

Weidmüller 

**Enclosures and Cable Glands
Solutions for hazardous areas
Holger Lafond**



Enclosure & Cable Glands Portfolio Hazardous Areas



Overview – Enclosures & Cable Glands

Stainless Steel Enclosures



Aluminium Enclosures



Plastic Enclosures



Cable Glands



Technical Requirements



Application Specific Solutions



Production





Stainless Steel Enclosures

Stainless Steel Enclosure range

KLIPPON® TB MH



KLIPPON® TB QL



KLIPPON® TB FS

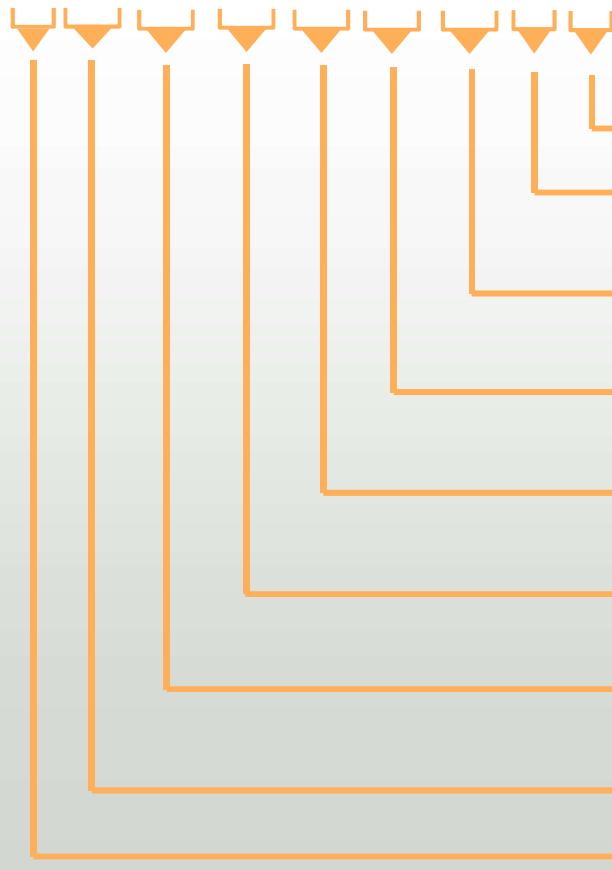


KLIPPON® STB



New Klippon® Product Family Description Explained:

K TB MH 98 74 20 S4 E 4



Number of gland plates: 0, 1, 2, 3 or 4

Surface: E: electropolished
P: painted

Material: S4: 1.4404 (V4A)
S2: 1.4301 (V2A)

Depth (cm): min.: 13
max.: 30

Width (cm): min.: 15
max.: 74

Height (cm): min.: 22
max.: 98

Basic Range: MH: Multi Hinge
QL: Quarter lock
FS: Fixing Screw

Product Name: TB (Terminal Box)

Brand Name: Klippon®

Stainless Steel Enclosures

Klippon® TB



Klippon® TB – Stainless steel enclosure range

Technical Data

Material

Stainless Steel
1.4404 (316L) 1,50 mm

Surface

elektropolished

Lid fixing

via hinges and M6 hex-head screws with slot
with padlock facility

Lid opening

Fully removable lid without tool, mountable left and right
side hand, lid opening: 130°

Dimensions

H x W x D (min.) mm

229 x 152 x 133

H x W x D (max.) mm

987 x 740 x 200

Gland plates

0,1,2,3,4

Gasket material

Silicone

Temperature range

-60° till + 135 °C

Impact resistance

10 J Industry applications

7 J ATEX applications

IP –Class

IP 66, IP 67

NEMA protection class

Nema 3, Nema 4x, Nema 12

Approvals

ATEX, IECEx, GOST Ex, cULus, German Lloyd,
Russian Maritime Register, CCOE



Klippon® TB MH

Klippon® TB QL

Stainless Steel
1.4404 (316L) 1,50 mm

elektropolished

Quarter lock with slot insert (other inserts
available upon request)

Fully removable lid, lid opening: 130°

229 x 152 x 133

987 x 740 x 200

0,1,2,3,4

Silicone

-60° till +135 °C

10 J Industry applications

7 J ATEX applications

IP 66

Nema 3, Nema 4x, Nema 12

ATEX, IECEx, GOST, Ex, cULus, German
Lloyd, Russian Maritime Register



Klippon® TB – Stainless steel enclosure range

Technical Data	Klippon® TB FS
Material	Stainless Steel 1.4404 (316L) 1,50 mm
Surface	elektropolished
Lid fixing	M6 hex-head screws with slot => no hinges!
Lid opening	Fully removable lid without tool
Dimensions	
H x W x D (min.) mm	229 x 152 x 133
H x W x D (max.) mm	987 x 740 x 200
Gland plates	0,1,2,3,4
Gasket material	Silicone
Temperature range	-60 till + 135 °C
Impact resistance	10 J Industry applications 7 J ATEX applications
IP –Class	IP 66, IP 67
NEMA protection class	Nema 3, Nema 4x, Nema 12
Approvals	ATEX, IECEx, GOST Ex, cULus, German Lloyd, Russian Maritime Register, CCOE



Klippon® TB - Features and Benefits

Features

- Extensive range of enclosures, with 12 standard sizes, in 2 standard depths.
- International Approvals

Benefits

- More choice which ensures Weidmüller enclosures meets application needs
- The latest standards and approvals required primarily by the process and petrochemical industries.

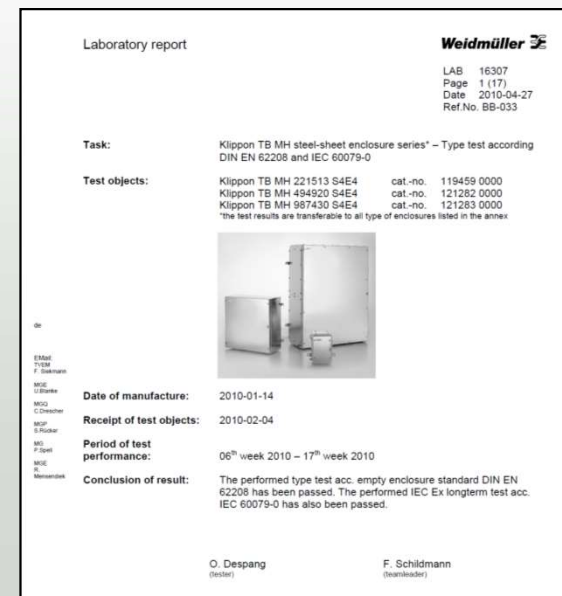
Klippon® TB range - Features and Benefits

Features

- 316L (1.4404) Stainless Steel Construction – all components
- Electro polished Finish (offered as standard)

Benefits

- Resistant to corrosion especially suited to salt air environments.



Klippon® TB range - Features and Benefits

Features

- Impact Resistant
 - in accordance with:
 - EN62208 (empty enclosure standard)
 - **10 Joules**
 - in accordance with:
 - EN60079 (ATEX/IEC Ex)
 - **7 Joules**

Benefits

- The Klippon® TB enclosure range has been tested and protects contents against an impact of up to 10 joules (note: 7 joules for 0 gland plate versions).

Klippon® TB range - Features and Benefits

Features

- Enhanced Gland Plate fixing
 - IGB has same appearance and material of enclosure
 - IGB thread provides more stability



Benefits

- Securely welded IGB ensures optimum product stability and performance
- Welded IGB is fitted without any additional sealing material reducing influence of
 - Mechanical Impact
 - Torque
 - Vibration
- Symmetrical pressure to the gasket is achieved with limited pressure to the IGB positions

Klippon® TB range - Features and Benefits

Features

- Internal – External Earth Stud



Benefits

- Brass as standard
- Stainless steel (option)
- Internal - External brass earth studs are equipped with a sealing mechanism and are keyed to prevent rotation.
- If the earth stud is damaged in the field it is a self seal unit which can be simply replaced.

Klippon® TB range - Features and Benefits

Features

- Lid Fixing Options – M6 Screws



Benefits

- The new Klippon® TB is supplied with standard M6 door fixing bolts, Hexagon Head with 10mm slot width.
- Provides a reliable locking mechanism.
- Captive element ensures against accidental loss of lid screws

Klippon® TB range - Features and Benefits

Features

- Automated Welding Corner



Benefits

- TIG welding ensures a seamless weld and not only ensures product performance, but also optimizes the visual appearance of the new Klippon® TB range

Klippon® TB range - Features and Benefits

Features

- Removable Gland Plates



Benefits

- The new Klippon® TB range is designed for offer with either 1,2,3 or 4 gland plates

Klippon® TB range - Features and Benefits

Features

- Silicon gasket fitted as standard
- Improved gasket compression set
- Symmetrical sealing around the enclosure
- Gland gasket is 5mm (previously 3mm).
Allow  and plate



Benefits

- Silicon Gaskets offer far greater temperature ranges:
- Empty Enclosure
 - (-60°C to + 135°C) (IP66)
 - (-60°C to + 105°C) (IP67)
- Assembled Enclosure
 - T4 (-60°C to + 55°C) (IP66/67)
 - T5 (-60°C to + 55°C) (IP66/67)
 - T6 (-60°C to + 40°C) (IP66/67)

Klippon® TB range - Features and Benefits

Features

- Multi-Hinge Functionality
Klippon® TB MH version only:
 - Change door fixing position
 - Designed to ensure minimum pressure to gasket



Benefits

- Hinge is hidden (similar to NEXT range)
- Hinge is designed to allow end user to change door position (left or right hand side)
- Hinge design incorporates additional protection for the overall gasket performance and resulting compression control functionality (also whilst in storage)

Klippon® TB range - Features and Benefits

Features

- Internal Rail Mounting Studs / “Stand off” Pillars



Benefits

- These are in position to allow the maximum length of rail to be fitted to the enclosure, whilst offering easy access for tooling.

Klippon® TB range - Features and Benefits

Features

- Rain Gutter



Benefits

- The new Klippon® TB range comes with this feature as standard, ensuring that any residual water laying around the door entry has no access to the internal workings of the enclosure when door is opened.

Klippon® TB range - Features and Benefits

Features

- Door Internal Earth Stud



Benefits

- In order to conform with requirements of the latest approvals, a secondary earth stud is fitted to the inside lid, as standard.

Klippon® TB range - Features and Benefits

Features

- Locking Padlock Facility
(Klippon® TB MH version only)



Benefits

- Fitted as standard mimicking the industry leading locking clasp of our original TB enclosure range, allowing the enclosure to be secured on site by means of padlock
- Padlock facility is flexible. Can be fitted to either side or removed completely.
- Padlock is available as a standard accessory (P/N: 9056800000)

Klippon® TB range - Features and Benefits

Features

- Mounting Feet



Benefits

- The new Klippon® TB comes with 2 slotted and 2 circular mounting feet, fitted as standard. Thus allowing fast, simple, easy and solid installation.
- The footprint is the same as previous Klippon® TB versions and means simple old-to-new replacement sales are achievable

Klippon® TB range - Features and Benefits

Features

- Door Locking Mechanisms outside of the ingress path



Benefits

- Whilst opening or closing the enclosure, no moisture or dust can penetrate the inside areas due to the operation of the locking mechanism thus ensuring IP66/67 protection.
- Gasket Compression is Controlled (in line with manufacturers recommendations)

Klippon® TB range – Accessories (Standard)

Features

- Spacers



- Mounting Plates



- Gland Plates



Benefits

- A range of spacers are available in 10mm, 15mm, 20mm and 30mm as accessories
- Available in Stainless Steel (304) and Mild Steel zinc finish
- Replacement gland plates will be available to order on request

Klippon® TB range – Accessories (Standard)

Features	Benefits
<ul style="list-style-type: none">• Sizes<ul style="list-style-type: none">- Min 229 x 152 x 133- Max 914 x 610 x 300• Landscape versions	<ul style="list-style-type: none">• Bespoke sizes are available - this means that any size requested between the smallest and largest standard versions can normally be produced – this may be subject to minimum order quantities and if covered by any required product approvals• We have had requests for “landscape” design versions. These can normally be offered as part of our flexible supply process

Klippon® TB range – Accessories (Standard)

Features	Benefits
<ul style="list-style-type: none">• Zero Gland Plates • Special Colours<ul style="list-style-type: none">- Subject to target price & qty	<ul style="list-style-type: none">• One major advantage of the production is the ability to offer enclosures with holes “pre-punched” into the enclosure at time manufacture.• This has potential benefits of time and cost especially for project requests and in support of our AS business needs. • As long as there is a RAL code and a powder coat colour available, it is possible to offer almost any colour demanded• This may be subject to a minimum order quantity

Klippon® TB range – Accessories (Standard)

Features

- Label Holders - Identification Tag Labels



- Document Holders - Drawing Pockets



Benefits

- Offered either:
 - Factory fitted
 - As standard accessory
- Document holders will be available on request as a factory fitted option

Klippon® TB range – Accessories (Standard)

Features

- Door Stay



- Rain Hood



Benefits




- Available as factory options and ensures lid stability in harsh weather conditions.
- Maybe subject to MOQ.

- Further protection for enclosure against harsh weather conditions.
Factory option, maybe subject to MOQ

Klippon® STB



Klippon® STB – Small steel enclosure range

Technical Data	Stainless Steel			Sheet steel	
Material	Stainless Steel 1.4404 (316L) 1,50 mm			Sheet steel painted 1.0330 1,50 mm	
Surface	elektropolished, polished sheet			painted RAL 7032	
Lid opening	Fully removable lid with 4 x M5 Bolts			Fully removable lid with 4 x M5 Bolts	
Dimensions					
H x W x D (min.) mm	120x120x80			120x120x80	
H x W x D (max.) mm	250x400x130			250x400x130	
Gasket material	Silicone			Silicone	
Temperature range	-60°C bis 100°C (120°C on request)			-60°C bis 120°C	
Impact resistance	7 J ATEX applications			10 J Industry applications	
IP – class	IP 66			IP 66	
Approvals	ATEX, GOST, cULus, German Lloyd, Lloyd Register, Russian Maritime Register				

Industry only

Klippon® STB – Key Features and Benefits

Features

- 316L (1.4404) Stainless Steel Construction
 - Mechanical Polished Sheet Finish
 - Electro-polished Finish

Note: The logo information will not be laser engraved onto the electro-polish finished versions, but instead will be replaced with a Weidmüller logo foil label

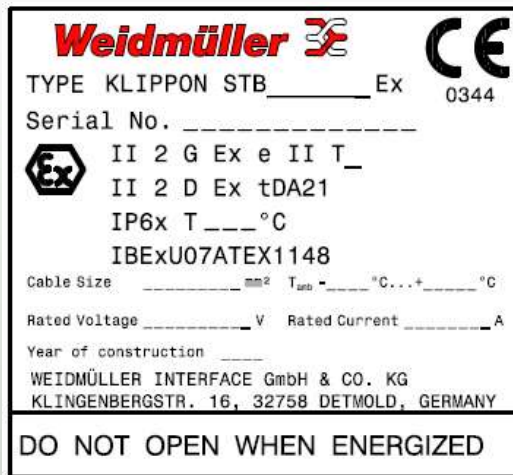
Benefits

- Suitable for outdoor use
- Corrosion Resistance - especially suited to salt air environments.
- Allows us to supply against specifications demanding electro-polish finish as required

Klippon® STB – Key Features and Benefits

Features

- ATEX to EN60079-7



Stainless Steel

Benefits

- Approved for use with Hazardous Areas (ATEX) applications



Versions Only

Klippon® STB – Key Features and Benefits

Features	Benefits
<ul style="list-style-type: none"> • Impact Resistant <ul style="list-style-type: none"> - 10J (Industrial) - 7J (ATEX) • International Approvals • Eight standard enclosure sizes 	<ul style="list-style-type: none"> • The new Klippon® STB enclosure range protects against an impact of either 7 or 10 joules. • International approvals for the Power Generation, Distribution and Transmission markets. Standards and approvals also required by the Oil & Gas, Chemical, Water and Transportation industries. • Offering a wide range of product sizes which ensures Weidmüller enclosures meet our customers needs for all applications.

Klippon® STB – Key Features and Benefits

Features

- Silicone Gasket fitted as standard



- Gasket Compression Control

Benefits

- Silicone Gaskets offers far greater temperature ranges (Temp. -50°C to $+120^{\circ}\text{C}$) allowing standard enclosures to be used in a wide range of application demanding operation within extreme temperature conditions
- Gasket compression control ensures IP performance is not compromised

Klippon® STB – Key Features and Benefits

Features

- C - Profil + M5 SNFS



Benefits

- C Profile (1.4301, 304) (TAS 20) + M5 sliding fixing nuts included as standard.
- Enhanced standard product offer that includes the necessary accessories to allow the user to fit the rail (user friendly)

Klippon® STB – Key Features and Benefits

Features

- Internal Lid Earth Stud



Benefits

- The Klippon® STB comes with a secondary earth stud, fitted to the lid as standard. Ensuring safe installation and maintenance.
- Allows earthing of hazardous potential of the removable lid – in line with the latest requirements of the industrial or ATEX standards

Klippon® STB – Key Features and Benefits

Features

- Mounting Feet pre-fitted and emulate the fixing centre's from existing range



Benefits

- The New Klippon® STB comes with 2 or 4 mounting feet, fitted as standard
- Vibration and shock proofed - IEC 61373 Cat 1b (same as RIA 20)
- Allows end user to field replace old version with new. No change to the fixing centre dimension

Klippon® STB – Key Features and Benefits

Features

- Branding



Benefits









- Laser marking
- Removes label from the bill of material and also removes this from the assembly process – makes logo a permanent feature on the enclosure
- Mechanical Polished Sheet version only.
- Foil brand label is fitted to electropolished and painted sheet steel versions

Klippon® STB – Approvals (Stainless Steel Versions)

Empty Enclosures Standard

- Enclosures have been tested for compliance against the requirements of EN 62208

ATEX / IECEx

- Empty Enclosures:
 - ATEX / IECEx Certification: IBExU 07ATEX1147 U / IECEx IBE09.0018U
 - ATEX / IECEx Marking:  II 2 G Ex e II C Gb,  II 2 D Ex tb IIIC Db IP66
- Approvals for Control and Distribution Box:
 - ATEX / IECEx Certification: IBExU 07ATEX1148 / IECEx IBE09.0019 *
 - ATEX / IECEx Marking:
 -  II 2 G Ex e IIC Gb Tx,  II 2 D Ex tb IIIC Db IP6x Txxxx °C
 -  I II 1 G Ex ia IIC Ga Tx,  II 1 D Ex tb IIIC Db IP6x Txxx°C
 -  II 2 G Ex e IIC Gb Tx,  II 2 D Ex tb IIIC Db IP6x Txxx°C

cULus Approval – NEMA 4/4X (ordinary location)

- Klippon STB 1 and 1.1: UL 508 / CSA C22.2 No 14 (E197061)
- Klippon STB 2...6 : UL 50; UL 50e / CSA 22.2 No 94 (E256877)

Lloyds Register - 08/20032

Germanischer Lloyd - 5935808 HH

GOST – 7550834




Aluminium Enclosures



Klippon® K – Aluminium enclosure range



Technical Data	Ex Enclosure 	Standard Enclosure
Material Surface	High quality aluminium alloy (Al-Si12) untreated and smooth	High quality aluminium alloy (Al-Si12) untreated and smooth or silver-grey textured - similar to RAL7001
Lid fixing	Captive Torx 20 / slotted stainless steel screws	Captive Torx 20 / slotted stainless steel screws
Dimensions		
H x W x D (min.) mm	45 x 50 x 30	45 x 50 x 30
H x W x D (max.) mm	230 x 280 x 111	230 x 280 x 111
Gasket material	Silicone	Chloroprene / Silicone
Temperature range	-60 till + 135 °C	-60 till +135 °C
Impact resistance	7 J ATEX applications	10 J Industry applications
IP –class	IP 66, IP 67	IP 66, IP67, IP68
Approvals	ATEX, GOST Ex, Russian Maritime Register, German Lloyd	cULus, GOST, Russian Maritime Register, German Lloyd

Industry only

Klippon® K – Key Features and Benefits

Features

- Torx Slotted Screws

The lids are secured with captive Torx slotted screws made of stainless steel.



Benefits

- The standardised Torx slotted screw head permits operation of the enclosure by using only one tool
- For assembly, we recommend the use of our Torx TH20 screwdriver (9009160000). The lid screws are tightened to a torque of 2.5 Nm.



Klippon® K – Key Features and Benefits

Features

- Closed moulded sealing

The enclosures are equipped as standard with a moulded sealing made from either silicone or chloroprene and adapted to the contour of the enclosure.



Benefits

- Securely filled seals ensure increased impermeability of each enclosure. The sealing guarantees IP protection from IP66 up to IP68.



Klippon® K – Key Features and Benefits

Features

- External earth bolts



- Enclosure with Heli-coil inserts



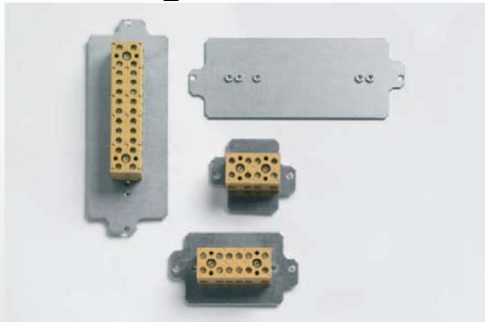
Benefits

- Klippon® K Ex enclosures are designed for hazardous area applications equipped as standard with an M4 earth bolt made of stainless steel.
- Enclosures are also available on request with Helicoils already inserted in the thread. They can be used in aggressive environments to protect against corrosion.

Klippon® K – Accessories

Features

- Mounting Plates



- Mounting feet



Benefits

- Mounting plates for the installation of terminal rails or block terminals are available as option.
- The enclosure can be fastened directly via the pre-punched fixing holes provided on the rear side of the enclosure. Alternatively, it is possible to secure the enclosure from the outside by means of mounting lugs

**Plastic Enclosures
glasfiber reinforst Polyester**





Plastic enclosure ranges



- [Technical Data Klippon® POK](#)
- [Technical Data TBF](#)
- [Technical Data FPC & MPC](#)
- **Key Features & Benefits**
- **Application Examples**

Klippon® POK – Polyester enclosure range

Technical Data	Ex Enclosures 	Standard Enclosures 
Material	Glass fibre-reinforced polyester to DIN 16913 with added graphite	Glass fibre-reinforced polyester to DIN 16913
Surface	black, similar to RAL 9011	grey, similar to RAL7001
Lid fixing	with 4 stainless steel screws	with 4 stainless steel screws
Dimensions		
H x W x D (min.) mm	75 x 80 x 55	75 x 80 x 55
H x W x D (max.) mm	250 x 400 x 160	250 x 400 x 160
Gasket material	Silicone	Chloroprene + polyurethane
Temperature range	-55°C to +100°C	-40°C to +90°C
Impact resistance	7J	7J
IP – class	IP 66	IP 66
Flammability	UL94 V0	UL94 V0
Toxicity	halogen & cadmium-free	halogen & cadmium-free
Approvals	ATEX, GOST Ex, GOST, Russian Maritime Register	GOST, cULus, Lloyds Register, Russian Maritime Register

Industry only

Plastic Enclosures – Key Features and Benefits

Features

- Robust and impact resistant



Benefits

- The plastic enclosures are extremely tough and impact resistant to 7 J thanks to the glass-fibre reinforced content

Cable Glands & Accessories



Cable Glands

Ex Cable Glands



- Ex e Brass Cable Glands
- Klippon® Cable Glands
- Selection Guide
- Cross Reference Guide
- Promotional Material
- Ex e, i Plastic Cable Glands

Standard Cable Glands



- Plastic Cable Glands
- Brass Cable Glands
- Stainless Steel Cable Glands

Cabtite®



- Cabtite KEL
- Cabtite KZL
- Cabtite KVT

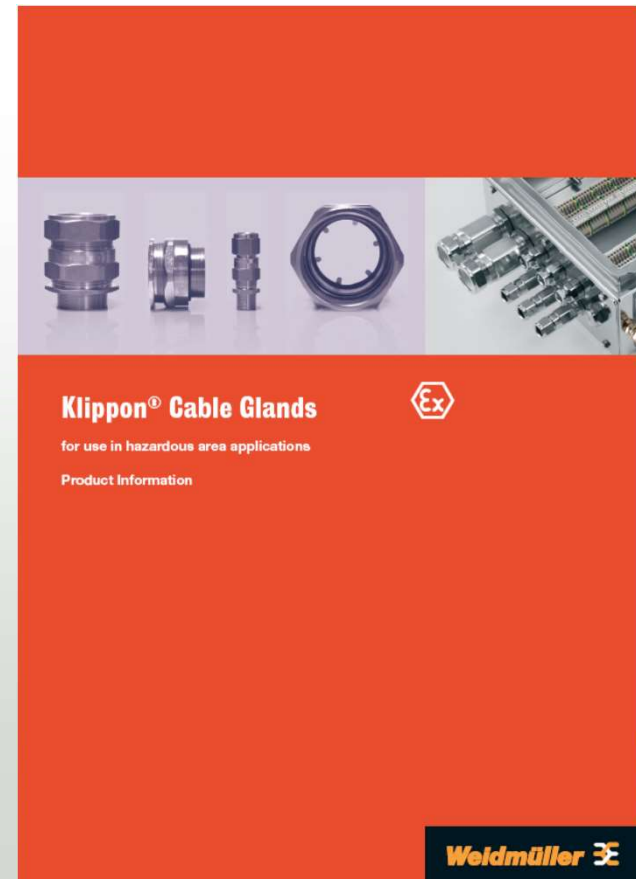
Accessories



- Adaptors
- Stopping Plugs
- Compensating Elements
- Other Accessories

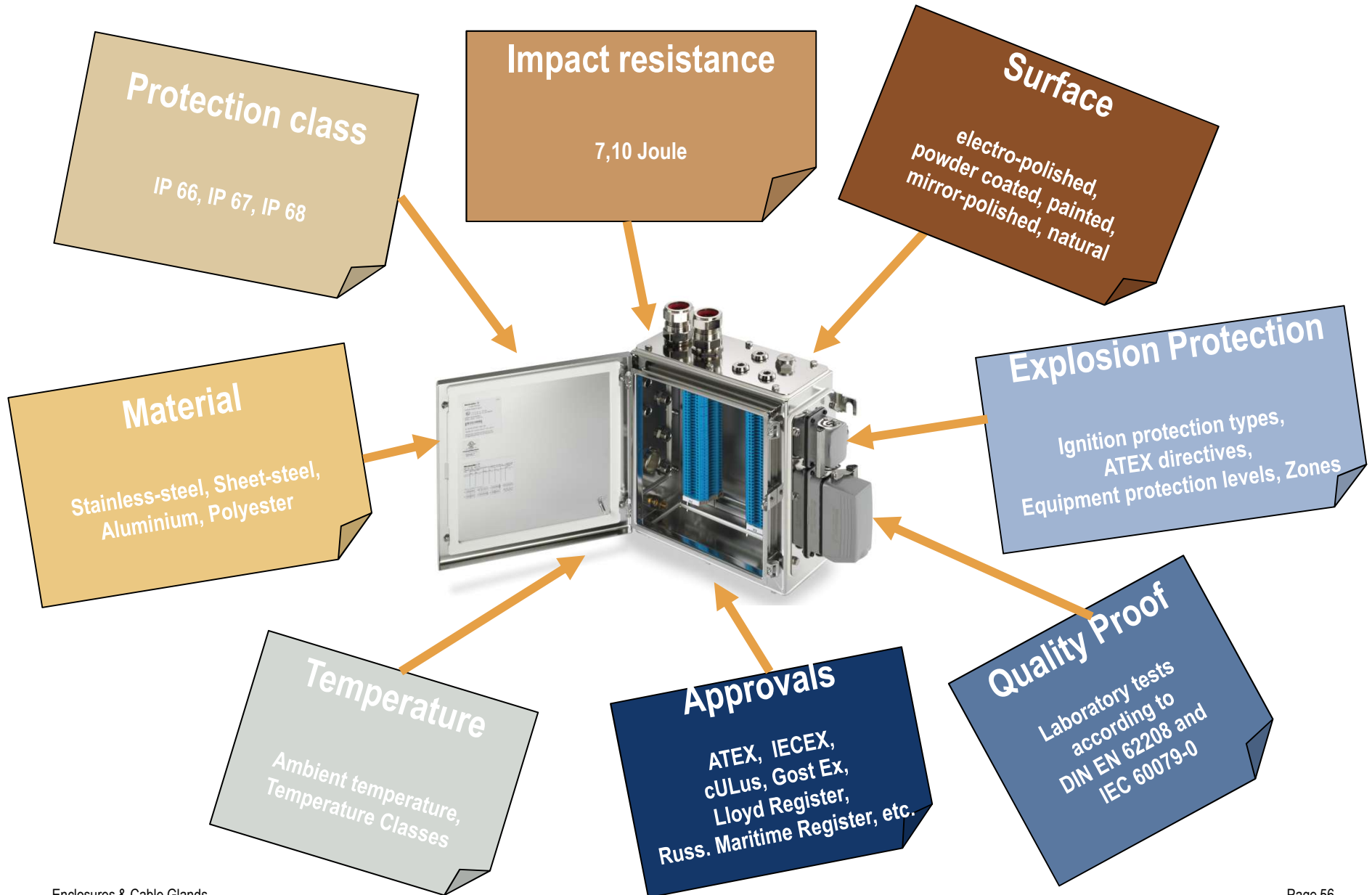
Klippon® Cable Glands – Market Communication

- Product brochure
 - Part Number German Version: 1237770000
 - Part Number English Version: 1237780000
- Sample Case with one sample per gland type
 - Part Number: 1241770000
- Online Catalogue
- Enclosure Catalogue No. 5
 - Part Number English Version: 1274520000
 - Part Number German Version: 1274510000





Technical Requirements





Quality Proof

Quality Proof

- Technical requirements are tested in the Weidmüller laboratory
 - According to EN 62208 empty enclosure standard:
 1. Static load
 2. Axial loads of metal inserts
 3. Degree of protection against dust and water (IP rate)
 4. Degree of protection against mechanical impacts (IK code)
 5. Proof of continuity of PE circuit
 6. Salt spray corrosion test
 7. Durability of markings
 - According to IEC 60079-0 Ex tests
 - Long term thermal test (Thermal stability, cold stability)
 - Additional tests:
 - Torque test
 - Computer tomography (CT)
 - Vibration and shock test
 - Light resistance test (sun test)
 - Flammability test
 - Surface analysis

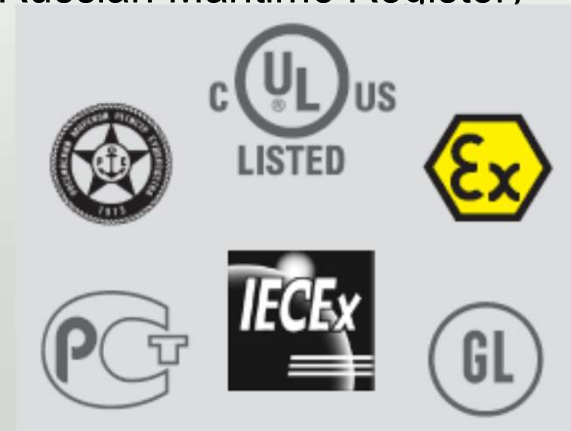




International Approvals

International approvals

- Weidmüller's products and services meet our own strict standards as well as international quality and safety standards.
- Enclosures are tailored to harsh, fluctuating conditions for demanding industries and certified in compliance with international standards and comply with the latest ATEX and IECEx directives concerning areas requiring explosion protection.
- Additional approvals for use in standard industrial applications (UL, cULus, GOST, GOST Ex, Germanischer Lloyd, Lloyds Register and Russian Maritime Register)
- Weidmüller products and technology are used in:
 - Electrical distribution systems
 - Control/monitoring systems
 - Boiler and turbine monitoring systems
 - Fuel management control,
 - Combustion control
 - Monitoring and distribution systems





Application Specific Solutions

Complementary Product Portfolio



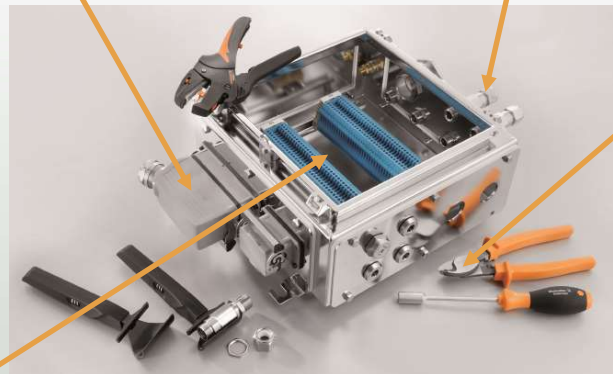
Heavy-duty connectors can be attached to the sides of the enclosures. They may be used when you require machine and facility assemblies that are reliable, simple and quick. The connector housing is made of die-cast aluminium and offers excellent protection against dirt, moisture and mechanical loads.



Weidmüller offers a comprehensive line of **terminal blocks** with a wide variety of wire connection methods. They have been tested and certified for use in standard industrial applications as well as areas requiring explosion protection.



Weidmüller offers many **cable entry systems** as supplement of the enclosures including cable glands, stopping plugs, breathers, adaptors and the other accessories (lock nuts, sealing rings, IP washer)..

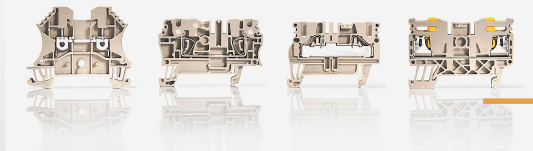


Weidmüller offers many **tools** to help you while preparing and processing enclosures. E.g. the DMS Manual ensures that the proper torque for DIN rails, gland plates and lid screws. Holes can be punched into the enclosures using the hydraulic sheet-metal hole puncher. The FleCaFix cable gland tool is for mounting and removing cable glands into these holes.

From a component manufacturer to a solution provider

One shop stop strategy
Complete solution made by one manufacturer

Part of assemblies **terminals**
Weidmüller is a manufacturer of terminals



Part of assemblies **enclosures**
Weidmüller is a manufacturer of enclosures



Part of assemblies **Cable glands**:
Weidmüller offers cable glands with
WI certificate



Part of assemblies **FF components**
Weidmüller is a strategic partner of FF component manufacturer

A large, solid orange shape that occupies the top half of the page. It has a rectangular top and a bottom edge that is mostly horizontal but features a small, curved cutout on the right side.

Weidmüller's production of stainless steel enclosures

Highest level of manufacturing expertise

- High quality Klippon® TB enclosures are manufactured in nine steps:

1. Laser cutting
2. Design
3. Process-compatible welding method
4. Attaching the inner-thread sockets
5. Electropolishing
6. Seals
7. Mounting
8. Quality Control
9. Packaging

+ Customised Production, if required



1. Laser Cutting

- The raw metal steel sheet is placed in position and is cut to form by a laser.
- The metal sheets are cut to the proper size by the laser in a fully automatic process with no mechanical factors influencing the cut.
- Each enclosure is laser engraved with its article number, product designation and unique order number to provide complete identification and product traceability during the entire production process.



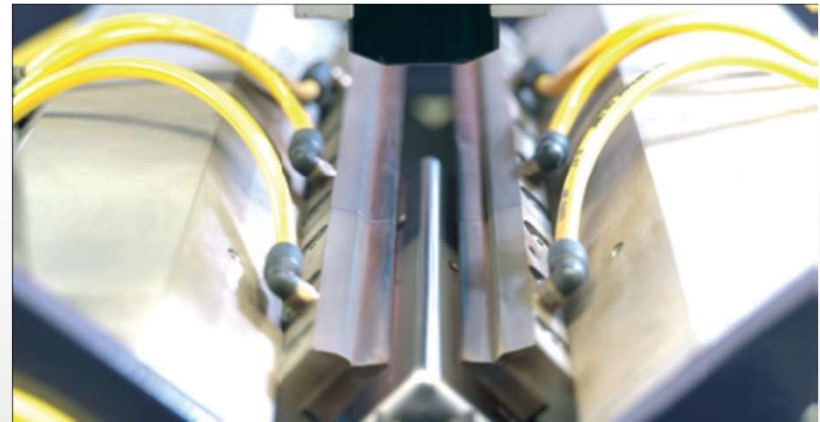
2. Design

- The one-piece enclosure blank cut-out is then bent using a bending machine to form the familiar enclosure body.
- The entire bottom section of the enclosure is made from a single sheet cut-out piece, so the welding is kept to a minimum. This results in precise, flat seal surfaces



3. Process-compatible welding method

- Moveable corners and edges of the sheet are welded into a single unit in a fully automated process. They are fixed in place with a standardised clamping mechanism. An inert gas is used on both sides during the welding process to protect against corrosion.
- The sensitive sealing edges are welded manually.



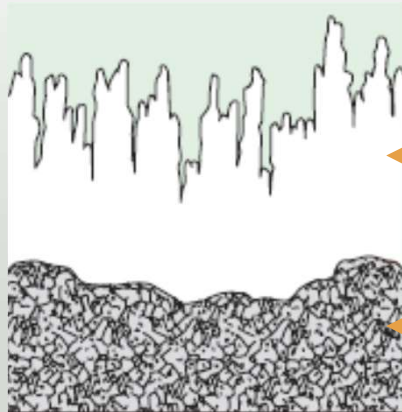
4. Attaching the inner-thread sockets

- Unique welding process where the innerthread socket is welded permanently to the enclosure in just a tenth of a second.
- In contrast to conventional joints, the welded joint created by this process requires no additional sealing material. This reduces the influences that mechanical impact, excessive torque and vibrations can have on the seal of the inner-thread sockets.
- Laboratory tests confirm a leak-free connection is maintained with a pressure of more than 1000 kg ensuring performance even under the harshest conditions.



5. Electro polishing

- The Klippon® TB enclosure range is supplied as standard with an electro-polished finish which increases corrosion resistance and reduces surface deposits and germs.



A cross-section of the enclosure surface **before** the electro-polishing:
Germs and dust take hold easily on the rough enclosure surface which could lead to a higher risk of corrosion.

A cross-section of the enclosure surface **after** the electro-polishing:
The electro-polishing process removes the spikes and thus smooths the surface. This reduces nucleation and significantly improves the corrosion resistance.

6. Seals

- Cutting of the lid and gland plate seals to shape in a flexible and precise process that uses a blade with a cutting speed of up to 1000 mm/s.



- A reliable seal ensures protection against external influences even at extreme temperatures. Thus the seal is one of the most important components of an enclosure. The seal must exhibit a high degree of resilience so that it can remain functional. Weidmüller's silicone gasket is the solution for all these requirements.

7. Mounting

- Assembly of other essential components, such as the lid, gland plates and earth stud.



8. Quality control

- **Dimensional control**
 - The enclosure dimensions are tested (random samples) using a 3-D measuring arm. This permits errors to be clearly identified.



9. Packaging

- The enclosures are packed in a specially designed flexible cardboard box before they are shipped.



- Standardised protective inserts at all corners of the enclosure protect the enclosure perfectly and fit tightly in order to avoid any slippage during transportation. The cardboard box has been designed so that it can be reused even after cable glands have been attached to the enclosure.

Customised Production

- The enclosures can be customised according to specific customer requirements after production with following options:
 - Including holes and cut-outs
 - Fully assembled with add-on components such as cable glands, sealing plugs, pressure compensating elements or heavy-duty connectors
 - Fitted with a variety of internal components such as terminal blocks or electronic components



Questions?!?
Thanks for your attention...

