Peppers Cable Glands Ltd. Stanhope Road, Camberley, GU15 3BT, UK

ARFF & ARMM Range Adaptors & Reducers – INSTALLATION INSTRUCTIONS

Warning

PLEASE STUDY THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLATION. These products should not be used in any application other than those mentioned here or in our Data Sheets, unless Peppers states in writing that the product is suitable for such application. Peppers can take no responsibility for any damage, injury or other consequential loss caused where the products are not installed or used according to these instructions. This leaflet is not intended to give advice on the selection of the products. Further guidance can be found in the standards listed below.

Brief Description

Peppers ARFF and ARMM range of Adaptors and Reducers are intended for indoor or outdoor use in the appropriate hazardous area locations. Adaptors and Reducers are designed to facilitate the installation of an entry device into an enclosure or housing where the entry threads on the equipment are dissimilar. They give environmental protection to IP66 and IP68 and are suitable for both mining and surface applications.

Installation

All Peppers adaptors and reducers should be installed and tightened to ensure the appropriate IP rating of the installation is maintained. The product should be hand-tightened and then suitably secured with a wrench. For threaded entries the entry thread should be fully engaged prior to tightening. Further guidance can be found in Peppers document CT0030 which can be found on our website. It is the installer and users' responsibility to ensure that the interface between the enclosure or cable gland and the adaptor or reducer is suitably sealed for the required application.

Installation Guidance

Point	Advice			
1	BS/EN/IEC 60079-10	BS/EN/IEC 60079-14	National Electrical Code (NEC 500 – 505)	Canadian Electrical Code (CSA C22.1)
2	Installation should only be carried out by a competent electrician, skilled in cable gland installation.			
3	Comprehensive details of the compliance standards can be found on the product certificates which are available for download from our website.			
4	NO INSTALLATION SHOULD BE CARRIED OUT UNDER LIVE CONDITIONS.			
5	Threaded entries: the product can be installed directly into threaded entries. Threaded entries should comply with the relevant applicable standards and have a lead-in chamfer to allow for full engagement of the threads. Failure to provide a sufficient lead-in chamfer may lead to ingress sealing issues. For Ex db applications a minimum of 5 fully engaged parallel threads is required. Any thread sealant used should be non-hardening. Whilst Peppers products with tapered threads, when installed into a threaded entry, have been tested to maintain IP66 without any additional sealant, due to the differing gauging tolerances associated with the use of tapered threads it is recommended to use a non-hardening thread sealant if an IP rating higher than IP64 is required.			
6	Clearance holes: these shall be no larger than 0.7mm above the nominal diameter of the external entry thread. The product should be secured with a Peppers locknut and the threads tightened to ensure the installation is secure. Where no integral sealing method is provided a Peppers sealing washer should be used to maintain IP ratings. A Peppers serrated washer should be used for additional installation protection. It is recommended that tapered threads are not used in clearance holes.			
7	To maintain the Ingress Protection rating of the product, the entry hole must be perpendicular to the surface of the enclosure. The surface should be sufficiently flat and rigid to support the assembly and make the IP joint. The surface must be clean and dry. The product incorporates a thread run out according to general machining techniques and will not have a full form thread for the entire length and as such entry threads should have a suitable lead-in chamfer to ensure a seal is maintained. Further guidance can be found on Peppers website. It is the users/installers responsibility to ensure that the interfaces and threads between the enclosure and adaptor/reducer and the associated cable gland/entry device is suitably sealed with O-rings, sealing washers and/or with thread sealant for the required application. Any thread sealant used shall be suitable for use in hazardous area locations, be suitable for the temperature range at the point of mounting, shall not contain evaporating solvent and cannot cause corrosion at the threaded interface when used for dissimilar materials.			
8	Where a bonding connection to earth is required a Peppers earth tag should be used. Peppers earth tags have been independently tested to comply with the Category B values given in IEC 62444. Further guidance can be found on Peppers website. Peppers earth tags should be fitted over the external entry thread from either inside or outside the enclosure. If fitted internally they must be secured with a Peppers locknut and optionally a Peppers serrated washer.			
9	Peppers external metric entry threads comply with ISO 965-1 & ISO 965-3 with a 6g tolerance fit. The standard metric thread pitch is 1.5mm for threads up to M75 and 2.0mm for size M80 and above. Alternative thread pitches are available upon request. Peppers external NPT threads comply with ASME B1.20.1 with gauging to clause 8.1. All threads comply with the threaded joint requirements of clause 5.3 from IEC 60079-1. Information on other thread types can be found in the product certificates.			
10	Aluminium variants may not be used in Group I (Mining) applications			
11	Restricted Breathing Requirements: - Adaptors and Reducers with parallel threads and fitted with appropriate sealing rings provide a restricted breathing seal. Adaptors and Reducers with tapered or parallel threads, installed into unthreaded entry holes, secured with a locknut, and fitted with appropriate sealing rings provide a restricted breathing seal.			
12	Once installed do not dismantle except for routine inspection. An inspection should be conducted as per IEC 60079-17. After inspection the assembly should be re-assembled as instructed.			

Product Ingress Protection & Enclosures Ratings

When installed in accordance with these instructions the Peppers ARFF and ARMM range of adaptors and reducers will maintain the following IP and enclosure ratings. IP68 rated products are tested to a depth of 100 metres for a period of 7 days.

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Male Thread Type	Entry Type	Seal Type	IP Rating	Type	Male Thread Type	Entry Type	Seal Type	IP Rating	Type
Parallel	Threaded	No Seal	IP66	3, 4, 4X	Tapered	Threaded	No Seal	IP66	3
Parallel	Threaded	O-Ring	IP66 & IP68	4, 4X, 6, 6P	Tapered	Threaded	Thread Sealant	IP66 & IP68	4, 4X, 6, 6P
Parallel	Clearance	Sealing Washer	IP66 & IP68	4, 4X, 6, 6P	Tapered	Clearance	Sealing Washer	IP66 & IP68	4, 4X, 6, 6P

Interpretation of Markings

Markings on the outside of this product carry the following meanings, Adaptor Type & Size, ARFF-**aaa**-**bbb**, female to female type or ARMM-**aaa**-**bbb**, male to male type, where **aaa** and **bbb** are the respective thread type and sizes of the Adaptor or Reducer.

Limitations on Usage

1. Installing more than one adaptor/reducer in series (by "stacking") is not permitted.
2. Products are approved for a temperature range at their point of mounting based upon the interface seal as detailed below:

Seal Option	No Seal	Nitrile O-Ring	Neoprene O-Ring	Silicone O-Ring	Fluorosilicone O-Ring	Viton O-Ring	EPDM O-Ring
Temperature Range	-100°C to +400°C	-30°C to +100°C	-35°C to +95°C	-60°C to +200°C	-55°C to +200°C	-20°C to +180°C	-50°C to +110°C

3. For CSA approved products:
   - Adaptors and Reducers shall not be used in any application where the operating temperature is below -50°C.
   - Class I conduit applications, for products with a female connection thread, the female thread must be NPT.

Approvals

Approval	Certificate Number	Protection Concept / Type
ATEX (2014/34/EU)	CML 19ATEX1090X / CML 21UKEX1038X	Ex I M2 II 1D 2G Ex db I Mb / Ex db IIC Gb / Ex eb I Mb / Ex eb IIC Gb / Ex ta IIIC Da
UKCA (SI 2016 No. 1107)	CML 19ATEX4092X / CML 21UKEX4042X	Ex II 3G Ex nR IIC Gc
IECEx	IECEx CML 19.0022X	Ex db I Mb / Ex db IIC Gb / Ex eb I Mb / Ex eb IIC Gb / Ex ta IIIC Da / Ex nR IIC Gc
CSA - Canada	2310046	Class I, Division 1 Groups A, B, C and D / Class II, Division 1 Groups E, F and G / Class III, Type 4X & 6P Ex db IIC Gb / Ex eb IIC Gb / Ex ta IIIC Da IP66/68
CSA - US	2310046	Class I, Division 1 Groups A, B, C and D / Class II, Division 1 Groups E, F and G / Class III, Type 4X & 6P Class I, Zone 1 AEx db IIC Gb / AEx eb IIC Gb / Zone 20 AEx ta IIIC Da IP66/68
INMETRO	NCC 13.2189 X	Ex db I Mb / Ex db IIC Gb / Ex eb I Mb / Ex eb IIC Gb / Ex ta IIIC Da / Ex nR IIC Gc
EAC	ПРОММАШ ТЕСТ RU C-GB.АЖ58.В.05106	Ex db I Mb U / Ex db IIC Gb U / Ex eb I Mb U / Ex eb II Gb U / Ex ta IIIC Da / Ex nR II Gc U
UKRAINE	СЦ 18.0319 X	I M2 Ex db I Mb / Ex eb I Mb / II 2DG Ex db IIC Gb / Ex eb IIC Gb / Ex tb IIIC Db / II 3G Ex nR IIC Gc
CCC	2021312313000373	Ex db I Mb / Ex db IIC Gb / Ex eb I Mb / Ex eb IIC Gb / Ex nR IIC Gc / Ex ta IIIC Da IP66
CCoE (PESO)	P494321/15 & P494321/19	Ex db I Mb / Ex db IIC Gb / Ex eb I Mb / Ex eb IIC Gb / Ex nR IIC Gc
ABS	20-LD1944057-PDA	Specified ABS Rules – See certificate
Lloyd's Register	LR2124442TA	Ex db I Mb / Ex db IIC Gb / Ex eb I Mb / Ex eb IIC Gb / Ex ta IIIC Da / Ex nR IIC Gc
DNV	TAE00004XK	Ex db I Mb / Ex db IIC Gb / Ex eb I Mb / Ex eb IIC Gb / Ex ta IIIC Da / Ex nR IIC Gc

Conditions for Safe Use

1. Blanking elements shall not be used in conjunction with ARFF & ARMM Adaptors and Reducers when installed in a flameproof enclosure.
2. When used in explosive dust atmospheres and installed in threaded entries without interface O-ring seals, ARFF & ARMM adaptors and Reducers shall only be fitted into enclosures that have either:
   - parallel entries that will ensure a minimum of 5 full threads of contact will be maintained, this is in accordance with clause 5.1.2 of IEC 60079-31.
   - tapered entries that will ensure a minimum of 3 ½ full threads of contact will be maintained, this is in accordance with clause 5.1.2 of IEC 60079-31.
3. ARFF & ARMM Adaptors and Reducers shall not to be used for the direct inter-connection of enclosures.
4. Only one ARFF & ARMM Adaptor or Reducer is to be used with any single cable entry on the associated equipment.
5. The ARFF & ARMM Adaptors and Reducers are approved for a temperature range at their point of mounting based upon the interface seal.