Brief Instructions ENG

Control and Distribution Panels GUB* / GUBX*

Pepperl-Fuchs GmbH
Lilienthalstrasse 200
69307 Mannheim, Germany
Tel. +49 621 776-0
Fax +49 621 776-1000

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Validity

Specific processes and instructions in this instruction manual require special provisions to guarantee the safety of the operating personnel.

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

The corresponding datasheets, manuals, declarations of conformity, EC-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.

Intended Use

The GUB series of Ex db IIC certified enclosures forms the optimal basis for the application-specific configuration of terminal boxes, control stations as well as control and distribution panels. A wide range of components and control functions can be integrated in one out of many sizes of Ex db and Ex tb certified flameproof enclosures. They are manufactured from copper-free aluminum with increased corrosion resistance or from high-quality stainless steel. This durability and the comprehensive enclosure sizes cover the requirements of many industries including offshore and marine applications.

A choice of windows allows viewing of integrated monitoring functions. Electrical components can be integrated as per customer specification.

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.

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

Protect the device against long-term or excessive mechanical vibrations.

Observe the following points when installing 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.

If you use cable glands with cylindrical thread, secure the cable glands against loosening by suitable glue or similar means.

For control panels with IECEx certification, only use cable glands with metric thread or NPT thread.

Mount the device so that it complies with the specified degree of protection according to IEC/EN 60529.

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

Close all unused enclosure holes with the appropriate stopping plugs.

The enclosure cover is heavy. In order to avoid personal injuries or property damage, make appropriate provisions for the mounting procedure.

Do not damage the flamepath surfaces between enclosure and enclosure cover during the opening of the control panel.

If one of the flamepath surfaces is damaged, exchange enclosure and enclosure cover.

Do not add additional components into the control panel, which are not listed in the original bill of materials.

Observe the tightening torque of the terminal screws.

The delivered control panel is completely wired. Do not modify or manipulate this control panel. Observe the wiring diagram when connecting the control panel.

Ensure that external ground connections exist, are in good condition, and are not damaged or corroded.

In order to minimize power dissipation, observe the maximum possible conductor lengths.

If radio frequency sources are present in the device, the usage of the device is bound to local restrictions. Ensure that the local restrictions allow usage of this device before commissioning.

Associated Apparatus / Intrinsically Safe Circuits

- When the control panel is equipped with an associated apparatus with intrinsically safe circuits and the panel is in addition equipped with a thermal probe for protecting the I.S. apparatus against ambient temperatures where it is not designed for, this thermal probe has to be connected to either an internal or external switch which switches OFF the power for the I.S. apparatus in case the temperature inside of the panel reaches the upper or lower thresholds of the I.S. apparatus. If an external temperature switch is used, the user has to configure the settings of that switch according to the following rules:
- Maximum temperature response threshold of [(TIEx-2) ±2°C] TIEx = Maximum value of the certified ambient temperature of the internal I.S. apparatus.
- Minimum temperature response threshold of [(TminEx+2)±2°C]. TminEx = minimum value of the certified ambient temperature of the internal I.S. apparatus.

Schedule of Limitations

The width of the flameproof joints is superior to those specified in the tables of EN/IEC 60079-1. Always contact Pepperl+Fuchs in case of any repairs of the flameproof joints.

When devices certified for hazardous areas are included in the solution, their limitations as specified in their respective documentation have to be respected.

Operation, Maintenance, Repair

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

The device must be disconnected from the power supply prior to installation and maintenance. The power supply may be activated only after all the circuits required for operation have been fully assembled and connected.

If the control panel was affected by a short circuit, check the following.

Check the functionality of the control panel.

Check that the integrity of the flameproof enclosure is present.

If the enclosure is damaged, replace enclosure and enclosure cover.

Check all surfaces of the flamepath for damage. If an actuator is present, check the flamepaths of the actuator for damage.

If the surfaces of the flamepath are damaged, replace the enclosure and the enclosure cover. If the surfaces of the flamepath of an actuator are damaged replace the complete actuator.

Do not paint or varnish the surfaces of the flamepath.

Enclosures with degree of protection IP66/67 have seals in the flamepath.

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

If there is a defect, always replace the device with an original device.

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

If the internal equipment contains a battery and a potentially explosive atmosphere is present, do not open the enclosure.

If the device is installed in potentially explosive dust atmosphere, remove dust layers which exceed 5 mm in regular intervals.

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.

Do not modify or manipulate the device.

Modifications are permitted only if approved in this instruction manual.

Delivery, Transport, Disposal

Disposing of device and packaging must be in compliance with the applicable laws and guidelines of the respective country.

Type Code / Model Number

Enclosure type
GUB enclosure Ex d IIC
| **Material**
| | copper-free aluminum
| **X** stainless steel AISI 316L
| | **Window**
| | | no window
| | **W** window
| | | **Enclosure variant**
| | | | standard variant
| | | **E** variant with extension
| | | | **Enclosure size**
| | | | **00 ... 5** see dimensions data table
| | | | | **Electrical circuits**
| | | | | **D** without intrinsically safe circuits
| | | | | **I** intrinsically safe circuits integrated
| | | | | | **Type of application**
| | | | | | **U** empty enclosure
| | | | | | **T** terminal box
| | | | | | **CP** control panel
| | | | | | **CS** control station
| | | | | | **DB** distribution board
| | | | | | **DMT** electronic earthing system
| | | | | | **MS** motor starter
| | | | | | **PS** power switching
| | | | | | **RIO** remote I/O field unit
| | | | | | **IFS** interface solution
| | | | | | **FJB** fieldbus solution
| | | | | | **OS** optical solution
| | | | | | **Q40** engineered solution per customer specification (Q40)
| | | | | | | **Variant number**
| | | | | | | -Yxxxxxx

GUB		W	E	3	.D	.CP	-Yxxxxxx

Example: Control panel GUB size 3 in aluminum, with extension and window, without intrinsically safe circuits

Technical Specifications

General	
Type and variants	GUB*, see type code table GUBX*, see type code table
Electrical specifications	
Operating voltage	1500 V DC / 1000 V AC max.
Operating current	recommended 1600 A max.
Mechanical specifications	
Dimensions	see data table, values might differ slightly due to manufacturing tolerances for custom designed solutions dimensions and mass may differ
Thread type	metric ISO pitch 1.5 mm or NPT ANSI ASME B1.20.1
Enclosure cover	threaded round cover
Cover fixing	flamepath thread
Cover seal	none, O-ring for IP66/67
Degree of protection	IP66 (IP66/67 with O-ring)
Cable entry	see data table
Grounding	M6 external grounding points
Mass	see data table valid for empty enclosure, will increase according to integrated components
Material	
Enclosure	aluminum alloy or AISI 316L stainless steel
Finish	aluminum: epoxy coated RAL 7005 (grey) stainless steel: shot peened
O-Ring	silicone
Glass	thermo-resistant tempered glass
Ambient conditions	
Ambient temperature	-60 ... 60 °C (-58 ... 140 °F) depending on integrated components
Data for application in connection with hazardous areas	
EU-type examination certificate	INERIS 14 ATEX 0035X INERIS 14 ATEX 9005U
Marking	Ⓔx II 2 GD Ex db IIC T* Gb Ex tb IIIC T** °C Db T6/T85 °C, T5/T100 °C, T4/T135 °C, T3/T200 °C depending on configuration, ambient temperature and built-in power loss
Maximum power dissipation	see data table maximum power dissipation at T4/+40 °C enclosure without window
International approvals	
IECEx approval	IECEx INE 14.0042X IECEx INE 16.0051U
EAC approval	TC RU C-IT.AA87.B.00156
Further approvals	available on request
Conformity	
Degree of protection	EN60529
CE marking	0080 or 0102, see type label

Release date 2020-11-24 DOCT-4031D Refer to „General Notes Relating to Pepperl+Fuchs Product Information"

Standards	EN 60079-0:2012/A11:2013 EN 60079-1:2014 EN IEC 60079-7:2015 EN 60079-11:2012 EN 60079-28:2015 EN 60079-31:2014 and/or IEC 60079-0:2011 IEC 60079-1:2014-06 IEC 60079-7:2015 IEC 60079-11:2011 IEC 60079-28:2015 IEC 60079-31:2013

Class of Temperature / Ambient Temperature for Cable Entries and Cable

Only use cable entries and cables suitable for the class of temperature / ambient temperature as reported in the following table.

Max. ambient temperature [°C]	Class of temperature type of protection Ex d IIA, IIB, IIC				
	T6 [°C]	T5 [°C]	T4 [°C]	T3 without window [°C]	T3 with window [°C]
40	n.a.	n.a.	110	150	140
50	n.a.	n.a.	110	150	140
60	n.a.	90	110	150	150
70	n.a.	90	110	160	150
80	-	90	115	160	150

Connection with cables suitable for the above mentioned temperatures.

Comparative Table Marking / Thread of the Cable Entry

Threaded entries in the enclosures are identified by the following coding:

Markings according to the requirements of IEC 60079-1 clause 13.2			
00 C = 1/4" ISO228	00 N = 1/4" NPT	00 M = M12 x 1.5	9PG = PG9
1 C = 1/2" ISO228	0 N = 3/8" NPT	0 M = M16 x 1.5	11PG = PG11
3 C = 1" ISO228	1 N = 1/2" NPT	1 M = M20 x 1.5	13PG = PG13
00 G = 1/4" ISO 7/1	2 N = 3/4" NPT	2 M = M25 x 1.5	16GP = PG16
0 G = 3/8" ISO 7/1	3 N = 1" NPT	3 M = M32 x 1.5	21PG = PG21
1 G = 1/2" ISO 7/1	4 N = 1 1/4" NPT	4 M = M40 x 1.5	29PG = PG29
2 G = 3/4" ISO 7/1	5 N = 1 1/2" NPT	42 M = M42 x 1.5	36PG = PG36
3 G = 1" ISO 7/1	6 N = 2" NPT	5 M = M50 x 1.5	42PG = PG42
4 G = 1 1/4" ISO 7/1	7 N = 2 1/2" NPT	6 M = M63 x 1.5	48PG = PG48
5 G = 1 1/2" ISO 7/1	8 N = 3 " NPT	7 M = M75 x 1.5	
6 G = 2" ISO 7/1	9 N = 4" NPT	8 M = M85 x 1.5	
7 G = 2 1/2 " ISO 7/1		9 M = M110 x 1.5	
8 G = 3" ISO 7/1			
9 G = 4" ISO 7/1			

"G" means also equivalent type according UNI6125 or EN10266-2
Example: diameter of the hole Ref. 2 M = thread M25 x 1.5

Legend

Dimension values see data table.
Real values might differ slightly due to manufacturing tolerances.
Dimensions are valid for standard enclosures and IP66 variants only.
Image and drawing are generic for this device type and may deviate from the specific variant.

Legend	
A	Height
B	Width
C	Depth
D	Internal height
E	Internal width
F	Internal depth to surface mounting plate
G	Mounting holes distance, vertical
H	Mounting holes distance, horizontal
J	Mounting holes diameter
K	Maximum external dimension of mounting brackets
L	Diameter threaded cover
L	Diameter circular window (window variants only)
M	Diameter mounting aperture
[A] ... [D]	Cable entry faces

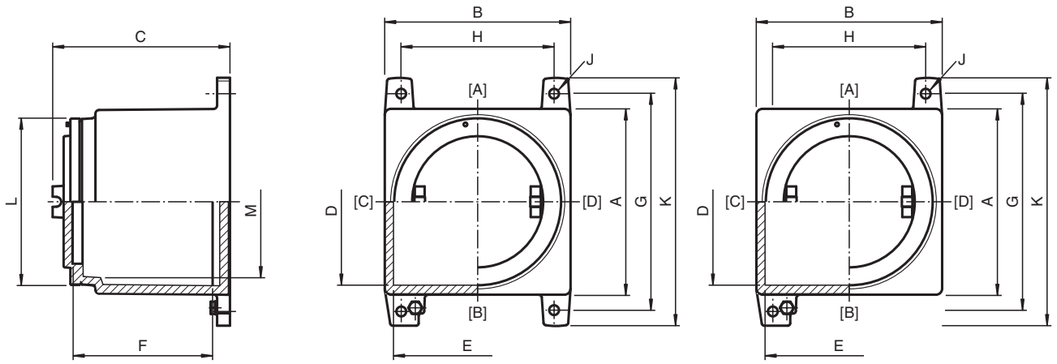
Mass is valid for empty enclosure, it will increase according to integrated components and cable glands
For custom designed solutions, such as for different termperature ranges, dimensions and mass may differ

Cable Entries max. Quantity per Size GUB* and GUBX*

Type	Cover	Faces A ... D									Bottom				
	M12	M20	M25	M32	M42	M50	M63	M75	M85	M110	M20	M25	M32	M42	M50
	1/4"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	1/2"	3/4"	1"	1-1/4"	1-1/2"
GUB*00*	1	4	3	2	1	1	1	-	-	-	2	2	1	-	-
GUB*0*	1	6	5	3	2	2	1	1	-	-	4	3	1	-	-
GUB*0H*	1	10	8	4	3	2	1	1	1	1	4	3	1	-	-
GUB*1*	2	8	8	5	2	2	2	1			6	4	2	1	1
GUB*1H*	2	12	10	5	4	4	2	1	1	1	6	4	2	1	1
GUB*1PF*	1	8	6	3	2	2	1	-	-	-	4	3	1	1	1
GUB*2*	3	10	10	6	3	3	2	2	-	-	10	8	4	2	2
GUB*3*	3	20	15	10	6	5	3	2	2	1	10	8	4	2	2
GUB*3L*	8	30	25	15	8	8	5	3	2	1	20	12	10	4	4
GUB*4*	10	45	35	20	14	10	8	5	3	1	25	15	11	5	5
GUB*4A*	10	28	20	12	10	5	4	3	3	-	25	15	11	5	5
GUB*5*	12	70	60	35	20	15	12	6	5	3	35	20	18	6	6

Metric ISO pitch 1.5mm, NPT ANSI ASME B1.20.1
Table shows drilling pattern for ambient temperature range -20 … +60 °C. For lower temperatures please contract Pepperl+Fuchs
For types of cable glands and combination of different gland sizes please contact Pepperl+Fuchs

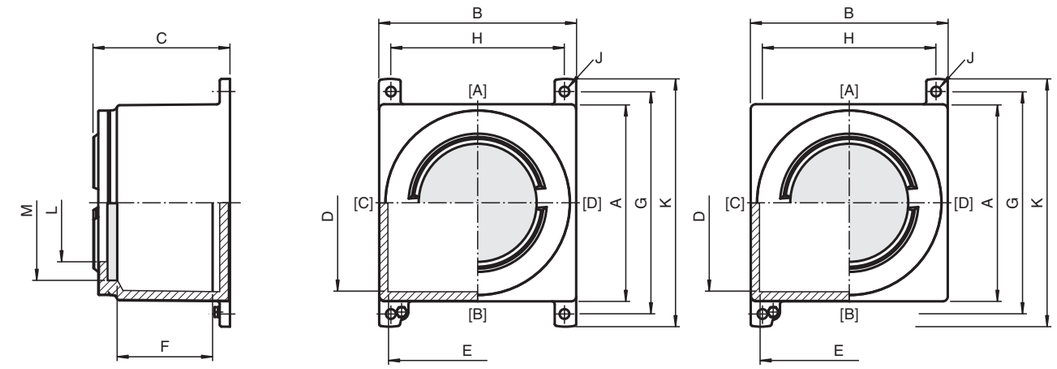
Dimensions GUB*



Variant-Specific Data GUB*

Type	External dimensions [mm]				Internal dimensions [mm]			Mounting [mm]			Diameter [mm]		Mounting brackets quantity	Mass [kg]	Max. power dissipation at T4/+40 °C [W]
	A	B	C	K	D	E	F	G	H	J	L	M			
GUB00*	119	119	137	166	92	92	102	145	95	8	112	97	2	2	48
GUB0*	150	150	145	200	125	125	117	178	125	8	136	114	2	3.5	78
GUB0H*	150	150	185	200	125	125	150	178	125	8	136	114	2	4.5	91
GUB1*	202	202	155	255	170	170	110	228	178	10	189	163	2	6.4	122
GUB1H*	202	202	200	255	170	170	150	228	178	10	189	163	2	7.6	143
GUB1PF*	176	176	139	220	150	150	105	196	154	10	170	147	2	6.4	95
GUB2*	250	250	160	305	225	225	112	275	232	10	231	206	4	8.5	181
GUB3*	260	260	215	310	228	228	169	285	228	10	231	206	4	11.5	222
GUB3L*	360	360	238	430	325	325	183	395	318	10	348	320	4	21	293
GUB4* (-20 °C)	450	450	305	525	410	410	227	485	410	10	437	406	4	43.5	466
GUB4*	450	450	305	525	410	410	215	485	410	10	437	406	4	53.5	466
GUB4A* (-20 °C)	450	450	235	525	410	410	157	485	410	10	437	406	4	38	400
GUB4A*	450	450	235	525	410	410	145	485	410	10	437	406	4	48	400
GUB5*	555	555	400	647	514	514	266	595	500	14	546	504	4	80	749

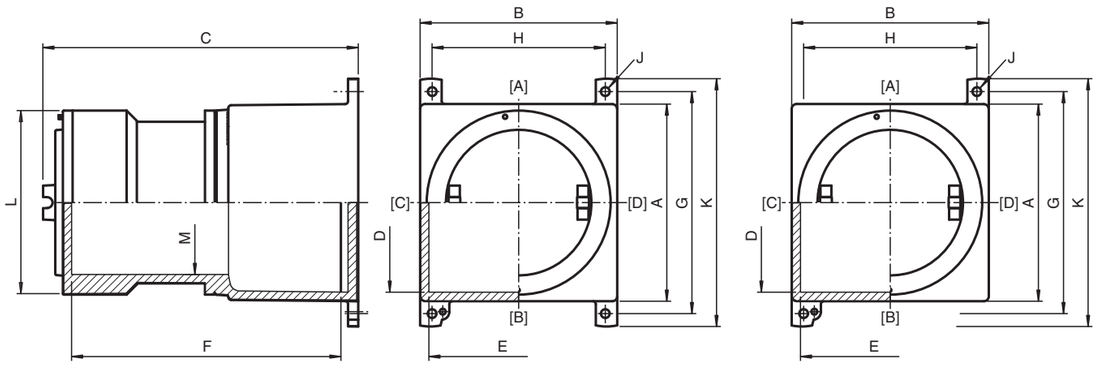
Dimensions GUBW*



Variant-Specific Data GUBW*

Type	External dimensions [mm]				Internal dimensions [mm]			Mounting [mm]			Diameter [mm]		Mounting brackets quantity	Mass [kg]	Max. power dissipation at T4/+40 °C [W]
	A	B	C	K	D	E	F	G	H	J	L	M			
GUBW00*	119	119	121	166	92	92	85	145	95	8	64	97	2	2.1	48
GUBW0*	150	150	135	200	125	125	105	178	125	8	79	114	2	3.6	78
GUBW0H*	150	150	171	200	125	125	137	178	125	8	79	114	2	4.6	91
GUBW1*	202	202	134	255	170	170	95	228	178	10	121	163	2	6.3	122
GUBW1H*	202	202	176	255	170	170	135	228	178	10	121	163	2	7.5	143
GUBW2*	250	250	140	305	225	225	93	275	232	10	160	206	4	9	95
GUBW3*	260	260	193	310	228	228	150	285	228	10	160	206	4	11	181
GUBW3L*	360	360	219	430	325	325	160	395	318	10	260	320	4	22	222
GUBW4* (-20 °C)	450	450	281	525	410	410	203	485	410	10	260	406	4	44	293
GUBW4*	450	450	281	525	410	410	203	485	410	10	260	406	4	51	466
GUBW4A* (-20 °C)	450	450	211	525	410	410	133	485	410	10	260	406	4	39	466
GUBW4A*	450	450	211	525	410	410	133	485	410	10	260	406	4	46	400
GUBW5*	555	555	400	647	514	514	275	595	500	14	260	504	4	80	749

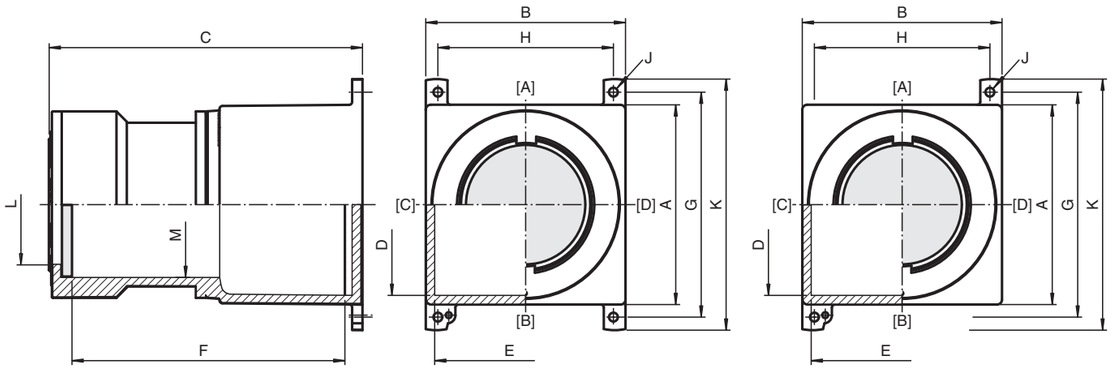
Dimensions GUBE*



Variant-Specific Data GUBE*

Type	External dimensions [mm]				Internal dimensions [mm]			Mounting [mm]			Diameter [mm]		Mounting brackets quantity	Mass [kg]	Max. power dissipation at T4/+40 °C [W]
	A	B	C	K	D	E	F	G	H	J	L	M			
GUBE0*	150	150	252	200	125	125	224	178	125	8	136	114	2	3.3	111
GUBE0H*	150	150	292	200	125	125	255	178	125	8	136	114	2	4.8	125
GUBE1*	202	202	301	255	170	170	255	228	178	10	189	163	2	9.1	185
GUBE1H*	202	202	345	255	170	170	299	228	178	10	189	163	2	10.4	206
GUBE2*	250	250	340	305	225	225	291	275	232	10	231	206	4	13	283
GUBE3*	260	260	391	310	228	228	345	285	228	10	231	206	4	15.2	323
GUBEB3L*	360	360	405	430	325	325	345	395	318	10	348	320	4	32.5	405
GUBE3L*	360	360	495	430	325	325	435	395	318	10	348	320	4	35	458
GUBE4* (-20 °C)	450	450	545	525	410	410	470	485	410	10	437	406	4	59	675
GUBE4*	450	450	545	525	410	410	457	485	410	10	437	406	4	69	675
GUBE4A* (-20 °C)	450	450	475	525	410	410	397	485	410	10	437	406	4	54	609
GUBE4A*	450	450	475	525	410	410	384	485	410	10	437	406	4	64	609

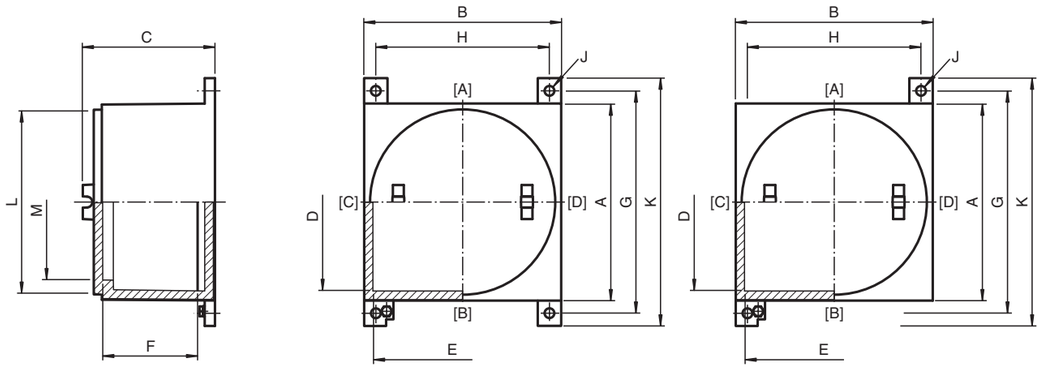
Dimensions GUBWE*



Variant-Specific Data GUBWE*

Type	External dimensions [mm]				Internal dimensions [mm]			Mounting [mm]			Diameter [mm]		Mounting brackets quantity	Mass [kg]	Max. power dissipation at T4/+40 °C [W]
	A	B	C	K	D	E	F	G	H	J	L	M			
GUBWE0*	150	150	242	200	125	125	212	178	125	8	79	114	2	3.5	111
GUBWE0H*	150	150	278	200	125	125	242	178	125	8	79	114	2	5	125
GUBWE1*	202	202	281	255	170	170	240	228	178	10	121	163	2	9	185
GUBWE1H*	202	202	323	255	170	170	284	228	178	10	121	163	2	10.3	206
GUBWE2*	250	250	340	305	225	225	272	275	232	10	160	206	4	12.5	283
GUBWE3*	260	260	371	310	228	228	330	285	228	10	160	206	4	15.5	323
GUBWEB3L*	360	360	384	430	325	325	322	395	318	10	260	320	4	33.5	405
GUBWE3L*	360	360	474	430	325	325	412	395	318	10	260	320	4	36	458
GUBWE4* (-20 °C)	450	450	522	525	410	410	445	485	410	10	260	406	4	61	675
GUBWE4*	450	450	522	525	410	410	445	485	410	10	260	406	4	68	675
GUBWE4A* (-20 °C)	450	450	452	525	410	410	372	485	410	10	260	406	4	56	609
GUBWE4A*	450	450	452	525	410	410	372	485	410	10	260	406	4	63	609

Dimensions GUBX*



Variant-Specific Data GUBX*

Type	External dimensions [mm]				Internal dimensions [mm]			Mounting [mm]			Diameter [mm]		Mounting brackets quantity	Mass [kg]	Max. power dissipation at T4/+40 °C [W]
	A	B	C	K	D	E	F	G	H	J	L	M			
GUBX00*	112	112	131	163	92	92	98	145	95	8	112	97	2	5.3	48
GUBX0*	150	150	153	205	125	125	113	178	125	8	136	114	2	12	78
GUBX0H*	150	150	190	205	125	125	150	178	125	8	136	114	2	16	91
GUBX1*	200	200	157	255	173	173	110	228	178	10	189	163	2	23	122
GUBX1H*	200	200	197	251	173	173	150	228	178	10	189	163	2	27	143
GUBX1PF*	176	176	137	220	150	150	95	196	154	10	170	147	2	23	95
GUBX2*	256	256	160	305	225	225	114	275	232	10	235	206	4	30	181
GUBX3*	258	258	215	310	225	225	165	285	228	10	235	206	4	37	222
GUBX3L*	347	347	255	430	325	325	185	395	318	10	348	320	4	91	293
GUBX4*	440	440	316	530	410	410	228	485	410	14	437	406	4	180	466
GUBX4A*	440	440	246	530	410	410	158	485	410	14	437	406	4	155	400
GUBX5*	540	540	376	640	510	510	273	595	510	16	540	504	4	216	749

Stainless steel GUBX enclosures are available with extensions and various viewing windows, too
For details please contact Pepperl+Fuchs

Release date 2020-11-24 DOCT-4031D Refer to „General Notes Relating to Pepperl+Fuchs Product Information"