Application Specification

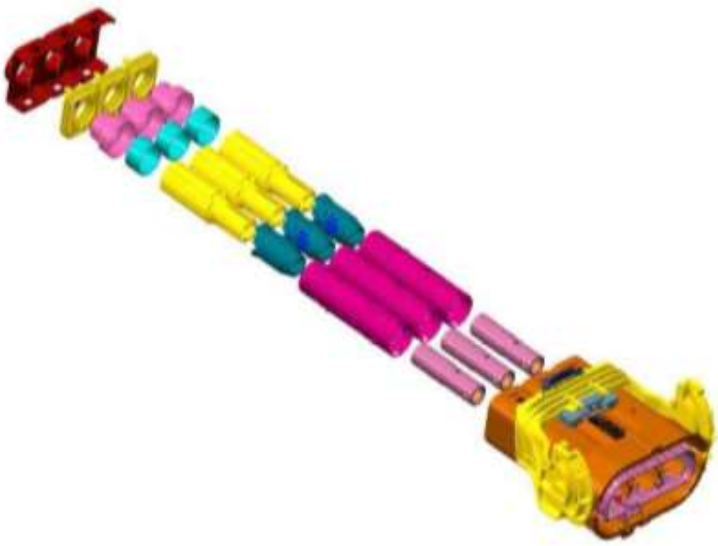
114-32212

2022-04-07 Rev A1

HVP800 2PHI AND 3PHI 180º

AMP+ High Current Connectors and headers

SPECIFICATION



				PR: Z.ZHANG **DATE:** 22APR2019			
				CHK: E.JIANG **DATE:** 22APR2019	**TE Connectivity** **Shanghai, China**		
A1	Add KBE cable 50mm2	L.Y	12APR22				
A	Initial Released	Z.Z	22APR19	**APP:** I.YIN **DATE:** 22APR2019	**Document No.:** 114-32212	**LOC:** CH	**REV:** A1
LTR	**REVISION RECORD**	**PR**	**DATE**				

| Indicates Change

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HVP800 2PHI AND 3PHI 180º

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- This connector is intended for use in high-voltage applications. Special care must be applied to ensure that the connector functions as intended.
- If you suspect that the connector has been modified, damaged, contaminated or otherwise compromised, please discontinue it use immediately.
- This connector should only be serviced by a trained and qualified technician.

1. SCOPE

1.1 Content

This specification describes the assembling and handling of the 2/3 pos. shielded HVP800-CONNECTOR 180°.

Required components and application tools

Processing steps for shielded cable assembly

Connector Assembly

1.2 Processing notes

The processor is responsible for ensuring the quality of the manufacturing process and the proper function of the system. The warranty and liability is excluded, if quality deficiency or damages occurs by failing compliance to this specification or using not specified, not released tools and not released connector components.

2. APPLICABLE DOCUMENTS

The following mentioned documents are part of this specification. If there is a conflict between the information contained in the documents and this specification or with any other technical documentation supplied, the last valid customer drawings takes preference.

2.1 TE Connectivity Documents

This Application Specification based on the latest valid customer drawings

2.1.1 Customer Drawings

Table 1: Customer Drawings

2pos Receptacle housing	
2310923	2 Pos, 8mm HV, REC HSG 180º, Assy
3pos Receptacle housing	
2327025	3 Pos, 8mm HV, REC HSG 180º, Assy
2pos Pinheader	
2322122 2355198	2 Pos. Dia 8mm Pin housing, Assy
3pos Pinheader	
2325013	3 Pos. Dia 8mm Pin housing, Assy

Single Components used at 2 and 3 pos. HVP 800, 180° Connector	
2141155 2310488	Cover, Seal
2141156 2356073	Single Wire Seal
2177090	Outer Shield Crimp Ferrule
2177061 2307013	Inner Shield Crimp Ferrule
2177060 2319655	Shielding Sleeve (2177060 Ag Plating over Tin, 2319655 Tin Plating)
2177058 2302636	Insulation Insert
2177059 2302639	Finger Protection Cap
2208669 2328075	Turned contact, 25 mm^2 , 180°, Assy
2208608 2393576 2328075	Turned contact, 35 mm^2 , 180°, Assy
2208608 2393576 2328075	Turned contact, 50 mm^2 , 180°, Assy
Application tools	
528008-4	HV-Crimping machine

* Others TE China HVP800 series part number also suitable for this specification.

Figure 1: HV-Crimping machine

2.1.2 Specifications

Table 2: TE-Specifications

Specifications	Description
108-32234	Product Specification HVP 800-CONNECTOR, 180º, 2 and 3 POS.
108-94255	Product Specification HV 8mm 180º Contact
114-94125	Application Specification for 8mm Round contact System
114-94325	Application Specification for 8mm stamped contact System F-Crimp

Note: Coroplast cables 9-2611/25mm^2, 9-2611/35mm^2 and 9-2611/50mm^2 & KBE cable 50mm2 applied

2.2 Cable specifications

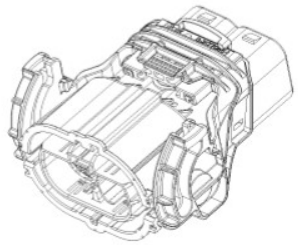
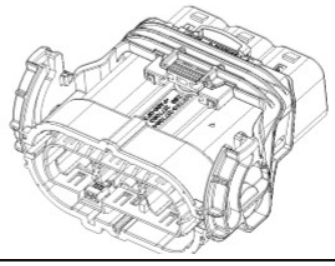
Table 3: Cable Specifications

Specifications	Description	
9-2611 / 25mm^2	Coroplast, shielded cable acc. LV216	See Appendix 8.1.1
9-2611 / 35mm^2	Coroplast, shielded cable acc. LV216	
9-2611 / 50mm^2	Coroplast, shielded cable acc. LV216	
KBE / 50mm^2	KBE, shielded cable acc. LV216	See Appendix 8.1.2

3. CONDITION OF DELIVERY AND PACKAGING

3.1 Components

Table 4: 2- and 3-pos 8mm HV, REC HSG 180°, sealed, Assy

TE-No.	Description	Qty.	Picture
2310923	2pos, Rec Hsg 180°, Assy	1x	
2327025	3pos, Rec Hsg 180°, Assy	1x	

The housing can be ordered alternative with 2 variants, the difference is with the levers position.

Table 5: Single components required for 2- and 3pos Plug Housing

TE-No.	Description	Qty.	Picture
2141155(*) 2310488(*)	Cover, Seal	2x (3x)	
2141156(*) 2356073(*)	Single wire seal	2x (3x)	
2177058 2302636	Insulation insert 180º	2x (3x)	
2177059 2302639	Finger protection cap	2x (3x)	
2177060 2319655	Shielding sleeve, 180º	2x (3x)	
2177061 2307013	Inner Shield Crimp Ferrule, 180º	2x (3x)	
2177090(*)	Outer Shield Crimp Ferrule	2x (3x)	
2208669 2328075	Turned contact, 25 mm² , 180º, Assy	2x (3x)	
2208608 2393576 2328075	Turned contact, 35 mm² , 180º, Assy	2x (3x)	
2208608 2393576 2328075	Turned contact, 50 mm² , 180º, Assy	2x (3x)	

(*): depend on the cables cross section
-1: for 50mm²; -2 for 35mm²; -3 for 25mm²

3.2 Packaging and Storage

See latest customer drawings.

4. APPLICATION TOOLS

HV-Crimping machine: TE 528008-4

4.1 HV 8mm contact

1.See latest valid TE-Application specification 114-94125 for 2208608

Table 6: Required application tools contact crimp

Wire size [mm²] / **Tools**	25	35	50
Wire Crimp	541872-2	541871-2	541863-2

2.See latest valid TE-Application specification 114-94325 for 2328075&2393576

4.2 Shielding

Table 7: Required application tools contact crimp

Wire size [mm²] / Tools	25	35	50
HV tooling HV 180 shield	0-541875-2	0-541864-2	0-541865-2
Installation number	411-18542	411-18540	411-18541

Figure 2: HV-Crimping applicator

Table 8: Spare parts for application tools shield crimp

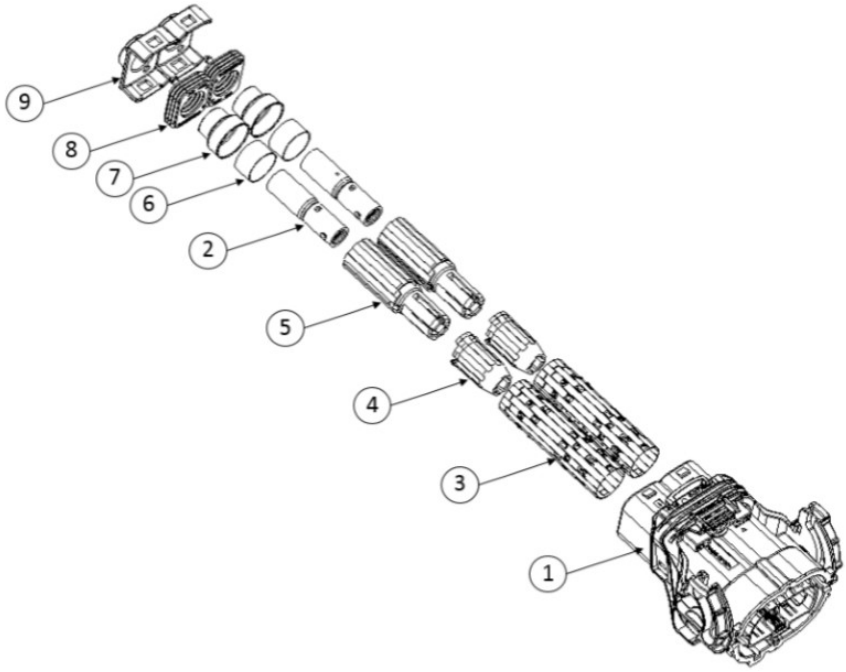
Wire size [mm²] / Tools	25	35	50
Die-Set HV 180 shield (Shield-crimp)	9-1579019-6	9-1579019-6	9-1579019-6
Die-Set HV 180 shield (ISO-crimp)	8-1579019-2	6-1579019-5	6-1579019-6

The new die set PN 9-1579019-6 is only used in combination with carrier plate PN 1-519720-6 and locater PN 7-519709-4.

5. ASSEMBLY INSTRUCTIONS

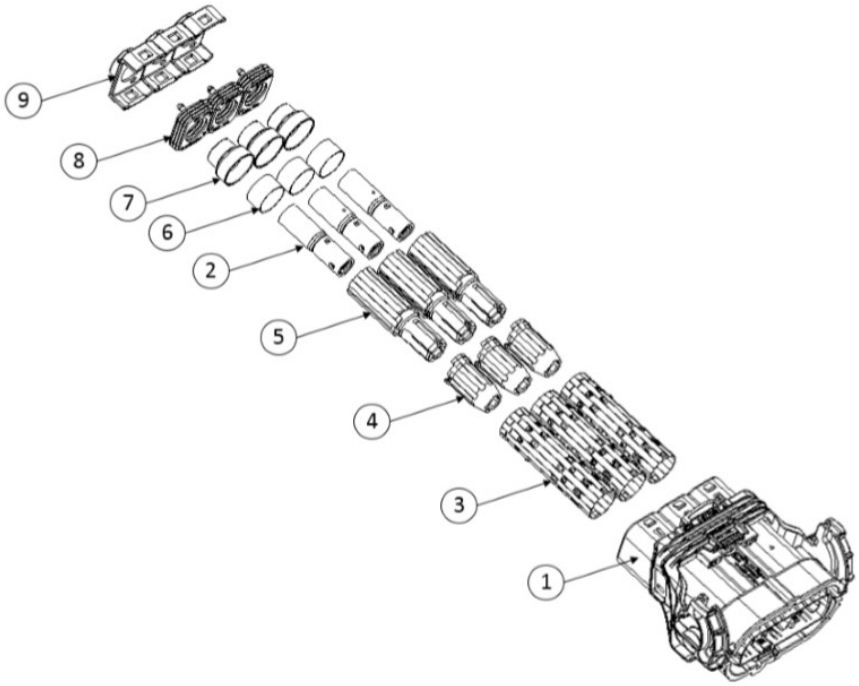
The described application processing below shows the main application steps and is only valid for the specified cable

5.1 Overview of all parts should be assembled



QTY	PART DESCRIPTION	ITEM
2	Protection cover,8mm HV	9
2	Single wire seal, 8mm HV	8
2	Shield crimp sleeve	7
2	Shield, crimp ferrule, inner, 180°	6
2	Insulation insert, 180°	5
2	Finger protection cap, 8mm HV 180°	4
2	Shielding sleeve, 180°	3
2	Contcat – Assy 180°/25mm^2 Contcat – Assy 180° /35mm^2 Contcat – Assy 180° /50mm^2	2
1	2pos, 8mm HV, Rec Hsg, 180°, assy	1

Figure 3: 2-pos. connector overview



QTY	PART DESCRIPTION	ITEM
3	Protection cover,8mm HV	9
3	Single wire seal, 8mm HV	8
3	Shield crimp sleeve	7
3	Shield, crimp ferrule, inner, 180°	6
3	Insulation insert, 180°	5
3	Finger protection cap, 8mm HV 180°	4
3	Shielding sleeve, 180°	3
3	Contcat – Assy 180° /25mm^2 Contcat – Assy 180° /35mm^2 Contcat – Assy 180° /50mm^2	2
1	3pos, 8mm HV, Rec Hsg, 180°, assy	1

Figure 4: 3-pos. connector overview

5.2 Shielded cable and terminal assembly

Avoid prolonged or repeated skin contact with silver shieldings. (Wear protective gloves)

5.2.1 Processing of cable

Before processing slide protection cover, single wire seal and shield crimp sleeve over cable sheath.

Stripping and Cutting cable to length accordance table 8

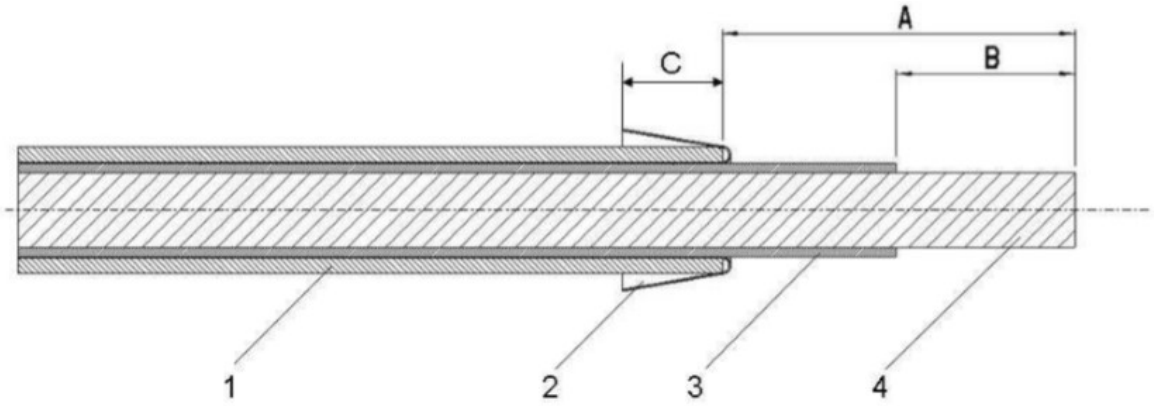


Figure 5: Cable design and cutting length

Table 9: Cutting dimensions

(ID)	Cable Design	A [mm]	B [mm]	C* [mm]
1	Outer sheath	--	--	--
2	Screening braid	--	--	*
3	Inner sheath	40±1mm	--	--
4	Conductor	--	114-94125	--

C* is to fix from the production department, that the braid extension after the crimping process is acc. to fig. 9 and fig. 11

Attention: Insulation and shielding braid must not be damaged !

5.2.2 Crimping contact

See latest valid TE-Application specification 114-94125 & 114-94325

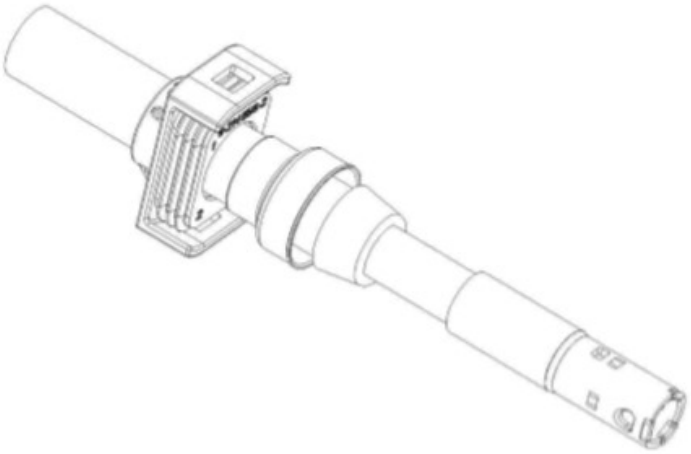


Figure 6: Contact crimp

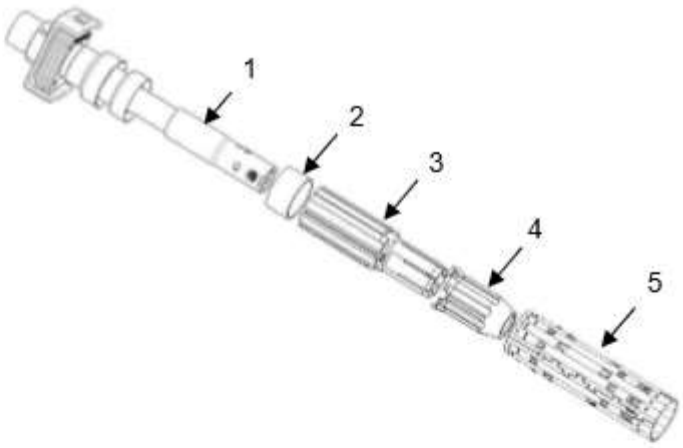
5.2.3 Crimp shielding

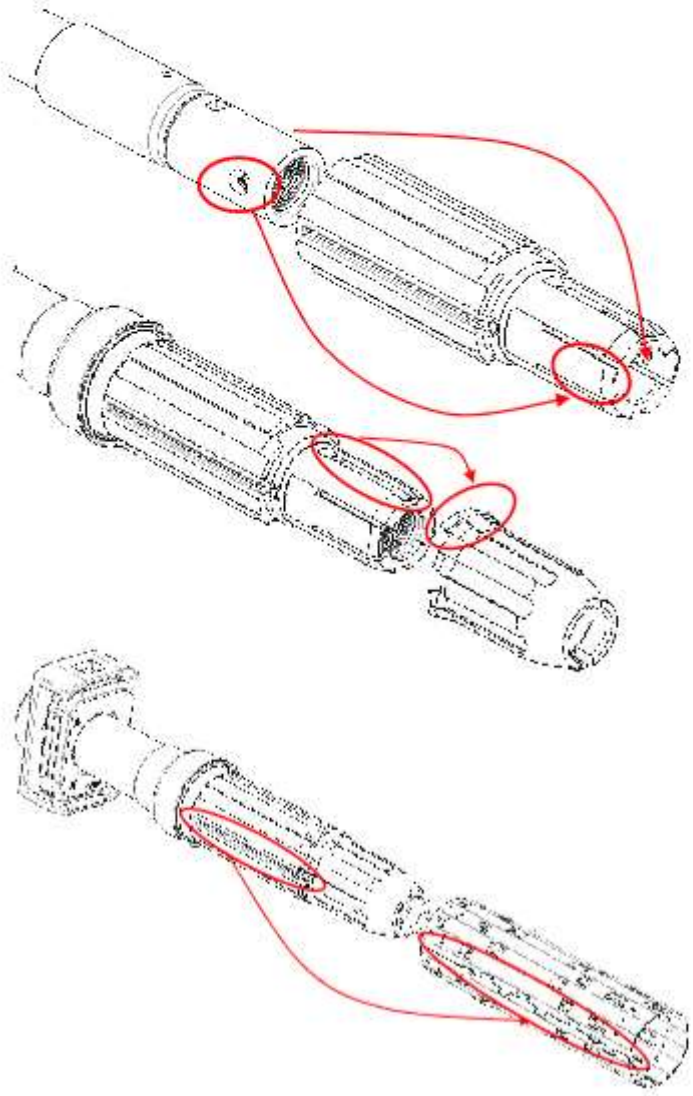
Shielding braid open out and disentangle (dimension see table 8)

Attention: Shielding braid shall not be broken.

Assembly the components acc. following sequence:

-1- Contact, crimped assy
-2- Inner crimp ferrule
-3- Insulation insert, oriented and pluged in with the contact
-4- Finger protection cap, oriented and plugged in with the contact
-5- Shielding sleeve, oriented and plugged in with the Insulation insert and finger protection cap





Orientation Insulation insert-Contact :
both windows at contact body and detents of the insulation insert are oriented and snaps-in together

Orientation Finger protection cap-Insulation insert :
the length slots at the insulation insert are oriented to the projection of the finger protection cap (both sides) and the finger protection cap snaps-in to the contact

Orientation Shielding sleeve :
the length slot at the insulation insert is oriented to the connection the shielding sleeve and the shielding sleeve snaps-in to the insulation insert and finger protection cap

Figure 7: Assembly sequence

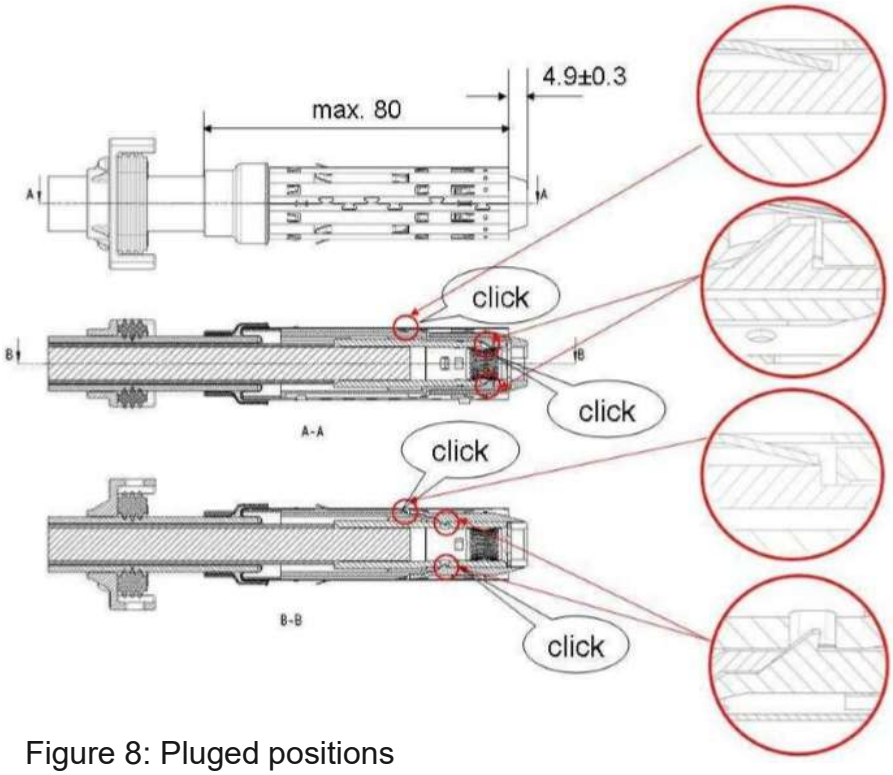


Figure 8: Pluged positions

Insert cable assembly into locator and crimping shield. For correct handling and using of application tools see following guide line

HV Tooling HV 180 Shielding 25mm²:	411-18542
HV Tooling HV 180 Shielding 35mm²:	411-18540
HV Tooling HV 180 Shielding 50mm²:	411-18541

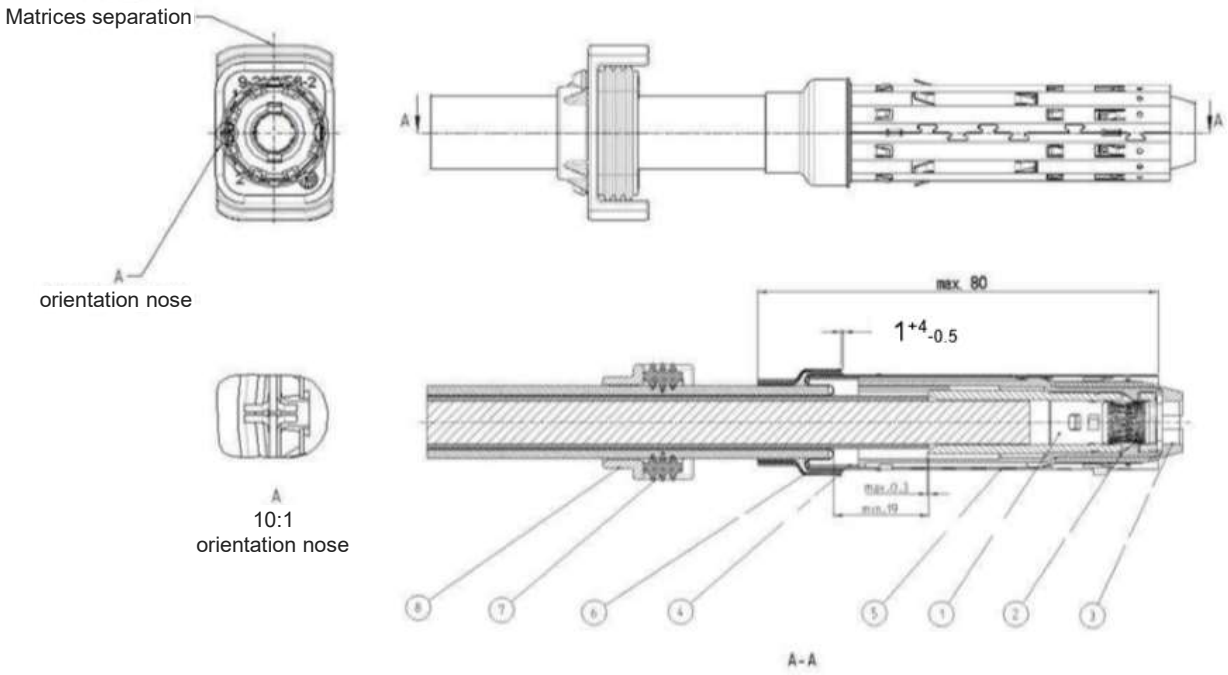


Figure 9: Cable assembly

Visual examination and inspection dimensions

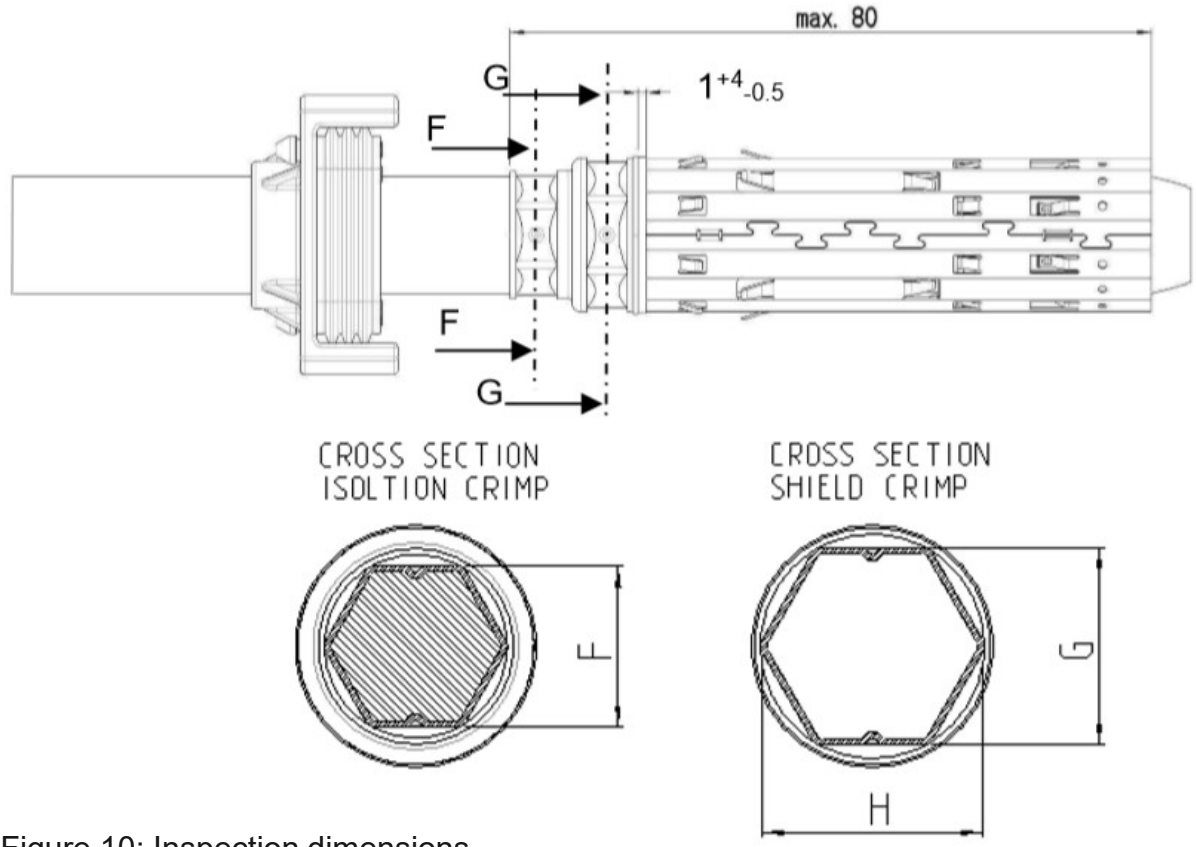


Figure 10: Inspection dimensions

Measured with the narrow outside jaws of caliper, directly on the crimping indentation (see cross lines F-F and G-G)

Wire type	Cross section [mm²]	F ± 0.2 [mm]	G± 0.2 [mm]	H [mm]
Coroplast	25	12.1	18.7	Max. 23
	35	14.3		
	50	15.4		

Note:
Shield crimp ferrule: TE 0-2177090-1/-2/-3

Additional post cutting of the shielding braid not permitted !

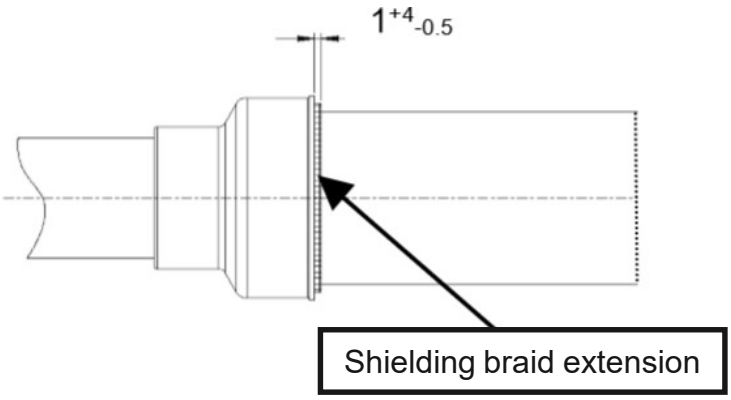


Figure 11: Braid extension

The end of the shielding braid must be visible and complete justified at the end of the crimp sleeve !
The shielding braid must be consistently (homogeneous) spread on the circumference !

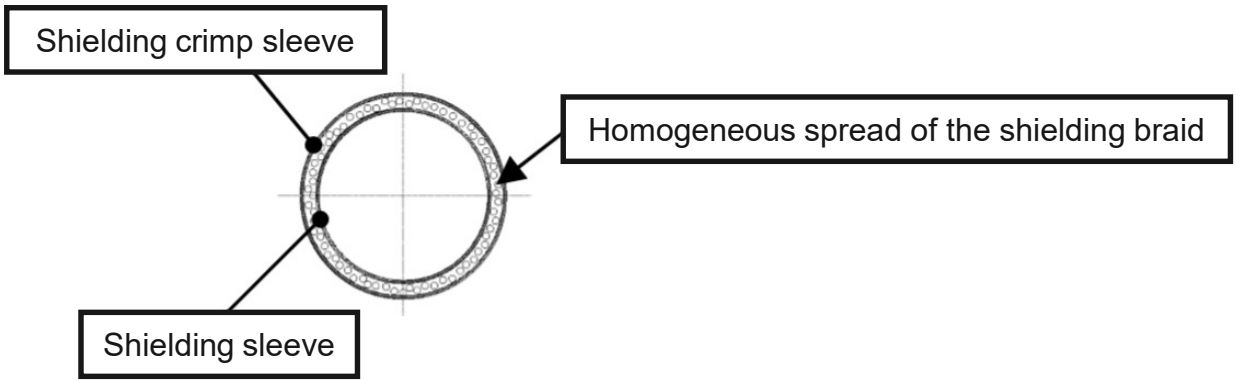


Figure 12: Braid spread

5.3 Cable assembly into Plug housing

5.3.1 Cable assembly

Crimped cable assembly must be oriented plugged into the connector housing and locked with.

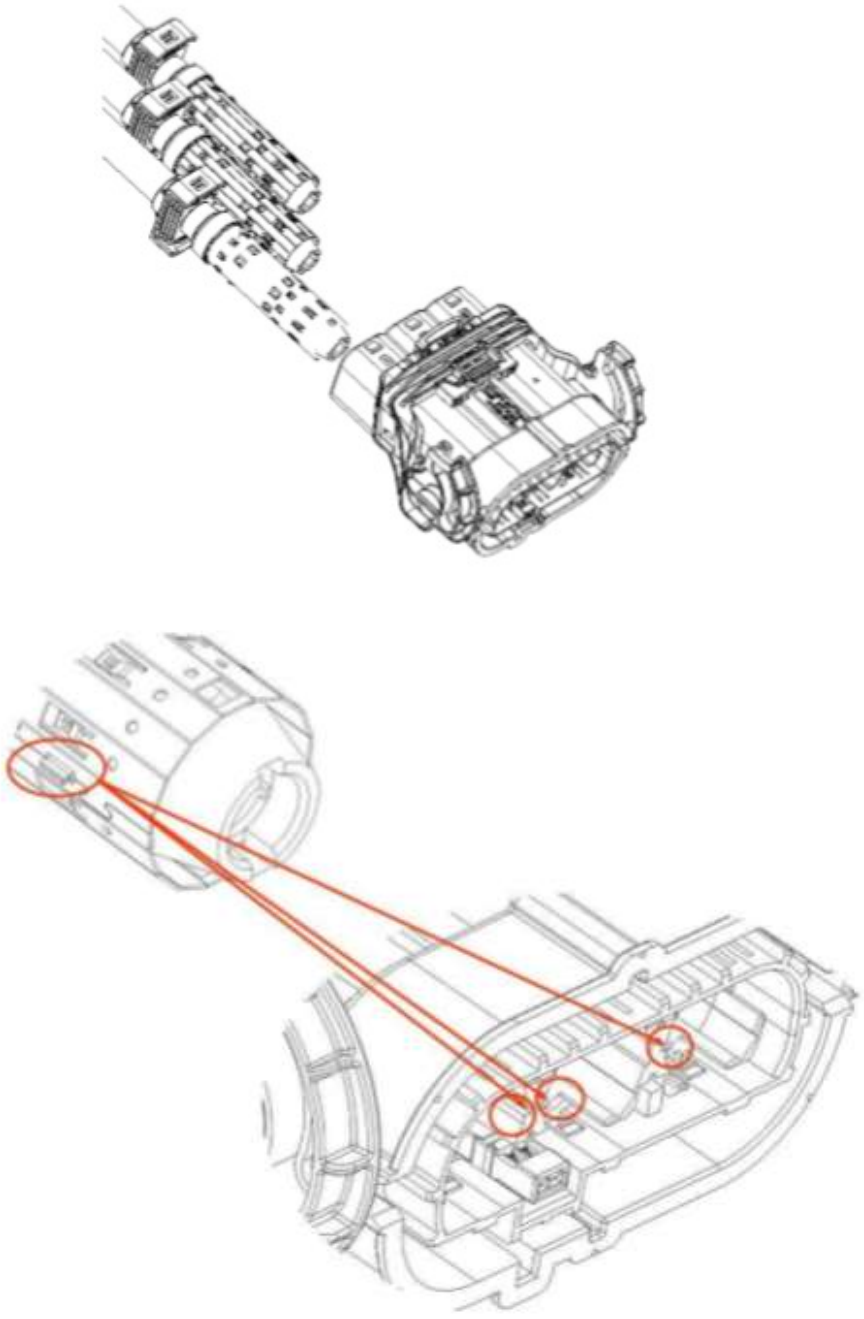


Figure 13: Assembly 3 pos. connector

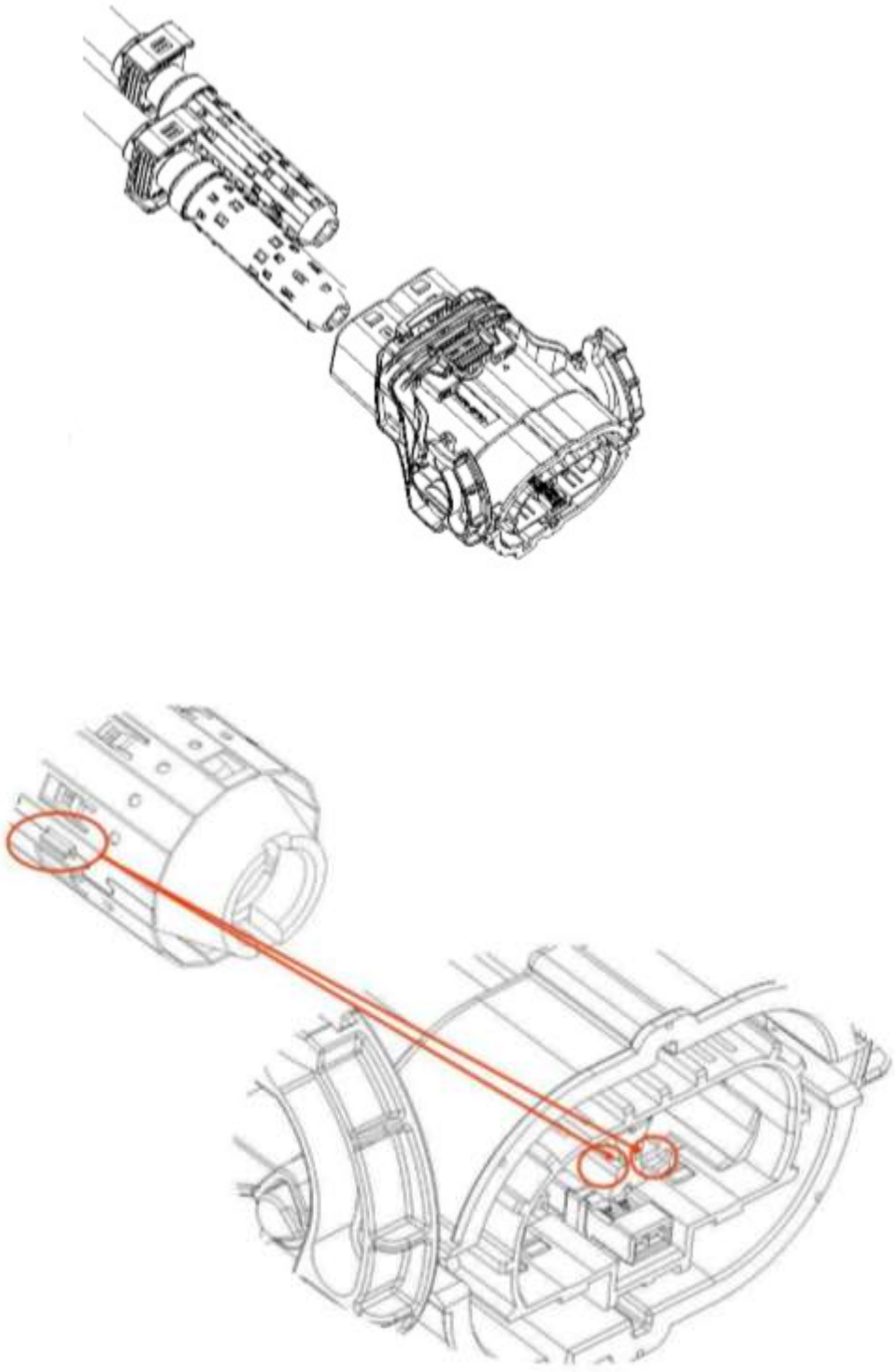
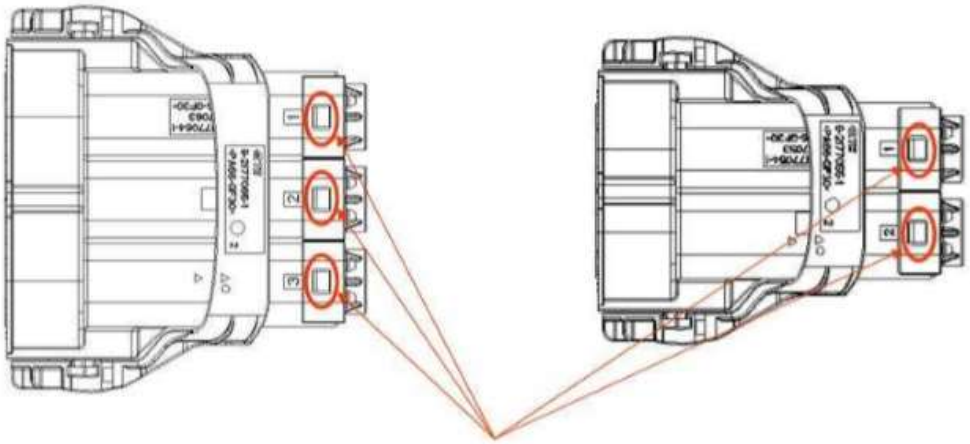


Figure 14: Assembly 2 pos. connector

5.3.2 Assembly of the cover



The cover must be mounted audio-visual to the housing

Figure 15: Cover assembly

6. FINAL EXAMINATION

6.1 Visual Examination

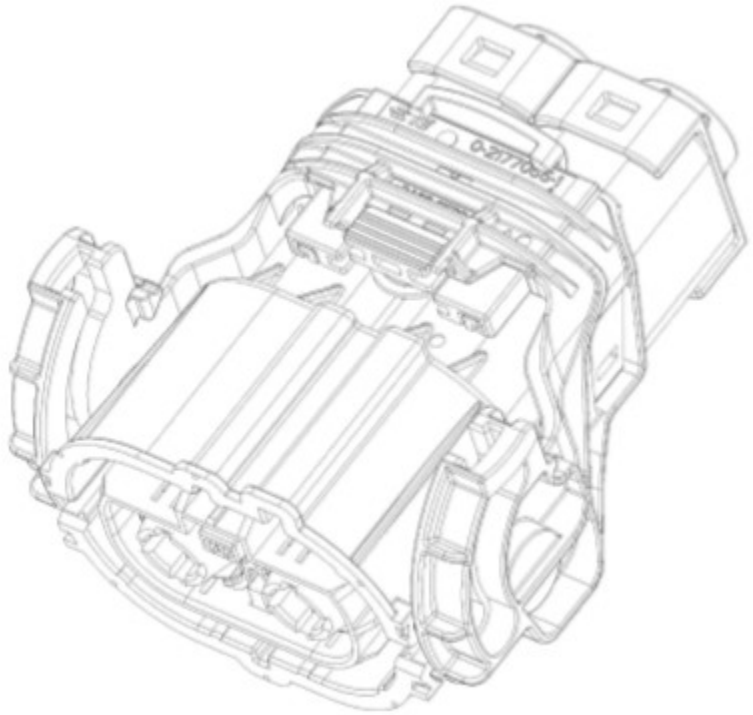
After processing the connector assembly has to be checked of completeness, correctness acc. customer drawings and free of damage.

6.2 Electrical Tests

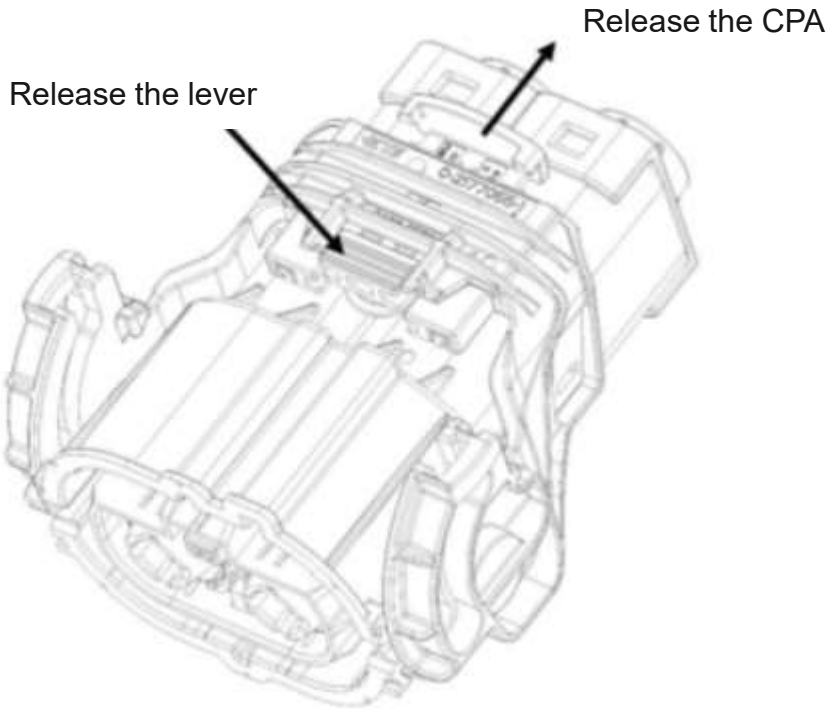
Electrical characteristic values according product specification TE-108-32234 / chapter 3.3 are ensured by applicator. The test parameter should be not exceeding the values shown in point 3.3 / TE-108-32234.

7. LOCKING MECHANISMS WITH LEVER AND CPA

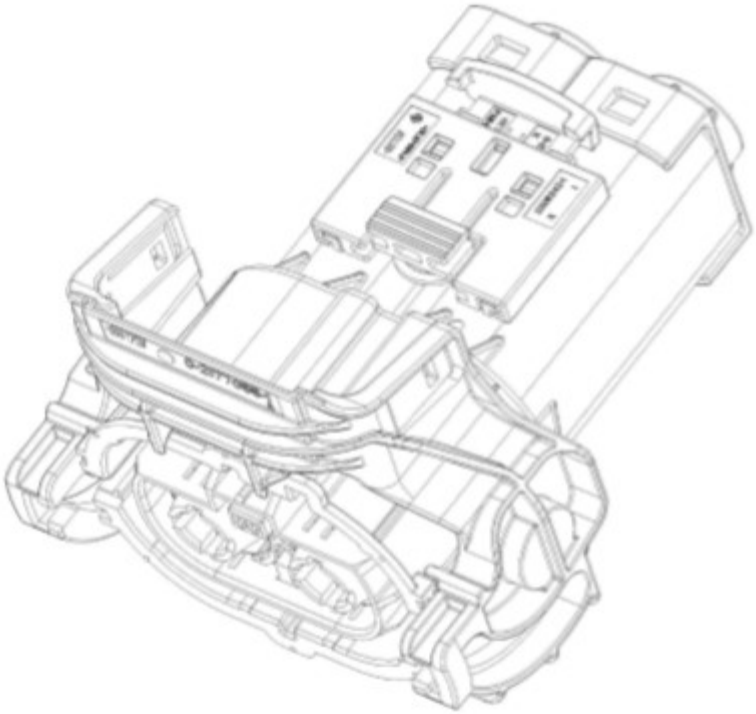
The following pictures are symbolic and the process is valid for both 2-pos. and 3-pos. connectors HVP800180°.



Housing in delivery condition with lever and CPA in closed position.



Release of the CPA by shifting the CPA along the arrow-direction and release the lever by pressing down of the latch of CPA-Adapter.



Open the lever by released CPA and pressed latch of CPA-Adapter.

8. APPENDIX

8.1 Data sheets

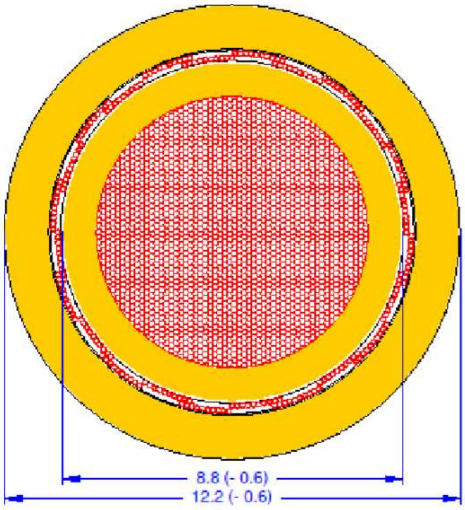
8.1.1 Coroplast acc. LV216 for wire range 25, 35 and 50mm²

Technical Information

Coroplast Part No.: 9-2611 / 25mm²
Page: 1

Shielded cable for automotive electric powertrain

FLR2GCB2G 25mm² / 0.21



Specification	LV 216-2 table A2 Daimler AG C51 / 8.1 VW N 107 776
Core FLR2G 25mm²	
Conductor material:	E-Cu EPT1 according DIN EN 13602
Conductor design:	Stranded bare copper 790 (±5%) x max. 0.21mm
Conductor diameter:	Max. 7.2mm
Core insulation:	Mod. Silicon rubber SIR
Core diameter:	8.8mm (-0.6)
Insulation wall thickness:	Min. 0.64mm
Color code:	Orange similar RAL 2003
Shielding	
Screening braid:	Tinned copper max. 0.21mm optical covering min. 85%
Foiled shielding:	ALU-PET foil Metallside in contact to screen overlap min. 20%
Outer sheath	
Sheath material:	Mod. Silicon rubber SIR
Outer diameter:	12.2mm (-0.6)
Insulation wall thickness:	Min. 0.75mm
Color code:	Orange similar RAL 2003
Marking	
Outer sheath is printed:	CONDUMEX FLR2GCB2G 25mm² ϟ ATTENTION HIGH VOLTAGE MAX 600 V AC/DC ISO 6722 ϟ
Distance of marking:	Max. 200mm

Coroplast Fritz Müller GmbH & Co. KG
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kabelundleitungen@coroplast.de

Technical Information

Coroplast Part No.: 9-2611 / 25mm²
Page: 2

Electrical properties		
Conductor resistance:	Max. 0.743 Ω/km 25mm²	
(DC,20°C)	nom. 4.0 Ω/km Shielding	
Test voltage:	Eff. 8.0 kVolt	(spark test)
	Eff. 5.0 kVolt	(5 minutes)
Operating voltage:	Max. 600 Volt	ISO 6722
(AC / DC)		
Mechanical properties		
Bend radius:		
-fixed installation:	Min. 4x cable diameter	
-unfixed installation:	Min. 8x cable diameter	
Weight of cable:	Approx. 345g/m	
Thermal properties		
Operating temperature:	-40°C to +180°C	(3000h)
Short term ageing:	Up to +205°C	(240h)

Version	Creator	Date of issue	Description
A1	Freyth	2010-10-08	First edition
A2	Wichmann	2010-10-18	Added VW N 107 776
A3	Wichmann	2010-11-17	Added resistance of shielding and weight of cable
A4	Wichmann	2010-11-26	Marking was…MAX 600 V AC…

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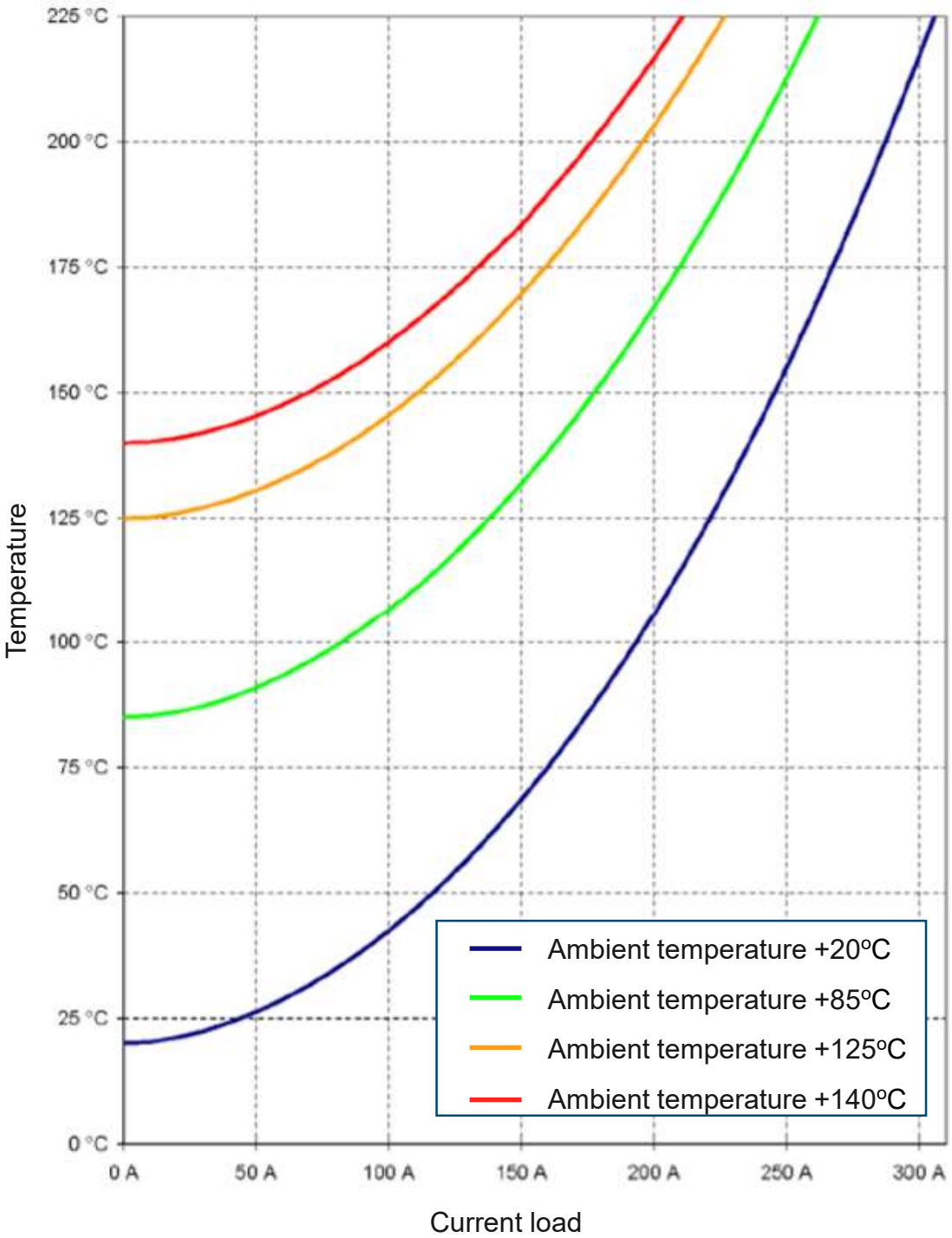
Technical Information

Coroplast Part No.: 9-2611 / 25mm²
Page: 3

Attachment: Continuous power dependent on ambient temperature calculation according to LV112-3 (Draft May 2009)



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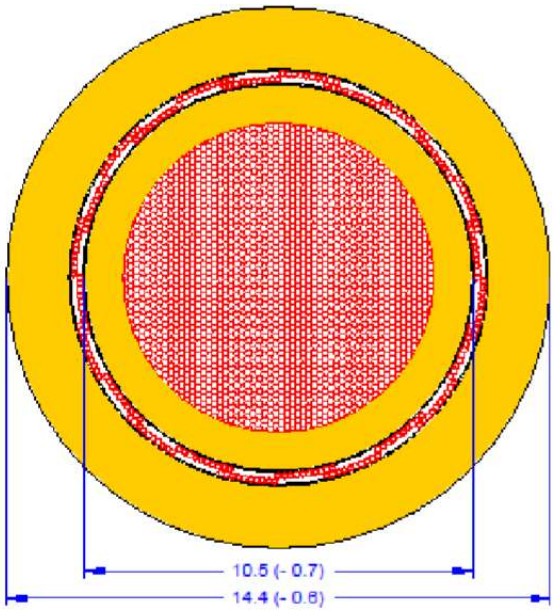
Technical Information

Coroplast Part No.: 9-2611 / 35mm²
Page: 1

Shielded cable for automotive electric powertrain

FLR2GCB2G 35mm² / 0.21



Specification	LV 216-2 table A2 Daimler AG C51 / 9.1 VW N 107 777
Core FLR2G 35mm²	
Conductor material:	E-Cu EPT1 according DIN EN 13602
Conductor design:	Stranded bare copper 1070 (±5%) x max. 0.21mm
Conductor diameter:	Max. 8.5mm
Core insulation:	Mod. Silicon rubber SIR
Core diameter:	10.5mm (-0.7)
Insulation wall thickness:	Min. 0.64mm
Color code:	Orange similar RAL 2003
Shielding	
Screening braid:	Tinned copper max. 0.21mm optical covering min. 85%
Foiled shielding:	ALU-PET foil Metallside in contact to screen overlap min. 20%
Outer sheath	
Sheath material:	Mod. Silicon rubber SIR
Outer diameter:	14.4mm (-0.6)
Insulation wall thickness:	Min. 0.8mm
Color code:	Orange similar RAL 2003
Marking	
Outer sheath is printed:	CONDUMEX FLR2GCB2G 35mm² ϟ ATTENTION HIGH VOLTAGE MAX 600 V AC/DC ISO 6722 ϟ
Distance of marking:	Max. 200mm

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Technical Information

Coroplast Part No.: 9-2611 / 35mm²
Page: 2

Electrical properties		
Conductor resistance:	Max. 0.572 Ω/km 35mm²	
(DC,20°C)	nom. 3.5 Ω/km Shielding	
Test voltage:	Eff. 8.0 kVolt	(spark test)
	Eff. 5.0 kVolt	(5 minutes)
Operating voltage: (AC / DC)	Max. 600 Volt	ISO 6722
Mechanical properties		
Bend radius:		
-fixed installation:	Min. 4x cable diameter	
-unfixed installation:	Min. 8x cable diameter	
Weight of cable:	Approx. 485g/m	
Thermal properties		
Operating temperature:	-40°C to +180°C	(3000h)
Short term ageing:	Up to +205°C	(240h)

Version	Creator	Date of issue	Description
A1	Freyth	2010-10-08	First edition
A2	Wichmann	2010-10-18	Added VW N 107 777
A3	Wichmann	2010-11-17	Added resistance of shielding and weight of cable
A4	Wichmann	2010-11-26	Marking was…MAX 600 V AC…

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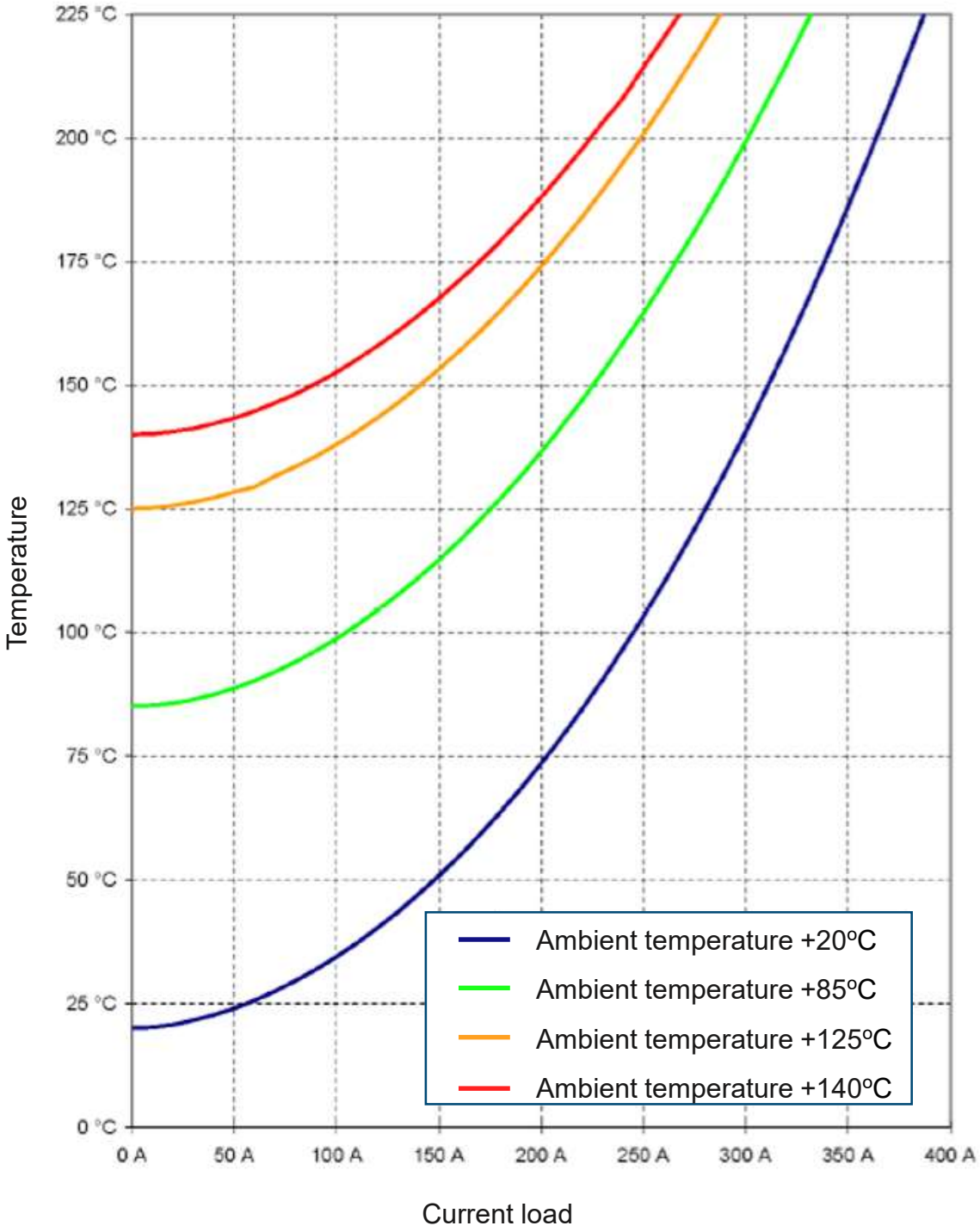
Technical Information

Coroplast Part No.: 9-2611 / 35mm²
Page: 3

Attachment: Continuous power dependent on ambient temperature calculation according to LV112-3 (Draft May 2009)



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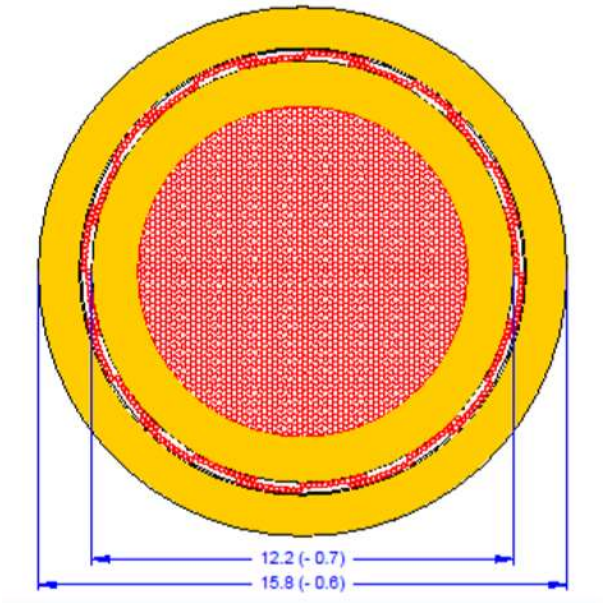
Technical Information

Coroplast Part No.: 9-2611 / 50mm²
Page: 1

Shielded cable for automotive electric powertrain

FLR2GCB2G 50mm² / 0.21



Specification	LV 216-2 table A2 Daimler AG C51 / 10.1 VW N 107 756
Core FLR2G 50mm²	
Conductor material:	E-Cu EPT1 according DIN EN 13602
Conductor design:	Stranded bare copper 1600 (±5%) x max. 0.21mm
Conductor diameter:	Max. 10.5mm
Core insulation:	Mod. Silicon rubber SIR
Core diameter:	12.2mm (-0.7)
Insulation wall thickness:	Min. 0.71mm
Color code:	Orange similar RAL 2003
Shielding	
Screening braid:	Tinned copper max. 0.21mm optical covering min. 85%
Foiled shielding:	ALU-PET foil Metallside in contact to screen overlap min. 20%
Outer sheath	Mod. Silicon rubber SIR
Sheath material:	15.8mm (-0.6)
Outer diameter:	Min. 0.8mm
Insulation wall thickness:	Orange similar RAL 2003
Color code:	
Marking	
Outer sheath is printed:	CONDUMEX FLR2GCB2G 50mm² ϟ ATTENTION HIGH VOLTAGE MAX 600 V AC/DC ISO 6722 ϟ
Distance of marking:	Max. 200mm

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Coroplast Part No.: 9-2611 / 50mm²
Page: 2

Electrical properties		
Conductor resistance:	Max. 0.368 Ω/km 50mm²	
(DC,20°C)	nom. 3.1 Ω/km Shielding	
Test voltage:	Eff. 8.0 kVolt	(spark test)
	Eff. 5.0 kVolt	(5 minutes)
Operating voltage: (AC / DC)	Max. 600 Volt	ISO 6722
Mechanical properties		
Bend radius:		
-fixed installation:	Min. 4 x cable diameter	
-unfixed installation:	Min. 8 x cable diameter	
Weight of cable:	Approx. 630g/m	
Thermal properties		
Operating temperature:	-40°C to +180°C	(3000h)
Short term ageing:	Up to +205°C	(240h)

Version	Creator	Date of issue	Description
A1	Freyth	2010-10-06	First edition
A2	Wichmann	2010-10-18	Added VW N 107 756
A3	Wichmann	2010-11-16	Added resistance of shielding and weight of cable
A4	Wichmann	2010-11-26	Marking was…MAX 600 V AC…

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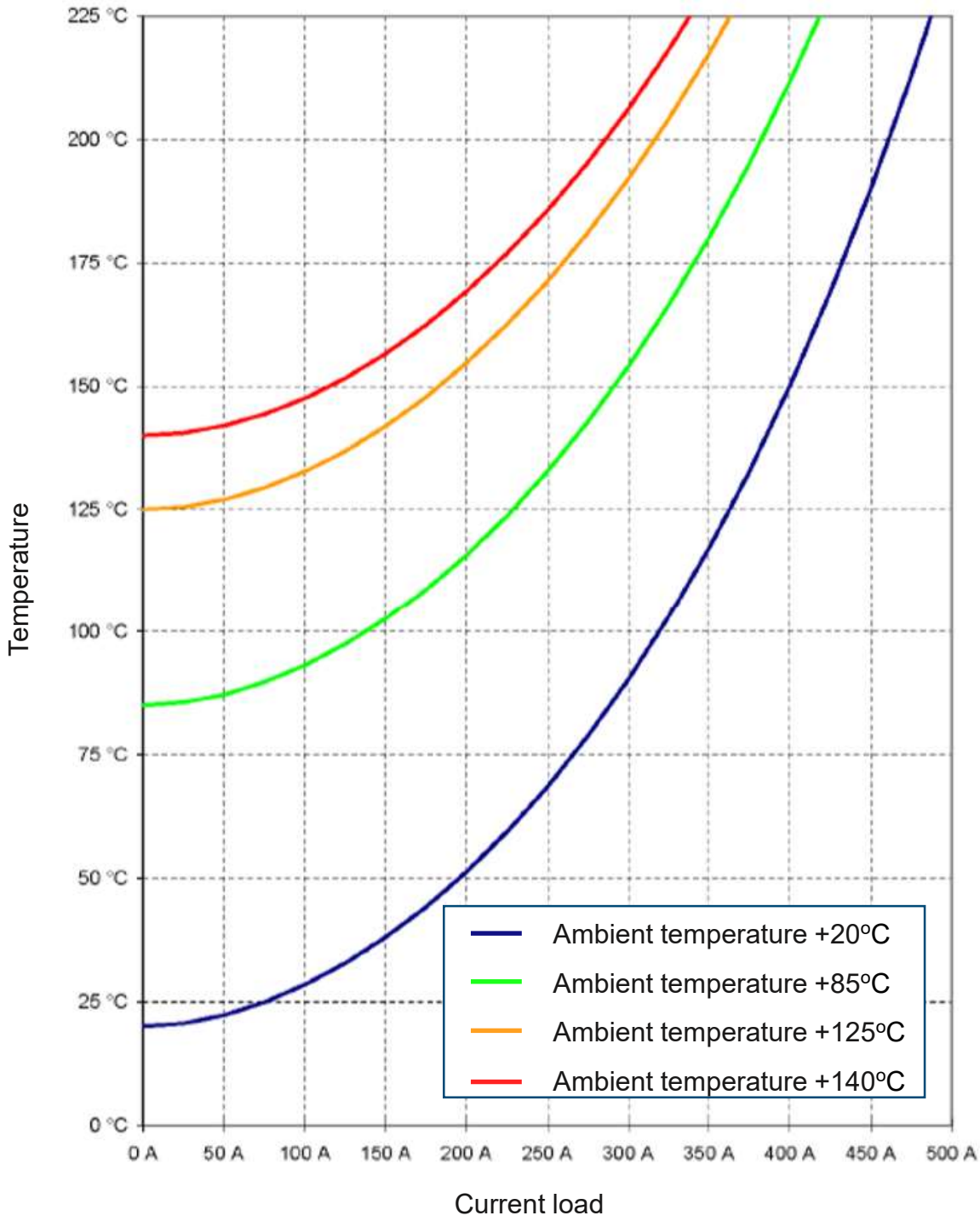
Technical Information

Coroplast Part No.: 9-2611 / 50mm²
Page: 3

Attachment: Continuous power dependent on ambient temperature calculation according to LV112-3 (Draft May 2009)



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8.1.2 KBE acc. LV216 for wire range 50mm²

Technical Data Sheet

FHLR2GCB2G 50mm²	P/N: 50mm²
1.0 Conductor	
1.1 Material	Bare copper wire
1.2 Construction	1600(±5%)×0.21mm max. 19/87/0.196(±0.008)mm*
1.3 Resistance	0.368mΩ/m max.
1.4 Conductor diameter	10.5mm max.
2.0 Bunch*	
2.1 Construction	87/0.196(±0.008)mm
2.2 Direction	S（left）
3.0 Cabling*	
3.1 Cabing(inner)	
3.1.1 Construction	7/87/0.196(±0.008)mm
3.1.2 Direction	Z（right）
3.2 Cabing(outer)	
3.2.1 Construction	12/87/0.196(±0.008)mm
3.2.2 Direction	Z（right）
4.0 Insulation	
4.1 Material	SiR Rubber
4.2 Thickness	0. 71mm min.
4.3 Outside diameter	12.2-0.7mm
4.4 Color	Orange
5.0 Braid	
5.1 Material	Tinned copper
5.2 Single size	0.21mm max
5.3 Construction	24/8/0.20(±0.008)mm*
5.4 Coverage	85% min
6.0 Shield	
6.1 Material	Al-PET foil
6.2 Overlap rate	20% min.
7.0 Jacket	
7.1 Material	SiR Rubber
7.2 Thickness	0.80mm min.

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7.3 Outside diameter	15. 8-0.6mm
7.4 Color	Orange

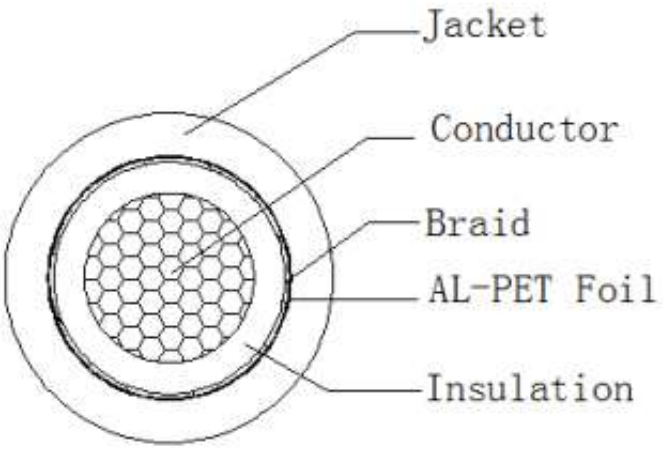
8.0 Manufacturer's identification

NBKBE FHLR2GCB2G 50mm^2 ϟ ATTENTION HIGH VOLTAGE MAX 600V AC/ 900V DC ISO 6722 ϟ

9.0 Examination

9.1 Operating Temperature	-40~180℃(3000h)
9.2 Standard	LV216-2 Class E
9.3 Short term ageing	205℃（240h）
9.4 Test voltage	eff. 8.0KV (spark test) eff.5.0 KV(5min)
9.5 Voltage	600V AC/900 V DC
9.6 Bend radius	4×cable-Φ min.(fixed installation) 8×cable-Φ min.(unfixed installation)
9.7 Weight of cable	approx.630g/m

10.0 Cross Section Drawing



Notes: * Production control requirements, not standard requirements

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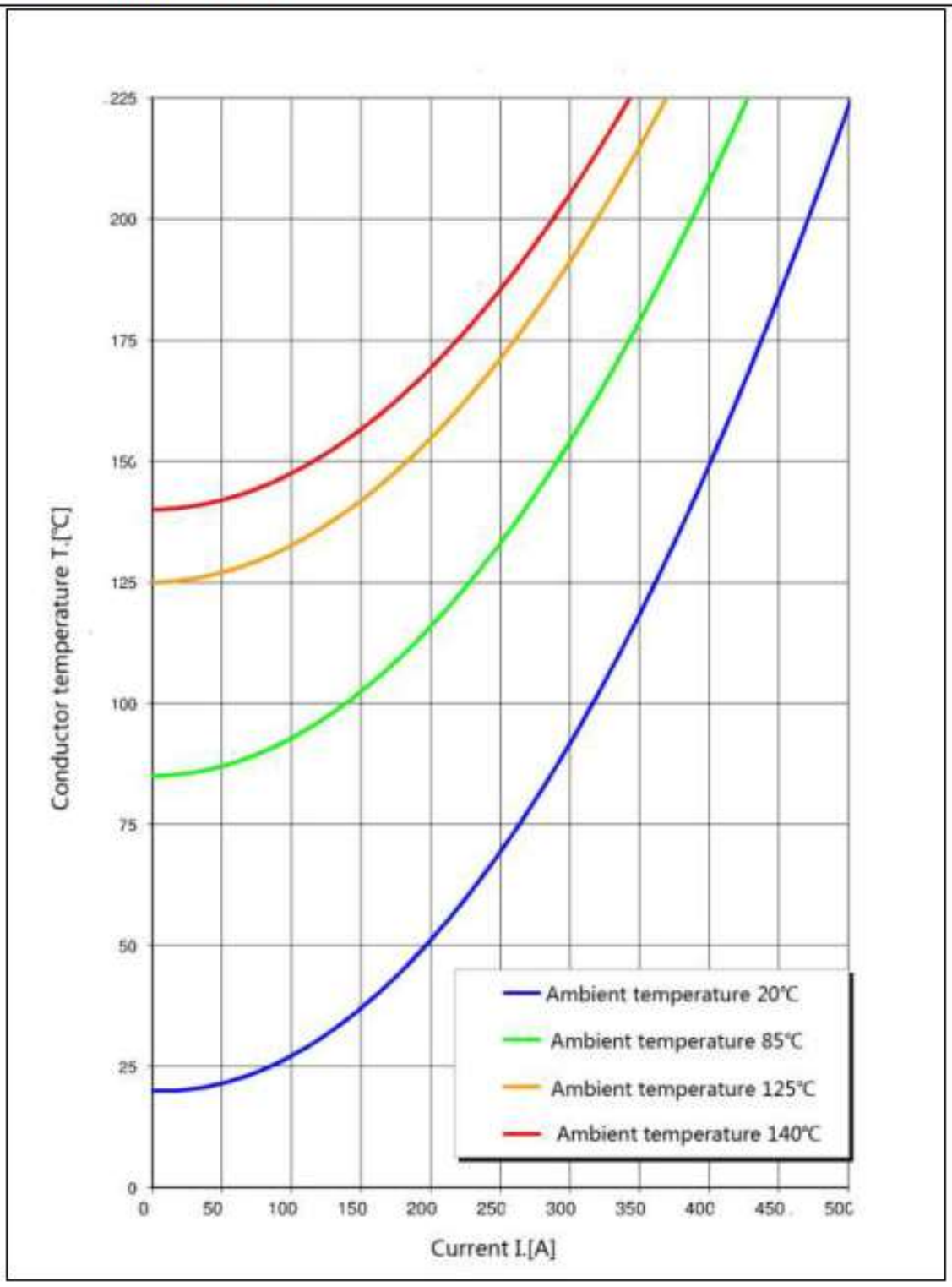
11.0 Temperature rise curve



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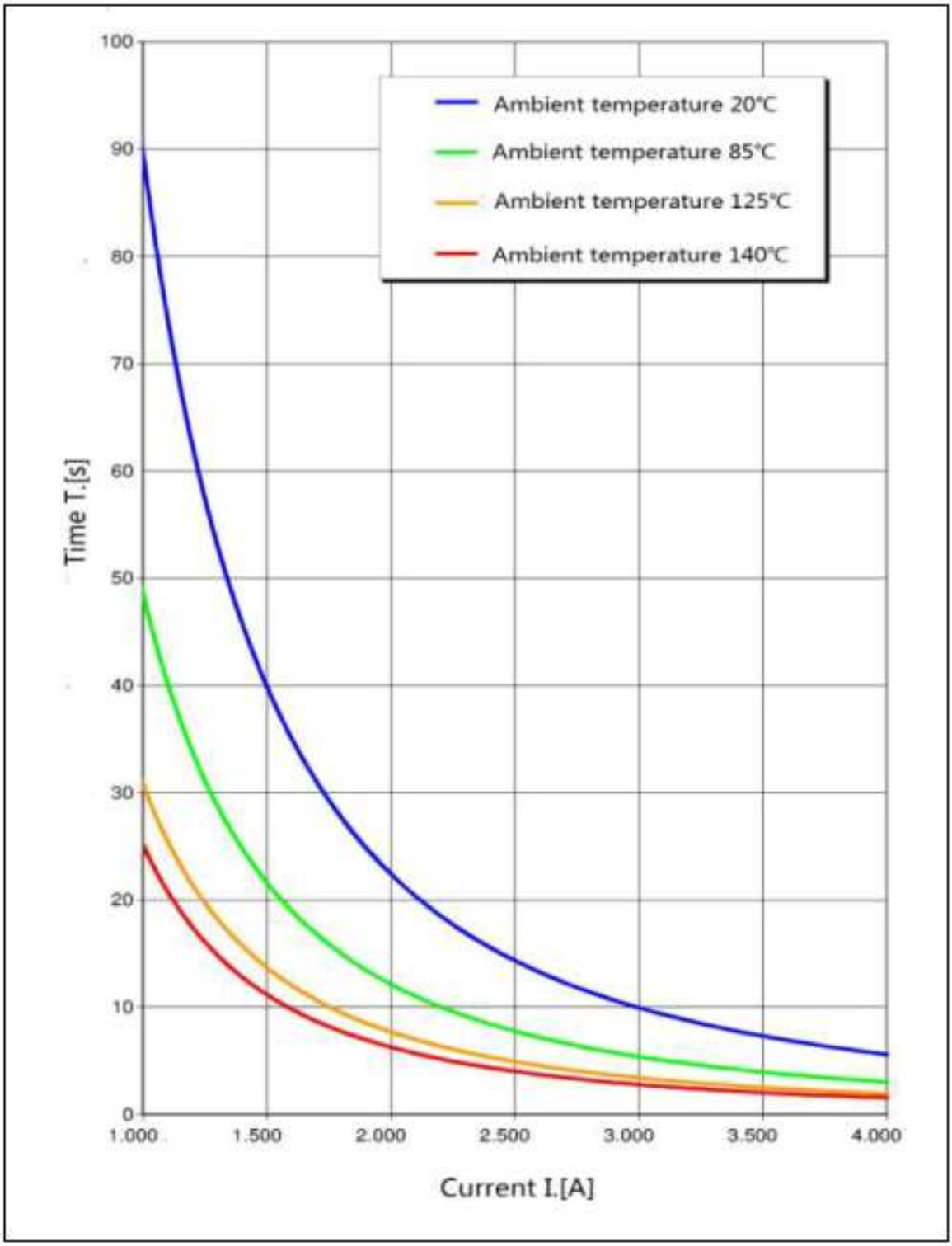
12.0 Current-time curve of conductor temperature reaches +230℃



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