



PRODUCT SPECIFICATION

HPS40-2 2+2

Male Connector 180° Blade

EPS-100128



HIRSCHMANN
AUTOMOTIVE



TABLE

1	General	2
1.1	Introduction	2
1.2	Other valid documents	2
1.3	Product design	2
1.3.1	Description	2
2	Technical product information.....	3
2.1	Current class	3
2.2	Operating condition	3
2.3	Voltage class.....	3
2.4	Ambient condition.....	3
2.5	EMC performance	4
2.6	Shield area.....	4
2.7	IP-Degree of protection	4
2.8	HVIL system.....	4
2.9	Ampacity (derating)	4
2.10	Assembling/ Disassembling (male plug device).....	4
3	Result of performed tests	5
3.1	Watertightness	5
3.2	Amount of mating cycles	5
4	Table of change.....	6

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1 General

1.1 Introduction

This product specification is valid for the HPS40-2 Blade connector, 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	809-855-...00
B	Interface drawing	807-655-...00
C	Product specification female	EPS-100096
D	Working committee directive LV214 (cf. TLF 0214)	Working committee test specification for motor vehicle plug-in connector – version March 2010
E	Working committee directive LV215 (cf. TLF 0214)	Electrics/ eelectronic requirements of HV-plug-in connectors – version May 2013
F	DIN EN 60664-1	Insulation coordination for electronic equipment in low voltage systems. Part 1: principles, requirement, and tests
G	2000/53/EG	Directive of the European Parliament and of the council on end-of life vehicles incl. attachments; European Union
H	ISO 6469-3	Electric road vehicles – safety specifications Part 3: protection of persons against electric hazards
I	ISO 26053	Road vehicles; protection classes (IP-Code); protection against foreign objects, water, and contact; electrical equipment;

1.3 Product design

1.3.1 Description

The HPS40-2 2+2 MALE CONNECTOR can only be ordered assembled.

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2 Technical product information

The connector can be placed in the entire vehicle if the specified characteristics will not be exceeded. The characteristics are determined by test (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:	1
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 < U_{eff} ≤ 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

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2.5 EMC performance

Delta transfer impedance of the HV connector system.

2.5 mm ²	4.0 mm ²	6.0 mm ²
Until 2 MHz: < 2.5 mΩ/ m Until 30 MHz: < 5 mΩ/ m	Until 30 MHz: < 1 mΩ	Until 30 MHz: < 1 mΩ
Shielding attenuation:		
2.5 mm ²	4.0 mm ²	6.0 mm ²
> 70 dB (10 kHz to 100 MHz) > 65 dB (100 MHz to 1,000 MHz)	> 70 dB (10 kHz 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 $R < 2 \text{ m}\Omega$ (Total from sheathed cable until the device.)

2.7 IP-Degree of protection

IPxxD (plugged female connector)

IPxxB+ (unplugged female connector)

min. air distance HV contacts to shock-proof protection finger female connector interface at IPxxB: 0.9 mm

min. air distance HV contacts to shock-proof protection finger male connector interface at IPxxB: 0.8 mm

2.8 HVIL system

The Connector can be ordered with HVIL Blades.

Min. 1 mm leading HV Interlock contacts to HV load contact at unmating (nominal 2 mm).

2.9 Ampacity (derating)

The derating in the housing shows exemplary values. Requirement related to the current capability of the connector has also to be considered with the Derating of the contact supplier.

2.10 Assembling/ Disassembling (male plug device)

The HPS40-2 Blade connector is designed to mount it one time to the device. At multiple unmating of the HV plug socket from the device, the sealing (O-Ring) must be substituted. Before re-assembling, the plug socket must be checked for damages from the unmating.

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3 Result of performed tests

3.1 Watertightness

IP6K9K and IPx8

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

3.2 Amount of mating cycles

Max. 50 cycles (Ag)



4 Table of change

Change description	Change date	Editor
First edition	-	Vasiljevic
Adaption acc. to meeting on 29 th of October 2019	-	Vasiljevic
Derating from PG13 added	-	Vasiljevic
Update design specification	06/ 2023	Jussel E-M.
Adjusting data of the bottom line	08/ 2023	Jussel E-M.
Adjusting data Ambient Condition	10/ 2023	Jussel E-M.