



Evaluation unit *castxpert* LB 452

Operating Manual
47344BA2

Rev. No.: 05, 08/2021

Embedded Software as of vers. 1.7.0 (CU) and 1.7.0 (MU)

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About this Manual

1.1 Some Prior Remarks

The product is handed over to you by the manufacturer BERTHOLD TECHNOLOGIES GmbH & Co. KG (designated as Berthold in the following) in a complete and functionally reliable condition.

This manual demonstrates to you how to:

- Assemble/Install the EVU (evaluation unit)
- Establish the connections to the power supply
- Build the measurement connections
- Carry out the measurements
- Apply software settings
- Install the extension module (optional)
- Carry out maintenance
- Fix errors
- Disassemble
- Dispose of the device

You must read through the entire manual. We have tried to compile for you all information for safe and proper operation.

However, should questions arise which are not answered in this manual, please refer to Berthold.

1.2 Storage Place

This operating manual as well as all product-related documentation relevant to the respective application must be accessible at all times near the device.

1.3 Target Group

This operating manual is directed at qualified specialist personnel who are familiar with handling electrical and electronic assemblies as well as with communication and measuring techniques.

Specialist personnel refers to those who can assess the work assigned to them and recognise possible dangers through their specialist training, knowledge and experience as well as knowledge of the relevant regulations.

1.4 Validity of the Operating Manual

The operating manual is valid from the delivery of the Berthold product to the user until its disposal. Version and release date of this operating manual can be found in the bottom of each page. Modification services are not performed by the manufacturer Berthold.

The manufacturer reserves the right to make changes to this operating manual at any time without stating reasons. The current revision of this operating manual replaces all previous versions.

1.5 Structure of the Manual

This manual has been divided into chapters. The order of the chapters should help you to familiarise yourself quickly and properly with the operation of the EVU.

1.6 Copyright

This manual contains copyright-protected information. None of the chapters may be copied or reproduced in any other form without prior authorisation from the manufacturer.

1.7 Representation

Identifier	Meaning	Example
Quotation mark	Field in the software user interface	"Calibrate"
Vertical line	Path specification	Settings Selection
Pointed brackets	Keys and buttons	<Update>
Round brackets	Image reference	Connect the plug (fig. 1, item 1)

In the software description, the term "clicking" is used if a process is to be activated. This also refers to the pressing of a button or an area on the touch display if a mouse is not used for control.

1.8 Warning Notes

Warning notes are designed as follows:

Signal Word



Source and consequence

Explanation, if required

- ▶ Prevention

In case of emergency

Warning symbols:	(warning triangle) draws attention to the hazard.
Signal word:	Indicates the severity of danger.
Source:	Specifies the type or source of danger.
Consequence:	Describes the consequences of non-compliance.
Prevention:	Specifies how the hazard can be avoided.
In case of emergency:	Specifies which actions are required in the event of the occurrence of risk.

Symbols Used in the Operating Manual

In this manual, warning instructions before instructions for action refer to risks of injury or damage to property. The hazard-prevention measures described must be observed.

DANGER



Indicates an **imminent**, major hazard, which will certainly result in serious injuries or even death if the hazard is not avoided.

WARNING



Indicates a **potential** hazard, which can result in serious injuries or even death if the hazard is not avoided.

CAUTION



Refers to a **potentially dangerous** situation, which can result in medium or minor physical injuries or damages to property, if it is not avoided.

NOTICE



If this information is not observed, deterioration in the operation and/or property damage may occur.

IMPORTANT



Sections marked with this symbol point out important information on the product or on handling the product.

Tip



Provides tips on application and other useful information.

1.9 Symbols Used on the Device

Read the operating manual



Please observe the instructions in this operating manual.

Electrostatic discharge



Please note the handling instructions. Electrostatically endangered components. Please observe the instructions in this operating manual.

Protective earth connection



At this position, connect the protective earth conductor (PE).

Equipotential bonding connection



At this position, connect the equipotential bonding conductor.

Direct voltage



The device is operated with direct voltage and may only be connected with a direct voltage source.

Alternating voltage



The device is operated with alternating voltage and may only be connected with an alternating voltage source.

No domestic waste



The electric product must not be disposed of in domestic waste.

1.10 Conformity

The company Berthold hereby declares in its sole responsibility that the design of this product, which is brought to the market by Berthold, complies with relevant EU directives stated in the original declaration of conformity.

This statement shall become void in the case of changes not authorised by Berthold or improper use.

For the original declaration of conformity, please refer to the chapter 7 Declaration of Conformity in the appendix "Technical Information".

2 Safety

2.1 Dangers and safety measures

- Read these instructions thoroughly and completely before working with the product.
- Store the instructions where they are accessible for all users at all times.

2.2 Proper use

The LB 452 evaluation unit (EVU) measures the fill level along with compatible detectors, a compatible radiation source and it may only be used for this purpose.

The following constitutes proper use:

- Adhering strictly to the instructions and operation sequences and not undertaking any different, unauthorised practices which could endanger your safety and the operational reliability of the EVU!
- Observing the given safety instructions!
- Carrying out the prescribed maintenance measures or having them carried out for you!

2.3 Improper Use

Improper use to be prevented:

- If the EVU is used in a way which is not described in the present manual, the EVU's protection is compromised and the guarantee claim becomes invalid.
- Berthold only accepts liability for / guarantees the correspondence of the EVU to its published specifications.

Avoid the following circumstances:

- Failing to observe the instructions on safety, operation, maintenance and disposal given in the manual.
- Failure to observe the operating instructions for the EVU and the connected detectors.
- Applying conditions and requirements which do not conform to those stated in the technical documents, data sheets, operation and assembly instructions and other specific guidelines of the manufacturer.
- Use of the EVU if parts of it are damaged or corroded.
- Restructuring or changing the system components.
- The EVU is not suitable for use in potentially explosive areas and may therefore not be operated in such areas. The product is not explosion-proof.
- Operation in a state where live parts are accessible.
- Operation without the safety precautions provided by the manufacturer.
- Manipulation or avoidance of existing safety equipment.

NOTICE



The device is not approved according to IEC 61508 "Functional safety of safety-related electric/electronic/programmable electronic systems".

If the product is used in a way which is not described in the present manual, the device's protection is compromised and the warranty claim becomes invalid.

2.4 Qualification of the Personnel

NOTICE



A minimum requirement for all work on or with the product would be employees with general knowledge who are instructed by an expert or authorised person.

At different parts in this manual, reference is made to personnel with certain qualifications who can be entrusted with different tasks during the installation, usage and maintenance.

These three groups of people are:

- Those with General Knowledge
- Experts
- Authorised Persons

Employees with General Knowledge

NOTICE



Employees with general knowledge must always be guided by an expert at the very least. When dealing with radioactive substances, a radiation safety officer must also be consulted.

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Those with a general knowledge are e.g. technicians or mechanics who can undertake different tasks during the transportation, assembly and installation of the shielding under the guidance of an authorised person. This can also refer to construction site personnel. The persons in question must have experience in the transportation and assembly of heavy component parts.

Experts

Experts are persons who have sufficient knowledge in the required area due to their specialist training and who are familiar with the relevant national health and safety regulations, accident prevention regulations, guidelines and recognised technical rules.

Expert personnel must be capable of safely assessing the results of their work and they must be familiar with the content of this manual.

Authorised Persons

Authorised persons are those who are either designated for the corresponding task due to legal regulations or those who have been authorised by Berthold for particular tasks. When dealing with radioactive materials, a radiation safety officer must also be consulted.

2.5 Operator's Obligations

The operator of the product must regularly train his personnel in the following topics:

- Observation and use of the operating manual and the legal provisions.
- Intended operation of the product.
- Observation of the plant security instructions and the operating instructions of the operator.
- Regular monitoring/maintenance of the product.