PRODUCT SPECIFICATION

HPS Y/H Distributor SCC

EPS-100185

HIRSCHMANN
AUTOMOTIVE

TABLE

1 General

1.1 Introduction

This product specification is valid for the HPS DISTRIBUTOR SCC, assembled according to the process specification listed below, and contains the product design and the condition upon delivery, the technical characteristics as well as the qualification inspections performed. In the case of improper application or deviation from specification that results in quality issues, the right of complaint is void.

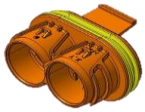
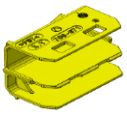
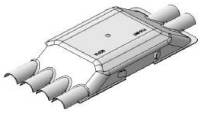
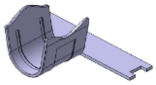
1.2 Other valid documents

A	Hirschmann product drawing	809-852-…00
B	Process specification	EVS-100131
C	Working committee directive LV214 (cf. TLF 0214)	Working committee test specification for motor vehicle plug-in connector – version March 2010
D	Working committee directive LV215 (cf. TLF 0214)	Electrics/ electronic requirements of HV-plug-in connectors – version May 2013
E	DIN EN 60664-1	Insulation coordination for electronic equipment in low voltage systems. Part 1: principles, requirement, and tests
F	2000/53/EG	Directive of the European Parliament and of the council on end-of life vehicles incl. attachments; European Union
G	ISO 6469-3	Electric road vehicles – safety specifications Part 3: protection of persons against electric hazards
H	ISO 26053	Road vehicles; degrees of protection (IP-Code); protection against foreign objects, water, and access; electrical equipment;

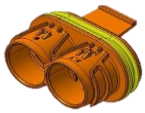
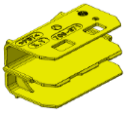
1.3 Product Design

1.3.1 BOM, PN, description, weight, MOQ

The HPS DISTRIBUTOR SCC consists of following parts. (see BOM)

HPS Y-Distributor 4.0 mm² SCC		809-852-…00	Weight without wire:		114,62
Article picture	Article description	Article number	Needed parts per system	Packaging unit / MOQ	Weight per pcs.
	HPS Distributor shieldhousing	706-669-501	1	340 pcs.	24,74 g
	HPS Distributor cablehousing one	809-853-501	1	800 pcs.	9,10 g
	HPS Distributor cablehousing two	809-853-502	2	600 pcs.	10,50 g
	HPS Distributor insulator yellow	706-671-501	1	3000 pcs.	4,14 g
	HPS Distributor insulator green	706-671-502	1	3000 pcs.	4,13 g
	HPS Distributor shield Y SCC	710-097-511	2	250 pcs.	10,10 g
	HPS Distributor shieldsleeve SCC	710-099-511	6	5000 pcs.	2,80 g
	HPS40-2 stress relief 4.0 mm² SCC	710-195-502	6	2000 pcs.	0,75 g
	HPS40-2 cable seal 4.0 mm² SCC	709-972-502	3	5000 pcs.	1,75 g
	HPS Distributor cap 4.0 mm² SCC	706-668-512	3	5000 pcs.	1,58 g

This document is not subject to change service!

HPS Y-Distributor 6.0 mm² SCC		809-852-…00	Weight without wire:		113,38 g
	HPS Distributor shieldhousing	706-669-501	1	340 pcs.	24,74 g
	HPS Distributor cablehousing one	809-853-501	1	800 pcs.	9,10 g
	HPS Distributor cablehousing two	809-853-502	2	600 pcs.	10,50 g
	HPS Distributor insulator yellow	706-671-501	1	3000 pcs.	4,14 g
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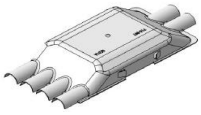	HPS Distributor shield Y SCC	710-097-511	2	250 pcs.	10,10 g
	HPS Distributor shieldsleeve SCC	710-099-511	6	5000 pcs.	2,80 g
	HPS40-2 stress relief 6.0 mm² SCC	710-671-501	6	20000 pcs.	0,54 g
	HPS40-2 X-Ring 6.0 mm² SCC	710-675-501	6	50000 pcs.	0,10 g
	HPS40-2 cable seal 6.0 mm² SCC	709-972-504	3	5000 pcs.	1,60 g
	HPS Distributor cap 6.0 mm² SCC	706-668-513	3	5000 pcs.	1,54 g

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2 Technical product information

The Distributor can be placed in the entire vehicle if the specified characteristics will not be exceeded. The characteristics are determined by tests (see verification plan) and material datasheets.

2.1 Current class

The connector system fulfills the class 1 and 2.

2.2 Operating condition

Nominal voltage	1,000 VDC
Maximum altitude	4,000 m
Insulating material group:	1
Degree of contamination:	2
Overvoltage category:	2
Rated impulse voltage:	4,000 VDC
Test voltage for electric strength:	4,242 VDC (3,000 VAC)

2.3 Voltage class

Class B according to ISO 6469-3
60 VDC < U ≤ 1,000 VDC
25 VAC < Ueff ≤ 707 VAC (15-150 Hz)

2.4 Ambient condition

Permissible temperature range for the plastic used:
-40° C to +140° C according to “temperature collective 4” for 8,000 h
The details of the changes in the properties of the plastics can be found in the plastics data sheets.

“Temperature collective 4” of MBN 10306, 2020-06 or GS 95024-3-1, 2013-07)

Temperature in ° C	Distribution in %
-40	6
23	20
85	65
135	8
140	1

2.5 EMC performance

Delta transfer impedance of the HV Distributor system.

4.0 mm²	**6.0 mm²**
Until 30 MHz: < 1 mΩ/ m	Until 30 MHz: < 1 mΩ/ m
Shielding attenuation:	
4.0 mm²	**6.0 mm²**
> 70 dB (10 kHz to 100 MHz) > 65 dB (100 MHz to 1,000 MHz)	> 75 dB (10 kHz to 500 MHz) > 65 dB (500 MHz to 1,000 MHz)

2.6 Shield area

Shield transfer: 360° circumferential

Shield contact resistance R < 2 mΩ (Total from shieled cable until shieled housing.)

2.7 IP-Degree of protection

IPxxD (assembled)

2.8 Technical cleanliness

Inside the distributor and on the distributor, there are no metallic particles *> 1,000 µm permitted*

For metallic particle at each Distributor: CCC = *N (J4/ K0) acc. to VDA Band 19*

For all other particle at each Distributor: CCC = *N (J10/ K0) acc. to VDA Band 19*

2.9 Ampacity SCC (derating)

The distributor SCC does not impact the ampacity of the harness; the derating of the used wires is divisive.

2.10 Ampacity SCC (I/t)

The ampacity shall be taken from the respective wire datasheet.

3 Performed tests SCC

Tests acc. to LV214 / LV215 (cf. TLF 0214)
Details see DVP-Plan_ HPS40 H-Distributor

1.1	PG 0 – Receiving inspection and testing (contacts + shield)	Shield contact resistance: < 2 mΩ Insulation resistance: R > 200 MΩ at 1,000 VDC; Withstand voltage 3,000 VAC for 1 min. (acc. to DIN EN 1987-3 and LV215) min. air distance 3.9 mm +min. creepage distance 5.0 mm
1.2	PG 1 - Dimension	
1.3	PG 2 – Material and surface test (contacts)	All metal parts
1.4	PG 3 – Material and surface test (housing) PG 10 – Conductor retention (welding + shield)	All plastic parts and seals See EVS-100130-00/ EVS-100131-00
1.12	PG 13 – Housing influence on the derating	No influence, the used wire is decisive.
1.14	PG 15 – Electrical stress test	
1.16	PG 17 – Dynamic stress	Shield contact > 2 mΩ - Vibration SG2 Temp. SG4 (HV contact + shield) - Vibration SG3 Temp. SG4 (HV contact + shield) - Vibration SG4 Temp. SG4 (HV contact + shield)
1.18	PG 19 – Environmental simulation	Max. test temperature: 140° C
1.19	PG 20 – Climatic load of the housing	Max. test temperature: 140° C
1.20	PG 21 – Long-term temperature	1,000 h at 140° C
1.21	PG 22B – Chemical durability	Without battery acid
1.22	PG 23 – Water leak tightness PG 49A – Resistance to dust PG 49B – Water tightness after dust	All wire cross section and wire type (4.0 mm²/ 6.0 mm² Coroplast, Kroschu, Leoni)
1.24	PG 50 – EMC test	Acc. to IEC 62153-4-3 At frequence area of 10 kHz to 1,000 MHz
1.25	PG 51 – Contact protection	IPXXD
1.26	K12 –Thermal shock with water surge	Acc. to LV124:2013
1.27	K15b – Climatic test	Acc. to LV124:2013

4 Result of performed tests

4.1 Insulation resistance

Over complete lifetime: >200 MΩ
Lowering during humidity load: >25 MΩ
In plugged condition between HV conductors and shield.

4.2 Watertightness

IP6K9K and IPx8
PG23 acc. to working group inspection guideline LV214 and LV215 (cf. TLF 0214)

4.3 Vibration load

Vibration stability: PG17 acc. to working group inspection guideline LV214 and LV215 (cf. TLF 0214)
Fixing length: free cable length between distributor and first cable fixing point where the cable is fixed with the same oscillation as the distributor. The cable fixing must be designed for every operation mode.

Vibration class severity level 2	no limit of fixing length, Shield contact, HV
Vibration class severity level 3	fixing length max. 200 mm, Shield contact, HV
Vibration class severity level 4	fixing length max. 50 mm, Shield contact, HV

4.4 Specific customer approval

BMW = SCC 5A3FD13

5 Table of change

Version	Change description	Change date	Editor
1	First version	18.05.2020	Hoor R.
2	Added test results & SCC-version	30.11.2020	Hoor R.
3	Update design specification	14.06.2023	Jussel E-M.
4	Adjusting data of the bottom line	08/ 2023	Jussel E-M.
5	Adjusting data “Ambient Condition”	10/ 2023	Jussel E-M.
6	Update Topic 2.8 – wording VDA	04/ 2024	Jussel E-M.
7	Topic 3, 1.1 Insulation resistance: R > 200 mΩ at 1,000 VDC; TO Insulation resistance: R > 200 MΩ at 1,000 VDC;	06/ 2024	Jussel E-M.