



# har-bus® HM male connector



## General information

Design	IEC 61076-4-101	
No. of contacts	55 - 220 signal (77 - 308 fully shielded); or customised	
Contact spacing	2,0mm	
Test voltage	750V AC	
Contact resistance	20 mOhm max.	
Insulation resistance	10 <sup>10</sup> Ohm min.	
Working current	1 A@70°C (see derating diagram)	
Temperature range	-55°C ... +125°C	
Termination technology	compliant press-in	
Clearance & creepage distance	0,8 mm each for fixed connector	
Insertion and withdrawal force	insertion force per contact:	0,75N max.
	withdrawal force per contact:	0,15N min.
Mating cycles	- PL1 acc. to IEC 61076-4-101 =>	500 mating cycles
	- PL2 acc. to IEC 61076-4-101 =>	250 mating cycles
UL file	E102079	
RoHS - compliant	Yes	
Leadfree	Yes	

## Insulator material

Material	PC (Polycarbonate, glass fiber reinforcement 20%)
Color	RAL 7032 (grey)
UL classification	UL 94-V0
Material group acc. IEC 60664-1	IIIa (175 ≤ CTI < 400)
NFF classification	I2, F1

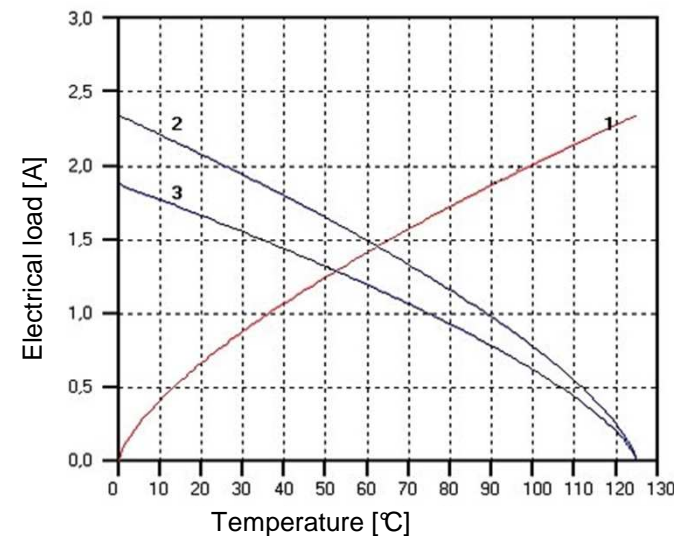
## Contact material

Contact material	Copper alloy	
Treatment contact zone	Bellcore recommended lubricant (PPE)	
Plating press-in zone	Ni	
Plating contact zone	- PL1 acc. to IEC 61076-4-101 =>	Au over PdNi over Ni
	- PL2 acc. to IEC 61076-4-101 =>	Au over PdNi over Ni
	- "S4" acc. to HARTING internal PL =>	min. 0,06µm Au / 0,7µm PdNi / 1,3µm Ni

## Derating diagram acc. to IEC 60512-5 (Current carrying capacity)

The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals.  
The current capacity curve is valid for continuous, non interrupted current loaded contacts of connectors when simultaneous power on all contacts is given, without exceeding the maximum temperature.

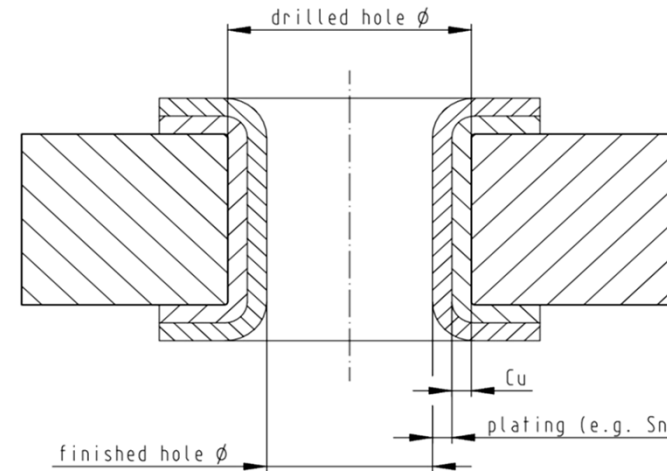
Control and test procedures according to DIN IEC 60512-5



Curve 1 shows raise in temperature  
Curve 2 shows nominal derating  
Curve 3 shows reduced values as per IEC512

## Recommended configuration of plated through holes

In addition to the hot-air-level (HAL), other PCB surfaces are getting more important. Due to their different properties - such as mechanical strength and coefficient of friction - we recommend the following configuration of PCB through holes.



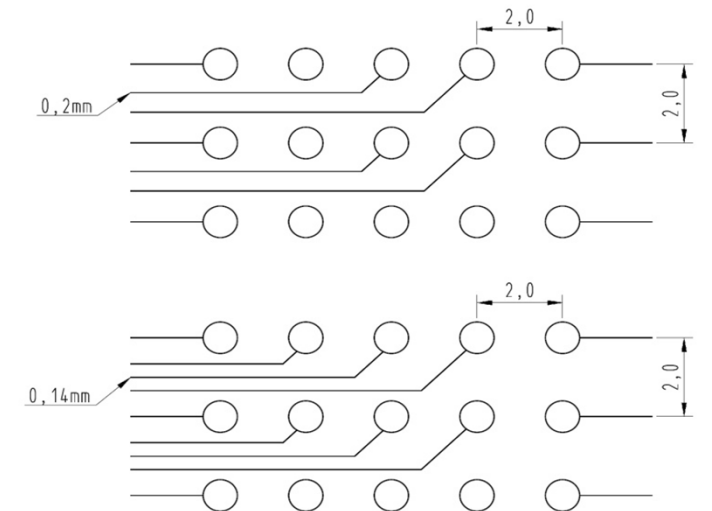
Tin plated PCB (HAL) acc. to EN 60352-5	Drilled hole Ø	0,7±0,02 mm
	Cu	min. 25µm
	Sn	max. 15µm
Chemical tin plated PCB	plated hole Ø	0,60 – 0,65mm
	Drilled hole Ø	0,7±0,02 mm
	Cu	min. 25µm
Gold /Nickel plated PCB	Sn	min. 0,8µm
	plated hole Ø	0,60 – 0,65mm
	Drilled hole Ø	0,7±0,02 mm
Silver plated PCB	Cu	min. 25µm
	Ni	3-7µm
	Au	0,05-0,12µm
Copper plated PCB (OSP)	plated hole Ø	0,60 – 0,65mm
	Drilled hole Ø	0,7±0,02 mm
	Cu	min. 25µm
Silver plated PCB	plated hole Ø	0,60 – 0,65mm
	Ag	0,1 – 0,3µm
	Drilled hole Ø	0,7±0,02 mm
Copper plated PCB (OSP)	plated hole Ø	0,60 – 0,65mm
	Cu	min. 25µm
	Drilled hole Ø	0,7±0,02 mm

## Circuit density

When using the specified diameter of the finished through hole according to IEC 61 076-4-101 (0.6 ± 0.05 mm) with an appropriate annular ring, the remaining distance between the rings is about 1 mm.

Under the condition that the width of the track and the space between should be equal, two tracks of 0.2 mm width or three tracks of 0.14 mm width can be placed between two rings.

Typical designs are shown in the drawing on the right side.



			Date	Name
		Detail.	22/05/12	mte
		Inspec.	22/05/12	TD
EC01567		Stand.		
Mod.	Date	Name	HARTING Electronics GmbH & Co. KG	



## Technical data sheet

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DS 17 00 110 0101