

LAPP GROUP

EPIC[®] POWERLOCK

Assembly instruction for
Crimp and Set screw types



1. Overview

Due to the wide range of cables used in the market, to ensure that a satisfactory result is obtained when EPIC[®] POWERLOCK connectors are terminated onto the end of the cables, the type and method used needs to be evaluated. This guide is intended to provide details of how to successfully terminate cables into EPIC[®] POWERLOCK connectors, either by crimping, set screws or threaded post methods. This document provides guidelines on:

- how to perform a crimped termination.
- what type of crimp tools and dies to use with recommendations.
- how to perform a set screw termination.
- terminating a threaded post panel type connector.

2. Termination Methods

EPIC[®] POWERLOCK connectors can be terminated to cables by using one of the following methods:

- Crimp termination.
- Set screw termination.
- Threaded post termination.

These recommended assembly methods are detailed below. If in doubt, consult Lapp.

2.1 Crimp Termination

It is essential to use the recommended crimp tool and die to ensure a satisfactory crimp. It is important that you are satisfied that the crimped joint meets your requirements. Consult Lapp for more details.

2.1.1 Crimp Connector Components

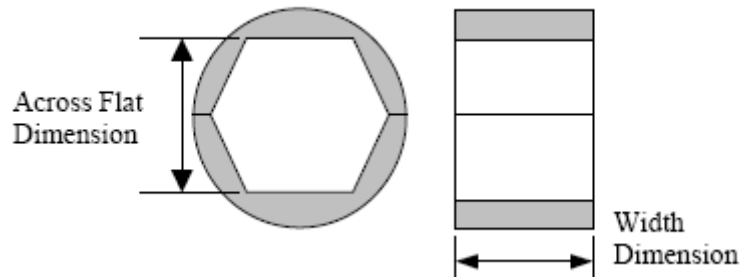
Shown below are the components supplied for both EPIC[®] POWERLOCK F6 drain and EPIC[®] POWERLOCK D6 source connectors. Both connector types include the following:

- Cable Gland
- Contact
- Housing (Insulator)
- Retention Pin



2.1.2 Crimp Die

The crimp die type and size are one of the most important aspects of the crimping operation to achieve a satisfactory crimped joint. They vary depending on the actual cable / contact combination to be crimped. A hexagon type crimp is recommended.



Across Flat Dimension Width Dimension

2.1.3 Crimp Tool

Depending on the application, various crimp tool and die set combinations can be used.



2.1.4 Crimp Settings

C130 CRIMP TOOL

CRIMP TOOL C 130	44420337
CRIMP DIE C 50	44420330
CRIMP DIE C 70	44420331
CRIMP DIE C 95	44420332
CRIMP DIE C 120	44420333
CRIMP DIE C 150	44420334
CRIMP DIE C 185	44420335
CRIMP DIE C 240	44420336

Crimpwerkzeug	Crimp Die Type	Description	Crimp Die Details	
			Die Across Flat Dimension (mm)	Die Width Dimension (mm)
C 130	44420330 44420331 44420332 44420333 44420334 44420335 44420336	C 25	7,6	9,0
		C 35	9,0	12,0
		C 50	10,0	12,0
		C 70	12,0	12,0
		C 95	14,0	12,0
		C 120	16,0	12,0
		C 150	17,3	12,0
		C 185	19,0	12,0
		C 240	21,5	12,0
		C 240	23,57	12,0
	C 300	23,0	12,0	

2.1.5 Crimp Assembly Tools

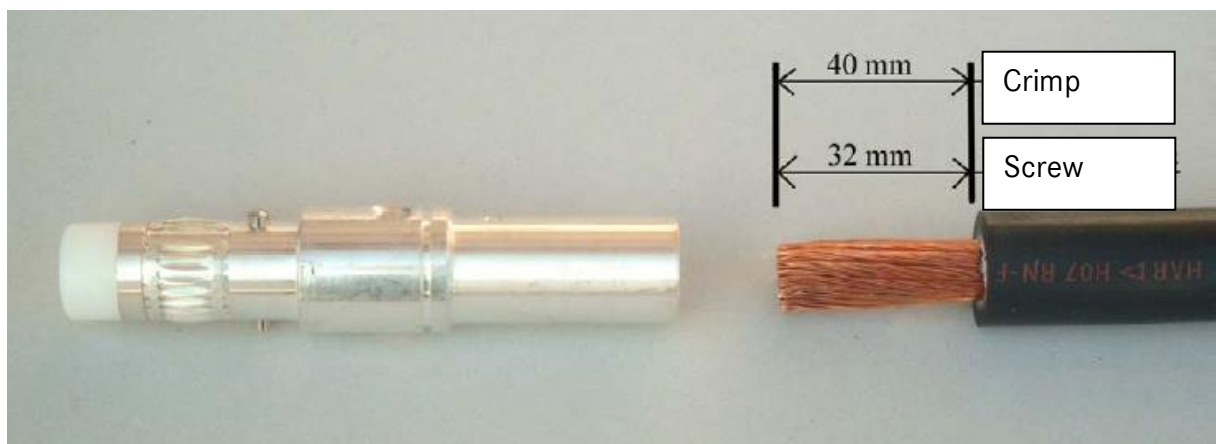
The tools listed below are recommended:

- Cable Stripping tool
- Cable shear
- Soft hammer/Press



2.1.6 Double Crimp Arrangement

The default recommended method is to double crimp although single crimps may be suitable for crimping 120mm² cables and smaller. Each crimp should be positioned centrally within the contact crimp area. The crimp area is between inspection hole and end of contact. If a single crimp is used, the crimp should be positioned centrally within the crimp. Crimp in the order shown to ensure a satisfactory crimp. Consult the factory if any additional information or advice is required.

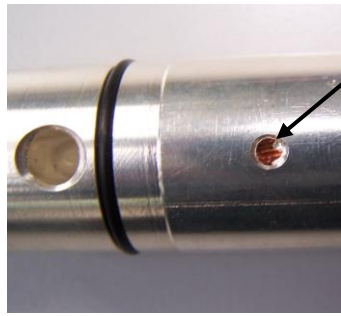


2.1.7 Recommended Assembly Procedure

1. Remove the Cable Gland from the Insulator and remove the contact.
2. Slide the Cable Gland onto the cable being terminated.
3. Carefully strip back the cable insulation by 42mm taking care not to damage any of the conductors stranding.
4. Insert the conductor stranding into the crimp bucket at the rear of the contact. Ensure that the cable is straight within a distance of 1 metre of the crimping location. This ensures that the individual cable wire strands are not distorted or displaced to each other caused by bending the cable. With the crimping tool, crimp the contact twice making sure that the cable is being forced into the contact and ensuring that the cable conductor is visible through the inspection hole.



5. Examine the crimped joint to ensure that the crimp is satisfactory. Ensure that all of the conductor strands are contained within the crimped area.



Inspection hole:
Copper strands visible

6. Following the crimping operation, any contact material deformed between the crimp dies which prevents the contact assembly from being fitted into the Insulator assembly should be removed, in line with normal working practices.
7. Fit the crimped contact into the insulator and visually align the Retention pin holes.
8. Fit the Retention pin, tapered end first into the insulator/contact using either a press or a soft hammer. Note that the Retention pin should only be used once. Re-using the Retention pin will invalidate the IP67 rating.



9. Ensure that the Retention pin is visible from both sides of the assembly after fitting and is flush/sub flush with the insulator.
10. Screw the cable gland into the insulator, tightening to a torque of 13Nm.
11. Finally inspect overall assembly.



2.2 Set Screw Termination

It is essential to use the recommended assembly method, reduction sleeves and set screw tightening torques to ensure a satisfactory termination.

2.2.1 Screw Connector Components

Show below are the components supplied for both line drain and line source connectors. Both connector types include the following:

- Cable Gland
- Contact
- Insulator
- Retention Pin
- Reduction Sleeves

2.2.2 Recommended Assembly Procedure

1. Remove the Cable Gland from the insulator and take out the contact.
2. Slide the Cable Gland onto the cable being terminated.
3. Carefully strip back the cable insulation by $\sim 33\text{mm}$ taking care not to damage any of the conductors stranding.



4. Select the appropriate reduction sleeves (see Table 1 below) and slide on in sequence over the exposed conductor stranding. All sleeves down to the size recommended for the cable in use should be used. i.e. for the 50mm^2 cable, the R120, R95, R70 and R50 sleeves should all be used. The sleeves fit inside each other to give a gradual reduction in diameter. The flared end of the sleeves should be against the cable insulation.

Cable Size (mm^2)	Reduction Sleeve Required	Set Screw Torque Minimum (Nm)	Cable Jacket Strip Length (mm)
120mm^2	120	10.5	33
90mm^2	120 + 95	10.5	33
70mm^2	120+95+70	10.5	33
50mm^2	120+95+70+50	10.5	33

Table 1. Set Screw Assembly Data





5. Slide the cable and reduction sleeves into the rear of the contact ensuring that they are fully seated inside of the contact. Using a 5mm A/F Allen key tighten the set screws to the appropriate torque setting.



- 6.** Fit the contact into the front insulator and visually align the Retention pin holes.
- 7.** Fit the Retention pin, tapered end first into the insulator/contact using either a press or a soft hammer. Note that the Retention pin should only be used once. Re-using the Retention pin can invalidate the IP67 rating.
- 8.** Ensure that the Retention pin is visible from both sides of the assembly after fitting and is flush/sub flush with the insulator.



9. Screw the cable gland into the insulator, tightening to a torque of 13Nm minimum.



10. Finally inspect overall assembly.

Note for users of fine stranded cables When using fine stranded power cables it is advisable to use the maximum number of sleeves and increase the torque setting. This will protect the individual cable strands from mechanical damage and allow greater compression of the conductor.

2.3 Panel Mount Termination

Panel receptacles are supplied fully assembled with contacts (See Figure 12 below.) An M12 nut and a spring washer are also supplied loosely fitted onto the contact. Termination to the panel connector is made by fitting the cable lug or other accessory using the nut and washer.

2.3.1 Panel Mount Connector Components

Shown below in figure 13 are the components supplied for both line drain and line source panel connectors. Both connector types include the following:

- Housing (Insulator)
- Contact with
- Retention pin
- M12 Nut
- M12 Washer

2.3.2 Recommended Assembly Procedure

1. Fit the contact into the front insulator and visually align the Retention pin holes.
2. Fit the Retention pin, tapered end first into the insulator/contact using either a press or a soft hammer. Note that the Retention pin should only be used once. Re-using the Retention pin can invalidate the IP67 rating.
3. Ensure that the Retention pin is visible from both sides of the assembly after fitting and is flush/sub flush with the insulator.
4. Remove the M12 nut and washer from the threaded post.
5. Fit terminal or accessory over the threaded post.
6. Refit the M12 washer and nut onto the threaded post and tighten to a maximum value of 12 Nm
7. Finally inspect overall assembly.





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