



# har-busÂ® HM power male connector



## General information

Design	OBSAI system specification V1.1	
No. of contacts	up to 4	
Contact spacing	3,0mm	
Test voltage	1500V AC	
Contact resistance	max. 1mOhm	
Insulation resistance	min. 10 <sup>9</sup> Ohm	
Working current	max. 23A at 70°C (with OBSAI configuration)	max. 20A at 70°C (fully loaded with power contacts)
Temperature range	-55°C ... +125°C	
Temperature range during reflow soldering	220°C for 2 minutes, 260°C max. short term	
Termination technology	press-in, solder pins (SMC)	
Clearance & creepage distance	0,8 mm each for fixed connector	
Insertion and withdrawal force	insertion force per contact: 4 N max.	withdrawal force per contact: 0,5 N min.
Mating cycles	- PL2 acc. to IEC 61076-4-101 => 250 mating cycles	
UL file	E102079	
RoHS - compliant	Yes	
Leadfree	Yes	

## Insulator material

Material	LCP (liquid crystalline polymer, glass fiber reinforcement 30%)
Colour	black
UL classification	UL 94-V0
Material group acc. to IEC 60664-1	IIIa (175 ≤ CTI < 400)

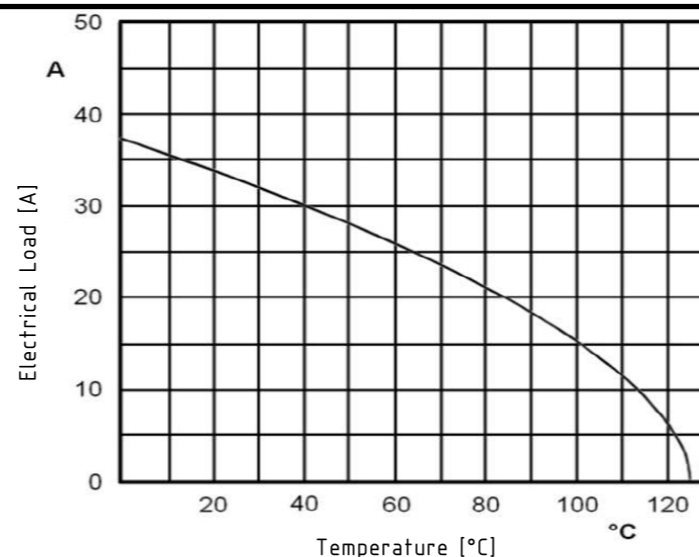
## Contact material

Contact material	Copper alloy
Plating press-in zone	Ni for press-in Ni/Sn for solder pins
Plating contact zone	Au over Ni

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

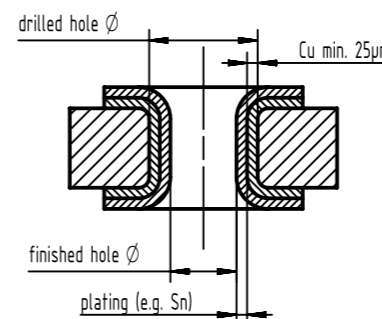
Loaded with four power contacts, each contact can carry up to 20A @ 70°C / 80 % derating.

With a configuration of two power contacts, GND and ENA, the current carrying capacity is even up to 23A @ 70°C / 80 % derating per contact.



## Recommended configuration of plated through holes for press-in termination

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.



PCB Type	Plating	Drilled hole Ø	Plated hole Ø
Tin plated PCB (HAL) acc. to EN 60352-5	Sn	1,15±0,025 mm	max. 15 µm
			0,94 - 1,09 mm
Chemical tin plated PCB	Sn	1,15±0,025 mm	min. 0,8µm
			1,00 - 1,10 mm
Gold /Nickel plated PCB	Ni	1,15±0,025 mm	3 - 7 µm
	Au		0,05 - 0,12 µm
			1,00 - 1,10 mm
Silver plated PCB	Ag	1,15±0,025 mm	0,1 - 0,3 µm
			1,00 - 1,10 mm
Copper plated PCB (OSP)		1,15±0,025 mm	
			1,00 - 1,10 mm

## Assembly instructions

It is highly recommended to use HARTING press-in tools to ensure a reliable press-in process. Please refer to the catalogue for tools, machines and further information about the press-in process.

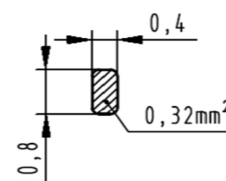
## Soldering instructions

The connectors should be protected when being soldered in a dip, flow or film soldering baths. Otherwise, they might become contaminated as a result of soldering operations or deformed as a result of overheating.

(1) For prototypes and short runs protect the connectors with an industrial adhesive tape, e.g. Tesaband 4331 (www.tesa.de). Cover the underside of the connector moulding and the adjacent parts of the pcb as well as the open sides of the connector. This will prevent heat and gases of the soldering apparatus from damaging the connector. About 140 + 5 mm of the tape should suffice.

(2) For large series a jig is recommended. Its protective cover with a fast action mechanical locking device shields the connectors from gas and heat generated by the soldering apparatus. As an additional protection a foil can be used for covering the parts that should not be soldered.

## Cross section of solder pins



All Dimensions in mm Original Size DIN A3		Scale 1:1	Free size tol.	Ref. Sub. DS 17 61 120 00 01 / EC01567 / 22.05.2012		
All rights reserved Department EC PD - DE		Created by THIELEMANN	Inspected by TADJE	Standardisation KOHLER	Date 2014-07-10	State Final Release
HARTING Electronics GmbH D-32339 Espelkamp		Title har-busÂ® HM power male connector			Doc-Key / ECM-Nr. 100580929/UGD/000/A 50000076072	
		Type DS	Number 17611200001		Rev. A	Page 1/1