



No. of contacts	stacking height 1,75mm, 3,25mm from 6 to 100poles, all even numbers
Contact spacing	stacking height 4,85mm from 6 to 80poles, all even numbers
Test Voltage	1,27mm x 1,27mm [0,050"x0,050"]
Contact resistance	500V
Insulation resistance	<25 mOhm
Working current acc. to IEC 60512, at 70°C, 80% derating	$\geq 10 \times 10^9 \Omega$
Working temperature range	see derating diagram
Termination technology	-55°C ... +125°C
Reflow processing temperature (acc. to ECA/IPC/JEDEC J-STD-075 Level PSL R0)	SMT
Clearance & creepage distance	min. 150s > 217°C
Insertion force (depending on mating connector)	min. 30s > 240°C
Withdrawal force (depending on mating connector)	0,4mm min.
Mating cycles	approximately 0,5N/contact
RoHS - compliant	approximately 0,5N/contact
Leadfree	PL1 : 500 mating cycles
Working voltage acc. to IEC 60664-1	PL2 : 250 mating cycles
UL file acc. UL 1977	Yes
UL file acc. CSA-C22.2 (for Canada)	Yes
PSL level acc. ECA/IPC/JEDEC J-STD-075	100V / 150V (depending on installation category)
MSL level acc. ECA/IPC/JEDEC J-STD-020D	ECBT2.E102079
	ECBT8.E102079
	PSL R0
	MSL 1

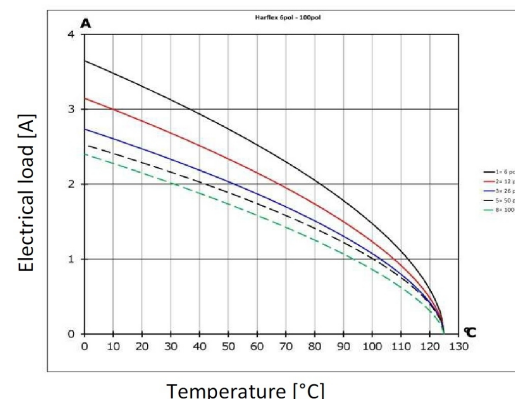
Material	LCP (liquid crystalline polymer)
Color	Black
UL classification	UL94-V0
Material group acc. IEC 60664-1	IIIa ($175 \leq CTI < 400$)

Contact material	Copper alloy
Plating termination zone	Sn
Plating contact sliding side	Au over PdNi (acc. to Performance level)

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.

derating curve at $I_{max} \cdot 0,8$ (IEC 60512-5-2)



The har-flex connectors are solderable with established lead-free SAC / SnNi solder but also leaded solder e.g. SnPb40

The har-flex connectors are solderable on lead-free pad surfaces like HAL, NiAu, Immersion Sn.

The solder deposition has to be placed on the pad area of the contact solder tines. Ideally, the solder deposition has the same length-to-width ratio and center point like the PCB pads. The size of the solder stencil apertures is depending on the thickness of the stencil. In general, the thinner stencils will need larger apertures to result in the required volume of solder paste. The minimum required solder paste volume for the signal pins is 0,094mm³, for the hold down it is 0,33mm³. For example, this can be achieved with the following stencil data :

	Signal pins		
Stencil thickness	PCB pad size	proposal stencil aperture size	calculated solder paste volume
120 µm	1,1 x 0,8 mm	1,05 x 0,75 mm	0,095 mm³
150 µm	1,1 x 0,8 mm	0,99 x 0,72 mm	0,107 mm³
	Hold-downs		
Stencil thickness	PCB pad size	proposal stencil aperture size	calculated solder paste volume
120 µm	2,5 x 1,2 mm	2,45 x 1,15 mm	0,338 mm³
150 µm	2,5 x 1,2 mm	2,25 x 1,08 mm	0,365 mm³

If a stencil with lower thickness shall be used, please insure the minimum required solder paste volume by enlarging the stencil aperture. Depending on the PCB design, the solder deposition may protrude the PCB pads. But to achieve a good sealing during solder paste printing and to reduce the cleaning interval of the stencil, the aperture should be smaller than the PCB pad about 10% or 25µm encircling.

All connectors are tested for coplanarity of contacts and are in the range of	6 pin to 50 pin: $\leq 0,1\text{mm}$
	50 pin to 68 pin: $\leq 0,12\text{mm}$
	70 pin to 80 pin: $\leq 0,13\text{mm}$
	82 pin to 100 pin: $\leq 0,15\text{mm}$

Performance level 1 (recommended for majority of applications)
Initial 250 mating cycles, 10 days gas test (25°C / 75% r.h.) using H2S 10 ppb, NO2 200 ppb, CL2 10 ppb, SO2 200 ppb.
Measurement of contact resistance. The remaining 250 mating cycles are subject to measurement of contact resistance and visual inspection.
Visual inspection. No abrasion of the contact finish through to the base material. No functional impairment.
Part number definition : 15 2

Initial 125 mating cycles, 4 days gas test (25°C / 75% r.h.) using H2S 10 ppb, NO2 200 ppb, CL2 10 ppb, SO2 200 ppb. Measurement of contact resistance. The remaining 125 mating cycles are subject to measurement of contact resistance and visual inspection.

Visual inspection. No abrasion of the contact finish through to the base material. No functional impairment.

Part number definition : 15 6

Defined contact surface of min. 0,06 μm Au over 0,7+0,2 μm PdNi
Part number definition : 15 5



All Dimensions in mm
Original Size DIN A3

Scale
1:1

Free size tol.

Ref.
Sub.

Sub.



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Created by
ZHUANGJ

Inspected by LUOK	
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Standardisation
HOFFMANN

Date	2020 07 20
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State
Final Release

Title	har flex male stacking height1.75 , 3.25 and 4.85
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Doc-Key / ECM-Nr.	100577896/UGD/001/E 500000177026
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HARTING Electronics GmbH

D-32339 Espelkamp

Type DS

Number	15111100301
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Rev.

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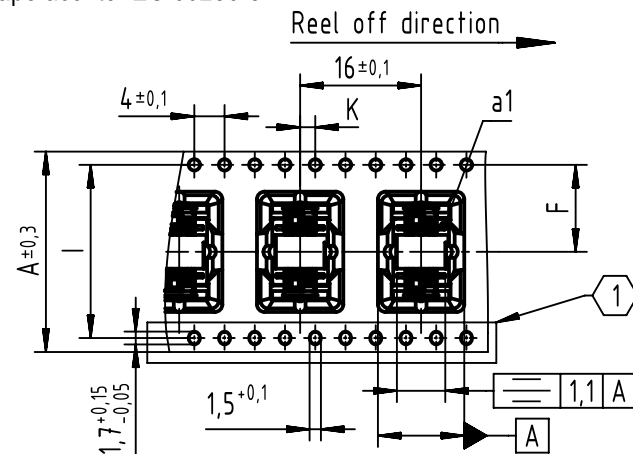


har-flex® straight male connector



TAPE LAYOUT & PACKAGING

Tape acc. to IEC 60286-3



Tape dimensions:	A	F	I	K
poles 06 to 12	24,0	11,5±0,1	-	2±0,1
poles 14 to 20	32,0	14,2±0,1	28,4	2±0,1
poles 22 to 40	44,0	20,2±0,15	40,4	2±0,15
poles 42 to 56	56,0	26,2±0,15	52,4	2±0,15
poles 58 to 80	72,0	34,2±0,3	68,4	2±0,2
poles 82 to 100	88,0	42,2±0,3	84,4	2±0,2

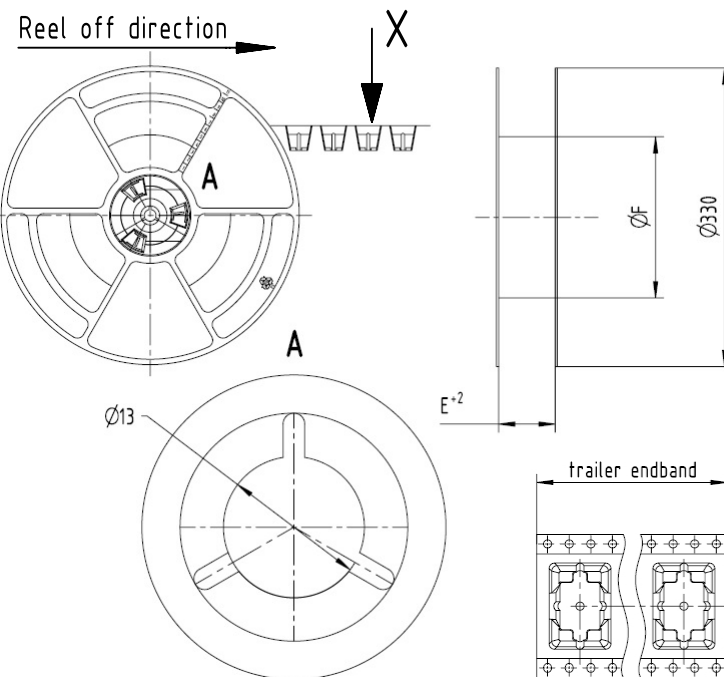
(1) NO DOUBLE SPROCKET HOLES FOR 06, 08, 10 AND 12 POLE NUMBERS (TAPE SIZE 24)

(2) Not available for stacking height 4,85mm

Packaging indices ("XXX" in part number)

Index	Stacking height	Packaging unit	Packaging
000	4,85mm	250	Tape&reel
	1,75mm&3,25mm	280	
333	All	1	Tape

REEL DIMENSIONS

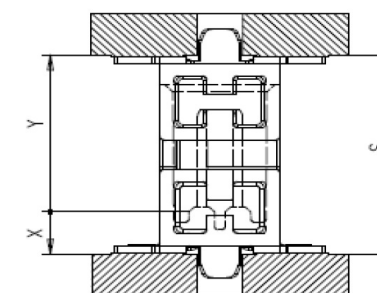


Reel dimensions:	E	F
Poles 06 to 12	24,4	178mm for stacking height 1,75mm & 3,25mm
Poles 14 to 20	32,4	
Poles 22 to 40	44,4	
Poles 42 to 56	56,4	100mm for stacking height 4,85mm
Poles 58 to 80	72,4	
Poles 82 to 100	88,4	

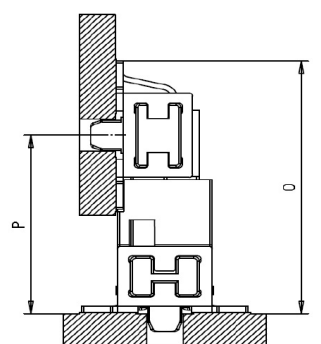
APPLICATION INFORMATION

S	X&Y	20mm	19mm	18mm	17mm	16mm	15mm	14mm	13mm	12mm	11mm	10mm	9mm	8mm
S	stacking heights	male 1.75mm female 6.25mm	male 3.25mm female 6.25mm	male 4.85mm female 6.25mm	male 1.75mm female 9.05mm	male 3.25mm female 9.05mm	male 4.85mm female 9.05mm	male 1.75mm female 13.65mm	male 3.25mm female 13.65mm	male 4.85mm female 13.65mm				
	PCB distance	8mm-9.5mm	9.5mm-11mm	11.1mm-12.6mm	10.8mm-12.3mm	12.3mm-13.8mm	13.9mm-15.4mm	15.4mm-16.9mm	16.9mm-18.4mm	18.5mm-20mm				
S	part numbers	1511... 1521...	1512... 1521...	1513... 1521...	1511... 1522...	1512... 1522...	1513... 1522...	1511... 1523...	1512... 1523...	1513... 1523...				

straight female



angled female

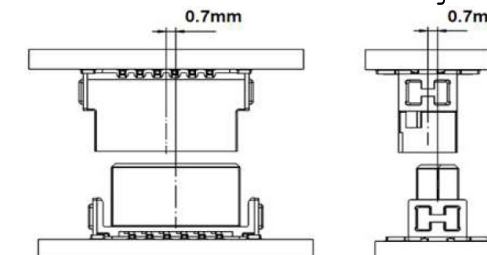


straight male

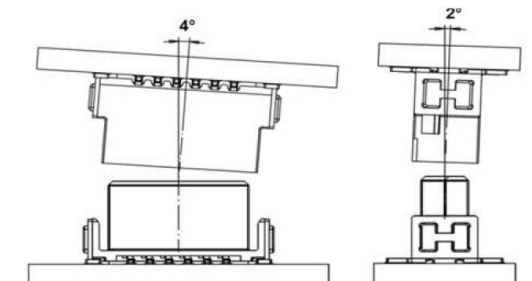
4,85	13,65	18,5	20
3,25	13,65	16,9	18,4
1,75	13,65	15,4	16,9
4,85	9,05	13,9	15,4
3,25	9,05	12,3	13,8
1,75	9,05	10,8	12,3
4,85	6,25	11,1	12,6
3,25	6,25	9,5	11
1,75	6,25	8	9,5
X	Y	Smin	* Smax

*Smax = Smin +1.5 wiping length with additional contact overlap security

Admissible mismatching



Admissible inclination



All Dimensions in mm
Original Size DIN A3

Scale
1:1

Free size tol.

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