


Combined Panel Solutions CPS*

Marking

Combined Panel Solutions CPS*
ATEX certificate: see datasheets of relevant enclosures ATEX marking:  II 2 GD EJB enclosures: Ex db IIB+H2 Gb, Ex tb IIIC Db GUB enclosures: Ex db IIC Gb, Ex tb IIIC Db SR.* / FXL.* / GR.* Termination and Control Stations: Ex eb IIC T6, T5, T4 Gb Ex db eb IIC T6, T5, T4 Gb Ex ib IIC T6, T5, T4 Gb Ex db eb ib IIC T6, T5, T4 Gb Ex tb IIIC T80 °C, T95 °C, T130 °C Db
IECEx certificate: see datasheets of relevant enclosures UKCA certificate: see datasheets of relevant enclosures

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 dismantling lies with the plant operator.

The personnel must be appropriately trained and qualified in order to carry out mounting, installation, commissioning, operation, maintenance, and dismantling 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.

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 control units are used to control electrical energy and electrical signals in hazardous areas. They must be installed in fixed installations. Intended use includes observing these operating instructions and the other applicable documents, e.g. the data sheet. Any other use of the control units is not allowed.

Improper Use

Protection of the 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.

During installation take into account all local / national or plant specific rules and regulations regarding electricity, grounding, installation as well as hygiene and safety.

Consider the requirements of the IEC/EN 60079-31 regarding excessive dust deposits.

Ensure that adequate free air exists around the enclosure, and that it is not subjected to external sources of heating that could affect the stated temperature class.

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

Additional warnings may be on separate labels besides the main nameplate.

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

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.

Cover screws should remain in the cover at all times.

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

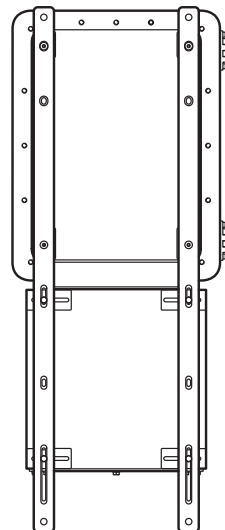
Tighten all cable glands with the appropriate torque.

Close all unused cable glands with the appropriate sealing plugs.

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

Close all unused enclosure holes with the appropriate stopping plugs.

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



Enclosures are installed by using the screw holes in the mounting frame.

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.

General rules for wall mounting of combined panel solutions

Mount the combined panel solutions to the wall or rack or equivalent by following the instructions below:

- Use the supplied support bars. This applies mainly to pre-defined combined panel solutions.
- Use the enclosure feet and supplied brackets. This applies to combined panel solutions where the support bar is not supplied by P+F.
- Ensure that the wall flatness is smaller or equal to 1 mm to avoid stress within the combined panel solutions. This is valid for all solutions.
- Ensure that larger unevenness is compensated e.g. by adding washers between the wall and the support bar or the enclosure.

Wall mounting of combined panel solutions with support bars

Mount combined panel solutions using the pre-defined support bars by following the instructions below:

- Use the top and bottom holes for wall mounting.
- Use all provided holes.

Note

The type of support bar is determined by the Ex d enclosure as it is generally heavier than the Ex e enclosure.

Note

Torque moments have to be calculated according to the individual mounting situation, e.g. mounting in a rack or wall.

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

Make sure that the enclosure is mounted on a flat surface to avoid distortion of the enclosure and ensure proper sealing function of the cover gasket.

If external ground connections exist, ensure they 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.

Only use cable glands with an ingress protection appropriate to the application.

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.

Select cables with a suitable temperature rating.

In case of mixed Ex e / Ex i arrangements, ensure the required minimum distances according to IEC/EN 60079-11.

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

Use only one conductor per terminal conductor entry point.

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.

Observe the special conditions for safe use listed in the manufacturer's documentation.

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

Arrange ground connections for incoming and outgoing cables so that the earth fault current is not carried between separate grounding plates.

When installing additional components, consult Pepperl+Fuchs in order to ensure these components are listed in the EU-type examination certificate and the maximum power dissipation of this solution is within the allowed limits.

All normally closed contacts of the 2 pole and 4 pole contact blocks are designed as positive opening contacts according to IEC 60947.

For easier wiring the internal contact modules might be removed from the DIN-Rail. Take care the small notches of the modules fit into the cutouts of the rail when mounting them back on.

With ammeters for current transformer connection the interchangeable scales can be changed via an opening at the upper side.

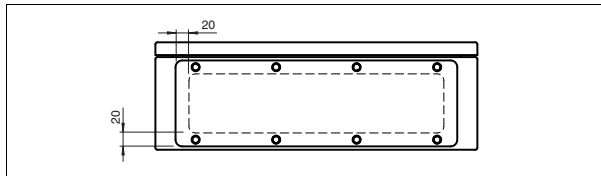
Rules for bringing in additional thru-holes for cable glands

In case of doubts contact Pepperl+Fuchs.

Additional holes can only be made in the Ex e enclosure, making additional holes in the Ex d enclosure is not permitted.

Thru-holes for plain entries must have a diameter of not more than 0.7 mm greater than the nominal diameter of the entry thread of cable gland or fitting.

Check the dimensional suitability of the selected entry device before installation.



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 = $1.5 \times (HSN+HSA)/2$

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 = $1.2 \times (WCN+WCA)/2$

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

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.

General rules for transport, lifting and handling of combined panel solutions

- Ensure that the combined panel solutions are protected from external stress during transport and handling to safely ensure explosion protection. The support bars help achieving this target.

i Note

If the support bars are not supplied by P+F, make sure to implement other suitable means (or processes) of protection to protect the combined panel solutions from damage.

- Use appropriate lifting gear depending on the weight of the combined panel solutions, e.g. crane or specially equipped forklifter.
- Ensure sufficient space around the combined panel solutions for handling and installation.
- Make sure that the mounting holes of combined panel solutions coincide with the envisaged holes on site.

i Note

All combined panel solutions must be fully supported during transport and handling to avoid damage. The support must be selected with regard to weight and size of the combined panel solutions.

General rules for lifting combined panel solutions

- If a support bar is attached or not, it is not allowed to lift combined panel solutions directly using the flange.
- If a support bar is attached or not, it is not allowed to lift combined panel solutions directly using both enclosures.

Lifting combined panel solutions with EJB enclosure and fitted support bar

Lift combined panel solutions with EJB enclosure and fitted support bar by following the instructions below:

1. Remove 4 cover screws
2. Fit 4 or more suitable lifting lugs to the threaded holes
3. Use the lugs for lifting the combined panel solutions
4. Make sure to fit the cover screws back into place, once you're finished.

i Note

Make sure that all lugs and ropes are strong enough so that two ropes can take the full weight of the combined panel solutions, due to the possible uneven load distribution. The support bar will support the Ex e enclosure during this process. They can also be used to maneuver the combined panel solutions.

i Note

The support bars are not designed to carry the weight of the entire combined panel solutions during horizontal lifting.

Lifting combined panel solutions with GUB enclosure and fitted support bar

Lift combined panel solutions with GUB enclosure and fitted support bar by following the instructions below:

- Lift combined panel solutions with GUB and fitted support bar by using the provided support bar for lifting and handling.

i Note

The support bars are strong enough to protect the combined panel solutions from damage during handling.

Technical Data

General	
Types and variants	CPS* - see type code table
Electrical specifications	
Operating voltage	1500 V DC / 1000 V AC max.
Operating current	1600 A max.
Mechanical specifications	
Dimensions	see data table values might differ slightly due to casting and manufacturing tolerances
Enclosure range	Details of Ex d enclosure see datasheet EJB* / EJBX* / GUB* / GUBX* Details of Ex e enclosure see datasheet SR.T* / SR.CS / *FXLS*.T* / FXLS*.CS* / GR.T* / GR.CS*
Degree of protection	IP66
Mass	see data table valid for empty enclosure, will increase according to integrated components
Mounting	see data table
Material	
Enclosure	Ex d enclosure: aluminum alloy or AISI 316L stainless steel Ex e enclosure: AISI 316L stainless steel or GRP
Finish	Ex d enclosure: epoxy coated RAL 7005 (grey) or shot peened Ex e enclosure: brushed or electropolished
Glass	optional thermo-resistant tempered glass
Seal	silicone
Grounding	M10 internal/external brass grounding bolt through enclosure body
Ambient conditions	
Ambient temperature	-50 ... 60 °C (-58 ... 140 °F) depending on integrated components
Data for application in connection with hazardous areas	
Maximum power dissipation	see datasheets of relevant enclosures
Conformity	
Degree of protection	EN 60529
CE marking	0080 or 0102, see type label

Typecode / Model Number

1	2	3	4	5	6	7	8						
CPS	.	*	*	.	*	.	*	-	*	.	***	.	*
CPS	.	EJB	10B	.	P	.	CS	-	SR	.	31.31.22	.	TBM

Example: CPS.EJB10B.P.CS-SR.31.31.22.TBM

Combined Panel Solutions

enclosure Ex d: EJB aluminum, size 10B, portrait orientation, control station

enclosure Ex e: SR stainless steel, size 310 x 310 x 220 mm, terminal box with mixed protection methods

1	Series
CPS	combined panel solutions

2	Ex d enclosure type and material
EJB	enclosure Ex d IIB+H ₂ in aluminum
EJBX	enclosure Ex d IIB+H ₂ in stainless steel
GUB	enclosure Ex d IIC in aluminum
GUBX	enclosure Ex d IIC in stainless steel

3	Ex d enclosure size
*	see datasheets of enclosure types

4	Ex d enclosure orientation
	square enclosure
L	landscape
P	portrait

5	Ex d solution type
*	see datasheets of enclosure types

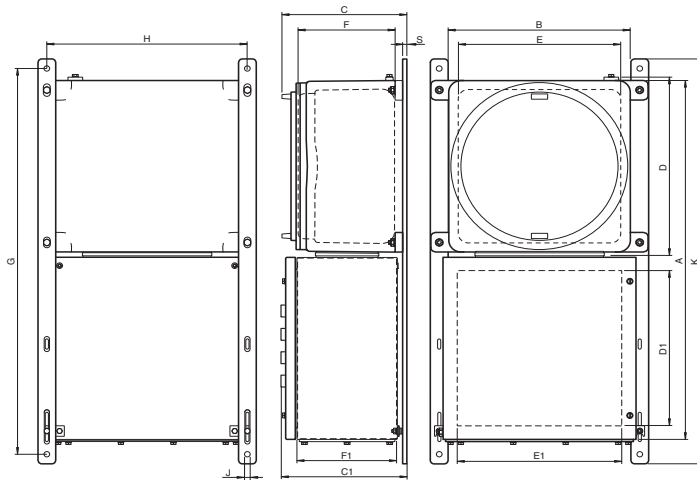
6	Ex e enclosure type and material
SR	enclosure Ex e in stainless steel, brushed finish
GR	enclosure Ex e in glass fiber reinforced polyester, black
FXL	enclosure Ex e in stainless steel, electropolished finish

7	Ex e enclosure size
*	see datasheets of enclosure types

8	Ex e solution type
*	see datasheets of enclosure types

Variant-Specific Data

Dimensions and Enclosure Details GUB*



Type	External dimensions [mm]					Internal dimensions Ex d enclosure [mm]			Internal dimensions Ex e enclosure [mm]			Mounting [mm]				Mass approx. [kg]
	A	B	C	C1	K	D	E	F	D1	E1	F1	G	H	J	S	
CPS.GUB1H.*-SR.26.26.16.*	483	260	197	255	480	170	170	150	206	206	143	178	228	10	10	14
CPS.GUB3L.*-GR.36.36.17.*	730	430	246	304	845	325	325	183	343	343	144	805	395	11	8	30
CPS.GUB3L.*-SR.38.38.22.*	757	430	246	304	845	325	325	183	326	326	203	805	395	11	8	37
CPS.GUB4.*-FXL.35.43.22.*	808	448	310	368	958	410	410	215	303	369	195	958	410	12.5	40	62
CPS.GUB5.*-FXL.40.56.23.*	973	555	436	494	1128	514	514	266	353	494	205	1078	500	12.5	40	114

Mass is valid for empty enclosure, it will increase according to integrated components and cable glands

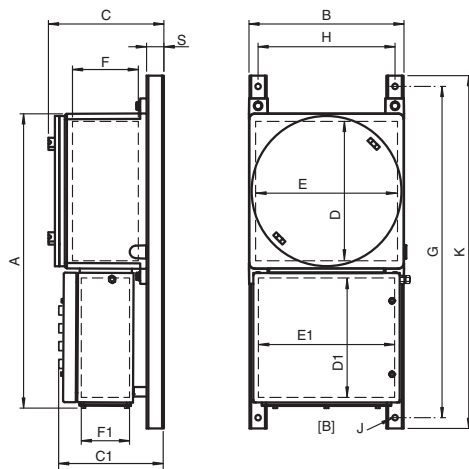
Values might differ slightly due to manufacturing tolerances

C1 is the maximum dimension with control element and varies depending on the control element

Brief Instructions

Combined Panel Solutions CPS*

Dimensions and Enclosure Details GUBX*



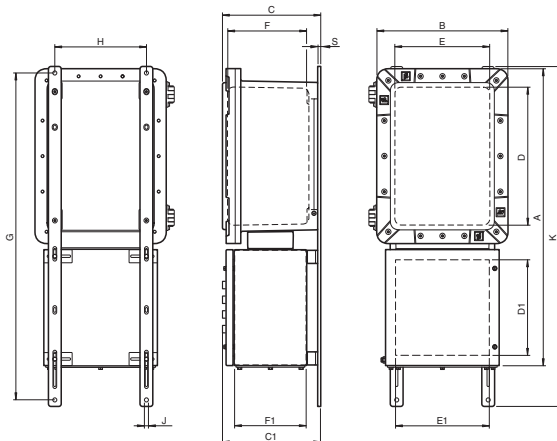
Type	External dimensions [mm]					Internal dimensions Ex d enclosure [mm]			Internal dimensions Ex e enclosure [mm]			Mounting [mm]				Mass approx. [kg]
	A	B	C	C1	K	D	E	F	D1	E1	F1	G	H	J	S	
CPS.GUBX1H.*-FXL.23.20.15.*	441	201	225	283	580	173	173	150	183	139	125	530	178	12.5	40	35
CPS.GUBX3L.*-FXL.30.34.17.*	657	347	258	316	811	325	325	185	253	279	145	761	318	12.5	40	105
CPS.GUBX4.*-FXL.35.43.22.*	814	454	322	380	959.5	410	410	228	303	369	195	909.5	410	12.5	40	168
CPS.GUBX5.*-FXL.40.56.23.*	950	555	380	438	1120.5	510	510	288	353	494	205	1070.5	495	12.5	40	241

Mass is valid for empty enclosure, it will increase according to integrated components and cable glands

Values might differ slightly due to manufacturing tolerances

C1 is the maximum dimension with control element and varies depending on the control element

Dimensions and Enclosure Details EJB*



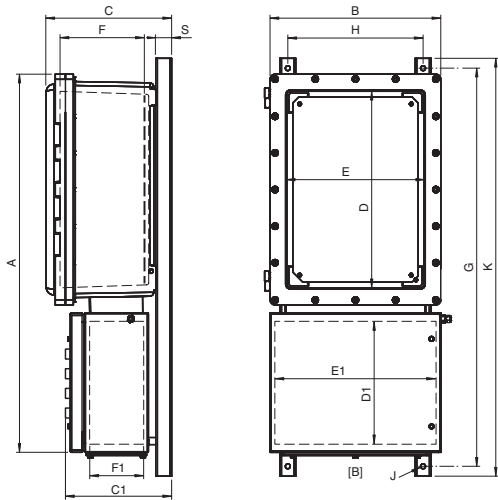
Type	External dimensions [mm]					Internal dimensions Ex d enclosure [mm]			Internal dimensions Ex e enclosure [mm]			Mounting [mm]				Mass approx. [kg]
	A	B	C	C1	K	D	E	F	D1	E1	F1	G	H	J	S	
CPS.EJB8B.P*-FXL.25.27.17.*	665	290	272	330	738	300	200	186	203	209	146	688	200	12.5	40	30
CPS.EJB10B.P*-SR.31.31.22.*	798	358	268	326	910	370	260	215	256	256	203	875	250	11	8	43
CPS.EJB10B.L.*-SR.31.31.22.*	688	468	268	326	910	260	370	215	256	256	203	875	345	11	8	43
CPS.EJB10B.P*-SR.38.38.22.*	868	380	268	326	910	370	260	215	326	326	203	875	250	11	8	45
CPS.EJB10B.L.*-SR.38.38.22.*	758	468	268	326	910	260	370	215	326	326	203	875	345	11	8	45
CPS.EJB10B.P*-GR.18.36.17.*	657	360	268	326	910	370	260	215	163	343	144	875	250	11	8	37
CPS.EJB10B.L.*-GR.18.36.17.*	547	468	268	326	910	260	370	215	163	343	144	875	345	11	8	37
CPS.EJB10B.P*-GR.36.36.17.*	840	360	268	326	910	370	260	215	343	343	144	875	250	11	8	39
CPS.EJB10B.L.*-SR.36.36.17.*	770	468	268	326	910	260	370	215	343	343	144	875	345	11	8	39
CPS.EJB15A.P*-SR.48.48.22.*	1102	480	292	350	1165	500	350	219	426	426	203	1125	340	13	12	78
CPS.EJB15A.L.*-SR.48.48.22.*	952	602	292	350	1165	350	500	219	426	426	203	1125	460	13	12	78
CPS.EJB18B.P*-SR.48.48.22.*	1253	538	415	473	1435	640	427	318	426	426	203	1394	415	13	15	133
CPS.EJB18B.L.*-SR.48.48.22.*	1310	751	415	473	1435	427	640	318	426	426	203	1394	501	13	15	133
CPS.EJB18B.P*-SR.60.60.26.*	1373	600	415	473	1435	640	427	318	546	546	203	1394	415	13	15	141
CPS.EJB18B.L.*-SR.60.60.26.*	1160	751	415	473	1435	427	640	318	546	546	203	1394	501	13	15	141
CPS.EJB20A.P*-SR.60.60.26.*	1547	687	511	569	1595	805	555	393	546	546	203	1545	510	17	20	250
CPS.EJB20A.P*-FXL.45.66.32.*	1401	687	531	589	2000	805	555	393	403	599	295	1389	510	12.5	40	229
CPS.EJB20A.P*-FXL.60.91.32.*	1305	937	531	589	1376.5	555	805	393	553	849	295	1326.5	668	12.5	40	241

Mass is valid for empty enclosure, it will increase according to integrated components and cable glands

Values might differ slightly due to manufacturing tolerances

C1 is the maximum dimension with control element and varies depending on the control element

Dimensions and Enclosure Details EJBX*



Type	External dimensions [mm]					Internal dimensions Ex d enclosure [mm]			Internal dimensions Ex e enclosure [mm]			Mounting [mm]				Mass approx. [kg]
	A	B	C	C1	K	D	E	F	D1	E1	F1	G	H	J	S	
CPS.EJBX8B.P*-FXL.25.27.17.*	638	270	289	347	738	300	200	195	203	209	146	688	250	12.5	40	47
CPS.EJBX10B.P*-FXL.30.34.17.*	764	340	319	377	847.5	370	260	370	253	279	145	797.5	320	12.5	40	80
CPS.EJBX15A.P*-FXL.35.43.22.*	963	430	316	374	1070	500	350	220	303	369	195	1020	430	12.5	40	115
CPS.EJBX18B.P*-FXL.40.52.32	1150	524	424	482	1243.5	632	422	320	353	454	295	1193.5	505	12.5	40	194
CPS.EJBX20A.P*-FXL.45.66.32.*	1387	672	486	544	1454.5	800	670	380	403	599	295	1404.5	630	12.5	40	354

Mass is valid for empty enclosure, it will increase according to integrated components and cable glands

Values might differ slightly due to manufacturing tolerances

C1 is the maximum dimension with control element and varies depending on the control element