize the scaling of displayed data.

Time base or y-axis scaling can also be zoomed in or out with a single click of a mouse.

2.1.3 Computed Channels

LabScribe allows the creation of a **virtual channel** by applying a function to an existing raw or virtual channel.

Thirty-five functions such as **Periodic, Integral, Derivative, Smoothing**, etc. are available; LabScribe can display up to 128 raw data or virtual channels.

LabScribe uses a unique Views Manager to control the display of these channels; related channels can be grouped into a View and you can, with a click of the mouse, switch between Views at any time, even while recording.

2.1.4 Specialized Analyses

LabScribe's AutoMark capability makes it possible to easily identify and perform measurements from characteristic points of interest in ECG, blood pressure and maximal response waveforms.

LabScribe3 also allows online as well as offline XYplot, which is useful for displaying pressure volume loops. In addition, LabScribe3 is capable of displaying offline FFT of your recordings.

2.1.5 Real-Time Notations

Keyboard input from the user may be time locked to the data to indicate drug delivery or stimulus points; annotations may be positioned in the data, just as you would write on chart paper.

2.1.6 Twenty-Four Off-Line Calculations

Twenty-Four off-line calculations are also supported; these operate on a selection of data and return a value.

Calculations include Area Under the Curve, Max-Min, Slope at a Point, Slope of the Line of Best Fit and the Mean.

2.1.7 Data Exported to .txt or .png

Any view of the data can be exported to the disk as a text file or graphic: this capability is ideal for post calculation in programs like Excel™ or MatLab™.

Picture formats make reports or poster presentations easy. Of course you can always print data from any window in the program.

3 SYSTEM SPECS.

BNC INPUTS (A1-A4)	
Number of Inputs	4
Input Range	±10 VDC
Resolution	16 bit
Connectors	BNC Cable
DIN8 TRANSDUCER INPUTS (A5-A8)	
Number of Inputs	4
Input Range	±10 VDC
Resolution	16 bit
Isolation	No
Excitation	±5 VDC, 100 mA
Connectors	DIN8
Gain	Programmable with input resistor
HIGH VOLTAGE STIMULATOR OUTPUT	
Connectors	HV Safety
Output Range	0-1mA
Compliance	100V
Max ON time	10ms
LOW VOLTAGE STIMULATOR OUTPUTS (S1 and S2)	
Resolution	16bit
Connectors	BNC
Output Range	±15 VDC at 35 mA
Modes	Pulse, Train, Constant, Step, Ramp, Triangle, Custom

DIGITAL INPUTS and OUTPUTS

Input	8 independent lines, TTL input, 1 MegaOhm input impedance, 5V maximum
Output	8 independent lines, TTL output level, 24 mA maximum load per line

A/D CONVERTER

Sampling Speed	100KHz aggregate
Interface	USB 1.1, 2.0, full speed

PHYSICAL

Power	12VDC, 1.5A
Enclosure and Dimensions	Plastic; 23cm(W) x 15cm(D) x 6.5cm(H)
Shipping Dimensions	45 (D) x 34 x 26 (h) cm
Weight	2.0 Kg
Shipping Weight	4.0 Kg

Software iWorx LabScribe3™

Warranty The 17308 hardware is protected with a 24-month warranty

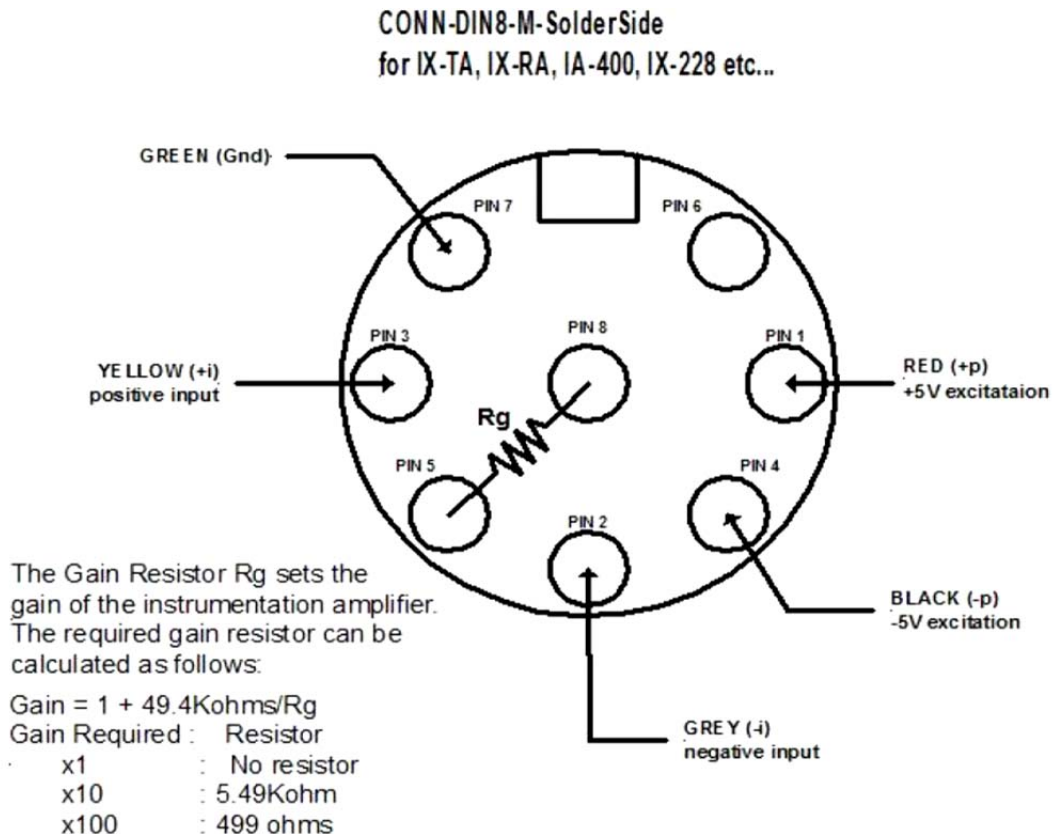


Figure 3 "DIN8 Transducer Connector Pin Configuration"

4 INSTALLATION

4.1 Unpacking & Preliminary Check

Check the contents of the shipment for completeness, packing list to hand, and visually inspect the instrument as soon you take it out of the packaging. Use the supplied **Check List**.

If the instrument is damaged or, after having tested it, fails to meet rated performances, notify the carrier and our company immediately.



Protect the environment!

Dispose of packaging properly, according to existing and applicable waste management rules and regulations.

4.2 Notes on the Instruction Manual

The Instruction Manual included in the package (on the CD) is necessary for the correct installation and operation of the instrument.

We recommend keeping the manual ready to be consulted by the qualified personnel who use the instrument.

Free of charge copies of the instruction manual are available upon request: please contact our service department (see paragraph 6.3-Customer Support) specifying the series number of your instrument.

4.2.1 Mains Switch

A two-pole toggle switch, which complies with international safety standards, provides a visual cue, meaning **OFF**, when pressed to the “O” side, **ON** when pressed to the “I” side.

4.3 PC Requirements

For a correct operation, it is advisable to work with the following minimum features:

PC	MAC
HW Features <ul style="list-style-type: none"> • Pentium 4, 3Ghz (or higher) • RAM system 1Gbyte (or higher) • RAM video 128Mbyte (or higher) 	HW Features <ul style="list-style-type: none"> • Processor: Intel • RAM: 1G or more
Recommended Operating System <ul style="list-style-type: none"> • Windows XP, Vista, 7 or later • Space on Hard Disk 1Gbyte 	Recommended Operating System <ul style="list-style-type: none"> • OSX 10.9 and up

4.4 Setting Up

First load the LabScribe3 software from the provided CD onto the computer, or download it from our web page <http://www.ugobasile.com/ub-software/viewcategory/3-ub-softwares.html>.



Do NOT connect the hardware to the computer before installing the software.

Connect the 17308 hardware to the computer via the USB cable provided. Connect the power cord and power up the hardware.

4.5 General Safety Instructions

The following guidelines must be followed to ensure safe operation.

- ! **DO NOT** attempt to open or perform any service work
- ! **DO NOT** connect up human subjects



4.6 Intended Use

The 17308 is intended for investigational use only.

4.7 Intended Environment

Storage Conditions:

- Temperature : 0°C to 40°C
- Humidity: 0 to 70%

Operating Conditions:

- Temperature : 10°C to 30°C.
- Humidity: 0 to 60%

4.8 Additional Safety Consideration

- a. Place your instrument on a steady flat surface.
- b. Use original accessories and spare parts only, see paragraph 7.
- c. Immediately disconnect and replace damaged power supply.
- d. Do not operate in hazardous environments or outside prescribed environmental limitations (i.e. +10C° / +40C°, 95% max. relative humidity, non-condensing)
- e. Do not spray any liquid on the connectors and on the geared motor.



UGO BASILE DOES NOT ACCEPT ANY RESPONSIBILITY FOR PROBLEMS OR HARM CAUSED TO THINGS OR PERSONS, ARISING FROM:

- incorrect electrical supply;
- incorrect installation procedure;
- incorrect or improper use or, in any case, not in accordance with the purpose

for which the instrument has been designed and the warnings stated in the instruction manual supplied with the instrument;

- replacement of original components, accessories or parts with others not approved by the manufacturer;
 - servicing carried out by unauthorized personnel
- see also paragraph 6-MAINTENANCE.

5 HOW TO USE THE 17308 RECORDER

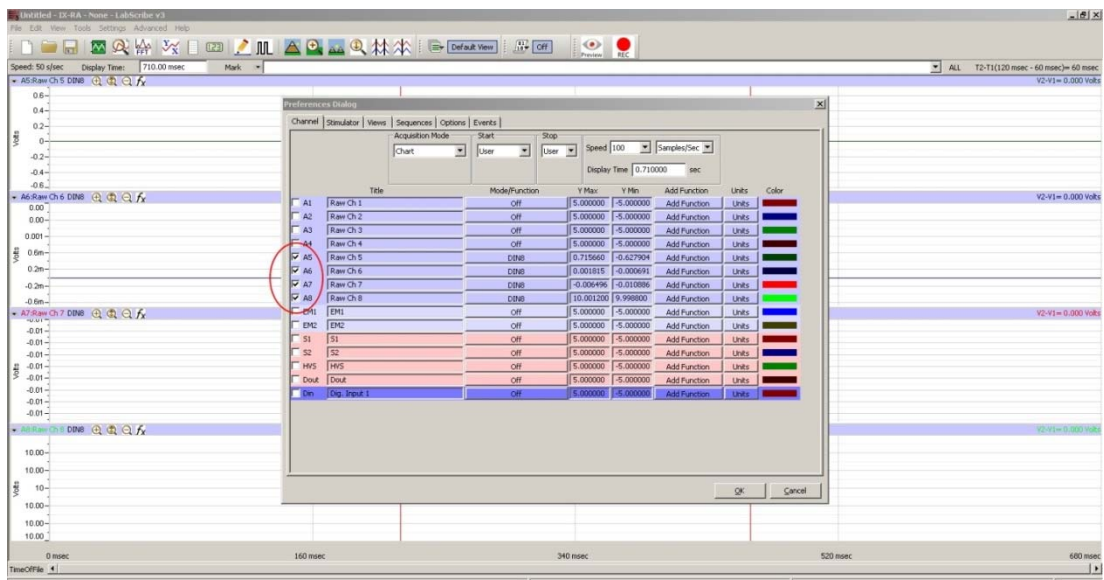
The 17308 Recorder is controlled by LabScribe recording & analysis software. LabScribe has an intuitive interface for setting up acquisition screens, calibrating signals, and analyzing data on up to 128 channels simultaneously at sampling rates as high as 100K samples/second.

- 1) To set up and start to use the 17308, first of all load LabScribe from the provided CD. Be sure to install the software for the appropriate computer platform (Windows or Mac OS) before connecting the hardware for the first time.
- 2) Plug in and switch on the 17308. If you will be running an experiment that uses an iWire device, connect the device before turning on the RA Recorder.
- 3) Double-click on the LabScribe shortcut to open the software. You should see a message indicating that the 17308 has been recognized by the software.
- 4) There are a number of advanced software modules available for LabScribe. These include modules for research involving intravascular blood pressure, ventricular pressure-volume loops, metabolic function, and ECG analysis.



When used in combination to Ugo Basile transducers, channels A1 to A4 are to be disabled, while **channels A5-A6-A7-A8 are to be enabled**, one for each connected transducer.

To disable/enable channels, select **Edit > Preference** from the main menu:



- 5) Connect the desired transducers to the appropriate channels.
- 6) If you need to connect an iWire device once the 17308 Recorder is already running, it must be turned off, the device connected, and then the 17308 Recorder turned back on.
- 7) Channels can be configured manually by using the LabScribe Preferences, accessed in the Windows Edit menu, and the Macintosh LabScribe menu. Here channels can be turned on or off, pre-set filters can be selected, and computed channels can be configured. Views can be configured, and stimulator parameters can be set. See the LabScribe User Manual for details.
- 8) Some channel parameters can also be changed from the individual channel menus in the recording window.
- 9) If you are using the Low Voltage Stimulator or the isolated High Voltage Stimulator, connect your stimulating electrodes to the appropriate stimulator and use LabScribe to control the stimulator as instructed in the LabScribe manual.

5.1 LabScribe3 Software

For installation and use of the **LabScribe3 software**, please refer to the related manual, provided on the software CD.

6 MAINTENANCE

The 17308 DataCapsule contains no customer serviceable parts other than blown fuses. If a problem occurs, contact your representative, see paragraph 6.3-Customer Support.

Repair, if required, will be completed at Ugo Basile Systems, Inc. The 17308 is protected by a 3-year warranty. Servicing by anyone other than an authorized service facility will void the warranty.



UNPLUG THE POWER SUPPLY BEFORE CARRYING OUT ANY MAINTENANCE JOB!

6.1 Cleaning and Sterilization

The 17308 hardware may be wiped down with a dry, lint-free cloth.

6.2 Disposal

Send to a recycling center equipped to handle electronics.

6.3 Customer Support

For any further information you may desire concerning the use and/or maintenance of the DataCapsule-Evo 17308, please do not hesitate to contact our **service department**, our local distributor or use our support page <http://www.ugobasile.com/support.html> :



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service@ugobasile.com
logistics@ugobasile.com
sales@ugobasile.com

Before sending any instrument to our factory for repair, please contact our logistics department to obtain a return authorization number (RMA) and shipping/packing instructions.

We may not be held responsible for damages during transport due to poor packing; whenever possible, please use the original packing.

7 ORDERING INFORMATION

17308	New DataCapsule-Evo, 4+4 Channel Digital Recorder , standard package, including LabScribe3 Data Acquisition Software (on CD)
52010-323	USB Cable A to B Power Supply
17403-302	Instruction Manual (on CD)

Notes

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CE CONFORMITY STATEMENT

Manufacturer **UGO BASILE srl**
Address Via G. di Vittorio, 2 – 21036 Gemonio, VA, ITALY
Phone n. +39 0332 744574
Fax n. +39 0332 745488

We hereby declare that

Instrument. **DATAcapsule-EVO DIGITAL RECORDER**
Catalog number **17308**

*It is manufactured in compliance with the following European Union Directives
and relevant harmonized standards*

- *2006/95/CE relating to electrical equipment designed for use within certain voltage limits*
- *2004/108/CE relating to electromagnetic compatibility*
EN 55011, 61326-1, 61000-3-2, EN 61000-3-3, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5,
EN 61000-4-6, EN 61000-4-11
- *2011/65/UE on the restriction of the use of certain hazardous substances in electrical and
electronic equipment*

Account Manager

Adriano Basile

Nome / Name

March 2015

Date


Firma / Signature