Control Units Stainless Steel LRS*

Marking

Control Units, Stainless Steel LRS*
ATEX certificate: CML 16 ATEX 3009X ATEX marking: Ex II 2 GD Ex db eb ib mb IIC T* Gb Ex tb IIIC T** °C Db T4/T130 °C @ Ta +55 °C T6/T80 °C @ Ta +40 °C on request
IECEx certificate: IECEx CML 16.0008X CCC certificate: 2020322304002545

The *-marked letters of the type code are placeholders for versions of the device.

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Target Group, Personnel

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismounting lies with the plant operator.

The personnel must be appropriately trained and qualified in order to carry out mounting, installation, commissioning, operation, maintenance, and dismounting of the device. The trained and qualified personnel must have read and understood the instruction manual.

Reference to Further Documentation

Observe directives, standards, and national laws applicable to the intended use and the operating location.

The corresponding datasheets, manuals, declarations of conformity, EU-type examination certificates, certificates, and control drawings if applicable (see datasheet) are an integral part of this document. You can find this information under www.pepperl-fuchs.com.

In order to access this documentation, enter the product name, i. e. the type code, or the item number of the product in the search field of the website.

For specific device information such as the year of construction, scan the QR code on the device. As an alternative, enter the serial number in the serial number search at www.pepperl-fuchs.com/device-information.

Intended Use

The device is only approved for appropriate and intended use. Ignoring these instructions will void any warranty and absolve the manufacturer from any liability.

The enclosures of the LRS* series are made of stainless steel.

The device can be used indoors.

The device can be used outdoors.

The device can be used in Zone 1.

The device can be used in Zone 21.

The device can be used in Zone 2.

The device can be used in Zone 22.

The device is designed for wall mounting.

The device is designed for mounting to a steel framework.

Use suitable fixing material for mounting.

Mount the enclosure at the fixing points provided.

Improper Use

Do not mount the device on the ceiling.

Protection of personnel and the plant is not ensured if the device is not used according to its intended use.

Mounting and Installation

Observe the installation instructions according to IEC/EN 60079-14.

If you intend to install the device or enclosure in areas that may be exposed to aggressive substances, ensure that the stated surface materials are compatible with these substances. If required, contact Pepperl+Fuchs for further information.

Observe directives, standards, and national laws applicable to the intended use and the operating location. Observe Directive 1999/92/EC in relation to hazardous areas.

Examples for such regulations are regulations regarding electricity, grounding, installation as well as hygiene and safety.

Observe the requirements according to IEC/EN 60079-31regarding excessive dust deposits.

To ensure compliance with the temperature class, ensure that there is adequate free air space around the enclosure.

Ensure that there are no external heat sources around the enclosure.

Safety-relevant markings are found on the nameplate supplied. Ensure that the nameplate is present and legible. Take the ambient conditions into account.

Additional warning markings may be affixed next to the nameplate.

The permitted ambient temperatures of the built-in components must not be exceeded.

Avoid mechanical impacts to the device (e. g. from heavy or sharp-edged objects).

Ensure that the enclosure is not damaged, distorted, or corroded.

Ensure that all seals are clean, undamaged, and correctly fitted.

Tighten all screws of the enclosure/enclosure cover with the appropriate torque.

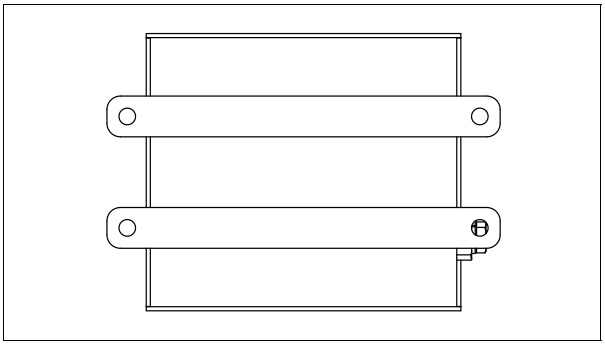
Ensure that unused terminal screws are properly tightened down.

For cable glands only use incoming cable diameters of the appropriate size.

Tighten all cable glands with the appropriate torque.

Close all unused cable glands with the appropriate sealing plugs.

Only use stopping plugs that are suitably certified for the application.



Enclosures are installed directly by using the screw holes in the mounting brackets.

Use all existing screw holes for mounting the enclosure.

It is recommended to use screws according to ISO 4762 or equivalent.

Follow below instructions when mounting the enclosure.

(1) Mark the upper screw positions on the mounting surface

(2) Drill the appropriate screw holes into the mounting surface

(3) Hang the enclosure using appropriate screws in the upper brackets

(4) Mark the lower screw positions using the holes of the lower brackets

(5) Remove enclosure

(6) Drill the appropriate screw holes into the mounting surface for the lower brackets

(7) Hang the enclosure using all available screw holes

(8) Tighten all mounting screws with the appropriate torque

Note

Torque moments depend on the used screws and the material that they are screwed into.

Close all unused enclosure holes with the appropriate stopping plugs.

If mounting the enclosure on concrete use expansion anchors. When mounting the enclosure to a steel framework use vibration resistant mounting material.

Ensure that the enclosure is mounted on a flat surface.

If external connections are present, ensure that the connections are in good condition, and are not damaged or corroded.

In order to prevent condensation in the enclosure, use suitably certified breather drains.

Requirements for Cable Glands

Only use cable glands that are suitably certified for the application.

Only use cable glands with a temperature range appropriate to the application.

Ensure that the degree of protection is not violated by the cable glands.

Ground metal cable glands.

Requirements for Internal Components

Select suitable conductors in order to ensure that the maximum permitted temperature of the conductors fit to the maximum permitted ambient temperature of the control station.

Only use cables and connection lines with a temperature range appropriate to the application.

Keep the separation distances between all non-intrinsically safe circuits and intrinsically safe circuits according to IEC/EN 60079-14.

Ensure that the terminals are in good condition and are not damaged or corroded.

Use only one conductor per terminal.

Observe the tightening torque of the terminal screws.

Use the shortest possible cable lengths and avoid small core cross sections.

Observe the minimum bending radius of the conductors.

When installing the conductors the insulation must reach up to the terminal.

When using stranded conductors, crimp wire end ferrules on the conductor ends.

Unused cables and connection lines must be either connected to terminals or securely tied down and isolated.

Insulation by tape alone is not permitted.

Refer to document **Supplement of the Instruction Manual** for information to the specific conditions of use.

Do not bunch more than 6 conductors to avoid hot spots.

Arrange the earth connections for incoming and outgoing cables in a way that the ground fault current is not routed between separate grounding plates.

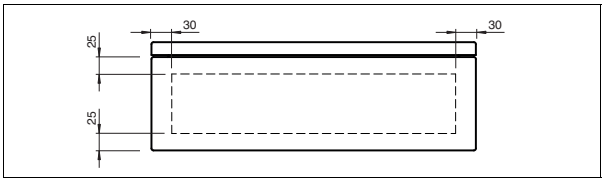
Contact Pepperl+Fuchs before installing additional components. Pepperl+Fuchs will check whether these components are listed in the certificate. The maximum power dissipation of this installation solution must be within the permitted limits.

Rules for bringing in additional thru-holes for cable glands

Determine if the space needed for the additional holes does not affect the stability of the enclosure wall and therefore the effectiveness of the gasket system.

In case of doubts contact Pepperl+Fuchs.

Maintain the minimum distances to enclosure rims and bottom as shown in the drawings.



Calculate the minimum distance from the center of the additional thru-hole to the center of an already existing adjacent thru-hole by means of one of the following formulas:

1. Calculation via diameters

HSN = diameter of adjacent thru-hole

HSA = diameter of additional thru-hole

Minimum distance between centers = 1.5 x (HSN+HSA)/2

2. Calculation via widths across corners

WCN = width across corners of adjacent cable gland

WCA = width across corners of additional cable gland

Minimum distance between centers = 1.2 x (WCN+WCA)/2

Fabricate the additional thru-holes with an appropriate tooling method.

Ensure the thru-hole diameters are fitting to the gaskets and cable glands to be installed.

Ensure the enclosure surfaces around the thru-holes are undamaged in order to maintain the IP-protection.

Operation, Maintenance, Repair

Observe the requirements according to IEC/EN 60079-14 during operation.

Observe IEC/EN 60079-17 for maintenance and inspection.

Observe the requirements according to IEC/EN 60079-19 for repair and overhaul.

Before opening the enclosure make sure that the built-in components are de-energized.

When energized, the enclosure may only be opened for maintenance, if only intrinsically safe circuits are used inside the enclosure.

Check the wear on the device and the device components at specific intervals. The interval between checks depends on the operating conditions and loads that occur.

Avoid electrostatic charges which could result in electrostatic discharges while installing, operating, or maintaining the device.

If cleaning is necessary while the device is located in a hazardous area, in order to avoid electrostatic charging only use a clean damp cloth.

Before assembly, check that the seal and sealing surface are clean and in good condition to ensure the degree of protection.

If there is a defect, the device must be repaired by Pepperl+Fuchs.

Alternatively the device can be repaired by a qualified electrician in compliance with IEC/EN 60079-19.

Delivery, Transport, Disposal

Store the device in a clean and dry environment. The permitted ambient conditions must be considered, see datasheet.

Check the packaging and contents for damage.

Check if you have received every item and if the items received are the ones you ordered.

The device, built-in components, packaging, and any batteries contained within must be disposed in compliance with the applicable laws and guidelines of the respective country.

Technical Data

General	
Types and variants	LRS* - see type code table
Electrical specifications	
Operating voltage	250 V AC / DC max. See certification label
Operating current	13 A max. Dependent on terminals and equipment fitted, but must not exceed maximum. See certification label
Mechanical specifications	
Dimensions	see data table
Enclosure cover	fully detachable
Cover fixing, torque	3 Nm - 3.5 Nm
Degree of protection	IP66
Mass	see data table
Mounting	see data table
Cable entry	cable glands as per specification
Material	
Enclosure	1.5 mm AISI 316L, (1.4404) stainless steel
Finish	brushed
Cover seal	silicone
Cover fixing	Stainless steel A4 (V4A) combination pozi driv and slotted screw
Grounding	M6 internal/external brass nickel-plated grounding bolt
Ambient conditions	
Ambient temperature	-40 ... 55 °C (-40 ... 131 °F) depending on integrated components
Data for application in connection with hazardous areas	
Maximum power dissipation	Dependent on enclosure size See certification label
Conformity	
Degree of protection	EN 60529
CE marking	2829

Type Code / Model Number

1	2	3		4		5		6		7		8		9		10
LR	*	*	.	*	.	****	.	****	.	****	.	****	.	*	.	*
LR	S	2	.	D	.	PGMX	.	E4MX	.		.		.	B	.	1

Example: LRS2.D.PGMX.E4MX.B.1

Control Unit, stainless steel enclosure for two control functions, portrait orientation.
Upper function: pushbutton green, base-mounted contact block with 1x NO / 1x NC contacts.
Lower function: twist-to-release mushroom button, red, base-mounted contact block with 1x NO / 1x NC contacts.
Cable entry configuration: bottom face cable gland M20 polyamide. Type of protection Ex db eb and Ex tb.

1	Series
LR	control unit

2	Material
S	stainless steel AISI 316L, brushed finish

3	Enclosure variant
1 ... 4	enclosure size, see dimensions data table

4	Enclosure orientation
B	landscape
D	portrait

5	Function 1
xxxx	see operating elements type code

6	Function 2
xxxx	see operating elements type code

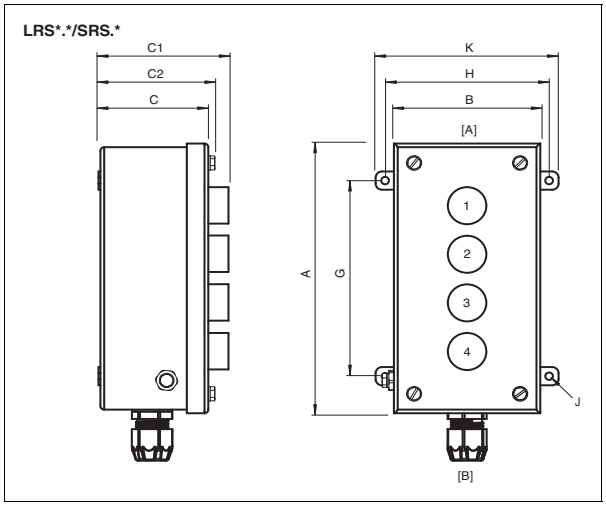
7	Function 3
xxxx	see operating elements type code

8	Function 4
xxxx	see operating elements type code

9	Entry configuration / cable glands
A ... I	standard entry configurations, see cable entries table
X	no entries
Z	customized entries

10	Type of explosion protection
1	Ex db eb, Ex tb
3	Ex ib, Ex tb
5	mixed protection, e.g.: Ex db ib tb

Variant-Specific Data



Dimensions and Enclosure Details

Enclosure type	Operating elements size and quantity	External dimensions [mm]						Mounting [mm]			Mass approx. [kg]
		A	B	C	C1	C2	K	G	H	J	
LRS1.*	1x small / 1x large	102	116	87	137	92	145	41	130	6.1	0.7
LRS2.*	2x small	142	116	87	137	92	145	81	130	6.1	1
LRS2.4P.*	1x small / 1x large (4-pole)	142	116	87	137	92	145	81	130	6.1	1
LRS3.*	3x small	182	116	87	137	92	145	121	130	6.1	1.3
LRS4.*	4x small / 2x large	222	116	87	137	92	145	161	130	6.1	1.5

Mass is valid for empty enclosure, it will increase according to enclosure accessories, integrated components and cable glands
Values might differ slightly due to manufacturing tolerances
Dimension C1 is maximum, it will differ according to operating elements configuration

Cable Entries max. Quantity per Size

Type code	Cable entries Face A			Cable entries Face B		
	Quantity	Type	Clamping range	Quantity	Type	Clamping range
.B.	-	-	-	1	CG.PEDS1.M20.*	6 ... 12 mm
.C.	-	-	-	1	CG.PEDS1.M25.*	9 ... 17 mm
.E.	1	SP.PE.M20.*	-	1	CG.PEDS1.M20.*	6 ... 12 mm
.F.	1	SP.PE.M25.*	-	1	CG.PEDS1.M25.*	9 ... 17 mm

For further configurations please contact Pepperl+Fuchs