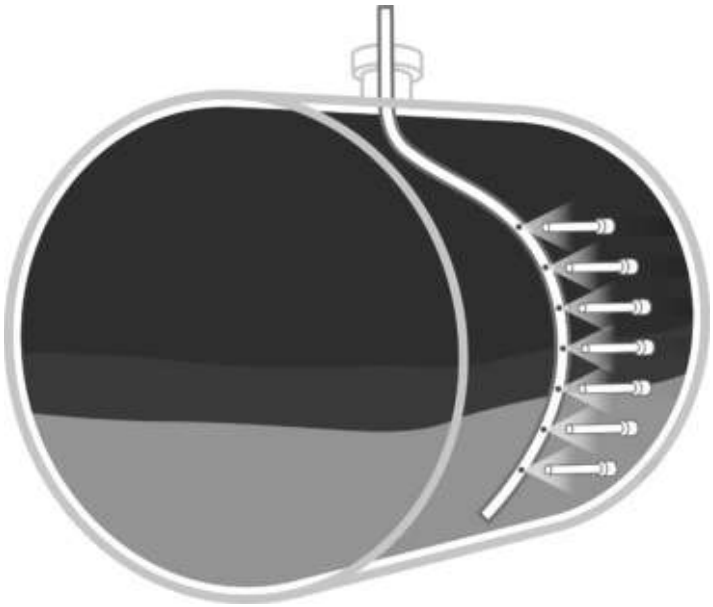


EmulsionSENS

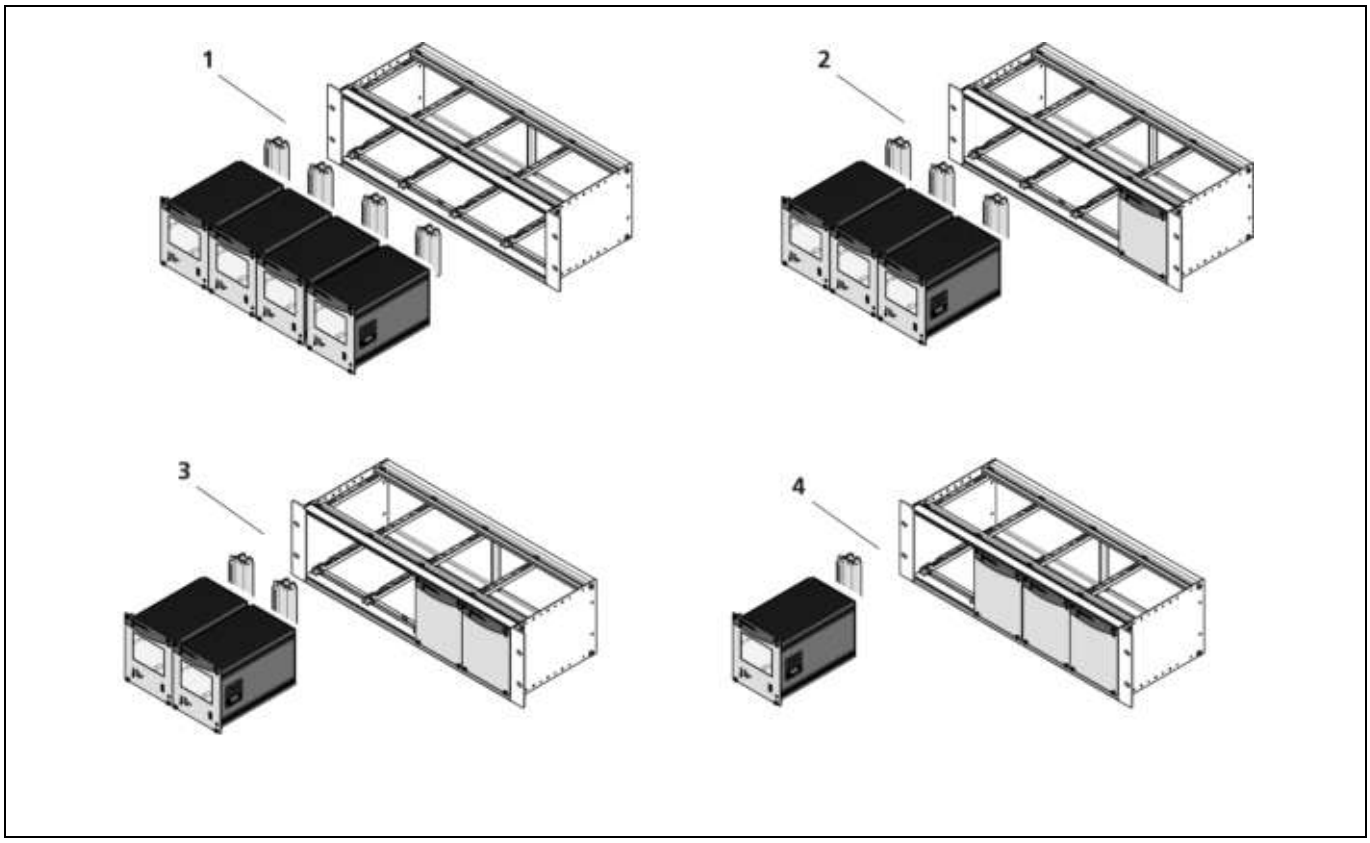
Technical Information

Technische Information

56925TI1M
Rev. No.: 00, 07/2019

Evaluation unit
Auswerteeinheit

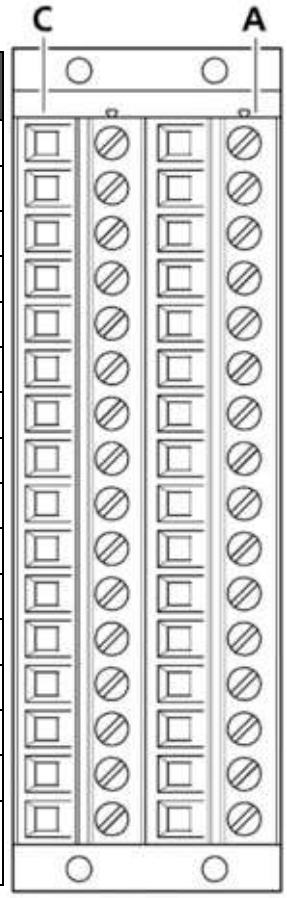
Installation variants 19" subrack
Einbauvarianten 19" Baugruppenträger



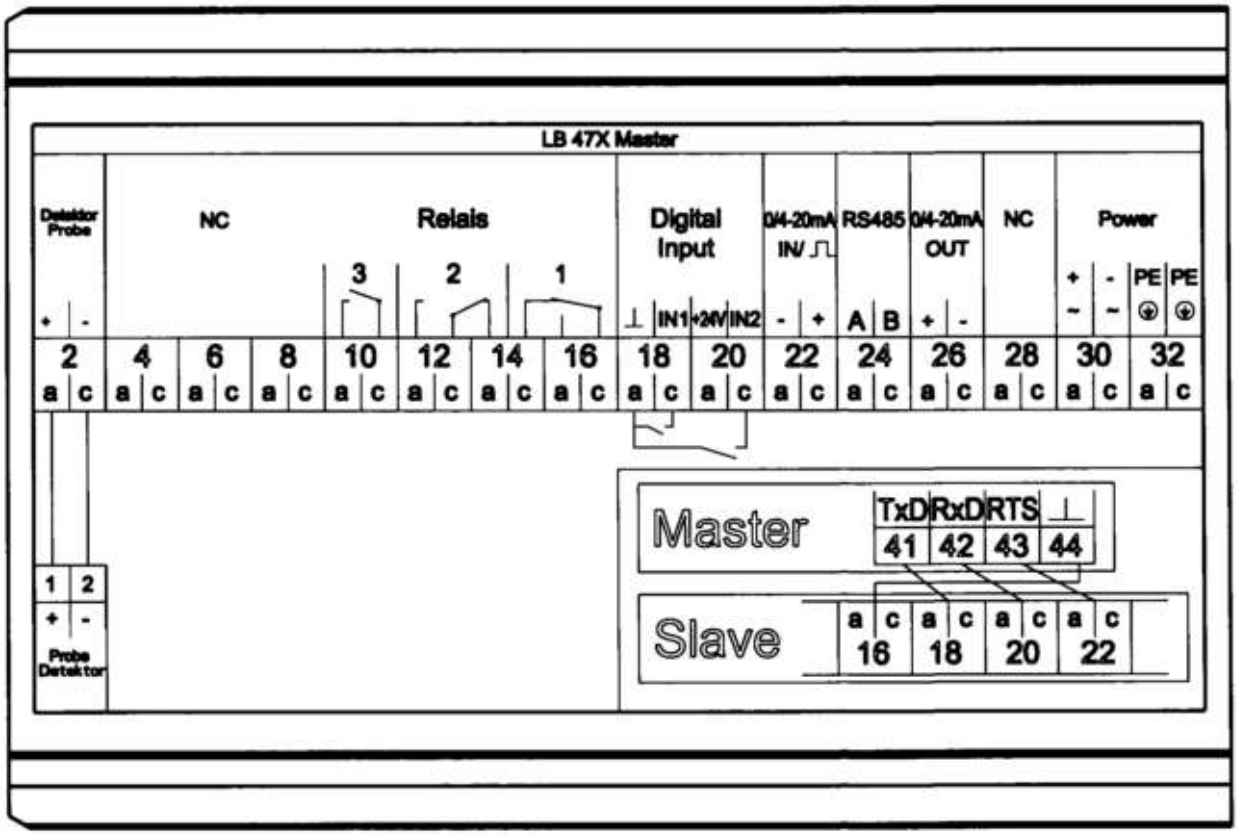
Item *Pos.*	Compontens *Komponenten*	Connection *Anschluss*
1	4x EVU (1 Master, 3 extension modules)	4 Terminal blocks *4 Klemmenblöcke*
2	3x EVU, 1x blanking panel (1 Master, 2 extension modules)	3 Terminal blocks *3 Klemmenblöcke*
3	2x EVU, 2x blanking panel (1 Master, 1 extension module)	2 Terminal blocks *2 Klemmenblöcke*
4	1x EVU, 3x blanking panel	1 Terminal block *1 Klemmenblock*

Assignment terminal block master EVU
Belegung Klemmenblock Master AWE

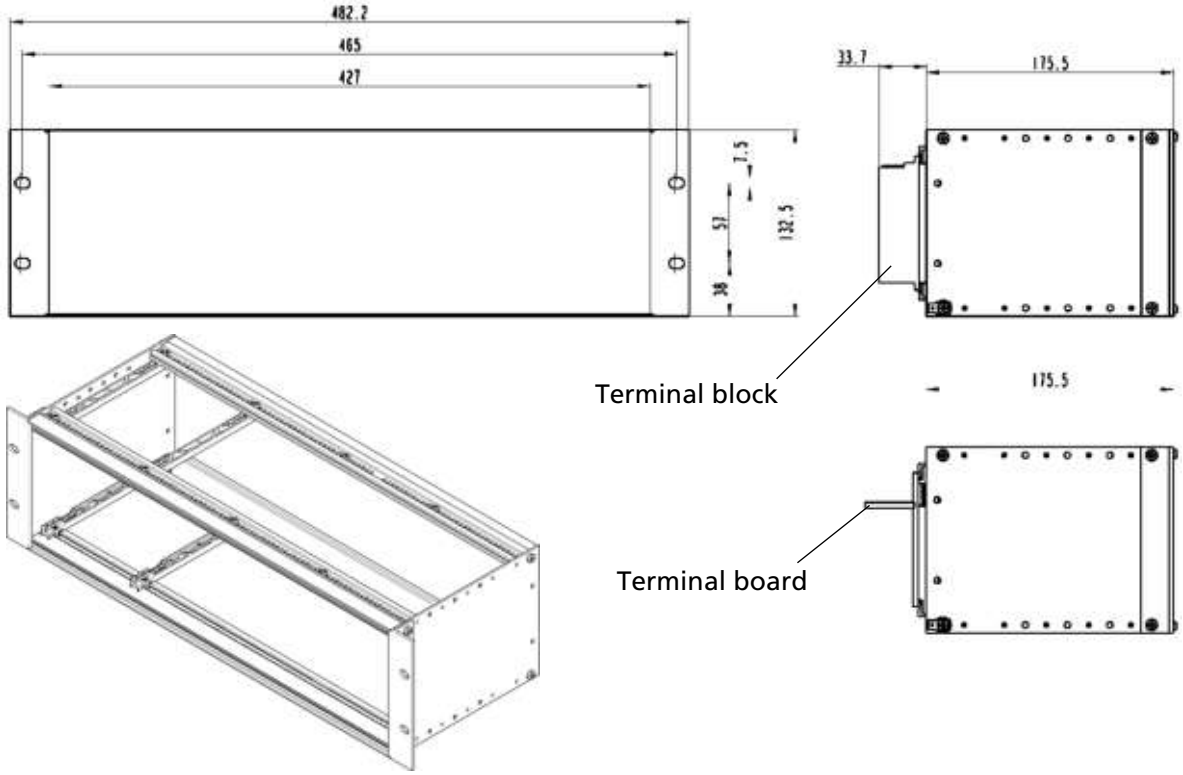
Signal	Pin
not assigned *nicht belegt*	C - 2
not assigned *nicht belegt*	C - 4
not assigned *nicht belegt*	C - 6
not assigned *nicht belegt*	C - 8
RELAY *RELAIS* 3 COM	C - 10
RELAY *RELAIS* 2 COM	C - 12
RELAY *RELAIS* 1 NC	C - 14
RELAY *RELAIS* 1 COM	C - 16
DIGITAL IN 1	C - 18
DIGITAL IN 2	C - 20
CURRENT IN +	C - 22
RS 485 B (Detector LB 480)	C - 24
CURRENT OUT –	C - 26
not assigned *nicht belegt*	C - 28
Main *Netz* N, DC 24 V –	C - 30
Protective conductor PE *Schutzleiter PE*	C - 32



Pin	Signal
A - 2	not assigned *nicht belegt*
A - 4	not assigned *nicht belegt*
A - 6	not assigned *nicht belegt*
A - 8	not assigned *nicht belegt*
A - 10	RELAY *RELAIS* 3 NO
A - 12	RELAY *RELAIS* 2 NO
A - 14	RELAY *RELAIS* 2 NC
A - 16	RELAY *RELAIS* 1 NO
A - 18	DIGITAL IN 1 GND
A - 20	+ 24 V
A - 22	CURRENT IN –
A - 24	RS 485 A (Detector LB 480)
A - 26	CURRENT OUT +
A - 28	not assigned *nicht belegt*
A - 30	Main *Netz* L1, 24 V DC +
A - 32	Protective conductor PE *Schutzleiter PE*



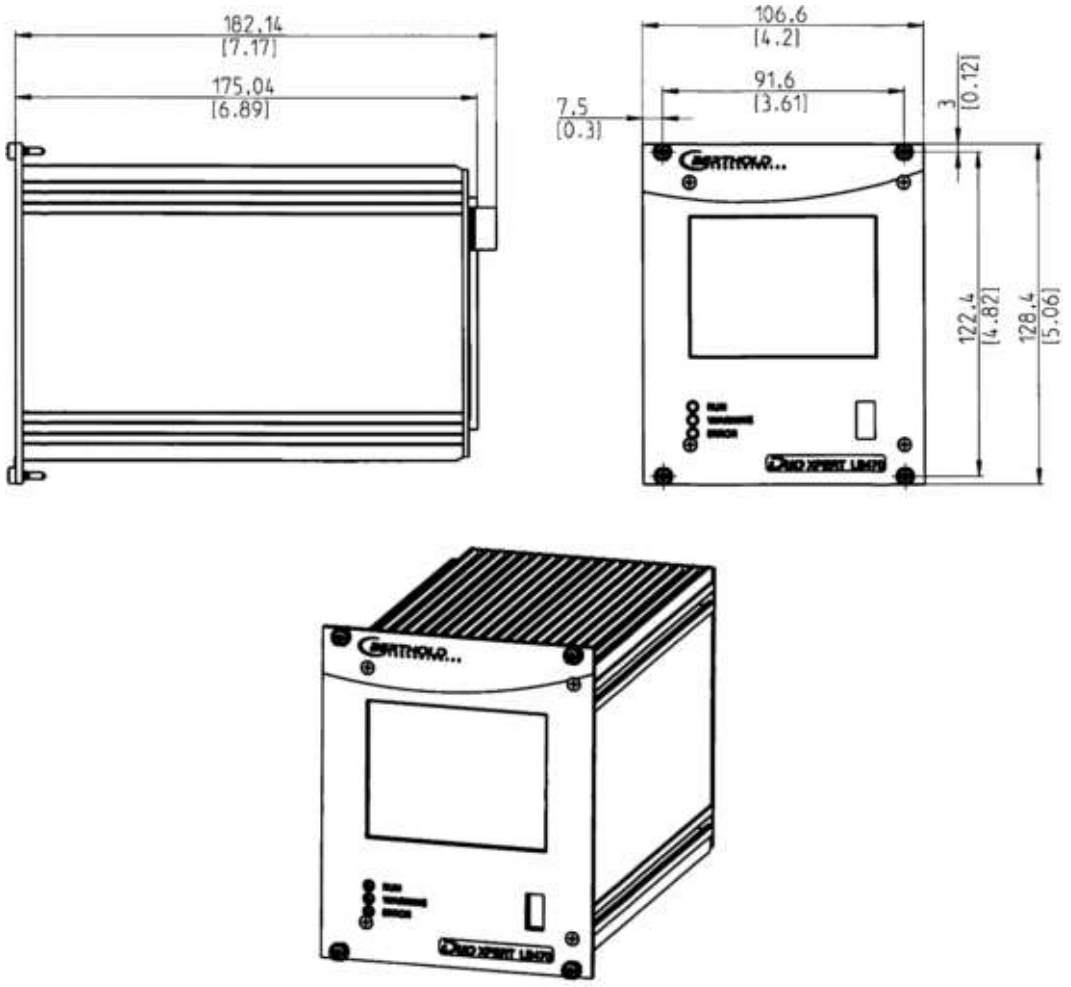
19" subrack
19" Baugruppenträger



Dimensions in mm
Abmessungen in mm

Technical Data *Technische Daten*	
Dimensions *Abmessungen*	3HE/84TE/5T, 482x132x172mm (WxHxD)
Max. Assembly *Max. Bestückung*	- 4 Master
Weight (with circuit board, without modules) *Gewicht (mit Anschlussplatine, ohne Module)*	1.4 kg
Weight terminal block *Gewicht Klemmenblock*	220 g
Operational temperature *Betriebstemperatur*	-20°C … +50°C, not condensing *nicht kondensierend*
Storage temperature *Lagerungstemperatur*	-30°C … +60°C
Degree of protection *Schutzklasse*	IP20

EVU
AWE



Dimensions in mm
Abmessungen in mm

Technical Data *Technische Daten*	
Dimensions *Abmessungen*	117/128/172mm (WxHxD)
Weight *Gewicht*	1200 g
Operational temperature *Betriebstemperatur*	-20°C … +50°C, not condensing. Avoid direct sunlight. Unobstructed air circulation must be provided to the subrack. *-20°C … +50°C nicht kondensierend. Direkte Sonneneinstrahlung ist zu vermeiden. Für eine ungehinderte Luftzirkulation um den Baugruppenträger ist zu sorgen.*
Storage temperature *Lagerungstemperatur*	-20°C … +85°C
Degree of protection *Schutzgrad*	IP20

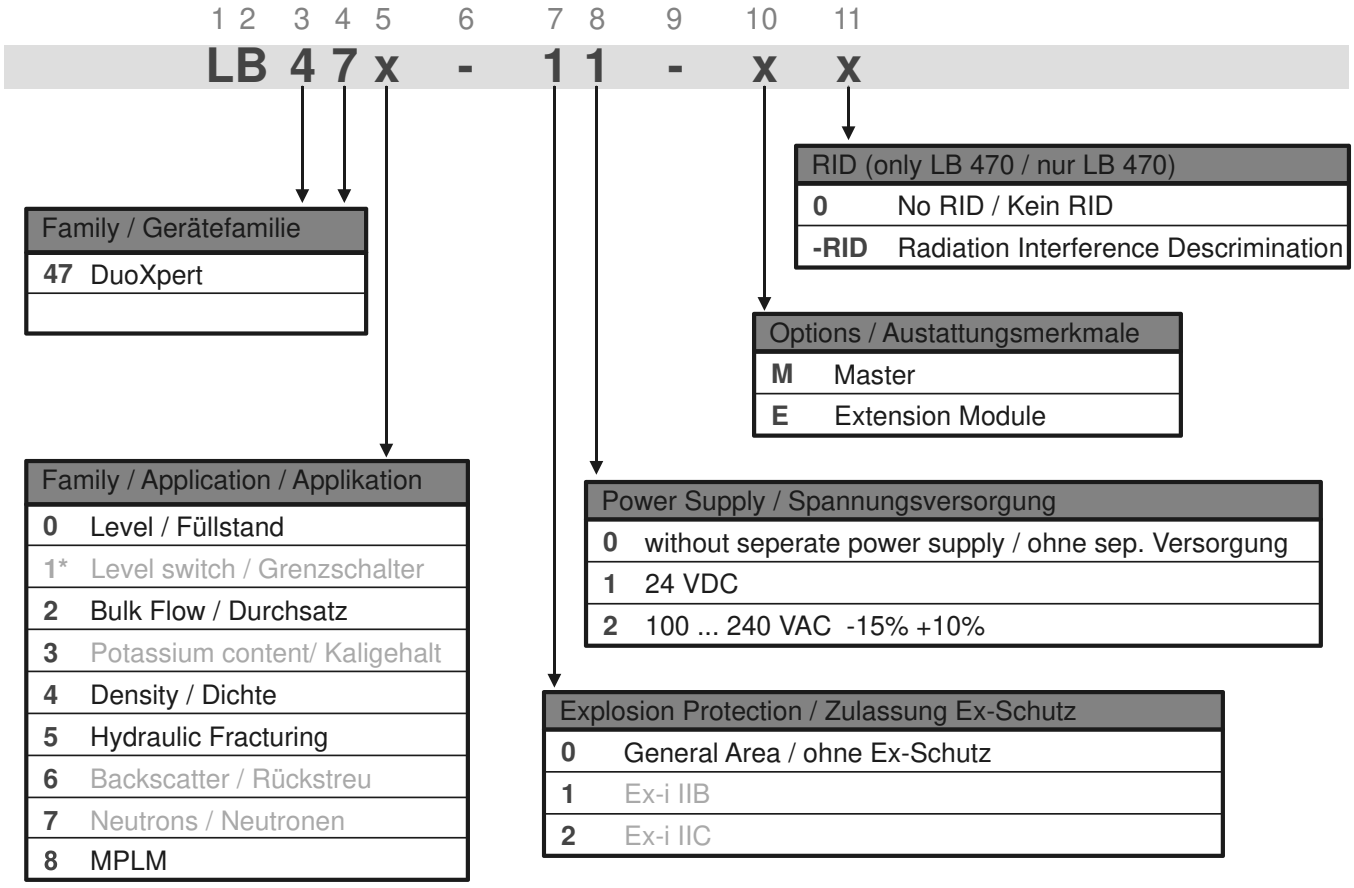
Connections *Anschlüsse*	- USB port for the connection to the USB storage medium - Master/slave connection (4-pin) and plug - RJ45 connection for Ethernet (on back wall) - 32-pin plug connector according to DIN 19465 Series C *- USB-Port zum Anschluss von USB-Speichermedium* *- Master/Slave Buchse (4-polig) und Stecker* *- RJ45-Buchse für Ethernet (an Rückwand)* *- 32 polige Stiftleiste nach DIN 19465 Baureihe C*
Display	- graphical LCD display - 320 x 240 points, 262,000 colours - Dimmable LED background lighting - Touch screen *- graphisches LCD-Display* *- 320 x 240 Punkte, 262.000 Farben* *- Dimmbare LED Hintergrundbeleuchtung* *- Touchscreen*
Computer core *Rechnerkern*	- Processor: Dual Core DSP/ARM Controller - clock frequency: 300 MHz internal (20 MHz external quartz) - ROM: 512 KByte - RAM: 64 MByte ext. SDRAM, 128 KByte int. shared RAM - FLASH: 8 MByte external serial *- Prozessor: Dual Core DSP/ARM Controller* *- Taktfrequenz: 300 MHz intern (20 MHz externer Quarz)* *- ROM: 512 KByte* *- RAM: 64 MByte ext. SDRAM, 128 KByte int. shared RAM* *- FLASH: 8 MByte extern seriell*

Power Supply *Stromversorgung*	
Voltage *Spannung*	100-240 V AC 50/60 Hz (wide range input) +/- 10% 21-32 V DC (24 V DC power input)
Power consumption *Leistungsaufnahme*	22 VA, 15 W
Fuses *Sicherungen*	Internal, 2 x 250 V, 1A delayed, 5x20 mm, 1500 A breaking capacity IEC 60127-2, 1x 250 V TR5 T80 mA (Ø 8,5 mm)

Interfaces *Schnittstellen*	
Current output *Stromausgang*	4-20mA internally switched from power source to sink current (according to NAMUR recommendation NE 006 and NE 043). Continuous short circuit proof and isolated (500 V). Internal resistance about 105 ohms max. Burden when operating as a power source: 850 ohm. Internal monitoring of the loop current and additional error signalling by hardware on detection of a fault condition. *4-20mA (nach Namur-Empfehlung NE 006 und NE 043) intern von Stromquelle auf Stromsenke umschaltbar.* *Dauerhaft kurzschlussfest und potentialgetrennt (500 V).* *Innenwiderstand ca. 105 Ohm max.* *Bürde bei Betrieb als Stromquelle: 850 Ohm.* *Interne Überwachung des Schleifenstroms und zusätzliche Fehlersignalisierung durch Hardware bei Erkennung eines Fehlerzustands.*
Current input *Stromeingang*	4-20 mA (according to NAMUR recommendation NE 006 and NE 043) switchable via software on frequency input, electrically isolated (500 V). Internal resistance approx. 300 ohm max. input voltage: 24 V DC *4-20 mA (nach Namur-Empfehlung NE 006 und NE 043) per Software umschaltbar auf Frequenzeingang, potentialgetrennt (500 V). Innenwiderstand ca. 300 Ohm max. Eingangsspannung: 24 V DC*
Impulse input *Impuls-eingang*	Frequency 0-100 kHz, Umax = 28 V, right angle signal form, low <1,5 V; high 4 – 28 V. Switchable to current input *Frequenz 0-100 kHz, Umax = 28 V,* *Rechteck-Signalform, Low <1,5V; High 4 – 28 V.* *Umschaltbar auf Stromeingang*
Digital outputs *Digitale Ausgänge*	3 relays, Umax = 33 V ACeff, 46 V DC; Imax = 1 A functions: Relay 1: SPDT for error signalling Relay 2: SPDT assignable by software Relay 3: SPST assignable by software *3 Relais, Umax = 33 V ACeff, 46V DC; Imax = 1 A* *Funktionen: Relais 1: SPDT zur Fehlersignalisierung* *Relais 2: SPDT über Software zuweisbar* *Relais 3: SPST über Software zuweisbar*
Digital inputs *Digitale Eingänge*	2 x together electrically isolated (500 V) Switch between DigIn and GND, Uoutmax approx. 24 V Function configurable via software *2 x gemeinsam potentialgetrennt (500 V),* *Schalter zwischen DigIn und GND, Uoutmax ca. 24 V* *Funktion über Software konfigurierbar*
External supply Externe ersorgung	Output voltage: 24 V DC Output current: max. 150 mA *Ausgangsspannung: 24 V DC* *Ausgangsstrom: max. 150 mA*
RS485	for master/master communication, and testing and evaluation purposes. not isolated from main electronics and USB port electrically isolated from remaining I/Os (500 V) *für Master/Master Kommunikation und Prüf-und Testzwecke. Nicht potentialgetrennt von Hauptelektronik und USB-Anschluss potentialgetrennt von restlichen I/Os (500 V)*

USB port	1 x USB 2.0 Type A (Host) via front plate to the connection of an ext. mouse, keyboard or storage medium Uout = 5 V, Ioutmax = 0.5 A *1 x USB 2.0 Typ A (Host) über Frontplatte zum Anschluss einer ext. Maus, Tastatur oder Speichermedium* *Uout = 5 V, Ioutmax = 0,5 A*
Ethernet	RJ45 connection via back wall, 10 Mbit, DHCP supported, max. 3 m *RJ45-Buchse über Rückwand, 10 Mbit,* *DHCP unterstützt, max. 3 m*

Number Key LB 47x
Nummernschlüssel LB 47x



* used by othe hardware

Declaration of Conformity
Konformitätserklärung

BERTHOLD TECHNOLOGIES GmbH & Co. KG
Calmbacher Straße 22
75323 Bad Wildbad, Germany
Phone +49 7081 177-0
Fax +49 7081 177-100
info@Berthold.com
www.Berthold.com

EG-Declaration of Conformity (ORIGINAL) File.No.: CE20028-2

We, hereby declare under our sole responsibility that the design of the following products / systems / units / machines brought into circulation by us comply with the relevant harmonized rules of the EU.

This declaration loses its validity should modifications or unsuitable and improper use take place without our authorisation.

Product name: ***radiomatric evaluation system DuoXpert***

Type / model: ***LB 47x***

	directive	applied standards	
LVD	2014/35/EU	EN 61010-1	2010
RoHS	2011/65/EG		
EMC	2014/30/EU	EN 61326-1	2013
		EN 61000-4-2	
		EN 61000-4-3	
		EN 61000-4-4	
		EN 61000-4-5	
		EN 61000-4-6	
		EN 61000-4-11	
		EN 61000-3-2	
		Namur NE21	2012

This declaration is issued by the manufacturer

BERTHOLD TECHNOLOGIES GmbH & Co. KG
Calmbacher Str. 22, D-75323 Bad Wildbad, Germany

released by

Dr. Jürgen Briggmann

Head of R&D
Bad Wildbad, 1st of September, 2015

Registergericht / Court of Registration: Stuttgart HRA 330991
Persönlich haftende Gesellschafterin / Fully liable Associates: BERTHOLD TECHNOLOGIES Verwaltungs-GmbH
Registergericht / Court of Registration: Stuttgart HRB 331520
Geschäftsführung / Management: Horst Knauff, Dr. Dirk Mörmann
USt.-Id-Nr. / VAT Reg. No.: DE813050511
Deutsche Steuernummer / German Tax No.: 49038/08038
WEEE-Reg. No.: DE99468690

Sparkasse PF-CW 75323 Bad Wildbad Konto/Account No. 8 045 003 (BLZ 666 500 85) SWIFT-BIC PZHSDE66 IBAN: DE37 6665 0085 0008 0450 03
Volksbank 75119 Pforzheim Konto/Account No. 957 004 (BLZ 666 900 00) SWIFT-BIC VBPFDE66 IBAN: DE85 6669 0000 0000 9570 04
Commerzbank 75105 Pforzheim Konto/Account No. 6 511 120 (BLZ 666 800 13) SWIFT-BIC DRES DEFF 666 IBAN: DE05 6668 0013 0651 1120 00

BERTHOLD TECHNOLOGIES GmbH & Co. KG
Calmbacher Straße 22
75323 Bad Wildbad, Germany
Phone +49 7081 177-0
Fax +49 7081 177-100
info@Berthold.com
www.Berthold.com

EG-Konformitätserklärung (ORIGINAL)

Dok.Nr.: CE20028-1

Hiermit erklären wir in alleiniger Verantwortung, dass die Bauart des(r) nachfolgend bezeichneten Geräte / Systems / Anlage / Maschine in der von uns in den Verkehr gebrachten Ausführung den unten genannten einschlägigen Harmonisierungsvorschriften der EU entsprechen.

Durch nicht mit uns abgestimmte Änderungen oder nicht bestimmungsgemäßen Gebrauch verliert diese Erklärung ihre Gültigkeit.

Produktbezeichnung: ***radiometrisches Auswertesystem DuoXpert***

Typenbezeichnung / Modell: ***LB 47x***

	Richtlinie (Fundstelle)	**angewendete Normen und weitere Spezifikationen**	
NSR	2014/35/EU	EN 61010-1	2010
RoHS	2011/65/EG		
EMV	2014/30/EU	EN 61326-1	2013
		EN 61000-4-2	
		EN 61000-4-3	
		EN 61000-4-4	
		EN 61000-4-5	
		EN 61000-4-6	
		EN 61000-4-11	
		EN 61000-3-2	
		Namur NE21	2012

Diese Erklärung wird verantwortlich für den Hersteller

BERTHOLD TECHNOLOGIES GmbH & Co. KG
Calmbacher Str. 22, D-75323 Bad Wildbad

abgegeben durch

Dr. Jürgen Briggmann

Leiter Entwicklung
Bad Wildbad, den 1. September 2015

Registergericht / Court of Registration: Stuttgart HRA 330991
Persönlich haftende Gesellschafterin / Fully liable Associates: BERTHOLD TECHNOLOGIES Verwaltungs-GmbH
Registergericht / Court of Registration: Stuttgart HRB 331520
Geschäftsführung / Management: Horst Knauff, Dr. Dirk Mörmann
USt.-Id-Nr. / VAT Reg. No.: DE813050511
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WEEE-Reg. No.: DE99468690

Sparkasse PF-CW 75323 Bad Wildbad Konto/Account No. 8 045 003 (BLZ 666 500 85) SWIFT-BIC PZHSDE66 IBAN: DE37 6665 0085 0008 0450 03
Volksbank 75119 Pforzheim Konto/Account No. 957 004 (BLZ 666 900 00) SWIFT-BIC VBPFDE66 IBAN: DE85 6669 0000 0000 9570 04
Commerzbank 75105 Pforzheim Konto/Account No. 6 511 120 (BLZ 666 800 13) SWIFT-BIC DRES DEFF 666 IBAN: DE05 6668 0013 0651 1120 00

Certificates
Zertifikate

NRTL certification US/CAN wall-mounted housing
NTRL Zertifikat US/CAN Wandgehäuse

Nemko

Certificate of Compliance

Nemko-CCL, Inc.

Certificate: NA201610530 **Date Issued:** January 20, 2016

Project: 257087-7.1

Issued to: Berthold Technologies GmbH & Co. KG
Calmbacher Straße 22
75323 Bad Wildbad
Germany

The products listed below have been certified as being compliant with all applicable requirements of the specifications listed and are eligible to bear the following certification mark

c Nemko US

Issued by: Robert Keller — Robert Keller, Senior Engineer/Safety Supervisor

Authorized by: — Thomas Jackson, Certification Manager

PRODUCTS

MEASUREMENT, CONTROL, OR LABORATORY EQUIPMENT – Certified to US and Canada Standards

Product: Process measurement unit
Model: Wall-mounted LB 47x, 1M/3S; Wall-mounted LB 47x, 2M (x can be 0 to 8 and describes different software versions for the master and slave modules not affecting safety).
Ratings: Wall-mounted LB 47x, 1M/3S: 40VA 100-240V, 50/60Hz, Class I; Wall-mounted LB 47x, 2M: 44VA 100-240V, 50/60Hz, Class I

The certification system, as described in ISO/IEC Guide 67 (Conformity Assessment – Fundamentals of Product Certification), most closely resembles System 5

Nemko-CCL, Inc. 1940 West Alexander Street Salt Lake City, Utah 84119-2039 Tel (801) 972-6146 Fax (801) 972-8432

NFCC-002 Issue 2 May 2014 Page 1 of 3

NRTL certification US/CAN wall-mounted housing (continued)
NTRL Zertifikat US/CAN Wandgehäuse (Fortsetzung)

APPLICABLE REQUIREMENTS

UL Std. No. 61010-1 2nd Edition - Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 1: General Requirements

CAN/CSA-C22.2 No. 61010-1-04 Second Edition - Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 1: General Requirements

This certificate is issued on condition that the holder complies and will continue to comply with the requirements of the above mentioned specifications and pursuant to the terms and conditions specified in the Certification Agreement.

The certification system, as described in ISO/IEC Guide 67 (Conformity Assessment – Fundamentals of Product Certification), most closely resembles System 5

Nemko-CCL, Inc. 1940 West Alexander Street Salt Lake City, Utah 84119-2039 Tel (801) 972-6146 Fax (801) 972-8432

NFCC-002 Issue 2 May 2014 Page 2 of 3

1

NRTL certification US/CAN wall-mounted housing (continued)
NTRL Zertifikat US/CAN Wandgehäuse (Fortsetzung)

Supplement to Certificate of Compliance

Certificate: NA201610530 **Project:** 257087-7.1

Nemko-CCL grants a license to the applicant to apply the Certification Mark to the certified products and that the mark shall only be affixed at the following factory locations

Factory Information

Factory Name	Location
Berthold Technologies GmbH & Co. KG	Calmbacher Straße 22 75323 Bad Wildbad Germany

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
257087-7.1	January 20, 2016	**Original Certification: Model:** Wall-mounted LB 47x, 1M/3S; Wall-mounted LB 47x, 2M (x can be 0 to 8 and describes different software versions for the master and slave modules not affecting safety). **Ratings:** Wall-mounted LB 47x, 1M/3S: 40VA 100-240V, 50/60Hz, Class I; Wall-mounted LB 47x, 2M: 44VA 100-240V, 50/60Hz, Class I

This Supplement forms an integral part of the Certificate of Compliance

The certification system, as described in ISO/IEC Guide 67 (Conformity Assessment – Fundamentals of Product Certification), most closely resembles: System 3

Nemko-CCL, Inc. 1940 West Alexander Street Salt Lake City, Utah 84119-2039 Tel (801) 972-6146 Fax (801) 972-8432

NFCC-002 Issue 2 May 2014 Page 3 of 3

NRTL certification US/CAN DuoXpert LB 47x
NTRL Zertifikat US/CAN DuoXpert LB 47x

Nemko

Certificate of Compliance

Nemko-CCL, Inc.

Certificate: NA201510498 **Date Issued:** September 17, 2015

Project: 235982-14.1

Issued to: Berthold Technologies GmbH & Co. KG
Calmbacher Straße 22
75323 Bad Wildbad
Germany

The products listed below have been certified as being compliant with all applicable requirements of the specifications listed and are eligible to bear the following certification mark

c Nemko US

Issued by: Robert Keller, Senior Engineer/Safety Supervisor

Authorized by: Thomas Jackson, Certification Manager

PRODUCTS

MEASUREMENT, CONTROL, OR LABORATORY EQUIPMENT – Certified to US and Canada Standards

Product: Process measurement unit for building-in
Model: DuoXpert LB47x-02-M; DuoXpert LB47x-02-S (x can be 0 to 8 and describes different software versions for the master and slave modules not affecting safety)
Ratings: LB47x-02-M: 100-240V AC 22VA 50/60Hz; LB47x-02-S: 100-240V AC 6VA 50/60Hz

APPLICABLE REQUIREMENTS

UL Std. No. 61010-1 3rd Edition - Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 1: General Requirements

CAN/CSA-C22.2 No. 61010-1-12 Third Edition – Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 1: General Requirements

This certificate is issued on condition that the holder complies and will continue to comply with the requirements of the above mentioned specifications and pursuant to the terms and conditions specified in the Certification Agreement.

The certification system, as described in ISO/IEC Guide 67 (Conformity Assessment – Fundamentals of Product Certification), most closely resembles System 5

Nemko-CCL, Inc. 1940 West Alexander Street Salt Lake City, Utah 84119-2039 Tel (801) 972-6146 Fax (801) 972-8432

NFCC-002 Issue 2 May 2014 Page 1 of 2

NRTL certification US/CAN DuoXpert LB 47x (continued)
NTRL Zertifikat US/CAN DuoXpert LB 47x (Fortsetzung)

Supplement to Certificate of Compliance

Certificate: NA201510498 **Project:** 235982-14.1

Nemko-CCL grants a license to the applicant to apply the Certification Mark to the certified products and that the mark shall only be affixed at the following factory locations

Factory Information

Factory Name	Location
Berthold Technologies GmbH & Co. KG	Calmbacher Straße 22 75323 Bad Wildbad Germany

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
235982-14.1	September 17, 2015	**Original Certification: Model:** DuoXpert LB47x-02-M; DuoXpert LB47x-02-S (x can be 0 to 8 and describes different software versions for the master and slave modules not affecting safety) **Ratings:** LB47x-02-M: 100-240V AC 22VA 50/60Hz; LB47x-02-S: 100-240V AC 6VA 50/60Hz

This Supplement forms an integral part of the Certificate of Compliance

The certification system, as described in ISO/IEC Guide 67 (Conformity Assessment – Fundamentals of Product Certification), most closely resembles System 5

Nemko-CCL, Inc. 1940 West Alexander Street Salt Lake City, Utah 84119-2039 Tel (801) 972-6146 Fax (801) 972-8432

NFCC-002 Issue 2 May 2014 Page 2 of 2

Parts overview
Übersicht Zubehör

ID. No. *Id. Nr.*	Description *Beschreibung*
68867	LB 478-01-M MPLMTransmitter (Master, 24 VDC) *LB 478-01-M MPLM-Messgerät (Master, 24 VDC)*
68866	LB 478-02-M MPLM Transmitter (Master, 100...240 VAC) *LB 478-02-M MPLM-Messgerät (Master, 100...240 VAC)*
68869	LB 47x-01-E MPLM Transmitter (Extension, 24 VDC) *LB 478-02-E MPLM-Messgerät (Erweiterung, 100...240 VAC)*
69969	LB 47x-02-E MPLM Transmitter (Extension, 100...240 VAC) *LB 47x-02-E MPLM-Messgerät (Erweiterung, 100...240 VAC)*
56925-8BA1	Operating manual DuoSeries LB 478 MPLM, German *Betriebsanleitung DuoSeries LB 478 MPLM, Deutsch*
56925-8BA2	Operating manual DuoSeries LB 478 MPLM, English *Betriebsanleitung DuoSeries LB 478 MPLM, Englisch*
64607	19" rack, 84 HP / 3 RU for use with terminal blocks *19"-Baugruppenträger für den Einsatz mit Klemmblöcken*
59477	Terminal block for LB 47x, Master *Klemmenblock für LB 47x, Master*
37526	Front Cover Plate 21 HP / 3 RU *Blindplatte 21TE / 3 HE*

Modifications due to technical advancement reserved.
Änderungen im Zuge technischer Weiterentwicklung vorbehalten.