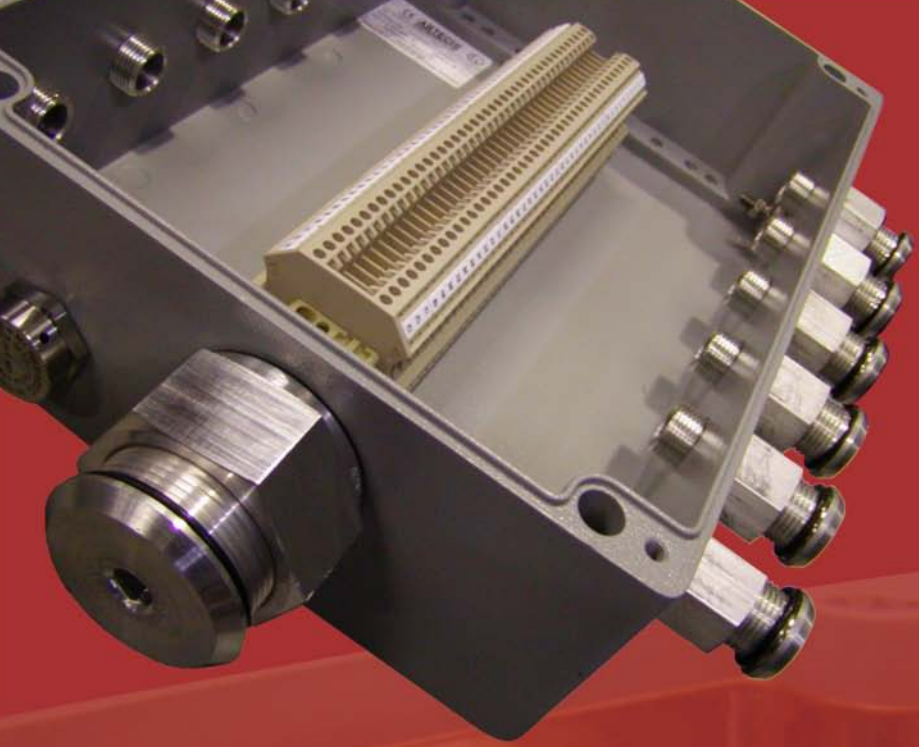

A.B Controls and Technology

Terminal Boxes

Electrical Enclosures

Hazardous Area Enclosures

Special Purpose Enclosures

ABTECH Limited

Enclosure Solutions

How to Contact Abtech

If you require any additional information regarding our products, please contact us at one of the listed locations.

Alternatively, our websites include detailed product information along with the ability to download certificates, software and drawings.

ABTECH Worldwide Locations and Local Support

Email: sales@abtech.eu
Web: www.abtech.eu

Email: sales@abtech-inc.net
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Email: sales@abtech.de
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2984 AG Ridderkerk, Postbus 4090
2980 GB Ridderkerk
Nederland

Tel: +31 (0) 180 428417
Fax: +31 (0) 180 431668
Email: sales@abtech.nl
Web: www.abtech.nl

Since the first ABTECH sheet steel enclosure was manufactured in the 1970's the company has never lost sight of it's goal, to become a leading supplier of quality electrical enclosures and junction boxes suitable for both industrial and hazardous area markets. This we believe has been achieved through innovation, market leading design, rigorous testing and adherence to quality.

In recent years ABTECH have extended their range of enclosures to cope with ever increasing customer demands for unique solutions to their problems. These solutions include high current connection boxes (up to 3000Amps), high temperature junction boxes (up to 950℃ for 3 hours) and IP68 enclosures (up to 120ft depth).

ABTECH rose to the challenge when the Channel Tunnel was being constructed and produced over 12,500 junction boxes and emergency lighting actuators to the most exacting of standards.

With the emphasis on reliability and safety, ABTECH designed a solution that more than met the rigorous specification laid down by Eurotunnel.

The new millennium has seen ABTECH once more expanding their range of products and services to help their customers cope with the need to meet ever changing international standards. The entire hazardous area product range of BPG, SX and ZAG enclosures now complies with the ATEX legislation and is certified EEx'e' Group II Zone 1 and Zone 2 areas.

ABTECH operate in the global market place as the nature of the Oil & Gas & Petrochemical industry demands and to meet this requirement ABTECH operate at an International level. With the headquarters based in Sheffield, England and factories and offices in Houston, Texas, Bünde, Germany and a network of agents covering over 40 countries worldwide, ABTECH have the coverage to manage any project. Indeed over the last 25 years, ABTECH have been involved in many projects throughout the world. Please refer to our Major Projects List on the inside back cover of this catalogue.

ABTECH also manufacture restricted breathing enclosures (EEx'nR') which are capable of housing sparking and hot components and are suitable for use in Zone 2 areas and can often be a cost effective alternative to flameproof enclosures (EEx'd').

The durability of our products is measured in decades. Whether the product is for an industrial or hazardous area application, ABTECH place the utmost importance on quality as would be expected from a leading manufacturer. The success of the company has been built on this dedication to total quality control and with over 30 years history of supply to the leading oil & gas companies throughout the world it is a policy that has been proven to work.

With approvals such as BS EN ISO 9001:2000, certification to British, European and International standards and approvals from certifying authorities in the UK, USA, Canada and Russia, the company's commitment to quality ensures that safety is never compromised.

Technical support at ABTECH begins long before the order is placed. Our dedicated sales staff based at our regional offices can offer advice on enclosure type, terminal selection, cable entry placement and any other requirements that might dictate the eventual selection. Technical assistance is also available at any time during the order process or indeed after the equipment is installed and ABTECH staff will be only too happy to help with any questions you may have.

The ABTECH range of products are suitable for both industrial and hazardous area applications.

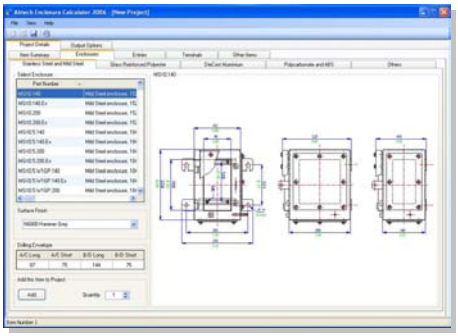
Enclosures manufactured in stainless steel, mild steel, glass reinforced polyester, aluminum, polycarbonate and ABS are suitable for a wide range of industrial and OEM applications and we have the facilities to modify the standard enclosure to meet the customer's requirements.

ABTECH Limited

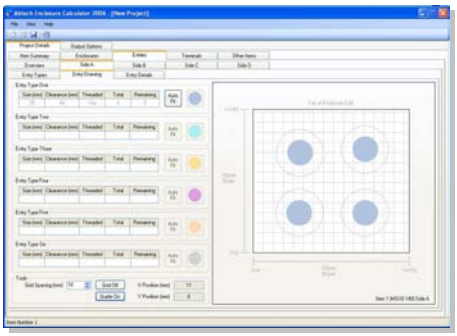
These services include machining, painting, silk screen printing and electro-polishing. We are also able to mould any of the plastic range of enclosures in a wide range of colours (subject to minimum order quantity).

ABTECH Enclosure Calculator 2007

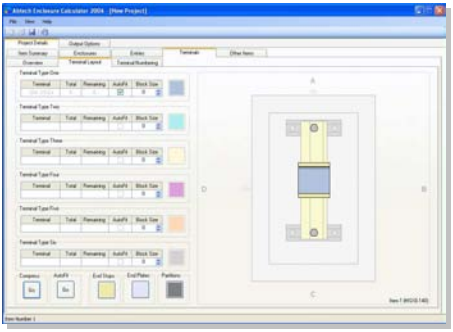
One of the most difficult and time consuming steps in the selection of a suitable enclosure to meet your particular requirements is trying to calculate if the size chosen will accommodate the terminals and cable entries you require. At ABTECH we have, for many years, been using our Enclosure Calculation software which was designed specifically for use with our enclosures.



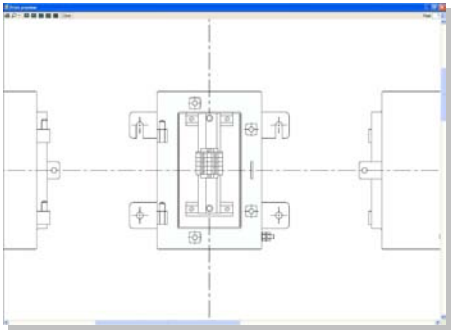
Some years ago we decided to make this program available to all our customers, free of charge, and this has been a tremendous success. The software allows users to easily design complex arrangements of entries and generates a drawing which ABTECH can subsequently use for manufacturing purposes.



The program also incorporates a terminal calculation program which lets you see at a glance whether or not the desired number of terminals can be accommodated within your chosen enclosure and as with the Entry Calculator will print a drawing of your finished design.



The software greatly simplifies the enclosure design process. The latest version will also produce general arrangement drawings which can printed or emailed as required.



The program can be used on any Windows based PC and is simple to install and use. It includes a comprehensive help menu to allow users to start using the software immediately without the need of expert tuition. The ABTECH Enclosure Calculator CD can be obtained by contacting our sales desk or for immediate download from our website at www.abtech.eu

1

SX

Stainless Steel and Mild Steel Enclosures

Further details on this range of enclosures can be found at;

www.ab-tech.co.uk/sx.htm

Stainless Steel and Mild Steel Enclosures

The SX range comprises 14 sizes of enclosure manufactured in either mild steel or stainless steel. 11 sizes are available in depths of 140 or 200mm and 8 sizes are available in depths of 140, 200 or 300mm. The majority of the range can be fitted with removable gland plates on any or all of the four sides. The mild steel version (MSX) is available with a number of paint options (most RAL colours are available) and anti-corrosion finishes. Further advice on surface finishes can be sought from the ABTECH sales office.

The stainless steel range (SSX) is manufactured in 316 grade stainless steel to give the maximum environmental protection. The main body is manufactured from 2mm thick sheet and the mounting straps and gland plates from 3mm thick plate. Cable entries can be drilled in the enclosure door or sides or through the gland plates, if fitted. Entries may also be drilled through the rear face of the enclosure (EEx'e' versions also.)

Another important feature of the SX range is the hinged, lift-off door, which is held to the enclosure by at least 4 captive stainless steel screws, which also maintain the correct compression on the gasket. The hinges are solid block, machined oversize to enable the screws to control the closing of the door, not the hinge, its only function being to support the door when opened. The hinges allow easy removal of the door with only minimal opening required before removal (less than 10°).

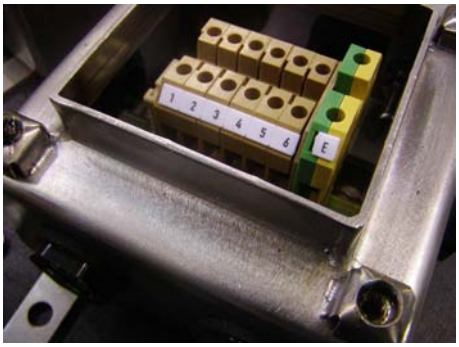
Earthing is accomplished by means of an Internal / external earth stud fitted as standard which can be connected to the terminal mounting rail or component mounting plate. Optionally, earth studs can be fitted to the door and gland plates. Rail mounted earth terminals or proprietary earth bars can be fitted inside the enclosure and ABTECH Sales staff will be happy to advise on this. When fitted with a standard neoprene gasket, the enclosure is suitable for ambient temperatures of - 40℃ to + 80℃ (-40℉ to +176℉). Alternatively, when fitted with an optional silicone gasket the temperature range is increased to - 70℃ to + 130℃ (-94℉ to +266℉).

The SX range of enclosures are suitable for use in hazardous areas and can be supplied with a number of certificates. ATEX EEx'e' to BS EN 50019 (Zone 1 & 2) EEx'nA' to BS EN50021 (Zone 2) and NEMA 4X (CSA, UL & FM class 1, div 2) and GOST.

The SX range can be supplied fitted with any component approved terminal to apparatus level or can be supplied empty as component approved for the clients own certification requirements.

The SX range was specifically designed to meet the rigours of the North Sea environment and is capable of achieving IP66 and IP67. It has also undergone and passed the Shell/ERA deluge test which was devised to adequately test enclosures and electrical equipment which is routinely subjected to ships deck conditions or fire deluge systems.

IP68 enclosures are also available for depths up to 120 ft to special order. Further information on submersible enclosures is available in Section 8 of this catalogue.



Other applications include junction boxes, both industrial and hazardous area, OEM applications, fire protection systems, tunnel wiring, IP68 applications, etc.

A video demonstrating the main features of the SX range is available on our website, please visit **www.ab-tech.co.uk/sx.htm**

The SX range has many features which lend itself to a wide variety applications, not least of which is the ability to be constructed to almost any dimension due to its fabricated nature. This can also be applied to EEx'e' enclosures where the certification allows oversize enclosures to be manufactured whilst retaining the next smallest sized enclosure's power rating.

The SX range is also suitable for fire resistance applications and when fitted with ceramic terminals meets the requirements of IEC 331 (750℃ (1382℉) for 3 hours) and also BS6387/1983 (950℃ (1742℉) for 3 hours). Further details are available in Section 6 of this catalogue.

SX Range Features

- Wide Operating Temperature (- 70℃ to + 175℃) (-94℉ to +347℉)
- Ingress Protection up to IP68
- Fire Resistant to IEC331
- Impact Resistant > 10 Nm
- Corrosion Resistant
- Gland plates can be fitted to any or all four sides (size SX66 and above)
- Certification for use in Zone 1 and 2
- UL, CSA, IECEx, ATEX, FM, InMetro and GOST Approvals
- Ideal for Petrochemical and Marine applications

Accessories and Options

The following table is a list of the available accessories suitable for particular standard sizes of SX enclosures. Care should be taken when ordering accessories for use with enclosures intended for hazardous areas to ensure that compliance with certification is retained.

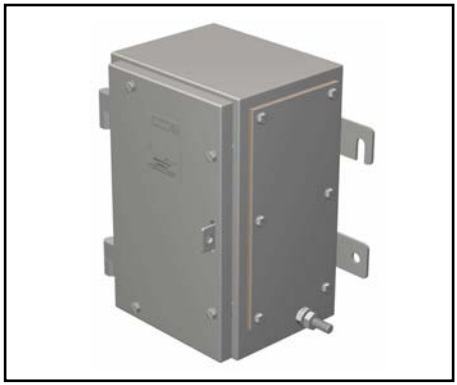
Part Number (see note 1)	Width (mm) (see note 2)	Height (mm) (see note 2)	Depth (mm) (see note 2)	140mm Depth	200mm Depth	300mm Depth	Gland Plates (on any or all four sides)	**EP** – Electro-polished external surfaces (SX range only)	**LB** - Label Bracket Welded to Door	**ES** - Earth Stud fitted to Door and Gland Plates	**EB** - Internal Earthing Bar	**SIL** - Silicone Gasket (see note 3)	**BD** - Breather Drain (see note 4)	**TP** - Tamper Proof Lid Fixing Screws	**MP** - Component Mounting Plate (Steel /Stainless Steel)	**RF** – RFI Protection (see note 5)
SX45	114	114	51	✗	✗	✗	✗	✓	✓	✗	✗	✓	✓	✓	✓	✓
SX64	102	152	63	✗	✗	✗	✗	✓	✓	✗	✗	✓	✓	✓	✓	✓
SX66	152	152	102	✗	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SX0	152	229	-	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SX0.5	184	274	-	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SX1	234	324	-	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SX1.5	306	306	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SX2	372	324	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SX3	372	448	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SX4	372	510	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SX5	510	510	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SX6	510	780	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SX7	650	950	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SX8	800	1250	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Ordering Example;

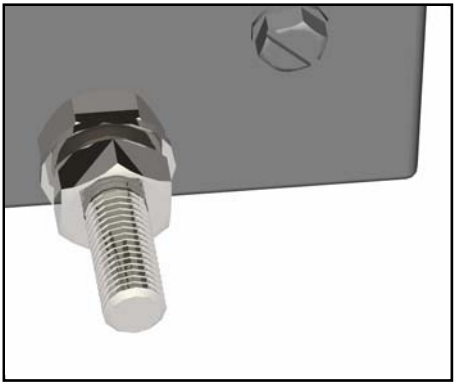
SX1.5 300 4GP LB EB

(Stainless Steel SX1.5 300mm deep, 4 gland plates, label bracket on door and internal earthing bar)

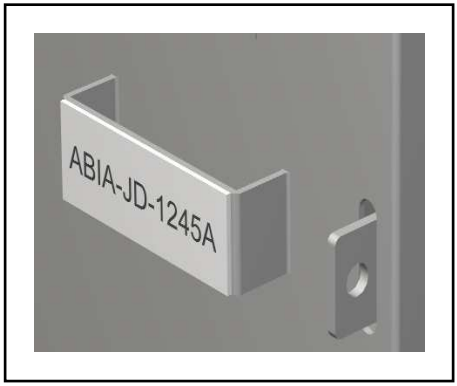
1. The range is available either in stainless steel 316 (SX variants) or mild steel (MSX variants).
2. Manufacturing tolerances are +/- 3mm on overall dimensions and +/-0.5mm on fixing hole centres.
3. Silicone gasket increases temperature rating (-70º to +175º C) (-94℉ to +347℉) and may increase working life in some applications.
4. Breather drain available in IP66 stainless steel or plastic.
5. Radio Frequency Interference (RFI) gasket may reduce IP rating.



Full width, full height Gland Plates
(can be fitted to any or all sides)

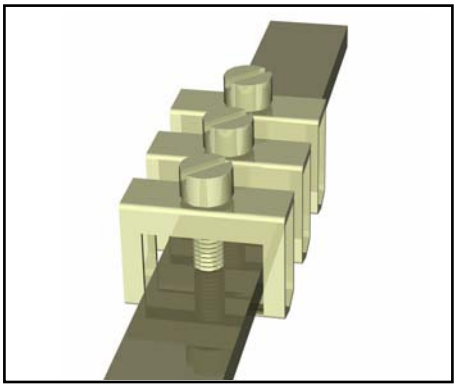


Earth Stud fitted to door and gland plates

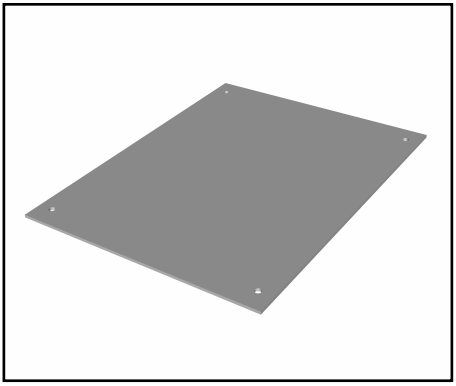


Label Bracket
(welded to door)

Electro-polished
(external surfaces on SX range only)



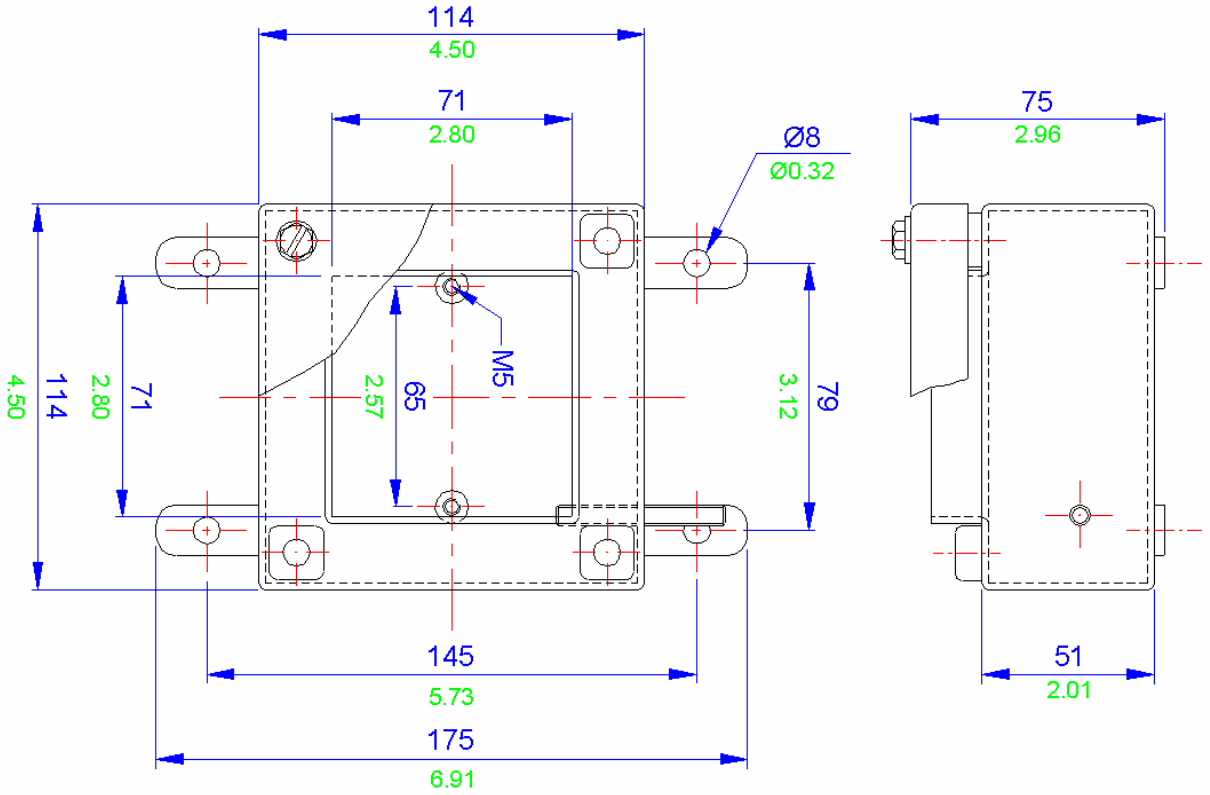
Internal Earthing bar
(can be fitted with clamps)



Component Mounting Plate
(steel or stainless steel 316)

We also supply cable glands, stopping plugs, breather drains and continuity plates.
Please contact us for further details.

MSX 45 / SSX 45 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

MSX 45 / SSX 45 Specifications

Width	114mm
Length	114mm
Depth	51mm
Material	Mild steel
	Stainless steel 316 (1.4404)
Weight	1200g
IP Rating	66 or 67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx e (Zone 1 & Zone 2) BS EN 60079-7
	ATEX EEx nA (Zone 2) BS EN 60079-15
	ATEX EEx nR (Zone 2) BS EN 60079-15
	CSA - Ex e (Class 1 Zone 1 & Zone2)
	FM - AEx e (Class 1 Zone 1 & Zone2)
	GOST-R Ex e (Zone 1 & Zone 2)
	NEMA 4X (CSA, UL & FM) (class 1 division 2)
Power Rating	8.0W

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Wago**	
SAK 2.5	7	280-992	8
SAK 4	7	280-999	0
SAK 6	5	281-691	7
SAK 10 *	4	281-992	7
SAK 16 *	3	281-993	0
SAK 35	0	282-691	0
SAK 70	0	284-691	0
WDU 2.5	0	283-691	0
WDU 4	0	285-691	0
WDU 6	0	280-998	8
WDU 10	0	281-998	0
WDU 16	0	264-120	7
Phoenix		264-220	4
UK 2.5 N	9	264-132 (2)	1
UK 3 N	9	264-134 (4)	1
UK 5 N	7	262-132 (2)	1
UK 10 N *	4	262-134 (4)	1
UK 16 N *	3		
UK 35 N	0		

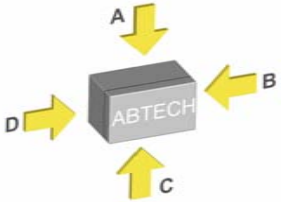
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

Entry Size	Side A-C	Side B-D
M16	4	4
M20	2	2
M25	2	2
M32	0	0
M40	0	0

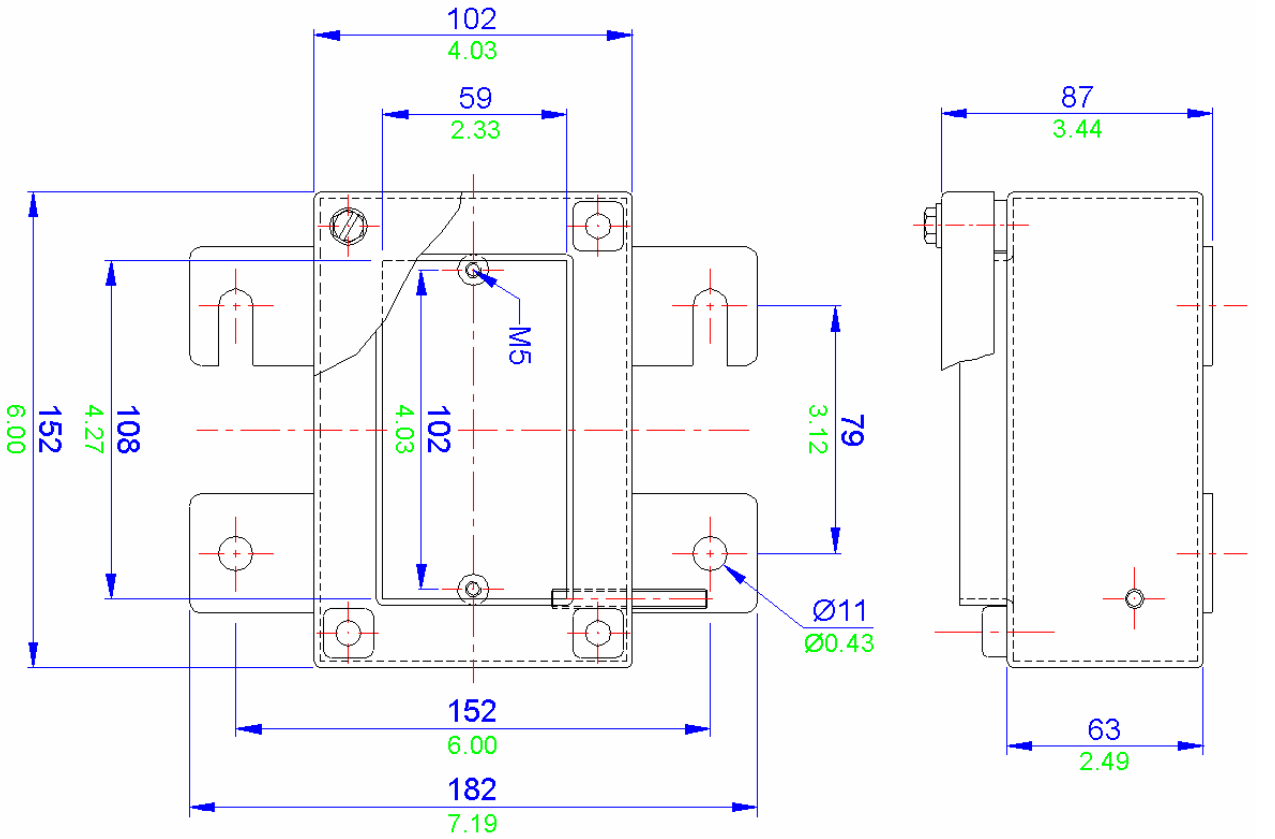
Drilling Envelope

Side A-C	114 x 51mm
Side B-D	114 x 51mm



Example

MSX 64 / SSX 64 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

MSX 64 / SSX 64 Specifications

Width	102mm
Length	152mm
Depth	63mm
Material	Mild steel
	Stainless steel 316 (1.4404)
Weight	1500g
IP Rating	66 or 67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx e (Zone 1 & Zone 2) BS EN 60079-7
	ATEX EEx nA (Zone 2) BS EN 60079-15
	ATEX EEx nR (Zone 2) BS EN 60079-15
	CSA - Ex e (Class 1 Zone 1 & Zone2)
	FM - AEx e (Class 1 Zone 1 & Zone2)
	GOST-R Ex e (Zone 1 & Zone 2)
	NEMA 4X (CSA, UL & FM) (class 1 division 2)
Power Rating	10.258W

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Wago**	
SAK 2.5	15	280-992	18
SAK 4	15	280-999	0
SAK 6	11	281-691	15
SAK 10 *	9	281-992	15
SAK 16 *	0	281-993	0
SAK 35	0	282-691	0
SAK 70	0	284-691	0
WDU 2.5	0	283-691	0
WDU 4	0	285-691	0
WDU 6	0	280-998	18
WDU 10	0	281-998	15
WDU 16	0	264-120	15
Phoenix		264-220	9
UK 2.5 N	17	264-132 (2)	3
UK 3 N	17	264-134 (4)	2
UK 5 N	15	262-132 (2)	3
UK 10 N *	9	262-134 (4)	2
UK 16 N *	7		
UK 35 N	0		

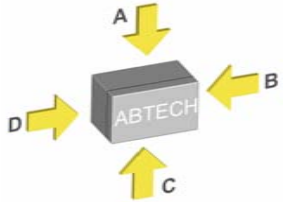
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

Entry Size	Side A-C	Side B-D
M16	6	8
M20	3	4
M25	2	3
M32	1	2
M40	0	0

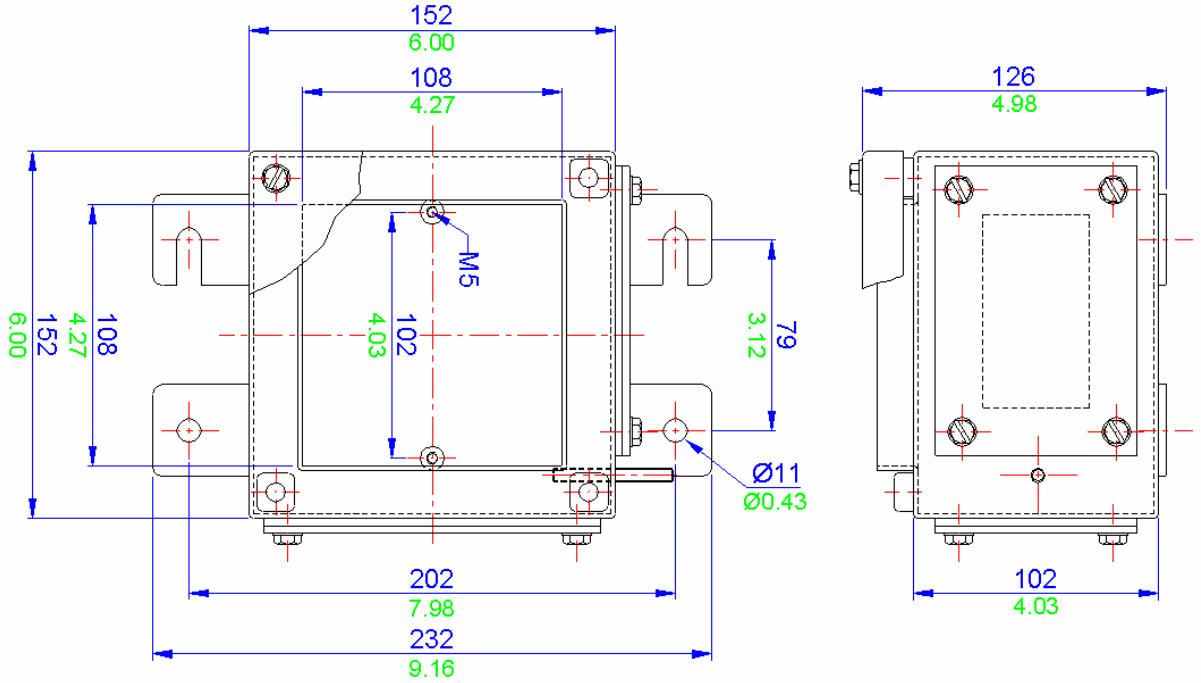
Drilling Envelope

Side A-C	102 x 63mm
Side B-D	152 x 63mm



Example

MSX 66 / SSX 66 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

MSX 66 / SSX 66 Specifications

Width	152mm
Length	152mm
Depth	102mm
Material	Mild steel
	Stainless steel 316 (1.4404)
Weight	2200g
IP Rating	66 or 67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx e (Zone 1 & Zone 2) BS EN 60079-7
	ATEX EEx nA (Zone 2) BS EN 60079-15
	ATEX EEx nR (Zone 2) BS EN 60079-15
	CSA - Ex e (Class 1 Zone 1 & Zone 2)
	FM - AEx e (Class 1 Zone 1 & Zone2)
	GOST-R Ex e (Zone 1 & Zone 2)
	NEMA 4X (CSA, UL & FM) (class 1 division 2)
Power Rating	14.287W

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Wago**	
SAK 2.5	15	280-992	18
SAK 4	15	280-999	18
SAK 6	11	281-691	15
SAK 10 *	9	281-992	15
SAK 16 *	7	281-993	15
SAK 35 *	6	282-691	11
SAK 70	0	284-691	10
WDU 2.5	17	283-691	7
WDU 4	15	285-691	0
WDU 6	11	280-998	18
WDU 10 *	9	281-998	15
WDU 16 *	7	264-120	16
Phoenix		264-220	10
UK 2.5 N	17	264-132 (2)	3
UK 3 N	17	264-134 (4)	2
UK 5 N	14	262-132 (2)	3
UK 10 N *	9	262-134 (4)	2
UK 16 N *	7		
UK 35 N *	6		

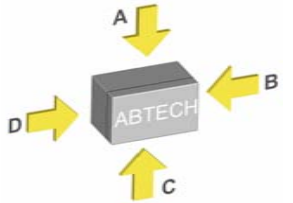
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

Entry Size	Side A-C	Side B-D
M16	14	14
M20	8	8
M25	6	6
M32	3	3
M40	2	2

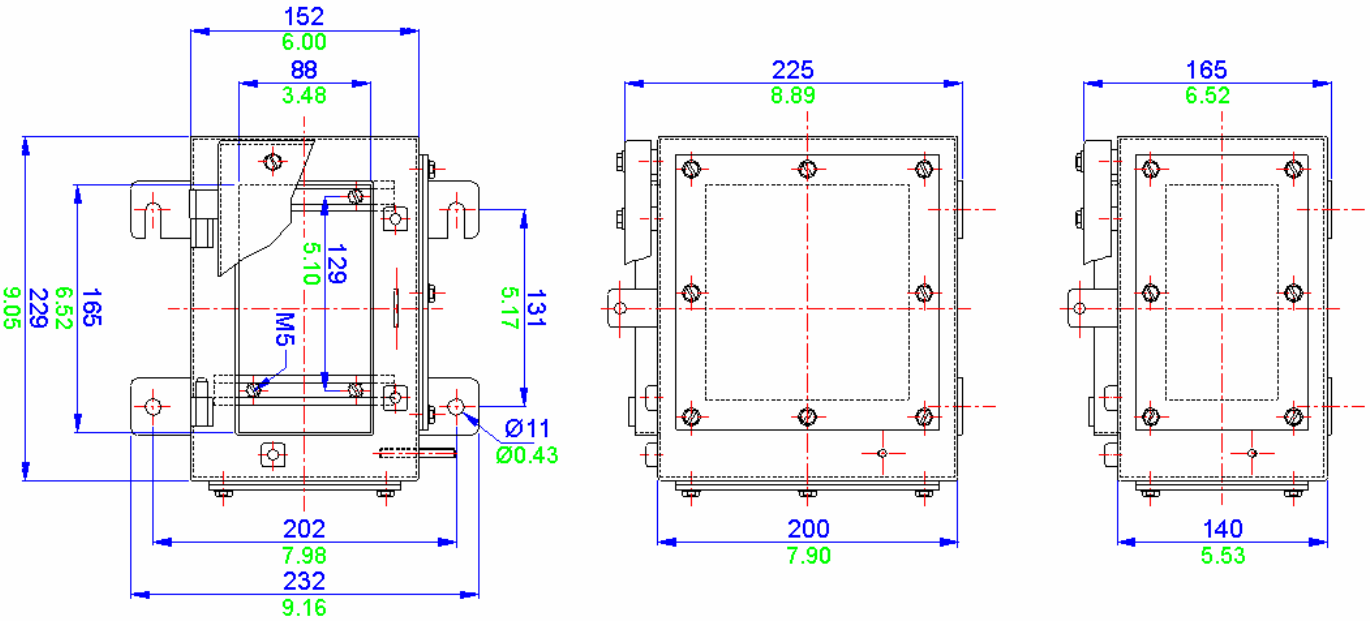
Drilling Envelope

Side A-C	152 x 102mm
Side B-D	152 x 102mm



Example

MSX 0 / SSX 0 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

MSX 0 / SSX 0 Specifications

Width	152mm	
Length	229mm	
Depth	140mm or 200mm	
Material	Mild steel	
	Stainless steel 316 (1.4404)	
Weight	140mm deep 3200g	200mm deep 4000g
IP Rating	66 or 67	
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)	
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)	
Certification	ATEX EEx e (Zone 1 & Zone 2) BS EN 60079-7	
	ATEX EEx nA (Zone 2) BS EN 60079-15	
	ATEX EEx nR (Zone 2) BS EN 60079-15	
	CSA - Ex e (Class 1 Zone 1 & Zone 2)	
	FM - AEx e (Class 1 Zone 1 & Zone2)	
	GOST-R Ex e (Zone 1 & Zone 2)	
	NEMA 4X (CSA, UL & FM) (class 1 division 2)	
Power Rating	19.874W	

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Wago**	
SAK 2.5	21	280-992	24
SAK 4	19	280-999	24
SAK 6	16	281-691	20
SAK 10 *	12	281-992	20
SAK 16 *	10	281-993	20
SAK 35 *	7	282-691 *	15
SAK 70 *	5	284-691 *	12
WDU 2.5	25	283-691	0
WDU 4	21	285-691	0
WDU 6	16	280-998	24
WDU 10 *	12	281-998	20
WDU 16 *	10	264-120	21
Phoenix		264-220	12
UK 2.5 N	25	264-132 (2)	4
UK 3 N	25	264-134 (4)	3
UK 5 N	21	262-132 (2)	4
UK 10 N *	12	262-134 (4)	3
UK 16 N *	10		
UK 35 N *	8		

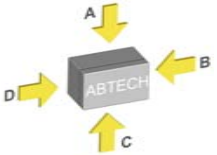
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix
(using standard gland clearances)

Size	Side A-C		Side B-D	
	140	200	140	200
M16	4	9	8	16
M20	2	6	6	9
M25	1	4	3	6
M32	1	2	2	4
M40	1	1	2	2

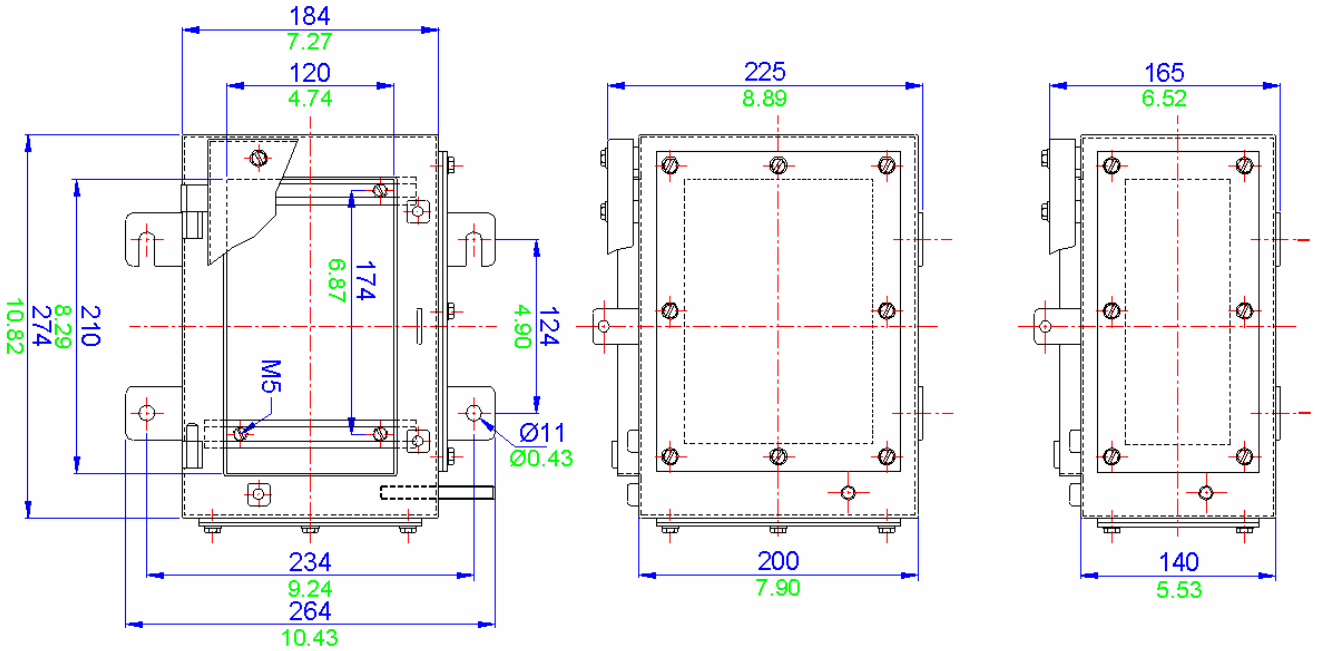
Drilling Envelope Size
(with glandplate fitted)

	Side A-C		Side B-D	
	140	200	140	200
Width	87	87	144	144
Height	75	135	75	135



Example

MSX 0.5 / SSX 0.5 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

MSX 0.5 / SSX 0.5 Specifications

Width	184mm	
Length	274mm	
Depth	140mm or 200mm	
Material	Mild steel	
	Stainless steel 316 (1.4404)	
Weight	140mm deep 5000g	200mm deep 6000g
IP Rating	66 or 67	
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)	
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)	
Certification	ATEX EEx e (Zone 1 & Zone 2) BS EN 60079-7	
	ATEX EEx nA (Zone 2) BS EN 60079-15	
	ATEX EEx nR (Zone 2) BS EN 60079-15	
	CSA - Ex e (Class 1 Zone 1 & Zone 2)	
	FM - AEx e (Class 1 Zone 1 & Zone2)	
	GOST-R Ex e (Zone 1 & Zone 2)	
	NEMA 4X (CSA, UL & FM) (class 1 division 2)	
Power Rating	19.874W	

Terminal Populations

Maximum Number of Rows			2
Weidmuller		**Wago**	
SAK 2.5	56	280-992	31
SAK 4	52	280-999	31
SAK 6	42	281-691	27
SAK 10 *	34	281-992	27
SAK 16 *	14	281-993	27
SAK 35 *	10	282-691 *	21
SAK 70 *	7	284-691 *	16
WDU 2.5	67	283-691	28
WDU 4	56	285-691	0
WDU 6	42	280-998	31
WDU 10 *	34	281-998	27
WDU 16 *	14	264-120	56
Phoenix		264-220	32
UK 2.5 N	68	264-132 (2)	12
UK 3 N	68	264-134 (4)	8
UK 5 N	56	262-132 (2)	12
UK 10 N *	34	262-134 (4)	8
UK 16 N *	14		
UK 35 N *	11		

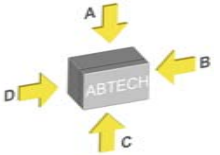
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix
(using standard gland clearances)

Size	Side A-C		Side B-D	
	140	200	140	200
M16	6	12	10	20
M20	4	9	8	12
M25	2	6	4	9
M32	2	4	3	6
M40	1	2	2	4

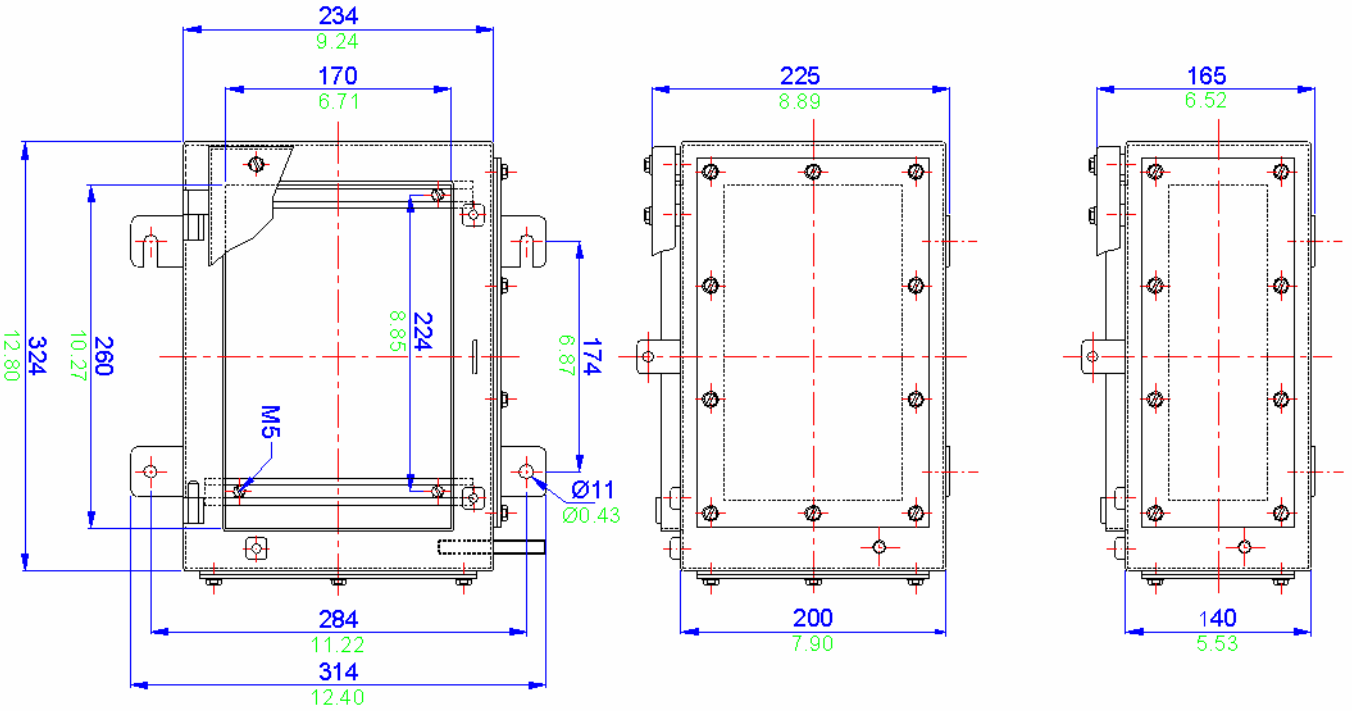
Drilling Envelope Size
(with glandplate fitted)

	Side A-C		Side B-D	
	140	200	140	200
Width	119	119	189	189
Height	75	135	75	135



Example

MSX 1 / SSX 1 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

MSX 1 / SSX 1 Specifications

Width	234mm	
Length	324mm	
Depth	140mm or 200mm	
Material	Mild steel	
	Stainless steel 316 (1.4404)	
Weight	140mm deep 6300g	200mm deep 7200g
IP Rating	66 or 67	
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)	
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)	
Certification	ATEX EEx e (Zone 1 & Zone 2) BS EN 60079-7	
	ATEX EEx nA (Zone 2) BS EN 60079-15	
	ATEX EEx nR (Zone 2) BS EN 60079-15	
	CSA - Ex e (Class 1 Zone 1 & Zone 2)	
	FM - AEx e (Class 1 Zone 1 & Zone2)	
	GOST-R Ex e (Zone 1 & Zone 2)	
	NEMA 4X (CSA, UL & FM) (class 1 division 2)	
Power Rating	29.206W	

Terminal Populations

Maximum Number of Rows			2
Weidmuller		**Wago**	
SAK 2.5	72	280-992	41
SAK 4	66	280-999	41
SAK 6	54	281-691	34
SAK 10 *	44	281-992	34
SAK 16 *	18	281-993	34
SAK 35 *	14	282-691	27
SAK 70 *	10	284-691 *	21
WDU 2.5	86	283-691 *	18
WDU 4	72	285-691 *	12
WDU 6	54	280-998	41
WDU 10 *	44	281-998	34
WDU 16 *	18	264-120	72
Phoenix		264-220	42
UK 2.5 N	86	264-132 (2)	14
UK 3 N	86	264-134 (4)	10
UK 5 N	72	262-132 (2)	14
UK 10 N *	44	262-134 (4)	10
UK 16 N *	18		
UK 35 N *	14		

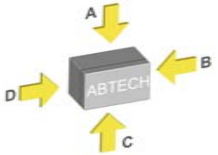
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix
(using standard gland clearances)

Size	Side A-C		Side B-D	
	140	200	140	200
M16	10	20	14	28
M20	6	12	10	18
M25	3	9	5	12
M32	2	4	4	8
M40	2	2	3	6

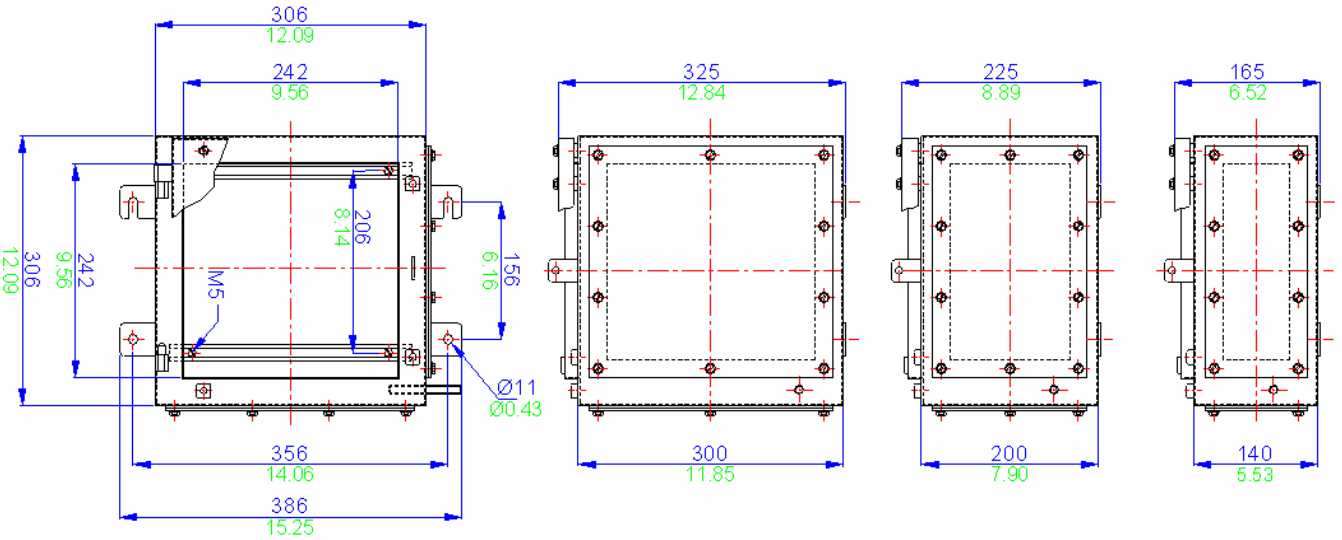
Drilling Envelope Size
(with glandplate fitted)

	Side A-C		Side B-D	
	140	200	140	200
Width	169	169	239	239
Height	75	135	75	135



Example

MSX 1.5 / SSX 1.5 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

MSX 1.5 / SSX 1.5 Specifications

Width	306mm		
Length	306mm		
Depth	140mm or 200mm		
Material	Mild steel		
	Stainless steel 316 (1.4404)		
Weight	140mm 7.3Kg	200mm 8.8Kg	300mm 11.3Kg
IP Rating	66 or 67		
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)		
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)		
Certification	ATEX EEx e (Zone 1 & Zone 2) BS EN 60079-7		
	ATEX EEx nA (Zone 2) BS EN 60079-15		
	ATEX EEx nR (Zone 2) BS EN 60079-15		
	CSA - Ex e (Class 1 Zone 1 & Zone 2)		
	FM - AEx e (Class 1 Zone 1 & Zone2)		
	GOST-R Ex e (Zone 1 & Zone 2)		
	NEMA 4X (CSA, UL & FM) (class 1 division 2)		
Power Rating	32.284W		

Terminal Populations

Maximum Number of Rows			3
Weidmuller		**Wago**	
SAK 2.5	99	280-992	74
SAK 4	93	280-999	74
SAK 6	75	281-691	64
SAK 10 *	60	281-992	64
SAK 16 *	34	281-993	64
SAK 35 *	24	282-691	48
SAK 70 *	20	284-691 *	38
WDU 2.5	118	283-691 *	32
WDU 4	99	285-691 *	11
WDU 6	75	280-998	74
WDU 10 *	60	281-998	64
WDU 16 *	34	264-120	99
Phoenix		264-220	60
UK 2.5 N	120	264-132 (2)	21
UK 3 N	120	264-134 (4)	15
UK 5 N	99	262-132 (2)	21
UK 10 N *	60	262-134 (4)	15
UK 16 N *	34		
UK 35 N *	26		

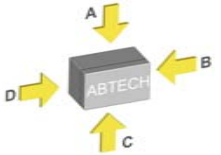
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix
(using standard gland clearances)

Size	Side A-C		Side B-D	
	140	200	140	200
M16	14	28	12	25
M20	10	18	10	16
M25	5	12	4	12
M32	4	8	3	6
M40	3	6	3	4

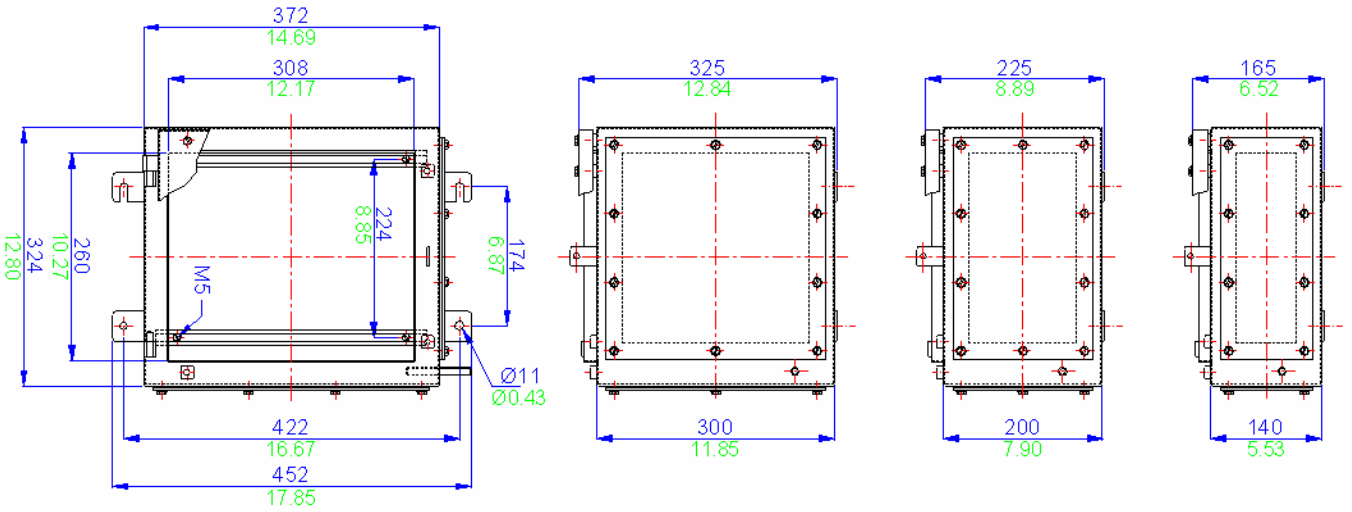
Drilling Envelope Size
(with glandplate fitted)

	Side A-C		Side B-D	
	140	200	140	200
Width	241	241	221	221
Height	75	135	75	135



Example

MSX 2 / SSX 2 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

MSX 2 / SSX 2 Specifications

Width	372mm		
Length	324mm		
Depth	140mm or 200mm		
Material	Mild steel		
	Stainless steel 316 (1.4404)		
Weight	140mm 9.5Kg	200mm 11.3Kg	300mm 14.3Kg
IP Rating	66 or 67		
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)		
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)		
Certification	ATEX EEx e (Zone 1 & Zone 2) BS EN 60079-7		
	ATEX EEx nA (Zone 2) BS EN 60079-15		
	ATEX EEx nR (Zone 2) BS EN 60079-15		
	CSA - Ex e (Class 1 Zone 1 & Zone 2)		
	FM - AEx e (Class 1 Zone 1 & Zone2)		
	GOST-R Ex e (Zone 1 & Zone 2)		
	NEMA 4X (CSA, UL & FM) (class 1 division 2)		
Power Rating	36.500W		

Terminal Populations

Maximum Number of Rows			3
Weidmuller		**Wago**	
SAK 2.5	132	280-992	150
SAK 4	123	280-999	150
SAK 6	99	281-691	126
SAK 10	78	281-992	126
SAK 16	66	281-993	84
SAK 35	42	282-691	99
SAK 70	24	284-691 *	78
WDU 2.5	158	283-691 *	44
WDU 4	132	285-691 *	30
WDU 6	99	280-998	150
WDU 10 *	78	281-998	126
WDU 16 *	66	264-120	132
Phoenix		264-220	78
UK 2.5 N	156	264-132 (2)	27
UK 3 N	156	264-134 (4)	18
UK 5 N	132	262-132 (2)	27
UK 10 N	78	262-134 (4)	18
UK 16 N	66		
UK 35 N	54		

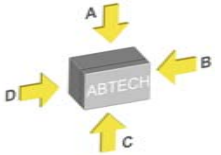
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix
(using standard gland clearances)

Size	Side A-C		Side B-D	
	140	200	140	200
M16	18	36	14	28
M20	14	24	10	18
M25	6	18	6	12
M32	5	10	4	8
M40	4	8	3	6

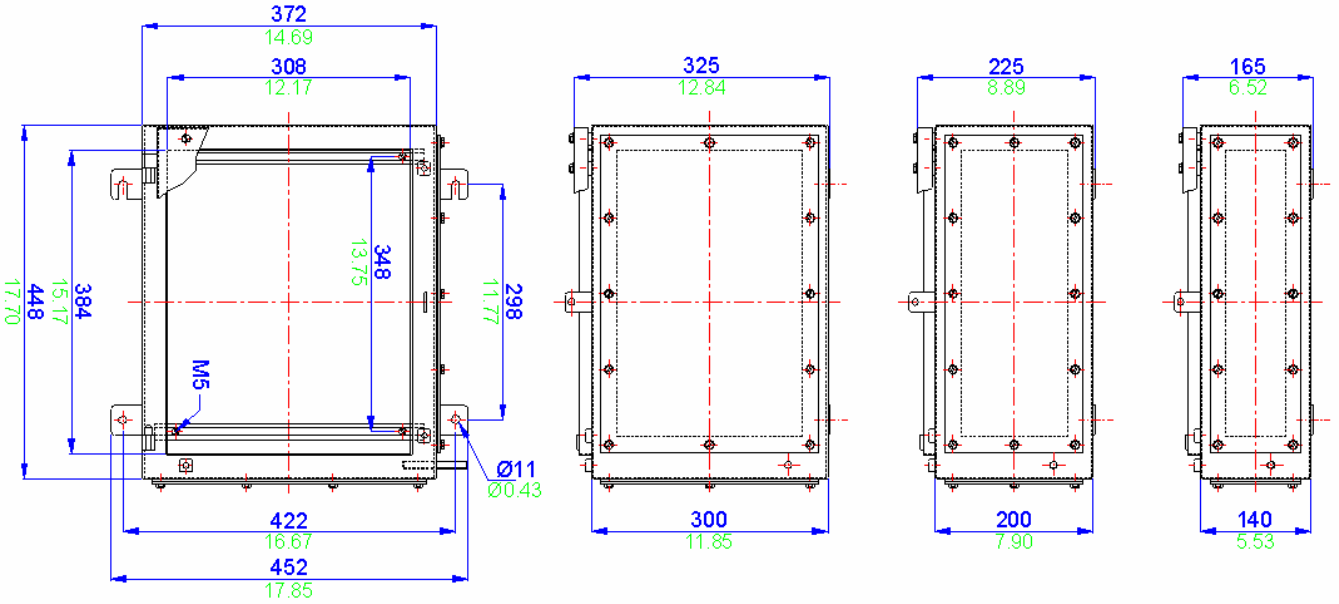
Drilling Envelope Size
(with glandplate fitted)

	Side A-C		Side B-D	
	140	200	140	200
Width	307	307	239	239
Height	75	135	75	135



Example

MSX 3 / SSX 3 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

MSX 3 / SSX 3 Specifications

Width	372mm		
Length	448mm		
Depth	140mm or 200mm		
Material	Mild steel		
	Stainless steel 316 (1.4404)		
Weight	140mm 11.3Kg	200mm 13.3Kg	300mm 16.6Kg
IP Rating	66 or 67		
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)		
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)		
Certification	ATEX EEx e (Zone 1 & Zone 2) BS EN 60079-7		
	ATEX EEx nA (Zone 2) BS EN 60079-15		
	ATEX EEx nR (Zone 2) BS EN 60079-15		
	CSA - Ex e (Class 1 Zone 1 & Zone 2)		
	FM - AEx e (Class 1 Zone 1 & Zone2)		
	GOST-R Ex e (Zone 1 & Zone 2)		
	NEMA 4X (CSA, UL & FM) (class 1 division 2)		
Power Rating	42.289W		

Terminal Populations

Maximum Number of Rows			3
Weidmuller		**Wago**	
SAK 2.5	168	280-992	189
SAK 4	156	280-999	189
SAK 6	126	281-691	162
SAK 10 *	102	281-992	162
SAK 16 *	84	281-993	108
SAK 35 *	63	282-691	126
SAK 70 *	45	284-691 *	99
WDU 2.5	201	283-691 *	56
WDU 4	168	285-691 *	38
WDU 6	126	280-998	189
WDU 10 *	102	281-998	162
WDU 16 *	84	264-120	168
Phoenix		264-220	99
UK 2.5 N	201	264-132 (2)	36
UK 3 N	201	264-134 (4)	24
UK 5 N	168	262-132 (2)	36
UK 10 N *	102	262-134 (4)	24
UK 16 N *	84		
UK 35 N *	69		

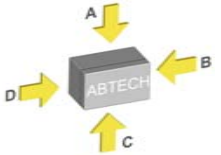
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix
(using standard gland clearances)

Size	Side A-C		Side B-D	
	140	200	140	200
M16	16	36	20	45
M20	12	24	16	28
M25	7	15	8	21
M32	5	10	6	12
M40	4	8	5	8

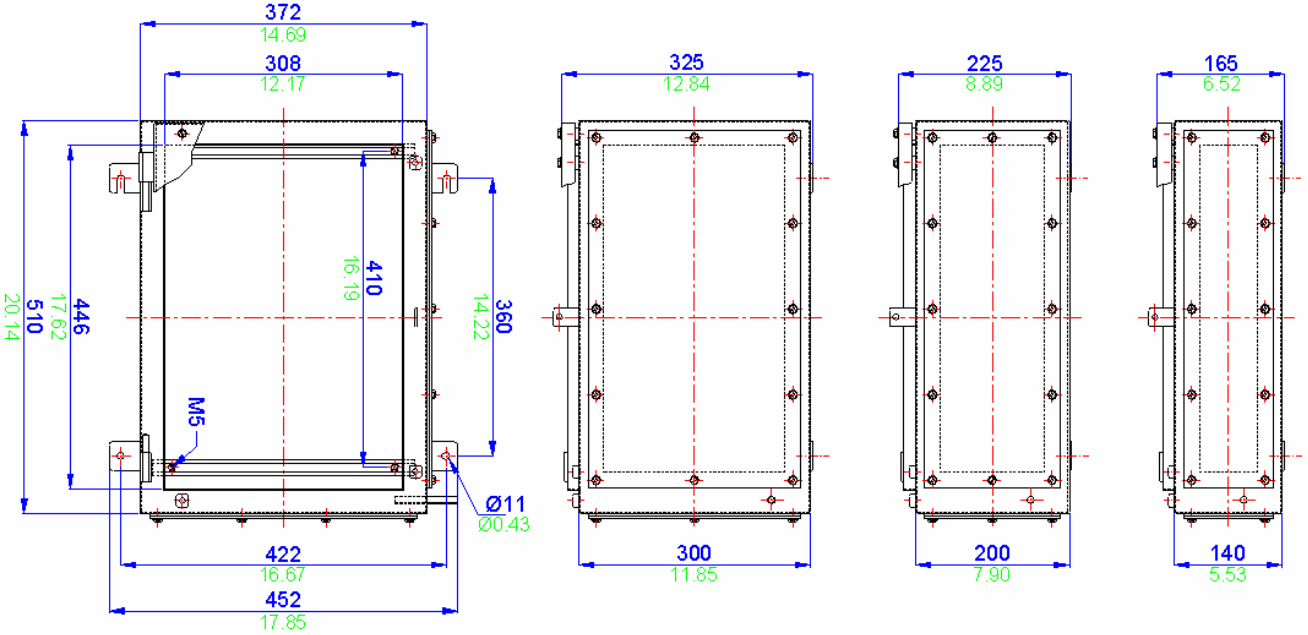
Drilling Envelope Size
(with glandplate fitted)

	Side A-C		Side B-D	
	140	200	140	200
Width	307	307	363	363
Height	75	135	75	135



Example

MSX 4 / SSX 4 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

MSX 4 / SSX 4 Specifications

Width	372mm		
Length	510mm		
Depth	140mm or 200mm		
Material	Mild steel		
	Stainless steel 316 (1.4404)		
Weight	140mm 12.7Kg	200mm 14.8Kg	300mm 18.3Kg
IP Rating	66 or 67		
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)		
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)		
Certification	ATEX EEx e (Zone 1 & Zone 2) BS EN 60079-7		
	ATEX EEx nA (Zone 2) BS EN 60079-15		
	ATEX EEx nR (Zone 2) BS EN 60079-15		
	CSA - Ex e (Class 1 Zone 1 & Zone 2)		
	FM - AEx e (Class 1 Zone 1 & Zone2)		
	GOST-R Ex e (Zone 1 & Zone 2)		
	NEMA 4X (CSA, UL & FM) (class 1 division 2)		
Power Rating	44.726W		

Terminal Populations

Maximum Number of Rows			3
Weidmuller		**Wago**	
SAK 2.5	198	280-992	222
SAK 4	183	280-999	222
SAK 6	150	281-691	189
SAK 10	120	281-992	189
SAK 16	99	281-993	126
SAK 35	75	282-691	147
SAK 70	54	284-691	117
WDU 2.5	237	283-691	66
WDU 4	198	285-691	44
WDU 6	150	280-998	222
WDU 10 *	120	281-998	189
WDU 16 *	99	264-120	198
Phoenix		264-220	117
UK 2.5 N	237	264-132 (2)	42
UK 3 N	237	264-134 (4)	30
UK 5 N	198	262-132 (2)	42
UK 10 N	102	262-134 (4)	30
UK 16 N	99		
UK 35 N	81		

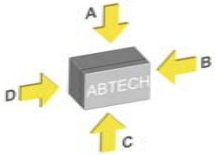
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix
(using standard gland clearances)

Size	Side A-C		Side B-D	
	140	200	140	200
M16	18	36	26	52
M20	14	24	20	36
M25	6	18	10	24
M32	5	10	7	14
M40	4	8	6	10

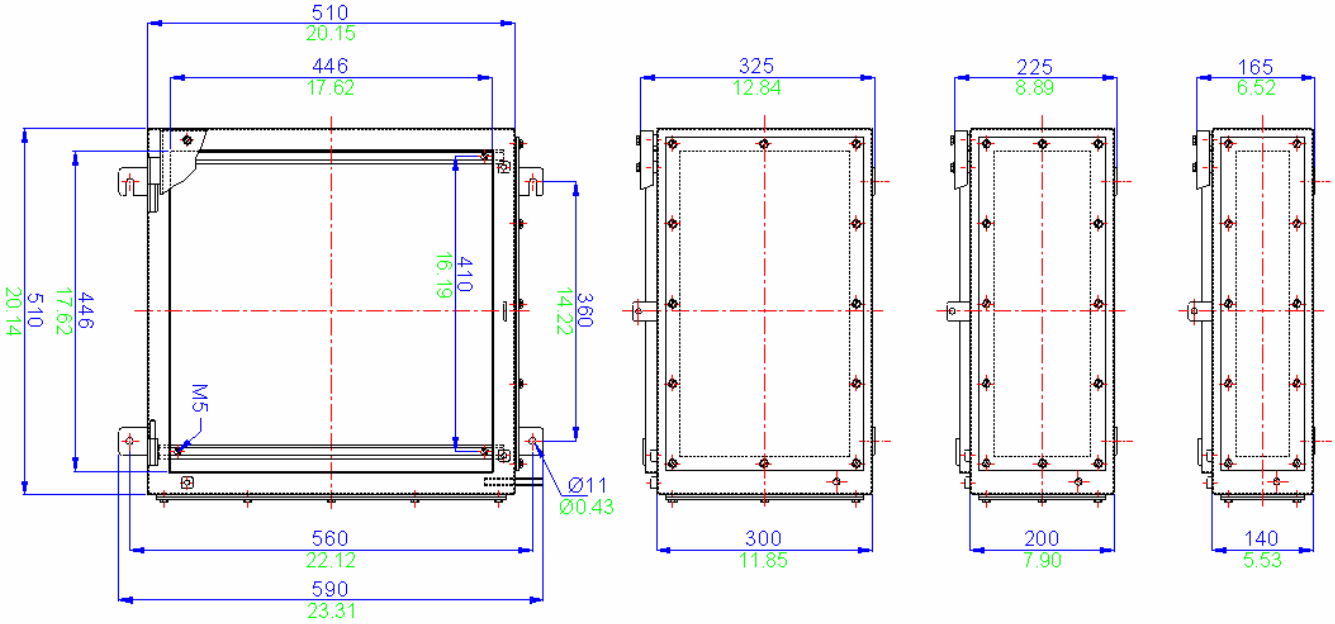
Drilling Envelope Size
(with glandplate fitted)

	Side A-C		Side B-D	
	140	200	140	200
Width	307	307	425	425
Height	75	135	75	135



Example

MSX 5 / SSX 5 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

MSX 5 / SSX 5 Specifications

Width	510mm		
Length	510mm		
Depth	140mm or 200mm		
Material	Mild steel		
	Stainless steel 316 (1.4404)		
Weight	140mm 17.0Kg	200mm 20.0Kg	300mm 25.0Kg
IP Rating	66 or 67		
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)		
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)		
Certification	ATEX EEx e (Zone 1 & Zone 2) BS EN 60079-7		
	ATEX EEx nA (Zone 2) BS EN 60079-15		
	ATEX EEx nR (Zone 2) BS EN 60079-15		
	CSA - Ex e (Class 1 Zone 1 & Zone 2)		
	FM - AEx e (Class 1 Zone 1 & Zone2)		
	GOST-R Ex e (Zone 1 & Zone 2)		
	NEMA 4X (CSA, UL & FM) (class 1 division 2)		
Power Rating	50.328W		

Terminal Populations

Maximum Number of Rows			4
Weidmuller		**Wago**	
SAK 2.5	264	280-992	296
SAK 4	244	280-999	296
SAK 6	200	281-691	252
SAK 10	160	281-992	252
SAK 16	132	281-993	189
SAK 35	100	282-691	196
SAK 70	72	284-691	156
WDU 2.5	316	283-691	99
WDU 4	264	285-691	66
WDU 6	200	280-998	296
WDU 10	160	281-998	252
WDU 16	132	264-120	264
Phoenix		264-220	156
UK 2.5 N	316	264-132 (2)	56
UK 3 N	316	264-134 (4)	40
UK 5 N	264	262-132 (2)	56
UK 10 N	160	262-134 (4)	40
UK 16 N	132		
UK 35 N	108		

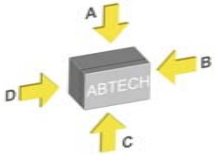
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix
(using standard gland clearances)

Size	Side A-C		Side B-D	
	140	200	140	200
M16	26	55	26	52
M20	20	36	20	36
M25	10	27	10	24
M32	7	14	7	14
M40	6	12	6	10

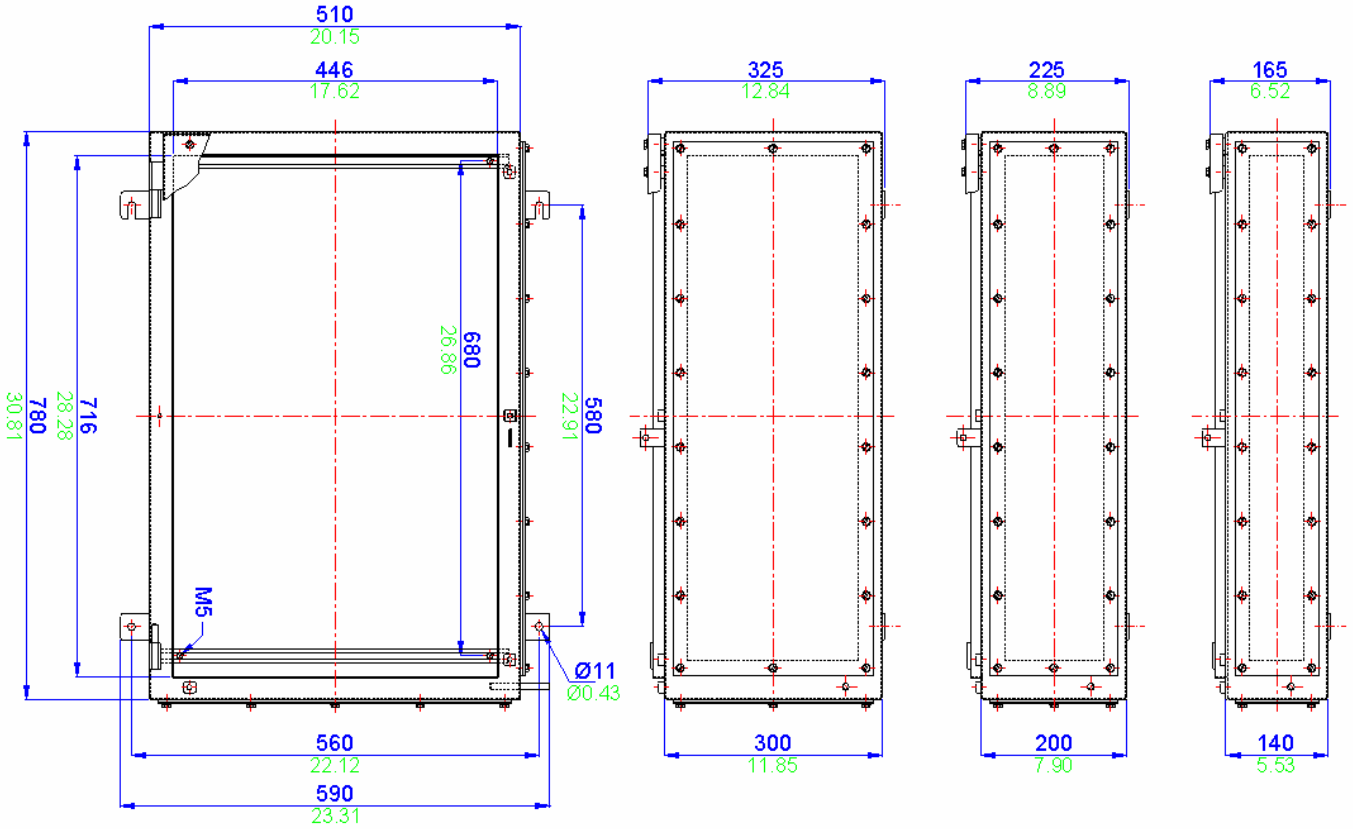
Drilling Envelope Size
(with glandplate fitted)

	Side A-C		Side B-D	
	140	200	140	200
Width	445	445	425	425
Height	75	135	75	135



Example

MSX 6 / SSX 6 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

MSX 6 / SSX 6 Specifications

Width	510mm		
Length	780mm		
Depth	140mm or 200mm or 300mm		
Material	Mild steel		
	Stainless steel 316 (1.4404)		
Weight	140mm 24.0Kg	200mm 27.0Kg	300mm 32.0Kg
IP Rating	66 or 67		
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)		
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)		
Certification	ATEX EEx e (Zone 1 & Zone 2) BS EN 60079-7		
	ATEX EEx nA (Zone 2) BS EN 60079-15		
	ATEX EEx nR (Zone 2) BS EN 60079-15		
	CSA - Ex e (Class 1 Zone 1 & Zone 2)		
	FM - AEx e (Class 1 Zone 1 & Zone2)		
	GOST-R Ex e (Zone 1 & Zone 2)		
	NEMA 4X (CSA, UL & FM) (class 1 division 2)		
Power Rating	57.383W		

Terminal Populations

Maximum Number of Rows			4
Weidmuller		**Wago**	
SAK 2.5	440	280-992	496
SAK 4	404	280-999	496
SAK 6	332	281-691	424
SAK 10	264	281-992	424
SAK 16	220	281-993	318
SAK 35	168	282-691	328
SAK 70	120	284-691	264
WDU 2.5	528	283-691	165
WDU 4	440	285-691	114
WDU 6	332	280-998	496
WDU 10	264	281-998	424
WDU 16	220	264-120	440
Phoenix		264-220	264
UK 2.5 N	524	264-132 (2)	92
UK 3 N	524	264-134 (4)	64
UK 5 N	440	262-132 (2)	92
UK 10 N	264	262-134 (4)	64
UK 16 N	229		
UK 35 N	176		

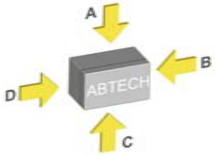
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix
(using standard gland clearances)

Size	Side A-C		Side B-D	
	140	200	140	200
M16	26	55	42	85
M20	20	36	34	60
M25	10	27	18	42
M32	7	14	11	22
M40	6	12	10	18

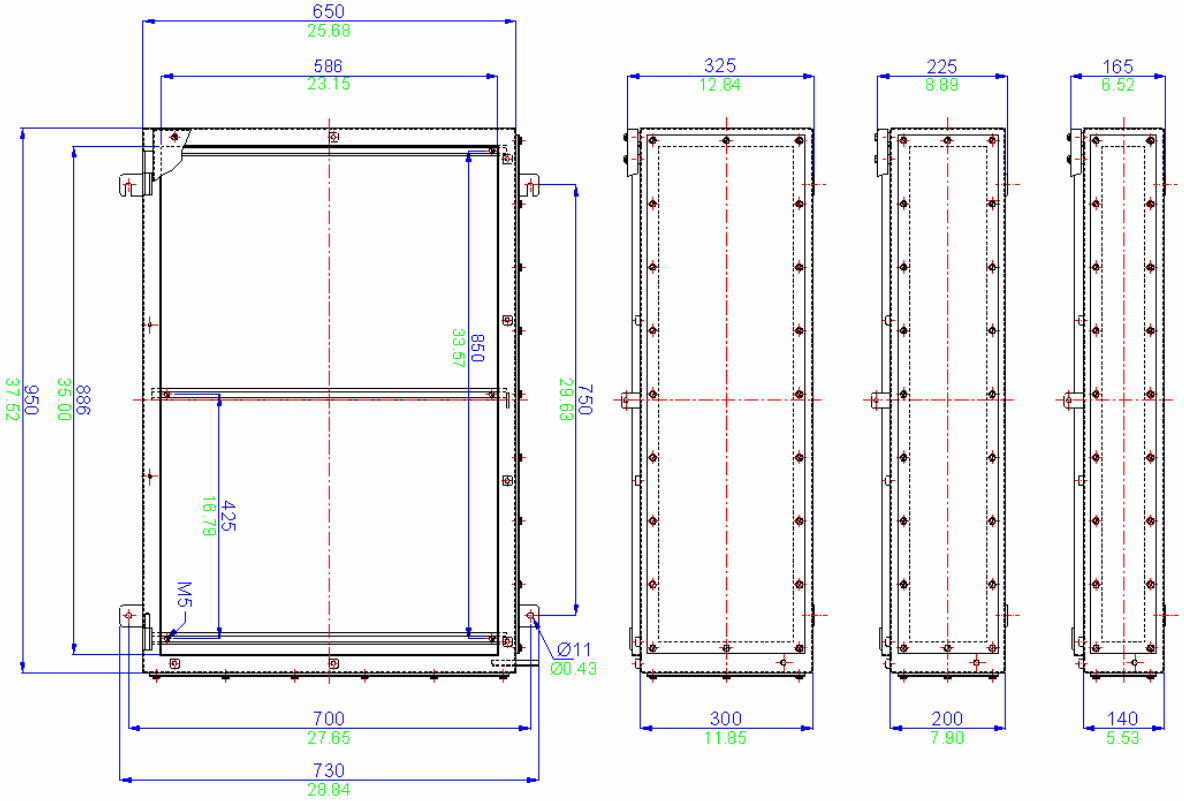
Drilling Envelope Size
(with glandplate fitted)

	Side A-C		Side B-D	
	140	200	140	200
Width	445	445	695	695
Height	75	135	75	135



Example

MSX 7 / SSX 7 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

MSX 7 / SSX 7 Specifications

Width	650mm		
Length	950mm		
Depth	140mm or 200mm or 300mm		
Material	Mild steel		
	Stainless steel 316 (1.4404)		
Weight	140mm 35.0Kg	200mm 39.0Kg	300mm 45.0Kg
IP Rating	66 or 67		
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)		
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)		
Certification	ATEX EEx e (Zone 1 & Zone 2) BS EN 60079-7		
	ATEX EEx nA (Zone 2) BS EN 60079-15		
	ATEX EEx nR (Zone 2) BS EN 60079-15		
	CSA - Ex e (Class 1 Zone 1 & Zone 2)		
	FM - AEx e (Class 1 Zone 1 & Zone2)		
	GOST-R Ex e (Zone 1 & Zone 2)		
	NEMA 4X (CSA, UL & FM) (class 1 division 2)		
Power Rating	68.000W		

Terminal Populations

Maximum Number of Rows			5
Weidmuller		**Wago**	
SAK 2.5	685	280-992	775
SAK 4	635	280-999	775
SAK 6	520	281-691	660
SAK 10	415	281-992	660
SAK 16	345	281-993	528
SAK 35	260	282-691	510
SAK 70	150	284-691	410
WDU 2.5	822	283-691	272
WDU 4	685	285-691	188
WDU 6	520	280-998	775
WDU 10	415	281-998	660
WDU 16	345	264-120	685
Phoenix		264-220	410
UK 2.5 N	820	264-132 (2)	145
UK 3 N	820	264-134 (4)	100
UK 5 N	685	262-132 (2)	145
UK 10 N	415	262-134 (4)	100
UK 16 N	345		
UK 35 N	280		

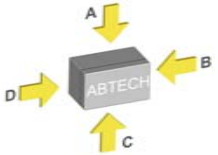
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix
(using standard gland clearances)

Size	Side A-C		Side B-D	
	140	200	140	200
M16	36	72	54	110
M20	28	48	42	72
M25	14	36	22	54
M32	10	20	14	28
M40	8	16	12	24

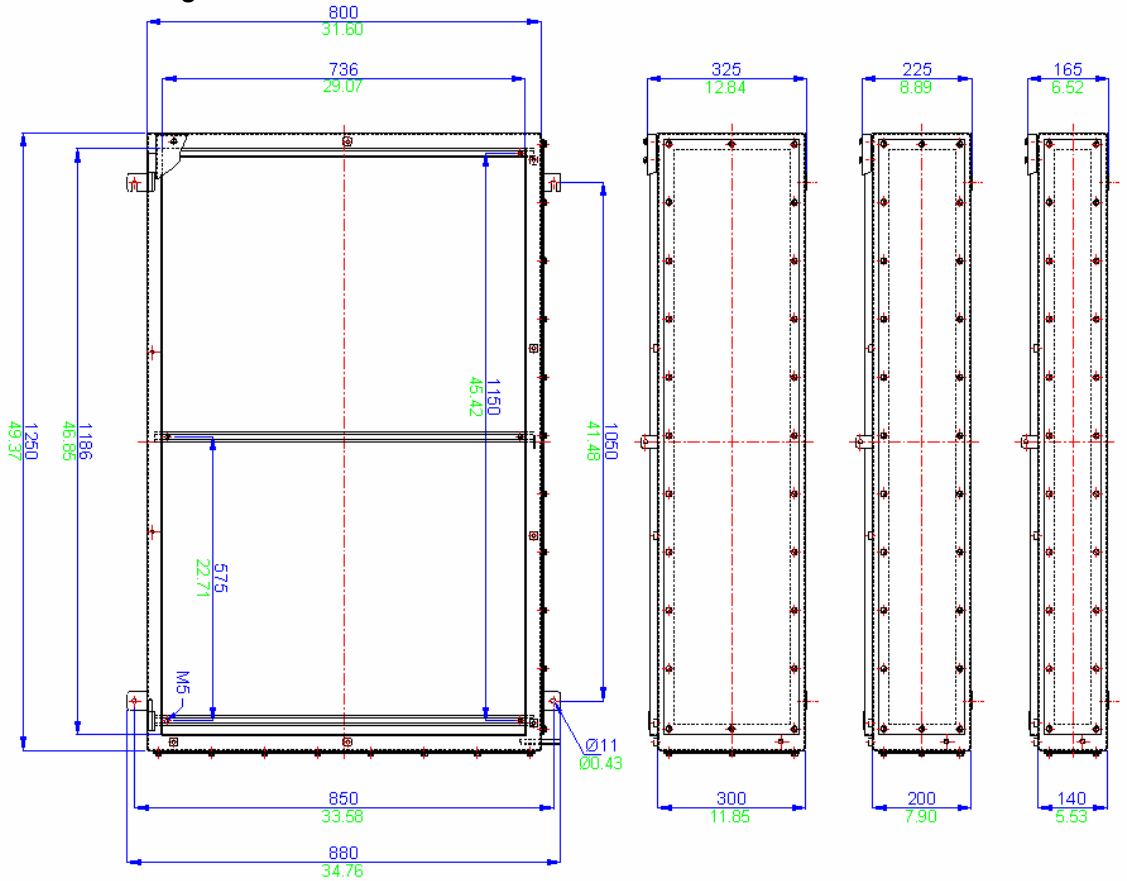
Drilling Envelope Size
(with glandplate fitted)

	Side A-C		Side B-D	
	140	200	140	200
Width	585	585	865	865
Height	75	135	75	135



Example

MSX 8 / SSX 8 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

MSX 8 / SSX 8 Specifications

Width	800mm		
Length	1250mm		
Depth	140mm or 200mm or 300mm		
Material	Mild steel		
	Stainless steel 316 (1.4404)		
Weight	140mm 40.0Kg	200mm 52.0Kg	300mm 72.0Kg
IP Rating	66 or 67		
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)		
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)		
Certification	ATEX EEx e (Zone 1 & Zone 2) BS EN 60079-7		
	ATEX EEx nA (Zone 2) BS EN 60079-15		
	ATEX EEx nR (Zone 2) BS EN 60079-15		
	CSA - Ex e (Class 1 Zone 1 & Zone2)		
	FM - AEx e (Class 1 Zone 1 & Zone2)		
	GOST-R Ex e (Zone 1 & Zone 2)		
	NEMA 4X (CSA, UL & FM) (class 1 division 2)		
Power Rating	119.462W		

Terminal Populations

Maximum Number of Rows			5
Weidmuller		**Wago**	
SAK 2.5	1295	280-992	775
SAK 4	635	280-999	775
SAK 6	520	281-691	660
SAK 10	415	281-992	660
SAK 16	345	281-993	528
SAK 35	260	282-691	510
SAK 70	150	284-691	410
WDU 2.5	1554	283-691	272
WDU 4	1295	285-691	188
WDU 6	520	280-998	775
WDU 10	415	281-998	660
WDU 16	345	264-120	685
Phoenix		264-220	410
UK 2.5 N	820	264-132 (2)	145
UK 3 N	820	264-134 (4)	100
UK 5 N	685	262-132 (2)	145
UK 10 N	415	262-134 (4)	100
UK 16 N	345		
UK 35 N	280		

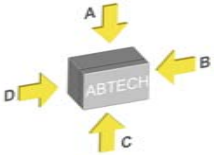
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix
(using standard gland clearances)

Size	Side A-C		Side B-D	
	140	200	140	200
M16	45	90	72	150
M20	36	60	58	100
M25	18	45	30	72
M32	12	24	20	40
M40	10	20	17	32

Drilling Envelope Size
(with glandplate fitted)

	Side A-C		Side B-D	
	140	200	140	200
Width	735	735	1165	1165
Height	75	135	75	135



Example

2

BPG

Glass Reinforced Polyester Enclosures

Further details on this range of enclosures can be found at;

www.ab-tech.co.uk/bpg.htm

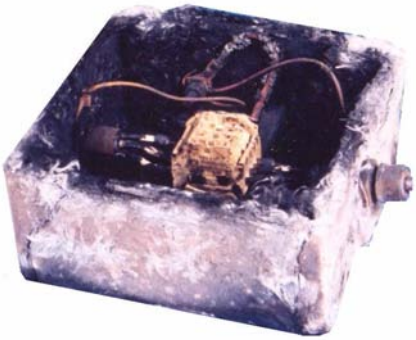
Glass Reinforced Polyester Enclosures

The BPG range comprises 16 sizes of enclosure manufactured in glass reinforced polyester (GRP). This material is highly resistant to contamination from oils, fats, aliphatic and aromatic carbohydrates, bacteria and enzymes. It is also suitable for LSOH (low smoke zero halogen) applications.

Polyester gives excellent mechanical strength and life expectancy. The wall thickness is sufficient to allow tapped entry holes to be machined in the walls of the enclosure and it provides a very good alternative to aluminium or cast iron.

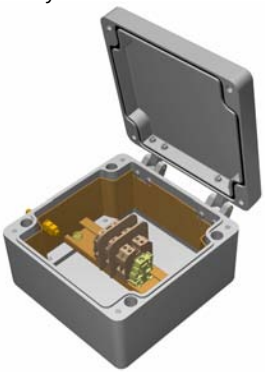
ABTECH mould the BPG range from SMC material rather than DMC which is the most common form of GRP. In this method the glass reinforcement takes the form of sheets rather than short strands. This gives much greater mechanical strength and also in the event of the enclosure being exposed to fire conditions the structure holds together even if the resin is depleted due to the elevated temperatures.

This is demonstrated by the fact that the BPG range when fitted with ceramic terminals meets the requirements of IEC 331 (750℃ (1382℉) for 3 hours) and also BS6387/1983 (950℃ (1742℉) for 3 hours - flame only). Further information about this testing procedure can be found in Section 6 of this catalogue.



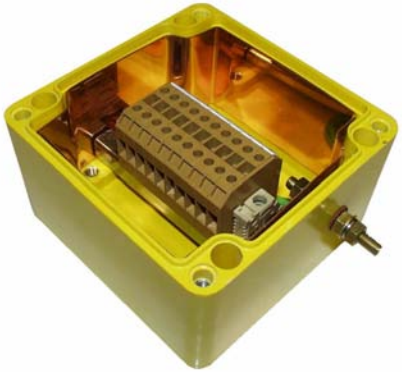
Due to the enclosure's labyrinth seal system, whereby the seal is protected from external forces, the BPG range has excellent ingress protection qualities which mean that the enclosures are tested to and passed IP66/67. They have also undergone and passed the Shell/ERA deluge test which was devised to adequately test enclosures and electrical equipment which is routinely subjected to ship decks conditions or fire deluge systems.

The mounting holes, although contained within the profile of the enclosure, sit outside the seal and all external fasteners and fixings are manufactured from 316 grade stainless steel to ensure reliability.



The BPG range has many features which lend itself to a whole host of applications including both industrial and hazardous area junction boxes, OEM applications, fire protection systems, tunnel wiring etc.

The BPG range can be machined, drilled, tapped with various thread forms, painted and of course it can be moulded in a variety of colours which gives a much improved durability of colour over painting.



The BPG range is also available carbon loaded (BPGC) which helps to reduce the surface resistance of the material and consequently reduce the risk of spark from static build up.

Earthing can be accomplished by various means. Internal / external earth stud which in turn can be connected to the terminal mounting rail or component mounting plate, an earth continuity plate (ECP) can be fitted around the inner walls to provide continuity for cable glands and various rail mounted earth terminals or proprietary earth bars can be fitted inside the enclosure.

When fitted with a standard neoprene gasket, the enclosure is suitable for ambient temperatures of - 40℃ to + 80℃ (-40℉ to +176℉). Alternatively, when fitted with an optional silicone gasket the temperature range is increased to - 70℃ to + 130℃ (-94℉ to +266℉). For certified apparatus contact the ABTECH Sales department for ambient operating temperatures.

The BPG and BPGC enclosures are suitable for use in hazardous areas and can be supplied with a number of certificates, specifically ATEX EEx'e' to BS EN 50019 (zone 1 & 2) EEx'nA' to BS EN50021 (zone 2) and NEMA 4X (CSA, UL & FM class 1, div 2).

The BPG range can be supplied fitted with any component approved terminal to apparatus level or can be supplied empty as component approved for the clients own certification requirements.

BPG Range Features

- Wide Operating Temperature (- 70℃ to + 130℃) (-94℉ to +266℉)
- Ingress Protection up to IP67
- Fire Resistant to IEC331
- Impact Resistant > 7Nm
- UV Resistant
- Can be drilled and tapped to accommodate most thread forms (NPT for example)
- Certification for use in Zone 1 and 2
- UL, CSA, IECEx, ATEX, InMetro and GOST Approvals
- Ideal for Petrochemical and Marine applications

Accessories and Options

The following table is a list of the available accessories suitable for a particular size of BPG enclosure. Care should be taken when ordering accessories for use with enclosures intended for hazardous areas to ensure that compliance with certification is retained.

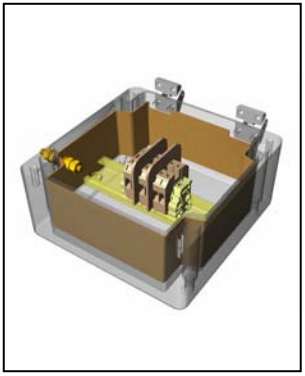
Part Number	Width (mm)	Length (mm)	Depth (mm)	**C** - Carbon Loaded (see note 1)	**EX** - Ex Certified (see note 2)	**EC** - Earth Continuity Plate	**ES** - Earth Stud	**AS** - Allen Head Fixing Screws	**TP** - Tamper Proof Screws	**EH** - External Hinges	**MP** - Component Mounting Plate	**MF** - External Mounting Feet	**EB** - Internal Earthing Bar	**SG** - Silicone Gasket (see note 3)	**MR** - DIN Standard Mounting Rail	**RF** - RFI Protection (see note 4)
BPG1	80	75	55	✓	✓	✗	✗	✓	✓	✓	✓	✓	✗	✓	✓	✓
BPG2	110	75	55	✓	✓	✗	✗	✓	✓	✓	✓	✓	✗	✓	✓	✓
BPG3	160	75	55	✓	✓	✗	✗	✓	✓	✓	✓	✓	✗	✓	✓	✓
BPG4	190	75	55	✓	✓	✗	✗	✓	✓	✓	✓	✓	✗	✓	✓	✓
BPG4.5	190	75	75	✓	✓	✗	✗	✓	✓	✓	✓	✓	✗	✓	✓	✓
BPG5	230	75	55	✓	✓	✗	✗	✓	✓	✓	✓	✓	✗	✓	✓	✓
BPG6	122	120	90	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BPG7	220	120	90	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BPG8	160	160	90	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BPG9	260	160	90	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BPG10	360	160	90	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BPG11	560	160	90	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BPG12	255	250	120	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BPG13	400	250	120	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BPG13.5	400	250	140	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BPG14	600	250	120	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BPG15	400	405	120	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Ordering Example;

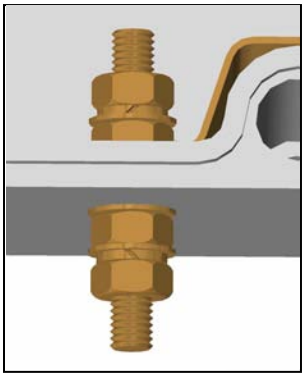
BPG8 EX EC EB MR

(BPG8 EX Certified with Earth Continuity Plate, Internal Earthing Bar and DIN standard Mounting Rail)

1. Carbon loading gives a surface tracking value of between 10MΩ and 10GΩ. Surface colour is black.
2. EEx'e' certification may be component or apparatus certified - please specify your requirements.
3. Silicone gasket increases temperature rating (-70º to +130º C) (-94℉ to +266℉).
4. Radio Frequency Interference (RFI) gasket may reduce IP rating. Enclosure may also be internally coated with RFI material.

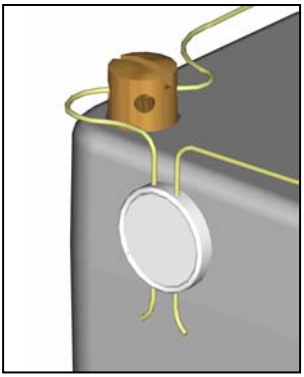


Copper earth continuity plate
(must also be fitted with earth stud)



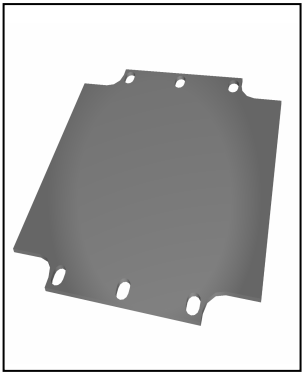
Earth Stud
(either brass or stainless steel)

Allen Head fixing screws
(grade 316)

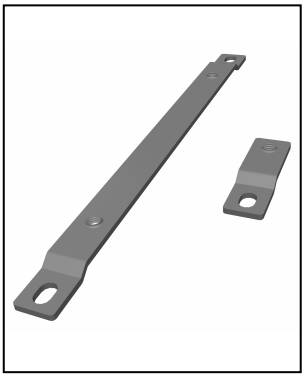


Tamper-proof screws

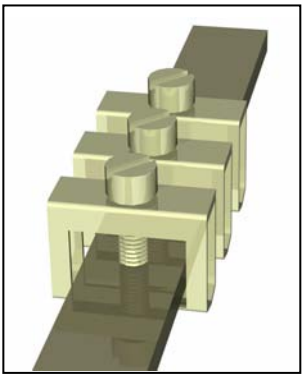
External hinges



Component mounting plate
(tufnol as standard, steel an option)



External mounting feet
(stainless steel 316)

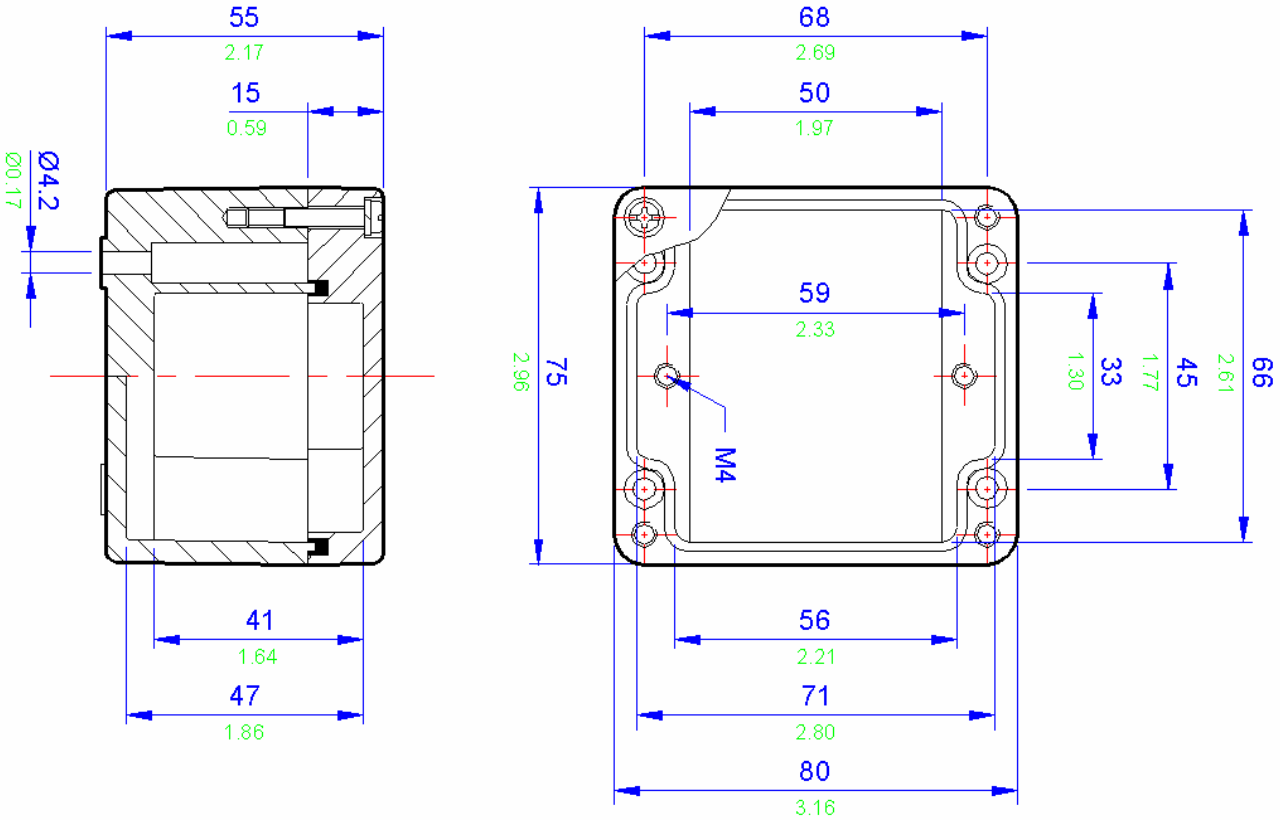


Internal Earthing bar
(can be fitted with clamps)

DIN standard mounting rail
(TS15, TS32 or TS35)

We can also supply cable glands, stopping plugs, breather drains and continuity plates. Please contact us for further details.

BPG 1 / BPGC 1 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

BPG 1 / BPGC 1 Specifications

Width	80mm
Length	75mm
Depth	55mm
Material	BPG1 - Glass Reinforced Polyester (RAL7001 grey)
	BPGC1 - Carbon Loaded Glass Reinforced Polyester (Black)
Weight	230g
IP Rating	66/67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA & UL) (class 1 division 2)
	GOST-R Ex'e' (Zone 1 & 2)
Power Rating	8.390W

Terminal Populations

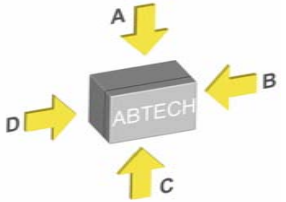
Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	1	280-992	0
BK6 (6 way)	1	280-999	0
BK12 (12 way)	0	281-691	0
MK6/3	1	281-992	0
MK6/4	1	281-993	0
MK6/6	0	282-691	0
SAK2.5	0	284-691	0
SAK4	0	283-691	0
SAK6N	0	285-691	0
SAK10	0	280-998	0
SAK16	0	281-998	0
SAK35	0	264-120	8
Entrelec		264-220	4
MA2.5/5	0	264-132 (2)	0
M4/6	0	264-134 (4)	0
M6/8	0	262-132 (2)	0
M10/10	0	262-134 (4)	0
M16/12	0		
M35/16	0		

Cable Gland Entry Matrix

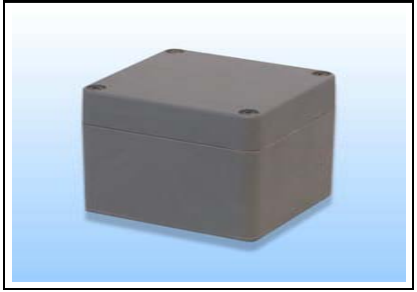
Entry Size	Side A-C	Side B-D
M16	1	0
M20	0	0
M25	0	0
M32	0	0
M40	0	0

Drilling Envelope Size

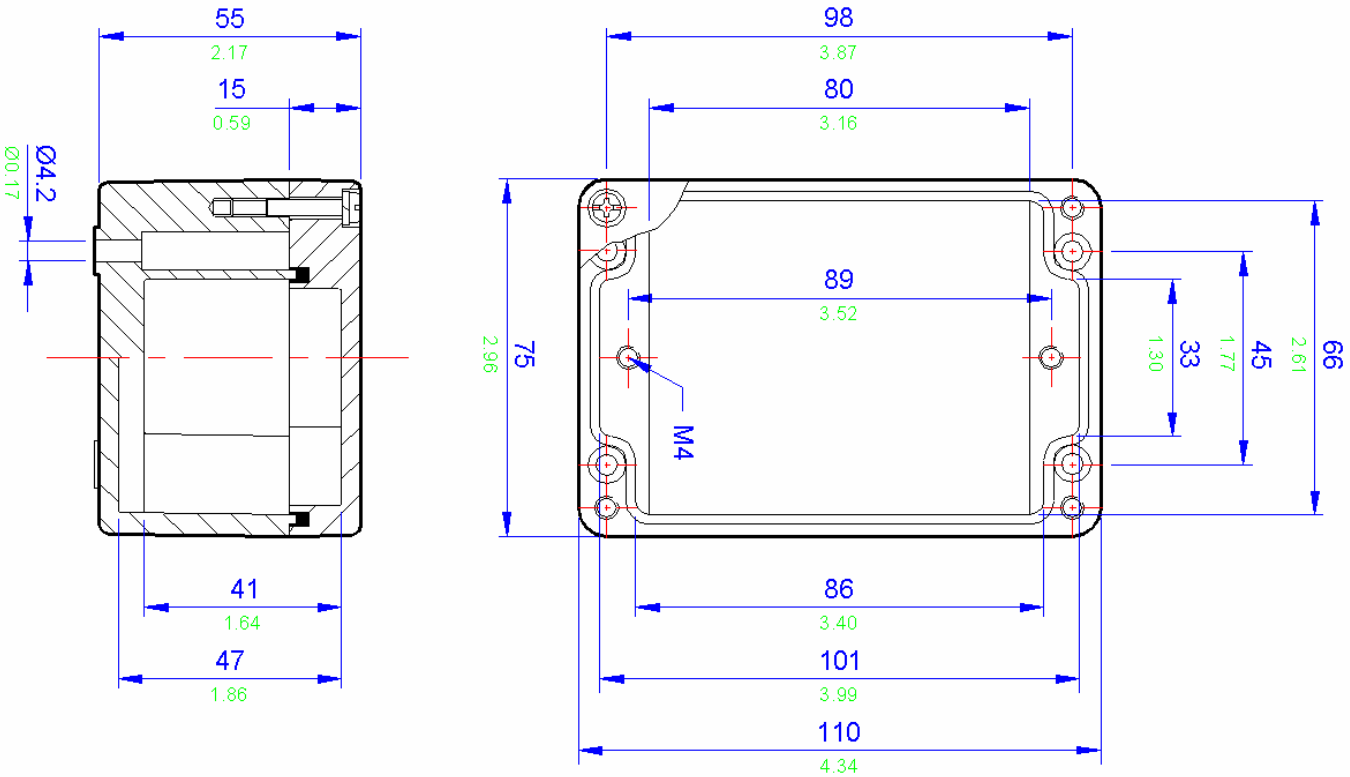
Side A-C	50 x 36mm
Side B-D	26 x 30mm



Example



BPG 2 / BPGC 2 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

BPG 2 / BPGC 2 Specifications

Width	110mm
Length	75mm
Depth	55mm
Material	BPG2 - Glass Reinforced Polyester (RAL7001 grey)
	BPGC2 - Carbon Loaded Glass Reinforced Polyester (Black)
Weight	230g
IP Rating	66/67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA & UL) (class 1 division 2)
	GOST-R Ex'e' (Zone 1 & 2)
Power Rating	8.551W

Terminal Populations

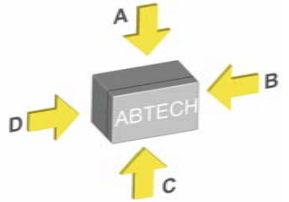
Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	2	280-992	0
BK6 (6 way)	1	280-999	0
BK12 (12 way)	1	281-691	0
MK6/3	1	281-992	0
MK6/4	1	281-993	0
MK6/6	1	282-691	0
SAK2.5	0	284-691	0
SAK4	0	283-691	0
SAK6N	0	285-691	0
SAK10	0	280-998	0
SAK16	0	281-998	0
SAK35	0	264-120	12
Entrelec		264-220	7
MA2.5/5	0	264-132 (2)	2
M4/6	0	264-134 (4)	1
M6/8	0	262-132 (2)	2
M10/10	0	262-134 (4)	1
M16/12	0		
M35/16	0		

Cable Gland Entry Matrix

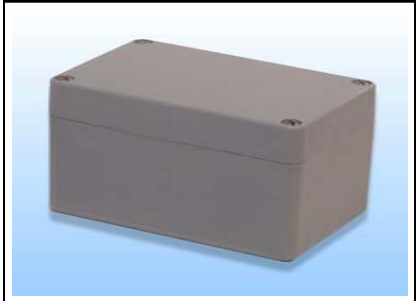
Entry Size	Side A-C	Side B-D
M16	2	0
M20	0	0
M25	0	0
M32	0	0
M40	0	0

Drilling Envelope Size

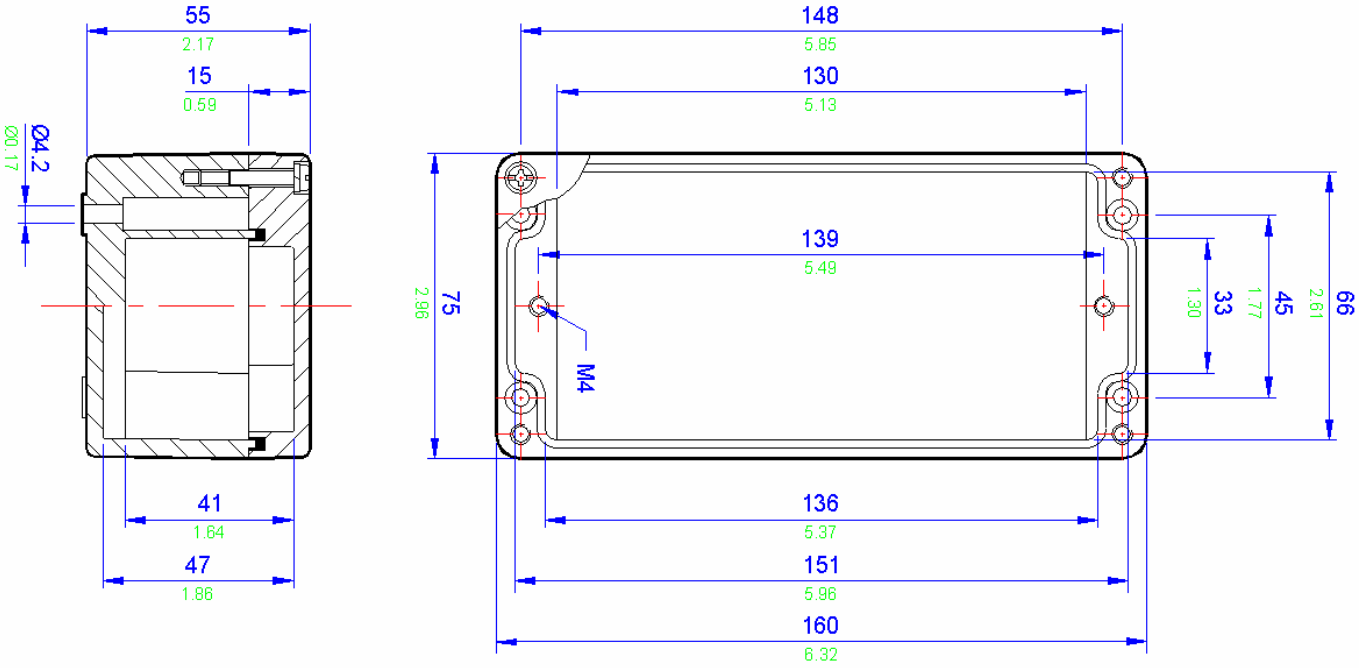
Side A-C	80 x 36mm
Side B-D	26 x 30mm



Example



BPG 3 / BPGC 3 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

BPG 3 / BPGC 3 Specifications

Width	160mm
Length	75mm
Depth	55mm
Material	BPG3 - Glass Reinforced Polyester (RAL7001 grey)
	BPGC3 - Carbon Loaded Glass Reinforced Polyester (Black)
Weight	405g
IP Rating	66/67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA & UL) (class 1 division 2)
	GOST-R Ex'e' (Zone 1 & 2)
Power Rating	8.833W

Terminal Populations

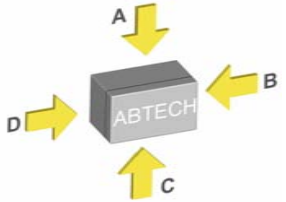
Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	3	280-992	0
BK6 (6 way)	2	280-999	0
BK12 (12 way)	1	281-691	0
MK6/3	2	281-992	0
MK6/4	2	281-993	0
MK6/6	1	282-691	0
SAK2.5	0	284-691	0
SAK4	0	283-691	0
SAK6N	0	285-691	0
SAK10	0	280-998	0
SAK16	0	281-998	0
SAK35	0	264-120	19
Entrelec		264-220	11
MA2.5/5	0	264-132 (2)	4
M4/6	0	264-134 (4)	3
M6/8	0	262-132 (2)	4
M10/10	0	262-134 (4)	3
M16/12	0		
M35/16	0		

Cable Gland Entry Matrix

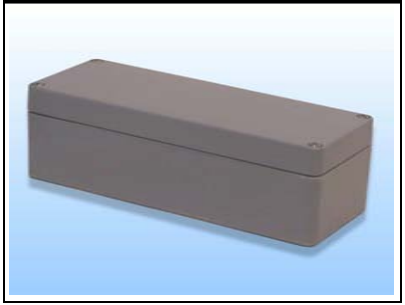
Entry Size	Side A-C	Side B-D
M16	4	0
M20	0	0
M25	0	0
M32	0	0
M40	0	0

Drilling Envelope Size

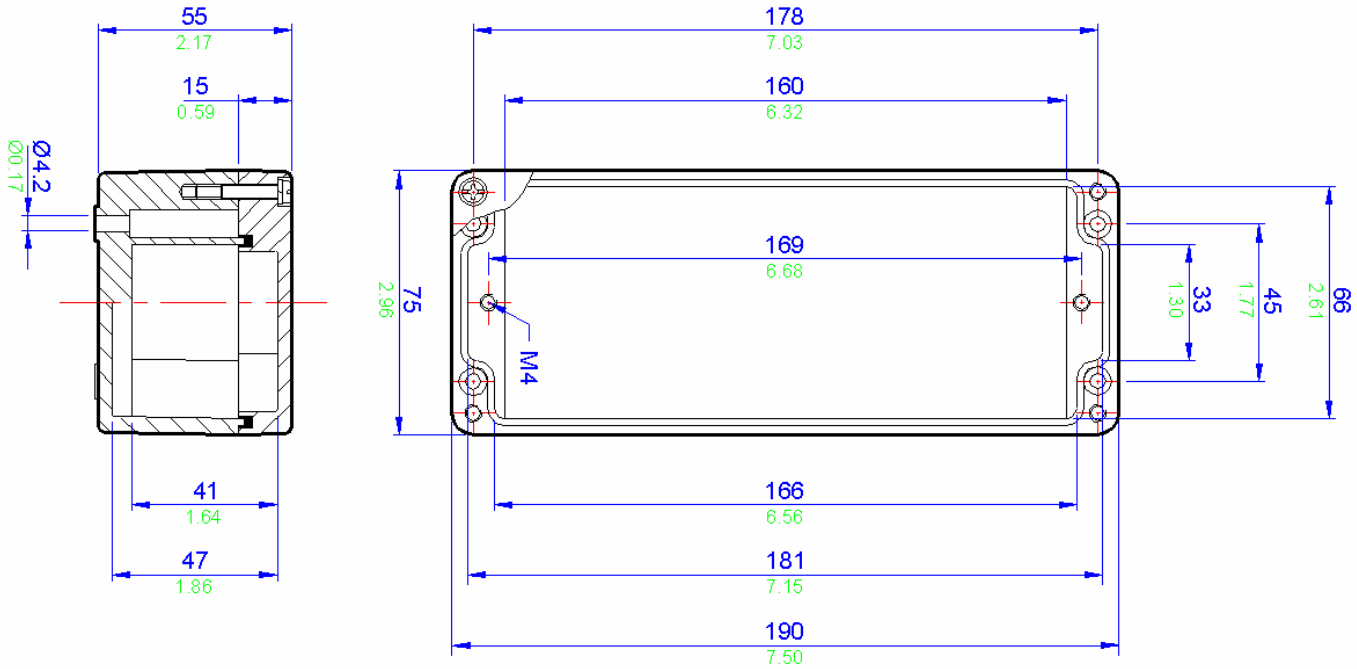
Side A-C	130 x 36mm
Side B-D	27 x 29mm



Example



BPG 4 / BPGC 4 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

BPG 4 / BPGC 4 Specifications

Width	190mm
Length	75mm
Depth	55mm
Material	BPG4 - Glass Reinforced Polyester (RAL7001 grey)
	BPGC4 - Carbon Loaded Glass Reinforced Polyester (Black)
Weight	450g
IP Rating	66/67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA & UL) (class 1 division 2)
	GOST-R Ex'e' (Zone 1 & 2)
Power Rating	9.012W

Terminal Populations

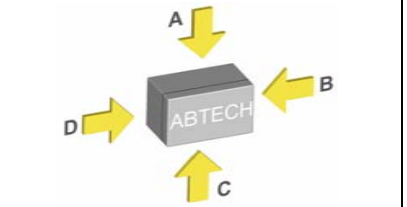
Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	4	280-992	0
BK6 (6 way)	2	280-999	0
BK12 (12 way)	1	281-691	0
MK6/3	3	281-992	0
MK6/4	3	281-993	0
MK6/6	2	282-691	0
SAK2.5	0	284-691	0
SAK4	0	283-691	0
SAK6N	0	285-691	0
SAK10	0	280-998	0
SAK16	0	281-998	0
SAK35	0	264-120	25
Entrelec		264-220	15
MA2.5/5	0	264-132 (2)	5
M4/6	0	264-134 (4)	3
M6/8	0	262-132 (2)	5
M10/10	0	262-134 (4)	3
M16/12	0		
M35/16	0		

Cable Gland Entry Matrix

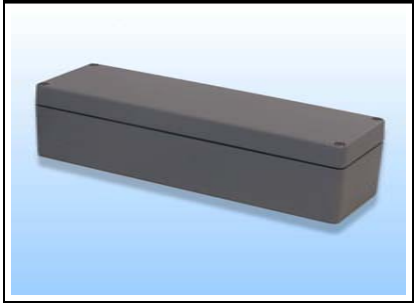
Entry Size	Side A-C	Side B-D
M16	5	0
M20	0	0
M25	0	0
M32	0	0
M40	0	0

Drilling Envelope Size

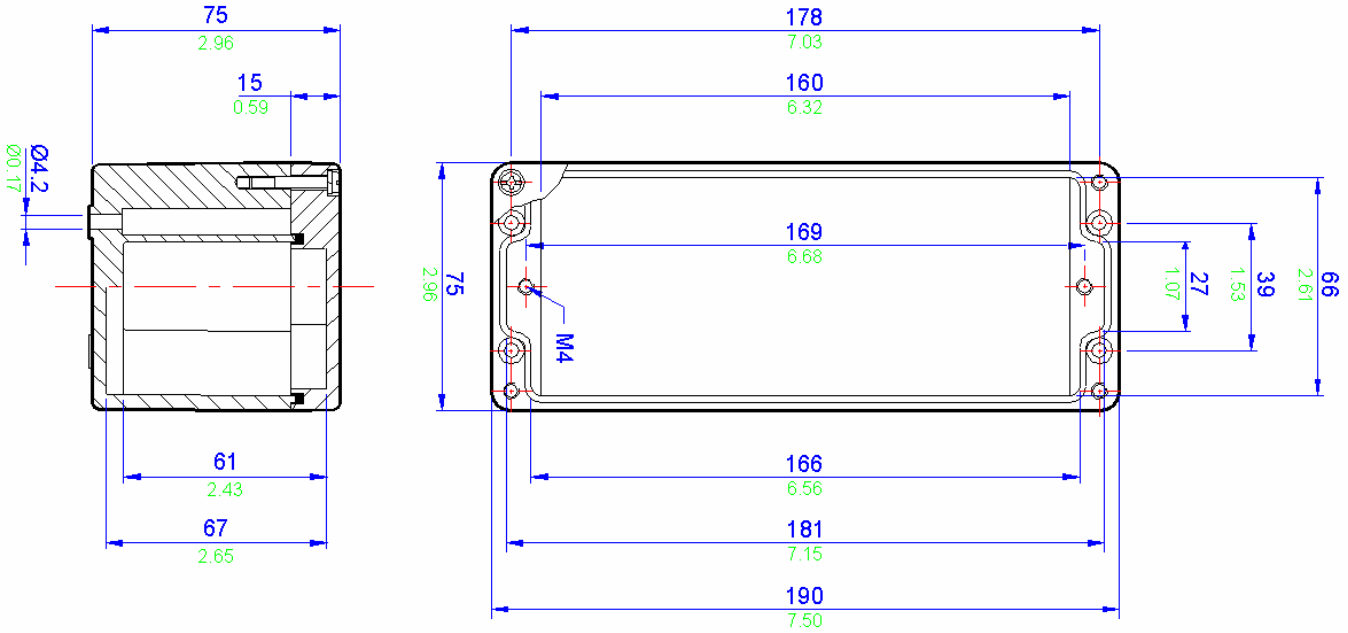
Side A-C	160 x 36mm
Side B-D	27 x 30mm



Example



BPG 4.5 / BPGC 4.5 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

BPG 4 .5/ BPGC 4.5 Specifications

Width	190mm
Length	75mm
Depth	75mm
Material	BPG4.5 - Glass Reinforced Polyester (RAL7001 grey)
	BPGC4.5 - Carbon Loaded Glass Reinforced Polyester (Black)
Weight	529g
IP Rating	66/67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA & UL) (class 1 division 2)
	GOST-R Ex'e' (Zone 1 & 2)
Power Rating	9.260W

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	4	280-992	28
BK6 (6 way)	3	280-999	0
BK12 (12 way)	1	281-691	24
MK6/3	3	281-992	0
MK6/4	3	281-993	0
MK6/6	2	282-691	0
SAK2.5	25	284-691	0
SAK4	25	283-691	0
SAK6N	19	285-691	0
SAK10 *	17	280-998	28
SAK16	0	281-998	24
SAK35	0	264-120	25
Entrelec		264-220	15
MA2.5/5	30	264-132 (2)	6
M4/6	25	264-134 (4)	4
M6/8	19	262-132 (2)	6
M10/10 *	15	262-134 (4)	4
M16/12 *	12		
M35/16	0		

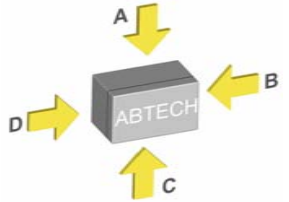
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

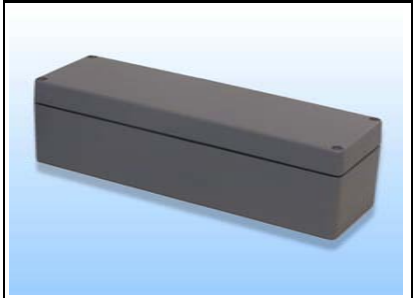
Entry Size	Side A-C	Side B-D
M16	6	0
M20	4	0
M25	3	0
M32	0	0
M40	0	0

Drilling Envelope Size

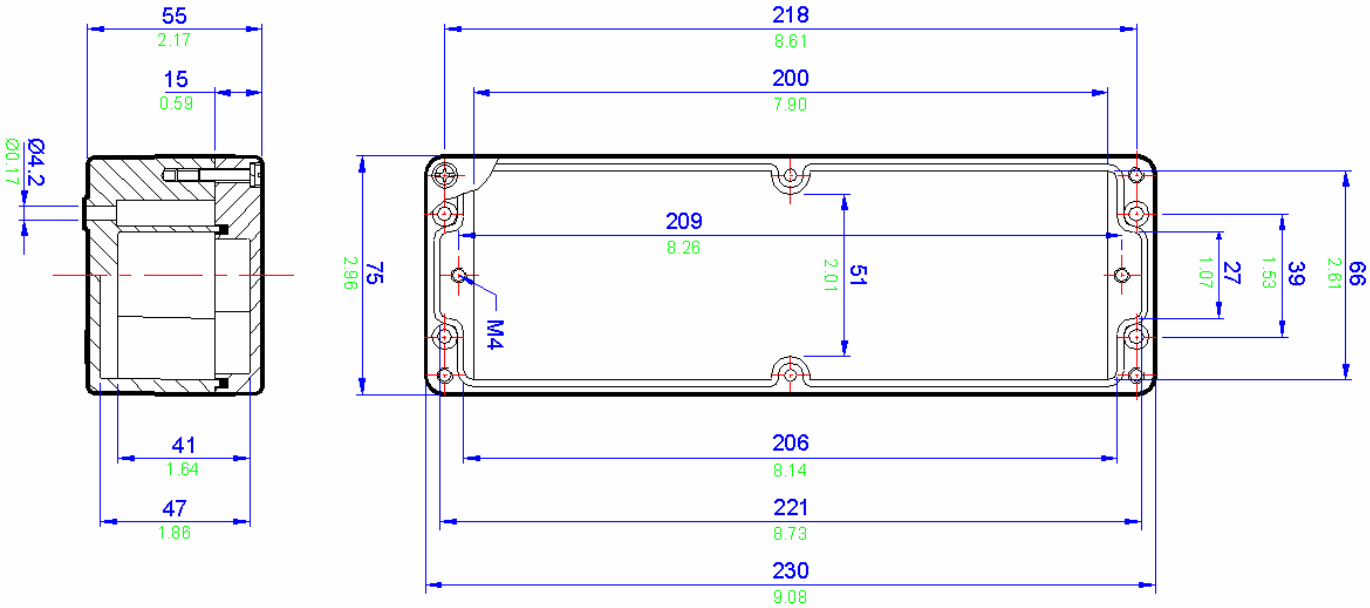
Side A-C	55 x 160mm
Side B-D	52 x 19mm



Example



BPG 5 / BPGC 5 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

BPG 5 / BPGC 5 Specifications

Width	230mm
Length	75mm
Depth	55mm
Material	BPG5 - Glass Reinforced Polyester (RAL7001 grey)
	BPGC5 - Carbon Loaded Glass Reinforced Polyester (Black)
Weight	529g
IP Rating	66/67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA & UL) (class 1 division 2)
	GOST-R Ex'e' (Zone 1 & 2)
Power Rating	9.260W

Terminal Populations

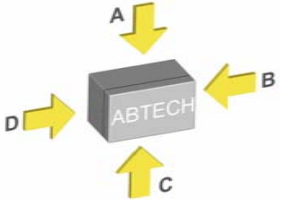
Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	0	280-992	0
BK6 (6 way)	4	280-999	0
BK12 (12 way)	2	281-691	0
MK6/3	4	281-992	0
MK6/4	4	281-993	0
MK6/6	2	282-691	0
SAK2.5	0	284-691	0
SAK4	0	283-691	0
SAK6N	0	285-691	0
SAK10	0	280-998	0
SAK16	0	281-998	0
SAK35	0	264-120	32
Entrelec		264-220	19
MA2.5/5	0	264-132 (2)	6
M4/6	0	264-134 (4)	4
M6/8	0	262-132 (2)	6
M10/10	0	262-134 (4)	4
M16/12	0		
M35/16	0		

Cable Gland Entry Matrix

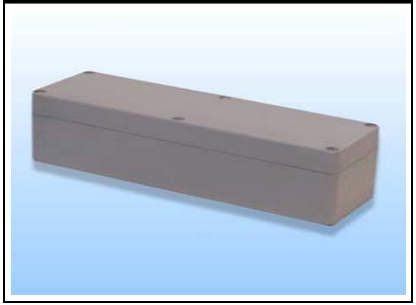
Entry Size	Side A-C	Side B-D
M16	0	0
M20	0	0
M25	0	0
M32	0	0
M40	0	0

Drilling Envelope Size

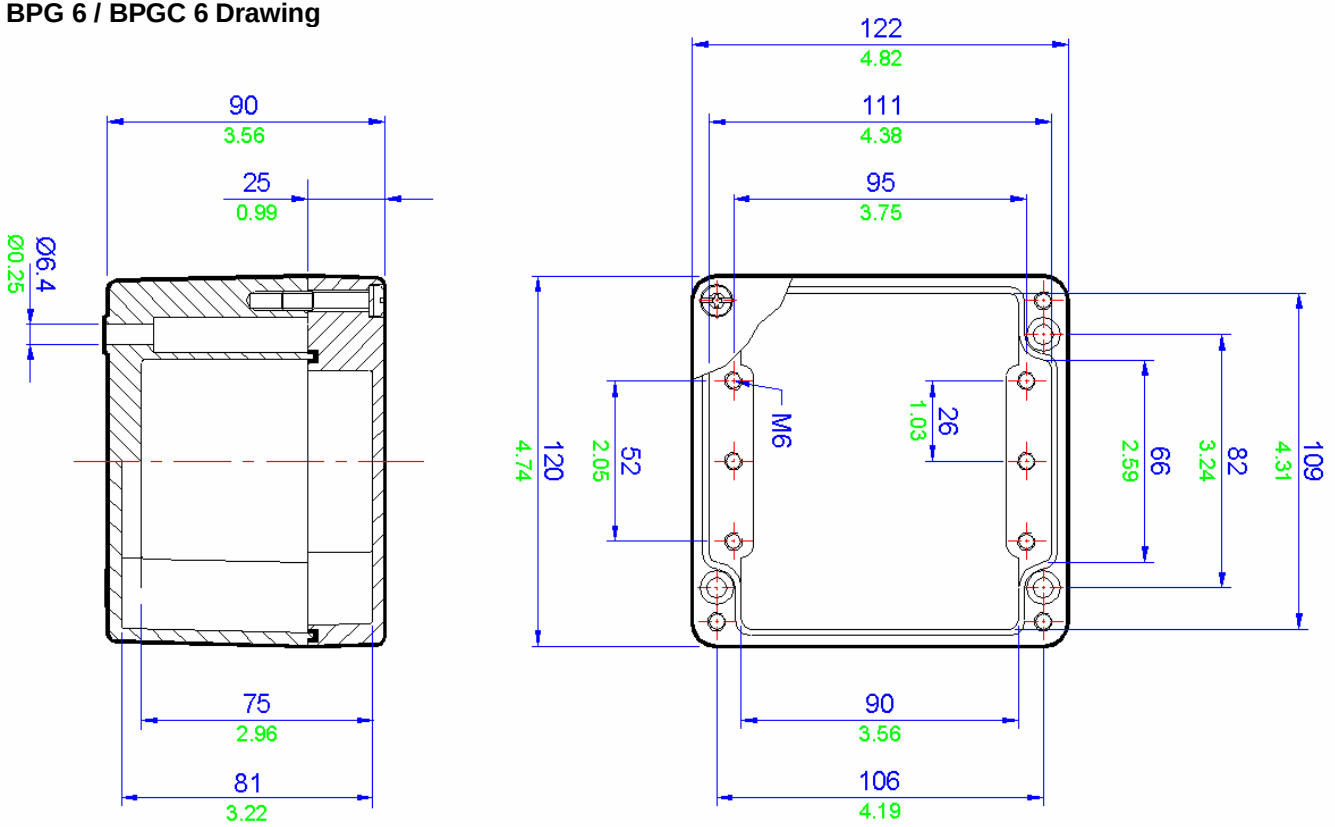
Side A-C	90 x 30mm
Side B-D	23 x 28mm



Example



BPG 6 / BPGC 6 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

BPG 6 / BPGC 6 Specifications

Width	122mm
Length	120mm
Depth	90mm
Material	BPG6 - Glass Reinforced Polyester (RAL7001 grey)
	BPGC6 - Carbon Loaded Glass Reinforced Polyester (Black)
Weight	750g
IP Rating	66/67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA & UL) (class 1 division 2)
	GOST-R Ex'e' (Zone 1 & 2)
Power Rating	9.378W

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	2	280-992	15
BK6 (6 way)	2	280-999	15
BK12 (12 way)	1	281-691	13
MK6/3	1	281-992	13
MK6/4	1	281-993	13
MK6/6	1	282-691	10
SAK2.5	14	284-691	8
SAK4	13	283-691	6
SAK6N	10	285-691	0
SAK10 *	8	280-998	15
SAK16 *	7	281-998	13
SAK35 *	5	264-120	13
Entrelec		264-220	8
MA2.5/5	17	264-132 (2)	3
M4/6	14	264-134 (4)	2
M6/8	8	262-132 (2)	3
M10/10 *	8	262-134 (4)	2
M16/12 *	7		
M35/16 *	5		

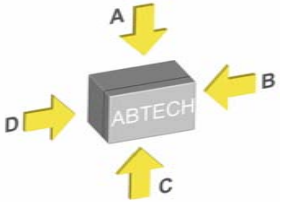
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

Entry Size	Side A-C	Side B-D
M16	2	1
M20	1	1
M25	1	1
M32	1	0
M40	0	0

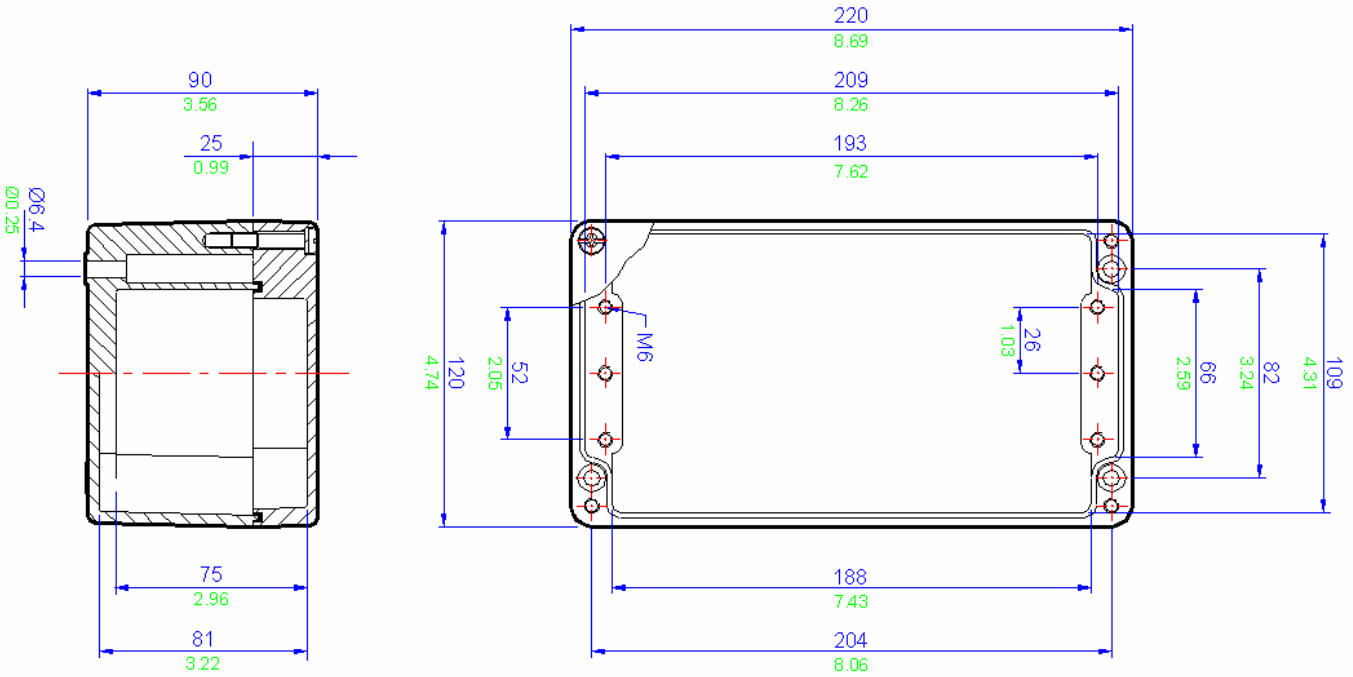
Drilling Envelope Size

Side A-C	75 x 60mm
Side B-D	54 x 53mm



Example

BPG 7 / BPGC 7 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

BPG 7 / BPGC 7 Specifications

Width	220mm
Length	120mm
Depth	90mm
Material	BPG7 - Glass Reinforced Polyester (RAL7001 grey)
	BPGC7 - Carbon Loaded Glass Reinforced Polyester (Black)
Weight	1060g
IP Rating	66/67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA & UL) (class 1 division 2)
	GOST-R Ex'e' (Zone 1 & 2)
Power Rating	10.500W

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	5	280-992	34
BK6 (6 way)	3	280-999 *	34
BK12 (12 way)	2	281-691	29
MK6/3	4	281-992	29
MK6/4	4	281-993 *	29
MK6/6	2	282-691	22
SAK2.5	30	284-691 *	18
SAK4	28	283-691 *	15
SAK6N	22	285-691	0
SAK10 *	18	280-998	34
SAK16 *	15	281-998	29
SAK35 *	11	264-120	30
Entrelec		264-220	18
MA2.5/5	36	264-132 (2)	6
M4/6	30	264-134 (4)	4
M6/8	22	262-132 (2)	6
M10/10 *	18	262-134 (4)	4
M16/12 *	15		
M35/16 *	11		

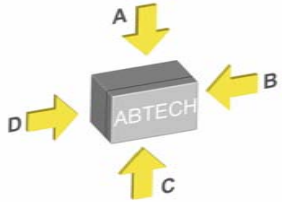
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

Entry Size	Side A-C	Side B-D
M16	10	1
M20	4	1
M25	3	1
M32	3	0
M40	0	0

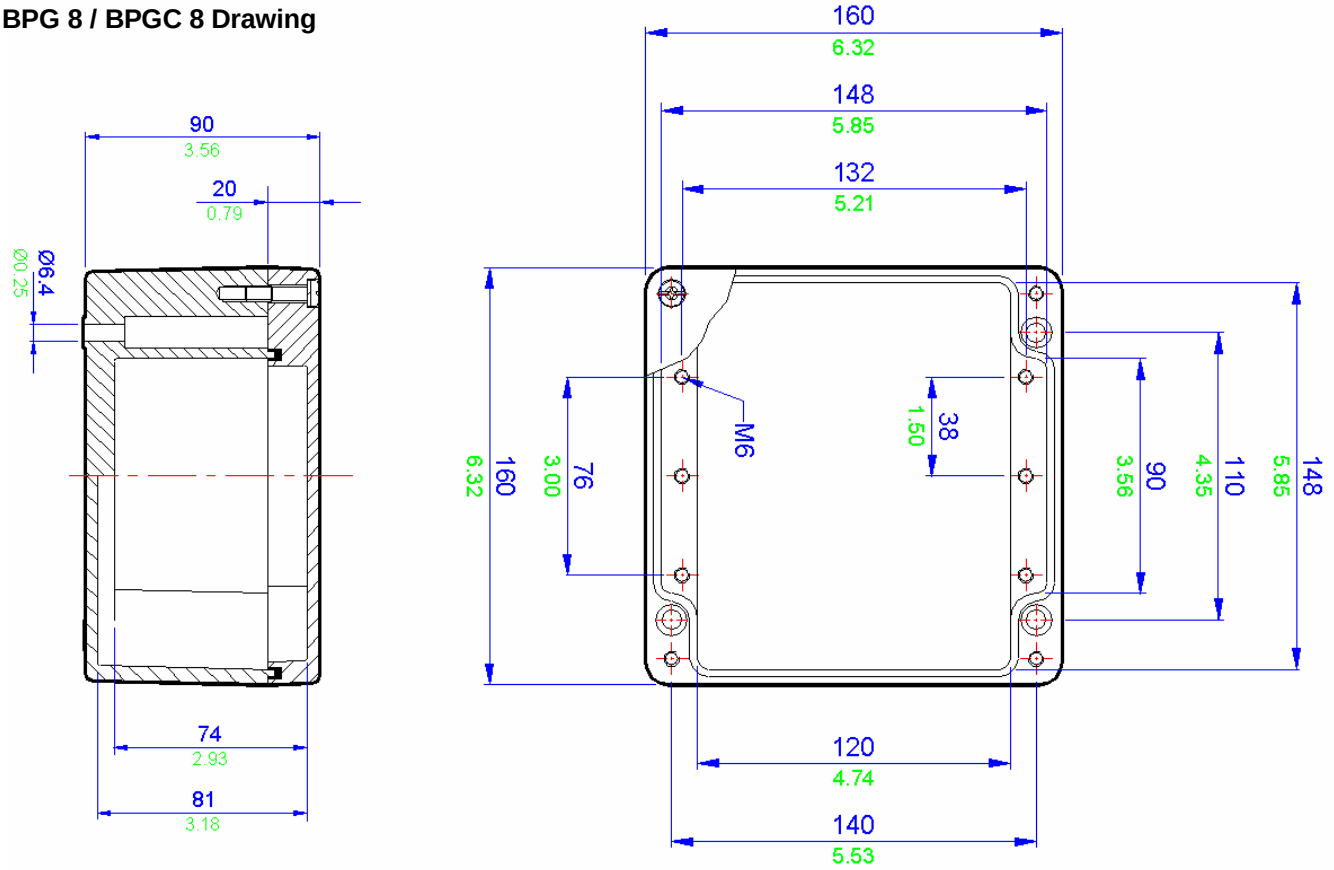
Drilling Envelope Size

Side A-C	180 x 60mm
Side B-D	56 x 53mm



Example

BPG 8 / BPGC 8 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

BPG 8 / BPGC 8 Specifications

Width	160mm
Length	160mm
Depth	90mm
Material	BPG8 - Glass Reinforced Polyester (RAL7001 grey)
	BPGC8 - Carbon Loaded Glass Reinforced Polyester (Black)
Weight	1060g
IP Rating	66/67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA & UL) (class 1 division 2)
	GOST-R Ex'e' (Zone 1 & 2)
Power Rating	10.348W

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	3	280-992	22
BK6 (6 way)	2	280-999	22
BK12 (12 way)	1	281-691	19
MK6/3	2	281-992	19
MK6/4	2	281-993	19
MK6/6	1	282-691	15
SAK2.5	20	284-691 *	12
SAK4	19	283-691 *	10
SAK6N	15	285-691	0
SAK10 *	12	280-998	22
SAK16 *	10	281-998	19
SAK35 *	7	264-120	20
Entrelec		264-220	12
MA2.5/5	24	264-132 (2)	4
M4/6	20	264-134 (4)	3
M6/8	15	262-132 (2)	4
M10/10 *	12	262-134 (4)	2
M16/12 *	10		
M35/16 *	7		

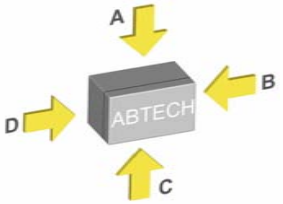
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

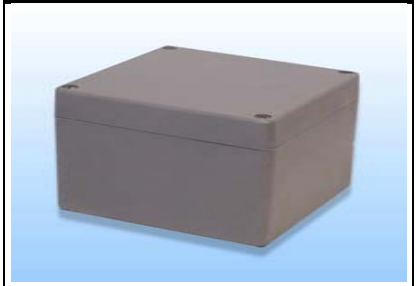
Entry Size	Side A-C	Side B-D
M16	6	2
M20	2	2
M25	2	1
M32	1	1
M40	0	0

Drilling Envelope Size

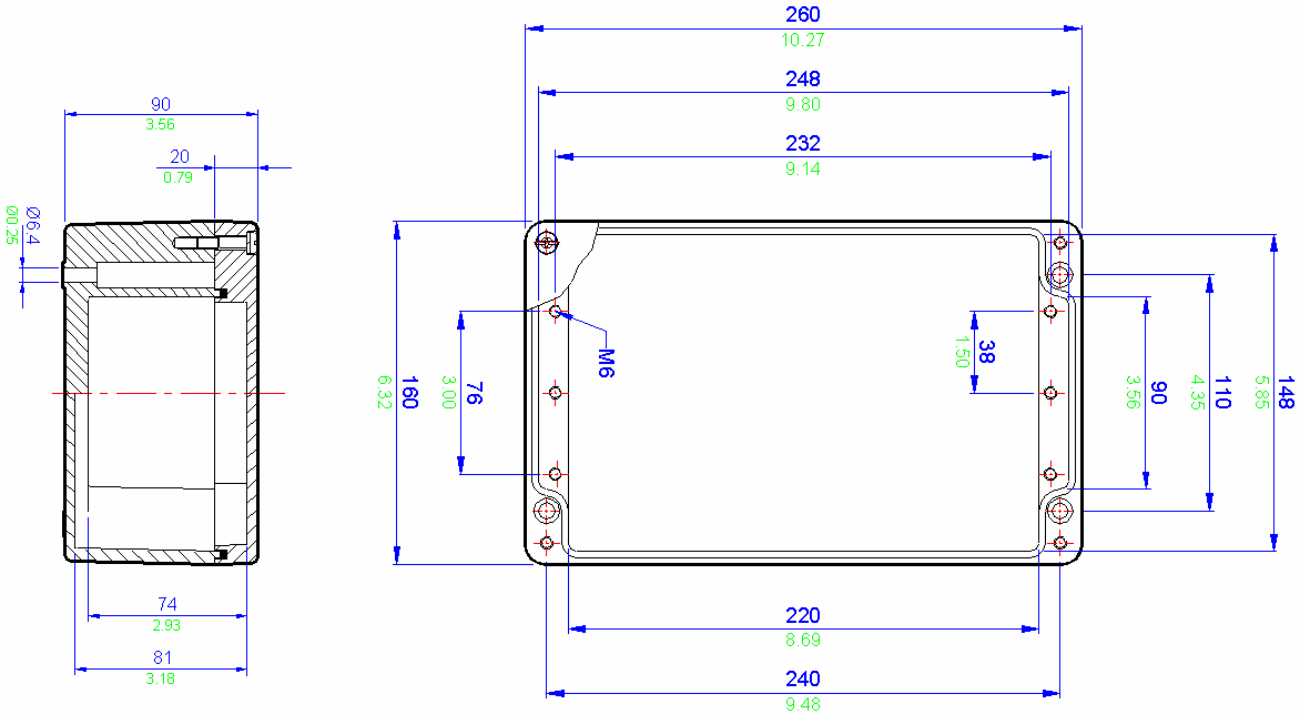
Side A-C	108 x 65mm
Side B-D	78 x 58mm



Example



BPG 9 / BPGC 9 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

BPG 9 / BPGC 9 Specifications

Width	260mm
Length	160mm
Depth	90mm
Material	BPG9 - Glass Reinforced Polyester (RAL7001 grey)
	BPGC9 - Carbon Loaded Glass Reinforced Polyester (Black)
Weight	1170g
IP Rating	66/67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA & UL) (class 1 division 2)
	GOST-R Ex'e' (Zone 1 & 2)
Power Rating	11.933W

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	6	280-992	40
BK6 (6 way)	4	280-999	40
BK12 (12 way)	2	281-691	34
MK6/3	4	281-992	34
MK6/4	4	281-993	34
MK6/6	3	282-691	27
SAK2.5	36	284-691 *	21
SAK4	34	283-691 *	18
SAK6N	27	285-691	0
SAK10 *	22	280-998	40
SAK16 *	18	281-998	34
SAK35 *	14	264-120	36
Entrelec		264-220	21
MA2.5/5	43	264-132 (2)	7
M4/6	36	264-134 (4)	5
M6/8	27	262-132 (2)	7
M10/10 *	22	262-134 (4)	5
M16/12 *	18		
M35/16 *	14		

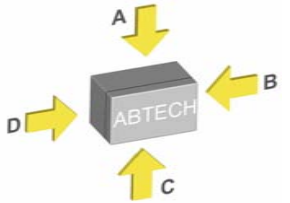
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

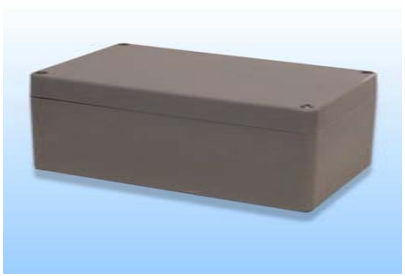
Entry Size	Side A-C	Side B-D
M16	12	4
M20	6	2
M25	4	1
M32	3	1
M40	0	0

Drilling Envelope Size

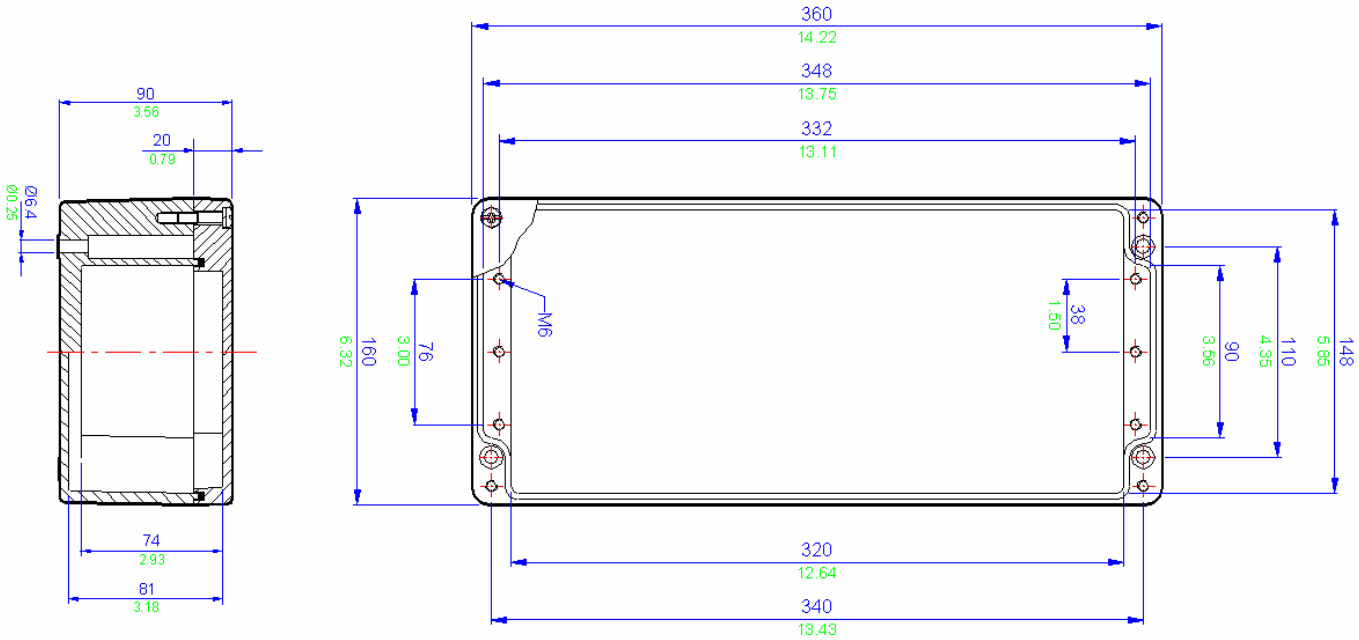
Side A-C	210 x 65mm
Side B-D	80 x 60mm



Example



BPG 10 / BPGC 10 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

BPG 10 / BPGC 10 Specifications

Width	360mm
Length	160mm
Depth	90mm
Material	BPG10 - Glass Reinforced Polyester (RAL7001 grey)
	BPGC10 - Carbon Loaded Glass Reinforced Polyester (Black)
Weight	2150g
IP Rating	66/67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA & UL) (class 1 division 2)
	GOST-R Ex'e' (Zone 1 & 2)
Power Rating	13.793W

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	9	280-992	58
BK6 (6 way)	6	280-999	58
BK12 (12 way)	3	281-691	50
MK6/3	6	281-992	50
MK6/4	6	281-993	50
MK6/6	4	282-691	39
SAK2.5	52	284-691 *	31
SAK4	48	283-691 *	26
SAK6N	40	285-691	0
SAK10 *	32	280-998	58
SAK16 *	26	281-998	50
SAK35 *	20	264-120	52
Entrelec		264-220	31
MA2.5/5	63	264-132 (2)	11
M4/6	52	264-134 (4)	7
M6/8	40	262-132 (2)	10
M10/10 *	32	262-134 (4)	7
M16/12 *	26		
M35/16 *	20		

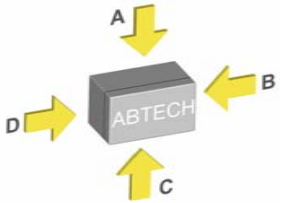
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

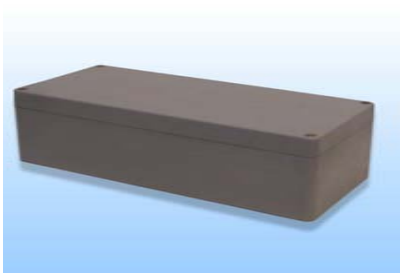
Entry Size	Side A-C	Side B-D
M16	18	4
M20	8	2
M25	6	1
M32	5	1
M40	0	0

Drilling Envelope Size

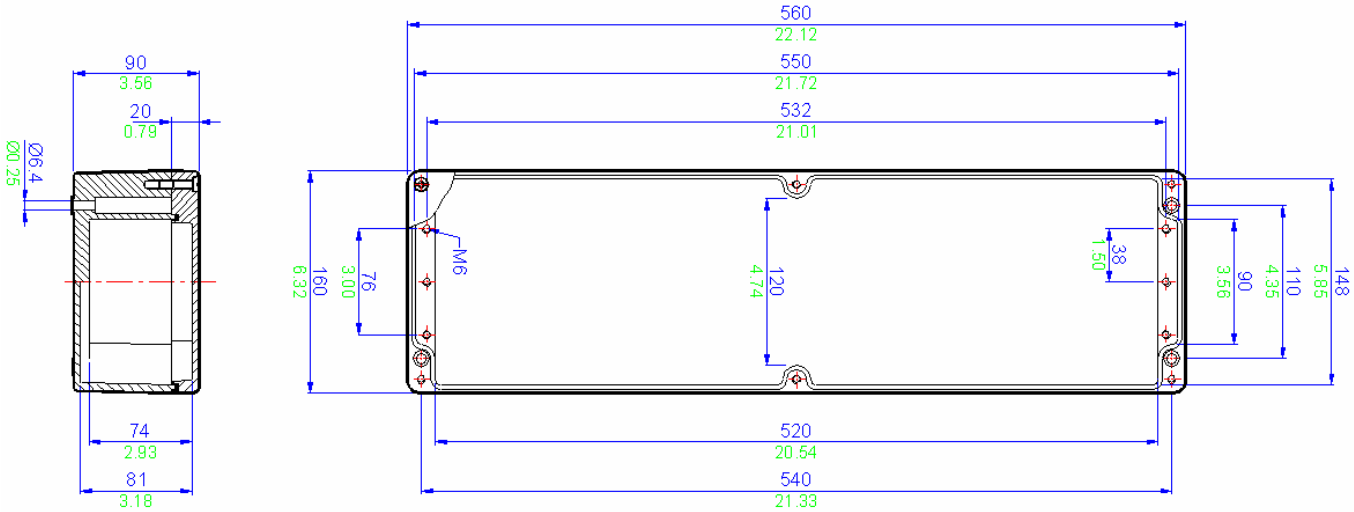
Side A-C	312 x 65mm
Side B-D	82 x 60mm



Example



BPG 11 / BPGC 11 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

BPG 11 / BPGC 11 Specifications

Width	560mm
Length	160mm
Depth	90mm
Material	BPG11 - Glass Reinforced Polyester (RAL7001 grey)
	BPGC11 - Carbon Loaded Glass Reinforced Polyester (Black)
Weight	3200g
IP Rating	66/67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA & UL) (class 1 division 2)
	GOST-R Ex'e' (Zone 1 & 2)
Power Rating	18.338W

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	14	280-992	96
BK6 (6 way)	10	280-999	96
BK12 (12way)	5	281-691	82
MK6/3	11	281-992	82
MK6/4	11	281-993	82
MK6/6	7	282-691	63
SAK2.5	85	284-691 *	51
SAK4	78	283-691 *	42
SAK6N	64	285-691	0
SAK10 *	51	280-998	96
SAK16 *	43	281-998	82
SAK35 *	32	264-120	85
Entrelec		264-220	51
MA2.5/5	101	264-132 (2)	18
M4/6	85	264-134 (4)	12
M6/8	64	262-132 (2)	17
M10/10 *	51	262-134 (4)	12
M16/12 *	43		
M35/16 *	32		

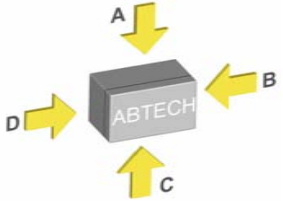
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

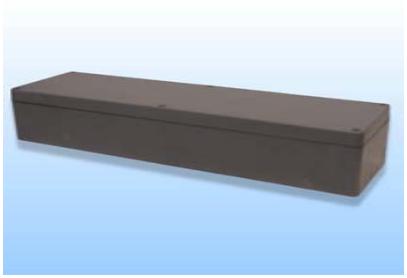
Entry Size	Side A-C	Side B-D
M16	28	4
M20	12	2
M25	10	1
M32	8	1
M40	0	0

Drilling Envelope Size

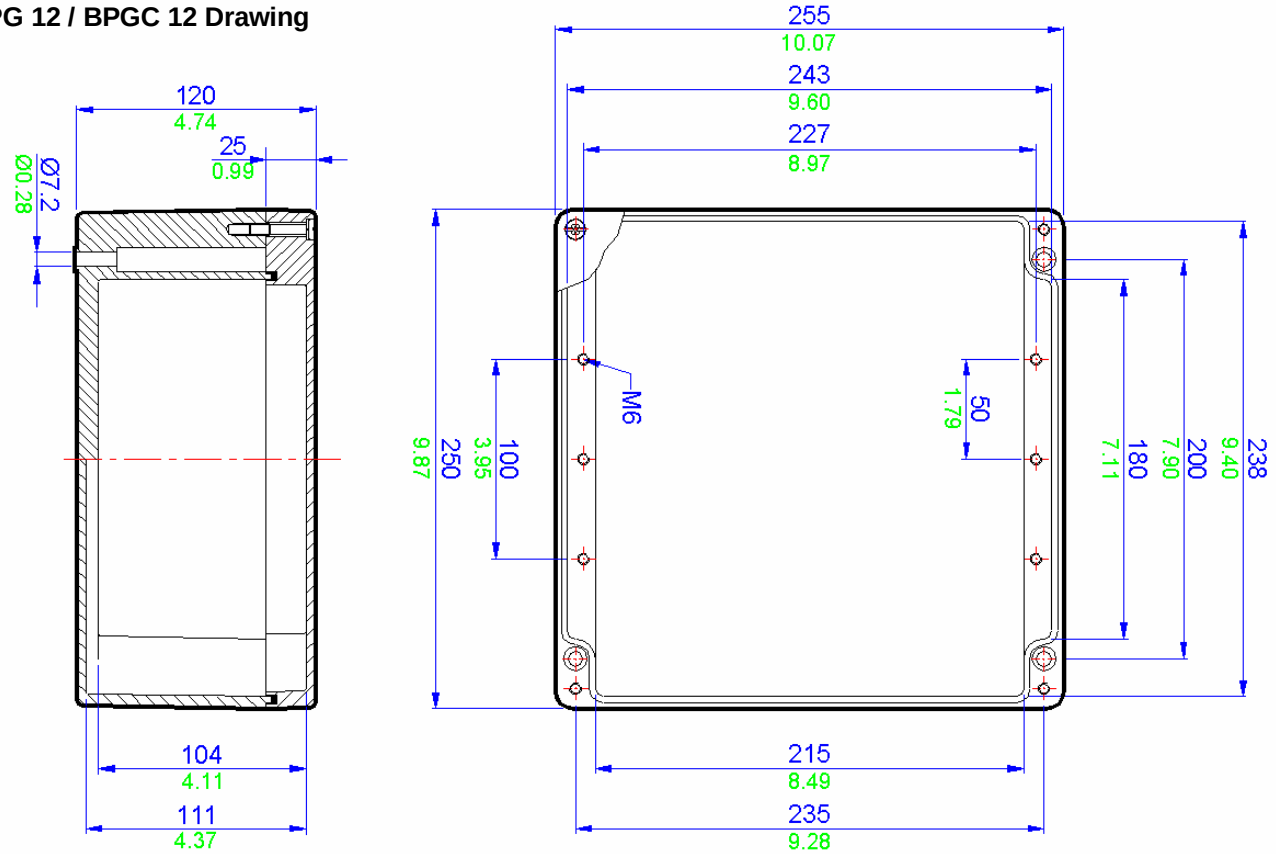
Side A-C	242 x 65mm (x 2)
Side B-D	80 x 60mm



Example



BPG 12 / BPGC 12 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

BPG 12 / BPGC 12 Specifications

Width	255mm
Length	250mm
Depth	120mm
Material	BPG12 - Glass Reinforced Polyester (RAL7001 grey)
	BPGC12 - Carbon Loaded Glass Reinforced Polyester (Black)
Weight	3200g
IP Rating	66/67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA & UL) (class 1 division 2)
	GOST-R Ex'e' (Zone 1 & 2)
Power Rating	15.474W

Terminal Populations

Maximum Number of Rows			2
Weidmuller		**Wago**	
BK4 (4 way)	12	280-992	78
BK6 (6 way)	8	280-999	78
BK12 (12 way)	4	281-691	66
MK6/3	8	281-992	66
MK6/4	8	281-993	66
MK6/6	6	282-691	52
SAK2.5	70	284-691 *	42
SAK4	66	283-691 *	17
SAK6N	54	285-691	12
SAK10 *	42	280-998	78
SAK16 *	36	281-998	66
SAK35 *	26	264-120	70
Entrelec		264-220	42
MA2.5/5	84	264-132 (2)	14
M4/6	70	264-134 (4)	10
M6/8	54	262-132 (2)	14
M10/10 *	42	262-134 (4)	8
M16/12 *	36		
M35/16 *	26		

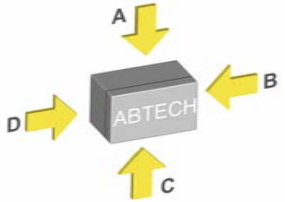
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

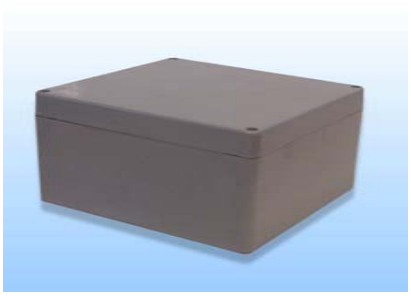
Entry Size	Side A-C	Side B-D
M16	15	12
M20	10	8
M25	6	4
M32	3	2
M40	3	2

Drilling Envelope Size

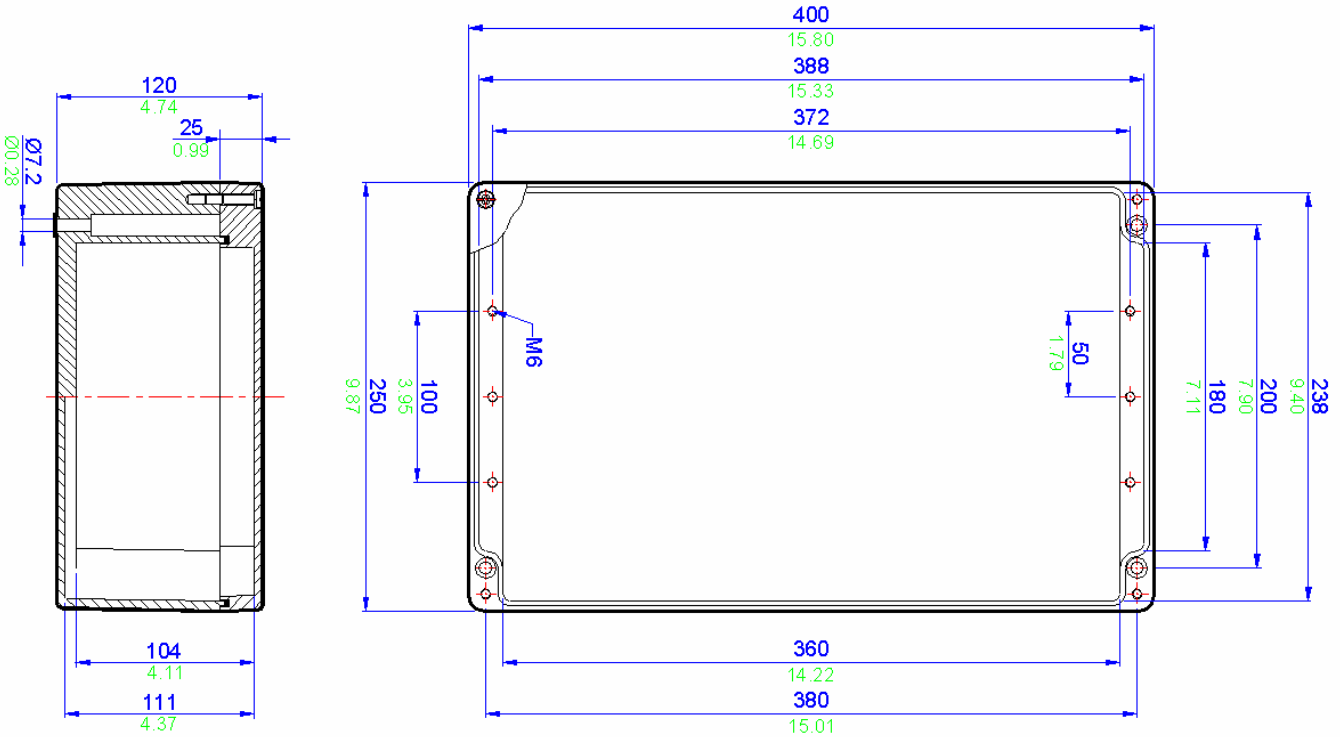
Side A-C	205 x 90mm
Side B-D	170 x 85mm



Example



BPG 13 / BPGC 13 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

BPG 13 / BPGC 13 Specifications

Width	400mm
Length	250mm
Depth	120mm
Material	BPG13 - Glass Reinforced Polyester (RAL7001 grey)
	BPGC13 - Carbon Loaded Glass Reinforced Polyester (Black)
Weight	3650g
IP Rating	66/67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA & UL) (class 1 division 2)
	GOST-R Ex'e' (Zone 1 & 2)
Power Rating	20.867W

Terminal Populations

Maximum Number of Rows			2
Weidmuller		**Wago**	
BK4 (4 way)	20	280-992	132
BK6 (6 way)	14	280-999	132
BK12 (12 way)	6	281-691	114
MK6/3	14	281-992 *	114
MK6/4	14	281-993	114
MK6/6	10	282-691	88
SAK2.5	118	284-691 *	70
SAK4	108	283-691 *	29
SAK6N	88	285-691	20
SAK10 *	72	280-998	132
SAK16 *	60	281-998	114
SAK35 *	44	264-120	118
Entrelec		264-220	70
MA2.5/5	140	264-132 (2)	24
M4/6	118	264-134 (4)	16
M6/8	88	262-132 (2)	24
M10/10 *	72	262-134 (4)	16
M16/12 *	60		
M35/16 *	44		

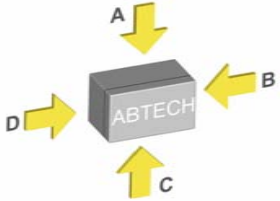
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

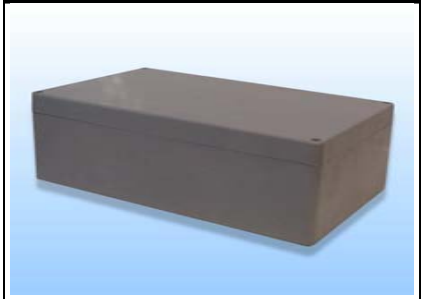
Entry Size	Side A-C	Side B-D
M16	30	12
M20	16	8
M25	14	4
M32	6	2
M40	5	2

Drilling Envelope Size

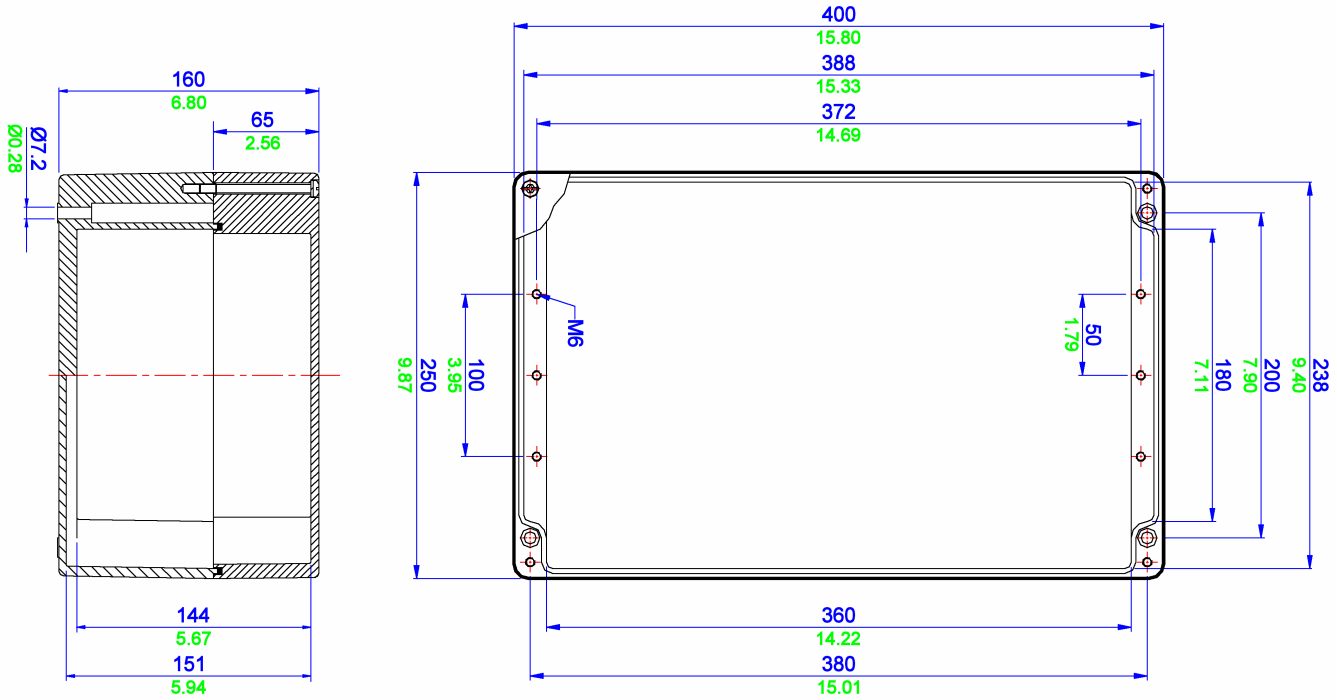
Side A-C	350 x 89mm
Side B-D	170 x 84mm



Example



BPG 13.5 / BPGC 13.5 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

BPG / C 13.5 Specifications

Width	400mm
Length	250mm
Depth	160mm
Material	BPG13.5 - Glass Reinforced Polyester (RAL7001 grey)
	BPGC13.5 - Carbon Loaded Glass Reinforced Polyester (Black)
Weight	4872g
IP Rating	66/67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA & UL) (class 1 division 2)
	GOST-R Ex'e' (Zone 1 & 2)
Power Rating	20.867W

Terminal Populations

Maximum Number of Rows			2
Weidmuller		**Wago**	
BK4 (4 way)	20	280-992	132
BK6 (6 way)	14	280-999	132
BK12 (12 way)	6	281-691	114
MK6/3	14	281-992 *	114
MK6/4	14	281-993	114
MK6/6	10	282-691	88
SAK2.5	118	284-691 *	70
SAK4	108	283-691 *	29
SAK6N	88	285-691	20
SAK10 *	72	280-998	132
SAK16 *	60	281-998	114
SAK35 *	44	264-120	118
Entrelec		264-220	70
MA2.5/5	140	264-132 (2)	24
M4/6	118	264-134 (4)	16
M6/8	88	262-132 (2)	24
M10/10 *	72	262-134 (4)	16
M16/12 *	60		
M35/16 *	44		

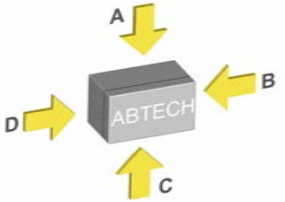
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

Entry Size	Side A-C	Side B-D
M16	30	12
M20	16	8
M25	14	4
M32	6	2
M40	5	2

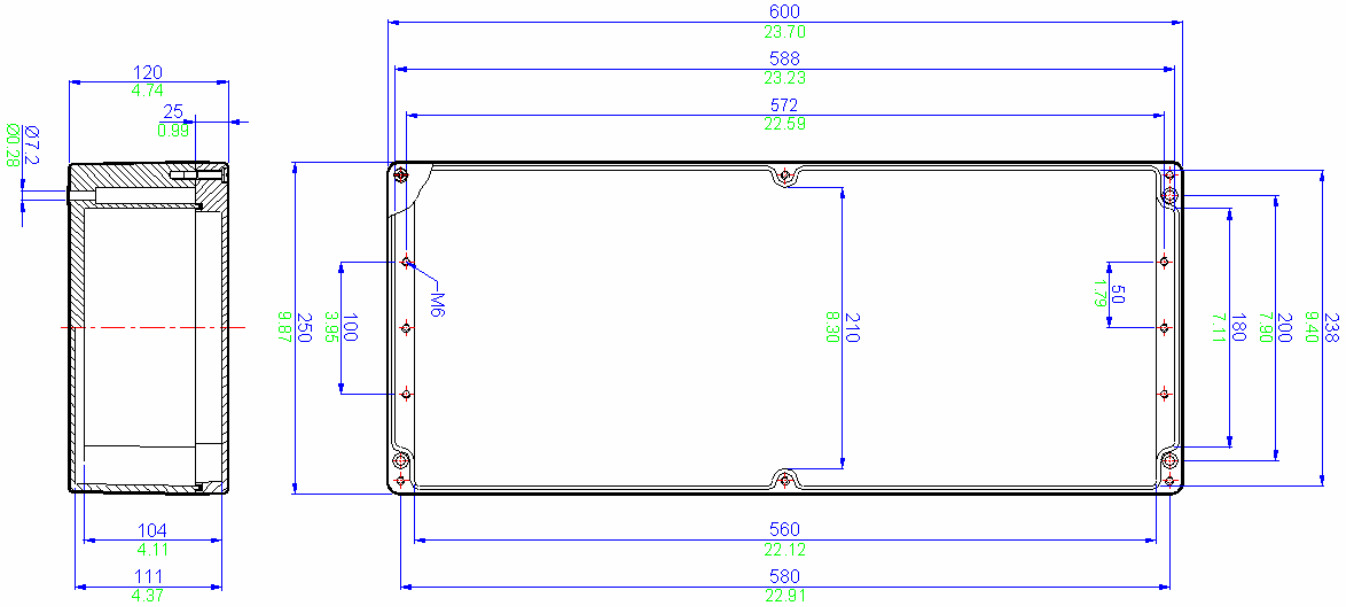
Drilling Envelope Size

Side A-C	350 x 89mm
Side B-D	170 x 84mm



Example

BPG 14 / BPGC 14 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

BPG 14 / BPGC 14 Specifications

Width	600mm
Length	250mm
Depth	120mm
Material	BPG14 - Glass Reinforced Polyester (RAL7001 grey)
	BPGC14 - Carbon Loaded Glass Reinforced Polyester (Black)
Weight	5235g
IP Rating	66/67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA & UL) (class 1 division 2)
	GOST-R Ex'e' (Zone 1 & 2)
Power Rating	30.384W

Terminal Populations

Maximum Number of Rows			2
Weidmuller		**Wago**	
BK4 (4 way)	30	280-992	132
BK6 (6 way)	22	280-999	132
BK12 (12 way)	12	281-691	114
MK6/3	22	281-992 *	114
MK6/4	22	281-993	114
MK6/6	14	282-691	88
SAK2.5	182	284-691 *	70
SAK4	168	283-691 *	29
SAK6N	138	285-691 *	20
SAK10 *	110	280-998	132
SAK16 *	92	281-998	114
SAK35 *	70	264-120	118
Entrelec		264-220	70
MA2.5/5	218	264-132 (2)	24
M4/6	182	264-134 (4)	16
M6/8	138	262-132 (2)	24
M10/10 *	110	262-134 (4)	16
M16/12 *	92		
M35/16 *	70		

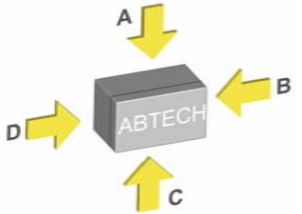
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

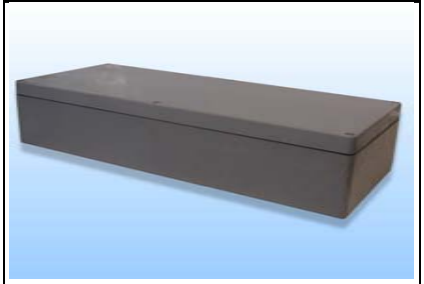
Entry Size	Side A-C	Side B-D
M16	42	12
M20	24	8
M25	20	4
M32	8	2
M40	6	2

Drilling Envelope Size

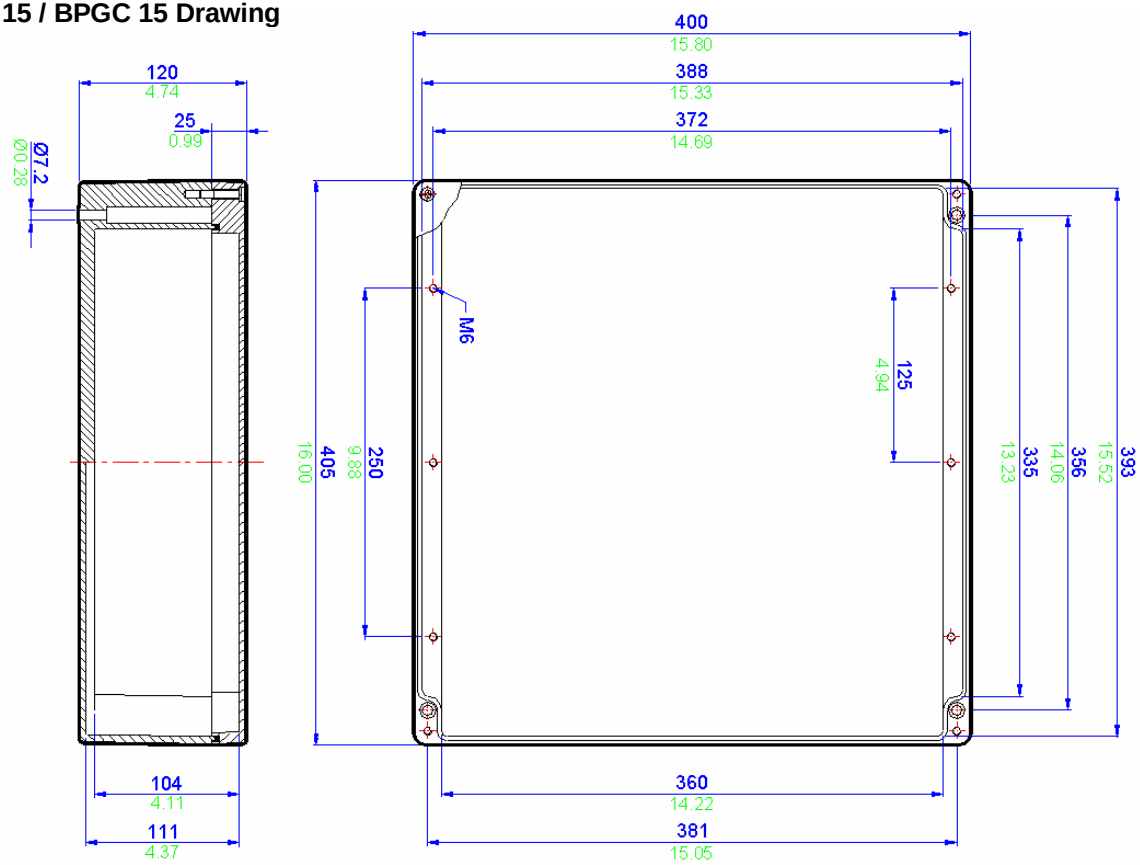
Side A-C	260 x 90mm (x 2)
Side B-D	168 x 85mm



Example



BPG 15 / BPGC 15 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

BPG 15 / BPGC 15 Specifications

Width	400mm
Length	405mm
Depth	120mm
Material	BPG15 - Glass Reinforced Polyester (RAL7001 grey)
	BPGC15 - Carbon Loaded Glass Reinforced Polyester (Black)
Weight	5580g
IP Rating	66/67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA & UL) (class 1 division 2)
	GOST-R Ex'e' (Zone 1 & 2)
Power Rating	31.350W

Terminal Populations

Maximum Number of Rows			3
Weidmuller		**Wago**	
BK4 (4 way)	30	280-992	198
BK6 (6 way)	21	280-999	198
BK12 (12 way)	9	281-691	171
MK6/3	21	281-992 *	171
MK6/4	21	281-993	171
MK6/6	15	282-691	132
SAK2.5	177	284-691 *	105
SAK4	162	283-691 *	58
SAK6N	132	285-691 *	40
SAK10 *	108	280-998	198
SAK16 *	90	281-998	171
SAK35 *	66	264-120	177
Entrelec		264-220	101
MA2.5/5	210	264-132 (2)	36
M4/6	177	264-134 (4)	24
M6/8	132	262-132 (2)	36
M10/10 *	108	262-134 (4)	24
M16/12 *	90		
M35/16 *	66		

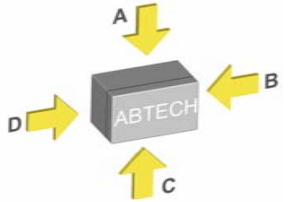
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

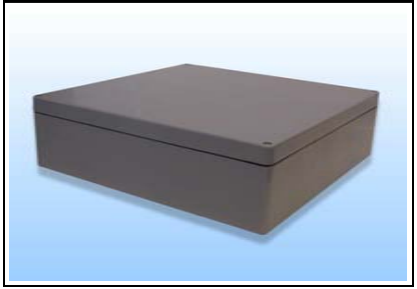
Entry Size	Side A-C	Side B-D
M16	30	24
M20	18	16
M25	14	10
M32	6	5
M40	5	4

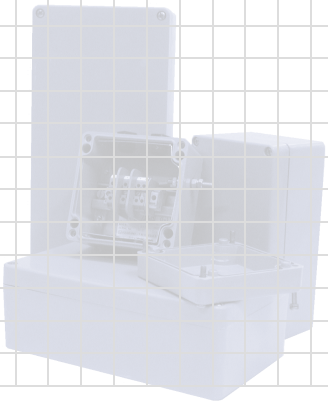
Drilling Envelope Size

Side A-C	352 x 89mm
Side B-D	327 x 84mm



Example





3

BPGA

Glass Reinforced Polyester Junction Boxes

Further details on this range of enclosures can be found at;

www.ab-tech.co.uk/bpga.htm

Glass Reinforced Polyester Junction Boxes

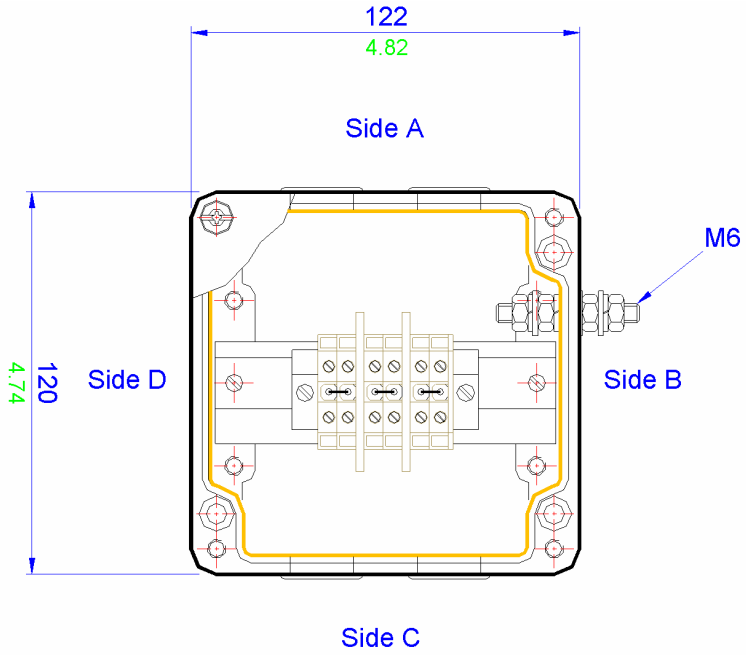
The ABTECH BPGA range comprises of three types of BPG enclosure in two different sizes. These enclosures are available pre-assembled and are readily available from stock. The BPGA enclosures are ideal for a range of uses such as lighting, power and instrument junction boxes.

The enclosures come equipped with terminals as shown in the specification table for each individual box, copper earth continuity plate and are also fitted with a brass M6 internal/external earth stud.

Each enclosure comes pre-drilled with four M20 tapped cable entries and is supplied with EEx'e' certified blanking plugs. The BPGA range of enclosures are also ATEX certified EEx'e' and are suitable for use in Category 2/Zone 1 and Category 3/ Zone 2 areas according to EN 60079-14 with a working ambient temperature of between -20℃ and +40℃ (-4℉ to 104℉).

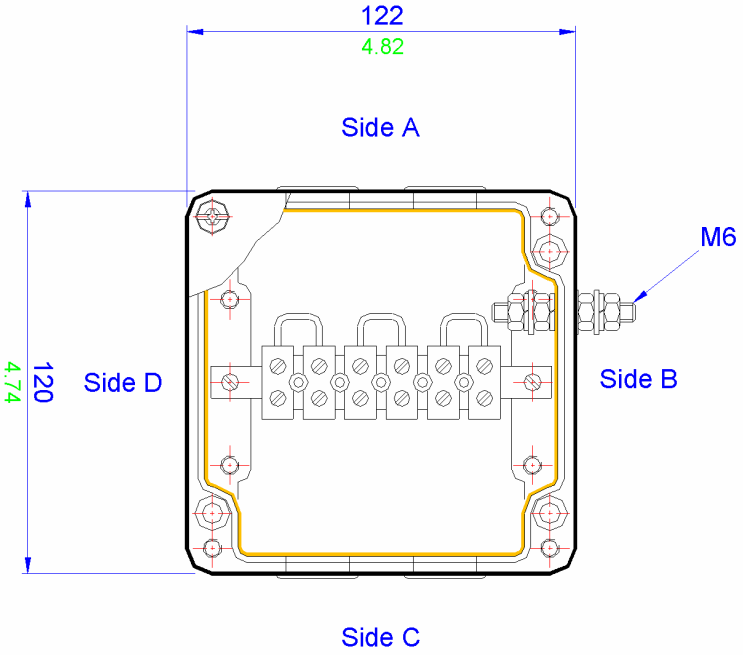
These enclosures are manufactured in impact resistant glass-reinforced polyester which has an ingress protection rating of IP66/67 and are Shell/ERA deluge tested.

BPGA 120 Specifications	
Width	122mm
Length	90mm
Height	120mm
Material	Glass Reinforced Polyester (RAL7001 grey)
Blanking Plugs	4 off (EEx'e' rated)
Terminals	6 x SAK 2.5 (linked in pairs)
IP Rating	66/67
Internal/External Brass M6 Earth Stud	Yes
Earth Continuity Plate	Yes
Temperature	-20ºC to +40ºC (-4℉ to 104℉) (standard neoprene gasket)
Deluge Tested	DTS-01
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA & UL) (class 1 division 2)
Cable Entries	4 x M20 (2 x Side A, 2 x Side C)
Power Rating	9.378W



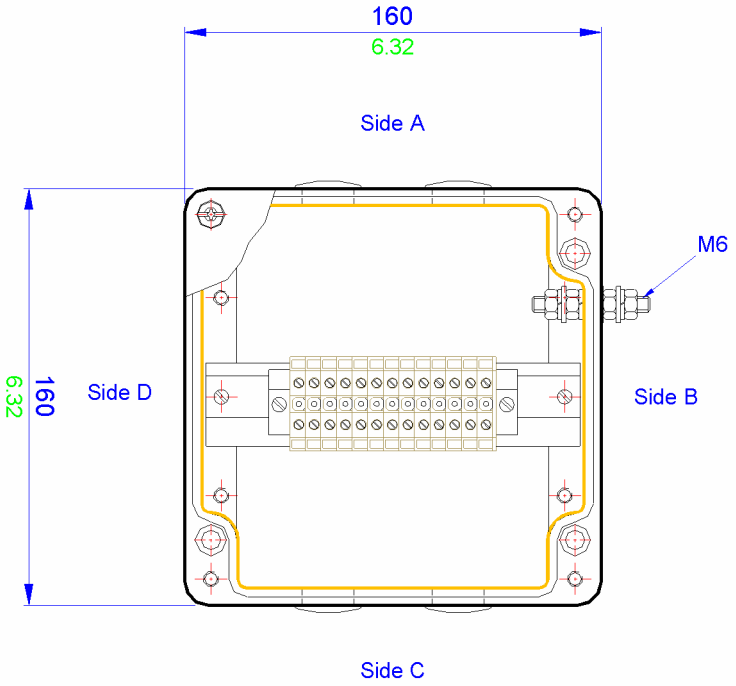
All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

BPGA 125 Specifications	
Width	122mm
Length	90mm
Height	120mm
Material	Glass Reinforced Polyester (RAL7001 grey)
Blanking Plugs	3 off (EEx'e' rated)
Terminals	1 x MK6 / 6 way (linked in pairs)
IP Rating	66/67
Internal/External Brass M6 Earth Stud	Yes
Earth Continuity Plate	Yes
Temperature	-20ºC to +40ºC (-4℉ to 104℉) (standard neoprene gasket)
Deluge Tested	DTS-01
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA & UL) (class 1 division 2)
Cable Entries	4 x M20 (2 x Side A, 2 x Side C)
Power Rating	9.378W

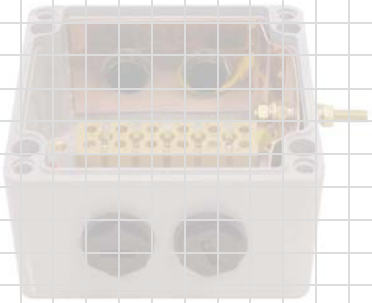


All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

BPGA 160 Specifications	
Width	160mm
Length	90mm
Height	160mm
Material	Glass Reinforced Polyester (RAL7001 grey)
Blanking Plugs	4 off (EEx'e' rated)
Terminals	13 x SAK 2.5
IP Rating	66/67
Internal/External Brass M6 Earth Stud	Yes
Earth Continuity Plate	Yes
Temperature	-20ºC to +40ºC (-4℉ to 104℉) (standard neoprene gasket)
Deluge Tested	DTS-01
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA & UL) (class 1 division 2)
Cable Entries	4 x M20 (2 x Side A, 2 x Side C)
Power Rating	10.348W



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)



4

ZAG

Die-Cast Aluminium Enclosures

Further details on this range of enclosures can be found at;

www.ab-tech.co.uk/zag.htm

Die-cast Aluminium Enclosures

The ZAG range of enclosures comprises of 19 different sizes of enclosures and is precision die cast in AL-Si 12 grade (LM24) aluminium alloy. This is considered to be the most suitable grade of aluminium for maximum corrosion resistance especially in salt laden atmospheres.
Additional optional protection methods such as alochrome, anodising and epoxy polyester painting coupled with the fitment of captive 316 grade stainless steel lid retaining screws further enhance the anti-corrosion properties of the enclosure.

The wall thickness is sufficient to allow tapped entry holes to be machined into the walls or the base of the enclosure.

Due to the enclosure's labyrinth seal system, similar to that of the BPG range of enclosures, whereby the seal is protected from external forces, the ZAG enclosure has excellent ingress protection qualities this means that the enclosure has been tested to and passed IP65/66/67.

The mounting holes, although contained within the profile of the enclosure, sit outside the seal and all the external fasteners and fixings are manufactured from 316 grade stainless steel to ensure the enclosures reliability. External stainless steel mounting feet are offered as an option.

The ZAG range has many features which lend itself to a whole host of applications including junction boxes, both industrial and hazardous area, and especially OEM applications, where the excellent machining qualities of aluminium come to the fore.

The ZAG range can be drilled and tapped with various thread forms and it readily accepts most paint finishes and colours.

The ZAG range is particularly suitable for the engraving of instructions and decals and this method provides excellent durability. Silk screen printing is also available.

All of this can be achieved even in relatively small batches which makes the ZAG range ideal for the small to medium size manufacturers who can achieve a custom enclosure economically.

Earthing of the enclosure can be accomplished by various means. Internal / external stainless steel earth studs which in turn can be connected to the terminal mounting rail or component plate and various rail mounted earth terminals or proprietary earth bars can be fitted inside the enclosure. Due to the fact that aluminium is an excellent conductor, earthing for cable glands is provided through contact with the enclosure wall with no further earthing required.

When fitted with a standard neoprene gasket the enclosure is suitable for ambient temperatures - 40ºC to + 80ºC (-40℉ to +176℉).

Alternatively, when fitted with an optional silicon gasket the temperature range can be increased to - 70ºC to + 130ºC (-94℉ to +266℉).

The ZAG enclosures are suitable for use in hazardous areas and can be supplied with a number of certificates;

ATEX EEx'e' to BS EN 50019 (zone 1 & 2) EEx 'nA' to BS EN 50021 (zone 2) and NEMA 4x (CSA, UL & FM class 1, division 2).

The ZAG range can also be supplied fitted with any component approved terminal to apparatus level or can be supplied empty as component approved for the clients own certification requirements.

Further information on enclosure certification can be found in Section 9 of this catalogue.

ZAG Range Features

- Wide Operating Temperature (- 70ºC to +130ºC) (-94℉ to +266℉)
- Ingress Protection up to IP67
- Painted and Unpainted versions
- Impact Resistant > 7 Nm
- Corrosion Resistant
- Can be drilled and tapped to accommodate most thread forms (NPT for example)
- Certification for use in Zone 1 and 2
- UL, CSA, ATEX, FM, InMetro and GOST Approvals
- Ideal for Petrochemical and Marine applications

Accessories and Options

The following table is a list of the available accessories suitable for a particular size of ZAG enclosure. Care should be taken when ordering accessories for use with enclosures intended for hazardous areas to ensure that compliance with certification is retained.

Part Number	Width (mm)	Length (mm)	Depth (mm)	**UP** - Unpainted	**EX** - Ex Certified (see note 1)	**AL** - Alochromed	**ES** - Earth Stud	**AS** - Allen Head Fixing Screws	**TP** - Tamper Proof Screws	**EH** - External Hinges	**MP** - Component Mounting Plate	**MF** - External Mounting Feet	**EB** - Internal Earthing Bar	**SG** - Silicone Gasket (see note 2)	**MR** - DIN Standard Mounting Rail	**RF** - RFI Protection (see note 3)
ZAG1	50	45	30	✓	✗	✓	✗	✓	✓	✗	✗	✗	✗	✓	✗	✓
ZAG2	58	64	34	✓	✓	✗	✗	✓	✓	✗	✓	✗	✗	✓	✗	✓
ZAG3	98	64	34	✓	✓	✓	✓	✓	✓	✗	✓	✗	✗	✓	✗	✓
ZAG4	150	64	34	✓	✓	✓	✓	✓	✓	✗	✓	✓	✗	✓	✗	✓
ZAG5	75	80	57	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓
ZAG6	125	80	57	✓	✓	✗	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓
ZAG7	175	80	57	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓
ZAG8	250	80	56	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓
ZAG9	122	120	80	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZAG9/9	122	120	90	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZAG10	220	120	80	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZAG10/9	220	120	90	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZAG11	160	160	90	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZAG12	260	160	90	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZAG13	360	160	90	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZAG14	560	160	90	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZAG15	202	230	110	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZAG16	330	230	110	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZAG21	120	360	80	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

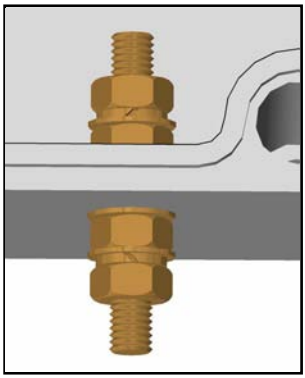
Ordering Example;

ZAG10 UP AS SG

(ZAG 10 unpainted, Allen Head Fixing Screws and Silicone Lid Gasket)

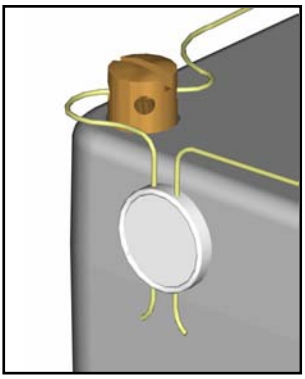
1. EEx'e' certification may be component or apparatus certified - please specify your requirements.
2. Silicone gasket increases temperature rating (-70ºC to +130ºC) (-94℉ to +266℉).
3. Radio Frequency Interference (RFI) gasket may reduce IP rating. Enclosure may also be internally coated with RFI material.

Unpainted (raw) finish

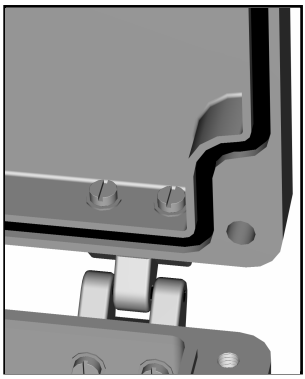


Earth Stud
(either brass or stainless steel)

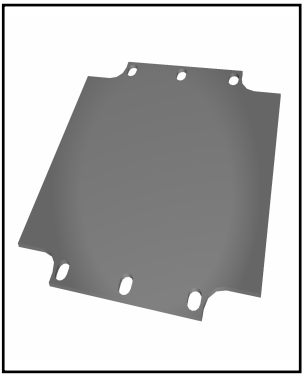
Allen Head fixing screws
(grade 316)



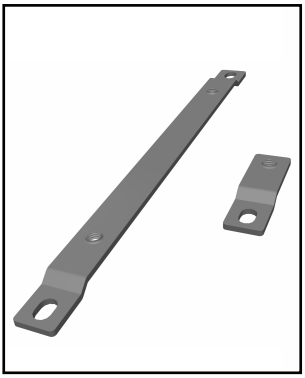
Tamper-proof screws



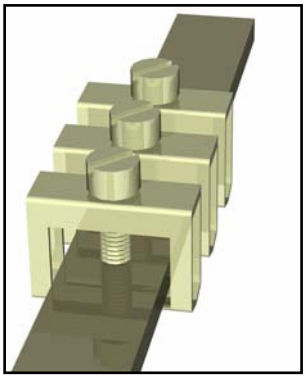
External hinges



Component mounting plate
(tufnol as standard, steel an option)



External mounting feet
(stainless steel 316)

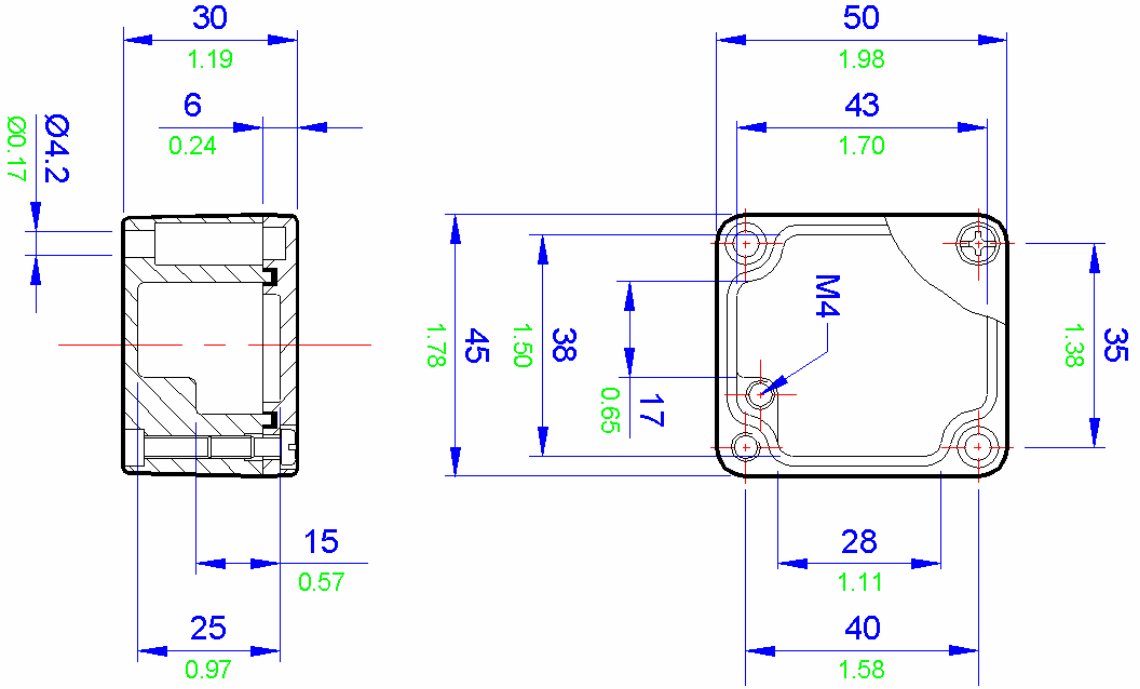


Internal Earthing bar
(can be fitted with clamps)

DIN standard mounting rail
(TS15, TS32 or TS35)

We can also supply cable glands, stopping plugs, breather drains and continuity plates. Please contact for further details.

ZAG 1 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZAG 1 Specifications

Width	50mm
Length	45mm
Depth	30mm
Material	Precision Cast AlSi12 (LM24) aluminium alloy - unpainted
	Precision Cast AlSi12 (LM24) aluminium alloy – painted epoxy polyester RAL7001 grey
Weight	75g
IP Rating	65
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	N/A
Power Rating	N/A

Terminal Populations

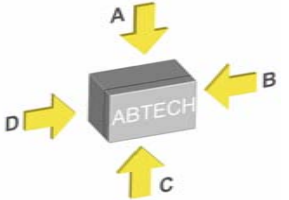
Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	0	280-992	0
BK6 (6 way)	0	280-999	0
BK12 (12 way)	0	281-691	0
MK6/3	0	281-992	0
MK6/4	0	281-993	0
MK6/6	0	282-691	0
SAK2.5	0	284-691	0
SAK4	0	283-691	0
SAK6N	0	285-691	0
SAK10	0	280-998	0
SAK16	0	281-998	0
SAK35	0	264-120	6
Entrelec		264-220	3
MA2.5/5	0	264-132 (2)	0
M4/6	0	264-134 (4)	0
M6/8	0	262-132 (2)	0
M10/10	0	262-134 (4)	0
M16/12	0		
M35/16	0		

Cable Gland Entry Matrix

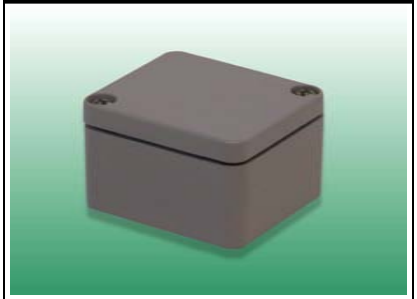
Entry Size	Side A-C	Side B-D
M16	0	0
M20	0	0
M25	0	0
M32	0	0
M40	0	0

Drilling Envelope Size

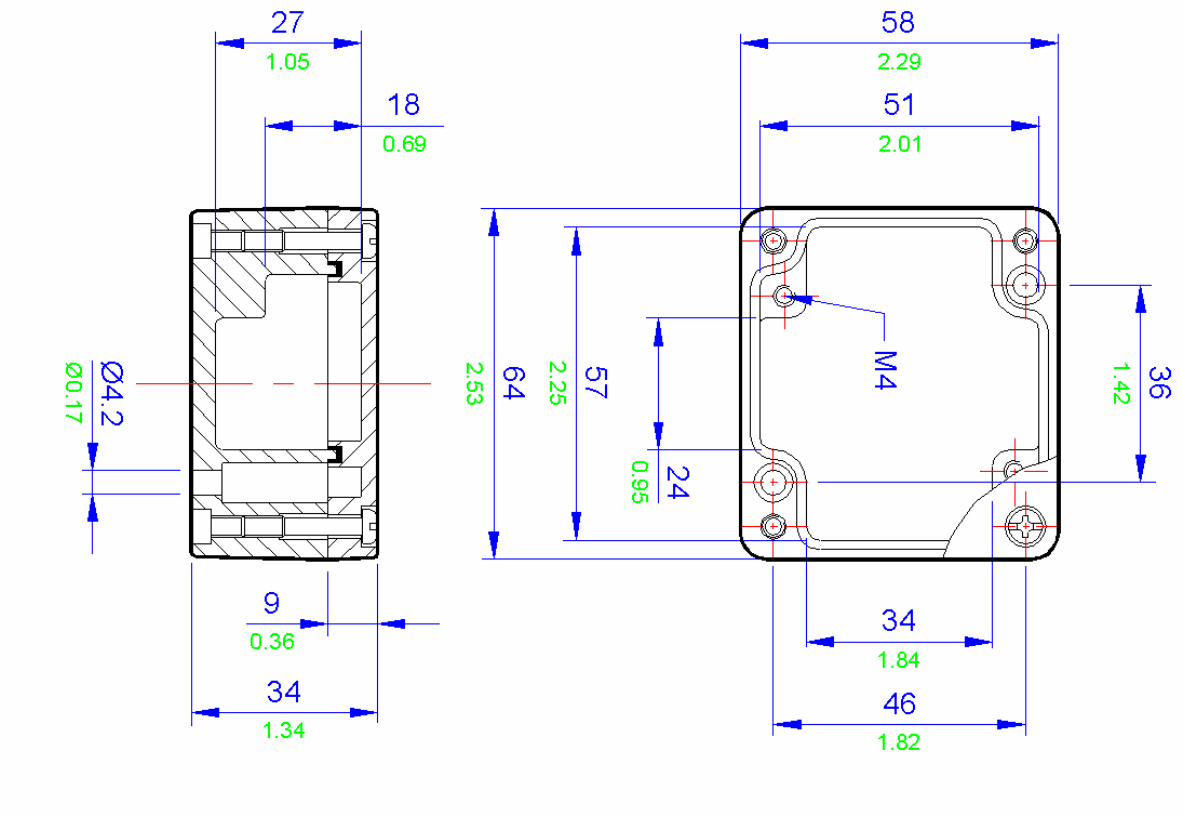
Side A-C	24 x 21mm
Side B-D	16 x 21mm



Example



ZAG 2 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZAG 2 Specifications

Width	58mm
Length	64mm
Depth	34mm
Material	Precision Cast AlSi12 (LM24) aluminium alloy - unpainted
	Precision Cast AlSi12 (LM24) aluminium alloy – painted epoxy polyester RAL7001 grey
Weight	170g
IP Rating	65
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA, UL & FM (class 1 division 2)
Power Rating	0.900W

Terminal Populations

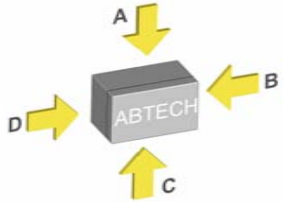
Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	1	280-992	0
BK6 (6 way)	0	280-999	0
BK12 (12 way)	0	281-691	0
MK6/ 3	1	281-992	0
MK6/4	0	281-993	0
MK6/6	0	282-691	0
SAK2.5	0	284-691	0
SAK4	0	283-691	0
SAK6N	0	285-691	0
SAK10	0	280-998	0
SAK16	0	281-998	0
SAK35	0	264-120	0
Entrelec		264-220	0
MA2.5/5	0	264-132 (2)	0
M4/6	0	264-134 (4)	0
M6/8	0	262-132 (2)	0
M10/10	0	262-134 (4)	0
M16/12	0		
M35/16	0		

Cable Gland Entry Matrix

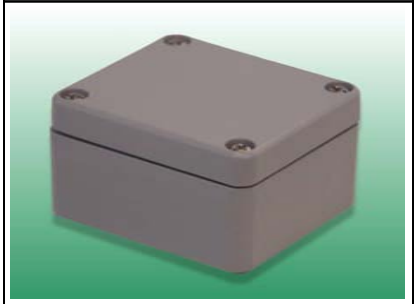
Entry Size	Side A-C	Side B-D
M16	0	0
M20	0	0
M25	0	0
M32	0	0
M40	0	0

Drilling Envelope Size

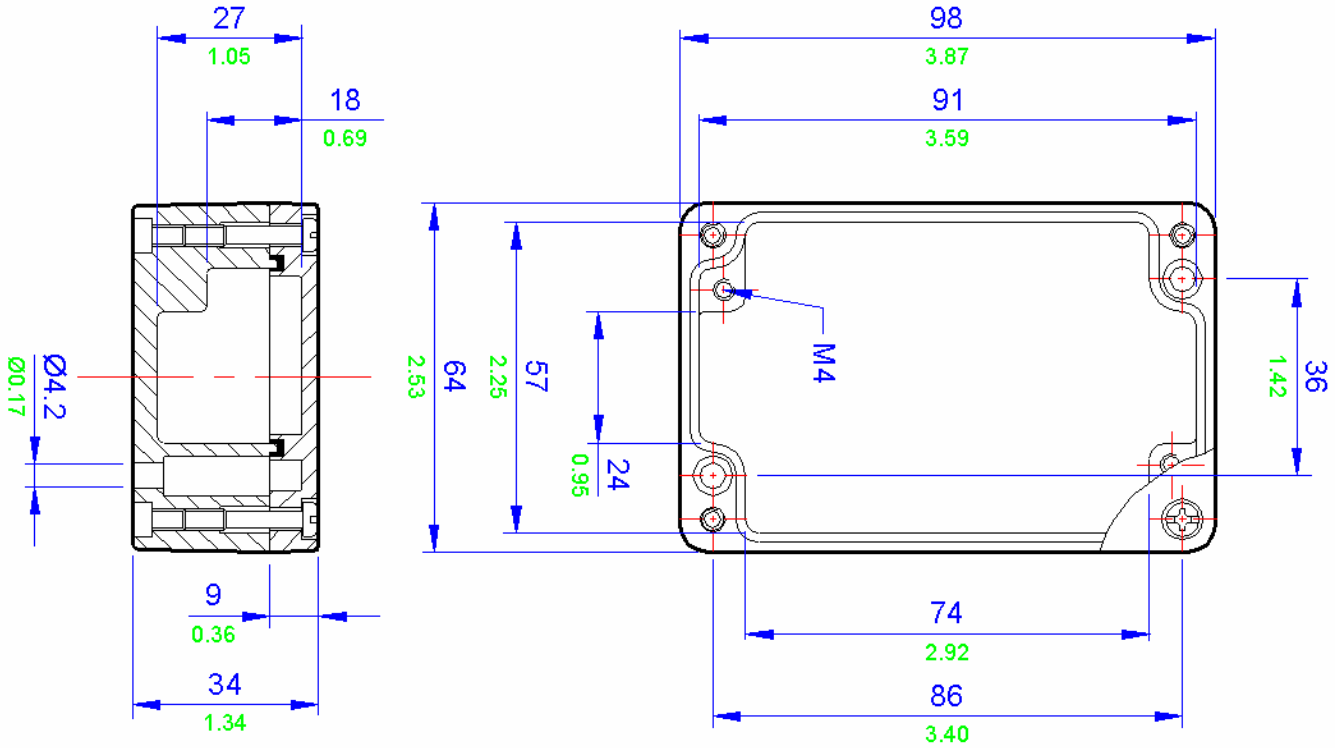
Side A-C	21 x 20mm
Side B-D	29 x 20mm



Example



ZAG 3 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZAG 3 Specifications

Width	98mm
Length	64mm
Depth	34mm
Material	Precision Cast AlSi12 (LM24) aluminium alloy - unpainted
	Precision Cast AlSi12 (LM24) aluminium alloy – painted epoxy polyester RAL7001 grey
Weight	220g
IP Rating	65
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA, UL & FM (class 1 division 2)
Power Rating	1.200w

Terminal Populations

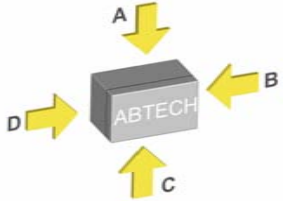
Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	1	280-992	0
BK6 (6 way)	1	280-999	0
BK12 (12 way)	0	281-691	0
MK6/3	1	281-992	0
MK6/4	1	281-993	0
MK6/6	1	282-691	0
SAK2.5	0	284-691	0
SAK4	0	283-691	0
SAK6N	0	285-691	0
SAK10	0	280-998	0
SAK16	0	281-998	0
SAK35	0	264-120	0
Entrelec		264-220	0
MA2.5/5	0	264-132 (2)	0
M4/6	0	264-134 (4)	0
M6/8	0	262-132 (2)	0
M10/10	0	262-134 (4)	0
M16/12	0		
M35/16	0		

Cable Gland Entry Matrix

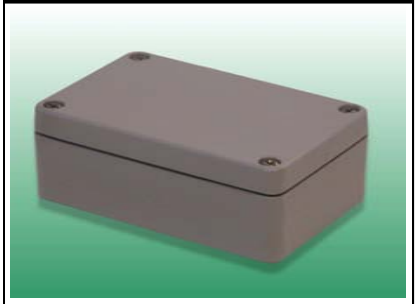
Entry Size	Side A-C	Side B-D
M16	0	0
M20	0	0
M25	0	0
M32	0	0
M40	0	0

Drilling Envelope Size

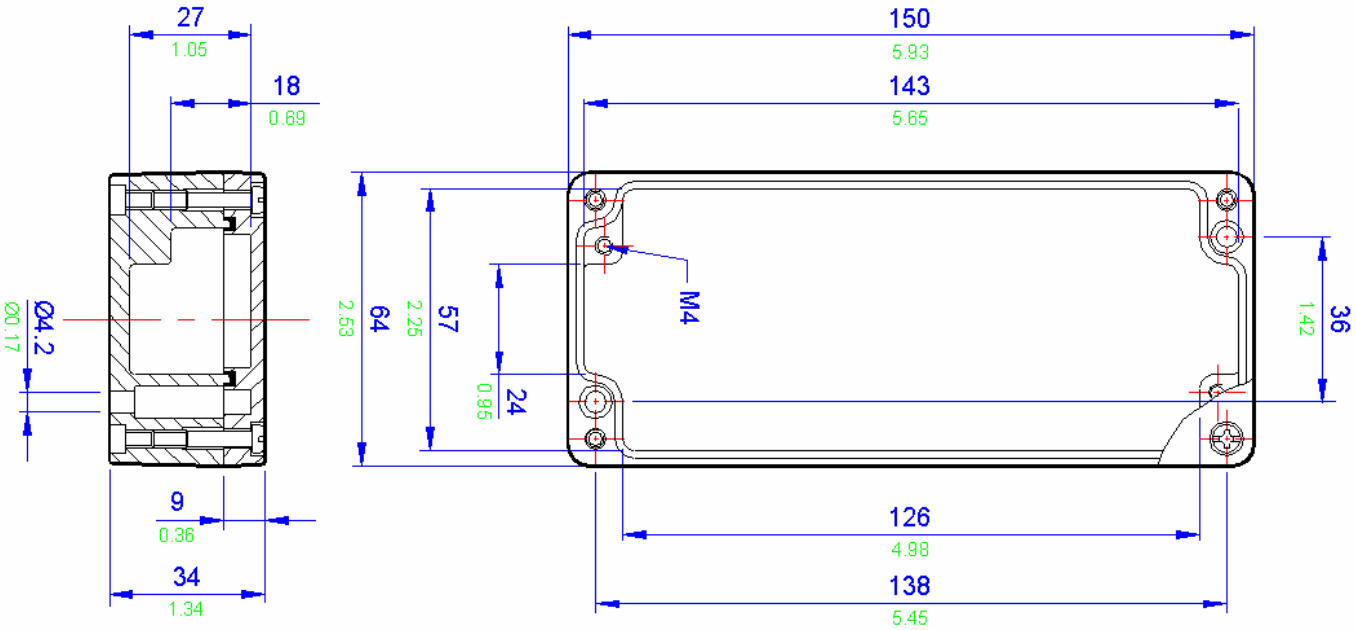
Side A-C	68 x 21mm
Side B-D	19 x 21mm



Example



ZAG 4 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZAG 4 Specifications

Width	150mm
Length	64mm
Depth	34mm
Material	Precision Cast AlSi12 (LM24) aluminium alloy - unpainted
	Precision Cast AlSi12 (LM24) aluminium alloy – painted epoxy polyester RAL7001 grey
Weight	330g
IP Rating	67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA, UL & FM (class 1 division 2)
Power Rating	1.700w

Terminal Populations

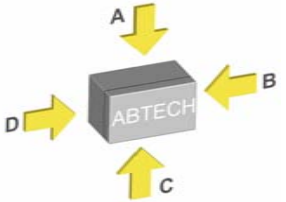
Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	3	280-992	0
BK6 (6 way)	2	280-999	0
BK12 (12 way)	1	281-691	0
MK6/3	3	281-992	0
MK6/4	2	281-993	0
MK6/6	1	282-691	0
SAK2.5	0	284-691	0
SAK4	0	283-691	0
SAK6N	0	285-691	0
SAK10	0	280-998	0
SAK16	0	281-998	0
SAK35	0	264-120	0
Entrelec		264-220	0
MA2.5/5	0	264-132 (2)	0
M4/6	0	264-134 (4)	0
M6/8	0	262-132 (2)	0
M10/10	0	262-134 (4)	0
M16/12	0		
M35/16	0		

Cable Gland Entry Matrix

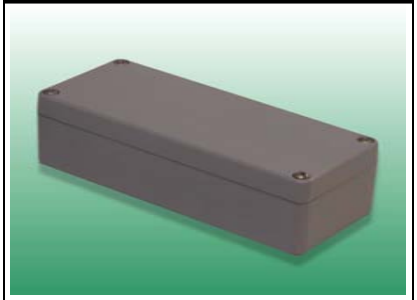
Entry Size	Side A-C	Side B-D
M16	0	0
M20	0	0
M25	0	0
M32	0	0
M40	0	0

Drilling Envelope Size

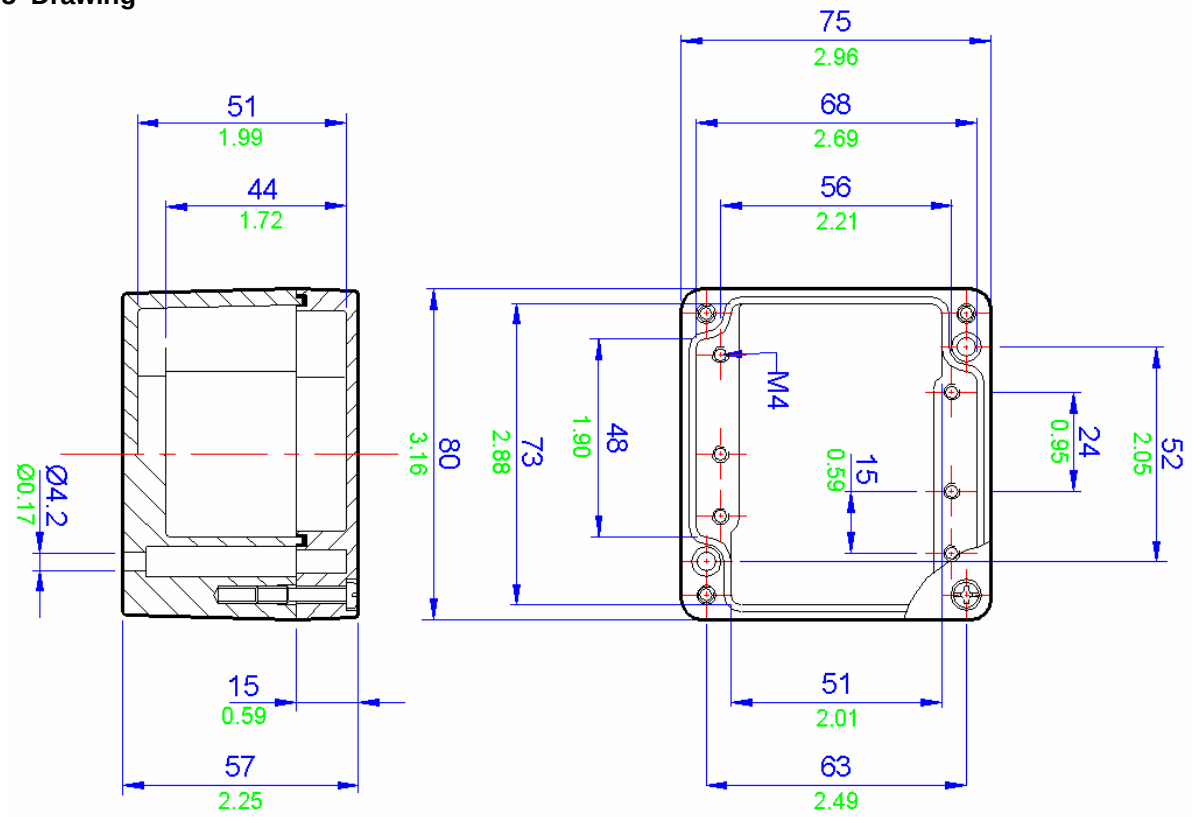
Side A-C	120 x 22mm
Side B-D	20 x 22mm



Example



ZAG 5 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZAG 5 Specifications

Width	75mm
Length	80mm
Depth	57mm
Material	Precision Cast AlSi12 (LM24) aluminium alloy - unpainted
	Precision Cast AlSi12 (LM24) aluminium alloy – painted epoxy polyester RAL7001 grey
Weight	290g
IP Rating	67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA, UL & FM (class 1 division 2)
Power Rating	1.500w

Terminal Populations

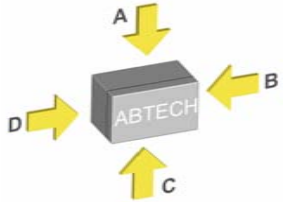
Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	1	280-992	0
BK6 (6 way)	0	280-999	0
BK12 (12 way)	0	281-691	0
MK6/3	1	281-992	0
MK6/4	1	281-993	0
MK6/6	0	282-691	0
SAK2.5	0	284-691	0
SAK4	0	283-691	0
SAK6N	0	285-691	0
SAK10	0	280-998	0
SAK16	0	281-998	0
SAK35	0	264-120	6
Entrelec		264-220	3
MA2.5/5	0	264-132 (2)	1
M4/6	0	264-134 (4)	0
M6/8	0	262-132 (2)	1
M10/10	0	262-134 (4)	0
M16/12	0		
M35/16	0		

Cable Gland Entry Matrix

Entry Size	Side A-C	Side B-D
M16	1	0
M20	0	0
M25	0	0
M32	0	0
M40	0	0

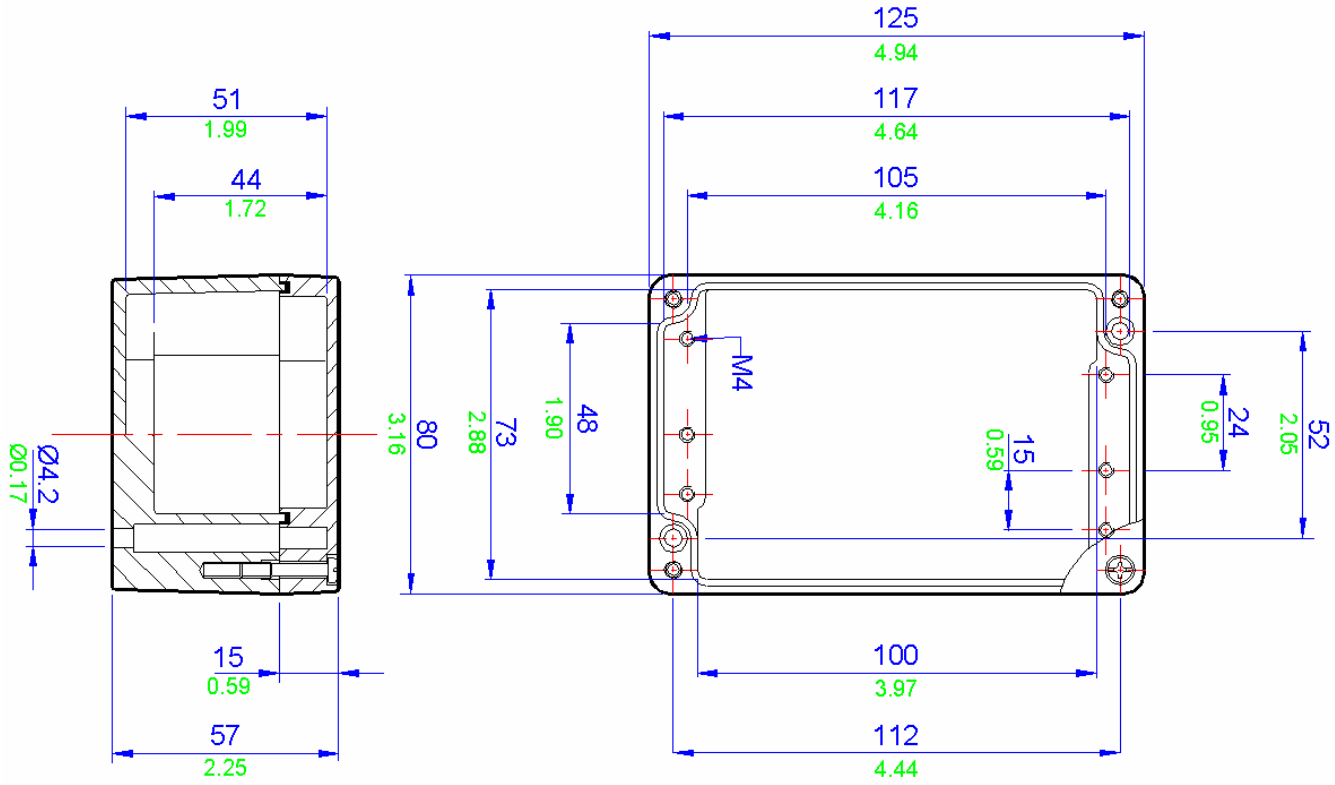
Drilling Envelope Size

Side A-C	41 x 37mm
Side B-D	39 x 31mm



Example

ZAG 6 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZAG 6 Specifications

Width	125mm
Length	80mm
Depth	57mm
Material	Precision Cast AlSi12 (LM24) aluminium alloy - unpainted
	Precision Cast AlSi12 (LM24) aluminium alloy – painted epoxy polyester RAL7001 grey
Weight	435g
IP Rating	67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA, UL & FM (class 1 division 2)
Power Rating	2.200w

Terminal Populations

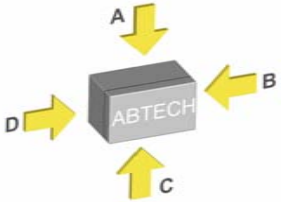
Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	2	280-992	0
BK6 (6 way)	1	280-999	0
BK12 (12 way)	1	281-691	0
MK6/3	2	281-992	0
MK6/4	1	281-993	0
MK6/6	1	282-691	0
SAK2.5	0	284-691	0
SAK4	0	283-691	0
SAK6N	0	285-691	0
SAK10	0	280-998	0
SAK16	0	281-998	0
SAK35	0	264-120	14
Entrelec		264-220	8
MA2.5/5	0	264-132 (2)	3
M4/6	0	264-134 (4)	2
M6/8	0	262-132 (2)	3
M10/10	0	262-134 (4)	2
M16/12	0		
M35/16	0		

Cable Gland Entry Matrix

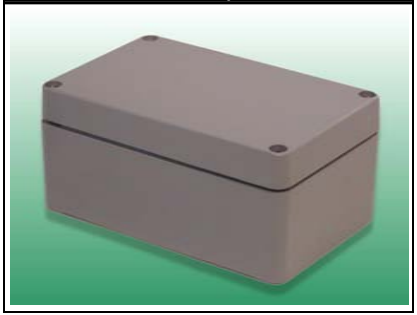
Entry Size	Side A-C	Side B-D
M16	2	0
M20	0	0
M25	0	0
M32	0	0
M40	0	0

Drilling Envelope Size

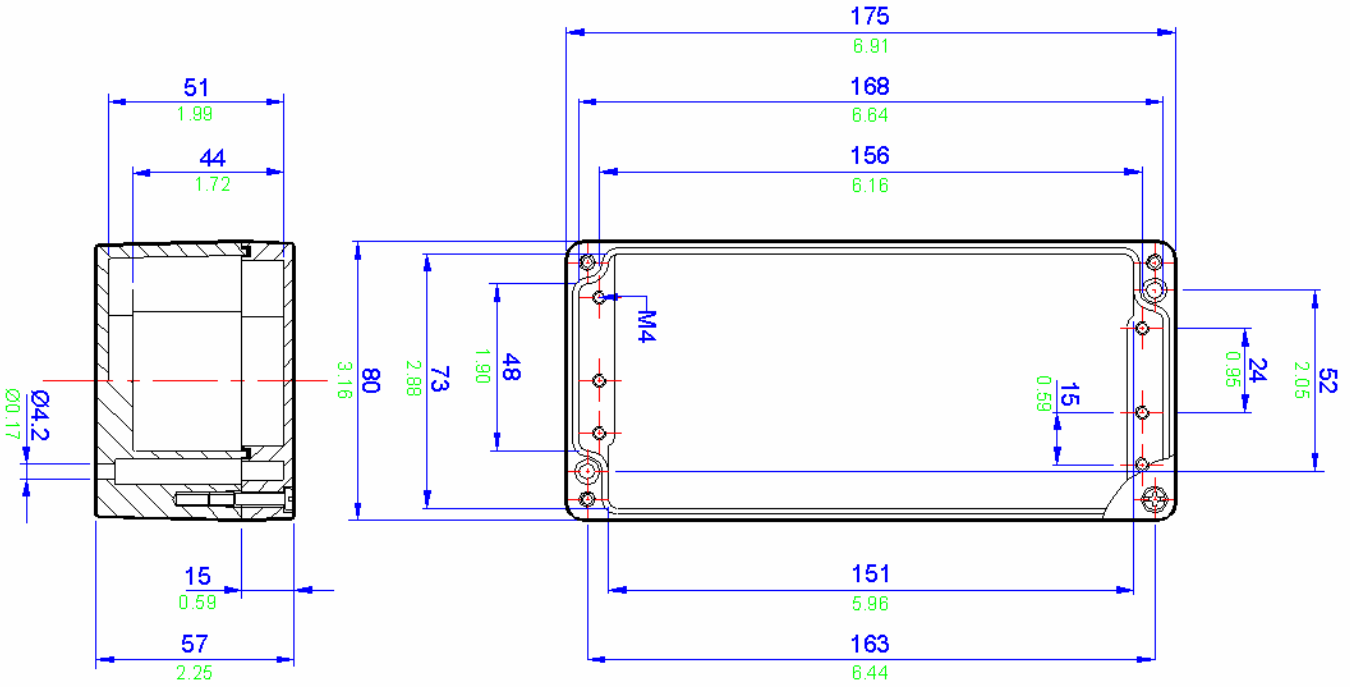
Side A-C	95 x 38mm
Side B-D	42 x 31mm



Example



ZAG 7 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZAG 7 Specifications

Width	175mm
Length	80mm
Depth	57mm
Material	Precision Cast AlSi12 (LM24) aluminium alloy - unpainted
	Precision Cast AlSi12 (LM24) aluminium alloy – painted epoxy polyester RAL7001 grey
Weight	540g
IP Rating	67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA, UL & FM (class 1 division 2)
Power Rating	2.900w

Terminal Populations

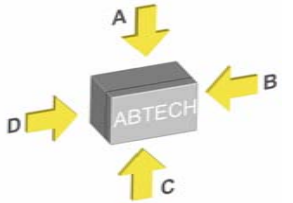
Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	4	280-992	0
BK6 (6 way)	3	280-999	0
BK12 (12 way)	1	281-691	0
MK6/3	3	281-992	0
MK6/4	2	281-993	0
MK6/6	1	282-691	0
SAK2.5	0	284-691	0
SAK4	0	283-691	0
SAK6N	0	285-691	0
SAK10	0	280-998	0
SAK16	0	281-998	0
SAK35	0	264-120	23
Entrelec		264-220	13
MA2.5/5	0	264-132 (2)	4
M4/6	0	264-134 (4)	3
M6/8	0	262-132 (2)	4
M10/10	0	262-134 (4)	3
M16/12	0		
M35/16	0		

Cable Gland Entry Matrix

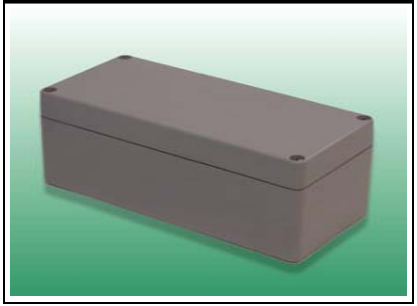
Entry Size	Side A-C	Side B-D
M16	4	0
M20	0	0
M25	0	0
M32	0	0
M40	0	0

Drilling Envelope Size

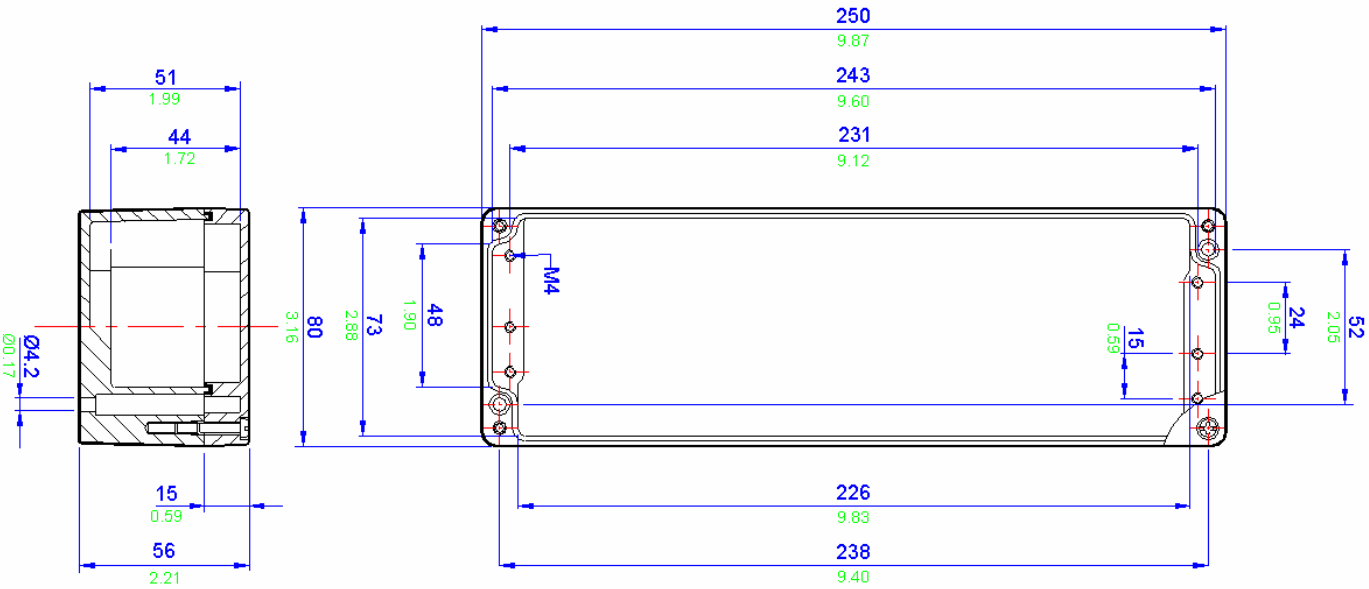
Side A-C	141 x 37mm
Side B-D	39 x 31mm



Example



ZAG 8 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZAG 8 Specifications

Width	250mm
Length	80mm
Depth	56mm
Material	Precision Cast AlSi12 (LM24) aluminium alloy - unpainted
	Precision Cast AlSi12 (LM24) aluminium alloy – painted epoxy polyester RAL7001 grey
Weight	710g
IP Rating	65
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA, UL & FM (class 1 division 2)
Power Rating	2.900w

Terminal Populations

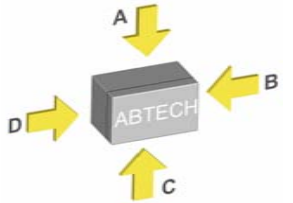
Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	6	280-992	0
BK6 (6 way)	4	280-999	0
BK12 (12 way)	2	281-691	0
MK6/3	4	281-992	0
MK6/4	4	281-993	0
MK6/6	3	282-691	0
SAK2.5	0	284-691	0
SAK4	0	283-691	0
SAK6N	0	285-691	0
SAK10	0	280-998	0
SAK16	0	281-998	0
SAK35	0	264-120	35
Entrelec		264-220	21
MA2.5/5	0	264-132 (2)	7
M4/6	0	264-134 (4)	5
M6/8	0	262-132 (2)	7
M10/10	0	262-134 (4)	5
M16/12	0		
M35/16	0		

Cable Gland Entry Matrix

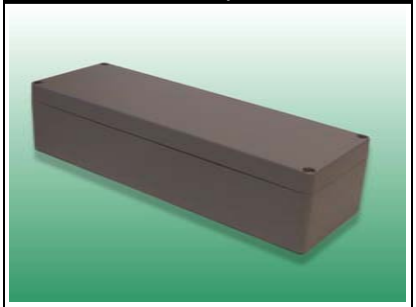
Entry Size	Side A-C	Side B-D
M16	6	0
M20	0	0
M25	0	0
M32	0	0
M40	0	0

Drilling Envelope Size

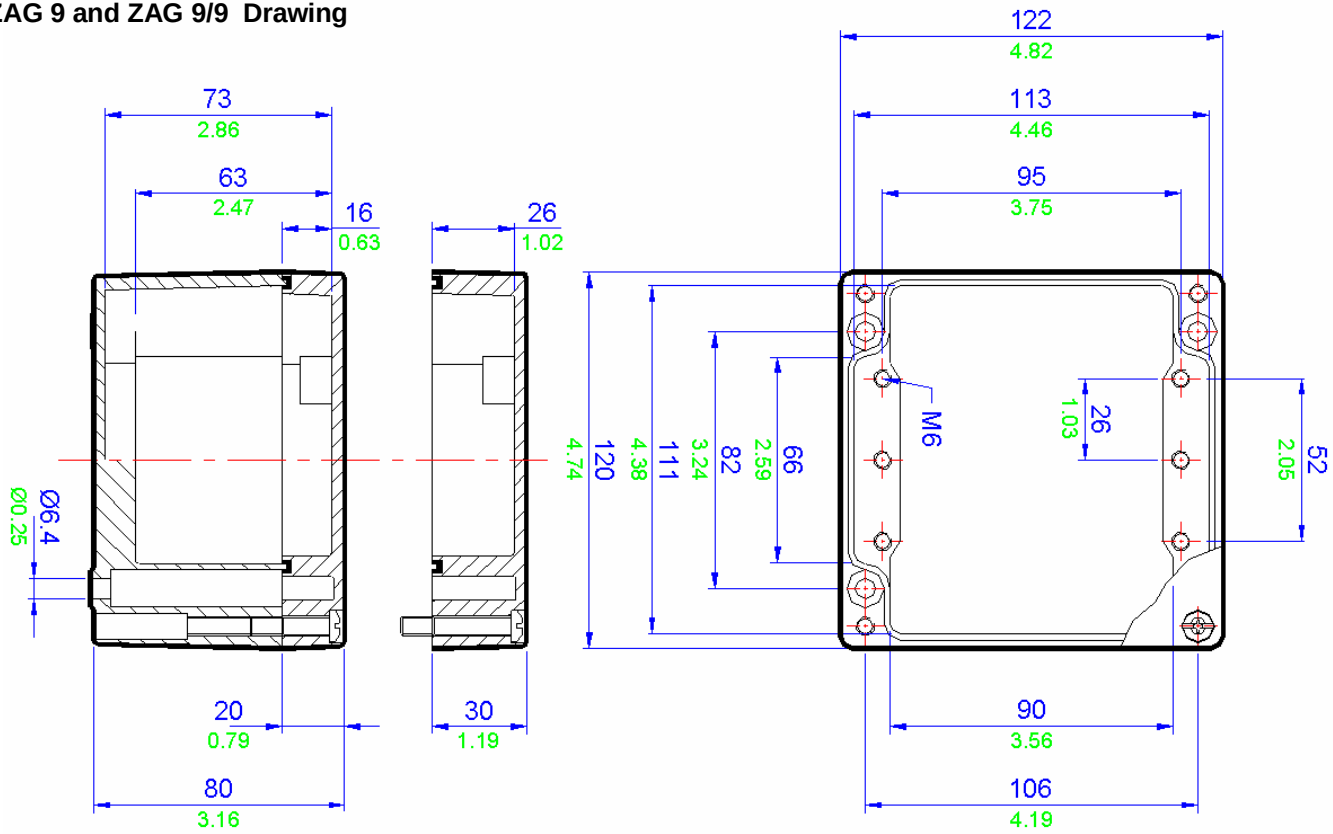
Side A-C	222 x 35mm
Side B-D	31 x 42mm



Example



ZAG 9 and ZAG 9/9 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZAG 9 ZAG 9/9 Specifications

Width	122mm
Length	120mm
Depth	80mm (ZAG 9) or 90mm (ZAG9/9)
Material	Precision Cast AlSi12 (LM24) aluminium alloy - unpainted
	Precision Cast AlSi12 (LM24) aluminium alloy – painted epoxy polyester RAL7001 grey
Weight	940g or 965g
IP Rating	67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA, UL & FM (class 1 division 2)
Power Rating	3.400w

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	2	280-992	15
BK6 (6 way)	2	280-999 *	15
BK12 (12 way)	1	281-691	13
MK6/3	1	281-992	13
MK6/4	1	281-993 *	13
MK6/6	1	282-691	10
SAK2.5	14	284-691 *	8
SAK4	13	283-691 *	6
SAK6N	10	285-691	0
SAK10 *	8	280-998	15
SAK16 *	7	281-998	13
SAK35 *	5	264-120	13
Entrelec		264-220	8
MA2.5/5	17	264-132 (2)	3
M4/6	14	264-134 (4)	2
M6/8	8	262-132 (2)	3
M10/10 *	8	262-134 (4)	2
M16/12 *	7		
M35/16 *	5		

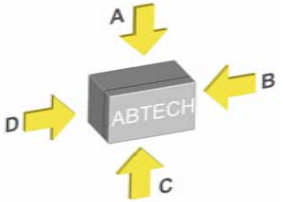
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

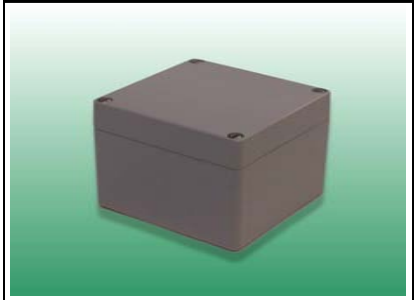
Entry Size	Side A-C	Side B-D
M16	2	1
M20	2	1
M25	1	0
M32	0	0
M40	0	0

Drilling Envelope Size

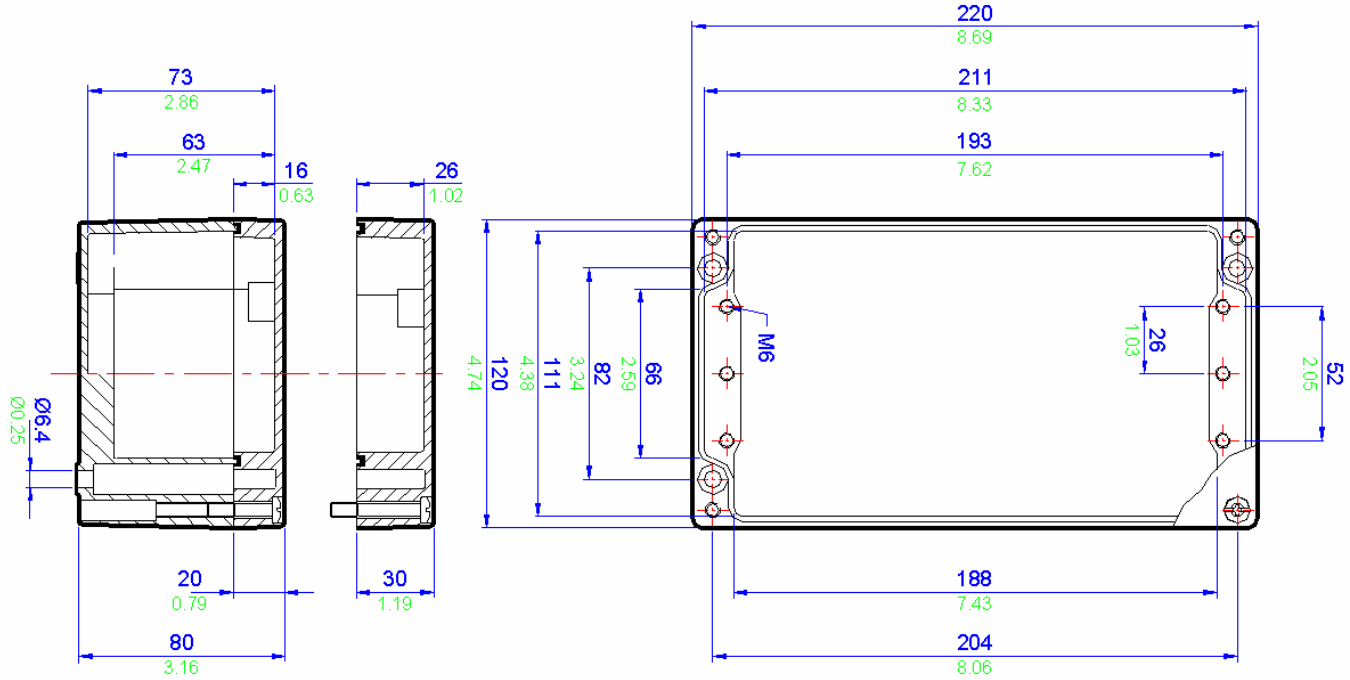
Side A-C	82 x 55mm
Side B-D	56 x 45mm



Example



ZAG 10 and ZAG 10/9 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZAG 10 and ZAG 10/9 Specifications

Width	220mm
Length	120mm
Depth	80mm (ZAG 10) or 90mm (ZAG 10/9)
Material	Precision Cast AlSi12 (LM24) aluminium alloy - unpainted
	Precision Cast AlSi12 (LM24) aluminium alloy – painted epoxy polyester RAL7001 grey
Weight	1410g or 1440g
IP Rating	67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA, UL & FM (class 1 division 2)
Power Rating	5.400w

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	5	280-992	34
BK6 (6 way)	3	280-999	34
BK12 (12 way)	2	281-691	29
MK6/3	5	281-992	29
MK6/4	4	281-993 *	29
MK6/6	2	282-691	22
SAK2.5	30	284-691 *	18
SAK4	28	283-691 *	15
SAK6N	22	285-691	0
SAK10 *	18	280-998	34
SAK16 *	15	281-998	29
SAK35 *	11	264-120	30
Entrelec		264-220	18
MA2.5/5	36	264-132 (2)	6
M4/6	30	264-134 (4)	4
M6/8	22	262-132 (2)	6
M10/10 *	18	262-134 (4)	4
M16/12 *	15		
M35/16 *	11		

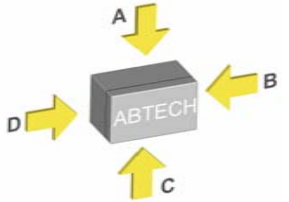
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

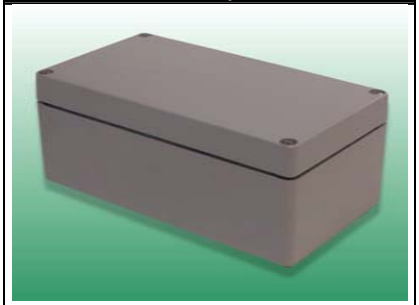
Entry Size	Side A-C	Side B-D
M16	6	1
M20	4	1
M25	3	1
M32	0	0
M40	0	0

Drilling Envelope Size

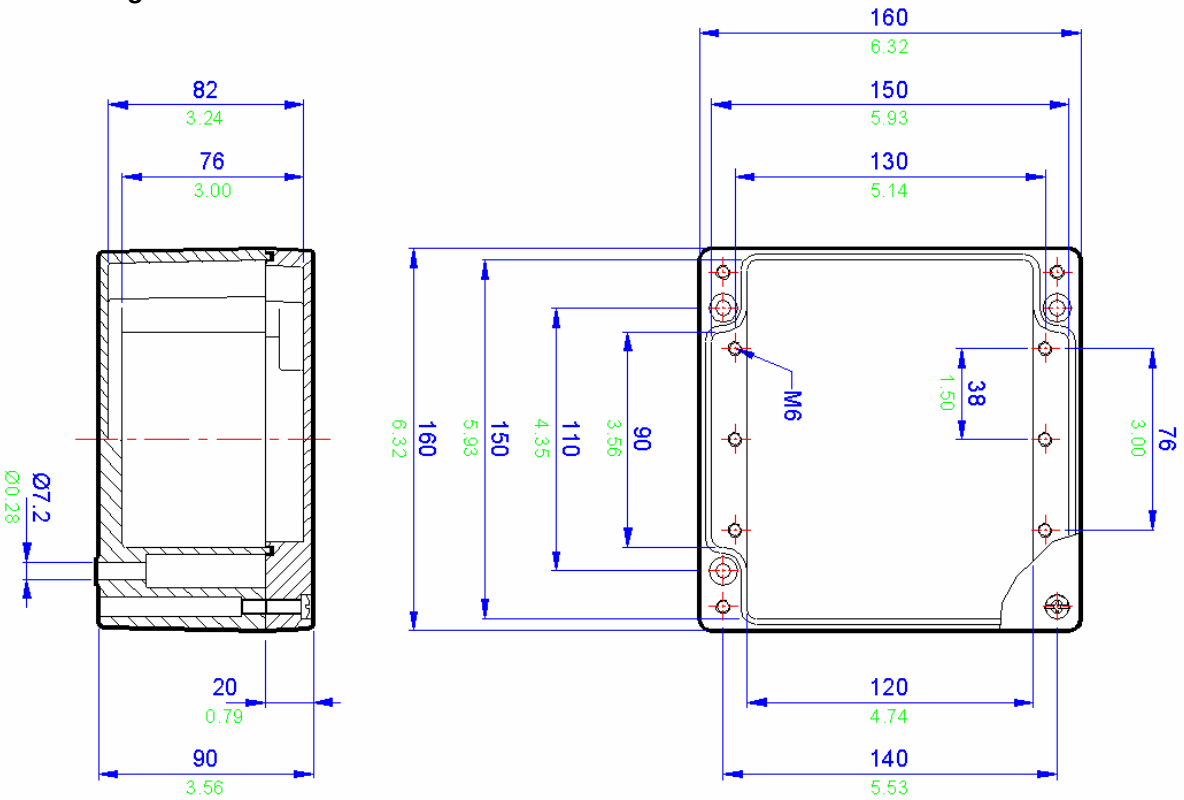
Side A-C	178 x 55mm
Side B-D	46 x 56mm



Example



ZAG 11 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZAG 11 Specifications

Width	160mm
Length	160mm
Depth	90mm
Material	Precision Cast AlSi12 (LM24) aluminium alloy - unpainted
	Precision Cast AlSi12 (LM24) aluminium alloy – painted epoxy polyester RAL7001 grey
Weight	1410g
IP Rating	67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA, UL & FM (class 1 division 2)
Power Rating	5.400w

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	3	280-992	22
BK6 (6 way)	2	280-999	22
BK12 (12 way)	1	281-691	19
MK6/3	3	281-992	19
MK6/4	2	281-993	19
MK6/6	1	282-691	15
SAK2.5	20	284-691 *	12
SAK4	19	283-691 *	10
SAK6N	15	285-691	0
SAK10 *	12	280-998	22
SAK16 *	10	281-998	19
SAK35 *	7	264-120	20
Entrelec		264-220	12
MA2.5/5	24	264-132 (2)	4
M4/6	20	264-134 (4)	3
M6/8	15	262-132 (2)	4
M10/10 *	12	262-134 (4)	2
M16/12 *	10		
M35/16 *	7		

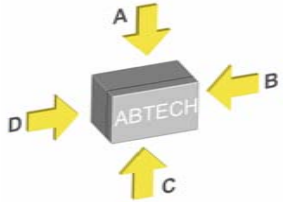
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

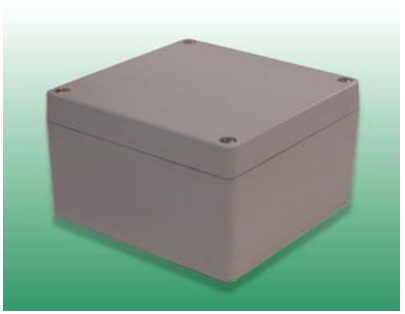
Entry Size	Side A-C	Side B-D
M16	6	2
M20	2	2
M25	2	1
M32	1	0
M40	0	0

Drilling Envelope Size

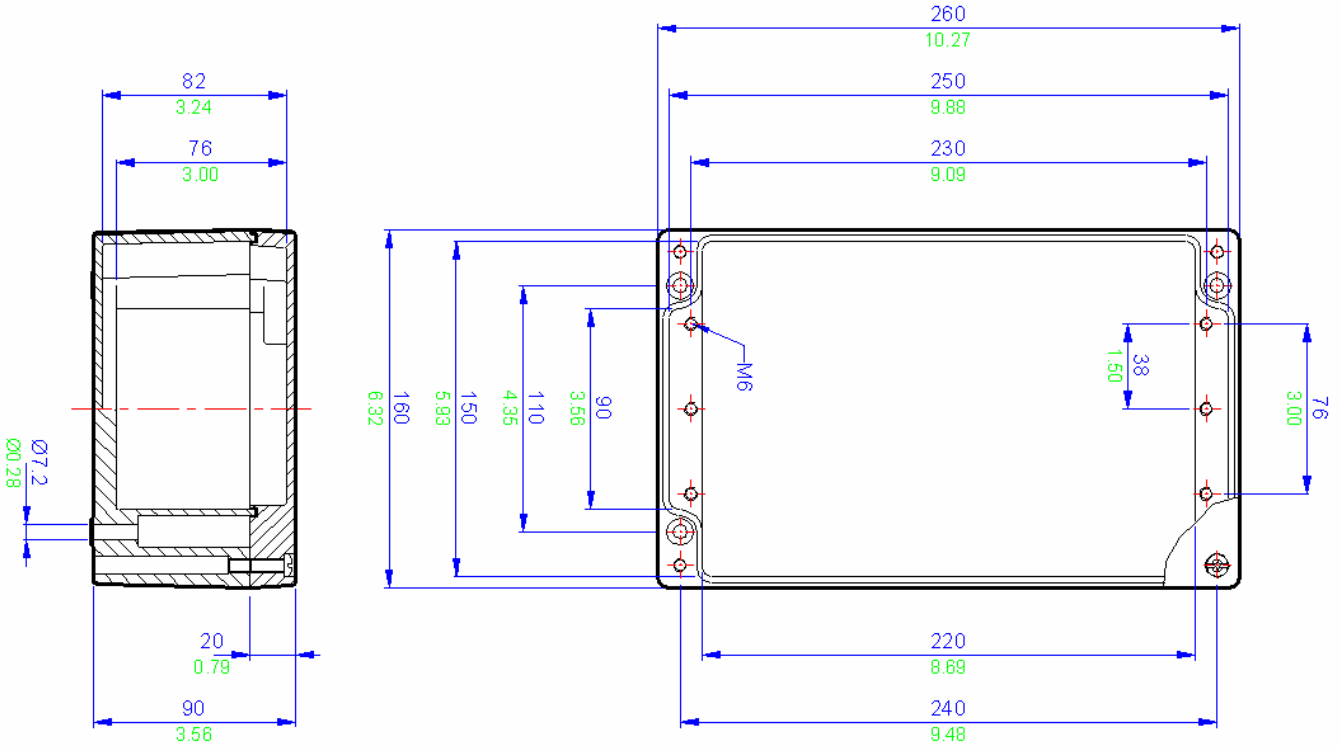
Side A-C	110 x 65mm
Side B-D	80 x 56mm



Example



ZAG 12 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZAG 12 Specifications

Width	260mm
Length	160mm
Depth	90mm
Material	Precision Cast AlSi12 (LM24) aluminium alloy - unpainted
	Precision Cast AlSi12 (LM24) aluminium alloy – painted epoxy polyester RAL7001 grey
Weight	1960g
IP Rating	67
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA, UL & FM (class 1 division 2)
Power Rating	8.000w

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	6	280-992	40
BK6 (6 way)	4	280-999	40
BK12 (12 way)	2	281-691	34
MK6/3	5	281-992	34
MK6/4	4	281-993	34
MK6/6	3	282-691	27
SAK2.5	36	284-691 *	21
SAK4	34	283-691 *	18
SAK6N	27	285-691	0
SAK10 *	22	280-998	40
SAK16 *	18	281-998	34
SAK35 *	14	264-120	36
Entrelec		264-220	21
MA2.5/5	43	264-132 (2)	7
M4/6	36	264-134 (4)	5
M6/8	27	262-132 (2)	7
M10/10 *	22	262-134 (4)	5
M16/12 *	18		
M35/16 *	14		

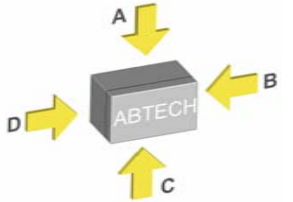
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

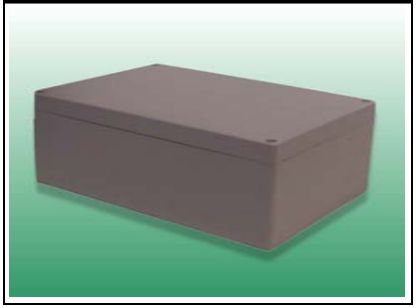
Entry Size	Side A-C	Side B-D
M16	12	2
M20	6	2
M25	4	1
M32	3	0
M40	0	0

Drilling Envelope Size

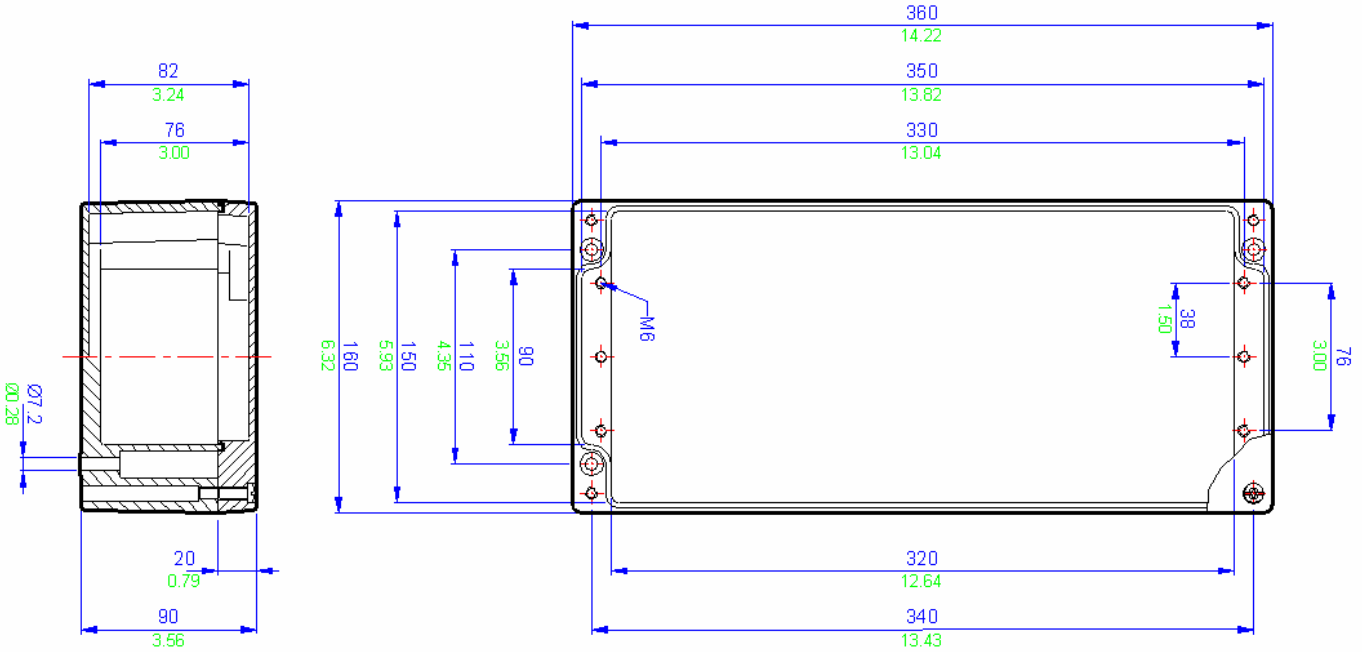
Side A-C	210 x 65mm
Side B-D	80 x 56mm



Example



ZAG 13 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZAG 13 Specifications

Width	360mm
Length	160mm
Depth	90mm
Material	Precision Cast AlSi12 (LM24) aluminium alloy - unpainted
	Precision Cast AlSi12 (LM24) aluminium alloy – painted epoxy polyester RAL7001 grey
Weight	2550g
IP Rating	65
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA, UL & FM (class 1 division 2)
Power Rating	10.400w

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	9	280-992	58
BK6 (6 way)	6	280-999	58
BK12 (12 way)	3	281-691	50
MK6/3	7	281-992	50
MK6/4	6	281-993	50
MK6/6	4	282-691	39
SAK2.5	52	284-691 *	31
SAK4	48	283-691 *	26
SAK6N	40	285-691	0
SAK10 *	32	280-998	58
SAK16 *	26	281-998	50
SAK35 *	20	264-120	52
Entrelec		264-220	31
MA2.5/5	63	264-132 (2)	11
M4/6	52	264-134 (4)	7
M6/8	40	262-132 (2)	10
M10/10 *	32	262-134 (4)	7
M16/12 *	26		
M35/16 *	20		

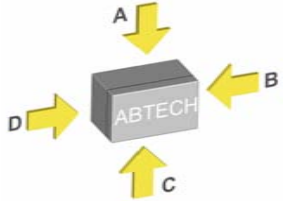
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

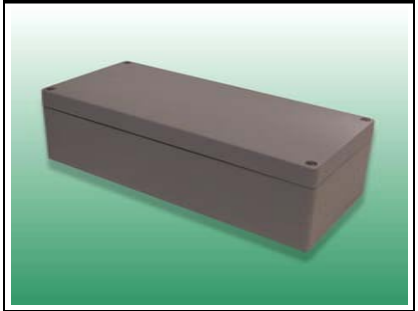
Entry Size	Side A-C	Side B-D
M16	18	2
M20	8	2
M25	6	1
M32	5	0
M40	0	0

Drilling Envelope Size

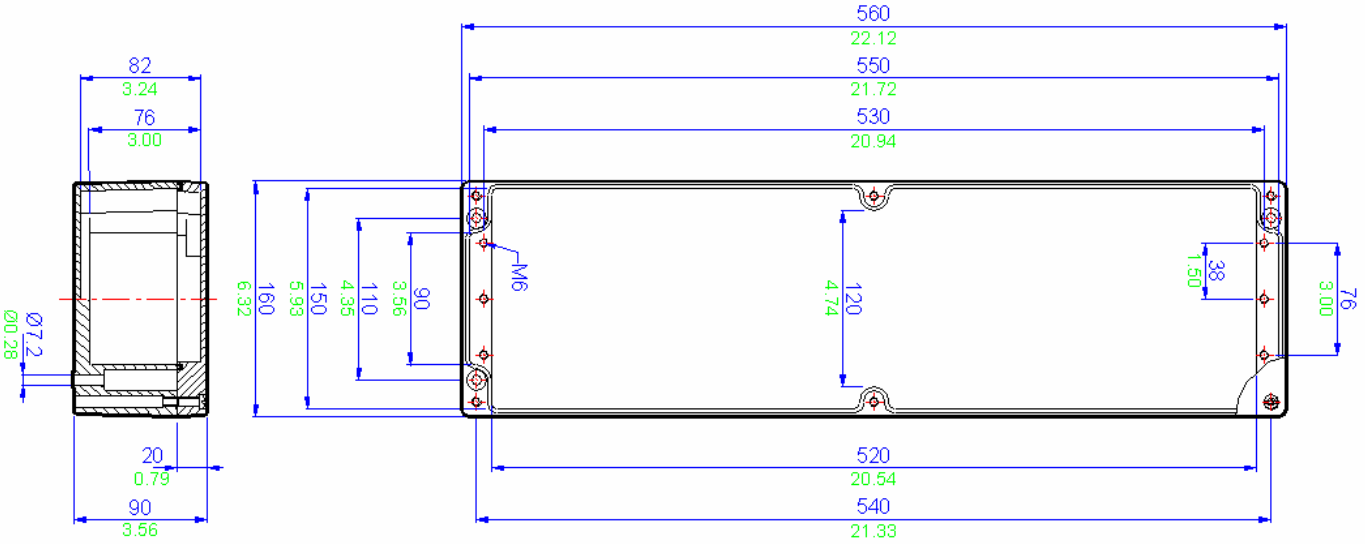
Side A-C	314x 65mm
Side B-D	80 x 56mm



Example



ZAG 14 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZAG 14 Specifications

Width	560mm
Length	160mm
Depth	90mm
Material	Precision Cast AlSi12 (LM24) aluminium alloy - unpainted
	Precision Cast AlSi12 (LM24) aluminium alloy – painted epoxy polyester RAL7001 grey
Weight	4310g
IP Rating	65
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA, UL & FM (class 1 division 2)
Power Rating	10.400w

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	14	280-992	96
BK6 (6 way)	10	280-999	96
BK12 (12 way)	5	281-691	82
MK6/3	12	281-992	82
MK6/4	11	281-993	82
MK6/6	7	282-691	63
SAK2.5	85	284-691 *	51
SAK4	78	283-691 *	42
SAK6N	64	285-691	0
SAK10 *	51	280-998	96
SAK16 *	43	281-998	82
SAK35 *	32	264-120	85
Entrelec		264-220	51
MA2.5/5	101	264-132 (2)	18
M4/6	85	264-134 (4)	12
M6/8	64	262-132 (2)	18
M10/10 *	51	262-134 (4)	12
M16/12 *	43		
M35/16 *	32		

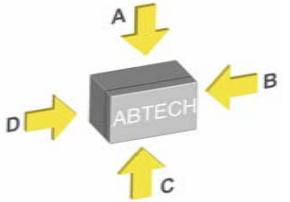
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

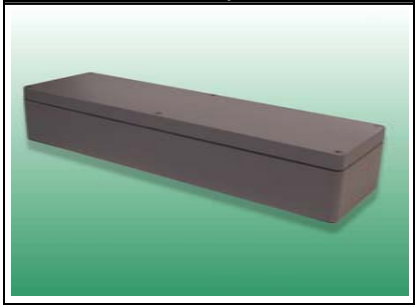
Entry Size	Side A-C	Side B-D
M16	28	2
M20	12	2
M25	10	1
M32	8	0
M40	0	0

Drilling Envelope Size

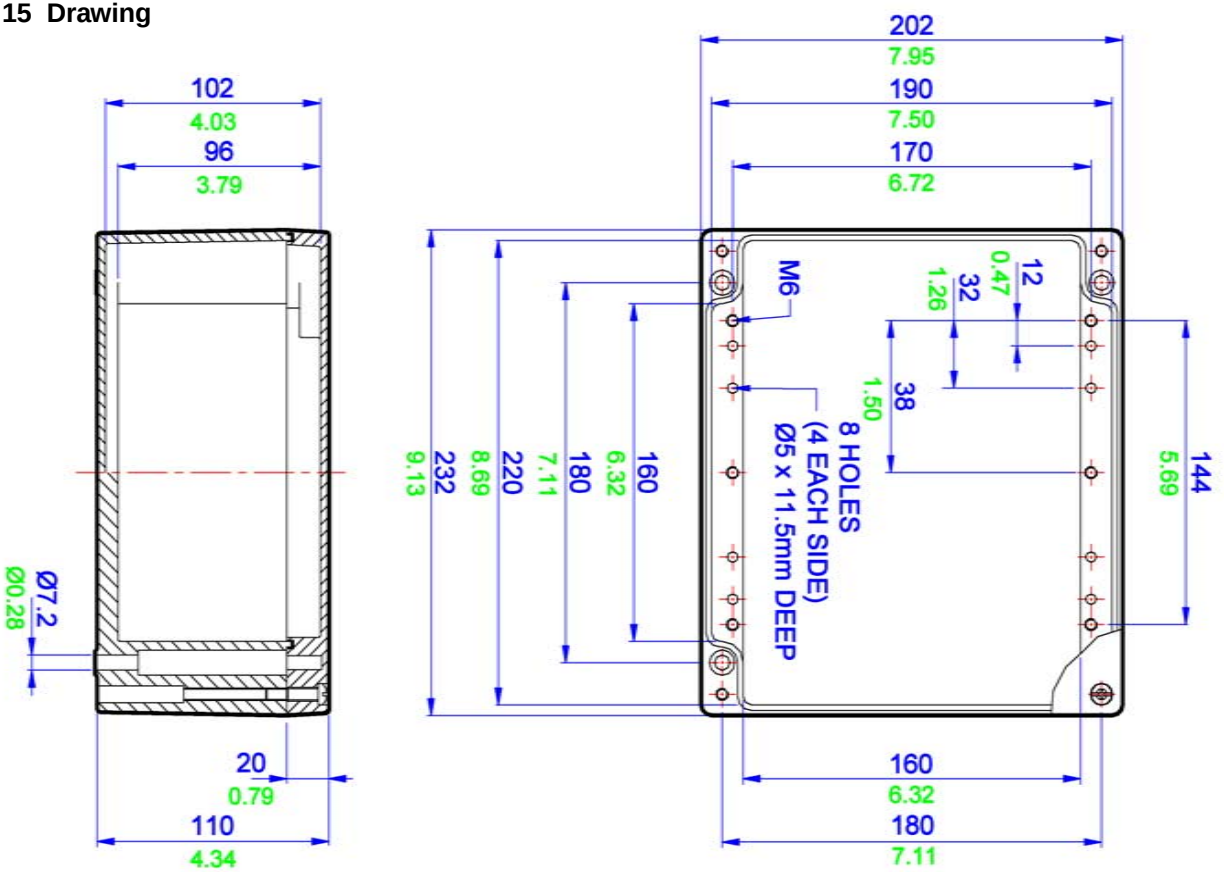
Side A-C	240 x 65mm (x2)
Side B-D	56 x 80mm



Example



ZAG 15 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZAG 15 Specifications

Width	202mm
Length	230mm
Depth	110mm
Material	Precision Cast AlSi12 (LM24) aluminium alloy - unpainted
	Precision Cast AlSi12 (LM24) aluminium alloy – painted epoxy polyester RAL7001 grey
Weight	2750g
IP Rating	65
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA, UL & FM (class 1 division 2)
Power Rating	9.500w

Terminal Populations

Maximum Number of Rows			2
Weidmuller		**Wago**	
BK4 (4 way)	10	280-992	70
BK6 (6 way)	8	280-999	70
BK12 (12 way)	4	281-691	60
MK6/3	10	281-992	60
MK6/4	8	281-993	60
MK6/6	4	282-691	46
SAK2.5	62	284-691 *	36
SAK4	58	283-691 *	15
SAK6N	48	285-691	10
SAK10 *	38	280-998	70
SAK16 *	32	281-998	60
SAK35 *	24	264-120	62
Entrelec		264-220	36
MA2.5/5	76	264-132 (2)	12
M4/6	62	264-134 (4)	8
M6/8	48	262-132 (2)	12
M10/10 *	38	262-134 (4)	8
M16/12 *	32		
M35/16 *	24		

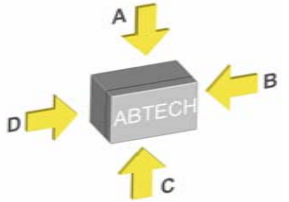
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

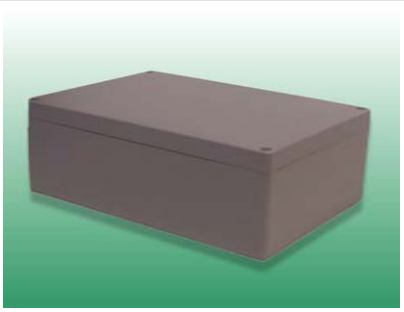
Entry Size	Side A-C	Side B-D
M16	9	8
M20	6	6
M25	4	3
M32	2	2
M40	2	2

Drilling Envelope Size

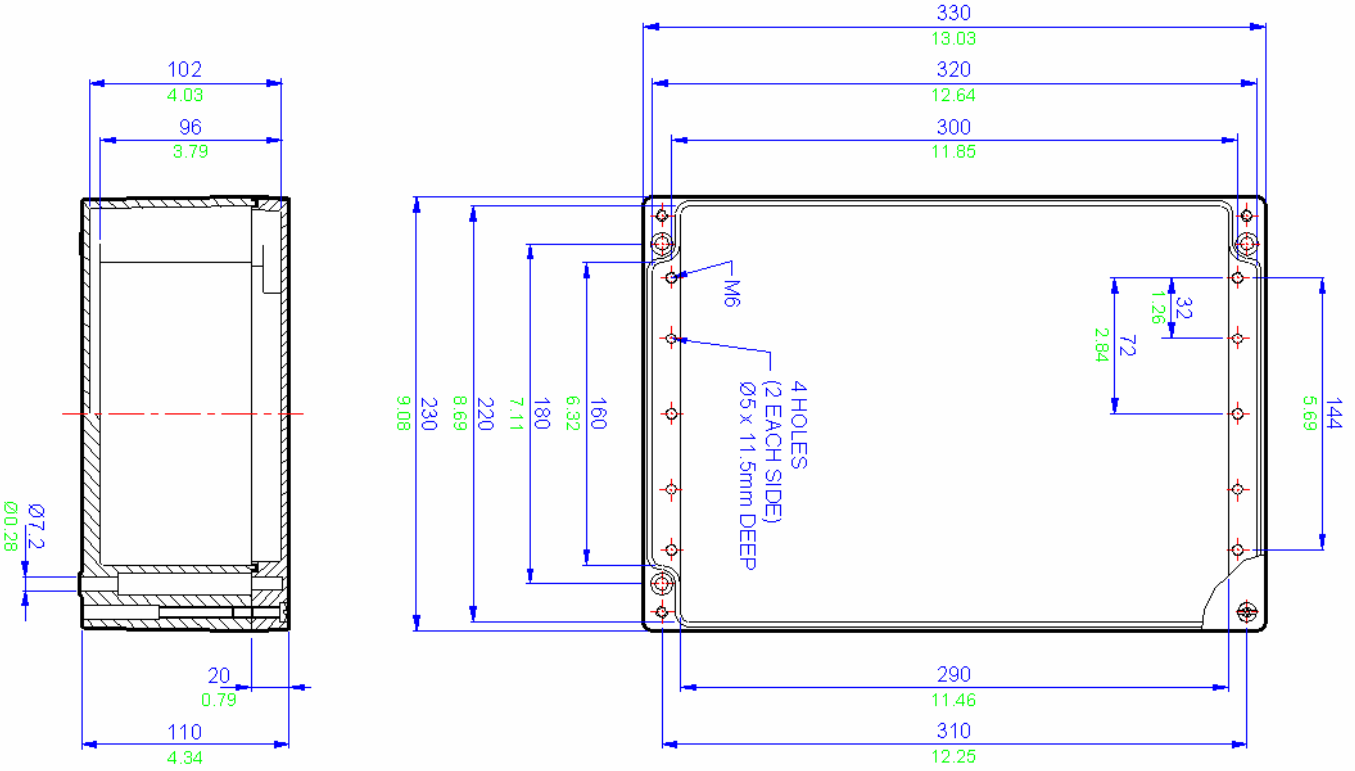
Side A-C	150 x 85mm
Side B-D	150 x 76mm



Example



ZAG 16 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZAG 16 Specifications

Width	330mm
Length	230mm
Depth	110mm
Material	Precision Cast AlSi12 (LM24) aluminium alloy - unpainted
	Precision Cast AlSi12 (LM24) aluminium alloy – painted epoxy polyester RAL7001 grey
Weight	4270g
IP Rating	66
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA, UL & FM (class 1 division 2)
Power Rating	14.000w

Terminal Populations

Maximum Number of Rows			2
Weidmuller		**Wago**	
BK4 (4 way)	16	280-992	108
BK6 (6 way)	12	280-999	108
BK12 (12 way)	6	281-691	92
MK6/3	14	281-992	92
MK6/4	12	281-993	92
MK6/6	8	282-691	72
SAK2.5	96	284-691 *	56
SAK4	88	283-691 *	24
SAK6N	72	285-691	16
SAK10 *	58	280-998	108
SAK16 *	48	281-998	92
SAK35 *	36	264-120	96
Entrelec		264-220	56
MA2.5/5	114	264-132 (2)	20
M4/6	96	264-134 (4)	14
M6/8	72	262-132 (2)	20
M10/10 *	58	262-134 (4)	12
M16/12 *	48		
M35/16 *	36		

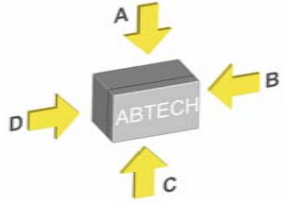
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

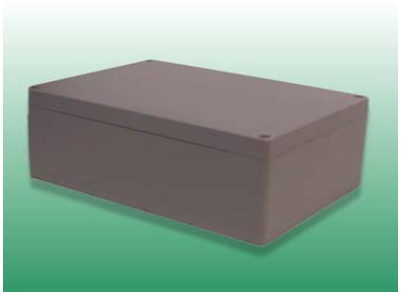
Entry Size	Side A-C	Side B-D
M16	21	8
M20	14	6
M25	10	3
M32	4	2
M40	4	2

Drilling Envelope Size

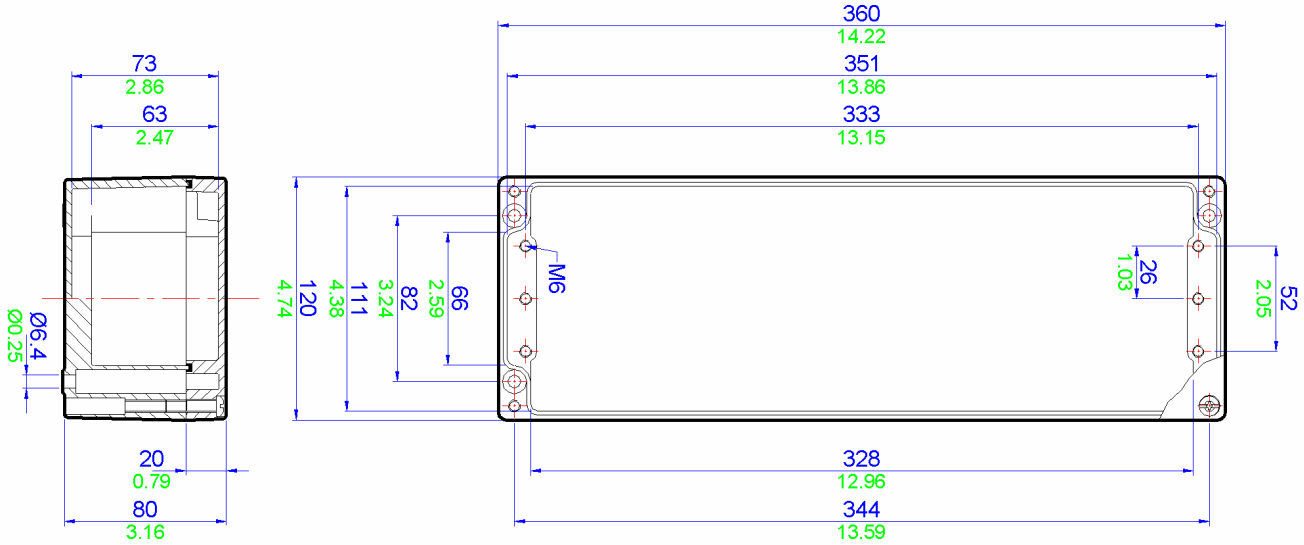
Side A-C	284 x 85mm
Side B-D	150 x 76mm



Example



ZAG 21 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZAG 21 Specifications

Width	120mm
Length	360mm
Depth	80mm
Material	Precision Cast AlSi12 (LM24) aluminium alloy - unpainted
	Precision Cast AlSi12 (LM24) aluminium alloy – painted epoxy polyester RAL7001 grey
Weight	2050g
IP Rating	66
Temperature	-40º to 80º C (-40℉ to +176℉) (standard neoprene gasket)
	-70º to 130º C (-94℉ to +266℉) (silicone gasket)
Certification	ATEX EEx'e' BS EN 50019 (Zone 1 & 2)
	ATEX EEx'nA' BS EN 50021 (Zone 2)
	NEMA 4X (CSA, UL & FM (class 1 division 2)
Power Rating	8.000w

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Wago**	
BK4 (4 way)	9	280-992	58
BK6 (6 way)	6	280-999	58
BK12 (12 way)	3	281-691	50
MK6/3	6	281-992	50
MK6/4	6	281-993	50
MK6/6	4	282-691	39
SAK2.5	52	284-691 *	31
SAK4	48	283-691 *	26
SAK6N	40	285-691	0
SAK10 *	32	280-998	58
SAK16 *	26	281-998	50
SAK35	0	264-120	52
Entrelec		264-220	31
MA2.5/5	63	264-132 (2)	11
M4/6	52	264-134 (4)	7
M6/8	40	262-132 (2)	10
M10/10 *	32	262-134 (4)	7
M16/12 *	26		
M35/16	0		

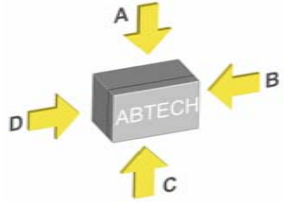
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

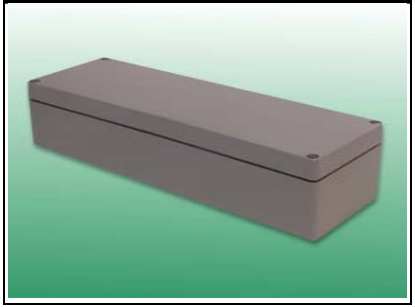
Entry Size	Side A-C	Side B-D
M16	12	1
M20	8	1
M25	7	1
M32	0	0
M40	0	0

Drilling Envelope Size

Side A-C	320 x 56mm
Side B-D	60 x 47mm



Example



5

High Voltage

Stainless Steel and Mild Steel Enclosures

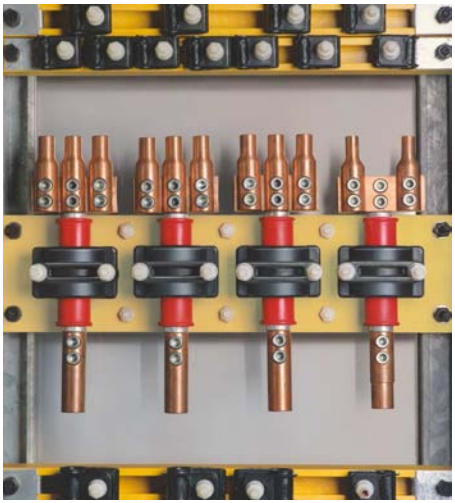
Further details on this range of enclosures can be found at;

www.ab-tech.co.uk/hv.htm

Stainless Steel and Mild Steel Enclosures

For many years, ABTECH have been at the forefront in the design and manufacture of high voltage connection solutions for use in hazardous areas.

Through constantly listening to customers needs, the range has been developed and expanded to the five major ranges shown in this section. Different sizes and options result in more than 50 combinations to choose from.



All ABTECH high voltage enclosures are manufactured in 316 grade stainless steel and have an IP rating of IP66 as standard. IP67 versions are also available.

All enclosures are ATEX certified by SIRA for use in a Category 2/Zone 1 areas and Category 3/Zone 2 areas.

The entire range offers flexibility in terms of both connection options and mounting arrangements.

New variations are continually being added to the High Voltage range. For example, we can now offer Category 3/Zone 2 high voltage enclosures capable of operation at 35kV.

Whatever your requirement may be for high voltage connections in hazardous areas, call ABTECH for the solution.

Our High Voltage ranges currently consist of the following types;

MJB Range

The MJB range provides a simple, low cost but effective solution for the connection of cables. Used primarily for joining cables or as a connection box. Maximum voltage 8.3kV.

DPJB Range

The original high voltage 'down hole pump' connection box which has been used by many customers all over the world.

HVJB Range

The latest in the High Voltage range offering enhanced flexibility over the choice of cables, entries and cable terminations. Maximum voltage 11kV.

LR Range

The LR range was originally designed for a specialist application for a specific customer. However, this type of enclosure has since been used in more general applications where a need for the flexible connection arrangements is required. Maximum voltage 11kV

BusBar Box

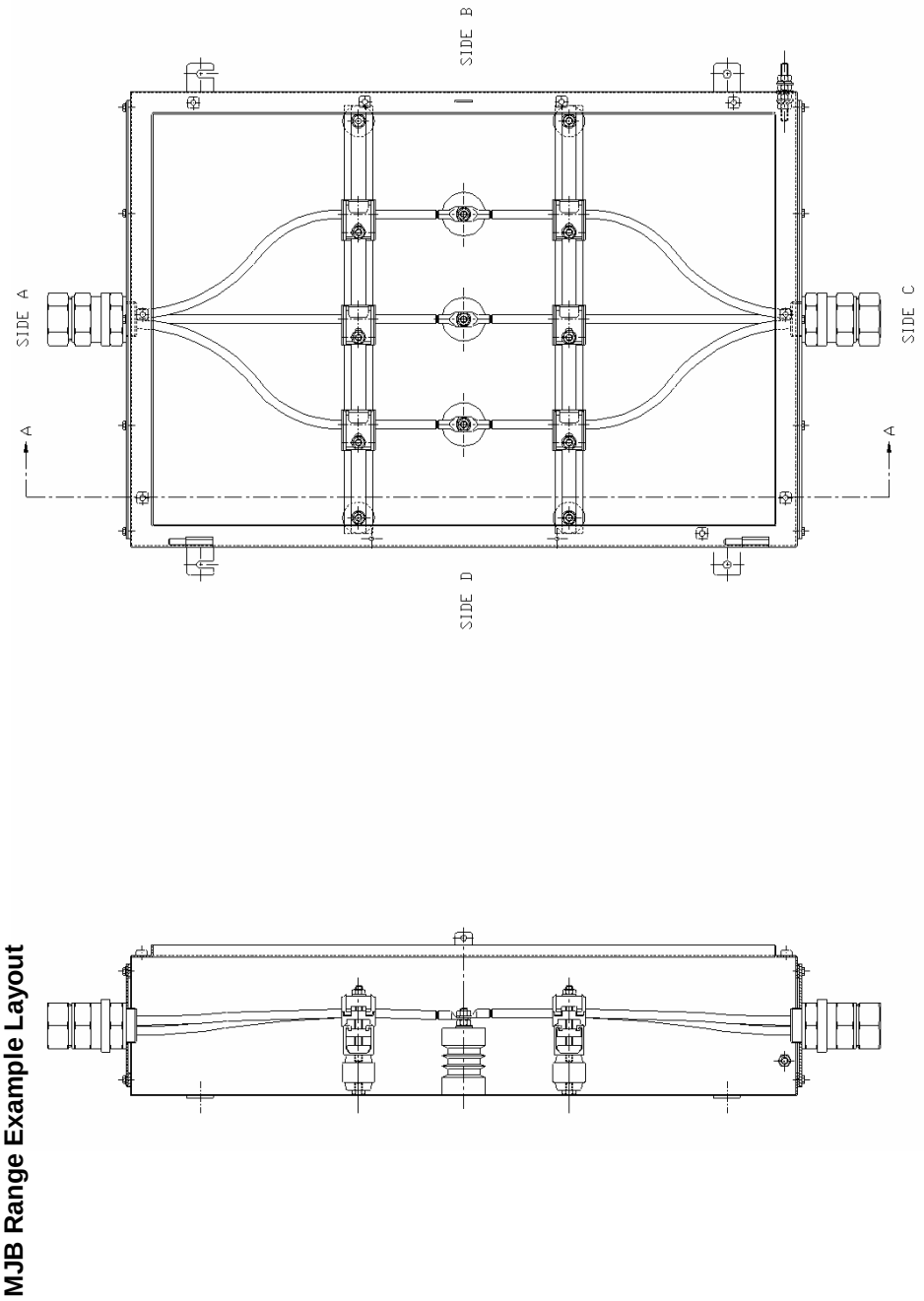
A busbar enclosure with a maximum voltage of 11kV, a current capacity of 3000A per phase and a fault rating of 80kA for 1 second. Capable of connecting 3 phase & neutral and up to 6 cables per phase.

SX125 Range

A unique solution to the termination of umbilical cables to offshore platform or on-shore distribution systems. A power conductor compartment is provided for use at up to 11 kV and a separate control compartment for terminating optical fibres and/or control conductors.

Stainless Steel and Mild Steel Enclosures

MJB Range Example Layout



MJB Range

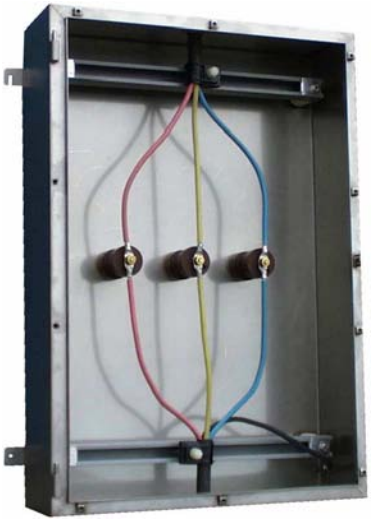
The ABTECH MJB range offers a simple and effective means of connecting cables or equipment, and is suitable for voltages up to a maximum of 8.3 kV.

The MJB range is manufactured in either mild steel or stainless steel and utilises the SX range of enclosures from SX 5 through SX 8 all available in either 200 or 300mm depths. These are the standard sizes depending on maximum operating voltage and conductor sizes although custom sizes can be manufactured to special order.

By using the SX design the same benefits are afforded to the MJB range. These benefits include: ingress protection to IP66 as standard with IP67 available as an option, enclosure tested to the Shell/ERA deluge specification, heavy duty construction, padlock facility and internal/external earth stud fitted as standard.

All hazardous area versions are ATEX certified using the latest standards and are suitable for operation in a Category 2/Zone 1 area and Category 3/Zone 2 area.

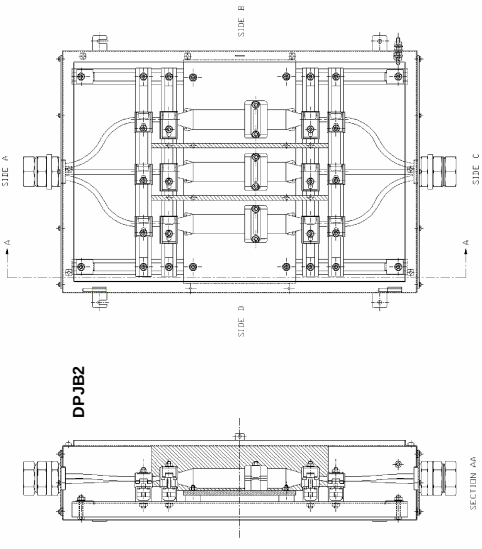
Standard operating ambient temperature is in the range - 20℃ to + 40℃ (-4℉ to +176℉). Versions are available which can accommodate an ambient temperature range of -50℃ to +65℃ (-58℉ to +149℉).

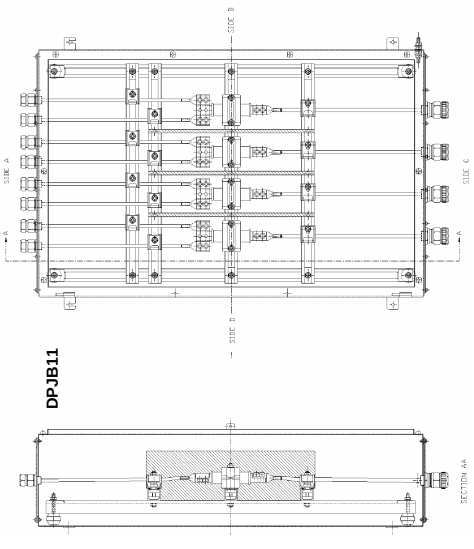


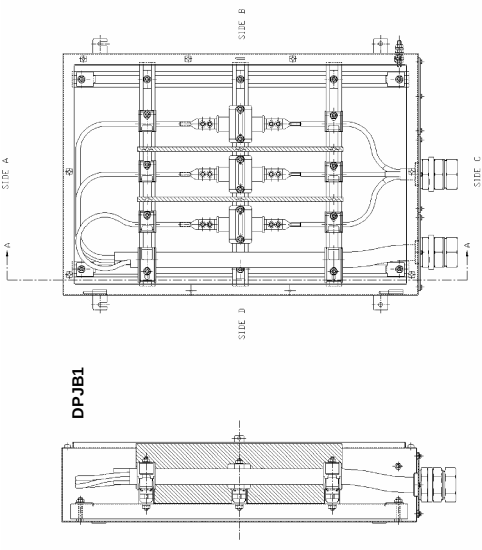
Part Number	Width (mm) (Dimension B)	Height (mm) (Dimension A)	Depth (mm)	Dimension C (mm)	Dimension D (mm)	Power Rating (W)	Maximum Voltage (kV)	Maximum Ways	Maximum Conductor Size (mm^2)
MJB5	510	510	200/300	560	360	16	6.6	3	120
MJB5/3	510	510	300	560	360	16	8.3	3	35
MJB6	510	780	200/300	560	580	23	6.6	3	120
MJB6/3	510	780	300	560	580	23	8.3	3	35
MJB7	650	950	200/300	700	750	33	6.6	4	240
MJB7/3	650	950	300	700	750	33	8.3	4	240
MJB8	800	1250	200/300	850	1050	50	6.6	4	240
MJB8/3	800	1250	200/300	850	1050	50	8.3	4	240

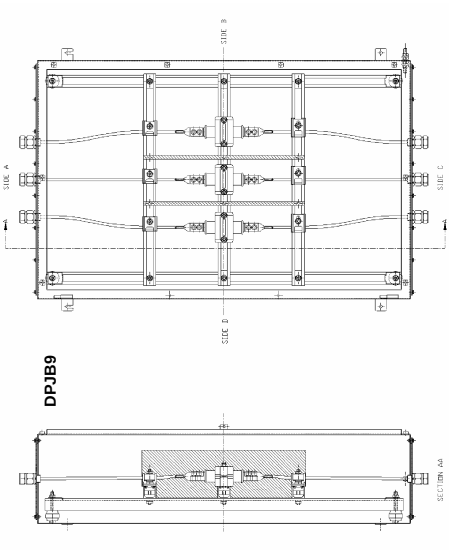
Stainless Steel and Mild Steel Enclosures

DPJB Range Example Layouts









DPJB Range

The ABTECH DPJB range offers an effective means of connecting cables or equipment up to a maximum of 11kV and is fault rated to 50kA for 1 second. Cable conductor sizes of up to 630mm^2 can be accommodated depending on the enclosure configuration and number of conductors.

The DPJB is manufactured in either mild steel or stainless steel and utilises the SX7 and SX8 enclosures in either 200 or 300mm depth depending on the operating voltage. By using the SX range design the same benefits are afforded to the DPJB range. These benefits include: ingress protection to IP66 as standard with IP67 available as an option, enclosure tested to the Shell/ERA deluge specification, heavy duty construction, padlock facility and internal/external earth stud fitted as standard.

All hazardous area versions are ATEX certified using the latest standards and are suitable for operation in a Category 2/Zone 1 areas and Category 3/Zone 2 areas. Standard operating ambient temperature is in a range – 20℃ to + 40℃ (-4℉ to +176℉). Versions are available which can accommodate an ambient temperature range of - 50℃ to + 65℃ (-58℉ to +149℉).. A double compartment version is available with a separate compartment which can be used to terminate control cables or fibre optic cables. This allows access to the low voltage/ fibre compartment without having to de-energise the high voltage compartment.

Versions are also available with purge protection for use in Class 1/Division 2 areas. Phase segregation is fitted as standard.

The DPJB range can be used as either a through box or with both the incoming and outgoing cable entering via one end. In the later instance it is important to consider the bending radii of the cables to ensure the enclosure is large enough

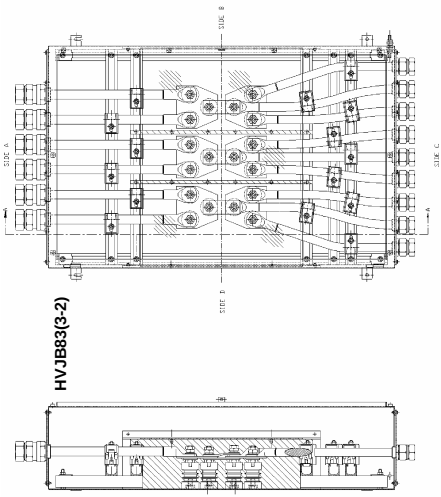
Spare copper crimp lugs are available from ABTECH to allow repairs or re-use of the enclosure.

Part Number	Width (mm) (Dimension B)	Height (mm) (Dimension A)	Depth (mm)	Power Rating (W)	Maximum Voltage (kV)	Maximum Ways	Max. Conductor Size (mm^2)
DPJB1	650	950	200	48.6	6.6	3	630
DPJB3	650	950	200	48.6	6.6	4	630
DPJB5	800	1250	300	48.6	6.6	3	630
DPJB7	800	1250	300	48.6	6.6	4	630
DPJB9	800	1250	300	48.6	11	3	630
DPJB11	800	1250	300	48.6	11	4	630
DPJB2	650	950	200	50.0	6.6	4	120

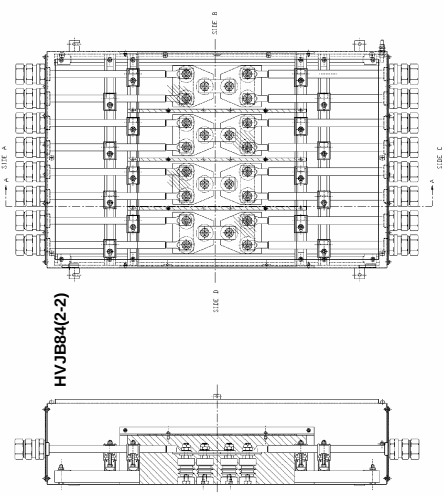
Stainless Steel and Mild Steel Enclosures

HVJB Range Example Layouts

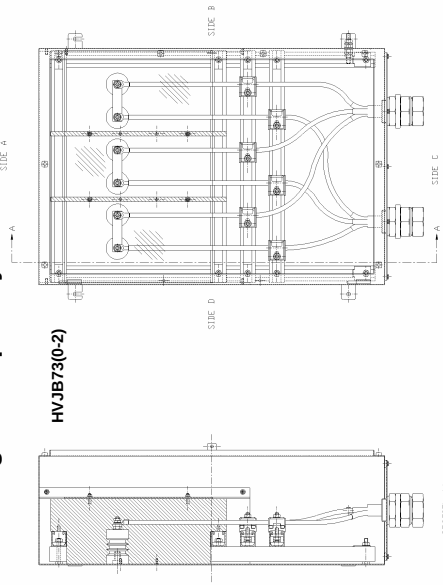
HVJB83(3-2)



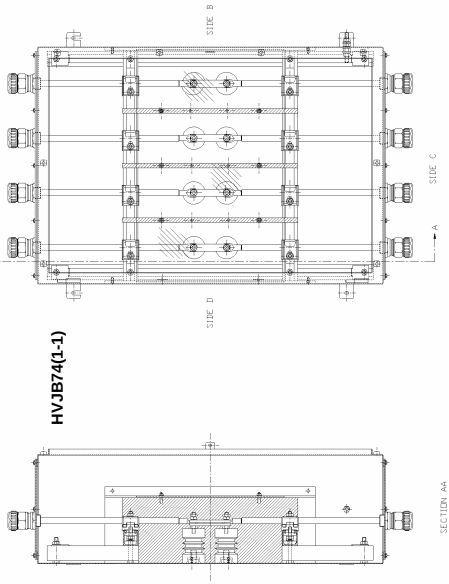
HVJB84(2-2)



HVJB73(0-2)



HVJB74(1-1)



HVJB Range

The ABTECH HVJB range is the latest range in the High Voltage series and offers improved flexibility over the DPJB range in many situations and is suitable for operating voltages of up to 11 kV maximum.

In conjunction with most of the High Voltage series it is manufactured in either mild steel or stainless steel and utilises the SX7 and SX8 range of enclosure. This is the standard sizes although custom sizes are available to special order. The HVJB range can accommodate conductors up to 630mm^2 and can be split in to 4 phases, 3 ways in each direction. Incoming and outgoing cables can enter from the same end of the enclosure or from different ends.

All hazardous area versions are ATEX certified to the latest standards and are suitable for operation in a Category 2/Zone 1 area and Category 3/Zone 2 area.

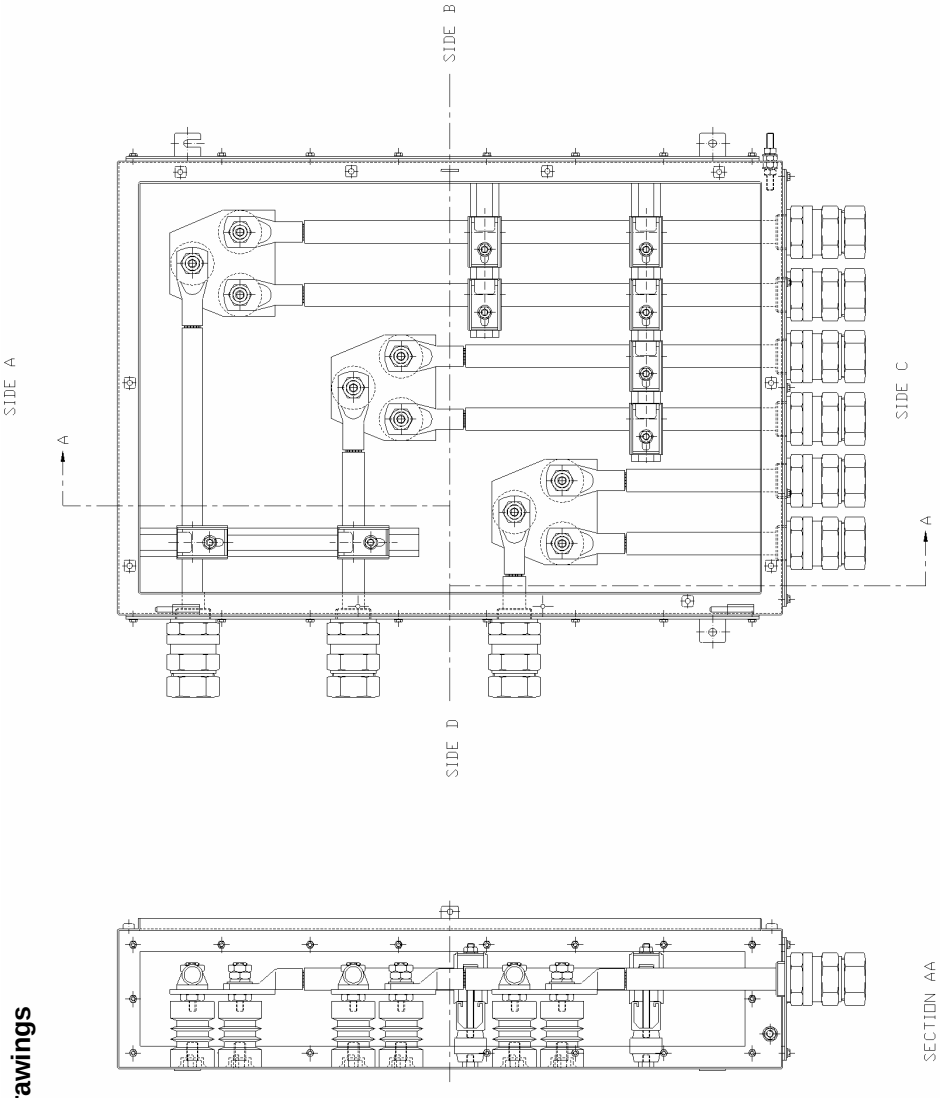
Standard operating ambient temperature is in the range - 20℃ to + 40℃ (-4℉ to +176℉). Extended temperature ranges are available by special order.

Part Number	Maximum Current (A)	Maximum Voltage (kV)	Maximum Ways	Top Cables	Bottom Cables	Max. Conductor Size (mm^2)
HVJB x3 (0-2)	980	11	3	0	2	630
HVJB x3 (0-3)	980	11	3	0	3	630
HVJB x3 (2-0)	980	11	3	2	0	630
HVJB x3 (3-0)	980	11	3	3	0	630
HVJB x3 (1-1)	980	11	3	1	1	630
HVJB x3 (1-2)	980	11	3	1	2	630
HVJB x3 (2-1)	980	11	3	2	1	630
HVJB x3 (2-2)	980	11	3	2	2	630
HVJB x3 (1-3)	980	11	3	1	3	630
HVJB x3 (3-1)	980	11	3	3	1	630
HVJB x3 (2-3)	980	11	3	2	3	630
HVJB x3 (3-2)	980	11	3	3	2	630
HVJB x3 (3-3)	980	11	3	3	3	630
HVJB x4 (0-2)	980	11	4	0	2	630
HVJB x4 (0-3)	980	11	4	0	3	630
HVJB x4 (2-0)	980	11	4	2	0	630
HVJB x4 (3-0)	980	11	4	3	0	630
HVJB x4 (1-1)	980	11	4	1	1	630
HVJB x4 (1-2)	980	11	4	1	2	630
HVJB x4 (2-1)	980	11	4	2	1	630
HVJB x4 (2-2)	980	11	4	2	2	630
HVJB x4 (1-3)	980	11	4	1	3	630
HVJB x4 (3-1)	980	11	4	3	1	630
HVJB x4 (2-3)	980	11	4	2	3	630
HVJB x4 (3-2)	980	11	4	3	2	630
HVJB x4 (3-3)	980	11	4	3	3	630

The letter 'x' in the Part Number above should be replaced with the number 7 or 8 depending on the size of enclosure required.
7 refers to an SX7 size enclosure measuring 650 x 950 x 300mm. 8 refers to an SX8 enclosure measuring 800 x 1250 x 300mm.
If cables greater than 300mm^2 are used it is advisable to use the SX8 size enclosure.

Stainless Steel and Mild Steel Enclosures

LR Range Drawings



LR Range

The ABTECH LR range was initially designed as a special for a particular application but has seen increasing use by clients due to the unique flexibility afforded by the design.

The LR range is manufactured in either mild steel or stainless steel and utilises the SX range of enclosures from SX5 through to SX8 all available in either 200 or 300mm depths. These are the standard sizes depending on maximum operating voltage and conductor sizes, although custom sizes can be manufactured to special order.

By using the SX design the same benefits are afforded to the LR range. These benefits include: ingress protection to IP 66 as standard with IP 67 available as an option, enclosure tested to the Shell/ERA deluge specification, heavy duty construction, padlock facility and an internal/external earth stud fitted as standard.

All hazardous area versions are ATEX certified using the latest standards and are suitable for operation in a Category 2/Zone 1 area and a Category 3/Zone 2 area.

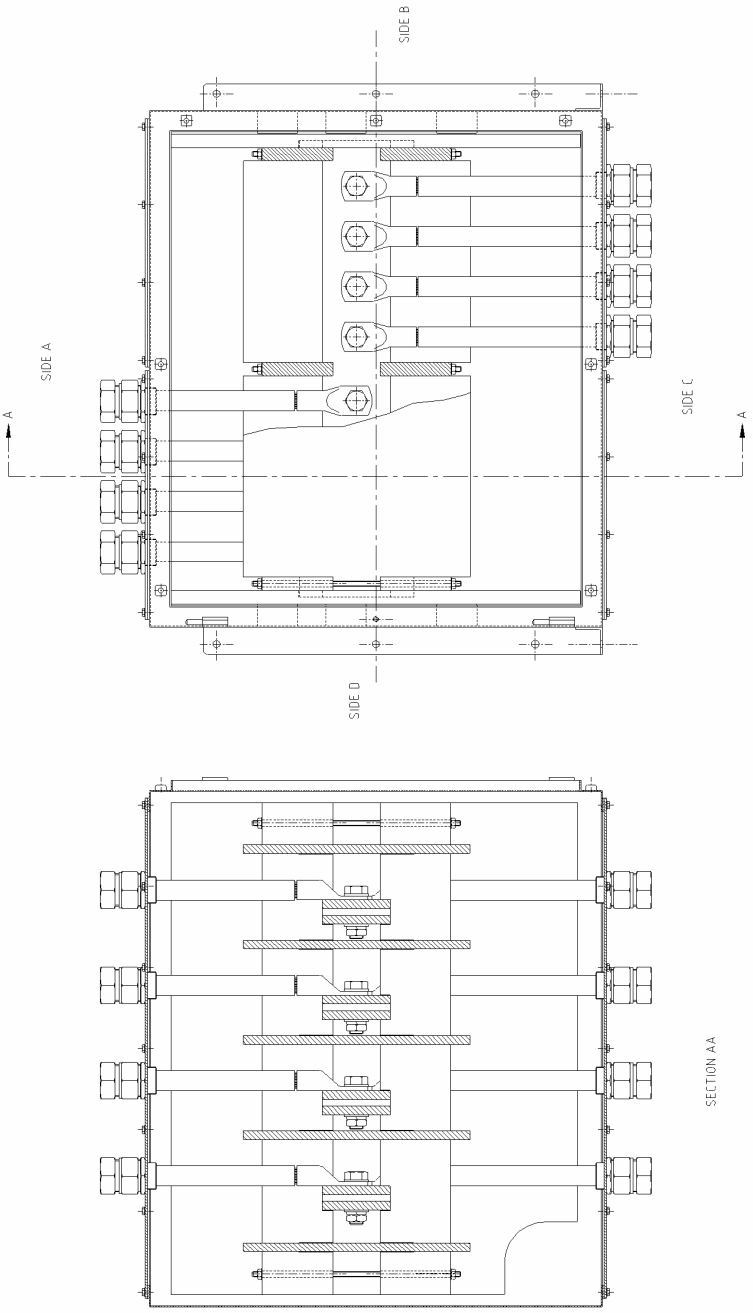
Standard operating ambient temperature is in the range - 20℃ to + 40℃ (-4℉ to +176℉). Versions are available which can accommodate an ambient temperature range of - 50℃ to + 65℃ (-58℉ to +149℉).

Part Number	Width (mm)	Height (mm)	Depth (mm)	Maximum Current (A)	Maximum Voltage (kV)	Maximum Ways	Max. Conductor Size (mm^2)
LR52(200)	510	510	200	1250	3.3	2	630
LR52(300)	510	510	300	1250	3.3	2	630
LR73(200)	650	950	200	1250	3.3	3	630
LR73(300)	650	950	300	1250	3.3	3	630

The LR52 version ATEX certification is based on the SX5-3GP-200 (3 gland plates, 200mm deep) and SX5-3GP-300 (3 gland plates, 300mm deep).
The LR73 version ATEX certification is based on the SX7-3GP-200 (3 gland plates, 200mm deep) and SX7-3GP-300 (3 gland plates, 300mm deep).
Other sizes are available on request.

Stainless Steel and Mild Steel Enclosures

Bus-Bar Range Drawing



Bus-Bar Range

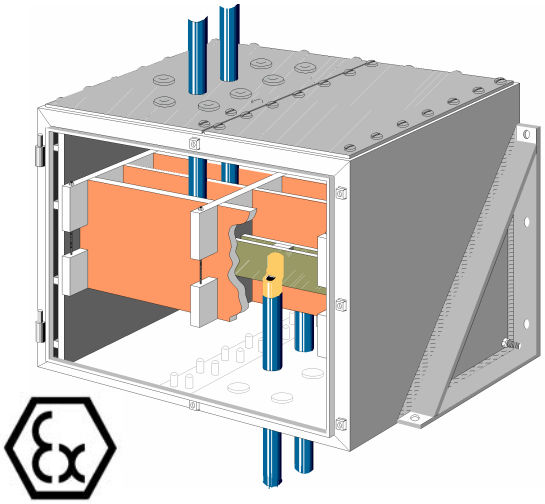
The ABTECH Bus-Bar box is used for the connection of cables or equipment where the conductor size and number of cables being connected would make it very difficult in any other ABTECH High Voltage range.

The Bus-Bar box is ideally suited for conductor sizes over 400mm^2, as the design allows cables to enter the enclosure and be terminated onto the busbar without having to be bent. This makes for quick and easy installation in applications which have normally been considered difficult to accomplish.

Although not based on a particular size of standard enclosure, the Bus-Bar box utilises the SX range features and is consequently afforded the same benefits from the use of these. These benefits include: ingress protection to IP66 as standard with IP67 available as an option, heavy duty construction, padlock facility and an internal/external earth stud fitted as standard. Additionally, the Bus-Bar box incorporates heavy duty mounting facilities which can be adapted to suit the customer's requirements.

The Bus-Bar box is ATEX certified using the latest standards and is suitable for operation in a Category 2/Zone 1 area and a Category 3/Zone 2 area.

Standard operating ambient temperature is in the range - 20℃ to + 40℃ (-4℉ to +176℉). Versions are available which can accommodate an ambient temperature range of - 50℃ to + 65℃ (-58℉ to +149℉).

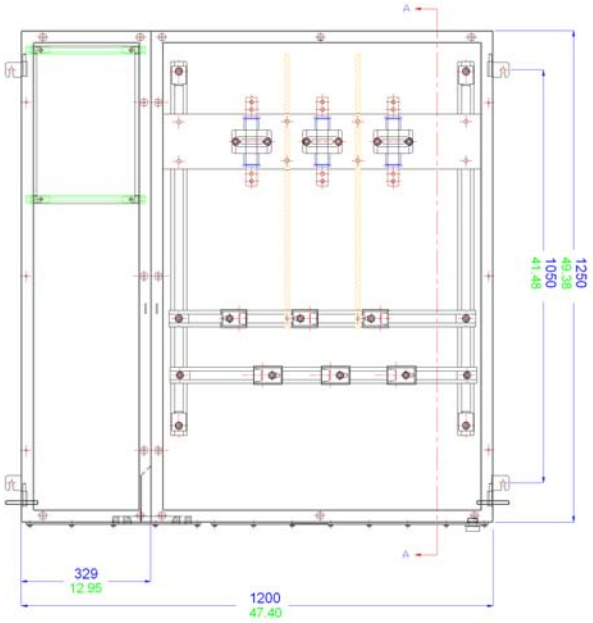


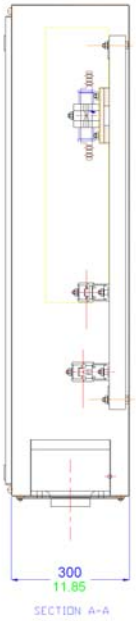
Part Number	Maximum Width (mm)	Maximum Height (mm)	Maximum Depth (mm)	Maximum Current (A)	Maximum Voltage (kV)	Maximum Ways	Maximum Conductors per Way	Maximum Ways	Max. Conductor Size (mm^2)
Bus-Bar Box	770	770	1250	3000	11	4	6	4	1000

The sizes stated above are the maximum sizes allowable. Smaller sizes are available to accommodate customer's requirements.

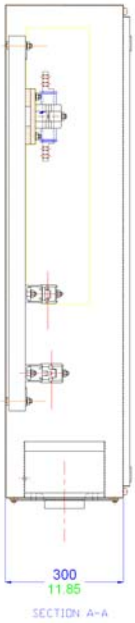
Stainless Steel and Mild Steel Enclosures

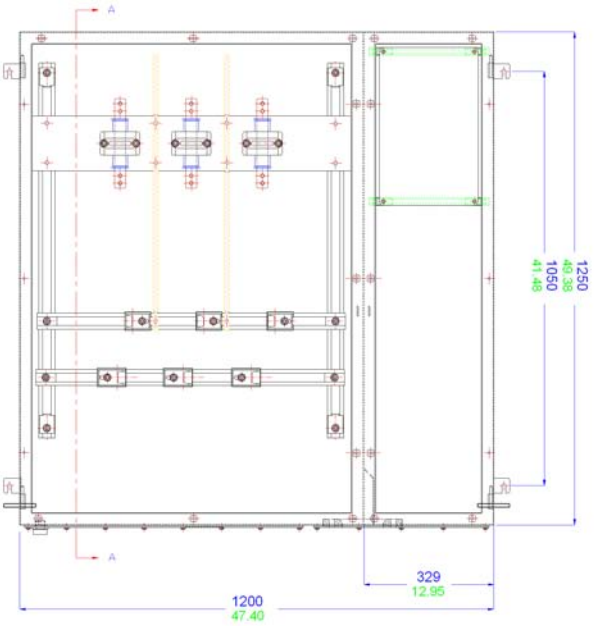
SX125 LH Drawing





SX125 RH Drawing





SX125 Range

The SX125 provides a unique solution to the termination of umbilical cables to offshore platform or on-shore distribution systems. Based on the successful and service proven SX range, they are available as either a left hand or right hand configuration. A power conductor compartment is provided for use at up to 11 kV and a separate control compartment for terminating optical fibres and/or control conductors.

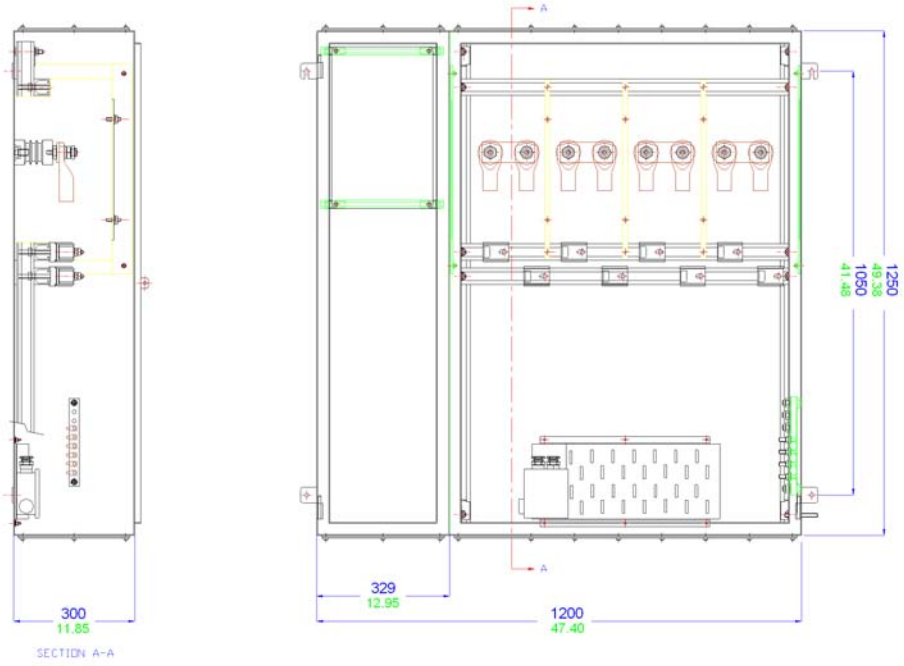
Each compartment gives independent protection to IP 66. This facilitates working on the optical fibres or control conductors without the need to isolate the feed to the power compartment.

The SX125 is available with either 3 couplers or 4 couplers, each capable of connecting up to 3 power conductors. In the control compartment there is the option to mount the optical fibre splice cassettes either directly onto a chassis plate or inside an additional EEx'e' certified enclosure for increased environmental protection. Terminals for control conductors can be treated in the same manner as optical fibres.

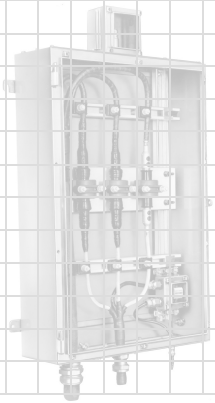
For higher voltage applications the SX125 is available with a purging system.

For high current applications the HVJB 125 was developed as an extension to the SX125 range. Offering all the facilities of the SX125 the HVJB 125 adds the facility for a suitably certified anti-condensation heater.

HVJB125 LH Drawing



Stainless Steel and Mild Steel Enclosures



6

Fire Rated

Stainless Steel, Mild Steel and GRP Enclosures

Further details on this range of enclosures can be found at;

www.ab-tech.co.uk/fr.htm

Fire Testing of Junction Boxes

When installing essential systems such as emergency lighting or fire safety controls, great emphasis is placed upon the fire survivability of the critical components such as fire dampers, actuators and cables that are contained in the area. Often the specification of the junction boxes is neglected with respect to fire survival. On the basis that any system is only as good as the weakest part, it is important that attention is paid to the junction boxes being utilised for essential systems. ABTECH have many years experience of ensuring the fire survival of junction boxes using both the SX and BPG ranges. We have supplied major projects worldwide with fire rated junction boxes including the Channel Tunnel, Dartford Tunnel and the Tengiz Oil Refinery in Kazahkstan to name but a few.

Since there are no recognised tests applicable to junction boxes, it was decided to test the enclosures to the same specification as the cable. At the time of the test (1990) the two main tests for electrical cables were IEC331/1970 and BS6387/1983.

In IEC331 a cable test is conducted in which the samples are subjected to flame at a temperature of 750℃ (1382℉) for a period of 3 hours with the electrical system fully functional before, during, and after the test. This test was carried out on both the SX (stainless steel) and BPG (glass reinforced polyester) ranges containing nylon, melamine and ceramic terminals.

After the test it was found that the body of the nylon terminals had disappeared completely, the melamine body had taken on the appearance of biscuit (because the wood filling had burnt away) and only the ceramic bodied terminal appeared to be intact.

Without cleaning or disturbing the terminals in any way, a flash potential of 5kV was applied between the copper conductor and the terminal rail, which passed without break-down.

Since the IEC331 standard only partly dealt with the requirements of real-life situations, it was decided to conduct additional testing to an alternative standard – BS6387/1983.

This test is performed in a similar way to IEC331/1970 with the specimen under test being suspended 75mm (approximately 3") above a flame, the temperature of which is maintained at 950℃ (1742℉) for 3 hours. During this period the cable and junction box is supplied with power. In order to pass the test, both components must be fully functioning after the period has elapsed.

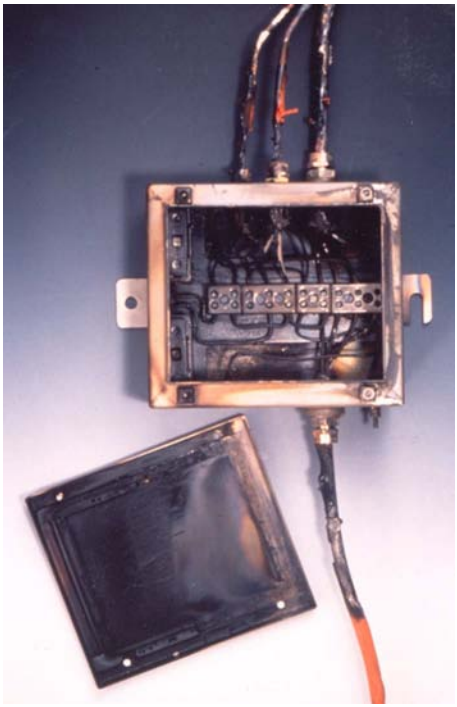
On the successful conclusion of this test, which is designated "fire-alone" BS6387'C', the next test is to mount the sample (still powered-up) on a flat vertical surface and to apply flame at a temperature of 950℃ (1742℉) (by means of a flame gun) whist at the same time striking the board on which the sample is mounted with a 25mm (1") diameter iron bar every 30 seconds for a period of 15 minutes. This is designated the "impact test" BS6387 'Z'.

Finally, a “fire with water test” is applied but only at a temperature of 650℃ (1202℉). The sample is subjected to flame at 650℃ for 15 minutes after which a water spray is applied for 15 minutes and at the culmination of this test the system is required to be completely functional, this test being designated BS6387 ‘W’.

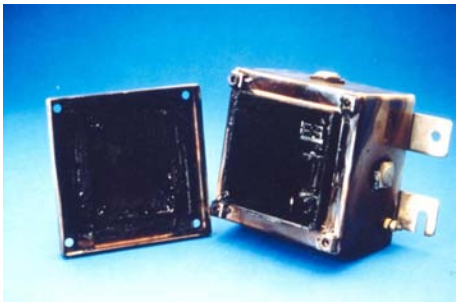
The SX range of enclosures passed all the tests applicable to BS6387 i.e. C, Z & W however, it was decided that the BPG range would only be submitted to the flame test ‘C’, which it passed.

In conclusion, the ABTECH SX and BPG ranges, when fitted with ceramic terminals, are suitable for use in areas which are designated to require fire resistant cables. The type of enclosure to be used will depend on the individual circumstances of the area and advice on the most suitable enclosure should be sought from the ABTECH Technical Department.

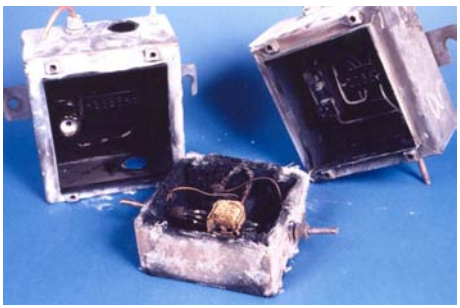
Enclosure Type	IEC 331 750℃ (1382℉) for 3 hours (Flame Only)	BS6387 ‘C’ 950℃(1742℉) for 3 hours (Flame Only)	BS6387 ‘Z’ 950℃ (1742℉) for 3 hours (External Impact)	BS6387 ‘W’ 950℃ (1742℉) for 3 hours (Water Spray)
SX Range	Pass	Pass	Pass	Pass
BPG Range	Pass	Pass	Not Tested	Not Tested



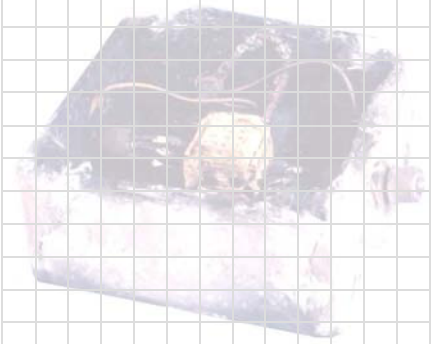
SX Range Enclosure and Cables after IEC331 Fire Testing



SX Range Enclosure after BS6387 Testing



SX and BPG Range Enclosures after BS6387 Testing



7

ZP

ABS Plastic and Polycarbonate Enclosures

Further details on this range of enclosures can be found at;

www.ab-tech.co.uk/zp.htm

ABS Plastic and Polycarbonate Enclosures

The ABTECH ZP range of enclosures comprises of 19 different sizes which are injection moulded in either ABS plastic or polycarbonate material. There is also an option of a clear polycarbonate lid which can be fitted to either base.

The enclosures are lightweight yet extremely robust and offer good protection against both corrosion and oil based contamination. The enclosure shares the labyrinth seal arrangement which is common to both the ZAG and BPG ranges and can offer protection up to IP65.

Stainless steel captive quick release quarter turn screws are fitted as standard offering a quick yet reliable method of securing the lid. This can provide a considerable cost saving in assembly times with on-average savings of 2 minutes per enclosure over conventional screws. As an option conventional threaded screws may be fitted if required.

The mounting holes, although contained within the profile of the enclosure, sit outside the seal and all the external fasteners and fixings are manufactured from 316 grade stainless steel to ensure reliability. External stainless steel mounting feet are offered as an option.

The ZP range is an extremely versatile enclosure with many uses and applications including junction boxes, instrument enclosures and a multitude of OEM applications. The addition of the clear lid makes the ZP range particularly suitable for housing instruments and indicators where a visual indication is required without the need for opening the enclosure.

The ZP range can be machined, drilled and tapped with various thread forms and can also be silk screen printed. The ZP range can be moulded in almost any colour subject to minimum quantities.

At our factories in England, Germany and the United States we have specialist machining centres for the ZP range of enclosure. These machines use the dedicated tooling and programming which is specific to the requirements of the material and reflect the increasing usage of this enclosure range, especially in small batch production.

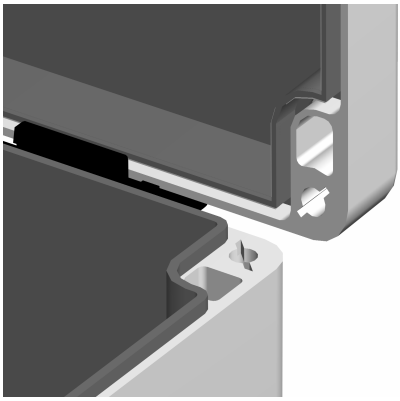
Internal components are located via a series of moulded pillars which can be fitted with threaded inserts or alternatively can accept self tapping screws and these are used for the fitment of a component mounting plate or DIN standard terminal mounting rails such as TS 15, TS 32 or TS 35.

Earthing can be accomplished through various means. For example, an internal / external earth stud, which in turn can be connected to the terminal mounting rail or component plate can be used as well as various rail mounted earth terminals or proprietary earth bars which can be fitted inside the enclosure.

The screening against RFI (radio frequency interference) is achieved by the use of a metalised coating of 50 micron thickness to the internal surfaces of the enclosure and the fitment of an RFI gasket. The ABTECH Sales team can give advice on suitable RFI gaskets and finishing techniques which will provide optimum protection but typically the following characteristics are achievable:-

Electrical Attenuation;
55 – 65dB @ 500MHz to 1000MHz

Magnetic Attenuation;
35dB @ 40KHz to 300MHz



ZP Range Features

- Wide Operating Temperature (- 70℃ to + 120℃) (-94℉ to +248℉)
- Ingress Protection up to IP65
- Available in Polycarbonate and ABS
- Optional Transparent lid
- Can be moulded any colour (subject to minimum quantities)
- Can be easily machined and silk screen printed
- Ideal for Instrument housings and junction boxes

ABS Plastic and Polycarbonate Enclosures

Accessories and Options

The following table is a list of the available accessories suitable for particular sizes of ZP enclosure.

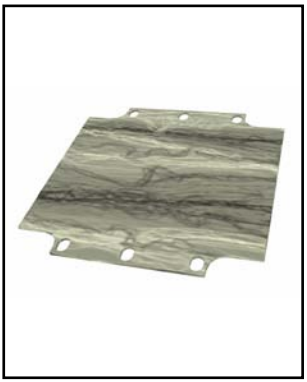
Part Number	Width (mm)	Length (mm)	Depth (mm)	**P** - Polycarbonate	**ABS** - ABS	**T** - Transparent Lid (moulded polycarbonate)	**TS** - Threaded Lid Fixing Screws (see note 1)	**MP** - Component Mounting Plate	**EH** - External Hinges	**EB** - Internal Earthing Bar	**MF** - External Mounting Feet	**SG** - Silicone Gasket (see note 2)	**MR** - DIN Standard Mounting Rail	**RF** - RFI Protection (see note 3)
ZP1	52	50	35	✓	✓	✓	✗	✓	✗	✗	✓	✓	✗	✓
ZP2	65	50	35	✓	✓	✓	✓	✓	✗	✗	✓	✓	✓	✓
ZP3	82	80	55	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZP4	82	80	85	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZP5	120	80	55	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZP6	120	80	85	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZP7	160	80	55	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZP8	160	80	85	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZP9	122	120	55	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZP10	122	120	85	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZP11	200	120	75	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZP12	200	150	75	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZP13	240	120	100	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZP14	240	160	90	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZP15	250	160	90	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZP16	240	160	120	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZP17	300	230	85	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZP18	360	200	150	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ZP19	300	230	110	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Ordering Example;

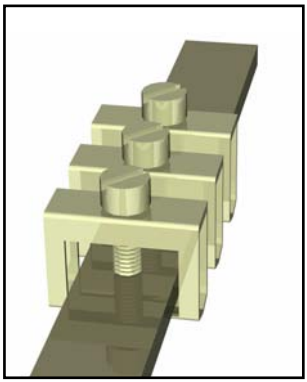
ZP12 ABS MF

(ZP12 moulded in ABS material with External Mounting Feet)

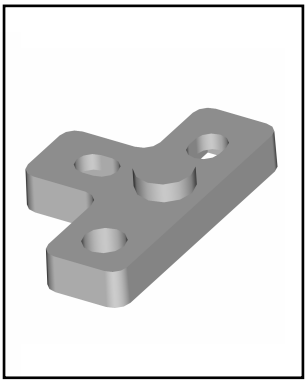
1. Standard lid fixing screws are ¼ turn quick release type.
2. Silicone gasket increases temperature rating (-70℃ to +120℃) (-94℉ to +248℉) and may increase w orking life.
3. Radio Frequency Interference (RFI) gasket may reduce IP rating. Enclosure may also be internally coated with RFI material.



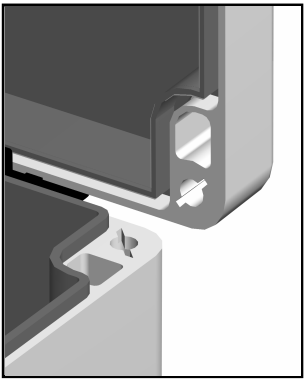
Component Mounting Plate
(tufnol as standard, steel an option)



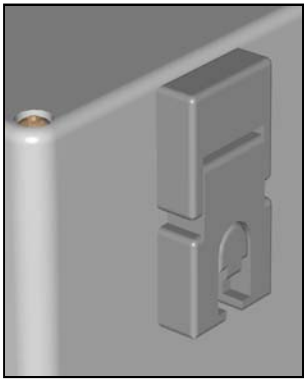
Internal Earthing Bar
(can be fitted with clamps)



External Mounting Feet
(stainless steel 316)

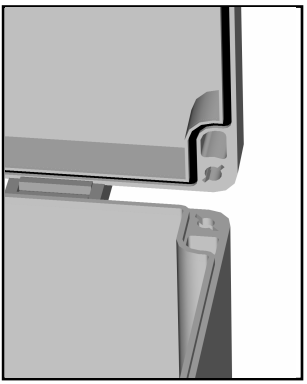


RFI Shielding
(metalised spray coating to interior)

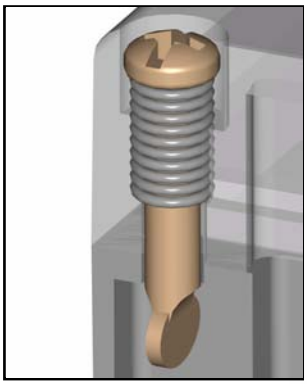


External Hinges

Transparent Lid
(moulded in polycarbonate)



Silicone Lid Seal Gasket

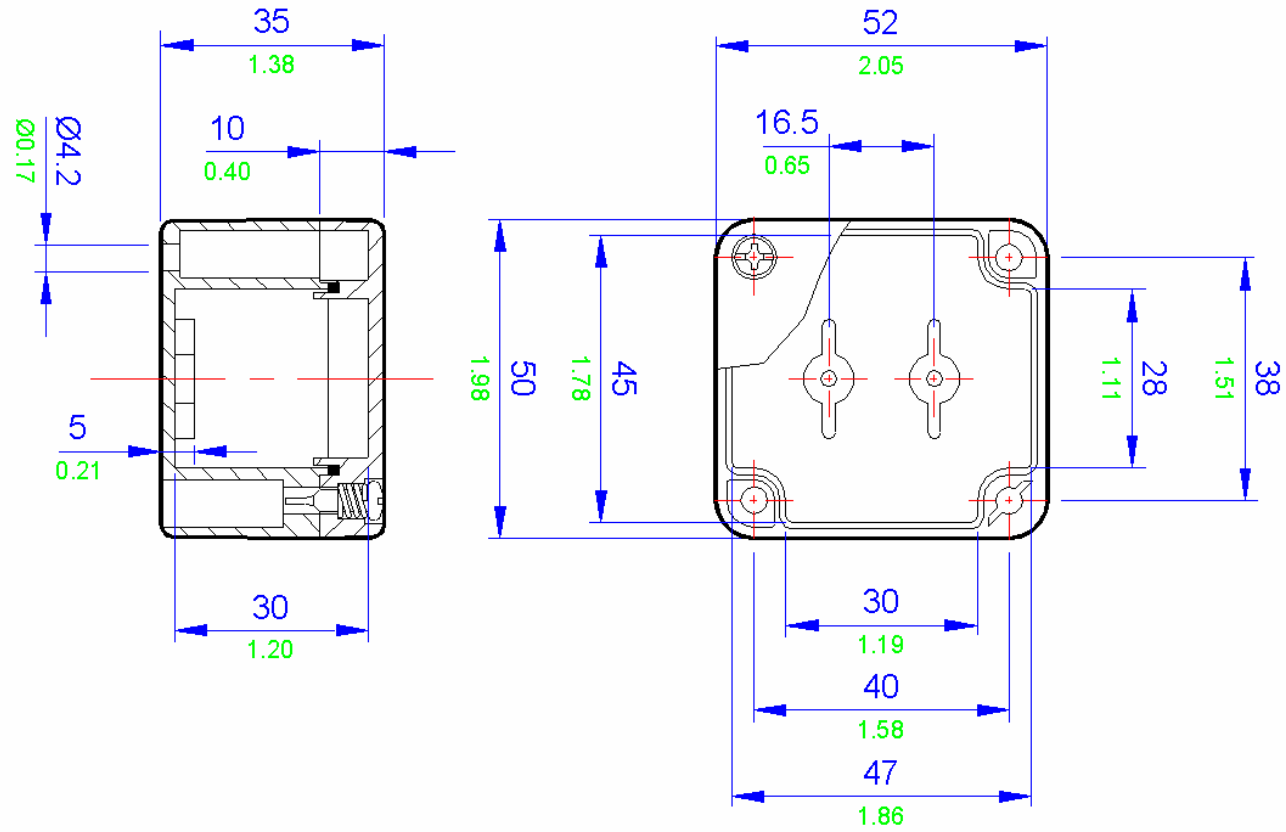


¼ Turn or Threaded Lid Fixing Screws

DIN Standard Mounting Rail
(TS 15, TS 32 or TS 35)

We can also supply cable glands, stopping plugs, breather drains and continuity plates. Please contact us for further details.

ZP 1 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZP1 Specifications

Width	52mm
Length	50mm
Depth	35mm
Material	Moulded Polycarbonate (RAL7035 grey)
	Moulded ABS (RAL7035 grey)
Weight	Polycarbonate 40g ABS 38g
IP Rating	65
Temperature	Polycarbonate versions -40º to 80º C (-94℉ to 176℉) (with standard neoprene gasket)
	Polycarbonate versions -40º to 120º C (-94℉ to 248℉) (with optional silicone gasket)
	ABS versions -40º to 65º C (-94℉ to 149℉)
Certification	NEMA Types 1, 4X, 12
	UL
Power Rating	Not Applicable

Terminal Populations

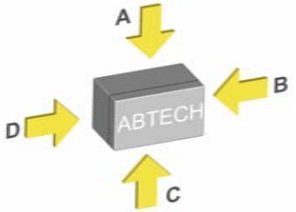
Maximum Number of Rows			1
Weidmuller		**Phoenix**	
BK4 (4 way)	1	G5 \ 4 (4 way)	1
BK6 (6 way)	0	G5 \ 6 (6 way)	0
BK12 (12 way)	0	G5 \ 12 (12 way)	0
MK6/4	0	UK 3 N	0
MK6/6	0	UK 5 N	0
SAK2.5	0	UK 10 N	0
SAK4	0	UK 16 N	0
SAK6N	0	UK 35 N	0
SAK10	0		
SAK16	0		
SAK35	0		
Entrelec			
MA2.5/5	0		
M4/6	0		
M6/8	0		
M10/10	0		
M16/12	0		
M35/16	0		

Cable Gland Entry Matrix

Entry Size	Side A-C	Side B-D
M16	0	0
M20	0	0
M25	0	0
M32	0	0
M40	0	0

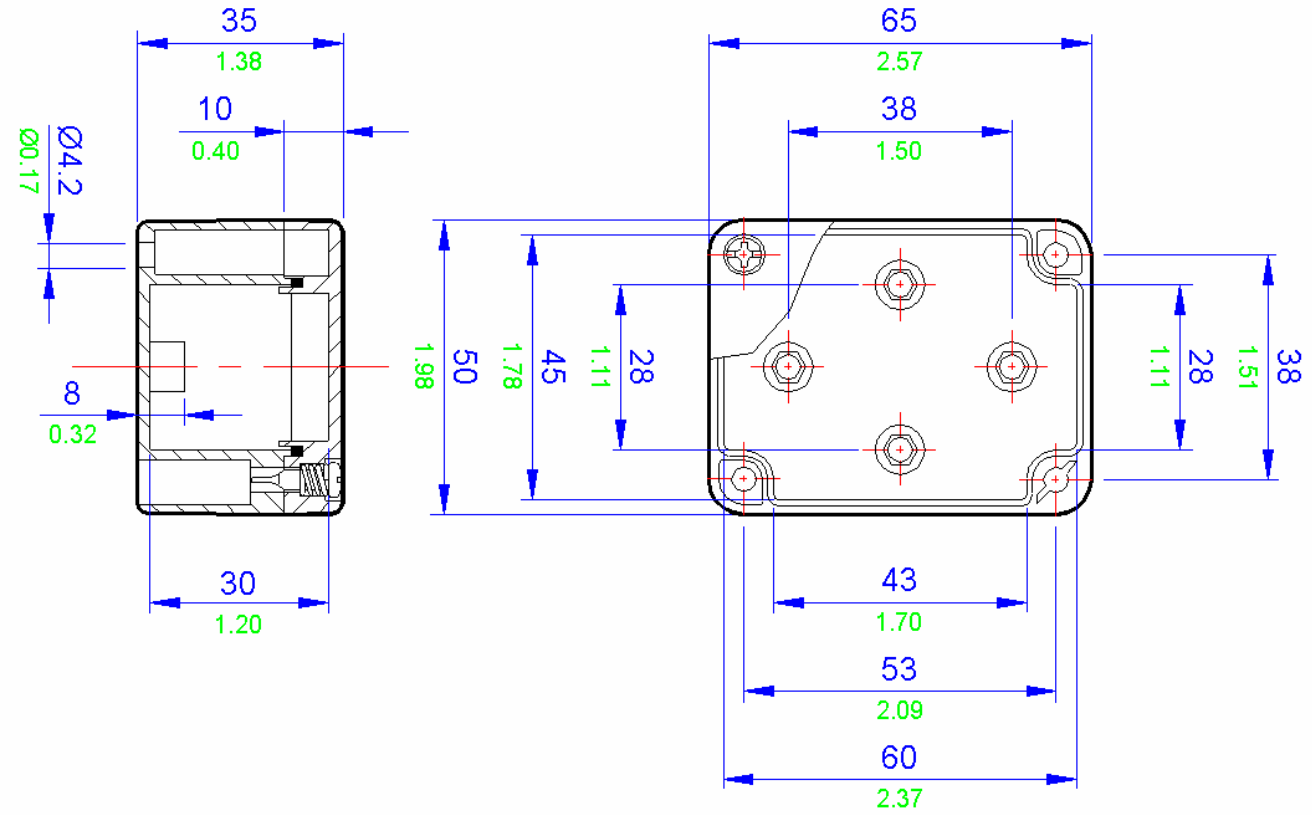
Drilling Envelope Size

Side A-C	28 x 22mm
Side B-D	26 x 22mm



Example

ZP 2 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZP2 Specifications

Width	65mm
Length	50mm
Depth	35mm
Material	Moulded Polycarbonate (RAL7035 grey)
	Moulded ABS (RAL7035 grey)
Weight	Polycarbonate 50g ABS 48g
IP Rating	65
Temperature	Polycarbonate versions -40º to 80º C (-94℉ to 176℉) (with standard neoprene gasket)
	Polycarbonate versions -40º to 120º C (-94℉ to 248℉) (with optional silicone gasket)
	ABS versions -40º to 65º C (-94℉ to 149℉)
Certification	NEMA Types 1, 4X, 12
	UL
Power Rating	Not Applicable

Terminal Populations

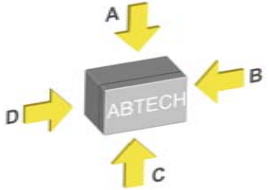
Maximum Number of Rows			1
Weidmuller		**Phoenix**	
BK4 (4 way)	1	G5 \ 4 (4 way)	1
BK6 (6 way)	0	G5 \ 6 (6 way)	0
BK12 (12 way)	0	G5 \ 12 (12 way)	0
MK6/4	0	UK 3 N	0
MK6/6	0	UK 5 N	0
SAK2.5	0	UK 10 N	0
SAK4	0	UK 16 N	0
SAK6N	0	UK 35 N	0
SAK10	0		
SAK16	0		
SAK35	0		
Entrelec			
MA2.5/5	0		
M4/6	0		
M6/8	0		
M10/10	0		
M16/12	0		
M35/16	0		

Cable Gland Entry Matrix

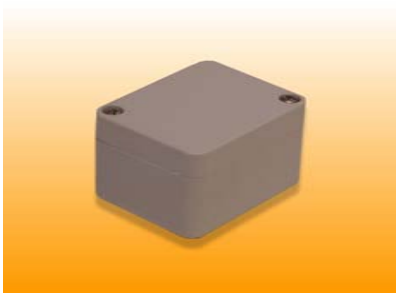
Entry Size	Side A-C	Side B-D
M16	0	0
M20	0	0
M25	0	0
M32	0	0
M40	0	0

Drilling Envelope Size

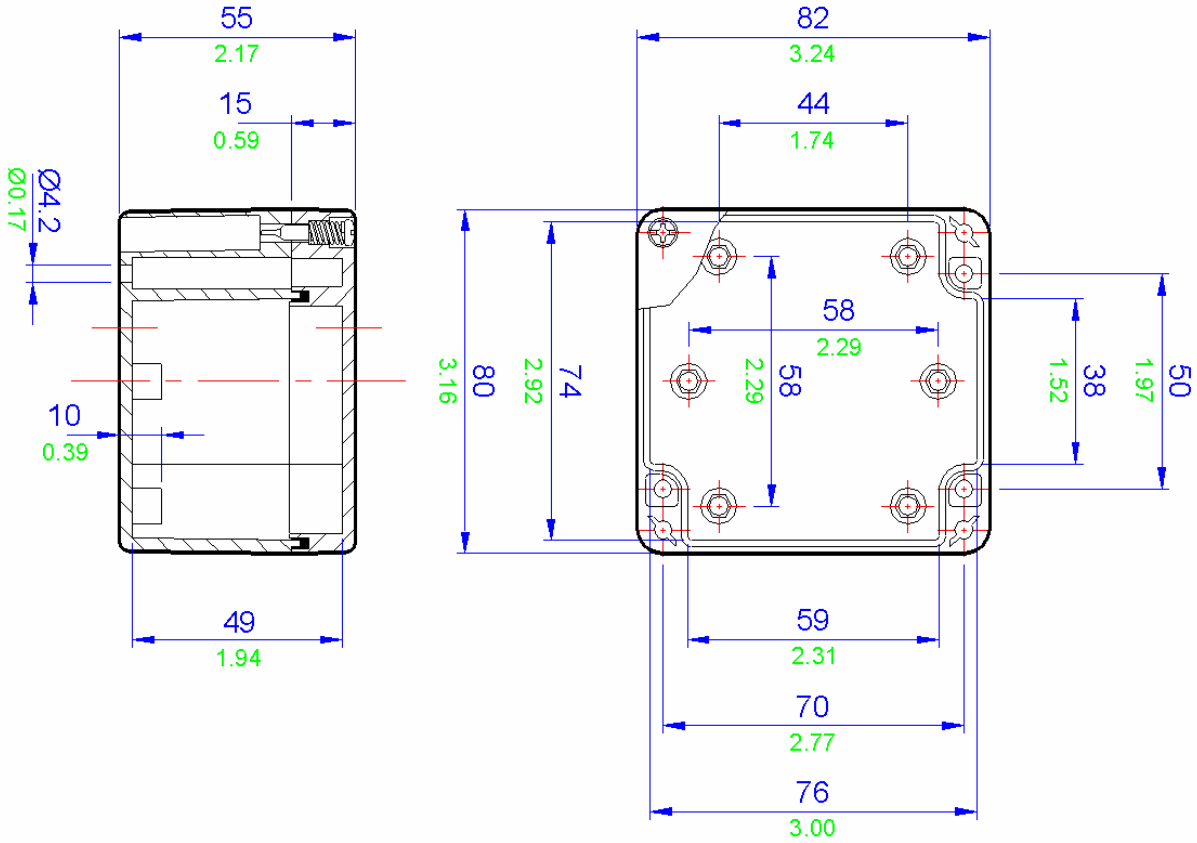
Side A-C	41 x 22mm
Side B-D	26 x 22mm



Example



ZP 3 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZP3 Specifications

Width	82mm
Length	80mm
Depth	55mm
Material	Moulded Polycarbonate (RAL7035 grey)
	Moulded ABS (RAL7035 grey)
Weight	Polycarbonate 150g ABS 148g
IP Rating	65
Temperature	Polycarbonate versions -40º to 80º C (-94℉ to 176℉) (with standard neoprene gasket)
	Polycarbonate versions -40º to 120º C (-94℉ to 248℉) (with optional silicone gasket)
	ABS versions -40º to 65º C (-94℉ to 149℉)
Certification	NEMA Types 1, 4X, 12
	UL
Power Rating	Not Applicable

Terminal Populations

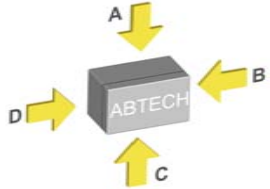
Maximum Number of Rows			1
Weidmuller		**Phoenix**	
BK4 (4 way)	2	G5 \ 4 (4 way)	2
BK6 (6 way)	1	G5 \ 6 (6 way)	1
BK12 (12 way)	0	G5 \ 12 (12 way)	0
MK6/4	0	UK 3 N	0
MK6/6	0	UK 5 N	0
SAK2.5	0	UK 10 N	0
SAK4	0	UK 16 N	0
SAK6N	0	UK 35 N	0
SAK10	0		
SAK16	0		
SAK35	0		
Entrelec			
MA2.5/5	0		
M4/6	0		
M6/8	0		
M10/10	0		
M16/12	0		
M35/16	0		

Cable Gland Entry Matrix

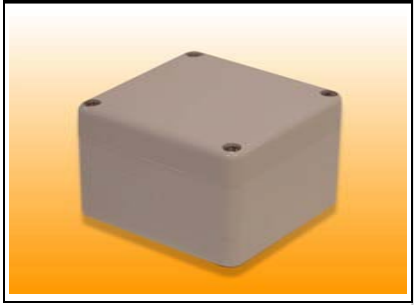
Entry Size	Side A-C	Side B-D
M16	0	0
M20	0	0
M25	0	0
M32	0	0
M40	0	0

Drilling Envelope Size

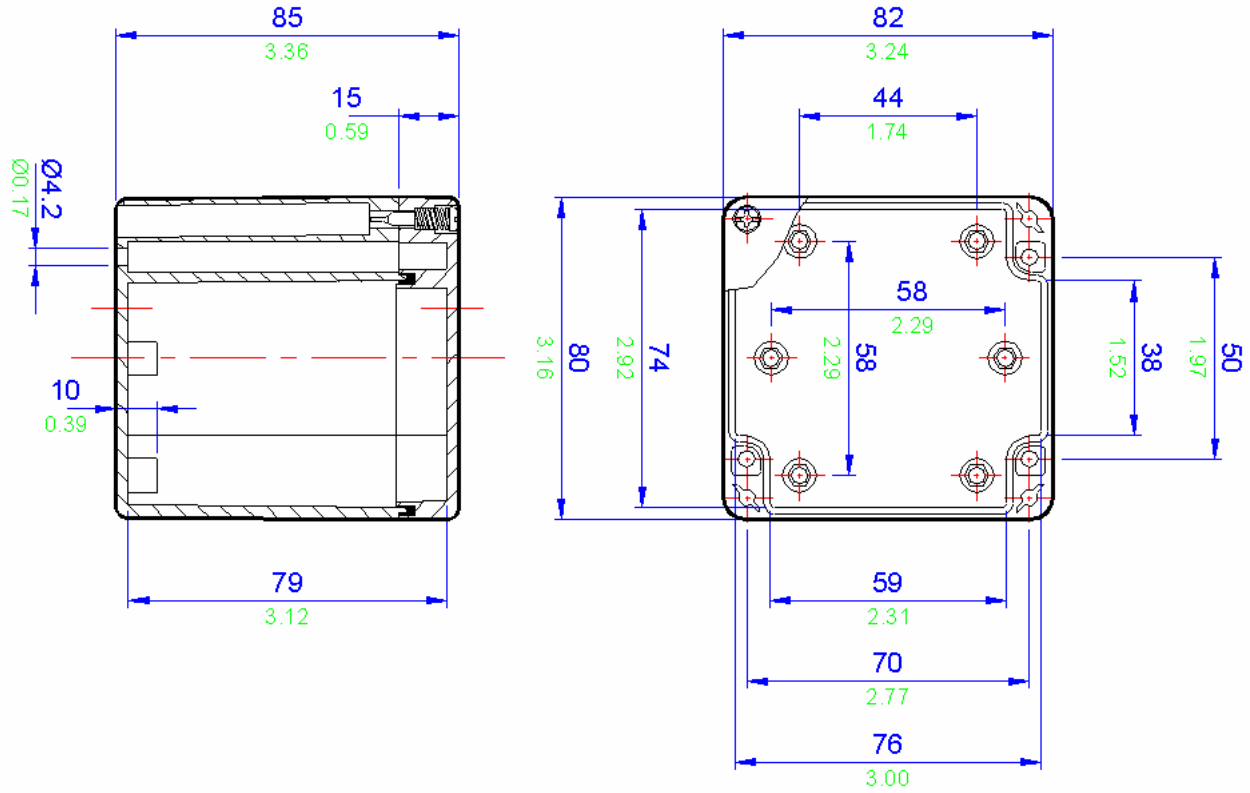
Side A-C	56 x 29mm
Side B-D	36x 29mm



Example



ZP 4 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZP4 Specifications

Width	82mm
Length	80mm
Depth	85mm
Material	Moulded Polycarbonate (RAL7035 grey)
	Moulded ABS (RAL7035 grey)
Weight	Polycarbonate 175g ABS 156g
IP Rating	65
Temperature	Polycarbonate versions -40º to 80º C (-94℉ to 176℉) (with standard neoprene gasket)
	Polycarbonate versions -40º to 120º C (-94℉ to 248℉) (with optional silicone gasket)
	ABS versions -40º to 65º C (-94℉ to 149℉)
Certification	NEMA Types 1, 4X, 12
	UL
Power Rating	Not Applicable

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Phoenix**	
BK4 (4 way)	2	G5 \ 4 (4 way)	2
BK6 (6 way)	1	G5 \ 6 (6 way)	1
BK12 (12 way)	0	G5 \ 12 (12 way)	0
MK6/4	1	UK 3 N	6
MK6/6	0	UK 5 N	5
SAK2.5	5	UK 10 N *	3
SAK4	5	UK 16 N *	2
SAK6N	4	UK 35 N	0
SAK10 *	3		
SAK16 *	2		
SAK35	0		
Entrelec			
MA2.5/5	6		
M4/6	5		
M6/8	3		
M10/10 *	3		
M16/12 *	1		
M35/16	0		

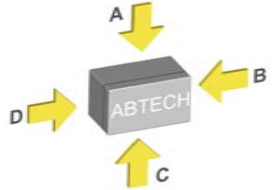
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

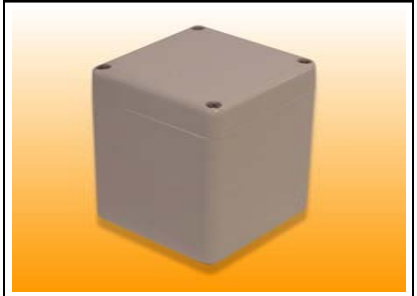
Entry Size	Side A-C	Side B-D
M16	1	1
M20	1	0
M25	1	0
M32	0	0
M40	0	0

Drilling Envelope Size

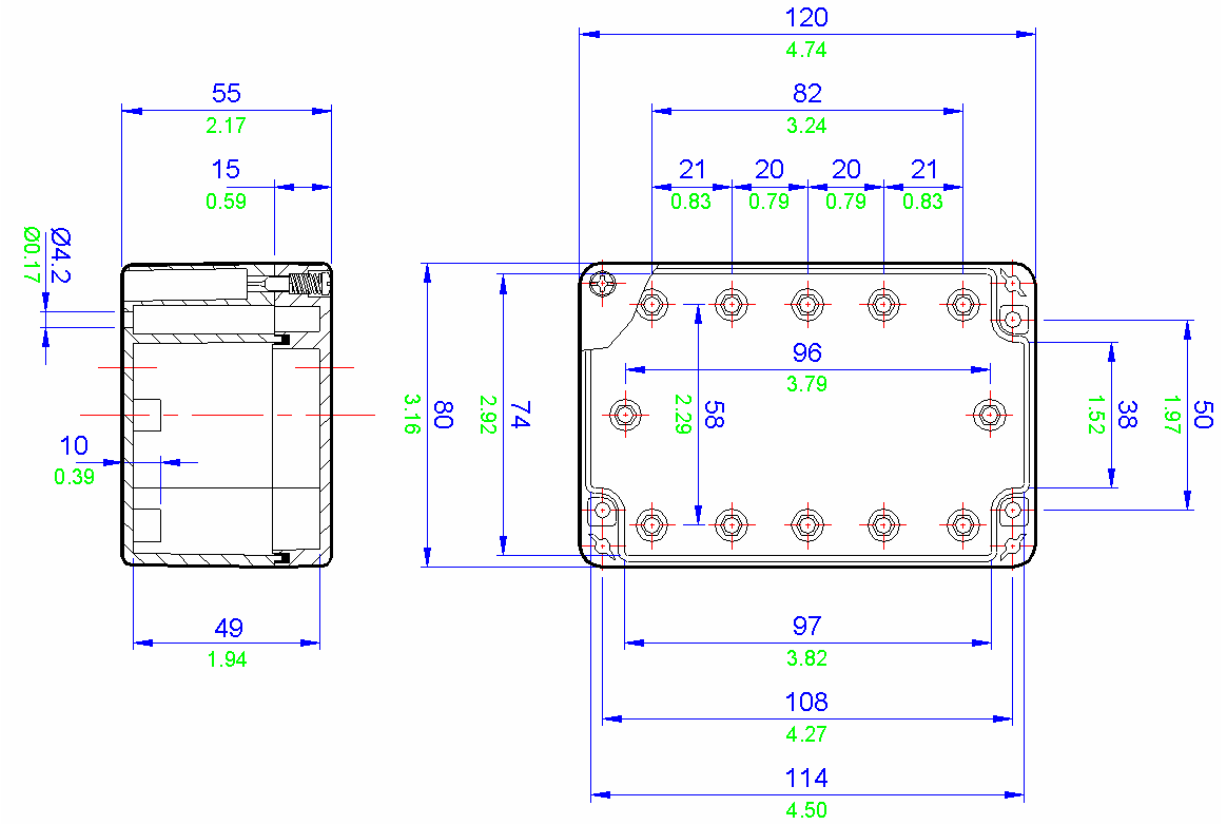
Side A-C	56 x 59mm
Side B-D	36 x 59mm



Example



ZP 5 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZP5 Specifications

Width	120mm
Length	80mm
Depth	55mm
Material	Moulded Polycarbonate (RAL7035 grey)
	Moulded ABS (RAL7035 grey)
Weight	Polycarbonate 175g ABS 165g
IP Rating	65
Temperature	Polycarbonate versions -40º to 80º C (-94℉ to 176℉) (with standard neoprene gasket)
	Polycarbonate versions -40º to 120º C (-94℉ to 248℉) (with optional silicone gasket)
	ABS versions -40º to 65º C (-94℉ to 149℉)
Certification	NEMA Types 1, 4X, 12
	UL
Power Rating	Not Applicable

Terminal Populations

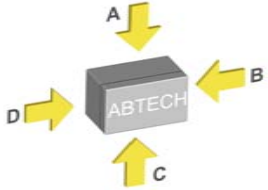
Maximum Number of Rows			1
Weidmuller		**Phoenix**	
BK4 (4 way)	2	G5 \ 4 (4 way)	2
BK6 (6 way)	2	G5 \ 6 (6 way)	2
BK12 (12 way)	1	G5 \ 12 (12 way)	1
MK6/4	2	UK 3 N	0
MK6/6	1	UK 5 N	0
SAK2.5	0	UK 10 N	0
SAK4	0	UK 16 N	0
SAK6N	0	UK 35 N	0
SAK10	0		
SAK16	0		
SAK35	0		
Entrelec			
MA2.5/5	0		
M4/6	0		
M6/8	0		
M10/10	0		
M16/12	0		
M35/16	0		

Cable Gland Entry Matrix

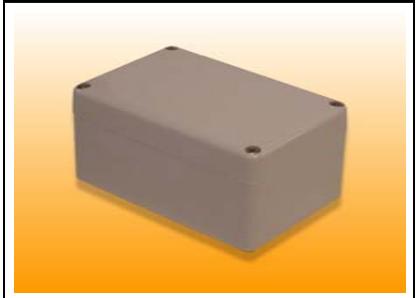
Entry Size	Side A-C	Side B-D
M16	0	0
M20	0	0
M25	0	0
M32	0	0
M40	0	0

Drilling Envelope Size

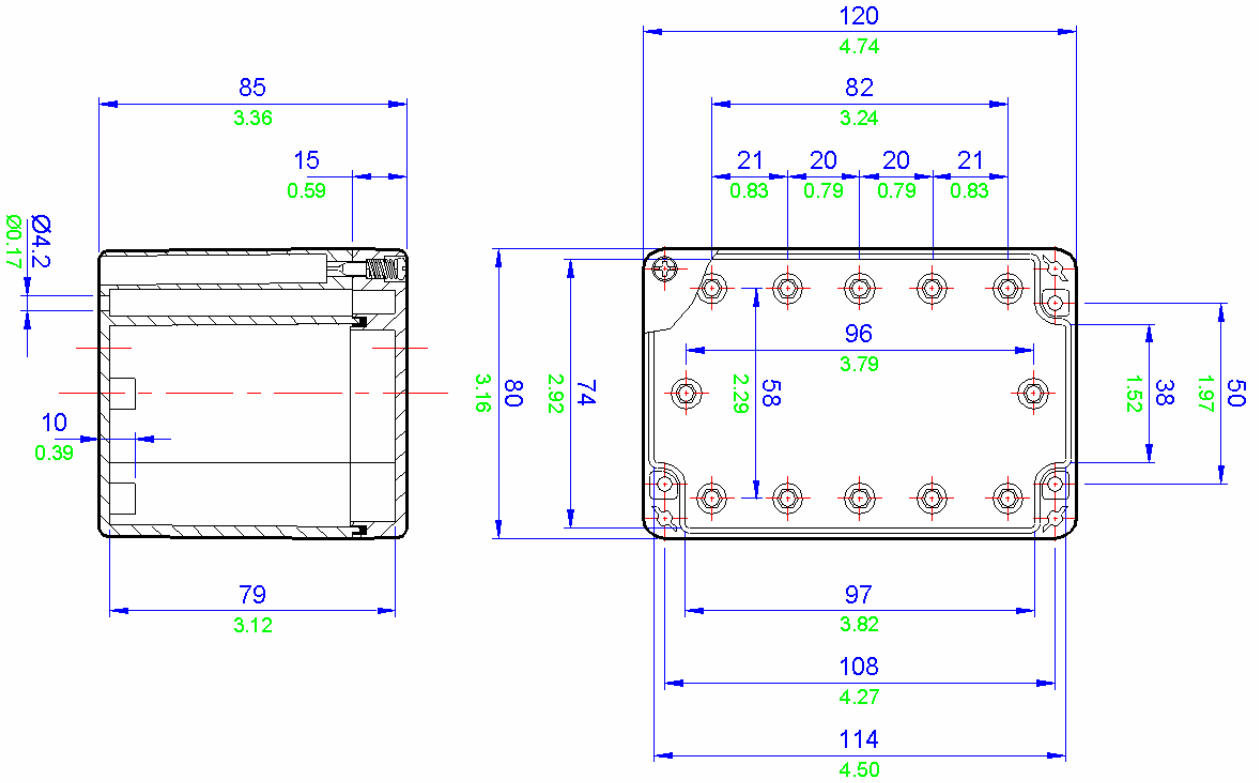
Side A-C	94 x 29mm
Side B-D	36 x 29mm



Example



ZP 6 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZP6 Specifications

Width	120mm
Length	80mm
Depth	85mm
Material	Moulded Polycarbonate (RAL7035 grey)
	Moulded ABS (RAL7035 grey)
Weight	Polycarbonate 225g ABS 205g
IP Rating	65
Temperature	Polycarbonate versions -40º to 80º C (-94℉ to 176℉) (with standard neoprene gasket)
	Polycarbonate versions -40º to 120º C (-94℉ to 248℉) (with optional silicone gasket)
	ABS versions -40º to 65º C (-94℉ to 149℉)
Certification	NEMA Types 1, 4X, 12
	UL
Power Rating	Not Applicable

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Phoenix**	
BK4 (4 way)	2	G5 \ 4 (4 way)	2
BK6 (6 way)	2	G5 \ 6 (6 way)	2
BK12 (12 way)	1	G5 \ 12 (12 way)	1
MK6/4	1	UK 3 N	16
MK6/6	1	UK 5 N	13
SAK2.5	14	UK 10 N *	8
SAK4	13	UK 16 N *	6
SAK6N	10	UK 35 N *	5
SAK10 *	8		
SAK16 *	7		
SAK35 *	5		
Entrelec			
MA2.5/5	17		
M4/6	14		
M6/8	8		
M10/10 *	8		
M16/12 *	7		
M35/16 *	5		

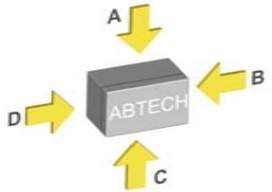
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

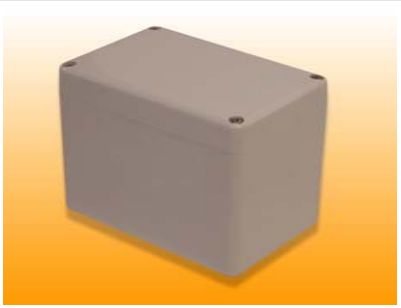
Entry Size	Side A-C	Side B-D
M16	4	1
M20	2	0
M25	2	0
M32	1	0
M40	0	0

Drilling Envelope Size

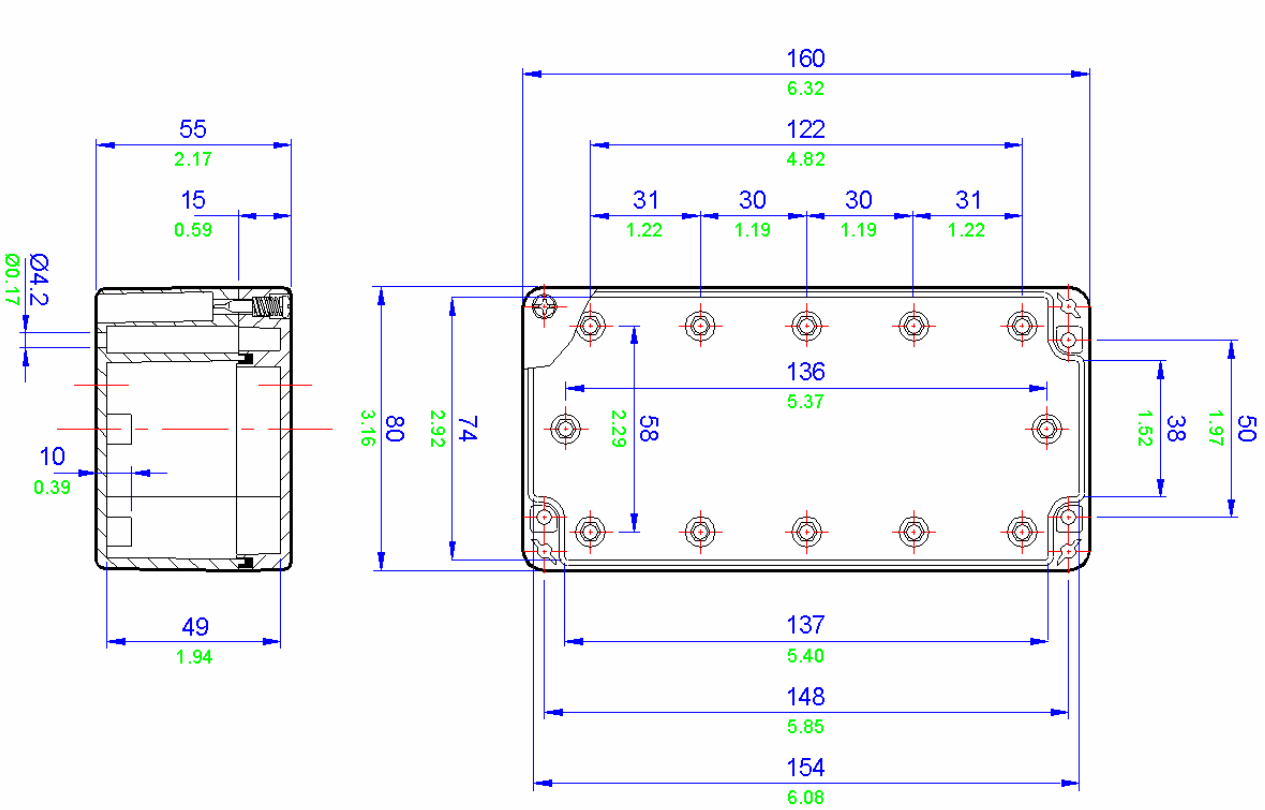
Side A-C	94 x 59mm
Side B-D	36 x 59mm



Example



ZP 7 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZP7 Specifications

Width	160mm
Length	80mm
Depth	55mm
Material	Moulded Polycarbonate (RAL7035 grey)
	Moulded ABS (RAL7035 grey)
Weight	Polycarbonate 225g ABS 205g
IP Rating	65
Temperature	Polycarbonate versions -40º to 80º C (-94℉ to 176℉) (with standard neoprene gasket)
	Polycarbonate versions -40º to 120º C (-94℉ to 248℉) (with optional silicone gasket)
	ABS versions -40º to 65º C (-94℉ to 149℉)
Certification	NEMA Types 1, 4X, 12
	UL
Power Rating	Not Applicable

Terminal Populations

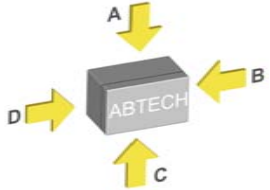
Maximum Number of Rows			1
Weidmuller		**Phoenix**	
BK4 (4 way)	3	G5 \ 4 (4 way)	3
BK6 (6 way)	2	G5 \ 6 (6 way)	2
BK12 (12 way)	1	G5 \ 12 (12 way)	1
MK6/4	2	UK 3 N	0
MK6/6	1	UK 5 N	0
SAK2.5	0	UK 10 N	0
SAK4	0	UK 16 N	0
SAK6N	0	UK 35 N	0
SAK10	0		
SAK16	0		
SAK35	0		
Entrelec			
MA2.5/5	0		
M4/6	0		
M6/8	0		
M10/10	0		
M16/12	0		
M35/16	0		

Cable Gland Entry Matrix

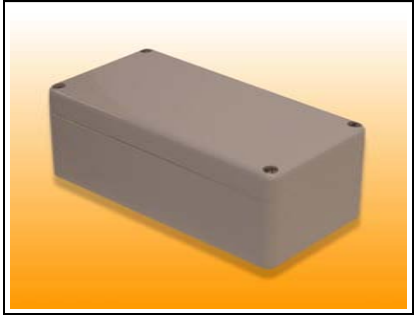
Entry Size	Side A-C	Side B-D
M16	0	0
M20	0	0
M25	0	0
M32	0	0
M40	0	0

Drilling Envelope Size

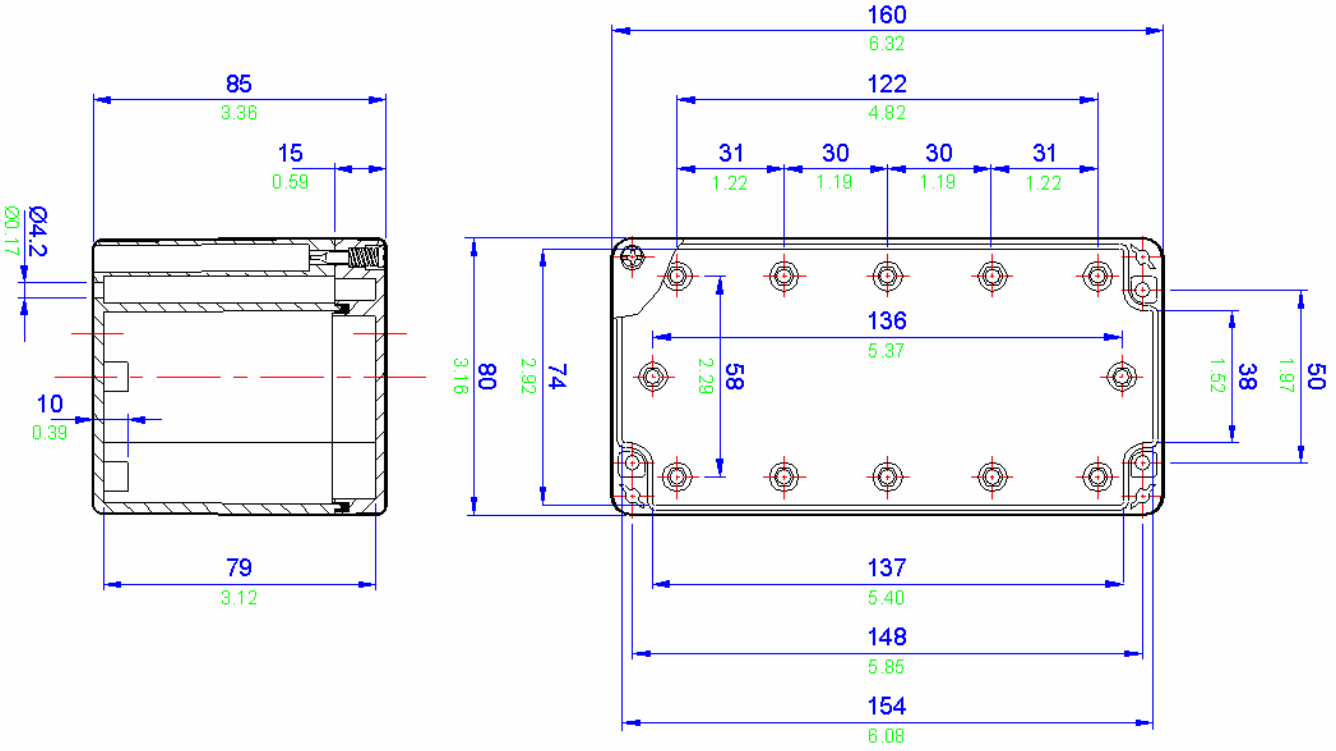
Side A-C	134 x 29mm
Side B-D	36 x 29mm



Example



ZP 8 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZP8 Specifications

Width	160mm
Length	80mm
Depth	85mm
Material	Moulded Polycarbonate (RAL7035 grey)
	Moulded ABS (RAL7035 grey)
Weight	Polycarbonate 250g ABS 235g
IP Rating	65
Temperature	Polycarbonate versions -40º to 80º C (-94℉ to 176℉) (with standard neoprene gasket)
	Polycarbonate versions -40º to 120º C (-94℉ to 248℉) (with optional silicone gasket)
	ABS versions -40º to 65º C (-94℉ to 149℉)
Certification	NEMA Types 1, 4X, 12
	UL
Power Rating	Not Applicable

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Phoenix**	
BK4 (4 way)	3	G5 \ 4 (4 way)	3
BK6 (6 way)	2	G5 \ 6 (6 way)	2
BK12 (12 way)	1	G5 \ 12 (12 way)	1
MK6/4	2	UK 3 N	23
MK6/6	1	UK 5 N	19
SAK2.5	20	UK 10 N *	11
SAK4	19	UK 16 N *	9
SAK6N	15	UK 35 N *	7
SAK10 *	12		
SAK16 *	10		
SAK35 *	7		
Entrelec			
MA2.5/5	24		
M4/6	20		
M6/8	15		
M10/10 *	12		
M16/12 *	10		
M35/16 *	7		

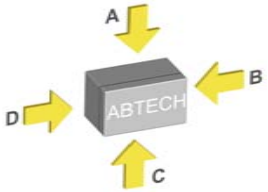
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

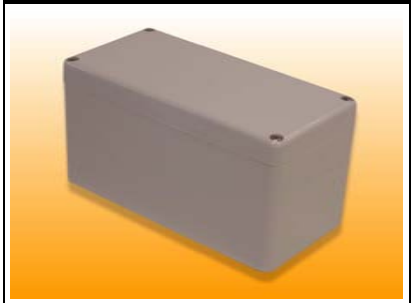
Entry Size	Side A-C	Side B-D
M16	6	1
M20	3	0
M25	2	0
M32	2	0
M40	0	0

Drilling Envelope Size

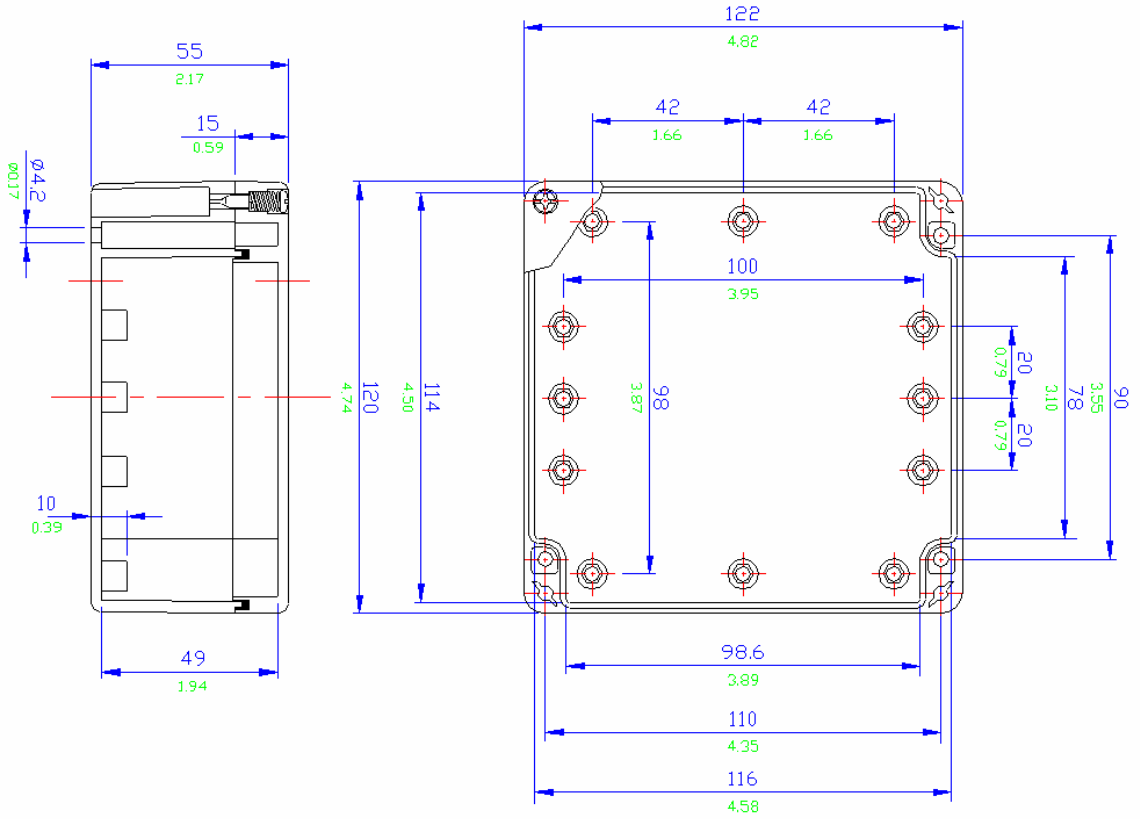
Side A-C	59 x 134mm
Side B-D	59 x 36mm



Example



ZP 9 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZP9 Specifications

Width	122mm
Length	120mm
Depth	55mm
Material	Moulded Polycarbonate (RAL7035 grey)
	Moulded ABS (RAL7035 grey)
Weight	Polycarbonate 240g ABS 220g
IP Rating	65
Temperature	Polycarbonate versions -40º to 80º C (-94℉ to 176℉) (with standard neoprene gasket)
	Polycarbonate versions -40º to 120º C (-94℉ to 248℉) (with optional silicone gasket)
	ABS versions -40º to 65º C (-94℉ to 149℉)
Certification	NEMA Types 1, 4X, 12
	UL
Power Rating	Not Applicable

Terminal Populations

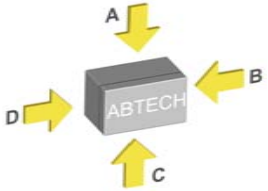
Maximum Number of Rows			1
Weidmuller		**Phoenix**	
BK4 (4 way)	2	G5 \ 4 (4 way)	2
BK6 (6 way)	2	G5 \ 6 (6 way)	2
BK12 (12 way)	1	G5 \ 12 (12 way)	1
MK6/4	2	UK 3 N	0
MK6/6	1	UK 5 N	0
SAK2.5	0	UK 10 N	0
SAK4	0	UK 16 N	0
SAK6N	0	UK 35 N	0
SAK10	0		
SAK16	0		
SAK35	0		
Entrelec			
MA2.5/5	0		
M4/6	0		
M6/8	0		
M10/10	0		
M16/12	0		
M35/16	0		

Cable Gland Entry Matrix

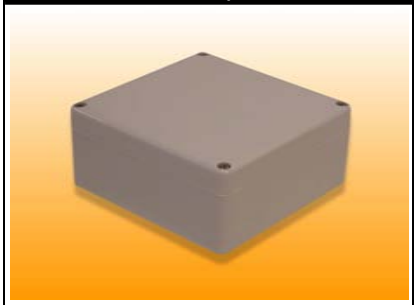
Entry Size	Side A-C	Side B-D
M16	0	0
M20	0	0
M25	0	0
M32	0	0
M40	0	0

Drilling Envelope Size

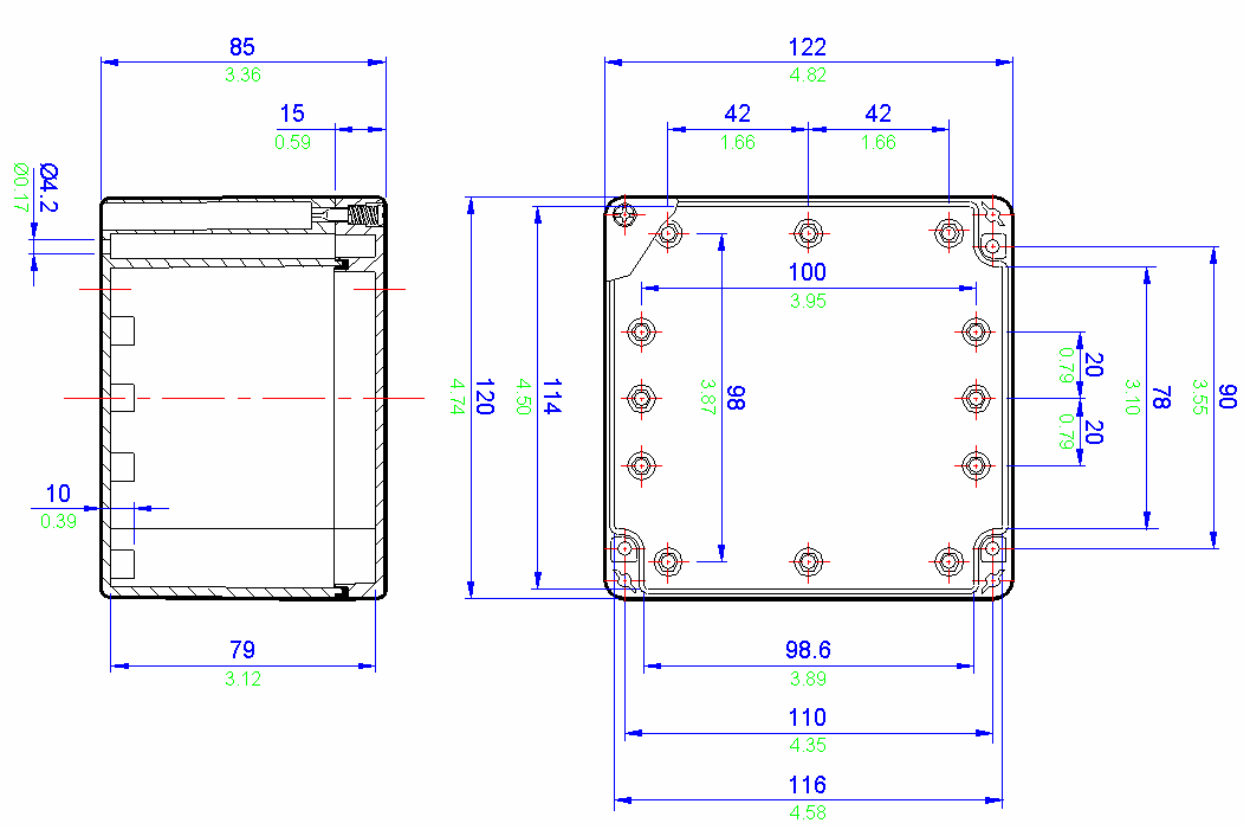
Side A-C	96 x 29mm
Side B-D	76 x 29mm



Example



ZP 10 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZP10 Specifications

Width	122mm
Length	120mm
Depth	85mm
Material	Moulded Polycarbonate (RAL7035 grey)
	Moulded ABS (RAL7035 grey)
Weight	Polycarbonate 295g ABS 270g
IP Rating	65
Temperature	Polycarbonate versions -40º to 80º C (-94℉ to 176℉) (with standard neoprene gasket)
	Polycarbonate versions -40º to 120º C (-94℉ to 248℉) (with optional silicone gasket)
	ABS versions -40º to 65º C (-94℉ to 149℉)
Certification	NEMA Types 1, 4X, 12
	UL
Power Rating	Not Applicable

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Phoenix**	
BK4 (4 way)	2	G5 \ 4 (4 way)	2
BK6 (6 way)	2	G5 \ 6 (6 way)	2
BK12 (12 way)	1	G5 \ 12 (12 way)	1
MK6/4	2	UK 3 N	16
MK6/6	1	UK 5 N	13
SAK2.5	14	UK 10 N *	8
SAK4	13	UK 16 N *	6
SAK6N	10	UK 35 N *	5
SAK10 *	8		
SAK16 *	7		
SAK35 *	5		
Entrelec			
MA2.5/5	17		
M4/6	14		
M6/8	8		
M10/10 *	8		
M16/12 *	7		
M35/16 *	5		

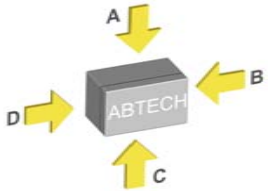
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

Entry Size	Side A-C	Side B-D
M16	4	2
M20	2	1
M25	2	1
M32	1	1
M40	0	0

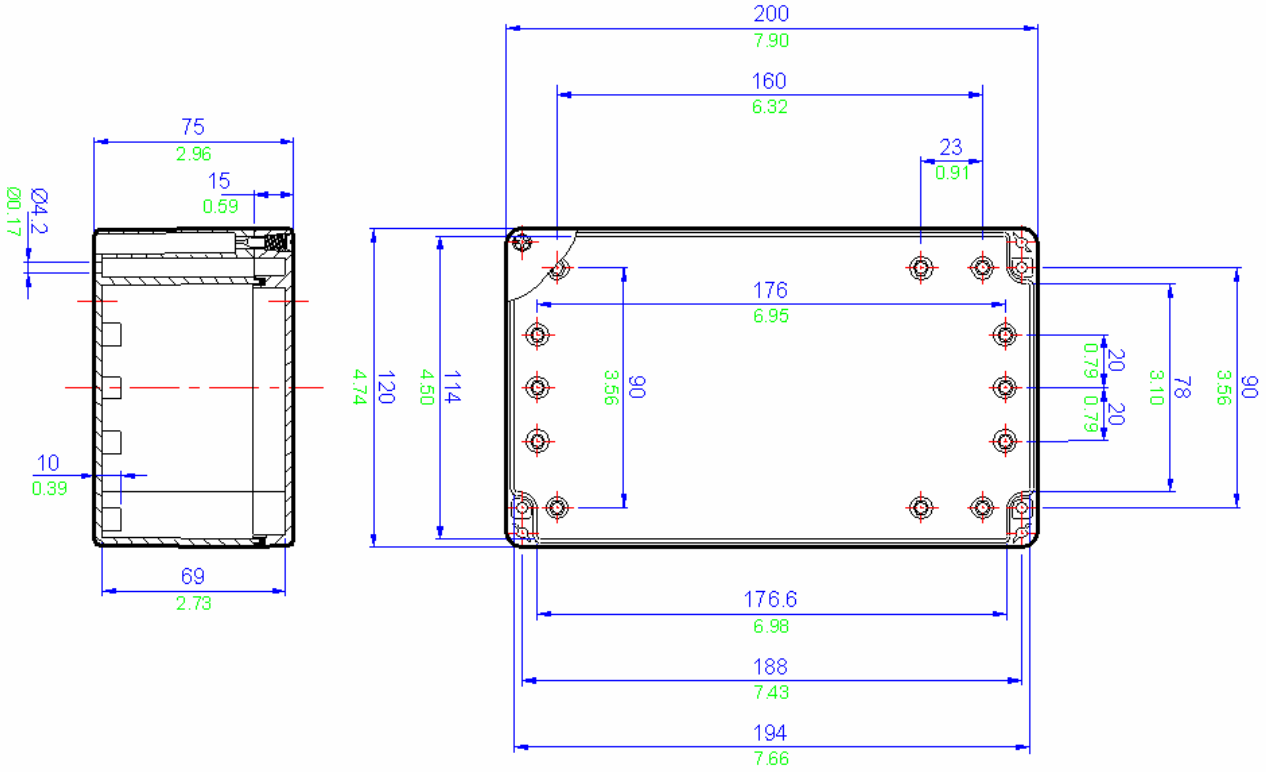
Drilling Envelope Size

Side A-C	96 x 59mm
Side B-D	76 x 59mm



Example

ZP 11 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZP11 Specifications

Width	200mm
Length	120mm
Depth	75mm
Material	Moulded Polycarbonate (RAL7035 grey)
	Moulded ABS (RAL7035 grey)
Weight	Polycarbonate 400g ABS 380g
IP Rating	65
Temperature	Polycarbonate versions -40º to 80º C (-94℉ to 176℉) (with standard neoprene gasket)
	Polycarbonate versions -40º to 120º C (-94℉ to 248℉) (with optional silicone gasket)
	ABS versions -40º to 65º C (-94℉ to 149℉)
Certification	NEMA Types 1, 4X, 12
	UL
Power Rating	Not Applicable

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Phoenix**	
BK4 (4 way)	5	G5 \ 4 (4 way)	5
BK6 (6 way)	3	G5 \ 6 (6 way)	3
BK12 (12 way)	2	G5 \ 12 (12 way)	2
MK6/4	3	UK 3 N	32
MK6/6	2	UK 5 N	27
SAK2.5	28	UK 10 N *	16
SAK4	28	UK 16 N *	13
SAK6N	21	UK 35 N *	11
SAK10 *	16		
SAK16 *	14		
SAK35 *	7		
Entrelec			
MA2.5/5	33		
M4/6	28		
M6/8	21		
M10/10 *	16		
M16/12 *	14		
M35/16 *	10		

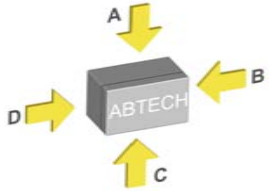
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

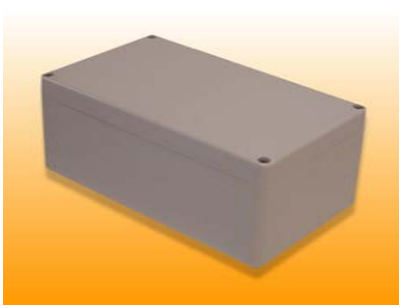
Entry Size	Side A-C	Side B-D
M16	5	2
M20	4	1
M25	3	1
M32	0	0
M40	0	0

Drilling Envelope Size

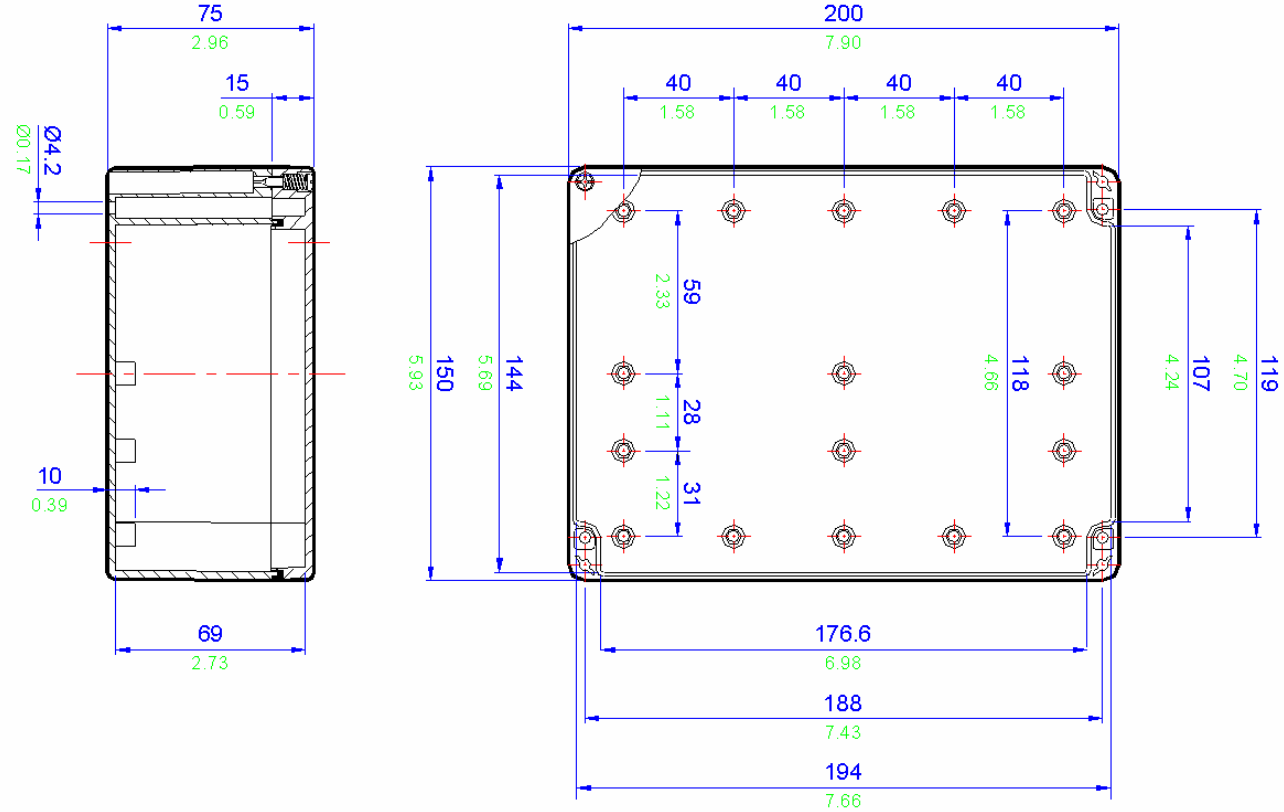
Side A-C	174 x 48mm
Side B-D	76 x 48mm



Example



ZP 12 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZP12 Specifications

Width	200mm
Length	150mm
Depth	75mm
Material	Moulded Polycarbonate (RAL7035 grey)
	Moulded ABS (RAL7035 grey)
Weight	Polycarbonate 475g ABS 440g
IP Rating	65
Temperature	Polycarbonate versions -40º to 80º C (-94℉ to 176℉) (with standard neoprene gasket)
	Polycarbonate versions -40º to 120º C (-94℉ to 248℉) (with optional silicone gasket)
	ABS versions -40º to 65º C (-94℉ to 149℉)
Certification	NEMA Types 1, 4X, 12
	UL
Power Rating	Not Applicable

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Phoenix**	
BK4 (4 way)	5	G5 \ 4 (4 way)	5
BK6 (6 way)	3	G5 \ 6 (6 way)	3
BK12 (12 way)	2	G5 \ 12 (12 way)	2
MK6/4	3	UK 3 N	32
MK6/6	2	UK 5 N	27
SAK2.5	28	UK 10 N *	16
SAK4	28	UK 16 N *	13
SAK6N	21	UK 35 N *	11
SAK10 *	16		
SAK16 *	14		
SAK35 *	7		
Entrelec			
MA2.5/5	33		
M4/6	28		
M6/8	21		
M10/10 *	16		
M16/12 *	14		
M35/16 *	10		

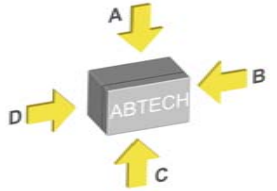
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

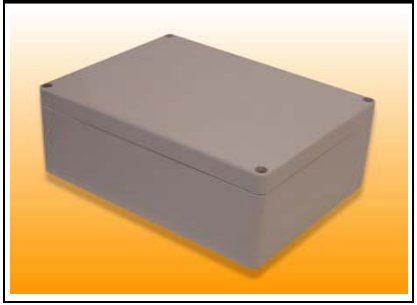
Entry Size	Side A-C	Side B-D
M16	5	3
M20	4	2
M25	3	2
M32	0	0
M40	0	0

Drilling Envelope Size

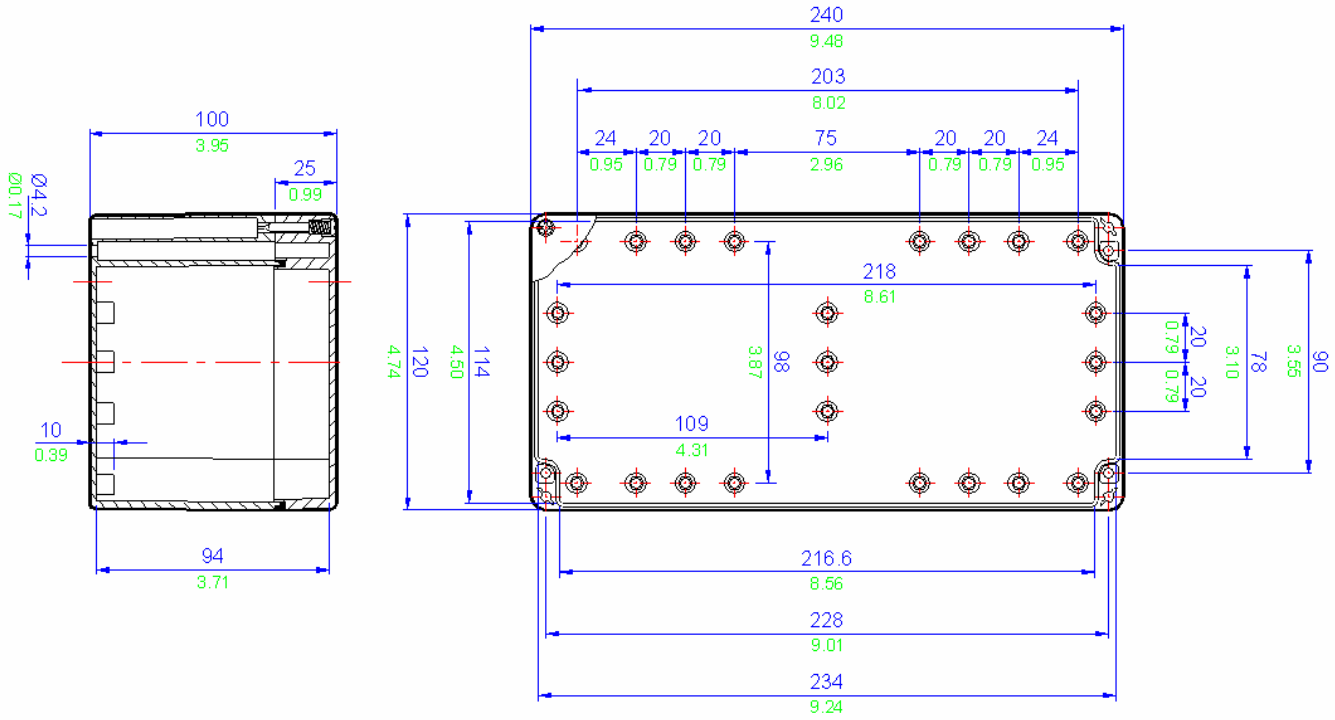
Side A-C	174 x 49mm
Side B-D	106 x 49mm



Example



ZP 13 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZP13 Specifications

Width	240mm
Length	120mm
Depth	100mm
Material	Moulded Polycarbonate (RAL7035 grey)
	Moulded ABS (RAL7035 grey)
Weight	Polycarbonate 550g ABS 495g
IP Rating	65
Temperature	Polycarbonate versions -40º to 80º C (-94℉ to 176℉) (with standard neoprene gasket)
	Polycarbonate versions -40º to 120º C (-94℉ to 248℉) (with optional silicone gasket)
	ABS versions -40º to 65º C (-94℉ to 149℉)
Certification	NEMA Types 1, 4X, 12
	UL
Power Rating	Not Applicable

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Phoenix**	
BK4 (4 way)	6	G5 \ 4 (4 way)	6
BK6 (6 way)	4	G5 \ 6 (6 way)	4
BK12 (12 way)	2	G5 \ 12 (12 way)	2
MK6/4	4	UK 3 N	39
MK6/6	3	UK 5 N	33
SAK2.5	34	UK 10 N *	20
SAK4	34	UK 16 N *	16
SAK6N	25	UK 35 N *	13
SAK10 *	20		
SAK16 *	17		
SAK35 *	11		
Entrelec			
MA2.5/5	41		
M4/6	34		
M6/8	25		
M10/10 *	20		
M16/12 *	17		
M35/16 *	12		

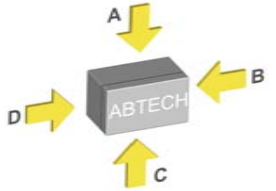
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

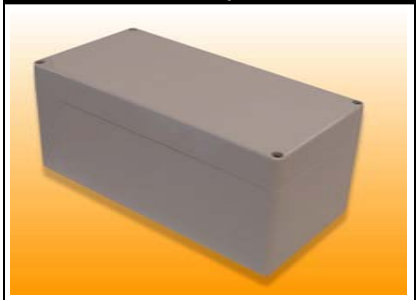
Entry Size	Side A-C	Side B-D
M16	12	4
M20	6	1
M25	4	1
M32	3	1
M40	0	0

Drilling Envelope Size

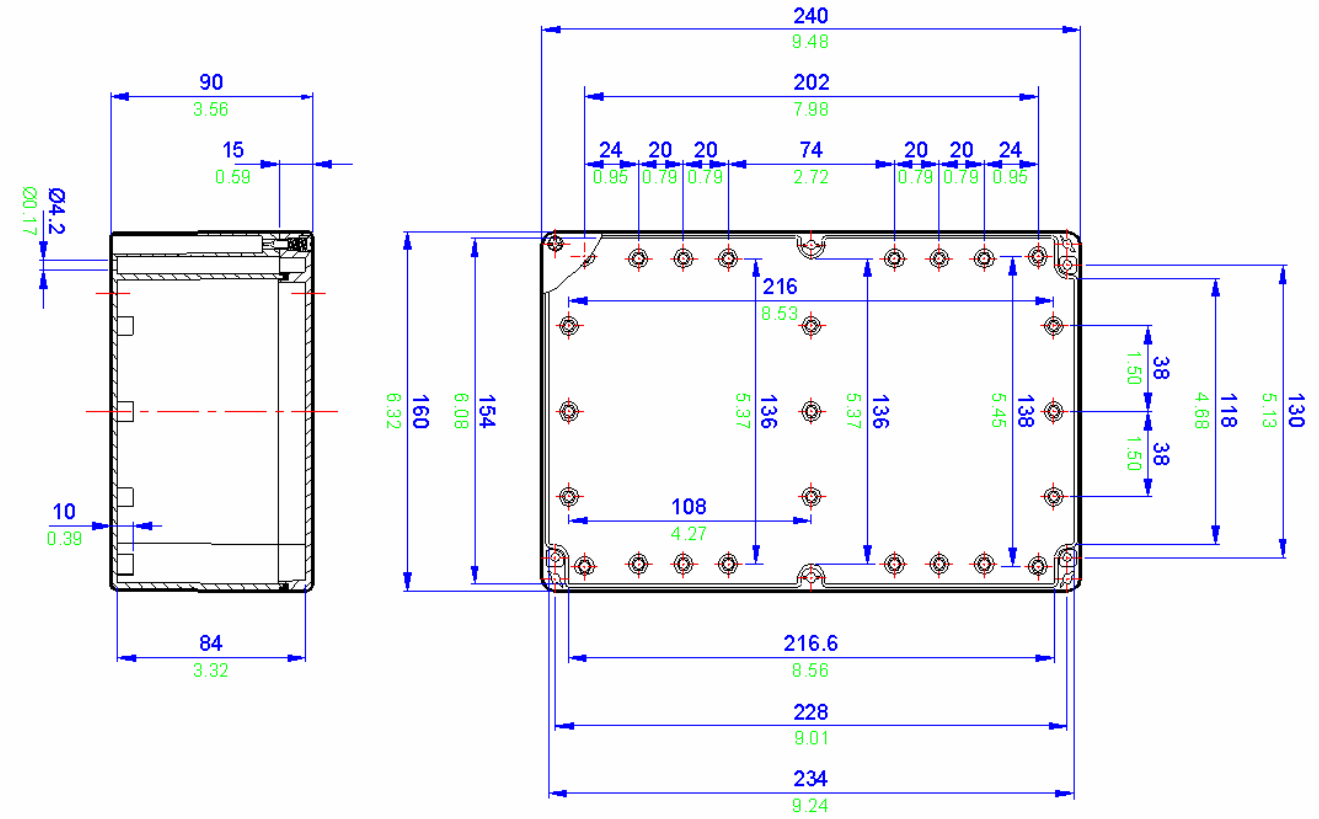
Side A-C	214 x 64mm
Side B-D	76 x 64mm



Example



ZP 14 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZP14 Specifications

Width	240mm
Length	160mm
Depth	90mm
Material	Moulded Polycarbonate (RAL7035 grey)
	Moulded ABS (RAL7035 grey)
Weight	Polycarbonate 645g ABS 575g
IP Rating	65
Temperature	Polycarbonate versions -40º to 80º C (-94℉ to 176℉) (with standard neoprene gasket)
	Polycarbonate versions -40º to 120º C (-94℉ to 248℉) (with optional silicone gasket)
	ABS versions -40º to 65º C (-94℉ to 149℉)
Certification	NEMA Types 1, 4X, 12
	UL
Power Rating	Not Applicable

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Phoenix**	
BK4 (4 way)	6	G5 \ 4 (4 way)	6
BK6 (6 way)	4	G5 \ 6 (6 way)	4
BK12 (12 way)	2	G5 \ 12 (12 way)	2
MK6/4	4	UK 3 N	39
MK6/6	3	UK 5 N	33
SAK2.5	34	UK 10 N *	20
SAK4	34	UK 16 N *	16
SAK6N	25	UK 35 N *	13
SAK10 *	20		
SAK16 *	17		
SAK35 *	11		
Entrelec			
MA2.5/5	41		
M4/6	34		
M6/8	25		
M10/10 *	20		
M16/12 *	17		
M35/16 *	12		

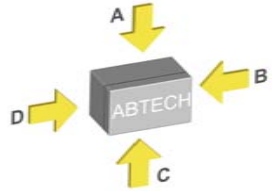
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

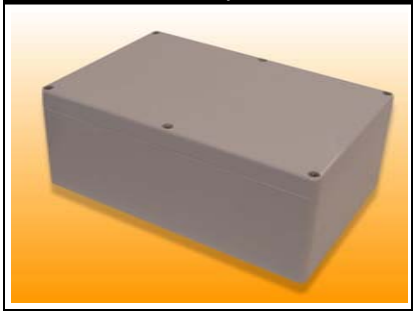
Entry Size	Side A-C	Side B-D
M16	12	6
M20	4	2
M25	4	2
M32	2	2
M40	0	0

Drilling Envelope Size

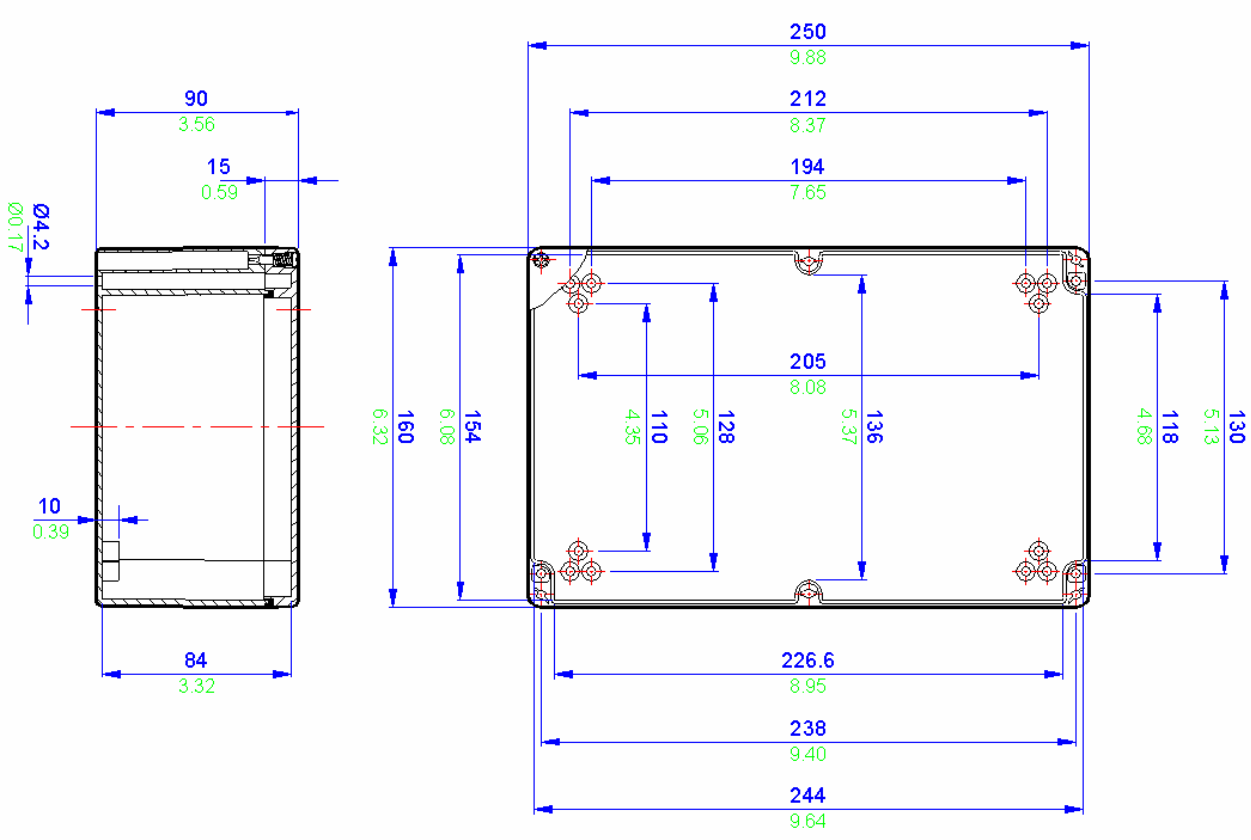
Side A-C	100 x 64mm (x2)
Side B-D	106 x 64mm



Example



ZP 15 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZP15 Specifications

Width	250mm
Length	160mm
Depth	90mm
Material	Moulded Polycarbonate (RAL7035 grey)
	Moulded ABS (RAL7035 grey)
Weight	Polycarbonate 550g ABS 495g
IP Rating	65
Temperature	Polycarbonate versions -40º to 80º C (-94℉ to 176℉) (with standard neoprene gasket)
	Polycarbonate versions -40º to 120º C (-94℉ to 248℉) (with optional silicone gasket)
	ABS versions -40º to 65º C (-94℉ to 149℉)
Certification	NEMA Types 1, 4X, 12
	UL
Power Rating	Not Applicable

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Phoenix**	
BK4 (4 way)	6	G5 \ 4 (4 way)	6
BK6 (6 way)	4	G5 \ 6 (6 way)	4
BK12 (12 way)	2	G5 \ 12 (12 way)	2
MK6/4	4	UK 3 N	42
MK6/6	3	UK 5 N	42
SAK2.5	36	UK 10 N *	21
SAK4	36	UK 16 N *	17
SAK6N	27	UK 35 N *	14
SAK10 *	21		
SAK16 *	18		
SAK35 *	12		
Entrelec			
MA2.5/5	43		
M4/6	36		
M6/8	27		
M10/10 *	21		
M16/12 *	18		
M35/16 *	13		

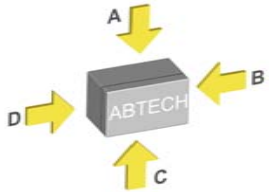
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

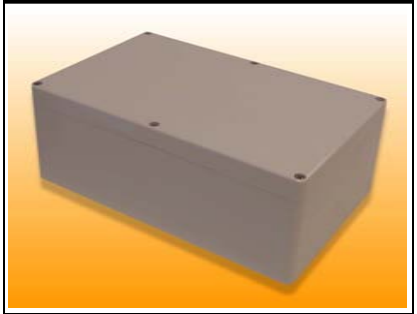
Entry Size	Side A-C	Side B-D
M16	12	6
M20	4	2
M25	4	2
M32	2	2
M40	0	0

Drilling Envelope Size

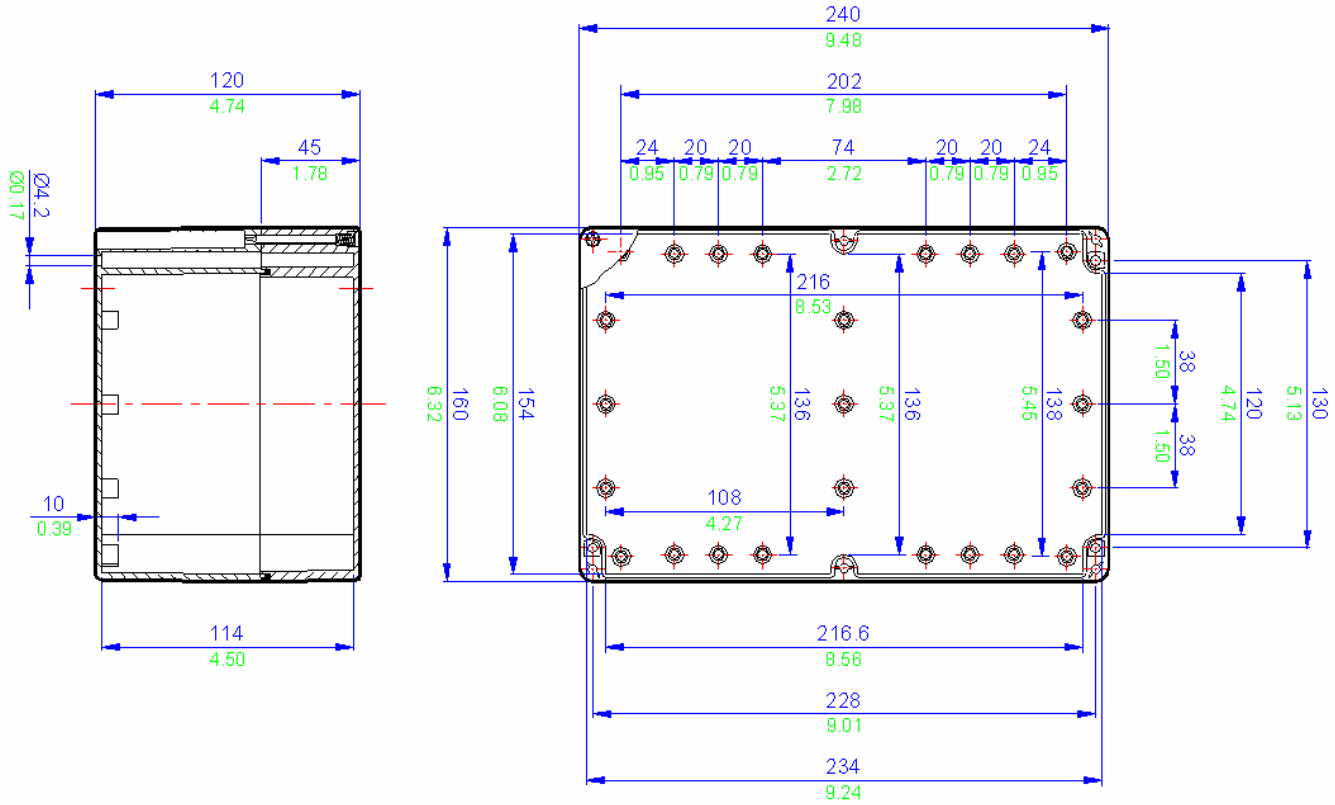
Side A-C	104 x 65mm (x2)
Side B-D	116 x 65mm



Example



ZP 16 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZP16 Specifications

Width	240mm
Length	160mm
Depth	120mm
Material	Moulded Polycarbonate (RAL7035 grey)
	Moulded ABS (RAL7035 grey)
Weight	Polycarbonate 805g ABS 720g
IP Rating	65
Temperature	Polycarbonate versions -40º to 80º C (-94℉ to 176℉) (with standard neoprene gasket)
	Polycarbonate versions -40º to 120º C (-94℉ to 248℉) (with optional silicone gasket)
	ABS versions -40º to 65º C (-94℉ to 149℉)
Certification	NEMA Types 1, 4X, 12
	UL
Power Rating	Not Applicable

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Phoenix**	
BK4 (4 way)	6	G5 \ 4 (4 way)	6
BK6 (6 way)	4	G5 \ 6 (6 way)	4
BK12 (12 way)	2	G5 \ 12 (12 way)	2
MK6/4	4	UK 3 N	39
MK6/6	3	UK 5 N	33
SAK2.5	34	UK 10 N *	20
SAK4	34	UK 16 N *	16
SAK6N	25	UK 35 N *	13
SAK10 *	20		
SAK16 *	17		
SAK35 *	11		
Entrelec			
MA2.5/5	41		
M4/6	34		
M6/8	25		
M10/10 *	20		
M16/12 *	17		
M35/16 *	12		

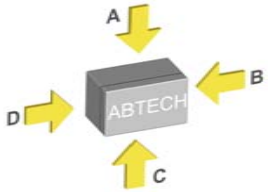
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

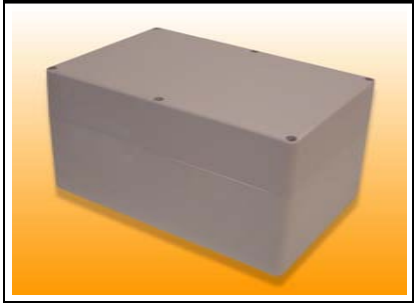
Entry Size	Side A-C	Side B-D
M16	12	6
M20	4	3
M25	4	2
M32	2	2
M40	0	0

Drilling Envelope Size

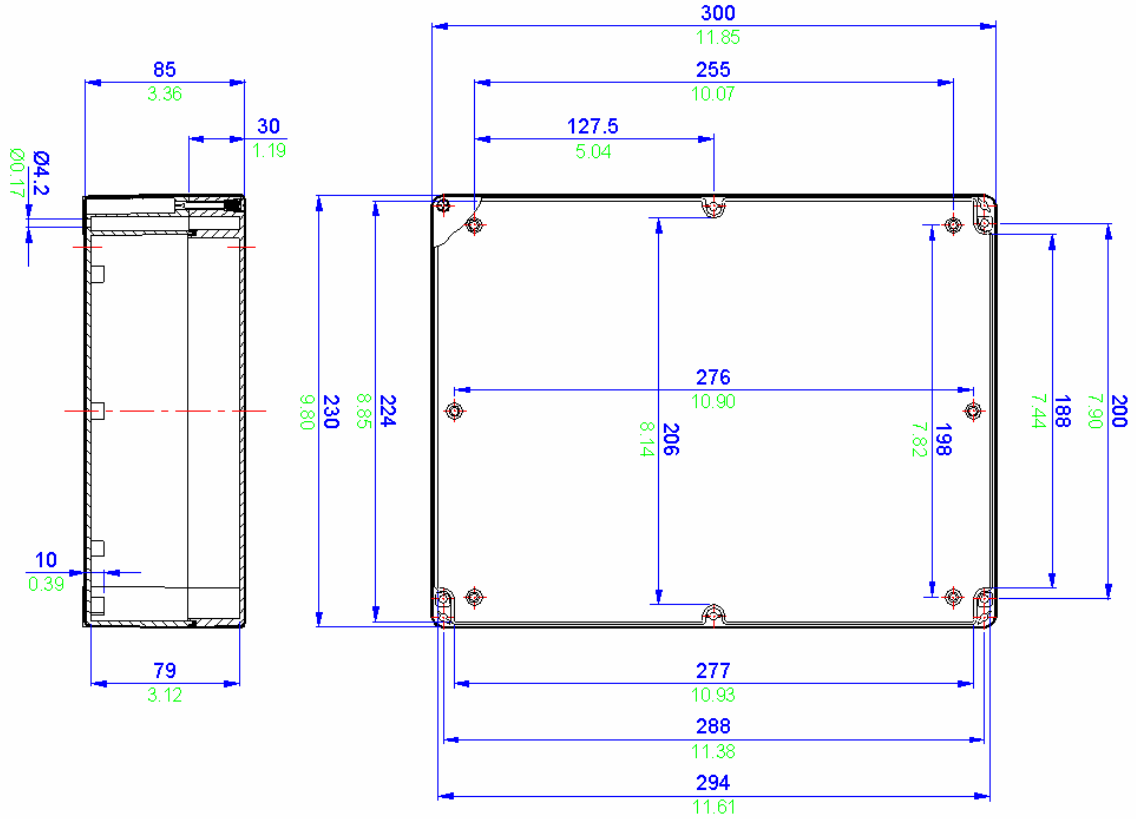
Side A-C	100 x 64mm (x2)
Side B-D	106 x 64mm



Example



ZP 17 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZP17 Specifications

Width	300mm
Length	230mm
Depth	85mm
Material	Moulded Polycarbonate (RAL7035 grey)
	Moulded ABS (RAL7035 grey)
Weight	Polycarbonate 930g ABS 875g
IP Rating	65
Temperature	Polycarbonate versions -40º to 80º C (-94℉ to 176℉) (with standard neoprene gasket)
	Polycarbonate versions -40º to 120º C (-94℉ to 248℉) (with optional silicone gasket)
	ABS versions -40º to 65º C (-94℉ to 149℉)
Certification	NEMA Types 1, 4X, 12
	UL
Power Rating	Not Applicable

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Phoenix**	
BK4 (4 way)	10	G5 \ 4 (4 way)	6
BK6 (6 way)	6	G5 \ 6 (6 way)	4
BK12 (12 way)	4	G5 \ 12 (12 way)	2
MK6/4	6	UK 3 N	39
MK6/6	4	UK 5 N	33
SAK2.5	56	UK 10 N *	20
SAK4	56	UK 16 N *	16
SAK6N	42	UK 35 N *	13
SAK10 *	34		
SAK16 *	28		
SAK35 *	18		
Entrelec			
MA2.5/5	68		
M4/6	56		
M6/8	42		
M10/10 *	34		
M16/12 *	28		
M35/16 *	20		

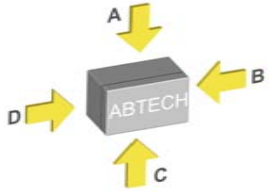
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

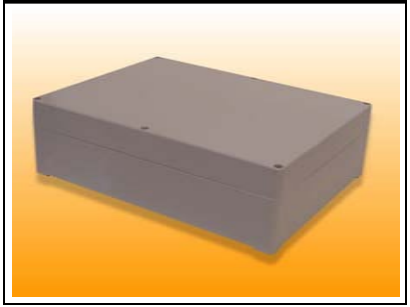
Entry Size	Side A-C	Side B-D
M16	8	5
M20	6	4
M25	0	0
M32	0	0
M40	0	0

Drilling Envelope Size

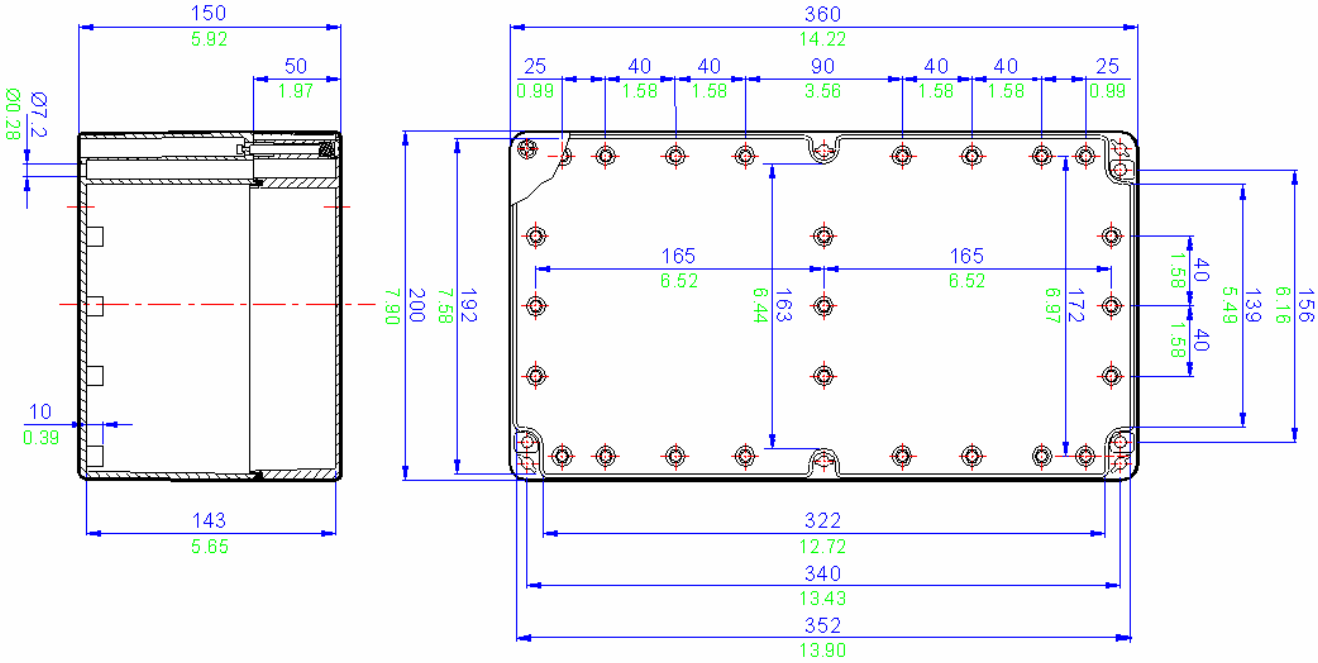
Side A-C	130 x 44mm (x2)
Side B-D	186 x 44mm



Example



ZP 18 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZP18 Specifications

Width	360mm
Length	200mm
Depth	150mm
Material	Moulded Polycarbonate (RAL7035 grey)
	Moulded ABS (RAL7035 grey)
Weight	Polycarbonate 1850g ABS 1625g
IP Rating	65
Temperature	Polycarbonate versions -40º to 80º C (-94℉ to 176℉) (with standard neoprene gasket)
	Polycarbonate versions -40º to 120º C (-94℉ to 248℉) (with optional silicone gasket)
	ABS versions -40º to 65º C (-94℉ to 149℉)
Certification	NEMA Types 1, 4X, 12
	UL
Power Rating	Not Applicable

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Phoenix**	
BK4 (4 way)	18	G5 \ 4 (4 way)	18
BK6 (6 way)	12	G5 \ 6 (6 way)	12
BK12 (12 way)	6	G5 \ 12 (12)	6
MK6/4	14	UK 3 N	126
MK6/6	8	UK 5 N	106
SAK2.5	110	UK 10 N *	64
SAK4	110	UK 16 N *	54
SAK6N	82	UK 35 N *	42
SAK10 *	66		
SAK16 *	54		
SAK35 *	36		
Entrelec			
MA2.5/5	132		
M4/6	110		
M6/8	82		
M10/10 *	66		
M16/12 *	54		
M35/16 *	36		

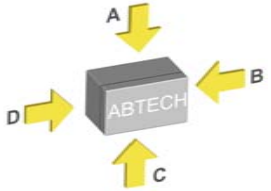
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

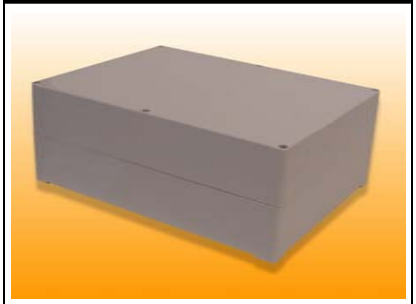
Entry Size	Side A-C	Side B-D
M16	18	9
M20	12	6
M25	8	4
M32	4	2
M40	4	2

Drilling Envelope Size

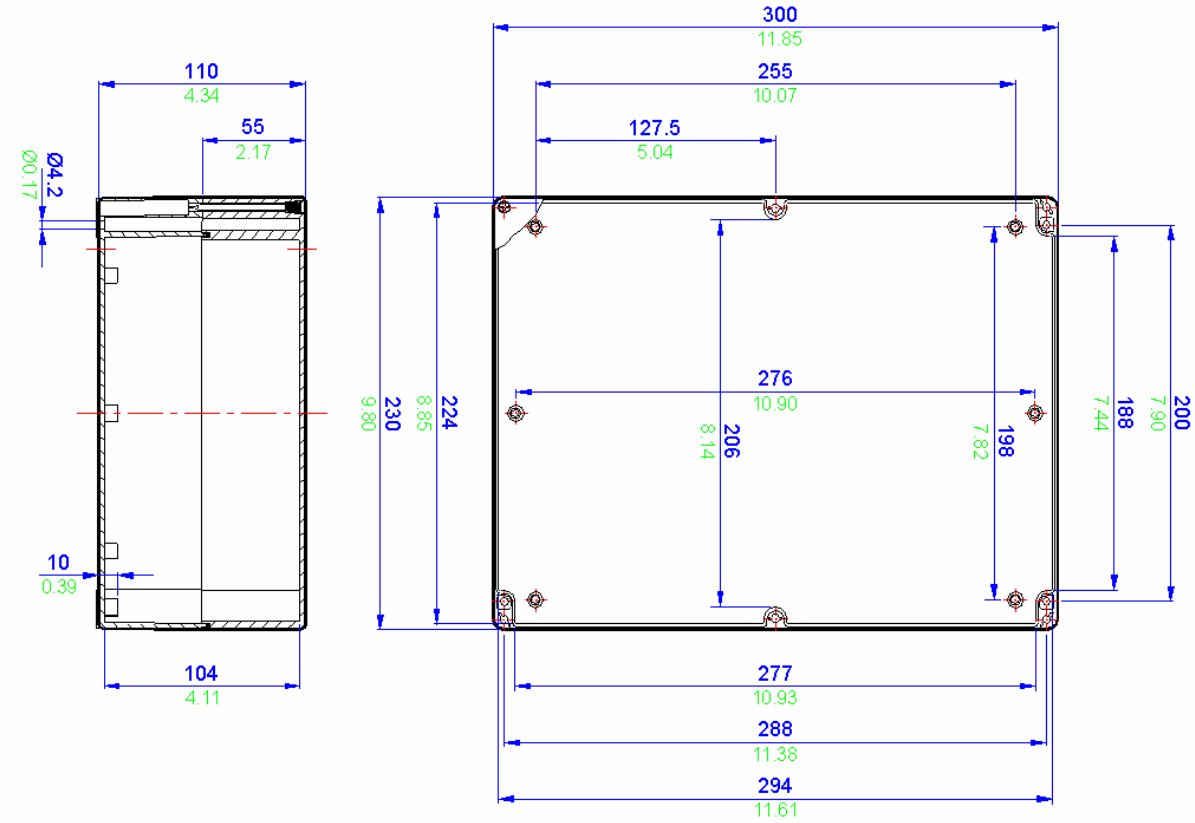
Side A-C	150 x 85mm (x2)
Side B-D	136 x 85mm



Example



ZP 19 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

ZP19 Specifications

Width	300mm
Length	230mm
Depth	110mm
Material	Moulded Polycarbonate (RAL7035 grey)
	Moulded ABS (RAL7035 grey)
Weight	Polycarbonate 1250g ABS 1025g
IP Rating	65
Temperature	Polycarbonate versions -40º to 80º C (-94℉ to 176℉) (with standard neoprene gasket)
	Polycarbonate versions -40º to 120º C (-94℉ to 248℉) (with optional silicone gasket)
	ABS versions -40º to 65º C (-94℉ to 149℉)
Certification	NEMA Types 1, 4X, 12
	UL
Power Rating	Not Applicable

Terminal Populations

Maximum Number of Rows			1
Weidmuller		**Phoenix**	
BK4 (4 way)	10	G5 \ 4 (4 way)	10
BK6 (6 way)	6	G5 \ 6 (6 way)	6
BK12 (12 way)	4	G5 \ 12 (12 way)	4
MK6/4	6	UK 3 N	64
MK6/6	4	UK 5 N	54
SAK2.5	56	UK 10 N *	32
SAK4	56	UK 16 N *	28
SAK6N	42	UK 35 N *	22
SAK10 *	34		
SAK16 *	28		
SAK35 *	18		
Entrelec			
MA2.5/5	68		
M4/6	56		
M6/8	42		
M10/10 *	34		
M16/12 *	28		
M35/16 *	20		

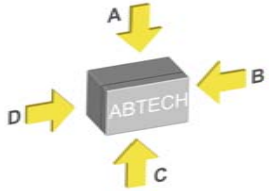
* Care must be taken to ensure that the size of this enclosure can accommodate the cable bending radius.

Cable Gland Entry Matrix

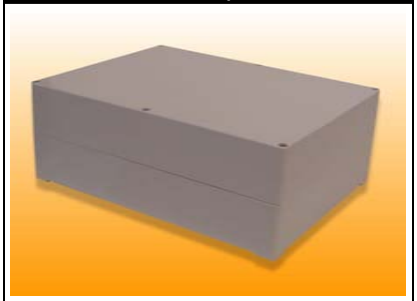
Entry Size	Side A-C	Side B-D
M16	8	5
M20	6	4
M25	0	0
M32	0	0
M40	0	0

Drilling Envelope Size

Side A-C	130 x 44mm (x2)
Side B-D	186 x 44mm



Example



8

Other Products

GRN Junction Boxes

BPC Control Stations

SXC Control Stations

Submersible Enclosures

GRN Enclosures

The ABTECH GRN8 enclosure has been designed as a cost-effective junction box for use in hazardous areas. There are a number of terminal and entry configurations available, resulting in a highly versatile enclosure which is suitable for a wide variety of installations.

The enclosure is manufactured in a UL approved UV stabilised polycarbonate and is available as a pre-assembled terminal box or as an empty enclosure for OEM applications.

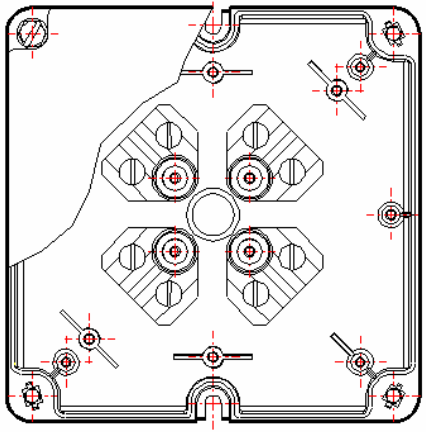
It can be supplied with the option of a terminal rail, an internal chassis plate or directly mounted terminals for cables up to 4 sq mm.

The GRN8 is a competitive product for lower risk applications in both safe and hazardous areas. It is designed to operate within the ambient temperature range of - 20℃ to + 40℃ (-4℉ to 104℉) but for non hazardous application the upper ambient temperature range can be extended to 120℃ (248℉). As well as being UV stable, polycarbonate is resistant to a wide variety of chemicals. The use of silicone rubber lid gasket and 316 stainless steel lid fixings ensures that the chemical resistance of the GRN8 is not compromised.
Earthing can be accomplished by various means. The provision of an internal/external earth/ground stud is optional or one of the terminals can be dedicated to earthing / grounding functions.

Additionally, there is the facility to mount an earth bar inside the box which can be used to terminate and connect as many earthing wires as there are cable entries.
This method is useful for the equi-potential bonding of metal cable glands and an additional equi-potential wire can be linked to the internal/external earth stud to facilitate a positive connection to the ‘plant dirty’ earthing system. The earth bar can alternatively be used as a clean earth for instrumentation as it can be electrically isolated from the dirty earth.

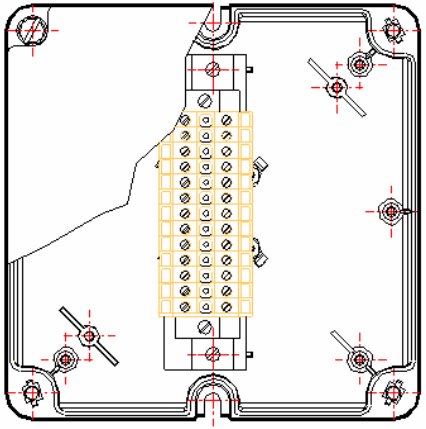
The GRN8 is ATEX certified for use in Zone 1 hazardous areas EEx‘e’ to BS EN 50019:2000 for Zone 1 and Zone 2 applications, BS EN 50281-1 for Zone 21 and Zone 22 applications and EEx‘nA’ to BS EN 50021 for Zone 2 applications.

GRN 8 Terminal Options



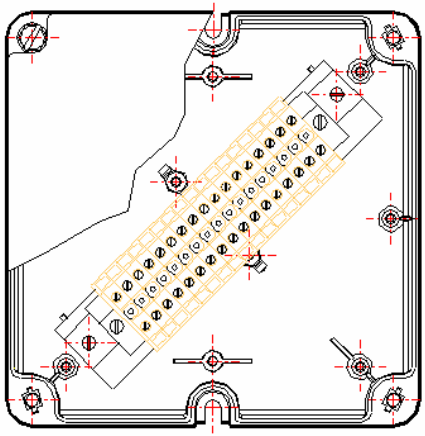
Option One

Up to 8 post / mantle type EEx'e' terminals
(up to 2 x 4mm^2 conductors per terminal)
Star configuration



Option Two

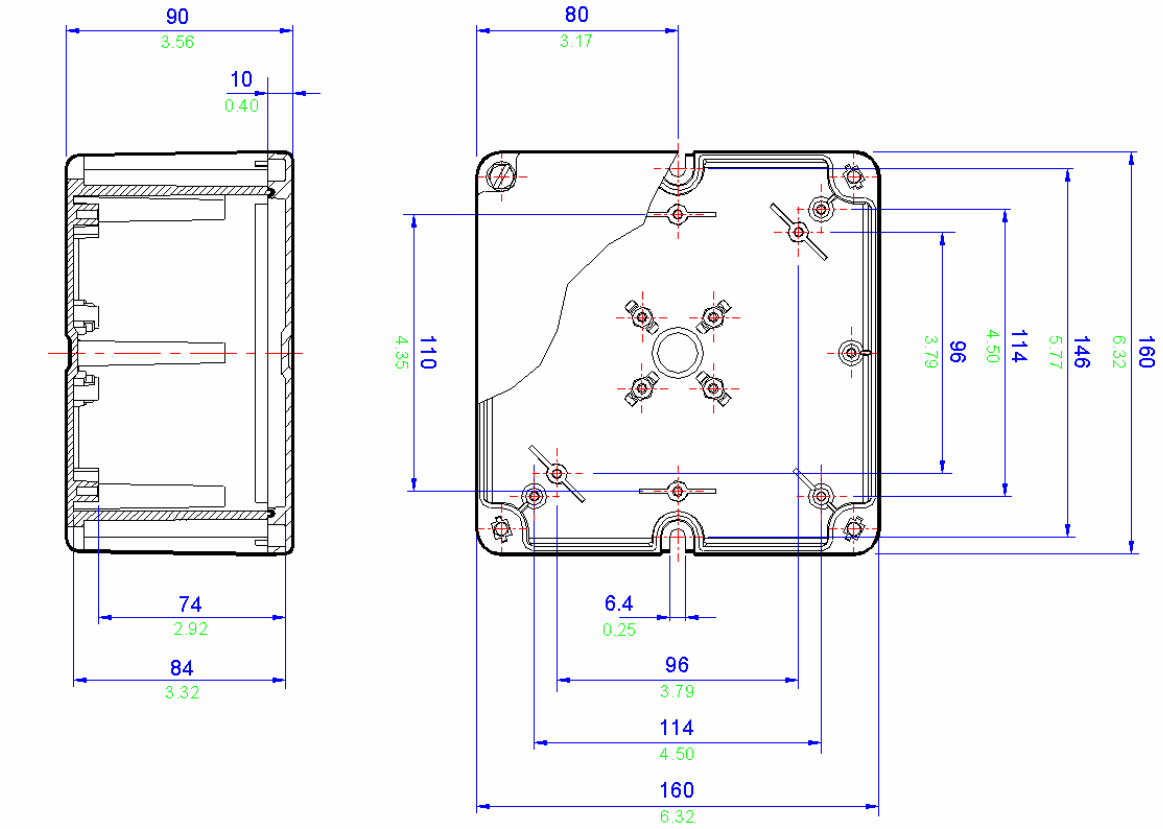
Up to 13 screw/clamp type EEx'e' terminals
(for conductors up to 2.5mm^2)
See table on page 189 for other terminal types
Horizontal / Vertical configuration



Option Three

Up to 17 screw/clamp type EEx'e' terminals
(for conductors up to 2.5mm^2)
See table on page 189 for other terminal types
Diagonal configuration

GRN 8 Drawing



All blue dimensions in mm, all green dimensions in decimal inches (drawing not to scale)

GRN 8 Specifications

Width	160mm
Length	160mm
Depth	90mm
Material	Moulded Polycarbonate (Black)
Weight	500g
IP Rating	65
Temperature	-40℃ to 80℃ (-40℉ to 176℉) (with standard neoprene gasket)
	-40℃ to 120º C (-40℉ to 248℉) (with optional silicone gasket)
	ATEX Certified Version -20º to 40º C (-4℉ to 104℉)
Certification	ATEX EEx'e' T6 BS EN50019 (Zone 1 and 2)
	ATEX EEx'e' T85℃ BS EN50281-1-1 (Zone 1 and 2)
Power Rating	10.0W

Terminal Populations

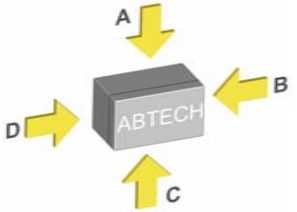
Maximum Number of Rows			1
Weidmuller		**Phoenix**	
BK4 (4 way)	3	G5 \ 4 (4 way)	3
BK6 (6 way)	2	G5 \ 6 (6 way)	2
BK12 (12 way)	1	G5 \ 12 (12 way)	1
MK6/4	2	UK 3 N	21
MK6/6	1	UK 5 N	17
SAK2.5	17	UK 10 N	11
SAK4	17	UK 16 N	9
SAK6N	14	UK 35 N	7
SAK10	11		
SAK16	9		
SAK35	5		
WDU 2.5	20	**Entrelec**	
WDU 4	17	MA2.5/5	21
WDU 6	14	M4/6	17
WDU 10	11	M6/8	14
WDU 16	9	M10/10	11
		M16/12	9
		M35/16	6

Entry Matrix

Entry Size	Side A-C	Side B-D
M16	4	4
M20	4	4
M25	2	2
M32	0	2
M40	0	0

Drilling Envelope

Side A-C	54 x 75mm x 2
Side B-D	48 x 75mm x 2



GRN 8 Photo

BPC Range of Control Stations

The BPC range of control stations have been designed for use in potentially explosive atmospheres and are suitable for most gas groups including hydrogen.

Based on the popular BPGC range of enclosures, they are manufactured from carbon loaded glass reinforced polyester (GRP). This material gives excellent mechanical strength and life expectancy, making these control stations particularly suitable for use in harsh environmental conditions. Additionally, the anti-static properties of the enclosure material make them ideal for use in dust hazard environments.

A number of common actuator types can be fitted, including Start, Stop, Emergency Stop and rotary type switches. Tag and individual actuator labels can be fitted as required.

Some typical arrangements of control station size and actuator layouts are shown on the page opposite, however, we are able to supply many other variants as dictated by your required design. Please contact our Sales office for further details.

BPC Specifications	
Size	Depends on base model of enclosure. Smallest base size BPGC6 (120x122x90mm) Largest base size: BPGC15 (400x405x120mm) See BPG Section for further details
Material	Carbon Loaded Glass Reinforced Polyester (Black)
IP Rating	IP66
Temperature	-40º to 80º C (-40℉ to +176℉)
Certification	Ⓔx II 2 GD EEx ed IIC T6
Actuator Types	Start, Stop, Mushroom head emergency stop, key operated switch, Rotary selector switch, Illuminated red indicator, Illuminated green indicator.
Termination	Direct to control elements ($2.5mm^2$ maximum)
Voltage Rating	415V maximum
Switching Current	6 Amps maximum
Entries	Depends on model. Typically, 1 or 2 x 25mm bottom entry. Fitted with plastic gland
Labels	Self-adhesive silver foil

BPC1310

Control Elements; (x2) Key Switch, Selector, Start, Illuminated Red Indicator, Emergency Stop. Mounted in BPGC13 Enclosure (400 x 150 x 120mm). Glands: 2 x M25

BPC73

Control Elements;
Key Switch, Start, Emergency Stop
Mounted in BPGC7 Enclosure
(220 x 120 x 90mm)
Glands;
1 x M25

BPC62

Control Elements;
Start, Stop
Mounted in BPGC6 Enclosure
(122 x 120 x 90mm)
Glands;
1 x M25

SXC Range of Control Stations

The SXC range of control stations have been designed for use in potentially explosive atmospheres and are suitable for all gas groups including hydrogen.

Based on the SX range of enclosures, they are manufactured from high quality 316 stainless steel. This material offers the highest degree of environmental protection and is suitable for even the most arduous of conditions.

Additionally, stainless steel prevents the build up of static electricity, making these controls stations ideal for use in dust hazard applications.

A number of common actuator types can be fitted, including Start, Stop, Emergency Stop and rotary type switches. Tag and individual actuator labels can be fitted as required.

Some typical arrangements of control station size and actuator layouts are shown on the page opposite, however, we are able to supply many other variants as dictated by your required design. Please contact our Sales office for further details.

SXC Specifications	
Size	Depends on base model of enclosure. Smallest base size SX66 (152x152x102mm) Largest base size: SX8 (800x1250x300mm) See SX Section for further details
Material	Stainless Steel 316 (1.4404)
IP Rating	IP66
Temperature	-40º to 80º C (-40℉ to +176℉)
Certification	Ex II 2 GD EEx ed IIC T6
Actuator Types	Start, Stop, Mushroom head emergency stop, key operated switch, Rotary selector switch, Illuminated red indicator, Illuminated green indicator.
Termination	Direct to control elements ($2.5mm^2$ maximum)
Voltage Rating	415V maximum
Switching Current	6 Amps maximum
Entries	Depends on model. Typically, 1 or 2 x 25mm bottom entry. Fitted with plastic gland
Labels	Self-adhesive silver foil

SXC325

Control Elements; (x5) Key Switch, Start, Selector, Illuminated
Green Indicator, Emergency Stop.
Mounted in SX3 Enclosure
(372 x 448 x 140mm). Glands: 2 x M25

SXC62

Control Elements;
Start, Stop
Mounted in SX66 Enclosure
(152 x 152 x 102mm)
Glands;
1 x M25

Submersible Enclosures

By definition, a submersible enclosure is one which provides complete protection to live or moving parts within the enclosure. Such protection being against the ingress of dust (or other contaminants) as well as protection against the ingress of water.

There are two distinct IP rating for submersible enclosures. These are:
IPX7 - submersion in one metre of water for 30 minutes, and IPX8 - submersion depth and duration to be agreed between manufacturer and client. The degree of protection provided is normally specified to a maximum depth for a pre-determined duration and defined frequency of duration for example “up to 20 metres for 72 hours – weekly”. IEC 529 - BS 5345 Part 1 relates to IP 68.

ABTECH designed their first submersible terminal box over 15 years ago. The IP Rating standard in use at the time was BS5490:1977. This, like its modern replacement BS EN 60529:1992, lists both the test method for ingress protection and the acceptance criteria. In general, the acceptance criteria for water penetration is that the amount of water entering the enclosure, if any, shall be insufficient to interfere with the safety and operation of the equipment inside. However, if the operating requirements include indefinite submersion the only realistic amount of water that can be tolerated is none.

The difficulty in detecting small quantities of water is that water may be present as a vapour, and therefore invisible. In time limited tests water may enter an enclosure in quantities small enough to increase the humidity inside the box, but this would not be apparent using a visual check since it would be invisible. A more objective measurement technique is required.

With the assistance of the University of Sheffield, ABTECH devised a method of detecting very small quantities of water. Two identical enclosures are required, one as a test box and one as a control. A conditioning room is set up in a location with constant humidity. The room must then be equipped with a calibrated high resolution analytical balance. Each box is left open in the same part of the conditioning room, close to the balance for 24 hours to ensure that they are both at the same temperature and both contain air at the same relative humidity. Using the balance one sachet of desiccant is weighed and quickly inserted into each box. The boxes are immediately closed and the lids secured. The weight of the desiccant in each box is recorded. The test box is then subject to the test as agreed with the client or as stated in the current British or international standard. The control box is left in the conditioning room.

When the test is completed the test box is thoroughly dried on the outside and left for several hours, preferably overnight, in a dry place outside of the conditioning room. This ensures that any extraneous water on the outside of the box has evaporated. The test box is then returned to the conditioning room. Both boxes are opened and quickly the desiccant is weighed again. The results are recorded. If no water has entered the test box the increase in weight of each sachet of desiccant will be the same. This is because they have both absorbed all the moisture in the air that was trapped inside the boxes. If any water has entered the test box the desiccant from that box will show a greater increase in weight. It should be noted, however, that it is only possible to measure the amount of water vapour absorbed by the desiccant within the accuracy limits of the balance.

ABTECH have devoted much development effort to the concept of submersible enclosures. Small enclosures are eminently suitable for submersible applications. They are relatively stiff and have little surface area for water pressure to act upon.

For shallow depths (less than 1m) submersion is generally achievable using standard off the shelf enclosures e.g. the ABTECH ZAG, BPG and SX ranges of enclosures.

However, boxes soon become large enough to require reinforcement. A box of only 300mm cube in 10 metres of water will experience over a tonne of pressure on each of its six sides. The actual forces that will be experienced need to be calculated and reinforcement needs to be added whilst leaving as much internal volume as possible free for components, even if that means using external reinforcement.

Added to this is the problem of preventing the cover sealing edges from cutting through the gasket, and reinforced boxes can be very heavy so it may also be necessary to include lifting eyes.

Manufacturing must be of the highest quality. It is essential to ensure high quality welding on fabricated boxes, correctly specified for both the static and dynamic loading they may have to withstand. Water under pressure will find the tiniest pin hole and will leak into the box until the air pressure inside is equal to the water pressure outside.

Once the necessary calculations have been completed then rigorous testing must be endured to ensure that the design meets the pre-agreed requirements of enclosure submersion.

Where submersion over elongated periods of time are to be catered for then consideration must also be given to enclosure material.

By far the most flexible material available for submersible applications is marine grade 316L stainless steel.

With non-submersible applications, cable entry is usually through a proprietary cable gland which itself will normally qualify for an IP rating similar to that of the enclosure to which it is applied. However, due to the greater pressures present with submersible enclosures, cable entry is normally achieved through welded stainless steel hubs suitably positioned to receive incoming multi-core cables.

As with all enclosure applications reliance is placed on the equipment installer to ensure that proper engineering practices are adhered to in order to ensure that the siting and installation of ABTECH Submersible Enclosures is within agreed conditions.

ABTECH have designed submersible boxes for use in a wide variety of applications ranging from prestige projects such as the underwater lighting in Trafalgar Square to severe applications on the legs of unmanned offshore installations.

If you have a submersible box application, the ABTECH technical staff will be happy to advise.

9 Technical

Selecting the Correct Enclosure

It is vital that the enclosure selected is suitable for the required application. The enclosure should be mechanically robust enough to contain cables and cable glands which will be fitted and the IP rating of the enclosure should be adequate to deal with the environmental conditions likely to be encountered. The enclosure should also be large enough to accommodate the terminals or components fitted and it should be considered at this stage whether or not future expansion will be necessary and to allow room for this. The ABTECH *Enclosure Calculator Software* can be used to select the correct enclosure by quickly calculating if the required terminals will fit.

Cable entry points must also be considered i.e. how many and where are they to be placed. If all the cable entry points are to be on the bottom face, for instance, this may necessitate a larger enclosure than would be necessary just to accommodate the terminals.

Terminal Selection

Any type or make can be fitted inside ABTECH enclosures except in the case of enclosures intended for use in hazardous areas. The terminal should be matched to the type and size of cable being used and attention should be paid to the current and voltage ratings of both the terminal and cable. Any manufacturer's instructions in relation to the fitment and necessary clearance required around the terminal should be strictly adhered to. Modular terminals can be fitted to DIN standard terminal rails and these can be fitted directly to the inside of the enclosure using the fixing points which are a standard feature of ABTECH enclosures or by mounting onto a component mounting plate which is available as an option for all enclosure types and sizes.

Cable Glands

Cable glands should be selected according to the cable type, screen or armour earthing requirements and the IP rating required. Using the ABTECH *Enclosure Calculator Software* will quickly let you see whether your chosen enclosure can accommodate the required number of cable glands and provide a drawing automatically. Designers should always allow enough clearance around multiple gland entries to allow for fixing nuts etc. Please refer to the drawing at the end of this section which shows ABTECH's suggested clearance dimensions for common entry sizes. Cable glands are a specialised field and the cable gland manufacturers should be contacted for technical information and help regarding the correct selection of these items.
ABTECH can supply and fit cable glands if required or we can machine the enclosure or gland plates for fitting on site. We can provide a number of different thread forms e.g. metric, NPT, PG etc. or clearance holes.

Hazardous Areas

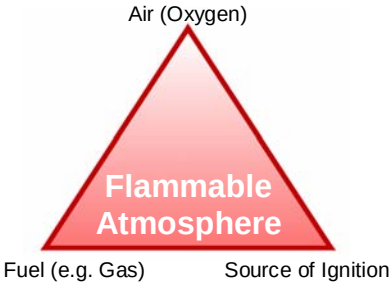
ABTECH specialises in the design and production of junction boxes and enclosures for use in potentially hazardous areas. The SX, BPG and ZAG enclosure ranges are all certified for use in Zone 1 and Zone 2 hazardous areas. We also specialise in high voltage junction boxes for up to 11kV in Zone 1 and 35KV in Zone 2 areas. The following gives a brief guide to the protection methods used for electrical equipment in hazardous areas.

Definition

A Hazardous Area is defined as "An Area containing a potentially explosive atmosphere, which, if ignited, could give rise to damage of property or injury to persons". Hazardous areas can be found in almost every industry and even in daily life, the best example being a petrol station or a gas station.

Protection

How do we protect hazardous areas? i.e., how do we stop a potentially explosive atmosphere from igniting and destroying the installation? In order to prevent an explosion we must first understand the conditions required to cause an explosion. There are three conditions which must co-exist in order to create an explosion, fuel, air and an ignition source. This is normally known as the Ignition Triangle.



With this knowledge, it is possible to protect the equipment from one of the three elements required to cause an explosion i.e. in the case of increased safety (EEx'e') the ignition source is removed by ensuring that there are no hot surfaces or sparking components which could ignite a fuel and oxygen mixture which may enter the enclosure.

Zone Classification

Codes of practise exist for the classification of areas according to the probability or likelihood of the existence of a flammable atmosphere. This is known as Area Classification and in accordance with EN 60079–14 is typically as follows:-

Zone 0
Where a Flammable Atmosphere is continuously present or present for long periods. Permitted forms of protection: Ex 'ia', Ex 's' (for Zone 0)

Zone 1
Where a Flammable Atmosphere is likely to occur during normal operation. Permitted forms of protection; any type of protection suitable for Zone 0 and Ex 'd', Ex 'ib', Ex 'p', Ex 'e', Ex 's', Ex 'm', Ex 'q'.

Zone 2
Where a Flammable Atmosphere is not likely to occur during normal operation and if it does will only exist for a short period of time. Typically less than 10 hours per year and is often referred to as the "Remotely Hazardous Area" Permitted forms of protection: Any type of protection suitable for Zone 0 and 1 and Ex 'nA', Ex 'nR', Ex 'o'

Zone 20
A place in which an explosive atmosphere, in the form of a cloud of combustible dust in air, is present continuously, or for long periods or frequently for short periods.

Zone 21
A place in which an explosive atmosphere, in the form of a cloud of combustible dust in air, is likely to occur occasionally in normal operation.

Zone 22
A place in which an explosive atmosphere, in the form of a cloud of combustible dust in air, is not likely to occur in normal operation but, if it does occur, will persist for a short period only.

For all dust hazard areas the permitted forms of protection include: mD (encapsulation), iaD (intrinsically safe), pD (purged), tD (protection by enclosure). Where protection type tD is selected a plastics enclosure should only be used if the material has anti-static properties.

Types Of Protection

Intrinsically Safe – Ex 'ia' (EN 50020)

This type of protection is afforded by the electrical circuit or components having insufficient energy to ignite a flammable atmosphere. Ex 'ia' equipment is safe under two fault conditions and permissible for use in Zone 0 areas. Intrinsically safe components or circuitry is normally housed in an enclosure having Ex 'e' protection although this is not always necessary. In this case it is important that the integrity of the enclosure is adequate for the area of use.

Intrinsically Safe – Ex 'ib' (EN 50020)

As above, except Ex 'ib' equipment is safe under one fault condition permissible in Zone 1 areas.

Flameproof – Ex 'd' (EN 50018)

Equipment may include arching and sparking (or incendive) devices and flammable mixtures may enter the enclosure. The enclosure construction is designed to contain an internal explosion and prevent transmission of sufficient energy to ignite a potentially flammable atmosphere outside the enclosure.

Increased Safety Ex 'e' (EN 50019)

Explosive mixtures may enter the equipment but the likelihood of a fault condition, which could result in ignition of this mixture, is significantly reduced.
The components used in the apparatus shall not produce arcs or sparks or temperatures above that of ignition temperature of the surrounding atmosphere in normal working conditions. Creepage and clearance distances for electrical insulation are increased over that of industrial equipment and insulation material must be reliable over long periods of time. A minimum ingress protection of IP54 must be provided by any enclosure containing increased safety equipment and it must also be capable of withstanding a 7Nm impact.

Pressurised – Ex 'p' (EN 50016)

Pressurised or purged apparatus Type 'p' rely on a combination of a positive static pressure applied inside the enclosure and a continuous flow of air or inert gas to expel any explosive mixture which may have entered. A monitoring system is an important part of the apparatus to ensure correct operation.

Encapsulation – Ex 'm' (EN 50028)

Encapsulation of arching and sparking components or apparatus to ensure no exposure to explosive mixtures which may be present. The surface temperature is also controlled under normal and fault conditions, thus preventing ignition from occurring.

Powder Filled – Ex 'q' (EN 50017)

Powder or sand filled enclosures housing arching and sparking devices. Often used to contain the energy released from the failure of electrical or electronic components such as the breaking of a fuse.

Non Sparking – Ex 'nA' (EN 50021)

This protection method is very similar to that of Ex 'e' and although to a higher level than industrial standards, it is less than that of Ex 'e'. Can only be used in Zone 2 areas but allows the use of fuses, disconnect terminals and other components not allowed in Ex 'e'.

Restricted Breathing – Ex 'nR' (EN 50021)

In this concept, protection is afforded by the sealing properties of the enclosure in which either hot or sparking equipment may be fitted. It is assumed that the likelihood of a flammable atmosphere being present whilst the enclosure is breathing is very remote and the sealing of the enclosure should be sufficient to protect against this.

Oil Immersion – Ex 'O' (EN 50015)

Where the sparking components are immersed in oil and controlled venting is also used. Most commonly found in older type switchgear.

Special – Ex 's'

No formal standard exists for this type of protection and it is the responsibility of the manufacturer and the relevant test authority to ensure that the apparatus is safe to use in the intended zone.

Temperature Classification & Gas Groupings

Flammable mixtures can be classified under two main characteristics in respect of explosion protection; temperature of ignition by hot surfaces and the spark energy required to ignite the mixture. The spark energy of the ignition is also related to the intensity of the explosion.

Classification of maximum surface temperatures in both North America and Europe are similar but vary slightly in the nomenclature used. The temperature classification is important to ensure that the correct equipment is matched to the flammable atmospheres that could potentially exist in an area. This will take into account such things as maximum ambient temperature and maximum operating voltage with a + 10% over voltage or an overload condition applied.

In some types of protection such as Ex 'd' or Ex 'nR' the temperature classification is based on the outside temperature of the enclosure where as in other types of protection such as Ex 'e' or Ex 'nA' the temperature classification is based on the temperature of the internal components. It follows that equipment with a higher temperature rating and, therefore, lower operating temperature is suitable for use in a wider range of hazardous areas.

Equipment rated T6 is suitable for use with all gases and vapourised mists.

All Gases are grouped according to their physical properties and details of their grouping can be found in either National or International codes of practice. Some examples of gas groups are shown on the next page.

Temperature Classification Table

Maximum Surface Temperature	US (NEC 505) IEC CENELEC	US (NEC 500)
450°C (842°F)	T1	T1
300°C (572°F)	T2	T2
280°C (536°F)		T2A
260°C (500°F)		T2B
230°C (446°F)		T2C
215°C (419°F)		T2D
200°C (392°F)	T3	T3
180°C ((356°F)		T3A
165°C (329°F)		T3B
160°C (320°F)		T3C
135°C (275°F)	T4	T4
120°C (248°F)		T4A
100°C (212°F)	T5	T5
85°C (185°F)	T6	T6

Unless otherwise specified on the rating plate it is assumed that the operating ambient temperature is in the range -20°C to + 40°C (-4℉ to 104℉) in accordance with European Standar ds.

Gas Grouping For Electrical Apparatus (EN 50014)

Group	Gas
I (Mining)	Methane (firedamp)
IIA	Industrial methane, Propane, Petrol & most industrial gases.
II B	Ethylene, Town Gas & other industrial gases
II C	Hydrogen, Acetylene & Carbon Di-sulphide.

Ambient Temperature

The ambient temperature is the surrounding temperature of the environment in which the equipment is installed, whether indoors or outdoors.

For electrical equipment certified in Europe it is assumed that the ambient temperature in which the equipment may be operated is between -20℃ and + 40℃ (-4℉ to 104℉). Some types of equipment are certified for operation outside this range and if so must be stated on the equipment label or certificate.

North American Standards

In North America all electrical installations are governed by the National Electric Code (NEC).

Electrical equipment used in ordinary, wet and hazardous (or classified) locations must be 'listed' by an accredited approval agency for use in the intended location. The hazardous locations include areas in which flammable, combustible or ignitable substances may occur in hazardous quantities. Article 501 Codes of the NEC use a different way of categorising the hazardous locations, which is by Class and Division, compared with the European and IEC standards, which have adopted the Zonal method. Electrical apparatus approved in North America for use in hazardous locations must be categorised with an Equipment Class and suitable for a specified Division and Gas Group.

Classifications are made in line with the type of combustible material as follows;

Class I – Flammable gases, vapours or mists

Class II – Combustible dusts

Class III – Ignitable fibres and flyings

In 1996 article 505 was introduced to the NEC which allowed Zonal classification of hazardous areas. This now means that products can be approved as follows:

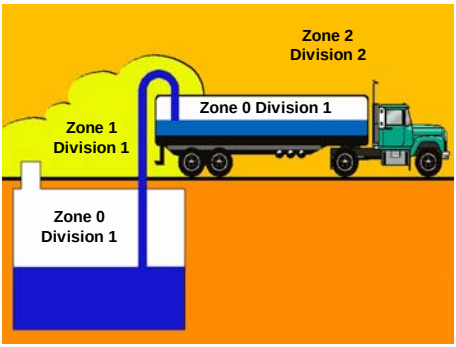
Either,

Class, Division & Gas Group
For example:
Class 1, Division 2, A,B,C,D

or

Class, Zone & Gas Group
For example:
Class 1, Zone 2, IIA, IIB, IIC.

Although this code change permits the use of products that have a Zonal classification, in a similar way to European practice, the mixing of different forms of equipment approval across zones or divisions is not acceptable. For example products approved for Zone 1 do not necessarily meet the requirements of Division 1, which also encompasses Zone 0.



Although no direct equivalents exist between European/IEC and American codes of protection and Area Classification there are similarities and there is a developing acceptance of European/IEC methods in North America and vice versa. The following table shows the basic relationships between the North American and European Classifications.

Equivalent Division/Zone

NEC	European / IEC
Division 1	Zone 0
	Zone 1
Division 2	Zone 2

As can be seen from the above table, Division 1 covers both the European / IEC Zones 0 & 1. Therefore, care must be taken when using zone classified equipment in a Division 1 area to ensure the suitability of the protection employed.

Underwriters Laboratory (UL) and Factory Mutual (FM) are the two main certification bodies in North America and in some cases electrical equipment may also need to meet certain Marine Standards and be separately approved by the US Coast Guards, before it can be used e.g. on an offshore oil rig.

Ingress Protection

A major secondary protection parameter is the ingress protection of the electrical equipment. Moisture or dust, if allowed to come into contact with electrical circuits, could led to either sparking or physical breakdown of the components and interfere with the protection method being used. In some cases the IP rating forms part of the explosion protection method. All IP ratings for products in this catalogue have been carried out in accordance with EN 60529 (IEC 529) and have been witness tested by independent test laboratories.

It will be noted that some products have both IP66 and IP67 ratings. This is because in some instances the IP66 requirement is more onerous than the IP 67 equivalent.

Both the SX range and BPG ranges have also been tested to the Shell/ERA deluge specification. This is one of the most onerous water ingress tests and was designed specifically for electrical equipment which would be subject to deluge conditions, e.g. ships decks and fire deluge areas.
The following table shows the criteria for IP requirements to EN 60529(IEC 529).

First Digit	Degree of Protection (Dust)	Second Digit	Degree of Protection (Water)
0	No Protection	0	No protection
1	Protection against ingress of large solid particles	1	Protection against ingress of vertically dripping water
2	Protection against ingress of medium solid particles	2	Protection against ingress of water dripping at an angle of 75 – 90 degrees
3	Protection against ingress of solid particles greater in thickness than 2.5mm	3	Protection against ingress of sprayed water
4	Protection against ingress of small foreign bodies greater in thickness than 1mm	4	Protection against ingress of splashed water
5	Protection against ingress of dust in an amount sufficient to interfere with enclosed equipment	5	Protection against ingress of water jets
6	Complete protection against ingress of dust	6	Protection against ingress of water in heavy seas
		7	Protection against effects temporary immersion
		8	Protection against effects of indefinite immersion

ATEX Directive

The ATEX directive (94/9/EC) came into force in April 1994 and was enacted into UK law in March 1996. It became a mandatory requirement in July 2003. All of the products in this catalogue have an EC type examination certificate to the ATEX directive. ATEX covers both electrical and mechanical ignition hazards.

Apparatus are divided into Equipment groups (I for mining and II non-mining), source of ignition Gas (G) and Dust (D) and Categories 1, 2 and 3. The Categories provide respectively, very high, high and normal levels of protection against ignition. The Categories deliver the level of protection which is currently obtained by applying the existing protection techniques (Ex 'd', Ex 'e' etc) and they also take into account other protection concepts proposed by manufacturers and considered by the notified (certification) bodies who produce EC type examination (ATEX) certificates.

The Categories in practice are equated to suitability for Zones. The actual category of apparatus specified for a Zone depends on the overall risk assessment for a Zone. The Zoning considers only the probability of the existence of an explosive atmosphere. It does not consider the consequential effects of an ignition taking place. Apparatus are marked with the grouping and Category in addition to the marking required by the individual protection standards.

All ABTECH products are certified for use in Group II industrial applications, most are certified for both Gas (G) and Dust (D) hazards and are suitable for classification in Categories 2 and 3. This means that they are or will generally be suitable for use in Zone 1 and Zone 2 areas. Guidance is given by the codes of practice such as EN 60079-10 and EN 60079-14 etc. These codes of practice provide the user with guidance in selecting apparatus to obtain the degree of safety that is required for the particular hazardous area application.

An EC type examination by a notified body is required for Category 1 and 2 equipment but not for Category 3 where the certification is supplied by the manufacturer.

Junction Boxes In Hazardous Areas

Junction boxes and terminal enclosures for use in hazardous areas mainly contain non incendive devices i.e. terminals. For Ex 'e' certified apparatus there are two main criteria when specifying the apparatus.

1. Are the components acceptable for use in the enclosure i.e. non sparking, and
2. Will any components or wiring be hotter than the temperature classification of the apparatus allows.

To comply with the first requirement, only terminals or other components which are specifically allowed for in the certificate of compliance, and post July 2003 only ATEX certified components may be fitted (apparatus constructed prior to July 2003 need not meet this requirement).

To ensure compliance with the second criteria for safe use, all low voltage ABTECH enclosures are certified using the dissipated power method.

Through testing it has been determined what the maximum power dissipation can be from the components and wiring inside each enclosure size to ensure that the temperature of any of the components does not exceed the temperature classification of the apparatus.

This figure is shown for each of the products throughout the catalogue and can be found on each of the product certificates.

By knowing the total current through the enclosure and the total resistance of the terminals and wiring, using Ohms Law it is possible to calculate the dissipation power of the circuit.

Power Dissipation;

$$\mathbf{P}\ (\text{Watts}) = \mathbf{I}^2\ (\text{Amps}) \times \mathbf{R}\ (\text{Ohms})$$

Where I is the total current through the enclosure, and R is the total resistance of the terminals and conductor contained within the enclosure.

The resistance of the terminals can be sought from the terminal manufacturers and the resistance of the conductors is available in reference books or from the cable manufacturers.

Alternatively, the ABTECH *Enclosure Calculator software* will calculate this automatically for a given combination of enclosure and terminals.

For high current applications the terminal resistance can vary depending on the cable size, cable quantity, crimping method for cable lugs and the actual current flow. Correct installation is essential in order to limit the overall temperature rise and the maximum operating temperature of the terminals.

In all Ex certified enclosures it is important that an earth facility is provided. In plastic enclosures this may be by means of an internal/external earth stud or by an earth terminal fitted inside. Additional earthing for cable glands can be provided by an earth continuity plate fitted inside the enclosure wall. Plastic enclosures carry a risk of static discharge which could lead to a spark being produced if rubbed with a dry cloth. Plastic enclosures should only ever be cleaned using a damp cloth. Optionally, plastic enclosures with a graphite filling are available which reduces this risk.

For metallic enclosures the earth facility must earth the enclosure body and can be provided by earth terminals connected to the body through the terminal mounting rail and/or by means of an internal/external earth stud.

Cable Glands for use In Hazardous Areas

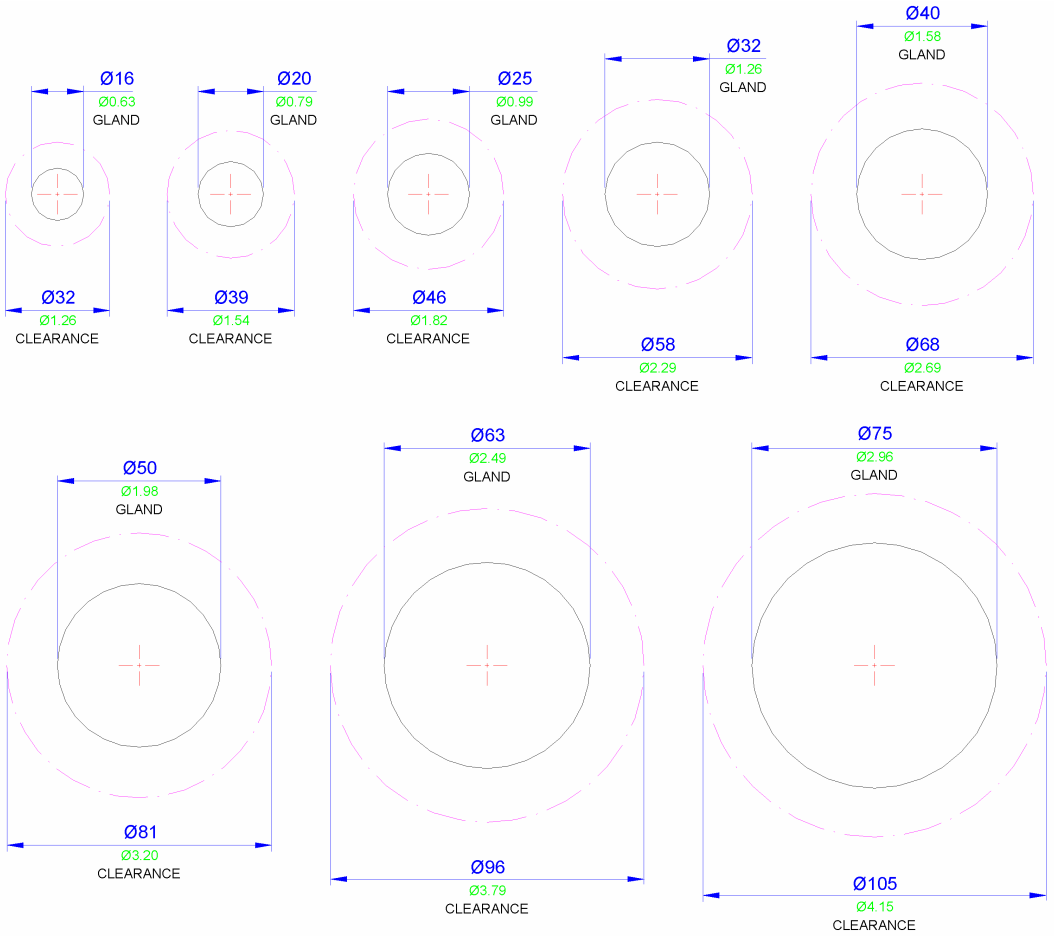
Cable glands used in enclosures intended for use in a hazardous area must meet with the same criteria as the enclosure to which they are connected. For example, cable glands used on an EEx'e' enclosure must meet the requirements for the enclosures of the EEx'e' standard i.e. must be capable of withstanding a 7Nm impact and capable of maintaining an ingress protection of at least IP54.

If a plastic or non-metallic cable gland is used it must be capable of passing these tests after having undergone an accelerated conditioning period.

Most reputable cable gland manufacturers have their products approved by a suitably notified body and will carry the certification markings on the body of the gland.

Cable glands are a very important element in the protection of electrical equipment and should not be underestimated. There are a vast array of different cables in use today and it is important that advice is sought from a cable gland manufacturer regarding selection.

Suggested Clearance Dimensions for Common Gland Sizes



Major Projects Worldwide

Abu Dhabi	ADNOC 545 Project, ADNOC Bab-Maqta-Taweelah, Gas Pipeline Project, Adma Opca MODICS project
Algeria	Sonatrach Project
Azerbaijan	Azeri, ACG
Brunei	Shell
Canada	Hibernia, Sable, Sable 2, Terra Nova, White Rose, Alma
China	Bohai Oil Phase 1 & 2, Panyu
Dubai	Dugas
India	ONGC ICP Project, ONGC ICW Project
Indonesia	Marathon Oil Kakap Project Line, Belenak
Iran	Khorasan Project
Malaysia	KVCM Project, ANGSI 'A', ANGSI 'B', St. Georges Compression
Nigeria	East Area Project
Qatar	North Field Development Project, RasGas
Russia	Sakhalin I & II
Saudi Arabia	Aramco GOSP 4
Singapore	ACT-OG-32 Project, Scherring Plough, Total Bongkot Field Development Project
Taiwan	FPC Upgrade
Thailand	Thai Petroleum – Thapp
U.A.E	Zadco

Major Project Customers

AGIP	Tiffany
Amerada Hess	Rob Roy, Ivanhoe, Scott, Triton
Britoil / BP	Beatrice, Thistle, Clyde
British Gas	Morecambe Bay, Phases 1 & 2, Morecambe Bay Onshore Roughs Project, Armada
BP	ULA (Norway), South East Forties, Wytch Farm, Miller Bruce, Andrew, Cleeton, Azeri, Clair, Thunderhorse, Plutonio
Chevron	Alba
Conoco	Murchison, Hutton, Heidrun, Complete Southern Basin Development, Caister/Murdoch Development, Belanak
Encana	Buzzard
ESSO	Goldeneye
ExxonMobil	Kizomba
Hamilton	Esmund, Duncan, Ravenspurn North, Liverpool Bay
Mobil	Beryl 'B', Beryl 'A' Refit
Norsk Hydro	Oseberg 2
Occidental	Claymore, Piper 'B', Saltire
Shell	Tern, Eider, Sole Pit, Kittiwake, Gannet, Galleon, Pelican Captain, Bonga
TengizChevrOil	West Azeri
Total	North Alwyn 'A' and 'B', St Fergus Terminal

Major Projects UK

Alternative Landing Ship Logistic Vessels
Birmingham Northern Relief Road
Blackwall Tunnel
BP Amoco - E.T.A.C, V.A.M plants
Channel Tunnel
Saltash Tunnel
Type 45 Frigate

Please contact us to receive your free copy of the latest Abtech Enclosure Calculator