HDAS
The most competitive connector

Amphenol reduces the pitch and increases the density of contacts with the brand new HDAS range.
1.905 x 1.905 [.075 x .075] staggered grid.
With its robust and simple design, high density, and high performance to extreme conditions, HDAS is the right connector when installation, cost, and reliability must be considered.

100% cost effective

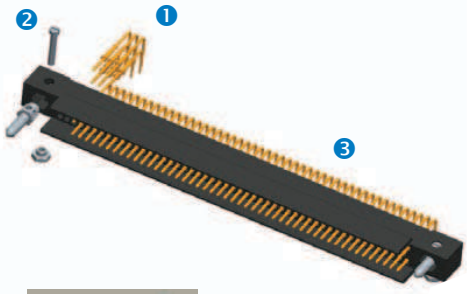
The press-fit technology allows significant assembly cost reduction on the backplane while ensuring an extreme reliability, even for the thickest motherboards. No more solder joints, pre-baking, or cleaning.

100% optimized

- The guiding/keying devices can be polarized in 6 positions within their own cavities, i.e. 36 keying possibilities per connector.
- The lateral rails on the male connector provide optimal protection to the contacts.
- The mechanical protection of the female contacts is provided per design.

100% performing

- The proven starclip technology of the socket provides a higher current rate, as well as an improved robustness as compare to the traditional technologies.
- LCP material allows all types of soldering processes as well as a higher temperature rating.
- HDAS has surpassed all MIL-DTL-55302 requirements as well as the new demands for military transportation.

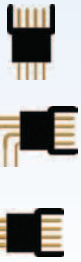


QUICK SELECTION GUIDE

Signal contacts * ❶

FEMALE

MALE



PAGE 48 | PAGE 49

Keying & Guiding * ❷

FEMALE FITTING
Keying & guiding

MALE FITTING
Guiding only
or
Keying & guiding

Other fitting, guiding or keying devices, consult us.

PAGE 50

Housing ❸

3 ROWS
50, 77, 119, 152

4 ROWS
102, 202

5 ROWS
253

6 ROWS
303, 402*

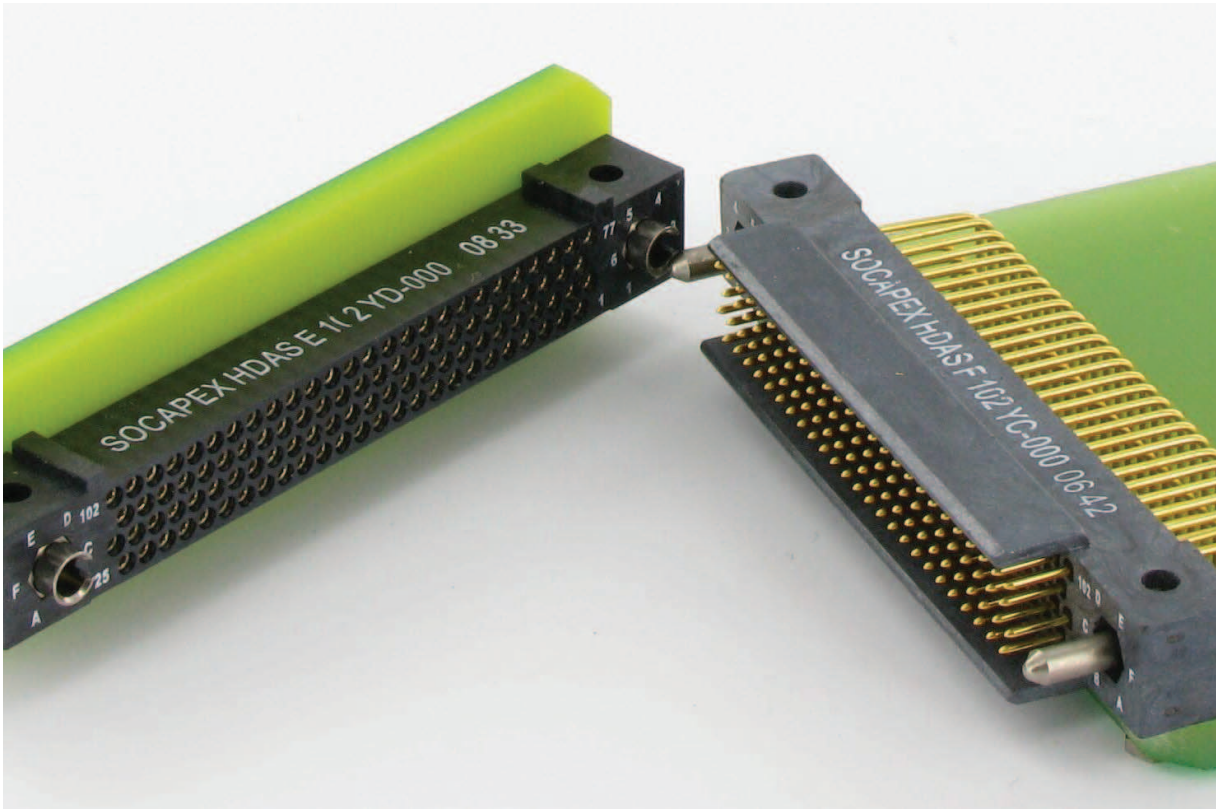
PAGE 52

The HDAS series serves various markets, including:

Military avionics & airframe | Commercial avionics & airframe | C4ISR | Navy | Ground vehicle | Industrial

* For special terminations of contacts (SMT, solder-cup, …), special fittings and guiding devices or special arrangements, do not hesitate to *consult us.*

All dimensions are given for information only and are in mm [inch], except as otherwise specified

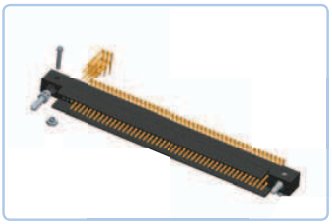


HDAS Series

High density monolithic connector

HDAS >>> GENERAL SPECIFICATIONS

HIGH DENSITY



- **Robust technology**
- **Dedicated to harsh environment (high temperature and vibration levels)**
- **The most cost effective**
- **1.905 [.075] staggered grid (0.9525 [.0375] offset), 1.905 [.075] between rows**

Terminations

Recommended configurations

Standard

Exceeds some MIL-DTL-55302 requirements.

MIL-DTL-55302

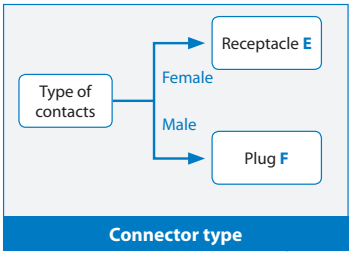
Main characteristics

- High density: 0.16 cts/mm² [103 cts/inch²]
- 9 sizes from 3 to 6 rows, 50 to 402* signal contacts
- 5A per signal contact
- DWV: 800 Vrms
- Press-fit solderless attachment technology available
- Lateral rails to protect male pins from external damage

Markets

Main applications

How to order



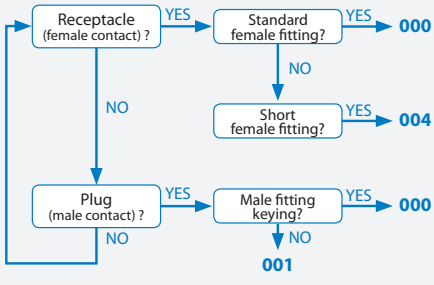
Female	Male	Description
Consult us	**YC**	**Right angle** PC tail standard length
Consult us	**YCS**	**Right angle** PC tail short length
YD		**Straight** PC tail standard length
YDS		**Straight** PC tail short length
YP	*Consult us*	Press fit
Consult us	**Z**	Solder cup

Signal contacts (see pages 48 to 49)

HDAS - --- --- --- --

Number of signal contacts (see pages 52 to 55)	
3 rows	**50** **77** **119** **152**
4 rows	**102** **202**
5 rows	**253**
6 rows	**303** **402***

Deviation (see pages 50 to 51)



Termination Plating

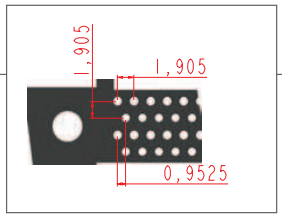
Ø: Tin lead plating on female terminations (YD, YDS, YP)

LF: Lead free plating on female terminations (for YD & YDS only)

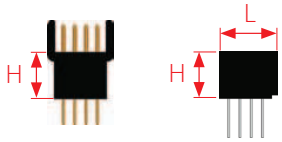
** Consult us*

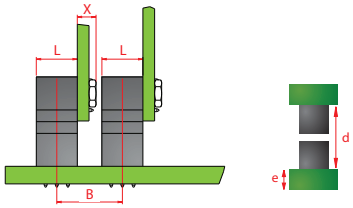
All dimensions are given for information only and are in mm [inch], except as otherwise specified

HDAS >>> TECHNICAL SPECIFICATIONS



DIMENSIONAL CHARACTERISTICS





H = 8 $_{MAX}$ [.315]
B_{MIN} = L + X
X = Board thickness + hardware thickness
d = 16 $_{MAX}$ [.630]
e = 1.6 [.063] to 5.5 [.217] or 2.5 $_{MIN}$ [.098] (for YP contacts)

	3 rows	4 rows	5 rows	6 rows
L	8.21 $_{MAX}$ [.323]	10.11 $_{MAX}$ [.398]	12.02 $_{MAX}$ [.473]	13.72 $_{MAX}$ [.540]

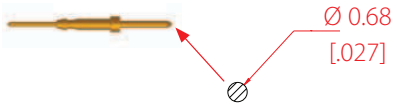
FEMALE CONTACT

Starclip female technology: 6 tines for better reliability
- 6 contact tines instead of 4
- Excellent mechanical and electrical reliability
- Better resistance to high vibrations
- Improved electrical conductivity
- 100% compatible with other connectors

Material
- Barrel: machined brass alloy
- Starclip: CuBe[BeCu], stamped and formed

Plating
- Barrel: tin lead or lead free
- Clip: gold over nickel

MALE CONTACT



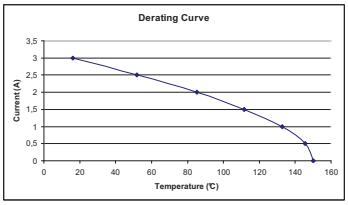
- **Mating end diameter:** Ø 0.68 [.027]
- **Contact section** (mating side): 0.36 mm² [.0006 inch²]
- **Material:** brass alloy (machined)
- **Plating:** gold over nickel

MATERIALS

- **Guiding devices:** electroless nickel plating over brass
- **Plastic insert:** thermoplastic LCP, 30% glass-fiber filled

MECHANICAL CHARACTERISTICS	ACCORDING TO MIL DTL 55 302	
Backoff[1] (mm)	1.2 [.0472] $_{MAX}$	N/A
Mating force per contact (N)	0.6 < F < 0.8	§ 4.5.3
Unmating force per contact (N)	0.3 < F < 0.5	§ 4.5.3
Durability cycles	500	§ 4.5.9
Sinusoïdal vibrations (20 to 2000 Hz) micro discontinuity 2ns	15 g	§ 4.5.10
Random vibrations (600 to 700 Hz) micro discontinuity 2ns	2.682g² / Hz	§ 4.5.10
Shocks micro discontinuity 2ns	100 g	§ 4.5.10
Recommanded tightening torques		
- nuts for Ø 2.5mm screws, brass (m.N)	0.25	N/A
- nuts for Ø 1.6mm screws, brass (m.N)	0.15	N/A
ENVIRONMENTAL CHARACTERISTICS		
Thermal shocks (°C)	-65 / +150	§ 4.5.13
Salt Spray (hours)	96	§ 4.5.11
Humidity		§ 4.5.15
Days	10	
Temperature (°C)	25 / 65	
Humidity rate (%)	90-95	
ELECTRICAL CHARACTERISTICS		
Current rating per contacts (A)	5 (see derating curve)	§ 4.5.5
Insulation resistance (GΩ)	5 $_{MIN}$	§ 4.5.8
Contact resistance (mΩ)	10 $_{MAX}$	§ 4.5.12
Dielectric Withstanding Voltage (Vrms)	800 $_{MIN}$	§ 4.5.7.1

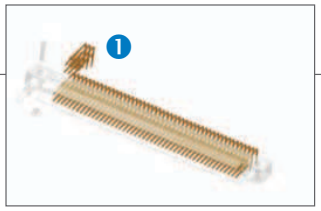
[1]: When both connectors are fully mated, the backoff is the maximum distance the connectors can be unmated while functioning properly



All dimensions are given for information only and are in mm [inch], except as otherwise specified

HDAS >>> SIGNAL CONTACTS (❶)

FEMALE CONTACTS FOR RECEPTACLES



Starclip female technology

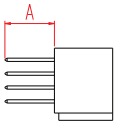
- 6 contact tines instead of 4
- Excellent mechanical and electrical reliability
- Better resistance to high vibrations
- Improved electrical conductivity
- 100% compatible with other connectors

- Size 23: high average current
- Clip for male contact Ø 0.68 [.027]
- **Plating** on active part (clip)

Cu	Ni	**Au**
1 [.039]	3.5 [.138]	**1.3 [.051]**

Female contacts

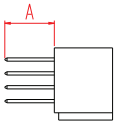
Standard straight PC tail



- Thru hole soldering
- Mother board or mezzanine connection
- PCB thickness: 5.5 $_{MAX}$ [.217]

Termination style	YD

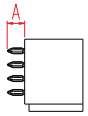
Short straight PC tail



- Thru hole soldering
- Mother board or mezzanine connection
- PCB thickness: 3.5 $_{MAX}$ [.138]

Termination style	YDS

Press-fit



- For solderless assembly
- Mother board or mezzanine connection
- PCB thickness: 2.5 $_{MIN}$ [.098]

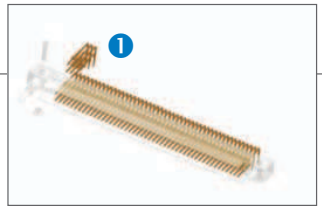
Termination style	YP

	YD	YDS	YP
A $_{MAX}$	6.85 ± 0.2 [.270 ± .008]	4.65 ± 0.2 [.183 ± .008]	2.6 ± 0.2 [.102 ± .008]
Termination section	Ø 0.45 $_{MAX}$ [.018]		Ø 0.82 [.032]
Standard termination plating µm [µin]	2.5 [.098] Ni + 5 [.197] Sn Pb		2 [.079] Ni electroless + 2 [.079] Ni electrolytic + 10 [.394] Sn Pb
RoHS termination plating* µm [µin]	3 [.118] Ni + 10 [.394] bright pure Sn		

** Consult us*

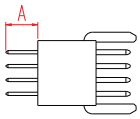
All dimensions are given for information only and are in mm [inch], except as otherwise specified

HDAS >>> SIGNAL CONTACTS (❶)



MALE CONTACTS FOR PLUGS

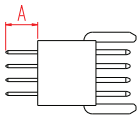
Standard straight PC tail



- Thru hole soldering
- Daughter board or mezzanine connection
- PCB thickness: 5.5 $_{MAX}$ [.217]

Termination style **YD**

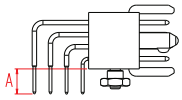
Short straight PC tail



- Thru hole soldering
- Daughter board or mezzanine connection
- PCB thickness: 3.3 $_{MAX}$ [.130]

Termination style **YDS**

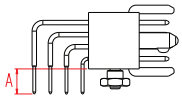
Standard right angle PC tail



- Thru hole soldering
- Daughter board
- PCB thickness: 2.8 $_{MAX}$ [.110]

Termination style **YC**

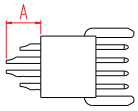
Short right angle PC tail



- Thru hole soldering
- Daughter board
- PCB thickness: 1.6 $_{MAX}$ [.063]

Termination style **YCS**

Solder cup



- Hard-soldering on wire
- AWG gauge 26 to 22

Termination style **Z**

	YD	YDS	YC	YCS	Z
A $_{MAX}$	6.6 ± 0.2 [.260 ± .008]	4.4 ± 0.2 [.173 ± .008]	4 ± 0.2 [.157 ± .008]	2.85 ± 0.2 [.112 ± .008]	5 ± 0.2 [.197 ± .008]
Termination section	Ø 0.45 $_{MAX}$ [.018]				Ø 0.93 $_{MAX}$ [.037]
Mating end diameter	Ø 0.68 $_{MAX}$ [.027] 23 (according to MIL DTL 55302)				
Plating µm [µin]	1 [.039] Cu + 3.5 [.138] Ni + **1 [.039] Au**				

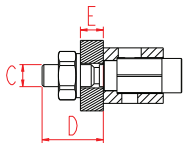
All dimensions are given for information only and are in mm [inch], except as otherwise specified

HDAS >>> KEYING & GUIDING (❷)

FEMALE FITTINGS FOR RECEPTACLES

Keying/guiding & non-locking

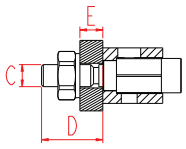
000 style - For YD/YDS/YP female contacts



- Standard female fitting
- Chassis or mother board
- Fixed receptacle
- Nickel over brass

HDAS E --- YDS **000**
HDAS E --- YD **000**
HDAS E --- YP **000**

004 style - For YD/YDS/YP female contacts



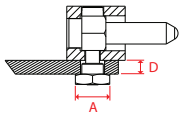
- Short female fitting
- Chassis or mother board
- Fixed receptacle
- Nickel over brass

HDAS E --- YDS **004**
HDAS E --- YD **004**
HDAS E --- YP **004**

MALE FITTINGS FOR PLUGS

Guiding only

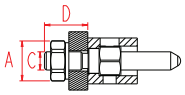
002 style - For YC/YCS male contacts



- Daughter board
- Free plug
- Nickel over brass

HDAS F --- YCS **002**
HDAS F --- YC **002**

002 style - For YD/YDS male contacts

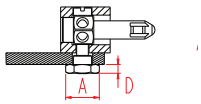


- Daughter board or mezzanine connection
- Nickel over brass

HDAS F --- YDS **002**
HDAS F --- YD **002**

Keying & guiding

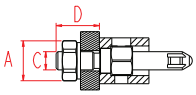
000 style - For YC/YCS male contacts



- Daughter board
- Free plug
- 6 keying positions
- Nickel over brass

HDAS F --- YCS **000**
HDAS F --- YC **000**

000 style - For YD/YDS male contacts



- Daughter board or mezzanine connection
- 6 keying positions
- Nickel over brass

HDAS F --- YDS **000**
HDAS F --- YD **000**

	Female fittings		Male fittings			
	000 style for YD / YDS / YP female contacts	**004 style** for YD / YDS / YP female contacts	**002 style** Guiding for YC / YCS male contacts	**002 style** Guiding for YD / YDS male contacts	**000 style** Keying for YC / YCS male contacts	**000 style** Keying for YD / YDS male contacts
A			Hex 4 [.157]	Hex 5 [.197]	Hex 4 [.157]	Hex 5 [.197]
C	M 2.5 [.098]			M 2.5 [.098]		M 2.5 [.098]
D	7.15 ±0.2 [.281 ± .008]	5.5 ± 0.2 [.217 ± .008]	1.2 $_{MAX}$ [.472]	6 $_{MAX}$ [.236]	1.2 $_{MAX}$ [.472]	6 $_{MAX}$ [.236]
E	3.2 $_{MAX}$ [.126]	D -2.8				

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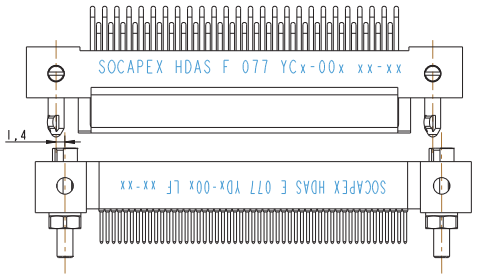
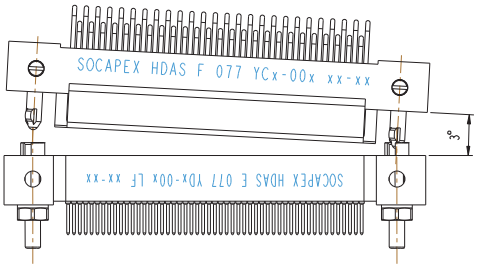
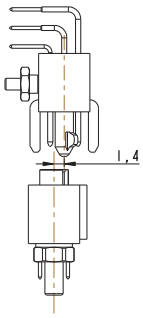
HDAS >>> KEYING & GUIDING (❷)

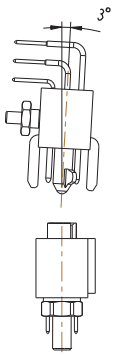
REALIGNMENT CAPABILITY

In the longitudinal axis	In the lateral axis

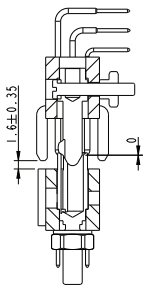
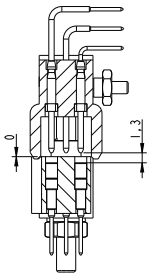
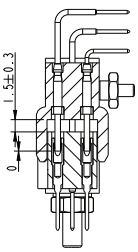
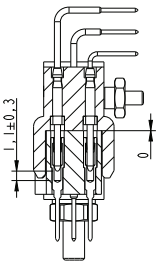




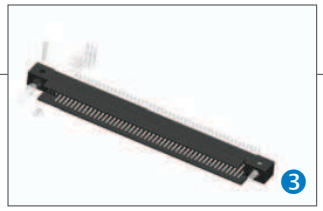




MATING SEQUENCE

Keying / Guiding	Rails	Electrical contact	Mated connector
			
1.6 ± 0.35 [.063 ± .014]	1.3 [.051]	0.5 ± 0.3 [.020 ± .012]	1.1 ± 0.3 [.043 ± .012]

HDAS >>> 3 & 4 ROWS (❸)

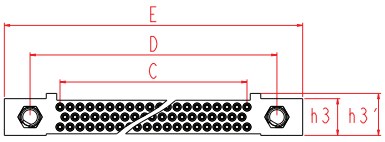


TYPICAL ARRANGEMENTS 3 & 4 ROWS

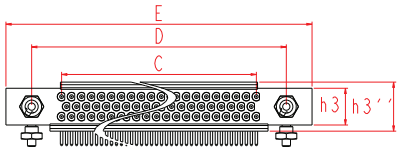
n is the total number of signal contacts.
r is the total number of rows.

Signal contacts on 3 rows*

receptacle



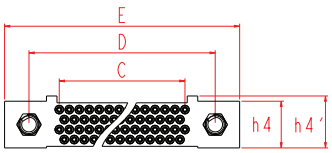
plug



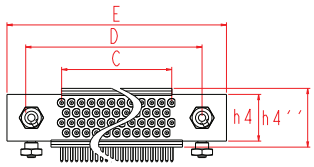
n	50, 77, 119	152
C	(n – 2) x 0.635	
D	C + 11.43	
E	D + 9.325	D + 9.82
h_3	7.01 $_{MAX}$ [.276]	
h_3'	8.21 $_{MAX}$ [.323]	
h_3''	9.36 $_{MAX}$ [.369]	

Signal contacts on 4 rows*

receptacle



plug

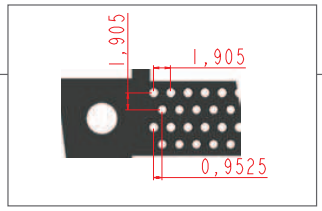


n	102	202
C	(n – 2) x 0.47625	
D	C + 11.555	C + 11.43
E	D + 9.325	D + 9.82
h_4	8.91 $_{MAX}$ [.351]	
h_4'	10.11 $_{MAX}$ [.398]	
h_4''	11.26 $_{MAX}$ [.443]	

*in mm: 1mm = 0.03937 inch

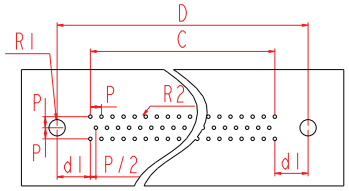
All dimensions are given for information only and are in mm [inch], except as otherwise specified

HDAS >>> 3 & 4 ROWS (❸)

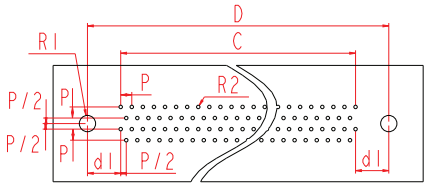


LAYOUTS 3 & 4 ROWS

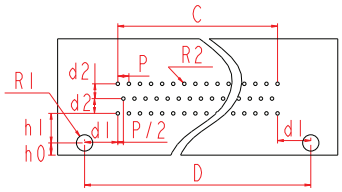
The boards are shown from the connector side.
All contact outputs are equidistant.

n	YD/YDS CONTACT (male and female for plug and receptacle)* YP CONTACT (female for receptacle)
50 / 77 / 119 / 152 3 rows	

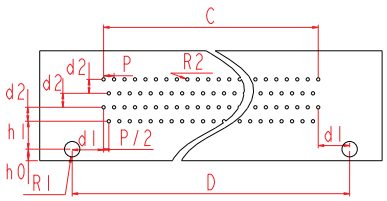
n	50, 77, 119	152
C	(n – 2) x 0.635	
D	C + 11.43	

n	
102 / 102 4 rows	

n	102	202
C	(n – 2) x 0.47625	
D	C + 11.555	C +11.43

	YC/YCS CONTACT (male for plug)*
50 / 77 / 119 / 152 3 rows	

n	50, 77, 119	152
C	(n – 2) x 0.635	
D	C + 11.43	

n	
102 / 102 4 rows	

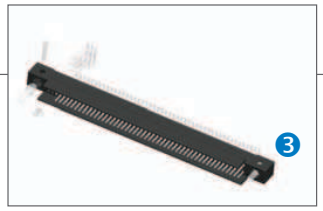
n	102	202
C	(n – 2) x 0.47625	
D	C + 11.555	C +11.43

	h_0	$2d_2$	d_2	$d_2/2$	p	p/2	d1	$2d_1$	R_1	R_2
102	2.1 MAX [.083]	5.08 [.2]	2.54 [.1]	1.27 [.05]	1.905 [.075]	0.9525 [.0375]	5.7775 [.227]	11.555 [.455]	Ø 2.8 $^{+0.1}_{0}$ [.110 $^{+.004}_{0}$]	Ø 0.6 MIN [.024] with metallization Ø 0.6 ± 0.05 for YP contacts [Ø.024 ± .002]
50, 77, 119							5.715 [.225]	11.43 [.450]		
152										
202										

in mm: 1mm = 0.03937 inch

All dimensions are given for information only and are in mm [inch], except as otherwise specified

HDAS >>> 5 & 6 ROWS (❸)

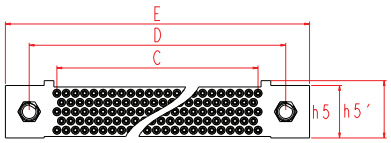


TYPICAL ARRANGEMENTS 5 & 6 ROWS

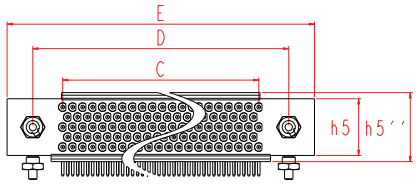
n is the total number of signal contacts.
r is the total number of rows.

Signal contacts on 5 rows

receptacle



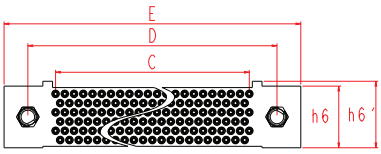
plug



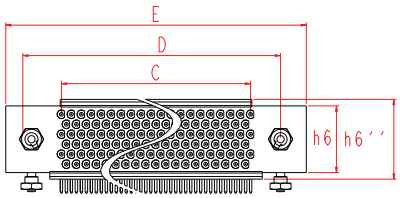
n	253
C	95.25 [3.750]
D	106.68 [4.200]
E	116.5 $_{MAX}$ [4.587]
h_5	10.82 $_{MAX}$ [.426]
h_5'	12.02 $_{MAX}$ [.473]
h_5''	13.17 $_{MAX}$ [.519]

Signal contacts on 6 rows

receptacle

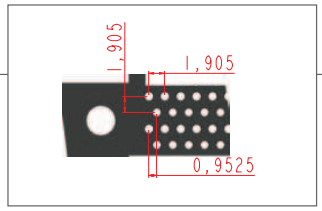


plug



n	303	402
C	95.25 [3.750]	62.865 [2.475]
D	106.68 [4.200]	148.59 [5.850]
E	116.5 $_{MAX}$ [4.587]	158.3 $_{MAX}$ [6.232]
h_6	12.72 $_{MAX}$ [.501]	
h_6'	13.72 $_{MAX}$ [.540]	
h_6''	15.22 $_{MAX}$ [.599]	

HDAS >>> 5 & 6 ROWS (❸)

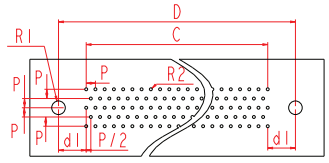


LAYOUTS 5 & 6 ROWS

The boards are shown from the connector side.
All contact outputs are equidistant.

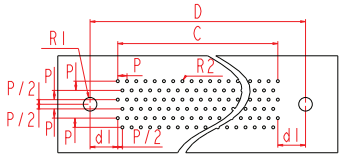
n — **YD/YDS CONTACT (male and female for plug and receptacle) YP CONTACT (female for receptacle)**

253 5 rows



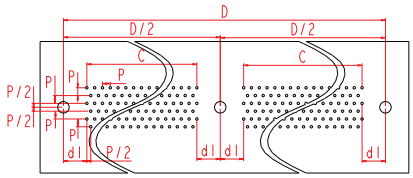
n	253
C	95.25 [3.750]
D	106.68 [4.200]

303 6 rows



n	303
C	95.25 [3.750]
D	106.68 [4.200]

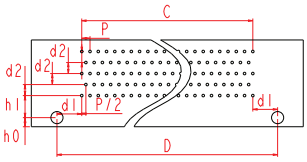
402 6 rows



n	402
C	62.865 [2.475]
D	148.59 [5.850]
D/2	74.295 [2.925]

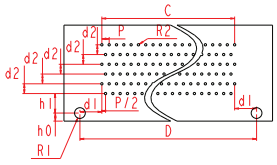
YC/YCS CONTACT (male for plug)

253 5 rows



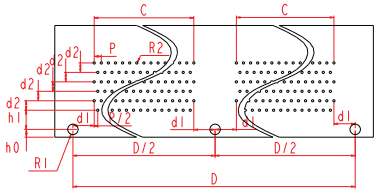
n	253
C	95.25 [3.750]
D	106.68 [4.200]

303 6 rows



n	303
C	95.25 [3.750]
D	106.68 [4.200]

402 6 rows



n	402
C	62.865 [2.475]
D	148.59 [5.850]
D/2	74.295 [2.925]

h_0	h_1	d_2	p	p/2	d1	R_1	R_2
2.1 $_{MAXI}$ [.083]	5.08 [.2]	2.54 [.1]	1.905 [.075]	0.9525 [.0375]	5.715 [.225]	Ø 2.8 $^{+0.1}_{0}$ [.110 $^{+.004}_{0}$]	Ø 0.6 $_{MIN}$ [.024] with metallization Ø 0.6 ± 0.05 for YP contacts [Ø.024 ± .002]

in mm: 1mm = 0.03937 inch

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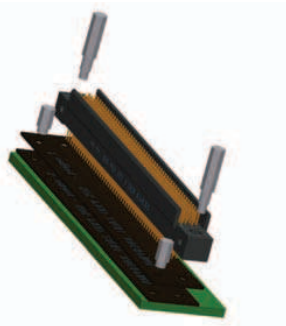
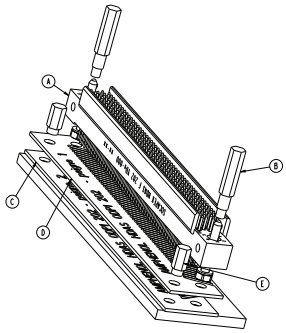
HDAS >>> TOOLING

MOUNTING OF A STRAIGHT PLUG (YD) ON A BOARD

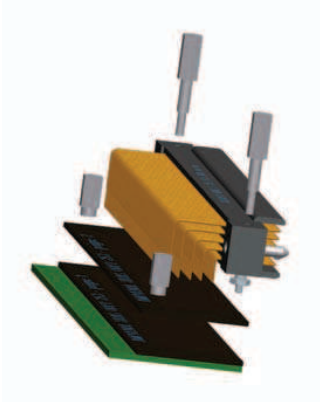


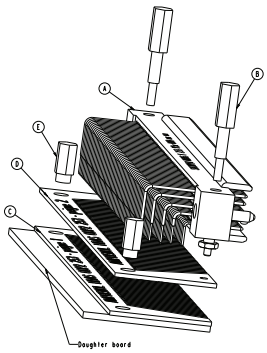


- Assemble alignment spacers (C and D) with tooth chamfers facing up, then insert positioning pins (E) into holes on spacers.
- Align the connector (A) on the spacers using positioning guide (B).
- Exert slight pressure on the connector so the contact tails pass through the spacer cavities and into the PCB holes
- Remove positioning pins (B and E) and alignment spacers (C and D)
- Exert pressure on the connector until it butts against the board and fasten fixing accessories

Part number	**HDAS ODP1 xxx**

MOUNTING OF A RIGHT ANGLE (YC) PLUG ON A DAUGHTER BOARD





- Assemble alignment spacers (C and D) with tooth chamfers facing up, then insert positioning pins (E) into holes on spacers.
- Align the connector (A) on the spacers using positioning guide (B).
- Exert slight pressure on the connector so the contact tails pass through the spacer cavities and into the PCB holes
- Remove positioning pins (B and E) and alignment spacers (C and D)
- Exert pressure on the connector until it butts against the board and fasten fixing accessories

Part number	**HDAS ODP2 xxx**

Consult us

All dimensions are given for information only and are in mm [inch], except as otherwise specified

NOTES