

## Raychem Link Boxes

**Raychem**  
from TE Connectivity

# Raychem Link Boxes

## Application

Single core cables in operation carry alternating currents and induced voltages in the metallic sheath of the cable. These currents may cause, depending from the sheath bonding, circulating currents flowing in the cable sheath which reduce the transmission capacity of the cable and cause an additional heating. Link Boxes are used for earthing and bonding cable sheaths of single core cables so that the induced voltages and circulating currents are eliminated or reduced.



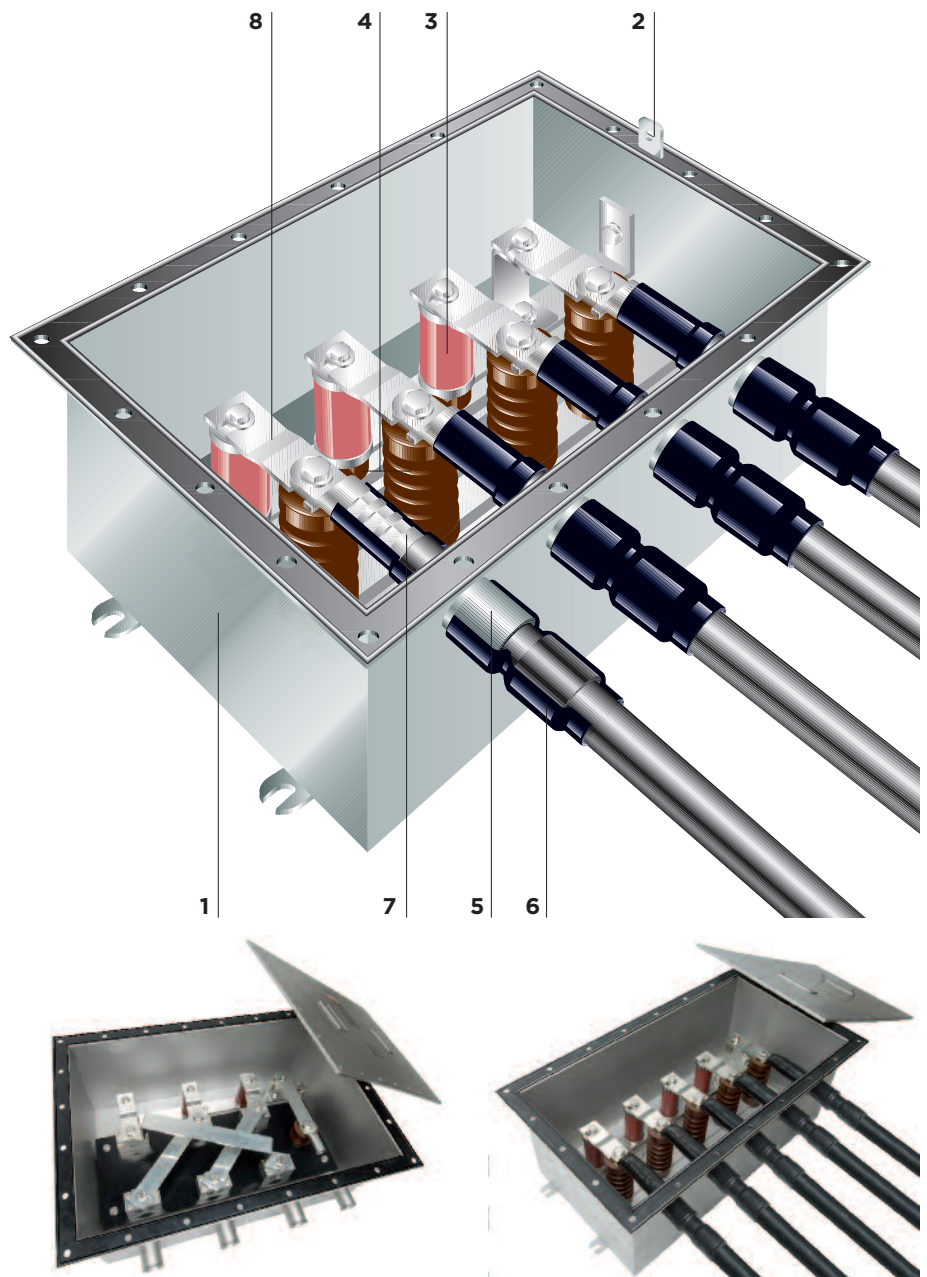
## Advanced Features

- Different designs available
- Stainless steel box
- Different mechanical protection levels up to IP68
- Electrically and mechanically type tested
- 1-phase and 3-phase boxes
- With or without surge arresters
- With or without removable links
- For concentric cables or single core cables
- Cross sections up to 300 mm<sup>2</sup>
- ZnO sheath voltage limiter for up to 7kV protection levels, larger protection levels on request
- Short circuit current up to 40 kA 1 sec



## Major Design Elements

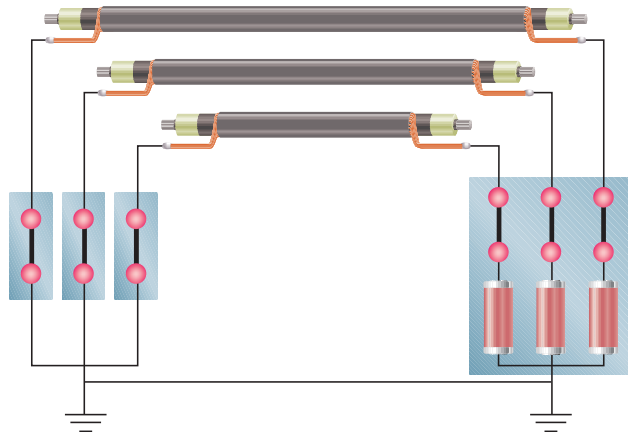
TE Connectivity's Raychem link boxes have reliable design and the housing (1) is made of stainless steel. The enclosure is water and dust tight type tested to fulfil the requirements of protection class IP68 for installations below ground. For other applications e.g. indoor installation, link boxes with less protection class are also available. Designs are capable to withstand different electrical demands for several voltage classes. The link box lid is lockable (2) by a standard security deadlock. The optional sheath voltage limiters (SVL) (3) are made of zinc oxide and are designed to meet the requirements of IEC 60099-4. Link boxes with SVL's are available for different voltage classes and provide active over-voltage protection that contributes directly to improved reliability of the system. The indoor post-insulators (4) made of epoxy resin are light weight and provide reliable electrical performance. The cable entries (5) are available with different inner diameters to fit single core or concentric cables with different cross sections. For perfect sealing cable entries are protected with coated heat shrink tubes (6). Sheath bonding cables are fixed by various methods with compression lugs (7) or by using clamping rings. The tinned copper links (8) are removable and available for cross sections up to 300 mm<sup>2</sup>.



## Most popular cable sheath grounding options

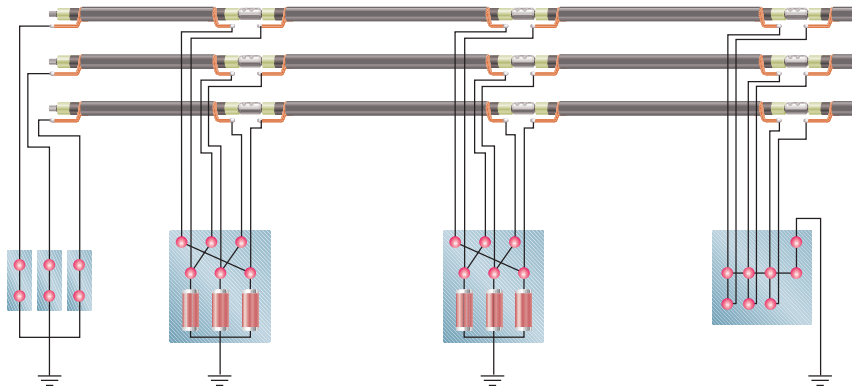
### Single point earthing

On relatively short cable sections the cable sheaths are solidly bonded together and earthed at one position. The sheaths of the three cable sections are connected and grounded at one point only. At all other points, there will be a voltage between sheath and ground that will be at its maximum at the farthest point from the ground bond. Since there is no closed sheath circuit, current does not flow along the sheaths and no sheath circulation current loss occurs.



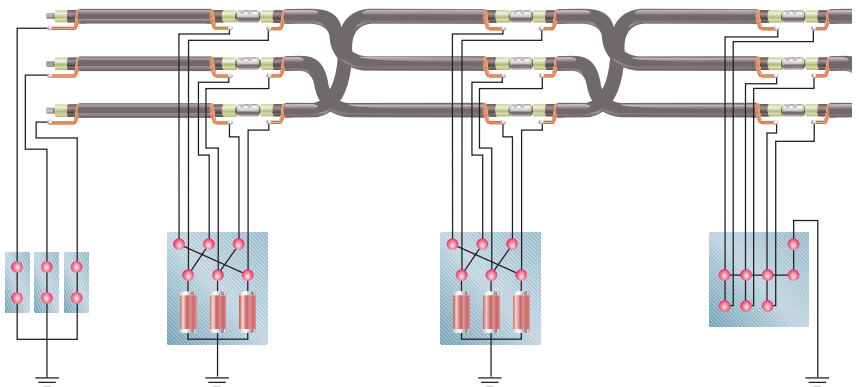
### Cross bonding

The cable route is sectionalized into equal lengths. The sections are cross connected to neutralize the induced voltages. The phase sum of the introduced voltages will be zero and hence there will be no circulating currents when the cable laying is symmetrical.

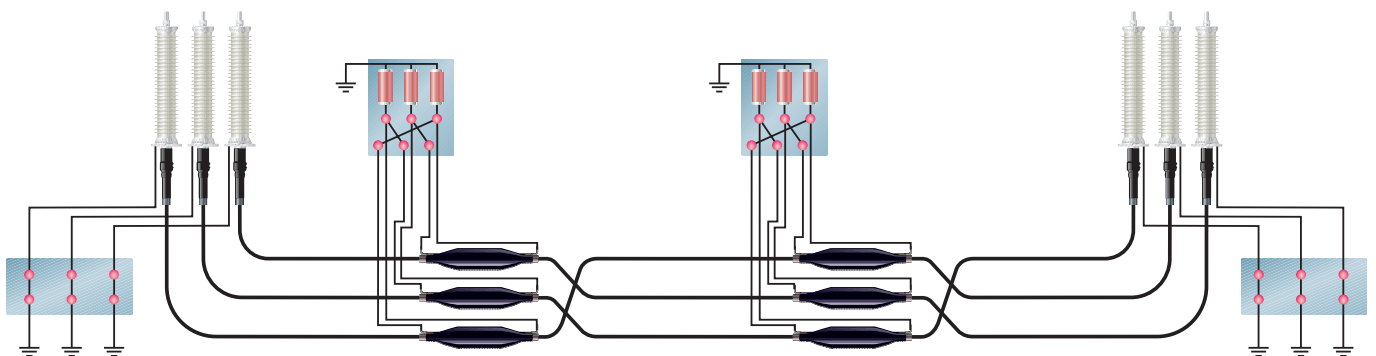


### Cross bonding and transposition

For cable laying in unsymmetrical formations the induced voltages are not equal at each phase and therefore the phase sum of the voltages are not zero despite cross bonding. The cables are transposed at each joint position and the cable sheaths are cross connected, each cable occupies the same relative position in the cable formation. By this means the phase sum of the induced voltage sheaths is over three sections the same.

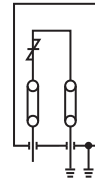
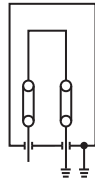


### Typical application example



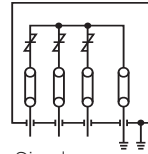
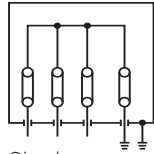
## Selection tables for Raychem Link Boxes

## Link Diagram



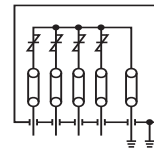
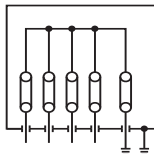
Bonding lead (type)	Single-core	Single-core
Bonding lead (mm <sup>2</sup> )	95 - 300	95 - 300
Protection class	IP 68	IP 68
Application	Buried	Buried
Sheath voltage limiters	N/A	1 kV-6 kV
Box size (LxHxW) (mm)	496x322x451	496x322x451
Material	stainless steel	stainless steel
Total weight	Approx. 35 kg	Approx. 35 kg
Connection links	Removable tinned copper 300 mm <sup>2</sup>	Removable tinned copper 300 mm <sup>2</sup>
Cable connection	Compression lug	Compression lug
Impulse withstand voltage (kV)	55	55
AC withstand voltage (kV)	-	-
DC withstand voltage (kV)	25	25
Short circuit current (kA/1s)	40	40
Description	HVLB-E-S-O-1-2-U-IP68	HVLB-E-S-x*-1-2-U-IP68

## Link Diagram



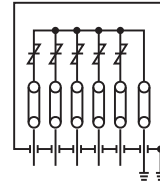
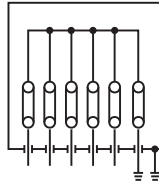
Bonding lead (type)	Single-core	Single-core
Bonding lead (mm <sup>2</sup> )	95 - 300	95 - 300
Protection class	IP 68	IP 68
Application	Buried	Buried
Sheath voltage limiters	N/A	1 kV-6 kV
Box size (LxHxW) (mm)	496x322x725	496x322x725
Material	stainless steel	stainless steel
Total weight	Approx. 65 kg	Approx. 65 kg
Connection links	Removable tinned copper 300 mm <sup>2</sup>	Removable tinned copper 300 mm <sup>2</sup>
Cable connection	Compression lug	Compression lug
Impulse withstand voltage (kV)	55	55
AC withstand voltage (kV)	-	-
DC withstand voltage (kV)	25	25
Short circuit current (kA/1s)	40	40
Description	HVLB-E-S-O-3-2-U-IP68	HVLB-E-S-x*-3-2-U-IP68

## Link Diagram

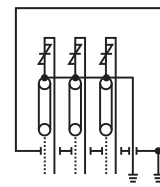
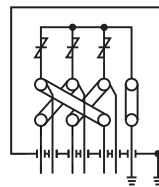


Bonding lead (type)	Single-core	Single-core
Bonding lead (mm <sup>2</sup> )	95 - 300	95 - 300
Protection class	IP 68	IP 68
Application	Buried	Buried
Sheath voltage limiters	N/A	1 kV-6 kV
Box size (LxHxW) (mm)	496x322x862	496x322x862
Material	stainless steel	stainless steel
Total weight	Approx. 75 kg	Approx. 75 kg
Connection links	Removable tinned copper 300 mm <sup>2</sup>	Removable tinned copper 300 mm <sup>2</sup>
Cable connection	Compression lug	Compression lug
Impulse withstand voltage (kV)	55	55
AC withstand voltage (kV)	-	-
DC withstand voltage (kV)	25	25
Short circuit current (kA/1s)	40	40
Description	HVLB-E-S-O-4-2-U-IP68	HVLB-E-S-x*-4-2-U-IP68

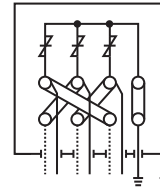
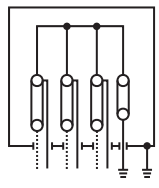
\* indicates voltage class of sheath voltage limiter (SVL)

**Link Diagram**

Bonding lead (type)	Single-core	Single-core
Bonding lead (mm <sup>2</sup> )	95 - 300	95 - 300
Protection class	IP 68	IP 68
Application	Buried	Buried
Sheath voltage limiters	N/A	1 kV-6 kV
Box size (LxHxW) (mm)	496x322x995	496x322x995
Material	stainless steel	stainless steel
Total weight	Approx. 85 kg	Approx. 85 kg
Connection links	Removable tinned copper 300 mm <sup>2</sup>	Removable tinned copper 300 mm <sup>2</sup>
Cable connection	Compression lug	Compression lug
Impulse withstand voltage (kV)	55	55
AC withstand voltage (kV)	-	-
DC withstand voltage (kV)	25	25
Short circuit current (kA/1s)	40	40
Description	HVLB-E-S-O-5-2-U-IP68	HVLB-E-S-x*-5-2-U-IP68

**Link Diagram**

Bonding lead (type)	Single-core	Concentric (coaxial)
Bonding lead (mm <sup>2</sup> )	95 - 300	95+95 - 300+300
Protection class	IP 68	IP 68
Application	Buried	Buried
Sheath voltage limiters	1 kV-6 kV	1 kV-6 kV
Box size (LxHxW) (mm)	665x395x665	665x395x665
Material	stainless steel	stainless steel
Total weight	Approx. 68 kg	Approx. 68 kg
Connection links	Removable tinned copper 300 mm <sup>2</sup>	Removable tinned copper 300 mm <sup>2</sup>
Cable connection	Clamping ring	Clamping ring
Impulse withstand voltage (kV)	60	60
AC withstand voltage (kV)	15	15
DC withstand voltage (kV)	-	-
Short circuit current (kA/1s)	40	40
Description	HVLB-C-S-x*-6-2-U-IP68	HVLB-E-C-x*-3-2-U-IP68

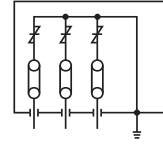
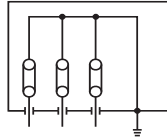
**Link Diagram**

Bonding lead (type)	Concentric (coaxial)	Concentric (coaxial)
Bonding lead (mm <sup>2</sup> )	95+95 - 300+300	95+95 - 300+300
Protection class	IP 68	IP 68
Application	Buried	Buried
Sheath voltage limiters	N/A	1 kV-6 kV
Box size (LxHxW) (mm)	621x356x883	621x356x883
Material	stainless steel	stainless steel
Total weight	Approx. 100 kg	Approx. 100 kg
Connection links	Removable tinned copper 300 mm <sup>2</sup>	Removable tinned copper 300 mm <sup>2</sup>
Cable connection	Clamping ring	Clamping ring
Impulse withstand voltage (kV)	55	55
AC withstand voltage (kV)	-	-
DC withstand voltage (kV)	25	25
Short circuit current (kA/1s)	40	40
Description	HVLB-E-C-O-3-2-68	HVLB-C-C-x*-3-2-68

\* indicates voltage class of the sheath voltage limiter (SVL)

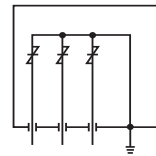
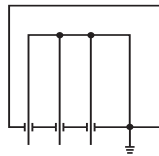
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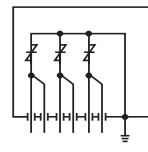
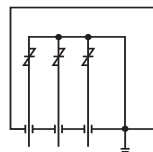
Bonding lead (type)	Single-core	Single-core
Bonding lead (mm <sup>2</sup> )	95 - 300	95 - 300
Protection class	IP 56	IP 56
Application	Non buried	Non buried
Sheath voltage limiters	N/A	1 kV-6 kV
Box size (LxHxW) (mm)	310x255x310	310x255x310
Material	stainless steel	stainless steel
Total weight	Approx. 16 kg	Approx. 16 kg
Connection links	Removable copper 240 mm <sup>2</sup>	Removable copper 240 mm <sup>2</sup>
Cable connection	Compression lug	Compression lug
Impulse withstand voltage (kV)	35	35
AC withstand voltage (kV)	24	24
DC withstand voltage (kV)	40	40
Short circuit current (kA/1s)	-	-
Description	HVLB-GND-0-3	HVLB-GND-x*-3

## Link Diagram



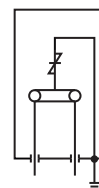
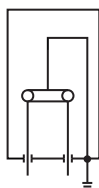
Bonding lead (type)	Single-core	Single-core
Bonding lead (mm <sup>2</sup> )	95 - 300	95 - 300
Protection class	IP 56	IP 56
Application	Non buried	Non buried
Sheath voltage limiters	N/A	1 kV-6 kV
Box size (LxHxW) (mm)	310x255x310	310x255x310
Material	stainless steel	stainless steel
Total weight	Approx. 16 kg	Approx. 16 kg
Connection links	Copper 240 mm <sup>2</sup>	Copper 120 mm <sup>2</sup>
Cable connection	Compression lug	Compression lug
Impulse withstand voltage (kV)	35	35
AC withstand voltage (kV)	24	24
DC withstand voltage (kV)	40	40
Short circuit current (kA/1s)	-	-
Description	EPPA-055-0-3	EPPA-055-x*-3

## Link Diagram



Bonding lead (type)	Single-core	Single-core
Bonding lead (mm <sup>2</sup> )	95 - 300	95 - 300
Protection class	IP 68	IP 56
Application	Non buried	Non buried
Sheath voltage limiters	1 kV-6 kV	1 kV-6 kV
Box size (LxHxW) (mm)	310x255x310	310x255x310
Material	stainless steel	stainless steel
Total weight	Approx. 16 kg	Approx. 16 kg
Connection links	Copper 120 mm <sup>2</sup>	Copper 120 mm <sup>2</sup>
Cable connection	Compression lug	Compression lug
Impulse withstand voltage (kV)	35	35
AC withstand voltage (kV)	24	24
DC withstand voltage (kV)	40	40
Short circuit current (kA/1s)	-	-
Description	EPPA-055-x*-3-xx-IP68	EPPA-055-x*-3

\* indicates voltage class of the sheath voltage limiter (SVL)

**Link Diagram**

Bonding lead (type)	Single-core	Single-core
Bonding lead (mm <sup>2</sup> )	95 - 300	95 - 300
Protection class	IP 56	IP 56
Application	Non buried	Non buried
Sheath voltage limiters	N/A	1 kV-6 kV
Box size (LxHxW) (mm)	300x165x190	300x165x190
Material	stainless steel	stainless steel
Total weight	Approx. 10 kg	Approx. 11 kg
Connection links	Removable copper 120 mm <sup>2</sup>	Removable copper 120 mm <sup>2</sup>
Cable connection	Compression lug	Compression lug
Impulse withstand voltage (kV)	35	35
AC withstand voltage (kV)	24	24
DC withstand voltage (kV)	40	40
Short circuit current (kA/1s)	-	-
Description	EPPA-055-0-1	EPPA-055-x*-1

## About TE Connectivity

TE Connectivity is a global, \$14 billion company that designs and manufactures approximately 500,000 products that connect and protect the flow of power and data inside the products that touch every aspect of our lives. Our nearly 100,000 employees partner with customers in virtually every industry – from consumer electronics, energy and healthcare, to automotive, aerospace and communication networks – enabling smarter, faster, better technologies to connect products to possibilities.

More information on TE Connectivity can be found at: [www.te.com](http://www.te.com)

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Tyco Electronics Raychem GmbH  
a TE Connectivity Ltd. Company  
TE Energy  
Finsinger Feld 1  
85521 Ottobrunn/Munich, Germany

Phone: +49-89-6089-0  
Fax: +49-89-6096345

[energy.te.com](http://energy.te.com)

